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TETRA TECH EC, INC.

August 15, 2019

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RE: *2018 Remedial Action Summary Report, Lower Fox River Operable Units 2-5*
LFRR-19-0001

Dear Pablo and Beth:

On behalf of Lower Fox River Remediation LLC, attached is the *2018 Remedial Action Summary Report, Lower Fox River Operable Units 2-5.*

This report summarizes remedial action construction and operations completed during 2018, as well as quality assurance test results. The report also provides an assessment of the project performance in 2018 versus the objectives established at the start of the construction season.

The report has been prepared under the direction of the Phase 2B Project Coordinator, Ms. Terri L. Blackmar, PE. If you have any questions, please contact the undersigned or Ms. Blackmar.

Sincerely,



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2018 REMEDIAL ACTION SUMMARY REPORT
LOWER FOX RIVER OPERABLE UNITS 2-5

DCN: LFRR-19-0001

Prepared for

Fox River

LOWER FOX RIVER REMEDIATION LLC

Green Bay, Wisconsin

Prepared by

Tetra Tech EC, Inc.
J.F. Brennan Co., Inc.
Stuyvesant Projects Realization Inc.

August 2019

TETRA TECH EC, INC.

2018 REMEDIAL ACTION SUMMARY REPORT

LOWER FOX RIVER OPERABLE UNITS 2–5

Prepared by:
Tetra Tech EC, Inc.
J.F. Brennan Co., Inc.
Stuyvesant Projects Realization, Inc.

Prepared for:
Lower Fox River Remediation LLC
Green Bay, Wisconsin

Document Control Number: LFRR-19-0001

August 2019

Revision	Prepared By	Reviewed By	Approved By	Date
1	Richard Feeney and Paul Spillers	Bjorn Lysne and Lee Boreen	Bill Coleman	August 2019

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Lower Fox River Operable Units 2–5
2018 Remedial Action Summary Report
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EXECUTIVE SUMMARY

This report summarizes the 2018 remedial action (RA) performed in Operable Units (OUs) 2–5 of the Lower Fox River Remediation (LFRR) site. The RA was performed under contract to Lower Fox River Remediation LLC (LLC) on behalf of its member NCR Corporation.

The team that executed the work for the LLC included the following firms:

- Tetra Tech EC, Inc. (Tetra Tech), the prime contractor and lead for remedial design, quality control, waste management, separated sand handling, and water treatment operations
- J.F. Brennan Company, Inc., the lead for debris removal, dredging, sand covering, and engineered capping
- Stuyvesant Projects Realization, Inc., the lead for sediment desanding and dewatering operations
- Foth Infrastructure and Environment, LLC (Foth), which prepared hydrographic survey audit summaries, presented in Appendix P

Anchor QEA, LLC provided design assistance on the project. Other subcontractors provided specialty services, including trucking and excavating, disposing of waste, and supplying armor stone, quarry spall, and sand.

Purpose and Scope

The LFRR site extends from the outlet of Lake Winnebago and continues downstream to the mouth of the Fox River in the city of Green Bay, Wisconsin. The site has been divided into OUs for the remediation of polychlorinated biphenyls (PCBs) that have been released into the river.

The overall remediation program for the removal of PCBs in OUs 2–5 is set forth in a 2003 Record of Decision (ROD) and a 2007 ROD Amendment. The 2007 Administrative Order (Order) for RA directed respondents to implement the RA for OUs 2–5.

The LLC retained Tetra Tech as the prime contractor for the RA (except for the obligations related to long-term monitoring and other post-construction work outlined in the Order). Construction preparation work began in 2008 as Phase 2A, and in-water construction began in 2009 as Phase 2B; the 2018 season is the 10th year of in-water RA construction. This report is a deliverable described in the report titled Final Phase 2B Work Plan for 2017/2018 and Beyond Remedial Action of OUs 2-5 (2017/2018 and Beyond RA Work Plan) (Tetra Tech et al. 2018).

Remedial Action Summary

Consistent with the objectives presented in the 2017/2018 and Beyond RA Work Plan, 2018 remedial activities included:

- Completing pre-season operational testing and startup of the Sediment Desanding and Dewatering Plant and Water Treatment Plant (WTP) piping, instrumentation, and all other ancillary equipment and building systems to enable resumption of full-scale remediation and sediment dewatering and waste handling operations.
- Completing installation of fused pipelines and booster pump stations to support OU4/OU5 dredging, capping, and sand covering.

- Performing full-scale remediation in OU4/OU5, including dredging, desanding, dewatering, and disposing of non-Toxic Substances Control Act (TSCA) sediment from OU4 and OU5. A total of 585,841.07 cubic yards (cy) of non-TSCA sediment was dredged from dredge management units (DMUs) in which dredging occurred. No TSCA sediment was dredged. In addition, 2,289 cy of sediment was removed from these DMUs by natural forces (scour), and 11,371 cy of sediment was accreted, resulting in a net accretion of 9,082 cy.
- Beginning dredging, desanding, and dewatering operations on March 26, 2018 and completing dredging for the season on November 9, 2018.
- Beginning spreading operations for engineered caps, remedy, and residual sand covers on July 30, 2018 and completing spreading operations on November 13.
- Beginning mechanical placement operations for quarry spall, buttress and berm installations and larger armor stone on September 25, 2018. Completing sand spreading for the season on November 6, 2018. After sand spreading was completed, a limited amount of sand and D_{50} = 1.5-inch armor stone was placed with the spreader for caps CC22 and CB58. A limited quantity of D_{50} = 8-inch quarry spall was placed mechanically in cap CC22 on November 7, 2018. D_{50} = 1.5-inch armor stone was mechanically placed in special remediation area cap SRA-06 until November 15, 2018. Caps CB58 and SRA-06 were completed in 2018. Sand and armor stone placement were completed for CC22. Quarry spall placement in CC22 was started but not completed; therefore, cap CC22 is not discussed as a completed cap for 2018.
- Temporarily moving a portion of the D_{50} = 1.5-inch armor stone buttress at the C Reiss Terminal dock in dredge area OU4-D68B-5 to complete dredging in adjacent areas, then restoring the buttress.
- Performing OU4/OU5 post-dredge confirmation sampling from: 25 dredge-only areas; four dredge model confirm (DMC) areas; two dredge full indicator kriging areas; and three dredge no action areas. Performing post-dredge quasi-confirmation sampling in: 25 dredge-only areas and one DMC area. Evaluating the results in collaboration with the Agencies/Oversight Team to determine final primary remedy or residuals management requirements in accordance with the ROD and ROD Amendment. Resultant residual management for these areas, where required, is depicted in Figure ES-1 (provided at the end of this Executive Summary). Residual dredging was performed on 24.63 acres in dredge-only remedy areas.
- Disposing of 318,541.65 tons of non-TSCA waste resulting from the 2018 operations season at Advanced Disposal Services (ADS) Hickory Meadows Landfill from January 9, 2018 to December 7, 2018. This waste consisted of filter cake, scalpings, a limited amount of separated sand with apparently high organic content, miscellaneous personal protective equipment, spent media (sand, gravel, and granular activated carbon [GAC] from the multi-media WTP sand filters and GAC vessels, and other miscellaneous wastes from the LFRR Processing Facility.
- Completing RA in the Manufactured Gas Plant (MGP) South Focus Area. Wisconsin Public Service submitted a Draft Remedial Action Summary Report to the Agencies on January 31, 2019. MGP text in this document is limited only to the PCB wastes treated at the LFRR Treatment Facility and hauled to landfills that also may have contained MGP waste, including 35,746.65 tons of waste to the ADS Hickory Meadows Landfill and 6,516.20 tons to the Waste Management Ridgeview Landfill in Whitelaw, Wisconsin.
- Beneficially reusing 114,767 tons of separated sand generated from non-TSCA dredging for construction at the ADS Hickory Meadows Landfill and Georgia Pacific's Green Bay West Landfill. Approximately 18,000 tons of sand eligible as beneficial reuse material remained stockpiled on site following the 2018 season.

- Communicating with affected riparian property owners, municipalities, and utility owners when they could be affected by remediation activities. Providing general progress reports on the remediation to the Brown County Port Authority, municipalities, and the public via the project website.
- Complying with all applicable or relevant and appropriate requirements identified in the 2017/2018 and Beyond RA Work Plan.
- Safely performing all RA activities. From the start of the project through the end of 2018, the team achieved significant milestones of 3,897 days and 2,633,733 hours worked without a lost-time incident. No lost-time incidents occurred during 2018.

No in-river debris removal was conducted in 2018.

Figures ES-1, ES-2, and ES-3 (showing areas from south to north) depict the DMUs closed in OU4 in 2018. No OU5 management units were closed. The quantities associated with each type of RA performed since the start of construction in OUs 2–5 are summarized in Table ES-1. Annual dredge volumes from the start of construction are summarized in Table ES-2 (tables provided at the end of this Executive Summary).

Figure ES-1. OU4 Dredge Management Units Closed in 2018

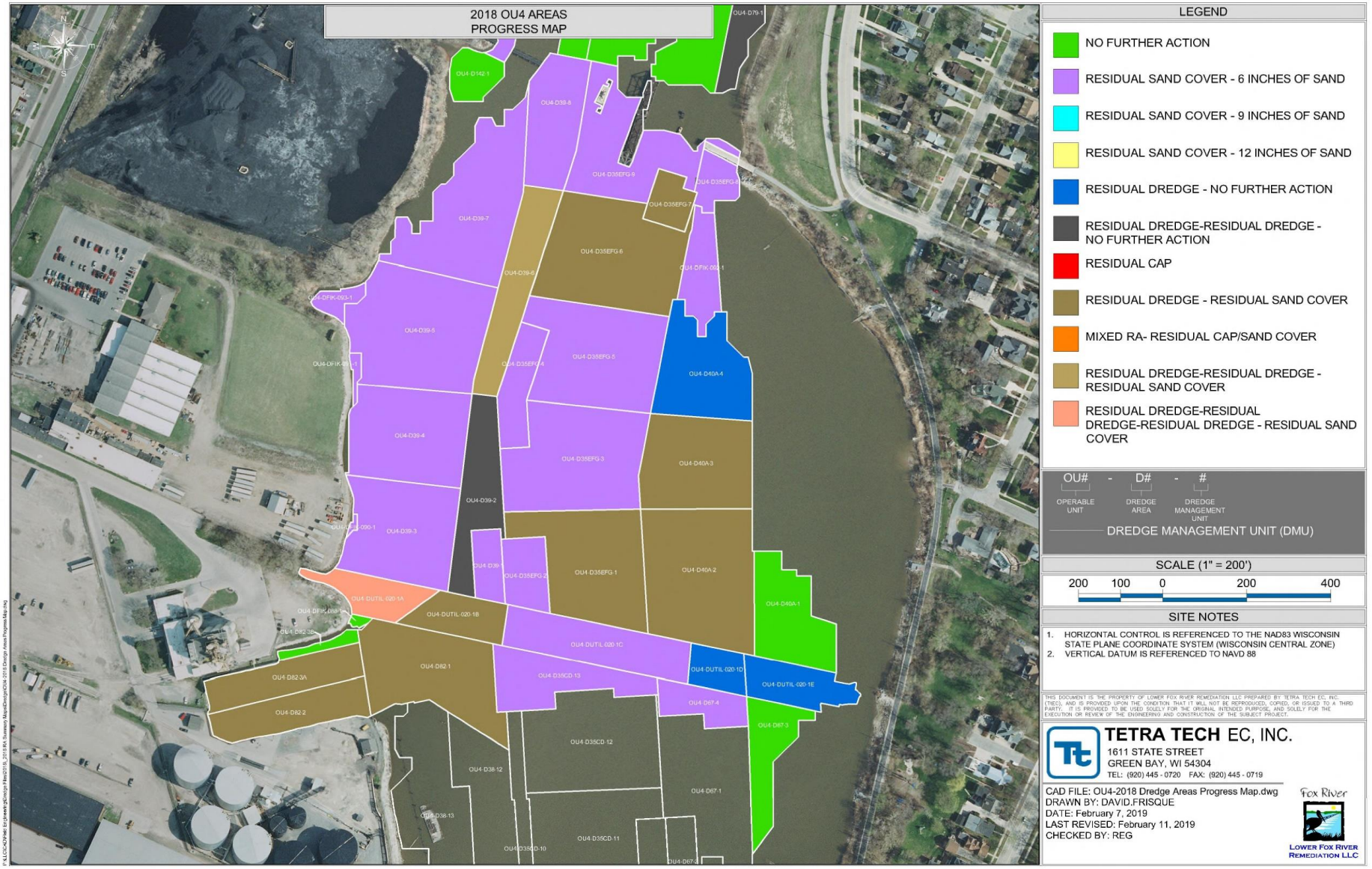


Figure ES-2. OU4 Dredge Management Units Closed in 2018

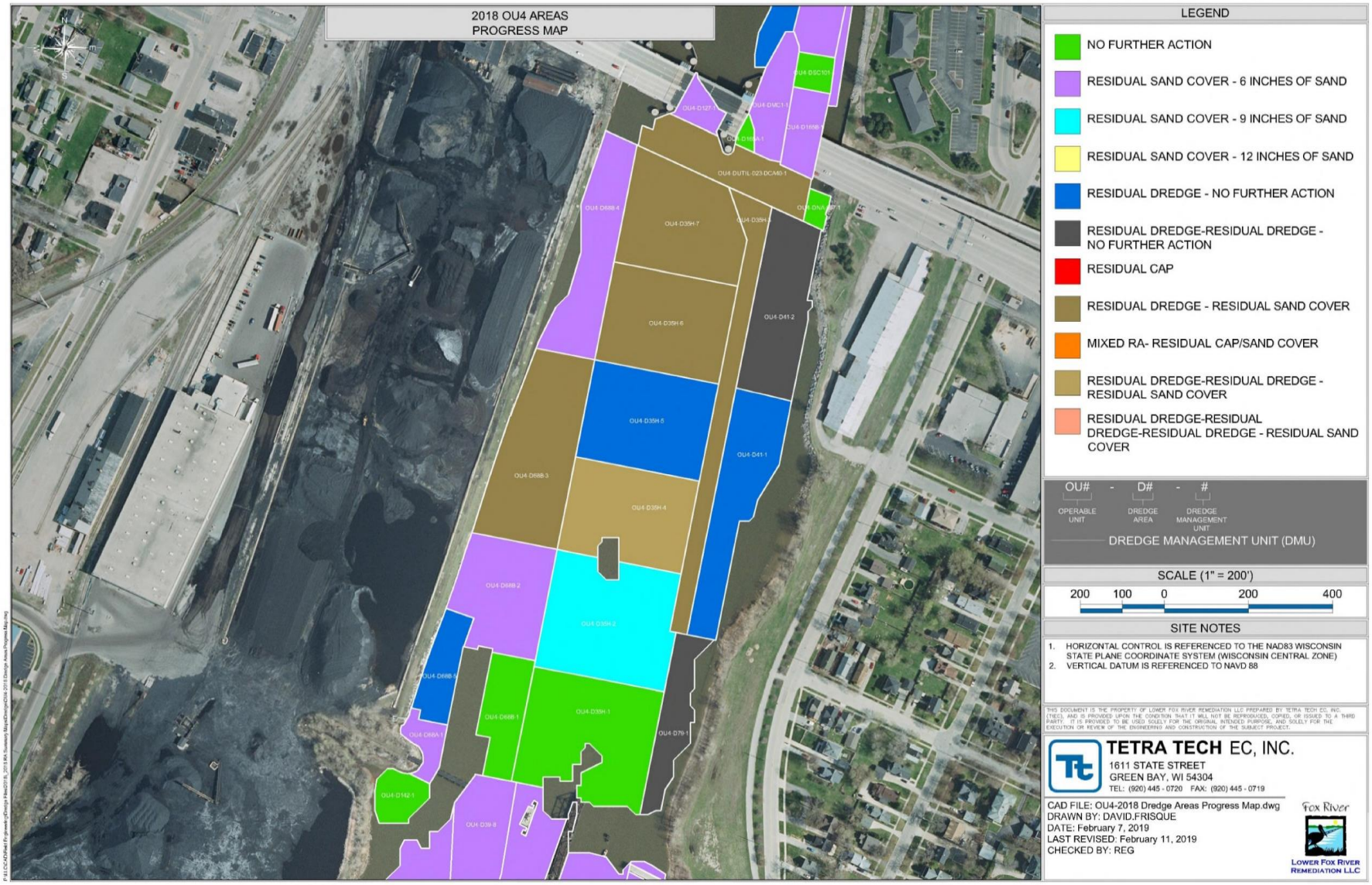


Figure ES-3. OU4 Dredge Management Units Closed in 2018



Table ES-1. Total Dredging, Capping, and Cover Quantities Completed from 2009 through 2018

Remedial Activity	OU2	OU3	OU4/OU5	2018[2]	Total
Dredging (in situ cubic yards)[1]	3,009	235,858	4,677,163	585,841	5,501,871
Caps as the Primary Remedy (Types A, B or C) (acres)[3]	6.98	26.80	105.29	0.09	139.16
Sand Cover as the Primary Remedy (acres)[3]	0.29	61.96	35.71	2.10	100.06
Sand Cover over Dredge Residuals (acres)[3]	0	52.08	346.17	41.88	440.13
Engineered Cap over Dredge Residuals (acres)[3]	0	0	8.36	0	8.36
Shoreline Caps (acres)	0	0	0.54[4]	0	0.54
Special Remediation Area Caps (acres)	0	0	0.00	2.81	2.81
Buttress (acres)	0	0	4.50	0.42	4.92
Berm (acres)	0	0	1.90	0.00	1.90
Temporary Sand Covers (acres)	0	0	1.49	0.00	1.49

Notes:
1. Dredge volumes shown are total volume **dredged, desanded, and dewatered**, which include overcut volumes and Phase 1 area volumes dredged as part of the Phase 2B work (i.e., excluding Phase 1 dredging performed in 2007).
2. Volumes and areas shown for 2018 are from OU4 and OU5 only.
3. Previous years' cap and sand cover volumes changed based on 2019 review. The adjustments were to correctly identify which season the caps were completed and to correctly identify if the cap was a Primary or Residual. The net change is 1.52 acres.
4. Shoreline cap area reduced by 0.41 acres to remove cap acreage not completed in 2016.

Abbreviations and Acronyms:
OU – Operable Unit

Table ES-2. Annual Dredge Volumes from 2009 through 2018[1]

	Non-TSCA Quantity Including Overcut (cy)				OU4 TSCA Quantity (cy)	Total Quantity (cy)
	OU2	OU3	OU4/OU5	Non-TSCA Total		
2009	3,009	126,351	407,808	537,168	7,367	544,535
2010	0	45,576	685,441	731,017	0	731,017
2011	0	63,931	171,478	235,409	0	235,409
2012	0	0	637,471	637,471	21,809	659,280
2013	0	0	569,369[2]	569,369	19,907[2]	589,276
2014	0	0	546,475	546,475	0	546,475
2015	0	0	455,049	455,049	58,895	513,944
2016	0	0	530,353	530,353	7,371	537,724
2017	0	0	558,370	558,370	0	558,370
2018	0	0	585,841	585,841	0	585,841
Total	3,009	235,858	5,147,655	5,386,522	115,349	5,501,871

Notes:
1. Dredge volumes for 2009 through 2018 reflect total volumes **dredged, desanded, and dewatered**, which include the overcut volumes, and include **dredging, desanding, and dewatering** of 67,157 cy from the Phase 1 area in 2010.
2. Based on a 2019 review, the 2013 TSCA and non-TSCA dredge volumes are increased by 7 cy and 8,946 cy, respectively.

Abbreviations and Acronyms:
cy – cubic yards
OU – Operable Unit
TSCA – Toxic Substances Control Act

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ACRONYMS AND ABBREVIATIONS

µg/L	micrograms per liter
µg/m^3	micrograms per cubic meter
A/OT	Agencies/Oversight Team
ADS	Advanced Disposal Services
AET	American Engineering Testing, Inc.
Agencies	Response Agencies
AMSAP	Phase 2B Air Monitoring Sampling and Analysis Plan
ARAR	applicable or relevant and appropriate requirements
ASTM	ASTM International
Badgerland Aggregates	Badgerland Aggregates LLC
BOD	biochemical oxygen demand
BRM	beneficial reuse material
CADD	computer-aided design and drafting
CAM	corrective action memorandum
cBOD	carbonaceous biochemical oxygen demand
COC	chain-of-custody
CQAPP	Construction Quality Assurance Project Plan
cy	cubic yards
DFIK	Dredge Full Indicator Kriging
DMC	dredge model confirm
DMU	dredge management unit
DNA	Dredge No Action
DRO	diesel-range organics
EBC	Environmental Bucket Cutter
EDD	electronic data deliverable
EHS	Environmental Health and Safety
FIK	full indicator kriging
Foth	Foth Infrastructure & Environment, LLC
GAC	granular activated carbon
GFT	Gene Frederickson Trucking & Excavating, Inc.
GOH	gross operational hours
G-P	Georgia-Pacific Consumer Products LP
GPS	global positioning system
H&S	health and safety
HAZWOPER	Hazardous Waste Operations and Emergency Response
HDPE	high-density polyethylene
Hg	mercury
I-43	Interstate Highway I-43
ISCO	In situ chemical oxidation

ACRONYMS AND ABBREVIATIONS (Continued)

J.F. Brennan	J.F. Brennan Company, Inc.
LFRR	Lower Fox River Remediation
LHE	low hazard exemption
LLC	Lower Fox River Remediation LLC
LLHg	low-level mercury
LOS	level of significance
LTD	load-out, transportation, and disposal
MC	Model Confirm
MGP	Manufactured Gas Plant
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
mg/m^3	milligrams per cubic meter
mm	millimeter
NA Confirm	No Action Confirm
ng/L	nanogram per liter
NOH	net operational hours
NTU	nephelometric turbidity unit
Order	2007 Administrative Order
OU	Operable Unit
Pace Analytical	Pace Analytical Services
PCBs	polychlorinated biphenyls
PE	Professional Engineer
PLC	programmable logic controller
PM_{10}	particulate matter, less than 10 micrometers in diameter
PPE	personal protective equipment
ppm	parts per million
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
RA	remedial action
RAL	remedial action level
RAO	remedial action objective
RAWP	Remedial Action Work Plan
ROD	Record of Decision
RTK	real-time kinematic
SCMU	Sand Cover Management Unit
SDDP	Sediment Desanding and Dewatering Plant
SDR	standard dimension ratio

ACRONYMS AND ABBREVIATIONS (Continued)

SOP	standard operating procedure
SOW	statement of work
SPRI	Stuyvesant Projects Realization Incorporated
SRA	Special Remediation Area
SU	Standard Unit
Tetra Tech	Tetra Tech EC, Inc.
TRC	total residual chlorine
TSCA	Toxic Substances Control Act
TSS	total suspended solids
ULLHg	ultra-low-level mercury
U.S.	United States
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
WDNR	Wisconsin Department of Natural Resources
WPSC	Wisconsin Public Service Corporation
WTP	Water Treatment Plant

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1. INTRODUCTION

This report summarizes the results of the 2018 remedial action (RA) performed at Operable Units (OUs) 2-5 of the Lower Fox River Remediation (LFRR) site. The team that executed the work and prepared this report included the following firms:

- Tetra Tech EC, Inc. (Tetra Tech), the prime contractor and lead for remedial design, waste management, separated sand handling, and water treatment operations
- J.F. Brennan Company, Inc. (J.F. Brennan), the lead for debris removal, dredging, sand covering, and capping
- Stuyvesant Projects Realization, Inc. (SPRI), the lead for sediment desanding and dewatering operations
- Foth Infrastructure and Environment, LLC (Foth), which prepared hydrographic survey audit summaries, presented in Appendix P

Anchor QEA, LLC provided design assistance on the project. Five other subcontractors provided specialty services, including trucking and excavating, disposing of waste, and supplying armor stone, quarry spall, and sand.

This report provides a summary of: 1) the management approach, including the project team, communications, and schedule; 2) the approach and results associated with the dredging, sediment desanding and dewatering, dewatered sediment load-out, transport, disposal, and water treatment; 3) the environmental monitoring activities; 4) the placement of sand and armor stone; and 5) an evaluation of project performance versus objectives.

1.1 OUs 2–5 Project Background

Lower Fox River Remediation, LLC (LLC), an entity formed by Appleton Papers, Inc. and NCR Corporation, retained Tetra Tech as the prime contractor for Phases 2A and 2B of the RA. Phase 2A has been completed. In 2018, the Tetra Tech team completed year 10 of Phase 2B. This report is a deliverable described in the report titled Phase 2B RA Work Plan for 2017/2018 and Beyond Remedial Action of OUs 2–5 (2017/2018 and Beyond RA Work Plan) (Tetra Tech et al. 2018). The Phase 2B Work Plan is a requirement of the Phase 2B Statement of Work (SOW) of the 2007 Administrative Order (Order) for OUs 2–5 (USEPA 2007).

The Phase 2B SOW requires implementation of elements of the remedy for OUs 2–5, which began in the 2009 construction season, and continues as necessary to meet the performance standards and specifications set forth in the Record of Decision (ROD) (USEPA and WDNR 2003) and 2007 ROD Amendment (USEPA and WDNR 2007). Project elements associated with the remainder of the Phase 2B RA have been developed in greater detail through collaborative work groups, which comprise representatives of the LLC, the Tetra Tech team, and the Response Agencies (Agencies)/Oversight Team (A/OT), and are documented in the annual RA Work Plans. Tetra Tech submitted the Draft RA Work Plan detailing the work planned for the 2018 production and operations season on October 31, 2017 (text) and November 30, 2017 (Appendices A through D). The Agencies issued an approval with modifications of the Final Phase 2B Work Plan for 2018 Remedial Action on March 13, 2018.

1.2 Work Performed in Late 2017 and Early 2018

Following completion of the 2017 operations season in the fall, site activities consisted of preparing for the winter period and conducting maintenance. Several of the maintenance activities continued into early 2018. These activities included:

- Conducting inspections in the LFRR Processing Facility in accordance with the Site-Wide Operations and Maintenance Plan (Tetra Tech et al. 2011a).
- Maintaining the Sediment Desanding and Dewatering Plant (SDDP) and Water Treatment Plant (WTP) equipment, including, but not limited to, inspecting the SDDP filter press cloths; periodically operating SDDP pumps to mitigate the potential for operational problems during the 2018 season; and continuing to backwash the WTP multi-media filters and granular activated carbon (GAC) units.
- Removing the used sand media and support gravel in the WTP sand filters, as well as cleaning the underdrains and vessel interiors in preparation for installation of new sand media and support gravel for the 2018 operations season.
- Evaluating the GAC vessels for water treatment effectiveness at the end of 2017 operations. The GAC media in half of the vessels (nine vessels) were judged to be suitable for refurbishing for the 2018 season. Those vessels were treated by transferring the existing GAC media from vessel to vessel while treating it with hydrogen peroxide to reduce the level of fouling and allow for GAC reuse for 2018. After chemical treatment, the GAC media levels in the nine vessels were measured and topped off with new re-activated carbon, as needed, to maintain 20,000 pounds in each vessel. The other nine GAC vessels were each cleaned out completely and refilled with 20,000 pounds of new GAC media.
- Cleaning out WTP process tanks, including both buffer tanks, the overflow tank, and the effluent tank.
- Removing from the river and temporarily storing hydraulic dredge slurry pipelines.
- Inspecting and reconditioning, as necessary, hydraulic dredges, spreading equipment, and booster station equipment.

1.3 Remedial Work Performed in 2018

Consistent with the objectives presented in the approved Final Phase 2B RA Work Plan for 2017, 2018 and Beyond Remedial Action, remedial activities included:

- Completing seasonal pre-operational testing and startup of the SDDP and WTP equipment, piping, instrumentation, and all other ancillary equipment and building systems to enable resumption of full-scale remediation and sediment dewatering and waste handling operations.
- Completing installation of fused pipelines and booster pump stations to support OU4/OU5 dredging, capping, and sand covering.
- Performing 2018 full-scale remediation in OU4/OU5, including dredging, SDDP, and WTP operations. Remediation began on March 26, 2018, as allowed by weather and river conditions, and generally continued as planned 24 hours per day, 5 days per week (i.e., early Monday to early Saturday morning) through the end of the operations season. On March 26, 2018, J.F. Brennan began dredging areas OU4-D35H, OU4-D168 and OU4-D40A using three dredges. During the 2018 season, J.F. Brennan used one 10-inch dredge, the *Mark Anthony*, and three 8-inch dredges, the *Ottawa River,* the *Utility Dredge,* and the *Ashtabula*. Of the total volume of sediment dredged, the *Mark Anthony* dredged 74.0 percent, the *Ashtabula* 5.5 percent, the *Ottawa River* 13.3 percent and the *Utility Dredge*

5.6 percent. On October 22, 2018, the *Utility Dredge* was reconfigured with a new excavator and equipment and was referred to as the Environmental Bucket Cutter (EBC) dredge through the remainder of 2018. The EBC dredge removed 1.6 percent of sediment from the river.

Dredging and sediment dewatering was neither planned, nor did it take place on Monday, May 28, 2018 (Memorial Day), during the week of July 4, 2018 (which includes Independence Day) and on Monday, September 3, 2018 (Labor Day). In addition, the dredges were shut down on April 16 and April 18, 2018 due to weather. The *Ashtabula* operated from March 26, 2018 until June 30, 2018 and was then removed from the project. A total of 585,841.07 cubic yards (cy) of non-Toxic Substances Control Act (non-TSCA) sediment was dredged. No TSCA sediments were dredged in 2018. Dredging concluded for the 2018 season on November 9, 2018.

- Beginning spreading operations for installing engineered caps, and remedy and residual sand covers on July 30, 2018.
- Beginning mechanical placement operations for quarry spall, buttress and berm installations and larger armor stone on September 25, 2018. Completing sand spreading for the season on November 6, 2018. After sand spreading was completed, a limited amount of sand and D_{50} = 1.5-inch armor stone was placed with the spreader for caps CC22 and CB58. A limited quantity of D_{50} = 8-inch quarry spall was placed mechanically in cap CC22 on November 7, 2018. D_{50} = 1.5-inch armor stone was mechanically placed in special remediation area cap SRA-06 until November 15, 2018. Caps CB58 and SRA-06 were completed in 2018. Sand and armor stone placement were completed for CC22. Quarry spall placement in CC22 was started but not completed; therefore, cap CC22 is not discussed as a completed cap for 2018.
- Temporarily moving the 1.5-inch armor stone buttress at the C Reiss dock in dredge area OU4-D68B to complete dredging in adjacent areas, then restoring the buttress following dredging.
- Performing post-dredge confirmation sampling in dredge areas D142, D157, D165A, D35EFG, D35H, D35J, D35M, D35NOP-DCA45, D35V, D35X, D39, D40A, D41, D49, D67, D68B, D70, D79, D82, DCA44, DSC101, DSC98, DUTIL-020, DUTIL-023-DCA45, and DUTIL-026-030 in OU4. Performing post-dredge confirmation sampling in dredge model confirm (DMC) areas DMC1, DMC2, DMC7, and DMC8 in OU4. Performing post-dredge confirmation sampling in dredge full indicator kriging (DFIK) areas DFIK-088 and DFIK-092 in OU4. Performing post-dredge confirmation sampling in dredge no action (DNA) areas DNA-057, DNA-071, and DNA-D70. Performing quasi-confirmation sampling (i.e., sampling prior to official confirmation to determine residual dredge requirements) in D135A, D135B, D138, D158, D159A, D159B, D160A, D160B, D162, D168, D170, D43A, D43E, D44, D46A, D46D, D47A, D94A, D94C, D94D, DCA86, DSC104, DSC105, DSC106, and DUTIL-043-045. Performing quasi-confirmation sampling in DMC area DMC34. Evaluating the results in collaboration with the A/OT to determine final primary remedy or residuals management requirements in accordance with the ROD and ROD Amendment.
- Disposing of 318,541.65 tons of non-TSCA waste resulting from 2018 operations at Advanced Disposal Services (ADS) Hickory Meadows Landfill from January 9, 2018 to December 7, 2018. This waste consisted of filter cake, scalpings, a limited amount of separated sand with apparently high organic content, personal protective equipment (PPE), spent media (sand, gravel, and GAC) from the multi-media WTP sand filters and GAC vessels, filter press cloths, and other miscellaneous wastes from the LFRR Processing Facility operations.
- Disposing of an additional 35,746.65 tons of non-TSCA waste at the ADS Hickory Meadows Landfill and an additional 6,516.20 tons of non-TSCA waste from remediation of Manufactured Gas Plant (MGP)-impacted areas to the Waste Management Ridgeview Landfill in Whitelaw, Wisconsin.

- Beneficially reusing 114,767 tons of separated sand generated from non-TSCA dredging for construction at two locations: the ADS Hickory Meadows Landfill and Georgia-Pacific's (G-P's) Green Bay West Landfill. Approximately 18,000 tons of sand for beneficial reuse (BRM) remained on site following the 2018 season.
- Communicating with affected riparian property owners, municipalities, and utility owners when they could be affected by remediation activities. Providing general progress reports on the remediation to the Brown County Port Authority, municipalities, and the public via the project website.
- Complying with all applicable or relevant and appropriate requirements (ARARs) identified in the approved Final Phase 2B Work Plan for 2018 Remedial Action (Tetra Tech et al. 2018).

No in-river debris removal was conducted in 2018.

Section 3.0 of this report contains additional details on where and when each of the four dredges deployed during the 2018 season. The text and figures in Section 4.0 and Appendix D of this report provide additional information on the dredging performed in 2018. The quantities associated with each type of RA in OUs 2–5 are summarized in Table 1-1.

Table 1-1. 2018 Summary of Remedial Actions for OUs 2–5

Remedy Type	OU2[1]	OU3[2]	OU4/OU5[3]	Total
In situ cy dredged (non-TSCA)	0	0	585,841	**585,841**
In situ cy dredged (TSCA)	0	0	0	**0**
Acres of engineered caps installed (Types A, B, C, or SRA cap) as the primary remedy	0	0	2.90	**2.90**
Acres of engineered caps installed based on residual concentration	0	0	0	**0**
Acres of sand cover installed as the primary remedy	0	0	2.10	**2.10**
Acres of sand cover installed based on residual concentration	0	0	41.88	**41.88**
Acres of shoreline caps installed complete	0	0	0	**0**

Notes:
[1] RA construction in OU2 was completed in 2009.
[2] RA construction in OU3 was completed in 2011.
[3] OUs 4 and 5 are considered jointly.
Abbreviations and Acronyms:
cy – cubic yards
OU – Operable Unit
RA – remedial action
TSCA – Toxic Substance Control Act

1.4 Incidents

1.4.1 Safety and Environmental Incidents

During 2018, nine incidents were recorded in the Tetra Tech Tracking and Optimizing Tool for Analyzing Losses database, including two near misses, one property damage, two equipment damage, three spills or releases, and one classified as "other".

The near misses occurred on two dates (January 23 and June 22) when bullets dredged from the river were discovered on the scalping screen during a scalping screen inspection. In both incidents, the Green Bay Police Department was notified, and officers arrived and removed the ammunition for off-site disposal.

Property damage occurred on April 15, 2018 when a snowstorm produced 26 inches of snow. The weight of drifting snow resulted in a partial collapse of the Building D roof. The damage occurred at night and

resulted in no injuries. As a result of the roof collapse, Building D was cleared of contents where and when safe to do so, and demolished later in 2018.

The two equipment damage incidents are described below:

1) On March 23, 2018, a turbidity raft on a trailer, towed by a pickup truck, was damaged while exiting the north overhead door in Building B. The overhead door was not raised high enough to allow the trailer and raft to clear the door, resulting in the contact. The crew moving the rafts had not used a spotter. The Quality Control (QC) Manager, Health and Safety Manager, and Project Manager were notified and went to the accident scene. The pickup truck and trailer containing the two turbidity rafts were parked outside of the overhead door. The staff in the pickup included the driver and three passengers. Prior to exiting the building, neither the driver nor the passengers checked for proper trailer clearance. To prevent future similar occurrences, the crew was directed to use a spotter at the overhead door when transporting the remaining turbidity rafts out of the building. Post-incident discussions with the crew included being aware of your surroundings, utilizing a spotter where necessary, and maintaining effective communication among team members. Also, the workers were advised to review Section 7.13 of the Tetra Tech Project Orientation, Rules, and Safety Guidelines Handbook (Motor Vehicle and Heavy Equipment Operation).
2) On October 10, 2018, the pipeline for the dredge *Ottawa River* damaged a downstream turbidity raft. This incident was not observed, but, apparently, the pipeline was forced under the raft, which overturned the raft, submerging the battery box and National Electrical Manufacturer Association box, which houses a cellular modem, and associated electronics. A turbidity sonde tube and cable were broken. The turbidity sonde sank and could not be recovered. No other equipment was damaged.

The three spills or releases are described below.

1) On March 30, 2018, Tetra Tech QC personnel observed stained gravel and soil and stained absorbent booms beneath a trailer-mounted 1,000-gallon diesel storage tank parked on gravel behind (east of) the WTP. Upon further inspection, personnel observed a slow leak in the fuel line/ fuel filter connection. The volume of the leak was estimated to be 1 gallon. Wisconsin Administrative Code Chapter 706 states that spills of fuel other than gasoline onto non-impervious surfaces do not require reporting when the quantity is less than 5 gallons. When Tetra Tech personnel identified the source and extent of the spill, the QC Manager, Health and Safety Manager, and Project Manager were notified, as was the LLC, Foth, and the A/OT.

   Tetra Tech operations personnel placed absorbent pads under the leaking filter and moved the diesel tank onto the concrete sand pad. Tetra Tech contacted Country Visions, the tank owner, to remove the tank from the project site. Operations personnel then excavated a 10-foot by 17-foot area approximately 4 to 6 inches deep until no visual or olfactory evidence of diesel fuel was observed. The excavated gravel and soil were placed into four 55-gallon storage drums. Two soil samples were collected from the base of the excavated area for analysis of diesel-range organics (DRO) and polycyclic aromatic hydrocarbons to document post-remedial action conditions. Global positioning system (GPS) coordinates were also recorded for the locations of the two samples. The four 55-gallon drums were sampled for DRO and toxicity characteristics leaching procedure benzene per the waste profile requirements set by ADS. Based on the results of the analytical test results, soil samples met the Wisconsin Department of Natural Resources (WDNR) requirements and the samples of drummed soil met the requirements for disposal at ADS. The excavated area was backfilled with gravel and the 55-gallon drums were disposed of at the ADS Hickory Meadows landfill under manifest for diesel-impacted soil.

2) On October 23, 2018, a hydraulic oil line on one of the Gene Frederickson Trucking & Excavating, Inc. (GFT) trucks broke and left drips of oil along State Street, onto the site parking lot, and in Building B. When the oil drips were noticed, the truck was parked in the west parking lot near the scale house and a mechanic was notified to repair the hydraulic line. The Operations Department placed Oil Dri and absorbent pads under the truck. GFT safety personnel were notified and arrived on site to assist the driver in placing Oil Dri on the affected areas. The amount of the hydraulic fluid released was estimated to be less than 1 gallon. The used Oil Dri and absorbent pads were contained in 5-gallon pails and disposed of by GFT.

3) On October 26, 2018, the hydraulic oil line on the 220 Volvo sand pad end-loader ruptured. The end loader was operating on a curbed concrete slab when the rupture occurred. The operator immediately deployed absorbent pads and booms, containing the release. It is estimated that fewer than 4 ounces of hydraulic oil was released. Aring Equipment was contacted for repair. The used booms and absorbent pads were disposed of in the petroleum, oil, and lubricant storage area of Building B.

The incident classified as "other" occurred on October 15, 2018. While loading filter cake into a GFT trailer, the end-loader operator inadvertently overloaded the trailer by 500 pounds. While removing the extra filter cake from the truck, the heel of the bucket struck the top of the wooden rake board causing the 2-inch by 8-inch board to split. There was no damage to the trailer and the cost to replace the board was estimated to be less than $100.

On October 25, 2018, the City of Green Bay contacted the project to relay a noise complaint due to night time quarry spall placement in the City Slip. The City was informed that the night work in City Slip was already completed. No additional noise complaints were raised. The City Slip berm repair was conducted in 2018. However, it is not a part the Phase 2B RA Work Plan for 2017/2018 and Beyond activities and is not further discussed in this report.

1.4.2 Quality Assurance Incidents

Sixteen quality assurance (QA) incident reports were documented during 2018. Corrective actions were implemented for each incident. Selected incidents are described below:

- On two occasions, Pace Analytical Services (Pace Analytical) distributed preliminary sample results before they were reviewed by Tetra Tech. On August 6, 2018, a batch of BRM sand sample results was sent without authorization, and, on September 17, 2018, Pace Analytical sent a batch of WTP influent/effluent sample results to the final distribution list without the results first being reviewed by Tetra Tech. Although there were no errors in either report or electronic data deliverable (EDD), Tetra Tech requires a formal review and approval of all analytical results before they are distributed to other internal and external project stakeholders. A corrective action memorandum (CAM) was requested from Pace Analytical in both instances.

  Corrective Actions: The Pace Analytical Project Manager will no longer prepare final distribution emails in advance. An additional quality check was also added to the Pace Analytical Project Review Checklist to ensure the preliminary results email distribution list is used only for preliminary distribution, and the final email distribution list is used only for final distribution.

- On October 5, 2018 a batch of WTP influent/effluent samples was sent to Pace Analytical for analysis of a variety of parameters. On October 12, 2018, the Pace Analytical Project Manager notified Tetra Tech that the effluent polychlorinated biphenyl (PCB) results would include qualifiers indicating that several QA parameters were not within acceptable limits. Tetra Tech requested that the samples be analyzed a second time with new QA samples. In general, Tetra Tech prepares two sample bottles for PCB analysis in the event a re-extraction is needed; however, in this instance, the second PCB sample bottle could not be located by Pace Analytical and a second analysis could not be performed. A CAM from Pace Analytical indicated that the PCB sample bottle may have been inadvertently disposed of due to misidentification of the sample bottle.

  Corrective Actions: Pace Analytical provided additional training, and required all sample receiving and organic extraction staff to review procedures for sample handling and placement of samples within the proper walk-in storage coolers.

- Tetra Tech received progress charts from J.F. Brennan for work completed by the sand spreader *Green Bay* on August 24, 2018. On August 27, 2018, Tetra Tech performed sand sampling within the listed progress limits and found that sand had not been placed in a section as originally reported. Upon investigation, J.F. Brennan determined that an incorrect ending position was recorded in the J.F. Brennan spreader operating log. The reported ending position was written as lane UU, step 144. However, the correct end location was lane UU, step 44. The August 24 progress charts were corrected and redistributed by J.F. Brennan shortly after the discovery.

  Corrective Actions: J.F. Brennan has revised the spreader operating log to include a location for operator and foreman initials to verify accuracy. The Project Engineer will then review the handwritten log against a digital step log.

1.5 Riparian Property Owner Communications

Initial notification letters were mailed on March 6, 2018 to 35 riparian property owners in OU4 or OU5 to notify them of the RA planned near their properties. On March 21, 2018, follow-up notification letters were mailed to 35 OU4 or OU5 riparian property owners to provide them with additional information. The letters include an agreement form stating that work will be performed and providing a

release of liability to Tetra Tech and NCR Corporation, and their owners, successors, officers, employees, agents, and representatives from any and all claims, demands, damages, costs, expenses, and causes of action arising out of the performance of the remedial activities. The agreement invites the riparian owner to sign and return the agreement. However, a riparian property owner signature is not required prior to completing the RA.

During 2018, in-depth discussions occurred with several riparian property and utility owners and the United States (U.S.) Army Corps of Engineers (USACE). The parties with whom the discussions occurred, and summaries of the discussions are provided below.

- Buckeye Pipeline Services Company – Discussion regarding the in-channel fuel line that crosses just south of the Interstate Highway I-43 (I-43) bridge; this company operates the West Shore Pipeline referred to on the OUs 2–5 project as utility #049.
- G-P – Discussion concerning remediation activities affecting the Day Street Mill; this interaction involved dredge and cap design alternatives for PCB-impacted sediment, as well as MGP-impacted sediment from a previous MGP operated by Wisconsin Public Service Corporation (WPSC) on the south side of the East River Turning Basin.
- G-P, WPSC, and Green Bay Metropolitan Sewerage (also known as NEW Water) – Discussion concerning wetlands assessment and delineation in the area known as the Tower Drive Slough, which is situated north of I-43 (dredge area D138), on the east side of the river and additional discussion for land owned by NEW Water and leased by U.S. Venture for its east terminal.
- Green Bay Water Utility – Discussion with this utility for dredge and cap remediation over three separate water lines crossing the river.
- Green Bay Yachting Club – Discussion to coordinate riparian property owner acceptance of the proposed remedial design and coordinate dredging within a marina (dredge area D49); this dredging was initiated in 2017 and completed in 2018.
- Lafarge Company – Discussion to coordinate sand covering activities performed in its slip on the west side of the river (dredge area D82) in support of remedial design.
- Proctor & Gamble – Discussion regarding location information for its intake structure located near dredge area D162.
- RGL (formerly Leicht Transport) – Discussion regarding final RGL approval that project activities are complete in the RGL slip.
- The Spectrum Company, a division of Charter Communications and formerly Time Warner – Discussion regarding the location of a fiber optic cable beneath the river; this utility is referred to on the OUs 2–5 project as utility #026.
- U.S. Army Corps of Engineers: - Discussions on placing SRA caps over utilities in the navigation channel.
- WPSC – Discussion to obtain access to conduct bathymetric surveys at the Pulliam Power Plant Slip, and discussions regarding remedial design alternatives and implementation plans near the Day Street Mill, where MGP impacts have been identified (noted above).

Many of the riparian property owners in this stretch of the river have had additional direct contact and discussions with cleanup project personnel. Since the remedial designs approved by the A/OT required J.F. Brennan to carry out dredging as close as practicable to shorelines, a riparian property owner's decision to not sign the agreement had no impact on implementation of the RA performed.

Copies of riparian property owner documentation for 2018 are included in Appendix R.

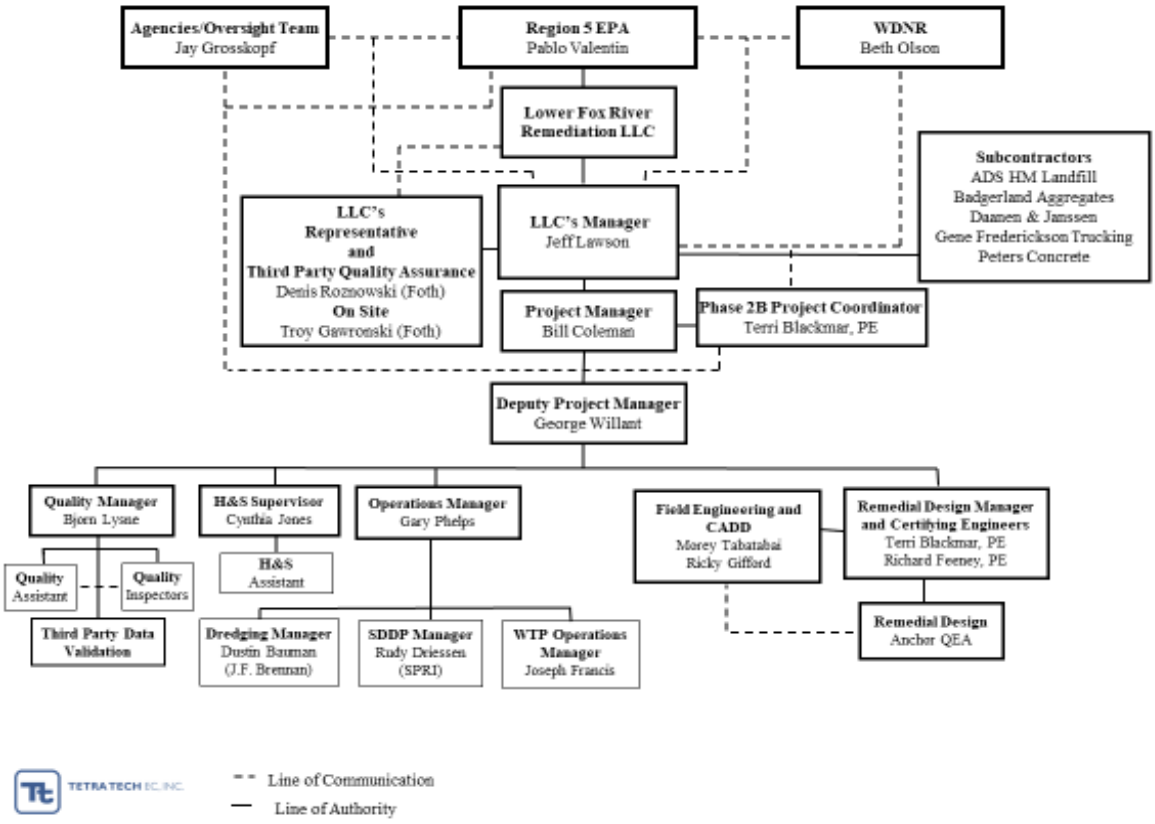
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2. 2018 REMEDIAL ACTION PROJECT TEAM

This section presents an overview of the project team members who conducted the 2018 RA, including responsibilities, authorities, and communications within the team. Figure 2-1, the Project Organization Chart, presents the project team structure.

The Construction QA Project Plan (CQAPP) contains additional information concerning the project's quality management organization and shows the reporting responsibility by line of communication and line of authority (Tetra Tech 2015a).

Figure 2-1. Project Organization Chart



2.1 2018 Project Organization, Responsibility, and Authority

The Agencies include the U.S. Environmental Protection Agency (USEPA) and the WDNR. The Agencies have the authority to ensure that the Respondents (the LLC) comply with the Order. Day-to-day oversight of the actions of the Respondents and the contractors and lower-tier subcontractors is provided by the A/OT. The A/OT consists of designated members from the USEPA, WDNR, and WDNR's outside contractors, such as The Boldt Company, O'Brien & Gere (formerly Natural Resource Technology), and other consultants.

2.1.1 Lower Fox River Remediation, LLC

The LLC has retained Mr. Jeffrey Lawson through Project Control Companies, Inc. to serve as the primary point of contact between the LLC and Tetra Tech's core management team.

2.1.2 The LLC's QA Representative – Foth Infrastructure & Environment, LLC

Foth served as the LLC's QA Representative. Mr. Denis Roznowski was the LLC's representative. Mr. Roznowski is a Professional Engineer (PE) in Wisconsin, with more than 20 years of experience on remediation projects, including sediment remediation. Mr. Troy Gawronski was responsible for daily interaction with the Tetra Tech team.

Foth conducted the following activities:

- Performed third-party QA auditing of determinations of high subgrade locations
- Audited the collection of effluent and surface water samples that were analyzed to track project performance against the remedial action objectives (RAOs) and environmental monitoring goals for these media, as described in the CQAPP
- Audited 100 percent of the pre-season and 20 percent of the post-dredge QA hydrographic surveys for verification of adherence to standard operating procedures (SOPs)
- Performed independent processing of raw hydrographic survey data from 100 percent of the pre-season and 20 percent of the post-dredge QA surveys to verify attainment of target elevations and removal of target sediment volumes
- Audited the collection and processing of 20 percent of the post-dredge confirmation samples to verify residual PCB levels for adherence to SOPs
- Audited the collection of 20 percent of the design related cores and poling locations for adherence to SOPs
- Audited the collection of 20 percent of the sand and armor stone thickness verification samples for adherence to SOPs
- Audited the collection of select filter cake samples for adherence to the SOP
- Audited the collection of select separated sand samples for adherence to the SOP
- Reviewed QA-related laboratory test data
- Provided technical support to the LLC
- Coordinated QA activities with Tetra Tech's Project and Construction/Operations Managers
- Participated in discussions with commercial riparian property owners concerning efforts to coordinate RA work near their properties
- Assisted the LLC in ongoing communication with the A/OT regarding project performance and other issues, as directed by the LLC
- Collected filter cake samples from randomly selected trucks at ADS Hickory Meadows Landfill in accordance with the procedures outlined in the Second Amendment to the Amended and Restated Landfill Disposal Service Agreement dated November 22, 2017.

2.1.3 Contractors

The LLC contracted directly with the companies listed below. Tetra Tech provided daily management of each of these contractors on behalf of the LLC.

ADS Hickory Meadows Landfill, LLC

Non-TSCA waste, including MGP waste-impacted sediment from the South Focus Area and BRM, was hauled to the ADS Hickory Meadows Landfill, which is located near the town of Hilbert, Wisconsin in Calumet County.

Badgerland Aggregates LLC

Badgerland Aggregates LLC (Badgerland Aggregates) provided D_{50} = 1.5-inch armor stone to the LLC for placement in engineered caps. Badgerland Aggregates also provided sand for use in primary remedy engineered caps, SRA caps, primary remedy sand covers, and residual sand covers.

Daanen & Janssen

Daanen & Janssen provided D_{50} = 8-inch quarry spall for cap CC22.

Gene Frederickson Trucking & Excavating, Inc.

GFT trucked non-TSCA waste, including filter cake, scalpings, and separated sand not suitable as BRM to the ADS Hickory Meadows Landfill for disposal. GFT transported armor stone from the supplier to the aggregate staging area at the LFRR Processing Facility and separated sand that qualified as BRM to approved off-site project locations.

Peters Concrete Company

Peters Concrete Company trucked sand from Badgerland Aggregates to the aggregate staging area at the LFRR Processing Facility.

2.1.4 Tetra Tech Team

Tetra Tech managed the project and provided project coordination, QA/QC oversight, health and safety (H&S) oversight, computer-aided design and drafting (CADD) support, management of the WTP operations, and filter cake load-out and disposal. J.F. Brennan and SPRI were the primary Tetra Tech subcontractors. J.F. Brennan was responsible for dredging, covering sand, capping armor, installing buttresses, stockpiling aggregates at the LFRR Processing Facility staging area, and performing hydrographic surveys. SPRI was responsible for operation and maintenance of the SDDP.

The core Tetra Tech management team consisted of the following individuals:

- Project Manager – Bill Coleman
- Deputy Project Manager – George Willant
- Phase 2B Project Coordinator – Terri Blackmar, PE
- J.F. Brennan Project Manager – Dustin Bauman
- SPRI Project Manager – Rudy Driessen

The responsibilities of the Tetra Tech Team are described below.

Tetra Tech Project Manager – Bill Coleman

Mr. Bill Coleman, Tetra Tech's Project Manager, performed or managed the following tasks during 2018:

- Provided overall direction and management of 2018 RA project activities
- Continued as the primary point of contact with the LLC
- Communicated with the Phase 2B Project Coordinator and the LLC's Resident Manager regarding project progress and issues needing their involvement for resolution
- Oversaw contingency plans for H&S emergencies
- Prepared and implemented contingency plans for emergencies involving a potential release of waste
- Managed the work of subcontractors
- Performed administrative and decision-making activities
- Implemented H&S plans
- Assisted in preparing monthly RA progress reports
- Reviewed updates to the construction schedule
- Oversaw the preparation and submittal of monthly invoices to the LLC
- Assisted the LLC, as requested, with communication with the public and media
- Assisted the LLC, as requested, with conferring with owners of riparian property near planned RA work
- Facilitated RA coordination between Tetra Tech and external organizations, such as subcontractors and regulatory agencies
- Coordinated with the LLC's QA representative
- Monitored dewatering, the WTP, dredging optimization, and filter cake load-out and disposal
- Assisted the LLC in communication with USEPA and WDNR regarding project status and technical issues, as requested

Deputy Project Manager – George Willant

Mr. George Willant served as the designee for the Project Manager, as required, and assisted the Project Manager.

Phase 2B Project Coordinator – Terri Blackmar, PE

Ms. Terri Blackmar, PE, the Phase 2B Project Coordinator, performed the following tasks:

- Monitored overall progress and compliance with the 2018 remedial design and evaluated the need to perform design changes, as necessary
- Informed LLC representatives of significant issues during remedial activities and worked with the LLC, the LLC's Resident Manager, and contractors to resolve these issues
- Communicated with the USEPA and WDNR regularly regarding significant issues and responded to concerns of the A/OT (after consultation with the LLC's Resident Manager and members of the LLC, when needed)

- Prepared and submitted the monthly progress reports required in the Order, on behalf of the LLC, with the assistance of SPRI, J.F. Brennan, and others as needed
- Made recommendations to the LLC regarding proposed changes in the implementation of the design and means to reduce costs and/or make the project more effective
- Oversaw the preparation of the 2019 Update to Phase 2B Remedial Action Work Plan (2019)
- Assisted with public and government communications, as needed

J.F. Brennan Project Manager – Dustin Bauman

Mr. Dustin Bauman, J.F. Brennan's Project Manager, performed or managed the following tasks:

- Managed preparations for resuming marine activities in early 2018
- Managed RA on-site activities concerning remediation activities in the river
- Instructed and coordinated activities with J.F. Brennan's field staff
- Coordinated the schedules of J.F. Brennan and its subcontractors
- Ensured that field activities in the Fox River were conducted in accordance with the 2017/2018 and Beyond RA Work Plan
- Ensured that J.F. Brennan's field staff were properly trained to perform field activities in accordance with the 2017/2018 and Beyond RA Work Plan, possessed proper certification (e.g., current Hazardous Waste Operations and Emergency Response [HAZWOPER] training), and complied with medical monitoring requirements
- Inspected and accepted J.F. Brennan's supplies and equipment
- Communicated construction and operations issues to the J.F. Brennan project team
- Performed oversight of J.F. Brennan's subcontractors
- Notified the Foth representative when QA hydrographic surveys were required
- Contributed to the preparation of the 2019 Update to Phase 2B Remedial Action Work Plan and 2018 RA Summary Report

SPRI Project Manager – Rudy Driessen

Mr. Rudy Driessen, SPRI's Project Manager, performed or managed the performance of the following tasks:

- Managed preparations for resuming SDDP construction activities in early 2018
- Managed RA on-site activities concerning operation and maintenance of the SDDP
- Instructed and coordinated activities with SPRI's field staff
- Coordinated the schedules of SPRI and its subcontractors
- Ensured that operation and maintenance of the SDDP was conducted in accordance with the 2017/2018 and Beyond RA Work Plan

- Ensured that SPRI's on-site staff were properly trained to perform their tasks in accordance with the 2017/2018 and Beyond RA Work Plan, possessed proper certification (e.g., current HAZWOPER training), and complied with medical monitoring requirements
- Inspected and accepted SPRI's supplies and equipment
- Communicated construction and operations issues to the SPRI project team
- Performed oversight of SPRI's subcontractors
- Contributed to the preparation of the 2019 Update to Phase 2B Remedial Action Work Plan and 2018 RA Summary Report

2.2 Communications

2.2.1 Monthly Progress Reports

As required in the Order, the Phase 2B Project Coordinator provided written monthly progress reports on the RA to the USEPA and WDNR by the 10th day of every subsequent month.

2.2.2 Meetings

Management and QC Meetings

The LLC, representatives of G-P and P.H. Glatfelter Co., the Tetra Tech team, including the Phase 2B Project Coordinator, the WDNR's Project Coordinator or representative, the Agencies' oversight contractors, and the USEPA's Remedial Project Manager held weekly QC meetings/telephone conferences, beginning on March 21, 2018, until dredging, desanding, dewatering, and covering/capping were completed. The final weekly QC meeting for the 2018 season occurred on November 14, 2018. After November 14, 2018, project status meetings involving the same parties were held generally every 2 weeks through December 2018. Additional meetings concerning work group issues or other timely topics of interest (i.e., over-the-shoulder meetings) were held as needed.

The purpose of these weekly QC meetings and periodic project status meetings was to provide a regularly scheduled time to achieve the following:

- Provide a summary of weekly quality, H&S, production, desanding, dewatering, disposal, sampling, and testing information, as needed
- Identify and develop a means of resolving issues that could impact meeting the Work Plan goals or that could affect the work anticipated beyond 2018
- Identify and develop a means of resolving communication issues

Daily Meetings

Meetings that included a safety topic, a quality topic, and brief summaries of planned and completed daily activities were held every workday morning at 8:00 a.m. Meeting attendees included representatives of Tetra Tech, SPRI, J.F. Brennan, and Foth. The daily meetings were formatted as teleconferences and were attended jointly by staff at the LFRR Processing Facility and staff in the Green Bay office facility. Also attending these meetings, when available, were representatives of the LLC, subcontractors, suppliers, or other entities concerned with current operations or involved in planning, coordination, or performance of future activities. Tetra Tech conducted each meeting and provided a summary of the meeting in Tetra Tech's daily report.

3. 2018 RA PROJECT SCHEDULE

The 2018 RA schedule for dredging, covering, capping, and mechanical placement operations is depicted on Figures 3-1a and 3-1b. These figures show the sequence and durations for work in areas dredged, capped, or sand covered during 2018, representing adjustments to what was anticipated in the 2017/2018 and Beyond RA Work Plan.

A summary of RA work performed in 2018 is provided below.

- Non-TSCA sediment was dredged from March 26, 2018 to November 9, 2018. (No TSCA sediment was dredged in 2018.)
- Temporary removal and replacement of the buttress at C Reiss dock (area D68B), and installation of engineered caps and sand covers began on July 23, 2018 and was concluded on November 15, 2018. Spreading for installation of engineered caps and sand covers began on July 30, 2018 and was completed on November 13, 2018. No temporary sand covers were installed during 2018. Some quantities of sand, armor stone, or quarry spall were mechanically placed or spread during the season for buttressing as required for structural purposes near bulkheads or berm installations (e.g., as part of corrective actions at OU4-D68B-5).
- Remedial activities were performed during the 2018 season, except for after 7 a.m. on Saturdays, Sundays, the Memorial Day and Labor Day holidays, the planned shutdown week of July 2, 2018, which included the Independence Day holiday, and on April 14 and 16, when a late-season snowstorm prevented work from being performed.
  - Dredging, sediment dewatering, and water treatment were conducted 24 hours per day, typically 5 days per week, from March 26, 2018 through November 9, 2018, except for brief periods when repairs to one of the dredges were necessary or during short periods when required by sediment processing facility operations.
  - The 10-inch dredge, *Mark Anthony* (see Appendix A, Photograph 1), operated from March 26, 2018 to November 9, 2018, generally at or near its capacity, except for brief periods when its usage was discontinued or was reduced due to SDDP or WTP processing limitations. The *Mark Anthony* worked in the OU4 and OU5 dredge areas shown on Figure 3-1.
  - The 8-inch dredge, *Ashtabula* (see Appendix A, Photograph 2) operated from March 26, 2018 until being demobilized on June 30, 2018. The *Ashtabula* was offline on May 11, 12, and 14 and from May 21 to May 29 to allow for more effective dredging by the *Utility Dredge*. The dredge *Ashtabula* worked in OU4 dredge areas shown on Figure 3-1.
  - The 8-inch dredge, *Ottawa River* (see Appendix A, Photograph 3), operated from March 26, 2018 to November 9, 2018. The *Ottawa River* was offline from May 15 through May 20 to allow for more effective dredging by the *Utility Dredge*, and offline on May 31 and September 8. The dredge *Ottawa River* worked in OU4 dredge areas shown on Figure 3-1.
  - The 8-inch *Utility Dredge* operated from May 10, 2018 through November 7, 2018. In response to the introduction of new dredging equipment, the *Utility Dredge* was known as the EBC dredge from October 22 until the end of the 2018 season. The *Utility Dredge*/EBC dredge worked in OU4/OU5 areas shown on Figure 3-1.
- The spreader *Green Bay* (see Appendix A, Photographs 6 and 7) spread sand for remedy and residual sand covers and engineered caps, SRA caps, and some buttress applications from July 30, 2018 to November 13, 2018. While not in use for sand operations, the *Green Bay* spread armor stone for remedy caps intermittently during the season. The spreader *Green Bay* was used to install sand or

armor stone in the OU4 remedy areas shown on Figure 3-1. During 2018, spreader operations were performed for approximately 12 hours per day.

- Additional armor stone engineered caps, SRA caps, and some buttress applications needed for structural purposes were placed mechanically during 2018 (see Appendix A, Photographs 5 and 9). Mechanical placement was used for installations in the OU4 remedy areas shown on Figure 3-1. This work began on July 23, 2018 and was completed on November 7, 2018.
- Quarry spall was placed in a portion of cap CC22 in 2018. However, the 2018 quarry spall volume is not reported in this Summary Report because the area receiving quarry spall was not completed in 2018.

Appendix A contains additional photographs of selected 2018 field activities.

Figure 3-1a. 2018 Remedial Action Schedule (Dredging)

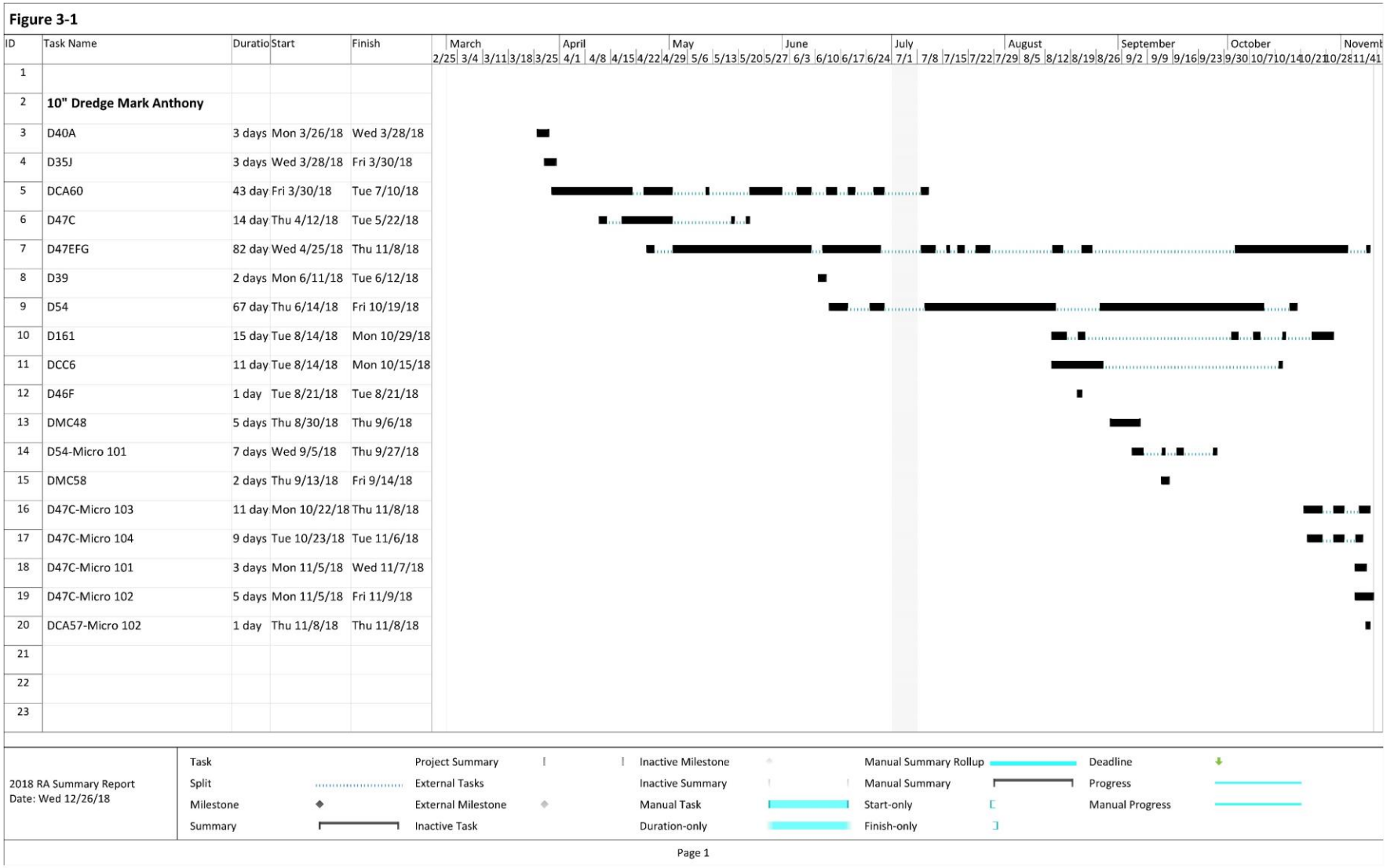


Figure 3-1

ID	Task Name	Duratio	Start	Finish
24	**8" Dredge Ottawa River**			
25	D168	3 days	Mon 3/26/18	Wed 3/28/18
26	D94D	2 days	Tue 3/27/18	Wed 3/28/18
27	DSC105	2 days	Tue 3/27/18	Wed 3/28/18
28	D170	2 days	Wed 3/28/18	Thu 3/29/18
29	DCA86	3 days	Thu 3/29/18	Mon 4/2/18
30	D47A	3 days	Thu 3/29/18	Mon 4/2/18
31	D159B	2 days	Thu 3/29/18	Fri 3/30/18
32	D49	16 day	Mon 4/2/18	Thu 4/26/18
33	D47H	1 day	Tue 4/10/18	Tue 4/10/18
34	D47EFG	7 days	Tue 4/10/18	Fri 4/27/18
35	D47B	11 day	Sat 4/21/18	Fri 5/4/18
36	D138	8 days	Sat 5/5/18	Tue 5/15/18
37	DMC34	2 days	Thu 5/10/18	Fri 5/11/18
38	D68B	10 day	Mon 5/21/18	Fri 7/27/18
39	DUTIL-020	4 days	Fri 5/25/18	Fri 6/8/18
40	D39	7 days	Fri 6/1/18	Mon 6/11/18
41	DMC2	24 day	Mon 6/11/18	Thu 10/25/18
42	D41	5 days	Mon 6/18/18	Fri 6/22/18
43	DMC1	2 days	Thu 6/21/18	Fri 6/22/18
44	DCA44	2 days	Thu 6/28/18	Fri 6/29/18
45	DUTIL-026-030	4 days	Thu 6/28/18	Fri 8/10/18
46	DNA-071	1 day	Fri 6/29/18	Fri 6/29/18

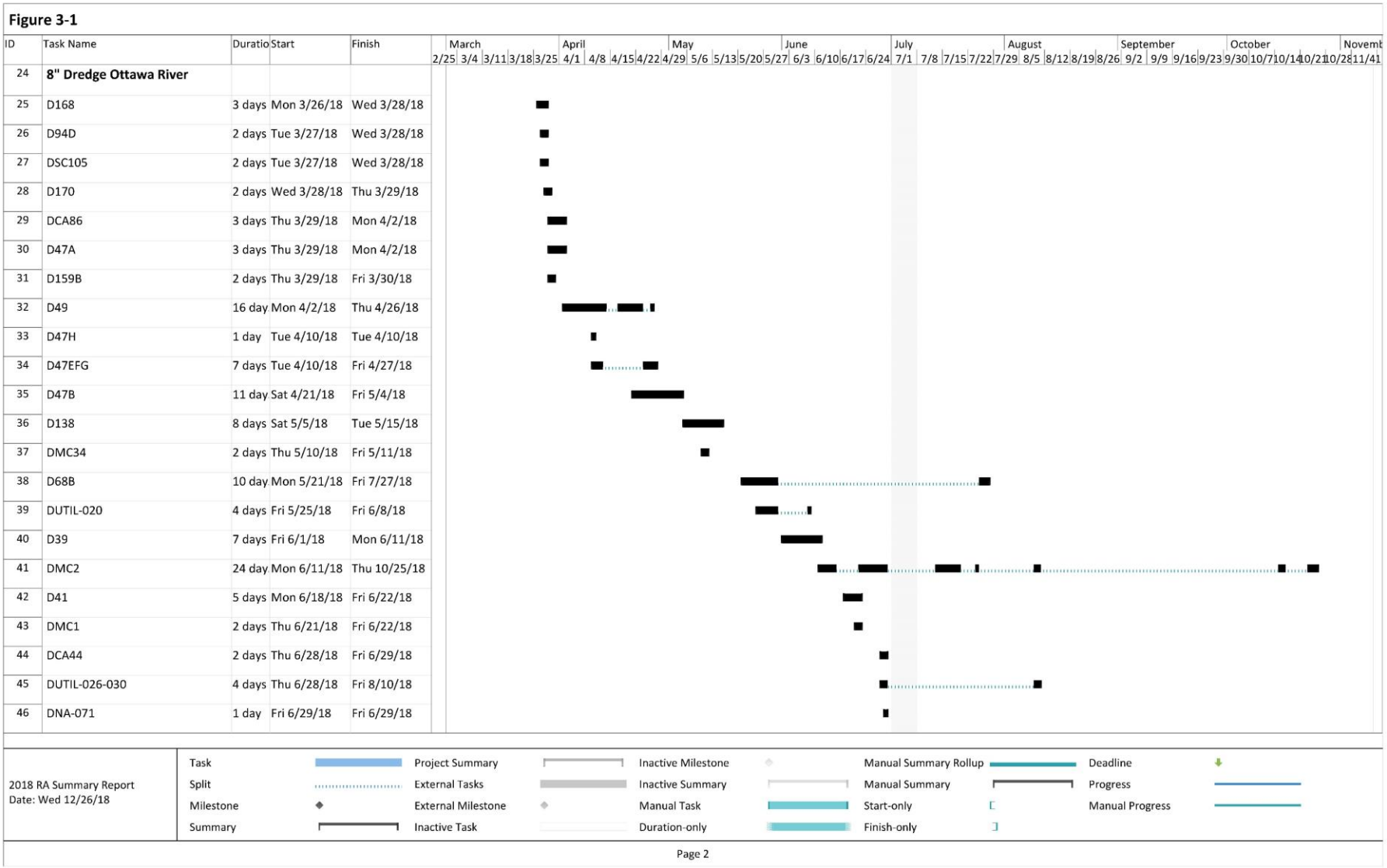
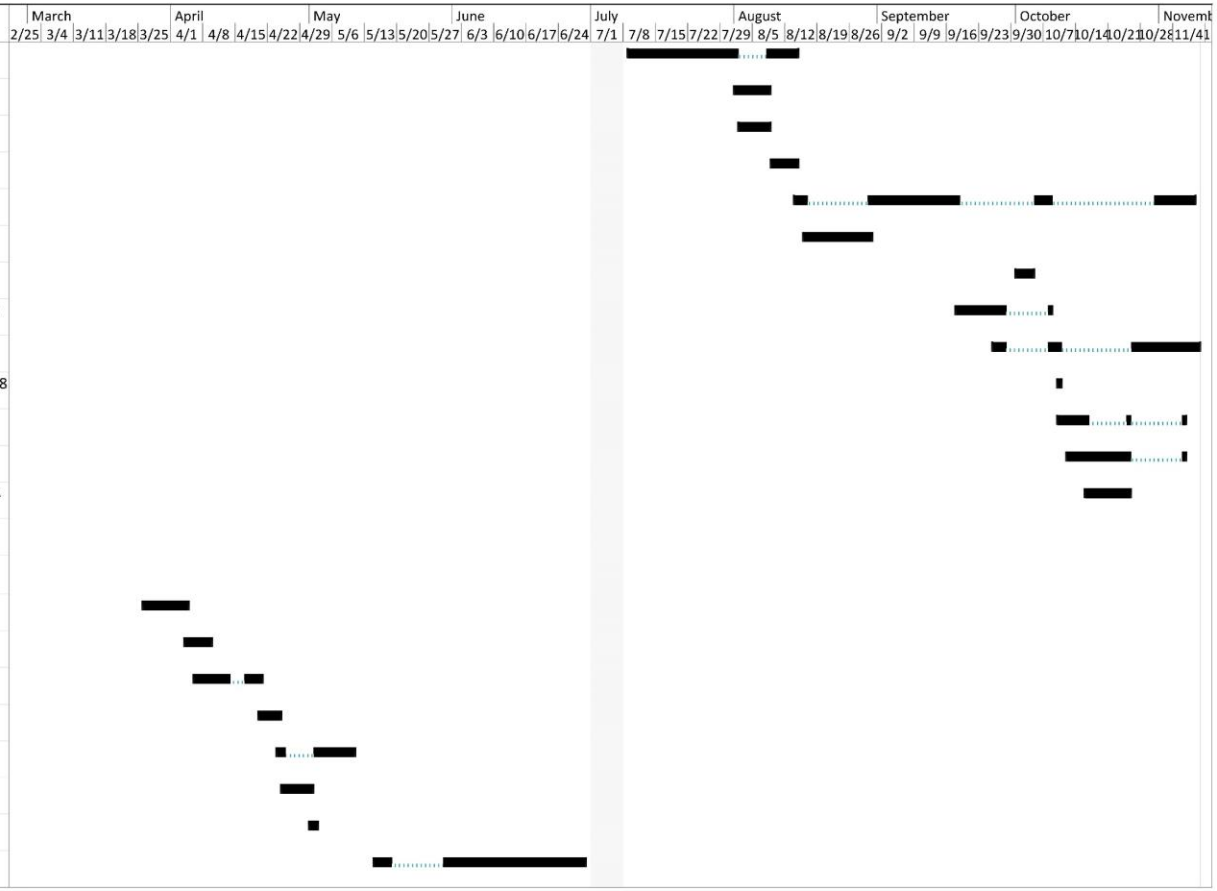


Figure 3-1

ID	Task Name	Duratio	Start	Finish
47	D35M	23 day	Mon 7/9/18	Tue 8/14/18
48	DUTIL-023, DCA40	6 days	Wed 8/1/18	Wed 8/8/18
49	DNA-057	5 days	Thu 8/2/18	Wed 8/8/18
50	D35J	4 days	Thu 8/9/18	Tue 8/14/18
51	D44	25 day	Tue 8/14/18	Thu 11/8/18
52	MGP SFA	11 day	Thu 8/16/18	Thu 8/30/18
53	SFA	4 days	Mon 10/1/18	Thu 10/4/18
54	D74	10 day	Tue 9/18/18	Mon 10/8/18
55	D43A	17 day	Wed 9/26/18	Fri 11/9/18
56	DMC8	1 day	Wed 10/10/18	Wed 10/10/18
57	D35X	7 days	Wed 10/10/18	Tue 11/6/18
58	D35NOP, DCA45	11 day	Fri 10/12/18	Tue 11/6/18
59	DMC7	8 days	Tue 10/16/18	Thu 10/25/18
60				
61	**8" Dredge Ashtabula**			
62	D35H	8 days	Mon 3/26/18	Wed 4/4/18
63	DFIK092	4 days	Wed 4/4/18	Mon 4/9/18
64	D40A	10 day	Fri 4/6/18	Fri 4/20/18
65	D79	3 days	Fri 4/20/18	Tue 4/24/18
66	D35J	9 days	Tue 4/24/18	Thu 5/10/18
67	DMC1	5 days	Wed 4/25/18	Tue 5/1/18
68	DNA-070	2 days	Tue 5/1/18	Wed 5/2/18
69	D138	27 day	Tue 5/15/18	Fri 6/29/18



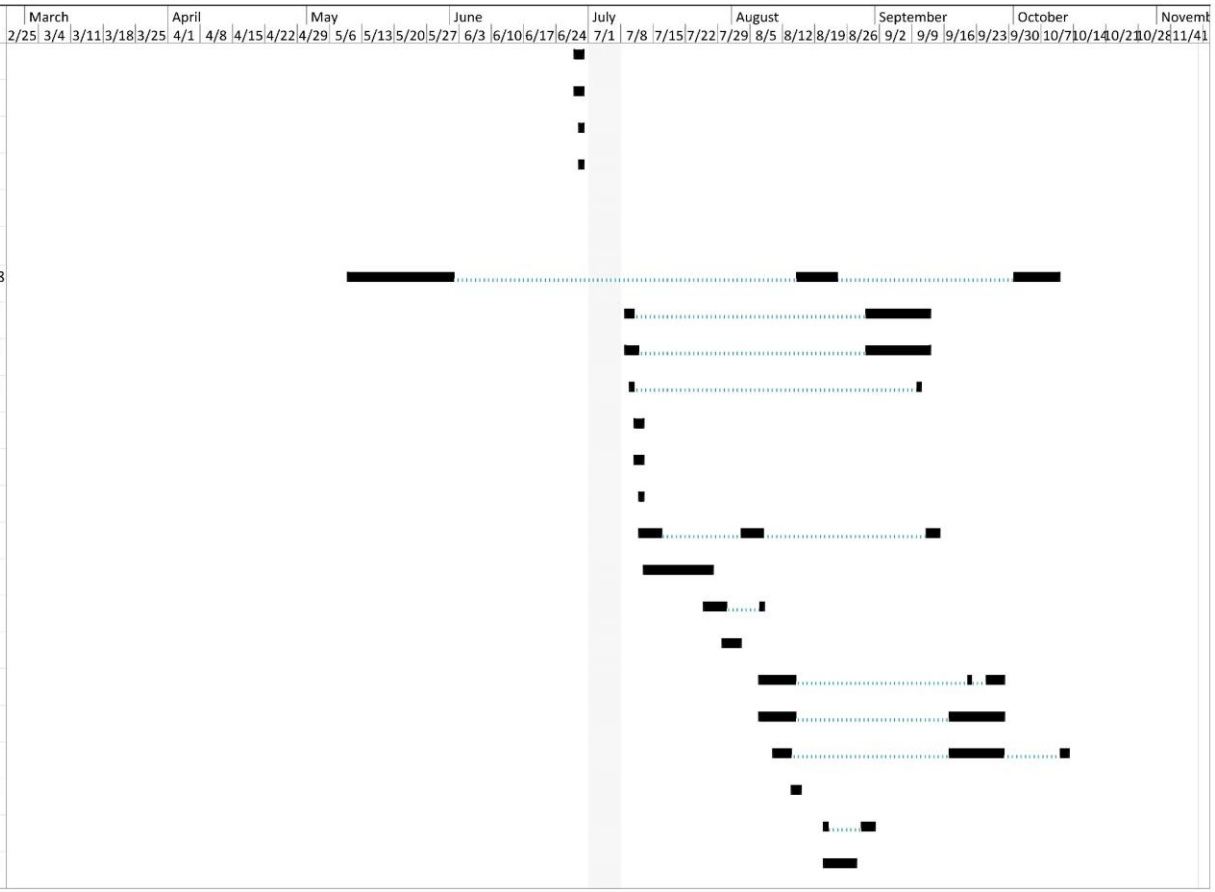
2018 RA Summary Report
Date: Wed 12/26/18

Task	Project Summary	Inactive Milestone	Manual Summary Rollup	Deadline
Split	External Tasks	Inactive Summary	Manual Summary	Progress
Milestone	External Milestone	Manual Task	Start-only	Manual Progress
Summary	Inactive Task	Duration-only	Finish-only	

Page 3

Figure 3-1

ID	Task Name	Duration	Start	Finish
70	DCA86	2 days	Thu 6/28/18	Fri 6/29/18
71	D47A	2 days	Thu 6/28/18	Fri 6/29/18
72	D47B	1 day	Fri 6/29/18	Fri 6/29/18
73	D160B	1 day	Fri 6/29/18	Fri 6/29/18
74				
75	**Utility Dredge**			
76	DUTIL-020	31 days	Thu 5/10/18	Wed 10/10/18
77	DUTIL-026-030	11 days	Mon 7/9/18	Wed 9/12/18
78	DNA-071	12 days	Mon 7/9/18	Wed 9/12/18
79	DCA44	2 days	Tue 7/10/18	Mon 9/10/18
80	DCA86	2 days	Wed 7/11/18	Thu 7/12/18
81	D160B	2 days	Wed 7/11/18	Thu 7/12/18
82	D170B	1 day	Thu 7/12/18	Thu 7/12/18
83	DUTIL-043-045	9 days	Thu 7/12/18	Fri 9/14/18
84	D46A	11 days	Fri 7/13/18	Fri 7/27/18
85	D46D	4 days	Thu 7/26/18	Tue 8/7/18
86	D162	4 days	Mon 7/30/18	Thu 8/2/18
87	D46G	11 days	Tue 8/7/18	Fri 9/28/18
88	DCA85B	16 days	Tue 8/7/18	Fri 9/28/18
89	D46E	14 days	Fri 8/10/18	Fri 10/12/18
90	DCC12	2 days	Tue 8/14/18	Wed 8/15/18
91	D82	4 days	Tue 8/21/18	Fri 8/31/18
92	DFIK-088	5 days	Tue 8/21/18	Mon 8/27/18



2018 RA Summary Report
Date: Wed 12/26/18

Task	Project Summary	Inactive Milestone	Manual Summary Rollup	Deadline
Split	External Tasks	Inactive Summary	Manual Summary	Progress
Milestone	External Milestone	Manual Task	Start-only	Manual Progress
Summary	Inactive Task	Duration-only	Finish-only	

Page 4

Figure 3-1

ID	Task Name	Duration	Start	Finish
93	DMC2	5 days	Tue 9/4/18	Mon 9/10/18
94	DMC3	1 day	Fri 9/7/18	Fri 9/7/18
95	D170	2 days	Wed 9/12/18	Thu 9/13/18
96	D47D	9 days	Mon 9/17/18	Fri 11/2/18
97	D77C	4 days	Mon 9/24/18	Thu 10/11/18
98	D46C	3 days	Wed 9/26/18	Fri 9/28/18
99	D47EFG	8 days	Wed 10/17/18	Fri 10/26/18
100	DCA57-Micro 102	9 days	Thu 10/18/18	Tue 10/30/18
101	DCA57-Micro 101	3 days	Tue 10/23/18	Tue 10/30/18
102	D47C-Micro 101	1 day	Tue 10/30/18	Tue 10/30/18
103	D47C-Micro 102	1 day	Tue 10/30/18	Tue 10/30/18
104	DCA57	1 day	Mon 10/1/18	Mon 10/1/18
105	D47C	1 day	Mon 10/1/18	Mon 10/1/18
106	D43A	3 days	Wed 10/31/18	Fri 11/2/18
107	D138B	4 days	Fri 11/2/18	Wed 11/7/18
108				
109				
110				
111				
112				
113				
114				
115				

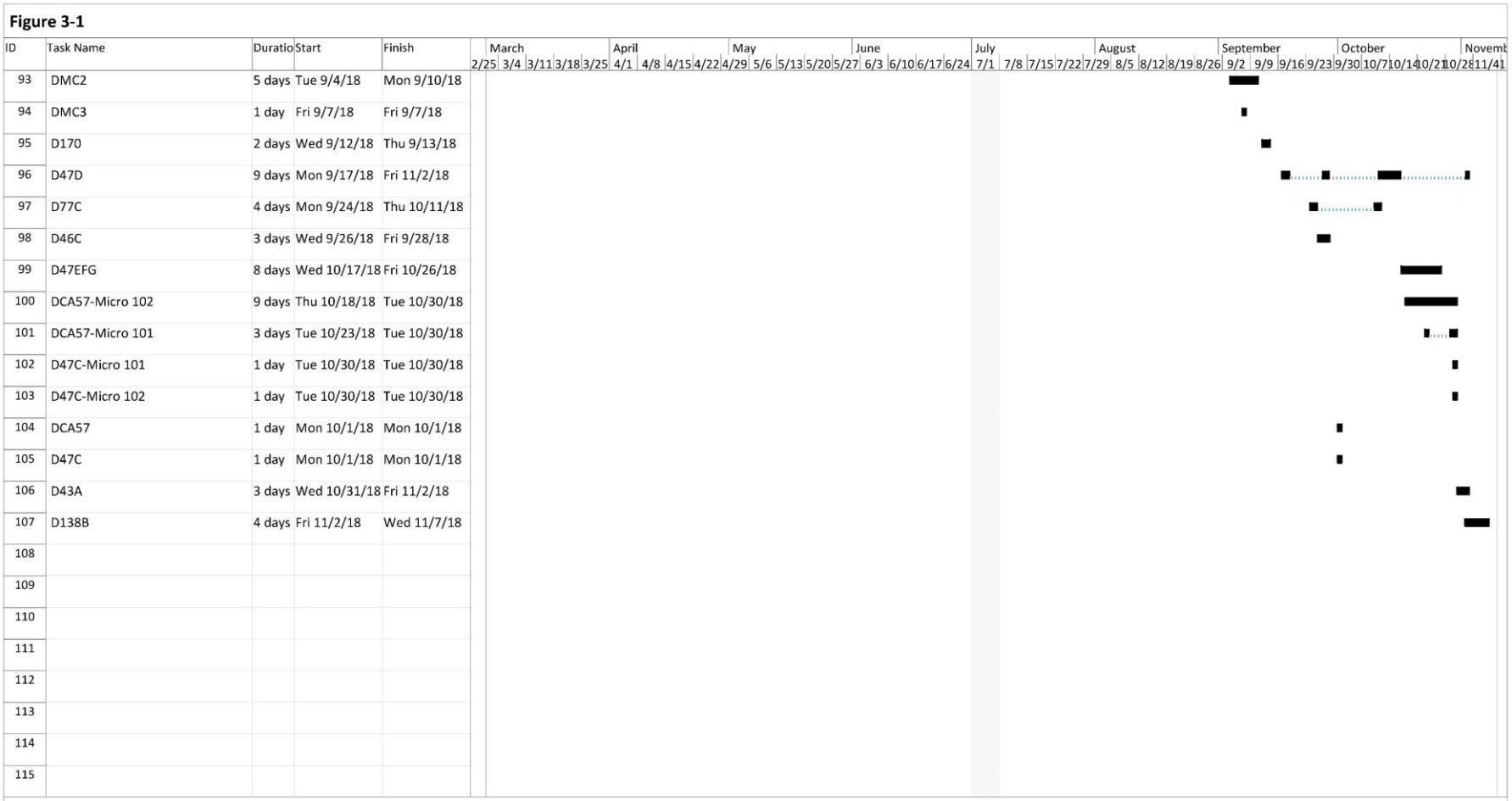


Figure 3-1b. 2018 Remedial Action Schedule (Sand Covering and Mechanical Placement)

Figure 3-1

ID	Task Name	Duratio	Start	Finish
1				
2	**Spreader Green Bay**			
3	SCFIK-089-01 sand cover	3 days	Mon 7/30/18	Wed 8/1/18
4	SCD53-1 sand cover	2 days	Mon 7/30/18	Tue 7/31/18
5	SCD40A-2 sand cover	6 days	Tue 7/31/18	Tue 8/7/18
6	SCD40A-3 sand cover	1 day	Wed 8/1/18	Wed 8/1/18
7	SCD35EFG-1 sand cover	4 days	Wed 8/8/18	Mon 8/13/18
8	SCD35EFG-5 sand cover	6 days	Wed 8/8/18	Tue 8/21/18
9	SCD35EFG-3 sand cover	4 days	Thu 8/9/18	Tue 8/14/18
10	SCD35EFG-2 sand cover	2 days	Mon 8/13/18	Tue 8/14/18
11	SCD35EFG-4 sand cover	2 days	Wed 8/15/18	Wed 8/22/18
12	SCD39-1 sand cover	1 day	Wed 8/15/18	Wed 8/15/18
13	SCDFIK-092-1 sand cover	1 day	Thu 8/16/18	Thu 8/16/18
14	SCD35EFG-6 sand cover	4 days	Fri 8/17/18	Mon 8/27/18
15	SCD35EFG-9 sand cover	5 days	Fri 8/17/18	Fri 8/24/18
16	SCD39-6 sand cover	5 days	Thu 8/23/18	Thu 9/13/18
17	SCD35EFG-8 sand cover	2 days	Mon 8/27/18	Tue 8/28/18
18	SRA-06 cap sand	11 day	Wed 8/29/18	Mon 11/12/18
19	SCD67-4 sand cover	2 days	Thu 8/30/18	Fri 8/31/18



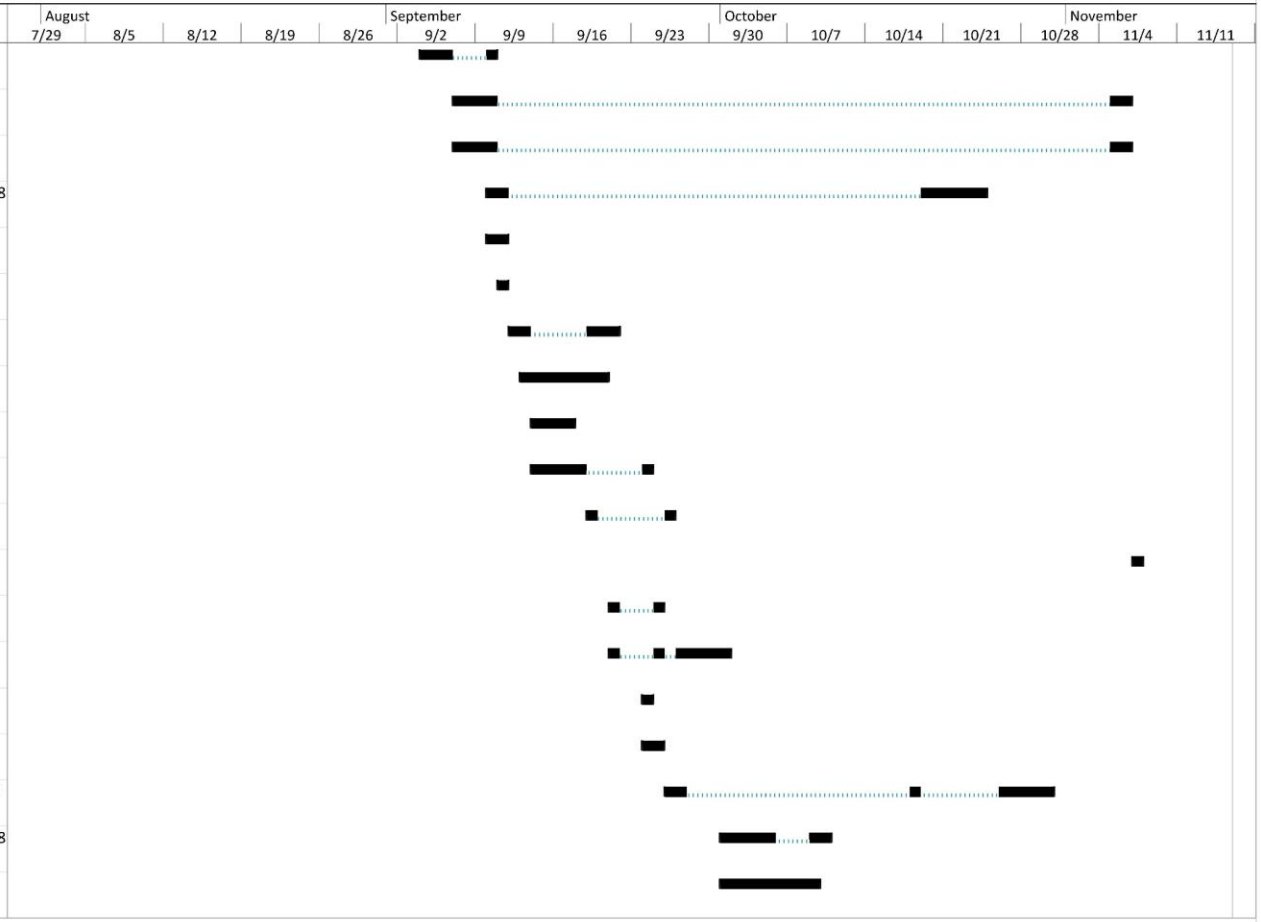
2018 RA Summary Report
Date: Wed 12/26/18

Task	Project Summary	Inactive Milestone	Manual Summary Rollup	Deadline	
Split	External Tasks	Inactive Summary	Manual Summary	Progress	
Milestone	External Milestone	Manual Task	Start-only	Manual Progress	
Summary	Inactive Task	Duration-only	Finish-only		

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Figure 3-1

ID	Task Name	Duration	Start	Finish
20	SCD35CD-13 sand cover	4 days	Tue 9/4/18	Mon 9/10/18
21	SCD82-2 sand cover	4 days	Fri 9/7/18	Tue 11/6/18
22	SCD82-3A sand cover	4 days	Fri 9/7/18	Tue 11/6/18
23	SCD82-1 sand cover	6 days	Mon 9/10/18	Wed 10/24/18
24	SCDUTIL-020-1B sand cover	2 days	Mon 9/10/18	Tue 9/11/18
25	SCD38-12 sand cover	1 day	Tue 9/11/18	Tue 9/11/18
26	SCD39-4 sand cover	5 days	Wed 9/12/18	Fri 9/21/18
27	SCD39-5 sand cover	6 days	Thu 9/13/18	Thu 9/20/18
28	SCD39-8 sand cover	2 days	Fri 9/14/18	Mon 9/17/18
29	SCD39-7 sand cover	4 days	Fri 9/14/18	Mon 9/24/18
30	CC-22 cap sand	2 days	Wed 9/19/18	Wed 9/26/18
31	CC-22 armor stone	1 day	Wed 11/7/18	Wed 11/7/18
32	SCNA-098 sand cover	2 days	Fri 9/21/18	Tue 9/25/18
33	SCD68B-2 sand cover	5 days	Fri 9/21/18	Mon 10/1/18
34	SCDFIK-091-1 sand cover	1 day	Mon 9/24/18	Mon 9/24/18
35	SCD68A-1 sand cover	2 days	Mon 9/24/18	Tue 9/25/18
36	SCD68B-3 sand cover	6 days	Wed 9/26/18	Tue 10/30/18
37	SCD35H-4 sand cover	7 days	Mon 10/1/18	Wed 10/10/18
38	SCD35H-2 sand cover	7 days	Mon 10/1/18	Tue 10/9/18



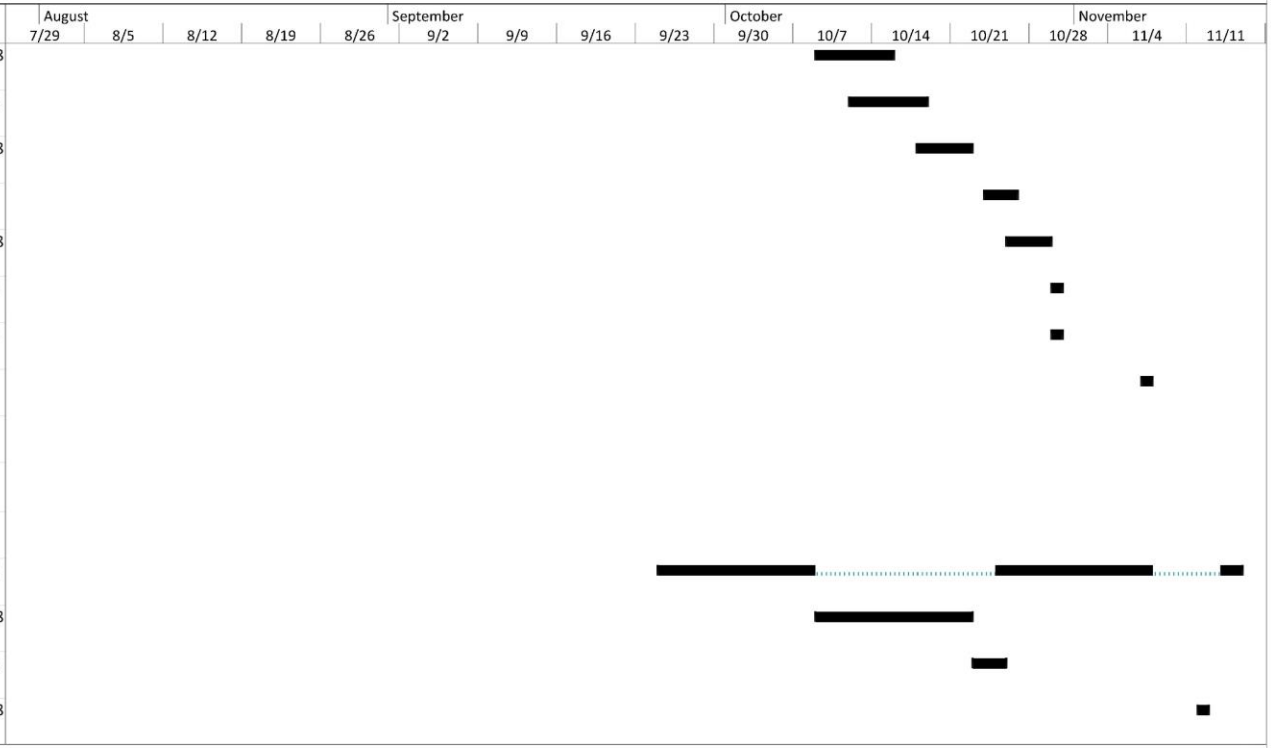
2018 RA Summary Report
Date: Wed 12/26/18

Task
Split
Milestone
Summary
Project Summary
External Tasks
External Milestone
Inactive Task
Inactive Milestone
Inactive Summary
Manual Task
Duration-only
Manual Summary Rollup
Manual Summary
Start-only
Finish-only
Deadline
Progress
Manual Progress

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Figure 3-1

ID	Task Name	Duratio	Start	Finish
39	SCD35H-3 sand cover	5 days	Tue 10/9/18	Mon 10/15/18
40	SCD35H-6 sand cover	5 days	Fri 10/12/18	Thu 10/18/18
41	SCD35H-7 sand cover	3 days	Thu 10/18/18	Mon 10/22/18
42	SCD39-3 sand cover	3 days	Wed 10/24/18	Fri 10/26/18
43	SCD68B-4 sand cover	2 days	Fri 10/26/18	Mon 10/29/18
44	SCDUTIL20-1A sand cover	1 day	Tue 10/30/18	Tue 10/30/18
45	SCDFIK-097 sand cover	1 day	Tue 10/30/18	Tue 10/30/18
46	CB58 armor stone	1 day	Wed 11/7/18	Wed 11/7/18
47				
48	**Mechanical Excavation/Placem**			
49	D68-5 buttress rock removal	3 days	Mon 7/23/18	Wed 7/25/18
50	SRA-06 armor stone	22 day	Tue 9/25/18	Thu 11/15/18
51	City Slip south berm quarry spall	10 day	Tue 10/9/18	Mon 10/22/18
52	D68-5 sand and buttress stone	3 days	Tue 10/23/18	Thu 10/25/18
53	CC22 quarry spall	1 day	Mon 11/12/18	Mon 11/12/18



2018 RA Summary Report
Date: Wed 12/26/18

Task	Project Summary	Inactive Milestone	Manual Summary Rollup	Deadline
Split	External Tasks	Inactive Summary	Manual Summary	Progress
Milestone	External Milestone	Manual Task	Start-only	Manual Progress
Summary	Inactive Task	Duration-only	Finish-only	

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4. 2018 DREDGING

The following sections describe dredging equipment, dredge areas, sampling activities, and QC measures implemented in 2018.

4.1 Dredge Systems

The 10-inch dredge system, 8-inch dredge systems, and support equipment were used during the 2018 RA construction season.

The 10-inch dredge system (Appendix A, Photograph 1) included:

- One 10-inch articulating swinging ladder dredge (dredge *Mark Anthony*)
- Up to four 10-inch diesel engine drive booster pumps
- Nearly 4.5 miles of 10-inch standard dimension ratio (SDR) 17 high-density polyethylene (HDPE) pipeline
- Various shallow water draft barges and boats

The 8-inch dredge systems (Appendix A, Photographs 2 and 3) included:

- Two 8-inch articulating swinging ladder dredges (dredges *Ashtabula* and *Ottawa River*)
- One 8-inch excavator with dredge pump attachment (*Utility Dredge*)
- Up to six 8-inch diesel engine drive booster pumps (Appendix A, Photograph 4)
- Nearly 9 miles of 8-inch SDR 17 HDPE pipeline
- Various shallow-water draft barges and boats

The support equipment included:

- Fuel barge (Appendix A, Photograph 10)
- Barge-mounted excavators of various sizes
- Various shallow-water draft barges and boats

Both standard cutterhead and excavator attachments were used for dredging. The cutterhead has a cone-shaped head with blades that dislodge and entrain the sediment in the water, so the suction pump of the dredge can draw in the sediment and propel it through the transfer pipeline, which continues to the SDDP. The excavator attachment has a dredge pump and specially designed suction head (Vic-Vac®). Small flexible cables ("whiskers") rotate at the bottom of the Vic-Vac® to assist with agitation of the dredged sediment. Beginning on October 17, 2018 Brennan equipped the *Utility Dredge* with a new dredging tool, the EBC. The EBC is an auger-style cutter attachment, mounted on an excavator. The EBC loosens sediment and moves it to the center of the bucket attachment where it is collected in an 8-inch dredge suction pump.

The dredge operator used kicker spuds at the stern of each dredge to move the dredge through the dredge cuts. Each dredge used real-time kinematic (RTK) GPS in conjunction with DredgePack® software, which was integrated with customized software for the programmable logic controller interface, for positioning systems, and for system calibration. Further explanation of dredge movement and positioning systems is provided in Section 4.2.1.1 of the 100 Percent Design Report, Volume 1 (Tetra Tech et al. 2009a).

4.2 2018 Dredge Areas

A total of 97 DMUs within OU4/OU5 were primary dredged and attained the target elevation in 90 percent of the DMU surface area. According to confirmation sampling, 28 DMUs were residual dredged. An additional 35 DMUs were production dredged, but not completed. No TSCA sediment was dredged.

Figures 4-1 through 4-252 (paper copies presented at the end of the report text) illustrate dredge area design surface details, final dredged surface elevations, variances from design to final surface elevations, high subgrade locations, and locations where post-dredge confirmation sampling was performed.

Table 4-1 provides a list of the dates during which the listed areas were dredged.

Table 4-1. 2018 Start and End Dates of Dredging by Dredge Area

AREA	START DATE	END DATE	NOTES
D35H RDMU 5	3/26/2018	4/4/2018	
D79 RDMUs 1Ra, 1Rb	4/20/2018	4/24/2018	
D40A RDMUs 2, 3, 4	3/26/2018	4/20/2018	
D68B RDMU 5	5/21/2018	7/27/2018	High subgrade
DFIK-092 DMU 1	4/4/2018	4/9/2018	
DUTIL-020 RDMUs 1A, 1B, 1D, 1E	5/10/2018	6/9/2018	RDMUs 1D and 1E were high subgrade
D39 RDMUs 2R, 6R	6/1/2018	6/12/2018	
D41 RDMU 2R	6/15/2018	6/22/2018	
DUTIL-020 RDMU 1AR	8/15/2018	8/23/2018	
DUTIL-020 RDMU 1AR2	10/1/2018	10/10/2018	
DFIK-088 DMU 1	8/21/2018	8/27/2018	
D82 RDMU 1	8/21/2018	8/30/2018	
DNA-D70 DMU 1	5/1/2018	5/2/2018	
D35J RDMUs 1, 2	3/28/2018	8/14/2018	
D35NOP-DCA45 RDMUs 3, 4, 5	9/28/2018	10/16/2018	
D35NOP-DCA45 RDMU 7	11/6/2018	11/9/2018	Not completed
DMC2 DMU 20	10/15/2018	10/25/2018	High subgrade
DMC2 DMU 3	6/12/2018	6/15/2018	High subgrade
DMC2 DMU 4B	6/11/2018	6/13/2018	
DMC2 DMU 10	6/22/2018	6/28/2018	
DMC2 DMU 13	6/26/2018	6/26/2018	
DMC2 DMU 5B	6/28/2018	9/10/2018	
DMC2 DMU 12	7/13/2018	7/24/2018	
DMC8 DMU 1	10/10/2018	10/10/2018	
DNA-071 DMUs 1, 2	6/29/2018	9/12/2018	DMU 1 was high subgrade
DUTIL-026-030 DMUs 1, 2, 3, 4	6/28/2018	9/12/2018	
DMC7 DMU 1	10/16/2018	10/25/2018	
D35X RDMU 1	10/10/2018	11/26/2018	
DCA44 DMUs 1, 2	6/28/2018	9/10/2018	DMU 1 was high subgrade
D35M RDMUs 1, 2, 3	7/9/2018	8/14/2018	
DUTIL-023-DCA40 RDMUs 1, 1a, 1b, 1c	8/1/2018	8/8/2018	
DCA57 DMU 1	8/2/2018	8/8/2018	
DMC1 DMU 1	4/25/2018	6/22/2018	
D170 DMU 1	3/28/2018	9/13/2018	
DUTIL-043-045-1 DMU 1	7/13/2018	8/7/2018	Not completed
DUTIL-043-045-2 DMU 1	7/13/2018	9/15/2018	
DUTIL-043-045-3 DMU 1	7/13/2018	8/7/2018	

AREA	START DATE	END DATE	NOTES
DUTIL-043-045-4 DMU 1	7/13/2018	9/14/2018	
D46A DMUs 1, 2, 3	7/13/2018	7/27/2018	
D159B DMU 1	3/29/2018	3/30/2018	
D94D DMU 1	3/27/2018	3/28/2018	
DSC105 DMUs 1, 2	3/27/2018	3/28/2018	
D47A DMU 1	3/29/2018	6/30/2018	
D160A DMU 1	3/29/2018	3/29/2018	
DCA86 DMU 1	3/29/2018	7/12/2018	
D162 DMU 1	7/30/2018	8/3/2018	High subgrade
D168 DMU 1	3/26/2018	3/28/2018	High subgrade
D46D DMU 1	7/26/2018	7/30/2018	High subgrade
D160B DMU 1	6/29/2018	7/12/2018	
D47B DMU 1	4/25/2018	6/29/2018	Not completed
D47B DMUs 2, 3, 4	4/21/2018	5/4/2018	DMU 4 did not require any dredging
D47H DMU 3	4/10/2018	4/26/2018	High subgrade
DCC12 DMU 3	8/14/2018	8/15/2018	
D46C DMU 1	9/26/2018	9/28/2018	Not completed
D46E DMU 1	8/10/2018	10/12/2018	High subgrade
D46G DMU 1	8/7/2018	9/29/2018	
D47D DMU 2	10/15/2018	11/2/2018	Not completed
D47D DMU 3	9/17/2018	10/13/2018	High subgrade
D77C DMU 1	9/24/2018	10/11/2018	High subgrade
DCA85B DMU 1	8/7/2018	9/29/2018	
D138B DMU 1	11/2/2018	11/7/2018	Not completed
D49 DMUs 1, 2	4/2/2018	4/26/2018	
DCA60 DMUs 1, 2, 3, 4, 5, 6, 7, 8, 9	3/30/2018	7/10/2018	DMUs 7 and 9 not completed
D161 DMUs 1, 2, 3, 4	8/14/2018	11/1/2018	DMUs 2, 3,4 not completed
D54 DMUs 1, 2, 3, 4, 6, 8, 9, 10, 11, 12, M101	6/14/2018	11/1/2018	DMUs 1, 2, 3, 4, 6, 8 not completed
DMC58 DMU 1	8/30/2018	9/28/2018	
D47EFG DMUs 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13	4/10/2018	11/2/2018	DMUs 3,4 not completed
D47EFG Redesign DMUs 3, 4, 5, 6, 7, 8	10/3/2018	11/8/2018	DMUs 3, 4 not completed
D47C DMUs 2, 3, 5, 6, 7 / Micro's 101, 102, 103, 104	4/12/2018	5/22/2018	
DCA57 Micros 101, 102	10/18/2018	10/31/2018	Not completed
DCC6 DMU's 1, 2 / Micros 101a, 101b, 101c, 102a, 102b	8/16/2018	10/13/2018	Not completed
D46F DMU 1	8/21/2018	8/21/2018	
D138 DMUs 1, 2, 3, 4, 5, 6	5/5/2018	6/30/2018	
DMC34 DMU 1	5/9/2018	6/28/2018	High subgrade
D74 DMU 2	9/18/2018	11/9/2018	Not completed
D44 DMUs 3, 4	8/14/2018	11/8/2018	High subgrade
D43A DMUs 5, 7	9/16/2018	11/9/2018	DMU 7 was high subgrade

Abbreviations and Acronyms:
DMU – Dredge Management Unit
RDMU – Residual Dredge Management Unit

QA hydrographic pre-dredge and post-dredge surveys were performed to establish and confirm top-of-sediment elevations. J.F. Brennan performed the surveys, Tetra Tech performed QC reviews, and Foth audited the collection and processing of 100 percent of the pre-dredge surveys and approximately 20 percent

of the post-dredge surveys. Table 4-2 provides an overview of the dredging progress, observations/challenges, and QA surveys during each month of the RA season.

Table 4-2. 2018 Dredge Activity Summary Table

MONTH	10-INCH DREDGE COVERAGE	OBSERVATIONS/CHALLENGES	8-INCH DREDGE ASHTABULA/8-INCH DREDGE OTTAWA RIVER COVERAGE/ 8-INCH *UTILITY DREDGE*	OBSERVATIONS/CHALLENGES	POST-DREDGE QA SURVEYS	PRODUCTION QA SURVEYS
MARCH	The *Mark Anthony* started the season on March 26 south of the Mason St. Bridge in D40A performing residual dredging in areas that were too deep for the 8" dredges to reach. The *Mark Anthony* then moved north of the Mason St. Bridge and continued dredging areas that were too deep for the 8" dredges to reach in D35J. After completing the areas upriver that were too deep for the 8-inch dredges, the *Mark Anthony* moved to the mouth of the river and began primary dredging in DCA60 on March 30. The dredge worked in the following areas in March 2018: D40A RDMUs 2, 3, 4 D35J RDMUs 1, 2 DCA60, DMUs 1, 2	Areas that were too deep for the 8-inch dredges to reach required the *Mark Anthony* to start the season dredging south of the Mason St. bridge.	*Ashtabula* - the *Ashtabula* started the season on March 26 performing residual dredging in D35H, RDMU 5R. The dredge continued in this area for the remainder of the month. *Ottawa River* - The *Ottawa River* started the season north of the East River on March 26 performing primary dredging in D168, then continued north, working in areas near the I-43 bridge, including the following: DSC105 DMUs 1, 2; D94D DMU 1; D170 DMU 1; D159B DMU 1; D160B DMU 1; D160A DMU 1; D47A DMU 1. *Utility Dredge* - The *Utility Dredge* did not perform any operations during the month of March.	The 8-inch dredges each had a smooth startup and did not encounter any challenges.	*3/29:* D94D DMU 1; D168 DMU 1; DSC105 DMUs 1, 2	D168 DMU 1 DSC105 DMUs 1, 2 D94D DMU 1 D159B DMU 1 D160A DMU 1 D40A RDMUs 2,3,4 DFIK-092 DMU 1 D35H RDMU 5R D35J RDMU 1 DCA60 DMUs 1,2 D170 DMU 1 D46A DMU 1 D47A DMU 1
APRIL	The *Mark Anthony* performed primary dredging at the mouth of the river, working in the following areas: DCA60 DMUs 1, 2, 3, 4, 5, 6, 7, 8 D47EFG DMU 10 D47C DMUs 5, 6, 7	Inclement weather in the beginning of April affected the *Mark Anthony's* production. Large ice sheets moved in and out of the mouth of the river with the changing winds. When the ice sheets entered the river, the *Mark Anthony* stopped operations and sheltered in the South Bay Marina. The *Mark Anthony* did not work on April 14 or 16 due to a late spring snowstorm. Dredging stopped on the night of April 13 when the storm arrived. The storm continued into Saturday, April 14. It was preplanned that dredging would be halted on April 16 to allow J.F. Brennan crews to conduct snow removal operations.	*Ashtabula* - D40A RDMUs 2, 3, 4; DFIL-092; D79 RDMU 1R; D35H RDMU 5R; D35J RDMU 1; DMC1 DMU 1 *Ottawa River* - D47A DMU 1; DCA86 DMU 1; D47B DMUs 1, 2, 3; D47EFG DMUs 1, 3, 4; D47H DMU 3; D49 DMUs 1, 2. *Utility Dredge* - The *Utility Dredge* did not perform any operations during the month of April.	Startup procedures were delayed following weekend shutdowns because freezing temperatures iced up conveyor belts at the separation plant. No operations were performed on April 14 and 16 during the snowstorm and cleanup activities following the storm. While operating in the Green Bay Yachting Club (D49) the *Ottawa River* encountered numerous pockets of very dense substrate, slowing operations.	*4/2:* D160A DMU 1; D159B DMU 1 *4/4:* D35H RDMU 5R *4/6:* D47A DMU 1 *4/10:* D49 DMU 1; D49 Micro DMU 101; DFIK-092 DMU 1 *4/18:* D40A RDMUs 3, 4 *4/20:* D40A RDMU 2 *4/26:* D79 RDMU 1R; DCA60 DMUs 1, 3, 4; D47C DMUs 5, 6, 7 *4/27:* D49 Micro DMU 102 *4/26 & 4/27:* D47H DMU 3 *4/28:* D47EFG DMU 1	D49 DMU 1 D49 Micro's 101, 102 D35H RDMU 5R DFIK-092 DMU 1 D40A RDMUs 2, 3, 4 DCA60 DMUs 1, 2, 3, 4, 5, 6, 7, 8 D47C DMUs 5, 6, 7 D47EFG DMUs 1, 8, 10 D79 RDMU 1R D47A DMU 1 DCA86 DMU 1 D47B DMUs 2, 3 D47H DMU 3 D35J RDMU 1 DMC1 DMU 1

MONTH	10-INCH DREDGE COVERAGE	OBSERVATIONS/CHALLENGES	8-INCH DREDGE ASHTABULA/8-INCH DREDGE OTTAWA RIVER COVERAGE/ 8-INCH *UTILITY DREDGE*	OBSERVATIONS/CHALLENGES	POST-DREDGE QA SURVEYS	PRODUCTION QA SURVEYS
MAY	The *Mark Anthony* spent the month continuing primary dredging operations at the mouth of the river, working in the following areas: D47C DMUs 2, 3, 4 D47EFG DMUs 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 DCA60 DMUs 2, 5, 6, 7, 8, 9	No operations were performed on Monday, May 28 in observation of Memorial Day.	*Ashtabula* – The *Ashtabula* conducted dredging in the following areas: DMC1 DMU 1; D35J RDMUs 1, 2; DNA-070 DMU 1; D138 DMUs 1, 2. *Ottawa River* – The *Ottawa River* conducted dredging in the following areas: D138 DMUs 1, 2; D47B DMUs 1, 2, 3; D68B RDMU 5; DUTIL-020 RDMUs 1A, 1B; D39 RDMU 2R. *Utility Dredge* - The *Utility Dredge* began 2018 operations on May 10 to complete residual dredging within the 25-foot utility buffer in DUTIL-020, in DUTIL-020 RDMUs 1A, 1B, 1D, 1E.	The *Ottawa River* was outfitted with grade control. On May 10 the *Ashtabula* was taken offline so the *Utility Dredge* could use the *Ashtabula's* 8-inch pipeline. Brennan operations were limited to only three hydraulic dredges in operation at any given time. The *Ashtabula* resumed operations on May 15 and the *Ottawa River* then was shut down to allow the *Utility Dredge* to continue operating. The *Utility Dredge* encountered debris, which led to frequent delays to clean the cutterhead and dredge pump. No operations were performed on Monday, May 28 in observation of Memorial Day.	*5/4:* DNA-D70 DMU 1; DCA60 DMU 6 *5/7:* D47B DMU 3 *5/9:* D35J RDMU 1 *5/16:* D47EFG DMU 9; DCA60 DMU 2 *5/23:* D47EFG DMUs 6, 7, 8; D47B DMUs 2, 3 *5/24:* DCA60 DMU 5	D79 RDMU 1R D35J RDMUs 1, 2 D47B DMUs 2, 3 D47H DMU 3 DCA60 DMUs 2, 5, 6, 7, 8, 9 D47C DMUs 2, 3 D47EFG DMUs 6, 7, 8, 9, 10, 11, 12, 13 DNA-D70 DMU 1 DUTIL-020 RDMUs 1A, 1B, 1D, 1E D68B RDMU 5R D138 DMUs 1, 2 DMC34 DMU 1 DMC1 DMU 1
JUNE	The *Mark Anthony* started the month working in dredge areas at the mouth of the river, including DCA60, D47EFG and D54. Over the weekend of May 9, the *Mark Anthony* was brought to the Shell site for replacement of the kicker spud. On May 11 and 12, the dredge targeted areas that were too deep for the 8-inch dredges in area D39. After completing the deep areas, the dredge returned to the mouth of the river for the rest of the month. During the month of June, the *Mark Anthony* worked in the following areas: D39 RDMUs 2R, 6R DCA60 DMUs 7, 8, 9 D47EFG DMUs 10, 11, 12, 13 D54 DMUs 10, 12	The *Mark Anthony* experienced issues with the stern kicker spud, which was replaced on the weekend of May 9.	*Ashtabula* – During June, the *Ashtabula* performed operations in the following areas: D138 DMUs 1, 2, 3, 4, 5, 6; DMC34 DMU 1; D47B DMU 1; D160B DMU 1; DCA86 DMU 1; D47A DMU 1. The *Ashtabula's* last day of operations was June 30, 2018. *Ottawa River* – The *Ottawa River* operated in the following areas: DUTIL-020 RDMUs 1D, 1E; D39 RDMUs 2R, 6R; D41 RDMU 2R; DMC1 DMU 1; DMC2 DMUs 3, 4B, 5B, 10, 13; DUTIL-026-030 DMUs 2, 4; DNA-071 DMU 2; DCA44 DMU 2 *Utility Dredge* - The *Utility Dredge* was used only on June 1 to perform residual dredging in DUTIL-020 RDMU 1E. The *Utility Dredge* was then taken offline to allow operation of the other three dredges.	The *Utility Dredge* completed operations in DUTIL-020 on June 1, and then went on standby, allowing the *Ottawa River* to come back online on Tuesday, June 5. While performing operations in Tower Drive Slough (D138), the *Ashtabula* frequently encountered debris that clogged the cutterhead and dredge pump, causing delays because of the cleaning required.	*6/1:* DUTIL-020 RDMUs 1A, 1B *6/11:* DUTIL-020 RDMUs 1D, 1E *6/13:* D39 RDMUs 2R, 6R *6/14:* DMC2 DMU 4B *6/15:* DMC2 DMUs 3, 13 *6/22:* D41 RDMU 2R 6/23: DMC1 DMU1 *6/24:* D138 DMU 3 *6/29:* DMC2 DMU 10; D138 DMUs 5, 6	DUTIL-020 RDMUs 1A, 1B, 1D, 1E D39 RDMUs 2R, 6R D41 RDMU 2R DMC2 DMUs 3, 4B, 10 D138 DMUs 1, 2, 3, 4, 5, 6 D47EFG DMUs 10, 11, 12, 13 D54 DMU 12 DMC1 DMU 1 DCA60 DMUs 7, 8, 9 D68B RDMU 5

MONTH	10-INCH DREDGE COVERAGE	OBSERVATIONS/CHALLENGES	8-INCH DREDGE ASHTABULA/8-INCH DREDGE OTTAWA RIVER COVERAGE/ 8-INCH *UTILITY DREDGE*	OBSERVATIONS/CHALLENGES	POST-DREDGE QA SURVEYS	PRODUCTION QA SURVEYS
JULY	No dredging occurred during the week of July 2 in observation of the July 4 holiday. Operations resumed on July 9. During July the *Mark Anthony* worked in the following areas: DCA60 DMUs 7, 8, 9 D47EFG DMUs 10, 11, 12, 13 D54 DMUs 6, 9, 10, 12	No operations were performed during the week of the July 4th. Favorable dredging conditions in D54 led to high rates of production.	No dredging operations were performed during the week of the July 4th in observation of the holiday. Operations resumed on Monday, July 9. *Ashtabula* - The *Ashtabula* was pulled from the river during the week of July 4 and did not return to the project for the remainder of the season. *Ottawa River* – Operations were conducted on the *Ottawa River* in the following areas: D68B RDMU 5; DMC2 DMU 12; D35M RDMUs 1, 2, 3. *Utility Dredge* - The *Utility Dredge* started with operations in DUTIL-026-030 DMUs 2, 3, 4; DNA-071 DMUs 1, 2 and DCA44 DMUs 1, 2. On July 11, the dredge was taken to Graymont where the crew installed a booster pump on the stern of the dredge. The *Utility Dredge* was then moved north near the I-43 bridge and worked in the following areas for the remainder of the month: DUTIL-043-045 DMUs 2-1, 4-1, 1DC1, 3DCA; D160B DMU 1; DCA86 DMU 1; D46A DMUs 1, 2, 3; D46D DMU 1 and D162 DMU 1.	No operations were performed during the week of the July 4.	*7/2:* DMC34 DMU1; D138 DMUs 1, 2, 4 *7/10:* DMC2 DMU 13 *7/12:* DCA60 DMU 8; D47EFG DMUs 12, 13 *7/13:* D54 DMU 12 *7/18:* DCA86 DMU 1; D160B DMU 1; D47A DMU 1 *7/26*: DMC2 DMU12 *7/26 & 7/28*: D35M RDMU 3 *7/28:* D46A DMUs 1, 2, 3; D47EFG DMUs 10, 11; D68B RDMU 5 *7/31:* D46D DMU 1	D47A DMU 1 DCA86 DMU 1 D160B DMU 1 D46A DMUs 1, 2, 3 DMC2 DMU 5B, 10, 13 D35M RDMUs 1, 2, 3 DCA44 DMUs 1, 2 DUTIL-026 DMUs 2, 3, 4 DNA-071 DMUs 1, 2 DUTIL-043-045-2 DMU 1 DUTIL-043-045-1 DMU 1 DUTIL-043-045-3 DMU 1 DCA60 DMUs 7, 8 D54 DMUs 6, 9, 10, 11, 12 D47EFG DMUs 10, 11, 12, 13 D68B RDMU 5B D138 DMUs 1, 2, 4, 5, 6 DMC34 DMU 1 D170 DMU 1 D46D DMU 1

MONTH	10-INCH DREDGE COVERAGE	OBSERVATIONS/CHALLENGES	8-INCH DREDGE ASHTABULA/8-INCH DREDGE OTTAWA RIVER COVERAGE/ 8-INCH *UTILITY DREDGE*	OBSERVATIONS/CHALLENGES	POST-DREDGE QA SURVEYS	PRODUCTION QA SURVEYS
AUGUST	The *Mark Anthony* continued operations at the mouth of the river, in the following areas: D47EFG DMUs 3, 4 D54 DMUs 3, 4, 6, 8, 10, 11 DMC58 DMU 1 DCC6 DMUs 1, 2 D161 DMUs 1, 2, 3 D46F DMU 1	Favorable dredging conditions in D54 allowed high production rates to continue.	*Ottawa River* - The *Ottawa River* worked in the following areas: D44 DMUs 3, 4; D35M RDMUs 1, 2; DMC2 DMU 58; DUTIL-026-030 DMU 1; D35J RDMU 2; DUTIL-023-DCA40 RDMUs 1; 1a, 1b, 1c; DNA-057 DMU 1 *Utility Dredge* - The Hyundai 450 excavator was replaced with the new John Deere 470 excavator, after which the *Utility Dredge* started operations on August 30. Throughout the month, the *Utility Dredge* worked in the following areas: DUTIL-020 RDMU 1AR; D82 RDMU 1; DFIK-088 DMU 1; DNA-071 DMU2; DUTIL-026-030 DMUs 1, 2; D162 DMU 1; DUTIL-043-045-1 DMU 1; DUTIL-043-045-3 DMU 1; DCA85B DMU 1; D46G DMU 1; D46E DMU 1; DCC12 DMU 3; D47B DMU 5	On the weekend of August 25, the crew replaced the cutterhead on the *Ottawa River* with the Vic Vac attachment. The *Ottawa River* operations with the Vic Vac for the remainder of the month.	*8/8*: D162 DMU1 *8/9*: DNA057 DMU1; DUTIL-023-DCA40 RDMU1; D35M RDMU2 *8/15*: D35J RDMU1 D35J RDMU2 *8/22*: DUTIL-043-045-1 DMU1 *8/25*: DUTIL-020 RDMU1AR; D161 DMU1 *8/31*: D82 RDMU1; DFIK-088 DMU1	D46D DMU 1 D35J RDMU 2 DMC1 DMU 1 D35M RDMUs 1, 2 D162 DMU 1 DNA-057 DMU 1 DUTIL-023 RDMU 1 D54 DMUs 3, 4, 6, 9, 10, 11 D44 DMUs 3, 4 DUTIL-020 RDMU 1AR DFIK-088 DMU 1 D82 RDMU 1 DMC2 DMU 5B DUTIL-043-045-3 DMU 1 DUTIL-043-045-1 DMU 1 D46G DMU 1 DCA85B DMU 1 DCC12 DMU 3 D47B DMUs 1, 5 D161 DMUs 1, 2, 3 DCC6 DMUs 1, 2 DCC6 Micros 101, 102 D47H DMU 1 D47EFG DMUs 3, 4 D46F DMU 1 D46E DMU 1

MONTH	10-INCH DREDGE COVERAGE	OBSERVATIONS/CHALLENGES	8-INCH DREDGE ASHTABULA/8-INCH DREDGE OTTAWA RIVER COVERAGE/ 8-INCH *UTILITY DREDGE*	OBSERVATIONS/CHALLENGES	POST-DREDGE QA SURVEYS	PRODUCTION QA SURVEYS
SEPTEMBER	The *Mark Anthony* worked in the following areas: D54 DMUs 1, 2, 3, 4, 6, 8, Micro 101 DMC58 DMU 1	By the end of September, the *Mark Anthony* completed the high-face, high-production dredging areas. Production slowed as the dredge operated in less productive areas.	*Ottawa River* - In September, the *Ottawa River* worked in the following areas: D44 DMUs 3, 4; D43A DMU 7; D74 DMU 2 *Utility Dredge* – In September, the *Utility Dredge* worked in the following areas: DNA-071 DMUs 1, 2; DUTIL-026-030 DMUs 1, 2, 3, 4; DMC2 DMU 5B; DCA44 DMU 1; DUTIL-043-045-1 DMU 1; DUTIL-043-045-2 DMU 1; D170 DMU 1; D46C DMU 1; DCA85B DMU 1; D46G DMU 1; D47D DMUs 1, 3; D46E DMU 1; D77C DMU 1	While working in DUTIL-026-030, the *Utility Dredge* encountered extensive pea gravel. Therefore, the *Ottawa River* went offline for periods of time to allow the *Utility Dredge* to operate at a higher flow rate to avoid plugging the line with the pea gravel.	*9/13*: DNA-071 DMU1; DCA44 DMU1; DCA44 DMU2; DMC2 DMU58; DNA-071 DMU2; DUTIL-026-030 DMU1; DUTIL-026-030 DMU2; DUTIL-026-030 DMU3; DUTIL-026-030 DMU4 *9/18*: D170 DMU1; DUTIL-043-045-2 DMU1; DUTIL-043-045-4 DMU1 *9/24*: D44 DMU3 *9/29*: D43A DMU7; D54 Micro101; DCA85B DMU1	DFIK-088 DMU 1 D82 RDMU 1 D170 DMU 1 DUTIL-043-045-2 DMU 1 DUTIL-043-045-4 DMU 1 DUTIL-026-030 DMUs 1, 2, 3, 4 DCA44 DMUs 1, 2 DMC2 DMUs 5B, 12 DNA-071 DMUs 1, 2 D44 DMUs 3, 4 D74 DMU 2 D43A DMU 7 D46C DMU 1 D46E DMU 1 D47D DMU 3 D46G DMU 1 DCA85B DMU 1 D77C DMU 1 D161 DMU 1 D54 Micro 101 D54 DMUs 1, 2, 3, 4, 6 DMC58 DMU 1 MGP Micro 100, Soft Sediment, Clay
OCTOBER	The *Mark Anthony* worked in the following areas: D54 DMUs 1, 2, 3 D47EFG DMUs 4, 5, 6, 7, 8, 9 D47C Micros 102, 103, 104 DCA57 Micro 102	On October 1, J.F. Brennan received a design revision for D47EFG. The *Mark Anthony* began targeting these high-face areas, leading to increased production rates compared to the end of September.	*Ottawa River* - In October, the *Ottawa River* worked in the following areas: D35X RDMU 1; DMC2 DMU 20; D35NOP-DCA45 RDMUs 3, 4, 5; DMC7 DMU 1; DMC8 DMU 1; D44 DMU 4; D43A DMUs 5, 7; D74 DMU 2; MGP SFA Soft Sediment *Utility Dredge* - The *Utility Dredge* began the month in DUTIL-020 near the Lafarge Slip, then was moved north near the I-43 bridge. The *Utility Dredge's* last day of operation was October 16. The dredge was then taken to Graymont and crews worked on installing the new EBC attachment. In October, the *Utility Dredge* worked in the following areas: DUTIL-020 RDMU 1AR2; D47D DMUs 1, 2, 3; D46E DMU 1; D77C DMU 1 EBC dredge - The EBC dredge began operations on October 17, conducting operations at the mouth of the river in D47EFG and DCA57. In October, the EBC dredge worked in the following areas: D47EFG DMUs 3, 4; DCA57 Micros 101, 102; D47C Micros 101, 102; D43A DMU 5	The *Utility Dredge* attachment was replaced on the John Deere with the new EBC attachment on October 17. The remainder of the month was spent testing the new attachment and working through the "bugs". Overall an increased production rate was experienced using the EBC attachment. Extensive debris near the Metro Boat Launch led to frequent delays to clean debris from the EBC attachment. On October 10, the crew removed the Vic Vac attachment from the *Ottawa River* and reinstalled a standard cutterhead.	*10/8*: D46G DMU1 *10/10*: DUTIL-020 RDMU1AR2 *10/16*: D43A DMU7 *10/22*: D46E DMU1; D77C DMU1; D47D DMU2; D47D DMU3 *10/25*: DMC8 DMU1 *10/26*: DMC2 DMU20; DMC7 DMU1; D35NOP-DCA45 RDMU3; D35NOP-DCA45 RDMU4; D35NOP-DCA45 RDMU5; D47EFG DMU8	DUTIL-020 RDMU 1AR2 D35NOP-DCA45 RDMUs 3, 4, 5 D35X RDMU 1 DMC2 DMU 20 DMC7 DMU 1 DMC8 DMU 1 D43A DMUs 5, 7 D44 DMU 4 D161 Micro 101 D161 DMUs 2, 4 D54 DMUs 1, 2, 3 D47EFG DMUs 3, 4, 5, 6, 7, 8 D47C Micros 102, 103, 104 DCA57 Micro 101, 102 D77C DMU 1 D47D DMUs 2, 3 D46E DMU 1 D46G DMU 1 MGP Hydraulic Soft Sediment, Hydraulic Soft Sediment, Clay

MONTH	10-INCH DREDGE COVERAGE	OBSERVATIONS/CHALLENGES	8-INCH DREDGE ASHTABULA/8-INCH DREDGE OTTAWA RIVER COVERAGE/ 8-INCH *UTILITY DREDGE*	OBSERVATIONS/CHALLENGES	POST-DREDGE QA SURVEYS	PRODUCTION QA SURVEYS
NOVEMBER	The *Mark Anthony* conducted operations near the mouth of the river until the end of the season on November 9. The dredge continued operations briefly, pumping water to allow the separation plant and water treatment plants to conduct winter shutdown procedures. In November, the *Mark Anthony* worked in the following areas: D47EFG DMUs 3, 4, 5, 6, 7 D47C Micros 101, 102, 103, 104 DCA57 Micros 101, 102		*Ottawa River* – In November, the *Ottawa River* worked until November 9, conducting operations in the following areas: D35X RDMU 1; D35NOP-DCA45 RDMU 7; D44 DMU 3; D43A DMU 5; D74, DMU 2 EBC dredge - The EBC dredge worked in the following areas: D43A DMU 5; D47D DMU 2; D138B DMU 1, until ending operations for the season on November 7.	Due to inclement weather, the *Ottawa River* ceased operations on November 9. The dredge then pumped water to allow the separation plant and WTP to perform year end shutdown procedures. On the evening of November 7, the EBC attachment experienced a mechanical failure. Mechanics did not receive repair parts before the end of the dredge season. The EBC dredge therefore remained down from November 7 through the end of the season.	*11/7*: D47EFG DMU5; D47EFG DMU7 *11/8*: D44 DMU4; D35X RDMU1 *11/12*: DCA57 Micro102; D47C Micro103; D47C Micro104; D47EFG DMU6	D35X RDMU 1 D43A DMU 5 D44 DMU 4 D35NOP-DCA45 RDMU 7 D138B DMU 1 D47D DMU 2 D47EFG DMUs 4, 5, 6, 7 D47C Micros 101, 102, 103, 104 DCA57 Micro 102

Abbreviations and Acronyms:
DMU – Dredge Management Unit
I-43 – Interstate Highway 43
QA – Quality Assurance
RDMU – Residual Dredge Management Unit

Table 4-3 presents a summary of all areas dredged in 2018, as well as post-dredge bathymetric survey volumes.

Table 4-3. 2018 QA Survey Volume Dredged by Area

Area	Total Volume Dredged 1,2 (in situ cy)	RAL Volume and 6 Inch Design Overcut Volume (in situ cy)	Dredge Area Completed to Required Grade?
D82 RDMU	788.32	754.46	Yes
DFIK-088	59.00	55.28	Yes
DUTIL-020 RDMU	13,929.09	13,402.35	Yes
D40A RDMU	13,062.13	12,427.64	Yes
DFIK-092	1,689.91	1,642.17	Yes
D39 RDMU	6,653.81	6,302.10	Yes
D79 RDMU	398.44	346.98	Yes
D35H RDMU	5,396.37	5,241.92	Yes
D68B RDMU	2,172.84	2,138.99	Yes
D41 RDMU	2,097.88	1,999.93	Yes
DUTIL-023-DCA40 RDMU	2,850.24	2,566.28	Yes
DNA-057	303.17	276.87	Yes
DNA-D70	230.09	173.53	Yes
D35J RDMU	6,221.22	5,425.12	Yes
DMC1	1,962.35	1,871.37	Yes
DMC2	3,679.58	3,423.11	Yes
DNA-071	793.01	754.76	Yes
DUTIL-026-030	2,872.54	2,521.72	Yes
DCA44	2,385.24	2,239.46	Yes
D35M RDMU	15,976.35	14,932.10	Yes
D35X RDMU	1,823.56	1,696.46	Yes
D35NOP-DCA45	716.77	458.65	Yes
D35NOP-DCA45 RDMU	4,719.63	4,504.59	Yes
DMC8	208.66	183.70	Yes
DMC7	1,018.35	976.65	Yes
D43A	8,612.91	8,575.90	No
D44	6,309.73	5,976.07	No
D162	1,110.48	1,067.47	Yes
D168	632.33	587.72	Yes
D94D	167.01	158.39	Yes
DSC105	351.18	276.20	Yes
D46D	1,073.29	1,028.47	Yes
DUTIL-043-045-2	1,118.15	1,081.61	Yes
DUTIL-043-045-3	244.07	230.42	Yes
DUTIL-043-045-4	379.65	364.88	Yes

Area	Total Volume Dredged 1,2 (in situ cy)	RAL Volume and 6 Inch Design Overcut Volume (in situ cy)	Dredge Area Completed to Required Grade?
D170	662.09	630.47	Yes
D46A	3,745.23	3,281.21	Yes
D159B	739.64	578.33	No
D47A	504.07	469.62	No
D160A	106.20	64.31	Yes
DCA86	769.97	739.81	Yes
D160B	342.12	332.44	Yes
D47D	1,739.43	1,498.72	No
DCA85B	3,305.10	3,191.98	Yes
D46G	1,048.30	940.40	Yes
D46E	1,326.15	1,236.53	Yes
D77C	498.34	494.86	Yes
D47B	3,405.90	3,198.50	No
D47H	355.16	301.56	No
D138	15,810.80	15,587.35	No
DMC34	148.10	140.50	Yes
D49	2,691.43	445.14	Yes
D49 MICRO	5,880.20	5,702.22	Yes
D47EFG	133,392.93	129,795.18	No
D161	7,702.56	2,690.33	No
DCA57 Micro	4,678.94	4,350.25	No
D47C	19,389.00	18,479.80	No
D47C Micro	18,112.93	17,297.33	No
D54	129,221.26	126,967.31	No
D54 Micro	12,296.36	12,007.79	No
DCA60	71,972.21	70,828.37	No
DUTIL-043-045-1	706.21	699.57	No
DCC12	1,021.76	1,021.76	No
D46F	614.23	112.04	No
DCC6	7,066.66	869.32	No
DCC6 Micro	11,346.33	11,129.78	No
D46C	331.26	325.44	No
DMC58	6,225.49	6,102.29	No
D74	4,017.09	3,999.28	No
D161 Micro	1,986.12	1,835.13	No
D138B	674.15	661.44	No
Total	**585,841.07**	**553,669.68**	

Notes:
[1] Total volume dredged is the sum of the volume dredged, overcut volume dredged, and excess overdredge.
[2] Includes residual dredge volumes.

Abbreviations and Acronyms:
cy – cubic yards
DFIK – Dredge Full Indicator Kriging
DNA – Dredge No Action
QA – quality assurance
RAL – remedial action level
RDMU – Residual Dredge Management Unit

As in all previous years of the project, the calculation of in situ cy of sediment dredged in 2018 was based on a comparison of pre-dredging bathymetry and post-dredging bathymetry over the DMUs where dredging occurred. Estimates of in situ volume dredged include the effects of accretion or scour that may have occurred in the DMUs between the two bathymetric surveys. Accretion lowers the reported dredging volume and scour increases it.

As one example, in some DMUs within a dredge area, dredging occurred in a portion of the DMUs during the year, but not in the entire DMU (this is because the other parts of these DMUs had been dredged in previous years). Although there were areas within individual DMUs where no dredging occurred during the year, the comparison of the two bathymetric surveys showed a quantity displaced from those areas for the year. This is an example of net scour occurring in these areas. In 2018, the Tetra Tech team calculated a scour volume of 2,289 cy and an accretion volume of 11,371 cy, for a net accretion volume of 9,082 cy.

4.3 Dredge Elevation Results

4.3.1 QA Hydrographic Surveys

J.F. Brennan conducted post-dredge QA hydrographic surveys and Foth provided third-party QA and auditing. During all 2018 survey operations (QC and QA), survey data were collected from 1,116 survey miles. As noted above, Foth audited and documented 100 percent of all QA pre-dredge surveys and approximately 20 percent of all QA post-dredge surveys. Foth audited equipment calibration, survey checks to benchmarks, and hydrographic surveying procedures. At the completion of each QA survey, J.F. Brennan provided Foth and Tetra Tech personnel with the complete unedited (*.raw file extension) data files.

All pre-dredge QA surveys were performed from March 2, 2018 to March 23, dredge QA surveys of D49, which were not performed until April 11, 2018 (south side of D49), and April 23, 2018 (north side of D49).

During project operations, post-dredge QA hydrographic surveys were completed in DMUs that J.F. Brennan personnel determined had sufficiently attained the target design elevations or encountered high subgrade in accordance with the approved CQAPP. The DMUs provided a means to divide larger dredge areas into smaller areas, which facilitated obtaining post-dredge confirmation samples, interpreting the results of their analyses, and determining what, if any, further RA was indicated in each DMU. J.F. Brennan completed post-dredge QA hydrographic surveys, at a minimum, at the end of every 2-week period of dredging.

Foth performed hydrographic survey audit checks to monitor progress in areas not dredged to the neat line design surface elevation in OU4 or OU5 (D43A, D44, D159B, D47A, D47D, D47B, D47H, D138, D47EFG, D161, D57A Micro, D47C, D47C Micro, D54, D54 Micro, DCA60, DUTIL-043-045-1, DCC12, D46F, DCC6, DCC6 Micro, D46C, DMC58, D74, D161 Micro, D138B). The results of these audit checks are included in Appendix P.

J.F. Brennan used an RTK GPS system to perform all QA hydrographic surveys and progress hydrographic surveys in D35H, D79, D40A, D68B, DFIK-092, DUTIL-020, D39, D41, DFIK-088, D82, DNA-D70, D35J, D35NOP-DCA45, DMC2, DMC8, DNA-071, DUTIL-026-030, DMC7, D35X, DCA44, D35M, DUTIL-023-

DCA-40, DNA-057, DMC1, D170, DUTIL-043-045, D46A, D159B, D94D, DSC105, D47A, D160A, DCA86, D162, D168, D46D, D160B, D47B, D47H, DCC12, D46C, D46E, D46G, D47D, D77C, D138B, D49, DCA60, D161, D54, D47EFG, D47C, DCA57, DCC6, D46F, D138, DMC34, D74, D44, and D43A. The RTK GPS produced highly accurate positional measurements and was used to determine the horizontal position and elevation on every QA survey. All measurements were referenced to the Fox River Control Network WDNR survey monuments. The data were recorded in North American Datum 83, U.S. State Plane, Wisconsin Central coordinates for horizontal measurements and North American Vertical Datum 88 for vertical measurements. The measurement unit for all data was the U.S. Survey Foot. During the QA surveys and progress surveys, J.F. Brennan staff completed poling and Foth audited the work to verify the accuracy of the hydrographic survey echosounder. Poling was performed at random locations, at a frequency of approximately one poling per hour of operation, with a minimum of three per survey event. Depths were recorded to the nearest 0.1 foot using a pole fitted with a standard 6-inch-diameter poling disc to limit sinking into soft sediments. Depth readings from poling were compared to readings being recorded by the echosounder on the hydrographic survey boat at the time of poling. The coordinates of each poling location were obtained from the HYPACK® system and recorded by personnel for future use.

The calibration techniques used for the QA surveys followed guidance in the USACE Engineering and Design Hydrographic Surveying Manual (USACE 2004). An initial calibration check included verifying the accuracy of the GPS. The GPS survey equipment used for the hydrographic survey was checked against the Fox River Control Network WDNR survey monuments located along OU4. The coordinates and elevations of the benchmarks acquired in the field were checked against published values. Discrepancies outside the project survey tolerances of ±0.13-foot vertical and ±0.13-foot horizontal were addressed prior to proceeding. This check to known benchmarks occurred at the start and end of each QA survey event.

Bar check calibration tests were also performed at the start and end of each QA survey. A bar was lowered beneath the transducer to a measured depth from the water surface. A sound velocity profiler was used to measure the sound velocity value, which was entered into the echosounder. At the 2-foot depth, adjustments were made to the draft value of the transducer. Typically, the bar was lowered at 5-foot increments, starting at the 5-foot depth and continuing down to the top of sediment. When the bar reached the top of sediment, it was raised to the nearest 1-foot increment for the deepest reading.

Finally, the bar was raised at the same increments as it was lowered and checked. For accuracy, the bar reading versus the echosounder reading, with draft entered, was reviewed at each increment. Survey personnel recorded the final sound velocity and draft values.

Following the field survey, J.F. Brennan, Foth, and Tetra Tech personnel reviewed the edited survey data to determine whether the required dredge elevations had been attained. Tetra Tech implemented the following procedures for its review:

- Created a modeled surface of post-dredge elevations for each DMU, using the J.F. Brennan-edited post-dredge QA survey data.
- Developed an isopach (sediment thickness contour) drawing for each DMU, which was used to compare the post-dredge QA survey modeled surface elevations (as the upper surface) and the design target elevations (as the lower surface).
- Used the isopach drawing to confirm whether dredging achieved the design target elevations for the DMU. Ninety percent or more of each DMU area was required to be at or below the design surface elevation, assuming there were no large contiguous areas remaining above design grade. Confirmed high subgrade locations within a DMU were considered to have achieved the target elevation.

J.F. Brennan and Tetra Tech also used the survey data to calculate the volume of sediment dredged in a DMU and to compare actual dredge overcuts to planned overcuts.

4.3.2 Overdredge Results

The target elevations provided to J.F. Brennan for dredge-only areas were the kriged 0.5 level-of-significance (LOS) surface representing the 1.0 part per million (ppm) PCB concentration surface (neat line) or dredge prism elevations, based on specific core data. In dredge-only areas, the overcut elevation is 6 inches below and perpendicular to the neat line elevation and side slopes where they are designed outside the neat line elevation. This overcut volume is a contractual tolerance that accommodates the accuracy limitations of the dredging equipment. In dredge and cap areas, the required dredge elevation is the depth designed to satisfy capping criteria in the ROD and ROD Amendment, or as otherwise approved by the Agencies.

The tables in Appendix D summarize the 2018 overdredge achieved by DMU/residual DMU (RDMU) for each dredge area. The overdredge information is presented in two ways: excluding all documented high subgrade areas and including high subgrade areas. The highest average overdredge value occurred in OU4-DNA-D70 DMU 1. The OU average overdredge value was calculated from the summation of all volume dredged below the design target elevation divided by the summation of all areas dredged below the design target elevation. This calculation illustrates how accurately the dredges have dredged sediment within the overcut allowance over a large area. It is also beneficial when creating new designs and estimates for upcoming dredge areas.

In OU4/OU5 for 2018, considering primary and residual dredging, the average overdredge achieved for the 125 DMUs where sediment was dredged to the 1.0 ppm remedial action level (RAL), including confirmed high subgrade, was 4.65 inches.

4.3.3 High Subgrade Areas

High subgrade is defined as deposits (generally clay, rock, till, gravel, dense sand, or concrete slabs) above the design elevation that cannot be efficiently dredged or dewatered and are typically not contaminated at significant levels due to the nature of the substrate (e.g., not soft sediment, low organic content). Lacustrine clay and till, for example, have been documented to have PCB concentrations ranging from well below the 1.0 ppm RAL to non-detectable; therefore, these kinds of deposits are not required to be dredged where they occur at an elevation above the modeled 0.5 LOS surface. Tetra Tech implemented certain procedures that were approved by the Agencies for identifying and quantifying high subgrade. When areas suspected to contain high subgrade were encountered (e.g., observing a clay plume emanating from the vicinity of the cutterhead or dense deposits, typically sand and/or gravel, detected by the dredge operator), J.F. Brennan notified Tetra Tech (and the SDDP operators) and provided QA survey data of the area(s). Tetra Tech entered the QA survey data into CADD software to graphically show the area(s) of suspected high subgrade. Once the areas were depicted graphically, Tetra Tech identified locations for collecting poling data and high subgrade samples to delineate the extent(s) of the suspected high subgrade area(s) and for high subgrade verification. Tetra Tech incorporated the field data into DMU project drawings that depicted post-dredge sediment thickness above the design elevation in dredge-only areas, or, in the case of dredge and cap remedies, the Agencies' approved prism-bottom elevation. A minimum of three sediment cores from each of the proposed high subgrade areas were required for verification. Tetra Tech identified additional core locations if the high subgrade area was significant in size or as other field conditions warranted.

Tetra Tech performed the poling and coring associated with verifying high subgrade areas in accordance with the High Subgrade SOP, provided in Appendix A of the CQAPP (Tetra Tech et al. 2015a). Foth provided QA auditing of the sampling events to determine whether the sampling was being completed in accordance with the SOP. Once on location, a 1.5-inch-diameter blunt aluminum pole was used to probe the river bottom to

estimate the soft sediment thickness. The poled depth was also taken to refusal to determine the consistency of the underlying potential high subgrade. Water depth was also obtained at each high subgrade location using a surveyor's rod with a 6-inch-diameter plate attached to the end.

If the soft sediment thickness was 0.3 foot or greater at the poling locations, a core sample was obtained using 2.7-inch-outside-diameter core tubes for visual confirmation of the probing results (see Appendix A, Photographs 13 and 14). Where thickness discrepancies between probing and coring results occurred, the coring result was used as the record of soft sediment thickness. If a sample could not be obtained after two coring attempts, it was assumed no soft sediment existed at that location.

Following poling and core sample collection in a DMU, the high subgrade area information was incorporated into the QA hydrographic survey post-dredge isopach drawings. For designation as a high subgrade area, all core samples (or poling in the absence of core samples) needed to indicate less than 0.3 foot of soft sediment above an underlying hard deposit. The areas confirmed as having high subgrade were considered to have met dredge target elevation in the calculations for determining if the 90 percent dredge elevation completion criterion was met. If the DMU failed the 90 percent criterion after including the high subgrade areas, the areas containing 0.3 foot or more of soft sediment would be identified on project drawings and provided to J.F. Brennan to perform cleanup dredge passes in the specified areas.

Appendix C contains high subgrade poling and core sample collection information for 2018. Documentation includes sample point locations, soft sediment thicknesses based on poling, and soft sediment thicknesses based on core sample measurements.

4.4 Post-Dredge Sampling

Based on post-dredge surveys, post-dredge confirmation sampling was completed. Typically, post-dredge confirmation sampling was conducted when 90 percent or more of the area was at or below the design elevation. Tetra Tech conducted high subgrade poling and sampling when the 90 percent dredge elevation criterion was not met, and high subgrade was believed to be present. However, high subgrade sampling was not performed if the DMU achieved the 90 percent target elevation criterion.

Sediment samples were collected from DMUs following sediment dredging to confirm removal of PCBs to less than the RAL concentration of 1.0 ppm. The methods and procedures for collecting cores and preparing samples for laboratory analyses are described in the Tetra Tech Post-Dredge Confirmation Sampling SOP, which is attached to the CQAPP (Tetra Tech et al. 2015a). Typically, five post-dredge confirmation core locations within a DMU were selected. Five locations were initially randomly selected. Tetra Tech moved some of these random locations to accommodate the A/OT's preference, for example, for creating a satisfactory distance from an adjacent DMU boundary or distance from another sample location. Tetra Tech submitted these locations to the A/OT for its review. The A/OT would sometimes relocate and/or add locations prior to approving the core locations and authorizing coring.

The as-built locations of the confirmation cores and results drawings, presented at the end of this report, include core locations for each dredge area. Table E-1 in Appendix E provides the post-dredge confirmation sample results.

4.5 Sediment Logging and Preparing Samples for Laboratory Analyses

The sediment cores were refrigerated overnight prior to logging, sampling, and undergoing laboratory analysis. At the beginning of the sampling procedure, the sediment water interface was marked and the water in the vertically oriented core tube was drained by drilling a hole in the tube above the sediment surface and removing

the top cap from the tube. After the water was drained, the core tube was oriented on a slanted cutting plane, cut lengthwise on opposite sides, and opened in two halves.

As part of logging the cores and preparing sediment samples, Tetra Tech recorded sediment characteristics, such as sediment type, color, and the presence of gravel and other specific features of the sediment, such as shells, wood fiber, and odor. Photographs 15 and 16 in Appendix A depict logging and sampling of collected cores.

Analytical samples were taken from 0.5-foot intervals measured from the sediment surface. Pace Analytical prepared the composite samples, which consisted of sediment collected from all five core locations (if recovered) in a DMU at 0-to-0.5-foot (designated "A"), 0.5-to-1.0-foot (designated "B"), and 1.0-to-1.5-foot (designated "C") intervals. Tetra Tech submitted the 15 discrete samples to Pace Analytical for dry compositing and analyses. Discrete interval samples were collected from all 0.5-foot intervals and either frozen in a secured freezer by Tetra Tech or sent to the Pace Analytical for drying, grinding, and holding.

4.5.1 Sample Labeling in Cores that Contained Accreted Sediment

In cores where comparison of the post-dredging and pre-coring bathymetry indicated that sediment had been deposited on the dredged surface, the first sample interval (i.e., 0.0- to 0.5-foot depth) was labeled "A", although some or all of that interval was deposited after the area was dredged.

4.5.2 Sediment Collection Documentation

During coring activities, staff logged field data daily into the RTK GPS data collector and field core collection forms (Appendix A, Photographs 11 and 12). Likewise, core processing data were downloaded daily from the RTK GPS data collection. Raw field data from sampling vessels and the sediment logging and sample preparation room were uploaded daily to the electronic database. The field core collection forms were QC reviewed prior to distribution. The database was stored and backed up on the Tetra Tech Green Bay server.

4.6 Identification of Re-Dredge Areas

The results of the post-dredge confirmation composite samples for the A, B, C intervals were used to determine if a sampled area needed to be re-dredged, residual sand covered, or residual capped, or required no further action. In limited areas, deeper post-dredge confirmation samples were collected and analyzed. These samples were logged in 0.5-foot intervals.

Post-dredge sampled areas that had PCB concentrations greater than or equal to 10 ppm in the composite "A" interval and PCB concentrations greater than or equal to 2 ppm PCB in the composite "B" interval were typically identified for residual dredging. Discrete samples were submitted for analyses if the composite samples exceeded 10 ppm for the "A" interval and/or 2 ppm for the "B" interval to identify which sub-area of the DMU should be re-dredged. Discrete samples from intervals deeper than 1.5 feet were submitted for analyses, when required. The discrete samples were also used to determine the horizontal extent of contamination and those areas of a DMU that required residual dredging.

Twenty-four re-dredge DMUs were identified from the following 18 dredge areas: DUTIL-020, DMC2, DNA-071, DUTIL-026-030, D35M, DMC7, D35NOP-DCA45, D35X, D43A, D44, D135A, D135B, D94C, DSC104, DUTIL-043-045, D159, D46A, and D47A. The post-dredge composite and discrete sample results are included in Table E-1 in Appendix E.

4.7 Post-Dredge PCB Results

Post-dredge confirmation sampling was performed in 118 DMUs in 60 dredge areas including: D135A, D135B, D138, D142, D157, D158, D159A, D159B, D160A, D160B, D162, D165A, D168, D170, D35EFG, D35H, D35J, D35M, D35NOP-DCA45, D35V, D35X, D39, D40A, D41, D43A, D43E, D44, D46A, D46D, D47A, D49, D67, D68B, D70, D79, D82, D94A, D94C, D94D, DCA44, DCA86, DFIK-088, DFIK-092, DMC1, DMC-2, DMC34, DMC7, DMC8, DNA-057, DNA-071, DNA-D70, DSC101, DSC104, DSC105, DSC106, DSC98, DUTIL-020, DUTIL-023-DCA45, DUTIL-026-030, and DUTIL-043-045. In total, 389 cores were collected in OU4/OU5 for confirmation analyses. A total of 1,544 post-dredge samples consisting of 563 composite samples and 981 discrete samples, including quasi-confirmation samples, were sent to Pace Analytical for PCB analysis. Post-dredge confirmation PCB results are presented in Table E-1 in Appendix E. Additionally, in accordance with the requirements stated in Section 7.2 of the Quality Assurance Project Plan (QAPP) (Tetra Tech et al. 2016), data validation was performed on 10 percent of post-dredge sample delivery groups.

Section 4.7.3, below, presents the details of the 2018 data validation effort, and Appendix F contains the data validation memoranda.

4.7.1 FIK and NA Confirm Sampling

Four full indicator kriging (FIK) model areas, eight No Action Confirm (NA Confirm) areas, and 21 Model Confirm (MC) areas were sampled. Table S-1 in Appendix S includes the FIK Confirm area sample results, Table S-2 contains the NA Confirm sample results, and Table S-4 contains the MC sample results.

4.7.2 Post-TSCA Dredge Sampling

Post-TSCA sampling was not conducted or required.

4.7.3 Post-Dredge PCB Data QA/QC

As specified in Section 7.2 of the QAPP (Tetra Tech et al. 2016), Pace Analytical generated an EDD file in Excel format for each post-dredge confirmation sample batch. These EDDs were posted with an individual sample data packet, which included the sample report and associated chain-of-custody (COC) forms, on the Tetra Tech Fox River SharePoint® site for the A/OT's review. Additionally, PCB concentration data from post-dredge confirmation samples were presented and reviewed at QC meetings held during production months. These data were discussed in small workgroup meetings with the A/OT to determine which type of residuals management would be implemented for each DMU.

Data generated through in-river sampling, such as post-dredge confirmation or poling location samples, were considered definitive data (as defined in the QAPP) with results of known and documented quality. As specified in QAPP Section 7.2.2.3, full validation was performed on approximately 10 percent of the definitive in-river data. To meet the minimum 10 percent data validation requirement, post-dredge confirmation samples, as well as design refinement, pre-cap, FIK, RA, NA Confirm, and "Beyond the Arc" samples were all considered in-river samples. A total of 396 samples, or 10.0 percent, underwent independent data validation. Aside from minor surrogate recovery and field/laboratory duplicate sample relative percent difference comments, all PCB and percent moisture data were independently validated as usable without additional qualification. Appendix F contains data validation technical memoranda produced by M.A. Kuehl and EcoChem, the independent validators for the 2018 in-river sediment samples.

In addition, the data validators verified the laboratories' compliance with methods, procedures, and contractual requirements by:

- Reviewing laboratory accreditation/certification records for the required list(s) of analytes
- Examining the traceability of the data from sample collection through analysis and reporting
- Confirming that holding time criteria were met, or deviations were documented and approved prior to analyses
- Confirming that required sampling and analytical methodologies were used
- Ensuring the required list(s) of analytes was reported
- Ensuring appropriate QC samples were analyzed at the required frequencies, and the results met performance criteria as outlined in the applicable QAPP worksheets
- Determining that laboratory data qualifiers were applied as specified in the methodologies and/or QAPP
- Reviewing sample names on COC forms to verify the correct sample protocol had been followed

4.8 Total Sediment Volume Dredged and Estimated PCB Mass Removed

Appendix D includes data regarding the dredge areas and DMUs completed where RAL sediment was dredged to the modeled neat line, dredge prism design elevations, or to confirmed high subgrade. Based on subsequent post-dredge confirmation sampling, each area was determined to: 1) be complete, 2) require residual dredging, or 3) require a residual sand cover. Appendix D also includes the percentage of DMUs requiring no further action, residual dredging, or the application of a residual sand cover following dredging to the design target elevation.

The in situ total volume of sediment dredged was 585,841.07 cy, from OU4 and OU5. Sediment volume was measured and tracked using hydrographic survey techniques. Pre-dredge and post-dredge survey data were reviewed and compared over the area of the DMUs where dredging occurred to calculate the volume of sediment dredged.

The term "PCB Mass Removal", as described in the 2007 ROD Amendment, is understood to refer to PCB mass that has been removed from OUs 2–5 because of contaminated sediment having been dredged, dewatered, and disposed of at an appropriate landfill. This excludes sediment that may have been displaced from local areas by some means other than dredging (e.g., sediment that was displaced due to scour, but remains in the river or perhaps Green Bay, and, therefore, is not removed from the Fox River and Green Bay ecosystems).

Based on a Technical Memorandum (Tetra Tech and Anchor QEA 2012c) and ongoing work group discussions between the A/OT and the design team, the parties agreed that calculation of estimated PCB mass removal for 2018 would be deferred. When a final calculation methodology is developed and accepted by the A/OT, the mass of PCB removed by dredging will be calculated accordingly and reported in a future RA Summary Report.

4.9 Dredging Productivity

This section provides an overview of dredging operations and efficiency for 2018.

4.9.1 Dredging Operations

From March 26 to November 10, 2018, the dredges worked 11,033.25 gross operational hours (GOH) combined. GOH are calculated based on the dredges operating 24 hours per day, 5 days per week for most of the season. The work week typically began at 7:00 a.m. on Monday and continued to 7:00 a.m. on Saturday. GOH are defined as hours available for the dredges to work even though they may not be dredging. Of these

11,033.25 GOH, 9043.75 were net operational hours (NOH) of dredging. NOH are defined as hours when the dredges performed dredging and are calculated for each dredge individually, as well as for a combined system representing all dredges. The individual and combined dredge information is summarized in Table 4-4.

Table 4-4. 2018 Operational Metrics for Each Dredge

	Utility Dredge	*Ashtabula*	*Ottawa River*	*Mark Anthony*	*EBC*
Standard Configuration First Pass					
GOH	829.00	501.25	940.25	2,718.50	346.0
NOH	670.75	436.25	800.75	2,300.50	177.50
Estimated Removal (cy)[1]	14,425	9,496	27,055	346,220	7,898
Estimated Removal Per GOH (cy)	17.4	18.9	28.8	127.4	22.8
Estimated Removal Per NOH (cy)	21.5	21.8	33.8	150.5	44.5
Efficiency	81%	87%	85%	85%	51%
Standard Configuration Second Pass					
GOH	448.5	328.75	595.75	937.50	74.00
NOH	297.75	276.75	512.00	779.25	42.00
Estimated Removal (cy) [1]	4,696	6,121	9,123	70,814	1,365
Estimated Removal Per GOH (cy)	10.5	18.6	15.3	75.5	18.4
Estimated Removal Per NOH (cy)	15.8	22.1	17.8	90.9	32.5
Efficiency	66%	84%	86%	83%	57%
Residual Dredging					
GOH	773.75	603.00	1,211.25	136.00	
NOH	577.00	526.00	1083.25	100.25	
Estimated Removal (cy) [1]	12,866	15,998	32,501	8,894	
Estimated Removal Per GOH (cy)	16.6	26.5	26.8	65.4	
Estimated Removal Per NOH (cy)	22.3	30.4	30.0	88.7	
Efficiency	75%	87%	89%	74%	
VicVac Configuration First Pass					
GOH			215.25		
NOH			190.25		
Estimated Removal (cy) [1]			4,453		
Estimated Removal Per GOH (cy)			20.7		
Estimated Removal Per NOH (cy)			23.4		
Efficiency			88%		
VicVac Configuration Second Pass					
GOH			374.50		
NOH			273.25		
Estimated Removal (cy) [1]			3,713		
Estimated Removal Per GOH (cy)			9.9		
Estimated Removal Per NOH (cy)			13.6		
Efficiency			73%		
Totals for All Configurations and Operation Type					
GOH	2,051.25	1,433.00	3,337.00	3,792.00	420.00
NOH	1,545.50	1,239.00	2,859.50	3,180.25	219.50
Estimated Removal (cy)[1]	31,987	31,615	76,845	425,928	9,263
Estimated Removal per GOH (cy)	15.6	22.1	23.0	112.3	22.1
Estimated Removal per NOH (cy)	20.7	25.5	26.9	133.9	42.2
Efficiency	75%	86%	86%	84%	52%

Notes:
[1] Estimated removal taken from daily reports. Does not reflect actual volumes derived from the QA surveys, which are listed in Table 4.3..

Abbreviations and Acronyms:
cy – cubic yards
GOH – gross operating hours
NOH – net operating hours
QA – Quality Assurance

Table 4-5. Project-to-Date Operational Metrics for Each Dredge

	Block Island	*Utility Dredge*	*Palm Beach*	*Ashtabula*	*Grand Calumet*	*Ottawa River*	*Fox River*	*Mark Anthony*	*EBC*
All Configurations and Attachments Project to Date (2009 to 2018)									
GOH	524.5	3,988.25	8,195.00	29,521.50	623.25	18,353.50	5,399.00	33,506.75	420.00
NOH	331.75	3,038.25	6,995.75	25,023.50	478.25	16,335.5	4,780.75	28,018.50	219.50
Estimated Removal (cy) 1	5,156	49,993	197,129	703,622	7,928	513,761.0	125,808	3,703,149.00	9,263
Estimated Removal Per GOH (cy)	9.8	12.5	24.0	23.8	12.7	28.0	23.3	110.5	22.1
Estimated Removal Per NOH (cy)	15.5	16.5	28.2	28.1	16.6	31.4	26.3	132.2	42.2
Efficiency	63%	76%	85%	85%	77%	89%	89%	84%	52%

Notes:
[1] Estimated removal taken from daily reports. Does not reflect actual volumes derived from the QA surveys, which are listed in Table 4.3..

Acronyms and Abbreviations:
cy – cubic yards
GOH – gross operating hours
NOH – net operating hours
QA – Quality Assurance

4.9.2 Dredging Efficiency

Percent uptime is the percentage of time that key equipment is operating compared to the total time that equipment is available for operations (not including scheduled off days, such as holidays or weekends). These data are collected and tracked so that adjustments, if necessary, can be made early in the season to maintain and/or improve efficiency.

The total project dredge percent uptime (equal to the dredge efficiency) was 82 percent. This was calculated by dividing the total NOH (total hours that dredging occurred) of all dredges by the total GOH (total hours available to dredge) of all dredges. The 18 percent downtime resulted from a variety of causes. The most common interruptions were associated with the startup and shutdown of dredge systems, dredge movements, and dredge repairs, and the SDDP being at capacity.

Other interruptions resulted from:

- Flushing the 8- and 10-inch dredge pipelines
- Cleaning the cutterhead of dense clay and debris
- Experiencing weather delays caused by ice flows and waves
- Repositioning the slurry pipeline
- Performing maintenance, and downtime of the SDDP and WTP
- Processing fine sediment/water in the SDDP and WTP, which is necessarily slower than for sediment with lower fractions of fine-grained sediment

All interruptions recorded during 2018 operations, which were included in the calculation of efficiency, are listed in Table 4-6. Many of these interruptions are commonplace during hydraulic dredging operations and were anticipated to occur. Table 4-7 contains a dredge interruption summary for all 10 years of operation, 2009 through 2018.

Table 4-6. 2018 Dredge Interruption Summary

Cause of Interruption		Time Consumption/Interruption (hours)					
		Utility Dredge	*Ashtabula*	*Ottawa River*	*Mark Anthony*	*EBC*	**Total**
OPERATIONAL	Obstructions	0.25	0.25	1.50	0.00	1.50	3.50
	Diver Break	0.00	0.00	0.00	0.00	0.00	0.00
(Sediment)	Clean Pipeline	17.50	7.00	28.00	11.00	0.75	64.25
	Clean Cutterhead	89.75	29.50	33.00	28.50	36.50	217.25
	Clean Main Pump	19.75	11.50	12.50	0.75	10.50	55.00
	Change Cutterhead	25.75	3.75	19.25	0.25	104.50	153.50
(Execution)	Move Dredge	26.75	9.50	70.75	43.75	2.50	153.25
	Move and Repair Pipeline	13.75	7.25	20.25	54.00	0.25	95.50
	Anchors	0.00	0.00	0.00	0.00	0.00	0.00
	Mob Dredge to New Area	27.75	1.25	5.50	6.00	5.25	45.75
(Mechanical)	Sensors, DredgePack®, GPS	24.00	12.25	15.25	5.00	4.25	60.75
	Engine Room & Spuds	11.50	14.50	22.50	71.75	0.50	120.75
	Startup/Shutdown	150.50	26.50	150.75	85.00	13.00	425.75
	Dredge Pumps	1.00	2.25	3.75	0.75	0.75	8.50
	Booster	8.75	22.00	10.00	37.50	6.75	85.00
PROJECT	WTP	0.00	0.00	0.00	5.50	1.75	7.25
	SDDP	27.75	5.75	33.00	151.25	4.50	222.25
	Load-Out	0.00	0.00	0.00	0.00	0.00	0.00
OUTSIDE	Water Quality and Weather	0.00	36.00	35.50	95.75	0.00	167.25
	Miscellaneous	47.75	2.25	8.00	6.25	6.75	71.00
	Boat Traffic	13.25	2.50	8.00	8.75	0.50	33.00
Total Interruptions		505.75	194.00	477.5	611.75	200.50	1,989.50
Net Operational		1,545.50	1,239.00	2,859.50	3,180.25	219.50	9,043.75
Gross Services		2,051.25	1,433.00	3,337.00	3,792.00	420.00	11,033.25
Efficiency		75%	86%	86%	84%	52%	82%

Acronyms and Abbreviations:
GPS – global positioning system
Mob – mobilization
SDDP – Sediment Desanding and Dewatering Plant
WTP – Water Treatment Plant

Table 4-7. Project-to-Date Dredge Interruption Summary

Cause of Interruption		Time Consumption/Interruption (hours)										Total % of GOH
		Palm Beach	*Utility Dredge*	*Block Island*	*Ashtabula*	*Fox River*	*Ottawa River*	*Mark Anthony*	*Grand Calumet*	*EBC*	**Total**	
OPERATIONAL	Obstructions	1.00	1.50	0.00	2.00	0.00	3.25	7.25	0.00	1.50	16.50	0.02%
	Diver Break	0.00	0.25	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00%
(Sediment)	Clean Pipeline	92.25	17.50	0.00	327.25	191.50	188.25	78.25	4.00	0.75	899.75	0.89%
	Clean Cutterhead	11.00	131.50	0.50	145.50	8.00	136.25	439.75	0.75	36.50	909.75	0.90%
	Clean Main Pump	9.25	42.75	2.25	70.25	5.75	63.75	74.50	0.00	10.50	279.00	0.27%
	Change Cutterhead	3.75	34.75	9.25	75.50	16.00	54.50	136.50	1.50	104.50	436.25	0.43%
(Execution)	Move Dredge	123.00	60.50	10.00	401.50	111.75	330.00	402.25	8.75	2.50	1,450.25	1.43%
	Move and Repair Pipeline	40.00	22.75	0.25	125.75	34.50	164.00	264.75	2.75	0.25	655.00	0.64%
	Diver Changeout	0.00	0.00	16.25	0.00	0.00	0.00	0.00	0.00	0.00	16.25	0.02%
	Anchors	22.25	4.25	0.00	4.00	0.75	1.00	14.50	0.50	0.00	47.25	0.05%
	Mob Dredge to New Area	63.75	55.25	0.00	110.00	7.00	116.00	138.75	15.00	5.25	511.00	0.50%
(Mechanical)	Sensors, DredgePack®, GPS	23.50	36.00	0.75	47.25	12.75	47.75	98.50	7.50	4.25	278.25	0.27%
	Engine Room & Spuds	71.25	56.00	6.25	175.50	32.50	121.75	447.75	3.75	0.50	915.25	0.90%
	Startup/Shutdown	84.50	258.25	108.75	574.25	74.50	762.50	507.75	6.50	13.00	2,390.00	2.35%
	Dredge Pumps	0.50	4.00	0.00	16.00	0.50	20.75	22.25	0.00	0.75	64.75	0.06%
	Booster	60.50	47.50	0.00	92.25	31.50	136.25	179.75	5.00	6.75	559.50	0.55%
PROJECT	WTP	88.50	0.50	0.00	67.25	34.25	149.50	289.00	0.00	1.75	630.75	0.62%
	SSDP	201.75	42.00	0.00	376.00	31.50	338.75	2,944.00	3.00	4.50	3,941.50	3.88%
	Load-Out	0.00	17.75	0.00	38.00	0.75	41.50	57.75	0.00	0.00	155.75	0.15%
OUTSIDE	Water Quality and Weather	40.50	8.25	2.00	36.75	0.00	37.00	106.25	0.00	0.00	230.75	0.23%
	Miscellaneous	262.00	91.25	23.50	742.25	24.75	267.50	357.00	86.00	6.75	1,861.00	1.83%
	Boat Traffic	0.00	17.75	12.75	22.50	0.00	36.50	43.00	0.00	0.50	133.00	0.13%
	Total Interruptions	1,199.25	950.25	192.75	3,449.75	618.25	3,016.75	6,609.50	145.00	200.50	16,382.00	
	Net Operational	6,995.75	3,038.25	331.75	25,023.50	4,780.75	16,335.50	28,018.75	478.25	219.50	85,222.00	
	Gross Services	8,195.00	3,988.50	524.50	28,473.25	5,399.00	19,352.25	34,628.25	623.25	420.00	101,604.00	
	Efficiency	85%	76%	63%	88%	89%	84%	81%	77%	52%	84%	

Acronyms and Abbreviations:
GOH – gross operating hours
GPS – global positioning system
Mob – mobilization
SDDP – Sediment Desanding and Dewatering Plant
WTP – Water Treatment Plant

When situations occurred that caused downtime, corrective actions were taken as soon as possible, thus maximizing operational uptime. The 18 percent downtime value excludes periods when no dredging was planned. For 2018, the dredges averaged an efficiency of 82 percent. Efficiency of the dredges was measured by the uptime when at least one of the dredges was operating.

Operational reporting was separated into the following five production categories for internal activity codes, as listed in the daily production reports:

1. Standard configuration cutterhead first pass
2. Standard configuration cutterhead second pass
3. Secondary configuration/Vic Vac dredging first pass
4. Secondary configuration/Vic Vac dredging second pass
5. Residual dredging

First pass dredging was reported when a dredge covered a primary dredge design for the first time. Second pass dredging was reported when a dredge covered an area that had been dredged previously during the 2018 season. Residual dredging was reported when an area or DMU required re-dredging based on post-dredge PCB confirmation sampling and analyses.

During the 2018 season, the 10-inch dredge *Mark Anthony* covered 2,597,694 square feet of first pass operations and 2,508,636 square feet of second pass operations. The 8-inch dredges covered 1,375,958 square feet during first pass operations and 1,243,601 square feet during second pass operations. In summary, to achieve the target elevation, second-pass dredging was required in 94 percent of the primary dredge areas. This means that after completing a first pass in a primary dredge area, the dredge usually made one more pass through the area to clear the area to 90 percent attainment.

The production efficiency of dredges was also calculated for each dredge for each designed dredging area. Table V-1 in Appendix V summarizes the operational hours for both individual dredges and combined dredges, per the designed dredging area.

Table 4-8 lists the volume of the 6-inch overdredge allowance, the actual volume dredged below the neat line, and the variance for each DMU where final dredging was completed during 2018. If dredge volumes can be reduced while still meeting RAOs, dredging will be more efficient, resulting in a reduction of the amount of sediment requiring desanding and dewatering and the amount of filter cake requiring transportation and disposal. Reducing dredge volumes may also shorten the schedule for project completion.

Table 4-8. 2018 Variances between Planned and Actual Overdredge Volumes for Completed Dredge Areas

Area	DMU	Planned Volume of 6-Inch Overcut (cy)	Actual Volume Dredged Below Neat Line (cy)1	Variance (cy)2,3
OU4-D82	RDMU 1	238.49	166.18	72.31
OU4-DFIK-088	1	24.67	16.63	8.04
OU4-DUTIL-020	RDMU 1A	138.80	97.46	41.34
OU4-DUTIL-020	RDMU 1AR	240.77	183.78	56.99
OU4-DUTIL-020	RDMU 1AR2	362.34	214.56	147.78
OU4-DUTIL-020	RDMU 1B	332.97	269.16	63.81
OU4-DUTIL-020	RDMU 1D	98.04	78.88	19.16

Area	DMU	Planned Volume of 6-Inch Overcut (cy)	Actual Volume Dredged Below Neat Line (cy)1	Variance (cy)2,3
OU4-DUTIL-020	RDMU 1E	438.81	295.74	143.07
OU4-D40A	RDMU 2	1,571.02	1,152.14	418.88
OU4-D40A	RDMU 3	819.96	592.23	227.73
OU4-D40A	RDMU 4	717.09	504.38	212.71
OU4-DFIK-092	1	340.47	213.88	126.59
OU4-D39	RDMU 2R	560.68	419.87	140.81
OU4-D39	RDMU 6R	951.53	646.71	304.82
OU4-D79	RDMU 1R	219.99	123.42	96.57
OU4-D35H	RDMU 5R	1,434.89	879.12	555.77
OU4-D68B	RDMU 5R	432.72	113.46	319.26
OU4-D41	RDMU 2R	718.17	484.47	233.70
OU4-DUTIL-023-DCA40	RDMU 1	363.29	316.24	47.05
OU4-DNA-057	1	60.15	31.84	28.31
OU4-DNA-D70	1	61.00	50.40	10.60
OU4-D35J	RDMU 1	1,336.36	1,008.07	328.29
OU4-D35J	RDMU 2	1,421.27	1,043.99	377.28
OU4-DMC1	1	424.15	215.39	208.76
OU4-DMC2	3	311.10	250.64	60.46
OU4-DMC2	4B	369.35	237.96	131.39
OU4-DMC2	5B	389.80	314.83	74.97
OU4-DMC2	10	500.56	380.37	120.19
OU4-DMC2	12	24.94	19.76	5.18
OU4-DMC2	13	29.52	22.76	6.76
OU4-DMC2	20	140.67	70.97	69.70
OU4-DNA-071	1	71.83	29.82	42.01
OU4-DNA-071	2	178.21	110.61	67.60
OU4-DUTIL-026-030	1	103.15	82.96	20.19
OU4-DUTIL-026-030	2	246.11	207.01	39.10
OU4-DUTIL-026-030	3	186.06	150.82	35.24
OU4-DUTIL-026-030	4	132.82	116.34	16.48
OU4-DCA44	1	33.26	21.30	11.96
OU4-DCA44	2	31.62	27.61	4.01
OU4-D35M	RDMU 1	1,615.18	1,243.56	371.62
OU4-D35M	RDMU 2	1,290.15	863.56	426.59
OU4-D35M	RDMU 3	1,514.46	1,145.14	369.32
OU4-D35X	RDMU 1	398.09	320.71	77.38

Area	DMU	Planned Volume of 6-Inch Overcut (cy)	Actual Volume Dredged Below Neat Line (cy)1	Variance (cy)2,3
OU4-D35NOP-DCA45	RDMU 3	877.90	655.87	222.03
OU4-D35NOP-DCA45	RDMU 4	195.86	144.37	51.49
OU4-D35NOP-DCA45	RDMU 5	276.44	193.31	83.13
OU4-D35NOP-DCA45	7	440.49	359.81	80.68
OU4-DMC8	1	78.68	68.77	9.91
OU4-DMC7	1	152.71	104.01	48.70
OU4-D43A	7	1,111.72	228.35	883.37
OU4-D44	3	918.72	688.10	230.62
OU4-D44	4	746.77	352.86	393.91
OU4-D162	1	250.35	171.43	78.92
OU4-D168	1	218.56	138.64	79.92
OU4-D94D	1	214.69	116.41	98.28
OU4-DSC105	1	225.30	150.08	75.22
OU4-DSC105	2	95.92	68.95	26.97
OU4-D46D	1	379.07	227.81	151.26
OU4-DUTIL-043-045-2	1	453.89	297.19	156.70
OU4-DUTIL-043-045-3	1	131.37	83.60	47.77
OU4-DUTIL-043-045-4	1	173.17	124.79	48.38
OU4-D170	1	412.53	269.77	142.76
OU4-D46A	1	846.02	648.76	197.26
OU4-D46A	2	128.58	84.74	43.84
OU4-D46A	3	999.23	819.99	179.24
OU4-D159B	1	741.20	441.71	299.49
OU4-D47A	1	439.80	289.92	149.88
OU4-D160A	1	57.75	53.74	4.01
OU4-DCA86	1	235.59	157.93	77.66
OU4-D160B	1	53.57	36.02	17.55
OU4-D47D	3	983.93	401.15	582.78
OU4-DCA85B	1	977.39	662.49	314.90
OU4-D46G	1	279.46	184.32	95.14
OU4-D46E	1	633.27	219.27	414.00
OU4-D77C	1	309.25	120.72	188.53
OU4-D47B	2	456.54	346.34	110.20
OU4-D47B	3	533.64	313.07	220.57
OU4-D47H	3	147.27	94.19	53.08

Area	DMU	Planned Volume of 6-Inch Overcut (cy)	Actual Volume Dredged Below Neat Line (cy)1	Variance (cy)2,3
OU4-D138	1	454.71	231.23	223.48
OU4-D138	2	1,148.15	591.80	556.35
OU4-D138	3	566.97	367.36	199.61
OU4-D138	4	497.04	332.12	164.92
OU4-D138	5	544.94	266.97	277.97
OU4-D138	6	799.06	407.02	392.04
OU4-DMC34	1	65.63	39.53	26.10
OU4-D49	1	363.45	322.38	41.07
OU4-D49 MICRO	101	969.49	512.22	457.27
OU4-D49 MICRO	102	1,075.45	595.60	479.85
OU4-D47EFG	1	834.61	531.16	303.45
OU4-D47EFG	5	1,549.54	1,111.68	437.86
OU4-D47EFG	6	1,592.03	1,359.49	232.54
OU4-D47EFG	7	1,606.40	1,002.31	604.09
OU4-D47EFG	8	1,614.82	1,038.07	576.75
OU4-D161	1	505.37	495.48	9.89
OU4-DCA57 Micro	102	1,081.41	919.82	161.59
OU4-D47C	2	693.49	440.50	252.99
OU4-D47C	3	1,274.25	1,071.06	203.19
OU4-D47C	5	1,525.61	976.15	549.46
OU4-D47C	6	1,599.19	1,182.00	417.19
OU5-D47C	7	448.36	394.34	54.02
OU4-D47C Micro	103	1,537.32	1,212.01	325.31
OU4-D47C Micro	104	1,303.04	1,013.12	289.92
OU5-D54	9	1,093.95	896.77	197.18
OU5-D54	10	895.67	638.21	257.46
OU5-D54	11	1,267.07	752.92	514.15
OU5-D54	12	703.66	601.33	102.33
OU5-D54 Micro	101	828.35	630.72	197.63
OU4-DCA60	1	400.31	290.58	109.73
OU4-DCA60	2	436.75	307.97	128.78
OU5-DCA60	3	768.22	579.22	189.00
OU5-DCA60	4	756.70	556.62	200.08
OU5-DCA60	5	716.95	602.07	114.88
OU5-DCA60	6	777.88	607.03	170.85
OU5-DCA60	8	717.35	545.55	171.80
2018 Totals		**69,064**	**47,476**	**21,589**

Area	DMU	Planned Volume of 6-Inch Overcut (cy)	Actual Volume Dredged Below Neat Line (cy)1	Variance (cy)2,3
2017 Totals		**84,547**	**62,094**	**22,452**
2016 Totals		**73,263**	**50,373**	**22,890**
2015 Totals		**123,792**	**133,395**	**-9,603**
2014 Totals		**112,134**	**103,798**	**8,336**
2013 Totals		**192,769**	**182,546**	**10,223**
2012 Totals		**41,298**	**32,708**	**8,590**
2011 Totals		**65,829**	**63,979**	**1,850**
2010 Totals		**121,129**	**112,734**	**8,395**
2009 Totals		**195,150**	**187,281**	**7,869**
Project Totals		**1,078,975**	**976,384**	**102,591**

Notes:
[1] Actual volume dredged below neat line is derived from post-dredge QA surveys.
[2] The variance is the difference between the volume of the 6-inch overdredge tolerance and the actual volume dredged below the neat line.
[3] A red value indicates more volume was dredged than planned.

Abbreviations and Acronyms:
cy – cubic yards
DMU – Dredge Management Unit
QA – quality assurance
RDMU – Residual Dredge Management Unit

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Dredge and Residual Dredge Drawings

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OU4-D47C MICRO-104 Completion Summary

Figure 4-241 OU5-D54-9 Post Dredge As-built Surface
OU5-D54-9 Completion Summary

Figure 4-242 OU5-D54-10 Post Dredge As-built Surface
OU5-D54-10 Completion Summary

Figure 4-243 OU5-D54-11 Post Dredge As-built Surface
OU5-D54-11 Completion Summary

Figure 4-244 OU5-D54-12 Post Dredge As-built Surface
OU5-D54-12 Completion Summary

Figure 4-245 OU5-D54 MICRO-101 Post Dredge As-built Surface
OU5-D54 MICRO-101 Completion Summary

Figure 4-246 OU4-DCA60-1 Post Dredge As-built Surface
OU4-DCA60-1 Completion Summary

Figure 4-247 OU4-DCA60-2 Post Dredge As-built Surface
OU4-DCA60-2 Completion Summary

Figure 4-248 OU5-DCA60-3 Post Dredge As-built Surface
OU5-DCA60-3 Completion Summary

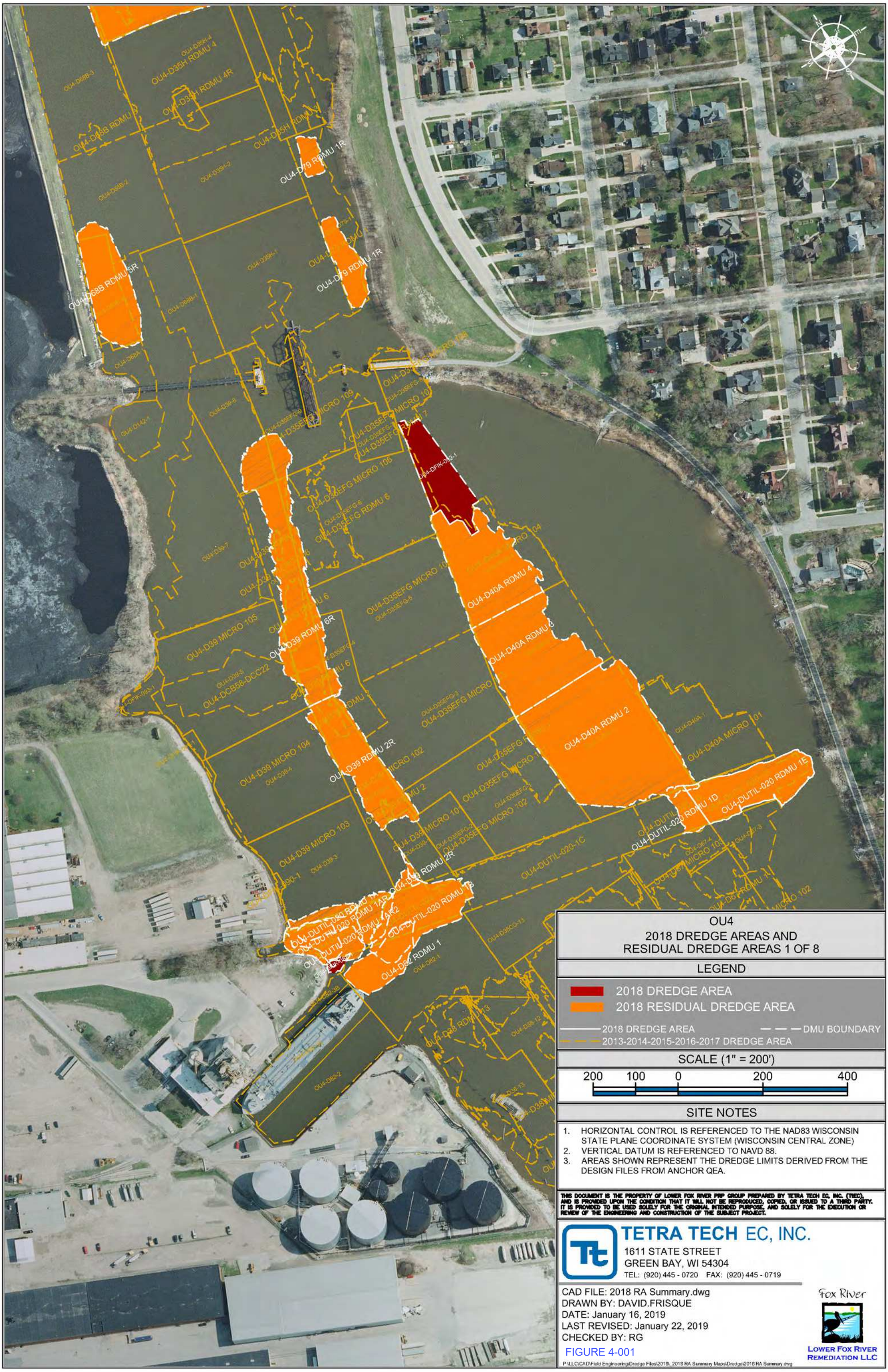
2018 Summary Drawing Figure List

Figure 4-249 OU5-DCA60-4 Post Dredge As-built Surface
OU5-DCA60-4 Completion Summary

Figure 4-250 OU5-DCA60-5 Post Dredge As-built Surface
OU5-DCA60-5 Completion Summary

Figure 4-251 OU5-DCA60-6 Post Dredge As-built Surface
OU5-DCA60-6 Completion Summary

Figure 4-252 OU5-DCA60-8 Post Dredge As-built Surface
OU5-DCA60-8 Completion Summary



OU4
2018 DREDGE AREAS AND
RESIDUAL DREDGE AREAS 1 OF 8

LEGEND

2018 DREDGE AREA
2018 RESIDUAL DREDGE AREA

2018 DREDGE AREA — — — DMU BOUNDARY
2013-2014-2015-2016-2017 DREDGE AREA

SCALE (1" = 200')

200 100 0 200 400

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88.
3. AREAS SHOWN REPRESENT THE DREDGE LIMITS DERIVED FROM THE DESIGN FILES FROM ANCHOR QEA.

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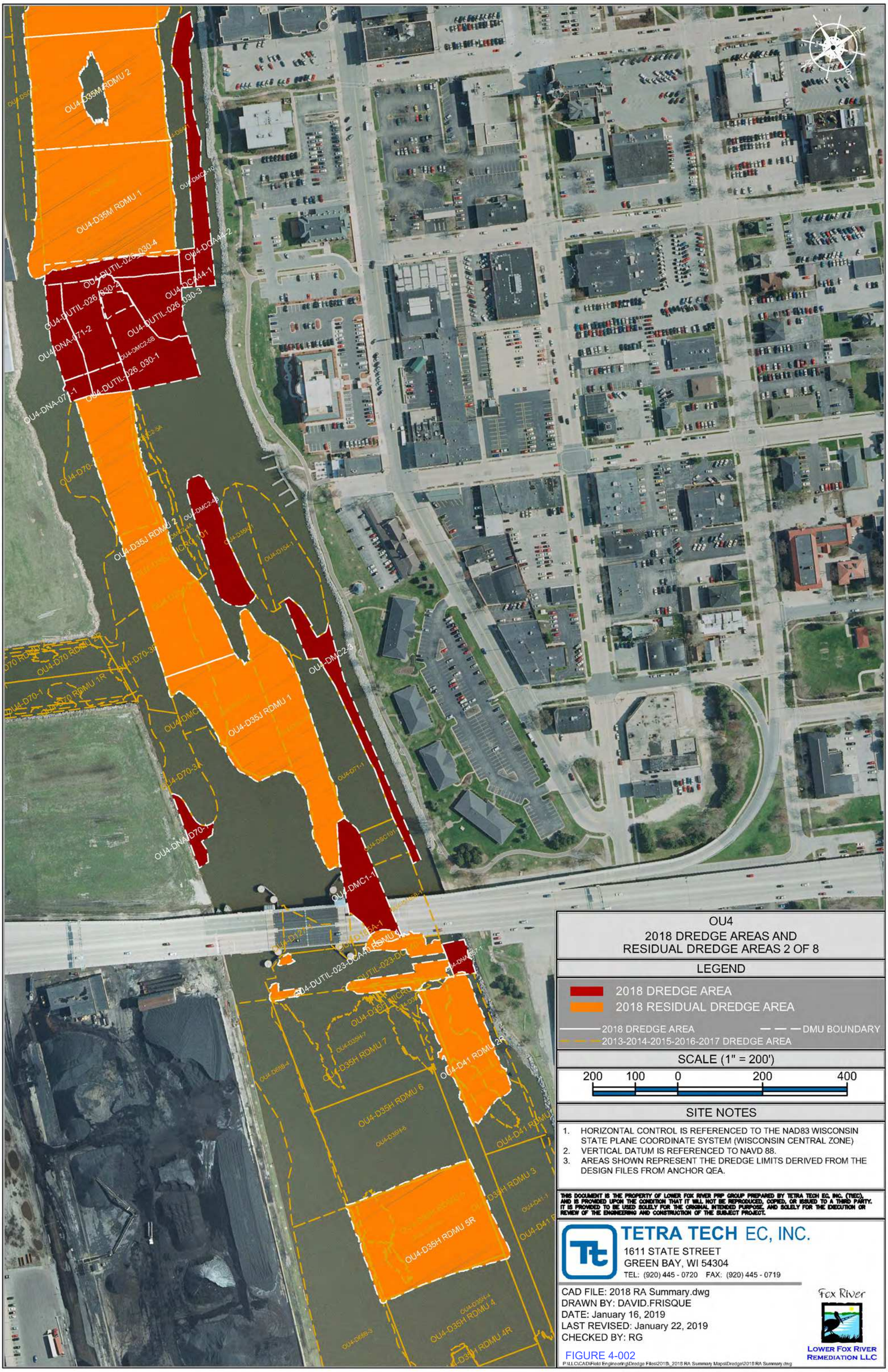
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FIGURE 4-001

Fox River
LOWER FOX RIVER REMEDIATION LLC

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OU4
2018 DREDGE AREAS AND RESIDUAL DREDGE AREAS 2 OF 8

LEGEND

2018 DREDGE AREA

2018 RESIDUAL DREDGE AREA

2018 DREDGE AREA — — — DMU BOUNDARY

2013-2014-2015-2016-2017 DREDGE AREA

SCALE (1" = 200')

200 100 0 200 400

SITE NOTES

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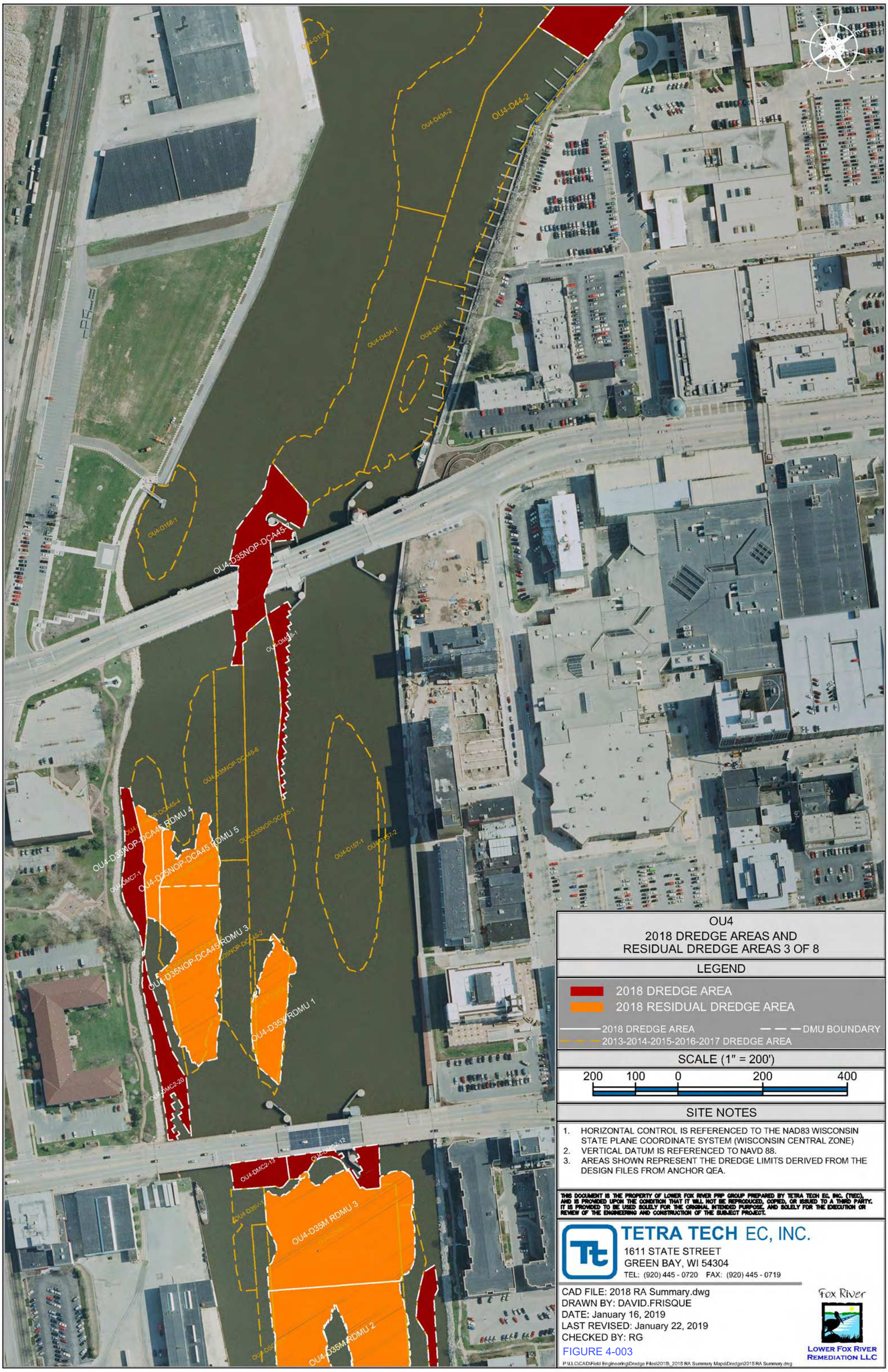
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Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-002

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OU4
2018 DREDGE AREAS AND
RESIDUAL DREDGE AREAS 3 OF 8

LEGEND

2018 DREDGE AREA
2018 RESIDUAL DREDGE AREA
2018 DREDGE AREA
DMU BOUNDARY
2013-2014-2015-2016-2017 DREDGE AREA

SCALE (1" = 200')

200 100 0 200 400

SITE NOTES

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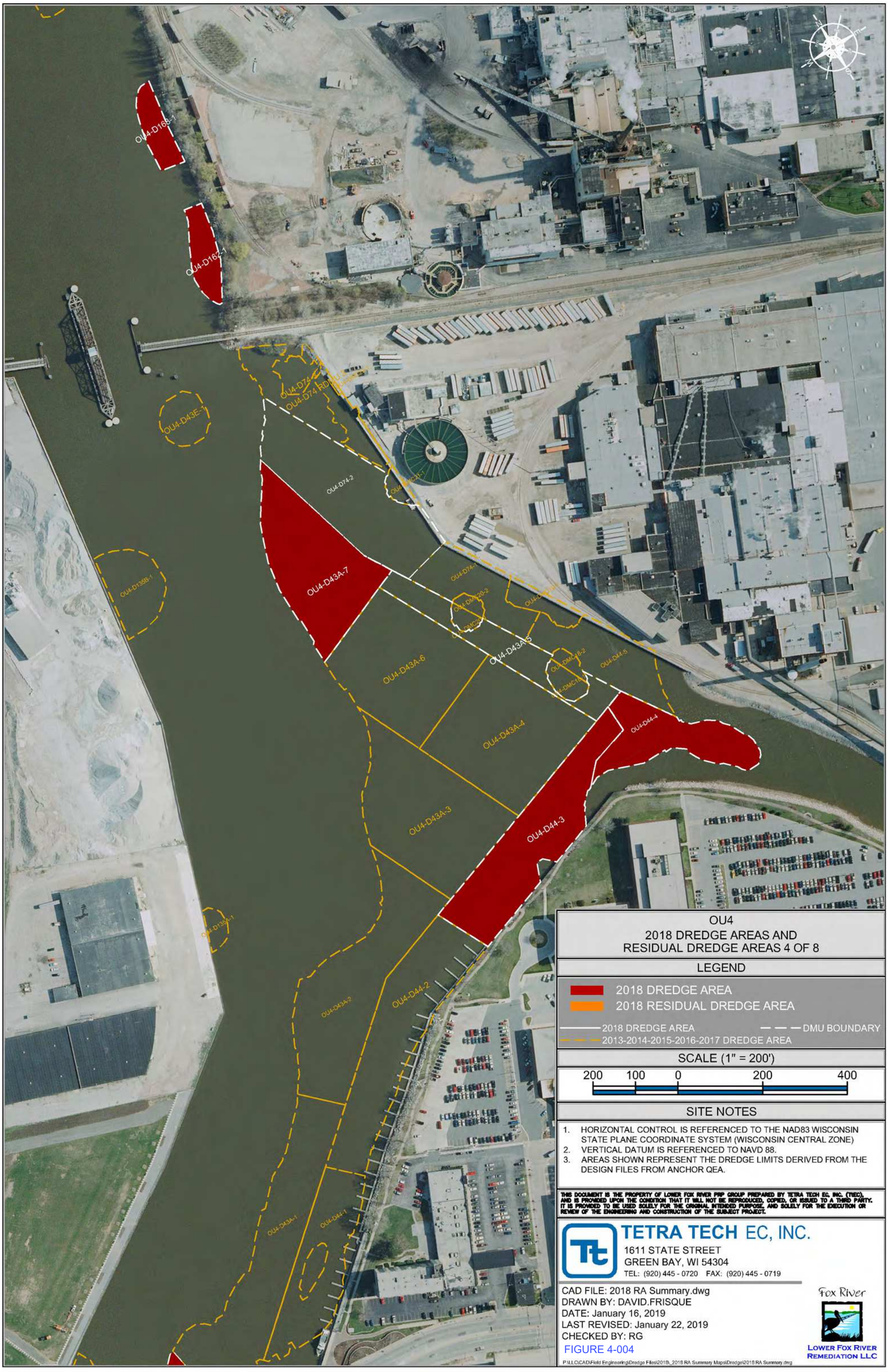
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FIGURE 4-003

Fox River
LOWER FOX RIVER REMEDIATION LLC

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OU4
2018 DREDGE AREAS AND
RESIDUAL DREDGE AREAS 4 OF 8

LEGEND

2018 DREDGE AREA
2018 RESIDUAL DREDGE AREA

2018 DREDGE AREA — — — DMU BOUNDARY
2013-2014-2015-2016-2017 DREDGE AREA

SCALE (1" = 200')

200 100 0 200 400

SITE NOTES

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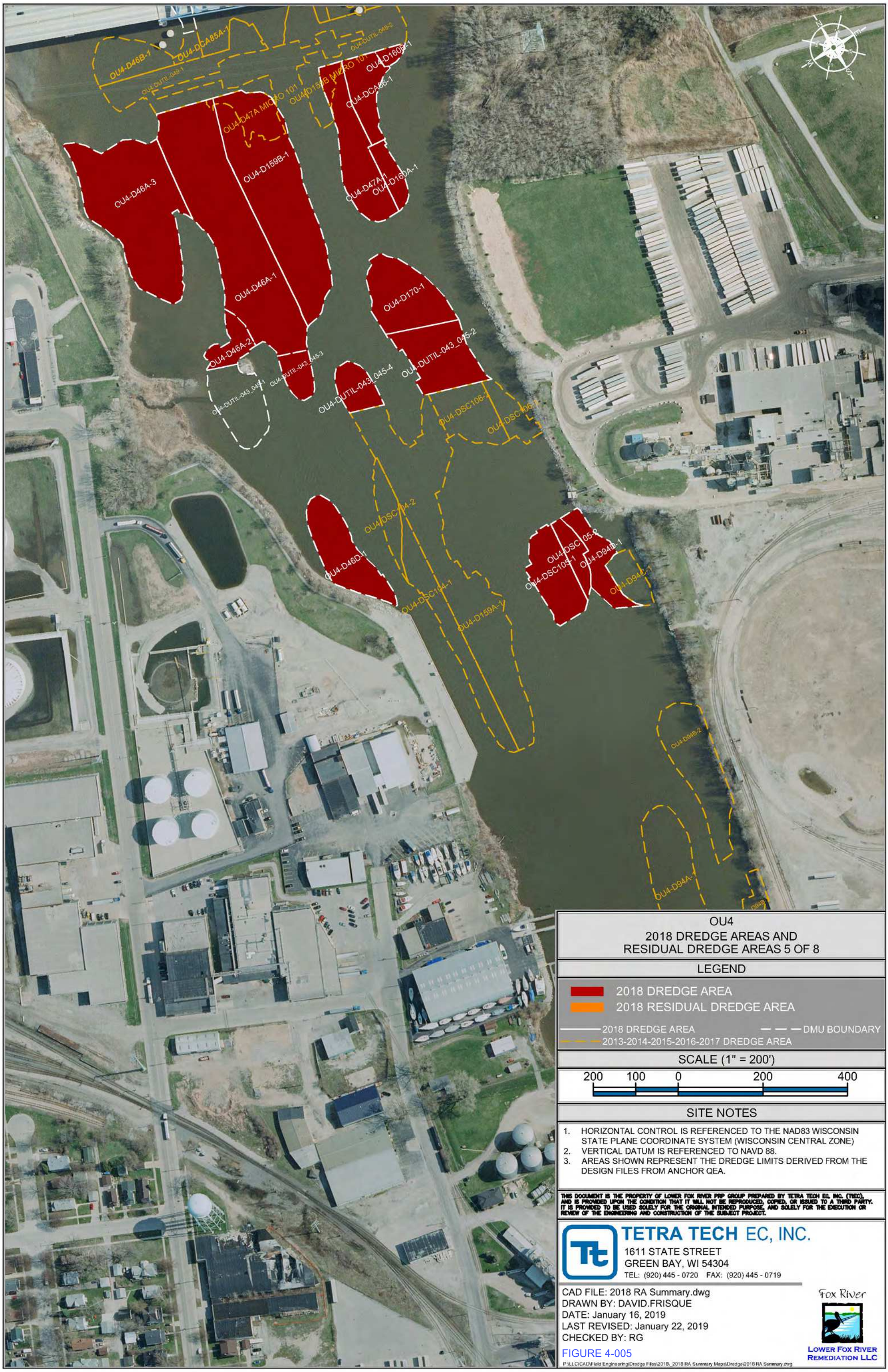
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FIGURE 4-004

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Fox River
LOWER FOX RIVER REMEDIATION LLC



OU4
2018 DREDGE AREAS AND
RESIDUAL DREDGE AREAS 5 OF 8

LEGEND

2018 DREDGE AREA
2018 RESIDUAL DREDGE AREA
2018 DREDGE AREA
DMU BOUNDARY
2013-2014-2015-2016-2017 DREDGE AREA

SCALE (1" = 200')

200 100 0 200 400

SITE NOTES

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FIGURE 4-005

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Fox River
LOWER FOX RIVER REMEDIATION LLC



OU4
2018 DREDGE AREAS AND RESIDUAL DREDGE AREAS 6 OF 8

LEGEND

- 2018 DREDGE AREA
- 2018 RESIDUAL DREDGE AREA
- 2018 DREDGE AREA
- DMU BOUNDARY
- 2013-2014-2015-2016-2017 DREDGE AREA

SCALE (1" = 200')

200 100 0 200 400

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
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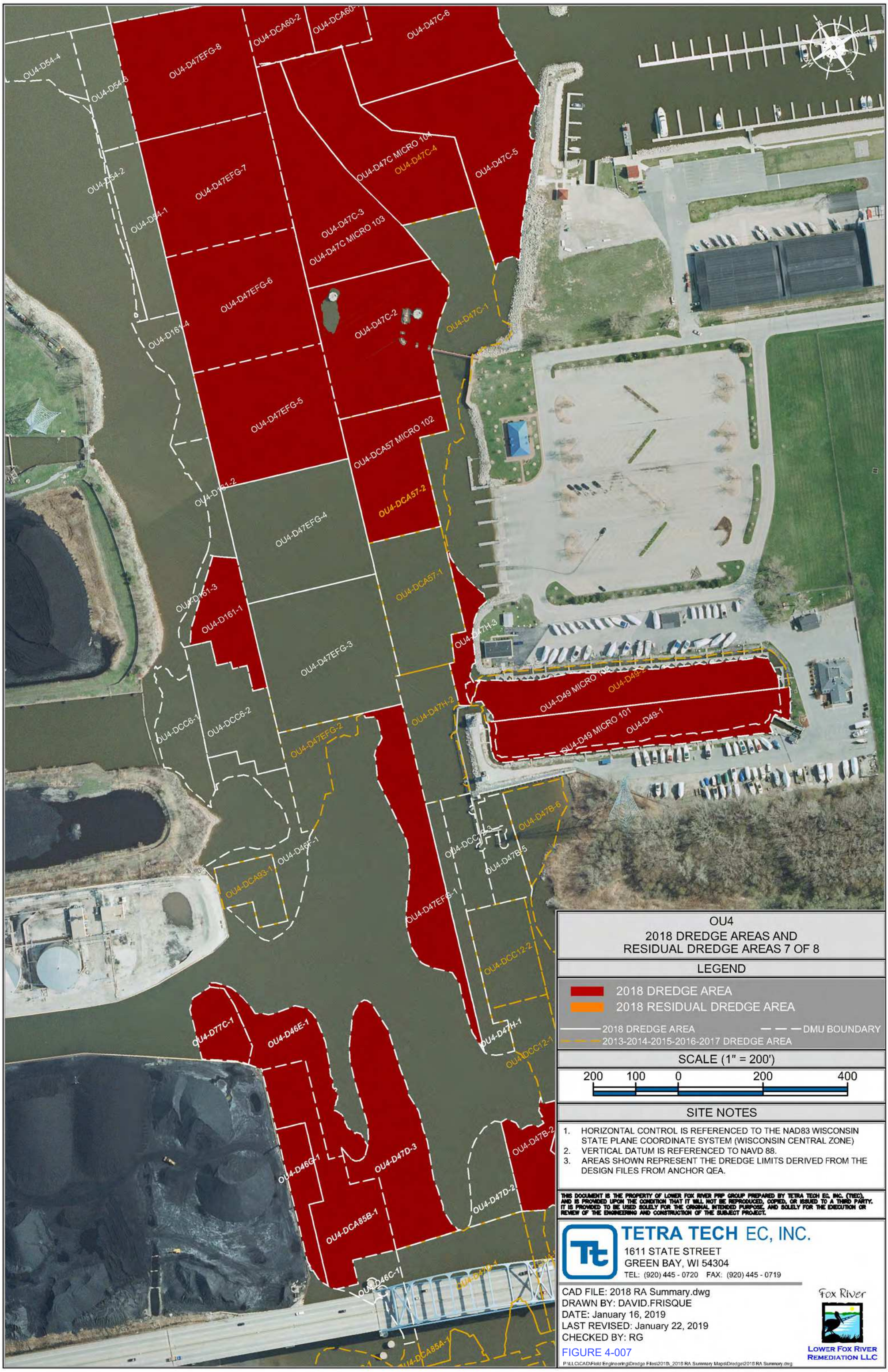
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FIGURE 4-006

Fox River
LOWER FOX RIVER REMEDIATION LLC

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OU4
2018 DREDGE AREAS AND RESIDUAL DREDGE AREAS 7 OF 8

LEGEND

2018 DREDGE AREA

2018 RESIDUAL DREDGE AREA

2018 DREDGE AREA — — — DMU BOUNDARY

2013-2014-2015-2016-2017 DREDGE AREA

SCALE (1" = 200')

200 100 0 200 400

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
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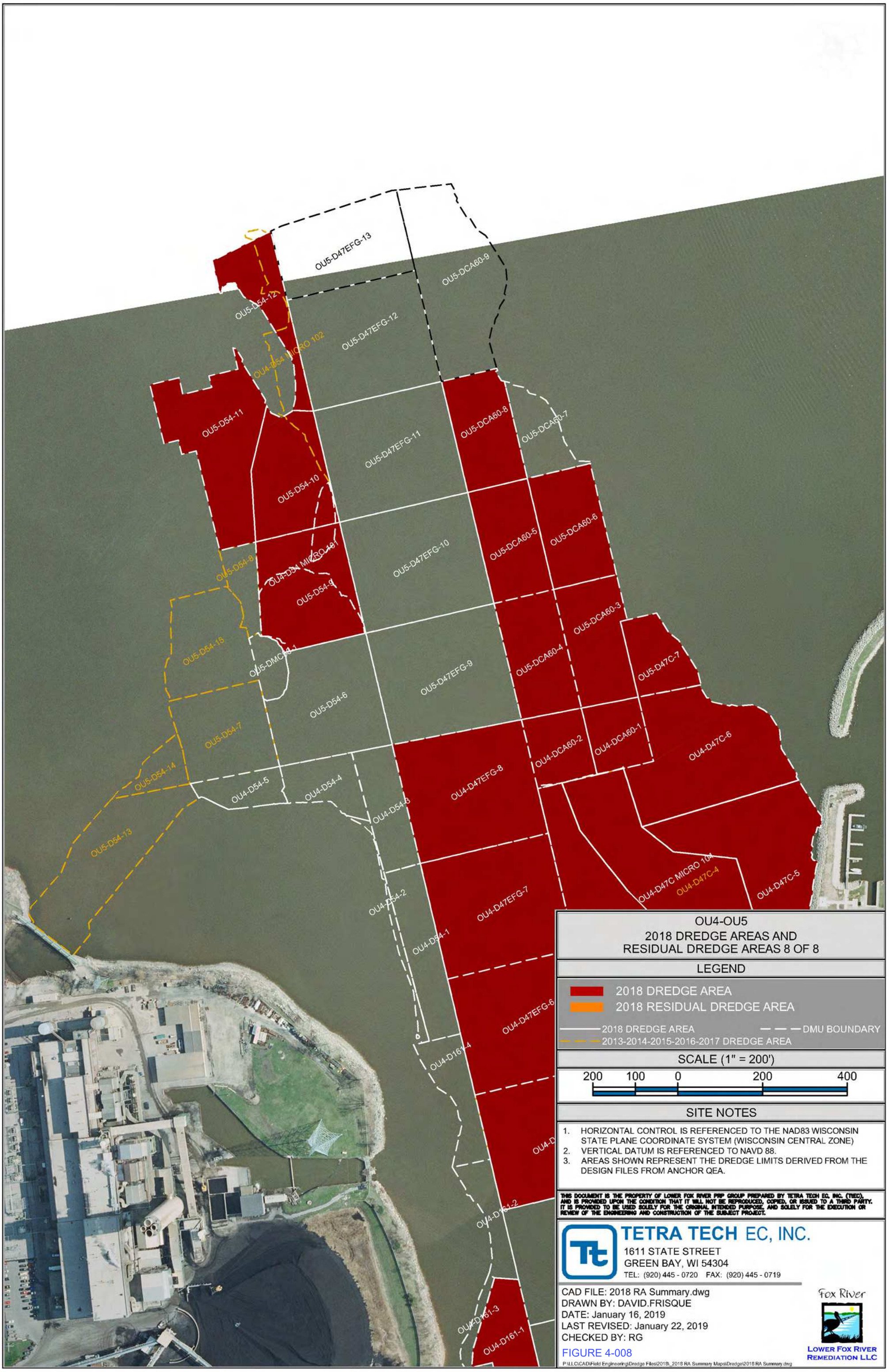
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FIGURE 4-007

Fox River
LOWER FOX RIVER REMEDIATION LLC

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OU4-OU5
2018 DREDGE AREAS AND RESIDUAL DREDGE AREAS 8 OF 8

LEGEND

2018 DREDGE AREA

2018 RESIDUAL DREDGE AREA

2018 DREDGE AREA — — — DMU BOUNDARY

2013-2014-2015-2016-2017 DREDGE AREA

SCALE (1" = 200')

200 100 0 200 400

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
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FIGURE 4-008

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Fox River
LOWER FOX RIVER REMEDIATION LLC

OU4-PRIMARY DREDGE
COMPOSITE SAMPLE RESULTS
1 OF 3

LEGEND

COMPOSITE A	COMPOSITE B	COMPOSITE C
NO RECOVERY	NO RECOVERY	NO RECOVERY
0 - 1.00 PPM	0 - 1.00 PPM	0 - 1.00 PPM
1.01 - 2.00 PPM	1.01 - 2.00 PPM	1.01 - 2.00 PPM
2.01 - 5.00 PPM	2.01 - 5.00 PPM	2.01 - 5.00 PPM
5.01 - 9.99 PPM	5.01 - 9.99 PPM	5.01 - 9.99 PPM
10.00 PPM AND ABOVE	10.00 PPM AND ABOVE	10.00 PPM AND ABOVE

2013-2014-2015-2016-2017 DREDGE AREA — — DMU BOUNDARY

SCALE (1" = 200')

200 100 0 200 400

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
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FIGURE 4-009

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Fox River
LOWER FOX RIVER REMEDIATION LLC

OU4-PRIMARY DREDGE
COMPOSITE SAMPLE RESULTS
2 OF 3

LEGEND

COMPOSITE A	COMPOSITE B	COMPOSITE C/D
NO RECOVERY	NO RECOVERY	NO RECOVERY
0 - 1.00 PPM	0 - 1.00 PPM	0 - 1.00 PPM
1.01 - 2.00 PPM	1.01 - 2.00 PPM	1.01 - 2.00 PPM
2.01 - 5.00 PPM	2.01 - 5.00 PPM	2.01 - 5.00 PPM
5.01 - 9.99 PPM	5.01 - 9.99 PPM	5.01 - 9.99 PPM
10.00 PPM AND ABOVE	10.00 PPM AND ABOVE	10.00 PPM AND ABOVE

2013-2014-2015-2016-2017 DREDGE AREA — — DMU BOUNDARY

SCALE (1" = 200')

200 100 0 200 400

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
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FIGURE 4-010

Fox River
LOWER FOX RIVER REMEDIATION LLC

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OU4-PRIMARY DREDGE
COMPOSITE SAMPLE RESULTS
3 OF 3

LEGEND

COMPOSITE A	COMPOSITE B	COMPOSITE C/D
NO RECOVERY	NO RECOVERY	NO RECOVERY
0 - 1.00 PPM	0 - 1.00 PPM	0 - 1.00 PPM
1.01 - 2.00 PPM	1.01 - 2.00 PPM	1.01 - 2.00 PPM
2.01 - 5.00 PPM	2.01 - 5.00 PPM	2.01 - 5.00 PPM
5.01 - 9.99 PPM	5.01 - 9.99 PPM	5.01 - 9.99 PPM
10.00 PPM AND ABOVE	10.00 PPM AND ABOVE	10.00 PPM AND ABOVE

2013-2014-2015-2016-2017 DREDGE AREA — — DMU BOUNDARY

SCALE (1" = 200')

200 100 0 200 400

SITE NOTES

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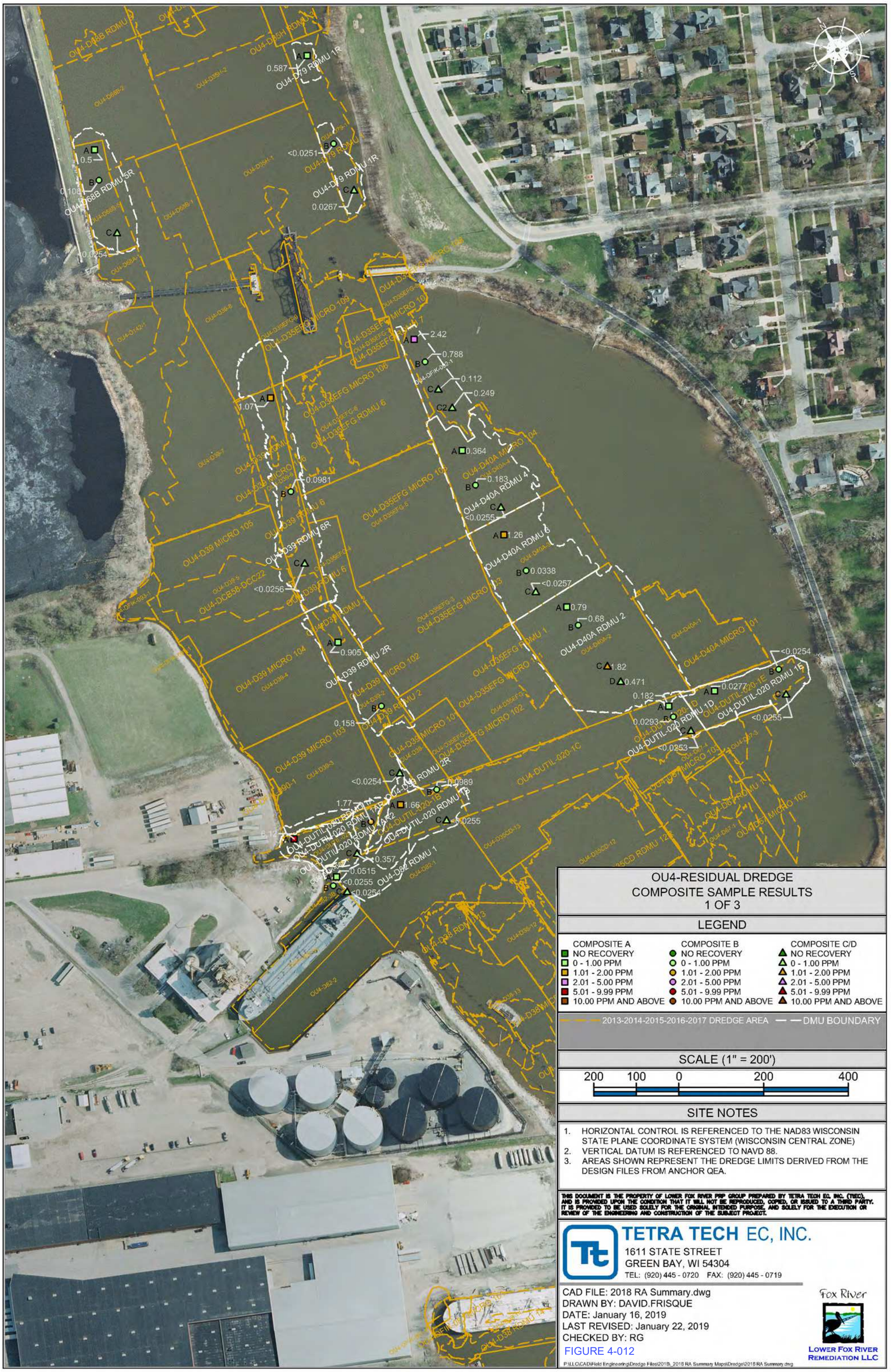
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FIGURE 4-011

Fox River
LOWER FOX RIVER REMEDIATION LLC

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OU4-RESIDUAL DREDGE
COMPOSITE SAMPLE RESULTS
1 OF 3

LEGEND

COMPOSITE A	COMPOSITE B	COMPOSITE C/D
NO RECOVERY	NO RECOVERY	NO RECOVERY
0 - 1.00 PPM	0 - 1.00 PPM	0 - 1.00 PPM
1.01 - 2.00 PPM	1.01 - 2.00 PPM	1.01 - 2.00 PPM
2.01 - 5.00 PPM	2.01 - 5.00 PPM	2.01 - 5.00 PPM
5.01 - 9.99 PPM	5.01 - 9.99 PPM	5.01 - 9.99 PPM
10.00 PPM AND ABOVE	10.00 PPM AND ABOVE	10.00 PPM AND ABOVE

2013-2014-2015-2016-2017 DREDGE AREA — — DMU BOUNDARY

SCALE (1" = 200')

200 100 0 200 400

SITE NOTES

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FIGURE 4-012

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Fox River
LOWER FOX RIVER REMEDIATION LLC

OU4-RESIDUAL DREDGE
COMPOSITE SAMPLE RESULTS
2 OF 3

LEGEND

COMPOSITE A	COMPOSITE B	COMPOSITE C/D
NO RECOVERY	NO RECOVERY	NO RECOVERY
0 - 1.00 PPM	0 - 1.00 PPM	0 - 1.00 PPM
1.01 - 2.00 PPM	1.01 - 2.00 PPM	1.01 - 2.00 PPM
2.01 - 5.00 PPM	2.01 - 5.00 PPM	2.01 - 5.00 PPM
5.01 - 9.99 PPM	5.01 - 9.99 PPM	5.01 - 9.99 PPM
10.00 PPM AND ABOVE	10.00 PPM AND ABOVE	10.00 PPM AND ABOVE

2013-2014-2015-2016-2017 DREDGE AREA — — DMU BOUNDARY

SCALE (1" = 200')

200 100 0 200 400

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88.
3. AREAS SHOWN REPRESENT THE DREDGE LIMITS DERIVED FROM THE DESIGN FILES FROM ANCHOR QEA.

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TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: 2018 RA Summary.dwg
DRAWN BY: DAVID.FRISQUE
DATE: January 16, 2019
LAST REVISED: January 22, 2019
CHECKED BY: RG

FIGURE 4-013

P:\LLC\CAD\Field Engineering\Dredge Files\2018_2018 RA Summary Maps\Dredge\2018 RA Summary.dwg

Fox River
LOWER FOX RIVER REMEDIATION LLC



OU4-RESIDUAL DREDGE
COMPOSITE SAMPLE RESULTS
3 OF 3

LEGEND

COMPOSITE A	COMPOSITE B	COMPOSITE C/D
NO RECOVERY	NO RECOVERY	NO RECOVERY
0 - 1.00 PPM	0 - 1.00 PPM	0 - 1.00 PPM
1.01 - 2.00 PPM	1.01 - 2.00 PPM	1.01 - 2.00 PPM
2.01 - 5.00 PPM	2.01 - 5.00 PPM	2.01 - 5.00 PPM
5.01 - 9.99 PPM	5.01 - 9.99 PPM	5.01 - 9.99 PPM
10.00 PPM AND ABOVE	10.00 PPM AND ABOVE	10.00 PPM AND ABOVE

2013-2014-2015-2016-2017 DREDGE AREA — — DMU BOUNDARY

SCALE (1" = 200')

200 100 0 200 400

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88.
3. AREAS SHOWN REPRESENT THE DREDGE LIMITS DERIVED FROM THE DESIGN FILES FROM ANCHOR QEA.

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DATE: January 16, 2019
LAST REVISED: January 22, 2019
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FIGURE 4-014

Fox River
LOWER FOX RIVER REMEDIATION LLC

P:\LLC\CAD\Field Engineering\Dredge Files\2018_2018 RA Summary Maps\Dredge\2018 RA Summary.dwg

OU4-D94A-1
OU4-D94B-1
OU4-D168-1
OU4-D162-1
OU4-D43E-1
OU4-D74
OU4-D74 RD
OU4-D74-2
OU4-DMC21-1
OU4-D135B-1
OU4-D43A-7
OU4-D74-1
OU4-DMC20-2
OU4-DMC21-2
OU4-D43A-5
OU4-DMC18-2
OU4-DMC18-1
OU4-D44-5
OU4-D43A-6
OU4-D43A-4
OU4-D44-4
OU4-D43A-3
OU4-D135A-1
OU4-D43A-2
OU4-D44-2
OU4-D43A-1
OU4-D44-1

OU4
2018 PRODUCTION DREDGE AREAS
1 OF 4

LEGEND

2018 PRODUCTION DREDGE AREA

2018 DREDGE AREA
DMU BOUNDARY
(RD) RESIDUAL DREDGE SAMPLE
2013-2014-2015-2016-2017 DREDGE AREA

SCALE (1" = 200')

200 100 0 200 400

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
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DRAWN BY: DAVID.FRISQUE
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LAST REVISED: January 22, 2019
CHECKED BY: RG
FIGURE 4-015

Fox River
LOWER FOX RIVER REMEDIATION LLC

P:\LL\CAD\Field Engineering\Dredge Files\2018_2018 RA Summary Maps\Dredge\2018 RA Summary.dwg

OU4
2018 PRODUCTION DREDGE AREAS
2 OF 4

LEGEND

2018 PRODUCTION DREDGE AREA

2018 DREDGE AREA
DMU BOUNDARY
(RD) RESIDUAL DREDGE SAMPLE
2013-2014-2015-2016-2017 DREDGE AREA

SCALE (1" = 200')

200 100 0 200 400

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88.
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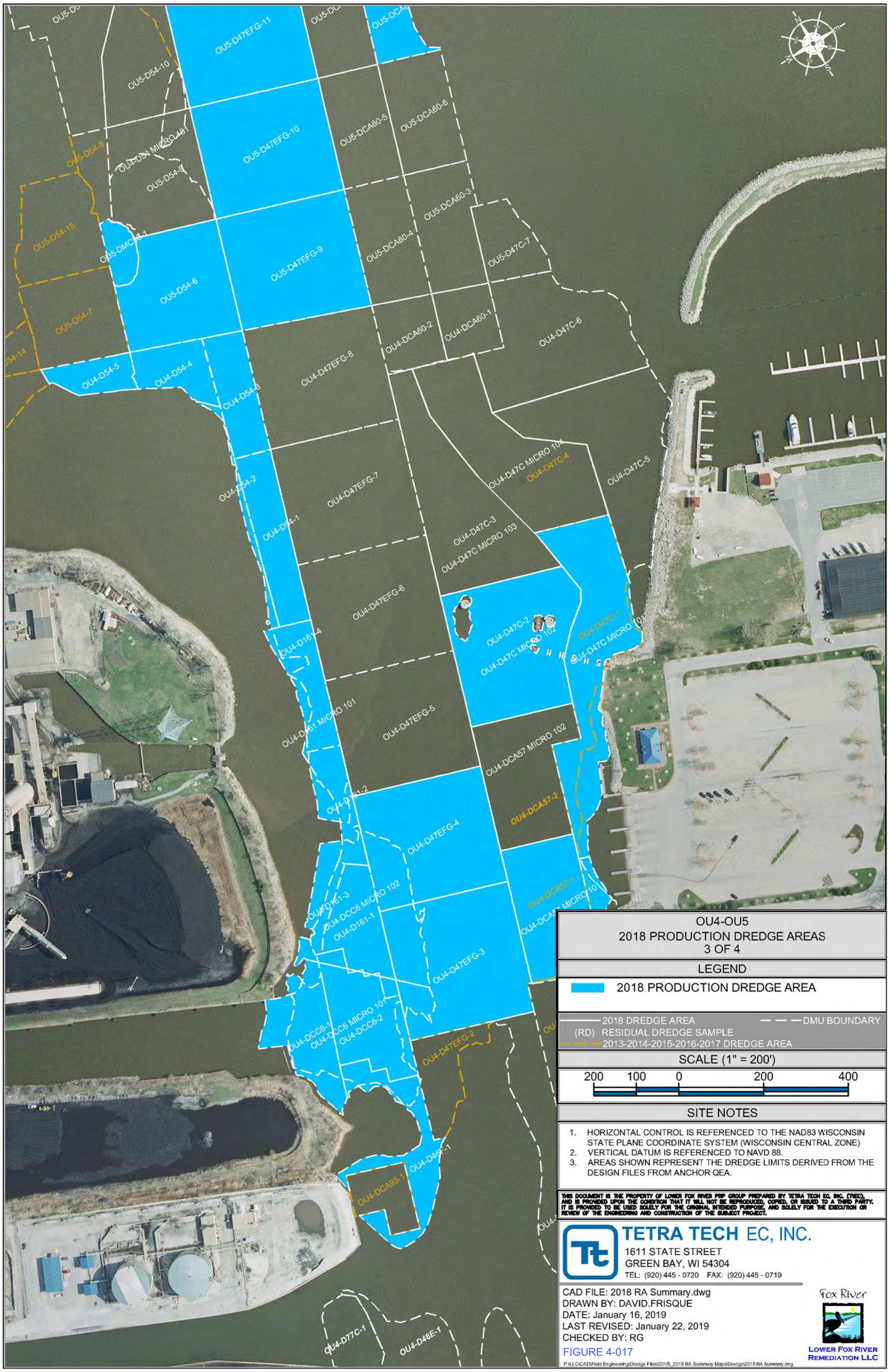
TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: 2018 RA Summary.dwg
DRAWN BY: DAVID.FRISQUE
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FIGURE 4-016

Fox River
LOWER FOX RIVER REMEDIATION LLC

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OU4-OU5
2018 PRODUCTION DREDGE AREAS
3 OF 4

LEGEND

2018 PRODUCTION DREDGE AREA

2018 DREDGE AREA — — — DMU BOUNDARY
(RD) RESIDUAL DREDGE SAMPLE
2013-2014-2015-2016-2017 DREDGE AREA

SCALE (1" = 200')

200 100 0 200 400

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88.
3. AREAS SHOWN REPRESENT THE DREDGE LIMITS DERIVED FROM THE DESIGN FILES FROM ANCHOR QEA.

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1611 STATE STREET
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TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

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DATE: January 16, 2019
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FIGURE 4-017

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Fox River
LOWER FOX RIVER REMEDIATION LLC

OU5-D47EFG-13
OU5-DCA60-9
OU5-D47EFG-12
OU5-D54-12
OU4-D54 MICRO 102
OU5-D54-11
OU5-D47EFG-11
OU5-DCA60-8
OU5-DCA60-7
OU5-D54-10
OU5-D47EFG-10
OU5-DCA60-5
OU5-DCA60-6
OU5-D54-8
OU4-D54 MICRO 101
OU5-D54-9
OU5-D54-15
OU5-DMC54-1
OU5-D47EFG-9
OU5-DCA60-4
OU5-DCA60-3
OU5-D47C-7
OU5-D54-6
OU5-D54-7
OU4-DCA60-2
OU4-DCA60-1
OU4-D47C-6
OU5-D54-14
OU4-D54-5
OU4-D54-4
OU4-D54-3
OU4-D47EFG-8
OU5-D54-13
OU4-D54-2
OU4-D47EFG-7
OU4-D54-1
OU4-D47EFG-6
OU4-D16-4
OU4-D161 MICRO 101
OU4-D47E
OU4-D161-2
OU4-D161-3
MICRO 102

OU4-OU5
2018 PRODUCTION DREDGE AREAS
4 OF 4

LEGEND

2018 PRODUCTION DREDGE AREA

2018 DREDGE AREA
DMU BOUNDARY
(RD) RESIDUAL DREDGE SAMPLE
2013-2014-2015-2016-2017 DREDGE AREA

SCALE (1" = 200')

200 100 0 200 400

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
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TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

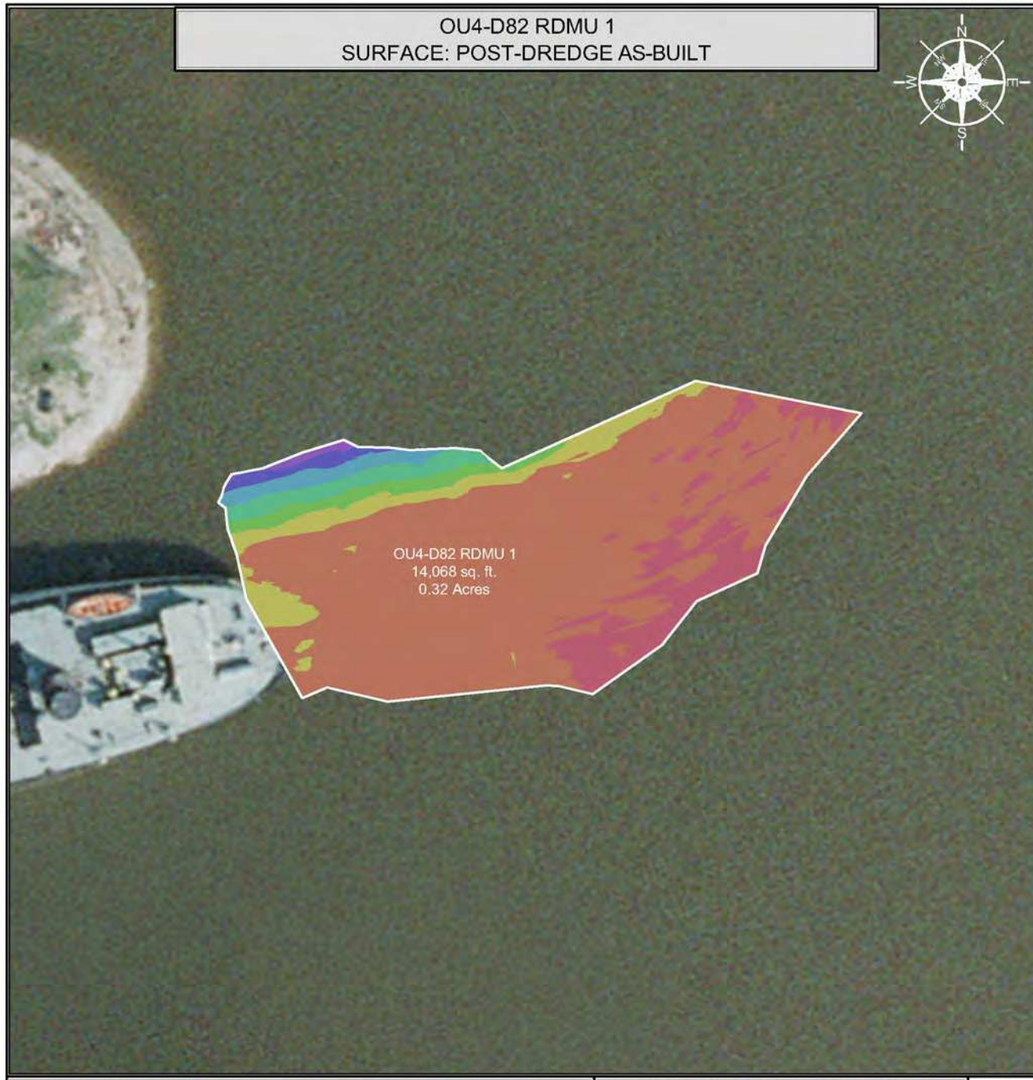
CAD FILE: 2018 RA Summary.dwg
DRAWN BY: DAVID.FRISQUE
DATE: January 16, 2019
LAST REVISED: January 22, 2019
CHECKED BY: RG

FIGURE 4-018

P:\LL\CAD\Field Engineering\Dredge Files\2018_2018 RA Summary Maps\Dredge\2018 RA Summary.dwg

Fox River
LOWER FOX RIVER REMEDIATION LLC

OU4-D82 RDMU 1
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

724.96	INITIAL RAL VOLUME
248.59	INITIAL OVERCUT VOLUME
973.55	RAL + OVERCUT VOLUME
877.27	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

602.18	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
238.49	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
840.67	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

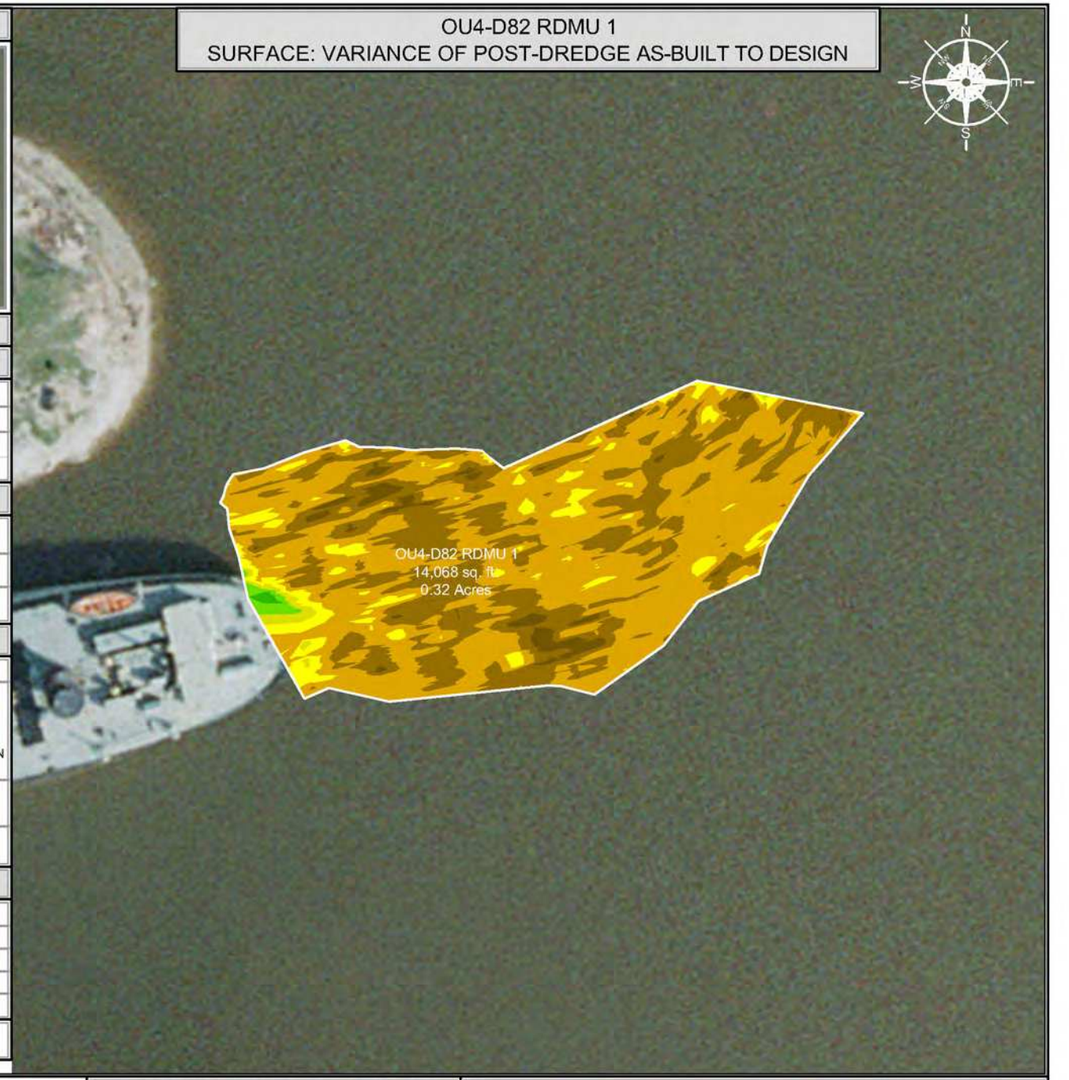
2018 AS-BUILT VOLUMES (CU. YD.)

788.32	TOTAL VOLUME DREDGED
588.28	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
13.90	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
82.38	OVERCUT VOLUME REMAINING
166.18	OVERCUT VOLUME DREDGED
33.86	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

14,068.26	AREA (SQ. FT.)
1,111.89	ABOVE DESIGN ELEVATION
12,956.37	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
5.00 "	AVERAGE DEPTH OF OVERCUT [1]
92	PERCENT COMPLETE [2]

OU4-D82 RDMU 1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 50')

50 25 0 50 100

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 8-31-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
548.00'	-	550.00'
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'
562.00'	-	564.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.82'	-	-1.00'	392.65
BELOW RAL	-1.00'	-	-0.50'	4,542.74
BELOW RAL	-0.50'	-	0.00'	8,020.98
ABOVE RAL	0.00'	-	0.50'	871.36
ABOVE RAL	0.50'	-	1.00'	124.51
ABOVE RAL	1.00'	-	1.50'	91.53
ABOVE RAL	1.50'	-	1.95'	24.49

TETRA TECH EC, INC.
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GREEN BAY, WI 54304
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CAD FILE: OU4-D82 RDMU 1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: September 10, 2018
LAST REVISED: November 13, 2018
CHECKED BY: REG

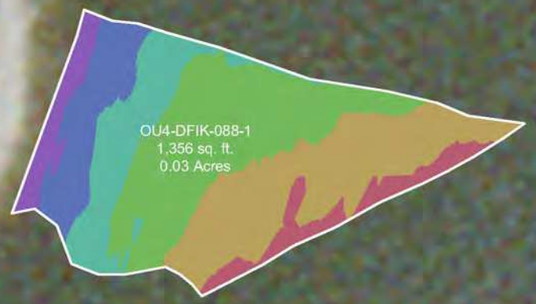
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-019

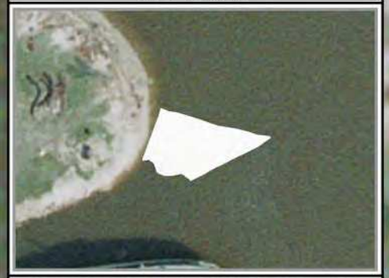
OU4-D82 RDMU 1
1st RESIDUAL DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\ALLDOCS\Field Engineering\Dredge Files\2018\OU4 D82 RDMU\DWG\Post Dredge\OU4 D82 RDMU 1.dwg

OU4-DFIK-088-1
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

43.32	INITIAL RAL VOLUME
22.99	INITIAL OVERCUT VOLUME
66.31	RAL + OVERCUT VOLUME
57.38	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

39.32	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
24.67	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
63.99	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

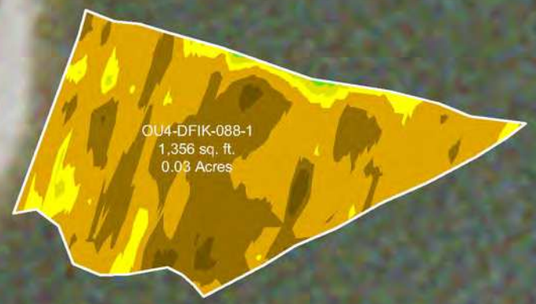
2018 AS-BUILT VOLUMES (CU. YD.)

59.00	TOTAL VOLUME DREDGED
38.65	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
0.67	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
8.26	OVERCUT VOLUME REMAINING
16.63	OVERCUT VOLUME DREDGED
3.72	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

1,356.05	AREA (SQ. FT.)
124.25	ABOVE DESIGN ELEVATION
1,231.80	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
5.35 "	AVERAGE DEPTH OF OVERCUT [1]
91	PERCENT COMPLETE [2]

OU4-DFIK-088-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 20')

20 10 0 20 40

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 8-31-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
566.00'	-	568.00'
568.00'	-	570.00'
570.00'	-	572.00'
572.00'	-	574.00'
574.00'	-	576.00'
576.00'	-	578.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.03'	-	-1.00'	33.43
BELOW RAL	-1.00'	-	-0.50'	460.03
BELOW RAL	-0.50'	-	0.00'	738.34
ABOVE RAL	0.00'	-	0.25'	104.75
ABOVE RAL	0.25'	-	0.50'	17.08
ABOVE RAL	0.50'	-	0.67'	2.42

TETRA TECH EC, INC.
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DRAWN BY: DAVID.FRISQUE
DATE: September 10, 2018
LAST REVISED: September 10, 2018
CHECKED BY: REG

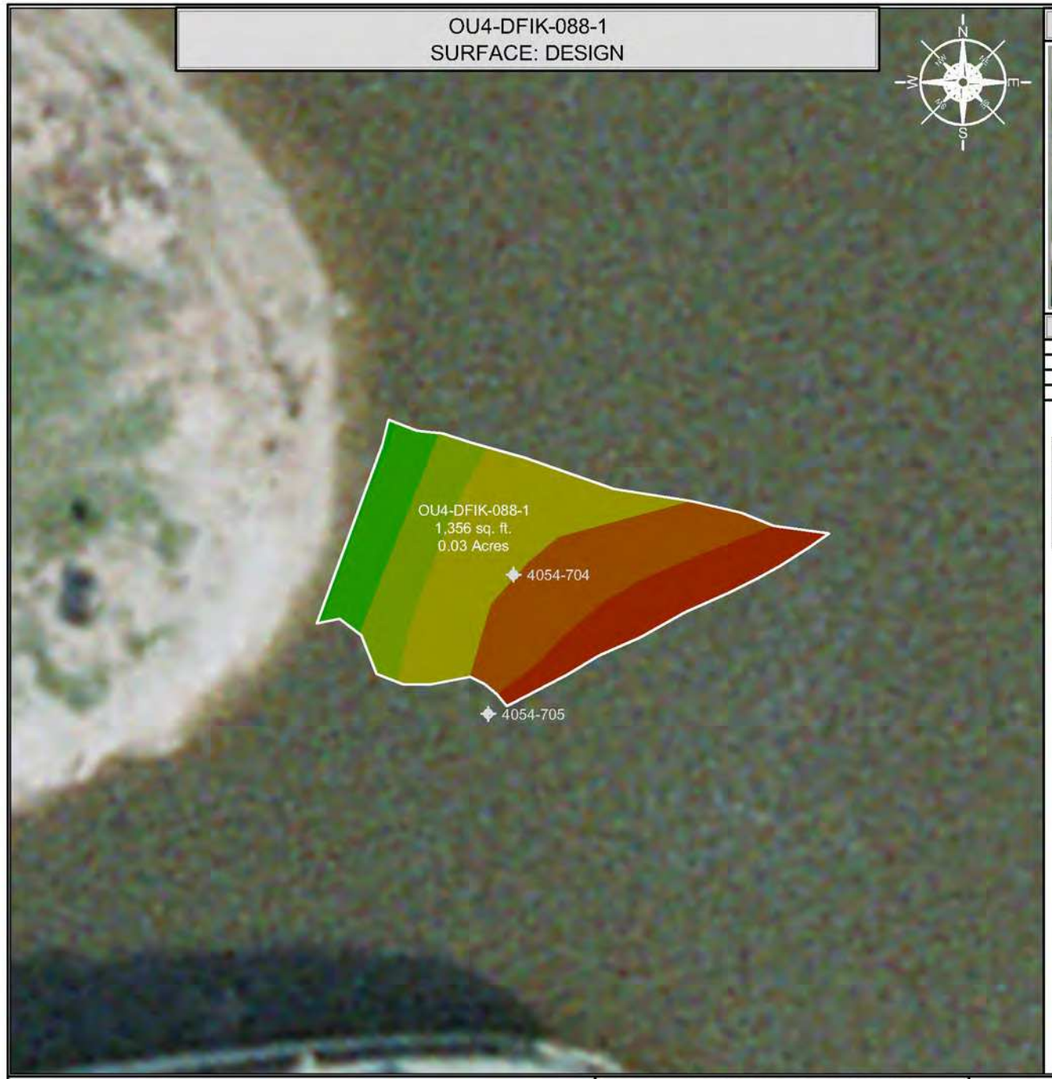
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-020

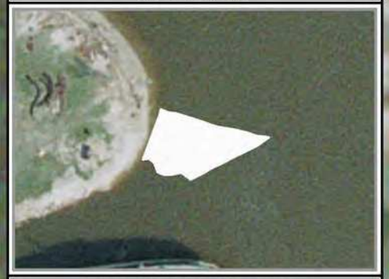
OU4-DFIK-088-1
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\ALLOC\ADR\Arc\mxd\gDredge Files\2018\OU4 DFIK-088\MXD\Post Dredge\OU4 DFIK-088-1.dwg

OU4-DFIK-088-1
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	51.5 µg/kg (0.0515 ppm)
0.5' - 1.0'	< 25.5 µg/kg (< 0.0255 ppm)
1.0' - 1.5'	< 25.4 µg/kg (< 0.0254 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4054-704	249501.32	2483574.66
4054-705	249482.97	2483571.33

OU4-DFIK-088-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 20')

20 10 0 20 40

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 8-31-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
567.00'	-	569.00'
569.00'	-	571.00'
571.00'	-	573.00'
573.00'	-	575.00'
575.00'	-	577.00'
577.00'	-	579.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-DFIK-088-1-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-DFIK-088-1-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-DFIK-088-1-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 9-5-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF TWO SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 9-10-2018

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OU# - D# - #

- OU# — OPERABLE UNIT
- D# — DREDGE AREA
- # — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.03'	-	-1.00'	33.43
BELOW RAL	-1.00'	-	-0.50'	460.03
BELOW RAL	-0.50'	-	0.00'	738.34
ABOVE RAL	0.00'	-	0.25'	104.75
ABOVE RAL	0.25'	-	0.50'	17.08
ABOVE RAL	0.50'	-	0.67'	2.42

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DFIK-088-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: September 10, 2018
LAST REVISED: November 26, 2018
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-021

OU4-DFIK-088-1
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LCAD\EHS Engineering\Dredge Files\2018\OU4 DFIK-088\DWG\Post Dredge\OU4-DFIK-088-1.dwg

OU4-DUTIL-020 RDMU 1A
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

305.44	INITIAL RAL VOLUME
133.52	INITIAL OVERCUT VOLUME
438.96	RAL + OVERCUT VOLUME
395.07	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

375.94	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
138.80	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
514.74	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

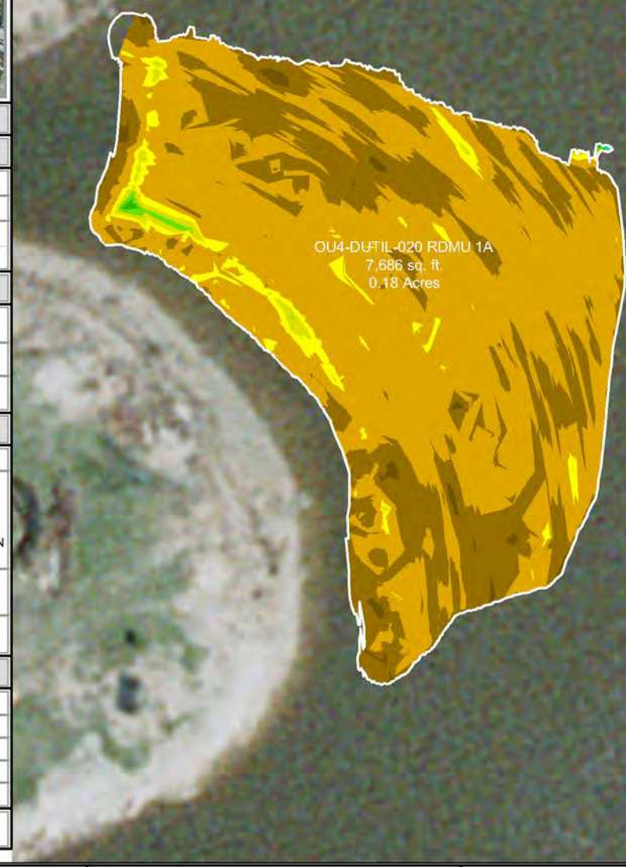
2018 AS-BUILT VOLUMES (CU. YD.)

485.00	TOTAL VOLUME DREDGED
373.37	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
2.57	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
41.32	OVERCUT VOLUME REMAINING
97.46	OVERCUT VOLUME DREDGED
14.17	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

7,686.31	AREA (SQ. FT.)
400.14	ABOVE DESIGN ELEVATION
7,286.17	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
4.96 "	AVERAGE DEPTH OF OVERCUT [1]
95	PERCENT COMPLETE [2]

OU4-DUTIL-020 RDMU 1A
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 30')

30 15 0 30 60

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-1-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
571.00'	-	572.00'
572.00'	-	573.00'
573.00'	-	574.00'
574.00'	-	575.00'
575.00'	-	576.00'
576.00'	-	577.00'
577.00'	-	578.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.41'	-	-1.00'	79.52
BELOW RAL	-1.00'	-	-0.50'	2,271.33
BELOW RAL	-0.50'	-	0.00'	4,935.32
ABOVE RAL	0.00'	-	0.25'	273.44
ABOVE RAL	0.25'	-	0.50'	73.16
ABOVE RAL	0.50'	-	0.75'	20.55
ABOVE RAL	0.75'	-	1.00'	4.91
ABOVE RAL	1.00'	-	1.14'	1.40

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DUTIL-020 RDMU 1A.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 11, 2018
LAST REVISED: November 20, 2018
CHECKED BY: REG

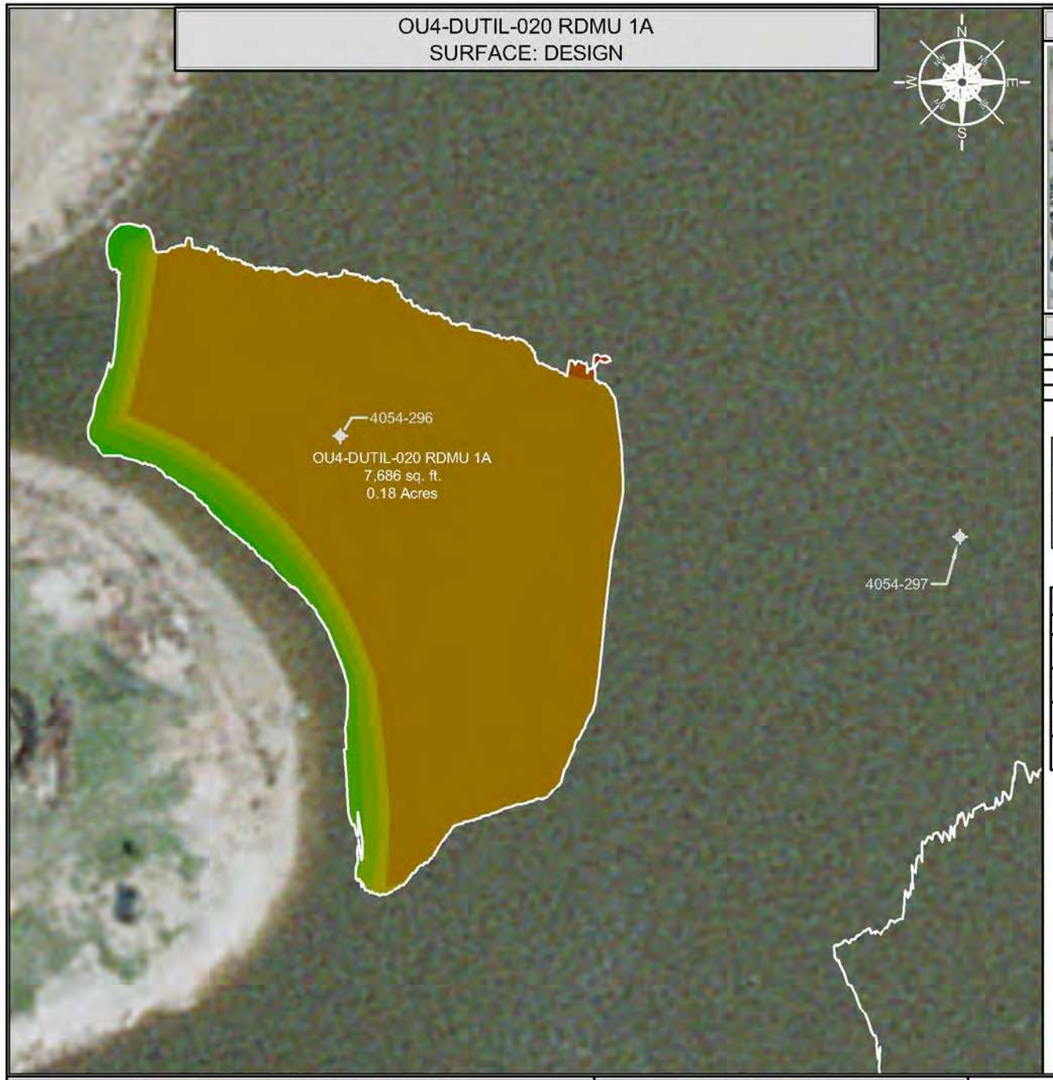
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-022

OU4-DUTIL-020 RDMU 1A
1st RESIDUAL DREDGE BATHYMETRY, VOLUMES AND AREAS

F:\LLOCAD\Field Engineering\Dredge Files\2018\OU4 DUTIL 020\DWG\Post Dredge\OU4 DUTIL-020 RDMU 1A.dwg

OU4-DUTIL-020 RDMU 1A
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	4,130 µg/kg (4.13 ppm)
0.5' - 1.0'	14,000 µg/kg (14 ppm)
1.0' - 1.5'	12,600 µg/kg (12.6 ppm)

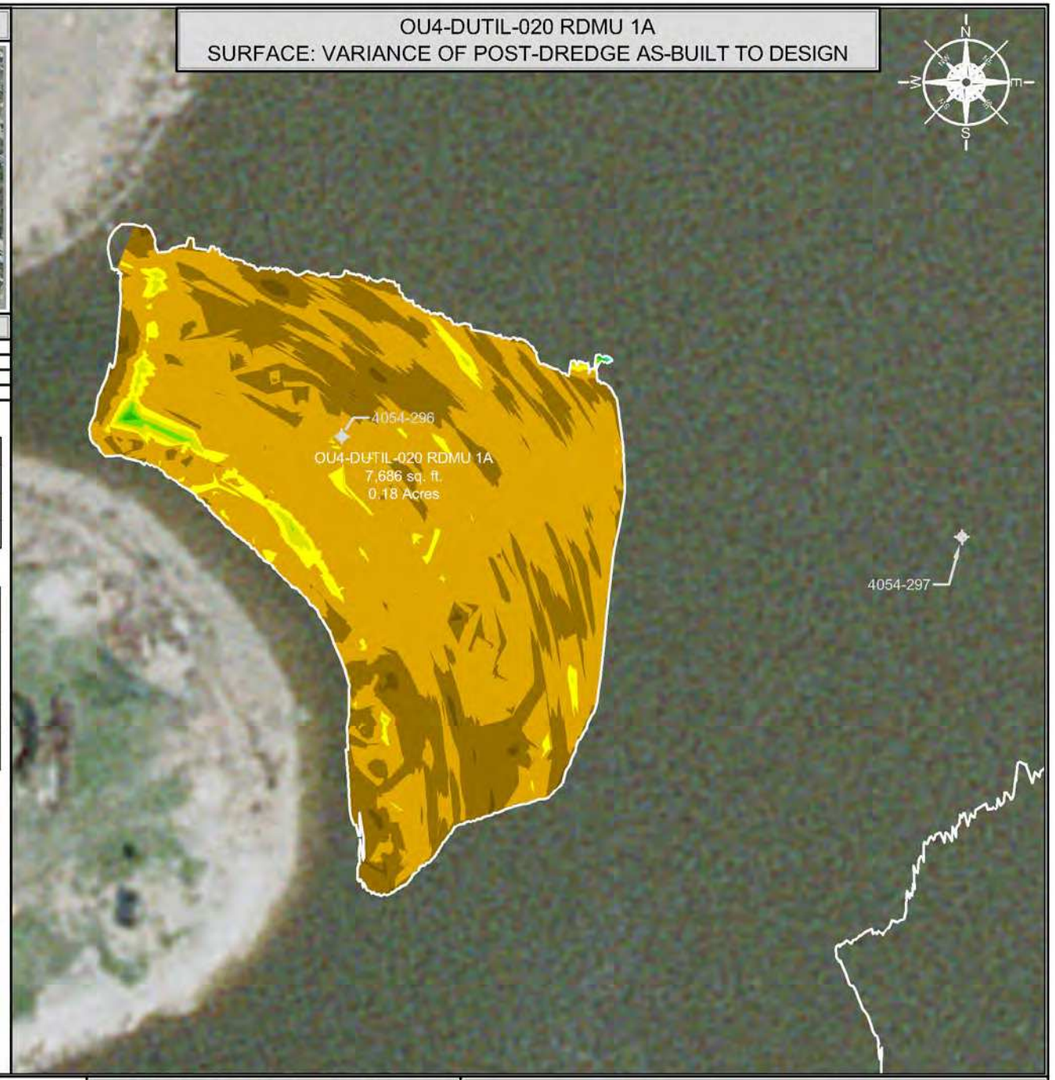
CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4054-297	249571.23	2483682.07
4054-296	249591.16	2483559.39

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION
4054-296	A: 630 µg/kg (0.63) ppm) D: 36,600 µg/kg (36.6) ppm) B: 5,800 µg/kg (5.8) ppm) E: 7,030 µg/kg (7.03) ppm) C: 9,480 µg/kg (9.48) ppm)
4054-297	A: 9,330 µg/kg (9.33) ppm) D: 25,200 µg/kg (25.2) ppm) B: 30,100 µg/kg (30.1) ppm) E: 7,700 µg/kg (7.7) ppm) C: 13,900 µg/kg (13.9) ppm)
4054-297RVT	F: <25.2 µg/kg (<0.0252) ppm) J: <25.3 µg/kg (<0.0253) ppm) G: <25.3 µg/kg (<0.0253) ppm) J2: <25.3 µg/kg (<0.0253) ppm) H: <25.3 µg/kg (<0.0253) ppm)
4054-297RVT	K: <25.4 µg/kg (<0.0254) ppm) N: 75.6 µg/kg (0.0756) ppm) L: <25.4 µg/kg (<0.0254) ppm) M: <25.3 µg/kg (<0.0253) ppm)

OU4-DUTIL-020 RDMU 1A
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-18-DUTIL-020-1A-4054-296-A
2. TTFR-18-DUTIL-020-1A-4054-296-B
3. TTFR-18-DUTIL-020-1A-4054-296-C
4. TTFR-18-DUTIL-020-1A-4054-296-D
5. TTFR-18-DUTIL-020-1A-4054-296-E
6. TTFR-18-DUTIL-020-1A-4054-297-A
7. TTFR-18-DUTIL-020-1A-4054-297-B
8. TTFR-18-DUTIL-020-1A-4054-297-C
9. TTFR-18-DUTIL-020-1A-4054-297-D
10. TTFR-18-DUTIL-020-1A-4054-297-E
11. TTFR-18-DUTIL-020-1A-4054-297RVT-F
12. TTFR-18-DUTIL-020-1A-4054-297RVT-G
13. TTFR-18-DUTIL-020-1A-4054-297RVT-H
14. TTFR-18-DUTIL-020-1A-4054-297RVT-J
15. TTFR-18-DUTIL-020-1A-4054-297RVT-J2
16. TTFR-18-DUTIL-020-1A-4054-297RVT-K
17. TTFR-18-DUTIL-020-1A-4054-297RVT-L
18. TTFR-18-DUTIL-020-1A-4054-297RVT-M
19. TTFR-18-DUTIL-020-1A-4054-297RVT-N

SCALE (1" = 30')

30 15 0 30 60

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-1-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
571.00'	-	572.00'
572.00'	-	573.00'
573.00'	-	574.00'
574.00'	-	575.00'
575.00'	-	576.00'
576.00'	-	577.00'
577.00'	-	578.00'
578.00'	-	579.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-DUTIL-020-1A-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-DUTIL-020-1A-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-DUTIL-020-1A-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 7-3-2018 and 7-18-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF TWO SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 7-10-2018, 7-16-2018, 7-18-2018, and 7-24-2018

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OU# - D# - #
OPERABLE UNIT / DREDGE AREA / DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.41'	-	-1.00'	79.52
BELOW RAL	-1.00'	-	-0.50'	2,271.33
BELOW RAL	-0.50'	-	0.00'	4,935.32
ABOVE RAL	0.00'	-	0.25'	273.44
ABOVE RAL	0.25'	-	0.50'	73.16
ABOVE RAL	0.50'	-	0.75'	20.55
ABOVE RAL	0.75'	-	1.00'	4.91
ABOVE RAL	1.00'	-	1.14'	1.40

TETRA TECH EC, INC.
1611 STATE STREET
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TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DUTIL-020 RDMU 1A.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 11, 2018
LAST REVISED: November 26, 2018
CHECKED BY: REG

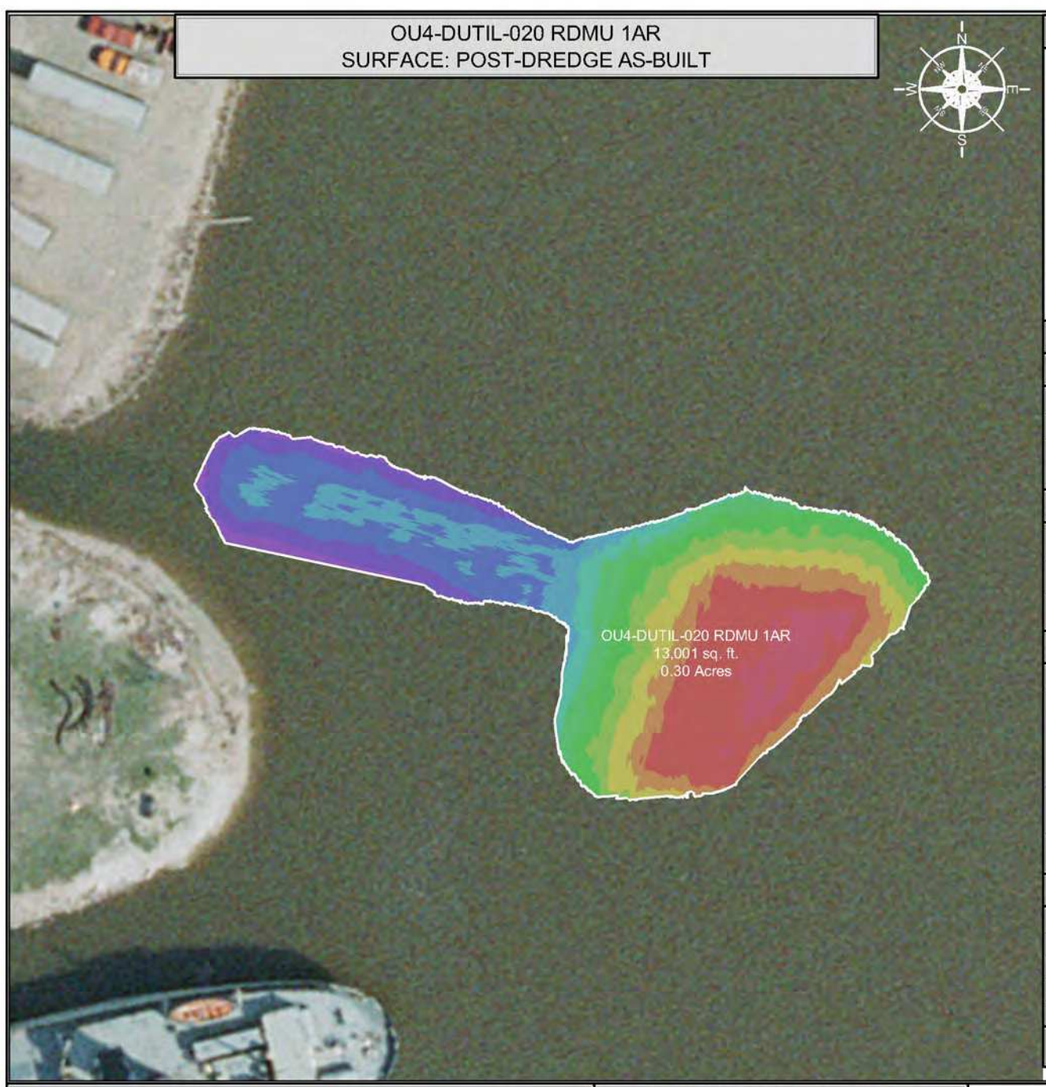
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-023

OU4-DUTIL-020 RDMU 1A
1st RESIDUAL DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

P:\LOCAL\Field Engineering\Dredge Files\2018\OU4 DUTIL-020\DWG\Post Dredge\OU4-DUTIL-020 RDMU 1A.dwg

OU4-DUTIL-020 RDMU 1AR
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

2,546.63	INITIAL RAL VOLUME
239.46	INITIAL OVERCUT VOLUME
2,786.09	RAL + OVERCUT VOLUME
2,725.32	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

2,406.36	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
240.77	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
2,647.13	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

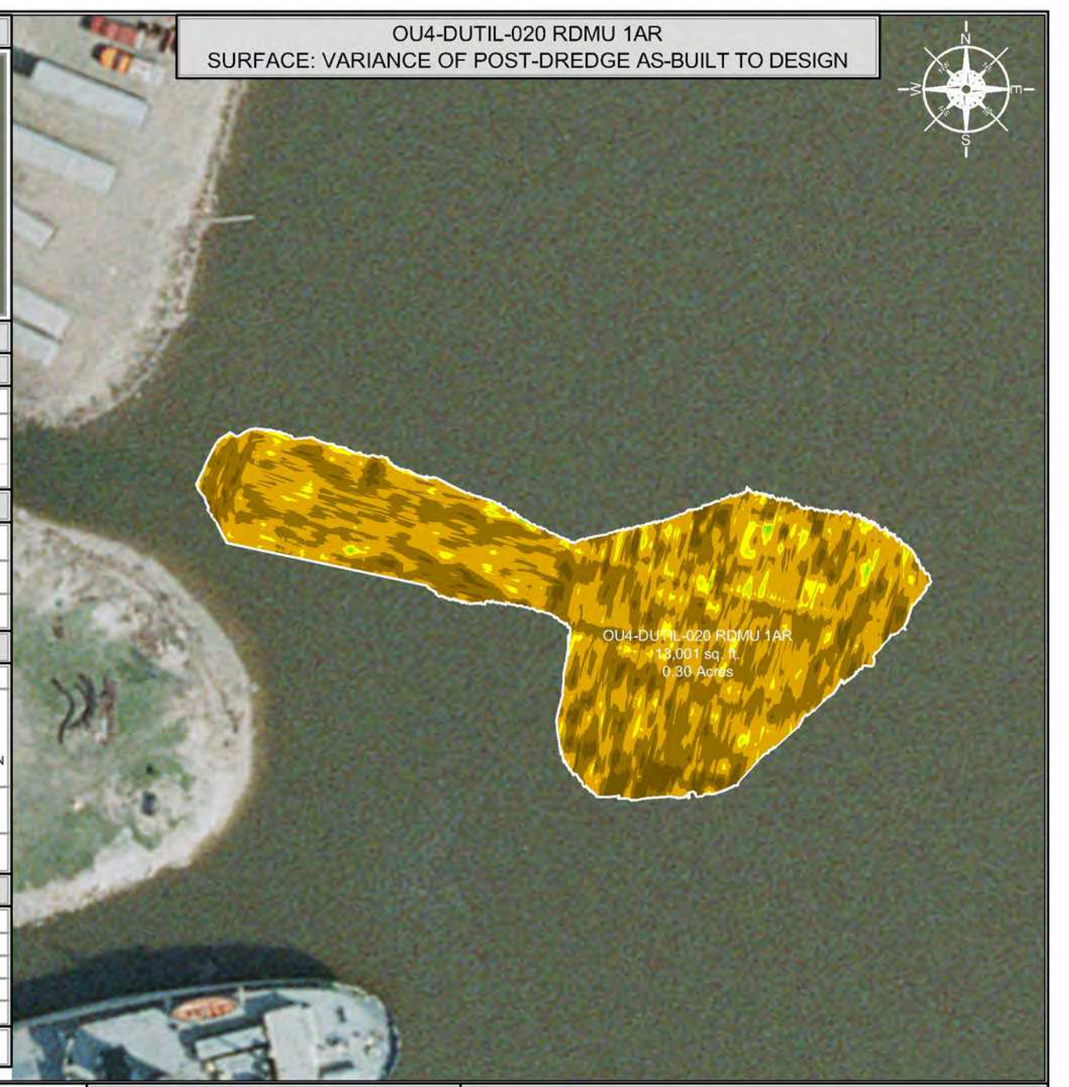
2018 AS-BUILT VOLUMES (CU. YD.)

2,646.07	TOTAL VOLUME DREDGED
2,402.78	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
3.58	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
57.19	OVERCUT VOLUME REMAINING
183.78	OVERCUT VOLUME DREDGED
59.51	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

13,001.29	AREA (SQ. FT.)
706.52	ABOVE DESIGN ELEVATION
12,294.77	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
6.41 "	AVERAGE DEPTH OF OVERCUT [1]
95	PERCENT COMPLETE [2]

OU4-DUTIL-020 RDMU 1AR
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 50')

50 25 0 50 100

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 8-25-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'
562.00'	-	564.00'
564.00'	-	566.00'
566.00'	-	568.00'
568.00'	-	570.00'
570.00'	-	572.00'
572.00'	-	574.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.43'	-	-1.00'	849.44
BELOW RAL	-1.00'	-	-0.50'	5,413.33
BELOW RAL	-0.50'	-	0.00'	6,032.00
ABOVE RAL	0.00'	-	0.25'	587.10
ABOVE RAL	0.25'	-	0.50'	108.88
ABOVE RAL	0.50'	-	0.74'	10.54

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DUTIL-020 RDMU 1AR.dwg
DRAWN BY: DAVID.FRISQUE
DATE: August 27, 2018
LAST REVISED: November 20, 2018
CHECKED BY: REG

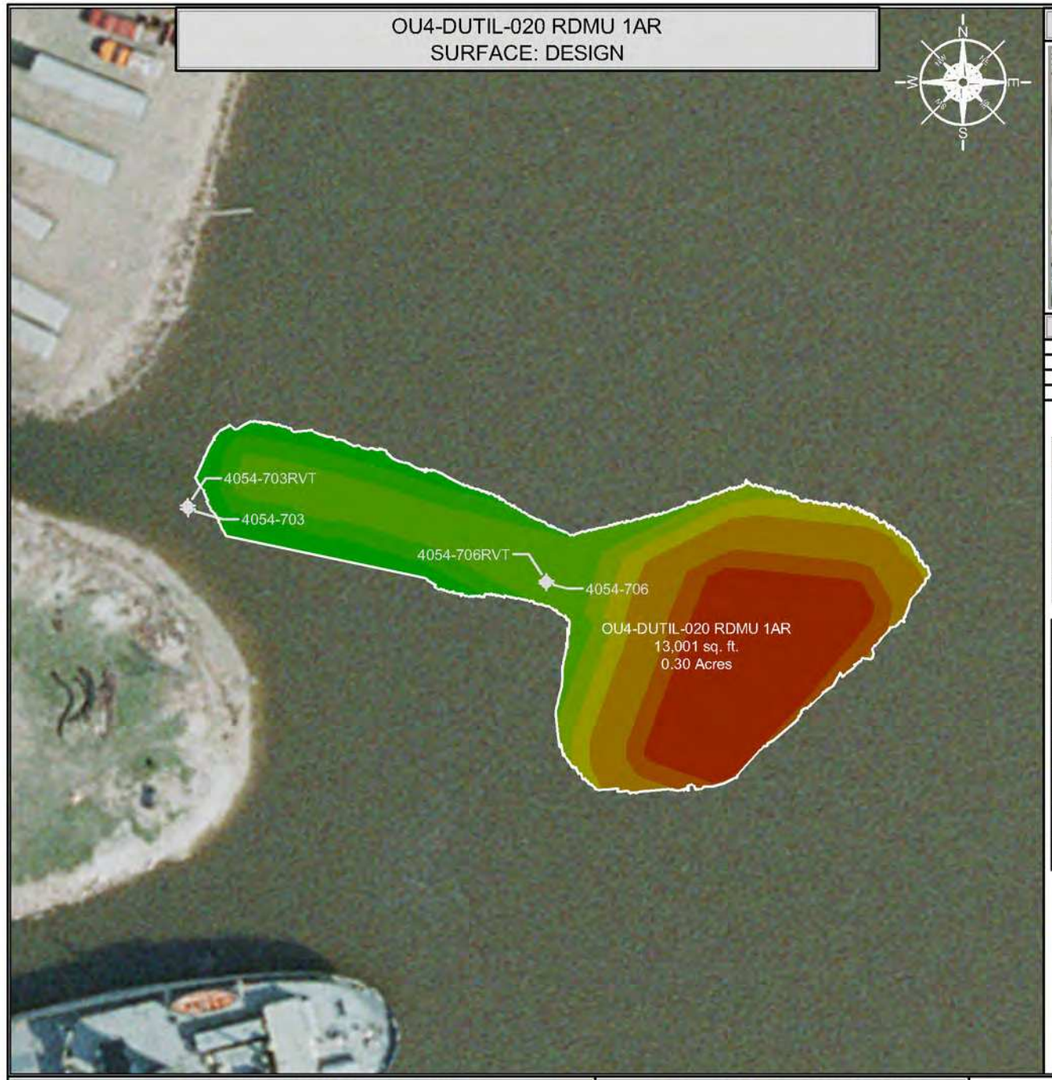
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-024

OU4-DUTIL-020 RDMU 1AR
2nd RESIDUAL DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LLOC\LD\Field Engineering\Dredge Files\2018\OU4 DUTIL-020\DWG\Post Dredge\OU4 DUTIL-020 RDMU 1AR.dwg

OU4-DUTIL-020 RDMU 1AR
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	27,200 µg/kg (27.2 ppm)
0.5' - 1.0'	21,900 µg/kg (21.9 ppm)
1.0' - 1.5'	25,200 µg/kg (25.2 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4054-703RVT	249594.38	2483530.24
4054-703	249593.20	2483530.32
4054-706RVT	249569.55	2483648.57
4054-706	249568.77	2483648.61

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION
4054-703	A: 1,340 µg/kg (1.34) ppm) D: 17,200 µg/kg (17.2) ppm) B: 3,920 µg/kg (3.92) ppm) C: 7,790 µg/kg (7.79) ppm)
4054-703RVT	E: 6,820 µg/kg (6.82) ppm) H: 8,420 µg/kg (8.42) ppm) F: 14,600 µg/kg (14.6) ppm) J: 7,960 µg/kg (7.96) ppm) G: 15,200 µg/kg (15.2) ppm) K: 8,890 µg/kg (8.89) ppm)
4054-706	A: 38,500 µg/kg (38.5) ppm) D: 23,500 µg/kg (23.5) ppm) B: 39,300 µg/kg (39.3) ppm) E: 29,100 µg/kg (29.1) ppm) C: 43,700 µg/kg (43.7) ppm)
4054-706RVT	F: 27,500 µg/kg (27.5) ppm) G2: 28,000 µg/kg (28) ppm) F2: 26,300 µg/kg (26.3) ppm) H: 14,100 µg/kg (14.1) ppm) G: 27,200 µg/kg (27.2) ppm)
4054-706RVT	H2: 14,700 µg/kg (14.7) ppm) K: 12,700 µg/kg (12.7) ppm) J: 15,900 µg/kg (15.9) ppm) K2: 11,700 µg/kg (11.7) ppm) J2: 17,000 µg/kg (17) ppm)
4054-706RVT	L: 1,700 µg/kg (1.7) ppm) M: 995 µg/kg (0.995) ppm) N: 256 µg/kg (0.256) ppm)

OU4-DUTIL-020 RDMU 1AR
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-18-DUTIL-020-1A-4054-703-A
2. TTFR-18-DUTIL-020-1A-4054-703-B
3. TTFR-18-DUTIL-020-1A-4054-703-C
4. TTFR-18-DUTIL-020-1A-4054-703-D
5. TTFR-18-DUTIL-020-1A-4054-703RVT-E
6. TTFR-18-DUTIL-020-1A-4054-703RVT-F
7. TTFR-18-DUTIL-020-1A-4054-703RVT-G
8. TTFR-18-DUTIL-020-1A-4054-703RVT-H
9. TTFR-18-DUTIL-020-1A-4054-703RVT-J
10. TTFR-18-DUTIL-020-1A-4054-703RVT-K
11. TTFR-18-DUTIL-020-1A-4054-706-A
12. TTFR-18-DUTIL-020-1A-4054-706-B
13. TTFR-18-DUTIL-020-1A-4054-706-C
14. TTFR-18-DUTIL-020-1A-4054-706-D
15. TTFR-18-DUTIL-020-1A-4054-706-E
16. TTFR-18-DUTIL-020-1A-4054-706RVT-F
17. TTFR-18-DUTIL-020-1A-4054-706RVT-F2
18. TTFR-18-DUTIL-020-1A-4054-706RVT-G
19. TTFR-18-DUTIL-020-1A-4054-706RVT-G2
20. TTFR-18-DUTIL-020-1A-4054-706RVT-H
21. TTFR-18-DUTIL-020-1A-4054-706RVT-H2
22. TTFR-18-DUTIL-020-1A-4054-706RVT-J
23. TTFR-18-DUTIL-020-1A-4054-706RVT-J2
24. TTFR-18-DUTIL-020-1A-4054-706RVT-K
25. TTFR-18-DUTIL-020-1A-4054-706RVT-K2
26. TTFR-18-DUTIL-020-1A-4054-706RVT-L
27. TTFR-18-DUTIL-020-1A-4054-706RVT-M
28. TTFR-18-DUTIL-020-1A-4054-706RVT-N

SCALE (1" = 50')

50 25 0 50 100

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 8-25-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
551.00'	-	553.00'
553.00'	-	555.00'
555.00'	-	557.00'
557.00'	-	559.00'
559.00'	-	561.00'
561.00'	-	563.00'
563.00'	-	565.00'
565.00'	-	567.00'
567.00'	-	569.00'
569.00'	-	571.00'
571.00'	-	573.00'
573.00'	-	575.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-DUTIL-020-1A-R-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-DUTIL-020-1A-R-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-DUTIL-020-1A-R-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 9-5-2018 and 9-12-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF FOUR SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 9-10-2018, 9-14-2018, and 9-18-2018

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.43'	-	-1.00'	849.44
BELOW RAL	-1.00'	-	-0.50'	5,413.33
BELOW RAL	-0.50'	-	0.00'	6,032.00
ABOVE RAL	0.00'	-	0.25'	587.10
ABOVE RAL	0.25'	-	0.50'	108.88
ABOVE RAL	0.50'	-	0.74'	10.54

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DUTIL-020 RDMU 1AR.dwg
DRAWN BY: DAVID.FRISQUE
DATE: August 27, 2018
LAST REVISED: November 26, 2018
CHECKED BY: REG

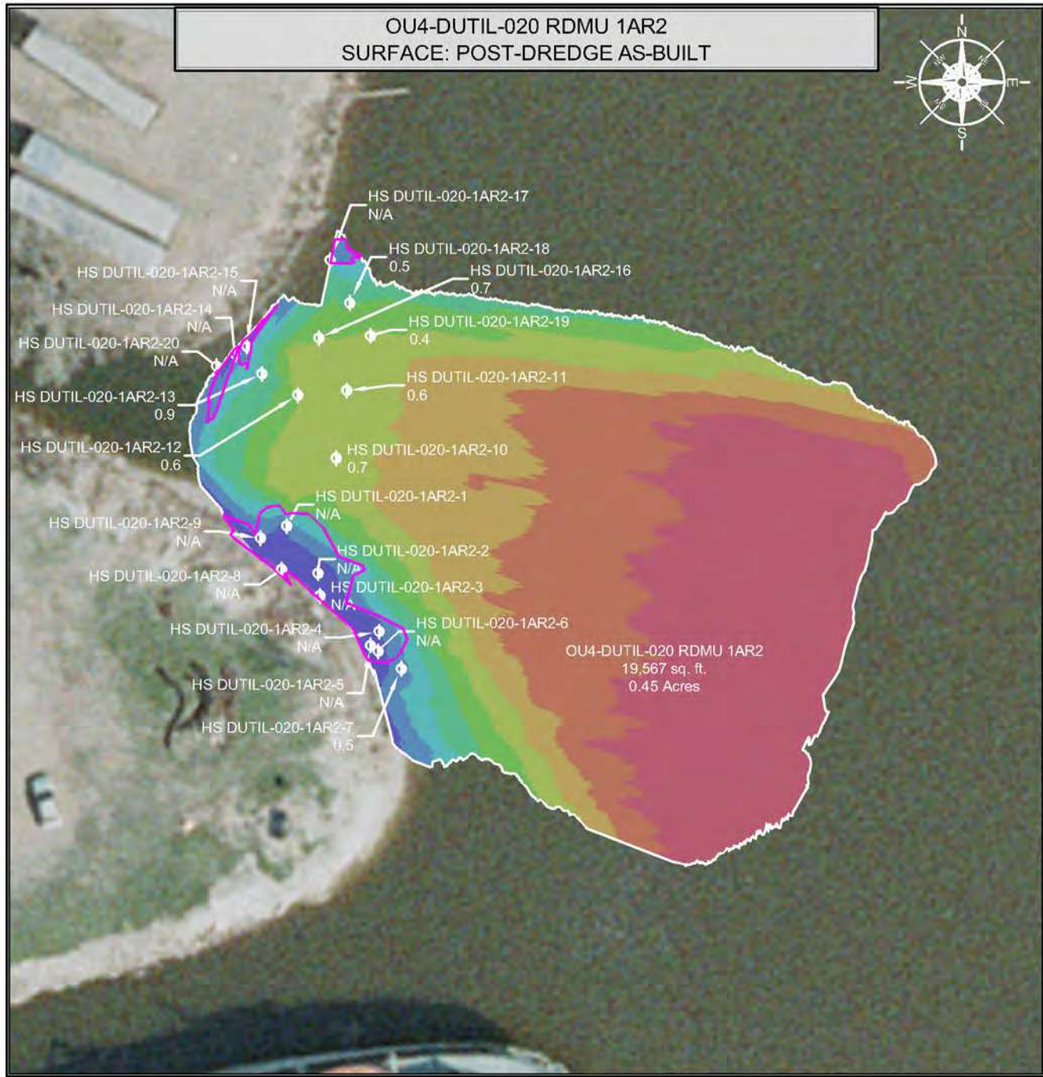
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-025

OU4-DUTIL-020 RDMU 1AR
2nd RESIDUAL DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LOC\CAD\Field Engineering\Dredge Files\2018\OU4 DUTIL-020\DWG\Post Dredge\OU4 DUTIL-020 RDMU 1AR.dwg

OU4-DUTIL-020 RDMU 1AR2
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP

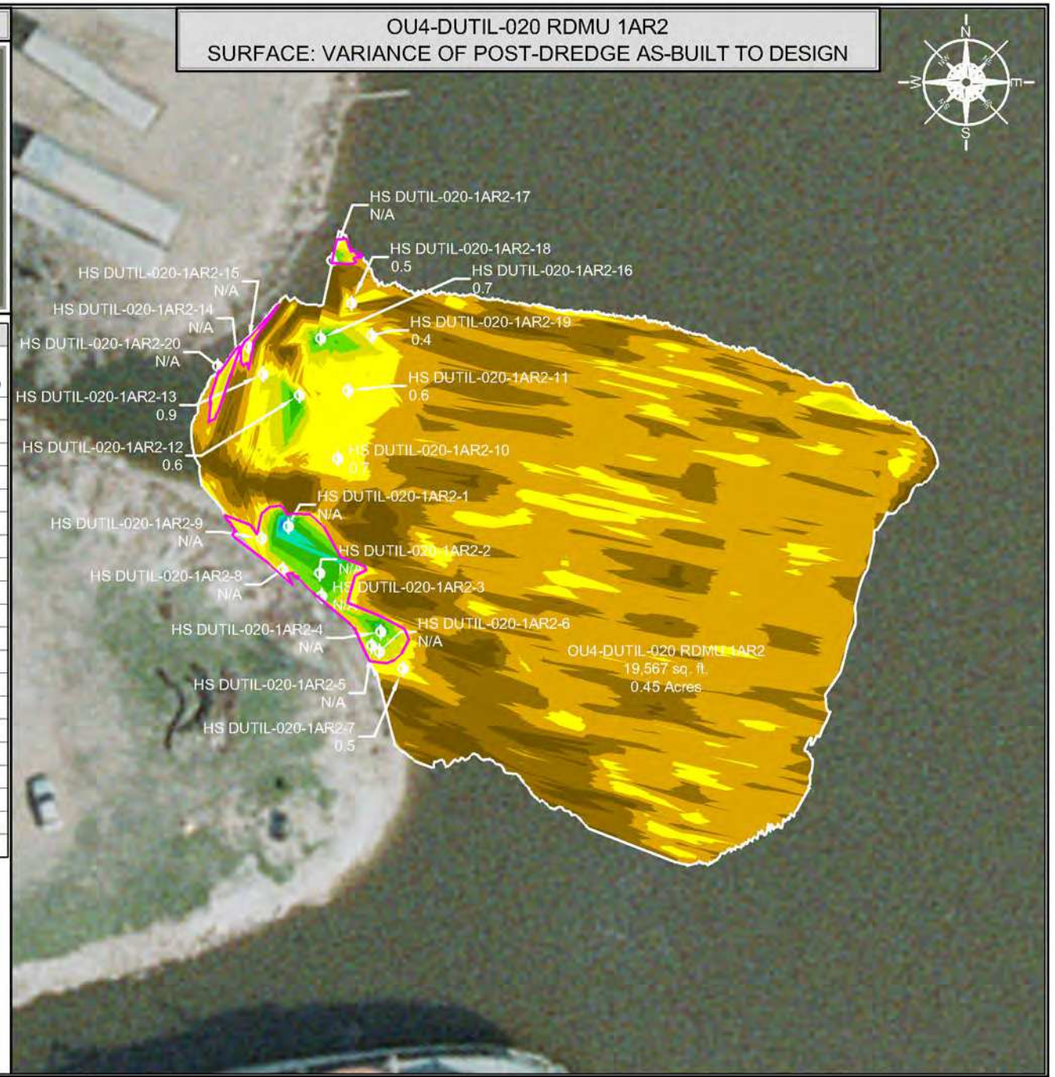


HIGH SUBGRADE SAMPLE AS-BUILT RESULTS

SAMPLE ID	NORTHING	EASTING	THICKNESS OF SOFT SEDIMENT (FEET)
HS DUTIL-020-1AR2-1	249576.88	2483519.61	N/A
HS DUTIL-020-1AR2-2	249564.42	2483527.86	N/A
HS DUTIL-020-1AR2-3	249558.54	2483528.34	N/A
HS DUTIL-020-1AR2-4	249549.02	2483543.90	N/A
HS DUTIL-020-1AR2-5	249545.41	2483541.62	N/A
HS DUTIL-020-1AR2-6	249543.84	2483543.62	N/A
HS DUTIL-020-1AR2-7	249539.24	2483549.82	0.5
HS DUTIL-020-1AR2-8	249565.42	2483518.16	N/A
HS DUTIL-020-1AR2-9	249573.70	2483512.57	N/A
HS DUTIL-020-1AR2-10	249594.78	2483532.60	0.7
HS DUTIL-020-1AR2-11	249612.66	2483535.35	0.6
HS DUTIL-020-1AR2-12	249611.44	2483522.48	0.6
HS DUTIL-020-1AR2-13	249617.00	2483512.96	0.9
HS DUTIL-020-1AR2-14	249622.22	2483505.93	N/A
HS DUTIL-020-1AR2-15	249624.29	2483509.02	N/A
HS DUTIL-020-1AR2-16	249626.46	2483528.08	0.7
HS DUTIL-020-1AR2-17	249646.99	2483531.07	N/A
HS DUTIL-020-1AR2-18	249635.76	2483536.26	0.5
HS DUTIL-020-1AR2-19	249627.12	2483541.62	0.4
HS DUTIL-020-1AR2-20	249619.10	2483500.97	N/A

NR = NO RECOVERY
NA = NO CORE COLLECTION REQUIRED DUE TO POLING DEPTH

OU4-DUTIL-020 RDMU 1AR2
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-10-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
561.00'	-	563.00'
563.00'	-	565.00'
565.00'	-	567.00'
567.00'	-	569.00'
569.00'	-	571.00'
571.00'	-	573.00'
573.00'	-	575.00'
575.00'	-	577.00'
577.00'	-	579.00'
579.00'	-	581.00'

DRAWING NOTES

1. HIGH SUBGRADE SAMPLES AND POLING DATA WERE COLLECTED ON 10-11-2018 AND LOGGED ON 10-11-2018

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.83'	-	-1.00'	1,226.35
	-1.00'	-	-0.50'	4,931.74
	-0.50'	-	0.00'	10,135.96
ABOVE RAL	0.00'	-	0.50'	2,321.25
	0.50'	-	1.00'	431.93
	1.00'	-	1.50'	277.26
	1.50'	-	2.00'	172.64
	2.00'	-	2.50'	47.28
	2.50'	-	3.00'	6.34
	3.00'	-	3.16'	0.35

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DUTIL-020 RDMU 1AR2.dwg
DRAWN BY: DAVID.FRISQUE
DATE: October 10, 2018
LAST REVISED: November 20, 2018
CHECKED BY: REG

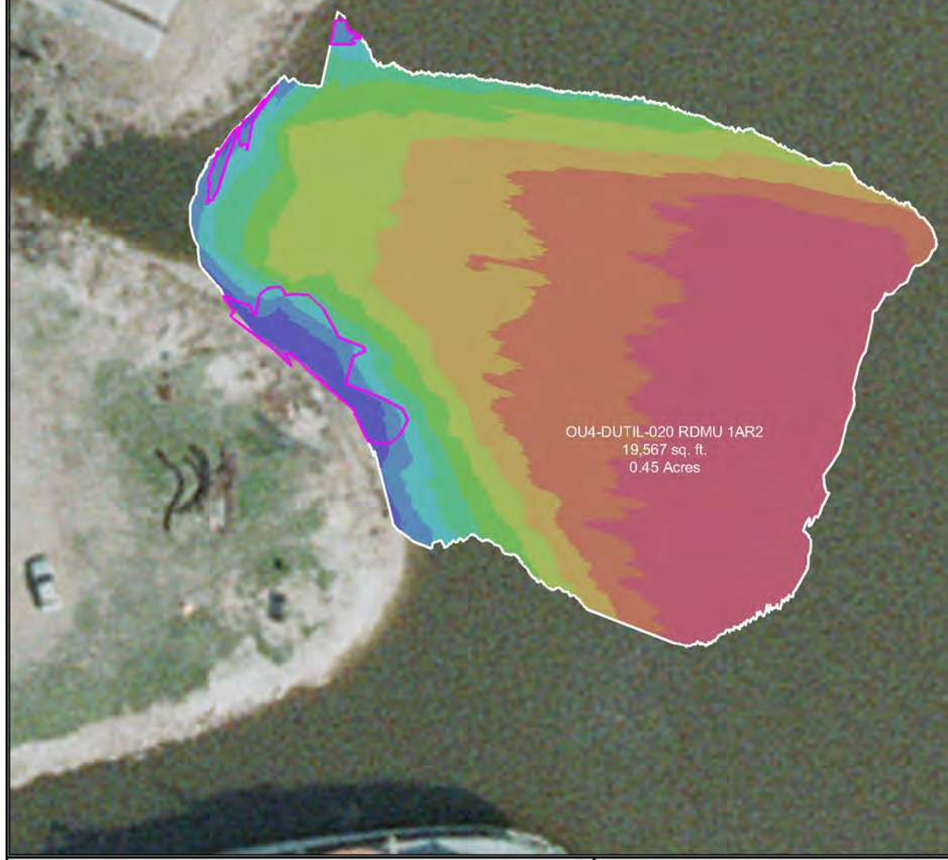
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-026

OU4-DUTIL-020 RDMU 1AR2 3rd RESIDUAL DREDGE HIGH SUBGRADE RESULTS

F:\LOCAD\Hilot Engineers-3D\ecgis Files\2018\OU4 DUTIL-020\DWG\Final Drawings\OU4 DUTIL-020 RDMU 1 (AR2.dwg

OU4-DUTIL-020 RDMU 1AR2
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

3,535.62	INITIAL RAL VOLUME
361.18	INITIAL OVERCUT VOLUME
3,896.80	RAL + OVERCUT VOLUME
3,693.62	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

3,347.61	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
362.34	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
3,709.95	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

2018 AS-BUILT VOLUMES (CU. YD.)

3,578.44	TOTAL VOLUME DREDGED
3,294.32	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
28.62	CONFIRMED HIGH SUBGRADE VOLUME
24.60	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
149.96	OVERCUT VOLUME REMAINING
214.56	OVERCUT VOLUME DREDGED
69.56	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

19,566.51	AREA (SQ. FT.)
2,659.81	ABOVE DESIGN ELEVATION
16,294.05	AT OR BELOW DESIGN ELEVATION
612.65	CONFIRMED HIGH SUBGRADE
5.65 "	AVERAGE DEPTH OF OVERCUT [1]
86	PERCENT COMPLETE [2]

OU4-DUTIL-020 RDMU 1AR2
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-10-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
561.00'	-	563.00'
563.00'	-	565.00'
565.00'	-	567.00'
567.00'	-	569.00'
569.00'	-	571.00'
571.00'	-	573.00'
573.00'	-	575.00'
575.00'	-	577.00'
577.00'	-	579.00'
579.00'	-	581.00'

A/OT Comment 2018-10-25: On an exception basis, residual sand cover with a minimum of 9-inches over the entire DMU footprint is acceptable.

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.83'	-	-1.00'	1,226.35
BELOW RAL	-1.00'	-	-0.50'	4,931.74
BELOW RAL	-0.50'	-	0.00'	10,135.96
ABOVE RAL	0.00'	-	0.50'	2,321.25
ABOVE RAL	0.50'	-	1.00'	431.93
ABOVE RAL	1.00'	-	1.50'	277.26
ABOVE RAL	1.50'	-	2.00'	172.64
ABOVE RAL	2.00'	-	2.50'	47.28
ABOVE RAL	2.50'	-	3.00'	6.34
ABOVE RAL	3.00'	-	3.16'	0.35

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DUTIL-020 RDMU 1AR2.dwg
DRAWN BY: DAVID.FRISQUE
DATE: October 10, 2018
LAST REVISED: November 20, 2018
CHECKED BY: REG

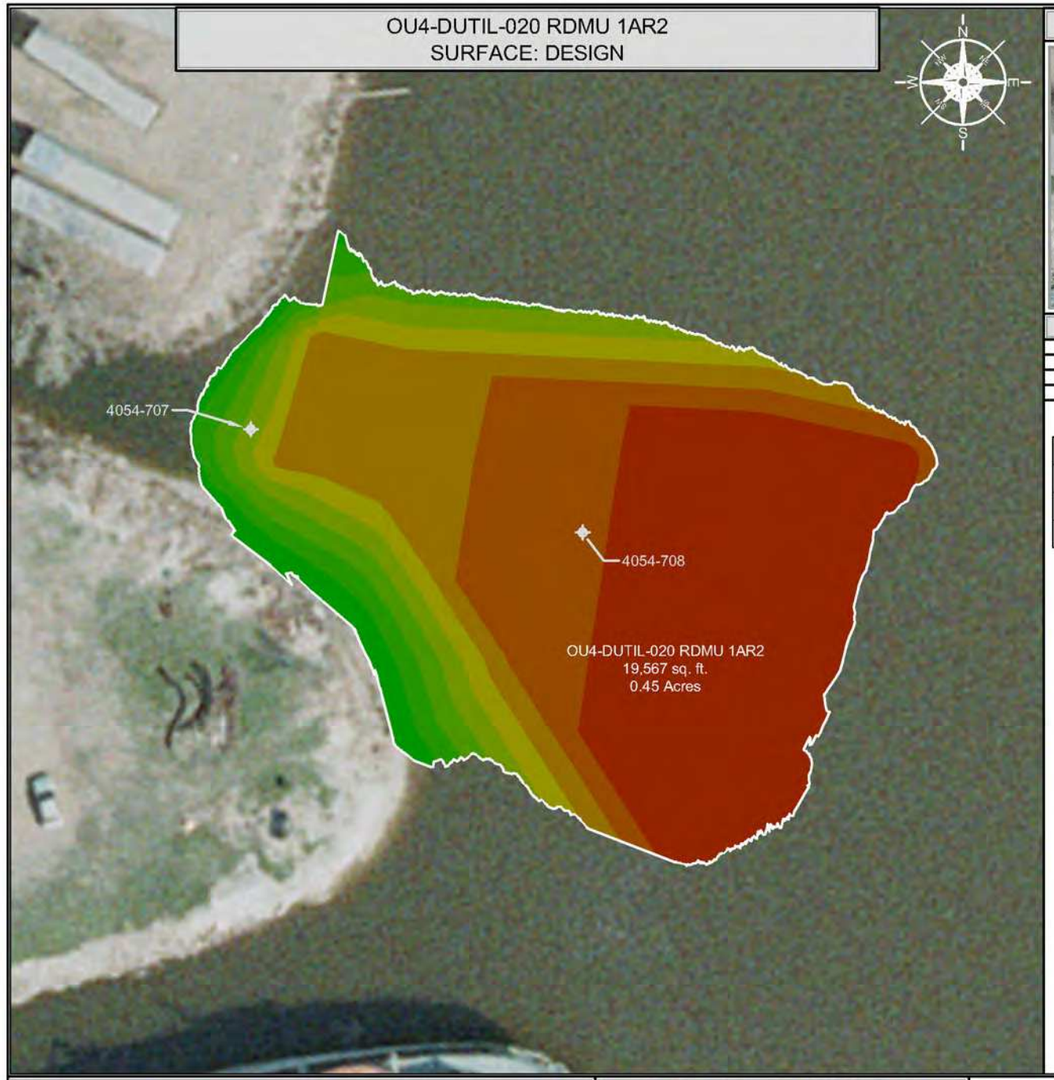
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-027

OU4-DUTIL-020 RDMU 1AR2
3rd RESIDUAL DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LLC\CAD\Field Engineering\Dredge Files\2018\OU4-DUTIL-020\DWG\Post Dredge\OU4-DUTIL-020 RDMU 1AR2.dwg

OU4-DUTIL-020 RDMU 1AR2
SURFACE: DESIGN



INDEX MAP



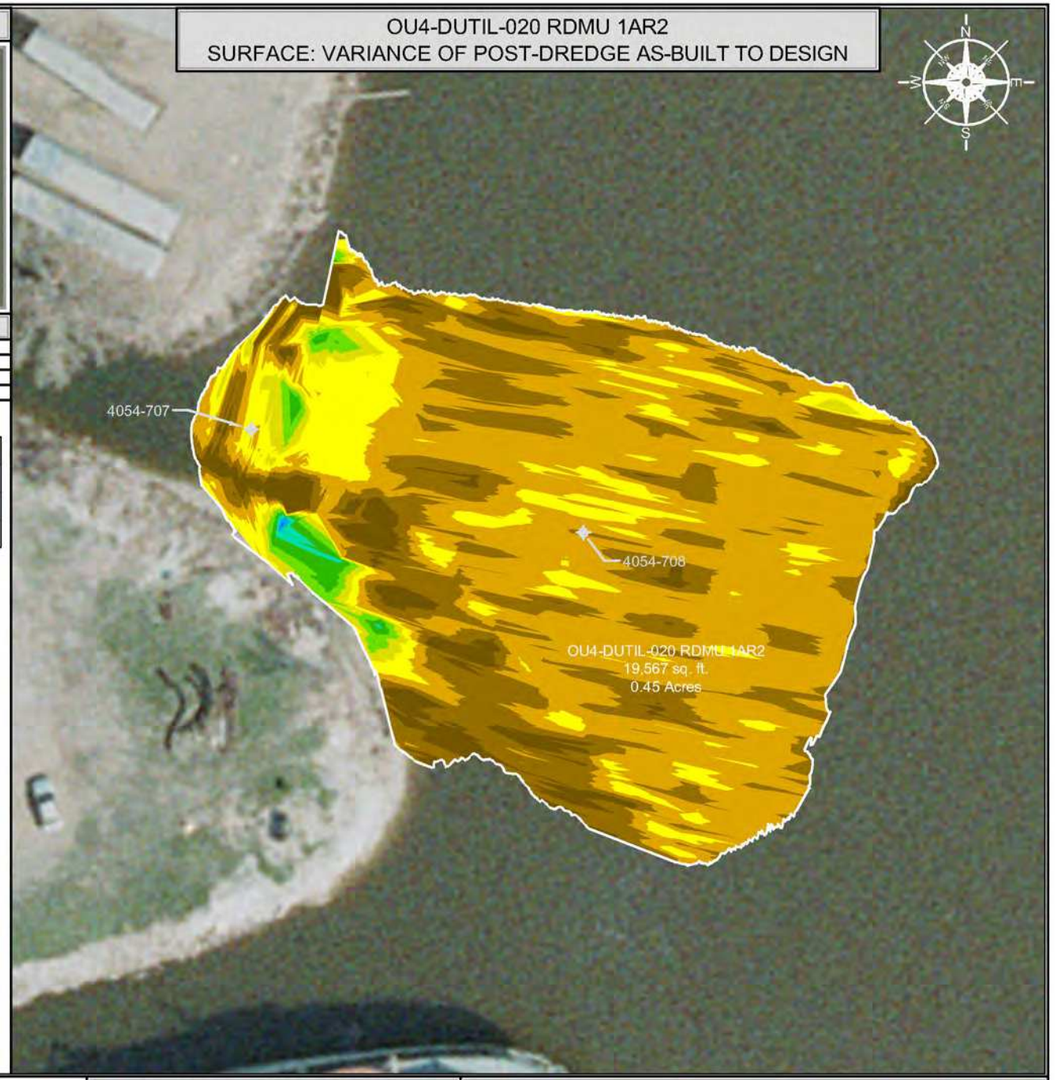
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	6,120 µg/kg (6.12 ppm)
0.5' - 1.0'	1,770 µg/kg (1.77 ppm)
1.0' - 1.5'	357 µg/kg (0.357 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4054-707	249602.45	2483509.82
4054-708	249575.21	2483597.42

OU4-DUTIL-020 RDMU 1AR2
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-10-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
562.00'	-	564.00'
564.00'	-	566.00'
566.00'	-	568.00'
568.00'	-	570.00'
570.00'	-	572.00'
572.00'	-	574.00'
574.00'	-	576.00'
576.00'	-	578.00'
578.00'	-	580.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-DUTIL-020-1AR2-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-DUTIL-020-1AR2-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-DUTIL-020-1AR2-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 10-11-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF TWO SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 10-16-2018

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.83'	-	-1.00'	1,226.35
BELOW RAL	-1.00'	-	-0.50'	4,931.74
BELOW RAL	-0.50'	-	0.00'	10,135.96
ABOVE RAL	0.00'	-	0.50'	2,321.25
ABOVE RAL	0.50'	-	1.00'	431.93
ABOVE RAL	1.00'	-	1.50'	277.26
ABOVE RAL	1.50'	-	2.00'	172.64
ABOVE RAL	2.00'	-	2.50'	47.28
ABOVE RAL	2.50'	-	3.00'	6.34
ABOVE RAL	3.00'	-	3.16'	0.35

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DUTIL-020 RDMU 1AR2.dwg
DRAWN BY: DAVID.FRISQUE
DATE: October 10, 2018
LAST REVISED: November 26, 2018
CHECKED BY: REG

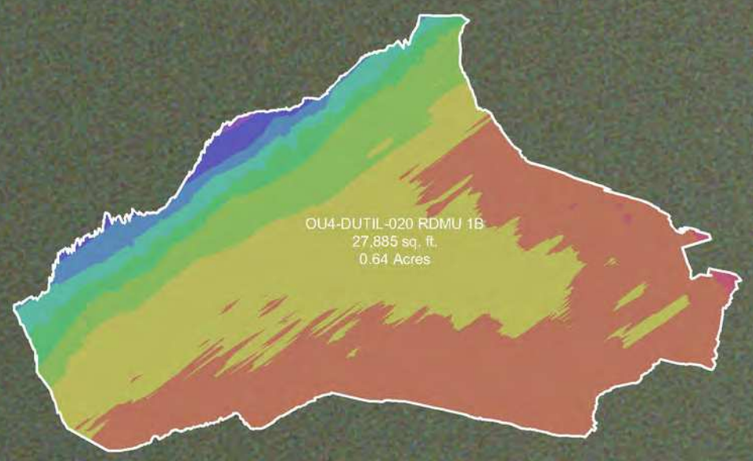
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-028

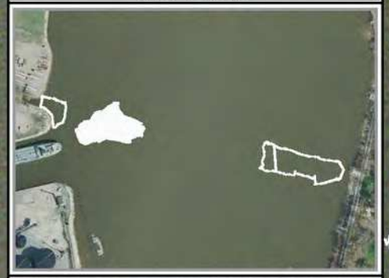
OU4-DUTIL-020 RDMU 1AR2
3rd RESIDUAL DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LOCAD\PHE\Engineering\Dredge Files\2018\OU4 DUTIL-020\DWG\Post Dredge\OU4 DUTIL-020 RDMU 1AR2.dwg

OU4-DUTIL-020 RDMU 1B
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

2,191.57	INITIAL RAL VOLUME
332.23	INITIAL OVERCUT VOLUME
2,523.80	RAL + OVERCUT VOLUME
2,410.31	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

2,201.13	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
332.97	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
2,534.10	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

2018 AS-BUILT VOLUMES (CU. YD.)

2,659.77	TOTAL VOLUME DREDGED
2,182.35	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
18.78	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
94.71	OVERCUT VOLUME REMAINING
269.16	OVERCUT VOLUME DREDGED
208.26	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

27,885.09	AREA (SQ. FT.)
2,426.85	ABOVE DESIGN ELEVATION
25,458.24	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
6.08 "	AVERAGE DEPTH OF OVERCUT [1]
91	PERCENT COMPLETE [2]

OU4-DUTIL-020 RDMU 1B
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-1-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
547.00'	-	549.00'
549.00'	-	551.00'
551.00'	-	553.00'
553.00'	-	555.00'
555.00'	-	557.00'
557.00'	-	559.00'
559.00'	-	561.00'
561.00'	-	563.00'
563.00'	-	565.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT
DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.57'	-	-1.00'	2,581.77
BELOW RAL	-1.00'	-	-0.50'	9,683.45
BELOW RAL	-0.50'	-	0.00'	13,193.03
ABOVE RAL	0.00'	-	0.50'	2,239.51
ABOVE RAL	0.50'	-	1.00'	159.64
ABOVE RAL	1.00'	-	1.50'	21.45
ABOVE RAL	1.50'	-	2.00'	5.17
ABOVE RAL	2.00'	-	2.16'	1.08

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DUTIL-020 RDMU 1B.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 11, 2018
LAST REVISED: November 20, 2018
CHECKED BY: REG

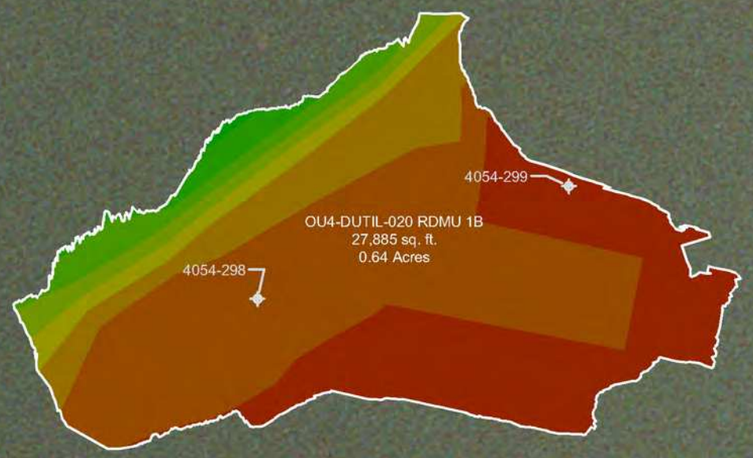
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-029

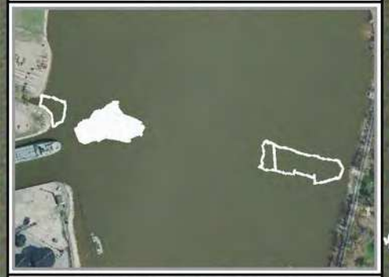
OU4-DUTIL-020 RDMU 1B
1st RESIDUAL DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\ALLDOCS\Field Engineering\Dredge Files\2018\OU4 DUTIL -020\DWG\Post Dredge\OU4 DUTIL -020 RDMU 1B.dwg

OU4-DUTIL-020 RDMU 1B
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	1,660 µg/kg (1.66 ppm)
0.5' - 1.0'	98.9 µg/kg (0.0989 ppm)
1.0' - 1.5'	<25.5 µg/kg (<0.0255 ppm)

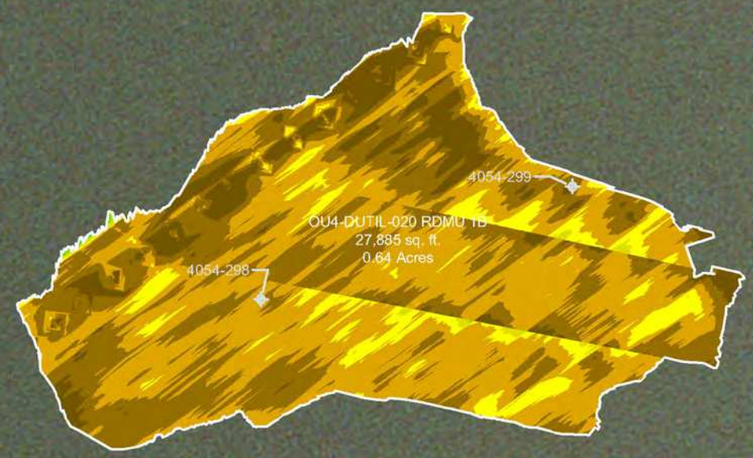
CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4054-299	249536.51	2483876.88
4054-298	249491.95	2483753.54

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION
4054-298	A: 2,520 µg/kg (2.52) ppm) B: 27.1 µg/kg (0.0271) ppm) C: <25.3 µg/kg (<0.0253) ppm)

OU4-DUTIL-020 RDMU 1B
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-18-DUTIL-020-1B-4054-298-A
2. TTFR-18-DUTIL-020-1B-4054-298-B
3. TTFR-18-DUTIL-020-1B-4054-298-C

SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-1-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
549.00'	-	551.00'
551.00'	-	553.00'
553.00'	-	555.00'
555.00'	-	557.00'
557.00'	-	559.00'
559.00'	-	561.00'
561.00'	-	563.00'
563.00'	-	565.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-DUTIL-020-1B-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-DUTIL-020-1B-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-DUTIL-020-1B-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 7-3-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF TWO SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 7-10-2018 and 7-18-2018

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OU# - D# - #
- OU# = OPERABLE UNIT
- D# = DREDGE AREA
- # = DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.57'	-	-1.00'	2,581.77
BELOW RAL	-1.00'	-	-0.50'	9,683.45
BELOW RAL	-0.50'	-	0.00'	13,193.03
ABOVE RAL	0.00'	-	0.50'	2,239.51
ABOVE RAL	0.50'	-	1.00'	159.64
ABOVE RAL	1.00'	-	1.50'	21.45
ABOVE RAL	1.50'	-	2.00'	5.17
ABOVE RAL	2.00'	-	2.16'	1.08

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DUTIL-020 RDMU 1B.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 11, 2018
LAST REVISED: November 26, 2018
CHECKED BY: REG

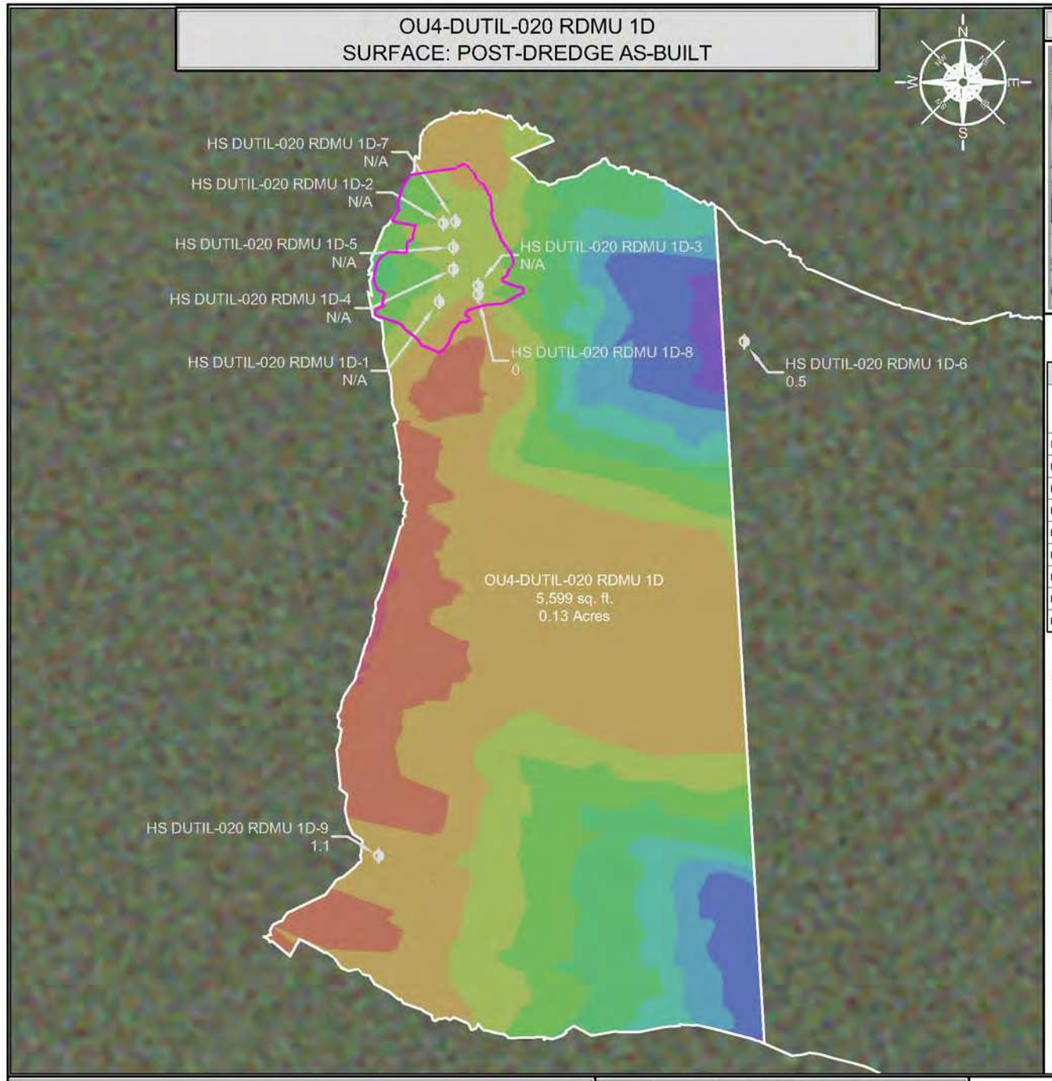
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-030

OU4-DUTIL-020 RDMU 1B
1st RESIDUAL DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

P:\LLOC\ACAD\Field Engineering\Dredge Files\2018\OU4-DUTIL-020\DWG\Post Dredge\OU4-DUTIL-020 RDMU 1B.dwg

OU4-DUTIL-020 RDMU 1D
SURFACE: POST-DREDGE AS-BUILT



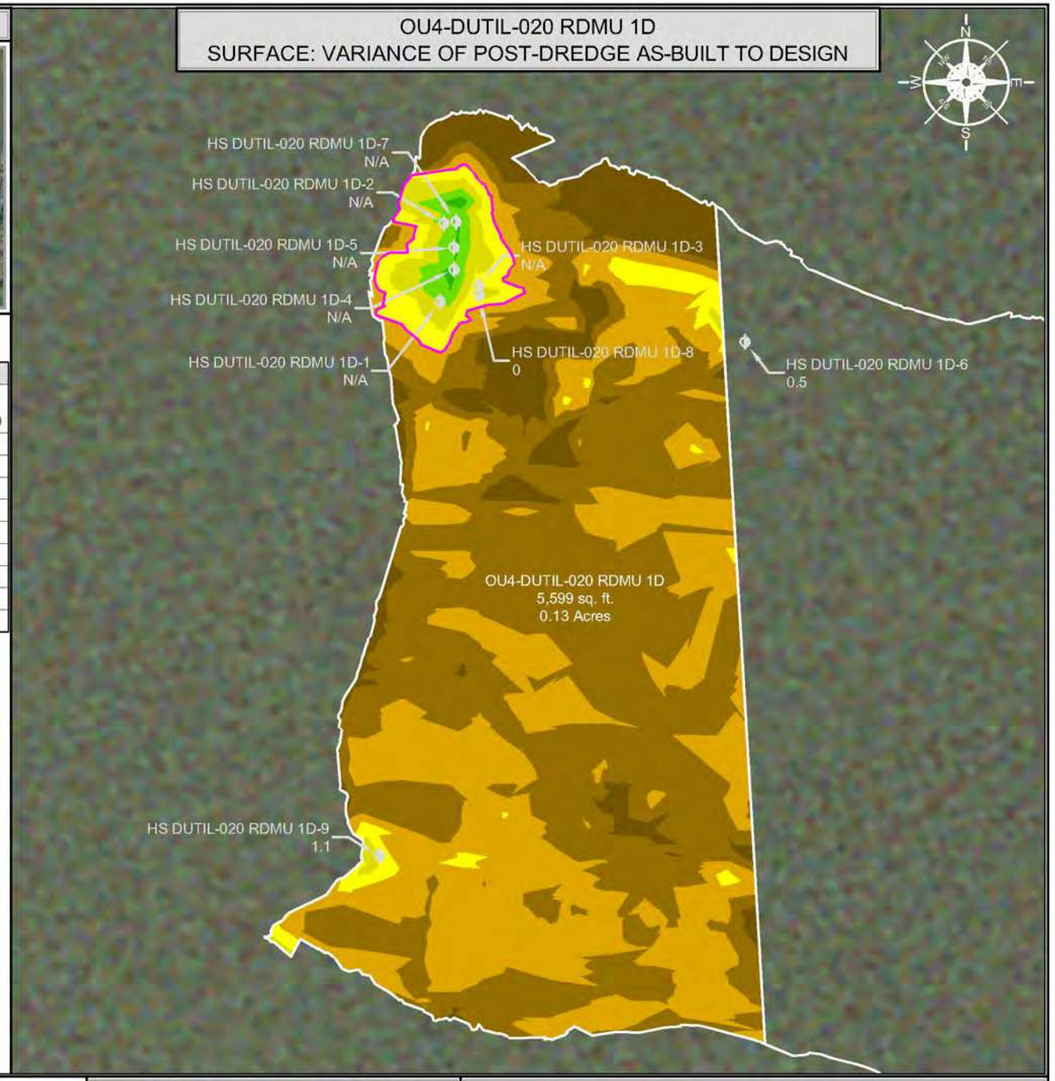
INDEX MAP



HIGH SUBGRADE SAMPLE AS-BUILT RESULTS			
SAMPLE ID	NORTHING	EASTING	THICKNESS OF SOFT SEDIMENT (FEET)
HS DUTIL-020 RDMU 1D-1	249414.85	2484453.33	N/A
HS DUTIL-020 RDMU 1D-2	249425.17	2484453.85	N/A
HS DUTIL-020 RDMU 1D-3	249416.91	2484458.46	N/A
HS DUTIL-020 RDMU 1D-4	249419.10	2484455.17	N/A
HS DUTIL-020 RDMU 1D-5	249422.01	2484455.18	N/A
HS DUTIL-020 RDMU 1D-6	249409.57	2484493.59	0.5
HS DUTIL-020 RDMU 1D-7	249425.40	2484455.42	N/A
HS DUTIL-020 RDMU 1D-8	249415.69	2484458.42	0
HS DUTIL-020 RDMU 1D-9	249341.77	2484445.29	1.1

NR = NO RECOVERY
NA = NO CORE COLLECTION REQUIRED DUE TO POLING DEPTH

OU4-DUTIL-020 RDMU 1D
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 20')

20 10 0 20 40

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-11-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'
560.00'	-	561.00'
561.00'	-	562.00'
562.00'	-	563.00'
563.00'	-	564.00'
564.00'	-	565.00'
565.00'	-	566.00'

DRAWING NOTES

1. HIGH SUBGRADE SAMPLES AND POLING DATA WERE COLLECTED ON 6-13-2018 AND LOGGED ON 6-14-2018

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OU# - D# - #
OPERABLE UNIT | DREDGE AREA | DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.83'	-	-1.00'	550.46
BELOW RAL	-1.00'	-	-0.50'	2,652.79
BELOW RAL	-0.50'	-	0.00'	1,983.71
ABOVE RAL	0.00'	-	0.50'	227.13
ABOVE RAL	0.50'	-	1.00'	117.98
ABOVE RAL	1.00'	-	1.50'	57.88
ABOVE RAL	1.50'	-	1.82'	8.69

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DUTIL-020 RDMU 1D.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 12, 2018
LAST REVISED: November 20, 2018
CHECKED BY: REG

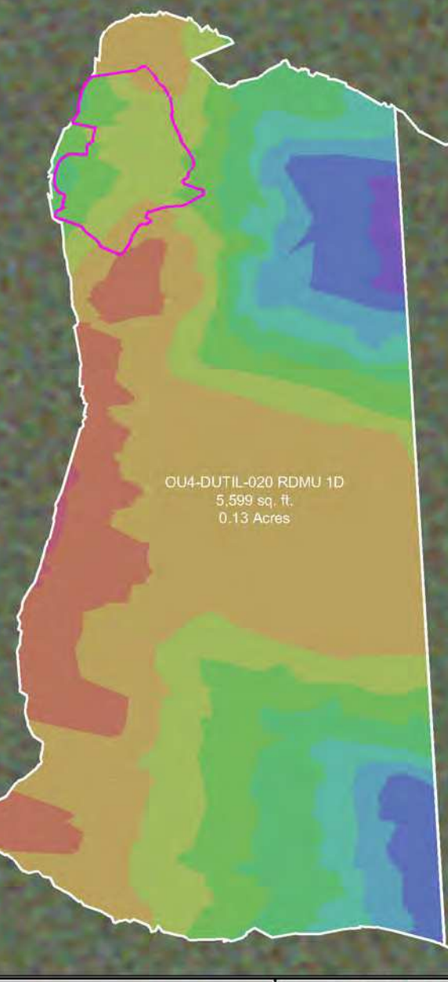
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-031

OU4-DUTIL-020 RDMU 1D
1st RESIDUAL DREDGE HIGH SUBGRADE RESULTS

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OU4-DUTIL-020 RDMU 1D
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

547.82	INITIAL RAL VOLUME
96.10	INITIAL OVERCUT VOLUME
643.92	RAL + OVERCUT VOLUME
615.81	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

492.36	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
98.04	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
590.40	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

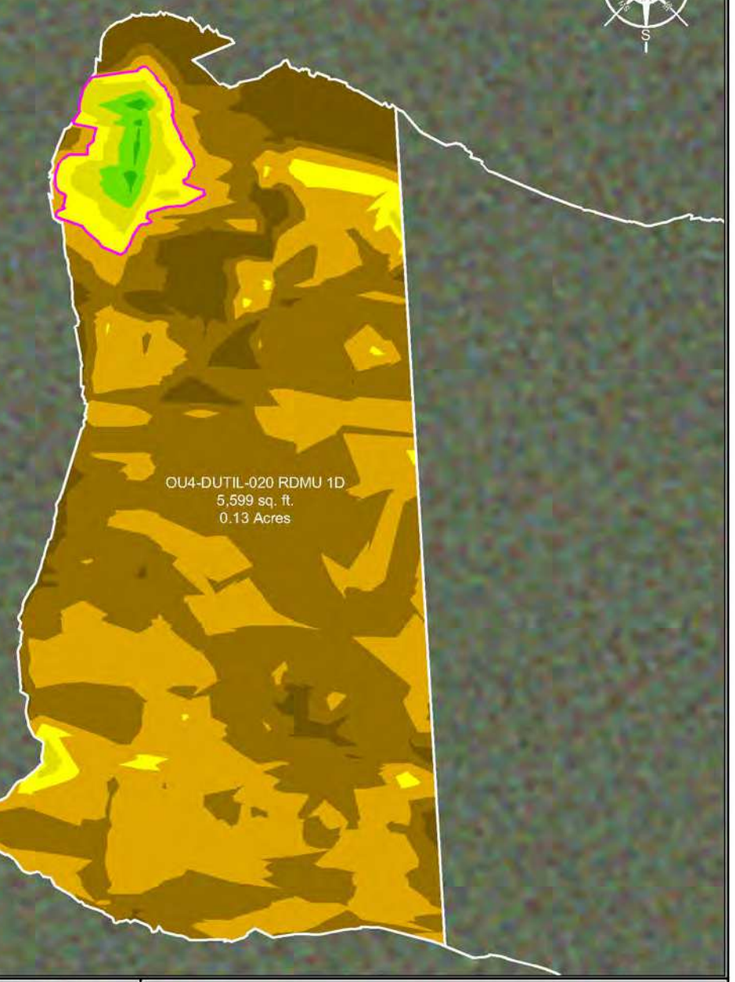
2018 AS-BUILT VOLUMES (CU. YD.)

601.56	TOTAL VOLUME DREDGED
484.46	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
7.05	CONFIRMED HIGH SUBGRADE VOLUME
0.85	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
20.21	OVERCUT VOLUME REMAINING
78.88	OVERCUT VOLUME DREDGED
38.22	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

5,598.65	AREA (SQ. FT.)
120.07	ABOVE DESIGN ELEVATION
5,186.96	AT OR BELOW DESIGN ELEVATION
291.62	CONFIRMED HIGH SUBGRADE
7.31 "	AVERAGE DEPTH OF OVERCUT [1]
98	PERCENT COMPLETE [2]

OU4-DUTIL-020 RDMU 1D
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 20')

20 10 0 20 40

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-11-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'
560.00'	-	561.00'
561.00'	-	562.00'
562.00'	-	563.00'
563.00'	-	564.00'
564.00'	-	565.00'
565.00'	-	566.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.83'	-	-1.00'	550.46
BELOW RAL	-1.00'	-	-0.50'	2,652.79
BELOW RAL	-0.50'	-	0.00'	1,983.71
ABOVE RAL	0.00'	-	0.50'	227.13
ABOVE RAL	0.50'	-	1.00'	117.98
ABOVE RAL	1.00'	-	1.50'	57.88
ABOVE RAL	1.50'	-	1.82'	8.69

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DUTIL-020 RDMU 1D.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 12, 2018
LAST REVISED: November 20, 2018
CHECKED BY: REG

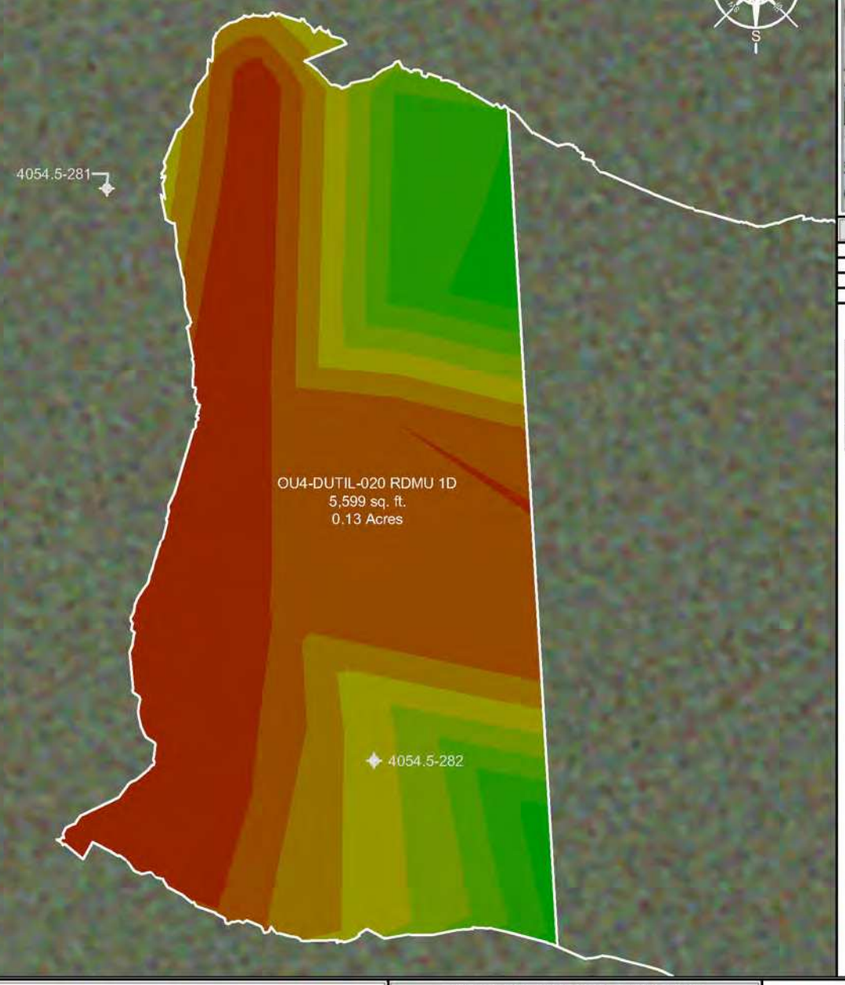
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-032

OU4-DUTIL-020 RDMU 1D
1st RESIDUAL DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\ALLOC\AS\Field Engineering\Dredge Files\2018\OU4 DUTIL-020\DWG\Post Dredge\OU4 DUTIL-020 RDMU 1D.dwg

OU4-DUTIL-020 RDMU 1D
SURFACE: DESIGN



INDEX MAP



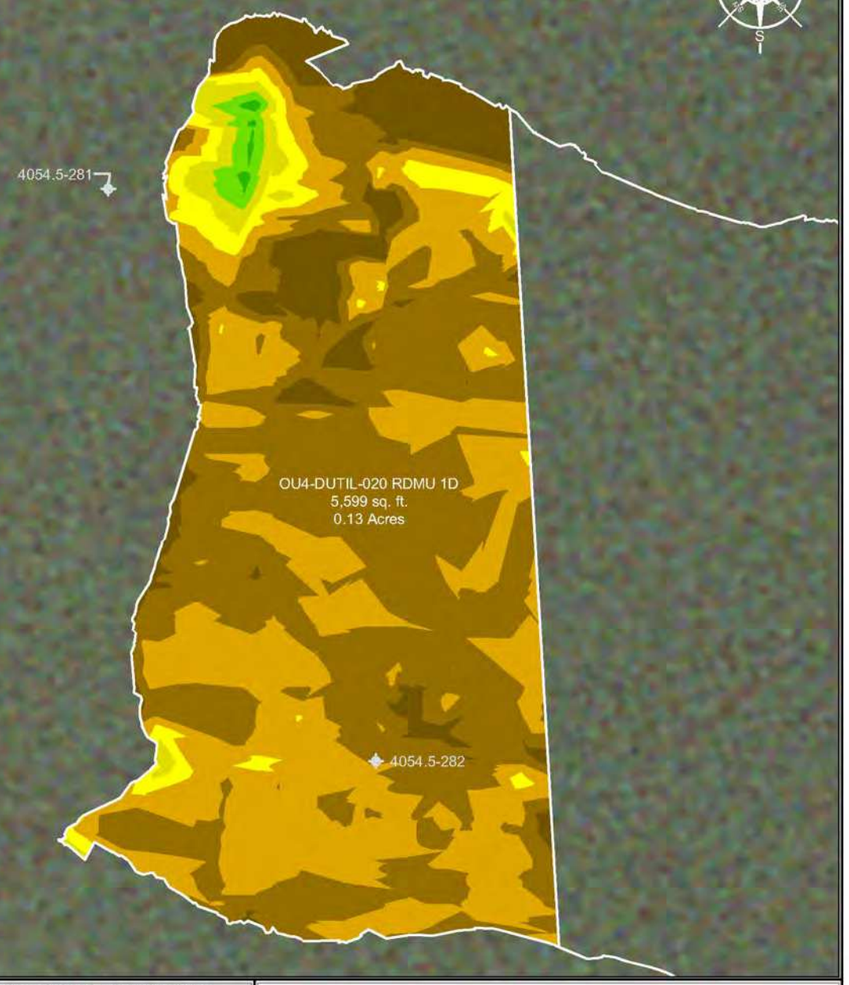
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	182 µg/kg (0.182 ppm)
0.5' - 1.0'	29.3 µg/kg (0.0293 ppm)
1.0' - 1.5'	<25.3 µg/kg (<0.0253 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4054.5-282	249341.48	2484472.06
4054.5-281	249416.96	2484436.74

OU4-DUTIL-020 RDMU 1D
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 20')

20 10 0 20 40

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-11-2018

DESIGN COLOR LEGEND

	MIN. EL.		MAX. EL.
	556.00'	-	557.00'
	557.00'	-	558.00'
	558.00'	-	559.00'
	559.00'	-	560.00'
	560.00'	-	561.00'
	561.00'	-	562.00'
	562.00'	-	563.00'
	563.00'	-	564.00'
	564.00'	-	565.00'
	565.00'	-	566.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-DUTIL-020-1D-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-DUTIL-020-1D-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-DUTIL-020-1D-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 7-3-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF TWO SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 7-10-2018

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OU# - D# - #
OPERABLE UNIT / DREDGE AREA / DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

		MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL		-2.83'	-	-1.00'	550.46
		-1.00'	-	-0.50'	2,652.79
		-0.50'	-	0.00'	1,983.71
ABOVE RAL		0.00'	-	0.50'	227.13
		0.50'	-	1.00'	117.98
		1.00'	-	1.50'	57.88
		1.50'	-	1.82'	8.69

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DUTIL-020 RDMU 1D.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 12, 2018
LAST REVISED: November 26, 2018
CHECKED BY: REG

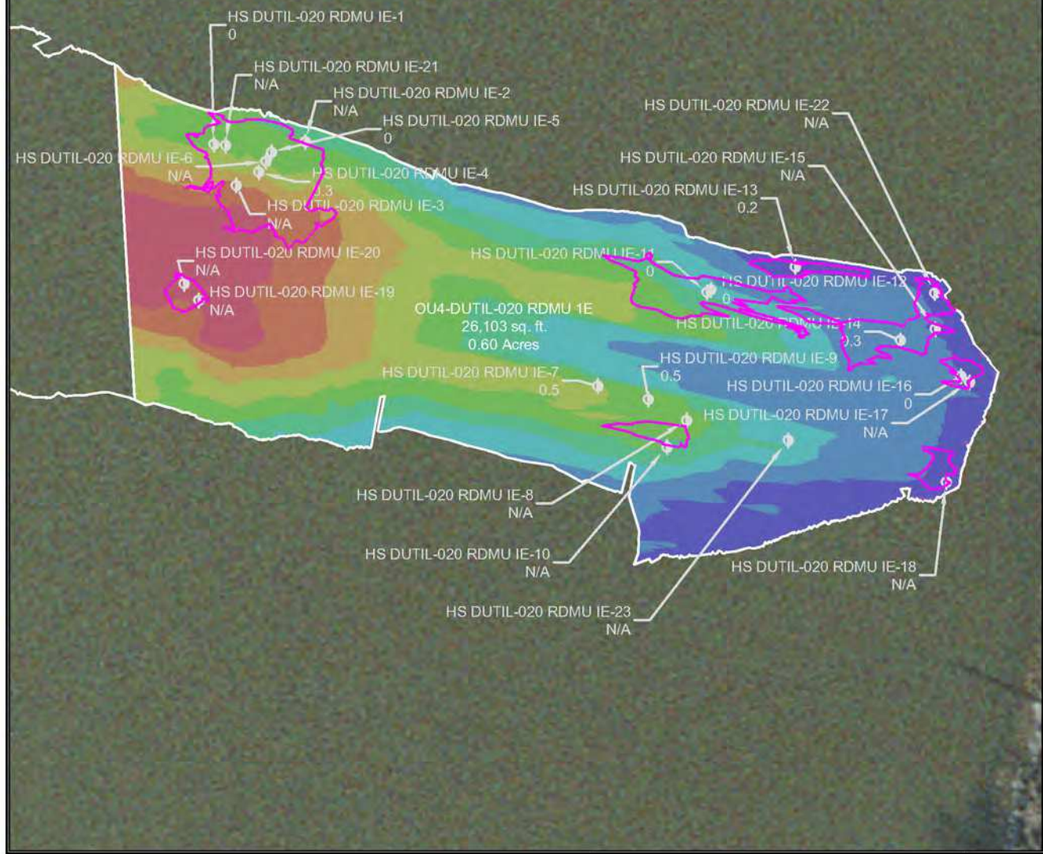
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-033

OU4-DUTIL-020 RDMU 1D
1st RESIDUAL DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LOCADD\Field Engineering\Dredge Files\2018\OU4 DUTIL-020\DWG\Post Dredge\OU4 DUTIL-020 RDMU 1D.dwg

OU4-DUTIL-020 RDMU 1E
SURFACE: POST-DREDGE AS-BUILT



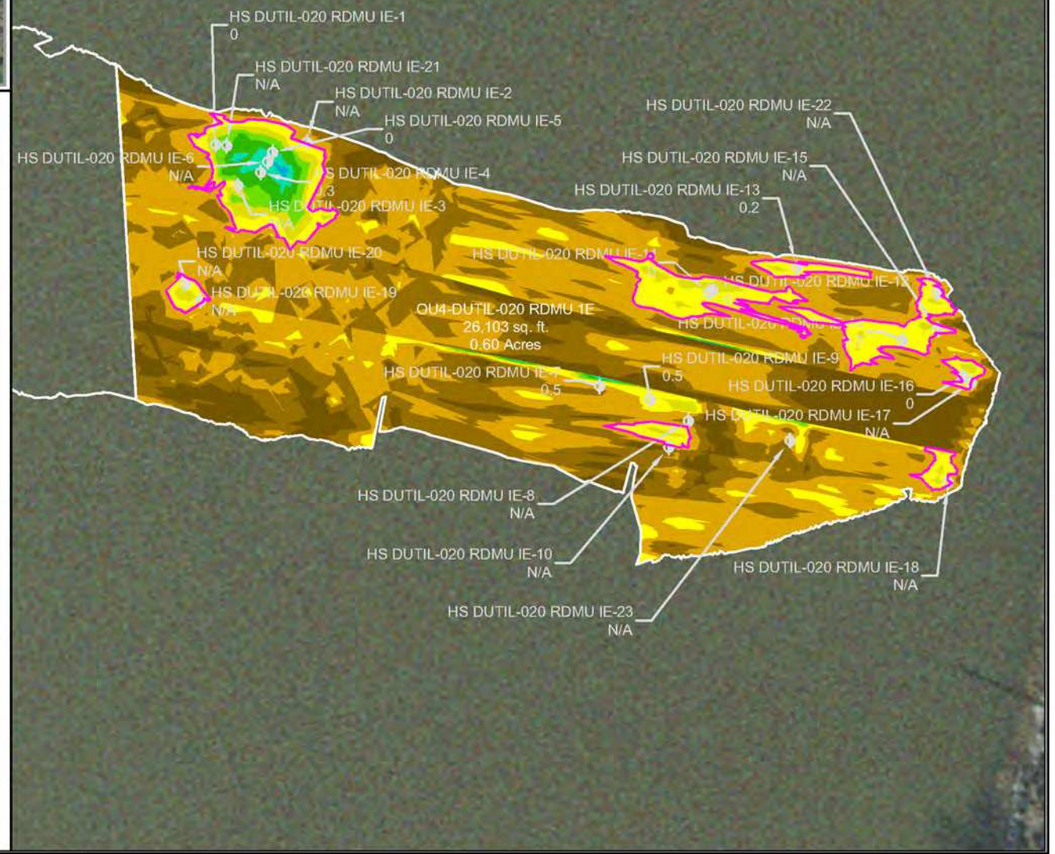
INDEX MAP



HIGH SUBGRADE SAMPLE AS-BUILT RESULTS			
SAMPLE ID	NORTHING	EASTING	THICKNESS OF SOFT SEDIMENT (FEET)
HS DUTIL-020 RDMU IE-1	249401.23	2484522.34	0
HS DUTIL-020 RDMU IE-2	249402.06	2484552.62	N/A
HS DUTIL-020 RDMU IE-3	249387.65	2484529.74	N/A
HS DUTIL-020 RDMU IE-4	249392.04	2484537.27	0.3
HS DUTIL-020 RDMU IE-5	249398.63	2484541.30	0
HS DUTIL-020 RDMU IE-6	249395.52	2484539.55	N/A
HS DUTIL-020 RDMU IE-7	249321.51	2484648.97	0.5
HS DUTIL-020 RDMU IE-8	249310.12	2484678.34	N/A
HS DUTIL-020 RDMU IE-9	249317.07	2484665.70	0.5
HS DUTIL-020 RDMU IE-10	249301.30	2484671.86	N/A
HS DUTIL-020 RDMU IE-11	249352.36	2484685.02	0
HS DUTIL-020 RDMU IE-12	249353.26	2484686.35	0
HS DUTIL-020 RDMU IE-13	249360.78	2484714.17	0.2
HS DUTIL-020 RDMU IE-14	249336.58	2484748.82	0.3
HS DUTIL-020 RDMU IE-15	249340.23	2484760.42	N/A
HS DUTIL-020 RDMU IE-16	249324.71	2484768.80	0
HS DUTIL-020 RDMU IE-17	249322.74	2484771.66	N/A
HS DUTIL-020 RDMU IE-18	249289.85	2484764.01	N/A
HS DUTIL-020 RDMU IE-19	249349.69	2484517.40	N/A
HS DUTIL-020 RDMU IE-20	249355.24	2484512.49	N/A
HS DUTIL-020 RDMU IE-21	249400.86	2484526.15	N/A
HS DUTIL-020 RDMU IE-22	249352.12	2484760.24	N/A
HS DUTIL-020 RDMU IE-23	249303.58	2484711.83	N/A

NR = NO RECOVERY
NA = NO CORE COLLECTION REQUIRED DUE TO POLING DEPTH

OU4-DUTIL-020 RDMU 1E
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 50')

50 25 0 50 100

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-11-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
557.00'	-	559.00'
559.00'	-	561.00'
561.00'	-	563.00'
563.00'	-	565.00'
565.00'	-	567.00'
567.00'	-	569.00'
569.00'	-	571.00'
571.00'	-	573.00'
573.00'	-	575.00'
575.00'	-	577.00'

DRAWING NOTES

1. HIGH SUBGRADE SAMPLES AND POLING DATA WERE COLLECTED ON 6-13-2018 AND LOGGED ON 6-14-2018

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-6.14'	-	-1.00'	3,391.68
BELOW RAL	-1.00'	-	-0.50'	7,826.69
BELOW RAL	-0.50'	-	0.00'	10,958.61
ABOVE RAL	0.00'	-	0.50'	2,706.07
ABOVE RAL	0.50'	-	1.00'	537.62
ABOVE RAL	1.00'	-	1.50'	274.12
ABOVE RAL	1.50'	-	2.00'	266.50
ABOVE RAL	2.00'	-	2.50'	128.50
ABOVE RAL	2.50'	-	2.71'	13.04

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DUTIL-020 RDMU 1E.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 12, 2018
LAST REVISED: November 20, 2018
CHECKED BY: REG

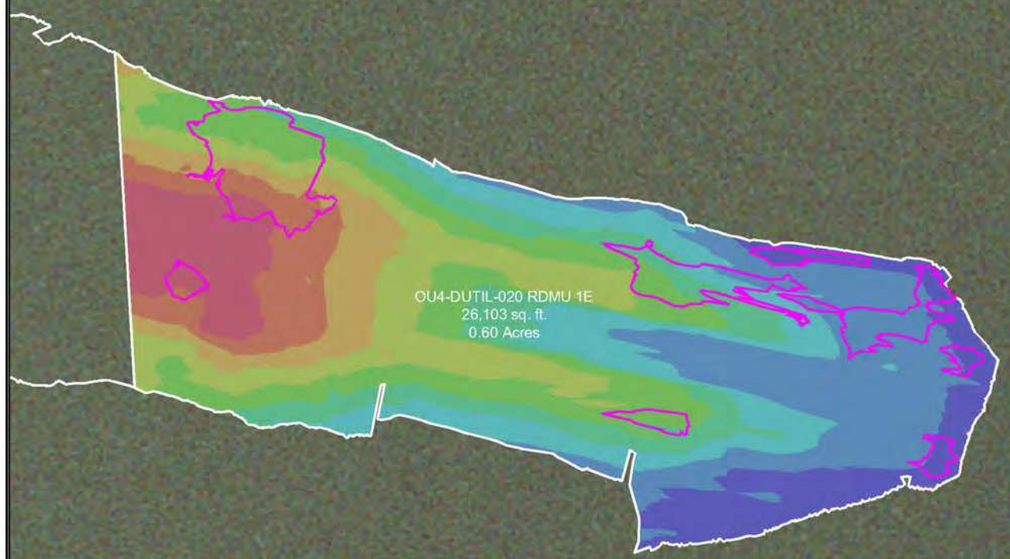
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-034

OU4-DUTIL-020 RDMU 1E
1st RESIDUAL DREDGE HIGH SUBGRADE RESULTS

P:\LLC\CAD\Field Engineering\Dredge Files\2018\OU4-DUTIL-020\DWG\Post Dredge\OU4-DUTIL-020 RDMU 1E.dwg

OU4-DUTIL-020 RDMU 1E
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

3,443.37	INITIAL RAL VOLUME
440.83	INITIAL OVERCUT VOLUME
3,884.20	RAL + OVERCUT VOLUME
3,650.85	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

3,598.99	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
438.81	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
4,037.80	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

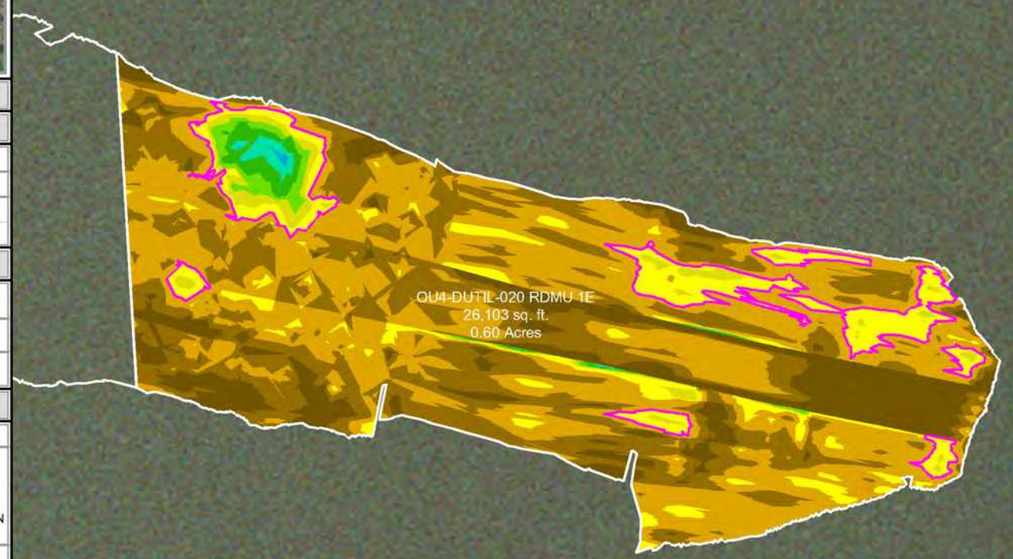
2018 AS-BUILT VOLUMES (CU. YD.)

3,958.25	TOTAL VOLUME DREDGED
3,525.49	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
63.01	CONFIRMED HIGH SUBGRADE VOLUME
10.49	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
159.85	OVERCUT VOLUME REMAINING
295.74	OVERCUT VOLUME DREDGED
137.02	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

26,102.82	AREA (SQ. FT.)
1,095.90	ABOVE DESIGN ELEVATION
22,176.97	AT OR BELOW DESIGN ELEVATION
2,829.95	CONFIRMED HIGH SUBGRADE
6.32 "	AVERAGE DEPTH OF OVERCUT [1]
96	PERCENT COMPLETE [2]

OU4-DUTIL-020 RDMU 1E
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 50')

50 25 0 50 100

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-11-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
557.00'	-	559.00'
559.00'	-	561.00'
561.00'	-	563.00'
563.00'	-	565.00'
565.00'	-	567.00'
567.00'	-	569.00'
569.00'	-	571.00'
571.00'	-	573.00'
573.00'	-	575.00'
575.00'	-	577.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-6.14'	-	-1.00'	3,391.68
BELOW RAL	-1.00'	-	-0.50'	7,826.69
BELOW RAL	-0.50'	-	0.00'	10,958.61
ABOVE RAL	0.00'	-	0.50'	2,706.07
ABOVE RAL	0.50'	-	1.00'	537.62
ABOVE RAL	1.00'	-	1.50'	274.12
ABOVE RAL	1.50'	-	2.00'	266.50
ABOVE RAL	2.00'	-	2.50'	128.50
ABOVE RAL	2.50'	-	2.71'	13.04

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DUTIL-020 RDMU 1E.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 12, 2018
LAST REVISED: November 20, 2018
CHECKED BY: REG

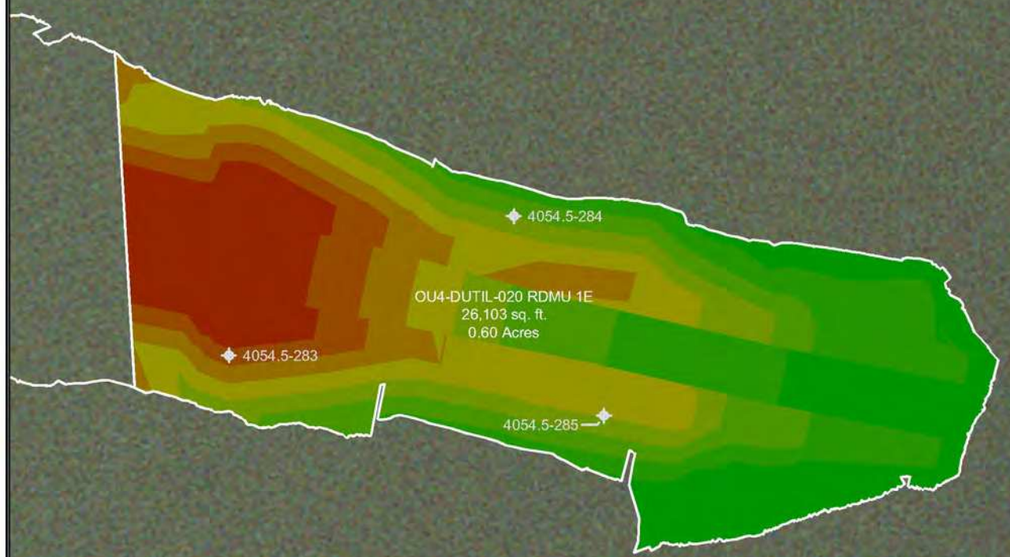
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-035

OU4-DUTIL-020 RDMU 1E
1st RESIDUAL DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\ALLDOCS\Field Engineering\Dredge Files\2018\OU4 DUTIL-020\DWG\Post Dredge\OU4-DUTIL-020 RDMU 1E.dwg

OU4-DUTIL-020 RDMU 1E
SURFACE: DESIGN



INDEX MAP



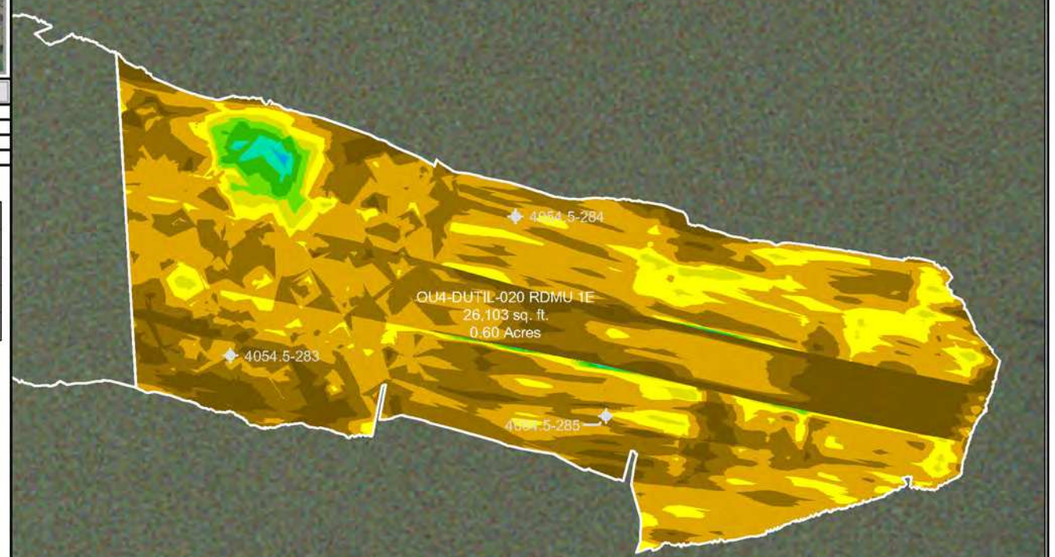
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	27.7 µg/kg (0.0277 ppm)
0.5' - 1.0'	<25.4 µg/kg (<0.0254 ppm)
1.0' - 1.5'	<25.5 µg/kg (<0.0255 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4054.5-285	249307.74	2484651.11
4054.5-284	249373.59	2484621.36
4054.5-283	249327.67	2484527.32

OU4-DUTIL-020 RDMU 1E
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 50')

50 25 0 50 100

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-11-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
557.00'	-	559.00'
559.00'	-	561.00'
561.00'	-	563.00'
563.00'	-	565.00'
565.00'	-	567.00'
567.00'	-	569.00'
569.00'	-	571.00'
571.00'	-	573.00'
573.00'	-	575.00'
575.00'	-	577.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-DUTIL-020-1E-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-DUTIL-020-1E-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-DUTIL-020-1E-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 7-3-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF THREE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 7-10-2018

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-6.14'	-	-1.00'	3,391.68
BELOW RAL	-1.00'	-	-0.50'	7,826.69
BELOW RAL	-0.50'	-	0.00'	10,958.61
ABOVE RAL	0.00'	-	0.50'	2,706.07
ABOVE RAL	0.50'	-	1.00'	537.62
ABOVE RAL	1.00'	-	1.50'	274.12
ABOVE RAL	1.50'	-	2.00'	266.50
ABOVE RAL	2.00'	-	2.50'	128.50
ABOVE RAL	2.50'	-	2.71'	13.04

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DUTIL-020 RDMU 1E.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 12, 2018
LAST REVISED: November 20, 2018
CHECKED BY: REG

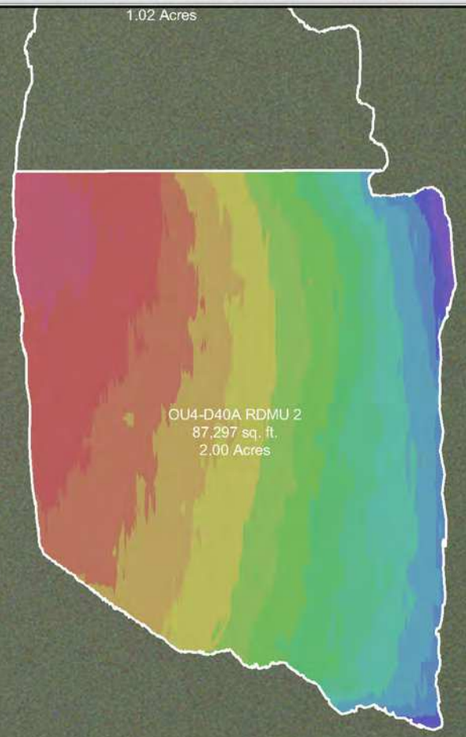
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-036

OU4-DUTIL-020 RDMU 1E
1st RESIDUAL DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LOCAD\Held Engineering\Dredge Files\2018\OU4 DUTIL-020\DWG\Post Dredge\OU4 DUTIL-020 RDMU 1E.dwg

OU4-D40A RDMU 2
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

5,067.53	INITIAL RAL VOLUME
1,548.47	INITIAL OVERCUT VOLUME
6,616.00	RAL + OVERCUT VOLUME
6,167.59	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

5,982.69	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
1,571.02	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
7,553.71	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

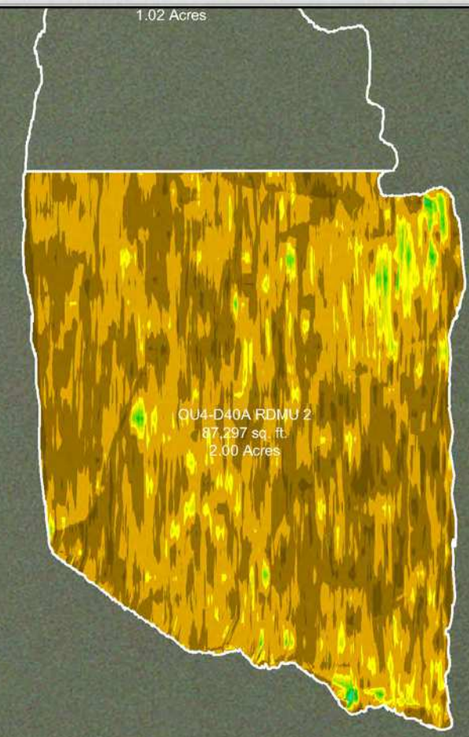
2018 AS-BUILT VOLUMES (CU. YD.)

7,421.29	TOTAL VOLUME DREDGED
5,927.11	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
47.92	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
400.49	OVERCUT VOLUME REMAINING
1,152.14	OVERCUT VOLUME DREDGED
342.04	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

87,297.88	AREA (SQ. FT.)
6,186.96	ABOVE DESIGN ELEVATION
81,110.92	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
5.97 "	AVERAGE DEPTH OF OVERCUT [1]
93	PERCENT COMPLETE [2]

OU4-D40A RDMU 2
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 4-20-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
541.00'	-	543.00'
543.00'	-	545.00'
545.00'	-	547.00'
547.00'	-	549.00'
549.00'	-	551.00'
551.00'	-	553.00'
553.00'	-	555.00'
555.00'	-	557.00'
557.00'	-	559.00'
559.00'	-	561.00'
561.00'	-	563.00'
563.00'	-	565.00'
565.00'	-	567.00'
567.00'	-	569.00'
569.00'	-	571.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT
DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.84'	-	-1.00'	4,565.14
BELOW RAL	-1.00'	-	-0.50'	37,083.92
BELOW RAL	-0.50'	-	0.00'	39,461.86
ABOVE RAL	0.00'	-	0.25'	4,280.39
ABOVE RAL	0.25'	-	0.50'	1,282.65
ABOVE RAL	0.50'	-	0.75'	483.78
ABOVE RAL	0.75'	-	1.00'	115.66
ABOVE RAL	1.00'	-	1.30'	24.47

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D40A RDMU 2.dwg
DRAWN BY: DAVID.FRISQUE
DATE: May 2, 2018
LAST REVISED: November 26, 2018
CHECKED BY: REG

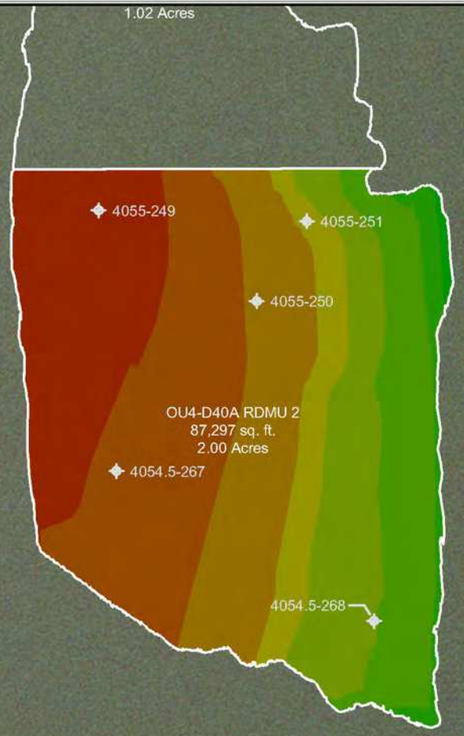
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-037

OU4-D40A RDMU 2
1st RESIDUAL DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LOC\GB\Field Engineering\Dredge Files\2018\OU4-D40A RDMU\DWG\Post Dredge\OU4-D40A RDMU 2.dwg

OU4-D40A RDMU 2
SURFACE: DESIGN



INDEX MAP



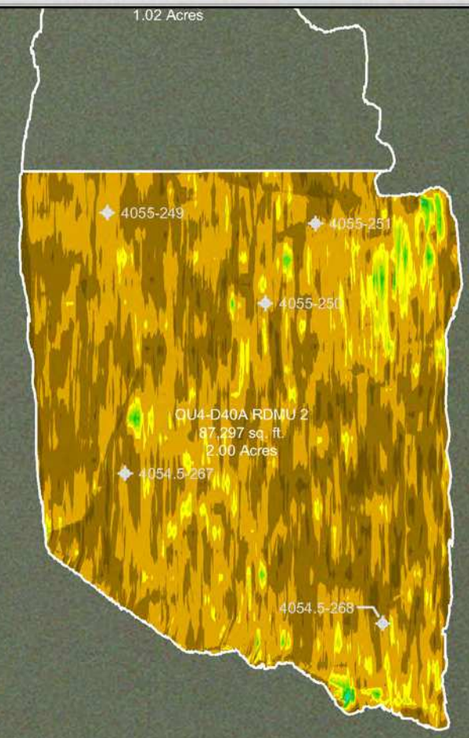
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	790 µg/kg (0.790 ppm)
0.5' - 1.0'	680 µg/kg (0.68 ppm)
1.0' - 1.5'	1,820 µg/kg (1.82 ppm)
1.5' - 2.0'	471 µg/kg (0.471 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4054.5-268	249473.85	2484478.57
4054.5-267	249572.84	2484308.61
4055-251	249737.66	2484434.24
4055-250	249685.04	2484401.11
4055-249	249744.78	2484296.84

OU4-D40A RDMU 2
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 4-20-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
542.00'	-	544.00'
544.00'	-	546.00'
546.00'	-	548.00'
548.00'	-	550.00'
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'
562.00'	-	564.00'
564.00'	-	566.00'
566.00'	-	568.00'
568.00'	-	570.00'
570.00'	-	572.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-D40A-2-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-D40A-2-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-D40A-2-C
4. 1.5' - 2.0' SAMPLE ID TTFR-18-D40A-2-D
5. CONFIRMATION SAMPLES WERE COLLECTED ON 7-2-2018
6. CONFIRMATION SAMPLES ARE A COMPOSITE OF FIVE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
7. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 7-6-2018 and 7-13-2018

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.84'	-	-1.00'	4,565.14
BELOW RAL	-1.00'	-	-0.50'	37,083.92
BELOW RAL	-0.50'	-	0.00'	39,461.86
ABOVE RAL	0.00'	-	0.25'	4,280.39
ABOVE RAL	0.25'	-	0.50'	1,282.65
ABOVE RAL	0.50'	-	0.75'	483.78
ABOVE RAL	0.75'	-	1.00'	115.66
ABOVE RAL	1.00'	-	1.30'	24.47

TETRA TECH EC, INC.
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GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D40A RDMU 2.dwg
DRAWN BY: DAVID.FRISQUE
DATE: May 2, 2018
LAST REVISED: November 20, 2018
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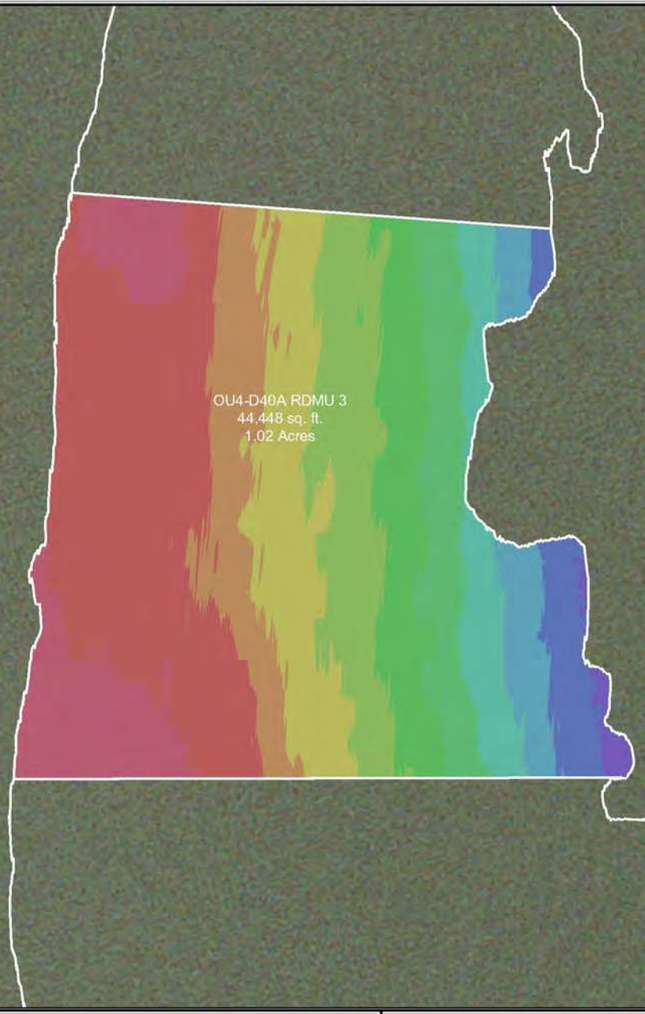
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-038

OU4-D40A RDMU 2
1st RESIDUAL DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LCAD\2\Files\Engineering\Dredge Files\2018\OU4-D40A RDMU\DWG\Post Dredge\OU4 D40A RDMU 2.dwg

OU4-D40A RDMU 3
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

1,746.16	INITIAL RAL VOLUME
812.09	INITIAL OVERCUT VOLUME
2,558.25	RAL + OVERCUT VOLUME
2,314.09	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

2,638.78	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
819.96	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
3,458.74	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

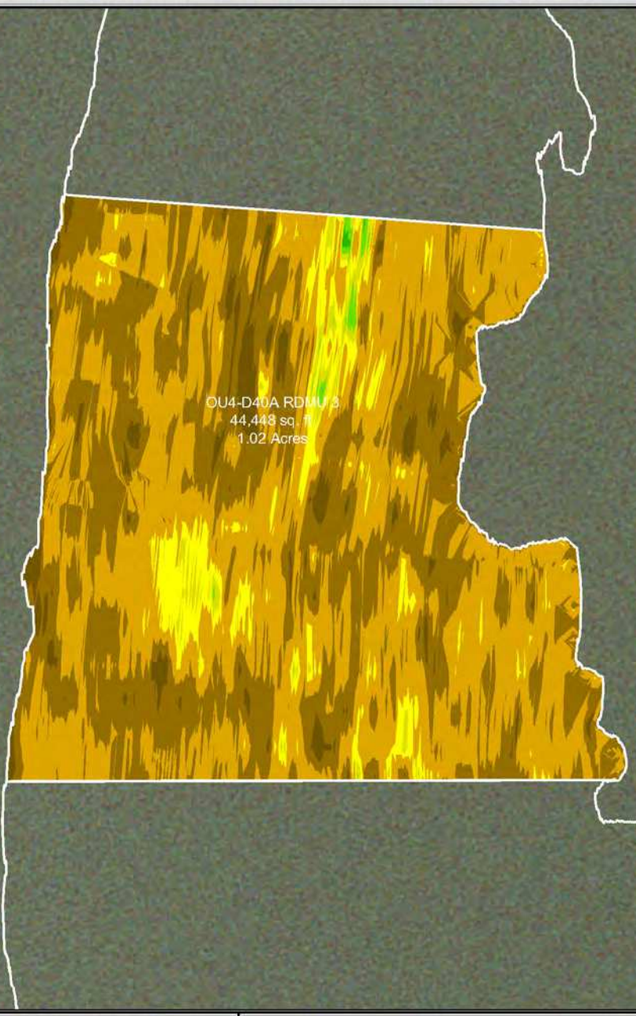
2018 AS-BUILT VOLUMES (CU. YD.)

3,361.36	TOTAL VOLUME DREDGED
2,614.81	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
21.13	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
223.03	OVERCUT VOLUME REMAINING
592.23	OVERCUT VOLUME DREDGED
154.32	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

44,449.08	AREA (SQ. FT.)
3,304.32	ABOVE DESIGN ELEVATION
41,144.76	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
5.88 "	AVERAGE DEPTH OF OVERCUT [1]
93	PERCENT COMPLETE [2]

OU4-D40A RDMU 3
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 4-18-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
542.00'	-	544.00'
544.00'	-	546.00'
546.00'	-	548.00'
548.00'	-	550.00'
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'
562.00'	-	564.00'
564.00'	-	566.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.11'	-	-1.00'	1,759.83
BELOW RAL	-1.00'	-	-0.50'	17,122.12
BELOW RAL	-0.50'	-	0.00'	22,262.81
ABOVE RAL	0.00'	-	0.25'	2,513.66
ABOVE RAL	0.25'	-	0.50'	629.10
ABOVE RAL	0.50'	-	0.75'	143.85
ABOVE RAL	0.75'	-	0.95'	17.71

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D40A RDMU 3.dwg
DRAWN BY: DAVID.FRISQUE
DATE: May 2, 2018
LAST REVISED: November 26, 2018
CHECKED BY: REG

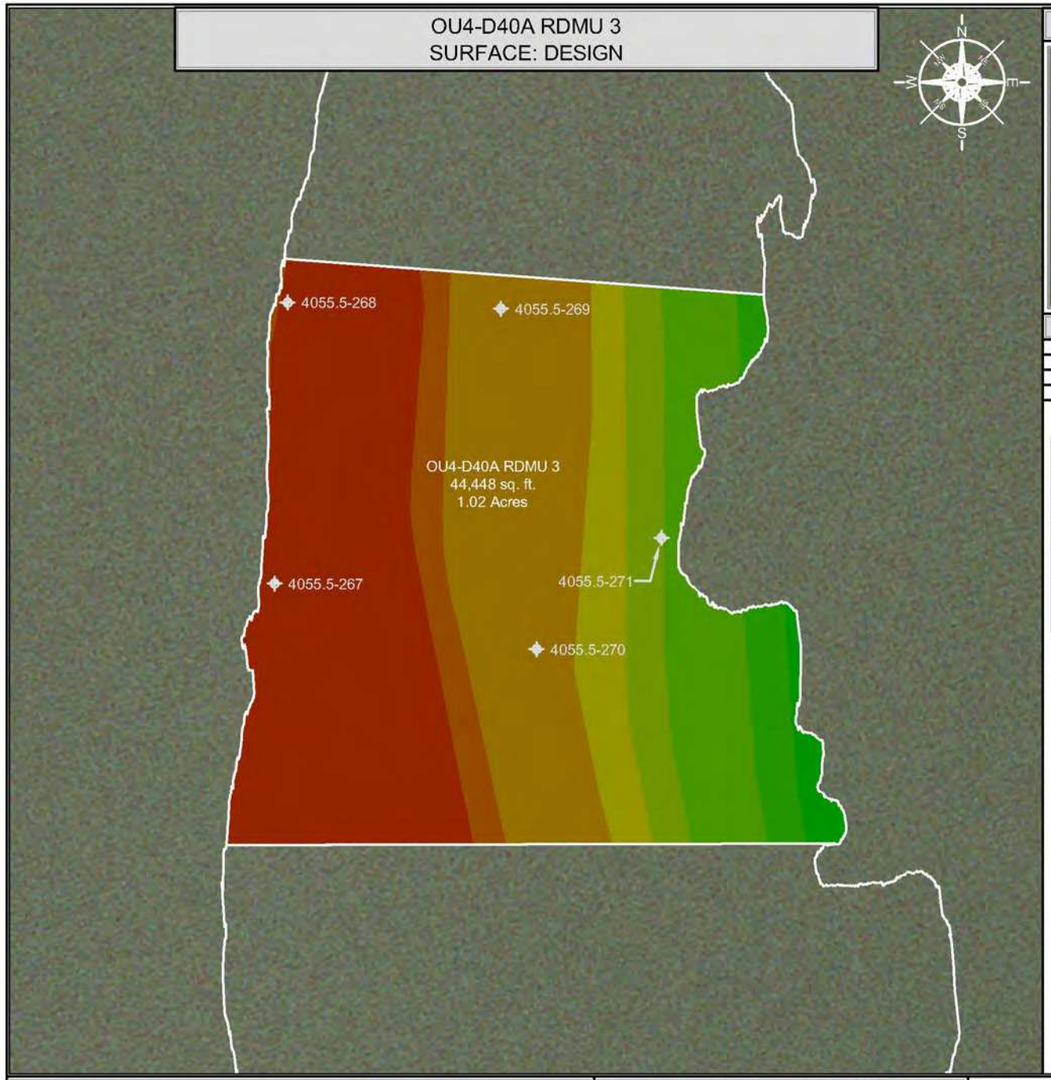
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-039

OU4-D40A RDMU 3
1st RESIDUAL DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\ALLDOCS\Field Engineering\Dredge Files\2018\OU4 D40A RDMU\DWG\Post Dredge\OU4 D40A RDMU 3.dwg

OU4-D40A RDMU 3
SURFACE: DESIGN



INDEX MAP



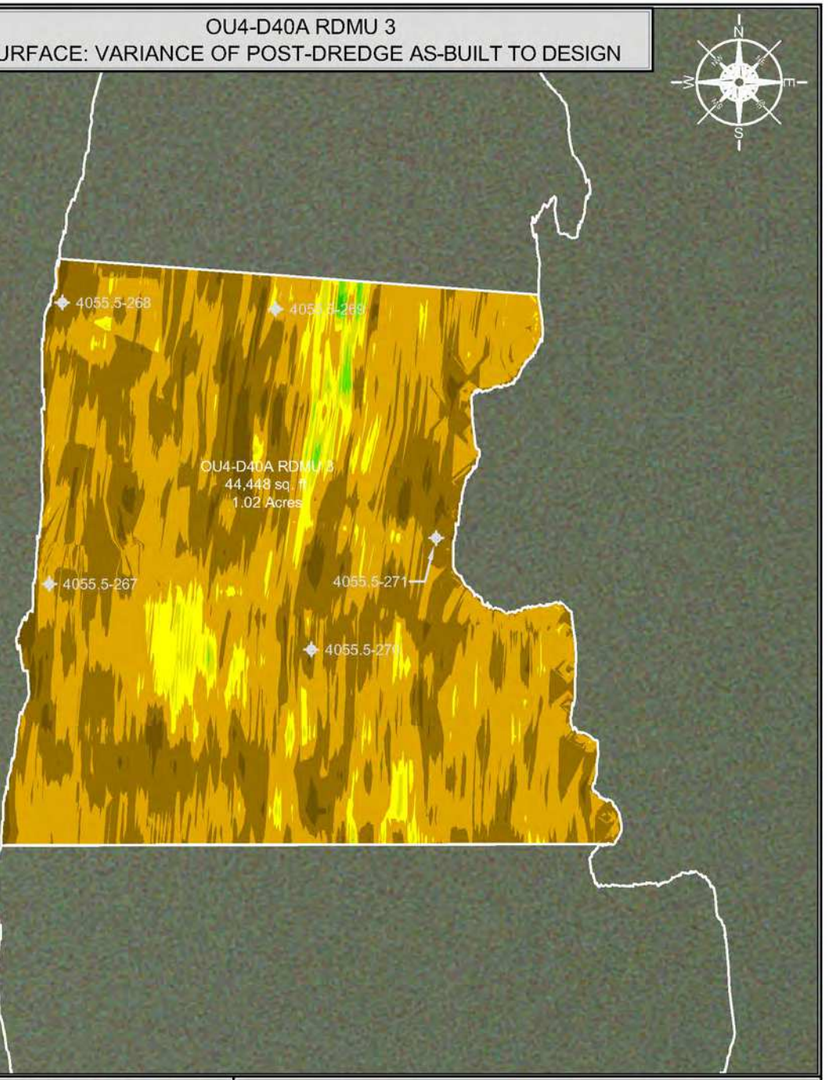
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	1,260 µg/kg (1.26 ppm)
0.5' - 1.0'	33.8 µg/kg (0.0338 ppm)
1.0' - 1.5'	<25.7 µg/kg (<0.0257 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4055.5-271	249893.55	2484412.75
4055.5-270	249849.41	2484363.27
4055.5-269	249984.15	2484349.22
4055.5-268	249986.71	2484264.73
4055.5-267	249875.41	2484259.58

OU4-D40A RDMU 3
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 4-18-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
542.00'	-	544.00'
544.00'	-	546.00'
546.00'	-	548.00'
548.00'	-	550.00'
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'
562.00'	-	564.00'
564.00'	-	566.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-D40A-3-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-D40A-3-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-D40A-3-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 7-2-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF FIVE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 7-6-2018

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OU# - D# - #
- OU# = OPERABLE UNIT
- D# = DREDGE AREA
- # = DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.11'	-	-1.00'	1,759.83
BELOW RAL	-1.00'	-	-0.50'	17,122.12
BELOW RAL	-0.50'	-	0.00'	22,262.81
ABOVE RAL	0.00'	-	0.25'	2,513.66
ABOVE RAL	0.25'	-	0.50'	629.10
ABOVE RAL	0.50'	-	0.75'	143.85
ABOVE RAL	0.75'	-	0.95'	17.71

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D40A RDMU 3.dwg
DRAWN BY: DAVID.FRISQUE
DATE: May 2, 2018
LAST REVISED: November 20, 2018
CHECKED BY: REG

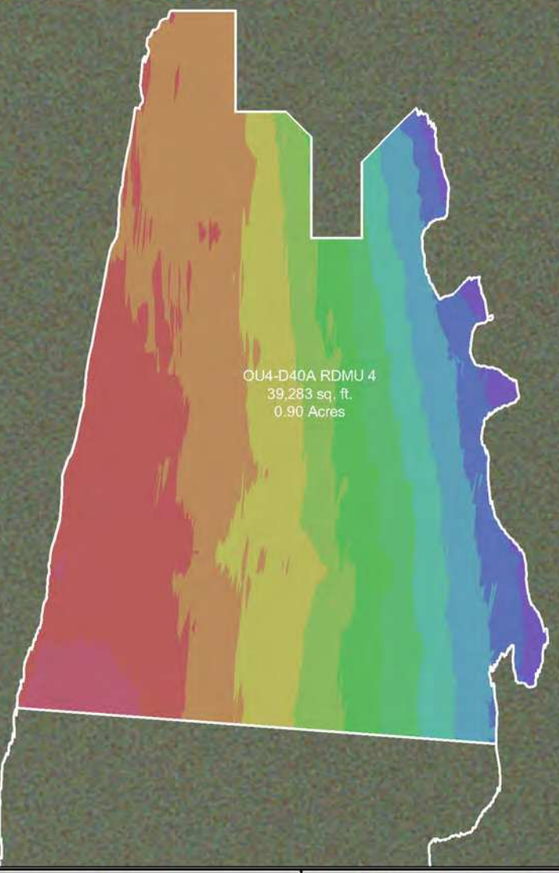
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-040

OU4-D40A RDMU 3
1st RESIDUAL DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

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OU4-D40A RDMU 4
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

1,072.93	INITIAL RAL VOLUME
701.21	INITIAL OVERCUT VOLUME
1,774.14	RAL + OVERCUT VOLUME
1,553.61	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

1,649.52	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
717.09	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
2,366.61	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

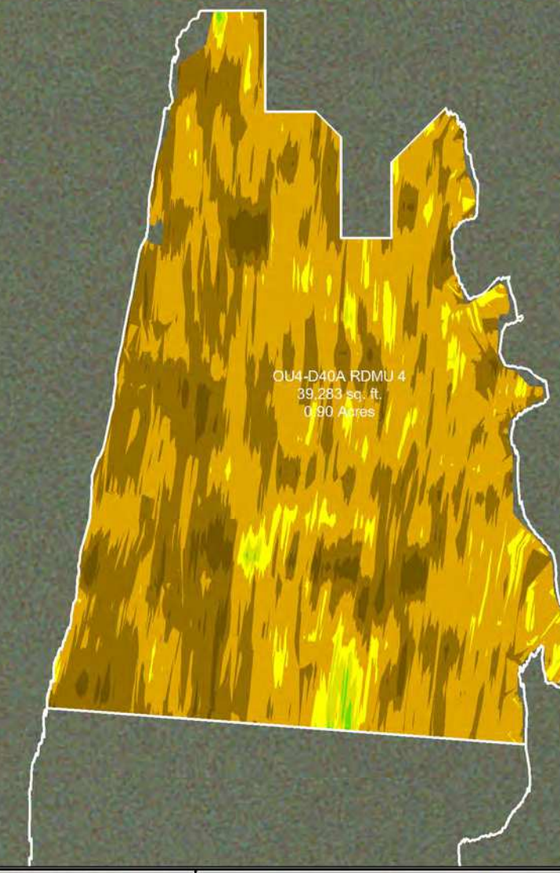
2018 AS-BUILT VOLUMES (CU. YD.)

2,279.48	TOTAL VOLUME DREDGED
1,636.97	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
11.83	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
208.70	OVERCUT VOLUME REMAINING
504.38	OVERCUT VOLUME DREDGED
138.13	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

39,282.91	AREA (SQ. FT.)
2,351.52	ABOVE DESIGN ELEVATION
36,931.39	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
5.64 "	AVERAGE DEPTH OF OVERCUT [1]
94	PERCENT COMPLETE [2]

OU4-D40A RDMU 4
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 4-18-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
543.00'	-	545.00'
545.00'	-	547.00'
547.00'	-	549.00'
549.00'	-	551.00'
551.00'	-	553.00'
553.00'	-	555.00'
555.00'	-	557.00'
557.00'	-	559.00'
559.00'	-	561.00'
561.00'	-	563.00'
563.00'	-	565.00'
565.00'	-	567.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.25'	-	-1.00'	1,727.51
BELOW RAL	-1.00'	-	-0.50'	14,341.09
BELOW RAL	-0.50'	-	0.00'	20,862.80
ABOVE RAL	0.00'	-	0.25'	1,951.41
ABOVE RAL	0.25'	-	0.50'	340.48
ABOVE RAL	0.50'	-	0.75'	59.39
ABOVE RAL	0.75'	-	0.78'	0.24

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D40A RDMU 4.dwg
DRAWN BY: DAVID.FRISQUE
DATE: May 2, 2018
LAST REVISED: November 20, 2018
CHECKED BY: REG

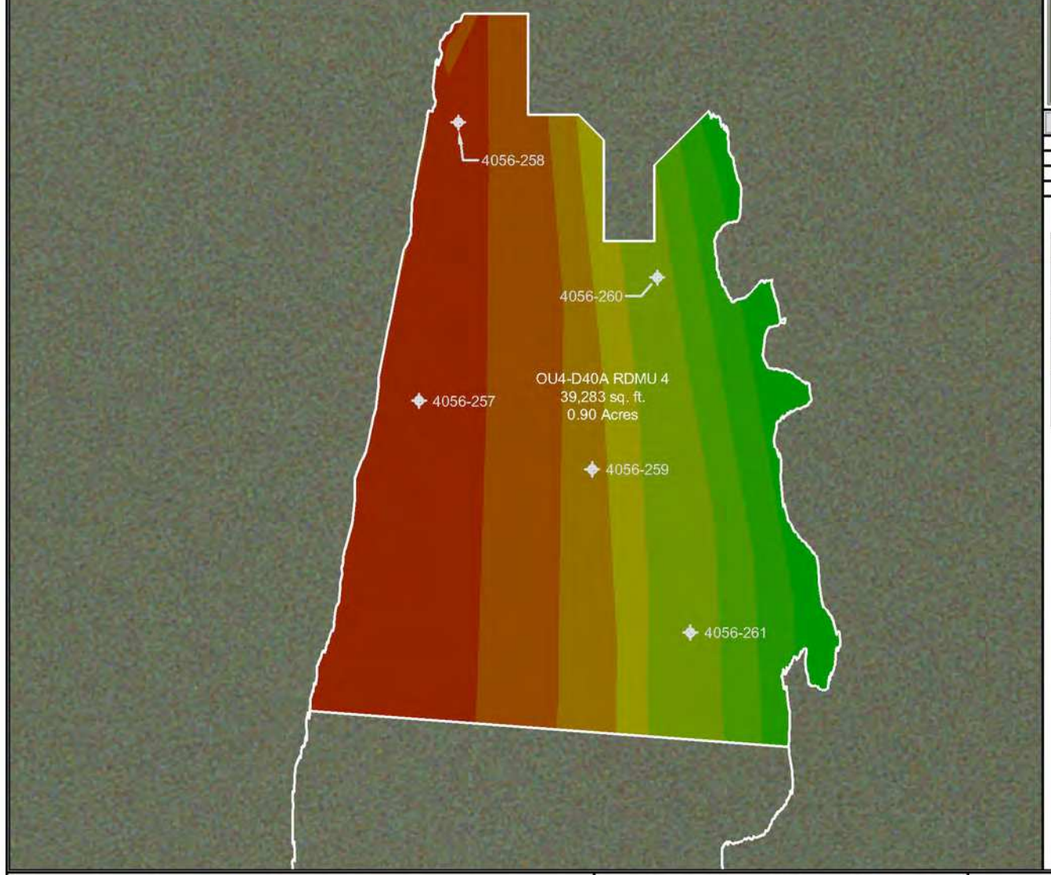
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-041

OU4-D40A RDMU 4
1st RESIDUAL DREDGE BATHYMETRY, VOLUMES AND AREAS

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OU4-D40A RDMU 4
SURFACE: DESIGN



INDEX MAP



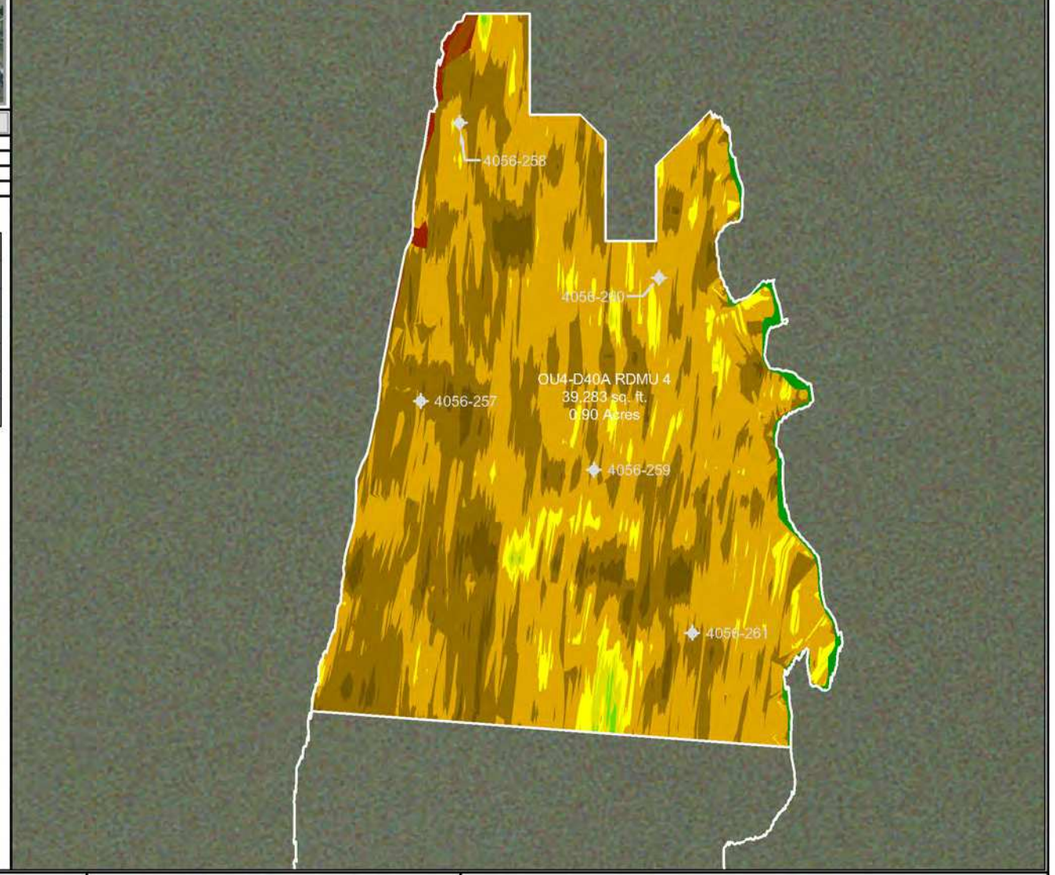
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	364 µg/kg (0.364 ppm)
0.5' - 1.0'	183 µg/kg (0.183 ppm)
1.0' - 1.5'	<25.5 µg/kg (<0.0255 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4056-261	250035.02	2484414.24
4056-260	250175.50	2484401.12
4056-259	250099.59	2484375.34
4056-258	250236.88	2484322.27
4056-257	250126.72	2484306.83

OU4-D40A RDMU 4
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 4-18-2018

DESIGN COLOR LEGEND

	MIN. EL.		MAX. EL.
	544.00'	-	546.00'
	546.00'	-	548.00'
	548.00'	-	550.00'
	550.00'	-	552.00'
	552.00'	-	554.00'
	554.00'	-	556.00'
	556.00'	-	558.00'
	558.00'	-	560.00'
	560.00'	-	562.00'
	562.00'	-	564.00'
	564.00'	-	566.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-D40A-4-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-D40A-4-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-D40A-4-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 7-2-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF FIVE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 7-6-2018

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

		MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL		-2.25'	-	-1.00'	1,727.51
		-1.00'	-	-0.50'	14,341.09
		-0.50'	-	0.00'	20,862.80
ABOVE RAL		0.00'	-	0.25'	1,951.41
		0.25'	-	0.50'	340.48
		0.50'	-	0.75'	59.39
		0.75'	-	0.78'	0.24

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D40A RDMU 4.dwg
DRAWN BY: DAVID.FRISQUE
DATE: May 2, 2018
LAST REVISED: November 20, 2018
CHECKED BY: REG

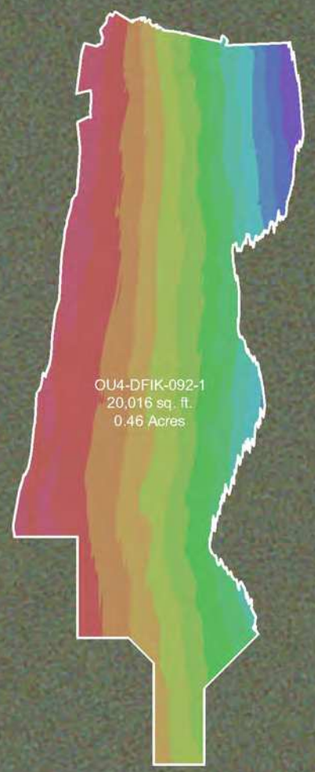
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-042

OU4-D40A RDMU 4
1st RESIDUAL DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

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OU4-DFIK-092-1
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

1,574.29	INITIAL RAL VOLUME
345.18	INITIAL OVERCUT VOLUME
1,919.47	RAL + OVERCUT VOLUME
1,783.89	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

1,436.94	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
340.47	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
1,777.41	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

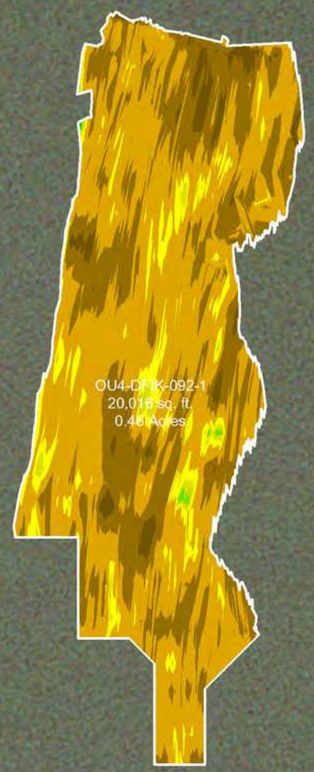
2018 AS-BUILT VOLUMES (CU. YD.)

1,689.91	TOTAL VOLUME DREDGED
1,428.29	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
8.61	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
126.97	OVERCUT VOLUME REMAINING
213.88	OVERCUT VOLUME DREDGED
47.74	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

20,015.53	AREA (SQ. FT.)
1,682.03	ABOVE DESIGN ELEVATION
18,333.50	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
4.62 "	AVERAGE DEPTH OF OVERCUT [1]
92	PERCENT COMPLETE [2]

OU4-DFIK-092-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 4-10-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
546.00'	-	548.00'
548.00'	-	550.00'
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'
562.00'	-	564.00'
564.00'	-	566.00'
566.00'	-	568.00'
568.00'	-	570.00'
570.00'	-	572.00'
572.00'	-	574.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.16'	-	-1.00'	623.25
BELOW RAL	-1.00'	-	-0.50'	6,177.18
BELOW RAL	-0.50'	-	0.00'	11,533.08
ABOVE RAL	0.00'	-	0.25'	1,412.60
ABOVE RAL	0.25'	-	0.50'	230.04
ABOVE RAL	0.50'	-	0.75'	35.62
ABOVE RAL	0.75'	-	1.00'	3.56
ABOVE RAL	1.00'	-	1.12'	0.21

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DFIK-092-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: May 2, 2018
LAST REVISED: November 20, 2018
CHECKED BY: REG

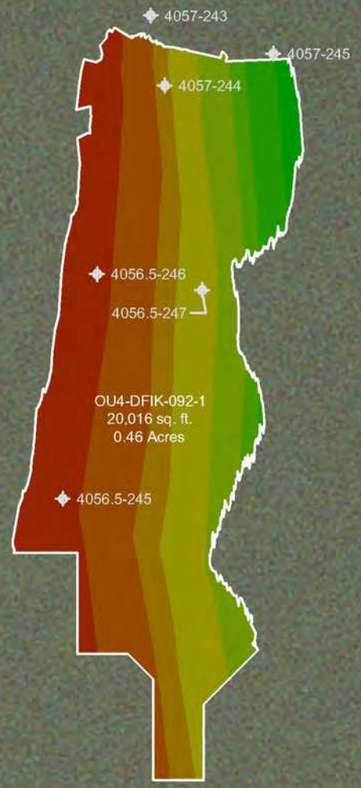
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-043

OU4-DFIK-092-1
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\ALLOC\42\Field Engineering\Dredge Files\2018\OU4 DFIK-092\GIS\Post Dredge\OU4 DFIK-092-1.dwg

OU4-DFIK-092-1
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	2,890 µg/kg (2.89 ppm)
0.5' - 1.0'	941 µg/kg (0.941 ppm)
1.0' - 1.5'	128 µg/kg (0.128 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4056.5-247	250384.12	2484399.32
4056.5-246	250390.41	2484357.74
4056.5-245	250301.54	2484344.10
4057-245	250477.65	2484427.51
4057-244	250465.06	2484384.55
4057-243	250492.70	2484379.05

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION
4056.5-245	A: 13,000 µg/kg (13) ppm) C2: 249 µg/kg (0.249) ppm) B: 1,970 µg/kg (1.97) ppm) C: 267 µg/kg (0.267) ppm)
4056.5-246	A: 550 µg/kg (0.55) ppm) B: <25.1 µg/kg (<0.0251) ppm) C: <25.0 µg/kg (<0.025) ppm)
4056.5-247	A: 40.9 µg/kg (0.0409) ppm) B: <25.3 µg/kg (<0.0253) ppm) C: <25.3 µg/kg (<0.0253) ppm)
4057-243	A: 112 µg/kg (0.112) ppm) B: 2,020 µg/kg (2.02) ppm) C: 305 µg/kg (0.305) ppm)
4057-244	A: 767 µg/kg (0.767) ppm) B: 684 µg/kg (0.684) ppm) C: <25.1 µg/kg (<0.0251) ppm)
4057-245	A: <25.2 µg/kg (<0.0252) ppm) B: <25.1 µg/kg (<0.0251) ppm) C: <25.1 µg/kg (<0.0251) ppm)

OU4-DFIK-092-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-18-DFIK-092-1-4056.5-245-A
2. TTFR-18-DFIK-092-1-4056.5-245-B
3. TTFR-18-DFIK-092-1-4056.5-245-C
4. TTFR-18-DFIK-092-1-4056.5-245-C2
5. TTFR-18-DFIK-092-1-4056.5-246-A
6. TTFR-18-DFIK-092-1-4056.5-246-B
7. TTFR-18-DFIK-092-1-4056.5-246-C
8. TTFR-18-DFIK-092-1-4056.5-247-A
9. TTFR-18-DFIK-092-1-4056.5-247-B
10. TTFR-18-DFIK-092-1-4056.5-247-C
11. TTFR-18-DFIK-092-1-4057-243-A
12. TTFR-18-DFIK-092-1-4057-243-B
13. TTFR-18-DFIK-092-1-4057-243-C
14. TTFR-18-DFIK-092-1-4057-244-A
15. TTFR-18-DFIK-092-1-4057-244-B
16. TTFR-18-DFIK-092-1-4057-244-C
17. TTFR-18-DFIK-092-1-4057-245-A
18. TTFR-18-DFIK-092-1-4057-245-B
19. TTFR-18-DFIK-092-1-4057-245-C

SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 4-10-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
546.00'	-	548.00'
548.00'	-	550.00'
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'
562.00'	-	564.00'
564.00'	-	566.00'
566.00'	-	568.00'
568.00'	-	570.00'
570.00'	-	572.00'
572.00'	-	574.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-DFIK-092-1-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-DFIK-092-1-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-DFIK-092-1-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 7-6-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF SIX SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 7-11-2018

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OU# - D# - #
- OU# — OPERABLE UNIT
- D# — DREDGE AREA
- # — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.16'	-	-1.00'	623.25
BELOW RAL	-1.00'	-	-0.50'	6,177.18
BELOW RAL	-0.50'	-	0.00'	11,533.08
ABOVE RAL	0.00'	-	0.25'	1,412.60
ABOVE RAL	0.25'	-	0.50'	230.04
ABOVE RAL	0.50'	-	0.75'	35.62
ABOVE RAL	0.75'	-	1.00'	3.56
ABOVE RAL	1.00'	-	1.12'	0.21

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DFIK-092-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: May 2, 2018
LAST REVISED: November 26, 2018
CHECKED BY: REG

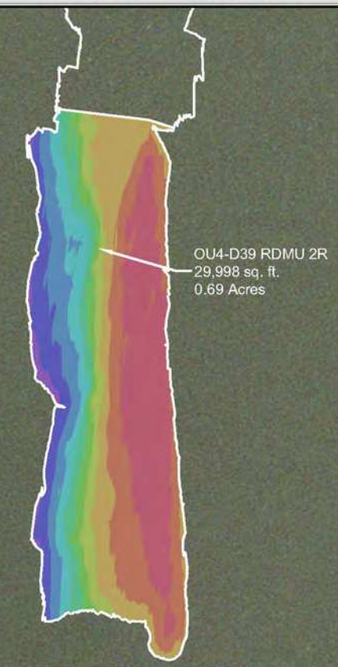
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-044

OU4-DFIK-092-1
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

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OU4-D39 RDMU 2R
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

1,876.32	INITIAL RAL VOLUME
544.08	INITIAL OVERCUT VOLUME
2,420.40	RAL + OVERCUT VOLUME
2,257.18	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

2,100.14	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
560.68	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
2,660.82	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

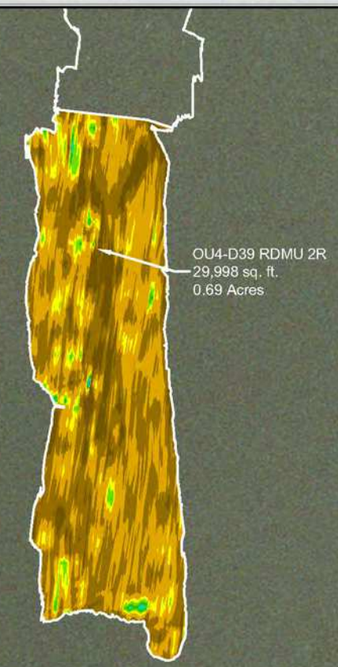
2018 AS-BUILT VOLUMES (CU. YD.)

2,686.10	TOTAL VOLUME DREDGED
2,082.19	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
17.95	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
145.27	OVERCUT VOLUME REMAINING
419.87	OVERCUT VOLUME DREDGED
184.04	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

30,894.34	AREA (SQ. FT.)
2,492.70	ABOVE DESIGN ELEVATION
28,401.64	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
6.89 "	AVERAGE DEPTH OF OVERCUT [1]
92	PERCENT COMPLETE [2]

OU4-D39 RDMU 2R
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-13-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
542.00'	-	544.00'
544.00'	-	546.00'
546.00'	-	548.00'
548.00'	-	550.00'
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT
DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.95'	-	-1.00'	3,354.92
BELOW RAL	-1.00'	-	-0.50'	12,223.34
BELOW RAL	-0.50'	-	0.00'	12,823.38
ABOVE RAL	0.00'	-	0.25'	1,769.66
ABOVE RAL	0.25'	-	0.50'	551.22
ABOVE RAL	0.50'	-	0.75'	133.21
ABOVE RAL	0.75'	-	1.00'	34.80
ABOVE RAL	1.00'	-	1.25'	3.14
ABOVE RAL	1.25'	-	1.50'	0.65

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D39 RDMU 2R.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 22, 2018
LAST REVISED: November 21, 2018
CHECKED BY: REG

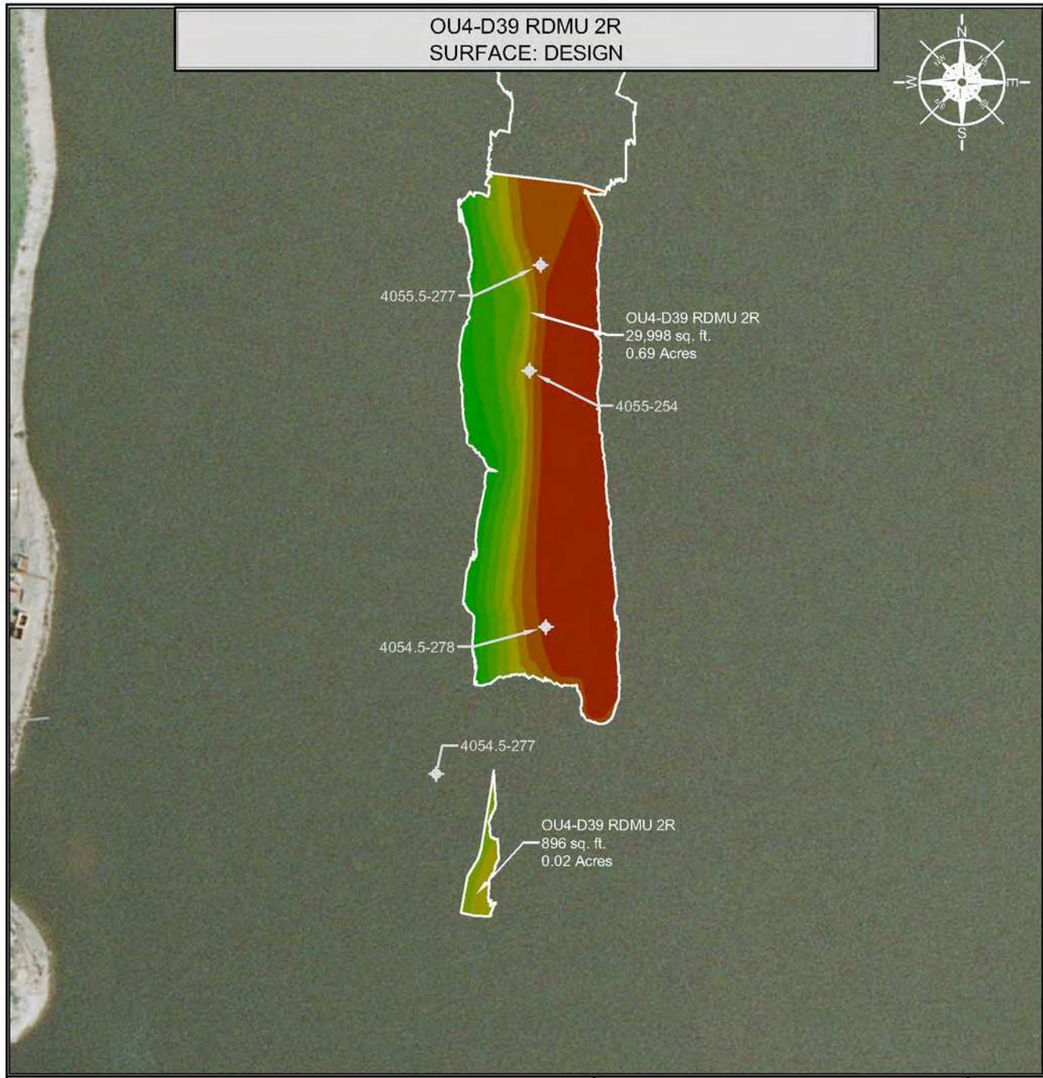
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-045

OU4-D39 RDMU 2R
2nd RESIDUAL DREDGE BATHYMETRY, VOLUMES AND AREAS

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OU4-D39 RDMU 2R
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	905 µg/kg (0.905 ppm)
0.5' - 1.0'	158 µg/kg (0.158 ppm)
1.0' - 1.5'	<25.4 µg/kg (<0.0254 ppm)

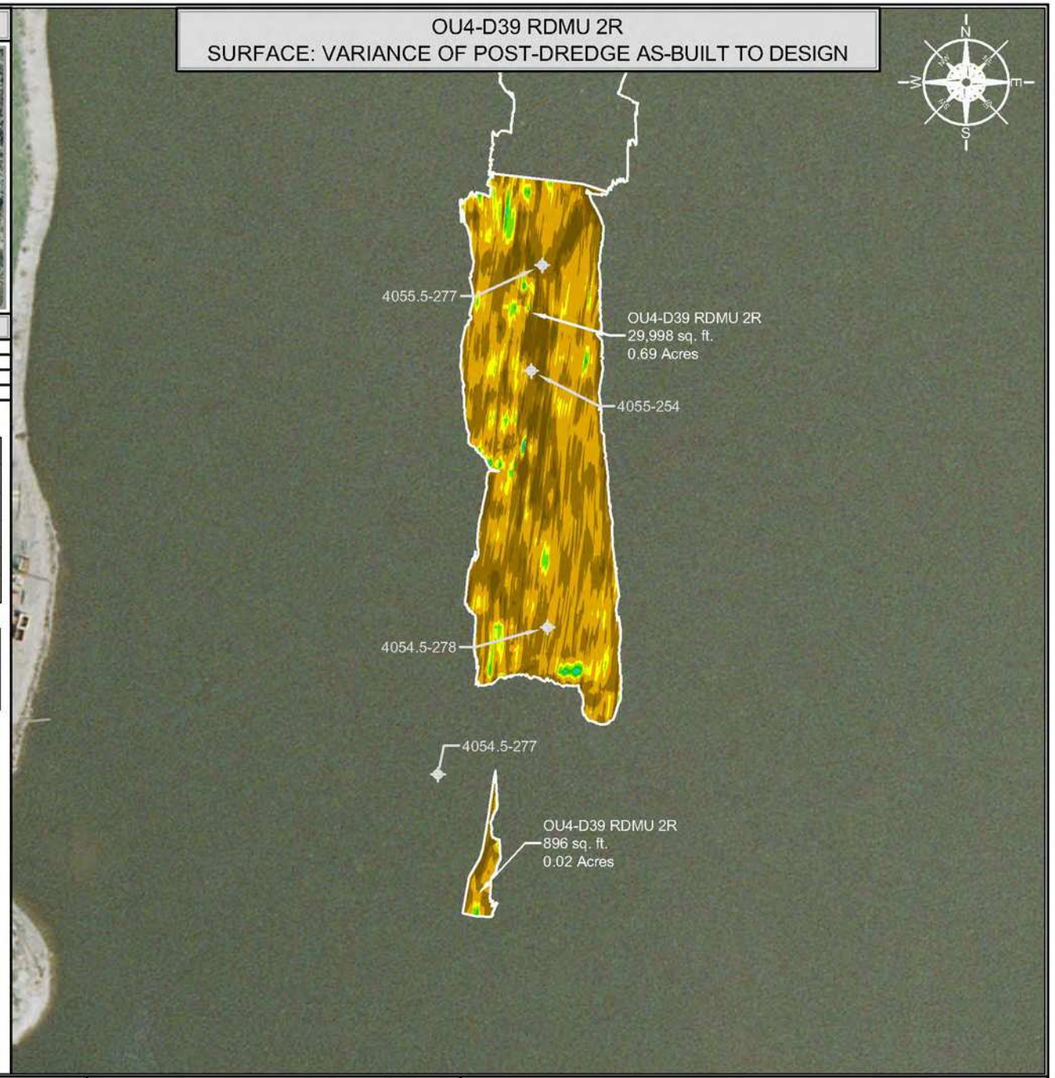
CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4054.5-278	249751.85	2483879.43
4054.5-277	249654.88	2483807.00
4055-254	249920.97	2483868.47
4055.5-277	249990.57	2483875.88

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION
4054.5-277	A: 427 µg/kg (0.427) ppm) D: <25.3 µg/kg (<0.0253) ppm) B: 37.3 µg/kg (0.0373) ppm) C: <25.2 µg/kg (<0.0252) ppm)

OU4-D39 RDMU 2R
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-18-D39-2-4054.5-277-A
2. TTFR-18-D39-2-4054.5-277-B
3. TTFR-18-D39-2-4054.5-277-C
4. TTFR-18-D39-2-4054.5-277-D

SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-13-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
543.00'	-	545.00'
545.00'	-	547.00'
547.00'	-	549.00'
549.00'	-	551.00'
551.00'	-	553.00'
553.00'	-	555.00'
555.00'	-	557.00'
557.00'	-	559.00'
559.00'	-	561.00'
561.00'	-	563.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-D39-2-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-D39-2-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-D39-2-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 7-5-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF FOUR SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 7-10-2018 and 7-18-2018

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT
DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.95'	-	-1.00'	3,354.92
BELOW RAL	-1.00'	-	-0.50'	12,223.34
BELOW RAL	-0.50'	-	0.00'	12,823.38
ABOVE RAL	0.00'	-	0.25'	1,769.66
ABOVE RAL	0.25'	-	0.50'	551.22
ABOVE RAL	0.50'	-	0.75'	133.21
ABOVE RAL	0.75'	-	1.00'	34.80
ABOVE RAL	1.00'	-	1.25'	3.14
ABOVE RAL	1.25'	-	1.50'	0.65

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D39 RDMU 2R.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 22, 2018
LAST REVISED: November 26, 2018
CHECKED BY: REG

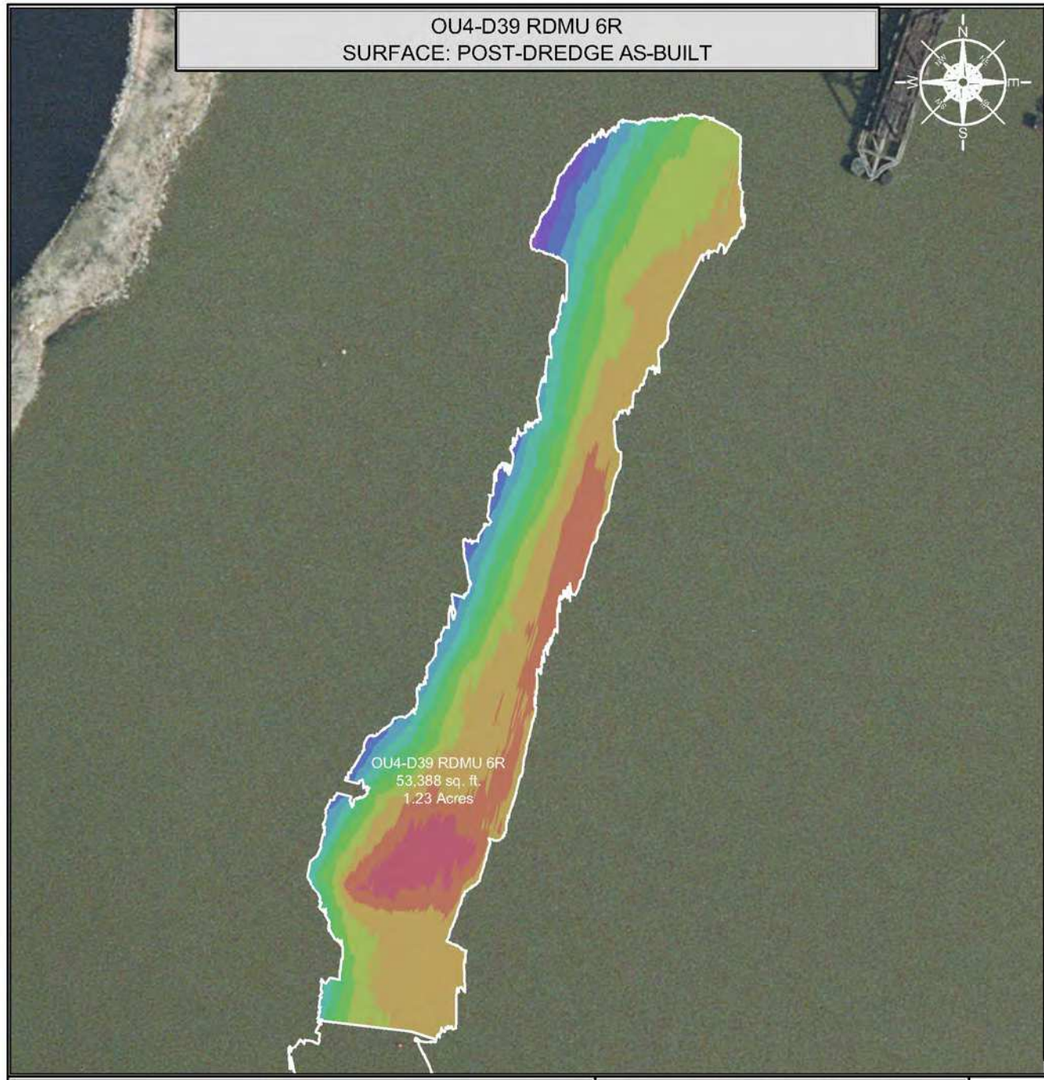
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-046

OU4-D39 RDMU 2R
2nd RESIDUAL DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

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OU4-D39 RDMU 6R
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

3,508.67	INITIAL RAL VOLUME
937.00	INITIAL OVERCUT VOLUME
4,445.67	RAL + OVERCUT VOLUME
4,100.78	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

3,180.79	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
951.53	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
4,132.32	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

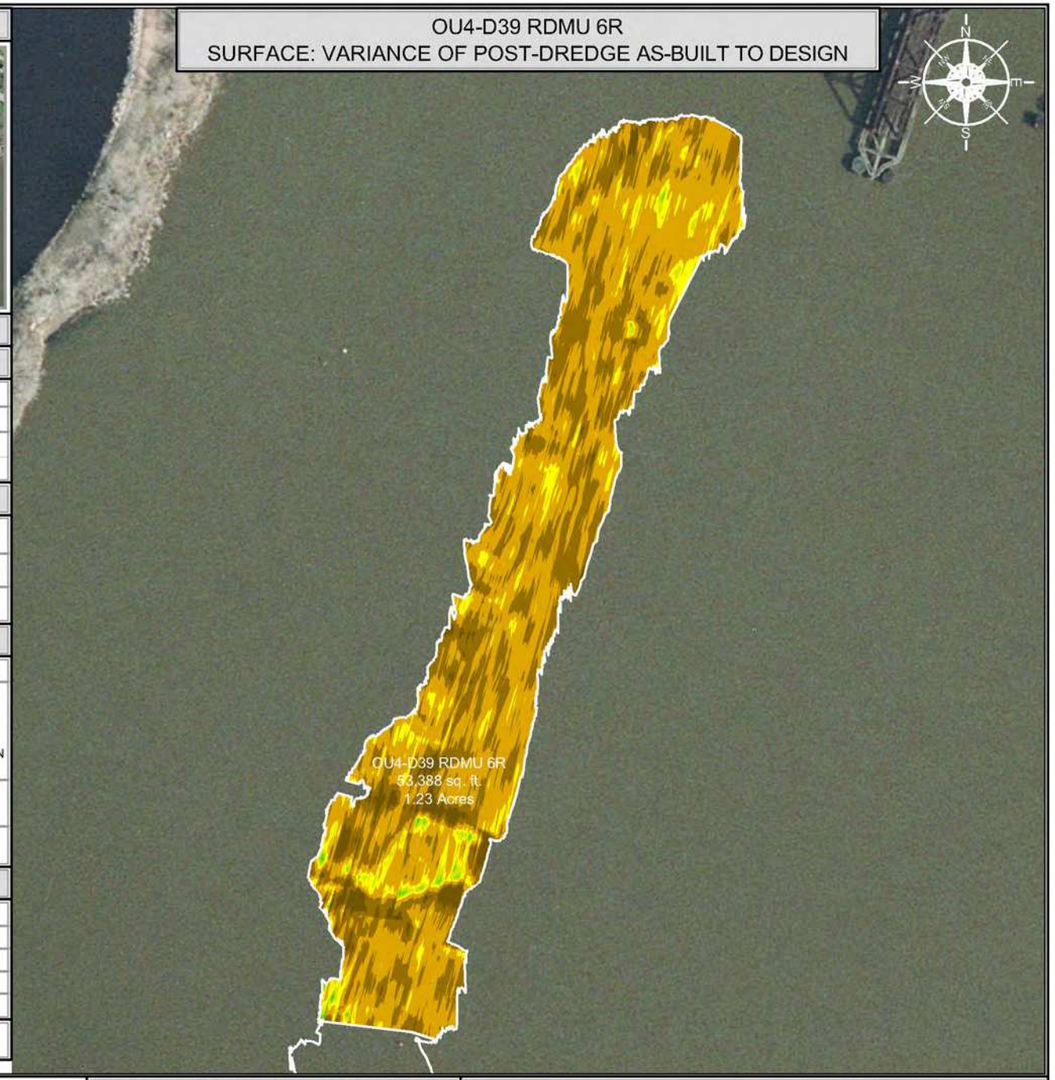
2018 AS-BUILT VOLUMES (CU. YD.)

3,967.71	TOTAL VOLUME DREDGED
3,153.33	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
27.46	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
317.43	OVERCUT VOLUME REMAINING
646.71	OVERCUT VOLUME DREDGED
167.67	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

53,387.55	AREA (SQ. FT.)
4,730.04	ABOVE DESIGN ELEVATION
48,657.51	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
5.42 "	AVERAGE DEPTH OF OVERCUT [1]
91	PERCENT COMPLETE [2]

OU4-D39 RDMU 6R
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-13-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
541.00'	-	543.00'
543.00'	-	545.00'
545.00'	-	547.00'
547.00'	-	549.00'
549.00'	-	551.00'
551.00'	-	553.00'
553.00'	-	555.00'
555.00'	-	557.00'
557.00'	-	559.00'
559.00'	-	561.00'
561.00'	-	563.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.31'	-	-1.00'	2,180.01
BELOW RAL	-1.00'	-	-0.50'	17,236.35
BELOW RAL	-0.50'	-	0.00'	29,241.15
ABOVE RAL	0.00'	-	0.25'	3,782.70
ABOVE RAL	0.25'	-	0.50'	767.26
ABOVE RAL	0.50'	-	0.75'	157.43
ABOVE RAL	0.75'	-	1.00'	21.35
ABOVE RAL	1.00'	-	1.22'	1.29

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D39 RDMU 6R.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 22, 2018
LAST REVISED: November 21, 2018
CHECKED BY: REG

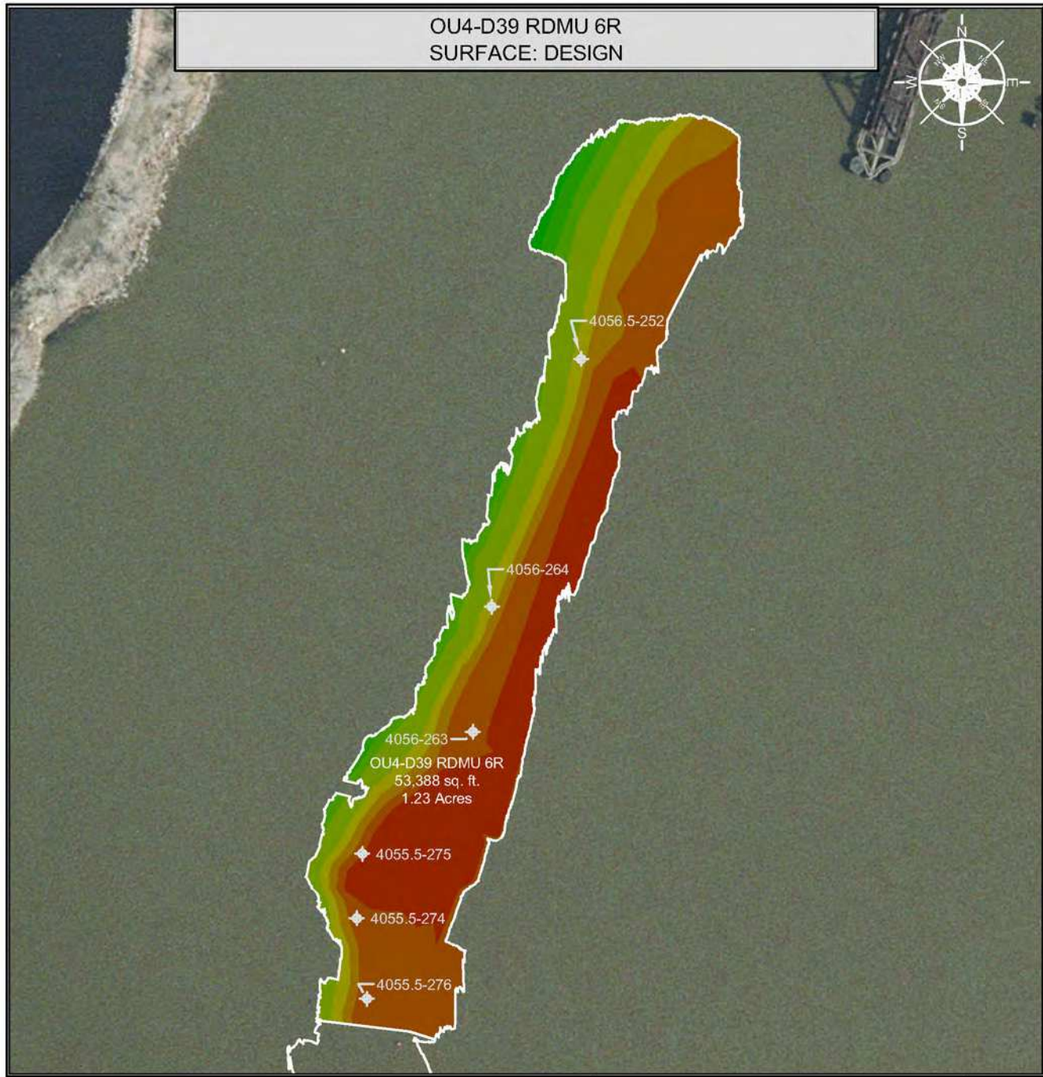
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-047

OU4-D39 RDMU 6R
2nd RESIDUAL DREDGE BATHYMETRY, VOLUMES AND AREAS

I:\LLC\LD\Field Engineering\Dredge Files\2018\OU4-D39 RDMU\DWG\Post Dredge\OU4-D39 RDMU 6R.dwg

OU4-D39 RDMU 6R
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	1,070 µg/kg (1.07 ppm)
0.5' - 1.0'	98.1 µg/kg (0.0981 ppm)
1.0' - 1.5'	<25.6 µg/kg (<0.0256 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4055.5-275	250161.35	2483870.88
4055.5-274	250118.88	2483867.20
4055.5-276	250065.70	2483873.88
4056-264	250324.23	2483956.46
4056-263	250241.79	2483943.89
4056.5-252	250487.71	2484015.39

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION
4055.5-275	A: 1,260 µg/kg (1.26) ppm) C: <25.4 µg/kg (<0.0254) ppm) B: 133 µg/kg (0.133) ppm) C2: <25.4 µg/kg (<0.0254) ppm) B2: 128 µg/kg (0.128) ppm)
4055.5-274	A: 229 µg/kg (0.229) ppm) C: <25.3 µg/kg (<0.0253) ppm) B: 58.7 µg/kg (0.0587) ppm) C2: <25.3 µg/kg (<0.0253) ppm) B2: <25.3 µg/kg (<0.0253) ppm)

OU4-D39 RDMU 6R
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-18-D39-6-4055.5-275-A
2. TTFR-18-D39-6-4055.5-275-B
3. TTFR-18-D39-6-4055.5-275-B2
4. TTFR-18-D39-6-4055.5-275-C
5. TTFR-18-D39-6-4055.5-275-C2
6. TTFR-18-D39-6-4055.5-274-A
7. TTFR-18-D39-6-4055.5-274-B
8. TTFR-18-D39-6-4055.5-274-B2
9. TTFR-18-D39-6-4055.5-274-C
10. TTFR-18-D39-6-4055.5-274-C2

SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-13-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
542.00'	-	544.00'
544.00'	-	546.00'
546.00'	-	548.00'
548.00'	-	550.00'
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'
562.00'	-	564.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-D39-6-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-D39-6-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-D39-6-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 7-5-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF SIX SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 7-10-2018

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OU# - D# - #
OPERABLE UNIT | DREDGE AREA | DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.31'	-	-1.00'	2,180.01
BELOW RAL	-1.00'	-	-0.50'	17,236.35
BELOW RAL	-0.50'	-	0.00'	29,241.15
ABOVE RAL	0.00'	-	0.25'	3,782.70
ABOVE RAL	0.25'	-	0.50'	767.26
ABOVE RAL	0.50'	-	0.75'	157.43
ABOVE RAL	0.75'	-	1.00'	21.35
ABOVE RAL	1.00'	-	1.22'	1.29

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D39 RDMU 6R.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 22, 2018
LAST REVISED: November 26, 2018
CHECKED BY: REG

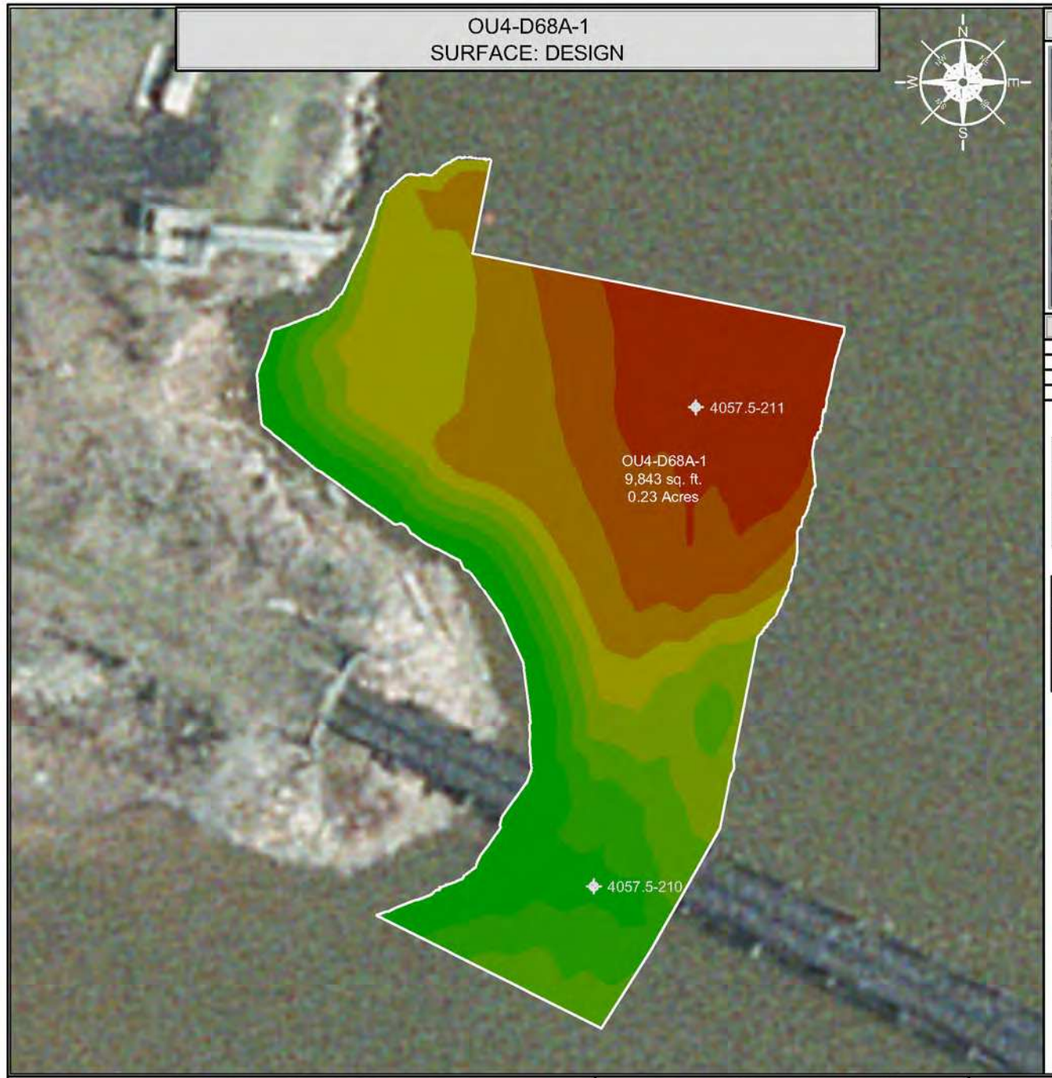
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-048

OU4-D39 RDMU 6R
2nd RESIDUAL DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

P:\LLOC\ATR\Field Env\Work\gDredge Files\2018\CH14 D39 RDMU\DWG\Post Dredge\CH14 D39 RDMU 6R.dwg

OU4-D68A-1
SURFACE: DESIGN



INDEX MAP

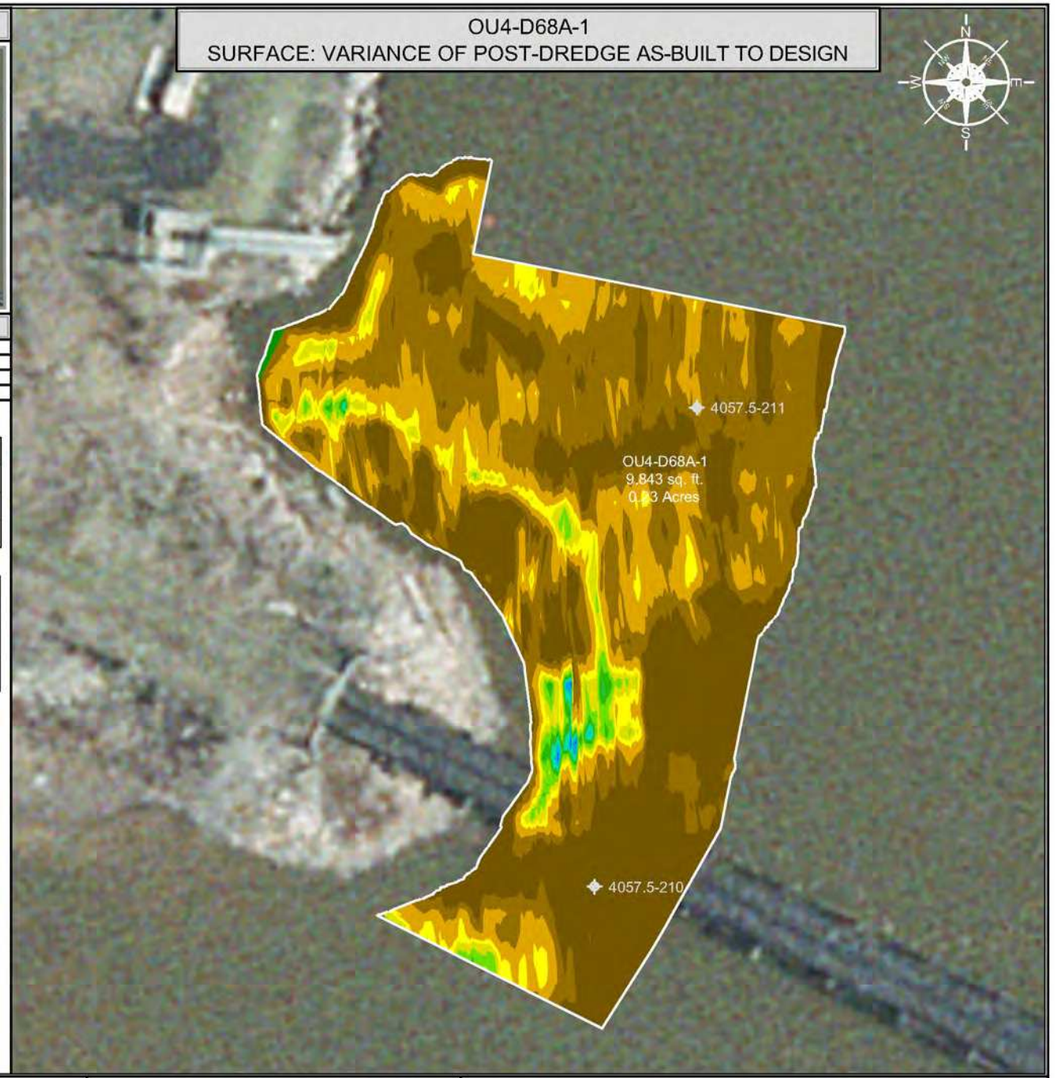


CONFIRMATION SAMPLE RESULTS	
INTERVAL	CONCENTRATION
0.0' - 0.5'	1,080 µg/kg (1.08 ppm)
0.5' - 1.0'	835 µg/kg (0.835 ppm)
1.0' - 1.5'	250 µg/kg (0.25 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS		
SAMPLE ID	NORTHING	EASTING
4057.5-211	250977.10	2483938.74
4057.5-210	250882.31	2483918.52

DISCRETE SAMPLE RESULTS	
LOCATION	CONCENTRATION
4057.5-210	A: 575 µg/kg (0.575) ppm) B: 499 µg/kg (0.499) ppm) C: 209 µg/kg (0.209) ppm)
4057.5-211	A: 1,580 µg/kg (1.58) ppm) B: 1,170 µg/kg (1.17) ppm) C: 290 µg/kg (0.29) ppm)

OU4-D68A-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-16-D68A-1-4057.5-210-A
2. TTFR-16-D68A-1-4057.5-210-B
3. TTFR-16-D68A-1-4057.5-210-C
4. TTFR-16-D68A-1-4057.5-211-A
5. TTFR-16-D68A-1-4057.5-211-B
6. TTFR-16-D68A-1-4057.5-211-C

SCALE (1" = 30')

30 15 0 30 60

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-5-2015

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
557.94'	-	560.00'
560.00'	-	562.00'
562.00'	-	564.00'
564.00'	-	566.00'
566.00'	-	568.00'
568.00'	-	570.00'
570.00'	-	572.00'
572.00'	-	574.00'
574.00'	-	576.00'
576.00'	-	578.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-16-D68A-1-A
2. 0.5' - 1.0' SAMPLE ID TTFR-16-D68A-1-B
3. 1.0' - 1.5' SAMPLE ID TTFR-16-D68A-1-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 10-4-2016
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF TWO SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 10-7-2016

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-4.69'	-	-1.00'	3,373.23
BELOW RAL	-1.00'	-	-0.50'	3,518.91
BELOW RAL	-0.50'	-	0.00'	1,987.92
ABOVE RAL	0.00'	-	0.25'	451.32
ABOVE RAL	0.25'	-	0.50'	250.07
ABOVE RAL	0.50'	-	0.75'	133.11
ABOVE RAL	0.75'	-	1.00'	51.81
ABOVE RAL	1.00'	-	1.25'	23.30
ABOVE RAL	1.25'	-	1.50'	8.78
ABOVE RAL	1.50'	-	1.70'	0.91

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D68A-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: December 3, 2015
LAST REVISED: November 26, 2018
CHECKED BY: REG

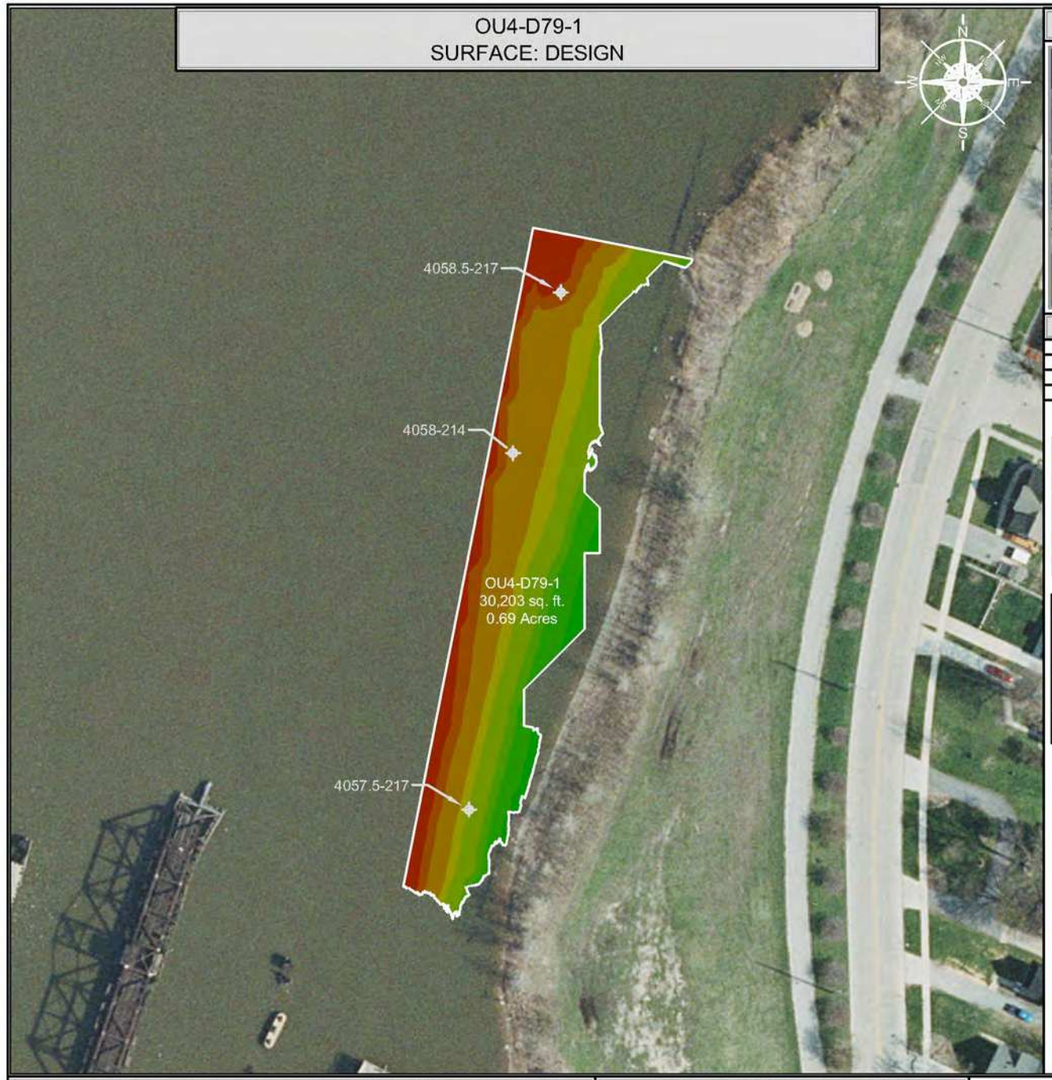
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-049

OU4-D68A-1
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LLC\Data\Fieldwork\gis\Dredge Files\2015\OU4 D68A\DWG\Post Dredge\OU4 D68A-1.dwg

OU4-D79-1
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	1,380 µg/kg (1.38 ppm)
0.5' - 1.0'	1,510 µg/kg (1.51 ppm)
1.0' - 1.5'	6,630 µg/kg (6.63 ppm)

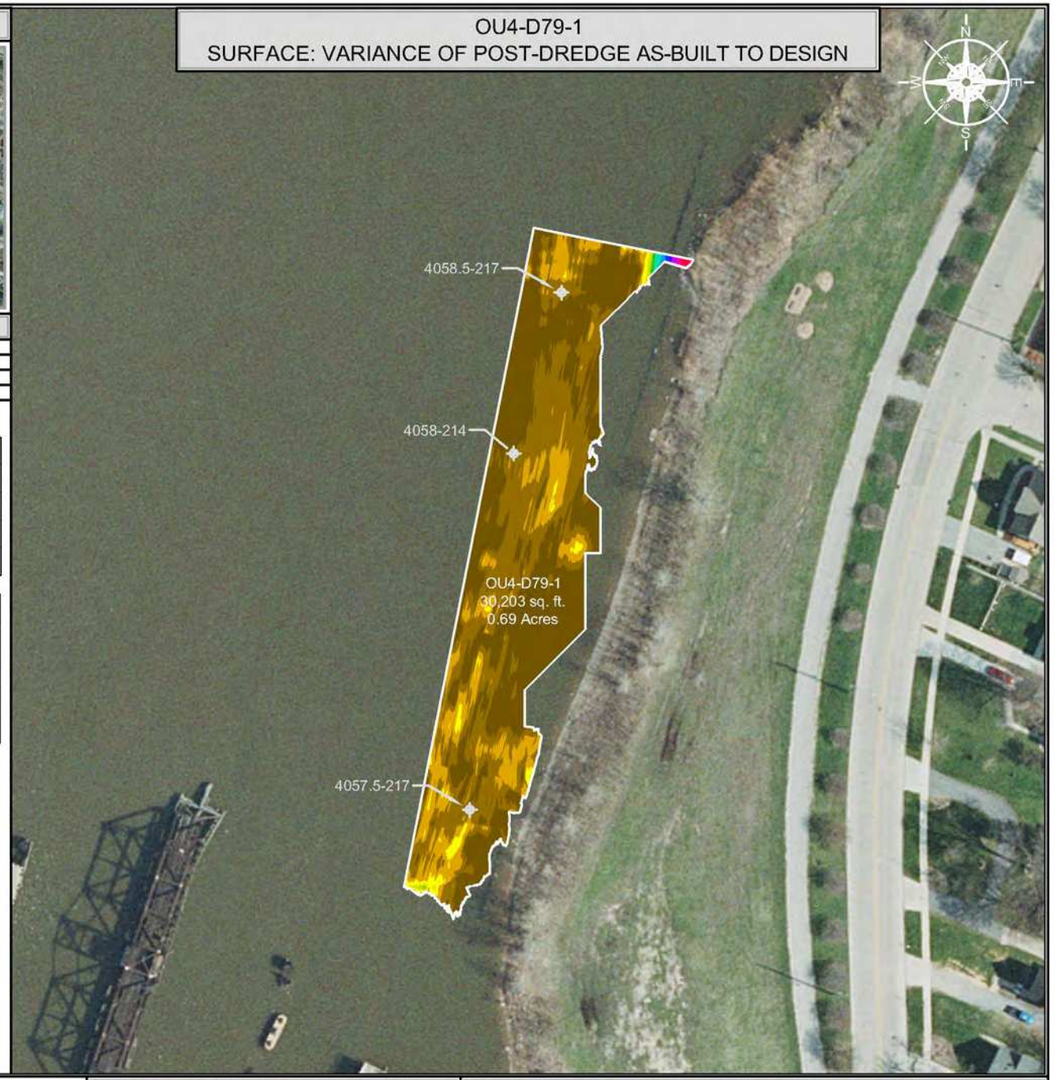
CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4057.5-217	250830.76	2484463.78
4058-214	251065.88	2484492.83
4058.5-217	251172.03	2484524.35

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION
4057.5-217	A: 281 µg/kg (0.281) ppm) B: NO RESULTS C: 333 µg/kg (0.333) ppm)
4058.5-217	A: 2,470 µg/kg (2.47) ppm) D: 267 µg/kg (0.267) ppm) B: 2,330 µg/kg (2.33) ppm) C: 1,800 µg/kg (1.8) ppm)
4058-214	A: 668 µg/kg (0.668) ppm) D: 318 µg/kg (0.318) ppm) B: 671 µg/kg (0.671) ppm) C: 11,300 µg/kg (11.3) ppm)

OU4-D79-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-16-D79-1-4057.5-217-A
2. TTFR-16-D79-1-4057.5-217-B
3. TTFR-16-D79-1-4057.5-217DS-C
4. TTFR-16-D79-1-4058.5-217-A
5. TTFR-16-D79-1-4058.5-217-B
6. TTFR-16-D79-1-4058.5-217-C
7. TTFR-16-D79-1-4058.5-217-D
8. TTFR-16-D79-1-4058-214-A
9. TTFR-16-D79-1-4058-214-B
10. TTFR-16-D79-1-4058-214-C
11. TTFR-16-D79-1-4058-214-D

SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-19-2015

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
551.60'	-	553.00'
553.00'	-	555.00'
555.00'	-	557.00'
557.00'	-	559.00'
559.00'	-	561.00'
561.00'	-	563.00'
563.00'	-	565.00'
565.00'	-	567.00'
567.00'	-	569.00'
569.00'	-	571.00'
571.00'	-	573.00'
573.00'	-	575.00'
575.00'	-	576.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-16-D79-1-A
2. 0.5' - 1.0' SAMPLE ID TTFR-16-D79-1-B
3. 1.0' - 1.5' SAMPLE ID TTFR-16-D79-1-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 7-6-2016
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF THREE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 7-11-2016, 7-14-2016, and 7-18-2016

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT
DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-3.15'	-	-1.00'	14,009.24
BELOW RAL	-1.00'	-	-0.50'	10,933.98
BELOW RAL	-0.50'	-	0.00'	4,395.78
ABOVE RAL	0.00'	-	0.50'	576.72
ABOVE RAL	0.50'	-	1.00'	80.96
ABOVE RAL	1.00'	-	1.50'	24.11
ABOVE RAL	1.50'	-	2.00'	18.08
ABOVE RAL	2.00'	-	2.50'	42.31
ABOVE RAL	2.50'	-	3.00'	21.67
ABOVE RAL	3.00'	-	3.50'	15.44
ABOVE RAL	3.50'	-	4.00'	7.86
ABOVE RAL	4.00'	-	4.50'	15.86
ABOVE RAL	4.50'	-	5.00'	17.35
ABOVE RAL	5.00'	-	6.30'	43.22

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D79-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: December 7, 2015
LAST REVISED: November 26, 2018
CHECKED BY: REG

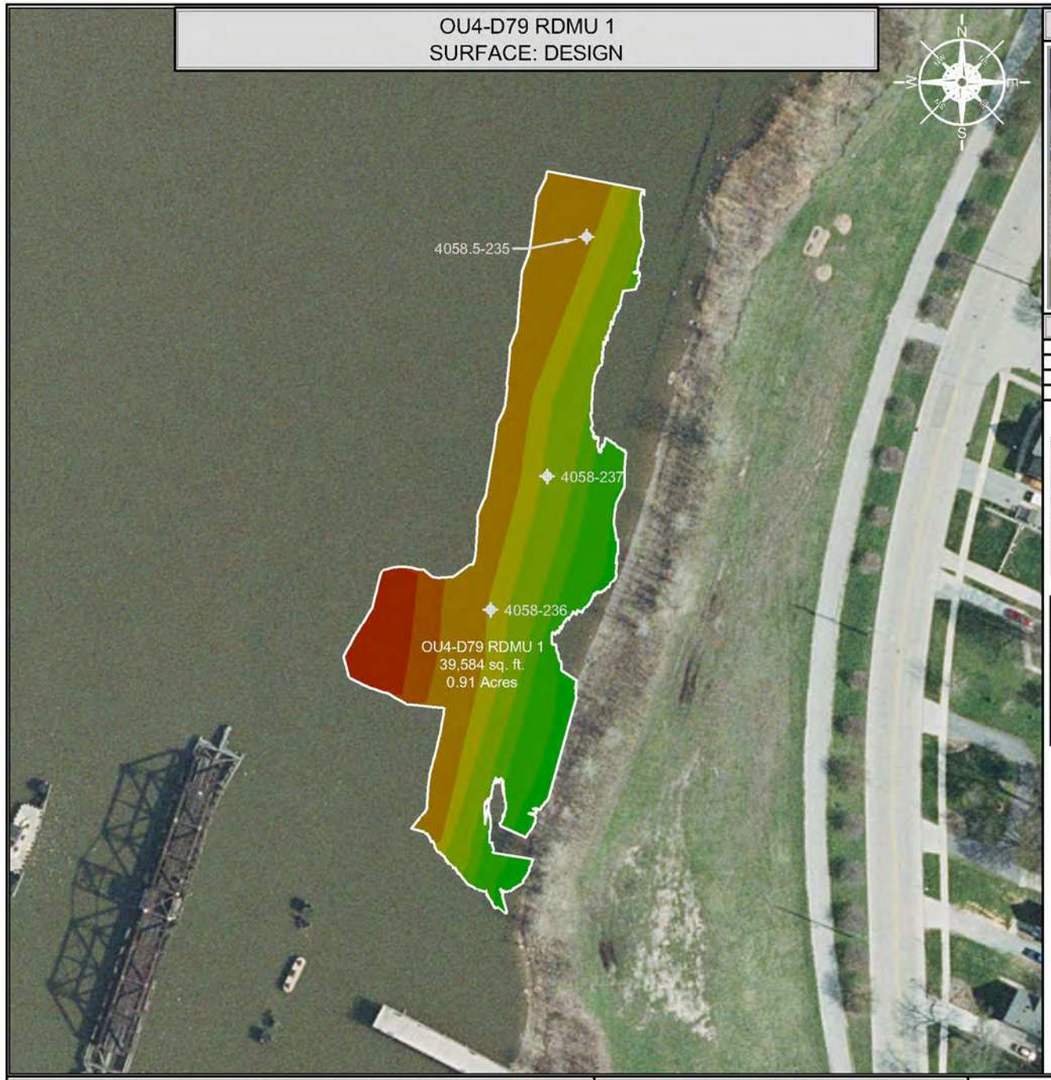
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-050

OU4-D79-1
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LCD\Utility\Hard Engineering\Dredge Files\2015\OU4 D79\DWG\Post Dredge\OU4-D79-1.dwg

OU4-D79 RDMU 1
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	3,550 µg/kg (3.55 ppm)
0.5' - 1.0'	2,040 µg/kg (2.04 ppm)
1.0' - 1.5'	<25.3 µg/kg (<0.0253 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4058-237	251013.85	2484502.70
4058-236	250925.82	2484465.37
4058.5-235	251171.86	2484528.60

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION
4058.5-235	A: 1,020 µg/kg (1.02) ppm) B: 132 µg/kg (0.132) ppm) C: <25.1 µg/kg (<0.0251) ppm)
4058-236	A: 8,020 µg/kg (8.02) ppm) B: 3,970 µg/kg (3.97) ppm) C: 116 µg/kg (0.116) ppm)
4058-237	A: 361 µg/kg (0.361) ppm) B: <25.3 µg/kg (<0.0253) ppm) C: <25.3 µg/kg (<0.0253) ppm)

OU4-D79 RDMU 1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-17-D79-1-4058.5-235-A
2. TTFR-17-D79-1-4058.5-235-B
3. TTFR-17-D79-1-4058.5-235-C
4. TTFR-17-D79-1-4058-236-A
5. TTFR-17-D79-1-4058-236-B
6. TTFR-17-D79-1-4058-236-C
7. TTFR-17-D79-1-4058-237-A
8. TTFR-17-D79-1-4058-237-B
9. TTFR-17-D79-1-4058-237-C

SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-29-2017

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
540.00'	-	543.00'
543.00'	-	546.00'
546.00'	-	549.00'
549.00'	-	552.00'
552.00'	-	555.00'
555.00'	-	558.00'
558.00'	-	561.00'
561.00'	-	564.00'
564.00'	-	567.00'
567.00'	-	570.00'
570.00'	-	573.00'
573.00'	-	576.00'
576.00'	-	579.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-17-D79-1-A
2. 0.5' - 1.0' SAMPLE ID TTFR-17-D79-1-B
3. 1.0' - 1.5' SAMPLE ID TTFR-17-D79-1-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 10-12-2017
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF THREE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 10-19-2017 and 10-24-2017

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT
DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.95'	-	-1.00'	1,173.43
BELOW RAL	-1.00'	-	-0.50'	10,853.30
BELOW RAL	-0.50'	-	0.00'	21,183.77
ABOVE RAL	0.00'	-	0.50'	4,871.94
ABOVE RAL	0.50'	-	1.00'	882.30
ABOVE RAL	1.00'	-	1.50'	343.49
ABOVE RAL	1.50'	-	2.00'	125.30
ABOVE RAL	2.00'	-	2.50'	127.80
ABOVE RAL	2.50'	-	2.98'	22.57

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D79 RDMU 1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: October 2, 2017
LAST REVISED: November 26, 2018
CHECKED BY: REG

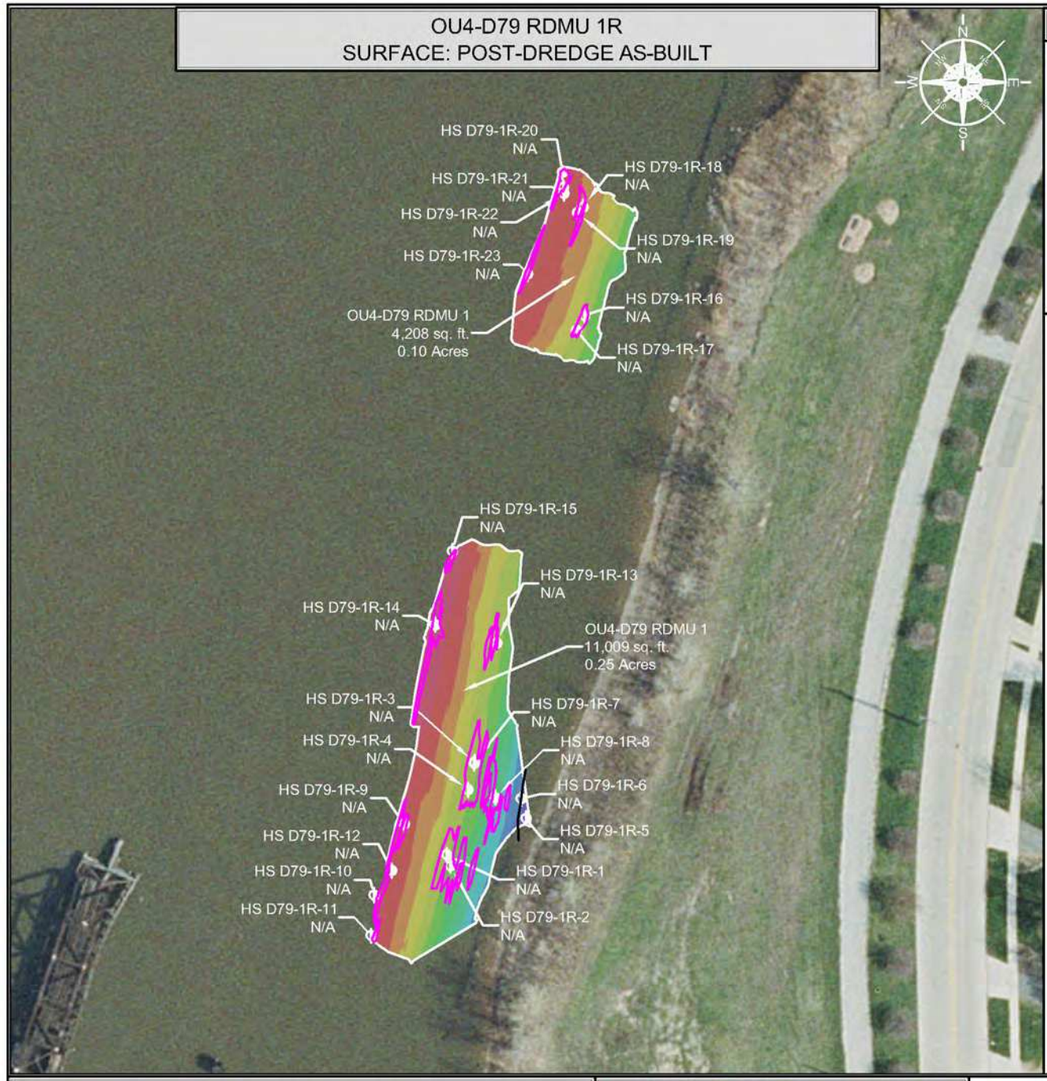
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-051

OU4-D79 RDMU 1
1st RESIDUAL DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LOCAL\GIS\Hist Engineering\Dredge Files\2017\OU4 D79 RDMU\DWG\Post Dredge\OU4 D79 RDMU 1.dwg

OU4-D79 RDMU 1R
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP

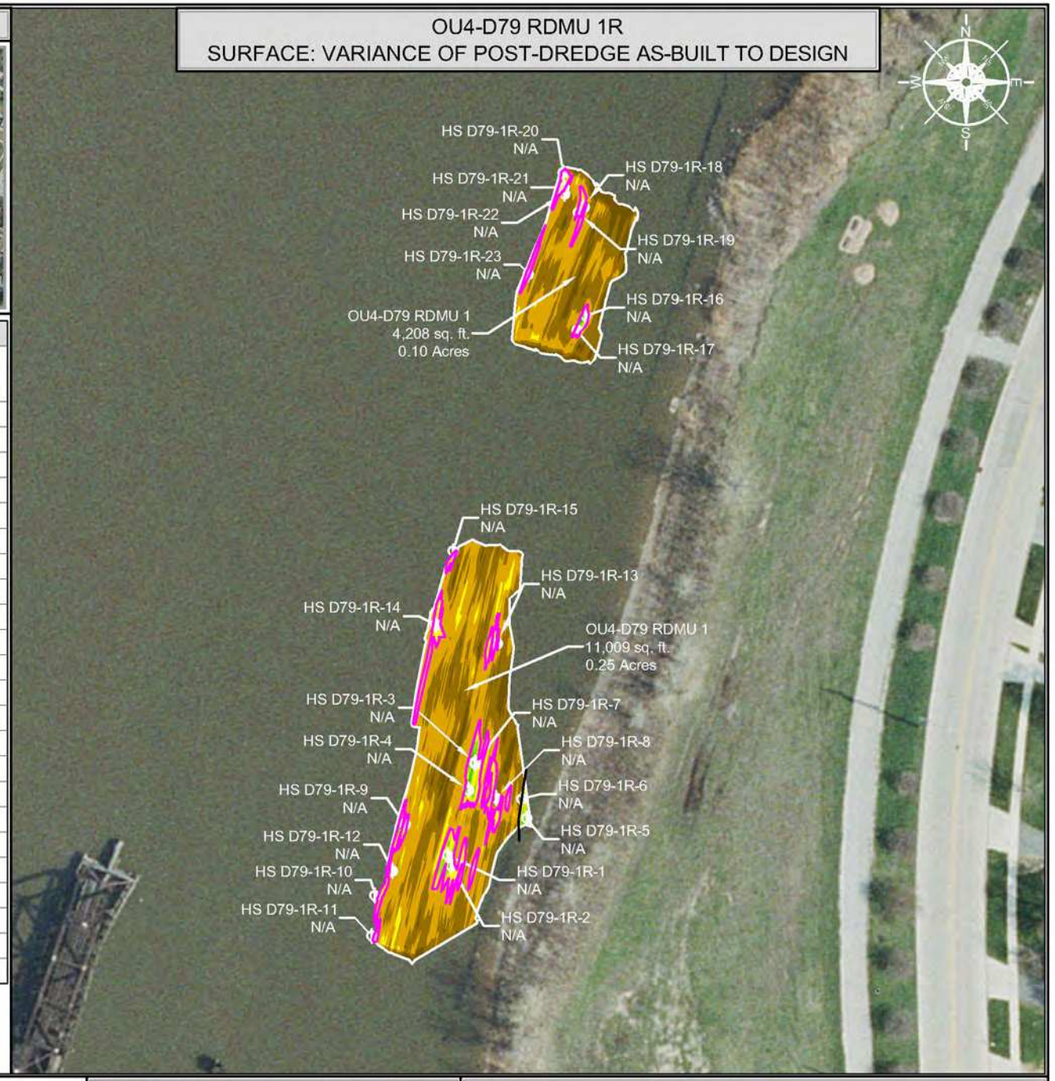


HIGH SUBGRADE SAMPLE AS-BUILT RESULTS

SAMPLE ID	NORTHING	EASTING	THICKNESS OF SOFT SEDIMENT (FEET)
HS D79-1R-1	250840.98	2484464.89	N/A
HS D79-1R-2	250835.20	2484466.76	N/A
HS D79-1R-3	250889.84	2484479.49	N/A
HS D79-1R-4	250875.38	2484476.16	N/A
HS D79-1R-5	250860.32	2484506.72	N/A
HS D79-1R-6	250870.52	2484504.02	N/A
HS D79-1R-7	250889.26	2484479.42	N/A
HS D79-1R-8	250871.14	2484490.55	N/A
HS D79-1R-9	250857.23	2484442.40	N/A
HS D79-1R-10	250819.69	2484426.51	N/A
HS D79-1R-11	250798.33	2484424.99	N/A
HS D79-1R-12	250832.69	2484435.82	N/A
HS D79-1R-13	250952.69	2484491.40	N/A
HS D79-1R-14	250962.37	2484458.67	N/A
HS D79-1R-15	251001.28	2484467.82	N/A
HS D79-1R-16	251125.54	2484537.71	N/A
HS D79-1R-17	251117.74	2484533.31	N/A
HS D79-1R-18	251182.86	2484537.02	N/A
HS D79-1R-19	251179.83	2484533.83	N/A
HS D79-1R-20	251201.02	2484525.95	N/A
HS D79-1R-21	251193.10	2484526.41	N/A
HS D79-1R-22	251189.89	2484526.88	N/A
HS D79-1R-23	251147.48	2484507.62	N/A

NR = NO RECOVERY
NA = NO CORE COLLECTION REQUIRED DUE TO POLING DEPTH

OU4-D79 RDMU 1R
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 80')

80 40 0 80 160

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 4-26-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'
562.00'	-	564.00'
564.00'	-	566.00'
566.00'	-	568.00'
568.00'	-	570.00'
570.00'	-	572.00'
572.00'	-	574.00'
574.00'	-	576.00'

DRAWING NOTES

1. HIGH SUBGRADE SAMPLES AND POLING DATA WERE COLLECTED ON 5-2-2018 and 5-3-2018 AND LOGGED ON N/A

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-3.19'	-	-1.00'	1,193.30
BELOW RAL	-1.00'	-	-0.50'	5,325.84
BELOW RAL	-0.50'	-	0.00'	6,851.35
ABOVE RAL	0.00'	-	0.25'	1,326.53
ABOVE RAL	0.25'	-	0.50'	327.90
ABOVE RAL	0.50'	-	0.75'	154.85
ABOVE RAL	0.75'	-	1.00'	35.61
ABOVE RAL	1.00'	-	1.20'	0.96

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D79 RDMU 1R.dwg
DRAWN BY: DAVID.FRISQUE
DATE: May 11, 2018
LAST REVISED: November 21, 2018
CHECKED BY: REG

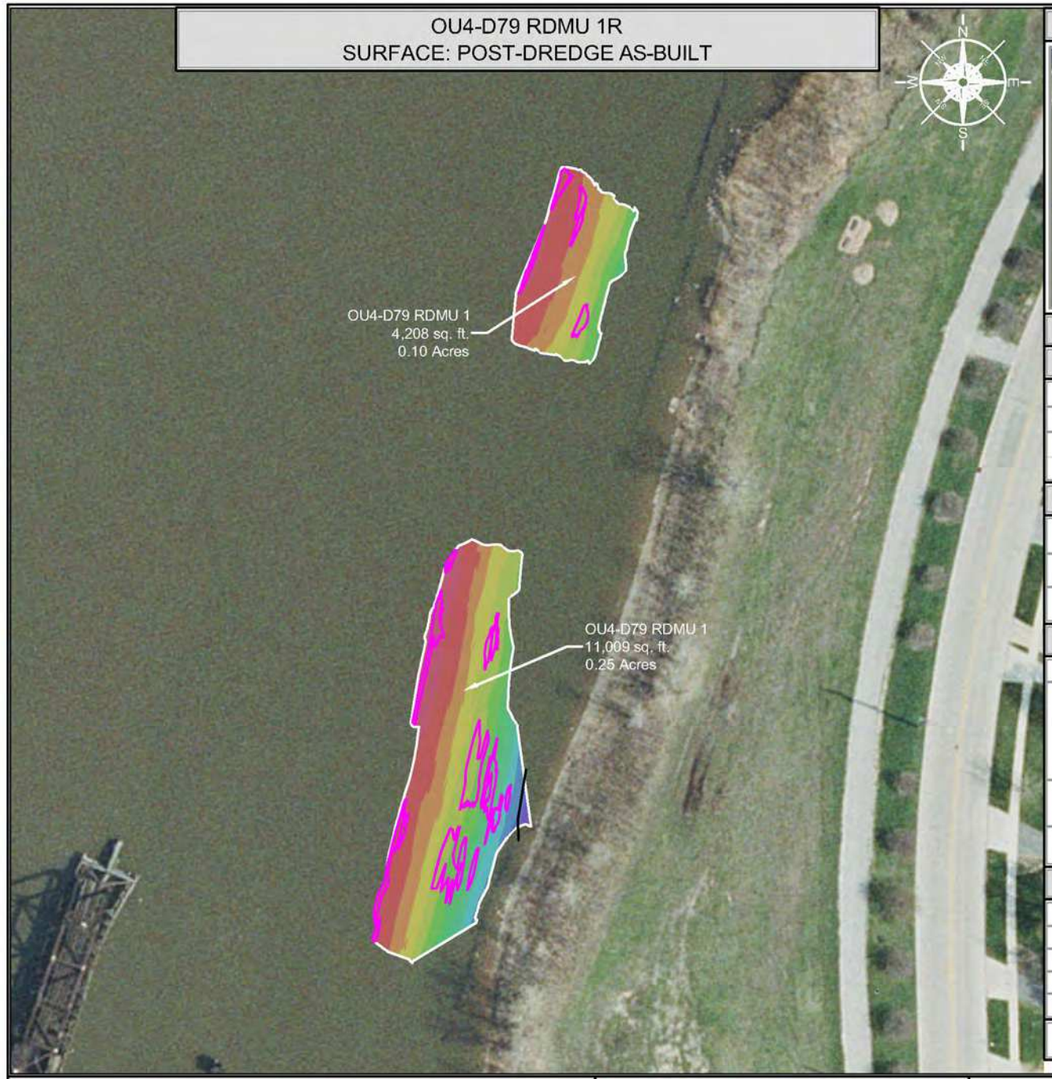
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-052

OU4-D79 RDMU 1R
2nd RESIDUAL DREDGE HIGH SUBGRADE RESULTS

F:\LCAD\LFRR\Engineering\Dredge Files\2018\OU4-D79 RDMU\DWG\Post Dredge\OU4-D79 RDMU 1R.dwg

OU4-D79 RDMU 1R
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

358.60	INITIAL RAL VOLUME
247.57	INITIAL OVERCUT VOLUME
606.17	RAL + OVERCUT VOLUME
501.30	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

236.81	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
219.99	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
456.80	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

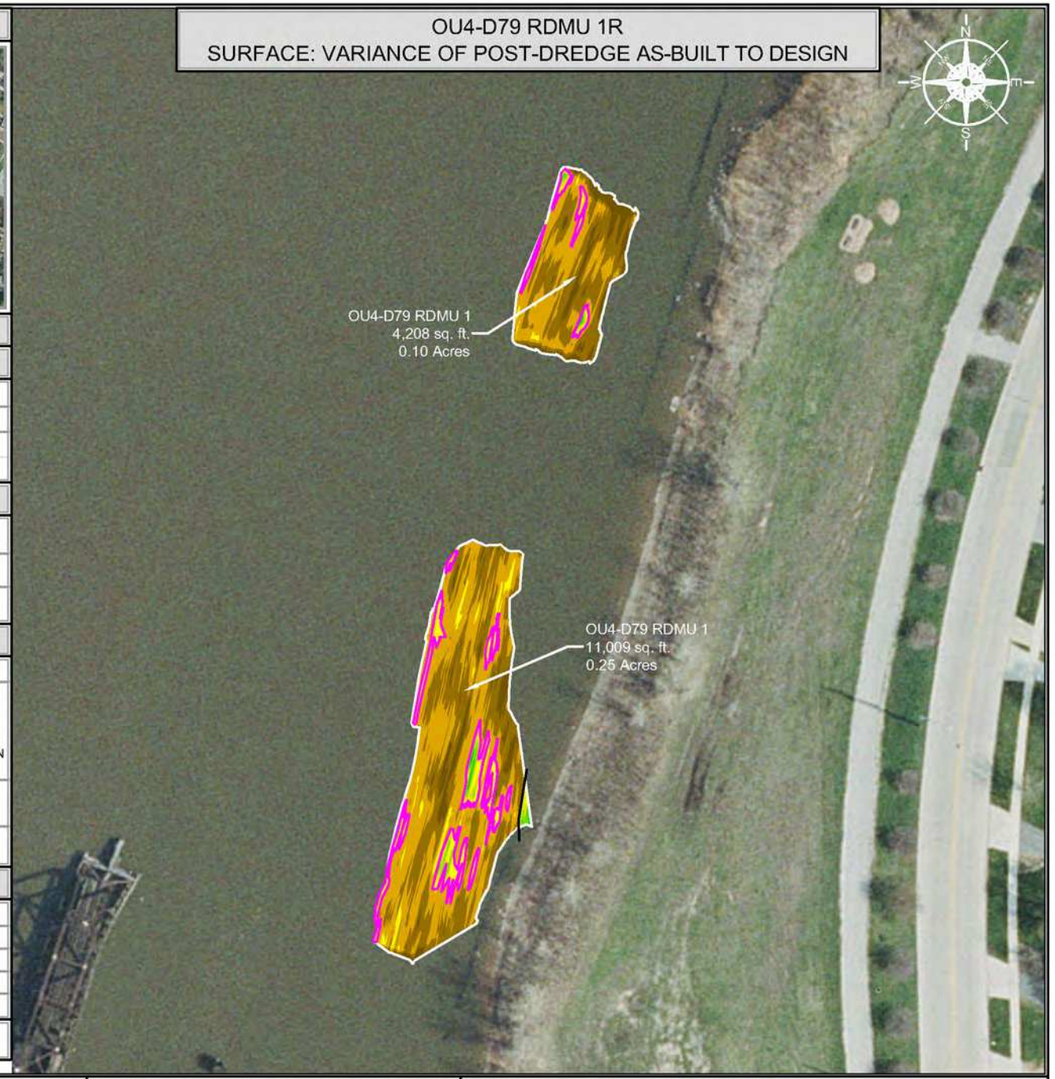
2018 AS-BUILT VOLUMES (CU. YD.)

398.44	TOTAL VOLUME DREDGED
223.56	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
11.28	CONFIRMED HIGH SUBGRADE VOLUME
2.49	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
91.10	OVERCUT VOLUME REMAINING
123.42	OVERCUT VOLUME DREDGED
51.46	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

15,216.35	AREA (SQ. FT.)
397.34	ABOVE DESIGN ELEVATION
13,370.49	AT OR BELOW DESIGN ELEVATION
1,448.52	CONFIRMED HIGH SUBGRADE
4.24 "	AVERAGE DEPTH OF OVERCUT [1]
97	PERCENT COMPLETE [2]

OU4-D79 RDMU 1R
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 80')

80 40 0 80 160

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 4-26-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'
562.00'	-	564.00'
564.00'	-	566.00'
566.00'	-	568.00'
568.00'	-	570.00'
570.00'	-	572.00'
572.00'	-	574.00'
574.00'	-	576.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-3.19'	-	-1.00'	1,193.30
	-1.00'	-	-0.50'	5,325.84
	-0.50'	-	0.00'	6,851.35
ABOVE RAL	0.00'	-	0.25'	1,326.53
	0.25'	-	0.50'	327.90
	0.50'	-	0.75'	154.85
	0.75'	-	1.00'	35.61
	1.00'	-	1.20'	0.96

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D79 RDMU 1R.dwg
DRAWN BY: DAVID.FRISQUE
DATE: May 11, 2018
LAST REVISED: November 21, 2018
CHECKED BY: REG

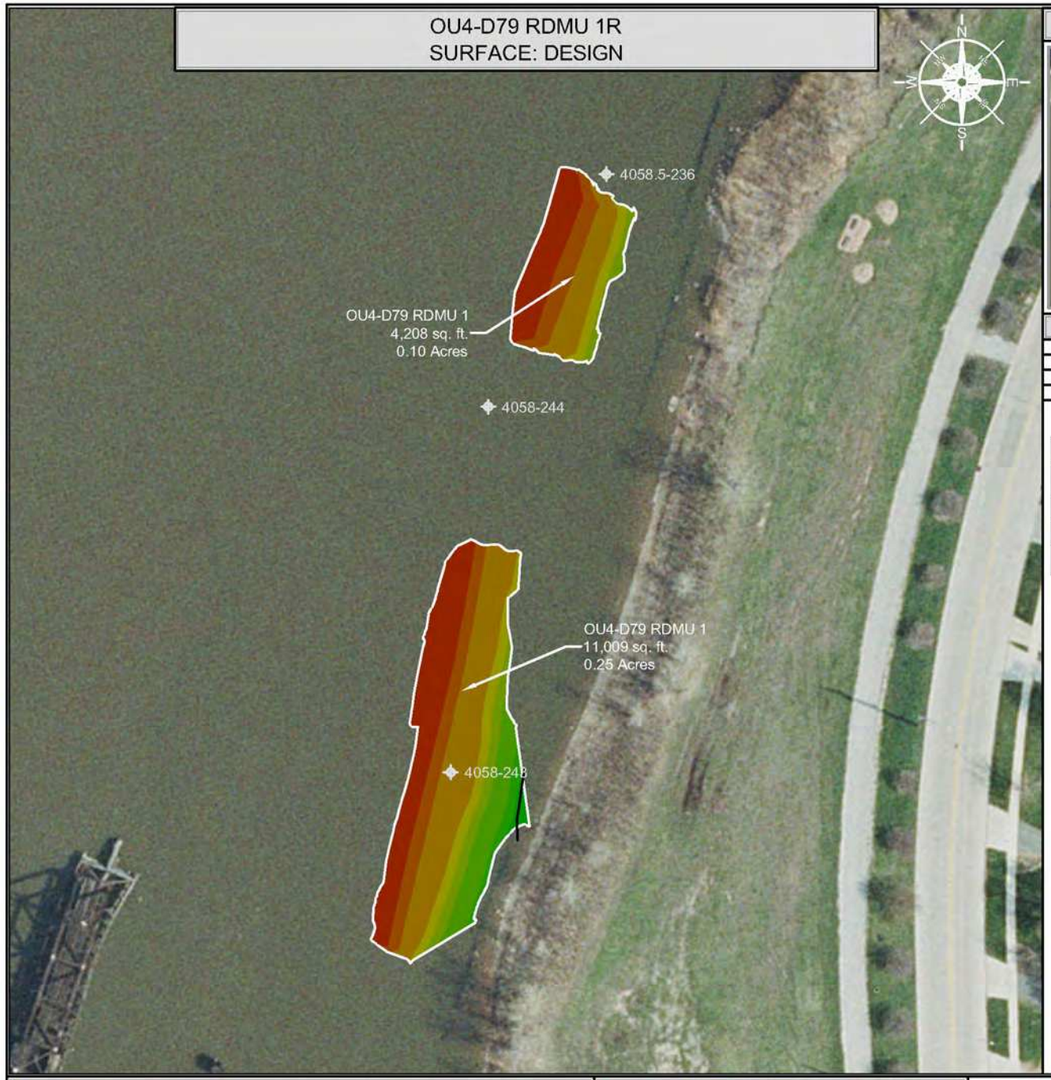
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-053

OU4-D79 RDMU 1R
2nd RESIDUAL DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LLC\CAD\Field Engineering\2Design Files\2015\SOU4-D79 RDMU1\DWG\Post Dredge\OU4-D79 RDMU 1R.dwg

OU4-D79 RDMU 1R
SURFACE: DESIGN



INDEX MAP



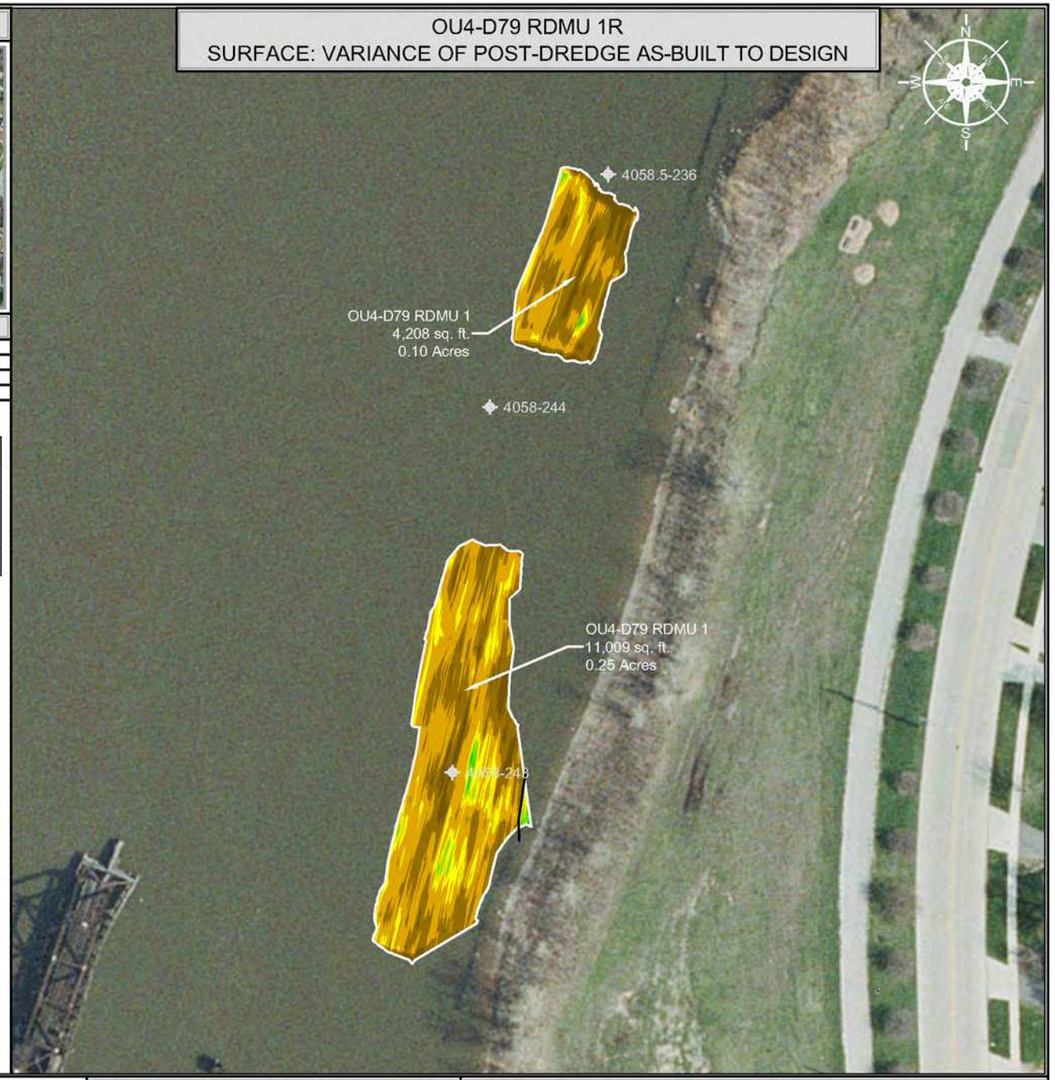
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	587 µg/kg (0.587 ppm)
0.5' - 1.0'	<25.1 µg/kg (<0.0251 ppm)
1.0' - 1.5'	26.7 µg/kg (0.0267 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4058-244	251077.41	2484487.36
4058-243	250884.52	2484467.55
4058.5-236	251200.13	2484549.70

OU4-D79 RDMU 1R
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 80')

80 40 0 80 160

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 4-26-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'
562.00'	-	564.00'
564.00'	-	566.00'
566.00'	-	568.00'
568.00'	-	570.00'
570.00'	-	572.00'
572.00'	-	574.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-D79-1-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-D79-1-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-D79-1-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 7-18-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF THREE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 7-24-2018

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OU# - D# - #
- OU# — OPERABLE UNIT
- D# — DREDGE AREA
- # — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-3.19'	-	-1.00'	1,193.30
BELOW RAL	-1.00'	-	-0.50'	5,325.84
BELOW RAL	-0.50'	-	0.00'	6,851.35
ABOVE RAL	0.00'	-	0.25'	1,326.53
ABOVE RAL	0.25'	-	0.50'	327.90
ABOVE RAL	0.50'	-	0.75'	154.85
ABOVE RAL	0.75'	-	1.00'	35.61
ABOVE RAL	1.00'	-	1.20'	0.96

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D79 RDMU 1R.dwg
DRAWN BY: DAVID.FRISQUE
DATE: May 11, 2018
LAST REVISED: November 26, 2018
CHECKED BY: REG

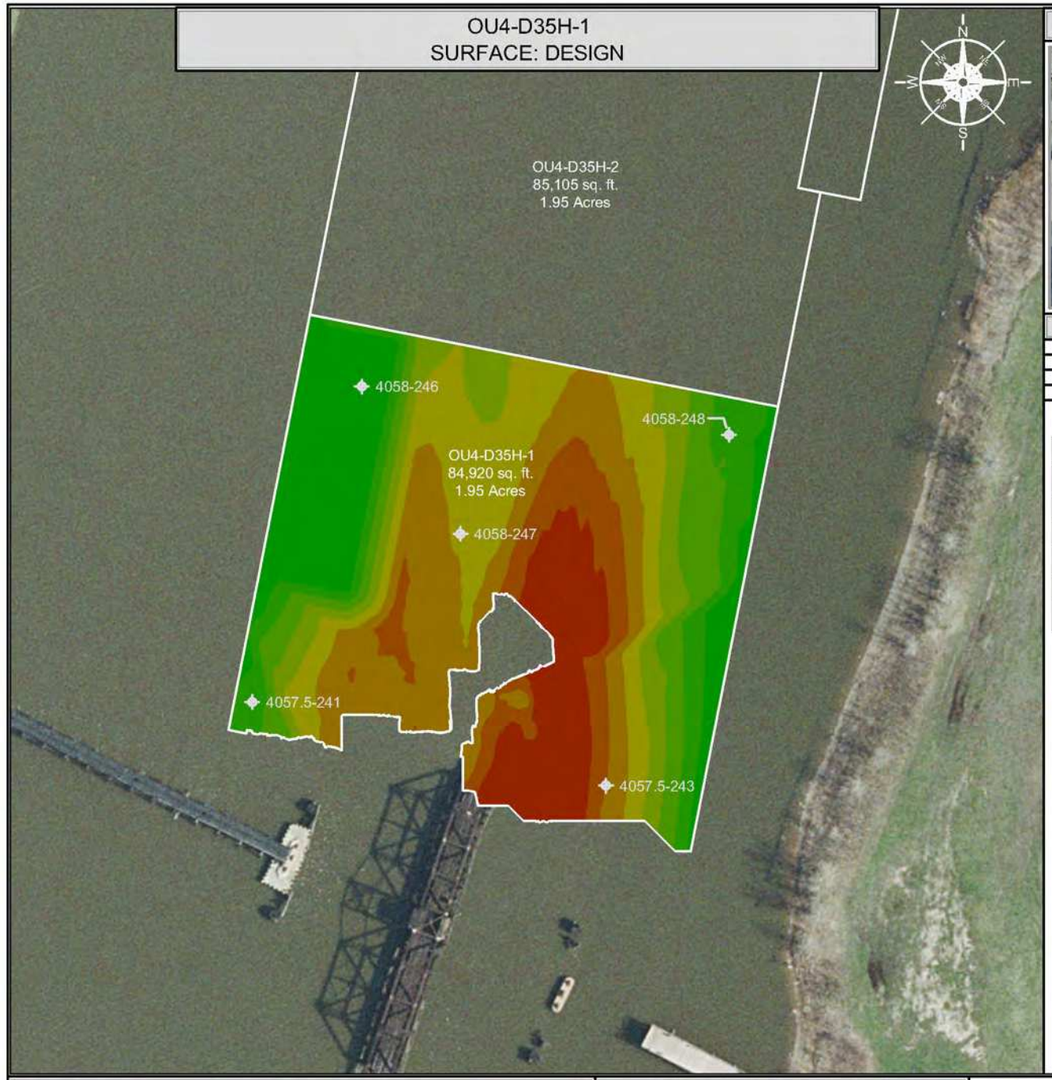
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-054

OU4-D79 RDMU 1R
2nd RESIDUAL DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LLC\CAD\Field Engineering\Design Files\2018\D314 D79 RDMU1R\GIS\Post Design\D314 D79 RDMU 1R.dwg

OU4-D35H-1
SURFACE: DESIGN



INDEX MAP



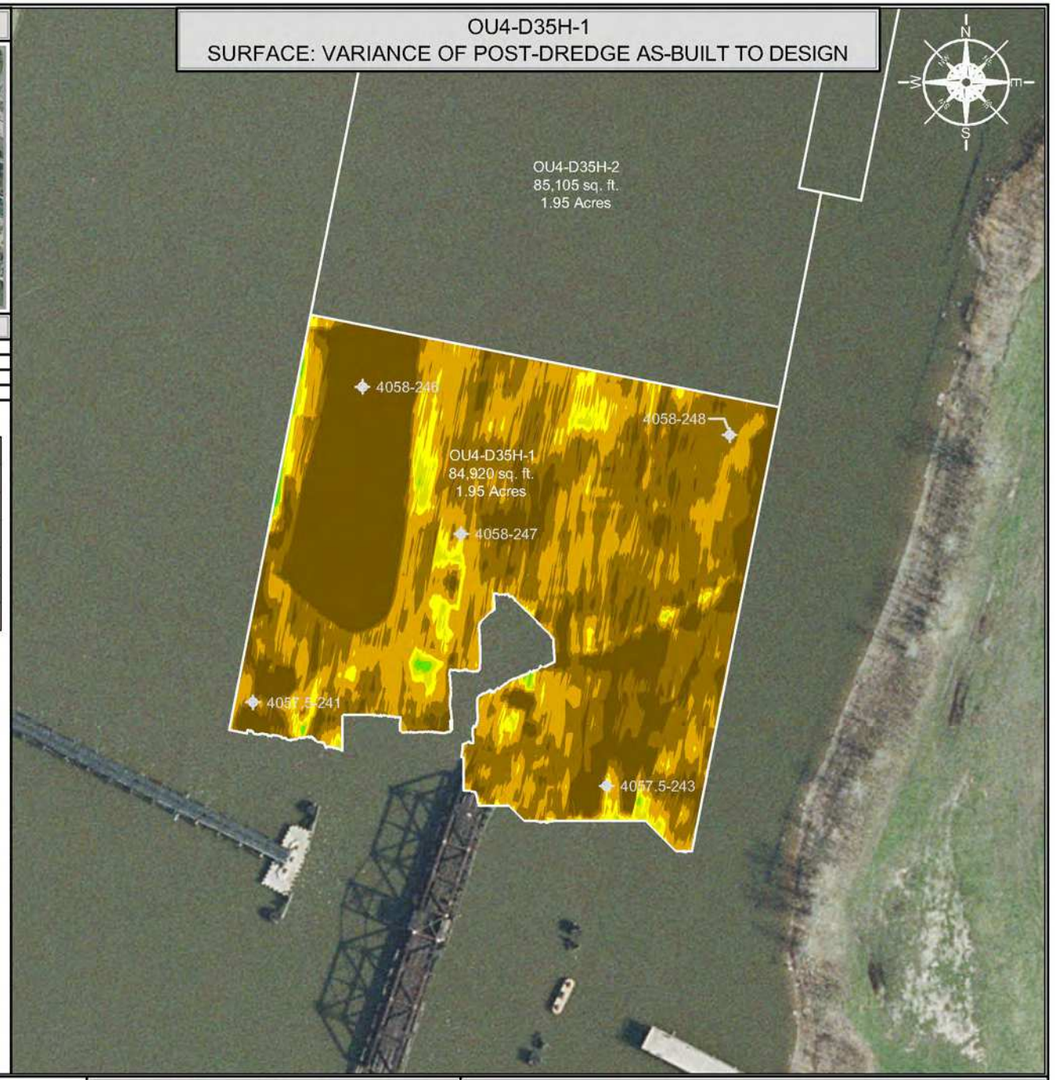
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	758 µg/kg (0.758 ppm)
0.5' - 1.0'	650 µg/kg (0.65 ppm)
1.0' - 1.5'	47.4 µg/kg (0.0474 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4057.5-243	250823.18	2484364.31
4057.5-241	250878.32	2484130.92
4058-248	251054.59	2484445.47
4058-247	250989.34	2484268.32
4058-246	251086.48	2484203.23

OU4-D35H-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-19-2015

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
536.64'	-	539.00'
539.00'	-	541.00'
541.00'	-	543.00'
543.00'	-	545.00'
545.00'	-	547.00'
547.00'	-	549.00'
549.00'	-	551.00'
551.00'	-	553.00'
553.00'	-	555.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-D35H-1-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-D35H-1-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-D35H-1-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 7-16-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF FIVE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 7-20-2018

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-9.56'	-	-1.00'	25,468.92
BELOW RAL	-1.00'	-	-0.50'	32,416.60
BELOW RAL	-0.50'	-	0.00'	22,079.67
ABOVE RAL	0.00'	-	0.25'	3,454.18
ABOVE RAL	0.25'	-	0.50'	1,128.88
ABOVE RAL	0.50'	-	0.75'	255.03
ABOVE RAL	0.75'	-	1.00'	32.30
ABOVE RAL	1.00'	-	1.20'	11.79

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35H-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: December 4, 2015
LAST REVISED: November 21, 2018
CHECKED BY: REG

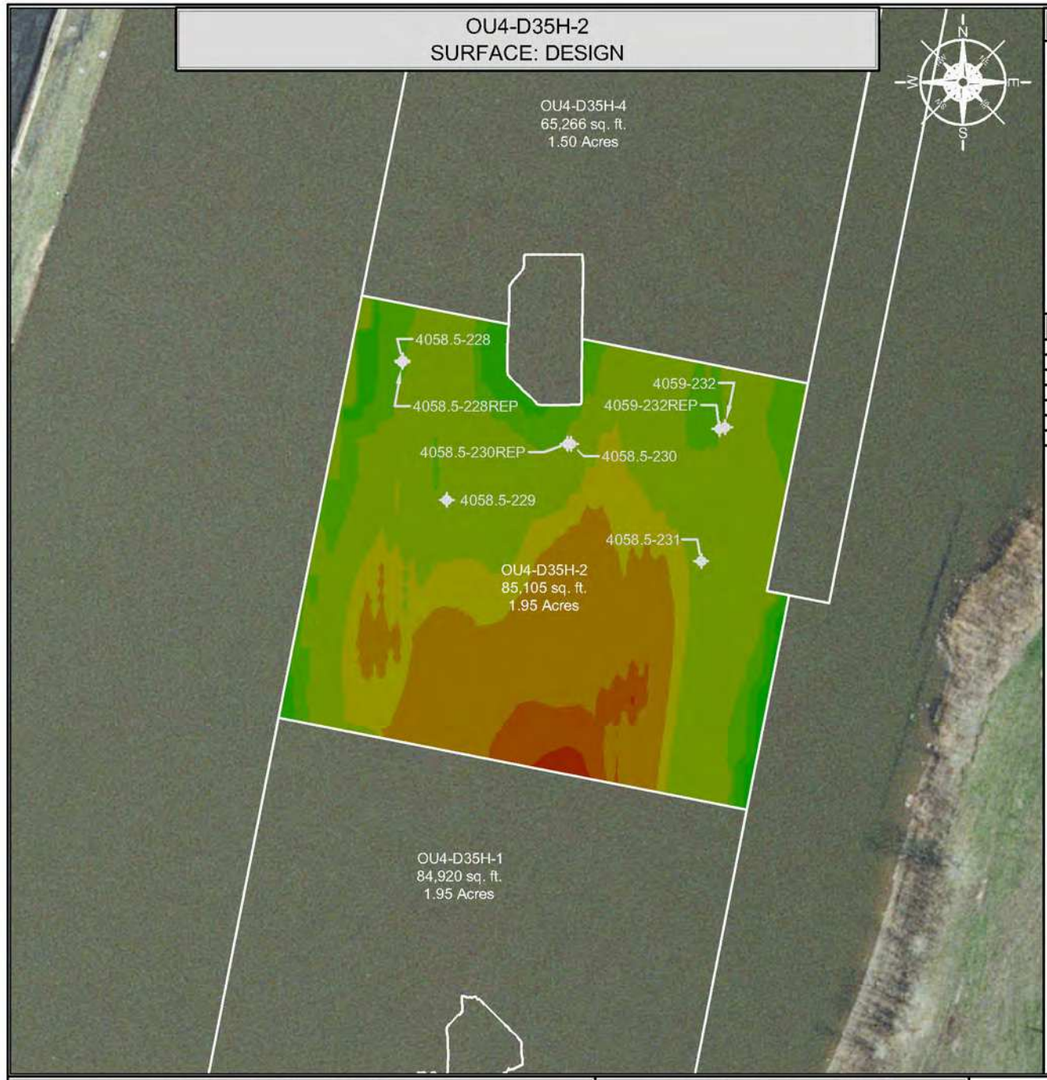
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-055

OU4-D35H-1
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

P:\ALLDOCS\Field Engineering\Dredge Files\2015\OU4-D35H\WORK\Post Dredge\OU4-D35H-1.dwg

OU4-D35H-2
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	770 µg/kg (0.77 ppm)
0.5' - 1.0'	1,920 µg/kg (1.92 ppm)
1.0' - 1.5'	55.6 µg/kg (0.0556 ppm)
0.0' - 0.5' REP	2,800 µg/kg (2.8 ppm)
0.5' - 1.0' REP	2,600 µg/kg (2.6 ppm)
1.0' - 1.5' REP	<25.5 µg/kg (<0.0255 ppm)

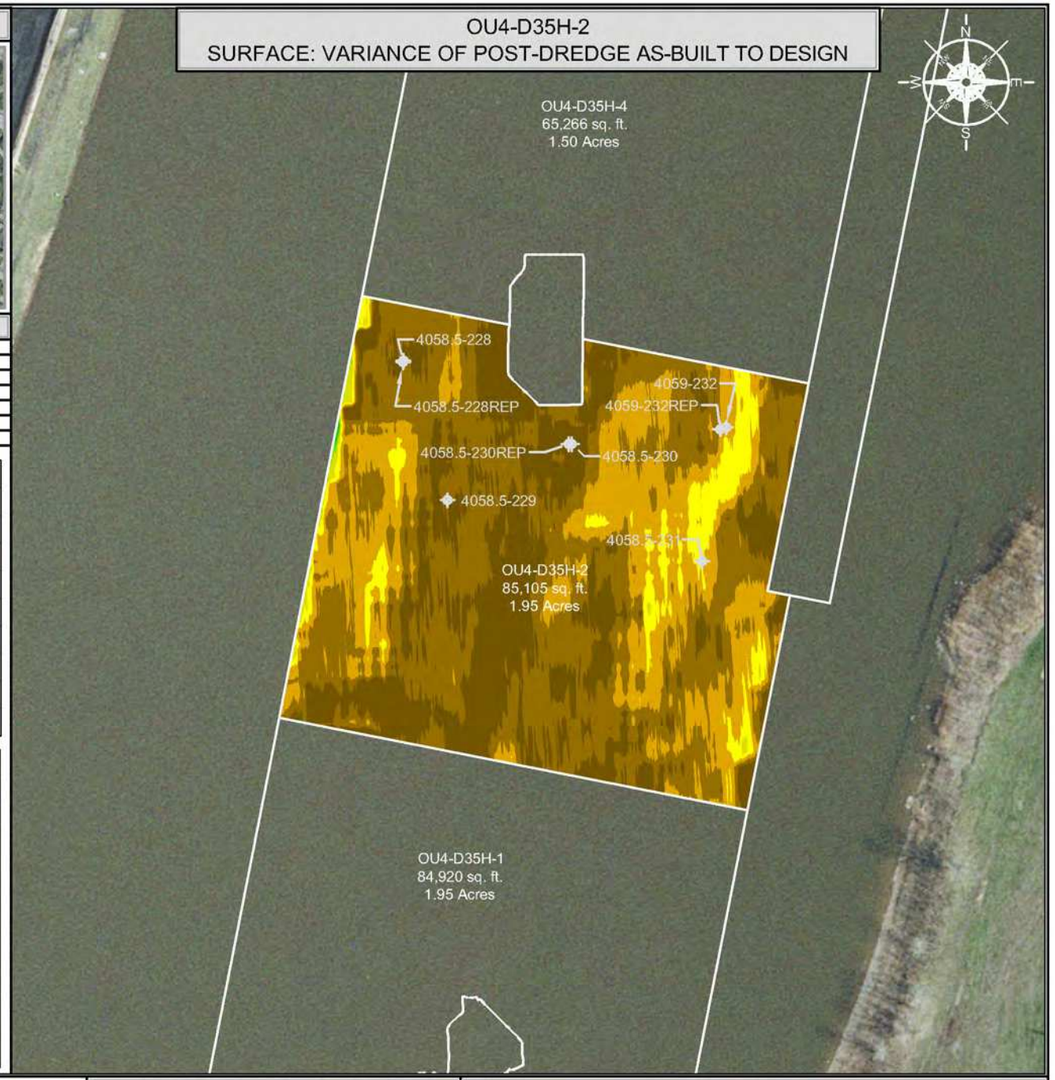
CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4058.5-230REP	251314.48	2484359.80
4058.5-228REP	251368.46	2484250.80
4058.5-231	251237.11	2484447.94
4058.5-229	251277.41	2484280.09
4058.5-230	251314.46	2484362.12
4058.5-228	251369.37	2484250.89
4059-232REP	251324.25	2484459.86
4059-232	251325.46	2484463.75

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION
4058.5-228	A: 1,180 µg/kg (1.18) ppm) B: 3,470 µg/kg (3.47) ppm) C: 135 µg/kg (0.135) ppm)
4058.5-230	A: 38.2 µg/kg (0.0382) ppm) B: <25.1 µg/kg (<0.0251) ppm) C: <25.8 µg/kg (<0.0258) ppm)
4059-232	A: 572 µg/kg (0.572) ppm) B: 262 µg/kg (0.262) ppm) C: <25.4 µg/kg (<0.0254) ppm)
4058.5-229	A: 5,340 µg/kg (5.34) ppm) B: 1,010 µg/kg (1.01) ppm) C: <25.4 µg/kg (<0.0254) ppm)
4058.5-231	A: 777 µg/kg (0.777) ppm) B: 403 µg/kg (0.403) ppm) C: <25.6 µg/kg (<0.0256) ppm)
4058.5-228REP	A: 1,920 µg/kg (1.92) ppm) B: 2,880 µg/kg (2.88) ppm) C: <25.4 µg/kg (<0.0254) ppm)
4058.5-230REP	A: 3,960 µg/kg (3.96) ppm) B: 1,960 µg/kg (1.96) ppm) C: <25.3 µg/kg (<0.0253) ppm)
4059-232REP	A: 443 µg/kg (0.443) ppm) B: 248 µg/kg (0.248) ppm) C: 83.3 µg/kg (0.0833) ppm)

OU4-D35H-2
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-17-D35H-2-4058.5-228-A
2. TTFR-17-D35H-2-4058.5-228-B
3. TTFR-17-D35H-2-4058.5-228-C
4. TTFR-17-D35H-2-4058.5-230-A
5. TTFR-17-D35H-2-4058.5-230-B
6. TTFR-17-D35H-2-4058.5-230-C
7. TTFR-17-D35H-2-4059-232-A
8. TTFR-17-D35H-2-4059-232-B
9. TTFR-17-D35H-2-4059-232-C
10. TTFR-17-D35H-2-4058.5-229-A
11. TTFR-17-D35H-2-4058.5-229-B
12. TTFR-17-D35H-2-4058.5-229-C
13. TTFR-17-D35H-2-4058.5-231-A
14. TTFR-17-D35H-2-4058.5-231-B
15. TTFR-17-D35H-2-4058.5-231-C
16. TTFR-17-D35H-2-4058.5-228REP-A
17. TTFR-17-D35H-2-4058.5-228REP-B
18. TTFR-17-D35H-2-4058.5-228REP-C
19. TTFR-17-D35H-2-4058.5-230REP-A
20. TTFR-17-D35H-2-4058.5-230REP-B
21. TTFR-17-D35H-2-4058.5-230REP-C
22. TTFR-17-D35H-2-4059-232REP-A
23. TTFR-17-D35H-2-4059-232REP-B
24. TTFR-17-D35H-2-4059-232REP-C

SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 3-16-2015

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
542.88'	-	543.00'
543.00'	-	544.00'
544.00'	-	545.00'
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.31'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-17-D35H-2-A
2. 0.5' - 1.0' SAMPLE ID TTFR-17-D35H-2-B
3. 1.0' - 1.5' SAMPLE ID TTFR-17-D35H-2-C
4. 0.0' - 0.5' SAMPLE ID TTFR-17-D35H-2REP-A
5. 0.5' - 1.0' SAMPLE ID TTFR-17-D35H-2REP-B
6. 1.0' - 1.5' SAMPLE ID TTFR-17-D35H-2REP-C
7. CONFIRMATION SAMPLES WERE COLLECTED ON 7-26-2017 and 10-11-2017
8. CONFIRMATION SAMPLES ARE A COMPOSITE OF EIGHT SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
9. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 8-1-2017, 10-16-2017, 10-19-2017, and 10-20-2017

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OU# - D# - #

- OU# — OPERABLE UNIT
- D# — DREDGE AREA
- # — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-3.71'	-	-1.00'	22,674.49
BELOW RAL	-1.00'	-	-0.50'	37,291.44
BELOW RAL	-0.50'	-	0.00'	19,601.19
ABOVE RAL	0.00'	-	0.50'	4,880.89
ABOVE RAL	0.50'	-	1.00'	503.43
ABOVE RAL	1.00'	-	1.50'	105.00
ABOVE RAL	1.50'	-	2.00'	21.12
ABOVE RAL	2.00'	-	2.50'	7.86

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35H-2.dwg
DRAWN BY: DAVID.FRISQUE
DATE: August 19, 2015
LAST REVISED: November 26, 2018
CHECKED BY: REG

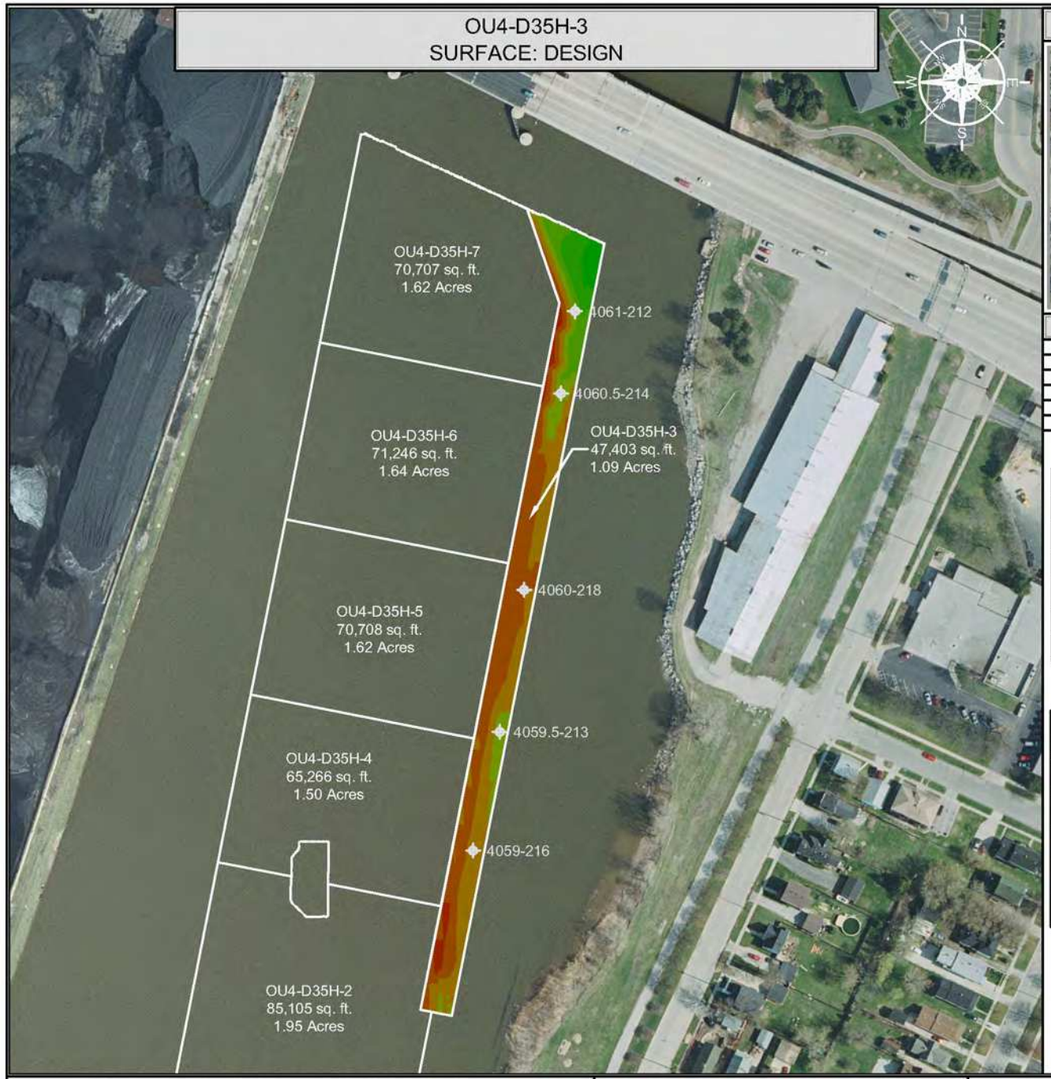
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-056

OU4-D35H-2
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LOC\24\PHE\Engineering\3Dredge Files\2015\OU4 D35H\DWG\Post Dredge\OU4 D35H-2.dwg

OU4-D35H-3
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	2,320 µg/kg (2.32 ppm)
0.5' - 1.0'	4,320 µg/kg (4.32 ppm)
0.5' - 1.0'	3,710 µg/kg (3.71 ppm)
1.0' - 1.5'	3,110 µg/kg (3.11 ppm)
1.0' - 1.5'	3,600 µg/kg (3.6 ppm)

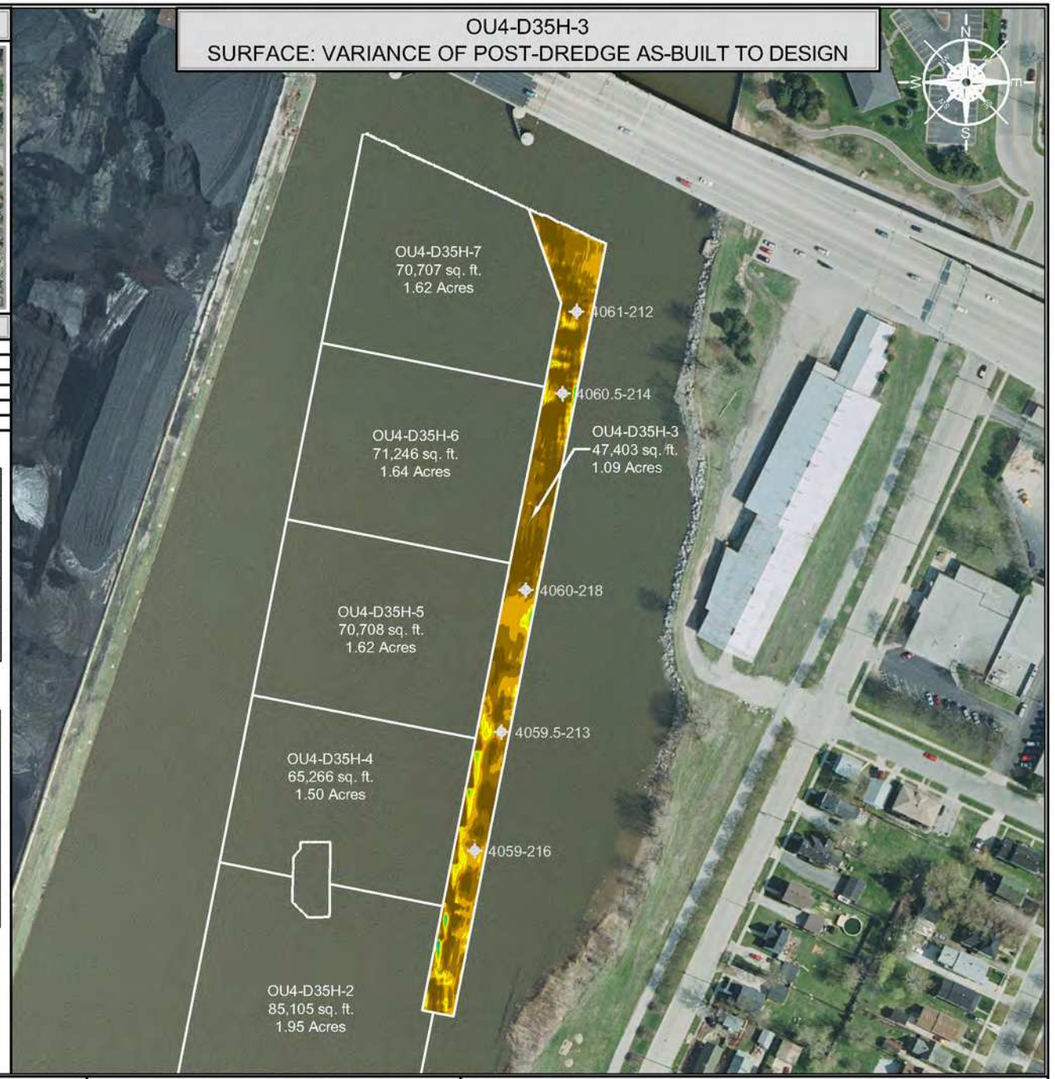
CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4059-216	251427.68	2484560.65
4059.5-213	251584.29	2484595.72
4060-218	251771.48	2484628.04
4060.5-214	252030.65	2484676.60
4061-212	252139.08	2484695.00

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION	
4059.5-213	A: 1,250 µg/kg (1.25) ppm) B: 1,740 µg/kg (1.74) ppm) C: 4,780 µg/kg (4.78) ppm)	D: 47.4 µg/kg (0.0474) ppm)
4059-216	A: 2,700 µg/kg (2.7) ppm) B: 1,940 µg/kg (1.94) ppm) C: 2,430 µg/kg (2.43) ppm)	D: 4,270 µg/kg (4.27) ppm) E: 3,580 µg/kg (3.58) ppm) RVTF: <25.9 µg/kg (<0.0259) ppm)
4060.5-214	A: 1,870 µg/kg (1.87) ppm) B: 2,010 µg/kg (2.01) ppm) C: 2,210 µg/kg (2.21) ppm)	D: 1,910 µg/kg (1.91) ppm) E: 1,260 µg/kg (1.26) ppm) RVTF: <25.9 µg/kg (<0.0259) ppm)
4060-218	A: 2,190 µg/kg (2.19) ppm) B: 4,480 µg/kg (4.48) ppm) C: 3,310 µg/kg (3.31) ppm)	D: 3,470 µg/kg (3.47) ppm) E: 1,310 µg/kg (1.31) ppm) RVTF: <25.9 µg/kg (<0.0259) ppm)
4061-212	A: 1,880 µg/kg (1.88) ppm) B: 6,430 µg/kg (6.43) ppm) C: 200 µg/kg (0.2) ppm)	D: <25.2 µg/kg (<0.0252) ppm)

OU4-D35H-3
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-16-D35H-3-4059.5-213-A
2. TTFR-16-D35H-3-4059.5-213-B
3. TTFR-16-D35H-3-4059.5-213-C
4. TTFR-16-D35H-3-4059.5-213-D
5. TTFR-16-D35H-3-4059-216-A
6. TTFR-16-D35H-3-4059-216-B
7. TTFR-16-D35H-3-4059-216-C
8. TTFR-16-D35H-3-4059-216-D
9. TTFR-16-D35H-3-4059-216-E
10. TTFR-16-D35H-3-4059-216RVT-F
11. TTFR-16-D35H-3-4060.5-214-A
12. TTFR-16-D35H-3-4060.5-214-B
13. TTFR-16-D35H-3-4060.5-214-C
14. TTFR-16-D35H-3-4060.5-214-D
15. TTFR-16-D35H-3-4060.5-214-E
16. TTFR-16-D35H-3-4060.5-214RVT-F
17. TTFR-16-D35H-3-4060-218-A
18. TTFR-16-D35H-3-4060-218-B
19. TTFR-16-D35H-3-4060-218-C
20. TTFR-16-D35H-3-4060-218-D
21. TTFR-16-D35H-3-4060-218-E
22. TTFR-16-D35H-3-4060-218RVT-F
23. TTFR-16-D35H-3-4061-212-A
24. TTFR-16-D35H-3-4061-212-B
25. TTFR-16-D35H-3-4061-212-C
26. TTFR-16-D35H-3-4061-212-D

SCALE (1" = 200')

200 100 0 200 400

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-18-2015

DESIGN COLOR LEGEND

	MIN. EL.		MAX. EL.
	547.71'	-	549.00'
	549.00'	-	551.00'
	551.00'	-	553.00'
	553.00'	-	555.00'
	555.00'	-	557.00'
	557.00'	-	559.00'
	559.00'	-	561.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-16-D35H-3-A
2. 0.5' - 1.0' SAMPLE ID TTFR-16-D35H-3-B
3. 0.5' - 1.0' SAMPLE ID TTFR-16-D35H-3-B2
4. 1.0' - 1.5' SAMPLE ID TTFR-16-D35H-3-C
5. 1.0' - 1.5' SAMPLE ID TTFR-16-D35H-3-C2
6. CONFIRMATION SAMPLES WERE COLLECTED ON 7-6-2016 and 7-25-2016
7. CONFIRMATION SAMPLES ARE A COMPOSITE OF FIVE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
8. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 7-11-2016, 7-14-2016, 7-18-2018, and 7-27-2016

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT
DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

		MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL		-3.68'	-	-1.00'	16,046.83
		-1.00'	-	-0.50'	17,649.07
		-0.50'	-	0.00'	10,273.88
ABOVE RAL		0.00'	-	0.25'	1,924.14
		0.25'	-	0.50'	979.39
		0.50'	-	0.75'	266.64
		0.75'	-	1.00'	90.13
		1.00'	-	1.25'	41.77
		1.25'	-	1.50'	29.24
		1.50'	-	1.75'	8.52
		1.75'	-	1.80'	0.56

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35H-3.dwg
DRAWN BY: DAVID.FRISQUE
DATE: December 4, 2015
LAST REVISED: November 26, 2018
CHECKED BY: REG

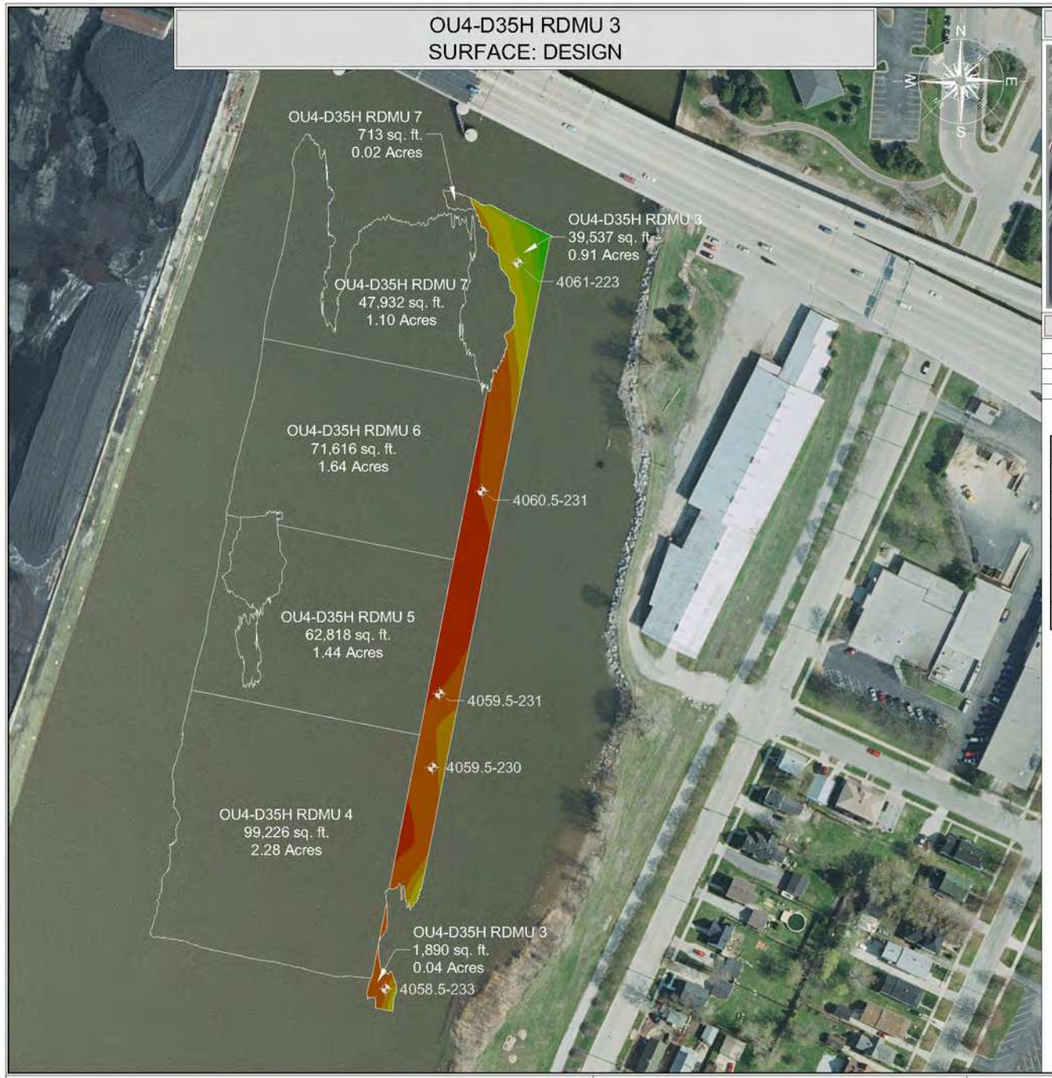
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-057

OU4-D35H-3
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

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OU4-D35H RDMU 3
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	1,860 µg/kg (1.86 ppm)
0.5' - 1.0'	548 µg/kg (0.548 ppm)
1.0' - 1.5'	<25.4 µg/kg (<0.0254 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4058.5-233	251240.35	2484517.35
4059.5-231	251629.48	2484588.17
4059.5-230	251532.41	2484579.00
4060.5-231	251896.98	2484644.25
4061-223	252198.11	2484691.84

OU4-D35H RDMU 3
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 200')

200 100 0 200 400

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 7-19-2017

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'
560.00'	-	561.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-17-D35H-3-A
2. 0.5' - 1.0' SAMPLE ID TTFR-17-D35H-3-B
3. 1.0' - 1.5' SAMPLE ID TTFR-17-D35H-3-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 10-12-2017
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF FIVE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 10-19-2017

THIS DOCUMENT IS THE PROPERTY OF LOWER FOX RIVER REMEDIATION LLC PREPARED BY TETRA TECH EC, INC. (TEC), AND IS PROVIDED UPON THE CONDITION THAT IT WILL NOT BE REPRODUCED, COPIED, OR ISSUED TO A THIRD PARTY. IT IS PROVIDED TO BE USED SOLELY FOR THE ORIGINAL INTENDED PURPOSE, AND SOLELY FOR THE EXECUTION OR REVIEW OF THE ENGINEERING AND CONSTRUCTION OF THE SUBJECT PROJECT.

OU# - D# - #

OU# = OPERABLE UNIT; D# = DREDGE AREA; # = DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-10.84'	-	-1.00'	3,666.05
BELOW RAL	-1.00'	-	-0.50'	14,423.94
BELOW RAL	-0.50'	-	0.00'	21,786.68
ABOVE RAL	0.00'	-	0.50'	1,392.29
ABOVE RAL	0.50'	-	1.00'	134.92
ABOVE RAL	1.00'	-	1.50'	18.81
ABOVE RAL	1.50'	-	1.90'	3.59

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35H RDMU 3.dwg
DRAWN BY: DAVID.FRISQUE
DATE: July 24, 2017
LAST REVISED: November 26, 2018
CHECKED BY: REG

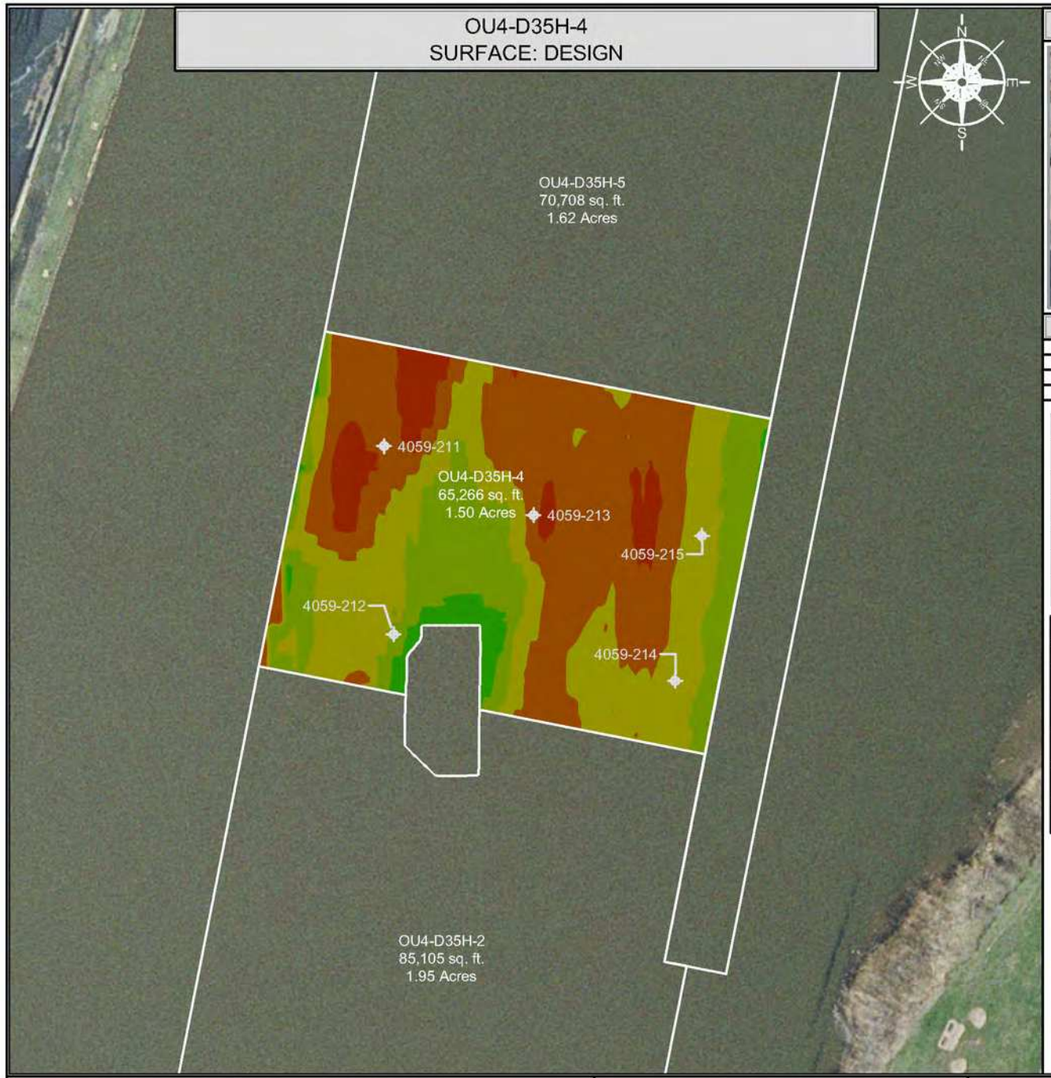
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-058

OU4-D35H RDMU 3
1st RESIDUAL DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LL\CAD\HHE\Engineering\Dredge Files\2017\OU4\D35H RDMU\DWG\RDMU D35H RDMU 3.dwg

OU4-D35H-4
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	4,280 µg/kg (4.28 ppm)
0.5' - 1.0'	1,900 µg/kg (1.9 ppm)
1.0' - 1.5'	1,340 µg/kg (1.34 ppm)

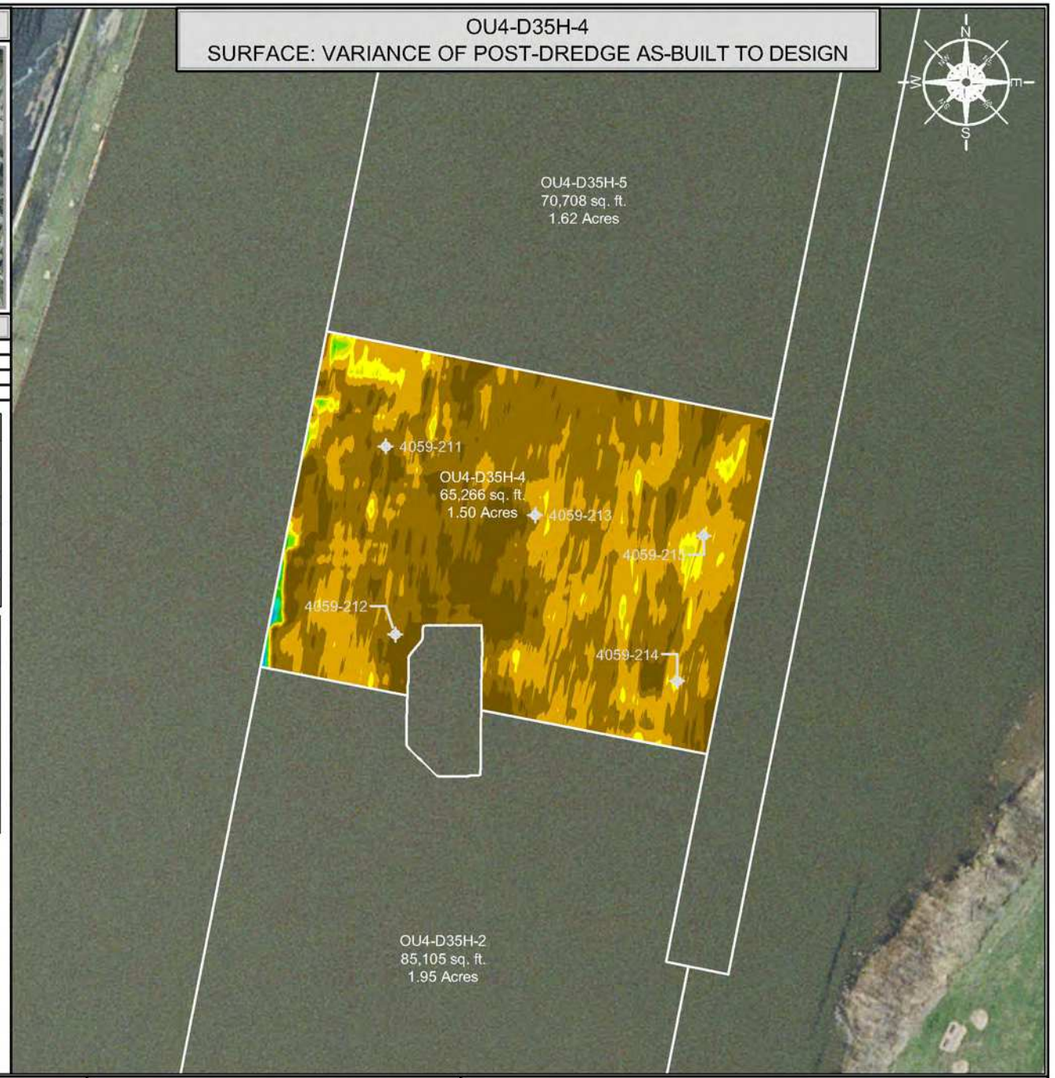
CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4059-215	251498.39	2484516.14
4059-214	251402.80	2484498.55
4059-213	251512.09	2484405.02
4059-212	251433.43	2484312.66
4059-211	251557.44	2484306.31

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION	
4059-211	A: 2,500 µg/kg (2.5) ppm) B: 3,520 µg/kg (3.52) ppm) C: 318 µg/kg (0.318) ppm)	D: <25.1 µg/kg (<0.0251) ppm) E: <25.4 µg/kg (<0.0254) ppm)
4059-212	A: 8,140 µg/kg (8.14) ppm) B: 1,370 µg/kg (1.37) ppm) C: <25.3 µg/kg (<0.0253) ppm)	D: <25.3 µg/kg (<0.0253) ppm)
4059-213	A: 1,980 µg/kg (1.98) ppm) B: 2,860 µg/kg (2.86) ppm) C: 2,250 µg/kg (2.25) ppm)	D: 3,020 µg/kg (3.02) ppm) E: 426 µg/kg (0.426) ppm)
4059-214	A: 1,260 µg/kg (1.26) ppm) B: 1,270 µg/kg (1.27) ppm) C: 1,820 µg/kg (1.82) ppm)	D: <25.5 µg/kg (<0.0255) ppm)
4059-215	A: 1,520 µg/kg (1.52) ppm) B: 1,540 µg/kg (1.54) ppm) C: 1,870 µg/kg (1.87) ppm)	D: 241 µg/kg (0.241) ppm) E: <25.4 µg/kg (<0.0254) ppm)

OU4-D35H-4
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-16-D35H-4-4059-211-A
2. TTFR-16-D35H-4-4059-211-B
3. TTFR-16-D35H-4-4059-211-C
4. TTFR-16-D35H-4-4059-211-D
5. TTFR-16-D35H-4-4059-211-E
6. TTFR-16-D35H-4-4059-212-A
7. TTFR-16-D35H-4-4059-212-B
8. TTFR-16-D35H-4-4059-212-C
9. TTFR-16-D35H-4-4059-212-D
10. TTFR-16-D35H-4-4059-213-A
11. TTFR-16-D35H-4-4059-213-B
12. TTFR-16-D35H-4-4059-213-C
13. TTFR-16-D35H-4-4059-213-D
14. TTFR-16-D35H-4-4059-213-E
15. TTFR-16-D35H-4-4059-214-A
16. TTFR-16-D35H-4-4059-214-B
17. TTFR-16-D35H-4-4059-214-C
18. TTFR-16-D35H-4-4059-214-D
19. TTFR-16-D35H-4-4059-215-A
20. TTFR-16-D35H-4-4059-215-B
21. TTFR-16-D35H-4-4059-215-C
22. TTFR-16-D35H-4-4059-215-D
23. TTFR-16-D35H-4-4059-215-E

SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-18-2015

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
547.25'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	552.08'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-16-D35H-4-A
2. 0.5' - 1.0' SAMPLE ID TTFR-16-D35H-4-B
3. 1.0' - 1.5' SAMPLE ID TTFR-16-D35H-4-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 7-27-2016
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF FIVE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 7-29-2016 and 8-4-2016

THIS DOCUMENT IS THE PROPERTY OF LOWER FOX RIVER REMEDIATION LLC PREPARED BY TETRA TECH EC, INC. (TtEC), AND IS PROVIDED UPON THE CONDITION THAT IT WILL NOT BE REPRODUCED, COPIED, OR ISSUED TO A THIRD PARTY. IT IS PROVIDED TO BE USED SOLELY FOR THE ORIGINAL INTENDED PURPOSE, AND SOLELY FOR THE EXECUTION OR REVIEW OF THE ENGINEERING AND CONSTRUCTION OF THE SUBJECT PROJECT.

OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.97'	-	-1.00'	9,561.81
BELOW RAL	-1.00'	-	-0.50'	32,925.30
BELOW RAL	-0.50'	-	0.00'	20,059.10
ABOVE RAL	0.00'	-	0.25'	1,843.43
ABOVE RAL	0.25'	-	0.50'	426.03
ABOVE RAL	0.50'	-	0.75'	174.79
ABOVE RAL	0.75'	-	1.00'	110.16
ABOVE RAL	1.00'	-	1.25'	89.49
ABOVE RAL	1.25'	-	1.50'	59.04
ABOVE RAL	1.50'	-	1.70'	2.19

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35H-4.dwg
DRAWN BY: DAVID.FRISQUE
DATE: December 7, 2015
LAST REVISED: November 26, 2018
CHECKED BY: REG

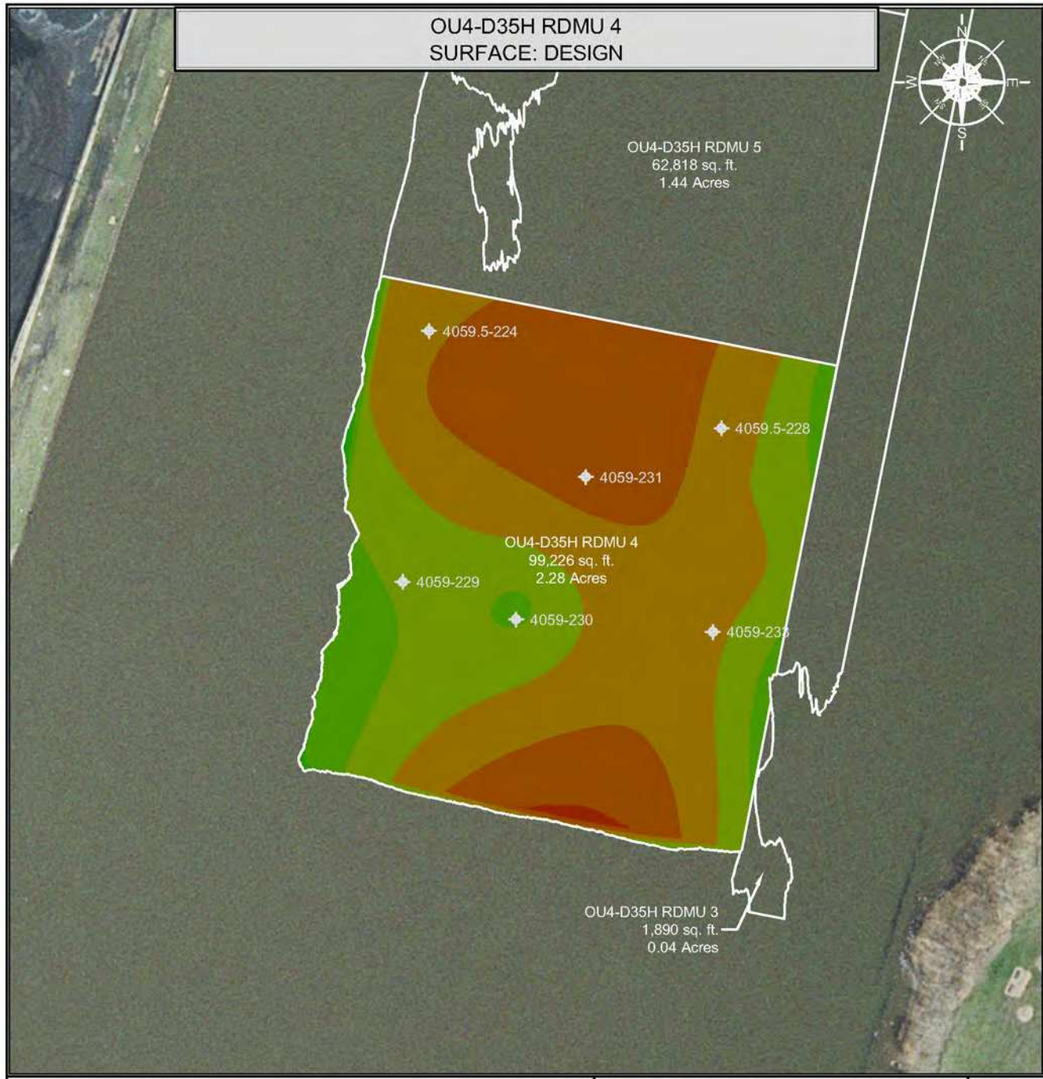
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-059

OU4-D35H-4
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LLC\Data\Fisher Engineering\Dredge Files\2015\OU4-D35H4\D35H4WVG Post Dredge\OU4-D35H4.dwg

OU4-D35H RDMU 4
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	1,890 µg/kg (1.89 ppm)
0.5' - 1.0'	1,310 µg/kg (1.31 ppm)
1.0' - 1.5'	134 µg/kg (0.134 ppm)

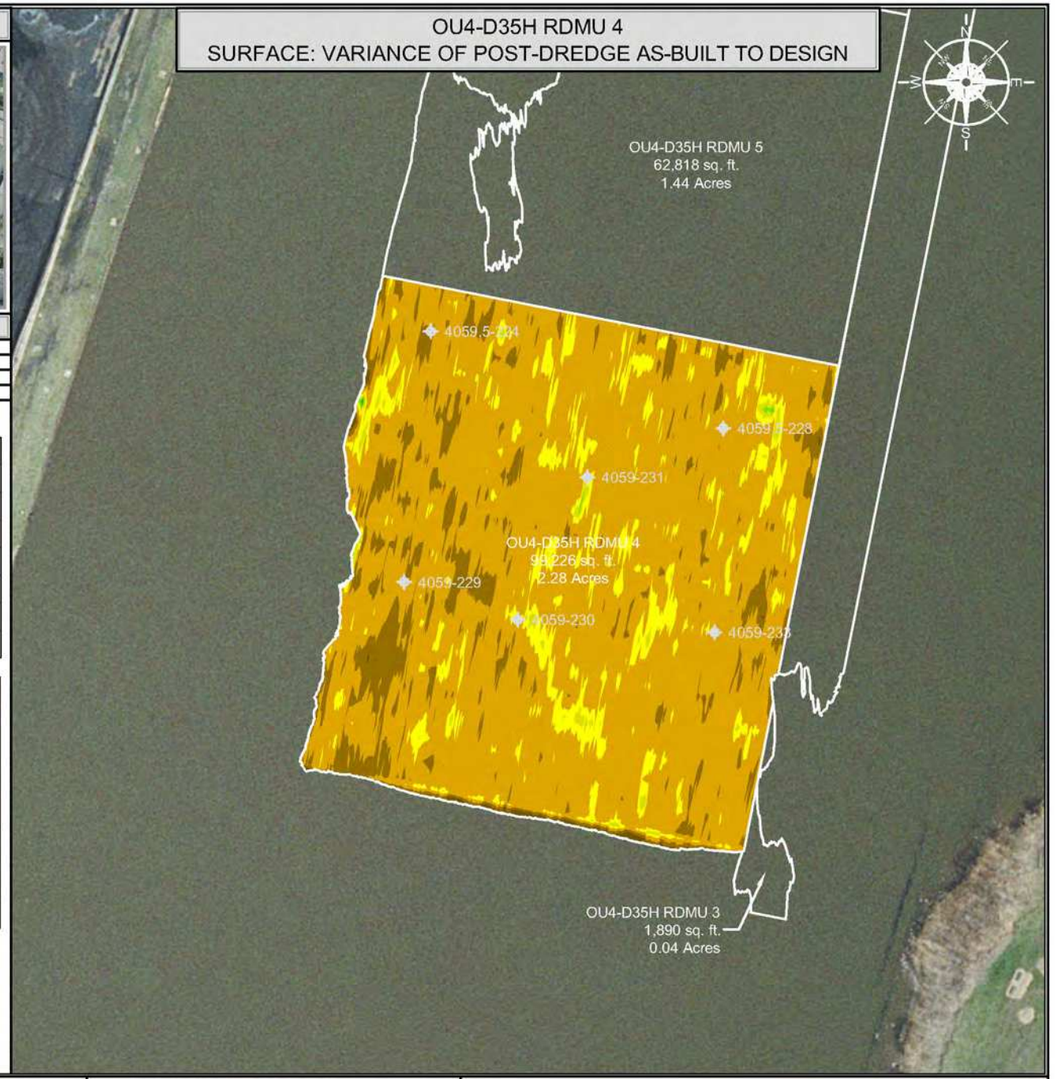
CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4059-230	251407.97	2484349.82
4059-233	251399.74	2484479.54
4059-231	251501.98	2484395.79
4059-229	251432.87	2484274.86
4059.5-228	251534.20	2484485.40
4059.5-224	251598.27	2484292.33

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION
4059.5-224	A: 2,650 µg/kg (2.65) ppm) D: <25.1 µg/kg (<0.0251) ppm) B: 4,450 µg/kg (4.45) ppm) C: <25.1 µg/kg (<0.0251) ppm)
4059.5-228	A: 2,210 µg/kg (2.21) ppm) D: <25.5 µg/kg (<0.0255) ppm) B: 971 µg/kg (0.971) ppm) C: 360 µg/kg (0.36) ppm)
4059-229	A: 1,490 µg/kg (1.49) ppm) D: <25.6 µg/kg (<0.0256) ppm) B: 1,120 µg/kg (1.12) ppm) C: 96.5 µg/kg (0.0965) ppm)
4059-231	A: 1,850 µg/kg (1.85) ppm) D: <25.5 µg/kg (<0.0255) ppm) B: 822 µg/kg (0.822) ppm) C: 157 µg/kg (0.157) ppm)
4059-233	A: 1,120 µg/kg (1.12) ppm) B: 243 µg/kg (0.243) ppm) C: <25.3 µg/kg (<0.0253) ppm)
4059-230	A: 6,780 µg/kg (6.78) ppm) B: 4,310 µg/kg (4.31) ppm) C: <25.1 µg/kg (<0.0251) ppm)

OU4-D35H RDMU 4
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



1. TTFR-17-D35H-4-4059.5-224-A
2. TTFR-17-D35H-4-4059.5-224-B
3. TTFR-17-D35H-4-4059.5-224-C
4. TTFR-17-D35H-4-4059.5-224-D
5. TTFR-17-D35H-4-4059.5-228-A
6. TTFR-17-D35H-4-4059.5-228-B
7. TTFR-17-D35H-4-4059.5-228-C
8. TTFR-17-D35H-4-4059.5-228-D
9. TTFR-17-D35H-4-4059-229-A
10. TTFR-17-D35H-4-4059-229-B
11. TTFR-17-D35H-4-4059-229-C
12. TTFR-17-D35H-4-4059-229-D
13. TTFR-17-D35H-4-4059-231-A
14. TTFR-17-D35H-4-4059-231-B
15. TTFR-17-D35H-4-4059-231-C
16. TTFR-17-D35H-4-4059-231-D
17. TTFR-17-D35H-4-4059-233-A
18. TTFR-17-D35H-4-4059-233-B
19. TTFR-17-D35H-4-4059-233-C
20. TTFR-17-D35H-4-4059-230-A
21. TTFR-17-D35H-4-4059-230-B
22. TTFR-17-D35H-4-4059-230-C

SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 7-17-2017

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-17-D35H-4-A
2. 0.5' - 1.0' SAMPLE ID TTFR-17-D35H-4-B
3. 1.0' - 1.5' SAMPLE ID TTFR-17-D35H-4-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 7-26-2017 and 9-26-2017
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF SIX SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 8-1-2017, 9-29-2017, 10-4-2017, and 10-5-2017

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OU# - D# - #
OU# = OPERABLE UNIT
D# = DREDGE AREA
= DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.01'	-	-1.00'	544.02
BELOW RAL	-1.00'	-	-0.50'	10,748.99
BELOW RAL	-0.50'	-	0.00'	78,248.35
ABOVE RAL	0.00'	-	0.25'	8,872.29
ABOVE RAL	0.25'	-	0.50'	762.41
ABOVE RAL	0.50'	-	0.75'	46.19
ABOVE RAL	0.75'	-	1.00'	4.07
ABOVE RAL	1.00'	-	1.10'	0.10

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35H RDMU 4.dwg
DRAWN BY: DAVID.FRISQUE
DATE: July 24, 2017
LAST REVISED: November 28, 2018
CHECKED BY: REG

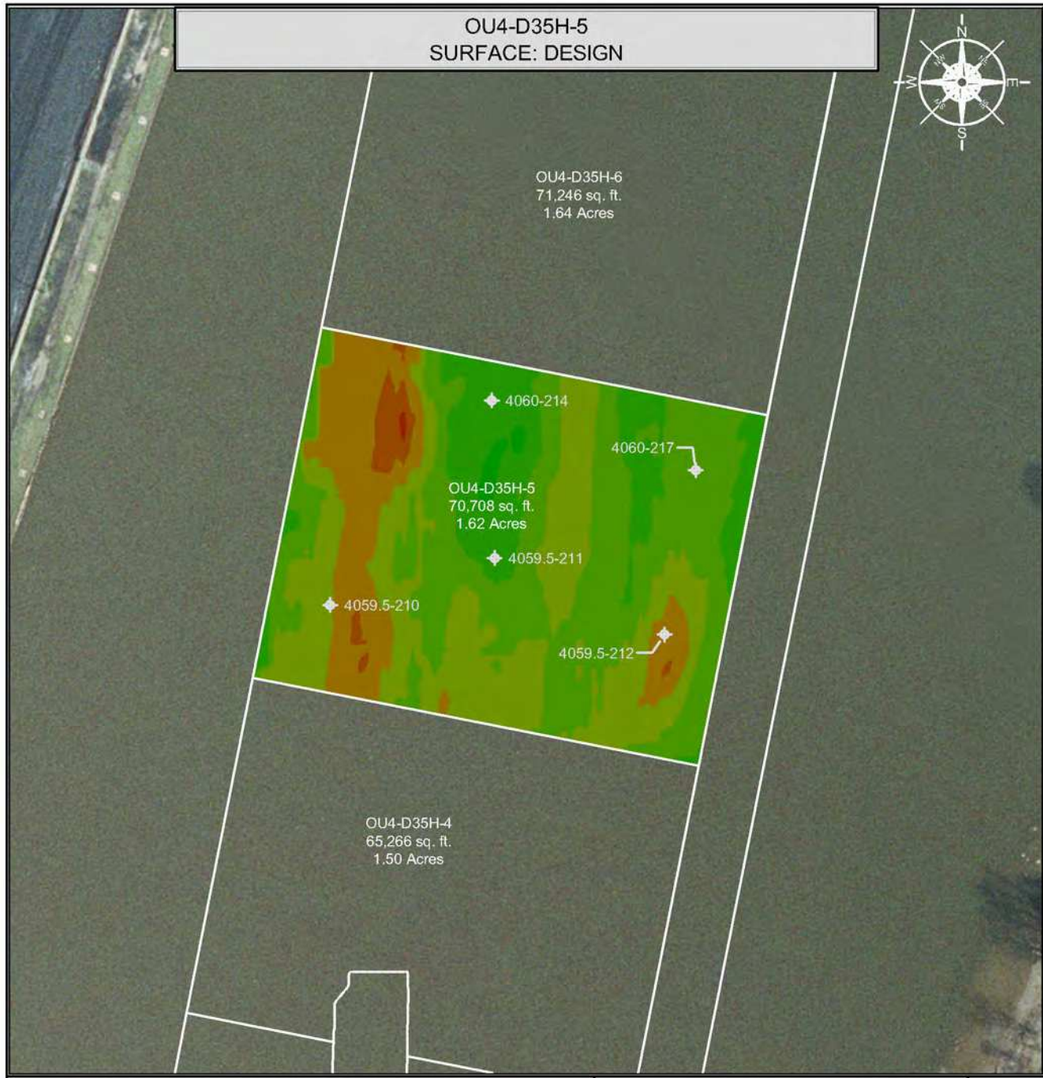
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-060

OU4-D35H RDMU 4
1st RESIDUAL DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LLC\CAD\FIG\Engineering\Design Files\2017\OU4-D35H RDMU\DWG\Post Design\OU4-D35H RDMU 4.dwg

OU4-D35H-5
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	1,670 µg/kg (1.67 ppm)
0.5' - 1.0'	2,470 µg/kg (2.47 ppm)
1.0' - 1.5'	1,770 µg/kg (1.77 ppm)

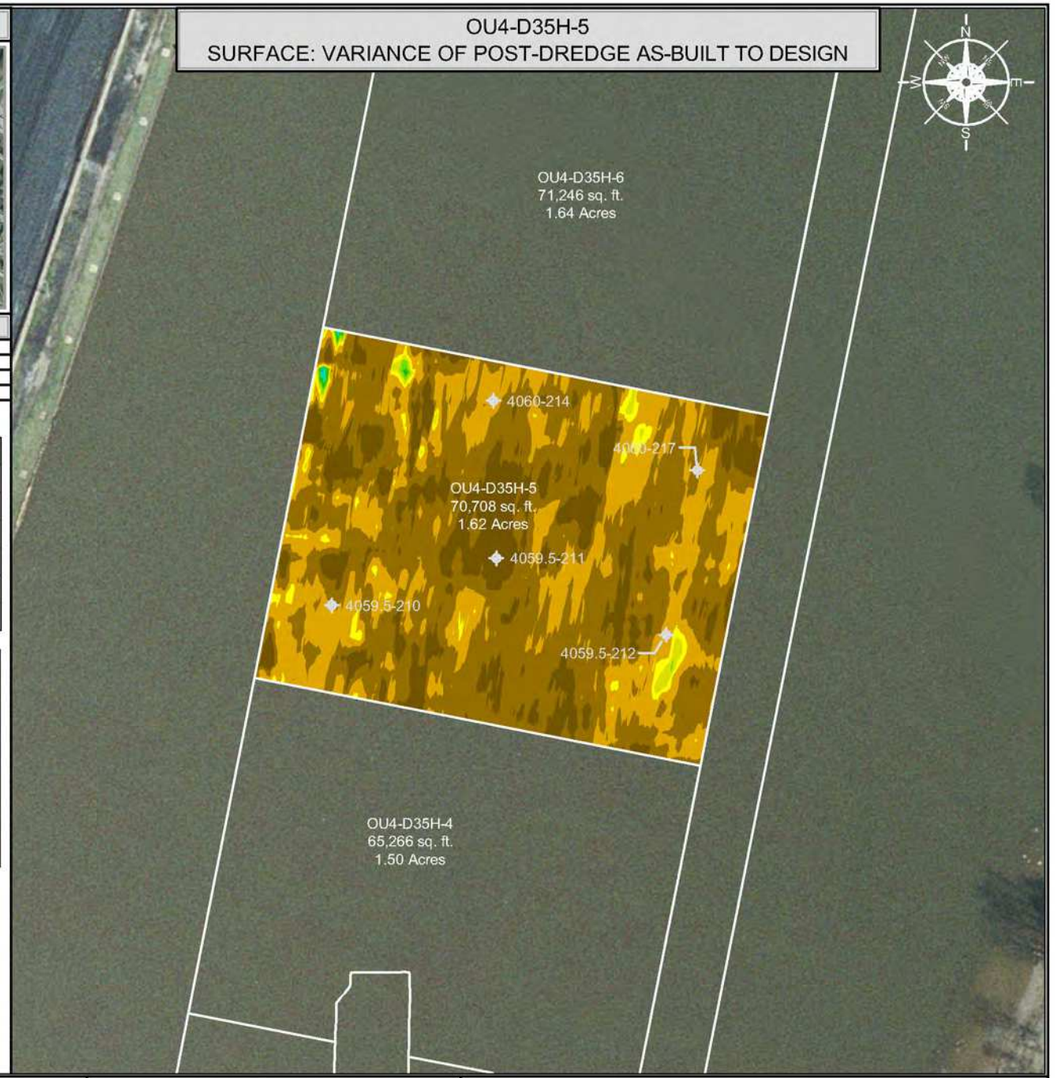
CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4059.5-212	251661.84	2484539.11
4059.5-211	251712.42	2484427.09
4059.5-210	251681.35	2484318.59
4060-217	251770.37	2484559.63
4060-214	251816.26	2484425.18

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION	
4059.5-210	A: 1,780 µg/kg (1.78) ppm) B: 494 µg/kg (0.494) ppm) C: 269 µg/kg (0.269) ppm)	D: <25.3 µg/kg (<0.0253) ppm)
4059.5-211	A: 2,090 µg/kg (2.09) ppm) B: 2,520 µg/kg (2.52) ppm) C: <25.1 µg/kg (<0.0251 ppm)	D: <25.1 µg/kg (<0.0251) ppm) E: <25.1 µg/kg (<0.0251) ppm)
4059.5-212	A: 1,610 µg/kg (1.61) ppm) B: 2,370 µg/kg (2.37) ppm) C: 2,430 µg/kg (2.43) ppm)	D: 438 µg/kg (0.438) ppm)
4060-214	A: 2,400 µg/kg (2.4) ppm) B: 4,440 µg/kg (4.44) ppm) C: 3,770 µg/kg (3.77) ppm)	D: <25.4 µg/kg (<0.0254) ppm)
4060-217	A: 1,470 µg/kg (1.47) ppm) B: 1,880 µg/kg (1.88) ppm) C: 2,340 µg/kg (2.34) ppm)	D: 118 µg/kg (0.118) ppm)

OU4-D35H-5
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-16-D35H-5-4059.5-210-A
2. TTFR-16-D35H-5-4059.5-210-B
3. TTFR-16-D35H-5-4059.5-210-C
4. TTFR-16-D35H-5-4059.5-210-D
5. TTFR-16-D35H-5-4059.5-211-A
6. TTFR-16-D35H-5-4059.5-211-B
7. TTFR-16-D35H-5-4059.5-211-C
8. TTFR-16-D35H-5-4059.5-211-D
9. TTFR-16-D35H-5-4059.5-211-E
10. TTFR-16-D35H-5-4059.5-212-A
11. TTFR-16-D35H-5-4059.5-212-B
12. TTFR-16-D35H-5-4059.5-212-C
13. TTFR-16-D35H-5-4059.5-212-D
14. TTFR-16-D35H-5-4060-214-A
15. TTFR-16-D35H-5-4060-214-B
16. TTFR-16-D35H-5-4060-214-C
17. TTFR-16-D35H-5-4060-214-D
18. TTFR-16-D35H-5-4060-217-A
19. TTFR-16-D35H-5-4060-217-B
20. TTFR-16-D35H-5-4060-217-C
21. TTFR-16-D35H-5-4060-217-D

SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-18-2015

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
545.74'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	551.10'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-16-D35H-5-A
2. 0.5' - 1.0' SAMPLE ID TTFR-16-D35H-5-B
3. 1.0' - 1.5' SAMPLE ID TTFR-16-D35H-5-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 7-28-2016
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF FIVE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 8-2-2016 and 8-9-2016

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT
DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.92'	-	-1.00'	12,592.26
BELOW RAL	-1.00'	-	-0.50'	36,368.60
BELOW RAL	-0.50'	-	0.00'	19,697.46
ABOVE RAL	0.00'	-	0.25'	1,335.22
ABOVE RAL	0.25'	-	0.50'	492.84
ABOVE RAL	0.50'	-	0.75'	108.30
ABOVE RAL	0.75'	-	1.00'	59.70
ABOVE RAL	1.00'	-	1.25'	31.53
ABOVE RAL	1.25'	-	1.40'	2.64

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35H-5.dwg
DRAWN BY: DAVID.FRISQUE
DATE: December 7, 2015
LAST REVISED: November 26, 2018
CHECKED BY: REG

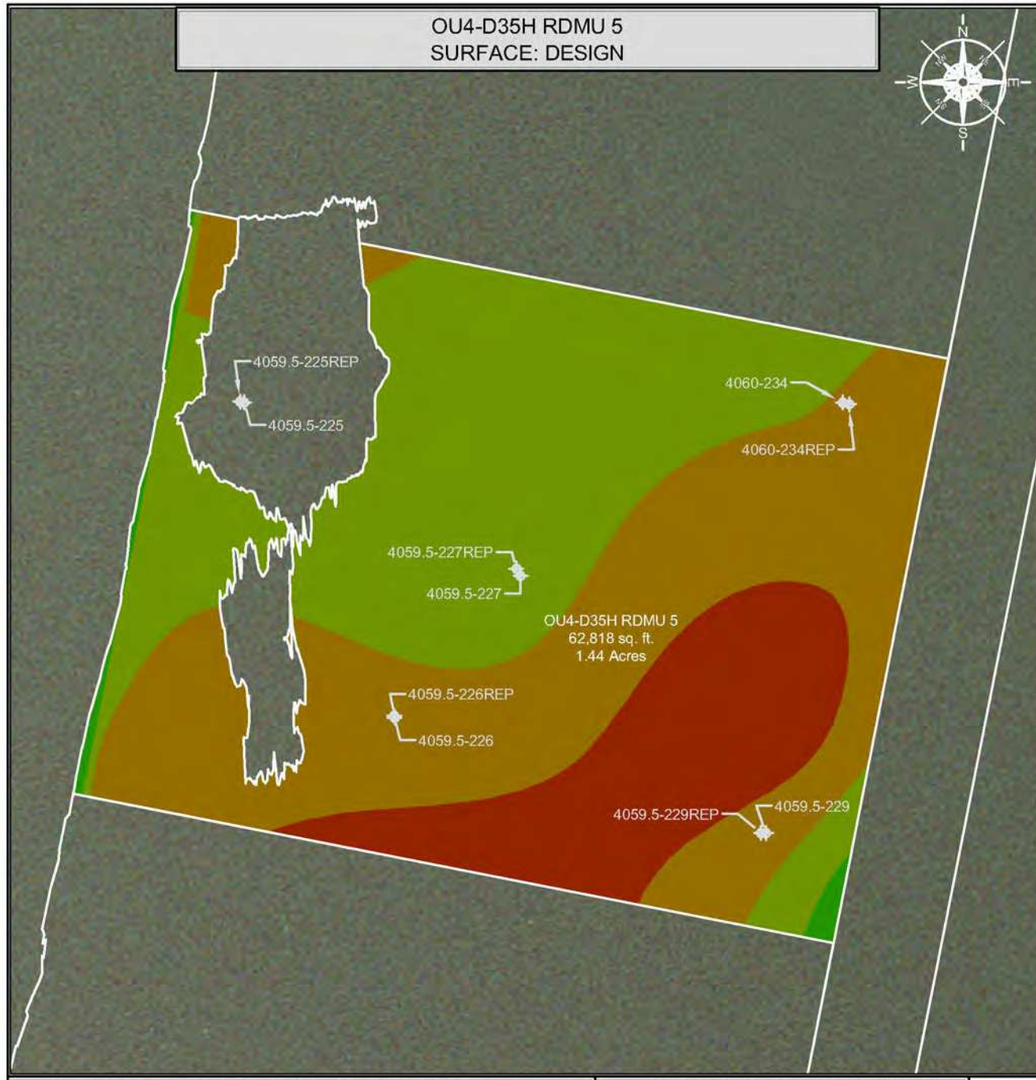
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-061

OU4-D35H-5
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LCAD\Fitfld Engineering\Dredge Fitfld\2015\OU4 D35H\DWG Post Dredge\OU4 D35H 5.dwg

OU4-D35H RDMU 5
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	1,590 µg/kg (1.59 ppm)
0.5' - 1.0'	954 µg/kg (0.954 ppm)
1.0' - 1.5'	470 µg/kg (0.47 ppm)
0.0' - 0.5' REP	1,980 µg/kg (1.98 ppm)
0.5' - 1.0' REP	2,840 µg/kg (2.84 ppm)
1.0' - 1.5' REP	1,480 µg/kg (1.48 ppm)

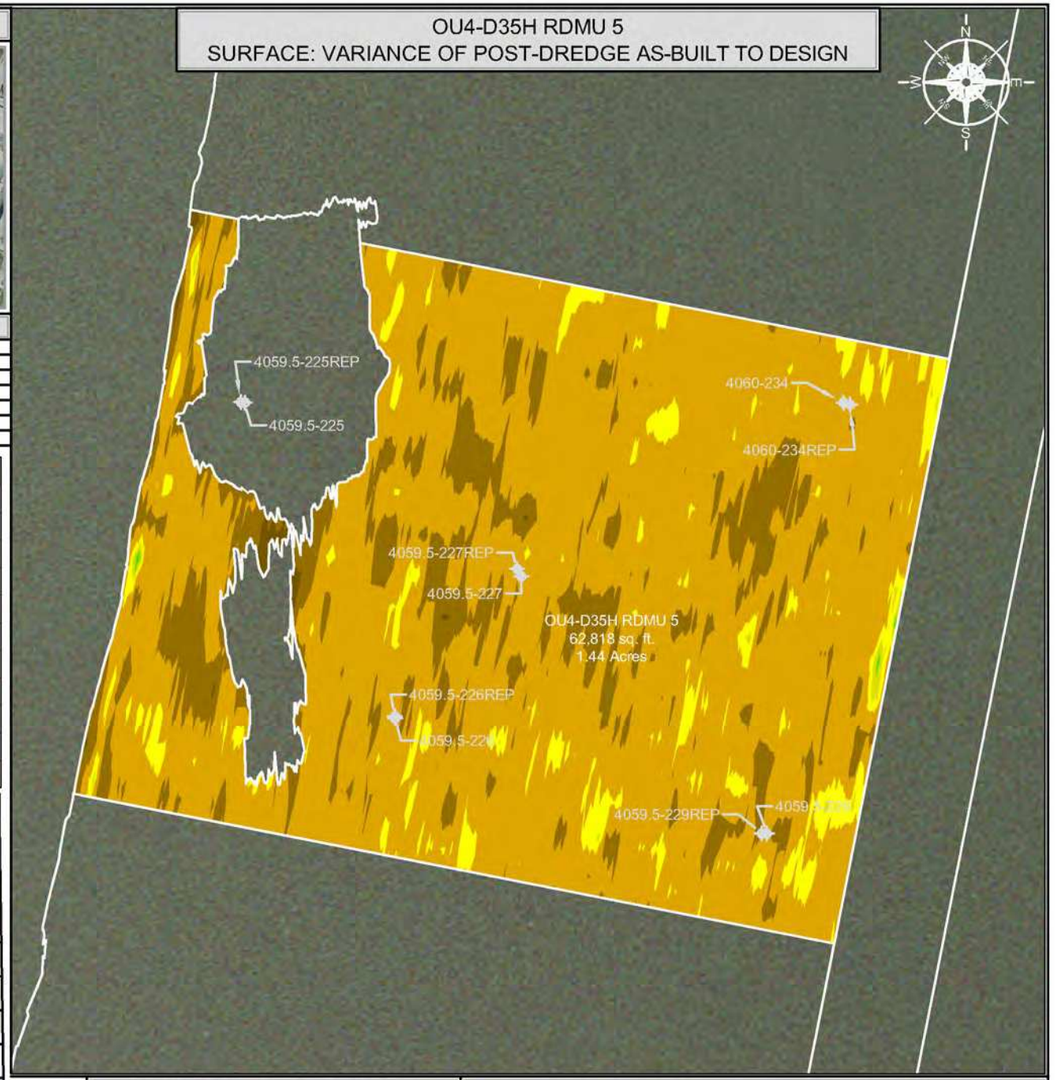
CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4059.5-227REP	251723.63	2484436.13
4059.5-226REP	251665.40	2484387.82
4059.5-225REP	251789.73	2484326.90
4059.5-229	251618.97	2484535.04
4059.5-227	251720.79	2484437.81
4059.5-226	251664.64	2484387.92
4059.5-229REP	251619.07	2484533.04
4059.5-225	251789.42	2484328.39
4060-234REP	251788.76	2484567.96
4060-234	251789.40	2484565.42

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION
4059.5-225	A: 1,140 µg/kg (1.14) ppm) D: <25.1 µg/kg (<0.0251) ppm) B: 1,570 µg/kg (1.57) ppm) C: 243 µg/kg (0.243) ppm)
4059.5-226	A: 1,450 µg/kg (1.45) ppm) B: 129 µg/kg (0.129) ppm) C: <25.4 µg/kg (<0.0254) ppm)
4059.5-227	A: 3,430 µg/kg (3.43) ppm) D: <25.4 µg/kg (<0.0254) ppm) B: 359 µg/kg (0.359) ppm) C: <25.0 µg/kg (<0.025) ppm)
4059.5-229	A: 1,440 µg/kg (1.44) ppm) D: <25.5 µg/kg (<0.0255) ppm) B: 1,820 µg/kg (1.82) ppm) C: 930 µg/kg (0.93) ppm)
4060-234	A: 1,020 µg/kg (1.02) ppm) D: <25.5 µg/kg (<0.0255) ppm) B: 1,080 µg/kg (1.08) ppm) C: 634 µg/kg (0.634) ppm)
4059.5-225REP	A: 1,180 µg/kg (1.18) ppm) D: <25.2 µg/kg (<0.0252) ppm) B: 3,560 µg/kg (3.56) ppm) C: 114 µg/kg (0.114) ppm)
4059.5-226REP	A: 1,900 µg/kg (1.9) ppm) D: <25.5 µg/kg (<0.0255) ppm) B: 572 µg/kg (0.572) ppm) C: 148 µg/kg (0.148) ppm)
4059.5-227REP	A: 4,430 µg/kg (4.43) ppm) D: <25.5 µg/kg (<0.0255) ppm) B: 6,030 µg/kg (6.03) ppm) C: 5,330 µg/kg (5.33) ppm)
4059.5-229REP	A: 3,000 µg/kg (3) ppm) D: <25.5 µg/kg (<0.0255) ppm) B: 1,920 µg/kg (1.92) ppm) C: 257 µg/kg (0.257) ppm)
4060-234REP	A: 1,220 µg/kg (1.22) ppm) B: 597 µg/kg (0.597) ppm) C: <25.3 µg/kg (<0.0253) ppm)

OU4-D35H RDMU 5
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-17-D35H-5-4059.5-225-A
2. TTFR-17-D35H-5-4059.5-225-B
3. TTFR-17-D35H-5-4059.5-225-C
4. TTFR-17-D35H-5-4059.5-225-D
5. TTFR-17-D35H-5-4059.5-226-A
6. TTFR-17-D35H-5-4059.5-226-B
7. TTFR-17-D35H-5-4059.5-226-C
8. TTFR-17-D35H-5-4059.5-227-A
9. TTFR-17-D35H-5-4059.5-227-B
10. TTFR-17-D35H-5-4059.5-227-C
11. TTFR-17-D35H-5-4059.5-227-D
12. TTFR-17-D35H-5-4059.5-229-A
13. TTFR-17-D35H-5-4059.5-229-B
14. TTFR-17-D35H-5-4059.5-229-C
15. TTFR-17-D35H-5-4059.5-229-D
16. TTFR-17-D35H-5-4060-234-A
17. TTFR-17-D35H-5-4060-234-B
18. TTFR-17-D35H-5-4060-234-C
19. TTFR-17-D35H-5-4060-234-D
20. TTFR-17-D35H-5-4059.5-225REP-A
21. TTFR-17-D35H-5-4059.5-225REP-B
22. TTFR-17-D35H-5-4059.5-225REP-C
23. TTFR-17-D35H-5-4059.5-225REP-D
24. TTFR-17-D35H-5-4059.5-226REP-A
25. TTFR-17-D35H-5-4059.5-226REP-B
26. TTFR-17-D35H-5-4059.5-226REP-C
27. TTFR-17-D35H-5-4059.5-226REP-D
28. TTFR-17-D35H-5-4059.5-227REP-A
29. TTFR-17-D35H-5-4059.5-227REP-B
30. TTFR-17-D35H-5-4059.5-227REP-C
31. TTFR-17-D35H-5-4059.5-227REP-D
32. TTFR-17-D35H-5-4059.5-229REP-A
33. TTFR-17-D35H-5-4059.5-229REP-B
34. TTFR-17-D35H-5-4059.5-229REP-C
35. TTFR-17-D35H-5-4059.5-229REP-D
36. TTFR-17-D35H-5-4060-234REP-A
37. TTFR-17-D35H-5-4060-234REP-B
38. TTFR-17-D35H-5-4060-234REP-C

SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 7-17-2017

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-17-D35H-5-A
2. 0.5' - 1.0' SAMPLE ID TTFR-17-D35H-5-B
3. 1.0' - 1.5' SAMPLE ID TTFR-17-D35H-5-C
4. 0.0' - 0.5' SAMPLE ID TTFR-17-D35H-5REP-A
5. 0.5' - 1.0' SAMPLE ID TTFR-17-D35H-5REP-B
6. 1.0' - 1.5' SAMPLE ID TTFR-17-D35H-5REP-C
7. CONFIRMATION SAMPLES WERE COLLECTED ON 9-26-2017
8. CONFIRMATION SAMPLES ARE A COMPOSITE OF TEN SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
9. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 9-29-2017, 10-4-2017, and 10-5-2017

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT
DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.76'	-	-1.00'	269.80
BELOW RAL	-1.00'	-	-0.50'	9,705.05
BELOW RAL	-0.50'	-	0.00'	49,124.82
ABOVE RAL	0.00'	-	0.25'	3,522.61
ABOVE RAL	0.25'	-	0.50'	174.85
ABOVE RAL	0.50'	-	0.75'	20.21
ABOVE RAL	0.75'	-	0.81'	0.40

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35H RDMU 5.dwg
DRAWN BY: DAVID.FRISQUE
DATE: July 24, 2017
LAST REVISED: November 26, 2018
CHECKED BY: REG

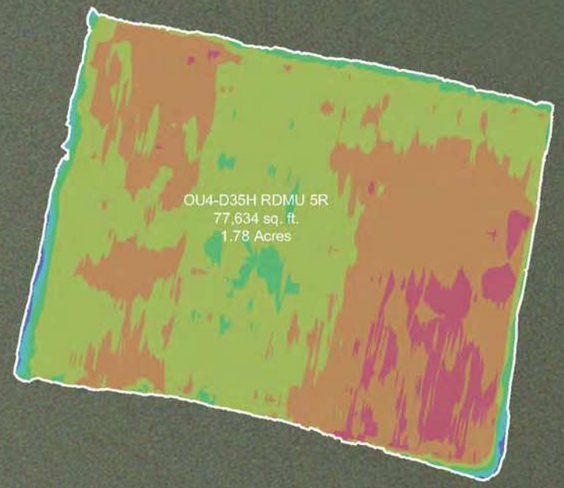
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-062

OU4-D35H RDMU 5
1st RESIDUAL DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LOCAL\EHH\Engineering\Design Files\2017\OU4 D35H RDMU\DWG\Post Dredge\OU4-D35H RDMU 5.dwg

OU4-D35H RDMU 5R
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

2,626.06	INITIAL RAL VOLUME
1,356.16	INITIAL OVERCUT VOLUME
3,982.22	RAL + OVERCUT VOLUME
3,402.51	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

4,390.84	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
1,434.89	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
5,825.73	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

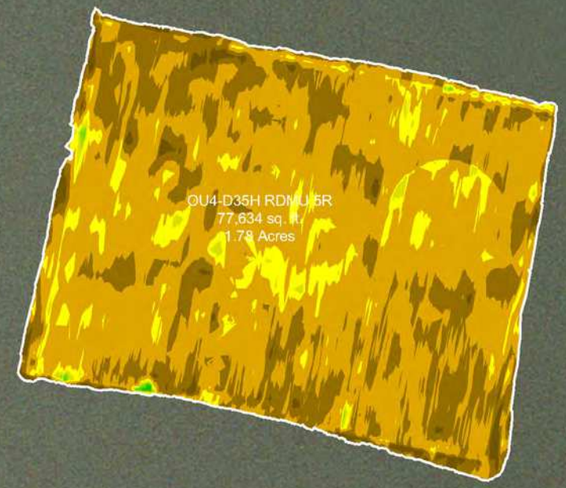
2018 AS-BUILT VOLUMES (CU. YD.)

5,396.37	TOTAL VOLUME DREDGED
4,362.80	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
27.20	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
552.51	OVERCUT VOLUME REMAINING
879.12	OVERCUT VOLUME DREDGED
154.45	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

77,634.05	AREA (SQ. FT.)
6,652.35	ABOVE DESIGN ELEVATION
70,981.70	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
4.72 "	AVERAGE DEPTH OF OVERCUT [1]
91	PERCENT COMPLETE [2]

OU4-D35H RDMU 5R
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 4-4-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
544.00'	-	545.00'
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT
DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.57'	-	-1.00'	1,689.56
BELOW RAL	-1.00'	-	-0.50'	19,774.36
BELOW RAL	-0.50'	-	0.00'	49,517.78
ABOVE RAL	0.00'	-	0.25'	5,985.45
ABOVE RAL	0.25'	-	0.50'	570.02
ABOVE RAL	0.50'	-	0.75'	76.01
ABOVE RAL	0.75'	-	0.98'	20.84

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35H RDMU 5R.dwg
DRAWN BY: DAVID.FRISQUE
DATE: April 5, 2018
LAST REVISED: November 26, 2018
CHECKED BY: REG

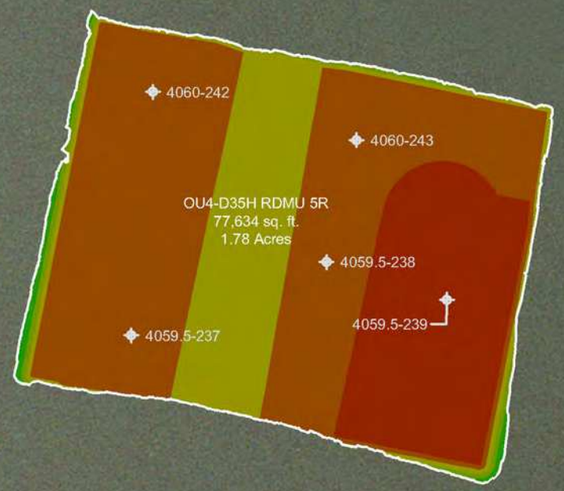
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-063

OU4-D35H RDMU 5R
2nd RESIDUAL DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LLOC\LD\Field Engineering\Dredge Files\2018\OU4-D35H RDMU\DWG\Post Dredge\OU4-D35H RDMU 5R.dwg

OU4-D35H RDMU 5R
SURFACE: DESIGN



INDEX MAP



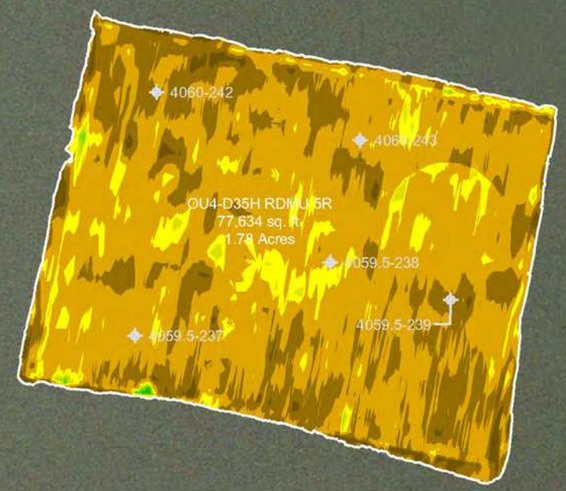
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	948 µg/kg (0.948 ppm)
0.5' - 1.0'	765 µg/kg (0.765 ppm)
1.0' - 1.5'	<25.5 µg/kg (<0.0255 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4059.5-239	251682.93	2484540.60
4059.5-238	251707.75	2484461.10
4059.5-237	251659.33	2484332.38
4060-243	251788.21	2484481.03
4060-242	251819.96	2484346.63

OU4-D35H RDMU 5R
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 4-4-2018

DESIGN COLOR LEGEND

	MIN. EL.		MAX. EL.
	545.00'	-	546.00'
	546.00'	-	547.00'
	547.00'	-	548.00'
	548.00'	-	549.00'
	549.00'	-	550.00'
	550.00'	-	551.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-D35H-5-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-D35H-5-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-D35H-5-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 7-19-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF FIVE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 7-24-2018

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OU# - D# - #

- OU# — OPERABLE UNIT
- D# — DREDGE AREA
- # — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

		MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL		-2.57'	-	-1.00'	1,689.56
BELOW RAL		-1.00'	-	-0.50'	19,774.36
BELOW RAL		-0.50'	-	0.00'	49,517.78
ABOVE RAL		0.00'	-	0.25'	5,985.45
ABOVE RAL		0.25'	-	0.50'	570.02
ABOVE RAL		0.50'	-	0.75'	76.01
ABOVE RAL		0.75'	-	0.98'	20.84

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35H RDMU 5R.dwg
DRAWN BY: DAVID.FRISQUE
DATE: April 5, 2018
LAST REVISED: November 26, 2018
CHECKED BY: REG

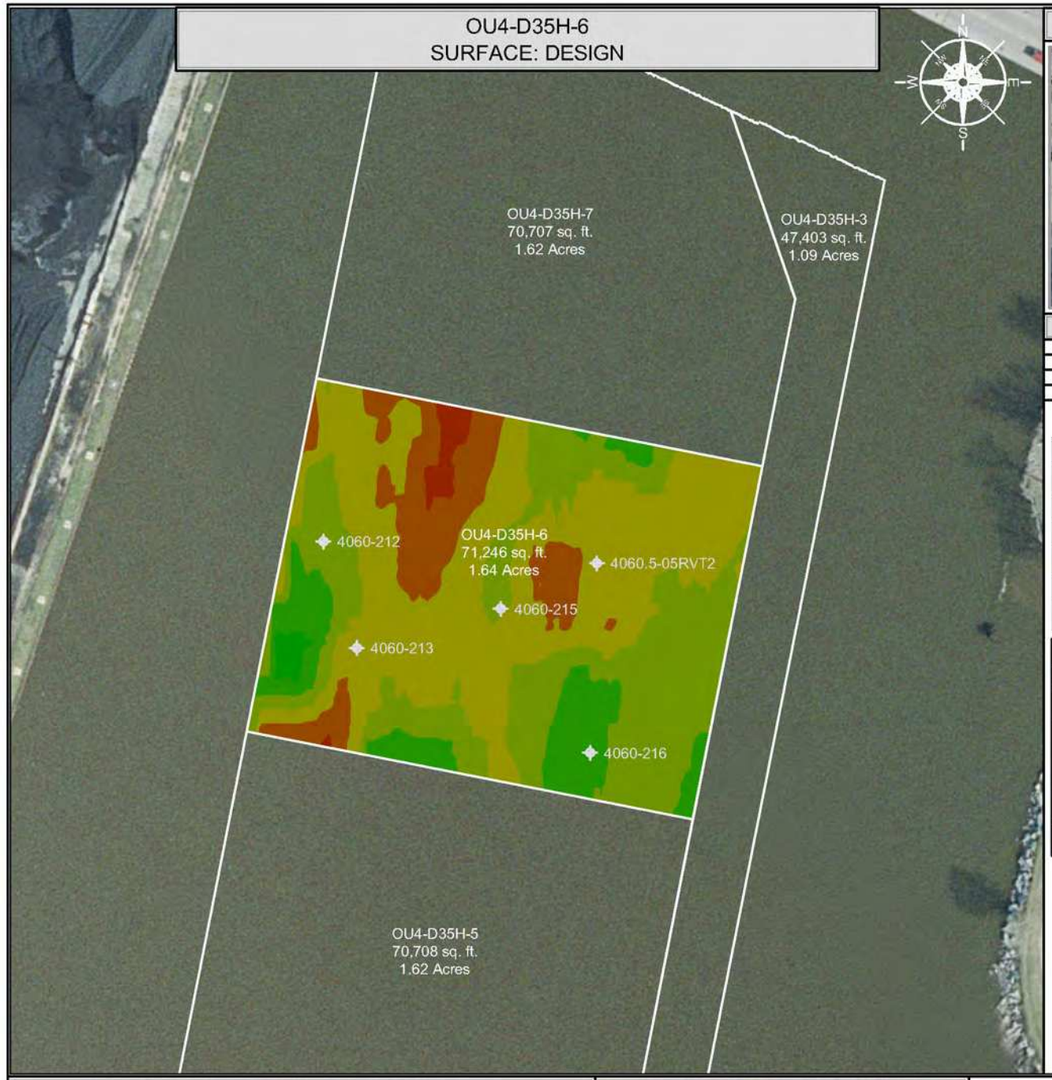
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-064

OU4-D35H RDMU 5R
2nd RESIDUAL DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

P:\LOCAL\Field Engineering\Design Files\2018\D314 D35H RDMU\DWG\Post Dredge\OU4 D35H RDMU 5R.dwg

OU4-D35H-6
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	1,940 µg/kg (1.94 ppm)
0.5' - 1.0'	1,540 µg/kg (1.54 ppm)
1.0' - 1.5'	1,520 µg/kg (1.52 ppm)

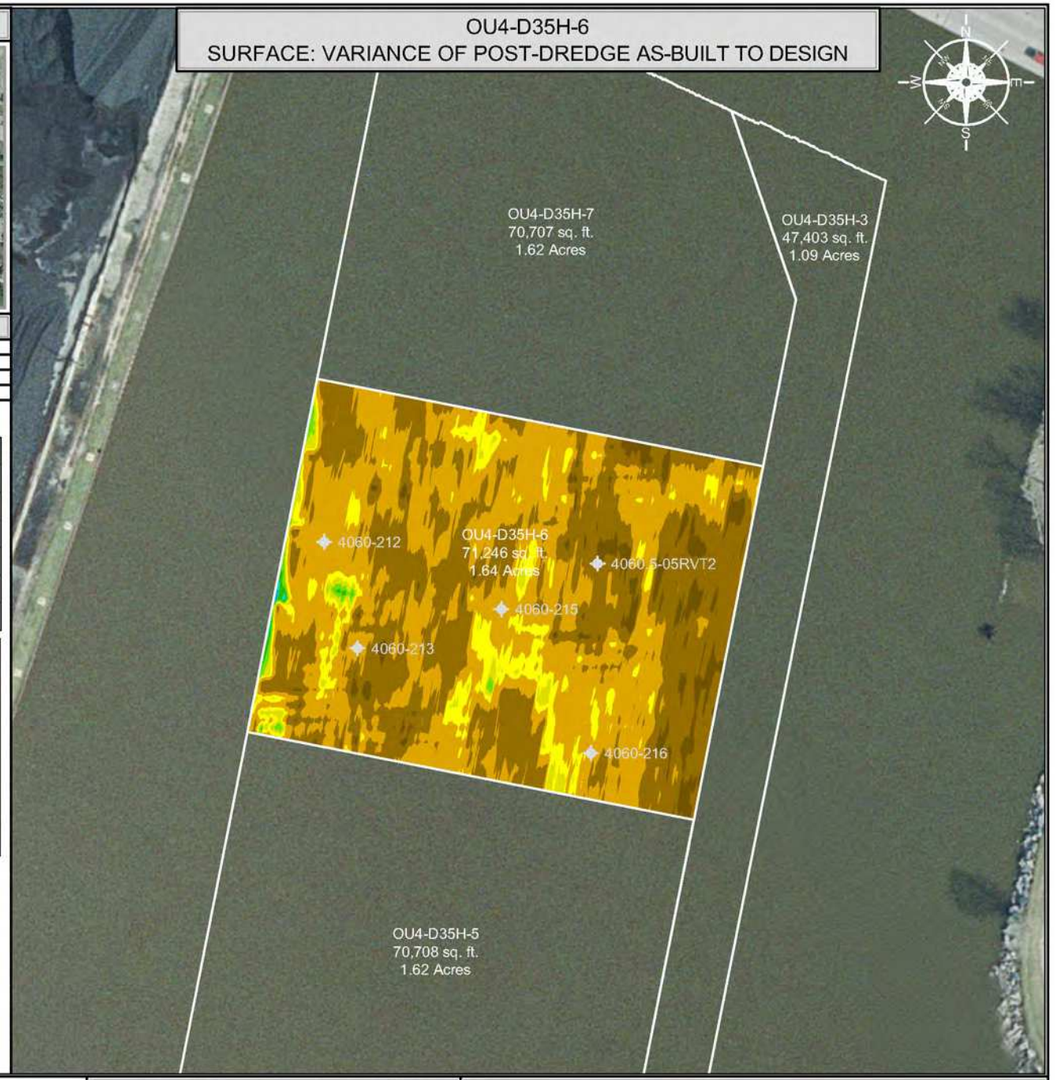
CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4060-216	251850.67	2484539.37
4060-215	251945.57	2484480.29
4060-213	251919.84	2484385.44
4060-212	251990.02	2484363.42
4060.5-05RVT2	251975.72	2484543.87

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION	
4060.5-05RVT2	A: 2,250 µg/kg (2.25) ppm) B: 966 µg/kg (0.966) ppm) C: 316 µg/kg (0.316) ppm)	
4060-212	A: 1,350 µg/kg (1.35) ppm) B: 1,130 µg/kg (1.13) ppm) C: 616 µg/kg (0.616) ppm)	D: <25.5 µg/kg (<0.0255) ppm) E: <25.6 µg/kg (<0.0256) ppm)
4060-213	A: 1,900 µg/kg (1.9) ppm) B: 2,250 µg/kg (2.25) ppm) C: 1,040 µg/kg (1.04) ppm)	D: 908 µg/kg (0.908) ppm) E: <25.2 µg/kg (<0.0252) ppm)
4060-215	A: 2,240 µg/kg (2.24) ppm) B: 3,420 µg/kg (3.42) ppm) C: 322 µg/kg (0.322) ppm)	D: <25.5 µg/kg (<0.0255) ppm)
4060-216	A: 2,190 µg/kg (2.19) ppm) B: 2,110 µg/kg (2.11) ppm) C: 4,550 µg/kg (4.55) ppm)	D: 91.7 µg/kg (0.0917) ppm) E: <25.1 µg/kg (<0.0251) ppm)

OU4-D35H-6
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-16-D35H-6-4060.5-05RVT2-A
2. TTFR-16-D35H-6-4060.5-05RVT2-B
3. TTFR-16-D35H-6-4060.5-05RVT2-C
4. TTFR-16-D35H-6-4060-212-A
5. TTFR-16-D35H-6-4060-212-B
6. TTFR-16-D35H-6-4060-212-C
7. TTFR-16-D35H-6-4060-212-D
8. TTFR-16-D35H-6-4060-212-E
9. TTFR-16-D35H-6-4060-213-A
10. TTFR-16-D35H-6-4060-213-B
11. TTFR-16-D35H-6-4060-213-C
12. TTFR-16-D35H-6-4060-213-D
13. TTFR-16-D35H-6-4060-213-E
14. TTFR-16-D35H-6-4060-215-A
15. TTFR-16-D35H-6-4060-215-B
16. TTFR-16-D35H-6-4060-215-C
17. TTFR-16-D35H-6-4060-215-D
18. TTFR-16-D35H-6-4060-216-A
19. TTFR-16-D35H-6-4060-216-B
20. TTFR-16-D35H-6-4060-216-C
21. TTFR-16-D35H-6-4060-216-D
22. TTFR-16-D35H-6-4060-216-E

SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-17-2015

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
546.25'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	551.26'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-16-D35H-6-A
2. 0.5' - 1.0' SAMPLE ID TTFR-16-D35H-6-B
3. 1.0' - 1.5' SAMPLE ID TTFR-16-D35H-6-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 7-28-2016
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF FIVE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 8-2-2016, 8-8-2016, and 8-9-2016

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OU# - D# - #
OPERABLE UNIT · DREDGE AREA · DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.74'	-	-1.00'	3,164.79
	-1.00'	-	-0.50'	28,525.32
	-0.50'	-	0.00'	32,459.41
ABOVE RAL	0.00'	-	0.25'	5,213.45
	0.25'	-	0.50'	1,219.84
	0.50'	-	0.75'	403.98
	0.75'	-	1.00'	147.58
	1.00'	-	1.25'	63.15
	1.25'	-	1.50'	27.64

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35H-6.dwg
DRAWN BY: DAVID.FRISQUE
DATE: December 7, 2015
LAST REVISED: November 26, 2018
CHECKED BY: REG

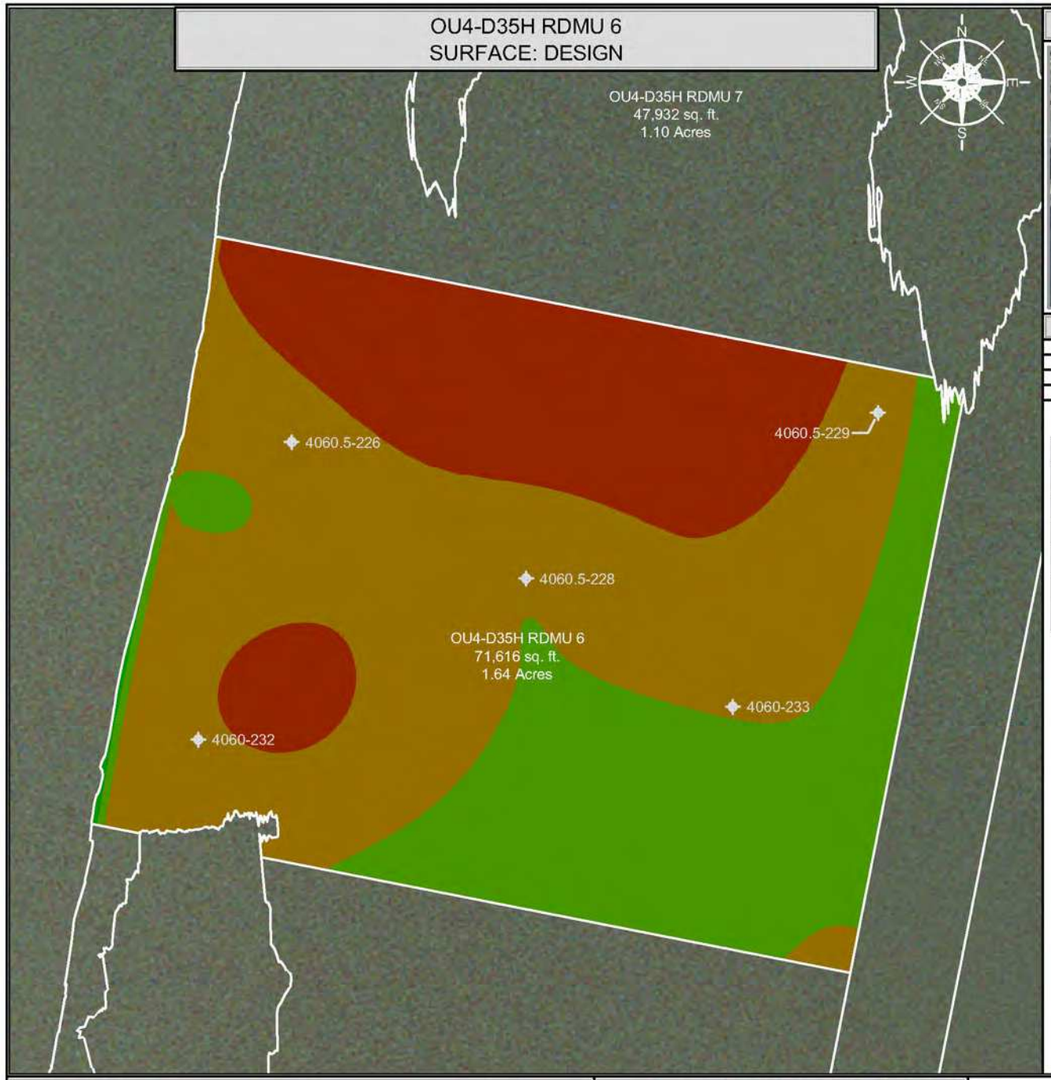
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-065

OU4-D35H-6
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LDC\ADH\Eng\eng3d\dsp\Files\2015\OU4 D35H\DWG\Post Dredge\OU4 D35H-6.dwg

OU4-D35H RDMU 6
SURFACE: DESIGN



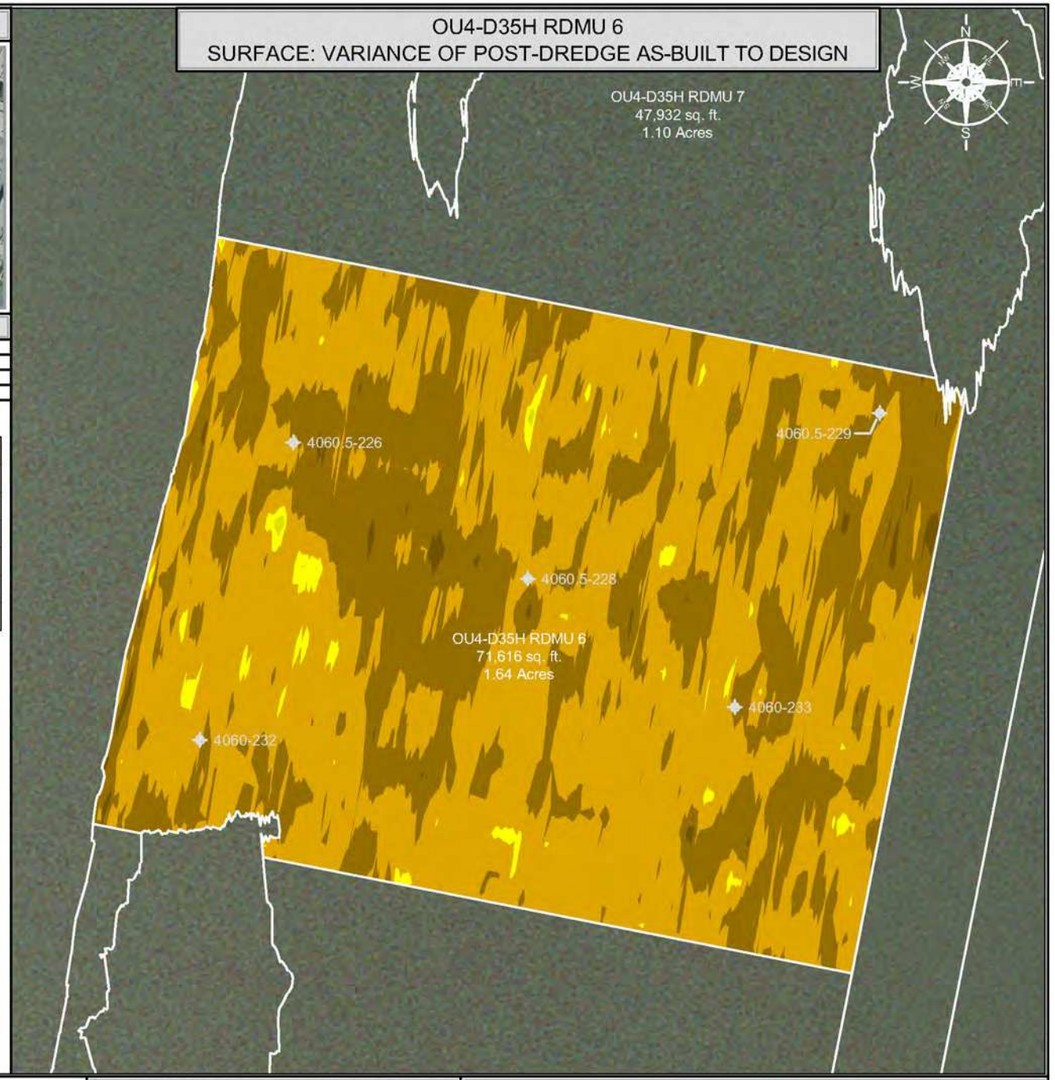
INDEX MAP



CONFIRMATION SAMPLE RESULTS	
INTERVAL	CONCENTRATION
0.0' - 0.5'	1,740 µg/kg (1.74 ppm)
0.5' - 1.0'	386 µg/kg (0.386 ppm)
1.0' - 1.5'	33.5 µg/kg (0.0335 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS		
SAMPLE ID	NORTHING	EASTING
4060-233	251912.07	2484560.80
4060-232	251899.08	2484349.13
4060.5-229	252028.38	2484618.23
4060.5-228	251962.81	2484478.95
4060.5-226	252016.78	2484386.06

OU4-D35H RDMU 6
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 7-19-2017

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-17-D35H-6-A
2. 0.5' - 1.0' SAMPLE ID TTFR-17-D35H-6-B
3. 1.0' - 1.5' SAMPLE ID TTFR-17-D35H-6-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 10-17-2017
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF FIVE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 10-23-2017

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OU# - D# - #
- OU# — OPERABLE UNIT
- D# — DREDGE AREA
- # — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.55'	-	-1.00'	427.47
BELOW RAL	-1.00'	-	-0.50'	26,895.02
BELOW RAL	-0.50'	-	0.00'	43,364.65
ABOVE RAL	0.00'	-	0.25'	889.62
ABOVE RAL	0.25'	-	0.50'	39.58

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35H RDMU 6.dwg
DRAWN BY: DAVID.FRISQUE
DATE: July 24, 2017
LAST REVISED: November 27, 2017
CHECKED BY: REG

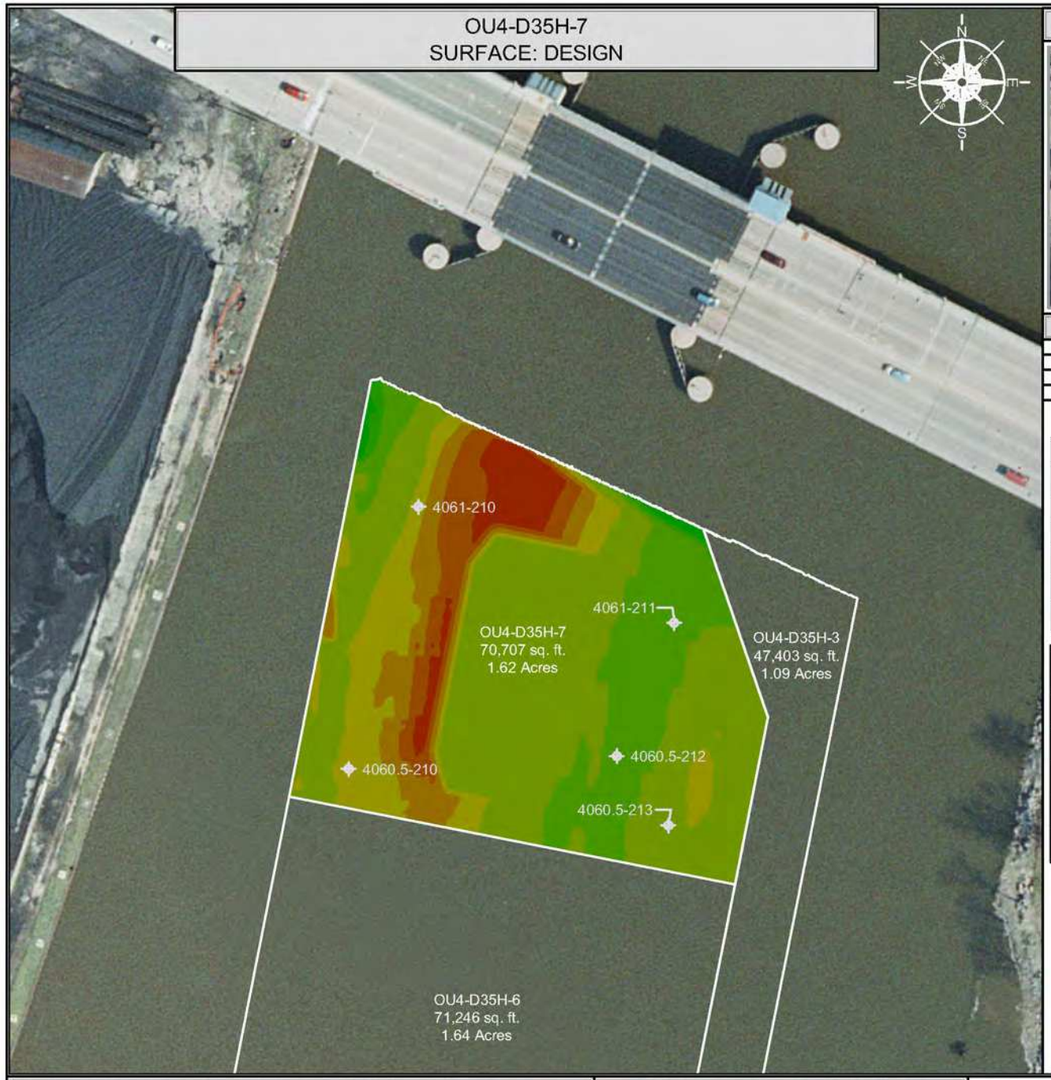
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-066

OU4-D35H RDMU 6
1st RESIDUAL DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LLOCAD\Field Engineering\Dredge Files\2017\OU4 D35H RDMU\DWG\Post Dredge\OU4 D35H RDMU 6.dwg

OU4-D35H-7
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	1,500 µg/kg (1.5 ppm)
0.5' - 1.0'	2,710 µg/kg (2.71 ppm)
1.0' - 1.5'	1,570 µg/kg (1.57 ppm)

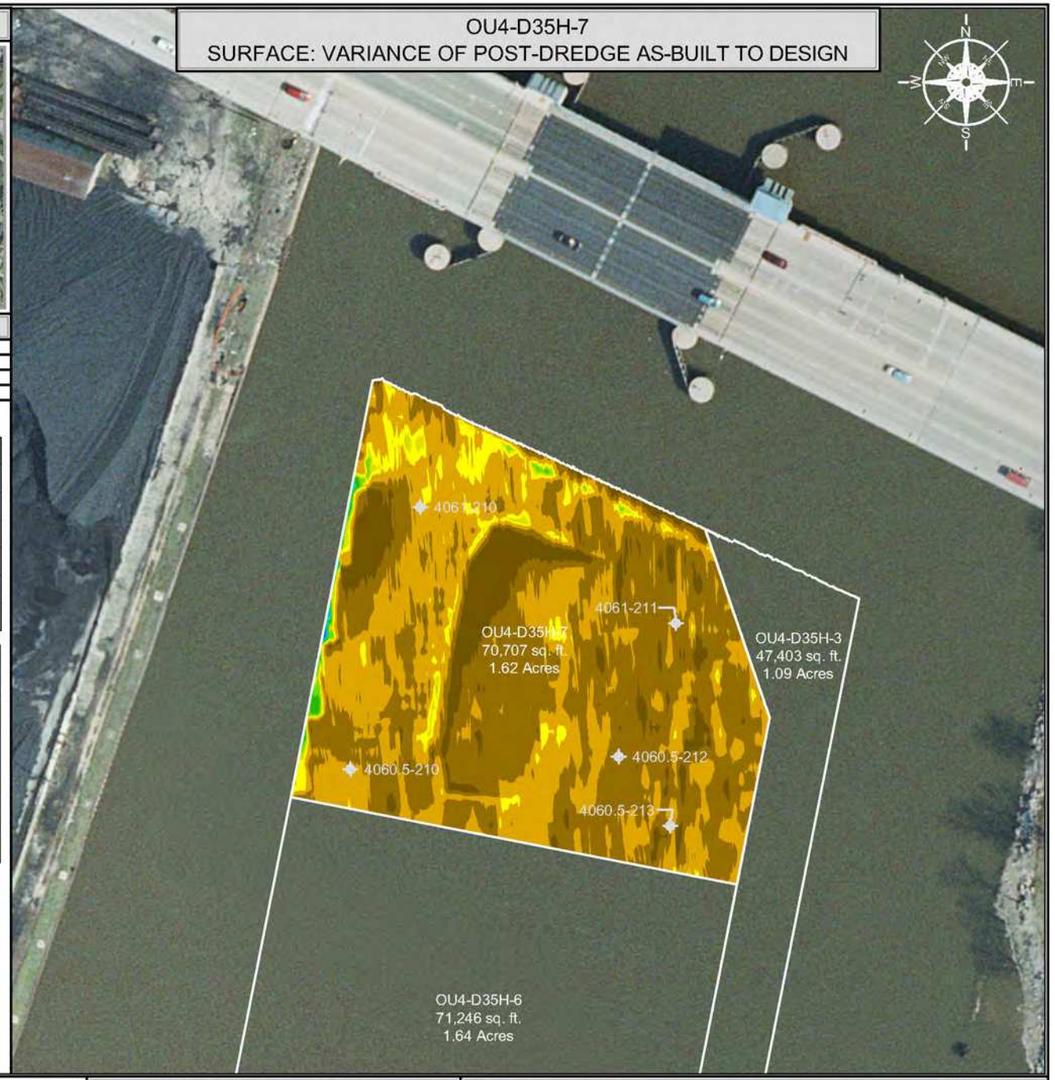
CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4060.5-213	252078.54	2484609.10
4060.5-212	252124.26	2484575.10
4060.5-210	252115.79	2484398.04
4061-211	252212.16	2484612.81
4061-210	252288.69	2484444.28

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION	
4060.5-210	A: 490 µg/kg (0.49) ppm) B: 1,040 µg/kg (1.04) ppm) C: 1,030 µg/kg (1.03) ppm)	D: 190 µg/kg (0.19) ppm) E: 56.6 µg/kg (0.0566) ppm)
4060.5-212	A: 2,220 µg/kg (2.22) ppm) B: 1,520 µg/kg (1.52) ppm) C: 2,510 µg/kg (2.51) ppm)	D: <25.1 µg/kg (<0.0251) ppm) E: <25.3 µg/kg (<0.0253) ppm)
4060.5-213	A: 2,640 µg/kg (2.64) ppm) B: 2,690 µg/kg (2.69) ppm) C: 226 µg/kg (0.226) ppm)	D: <25.4 µg/kg (<0.0254) ppm)
4061-210	A: 629 µg/kg (0.629) ppm) B: <25.7 µg/kg (<0.0257) ppm) C: <25.2 µg/kg (<0.0252) ppm)	D: <25.3 µg/kg (<0.0253) ppm)
4061-211	A: 1,910 µg/kg (1.91) ppm) B: 8,830 µg/kg (8.83) ppm) C: 4,500 µg/kg (4.5) ppm)	D: <25.1 µg/kg (<0.0251) ppm) E: <25.5 µg/kg (<0.0255) ppm)

OU4-D35H-7
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-16-D35H-7-4060.5-210-A
2. TTFR-16-D35H-7-4060.5-210-B
3. TTFR-16-D35H-7-4060.5-210-C
4. TTFR-16-D35H-7-4060.5-210-D
5. TTFR-16-D35H-7-4060.5-210-E
6. TTFR-16-D35H-7-4060.5-212-A
7. TTFR-16-D35H-7-4060.5-212-B
8. TTFR-16-D35H-7-4060.5-212-C
9. TTFR-16-D35H-7-4060.5-212-D
10. TTFR-16-D35H-7-4060.5-212-E
11. TTFR-16-D35H-7-4060.5-213-A
12. TTFR-16-D35H-7-4060.5-213-B
13. TTFR-16-D35H-7-4060.5-213-C
14. TTFR-16-D35H-7-4060.5-213-D
15. TTFR-16-D35H-7-4061-210-A
16. TTFR-16-D35H-7-4061-210-B
17. TTFR-16-D35H-7-4061-210-C
18. TTFR-16-D35H-7-4061-210-D
19. TTFR-16-D35H-7-4061-211-A
20. TTFR-16-D35H-7-4061-211-B
21. TTFR-16-D35H-7-4061-211-C
22. TTFR-16-D35H-7-4061-211-D
23. TTFR-16-D35H-7-4061-211-E

SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-14-2015

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
543.03'	-	544.00'
544.00'	-	545.00'
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.11'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-16-D35H-7-A
2. 0.5' - 1.0' SAMPLE ID TTFR-16-D35H-7-B
3. 1.0' - 1.5' SAMPLE ID TTFR-16-D35H-7-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 7-28-2016
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF FIVE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 8-2-2016 and 8-8-2016

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OU# - D# - #
- OU# — OPERABLE UNIT
- D# — DREDGE AREA
- # — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.76'	-	-1.00'	6,643.92
BELOW RAL	-1.00'	-	-0.50'	33,378.64
BELOW RAL	-0.50'	-	0.00'	26,139.97
ABOVE RAL	0.00'	-	0.25'	3,159.89
ABOVE RAL	0.25'	-	0.50'	692.25
ABOVE RAL	0.50'	-	0.75'	310.07
ABOVE RAL	0.75'	-	1.00'	206.74
ABOVE RAL	1.00'	-	1.25'	73.14
ABOVE RAL	1.25'	-	1.50'	50.17
ABOVE RAL	1.50'	-	1.75'	13.15
ABOVE RAL	1.75'	-	1.90'	2.82

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35H-7.dwg
DRAWN BY: DAVID.FRISQUE
DATE: December 7, 2015
LAST REVISED: November 26, 2018
CHECKED BY: REG

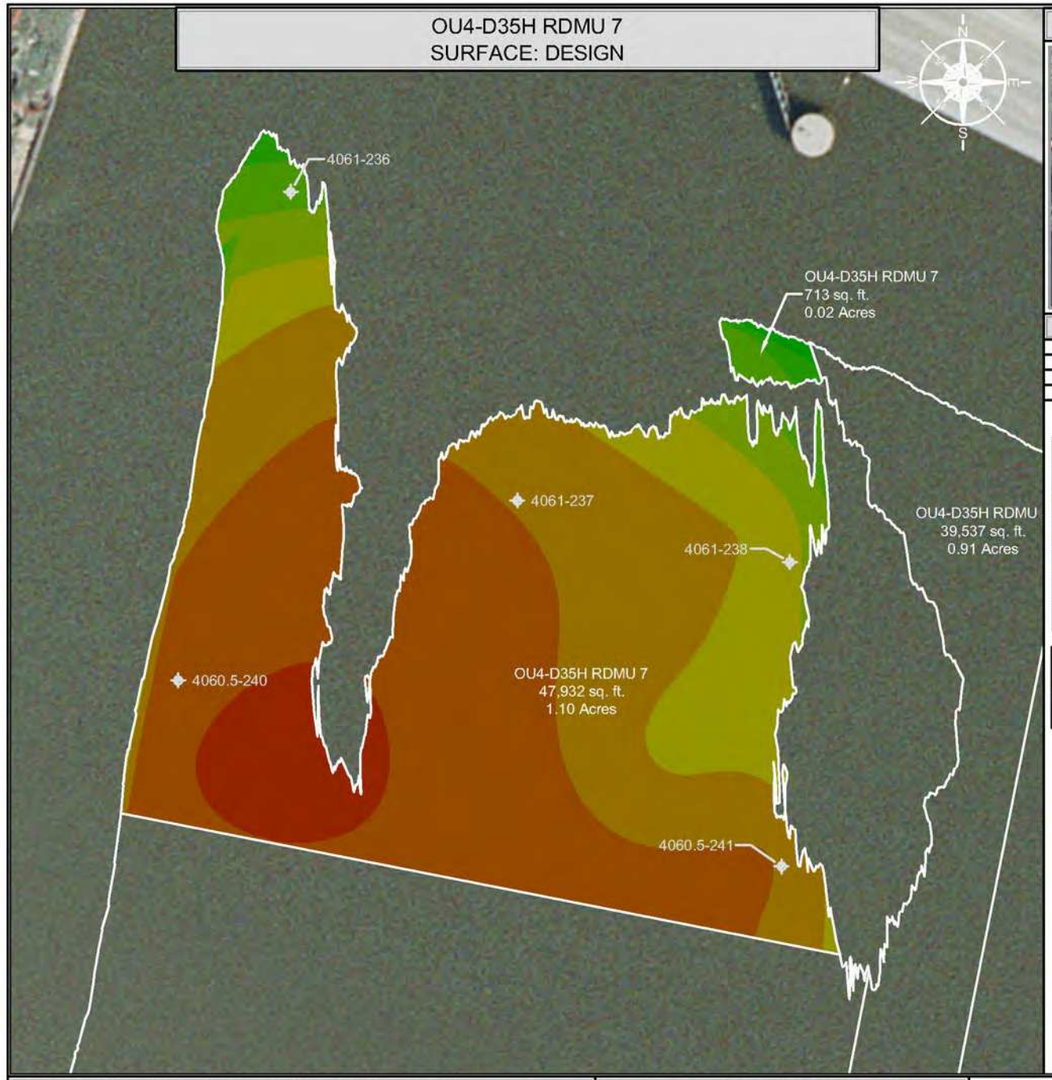
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-067

OU4-D35H-7
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

P:\LOCADD\Hold Engineering\Dredge Files\2015\OU4-D35H\DWG\Final Design\OU4-D35H-7.dwg

OU4-D35H RDMU 7
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	1,210 µg/kg (1.21 ppm)
0.5' - 1.0'	627 µg/kg (0.627 ppm)
1.0' - 1.5'	<25.5 µg/kg (<0.0255 ppm)

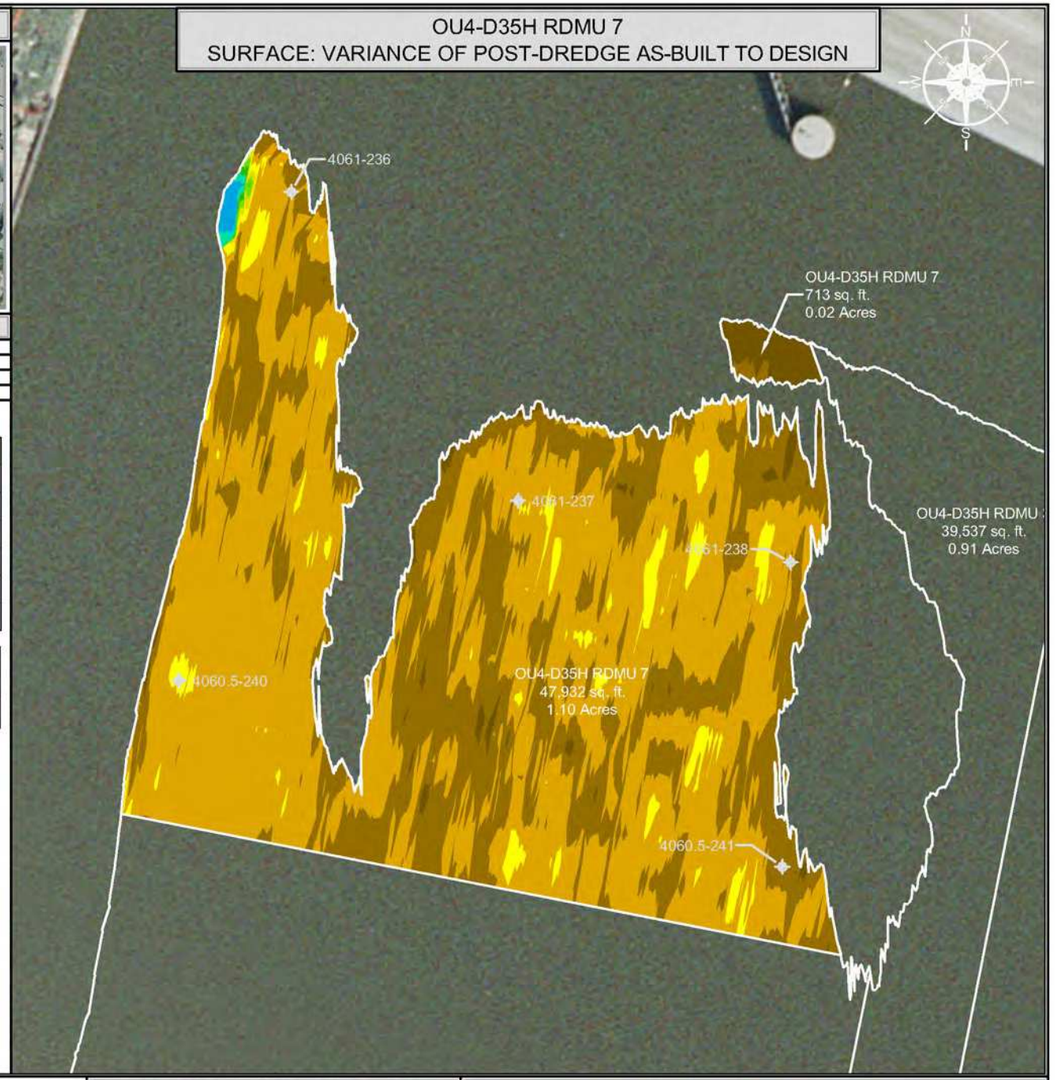
CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4060.5-241	252077.18	2484617.50
4060.5-240	252150.86	2484378.65
4061-238	252197.62	2484620.78
4061-237	252221.97	2484512.88
4061-236	252344.18	2484423.20

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION
4061-236	A: 1,340 µg/kg (1.34) ppm) D: <25.5 µg/kg (<0.0255) ppm) B: 603 µg/kg (0.603) ppm) C: 84.8 µg/kg (0.0848) ppm)

OU4-D35H RDMU 7
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-18-D35H-7-4061-236-A
2. TTFR-18-D35H-7-4061-236-B
3. TTFR-18-D35H-7-4061-236-C
4. TTFR-18-D35H-7-4061-236-D

SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 7-19-2017

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-D35H-7-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-D35H-7-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-D35H-7-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 8-14-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF FIVE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 8-21-2018 and 9-25-2018

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT
DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-5.27'	-	-1.00'	1,106.53
BELOW RAL	-1.00'	-	-0.50'	16,405.46
BELOW RAL	-0.50'	-	0.00'	29,197.77
ABOVE RAL	0.00'	-	0.50'	1,645.56
ABOVE RAL	0.50'	-	1.00'	47.61
ABOVE RAL	1.00'	-	1.50'	38.05
ABOVE RAL	1.50'	-	2.00'	25.44
ABOVE RAL	2.00'	-	2.50'	52.89
ABOVE RAL	2.50'	-	3.00'	126.23

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35H RDMU 7.dwg
DRAWN BY: DAVID.FRISQUE
DATE: July 24, 2017
LAST REVISED: November 26, 2018
CHECKED BY: REG

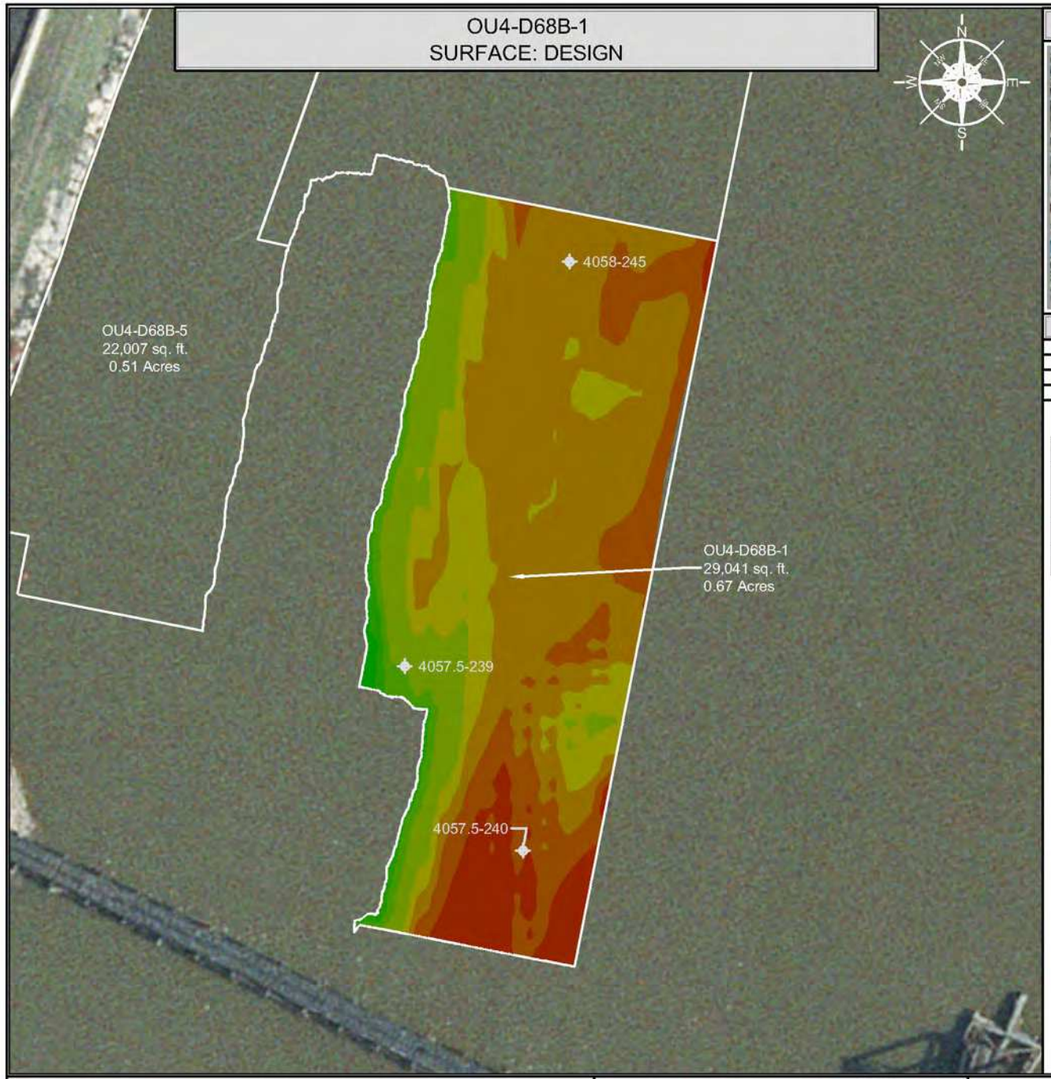
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-068

OU4-D35H RDMU 7
1st RESIDUAL DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

P:\LOCAL\Field Engineering\Dredge Files\2017\OU4 D35H RDMU\DWG\Post Dredge\OU4-D35H RDMU 7.dwg

OU4-D68B-1
SURFACE: DESIGN



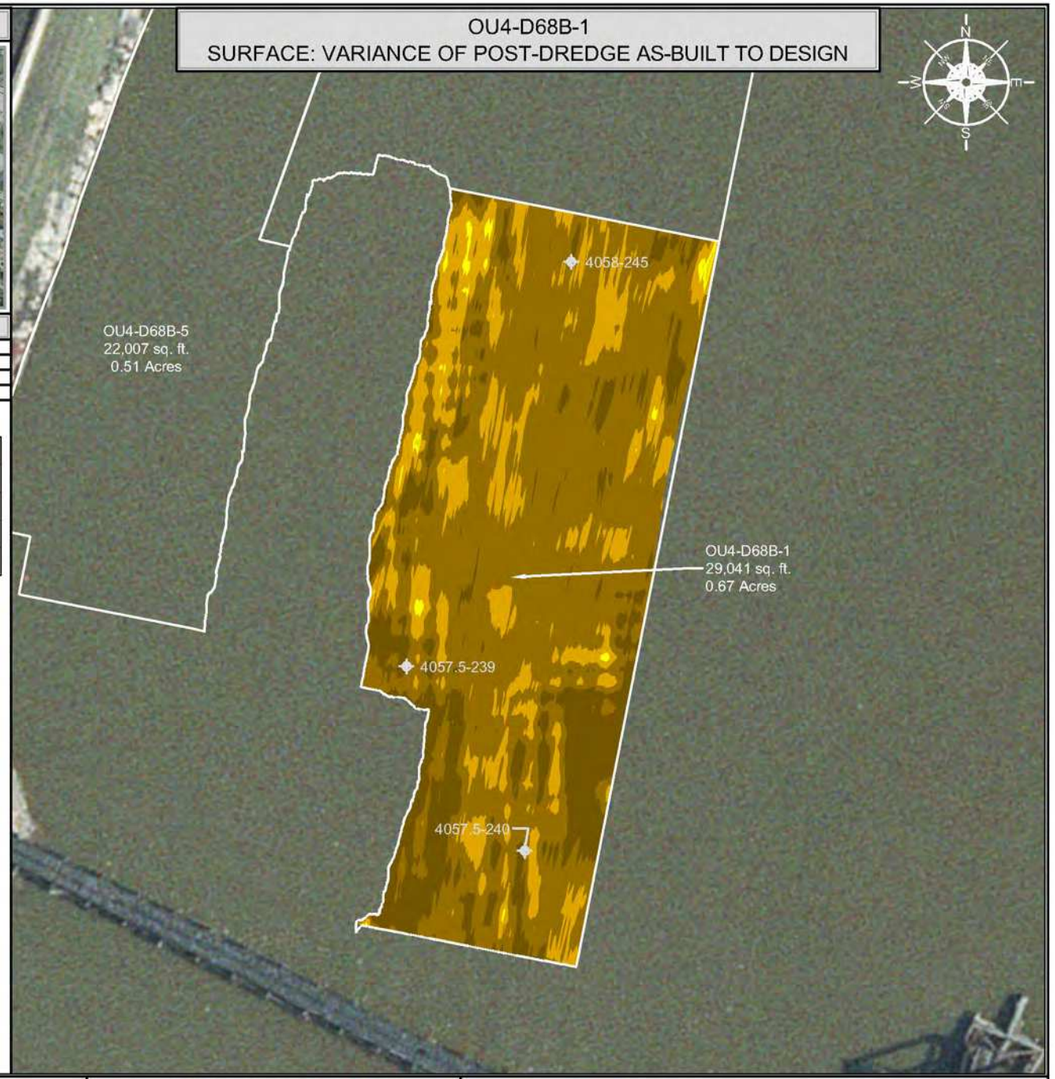
INDEX MAP



CONFIRMATION SAMPLE RESULTS	
INTERVAL	CONCENTRATION
0.0' - 0.5'	748 µg/kg (0.748 ppm)
0.5' - 1.0'	100 µg/kg (0.1 ppm)
1.0' - 1.5'	<25.3 µg/kg (<0.0253 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS		
SAMPLE ID	NORTHING	EASTING
4057.5-240	250906.11	2484094.74
4057.5-239	250979.04	2484047.92
4058-245	251139.16	2484113.23

OU4-D68B-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-16-2016

DESIGN COLOR LEGEND

	MIN. EL.		MAX. EL.
	550.00'	-	551.00'
	551.00'	-	552.00'
	552.00'	-	553.00'
	553.00'	-	554.00'
	554.00'	-	555.00'
	555.00'	-	556.00'
	556.00'	-	557.00'
	557.00'	-	558.00'
	558.00'	-	559.00'
	559.00'	-	560.00'
	560.00'	-	561.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-D68B-1-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-D68B-1-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-D68B-1-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 7-16-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF THREE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 7-20-2018

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OU# - D# - #

OU# = OPERABLE UNIT; D# = DREDGE AREA; # = DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

		MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL		-2.49'	-	-1.00'	5,102.58
BELOW RAL		-1.00'	-	-0.50'	18,282.33
BELOW RAL		-0.50'	-	0.00'	5,303.76
ABOVE RAL		0.00'	-	0.25'	178.46
ABOVE RAL		0.25'	-	0.50'	17.76
ABOVE RAL		0.50'	-	0.60'	0.00

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D68B-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: September 26, 2016
LAST REVISED: November 26, 2018
CHECKED BY: REG

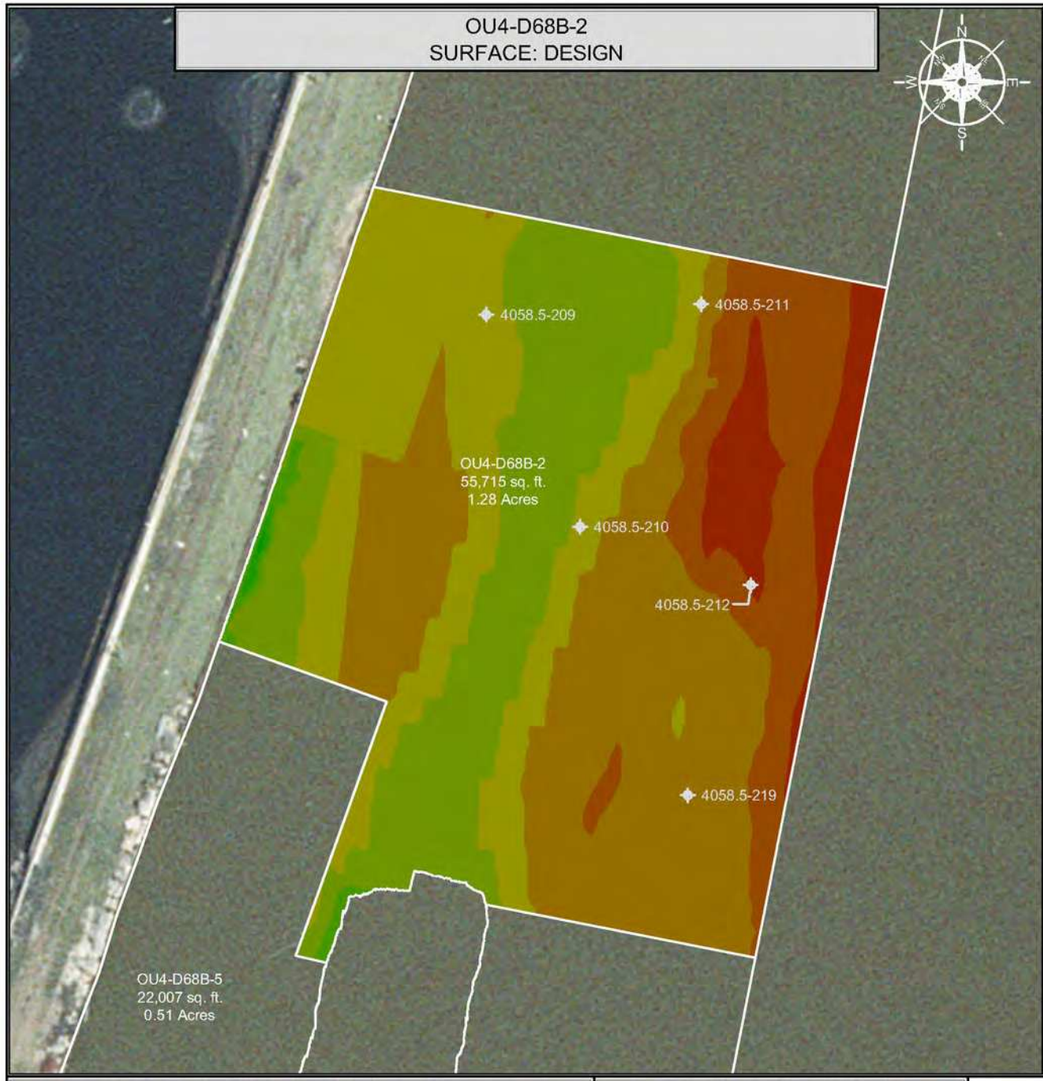
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-069

OU4-D68B-1
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\FLC\CAD\Field Engineering\Design Files\2016\OU4 D68B\DWG\Post Design\OU4 D68B-1.dwg

OU4-D68B-2
SURFACE: DESIGN



INDEX MAP

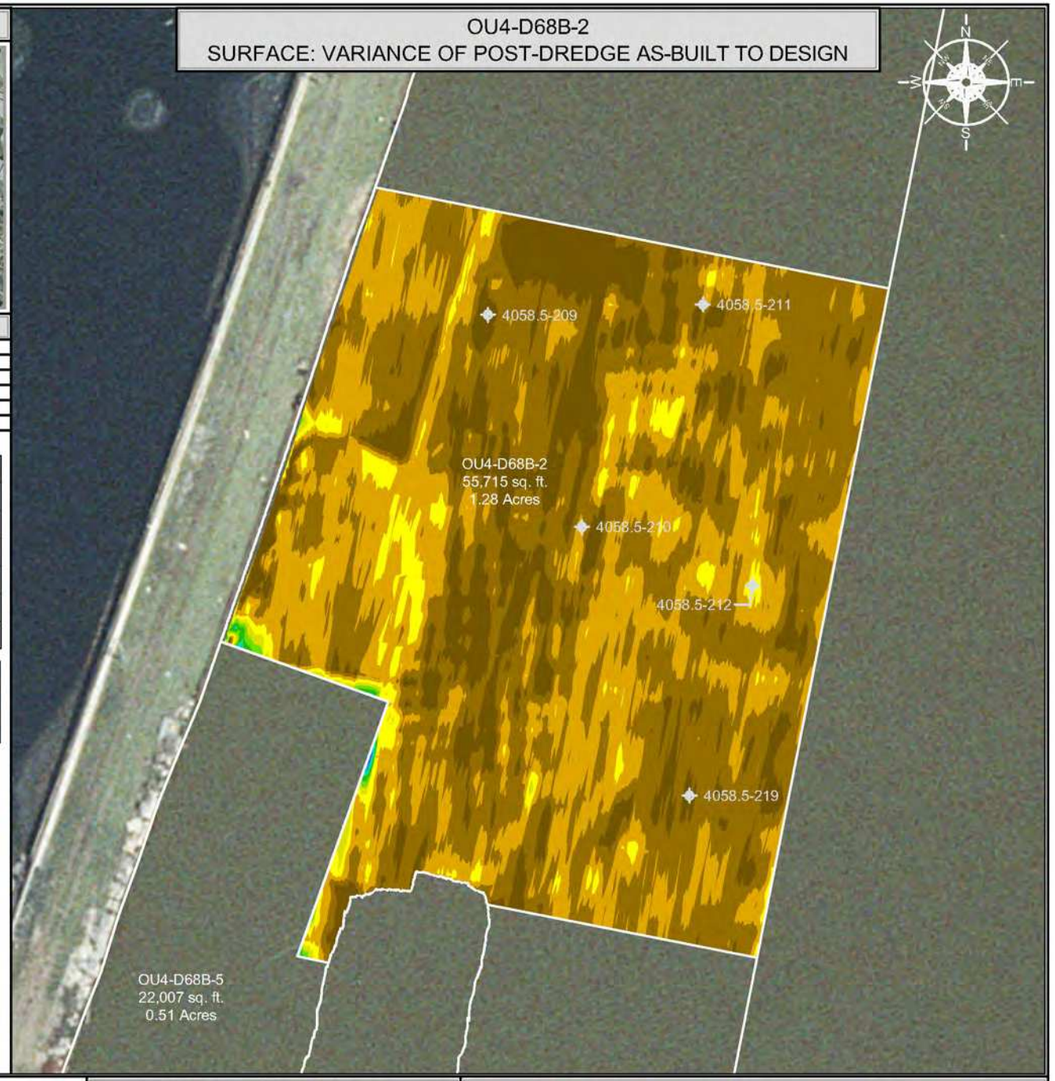


CONFIRMATION SAMPLE RESULTS	
INTERVAL	CONCENTRATION
0.0' - 0.5'	1,580 µg/kg (1.58 ppm)
0.0' - 0.5'	1,360 µg/kg (1.36 ppm)
0.5' - 1.0'	436 µg/kg (0.436 ppm)
1.0' - 1.5'	<25.5 µg/kg (<0.0255 ppm)
1.0' - 1.5'	<25.5 µg/kg (<0.0255 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS		
SAMPLE ID	NORTHING	EASTING
4058.5-211	251405.85	2484150.28
4058.5-209	251401.70	2484065.25
4058.5-210	251317.81	2484102.43
4058.5-212	251294.72	2484169.95
4058.5-219	251211.56	2484145.03

DISCRETE SAMPLE RESULTS	
LOCATION	CONCENTRATION
4058.5-209	A: 1,460 µg/kg (1.46) ppm) B: 999 µg/kg (0.999) ppm) C: <25.5 µg/kg (<0.0255) ppm)

OU4-D68B-2
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-16-D68B-2-4058.5-209-A
2. TTFR-16-D68B-2-4058.5-209-B
3. TTFR-16-D68B-2-4058.5-209-C

SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-16-2016

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
548.00'	-	550.00'
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'
562.00'	-	564.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-16-D68B-2-A
2. 0.0' - 0.5' SAMPLE ID TTFR-16-D68B-2-A2
3. 0.5' - 1.0' SAMPLE ID TTFR-16-D68B-2-B
4. 1.0' - 1.5' SAMPLE ID TTFR-16-D68B-2-C
5. 1.0' - 1.5' SAMPLE ID TTFR-16-D68B-2-C2
6. CONFIRMATION SAMPLES WERE COLLECTED ON 10-4-2016
7. CONFIRMATION SAMPLES ARE A COMPOSITE OF FIVE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
8. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 10-7-2016 and 10-26-2016

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-3.49'	-	-1.00'	8,968.86
BELOW RAL	-1.00'	-	-0.50'	26,383.93
BELOW RAL	-0.50'	-	0.00'	17,422.68
ABOVE RAL	0.00'	-	0.50'	2,208.53
ABOVE RAL	0.50'	-	1.00'	217.08
ABOVE RAL	1.00'	-	1.50'	99.35
ABOVE RAL	1.50'	-	2.00'	59.75
ABOVE RAL	2.00'	-	2.50'	25.07
ABOVE RAL	2.50'	-	3.00'	9.94
ABOVE RAL	3.00'	-	3.50'	5.06
ABOVE RAL	3.50'	-	3.80'	0.69

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D68B-2.dwg
DRAWN BY: DAVID.FRISQUE
DATE: September 26, 2016
LAST REVISED: November 26, 2018
CHECKED BY: REG

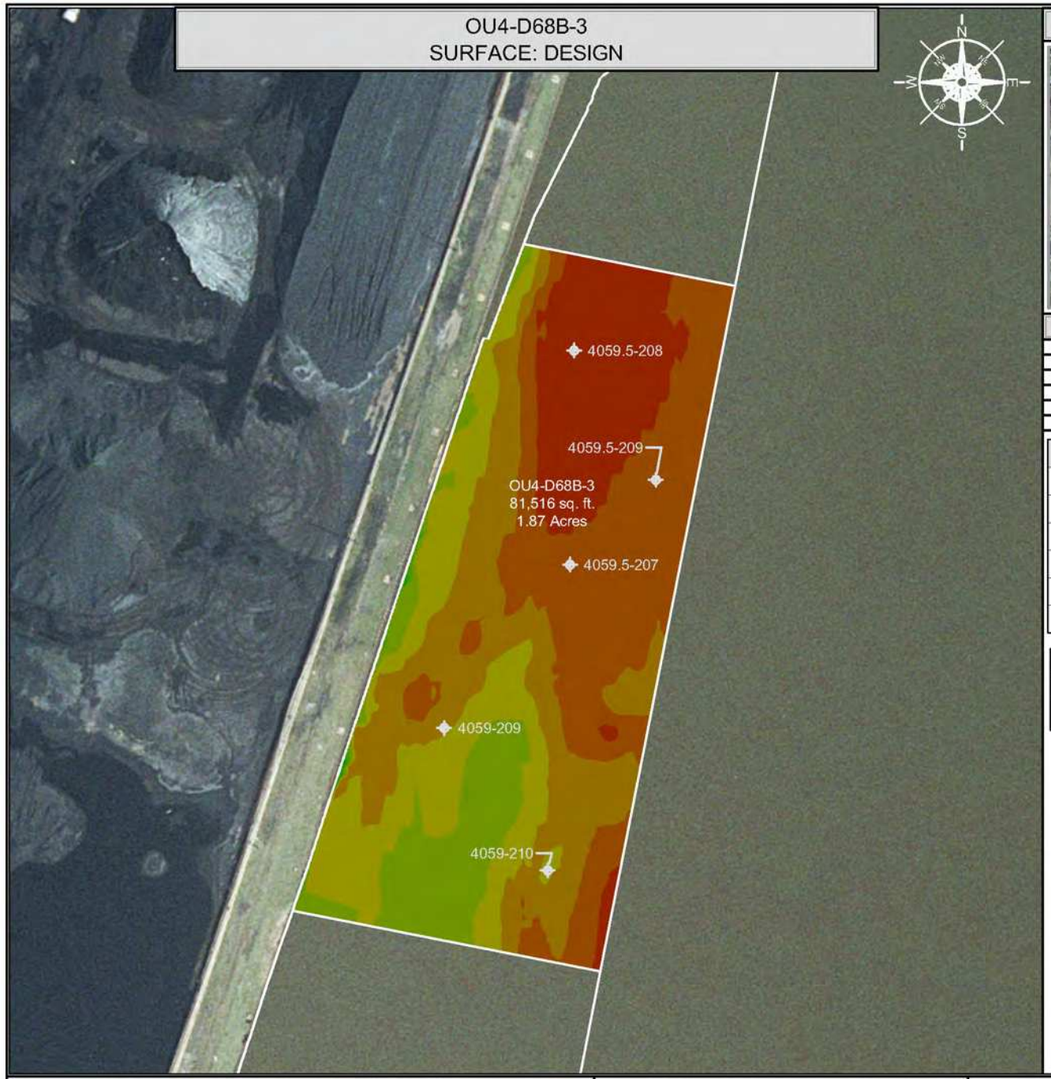
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-070

OU4-D68B-2
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

P:\LLOC\Active Engineering\Dredge Files\2016\OU4-D68B\DWG\Post-Dredge\OU4-D68B-2.dwg

OU4-D68B-3
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	990 µg/kg (0.99 ppm)
0.5' - 1.0'	1,810 µg/kg (1.81 ppm)
0.5' - 1.0'	938 µg/kg (0.938 ppm)
1.0' - 1.5'	878 µg/kg (0.878 ppm)
1.0' - 1.5'	658 µg/kg (0.658 ppm)

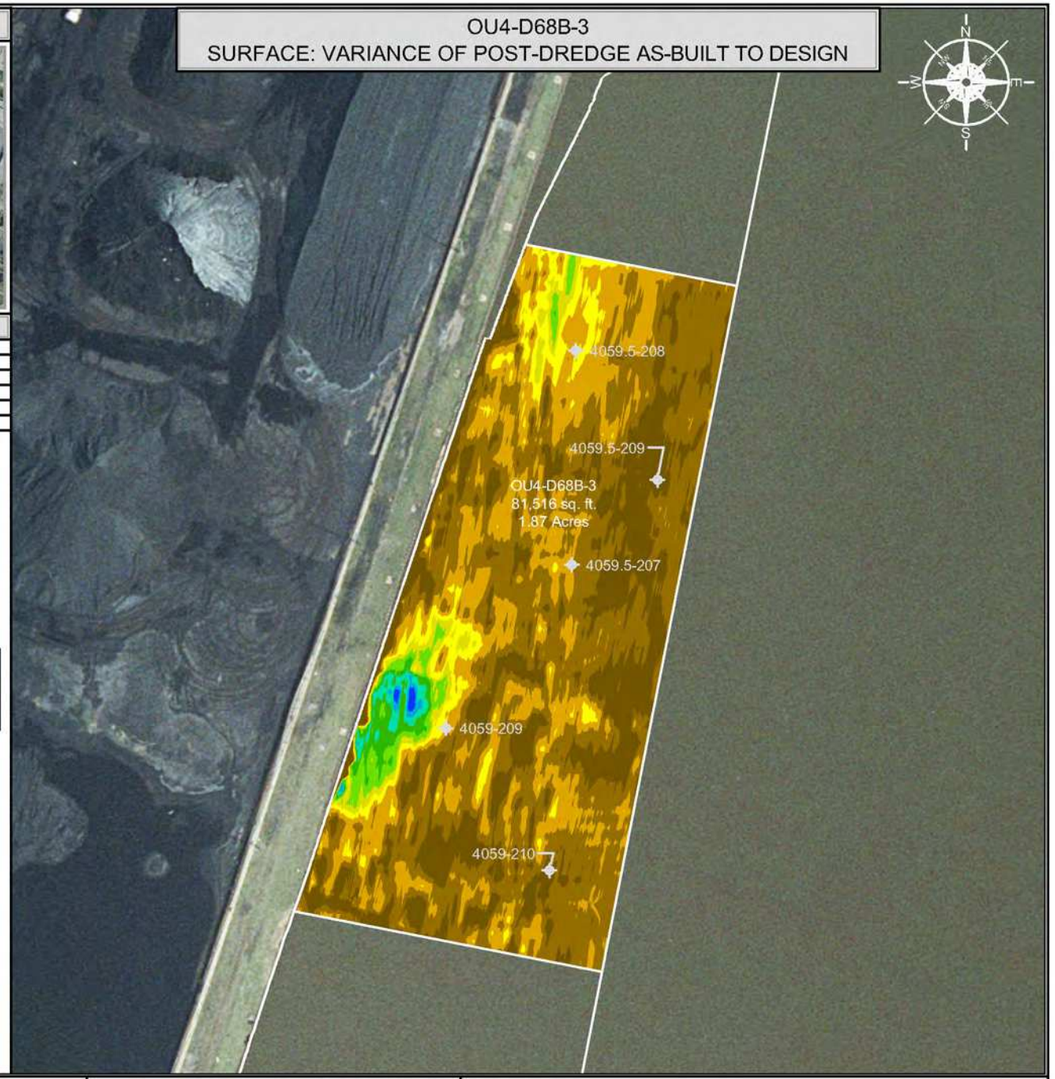
CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4059-210	251479.05	2484189.01
4059-209	251572.90	2484120.68
4059.5-209	251736.56	2484260.37
4059.5-208	251821.88	2484206.56
4059.5-207	251680.66	2484203.89

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION	
4059-209	A: 119 µg/kg (0.119) ppm) B: 158 µg/kg (0.158) ppm) C: 201 µg/kg (0.201) ppm)	D: 27.5 µg/kg (0.0275) ppm) DSE: 136 µg/kg (0.136) ppm)

OU4-D68B-3
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-16-D68B-3-4059-209-A
2. TTFR-16-D68B-3-4059-209-B
3. TTFR-16-D68B-3-4059-209-C
4. TTFR-16-D68B-3-4059-209-D
5. TTFR-16-D68B-3-4059-209DS-E

SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-28-2016

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
547.00'	-	549.00'
549.00'	-	551.00'
551.00'	-	553.00'
553.00'	-	555.00'
555.00'	-	557.00'
557.00'	-	559.00'
559.00'	-	561.00'
561.00'	-	563.00'
563.00'	-	565.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-16-D68B-3-A
2. 0.5' - 1.0' SAMPLE ID TTFR-16-D68B-3-B
3. 0.5' - 1.0' SAMPLE ID TTFR-16-D68B-3-B2
4. 1.0' - 1.5' SAMPLE ID TTFR-16-D68B-3-C
5. 1.0' - 1.5' SAMPLE ID TTFR-16-D68B-3-C2
6. CONFIRMATION SAMPLES WERE COLLECTED ON 10-4-2016
7. CONFIRMATION SAMPLES ARE A COMPOSITE OF FIVE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
8. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 10-7-2016, 10-31-2016, and 11-1-2016

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OU# - D# - #
- OU# — OPERABLE UNIT
- D# — DREDGE AREA
- # — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-9.89'	-	-1.00'	18,549.77
BELOW RAL	-1.00'	-	-0.50'	35,455.39
BELOW RAL	-0.50'	-	0.00'	18,127.19
ABOVE RAL	0.00'	-	0.50'	4,150.49
ABOVE RAL	0.50'	-	1.00'	1,706.98
ABOVE RAL	1.00'	-	1.50'	1,472.39
ABOVE RAL	1.50'	-	2.00'	1,097.94
ABOVE RAL	2.00'	-	2.50'	612.45
ABOVE RAL	2.50'	-	3.00'	178.37
ABOVE RAL	3.00'	-	3.50'	86.44
ABOVE RAL	3.50'	-	3.60'	3.20

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
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CAD FILE: OU4-D68B-3.dwg
DRAWN BY: DAVID.FRISQUE
DATE: September 19, 2016
LAST REVISED: November 26, 2018
CHECKED BY: REG

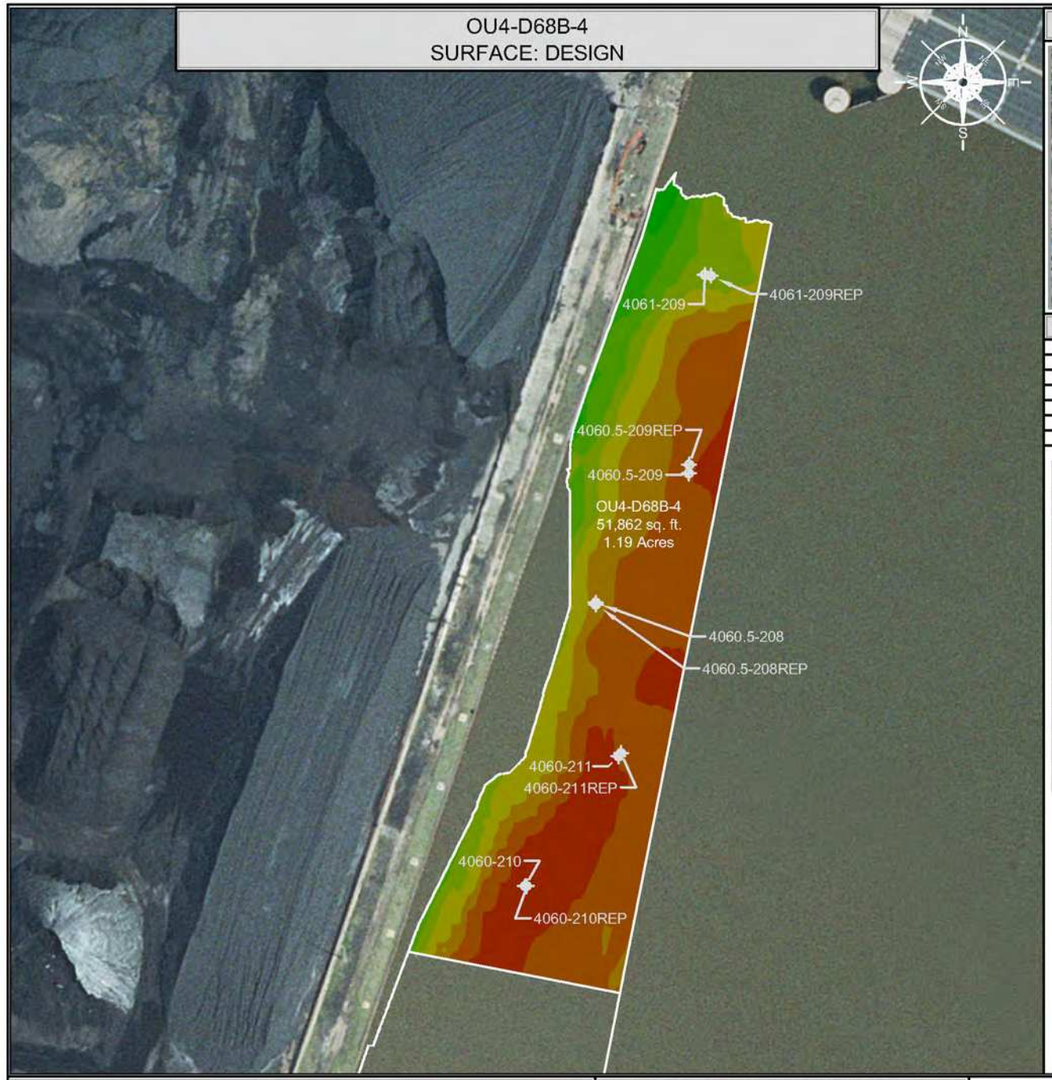
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-071

OU4-D68B-3
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LC\CAD\Hist Eng\sheets\sDesign Files\2016\5D0314 D68\D2\WS\Post Design\D314 D68B-3.dwg

OU4-D68B-4
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	622 µg/kg (0.622 ppm)
0.5' - 1.0'	641 µg/kg (0.641 ppm)
1.0' - 1.5'	64.2 µg/kg (0.0642 ppm)
0.0' - 0.5' REP	1,300 µg/kg (1.3 ppm)
0.5' - 1.0' REP	267 µg/kg (0.267 ppm)
1.0' - 1.5' REP	25.6 µg/kg (0.0256 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4060-211REP	252022.99	2484313.62
4060-210REP	251935.21	2484251.34
4060-211	252020.82	2484311.69
4060-210	251935.28	2484250.04
4060.5-208REP	252120.98	2484296.99
4060.5-209	252207.43	2484358.32
4060.5-208	252122.09	2484296.78
4060.5-209REP	252213.33	2484358.49
4061-209REP	252337.82	2484372.76
4061-209	252338.41	2484368.73

OU4-D68B-4
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-16-2016

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
546.00'	-	548.00'
548.00'	-	550.00'
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'
562.00'	-	564.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-16-D68B-4-A
2. 0.5' - 1.0' SAMPLE ID TTFR-16-D68B-4-B
3. 1.0' - 1.5' SAMPLE ID TTFR-16-D68B-4-C
4. 0.0' - 0.5' SAMPLE ID TTFR-16-D68B-4REP-A
5. 0.5' - 1.0' SAMPLE ID TTFR-16-D68B-4REP-B
6. 1.0' - 1.5' SAMPLE ID TTFR-16-D68B-4REP-C
7. CONFIRMATION SAMPLES WERE COLLECTED ON 10-5-2016
8. CONFIRMATION SAMPLES ARE A COMPOSITE OF TEN SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
9. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 10-10-2016 and 10-11-2016

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OU# - D# - #
- OU# — OPERABLE UNIT
- D# — DREDGE AREA
- # — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-7.10'	-	-1.00'	10,145.82
BELOW RAL	-1.00'	-	-0.50'	18,623.84
BELOW RAL	-0.50'	-	0.00'	18,700.62
ABOVE RAL	0.00'	-	0.25'	3,089.60
ABOVE RAL	0.25'	-	0.50'	787.16
ABOVE RAL	0.50'	-	0.75'	303.36
ABOVE RAL	0.75'	-	1.00'	69.25
ABOVE RAL	1.00'	-	1.25'	28.09
ABOVE RAL	1.25'	-	1.50'	1.74
ABOVE RAL	1.50'	-	1.60'	0.00

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D68B-4.dwg
DRAWN BY: DAVID.FRISQUE
DATE: September 26, 2016
LAST REVISED: November 26, 2018
CHECKED BY: REG

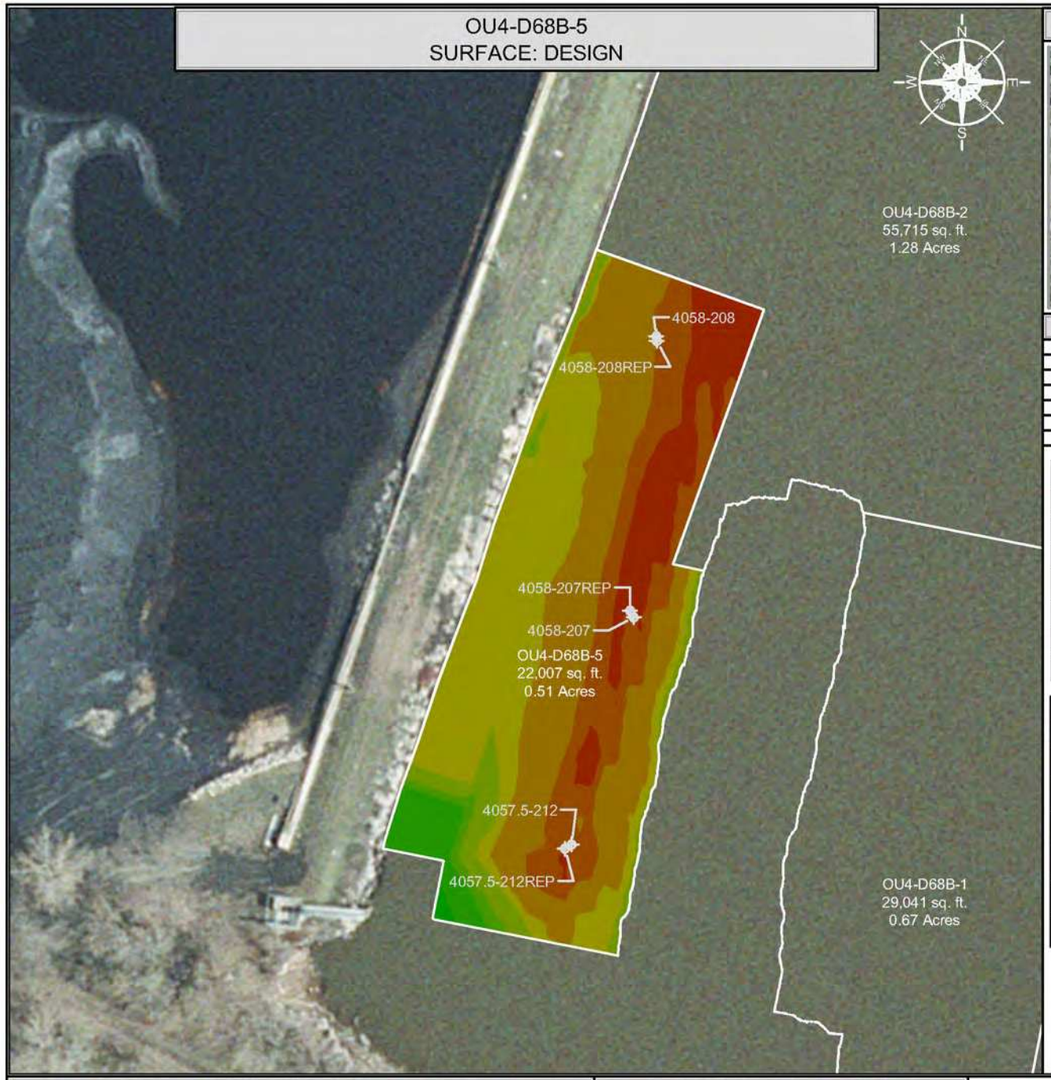
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-072

OU4-D68B-4
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LOCAD\Fldr Engineering\Dredge Files\2016\63314 D68B\D68WDP\ist Dredge\CH4-D68B-4.dwg

OU4-D68B-5
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	1,630 µg/kg (1.63 ppm)
0.5' - 1.0'	3,980 µg/kg (3.98 ppm)
1.0' - 1.5'	3,550 µg/kg (3.55 ppm)
0.0' - 0.5' REP	1,970 µg/kg (1.97 ppm)
0.5' - 1.0' REP	3,500 µg/kg (3.5 ppm)
1.0' - 1.5' REP	215 µg/kg (0.215 ppm)

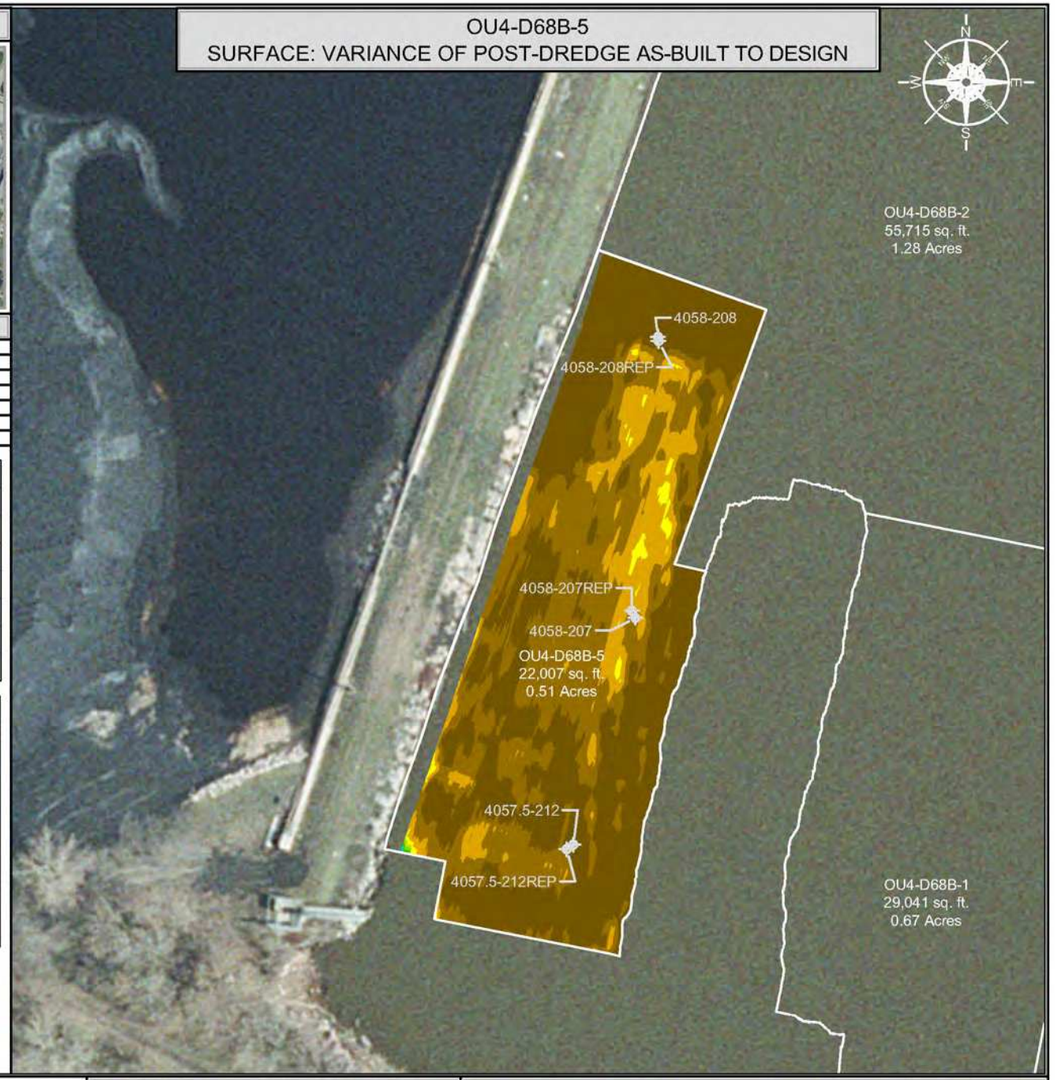
CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4057.5-212REP	251035.26	2483946.94
4057.5-212	251036.99	2483949.65
4058-208REP	251236.32	2483983.34
4058-207REP	251129.54	2483972.76
4058-208	251238.04	2483983.12
4058-207	251126.92	2483974.24

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION
4057.5-212	A: 1,520 µg/kg (1.52) ppm) B: 827 µg/kg (0.827) ppm) C: <25.5 µg/kg (<0.0255) ppm)
4058-207	A: 1,210 µg/kg (1.21) ppm) D: 273 µg/kg (0.273) ppm) B: 1,240 µg/kg (1.24) ppm) E: 489 µg/kg (0.489) ppm) C: 204 µg/kg (0.204) ppm)
4058-208	A: 2,470 µg/kg (2.47) ppm) D: 810 µg/kg (0.81) ppm) B: 5,250 µg/kg (5.25) ppm) C: 8,330 µg/kg (8.33) ppm)
4057.5-212REP	A: 1,790 µg/kg (1.79) ppm) B: 220 µg/kg (0.22) ppm) C: <25.6 µg/kg (<0.0256) ppm)
4058-207REP	A: 1,840 µg/kg (1.84) ppm) D: <25.3 µg/kg (<0.0253) ppm) B: 6,880 µg/kg (6.88) ppm) C: 192 µg/kg (0.192) ppm)
4058-208REP	A: 1,790 µg/kg (1.79) ppm) D: <25.4 µg/kg (<0.0254) ppm) B: 3,470 µg/kg (3.47) ppm) C: 537 µg/kg (0.537) ppm)

OU4-D68B-5
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-16-D68B-5-4057.5-212-A
2. TTFR-16-D68B-5-4057.5-212-B
3. TTFR-16-D68B-5-4057.5-212-C
4. TTFR-16-D68B-5-4058-207-A
5. TTFR-16-D68B-5-4058-207-B
6. TTFR-16-D68B-5-4058-207-C
7. TTFR-16-D68B-5-4058-207-D
8. TTFR-16-D68B-5-4058-207-E
9. TTFR-16-D68B-5-4058-208-A
10. TTFR-16-D68B-5-4058-208-B
11. TTFR-16-D68B-5-4058-208-C
12. TTFR-16-D68B-5-4058-208-D
13. TTFR-16-D68B-5-4057.5-212REP-A
14. TTFR-16-D68B-5-4057.5-212REP-B
15. TTFR-16-D68B-5-4057.5-212REP-C
16. TTFR-16-D68B-5-4058-207REP-A
17. TTFR-16-D68B-5-4058-207REP-B
18. TTFR-16-D68B-5-4058-207REP-C
19. TTFR-16-D68B-5-4058-207REP-D
20. TTFR-16-D68B-5-4058-208REP-A
21. TTFR-16-D68B-5-4058-208REP-B
22. TTFR-16-D68B-5-4058-208REP-C
23. TTFR-16-D68B-5-4058-208REP-D

SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-12-2016

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'
560.00'	-	561.00'
561.00'	-	562.00'
562.00'	-	563.00'
563.00'	-	564.00'
564.00'	-	565.00'
565.00'	-	566.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-16-D68B-5-A
2. 0.5' - 1.0' SAMPLE ID TTFR-16-D68B-5-B
3. 1.0' - 1.5' SAMPLE ID TTFR-16-D68B-5-C
4. 0.0' - 0.5' SAMPLE ID TTFR-16-D68B-5REP-A
5. 0.5' - 1.0' SAMPLE ID TTFR-16-D68B-5REP-B
6. 1.0' - 1.5' SAMPLE ID TTFR-16-D68B-5REP-C
7. CONFIRMATION SAMPLES WERE COLLECTED ON 11-16-2016
8. CONFIRMATION SAMPLES ARE A COMPOSITE OF SIX SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
9. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 11-23-2016 and 12-5-2016

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OU# - D# - #
- OU# = OPERABLE UNIT
- D# = DREDGE AREA
- # = DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-10.27'	-	-1.00'	10,488.44
BELOW RAL	-1.00'	-	-0.50'	7,441.84
BELOW RAL	-0.50'	-	0.00'	2,364.48
ABOVE RAL	0.00'	-	0.50'	201.54
ABOVE RAL	0.50'	-	1.00'	8.04
ABOVE RAL	1.00'	-	1.50'	5.43
ABOVE RAL	1.50'	-	2.00'	4.85
ABOVE RAL	2.00'	-	2.50'	1.42
ABOVE RAL	2.50'	-	3.00'	0.77
ABOVE RAL	3.00'	-	3.60'	0.18

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D68B-5.dwg
DRAWN BY: DAVID.FRISQUE
DATE: November 18, 2016
LAST REVISED: November 30, 2018
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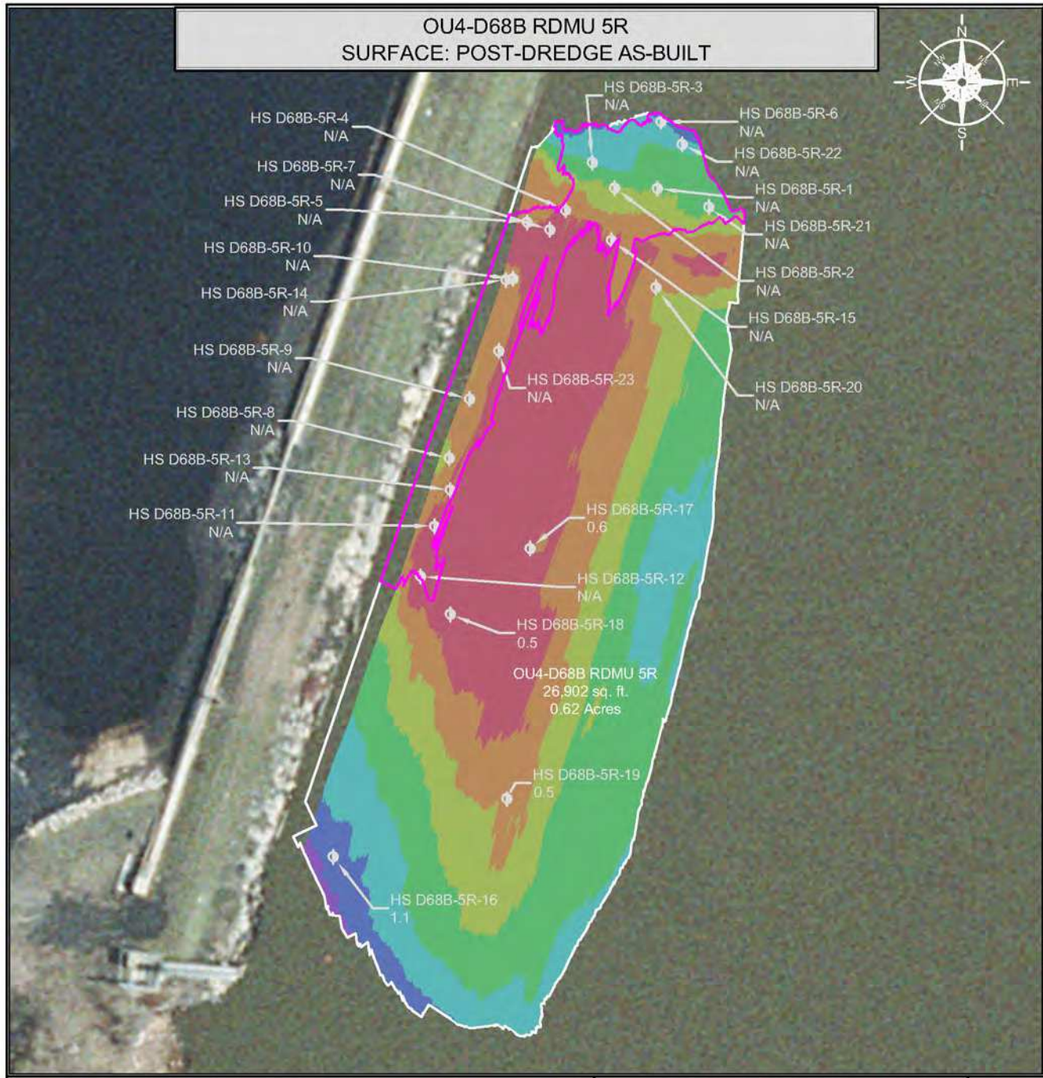
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-073

OU4-D68B-5
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

P:\LLOC\ENG\Field Engineering\Dredge Files\2016\OU4-D68B\DWG\Post Dredge\OU4-D68B-5.dwg

OU4-D68B RDMU 5R
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP

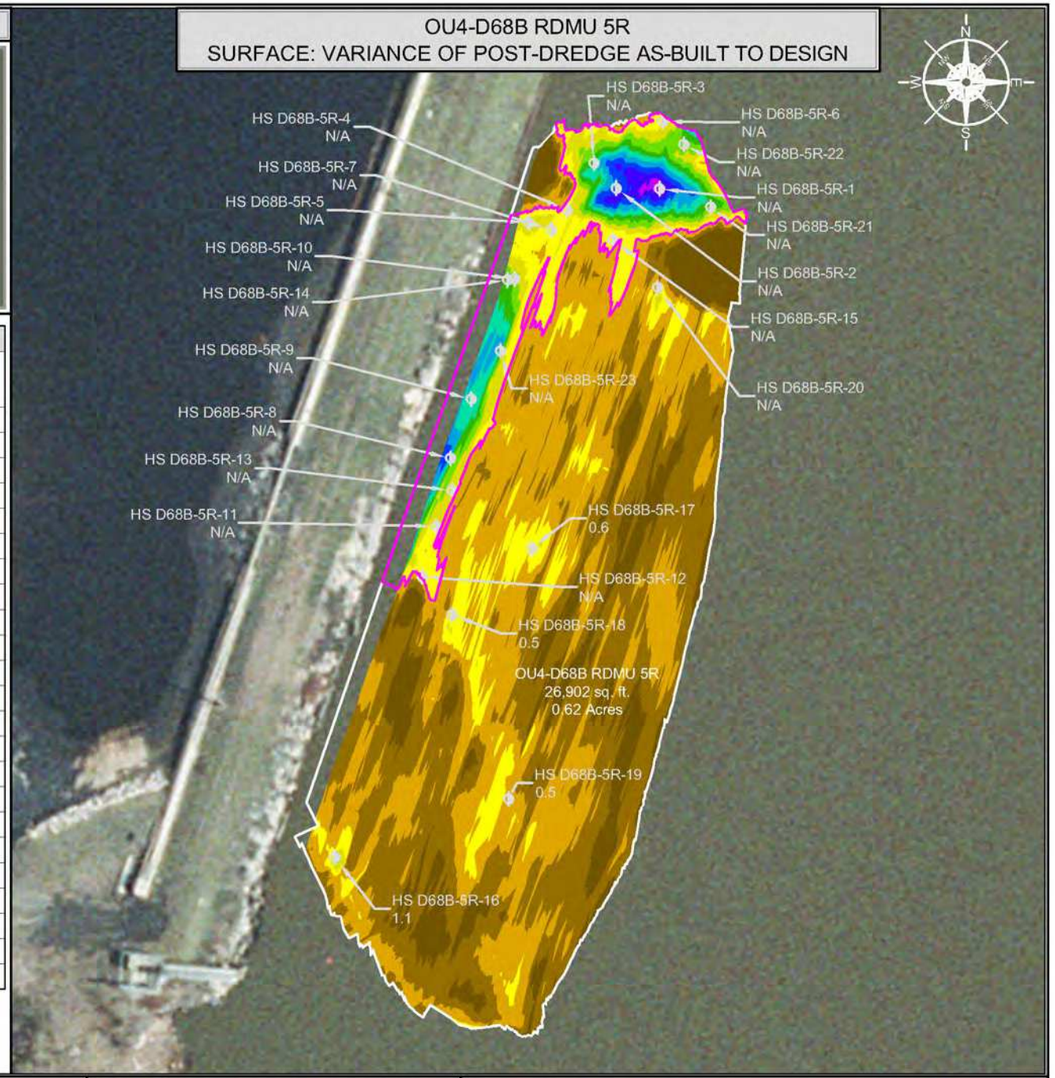


HIGH SUBGRADE SAMPLE AS-BUILT RESULTS

SAMPLE ID	NORTHING	EASTING	THICKNESS OF SOFT SEDIMENT (FEET)
HS D68B-5R-1	251268.40	2484006.38	N/A
HS D68B-5R-2	251268.58	2483992.19	N/A
HS D68B-5R-3	251276.92	2483984.88	N/A
HS D68B-5R-4	251261.37	2483976.02	N/A
HS D68B-5R-5	251257.27	2483963.29	N/A
HS D68B-5R-6	251290.50	2484007.52	N/A
HS D68B-5R-7	251254.87	2483970.83	N/A
HS D68B-5R-8	251179.52	2483937.56	N/A
HS D68B-5R-9	251199.06	2483944.27	N/A
HS D68B-5R-10	251238.67	2483958.57	N/A
HS D68B-5R-11	251157.08	2483932.76	N/A
HS D68B-5R-12	251140.48	2483928.17	N/A
HS D68B-5R-13	251168.95	2483937.95	N/A
HS D68B-5R-14	251238.29	2483956.37	N/A
HS D68B-5R-15	251251.35	2483991.18	N/A
HS D68B-5R-16	251048.04	2483899.37	1.1
HS D68B-5R-17	251149.67	2483964.30	0.6
HS D68B-5R-18	251127.99	2483938.00	0.5
HS D68B-5R-19	251067.16	2483956.58	0.5
HS D68B-5R-20	251235.82	2484005.83	N/A
HS D68B-5R-21	251262.30	2484023.24	N/A
HS D68B-5R-22	251283.02	2484014.40	N/A
HS D68B-5R-23	251214.89	2483954.05	N/A

NR = NO RECOVERY
NA = NO CORE COLLECTION REQUIRED DUE TO POLING DEPTH

OU4-D68B RDMU 5R
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 50')

50 25 0 50 100

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 7-28-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
549.00'	-	551.00'
551.00'	-	553.00'
553.00'	-	555.00'
555.00'	-	557.00'
557.00'	-	559.00'
559.00'	-	561.00'
561.00'	-	563.00'

DRAWING NOTES

1. HIGH SUBGRADE SAMPLES AND POLING DATA WERE COLLECTED ON 7-31-2018 AND LOGGED ON 7-31-2018

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OU# - D# - #
OU# = OPERABLE UNIT
D# = DREDGE AREA
= DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-4.81'	-	-1.00'	3,030.87
	-1.00'	-	-0.50'	8,714.25
	-0.50'	-	0.00'	9,096.90
ABOVE RAL	0.00'	-	0.50'	2,544.19
	0.50'	-	1.00'	677.50
	1.00'	-	1.50'	425.92
	1.50'	-	2.00'	325.99
	2.00'	-	2.50'	379.48
	2.50'	-	3.00'	278.14
	3.00'	-	3.50'	177.11
	3.50'	-	4.00'	116.34
	4.00'	-	4.41'	25.37

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D68B RDMU 5R.dwg
DRAWN BY: DAVID.FRISQUE
DATE: July 30, 2018
LAST REVISED: November 28, 2018
CHECKED BY: REG

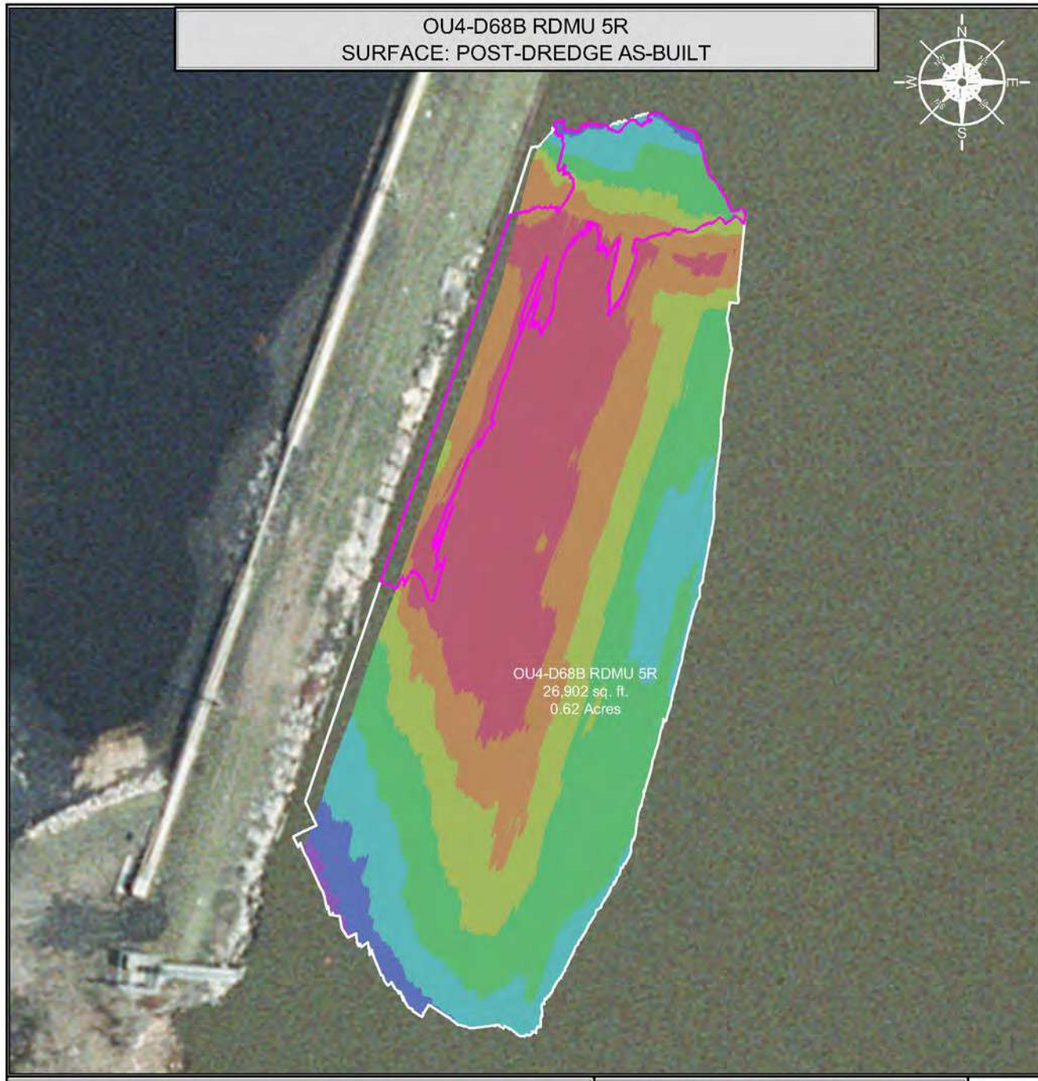
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-074

OU4-D68B RDMU 5R
1st RESIDUAL DREDGE HIGH SUBGRADE RESULTS

P:\LLOC\Drafted Engineering\Dredge Files\2018\OU4 D68B RDMU\DWG\Post Dredge\OU4 D68B RDMU 5R.dwg

OU4-D68B RDMU 5R
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

2,545.57	INITIAL RAL VOLUME
423.35	INITIAL OVERCUT VOLUME
2,968.92	RAL + OVERCUT VOLUME
2,630.07	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

2,798.53	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
432.72	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
3,231.25	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

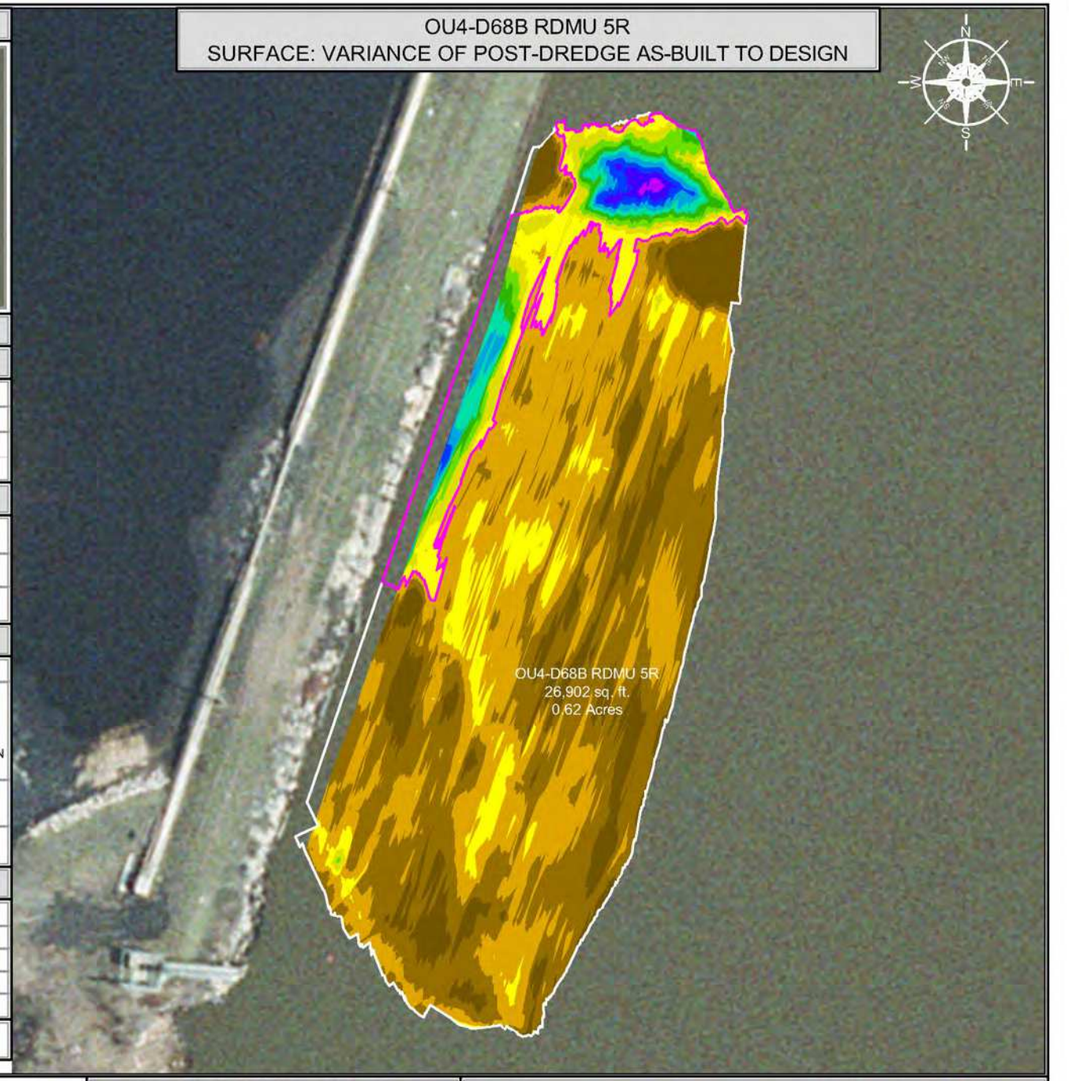
2018 AS-BUILT VOLUMES (CU. YD.)

2,172.84	TOTAL VOLUME DREDGED
2,025.53	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
167.96	CONFIRMED HIGH SUBGRADE VOLUME
8.07	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
162.82	OVERCUT VOLUME REMAINING
113.46	OVERCUT VOLUME DREDGED
33.85	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

26,902.24	AREA (SQ. FT.)
1,963.34	ABOVE DESIGN ELEVATION
20,842.02	AT OR BELOW DESIGN ELEVATION
4,096.88	CONFIRMED HIGH SUBGRADE
2.29 "	AVERAGE DEPTH OF OVERCUT [1]
93	PERCENT COMPLETE [2]

OU4-D68B RDMU 5R
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 50')

50 25 0 50 100

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 7-28-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
549.00'	-	551.00'
551.00'	-	553.00'
553.00'	-	555.00'
555.00'	-	557.00'
557.00'	-	559.00'
559.00'	-	561.00'
561.00'	-	563.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-4.81'	-	-1.00'	3,030.87
	-1.00'	-	-0.50'	8,714.25
	-0.50'	-	0.00'	9,096.90
ABOVE RAL	0.00'	-	0.50'	2,544.19
	0.50'	-	1.00'	677.50
	1.00'	-	1.50'	425.92
	1.50'	-	2.00'	325.99
	2.00'	-	2.50'	379.48
	2.50'	-	3.00'	278.14
	3.00'	-	3.50'	177.11
	3.50'	-	4.00'	116.34
	4.00'	-	4.41'	25.37

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D68B RDMU 5R.dwg
DRAWN BY: DAVID.FRISQUE
DATE: July 30, 2018
LAST REVISED: November 28, 2018
CHECKED BY: REG

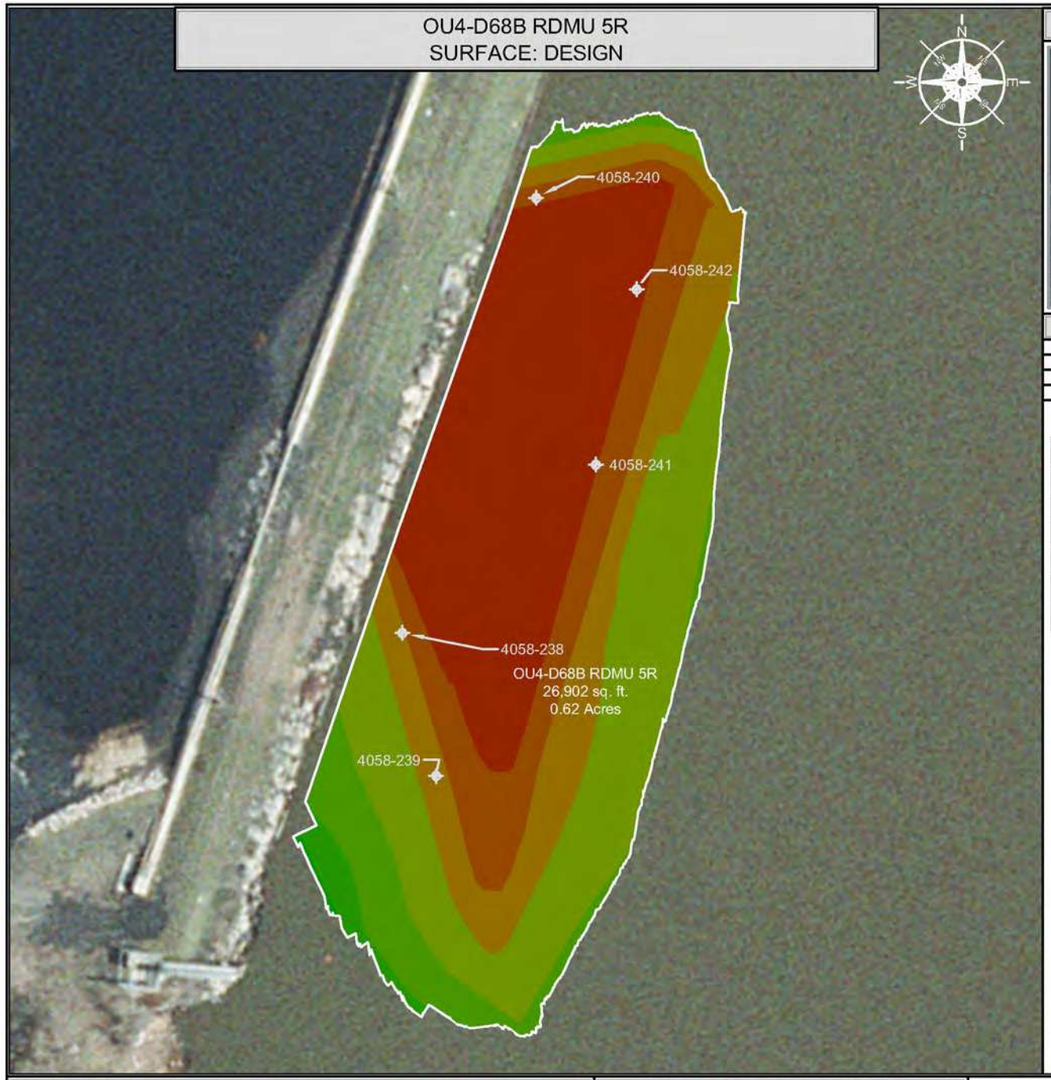
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-075

OU4-D68B RDMU 5R
1st RESIDUAL DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LLC\LD\Field Engineering\Dredge Files\2018\OU4 D68B RDMU\DWG\Post Dredge\OU4 D68B RDMU 5R.dwg

OU4-D68B RDMU 5R
SURFACE: DESIGN



INDEX MAP



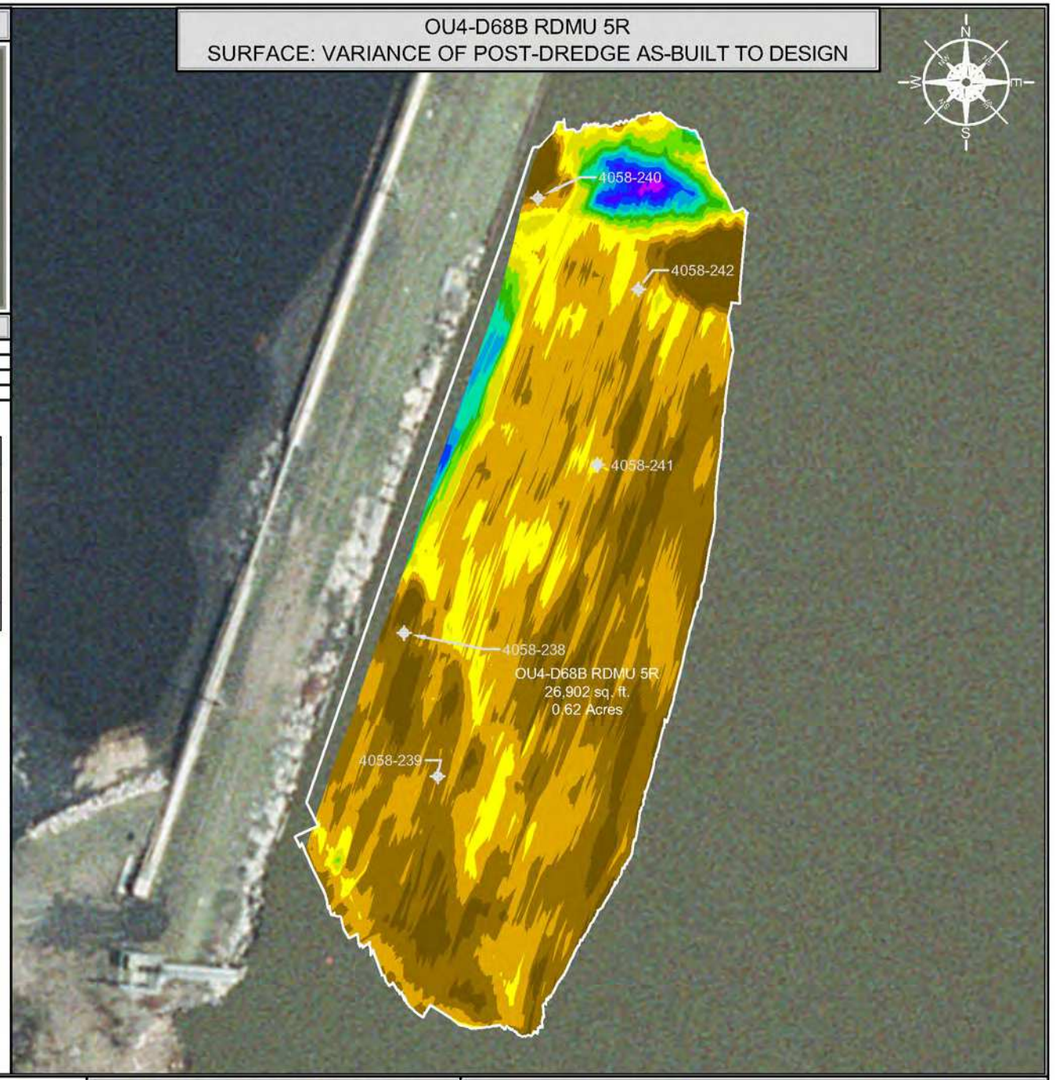
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	500 µg/kg (0.5 ppm)
0.5' - 1.0'	106 µg/kg (0.106 ppm)
1.0' - 1.5'	<25.4 µg/kg (<0.0254 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4058-242	251235.21	2483999.52
4058-241	251177.34	2483985.98
4058-240	251265.35	2483966.24
4058-239	251074.66	2483933.30
4058-238	251121.86	2483922.22

OU4-D68B RDMU 5R
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 50')

50 25 0 50 100

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 7-28-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'
562.00'	-	564.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-D68B-5-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-D68B-5-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-D68B-5-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 8-3-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF FIVE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 8-9-2018

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OU# - D# - #
OPERABLE UNIT | DREDGE AREA | DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-4.81'	-	-1.00'	3,030.87
	-1.00'	-	-0.50'	8,714.25
	-0.50'	-	0.00'	9,096.90
ABOVE RAL	0.00'	-	0.50'	2,544.19
	0.50'	-	1.00'	677.50
	1.00'	-	1.50'	425.92
	1.50'	-	2.00'	325.99
	2.00'	-	2.50'	379.48
	2.50'	-	3.00'	278.14
	3.00'	-	3.50'	177.11
	3.50'	-	4.00'	116.34
	4.00'	-	4.41'	25.37

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D68B RDMU 5R.dwg
DRAWN BY: DAVID.FRISQUE
DATE: July 30, 2018
LAST REVISED: November 28, 2018
CHECKED BY: REG

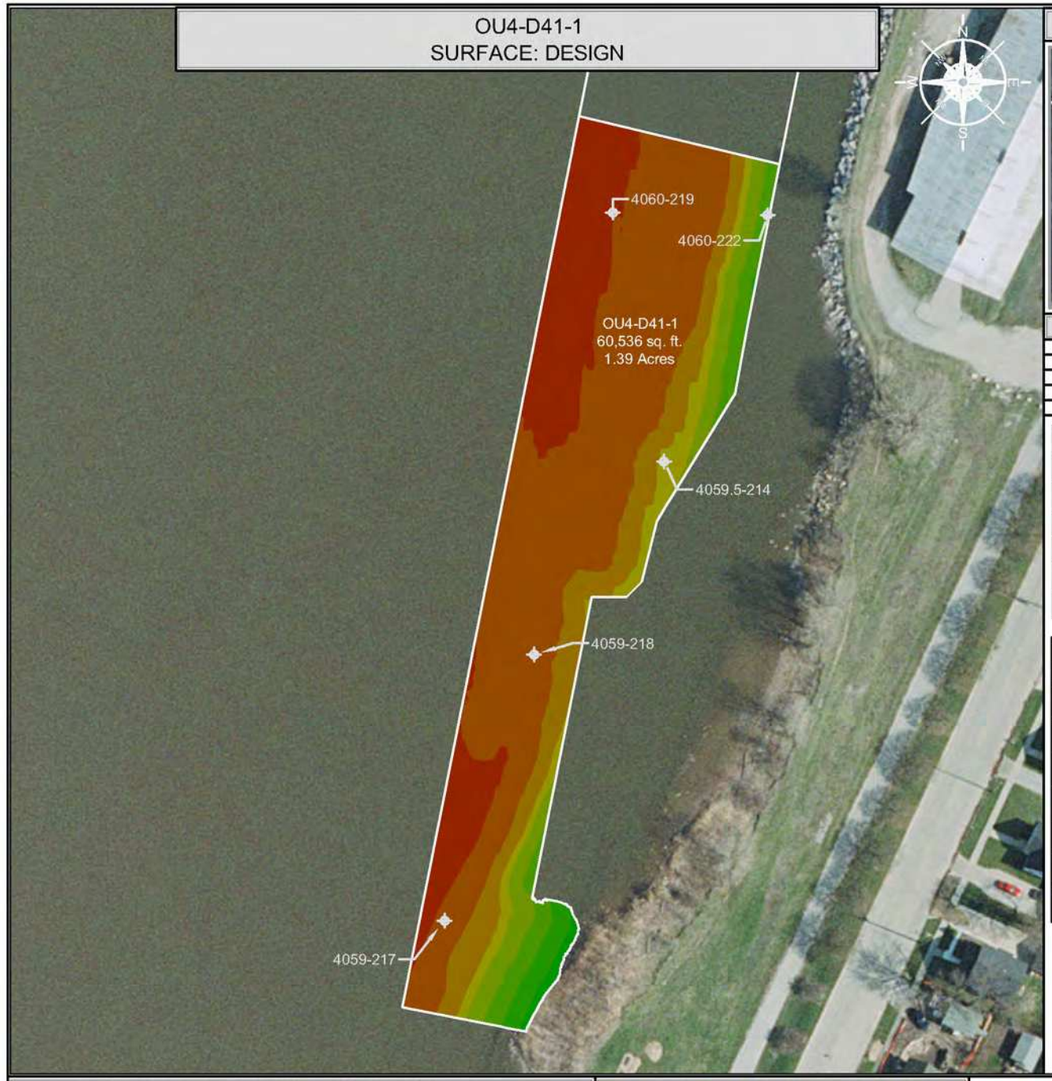
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-076

OU4-D68B RDMU 5R
1st RESIDUAL DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

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OU4-D41-1
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	1,260 µg/kg (1.26 ppm)
0.0' - 0.5'	1,300 µg/kg (1.3 ppm)
0.5' - 1.0'	1,170 µg/kg (1.17 ppm)
1.0' - 1.5'	871 µg/kg (0.871 ppm)

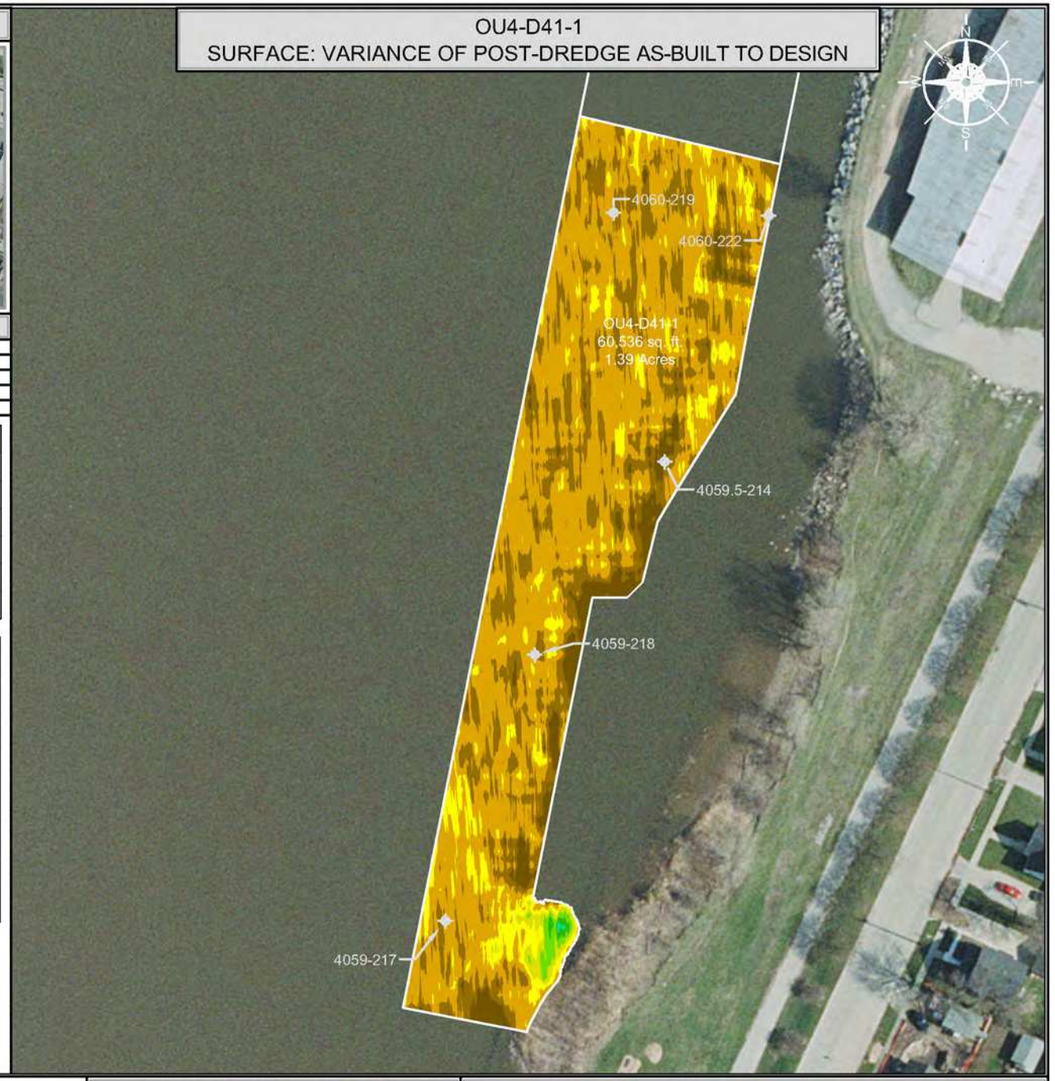
CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4059-218	251442.13	2484619.10
4059-217	251266.62	2484560.01
4059.5-214	251569.40	2484704.92
4060-222	251731.96	2484773.25
4060-219	251733.69	2484671.11

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION
4059.5-214	A: 1,270 µg/kg (1.27) ppm) D: 1,320 µg/kg (1.32) ppm) B: 1,370 µg/kg (1.37) ppm) E: 1,260 µg/kg (1.26) ppm) C: 1,460 µg/kg (1.46) ppm)
4059.5-214RVT	F: 1,430 µg/kg (1.43) ppm) J: <20 µg/kg (<0.02) ppm) G: 1,940 µg/kg (1.94) ppm) H: 2,400 µg/kg (2.4) ppm)
4059-217	A: 419 µg/kg (0.419) ppm) B: 65.5 µg/kg (0.0655) ppm)
4059-218	A: 1,270 µg/kg (1.27) ppm) DSD: 89.2 µg/kg (0.0892) ppm) RVTB: 169 µg/kg (0.169) ppm) DSC: 157 µg/kg (0.157) ppm)
4060-219	A: 1,740 µg/kg (1.74) ppm) D: 2,110 µg/kg (2.11) ppm) B: 1,260 µg/kg (1.26) ppm) E: 2,910 µg/kg (2.91) ppm) C: 586 µg/kg (0.586) ppm)
4060-219RVT	F: <20 µg/kg (<0.02) ppm) F2: <21 µg/kg (<0.021) ppm)
4060-222	A: 44.4 µg/kg (0.0444) ppm)

OU4-D41-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-16-D41-1-4059.5-214-A
2. TTFR-16-D41-1-4059.5-214-B
3. TTFR-16-D41-1-4059.5-214-C
4. TTFR-16-D41-1-4059.5-214-D
5. TTFR-16-D41-1-4059.5-214-E
6. TTFR-16-D41-1-4059.5-214RVT-F
7. TTFR-16-D41-1-4059.5-214RVT-G
8. TTFR-16-D41-1-4059.5-214RVT-H
9. TTFR-16-D41-1-4059.5-214RVT-J
10. TTFR-16-D41-1-4059-217-A
11. TTFR-16-D41-1-4059-217-B
12. TTFR-16-D41-1-4059-218-A
13. TTFR-16-D41-1-4059-218RVT-B
14. TTFR-16-D41-1-4059-218DS-C
15. TTFR-16-D41-1-4059-218DS-D
16. TTFR-16-D41-1-4060-219-A
17. TTFR-16-D41-1-4060-219-B
18. TTFR-16-D41-1-4060-219-C
19. TTFR-16-D41-1-4060-219-D
20. TTFR-16-D41-1-4060-219-E
21. TTFR-16-D41-1-4060-219RVT-F
22. TTFR-16-D41-1-4060-219RVT-F2
23. TTFR-16-D41-1-4060-222-A

SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-10-2016

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
549.00'	-	551.00'
551.00'	-	553.00'
553.00'	-	555.00'
555.00'	-	557.00'
557.00'	-	559.00'
559.00'	-	561.00'
561.00'	-	563.00'
563.00'	-	565.00'
565.00'	-	567.00'
567.00'	-	569.00'
569.00'	-	571.00'
571.00'	-	573.00'
573.00'	-	575.00'
575.00'	-	577.00'
577.00'	-	579.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-16-D41-1-A
2. 0.0' - 0.5' SAMPLE ID TTFR-16-D41-1-A2
3. 0.5' - 1.0' SAMPLE ID TTFR-16-D41-1-B
4. 1.0' - 1.5' SAMPLE ID TTFR-16-D41-1-C
5. CONFIRMATION SAMPLES WERE COLLECTED ON 7-6-2016 and 8-29-2016
6. CONFIRMATION SAMPLES ARE A COMPOSITE OF FIVE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
7. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 7-11-2016, 8-22-2016, and 9-7-2016

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OU# - D# - #
- OU# = OPERABLE UNIT
- D# = DREDGE AREA
- # = DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-3.05'	-	-1.00'	3,420.47
BELOW RAL	-1.00'	-	-0.50'	15,233.93
BELOW RAL	-0.50'	-	0.00'	35,444.12
ABOVE RAL	0.00'	-	0.50'	5,267.77
ABOVE RAL	0.50'	-	1.00'	600.38
ABOVE RAL	1.00'	-	1.50'	374.76
ABOVE RAL	1.50'	-	2.00'	103.29
ABOVE RAL	2.00'	-	2.40'	17.97

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D41-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 14, 2016
LAST REVISED: November 28, 2018
CHECKED BY: REG

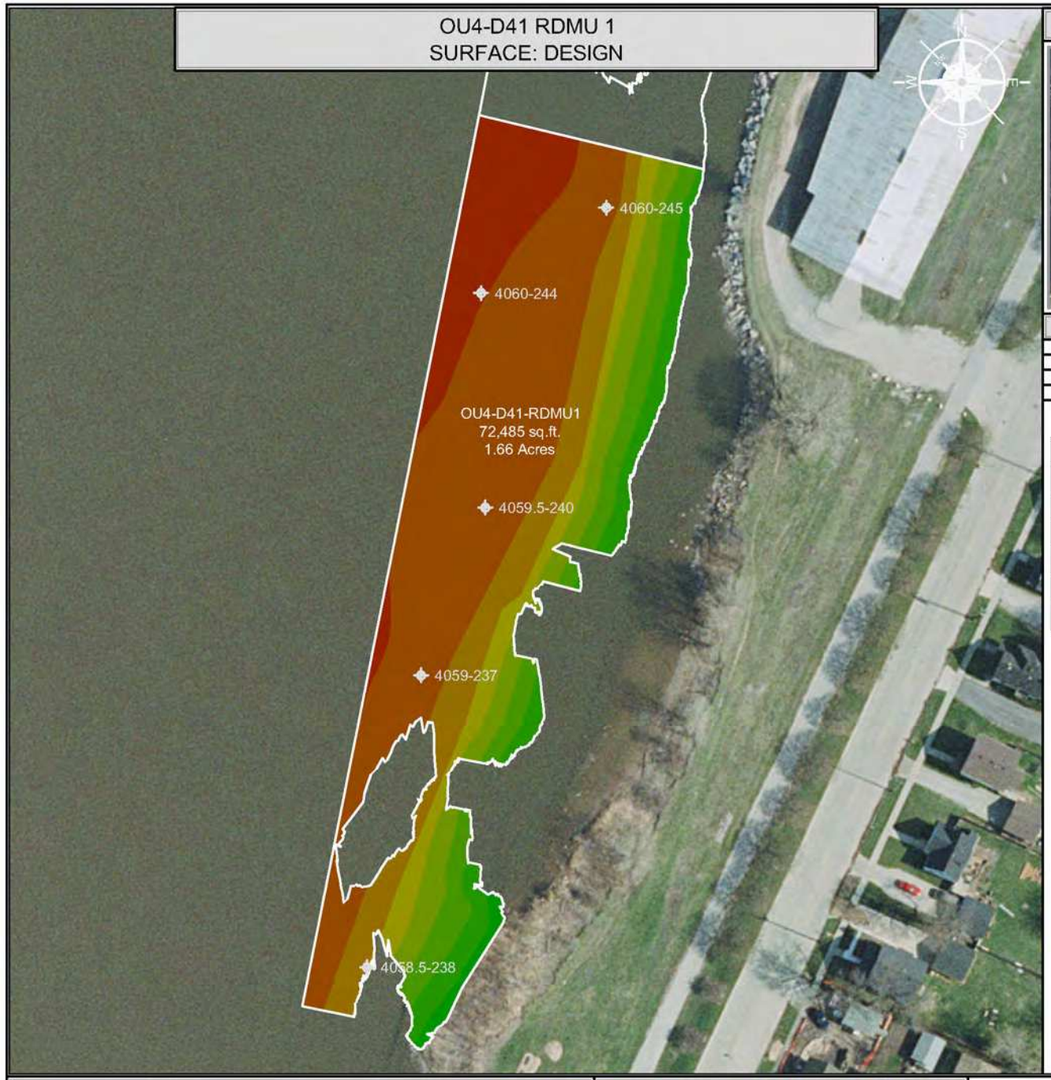
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-077

OU4-D41-1
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

P:\LLC\CAD\Field Engineering\Dredge Files\2016\OU4 D41\DWG\Post Dredge\OU4 D41-1.dwg

OU4-D41 RDMU 1
SURFACE: DESIGN



INDEX MAP



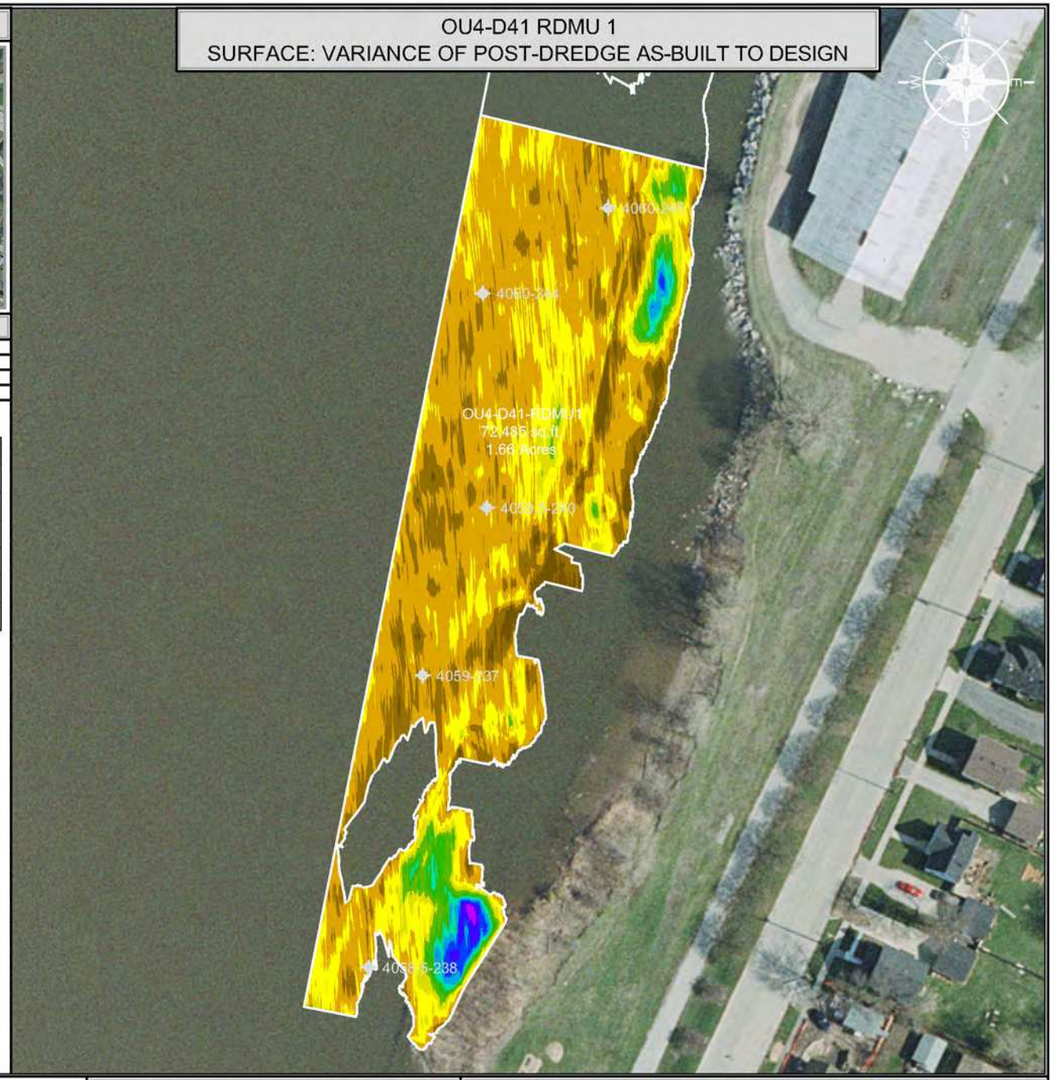
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	243 µg/kg (0.243 ppm)
0.5' - 1.0'	45.1 µg/kg (0.0451 ppm)
1.0' - 1.5'	<25.4 µg/kg (<0.0254 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4058.5-238	251235.37	2484574.86
4059-237	251427.89	2484610.61
4059.5-240	251538.54	2484652.86
4060-245	251736.31	2484732.77
4060-244	251679.92	2484650.07

OU4-D41 RDMU 1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-12-2017

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
547.00'	-	549.00'
549.00'	-	551.00'
551.00'	-	553.00'
553.00'	-	555.00'
555.00'	-	557.00'
557.00'	-	559.00'
559.00'	-	561.00'
561.00'	-	563.00'
563.00'	-	565.00'
565.00'	-	567.00'
567.00'	-	569.00'
569.00'	-	571.00'
571.00'	-	573.00'
573.00'	-	575.00'
575.00'	-	577.00'
577.00'	-	579.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-D41-1-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-D41-1-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-D41-1-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 7-18-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF FIVE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 7-24-2018

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OU# - D# - #

- OU# — OPERABLE UNIT
- D# — DREDGE AREA
- # — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.26'	-	-1.00'	1,703.90
BELOW RAL	-1.00'	-	-0.50'	10,520.87
BELOW RAL	-0.50'	-	0.00'	34,923.86
ABOVE RAL	0.00'	-	0.50'	13,540.87
ABOVE RAL	0.50'	-	1.00'	2,813.93
ABOVE RAL	1.00'	-	1.50'	1,753.50
ABOVE RAL	1.50'	-	2.00'	1,372.80
ABOVE RAL	2.00'	-	2.50'	762.19
ABOVE RAL	2.50'	-	3.00'	562.32
ABOVE RAL	3.00'	-	3.50'	446.80
ABOVE RAL	3.50'	-	4.00'	273.95
ABOVE RAL	4.00'	-	4.50'	61.05
ABOVE RAL	4.50'	-	4.60'	0.37

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D41 RDMU 1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: September 7, 2017
LAST REVISED: November 28, 2018
CHECKED BY: REG

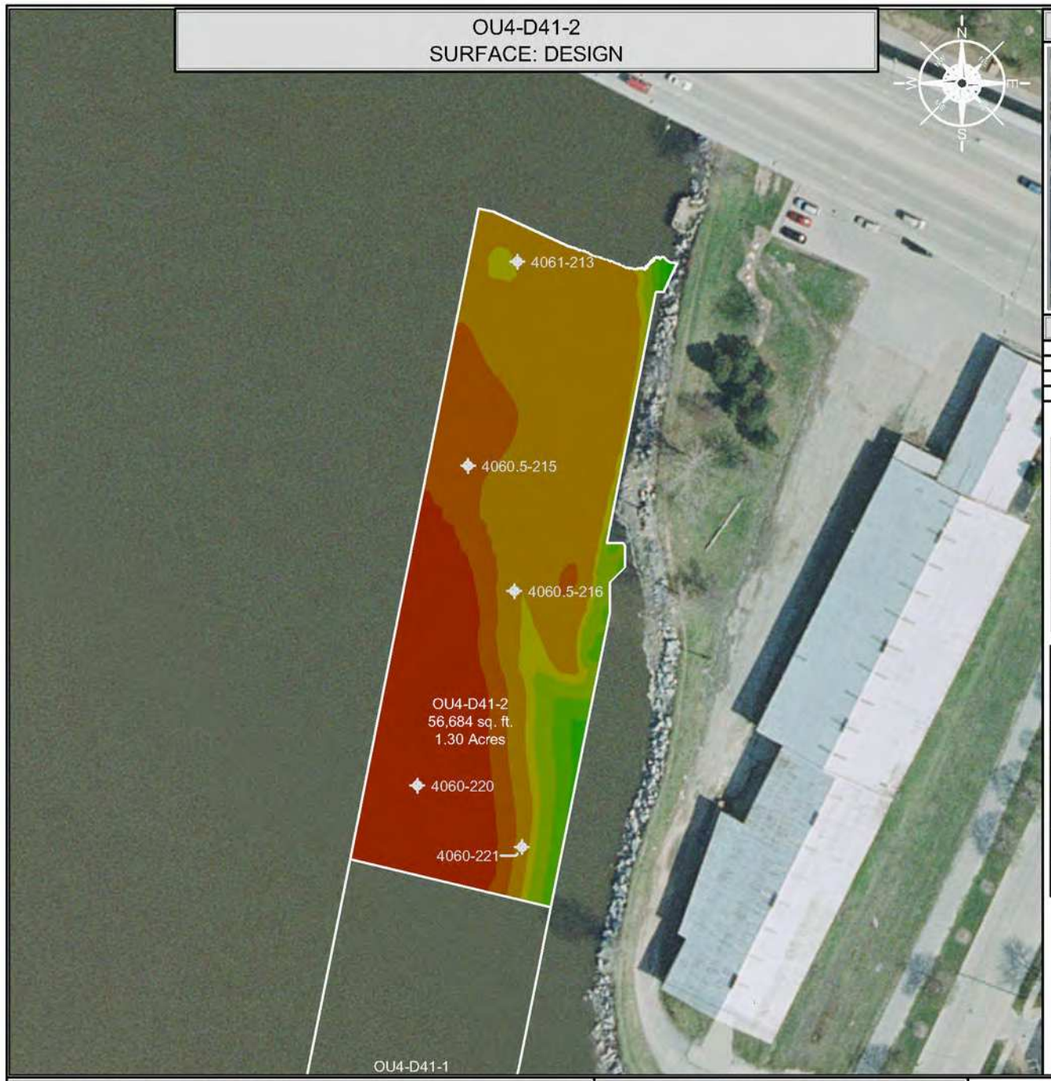
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-078

OU4-D41 RDMU 1
1st RESIDUAL DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

P:\LLOC\Drafted Engineering\Design Files\2017\OU4-D41 RDMU\DWG\Post Dredge\OU4-D41 RDMU 1.dwg

OU4-D41-2
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	1,750 µg/kg (1.75 ppm)
0.5' - 1.0'	1,560 µg/kg (1.56 ppm)
1.0' - 1.5'	875 µg/kg (0.875 ppm)

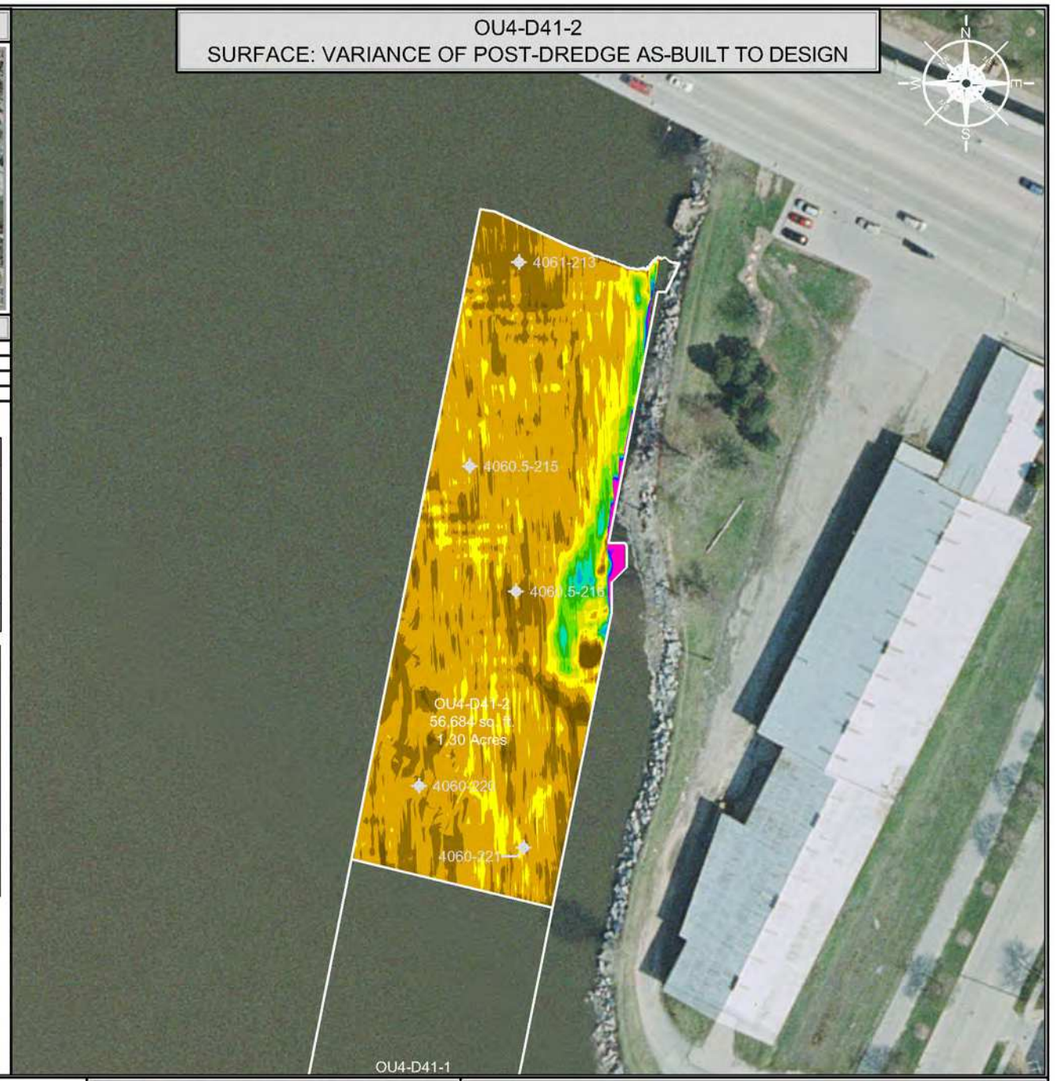
CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4060-221	251805.32	2484762.04
4060-220	251845.91	2484693.02
4060.5-216	251974.16	2484757.10
4060.5-215	252056.78	2484726.59
4061-213	252191.39	2484759.12

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION
4060.5-215	A: 4,180 µg/kg (4.18) ppm) D: 72.1 µg/kg (0.0721) ppm) B: 1,330 µg/kg (1.33) ppm) C: 470 µg/kg (0.47) ppm)
4060.5-216	A: 1,070 µg/kg (1.07) ppm) D: 1,540 µg/kg (1.54) ppm) B: 2,720 µg/kg (2.72) ppm) E: 2,730 µg/kg (2.73) ppm) C: 633 µg/kg (0.633) ppm)
4060.5-216RVT	F: 494 µg/kg (0.494) ppm) F2: 544 µg/kg (0.544) ppm)
4060-220	A: 1,490 µg/kg (1.49) ppm) D: 489 µg/kg (0.489) ppm) B: 1,480 µg/kg (1.48) ppm) C: 1,670 µg/kg (1.67) ppm)
4060-221	A: 256 µg/kg (0.256) ppm) B: 270 µg/kg (0.27) ppm) C: 25.3 µg/kg (0.0253) ppm)
4061-213	A: <25.1 µg/kg (<0.0251) ppm) B: <25.1 µg/kg (<0.0251) ppm)

OU4-D41-2
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-16-D41-2-4060.5-215-A
2. TTFR-16-D41-2-4060.5-215-B
3. TTFR-16-D41-2-4060.5-215-C
4. TTFR-16-D41-2-4060.5-215-D
5. TTFR-16-D41-2-4060.5-216-A
6. TTFR-16-D41-2-4060.5-216-B
7. TTFR-16-D41-2-4060.5-216-C
8. TTFR-16-D41-2-4060.5-216-D
9. TTFR-16-D41-2-4060.5-216-E
10. TTFR-16-D41-2-4060.5-216RVT-F
11. TTFR-16-D41-2-4060.5-216RVT-F2
12. TTFR-16-D41-2-4060-220-A
13. TTFR-16-D41-2-4060-220-B
14. TTFR-16-D41-2-4060-220-C
15. TTFR-16-D41-2-4060-220-D
16. TTFR-16-D41-2-4060-221-A
17. TTFR-16-D41-2-4060-221-B
18. TTFR-16-D41-2-4060-221-C
19. TTFR-16-D41-2-4061-213-A
20. TTFR-16-D41-2-4061-213-B

SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-9-2016

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'
562.00'	-	564.00'
564.00'	-	566.00'
566.00'	-	568.00'
568.00'	-	570.00'
570.00'	-	572.00'
572.00'	-	574.00'
574.00'	-	576.00'
576.00'	-	578.00'
578.00'	-	580.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-16-D41-2-A
2. 0.5' - 1.0' SAMPLE ID TTFR-16-D41-2-B
3. 1.0' - 1.5' SAMPLE ID TTFR-16-D41-2-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 7-15-2016 and 8-29-2016
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF FIVE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 7-20-2016, 8-22-2016, and 9-7-2016

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OU# - D# - #
OPERABLE UNIT / DREDGE AREA / DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-4.94'	-	-1.00'	862.81
BELOW RAL	-1.00'	-	-0.50'	11,787.22
BELOW RAL	-0.50'	-	0.00'	33,782.94
ABOVE RAL	0.00'	-	0.50'	5,312.21
ABOVE RAL	0.50'	-	1.00'	1,318.76
ABOVE RAL	1.00'	-	1.50'	1,322.59
ABOVE RAL	1.50'	-	2.00'	883.16
ABOVE RAL	2.00'	-	2.50'	427.68
ABOVE RAL	2.50'	-	3.00'	105.60
ABOVE RAL	3.00'	-	3.50'	51.41
ABOVE RAL	3.50'	-	4.00'	46.32
ABOVE RAL	4.00'	-	4.50'	43.89
ABOVE RAL	4.50'	-	12.60'	363.52

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D41-2.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 10, 2016
LAST REVISED: November 28, 2018
CHECKED BY: REG

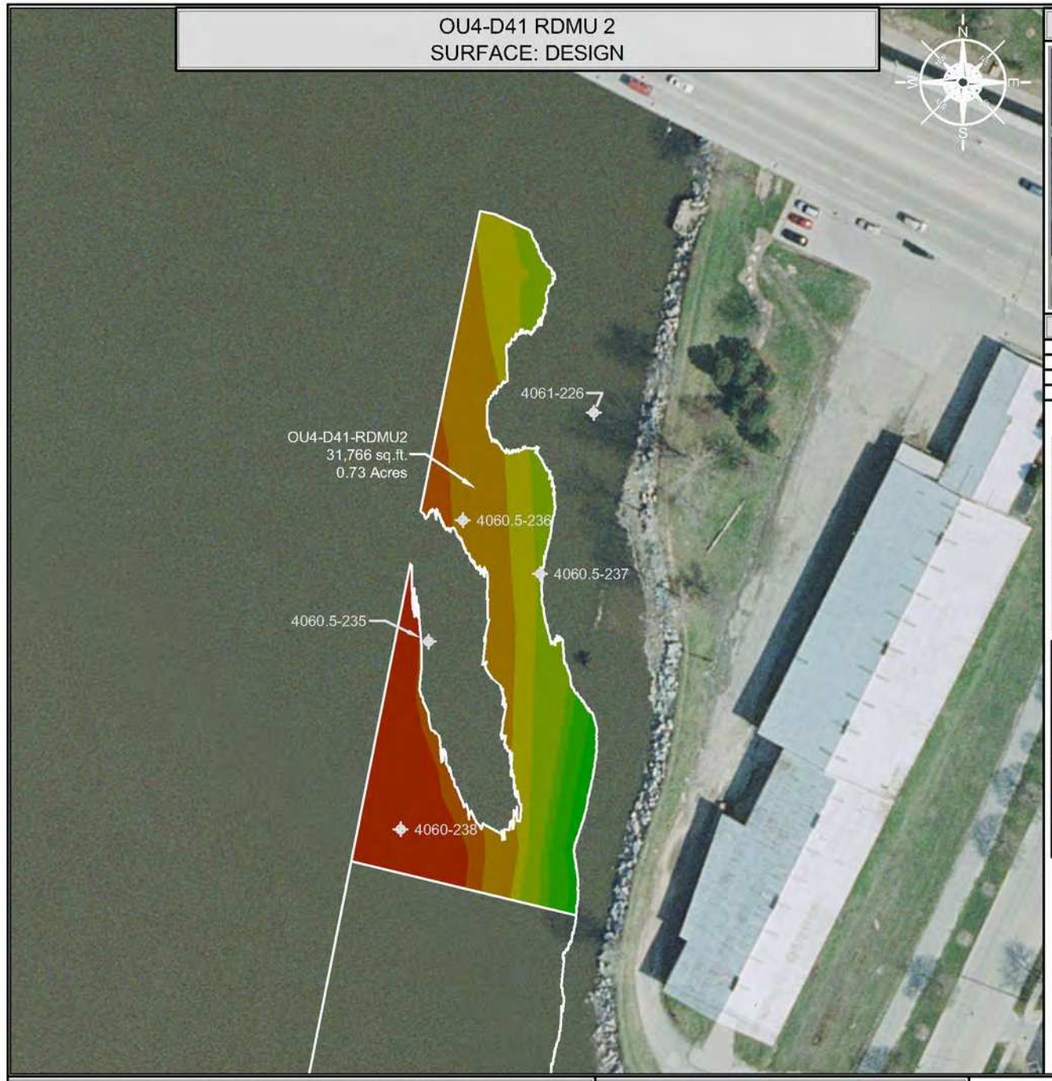
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-079

OU4-D41-2
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

P:\LLC\CAD\Field Engineering\Dredge Files\2016\OU4 D41\2D\WG\Post Dredge\OU4 D41-2.dwg

OU4-D41 RDMU 2
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	1,600 µg/kg (1.6 ppm)
0.5' - 1.0'	1,520 µg/kg (1.52 ppm)
1.0' - 1.5'	2,390 µg/kg (2.39 ppm)

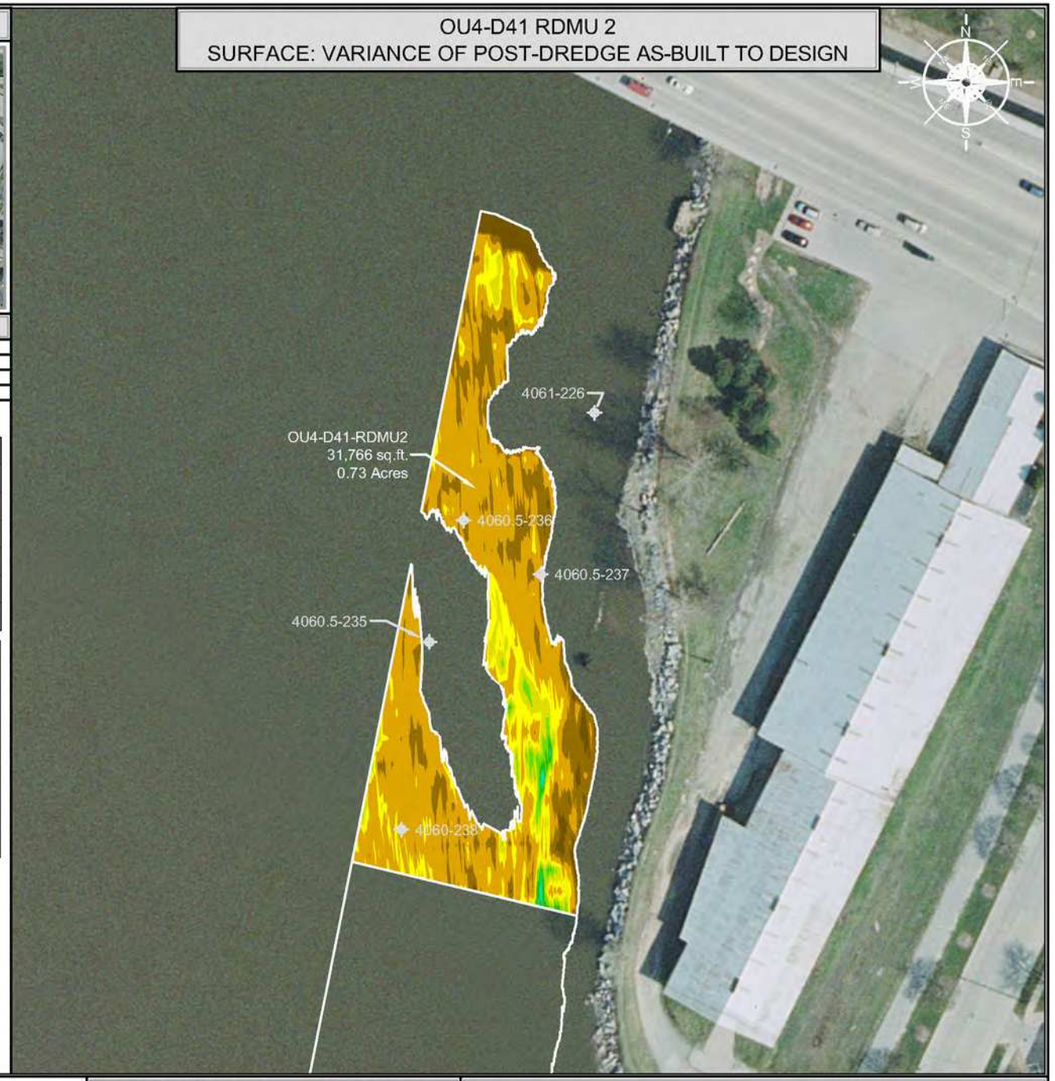
CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4060-238	251818.69	2484681.27
4060.5-237	251987.14	2484773.12
4060.5-236	252022.64	2484722.21
4060.5-235	251942.48	2484699.70
4061-226	252093.45	2484808.61

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION
4060.5-235	A: 1,260 µg/kg (1.26) ppm) B: 861 µg/kg (0.861) ppm) C: <25.3 µg/kg (<0.0253) ppm)
4060.5-236	A: 78.1 µg/kg (0.0781) ppm) D: <25.4 µg/kg (<0.0254) ppm) B: <25.3 µg/kg (<0.0253) ppm) C: <25.5 µg/kg (<0.0255) ppm)
4060.5-237	A: 1,070 µg/kg (1.07) ppm) B: 1,040 µg/kg (1.04) ppm) C: 4,590 µg/kg (4.59) ppm)
4060-238	A: 756 µg/kg (0.756) ppm) B: 77.4 µg/kg (0.0774) ppm) C: <25.4 µg/kg (<0.0254) ppm)
4061-226	A: 967 µg/kg (0.967) ppm) B: 1,850 µg/kg (1.85) ppm) C: 256 µg/kg (0.256) ppm)

OU4-D41 RDMU 2
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-17-D41-2-4060.5-235-A
2. TTFR-17-D41-2-4060.5-235-B
3. TTFR-17-D41-2-4060.5-235-C
4. TTFR-17-D41-2-4060.5-236-A
5. TTFR-17-D41-2-4060.5-236-B
6. TTFR-17-D41-2-4060.5-236-C
7. TTFR-17-D41-2-4060.5-236-D
8. TTFR-17-D41-2-4060.5-237-A
9. TTFR-17-D41-2-4060.5-237-B
10. TTFR-17-D41-2-4060.5-237-C
11. TTFR-17-D41-2-4060-238-A
12. TTFR-17-D41-2-4060-238-B
13. TTFR-17-D41-2-4060-238-C
14. TTFR-17-D41-2-4061-226-A
15. TTFR-17-D41-2-4061-226-B
16. TTFR-17-D41-2-4061-226-C

SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 8-30-2017

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
548.00'	-	550.00'
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'
562.00'	-	564.00'
564.00'	-	566.00'
566.00'	-	568.00'
568.00'	-	570.00'
570.00'	-	572.00'
572.00'	-	574.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-17-D41-2-A
2. 0.5' - 1.0' SAMPLE ID TTFR-17-D41-2-B
3. 1.0' - 1.5' SAMPLE ID TTFR-17-D41-2-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 10-12-2017
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF FIVE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 10-19-2017 and 10-25-2017

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OU# - D# - #
- OU# = OPERABLE UNIT
- D# = DREDGE AREA
- # = DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-6.59'	-	-1.00'	1,167.24
BELOW RAL	-1.00'	-	-0.50'	6,145.31
BELOW RAL	-0.50'	-	0.00'	18,242.91
ABOVE RAL	0.00'	-	0.25'	3,679.57
ABOVE RAL	0.25'	-	0.50'	1,717.67
ABOVE RAL	0.50'	-	0.75'	556.18
ABOVE RAL	0.75'	-	1.00'	188.38
ABOVE RAL	1.00'	-	1.30'	69.17

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D41 RDMU 2.dwg
DRAWN BY: DAVID.FRISQUE
DATE: August 31, 2017
LAST REVISED: November 28, 2018
CHECKED BY: REG

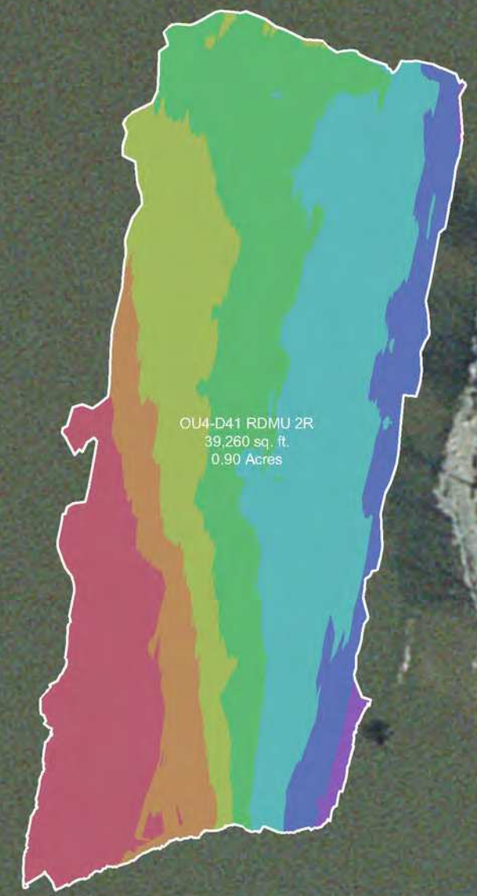
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-080

OU4-D41 RDMU 2
1st RESIDUAL DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

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OU4-D41 RDMU 2R
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

1,071.75	INITIAL RAL VOLUME
582.51	INITIAL OVERCUT VOLUME
1,654.26	RAL + OVERCUT VOLUME
1,407.49	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

1,530.50	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
718.17	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
2,248.67	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

2018 AS-BUILT VOLUMES (CU. YD.)

2,097.88	TOTAL VOLUME DREDGED
1,515.46	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
13.66	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
233.11	OVERCUT VOLUME REMAINING
484.47	OVERCUT VOLUME DREDGED
97.95	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

39,260.06	AREA (SQ. FT.)
3,185.66	ABOVE DESIGN ELEVATION
36,074.40	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
5.23 "	AVERAGE DEPTH OF OVERCUT [1]
92	PERCENT COMPLETE [2]

OU4-D41 RDMU 2R
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-22-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
549.00'	-	551.00'
551.00'	-	553.00'
553.00'	-	555.00'
555.00'	-	557.00'
557.00'	-	559.00'
559.00'	-	561.00'
561.00'	-	563.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.68'	-	-1.00'	568.79
	-1.00'	-	-0.50'	13,896.90
	-0.50'	-	0.00'	21,608.71
ABOVE RAL	0.00'	-	0.25'	2,856.75
	0.25'	-	0.50'	299.86
	0.50'	-	0.75'	27.46
	0.75'	-	0.84'	1.59

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D41 RDMU 2R.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 25, 2018
LAST REVISED: November 28, 2018
CHECKED BY: REG

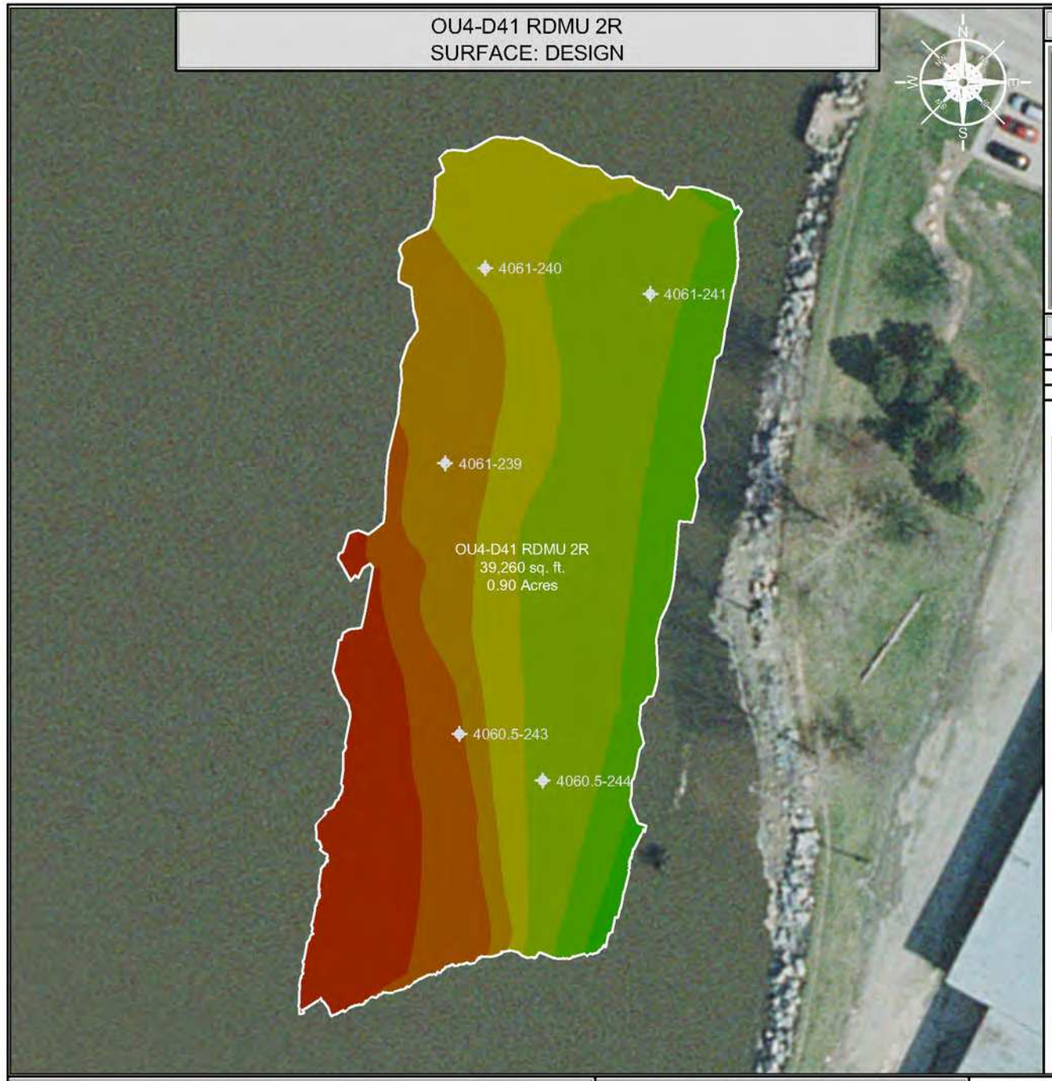
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-081

OU4-D41 RDMU 2R
2nd RESIDUAL DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LLC\CAD\Field Engineering\Dredge Files\2018\OU4-D41 RDMU\DWG\Post Dredge\OU4-D41 RDMU 2R.dwg

OU4-D41 RDMU 2R
SURFACE: DESIGN



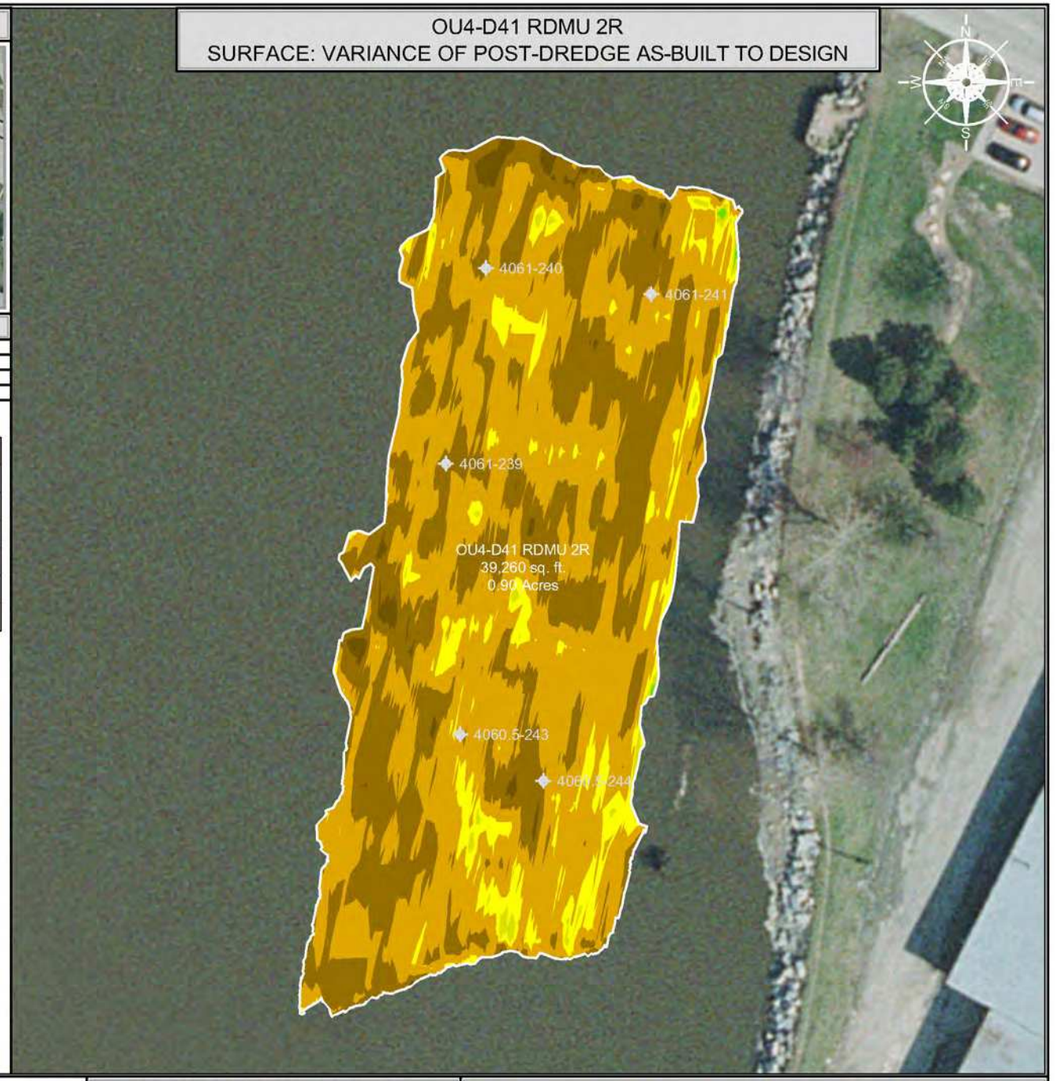
INDEX MAP



CONFIRMATION SAMPLE RESULTS	
INTERVAL	CONCENTRATION
0.0' - 0.5'	815 µg/kg (0.815 ppm)
0.5' - 1.0'	166 µg/kg (0.166 ppm)
1.0' - 1.5'	41.0 µg/kg (0.041 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS		
SAMPLE ID	NORTHING	EASTING
4060.5-244	251961.83	2484756.74
4060.5-243	251980.26	2484723.84
4061-241	252154.43	2484799.46
4061-240	252164.67	2484734.05
4061-239	252087.32	2484718.19

OU4-D41 RDMU 2R
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-22-2018

DESIGN COLOR LEGEND

	MIN. EL.		MAX. EL.
	549.00'	-	551.00'
	551.00'	-	553.00'
	553.00'	-	555.00'
	555.00'	-	557.00'
	557.00'	-	559.00'
	559.00'	-	561.00'
	561.00'	-	563.00'
	563.00'	-	565.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-D41-2-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-D41-2-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-D41-2-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 8-16-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF FIVE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 8-21-2016

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

		MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL		-1.68'	-	-1.00'	568.79
		-1.00'	-	-0.50'	13,896.90
		-0.50'	-	0.00'	21,608.71
ABOVE RAL		0.00'	-	0.25'	2,856.75
		0.25'	-	0.50'	299.86
		0.50'	-	0.75'	27.46
		0.75'	-	0.84'	1.59

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

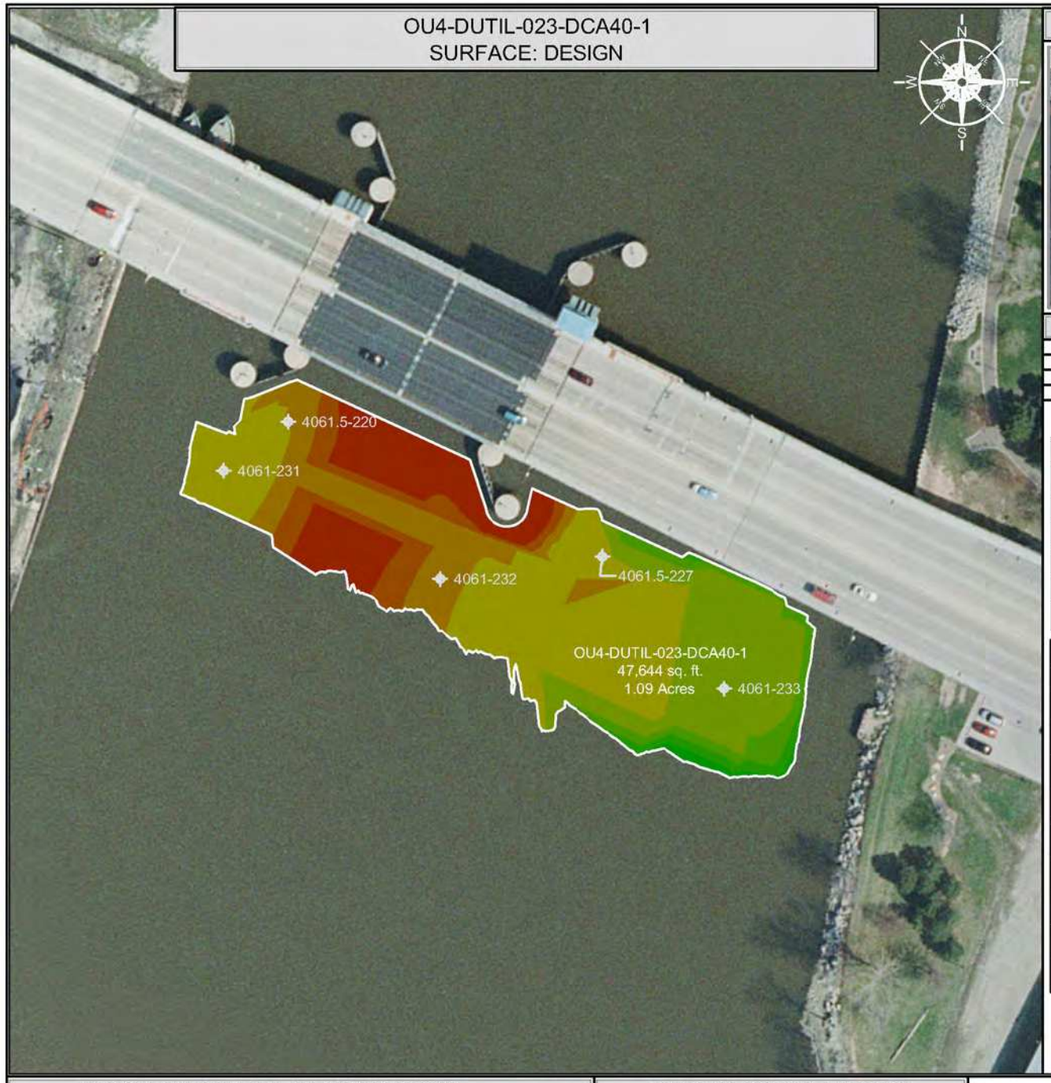
CAD FILE: OU4-D41 RDMU 2R.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 25, 2018
LAST REVISED: November 28, 2018
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-082

OU4-D41 RDMU 2R
2nd RESIDUAL DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LOC\ADH\Fld Eng\eng\3Dredge Files\2018\OU4 D41 RDMU\DWG\Post Dredge\OU4 D41 RDMU 2R.dwg



INDEX MAP



CONFIRMATION SAMPLE RESULTS

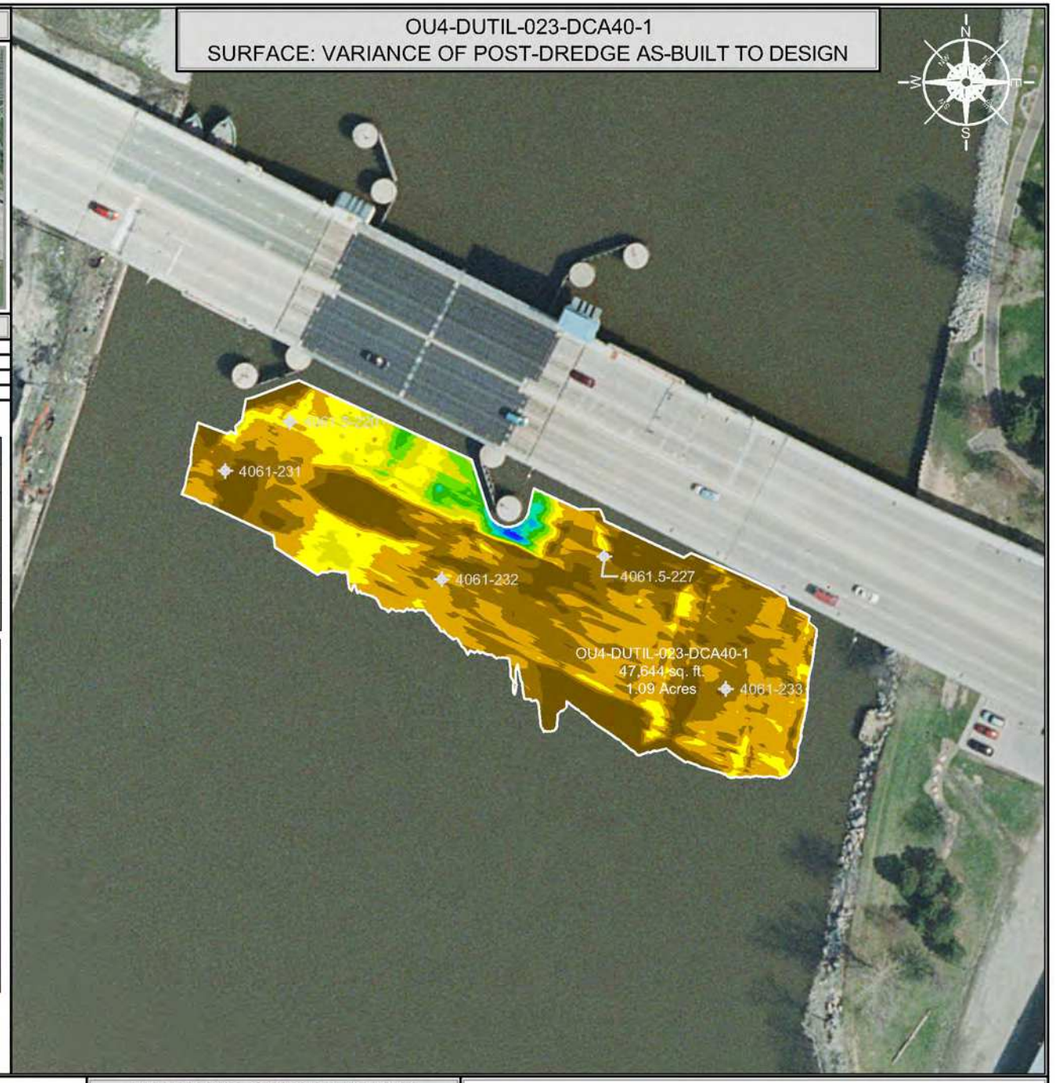
INTERVAL	CONCENTRATION
0.0' - 0.5'	4,880 µg/kg (4.88 ppm)
0.5' - 1.0'	5,000 µg/kg (5 ppm)
1.0' - 1.5'	6,910 µg/kg (6.91 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4061-233	252247.18	2484773.08
4061-232	252319.51	2484585.55
4061-231	252390.89	2484442.84
4061.5-227	252334.21	2484692.68
4061.5-220	252423.31	2484485.37

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION
4061-231	A: 8,730 µg/kg (8.73) ppm) D: 3,850 µg/kg (3.85) ppm) B: 11,500 µg/kg (11.5) ppm) E: 8,040 µg/kg (8.04) ppm) C: 14,900 µg/kg (14.9) ppm)
4061-231RVT	G: <25.2 µg/kg (<0.0252) ppm) H: <25.2 µg/kg (<0.0252) ppm)
4061-232	A: 350 µg/kg (0.35) ppm) B: 300 µg/kg (0.3) ppm) C: <25.2 µg/kg (<0.0252) ppm)
4061-233	A: 2,840 µg/kg (2.84) ppm) D: 12,100 µg/kg (12.1) ppm) B: 6,930 µg/kg (6.93) ppm) C: 6,960 µg/kg (6.96) ppm)
4061-233RVT	E: 13,000 µg/kg (13) ppm) G: 4,650 µg/kg (4.65) ppm) F: 13,600 µg/kg (13.6) ppm) H: 4,030 µg/kg (4.03) ppm) F2: 10,100 µg/kg (10.1) ppm)
4061-233RVT	J: 1,530 µg/kg (1.53) ppm) K: 559 µg/kg (0.559) ppm)
4061.5-220	A: 8,300 µg/kg (8.3) ppm) D: 302 µg/kg (0.302) ppm) B: 952 µg/kg (0.952) ppm) E: 51.8 µg/kg (0.0518) ppm) C: 150 µg/kg (0.15) ppm)
4061.5-227	A: 2,840 µg/kg (2.84) ppm) D: 7,900 µg/kg (7.9) ppm) B: 4,030 µg/kg (4.03) ppm) C: 15,000 µg/kg (15) ppm)
4061.5-227RVT	E: 6,250 µg/kg (6.25) ppm) G: 4,380 µg/kg (4.38) ppm) F: 2,500 µg/kg (2.5) ppm) F2: 2,750 µg/kg (2.75) ppm)



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-17-DUTIL-023-DCA40-1-4061-231-A
2. TTFR-17-DUTIL-023-DCA40-1-4061-231-B
3. TTFR-17-DUTIL-023-DCA40-1-4061-231-C
4. TTFR-17-DUTIL-023-DCA40-1-4061-231-D
5. TTFR-17-DUTIL-023-DCA40-1-4061-231-E
6. TTFR-17-DUTIL-023-DCA40-1-4061-231RVT-G
7. TTFR-17-DUTIL-023-DCA40-1-4061-231RVT-H
8. TTFR-17-DUTIL-023-DCA40-1-4061-232-A
9. TTFR-17-DUTIL-023-DCA40-1-4061-232-B
10. TTFR-17-DUTIL-023-DCA40-1-4061-232-C
11. TTFR-17-DUTIL-023-DCA40-1-4061-233-A
12. TTFR-17-DUTIL-023-DCA40-1-4061-233-B
13. TTFR-17-DUTIL-023-DCA40-1-4061-233-C
14. TTFR-17-DUTIL-023-DCA40-1-4061-233-D
15. TTFR-17-DUTIL-023-DCA40-1-4061-233RVT-E
16. TTFR-17-DUTIL-023-DCA40-1-4061-233RVT-F
17. TTFR-17-DUTIL-023-DCA40-1-4061-233RVT-F2
18. TTFR-17-DUTIL-023-DCA40-1-4061-233RVT-G
19. TTFR-17-DUTIL-023-DCA40-1-4061-233RVT-H
20. TTFR-17-DUTIL-023-DCA40-1-4061-233RVT-J
21. TTFR-17-DUTIL-023-DCA40-1-4061-233RVT-K
22. TTFR-17-DUTIL-023-DCA40-1-4061.5-220-A
23. TTFR-17-DUTIL-023-DCA40-1-4061.5-220-B
24. TTFR-17-DUTIL-023-DCA40-1-4061.5-220-C
25. TTFR-17-DUTIL-023-DCA40-1-4061.5-220-D
26. TTFR-17-DUTIL-023-DCA40-1-4061.5-220-E
27. TTFR-17-DUTIL-023-DCA40-1-4061.5-227-A
28. TTFR-17-DUTIL-023-DCA40-1-4061.5-227-B
29. TTFR-17-DUTIL-023-DCA40-1-4061.5-227-C
30. TTFR-17-DUTIL-023-DCA40-1-4061.5-227-D
31. TTFR-17-DUTIL-023-DCA40-1-4061.5-227RVT-E
32. TTFR-17-DUTIL-023-DCA40-1-4061.5-227RVT-F
33. TTFR-17-DUTIL-023-DCA40-1-4061.5-227RVT-F2
34. TTFR-17-DUTIL-023-DCA40-1-4061.5-227RVT-G

SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-30-2017

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
541.00'	-	543.00'
543.00'	-	545.00'
545.00'	-	547.00'
547.00'	-	549.00'
549.00'	-	551.00'
551.00'	-	553.00'
553.00'	-	555.00'
555.00'	-	557.00'
557.00'	-	559.00'
559.00'	-	561.00'
561.00'	-	563.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-17-DUTIL-023-DCA40-1-A
2. 0.5' - 1.0' SAMPLE ID TTFR-17-DUTIL-023-DCA40-1-B
3. 1.0' - 1.5' SAMPLE ID TTFR-17-DUTIL-023-DCA40-1-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 10-18-2017 and 11-2-2017
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF FIVE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 10-25-2017, 10-30-2017, and 11-7-2017

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OU# - D# - #

- OU# — OPERABLE UNIT
- D# — DREDGE AREA
- # — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-7.97'	-	-1.00'	8,656.43
BELOW RAL	-1.00'	-	-0.50'	15,414.99
BELOW RAL	-0.50'	-	0.00'	14,404.89
ABOVE RAL	0.00'	-	0.50'	5,263.78
ABOVE RAL	0.50'	-	1.00'	1,884.39
ABOVE RAL	1.00'	-	1.50'	975.47
ABOVE RAL	1.50'	-	2.00'	621.45
ABOVE RAL	2.00'	-	2.50'	235.77
ABOVE RAL	2.50'	-	3.00'	132.03
ABOVE RAL	3.00'	-	3.50'	44.67
ABOVE RAL	3.50'	-	3.70'	10.22

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
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CAD FILE: OU4-DUTIL-023-DCA40-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: September 19, 2017
LAST REVISED: November 29, 2018
CHECKED BY: REG

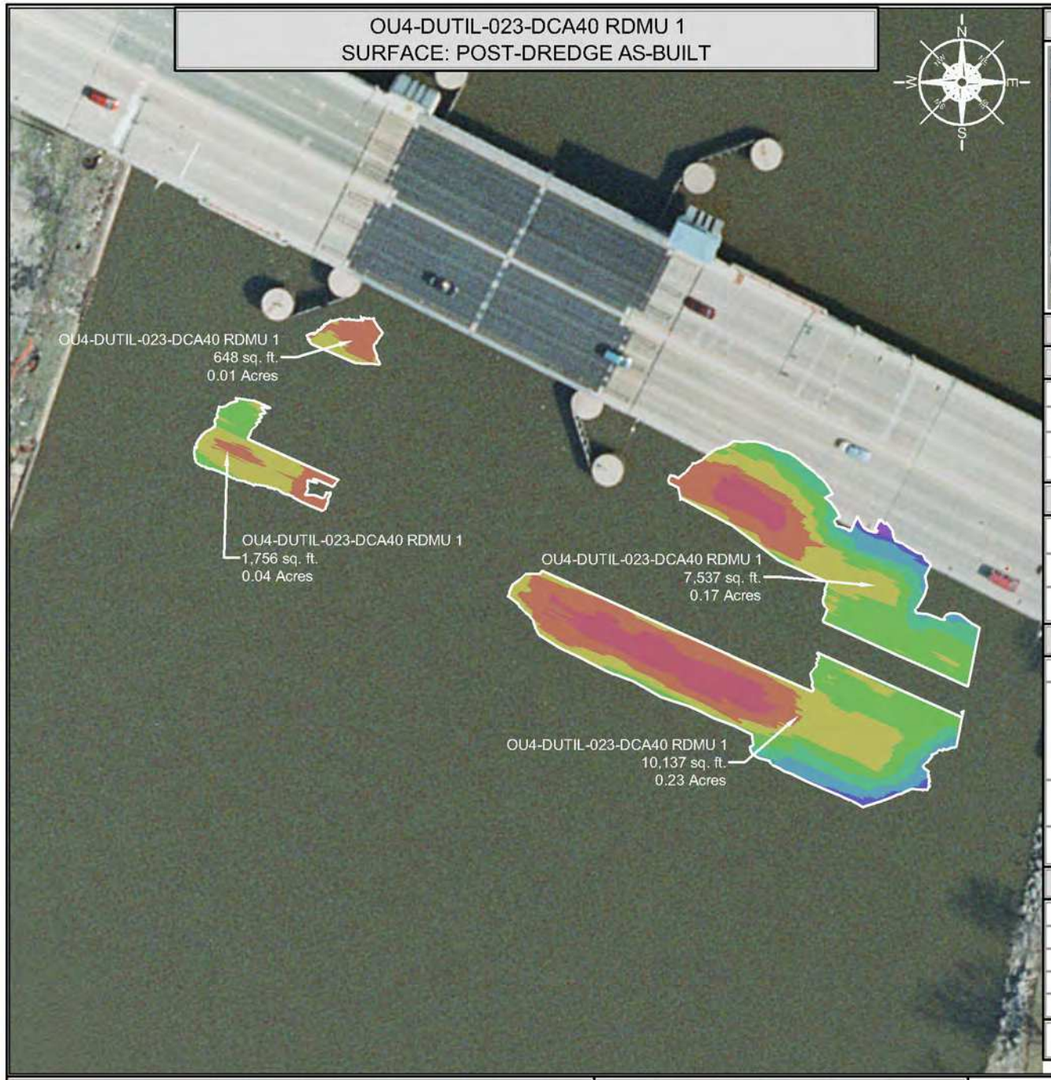
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-083

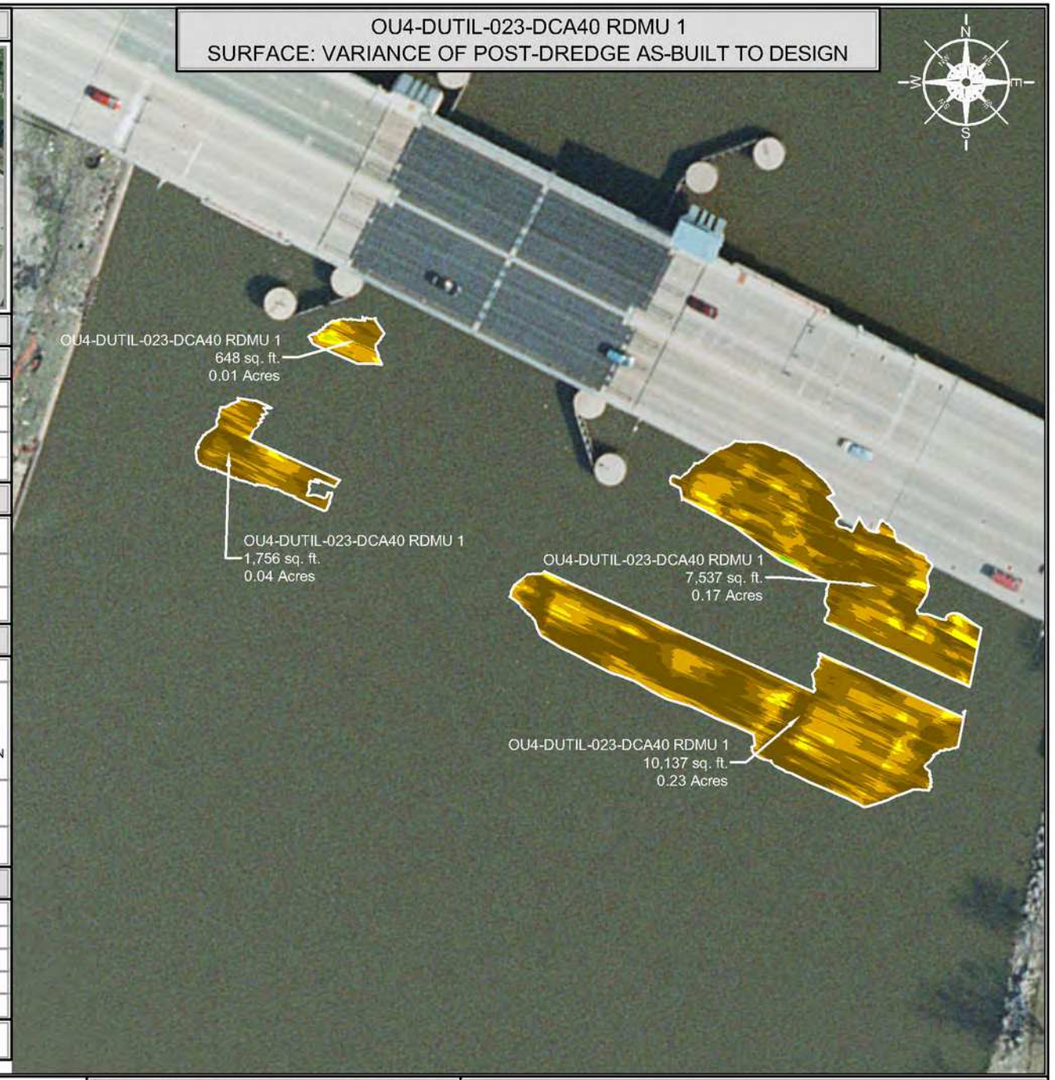
OU4-DUTIL-023-DCA40-1
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LDC\CAD\Hist Engineering\Design Files\2017\OU4 DUTIL-023-DCA40\WG\Post Design\OU4 DUTIL-023-DCA40-1.dwg

OU4-DUTIL-023-DCA40 RDMU 1
SURFACE: POST-DREDGE AS-BUILT



OU4-DUTIL-023-DCA40 RDMU 1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)	
1,853.46	INITIAL RAL VOLUME
359.85	INITIAL OVERCUT VOLUME
2,213.31	RAL + OVERCUT VOLUME
2,153.66	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES	
2,261.11	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
363.29	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
2,624.40	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

2018 AS-BUILT VOLUMES (CU. YD.)	
2,850.24	TOTAL VOLUME DREDGED
2,250.04	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
11.07	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
48.58	OVERCUT VOLUME REMAINING
316.24	OVERCUT VOLUME DREDGED
283.96	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)	
20,077.77	AREA (SQ. FT.)
859.79	ABOVE DESIGN ELEVATION
19,217.98	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
10.12 "	AVERAGE DEPTH OF OVERCUT [1]
96	PERCENT COMPLETE [2]

SCALE (1" = 80')

80 40 0 80 160

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 8-9-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
543.00'	-	545.00'
545.00'	-	547.00'
547.00'	-	549.00'
549.00'	-	551.00'
551.00'	-	553.00'
553.00'	-	555.00'
555.00'	-	557.00'
557.00'	-	559.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-4.64'	-	-1.00'	6,546.05
BELOW RAL	-1.00'	-	-0.50'	8,144.41
BELOW RAL	-0.50'	-	0.00'	4,527.52
ABOVE RAL	0.00'	-	0.50'	700.33
ABOVE RAL	0.50'	-	1.00'	103.42
ABOVE RAL	1.00'	-	1.50'	22.15
ABOVE RAL	1.50'	-	2.00'	8.56
ABOVE RAL	2.00'	-	2.50'	7.66
ABOVE RAL	2.50'	-	3.00'	6.86
ABOVE RAL	3.00'	-	3.50'	4.29
ABOVE RAL	3.50'	-	4.00'	6.29
ABOVE RAL	4.00'	-	4.12'	0.14

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DUTIL-023-DCA40 RDMU 1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: August 13, 2018
LAST REVISED: November 29, 2018
CHECKED BY: REG

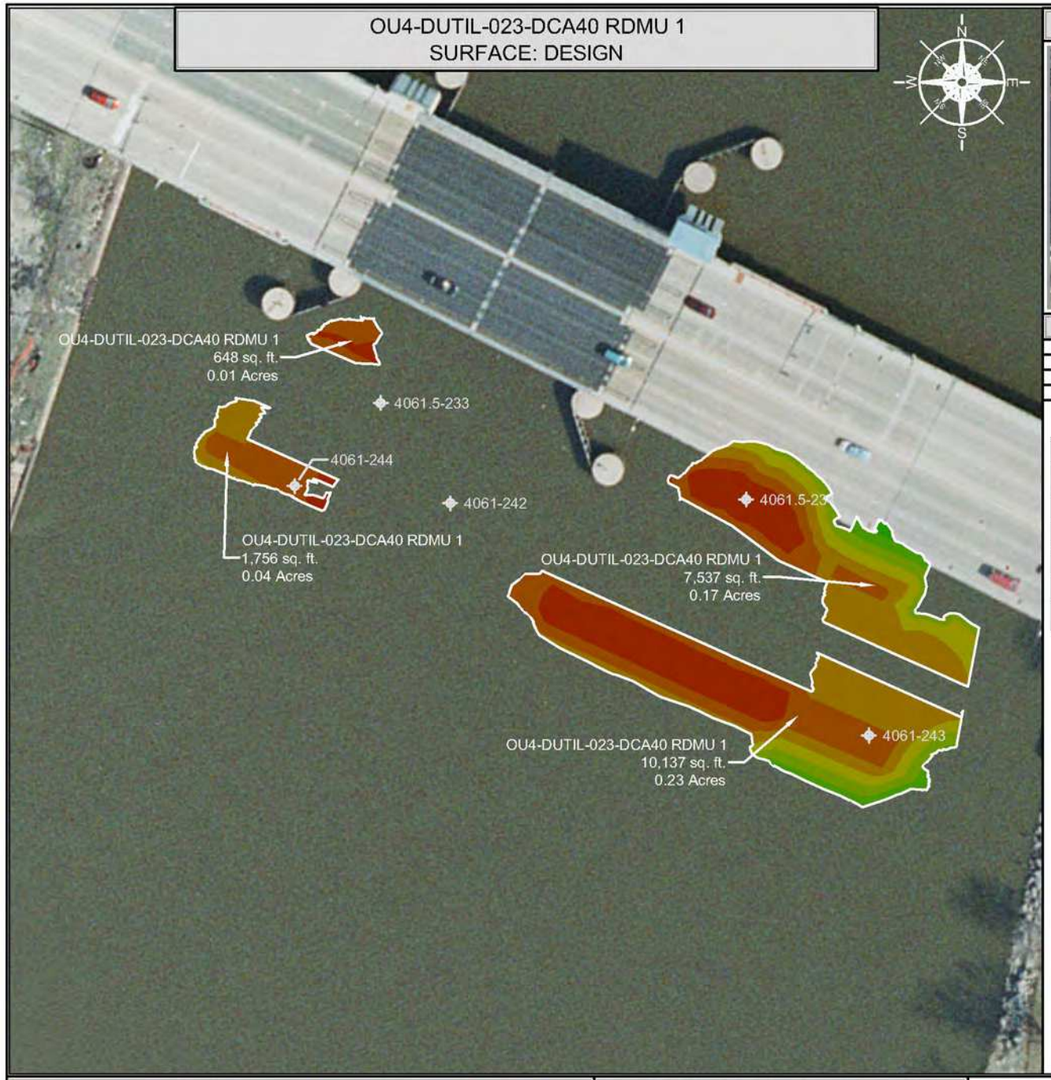
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-084

OU4-DUTIL-023-DCA40 RDMU 1
1st RESIDUAL DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LLOC\LD\Field Engineering\Dredge Files\2018\OU4 DUTIL-023-DCA40\DWG\Post Dredge\OU4 DUTIL-023-DCA40 RDMU 1.dwg

OU4-DUTIL-023-DCA40 RDMU 1
SURFACE: DESIGN



INDEX MAP



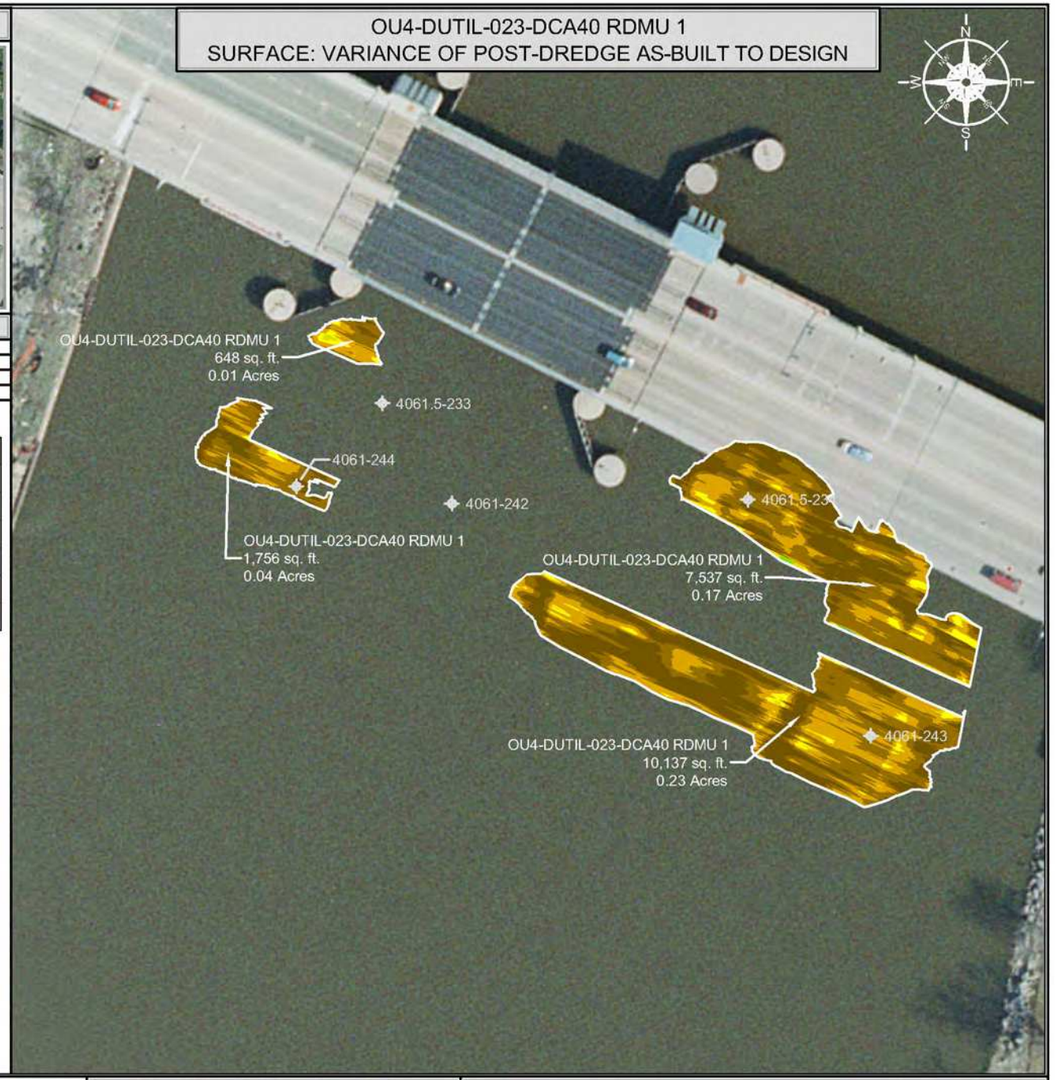
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	2,470 µg/kg (2.47 ppm)
0.5' - 1.0'	428 µg/kg (0.428 ppm)
1.0' - 1.5'	76.5 µg/kg (0.0765 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4061-244	252357.79	2484464.54
4061-242	252348.72	2484546.62
4061-243	252226.13	2484767.68
4061.5-233	252401.58	2484509.97
4061.5-234	252350.72	2484702.84

OU4-DUTIL-023-DCA40 RDMU 1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 80')

80 40 0 80 160

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 8-9-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
545.00'	-	547.00'
547.00'	-	549.00'
549.00'	-	551.00'
551.00'	-	553.00'
553.00'	-	555.00'
555.00'	-	557.00'
557.00'	-	559.00'
559.00'	-	561.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-DUTIL-023-DCA40-1-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-DUTIL-023-DCA40-1-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-DUTIL-023-DCA40-1-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 8-22-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF FIVE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 8-27-2018

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-4.64'	-	-1.00'	6,546.05
BELOW RAL	-1.00'	-	-0.50'	8,144.41
BELOW RAL	-0.50'	-	0.00'	4,527.52
ABOVE RAL	0.00'	-	0.50'	700.33
ABOVE RAL	0.50'	-	1.00'	103.42
ABOVE RAL	1.00'	-	1.50'	22.15
ABOVE RAL	1.50'	-	2.00'	8.56
ABOVE RAL	2.00'	-	2.50'	7.66
ABOVE RAL	2.50'	-	3.00'	6.86
ABOVE RAL	3.00'	-	3.50'	4.29
ABOVE RAL	3.50'	-	4.00'	6.29
ABOVE RAL	4.00'	-	4.12'	0.14

TETRA TECH EC, INC.
1611 STATE STREET
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CAD FILE: OU4-DUTIL-023-DCA40 RDMU 1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: August 13, 2018
LAST REVISED: November 29, 2018
CHECKED BY: REG

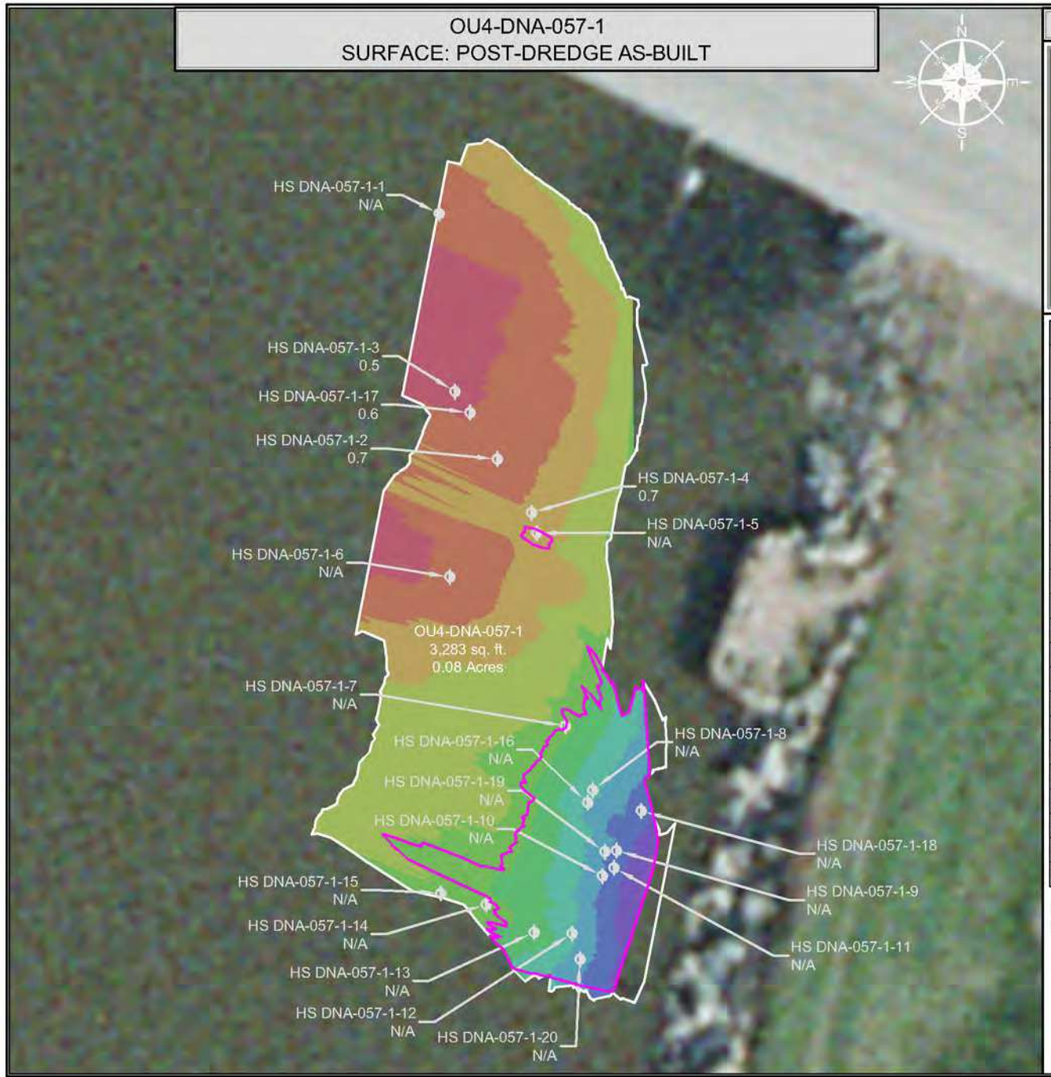
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-085

OU4-DUTIL-023-DCA40 RDMU 1
1st RESIDUAL DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LLC\CAD\Field Engineering\Dredge Files\2018\OU4 DUTIL-023 DCA40\DWG\Post Dredge\OU4 DUTIL-023-DCA40 RDMU 1.dwg

OU4-DNA-057-1
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP

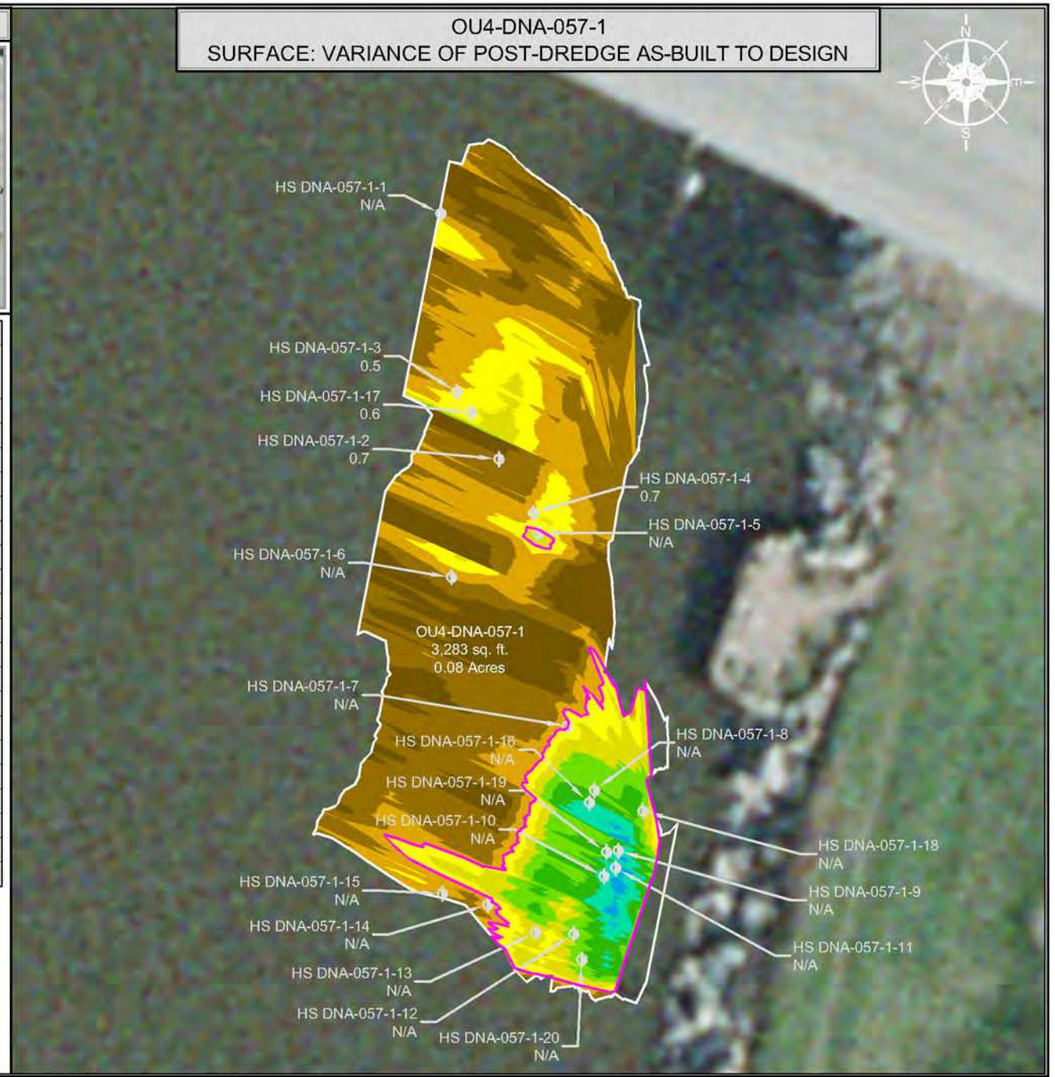


HIGH SUBGRADE SAMPLE AS-BUILT RESULTS

SAMPLE ID	NORTHING	EASTING	THICKNESS OF SOFT SEDIMENT (FEET)
HS DNA-057-1-1	252275.89	2484824.78	N/A
HS DNA-057-1-2	252243.52	2484832.45	0.7
HS DNA-057-1-3	252252.42	2484826.89	0.5
HS DNA-057-1-4	252236.42	2484837.01	0.7
HS DNA-057-1-5	252233.76	2484837.68	N/A
HS DNA-057-1-6	252227.93	2484826.21	N/A
HS DNA-057-1-7	252208.31	2484841.48	N/A
HS DNA-057-1-8	252199.83	2484845.08	N/A
HS DNA-057-1-9	252191.87	2484848.18	N/A
HS DNA-057-1-10	252188.50	2484846.34	N/A
HS DNA-057-1-11	252189.59	2484847.88	N/A
HS DNA-057-1-12	252180.90	2484842.35	N/A
HS DNA-057-1-13	252181.08	2484837.30	N/A
HS DNA-057-1-14	252184.73	2484830.98	N/A
HS DNA-057-1-15	252186.22	2484825.02	N/A
HS DNA-057-1-16	252198.19	2484844.37	N/A
HS DNA-057-1-17	252249.63	2484828.83	0.6
HS DNA-057-1-18	252197.10	2484851.44	N/A
HS DNA-057-1-19	252191.69	2484846.65	N/A
HS DNA-057-1-20	252177.51	2484843.39	N/A

NR = NO RECOVERY
NA = NO CORE COLLECTION REQUIRED DUE TO POLING DEPTH

OU4-DNA-057-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 20')

20 10 0 20 40

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 8-9-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'
562.00'	-	564.00'
564.00'	-	566.00'
566.00'	-	568.00'
568.00'	-	570.00'
570.00'	-	572.00'

DRAWING NOTES

1. HIGH SUBGRADE SAMPLES AND POLING DATA WERE COLLECTED ON 8-13-2018 AND LOGGED ON 8-13-2018

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-4.09'	-	-1.00'	551.57
BELOW RAL	-1.00'	-	-0.50'	1,040.26
BELOW RAL	-0.50'	-	0.00'	685.32
ABOVE RAL	0.00'	-	0.50'	345.69
ABOVE RAL	0.50'	-	1.00'	192.63
ABOVE RAL	1.00'	-	1.50'	162.48
ABOVE RAL	1.50'	-	2.00'	121.94
ABOVE RAL	2.00'	-	2.50'	69.46
ABOVE RAL	2.50'	-	2.97'	12.55

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DNA-057-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: August 10, 2018
LAST REVISED: November 29, 2018
CHECKED BY: REG

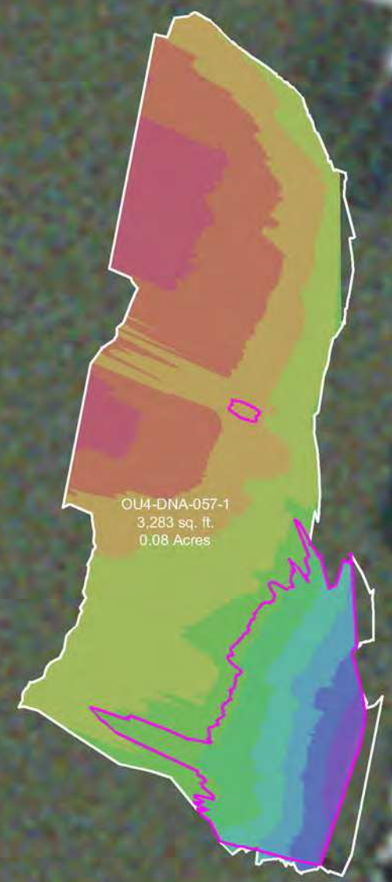
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-086

OU4-DNA-057-1
PRIMARY DREDGE HIGH SUBGRADE RESULTS

P:\LLC\DATA\Fild Engineering\Design Files\2018\OU4 DNA 057\2D\WG\Post Dredge\OU4 DNA_057-1.dwg

OU4-DNA-057-1
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

263.91	INITIAL RAL VOLUME
59.38	INITIAL OVERCUT VOLUME
323.29	RAL + OVERCUT VOLUME
270.87	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

275.44	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
60.15	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
335.59	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

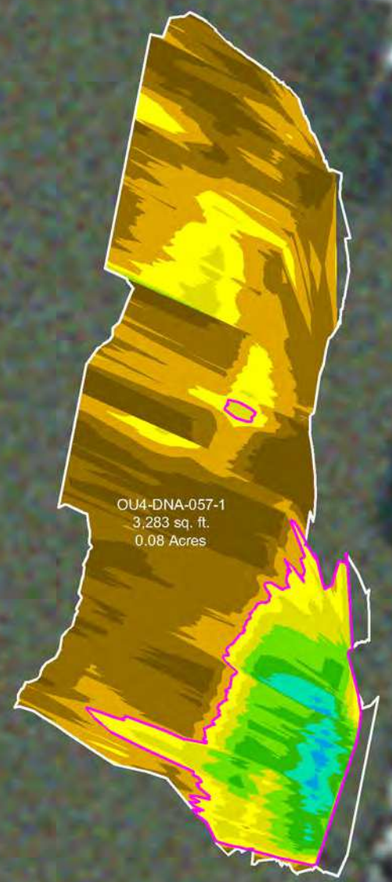
2018 AS-BUILT VOLUMES (CU. YD.)

303.17	TOTAL VOLUME DREDGED
245.03	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
27.90	CONFIRMED HIGH SUBGRADE VOLUME
2.51	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
22.01	OVERCUT VOLUME REMAINING
31.84	OVERCUT VOLUME DREDGED
26.30	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

3,282.67	AREA (SQ. FT.)
241.94	ABOVE DESIGN ELEVATION
2,377.92	AT OR BELOW DESIGN ELEVATION
662.81	CONFIRMED HIGH SUBGRADE
7.92 "	AVERAGE DEPTH OF OVERCUT [1]
93	PERCENT COMPLETE [2]

OU4-DNA-057-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 20')

20 10 0 20 40

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 8-9-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'
562.00'	-	564.00'
564.00'	-	566.00'
566.00'	-	568.00'
568.00'	-	570.00'
570.00'	-	572.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT
DREDGE AREA
DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-4.09'	-	-1.00'	551.57
BELOW RAL	-1.00'	-	-0.50'	1,040.26
BELOW RAL	-0.50'	-	0.00'	685.32
ABOVE RAL	0.00'	-	0.50'	345.69
ABOVE RAL	0.50'	-	1.00'	192.63
ABOVE RAL	1.00'	-	1.50'	162.48
ABOVE RAL	1.50'	-	2.00'	121.94
ABOVE RAL	2.00'	-	2.50'	69.46
ABOVE RAL	2.50'	-	2.97'	12.55

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DNA-057-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: August 10, 2018
LAST REVISED: November 29, 2018
CHECKED BY: REG

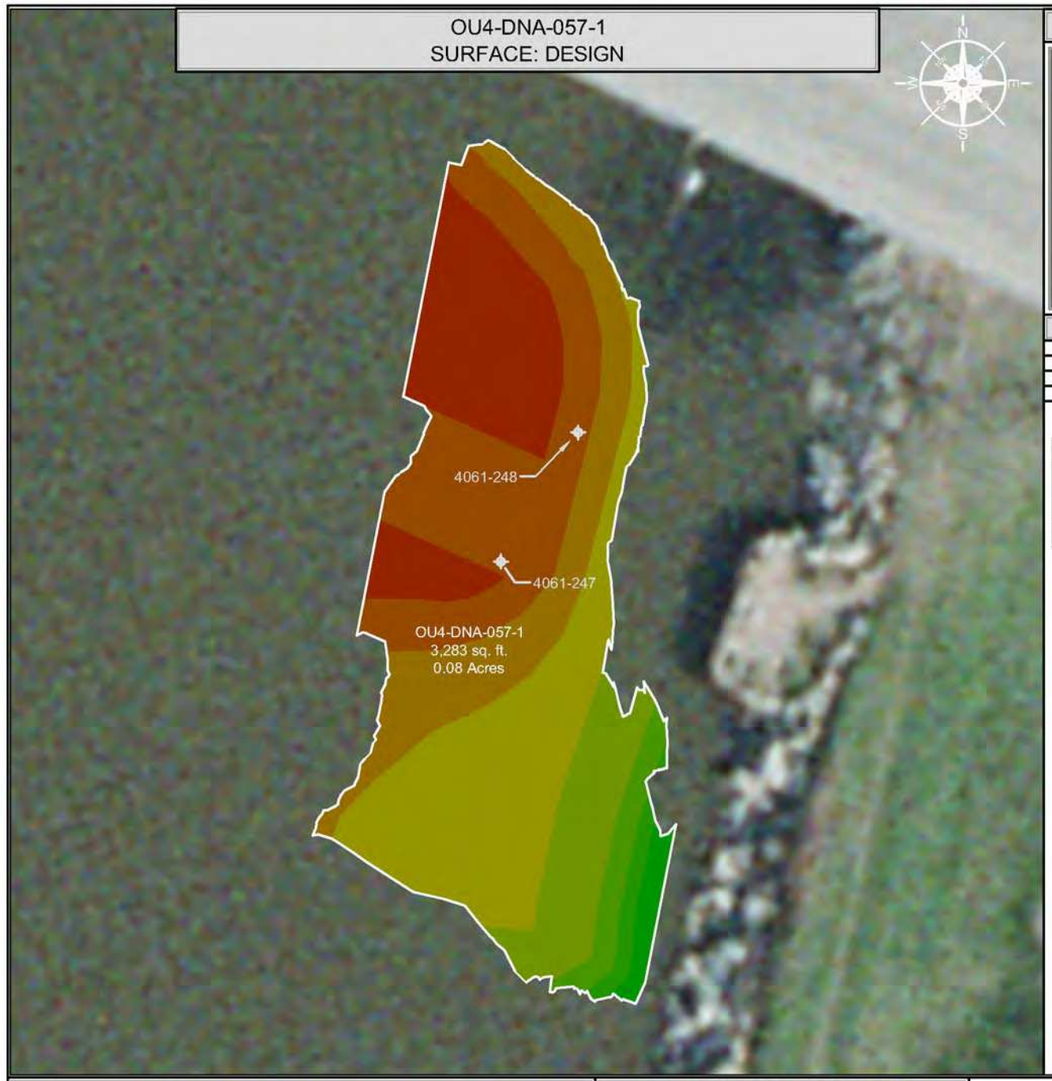
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-087

OU4-DNA-057-1
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\ALLOC\ADR\Field Engineering\gDredge Files\2018\OU4 DNA 057\DWG\Post Dredge\OU4 DNA 057-1.dwg

OU4-DNA-057-1
SURFACE: DESIGN



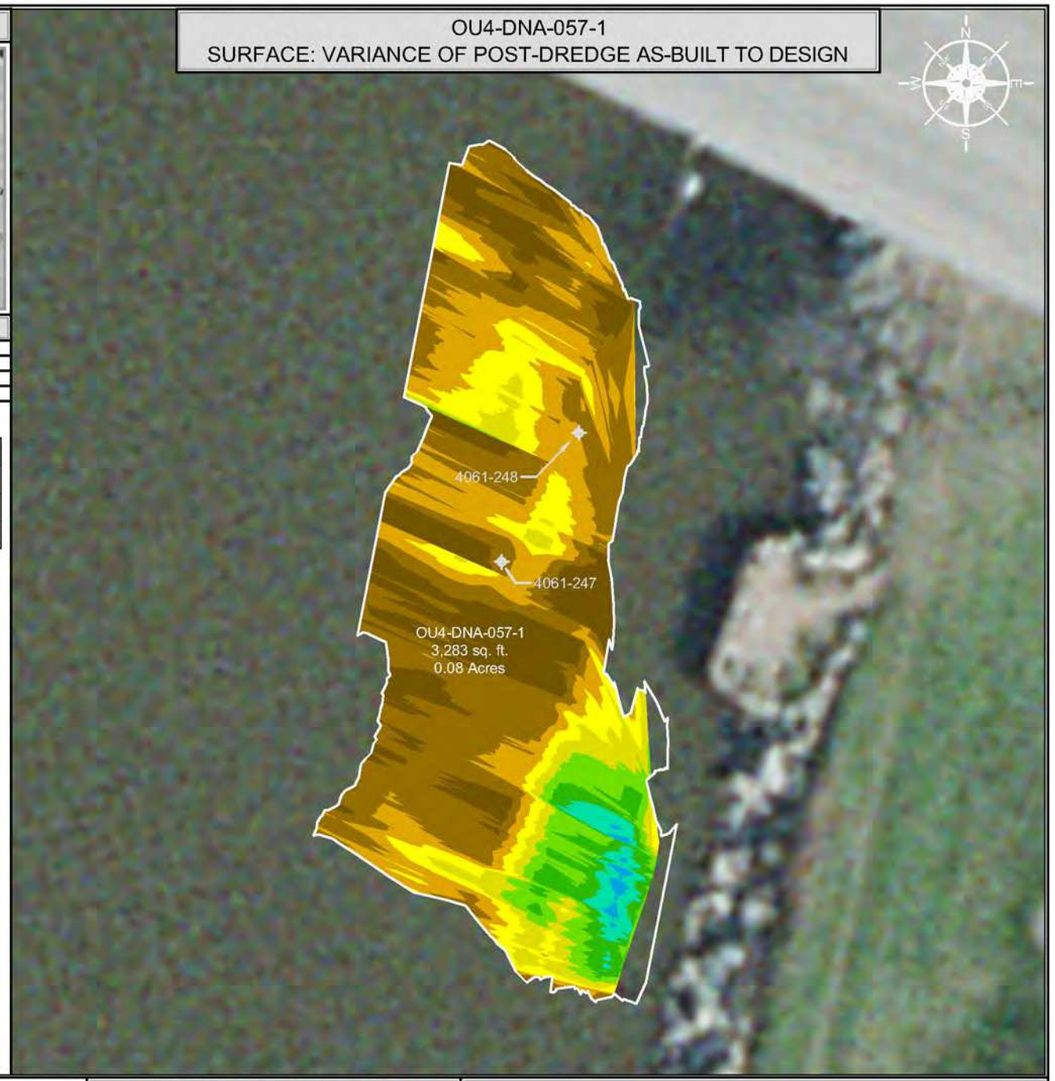
INDEX MAP



CONFIRMATION SAMPLE RESULTS	
INTERVAL	CONCENTRATION
0.0' - 0.5'	816 µg/kg (0.816 ppm)
0.5' - 1.0'	827 µg/kg (0.827 ppm)
1.0' - 1.5'	829 µg/kg (0.829 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS		
SAMPLE ID	NORTHING	EASTING
4061-248	252247.15	2484843.02
4061-247	252230.11	2484832.80

OU4-DNA-057-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 20')

20 10 0 20 40

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 8-9-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'
562.00'	-	564.00'
564.00'	-	566.00'
566.00'	-	568.00'
568.00'	-	570.00'
570.00'	-	572.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-DNA-057-1-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-DNA-057-1-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-DNA-057-1-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 8-22-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF TWO SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 8-28-2018

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OU# - D# - #

OU# = OPERABLE UNIT; D# = DREDGE AREA; # = DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-4.09'	-	-1.00'	551.57
BELOW RAL	-1.00'	-	-0.50'	1,040.26
BELOW RAL	-0.50'	-	0.00'	685.32
ABOVE RAL	0.00'	-	0.50'	345.69
ABOVE RAL	0.50'	-	1.00'	192.63
ABOVE RAL	1.00'	-	1.50'	162.48
ABOVE RAL	1.50'	-	2.00'	121.94
ABOVE RAL	2.00'	-	2.50'	69.46
ABOVE RAL	2.50'	-	2.97'	12.55

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DNA-057-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: August 10, 2018
LAST REVISED: November 29, 2018
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-088

OU4-DNA-057-1
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LOCAL\Plotting\Engineering\Design Files\2018\OU4 DNA-057\DWG\Post Design\OU4-DNA-057-1.dwg

OU4-D165B-1
SURFACE: DESIGN



INDEX MAP



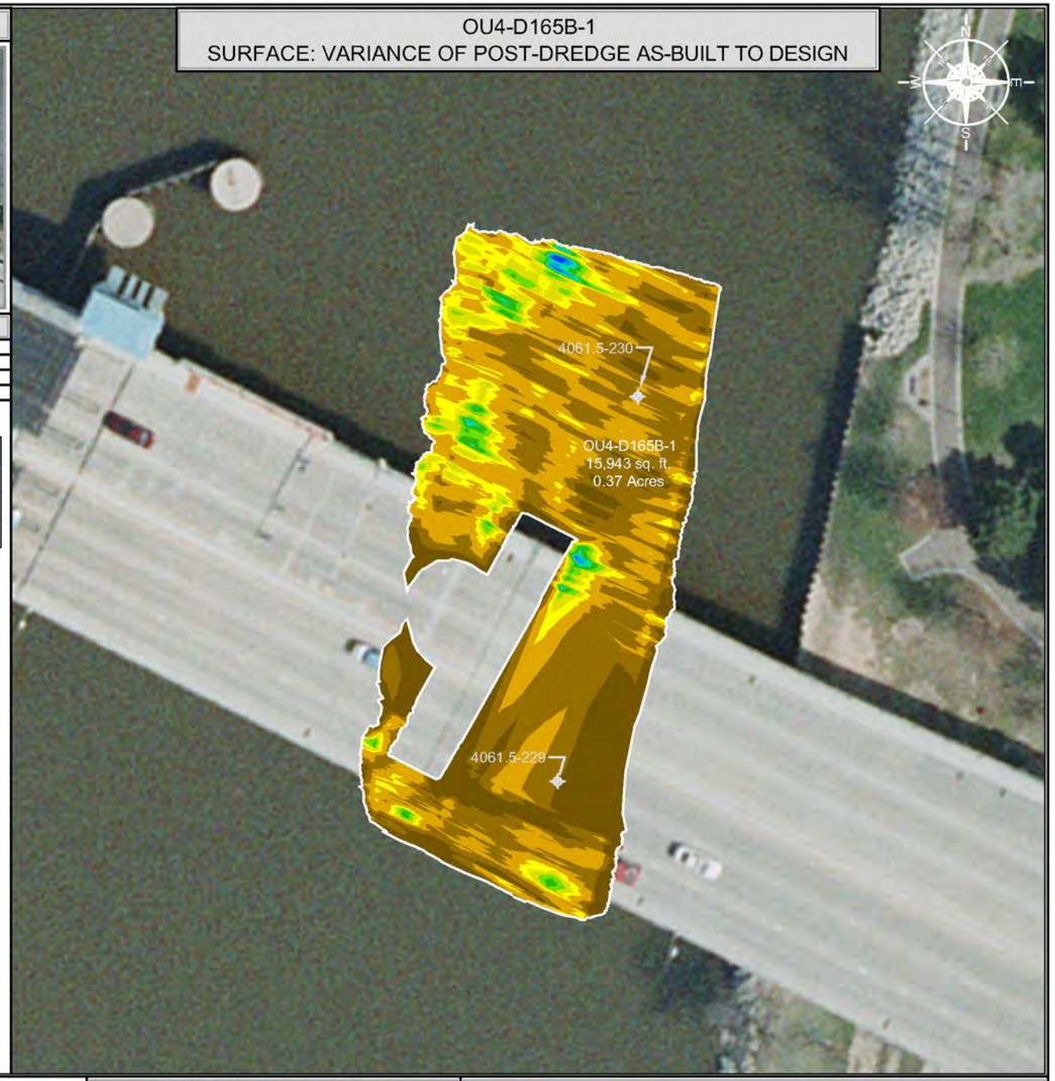
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	3,310 µg/kg (3.31 ppm)
0.5' - 1.0'	392 µg/kg (0.392 ppm)
1.0' - 1.5'	<25.1 µg/kg (<0.0251 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4061.5-230	252462.68	2484846.08
4061.5-229	252335.87	2484819.64

OU4-D165B-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 50')

50 25 0 50 100

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-17-2015

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
553.65'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'
560.00'	-	561.28'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-17-D165B-1-A
2. 0.5' - 1.0' SAMPLE ID TTFR-17-D165B-1-B
3. 1.0' - 1.5' SAMPLE ID TTFR-17-D165B-1-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 11-3-2017
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF TWO SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 11-8-2017

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OU# - D# - #
OPERABLE UNIT · DREDGE AREA · DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-3.35'	-	-1.00'	2,864.64
BELOW RAL	-1.00'	-	-0.50'	5,572.12
BELOW RAL	-0.50'	-	0.00'	5,018.28
ABOVE RAL	0.00'	-	0.25'	1,200.00
ABOVE RAL	0.25'	-	0.50'	731.49
ABOVE RAL	0.50'	-	0.75'	300.94
ABOVE RAL	0.75'	-	1.00'	163.25
ABOVE RAL	1.00'	-	1.25'	54.56
ABOVE RAL	1.25'	-	1.50'	29.45
ABOVE RAL	1.50'	-	1.70'	8.46

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D165B-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: November 18, 2015
LAST REVISED: November 29, 2018
CHECKED BY: REG

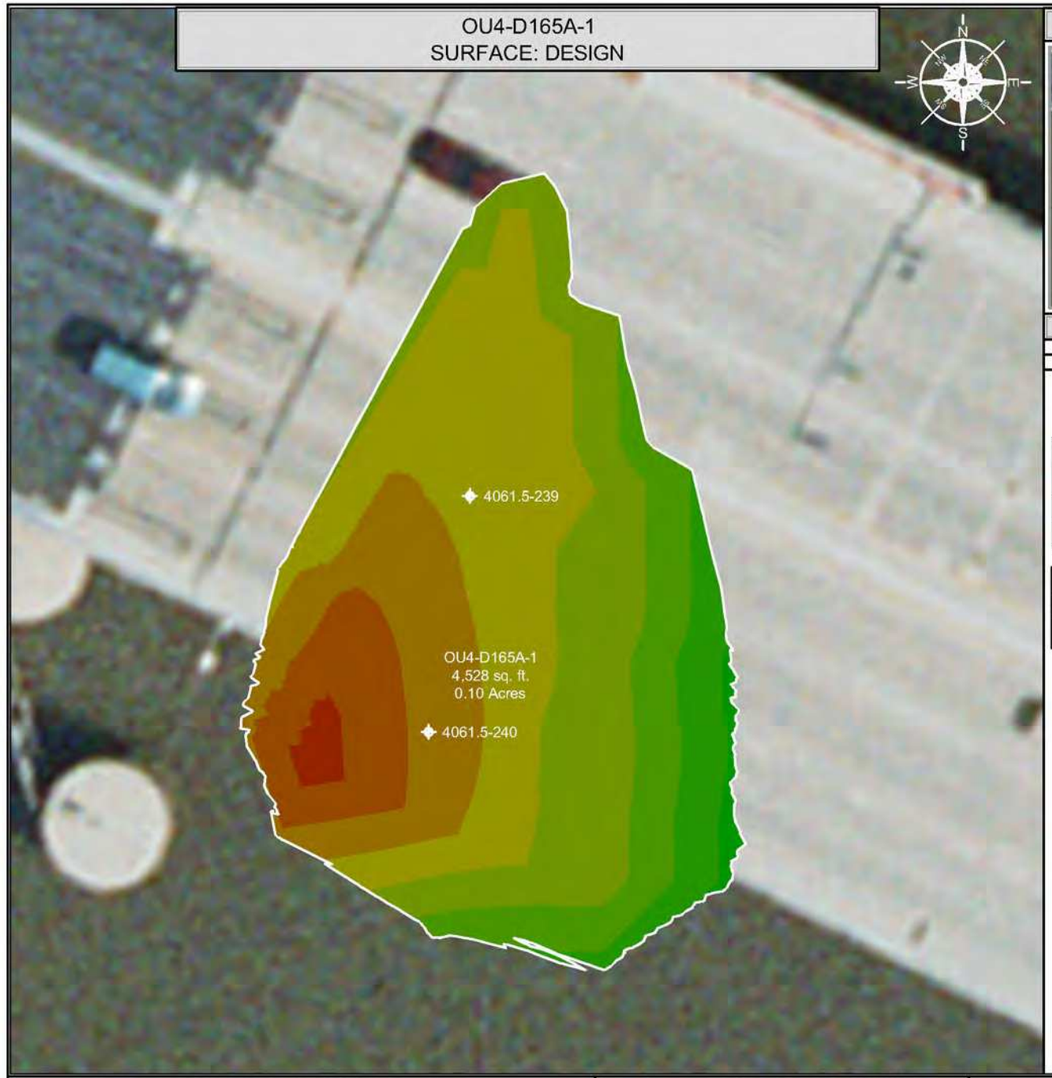
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-089

OU4-D165B-1
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

P:\LLC\CAD\Field Engineering\Dredge Files\2015\OU4 D165B\DWG\Post Design\OU4 D165B-1.dwg

OU4-D165A-1
SURFACE: DESIGN



INDEX MAP

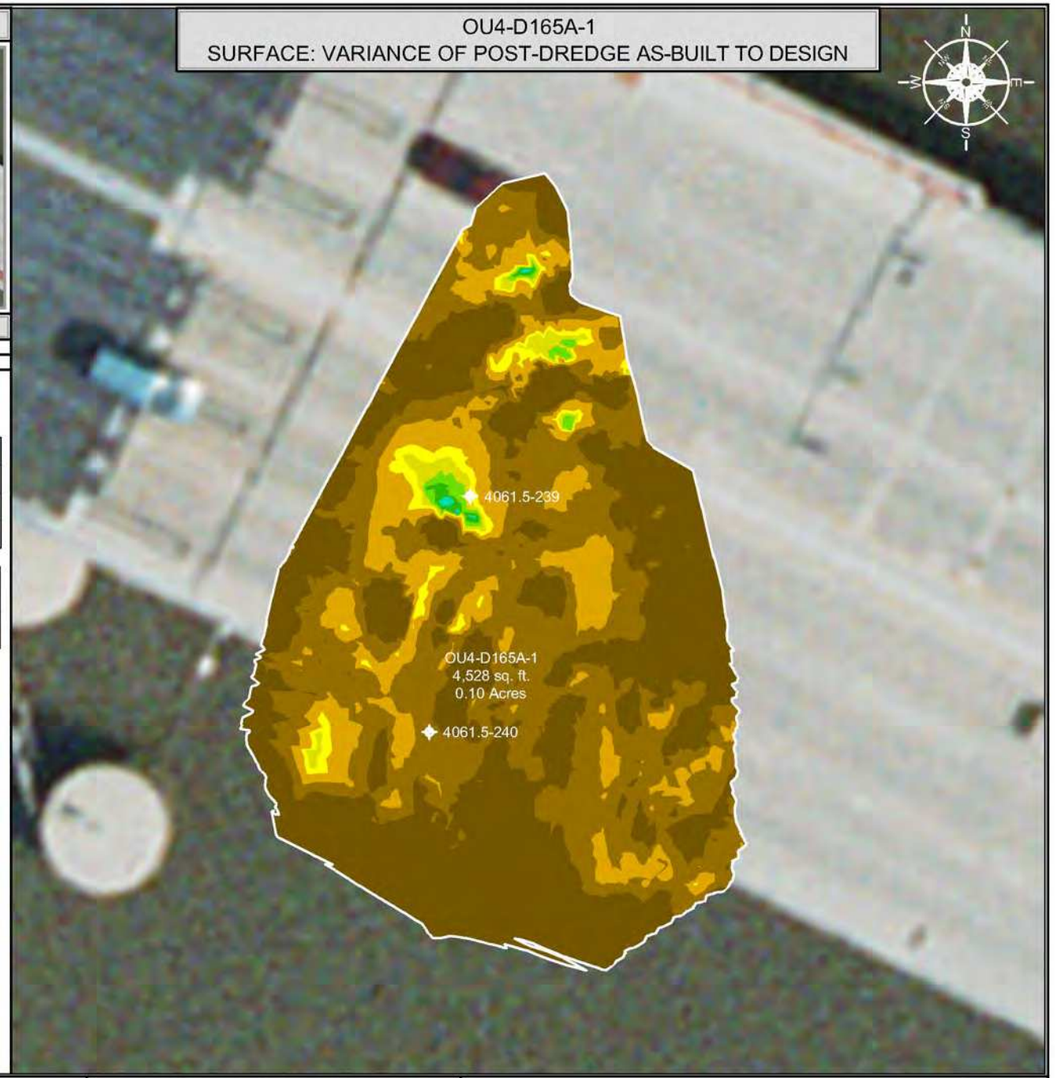


CONFIRMATION SAMPLE RESULTS	
INTERVAL	CONCENTRATION
0.0' - 0.5'	213 µg/kg (0.213 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS		
SAMPLE ID	NORTHING	EASTING
4061.5-239	252409.99	2484677.85
4061.5-240	252378.90	2484672.44

DISCRETE SAMPLE RESULTS	
LOCATION	CONCENTRATION
4061..5-239	B: <25.6 µg/kg (<0.0256) ppm) C: <25.2 µg/kg (<0.0252) ppm)

OU4-D165A-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-18-D165A-1-4061.5-239-B
2. TTFR-18-D165A-1-4061.5-239-C

SCALE (1" = 20')

20 10 0 20 40

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-12-2017

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
543.00'	-	545.00'
545.00'	-	547.00'
547.00'	-	549.00'
549.00'	-	551.00'
551.00'	-	553.00'
553.00'	-	555.00'
555.00'	-	557.00'
557.00'	-	559.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-D165A-1-A
2. CONFIRMATION SAMPLES WERE COLLECTED ON 8-22-2018
3. CONFIRMATION SAMPLES ARE A COMPOSITE OF TWO SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
4. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 8-27-2018

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OU# - D# - #
- OU# — OPERABLE UNIT
- D# — DREDGE AREA
- # — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-6.97'	-	-1.00'	1,975.21
BELOW RAL	-1.00'	-	-0.50'	1,706.27
BELOW RAL	-0.50'	-	0.00'	661.32
ABOVE RAL	0.00'	-	0.25'	91.87
ABOVE RAL	0.25'	-	0.50'	53.92
ABOVE RAL	0.50'	-	0.75'	25.57
ABOVE RAL	0.75'	-	1.00'	10.76
ABOVE RAL	1.00'	-	1.25'	3.09
ABOVE RAL	1.25'	-	1.44'	0.06

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D165A-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: September 19, 2017
LAST REVISED: November 29, 2018
CHECKED BY: REG

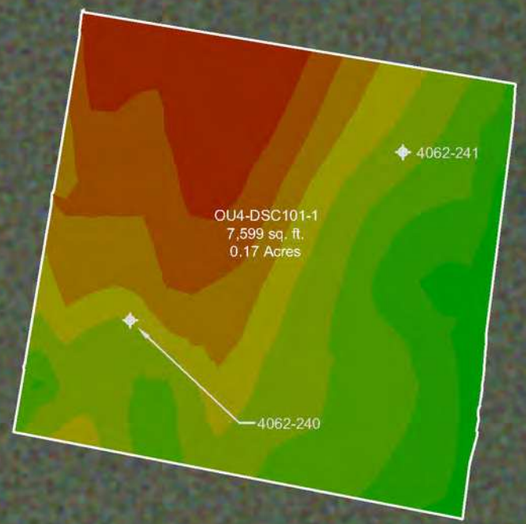
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-090

OU4-D165A-1
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LOCAD\Field Engineering\Dredge Files\2017\OU4 D165A\DWG\Post Dredge\OU4 D165A-1.dwg

OU4-DSC101-1
SURFACE: DESIGN



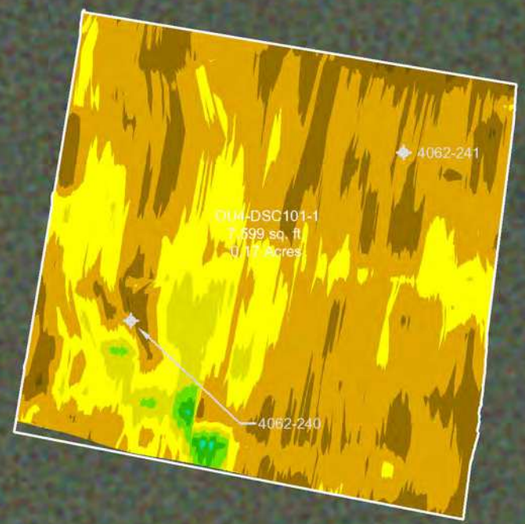
INDEX MAP



CONFIRMATION SAMPLE RESULTS	
INTERVAL	CONCENTRATION
0.0' - 0.5'	107 µg/kg (0.107 ppm)
0.5' - 1.0'	<25.2 µg/kg (<0.0252 ppm)
1.0' - 1.5'	<25.2 µg/kg (<0.0252 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS		
SAMPLE ID	NORTHING	EASTING
4062-241	252570.82	2484861.74
4062-240	252537.52	2484807.77

OU4-DSC101-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 30')

30 15 0 30 60

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-14-2016

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-DSC101-1-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-DSC101-1-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-DSC101-1-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 8-24-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF TWO SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 8-30-2018

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OU# - D# - #
OPERABLE UNIT | DREDGE AREA | DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.61'	-	-1.00'	18.83
	-1.00'	-	-0.50'	1,402.43
	-0.50'	-	0.00'	4,151.97
ABOVE RAL	0.00'	-	0.50'	1,559.12
	0.50'	-	1.00'	323.71
	1.00'	-	1.50'	56.69
	1.50'	-	2.00'	31.35
	2.00'	-	2.30'	3.13

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DSC101-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 14, 2016
LAST REVISED: November 29, 2018
CHECKED BY: REG

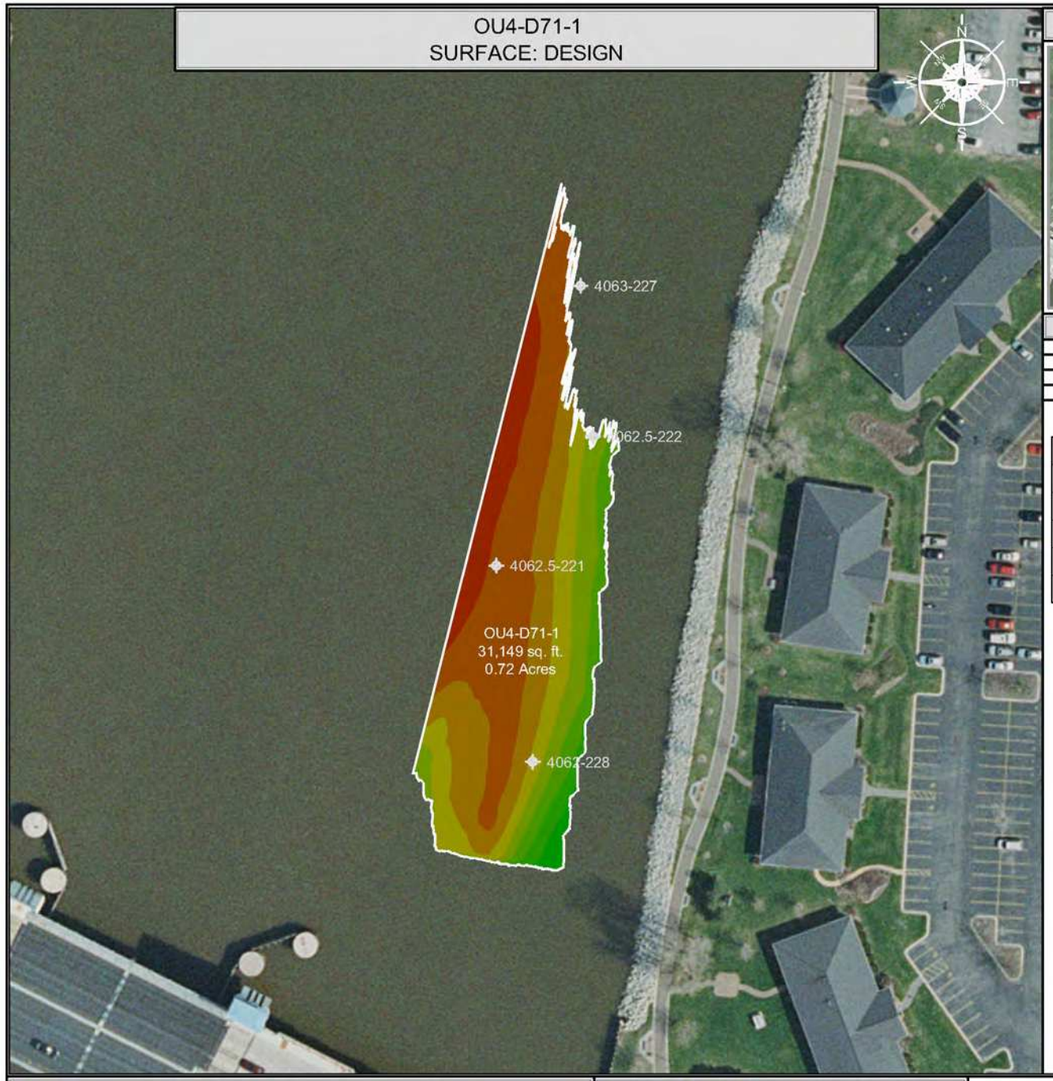
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-091

OU4-DSC101-1
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

P:\LOCAL\Field Engineering\Design Files\2018\OU4 DSC101\DWG\Post Design\OU4 DSC101-1.dwg

OU4-D71-1
SURFACE: DESIGN



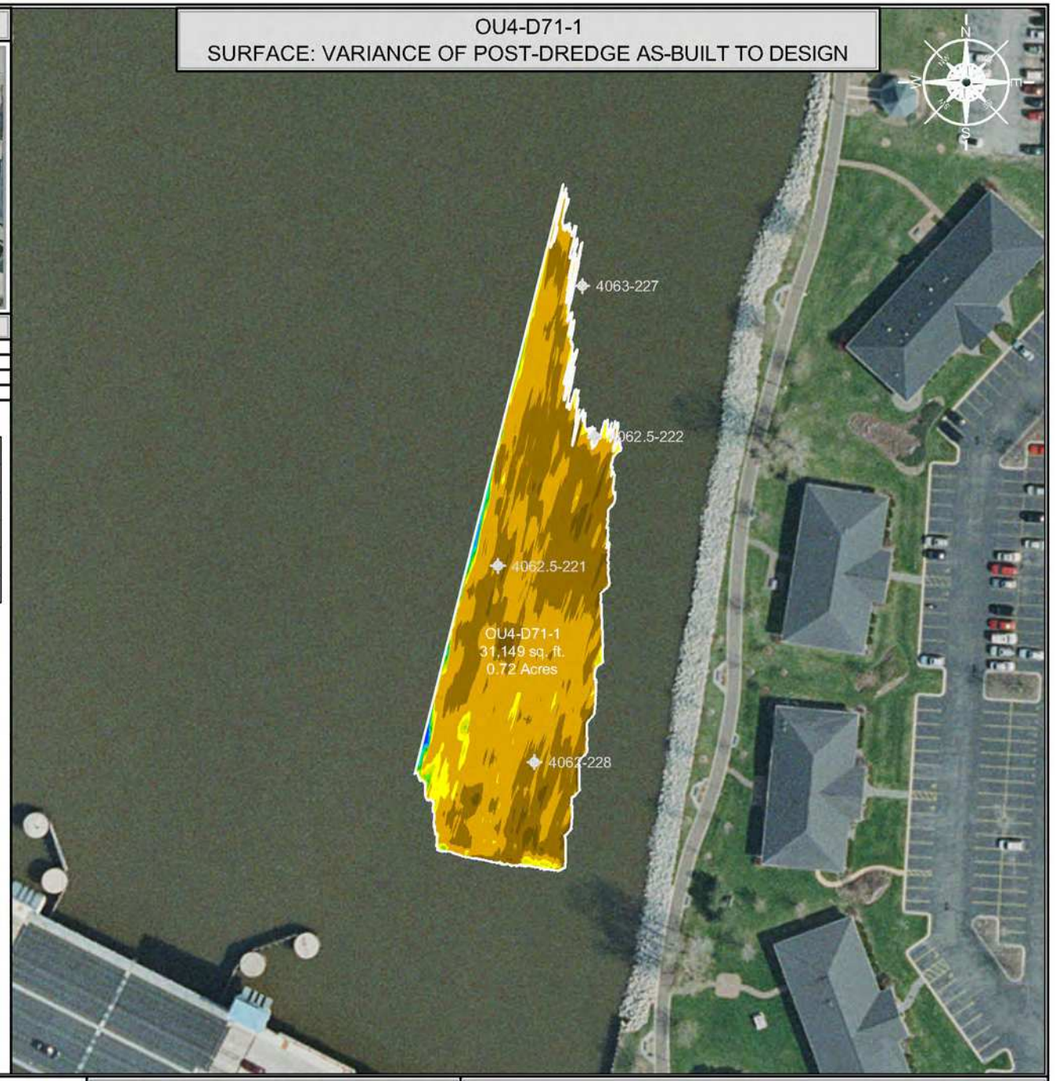
INDEX MAP



CONFIRMATION SAMPLE RESULTS	
INTERVAL	CONCENTRATION
0.0' - 0.5'	2,400 µg/kg (2.4 ppm)
0.5' - 1.0'	460 µg/kg (0.46 ppm)
1.0' - 1.5'	<25.3 µg/kg (<0.0253 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS		
SAMPLE ID	NORTHING	EASTING
4062-228	252653.77	2484863.83
4062.5-222	252868.60	2484903.60
4062.5-221	252783.18	2484839.68
4063-227	252967.90	2484895.24

OU4-D71-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-14-2015

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
547.14'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.40'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-17-D71-1-A
2. 0.5' - 1.0' SAMPLE ID TTFR-17-D71-1-B
3. 1.0' - 1.5' SAMPLE ID TTFR-17-D71-1-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 10-19-2017
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF FOUR SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 10-25-2017

THIS DOCUMENT IS THE PROPERTY OF LOWER FOX RIVER REMEDIATION LLC PREPARED BY TETRA TECH EC, INC. (TtEC), AND IS PROVIDED UPON THE CONDITION THAT IT WILL NOT BE REPRODUCED, COPIED, OR ISSUED TO A THIRD PARTY. IT IS PROVIDED TO BE USED SOLELY FOR THE ORIGINAL INTENDED PURPOSE, AND SOLELY FOR THE EXECUTION OR REVIEW OF THE ENGINEERING AND CONSTRUCTION OF THE SUBJECT PROJECT.

OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT
DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.92'	-	-1.00'	994.64
	-1.00'	-	-0.50'	12,600.72
	-0.50'	-	0.00'	15,285.77
ABOVE RAL	0.00'	-	0.25'	1,214.69
	0.25'	-	0.50'	361.86
	0.50'	-	0.75'	214.38
	0.75'	-	1.00'	110.14
	1.00'	-	1.25'	209.00
	1.25'	-	1.50'	119.69
	1.50'	-	1.75'	38.42
	1.75'	-	1.80'	0.01

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D71-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: December 4, 2015
LAST REVISED: November 29, 2018
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-092

OU4-D71-1
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LOC\4D\Field Engineering\3Dmdge Files\2015\OU4 D71\DWG\Post Dredge\OU4 D71-1.dwg

OU4-DNA-D70-1
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

125.51	INITIAL RAL VOLUME
61.00	INITIAL OVERCUT VOLUME
186.51	RAL + OVERCUT VOLUME
178.09	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

125.51	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
61.00	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
186.51	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

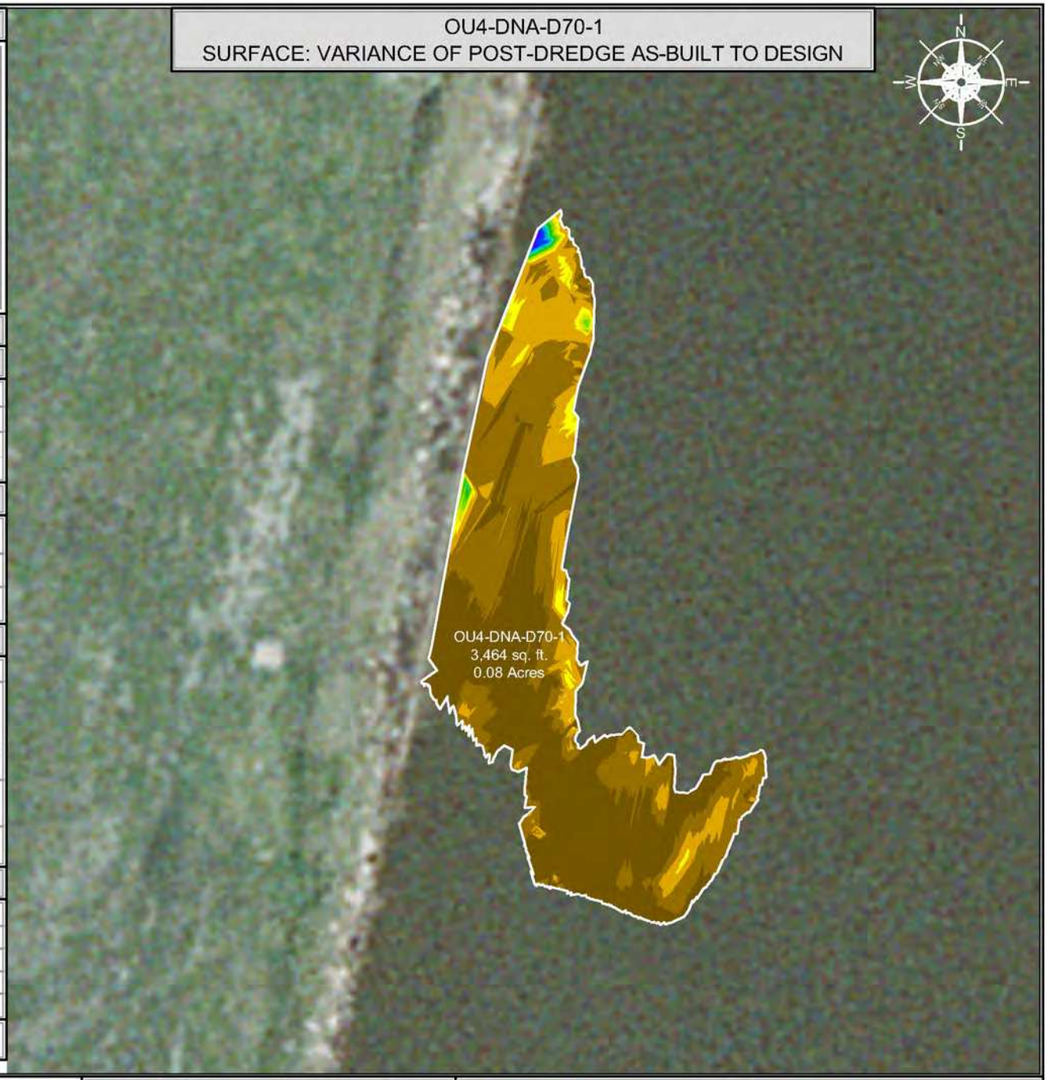
2018 AS-BUILT VOLUMES (CU. YD.)

230.09	TOTAL VOLUME DREDGED
123.13	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
2.02	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
6.40	OVERCUT VOLUME REMAINING
50.40	OVERCUT VOLUME DREDGED
56.56	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

3,464.45	AREA (SQ. FT.)
140.59	ABOVE DESIGN ELEVATION
3,323.86	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
10.43 "	AVERAGE DEPTH OF OVERCUT [1]
96	PERCENT COMPLETE [2]

OU4-DNA-D70-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 30')

30 15 0 30 60

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 5-4-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.79'	-	-1.00'	1,494.64
BELOW RAL	-1.00'	-	-0.50'	1,281.75
BELOW RAL	-0.50'	-	0.00'	547.47
ABOVE RAL	0.00'	-	0.25'	74.41
ABOVE RAL	0.25'	-	0.50'	22.48
ABOVE RAL	0.50'	-	0.75'	12.66
ABOVE RAL	0.75'	-	1.00'	7.83
ABOVE RAL	1.00'	-	1.25'	4.66
ABOVE RAL	1.25'	-	1.50'	3.86
ABOVE RAL	1.50'	-	1.75'	4.78
ABOVE RAL	1.75'	-	1.94'	3.36

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DNA-D70-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: May 21, 2018
LAST REVISED: November 29, 2018
CHECKED BY: REG

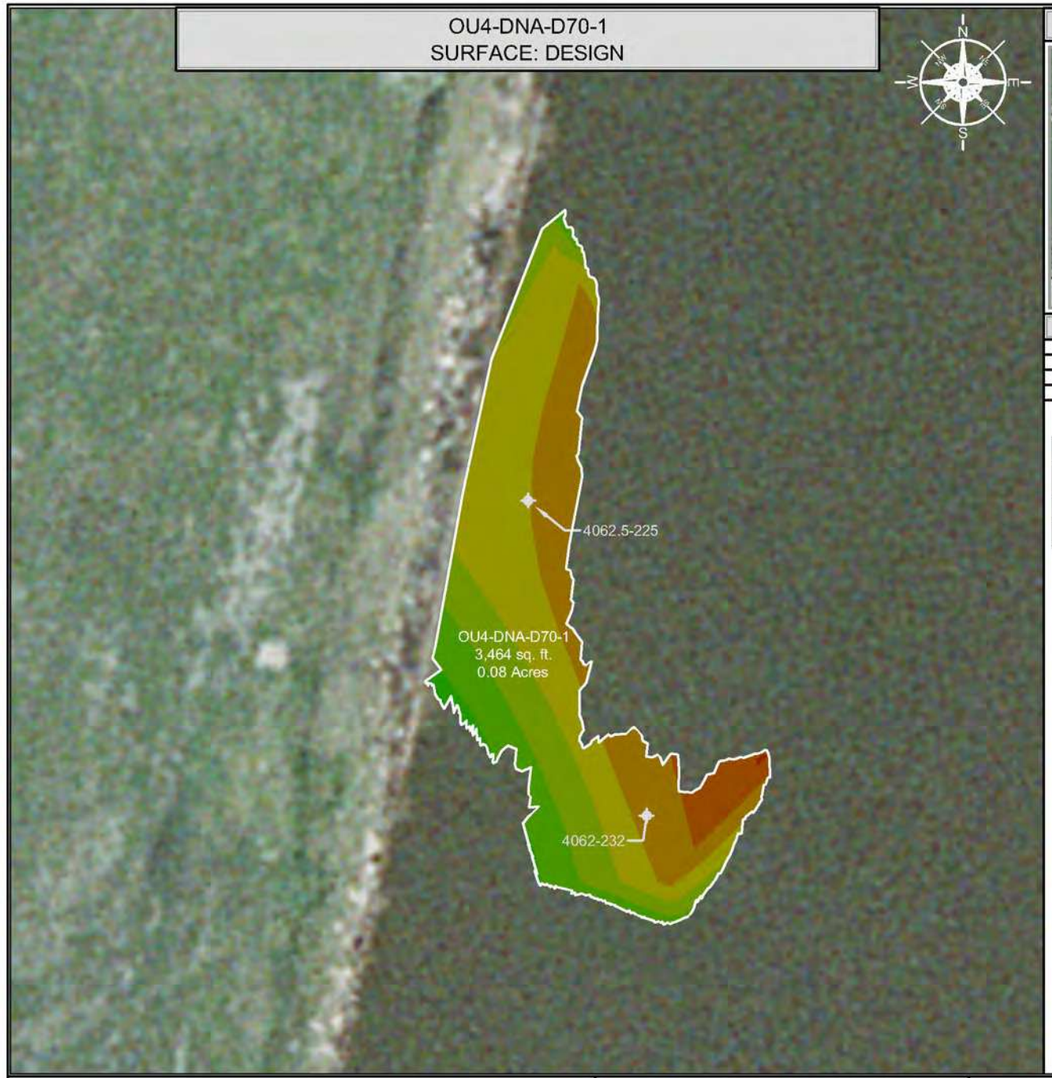
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-093

OU4-DNA-D70-1
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\ALLDOCS\Field Engineering\Dredge Files\2018\DNA D70\GIS\PostDredge\DNA D70-1.dwg

OU4-DNA-D70-1
SURFACE: DESIGN



INDEX MAP



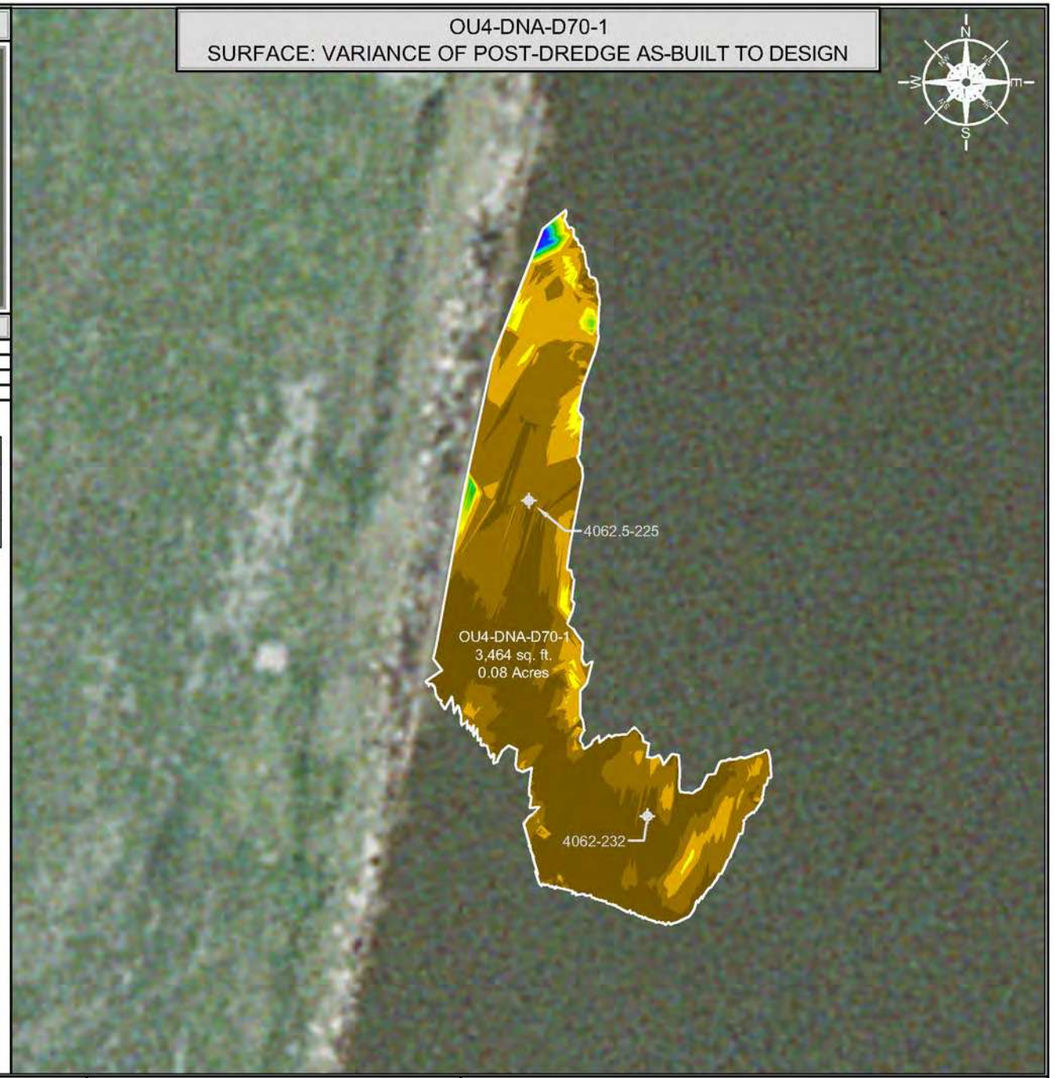
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	333 µg/kg (0.333 ppm)
0.5' - 1.0'	<25.4 µg/kg (<0.0254 ppm)
1.0' - 1.5'	<25.4 µg/kg (<0.0254 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4062-232	252790.67	2484497.61
4062.5-225	252853.09	2484474.15

OU4-DNA-D70-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 30')

30 15 0 30 60

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 5-4-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'
560.00'	-	561.00'
561.00'	-	562.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-DNA-D70-1-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-DNA-D70-1-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-DNA-D70-1-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 8-24-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF TWO SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 8-31-2018

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT
DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.79'	-	-1.00'	1,494.64
BELOW RAL	-1.00'	-	-0.50'	1,281.75
BELOW RAL	-0.50'	-	0.00'	547.47
ABOVE RAL	0.00'	-	0.25'	74.41
ABOVE RAL	0.25'	-	0.50'	22.48
ABOVE RAL	0.50'	-	0.75'	12.66
ABOVE RAL	0.75'	-	1.00'	7.83
ABOVE RAL	1.00'	-	1.25'	4.66
ABOVE RAL	1.25'	-	1.50'	3.86
ABOVE RAL	1.50'	-	1.75'	4.78
ABOVE RAL	1.75'	-	1.94'	3.36

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DNA-D70-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: May 21, 2018
LAST REVISED: November 29, 2018
CHECKED BY: REG

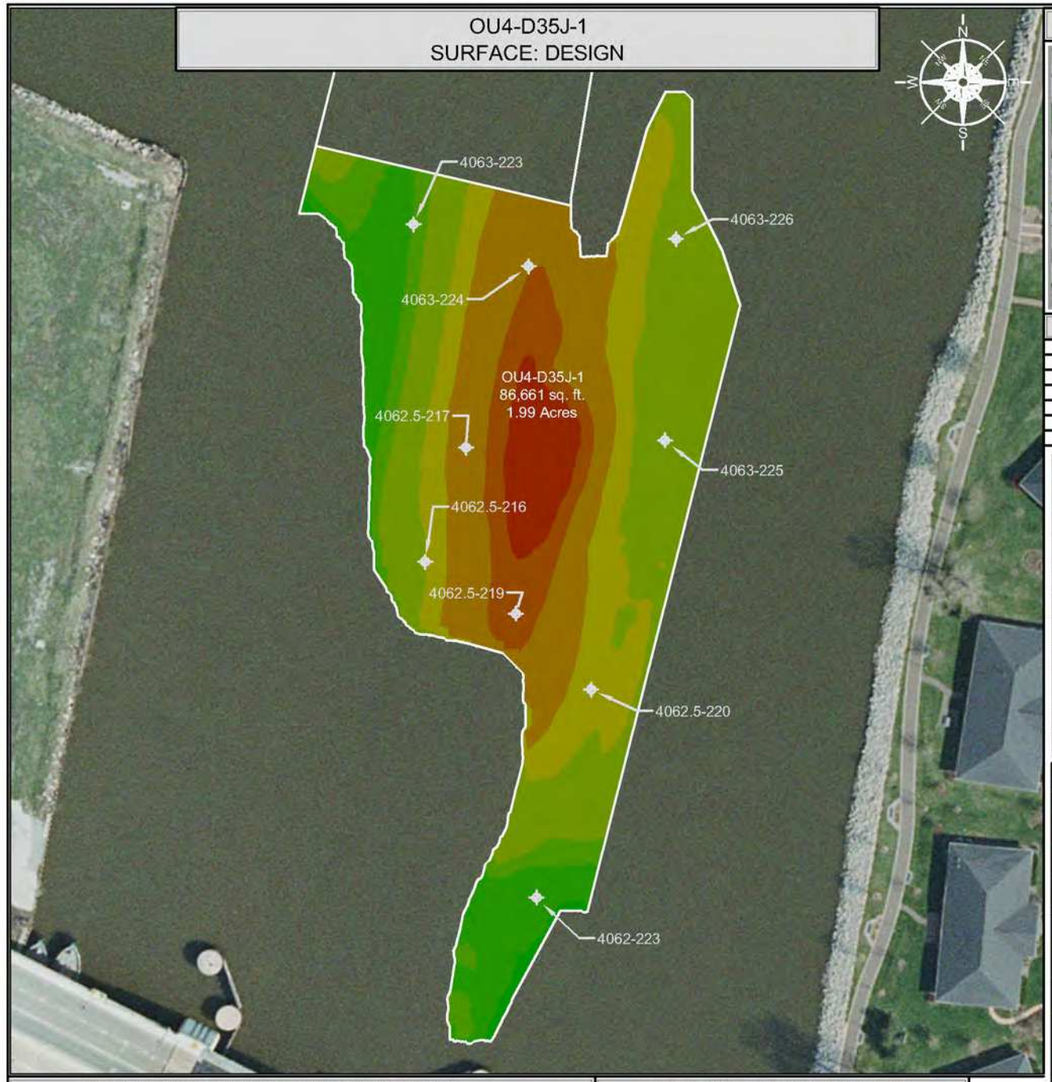
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-094

OU4-DNA-D70-1
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

P:\ILC\CAD\Relat Engineering\Design Files\2018\OU4-DNA-D70\DWG\Final Design\OU4-DNA-D70-1.dwg

OU4-D35J-1
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5' 1A	3,470 µg/kg (3.47 ppm)
0.5' - 1.0' 1A	3,820 µg/kg (3.82 ppm)
1.0' - 1.5' 1A	811 µg/kg (0.811 ppm)
0.0' - 0.5' 1B	3,010 µg/kg (3.01 ppm)
0.5' - 1.0' 1B	5,040 µg/kg (5.04 ppm)
1.0' - 1.5' 1B	31.5 µg/kg (0.0315 ppm)

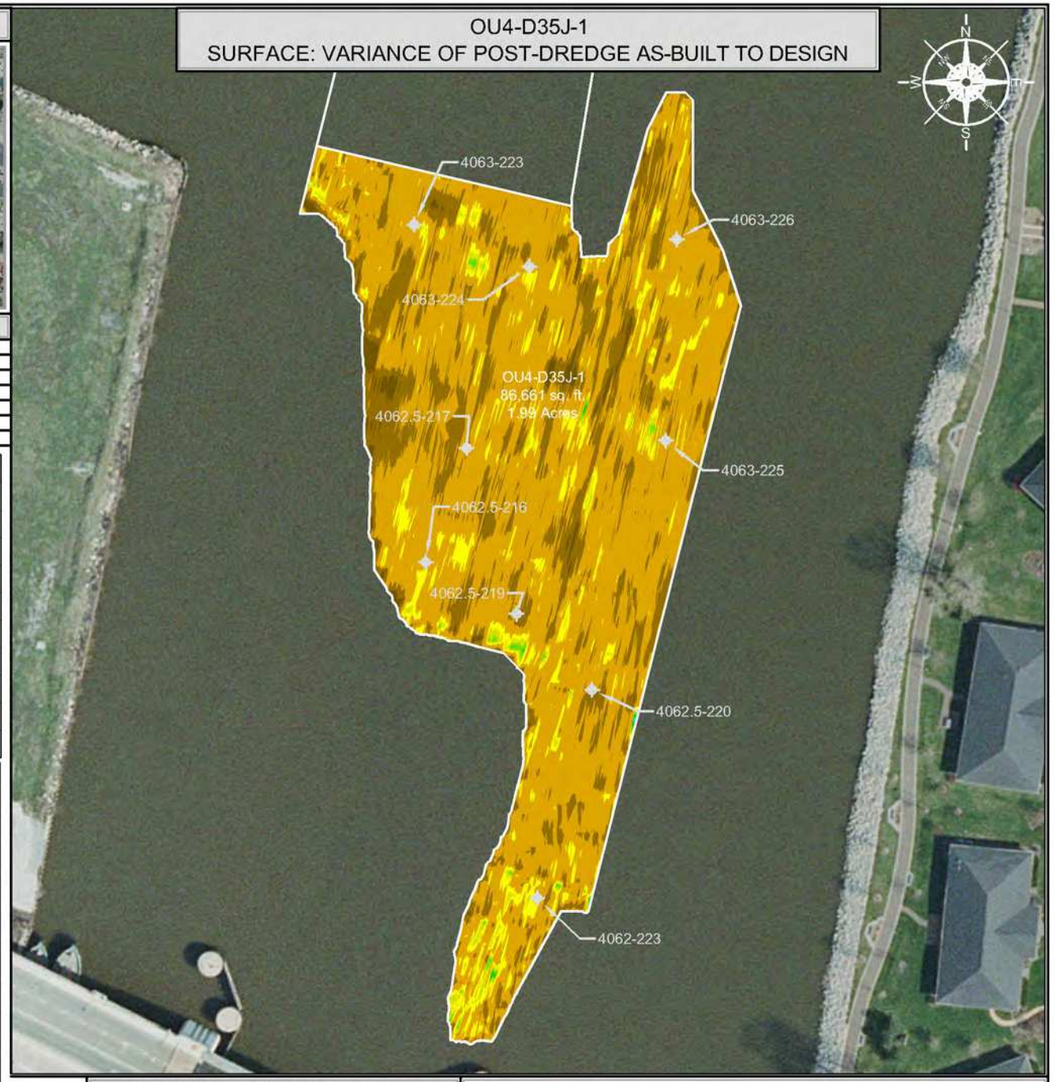
CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4062-223	252655.38	2484750.86
4062.5-219	252842.76	2484737.22
4062.5-217	252952.17	2484704.31
4062.5-216	252876.91	2484677.44
4062.5-220	252792.63	2484786.95
4063-223	253099.35	2484669.70
4063-226	253089.72	2484842.94
4063-225	252956.91	2484835.69
4063-224	253071.82	2484745.79

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION
4062.5-216	A: 1,650 µg/kg (1.65) ppm) D: 461 µg/kg (0.461) ppm) B: 16,000 µg/kg (16) ppm) E: <25.8 µg/kg (<0.0258) ppm) C: 6,130 µg/kg (6.13) ppm)
4062.5-217	A: 13,200 µg/kg (13.2) ppm) B: 3,170 µg/kg (3.17) ppm) C: <25.3 µg/kg (<0.0253) ppm)
4062.5-219	A: 49.3 µg/kg (0.0493) ppm) B: <25.3 µg/kg (<0.0253) ppm) C: <25.3 µg/kg (<0.0253) ppm)
4063-224	A: 49.6 µg/kg (0.0496) ppm) B: <25.3 µg/kg (<0.0253) ppm) C: <25.4 µg/kg (<0.0254) ppm)
4063-223	A: 3,740 µg/kg (3.74) ppm) D: <25.3 µg/kg (<0.0253) ppm) B: <25.2 µg/kg (<0.0252) ppm) C: <25.3 µg/kg (<0.0253) ppm)
4062.5-220	A: 8,450 µg/kg (8.45) ppm) D: <25.4 µg/kg (<0.0254) ppm) B: 12,300 µg/kg (12.3) ppm) C: 52.6 µg/kg (0.0526) ppm)
4062-223	A: 477 µg/kg (0.477) ppm) D: <25.2 µg/kg (<0.0252) ppm) B: 313 µg/kg (0.313) ppm) E: <25.4 µg/kg (<0.0254) ppm) C: 80.1 µg/kg (0.0801) ppm)
4063-225	A: 195 µg/kg (0.195) ppm) B: <25.5 µg/kg (<0.0255) ppm) C: <25.5 µg/kg (<0.0255) ppm)
4063-226	A: 132 µg/kg (0.132) ppm) B: <25.4 µg/kg (<0.0254) ppm) C: <25.5 µg/kg (<0.0255) ppm)

OU4-D35J-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-17-D35J-1A-4062.5-218-A
2. TTFR-17-D35J-1A-4062.5-216-B
3. TTFR-17-D35J-1A-4062.5-218-C
4. TTFR-17-D35J-1A-4062.5-216-D
5. TTFR-17-D35J-1A-4062.5-216-E
6. TTFR-17-D35J-1A-4062.5-217-A
7. TTFR-17-D35J-1A-4062.5-217-B
8. TTFR-17-D35J-1A-4062.5-217-C
9. TTFR-17-D35J-1A-4062.5-219-A
10. TTFR-17-D35J-1A-4062.5-219-B
11. TTFR-17-D35J-1A-4062.5-219-C
12. TTFR-17-D35J-1A-4063-224-A
13. TTFR-17-D35J-1A-4063-224-B
14. TTFR-17-D35J-1A-4063-224-C
15. TTFR-17-D35J-1A-4063-223-A
16. TTFR-17-D35J-1A-4063-223-B
17. TTFR-17-D35J-1A-4063-223-C
18. TTFR-17-D35J-1A-4063-223-D
19. TTFR-17-D35J-1B-4062.5-220-A
20. TTFR-17-D35J-1B-4062.5-220-B
21. TTFR-17-D35J-1B-4062.5-220-C
22. TTFR-17-D35J-1B-4062.5-220-D
23. TTFR-17-D35J-1B-4062-223-A
24. TTFR-17-D35J-1B-4062-223-B
25. TTFR-17-D35J-1B-4062-223-C
26. TTFR-17-D35J-1B-4062-223-D
27. TTFR-17-D35J-1B-4062-223-E
28. TTFR-17-D35J-1B-4063-225-A
29. TTFR-17-D35J-1B-4063-225-B
30. TTFR-17-D35J-1B-4063-225-C
31. TTFR-17-D35J-1B-4063-226-A
32. TTFR-17-D35J-1B-4063-226-B
33. TTFR-17-D35J-1B-4063-226-C

SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-15-2016

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
541.00'	-	542.00'
542.00'	-	543.00'
543.00'	-	544.00'
544.00'	-	545.00'
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-17-D35J-1A-A
2. 0.5' - 1.0' SAMPLE ID TTFR-17-D35J-1A-B
3. 1.0' - 1.5' SAMPLE ID TTFR-17-D35J-1A-C
4. 0.0' - 0.5' SAMPLE ID TTFR-17-D35J-1B-A
5. 0.5' - 1.0' SAMPLE ID TTFR-17-D35J-1B-B
6. 1.0' - 1.5' SAMPLE ID TTFR-17-D35J-1B-C
7. CONFIRMATION SAMPLES WERE COLLECTED ON 10-19-2017
8. CONFIRMATION SAMPLES ARE A COMPOSITE OF NINE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
9. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 10-25-2017 and 10-30-2017

THIS DOCUMENT IS THE PROPERTY OF LOWER FOX RIVER REMEDIATION LLC PREPARED BY TETRA TECH EC, INC. (TtEC), AND IS PROVIDED UPON THE CONDITION THAT IT WILL NOT BE REPRODUCED, COPIED, OR ISSUED TO A THIRD PARTY. IT IS PROVIDED TO BE USED SOLELY FOR THE ORIGINAL INTENDED PURPOSE, AND SOLELY FOR THE EXECUTION OR REVIEW OF THE ENGINEERING AND CONSTRUCTION OF THE SUBJECT PROJECT.

OU# - D# - #

- OU# — OPERABLE UNIT
- D# — DREDGE AREA
- # — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-3.52'	-	-1.00'	1,378.43
BELOW RAL	-1.00'	-	-0.50'	17,905.39
BELOW RAL	-0.50'	-	0.00'	59,896.43
ABOVE RAL	0.00'	-	0.25'	6,103.64
ABOVE RAL	0.25'	-	0.50'	1,073.90
ABOVE RAL	0.50'	-	0.75'	245.44
ABOVE RAL	0.75'	-	1.00'	40.83
ABOVE RAL	1.00'	-	1.25'	13.48
ABOVE RAL	1.25'	-	1.40'	0.53

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35J-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 16, 2016
LAST REVISED: November 29, 2018
CHECKED BY: REG

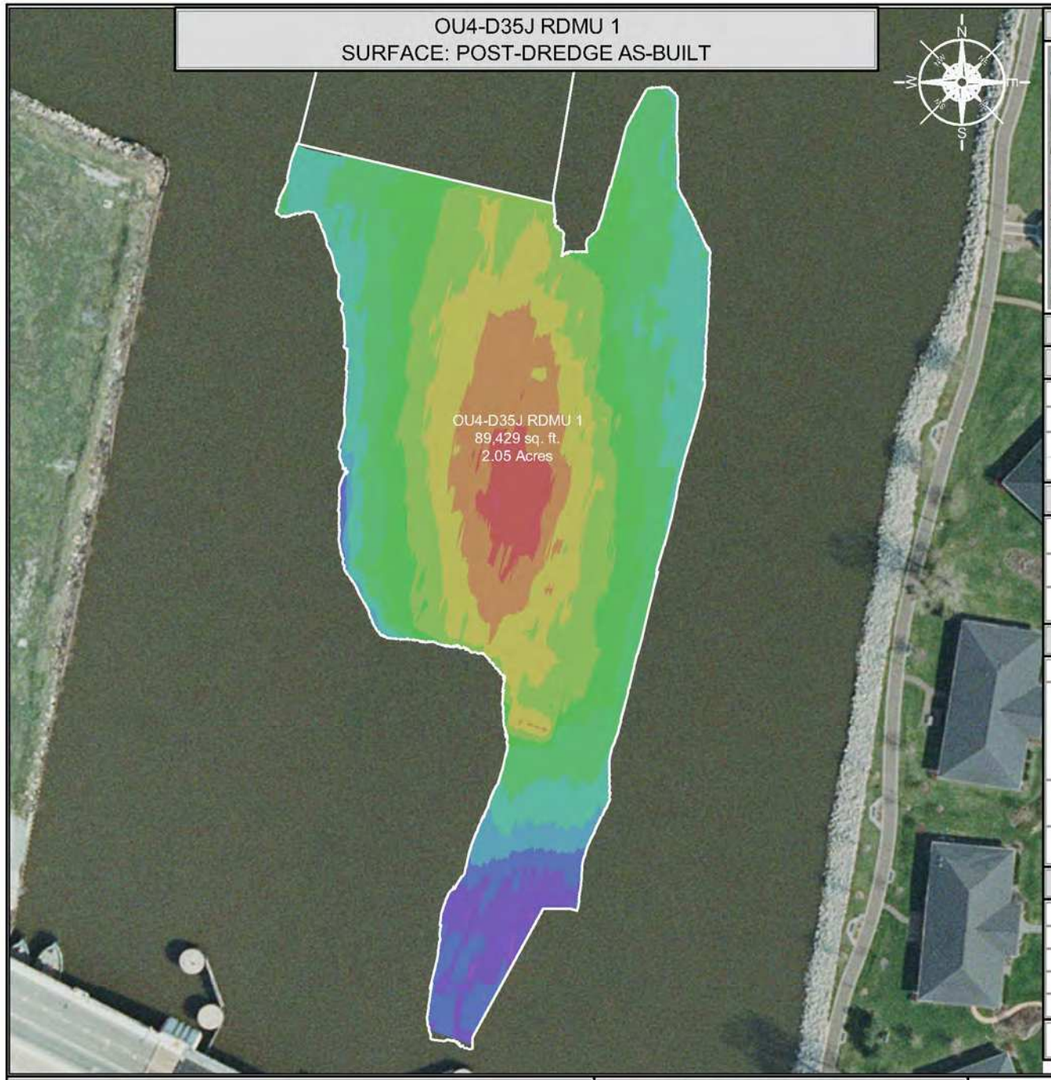
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-095

OU4-D35J-1
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LOCAD\Hall Engineering\Dredge Files\2016\OU4-D35J\DWG\Final Design\OU4-D35J-1.dwg

OU4-D35J RDMU 1
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

1,104.16	INITIAL RAL VOLUME
1,119.36	INITIAL OVERCUT VOLUME
2,223.52	RAL + OVERCUT VOLUME
1,988.93	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

1,569.50	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
1,336.36	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
2,905.86	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

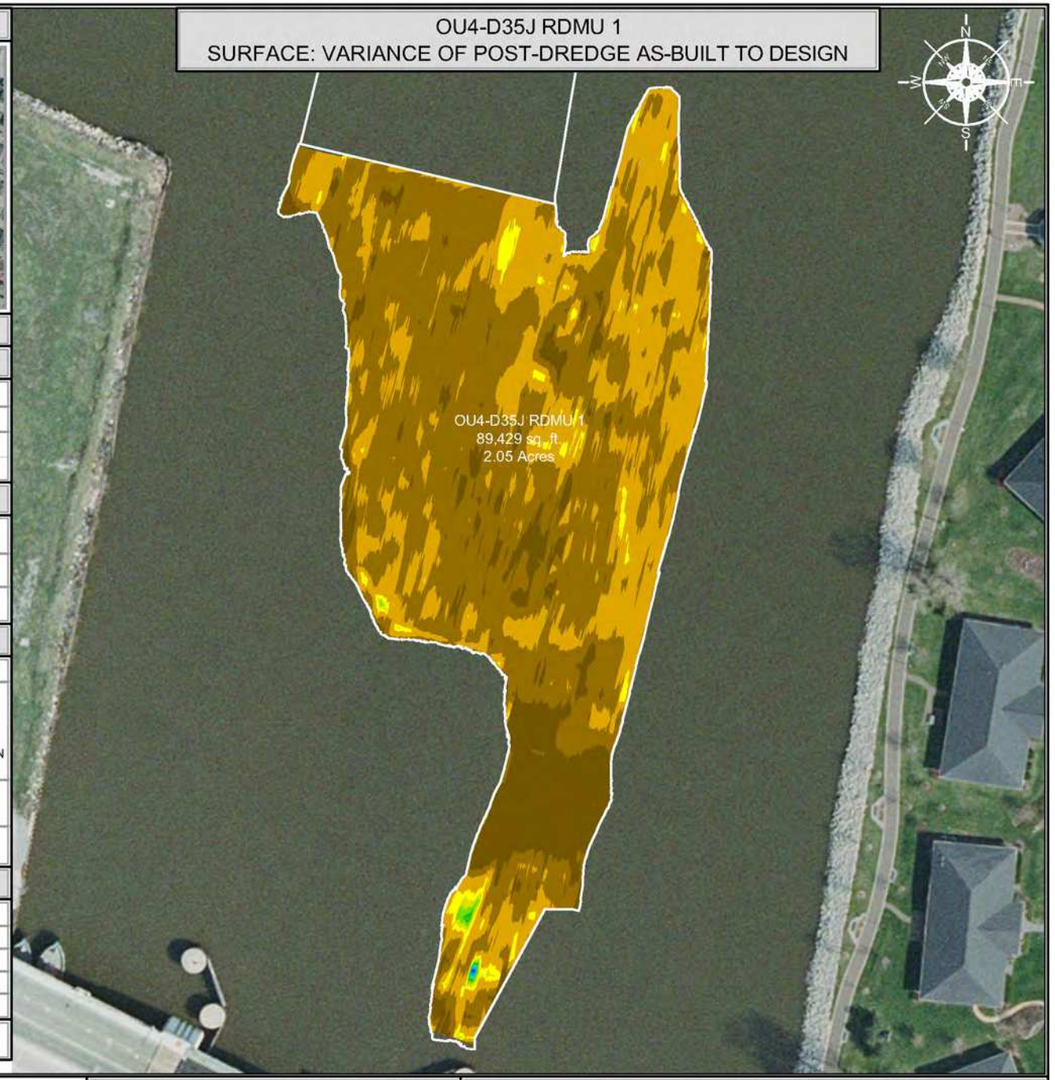
2018 AS-BUILT VOLUMES (CU. YD.)

2,946.40	TOTAL VOLUME DREDGED
1,554.87	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
13.66	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
220.93	OVERCUT VOLUME REMAINING
1,008.07	OVERCUT VOLUME DREDGED
383.46	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

89,428.55	AREA (SQ. FT.)
2,189.83	ABOVE DESIGN ELEVATION
87,238.72	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
5.17 "	AVERAGE DEPTH OF OVERCUT [1]
98	PERCENT COMPLETE [2]

OU4-D35J RDMU 1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 5-9-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
540.00'	-	541.00'
541.00'	-	542.00'
542.00'	-	543.00'
543.00'	-	544.00'
544.00'	-	545.00'
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-4.07'	-	-1.00'	11,010.82
BELOW RAL	-1.00'	-	-0.50'	48,458.74
BELOW RAL	-0.50'	-	0.00'	27,769.16
ABOVE RAL	0.00'	-	0.25'	1,596.76
ABOVE RAL	0.25'	-	0.50'	233.32
ABOVE RAL	0.50'	-	0.75'	127.71
ABOVE RAL	0.75'	-	1.00'	40.53
ABOVE RAL	1.00'	-	1.25'	16.81
ABOVE RAL	1.25'	-	1.50'	12.59
ABOVE RAL	1.50'	-	1.66'	4.97

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35J RDMU 1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: May 21, 2018
LAST REVISED: November 29, 2018
CHECKED BY: REG

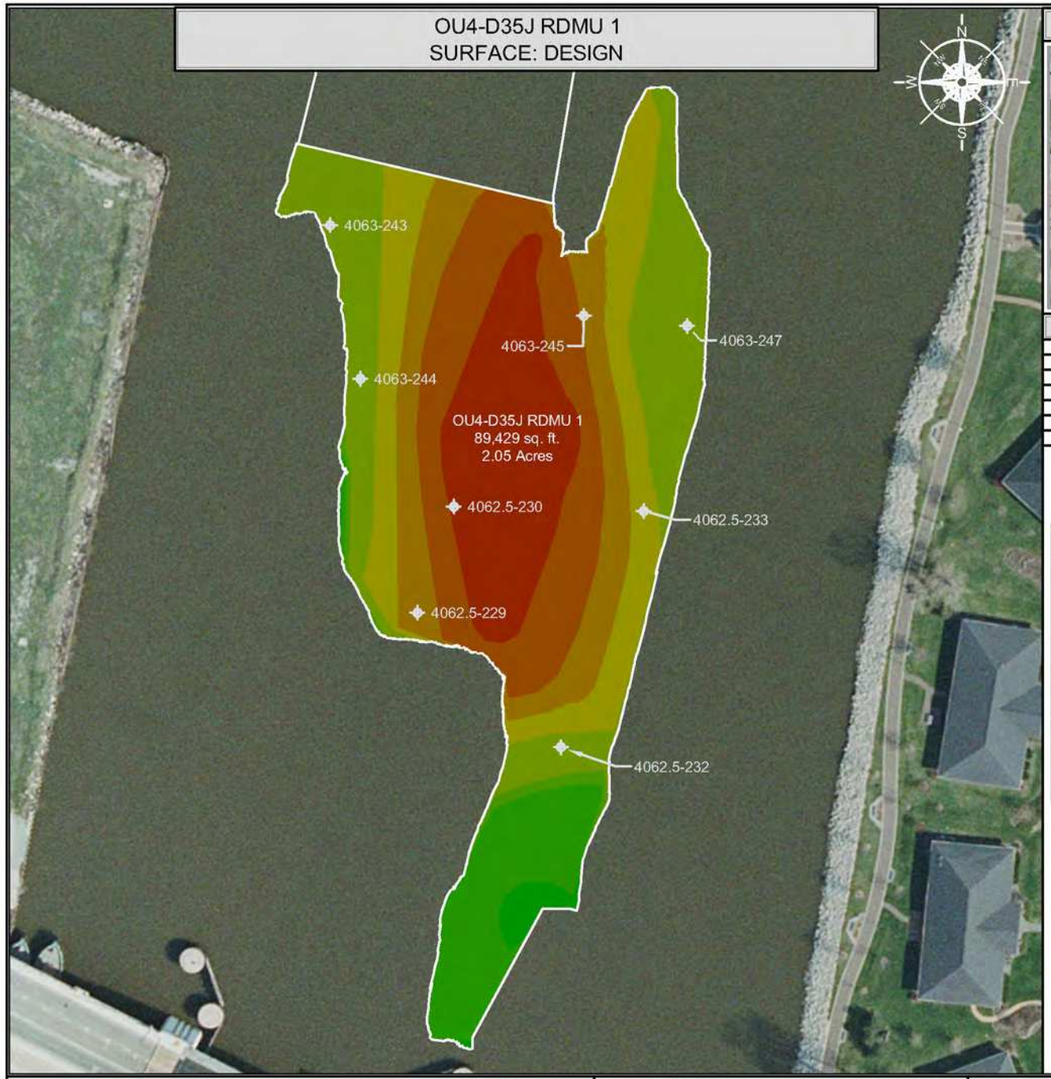
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-096

OU4-D35J RDMU 1
1st RESIDUAL DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\ALLOC\AS\Field Engineering\Dredge Files\2018\OU4-D35J RDMU\DWG\Post Dredge\OU4-D35J RDMU 1.dwg

OU4-D35J RDMU 1
SURFACE: DESIGN



INDEX MAP



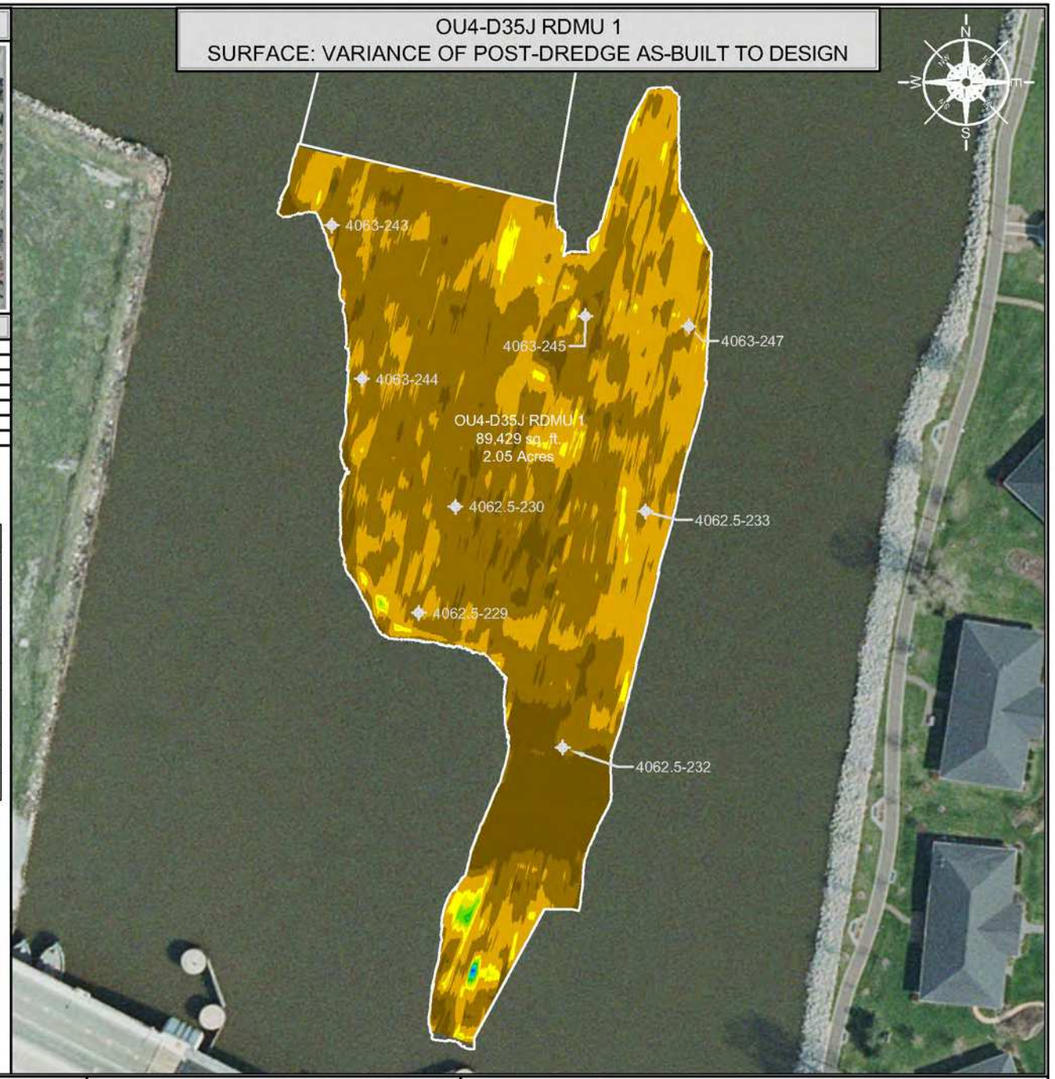
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5' 1A	440 µg/kg (0.44 ppm)
0.5' - 1.0' 1A	108 µg/kg (0.108 ppm)
1.0' - 1.5' 1A	<25.5 µg/kg (<0.0255 ppm)
0.0' - 0.5' 1B	330 µg/kg (0.33 ppm)
0.5' - 1.0' 1B	52.6 µg/kg (0.0526 ppm)
1.0' - 1.5' 1B	<25.6 µg/kg (<0.0256 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4062.5-230	252912.05	2484707.88
4062.5-229	252842.05	2484683.84
4062.5-233	252908.98	2484833.22
4062.5-232	252753.20	2484778.70
4063-243	253097.60	2484626.47
4063-244	252996.19	2484646.33
4063-245	253037.70	2484793.71
4063-247	253031.12	2484861.89

OU4-D35J RDMU 1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 5-9-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
542.00'	-	543.00'
543.00'	-	544.00'
544.00'	-	545.00'
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-D35J-1A-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-D35J-1A-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-D35J-1A-C
4. 0.0' - 0.5' SAMPLE ID TTFR-18-D35J-1B-A
5. 0.5' - 1.0' SAMPLE ID TTFR-18-D35J-1B-B
6. 1.0' - 1.5' SAMPLE ID TTFR-18-D35J-1B-C
7. CONFIRMATION SAMPLES WERE COLLECTED ON 8-27-2018
8. CONFIRMATION SAMPLES ARE A COMPOSITE OF EIGHT SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
9. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 8-31-2018

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT
DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-4.07'	-	-1.00'	11,010.82
BELOW RAL	-1.00'	-	-0.50'	48,458.74
BELOW RAL	-0.50'	-	0.00'	27,769.16
ABOVE RAL	0.00'	-	0.25'	1,596.76
ABOVE RAL	0.25'	-	0.50'	233.32
ABOVE RAL	0.50'	-	0.75'	127.71
ABOVE RAL	0.75'	-	1.00'	40.53
ABOVE RAL	1.00'	-	1.25'	16.81
ABOVE RAL	1.25'	-	1.50'	12.59
ABOVE RAL	1.50'	-	1.66'	4.97

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35J RDMU 1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: May 21, 2018
LAST REVISED: November 29, 2018
CHECKED BY: REG

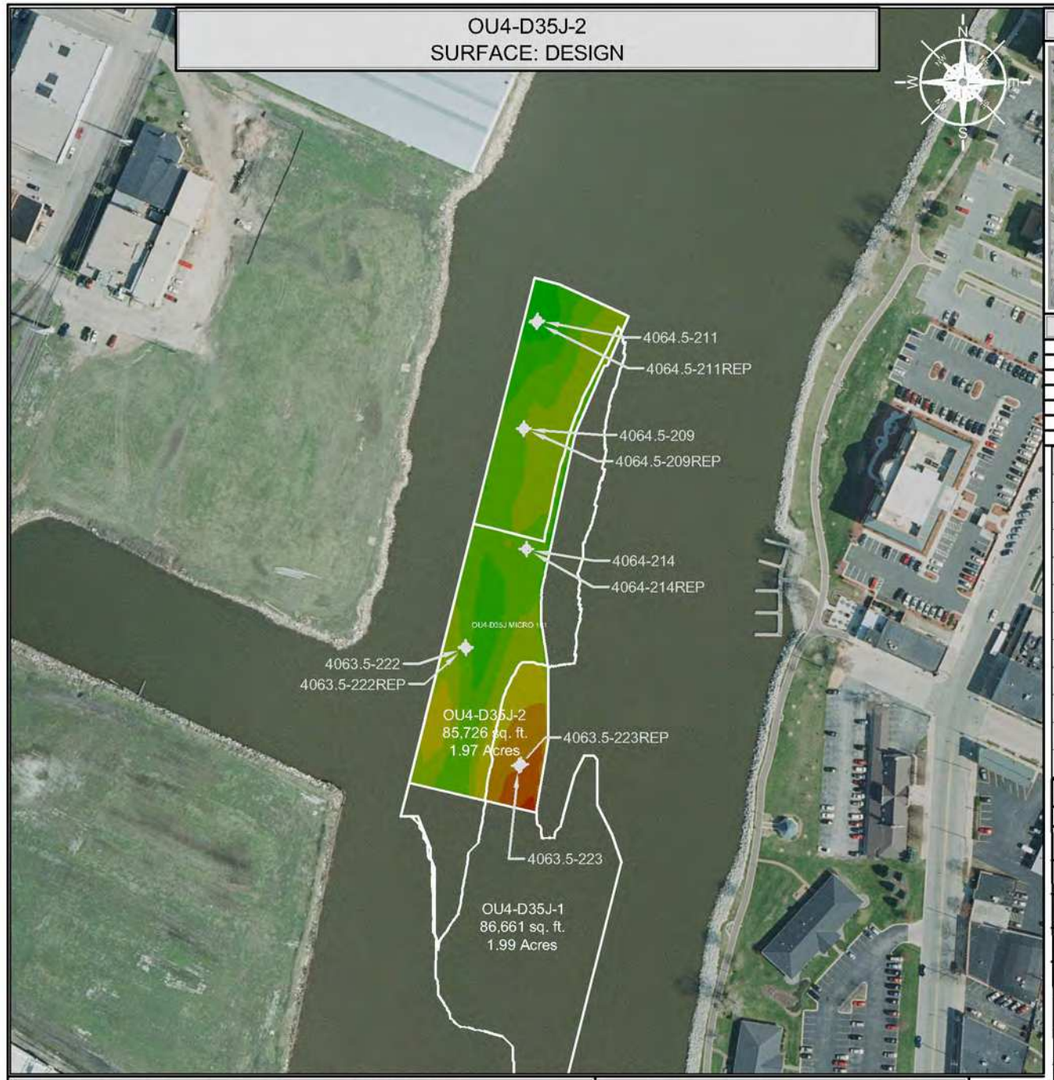
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-097

OU4-D35J RDMU 1
1st RESIDUAL DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LLC\LD\Field Engineering\Design Files\2018\OU4-D35J RDMU\DWG\Final Design\OU4-D35J RDMU 1.dwg

OU4-D35J-2
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	3,160 µg/kg (3.16 ppm)
0.5' - 1.0'	1,270 µg/kg (1.27 ppm)
1.0' - 1.5'	122 µg/kg (0.122 ppm)
0.0' - 0.5' REP	1,790 µg/kg (1.79 ppm)
0.5' - 1.0' REP	1,740 µg/kg (1.74 ppm)
1.0' - 1.5' REP	241 µg/kg (0.241 ppm)

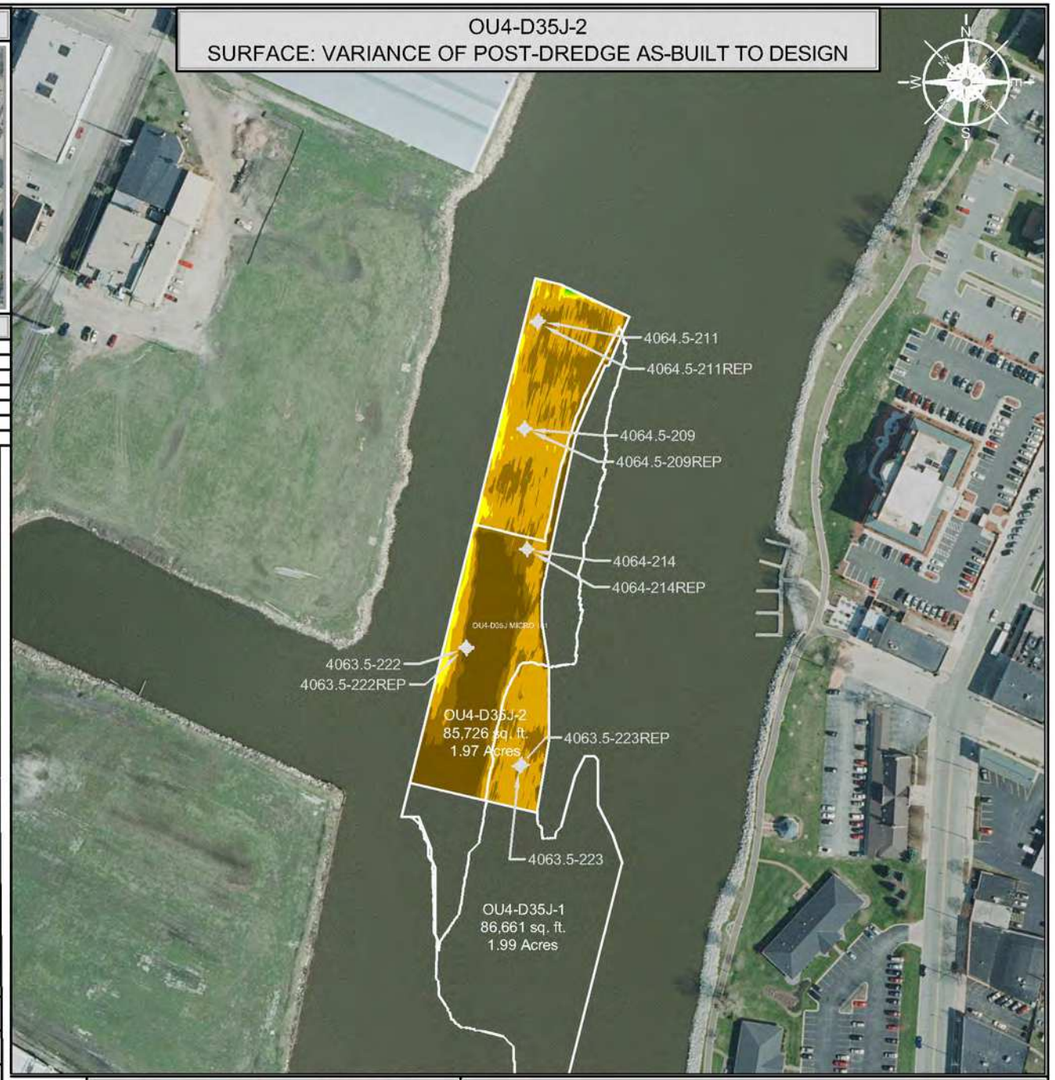
CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4063.5-223REP	253175.47	2484752.94
4063.5-222REP	253330.36	2484679.76
4063.5-223	253173.63	2484749.87
4063.5-222	253328.73	2484679.92
4064-214REP	253459.80	2484759.91
4064-214	253459.20	2484759.93
4064.5-209REP	253619.01	2484756.56
4064.5-211	253760.86	2484774.48
4064.5-209	253617.96	2484756.21
4064.5-211REP	253758.82	2484773.14

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION
4063.5-222	A: 3,650 µg/kg (3.65) ppm) B: 427 µg/kg (0.427) ppm) C: <25.1 µg/kg (<0.0251) ppm)
4063.5-223	A: 387 µg/kg (0.387) ppm) B: 46.1 µg/kg (0.0461) ppm) C: <25.3 µg/kg (<0.0253) ppm)
4064.5-209	A: 2,350 µg/kg (2.35) ppm) B: 2,290 µg/kg (2.29) ppm) C: 530 µg/kg (0.53) (ppm)
4064.5-211	A: 1,780 µg/kg (1.78) ppm) B: 763 µg/kg (0.763) ppm) C: <25.3 µg/kg (<0.0253) ppm)
4064-214	A: 7,690 µg/kg (7.69) ppm) B: 349 µg/kg (0.349) ppm) C: <25.4 µg/kg (<0.0254) ppm)
4063.5-222REP	A: 2,360 µg/kg (2.36) ppm) B: <25.4 µg/kg (<0.0254) ppm) C: <25.2 µg/kg (<0.0252) ppm)
4063.5-223REP	A: 610 µg/kg (0.61) ppm) B: 137 µg/kg (0.137) ppm) C: <25.4 µg/kg (<0.0254) ppm)
4064.5-209REP	A: 3,020 µg/kg (3.02) ppm) D: 178 µg/kg (0.178) ppm) B: 3,610 µg/kg (3.81) ppm) C: 1,620 µg/kg (1.62) ppm)
4064.5-211REP	A: 2,770 µg/kg (2.77) ppm) B: 3,430 µg/kg (3.43) ppm) C: 89.6 µg/kg (0.0896) ppm)
4064-214REP	A: 1,880 µg/kg (1.88) ppm) B: 69.4 µg/kg (0.0694) ppm) C: <25.2 µg/kg (<0.0252) ppm)

OU4-D35J-2
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-17-D35J-2-4063.5-222-A
2. TTFR-17-D35J-2-4063.5-222-B
3. TTFR-17-D35J-2-4063.5-222-C
4. TTFR-17-D35J-2-4063.5-223-A
5. TTFR-17-D35J-2-4063.5-223-B
6. TTFR-17-D35J-2-4063.5-223-C
7. TTFR-17-D35J-2-4064.5-209-A
8. TTFR-17-D35J-2-4064.5-209-B
9. TTFR-17-D35J-2-4064.5-209-C
10. TTFR-17-D35J-2-4064.5-211-A
11. TTFR-17-D35J-2-4064.5-211-B
12. TTFR-17-D35J-2-4064.5-211-C
13. TTFR-17-D35J-2-4064-214-A
14. TTFR-17-D35J-2-4064-214-B
15. TTFR-17-D35J-2-4064-214-C
16. TTFR-17-D35J-2-4063.5-222REP-A
17. TTFR-17-D35J-2-4063.5-222REP-B
18. TTFR-17-D35J-2-4063.5-222REP-C
19. TTFR-17-D35J-2-4063.5-223REP-A
20. TTFR-17-D35J-2-4063.5-223REP-B
21. TTFR-17-D35J-2-4063.5-223REP-C
22. TTFR-17-D35J-2-4064.5-209REP-A
23. TTFR-17-D35J-2-4064.5-209REP-B
24. TTFR-17-D35J-2-4064.5-209REP-C
25. TTFR-17-D35J-2-4064.5-209REP-D
26. TTFR-17-D35J-2-4064.5-211REP-A
27. TTFR-17-D35J-2-4064.5-211REP-B
28. TTFR-17-D35J-2-4064.5-211REP-C
29. TTFR-17-D35J-2-4064-214REP-A
30. TTFR-17-D35J-2-4064-214REP-B
31. TTFR-17-D35J-2-4064-214REP-C

SCALE (1" = 200')

200 100 0 200 400

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-21-2017

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
544.00'	-	545.00'
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-17-D35J-2-A
2. 0.5' - 1.0' SAMPLE ID TTFR-17-D35J-2-B
3. 1.0' - 1.5' SAMPLE ID TTFR-17-D35J-2-C
4. 0.0' - 0.5' SAMPLE ID TTFR-17-D35J-2REP-A
5. 0.5' - 1.0' SAMPLE ID TTFR-17-D35J-2REP-B
6. 1.0' - 1.5' SAMPLE ID TTFR-17-D35J-2REP-C
7. CONFIRMATION SAMPLES WERE COLLECTED ON 10-24-2017
8. CONFIRMATION SAMPLES ARE A COMPOSITE OF TEN SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
9. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 10-27-2017, 11-2-2017, and 11-20-2017

THIS DOCUMENT IS THE PROPERTY OF LOWER FOX RIVER REMEDIATION LLC PREPARED BY TETRA TECH EC, INC. (TEC), AND IS PROVIDED UPON THE CONDITION THAT IT WILL NOT BE REPRODUCED, COPIED, OR ISSUED TO A THIRD PARTY. IT IS PROVIDED TO BE USED SOLELY FOR THE ORIGINAL INTENDED PURPOSE, AND SOLELY FOR THE EXECUTION OR REVIEW OF THE ENGINEERING AND CONSTRUCTION OF THE SUBJECT PROJECT.

OU# - D# - #

- OU# — OPERABLE UNIT
- D# — DREDGE AREA
- # — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-3.25'	-	-1.00'	23,898.85
BELOW RAL	-1.00'	-	-0.50'	21,164.20
BELOW RAL	-0.50'	-	0.00'	36,435.83
ABOVE RAL	0.00'	-	0.50'	3,410.94
ABOVE RAL	0.50'	-	1.00'	635.51
ABOVE RAL	1.00'	-	1.50'	73.64
ABOVE RAL	1.50'	-	2.00'	32.24
ABOVE RAL	2.00'	-	2.30'	5.95

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

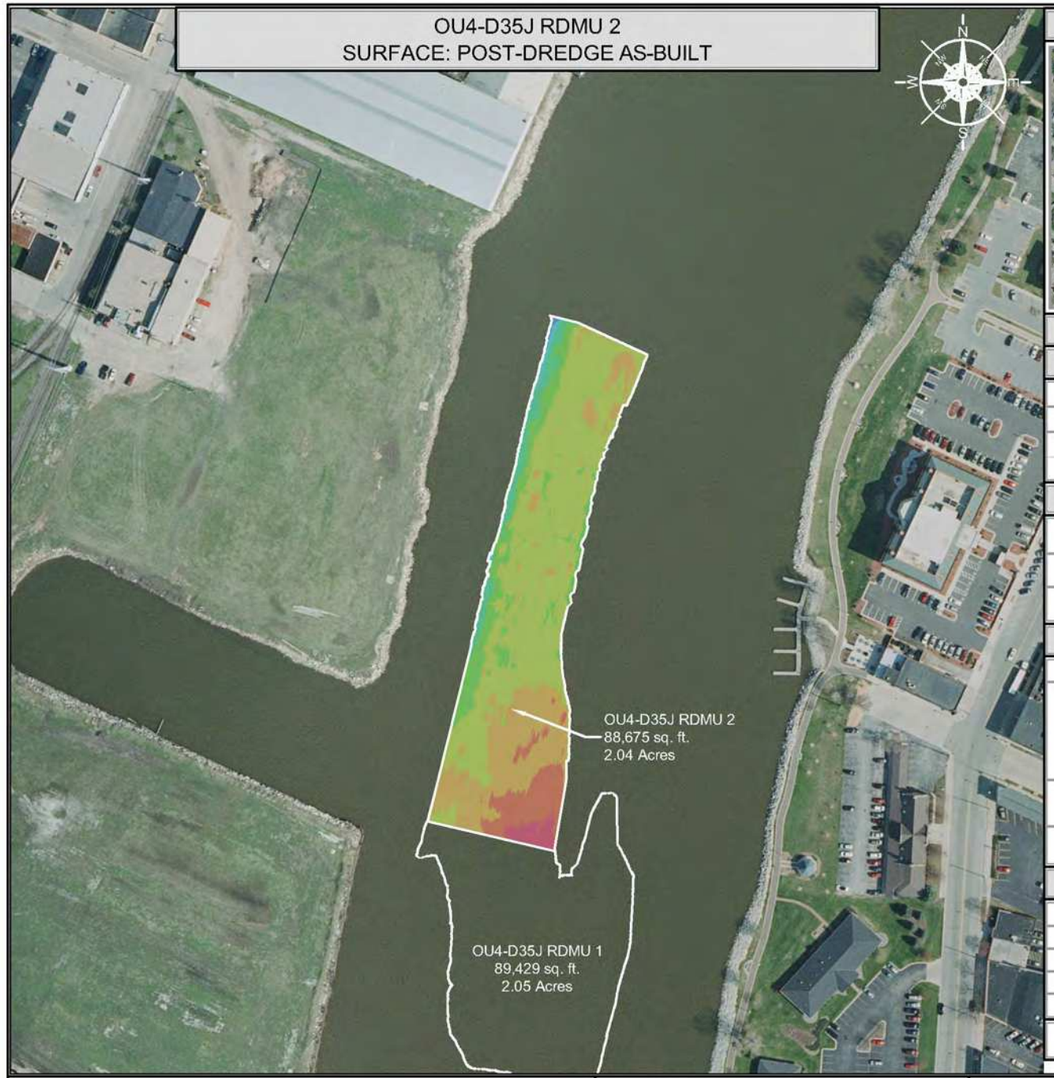
CAD FILE: OU4-D35J-2.dwg
DRAWN BY: DAVID.FRISQUE
DATE: October 2, 2017
LAST REVISED: November 29, 2018
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-098

OU4-D35J-2
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LOC\4\PHE\Engineering\3Dredge Files\2017\OU4 D35J\DWG\Final Design\OU4 D35J-2.dwg



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

1,123.21	INITIAL RAL VOLUME
1,283.19	INITIAL OVERCUT VOLUME
2,406.40	RAL + OVERCUT VOLUME
1,971.66	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

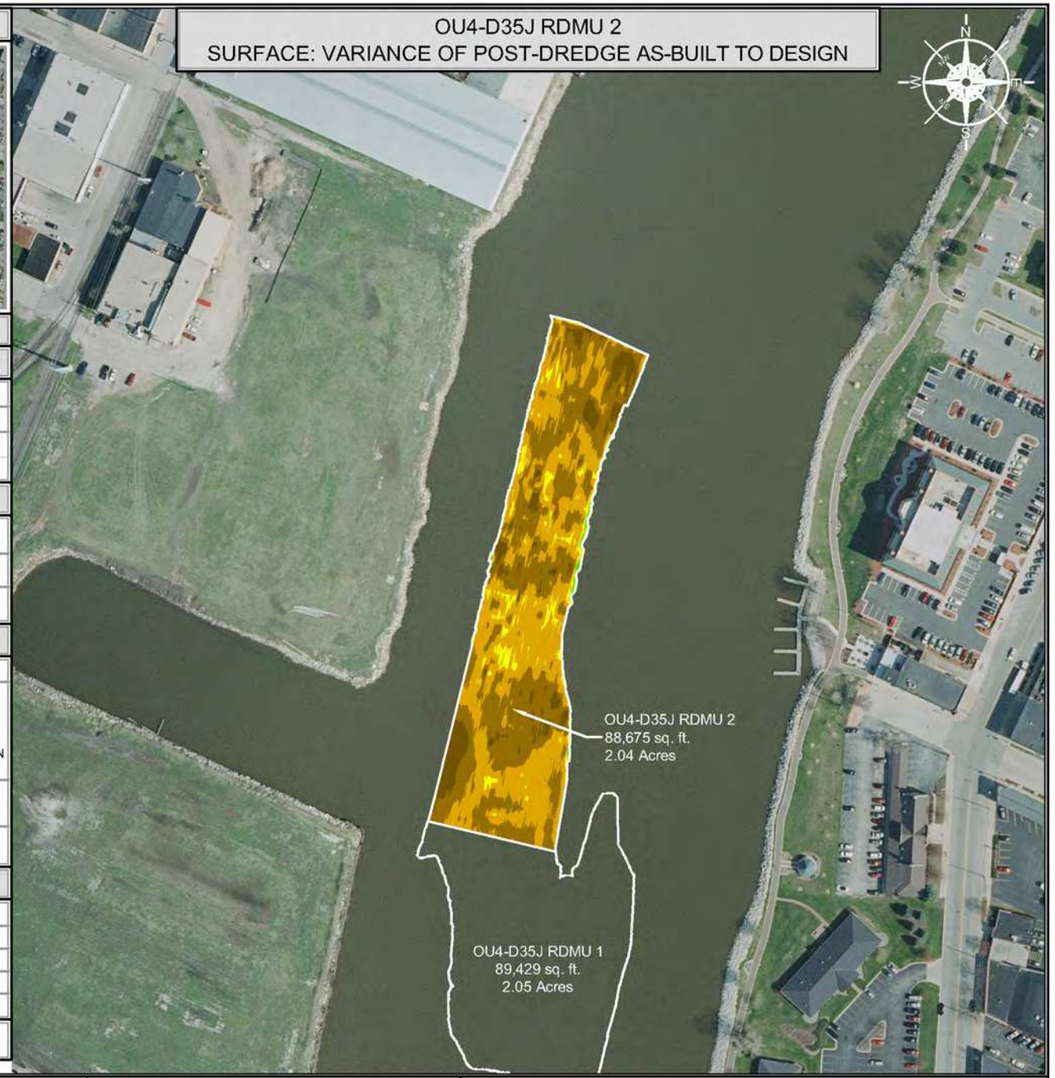
1,800.85	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
1,421.27	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
3,222.12	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

2018 AS-BUILT VOLUMES (CU. YD.)

3,274.82	TOTAL VOLUME DREDGED
1,818.19	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
28.38	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
406.36	OVERCUT VOLUME REMAINING
1,043.99	OVERCUT VOLUME DREDGED
412.64	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

88,675.06	AREA (SQ. FT.)
4,591.39	ABOVE DESIGN ELEVATION
84,083.67	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
5.61 "	AVERAGE DEPTH OF OVERCUT [1]
95	PERCENT COMPLETE [2]



SCALE (1" = 200')

200 100 0 200 400

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 8-15-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
544.00'	-	545.00'
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT
DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.98'	-	-1.00'	7,419.73
	-1.00'	-	-0.50'	37,510.41
	-0.50'	-	0.00'	39,153.53
ABOVE RAL	0.00'	-	0.25'	3,562.26
	0.25'	-	0.50'	548.65
	0.50'	-	0.75'	413.71
	0.75'	-	1.00'	41.64
	1.00'	-	1.21'	2.19

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35J RDMU 2.dwg
DRAWN BY: DAVID.FRISQUE
DATE: August 21, 2018
LAST REVISED: November 29, 2018
CHECKED BY: REG

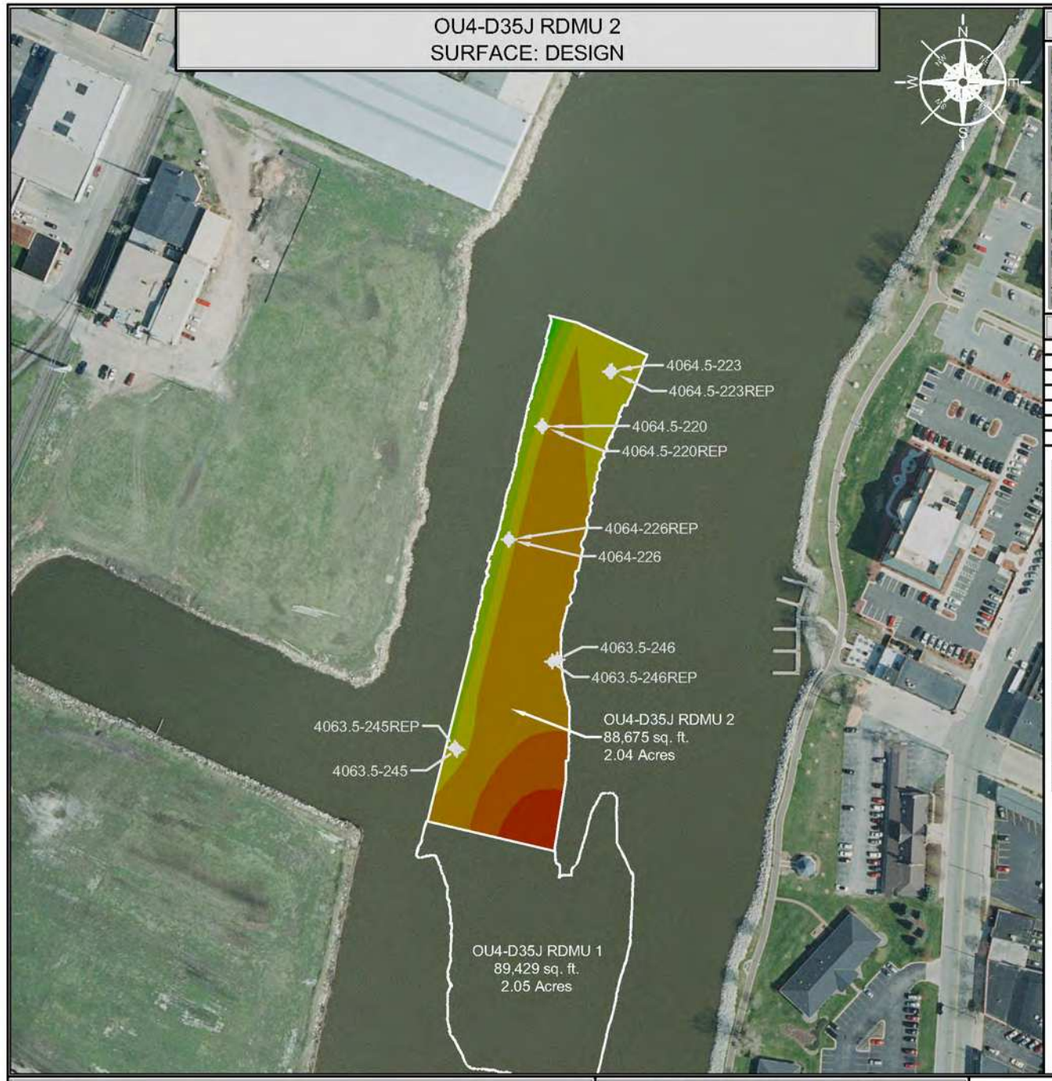
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-099

OU4-D35J RDMU 2
1st RESIDUAL DREDGE BATHYMETRY, VOLUMES AND AREAS

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OU4-D35J RDMU 2
SURFACE: DESIGN



INDEX MAP



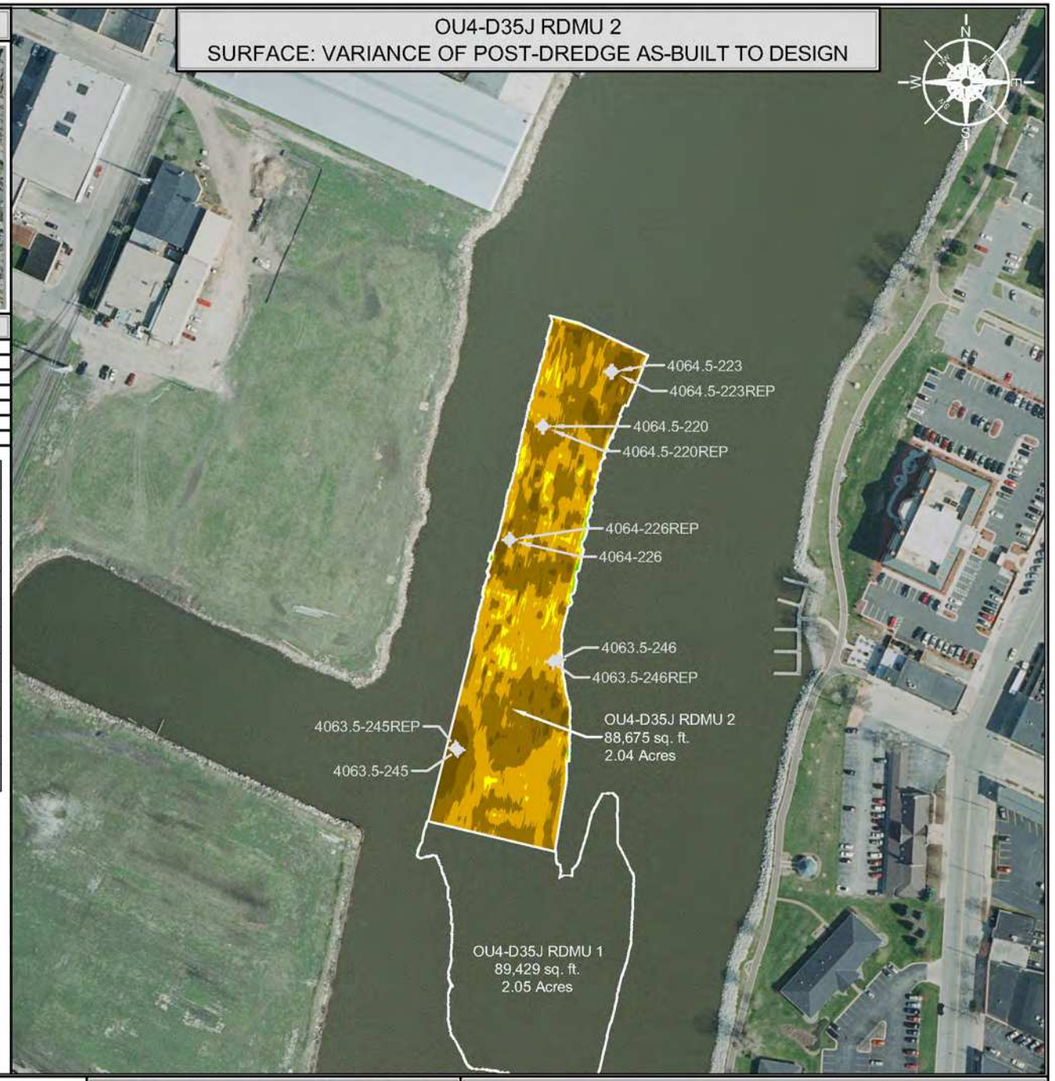
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	1,440 µg/kg (1.44 ppm)
0.5' - 1.0'	54.4 µg/kg (0.0544 ppm)
1.0' - 1.5'	<25.3 µg/kg (<0.0253 ppm)
0.0' - 0.5' REP	3,010 µg/kg (3.01 ppm)
0.5' - 1.0' REP	90.1 µg/kg (0.0901 ppm)
1.0' - 1.5' REP	<25.3 µg/kg (<0.0253 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4063.5-246REP	253361.76	2484769.91
4063.5-245REP	253248.14	2484641.89
4063.5-246	253364.55	2484776.90
4063.5-245	253245.47	2484644.49
4064-226REP	253522.98	2484713.83
4064-226	253522.74	2484712.38
4064.5-223REP	253744.94	2484848.75
4064.5-223	253744.41	2484846.32
4064.5-220	253672.27	2484756.34
4064.5-220REP	253672.38	2484757.67

OU4-D35J RDMU 2
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 200')

200 100 0 200 400

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 8-15-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
544.00'	-	545.00'
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-D35J-2-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-D35J-2-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-D35J-2-C
4. 0.0' - 0.5' SAMPLE ID TTFR-18-D35J-2REP-A
5. 0.5' - 1.0' SAMPLE ID TTFR-18-D35J-2REP-B
6. 1.0' - 1.5' SAMPLE ID TTFR-18-D35J-2REP-C
7. CONFIRMATION SAMPLES WERE COLLECTED ON 9-21-2018
8. CONFIRMATION SAMPLES ARE A COMPOSITE OF TEN SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
9. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 9-28-2018

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OU# - D# - #
- OU# — OPERABLE UNIT
- D# — DREDGE AREA
- # — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.98'	-	-1.00'	7,419.73
BELOW RAL	-1.00'	-	-0.50'	37,510.41
BELOW RAL	-0.50'	-	0.00'	39,153.53
ABOVE RAL	0.00'	-	0.25'	3,562.26
ABOVE RAL	0.25'	-	0.50'	548.65
ABOVE RAL	0.50'	-	0.75'	413.71
ABOVE RAL	0.75'	-	1.00'	41.64
ABOVE RAL	1.00'	-	1.21'	2.19

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35J RDMU 2.dwg
DRAWN BY: DAVID.FRISQUE
DATE: August 21, 2018
LAST REVISED: November 29, 2018
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-100

OU4-D35J RDMU 2
1st RESIDUAL DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LOCAD\Pfiles\Engineering\3Dredge Files\2018\OU4 D35J RDMU\DWG\Post Dredge\OU4 D35J RDMU 2.dwg

OU4-D70-3
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5' 3A	2,470 µg/kg (2.47 ppm)
0.5' - 1.0' 3A	371 µg/kg (0.371 ppm)
1.0' - 1.5' 3A	264 µg/kg (0.264 ppm)
0.0' - 0.5' 3AREP	1,350 µg/kg (1.35 ppm)
0.5' - 1.0' 3AREP	373 µg/kg (0.373 ppm)
1.0' - 1.5' 3AREP	<25.2 µg/kg (<0.0252 ppm)
0.0' - 0.5' 3B	2,070 µg/kg (2.07 ppm)
0.5' - 1.0' 3B	682 µg/kg (0.682 ppm)
1.0' - 1.5' 3B	111 µg/kg (0.111 ppm)
0.0' - 0.5' 3C	1,360 µg/kg (1.36 ppm)
0.5' - 1.0' 3C	125 µg/kg (0.125 ppm)
1.0' - 1.5' 3C	<25.6 µg/kg (<0.0256 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4062-217REP	252804.44	2484514.31
4062-217	252805.11	2484512.02
4062.5-212REP	252990.68	2484557.38
4062.5-211REP	252917.05	2484499.19
4062.5-212	252990.30	2484554.92
4062.5-211	252916.75	2484500.81
4063-221	253150.63	2484578.02
4063-220	253156.40	2484549.41
4063-219REP	253060.84	2484543.80
4063-219	253059.75	2484546.17
4063.5-220	253276.82	2484616.23
4063.5-218	253257.18	2484579.36
4063.5-217	253245.59	2484545.21
4063.5-221	253365.86	2484613.01
4064-213	253623.09	2484701.35
4064-212	253433.03	2484648.32
4064.5-208	253782.00	2484725.48
4064.5-207	253687.07	2484652.70

OU4-D70-3
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 200')

200 100 0 200 400

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-30-2017

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
545.00'	-	547.00'
547.00'	-	549.00'
549.00'	-	551.00'
551.00'	-	553.00'
553.00'	-	555.00'
555.00'	-	557.00'
557.00'	-	559.00'
559.00'	-	561.00'
561.00'	-	563.00'
563.00'	-	565.00'
565.00'	-	567.00'
567.00'	-	569.00'
569.00'	-	571.00'
571.00'	-	573.00'
573.00'	-	575.00'
575.00'	-	577.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-17-D70-3A-A
2. 0.5' - 1.0' SAMPLE ID TTFR-17-D70-3A-B
3. 1.0' - 1.5' SAMPLE ID TTFR-17-D70-3A-C
4. 0.0' - 0.5' SAMPLE ID TTFR-17-D70-3AREP-A
5. 0.5' - 1.0' SAMPLE ID TTFR-17-D70-3AREP-B
6. 1.0' - 1.5' SAMPLE ID TTFR-17-D70-3AREP-C
7. 0.0' - 0.5' SAMPLE ID TTFR-17-D70-3B-A
8. 0.5' - 1.0' SAMPLE ID TTFR-17-D70-3B-B
9. 1.0' - 1.5' SAMPLE ID TTFR-17-D70-3B-C
10. 0.0' - 0.5' SAMPLE ID TTFR-17-D70-3C-A
11. 0.5' - 1.0' SAMPLE ID TTFR-17-D70-3C-B
12. 1.0' - 1.5' SAMPLE ID TTFR-17-D70-3C-C
13. CONFIRMATION SAMPLES WERE COLLECTED ON 10-19-2017, 10-23-2017, and 10-24-2017
14. CONFIRMATION SAMPLES ARE A COMPOSITE OF EIGHTEEN SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
15. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 10-25-2017 and 10-27-2017

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OU# - D# - #

OU# = OPERABLE UNIT; D# = DREDGE AREA; # = DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-4.61'	-	-1.00'	8,611.86
BELOW RAL	-1.00'	-	-0.50'	33,519.90
BELOW RAL	-0.50'	-	0.00'	27,513.46
ABOVE RAL	0.00'	-	0.25'	2,151.05
ABOVE RAL	0.25'	-	0.50'	480.91
ABOVE RAL	0.50'	-	0.75'	168.90
ABOVE RAL	0.75'	-	1.00'	32.34
ABOVE RAL	1.00'	-	1.25'	3.03
ABOVE RAL	1.25'	-	1.50'	0.05
ABOVE RAL	1.50'	-	1.70'	0.01

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D70-3.dwg
DRAWN BY: DAVID.FRISQUE
DATE: October 2, 2017
LAST REVISED: November 30, 2018
CHECKED BY: REG

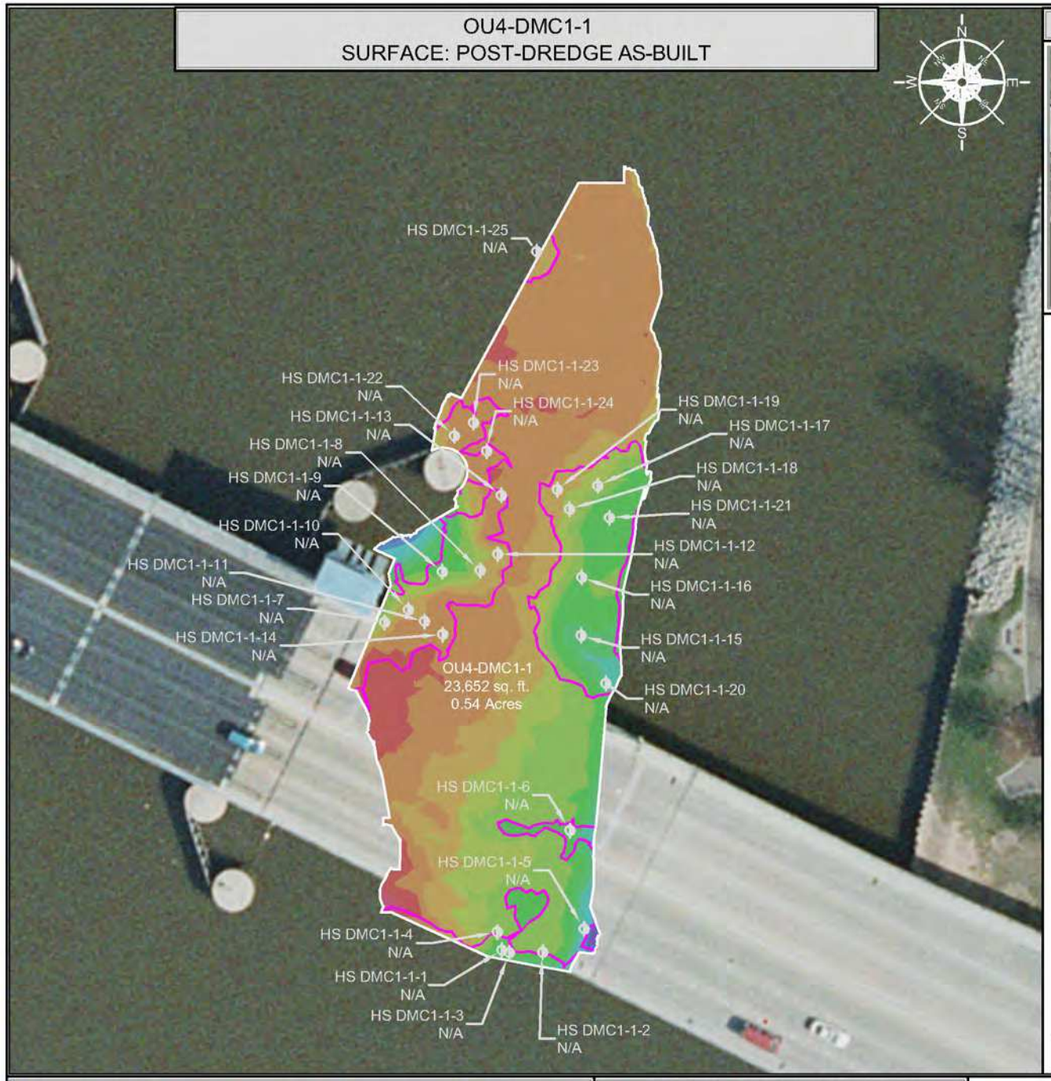
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-101

OU4-D70-3
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

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OU4-DMC1-1
SURFACE: POST-DREDGE AS-BUILT

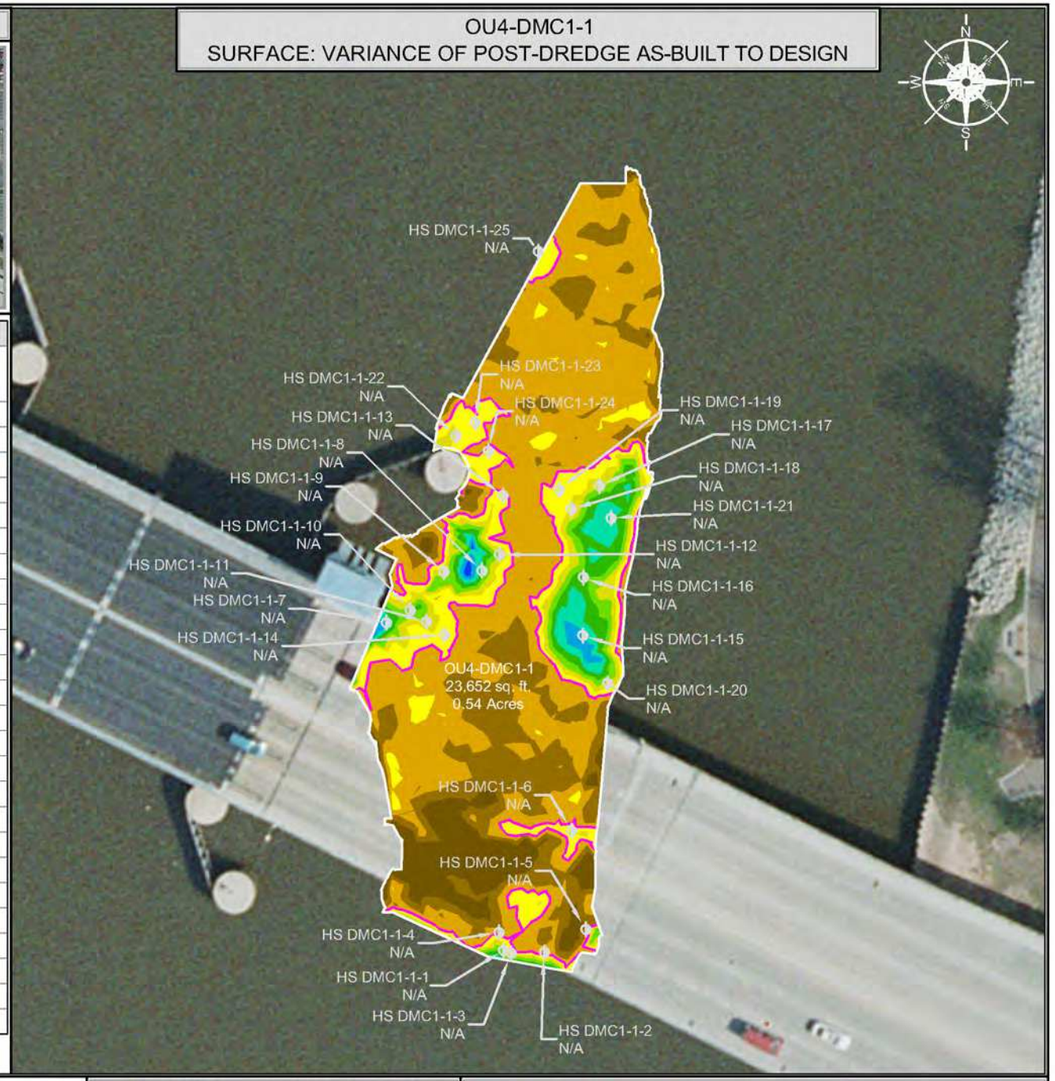


INDEX MAP



HIGH SUBGRADE SAMPLE AS-BUILT RESULTS			
SAMPLE ID	NORTHING	EASTING	THICKNESS OF SOFT SEDIMENT (FEET)
HS DMC1-1-1	252343.06	2484736.38	N/A
HS DMC1-1-2	252342.30	2484752.45	N/A
HS DMC1-1-3	252341.96	2484739.37	N/A
HS DMC1-1-4	252350.19	2484734.57	N/A
HS DMC1-1-5	252351.45	2484768.93	N/A
HS DMC1-1-6	252390.40	2484763.41	N/A
HS DMC1-1-7	252472.78	2484690.01	N/A
HS DMC1-1-8	252493.35	2484727.68	N/A
HS DMC1-1-9	252492.81	2484712.79	N/A
HS DMC1-1-10	252477.79	2484699.38	N/A
HS DMC1-1-11	252473.17	2484705.80	N/A
HS DMC1-1-12	252499.69	2484734.77	N/A
HS DMC1-1-13	252523.02	2484736.22	N/A
HS DMC1-1-14	252467.92	2484712.89	N/A
HS DMC1-1-15	252467.63	2484767.74	N/A
HS DMC1-1-16	252490.62	2484767.86	N/A
HS DMC1-1-17	252526.83	2484774.39	N/A
HS DMC1-1-18	252517.58	2484763.10	N/A
HS DMC1-1-19	252525.33	2484758.26	N/A
HS DMC1-1-20	252448.66	2484777.57	N/A
HS DMC1-1-21	252514.16	2484778.90	N/A
HS DMC1-1-22	252546.57	2484717.49	N/A
HS DMC1-1-23	252551.83	2484725.09	N/A
HS DMC1-1-24	252540.56	2484730.28	N/A
HS DMC1-1-25	252619.52	2484750.12	N/A

OU4-DMC1-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-23-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'
560.00'	-	561.00'
561.00'	-	562.00'

NR = NO RECOVERY
NA = NO CORE COLLECTION REQUIRED DUE TO POLING DEPTH

DRAWING NOTES

1. HIGH SUBGRADE SAMPLES AND POLING DATA WERE COLLECTED ON 8-8-2018 AND LOGGED ON 8-8-2018

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.75'	-	-1.00'	1,816.27
BELOW RAL	-1.00'	-	-0.50'	4,743.72
BELOW RAL	-0.50'	-	0.00'	10,683.17
ABOVE RAL	0.00'	-	0.50'	2,951.71
ABOVE RAL	0.50'	-	1.00'	1,068.91
ABOVE RAL	1.00'	-	1.50'	834.57
ABOVE RAL	1.50'	-	2.00'	814.04
ABOVE RAL	2.00'	-	2.50'	573.30
ABOVE RAL	2.50'	-	3.00'	167.82
ABOVE RAL	3.00'	-	3.52'	15.78

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DMC1-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: July 30, 2018
LAST REVISED: November 29, 2018
CHECKED BY: REG

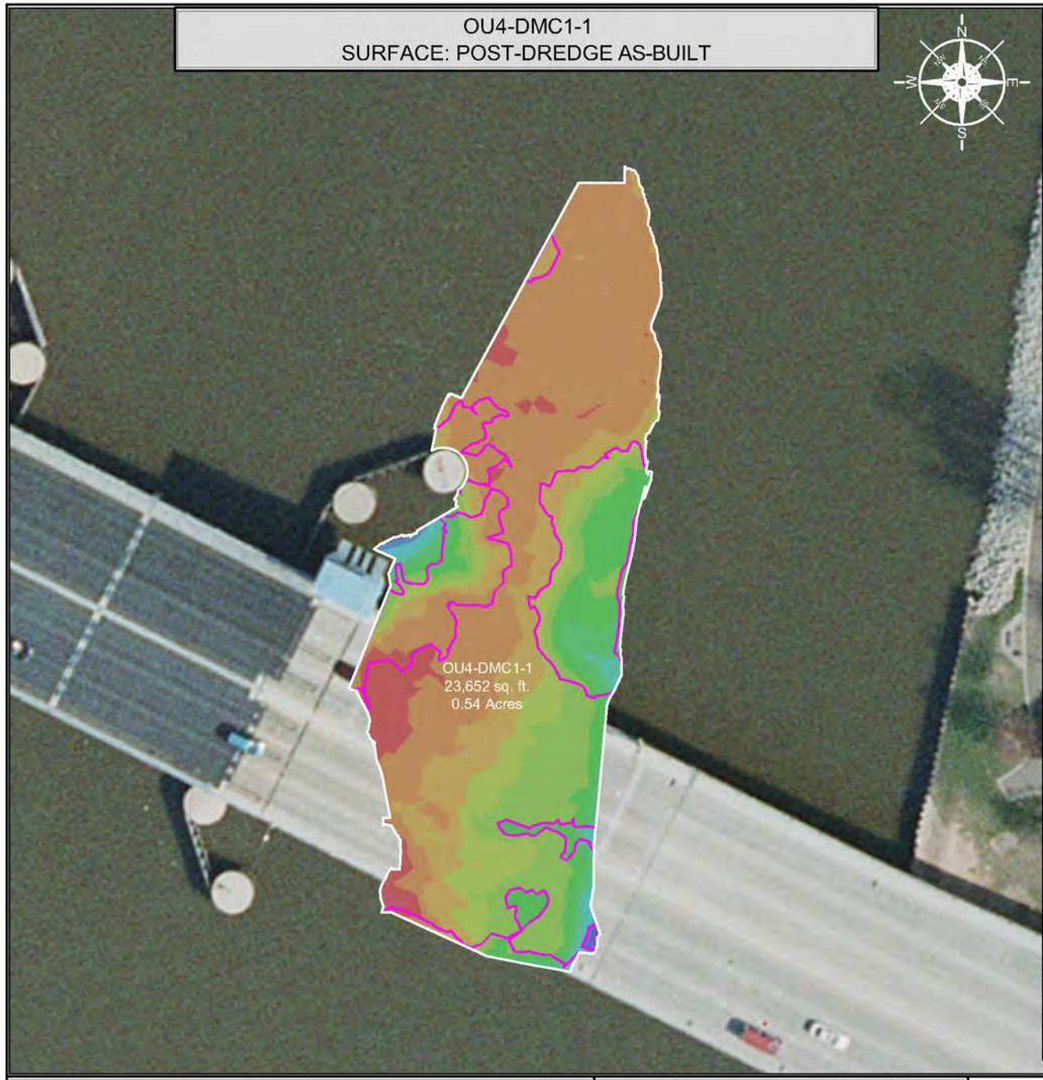
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-102

OU4-DMC1-1
PRIMARY DREDGE HIGH SUBGRADE RESULTS

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OU4-DMC1-1
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

1,901.40	INITIAL RAL VOLUME
422.14	INITIAL OVERCUT VOLUME
2,323.54	RAL + OVERCUT VOLUME
1,903.81	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

1,862.19	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
424.15	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
2,286.34	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

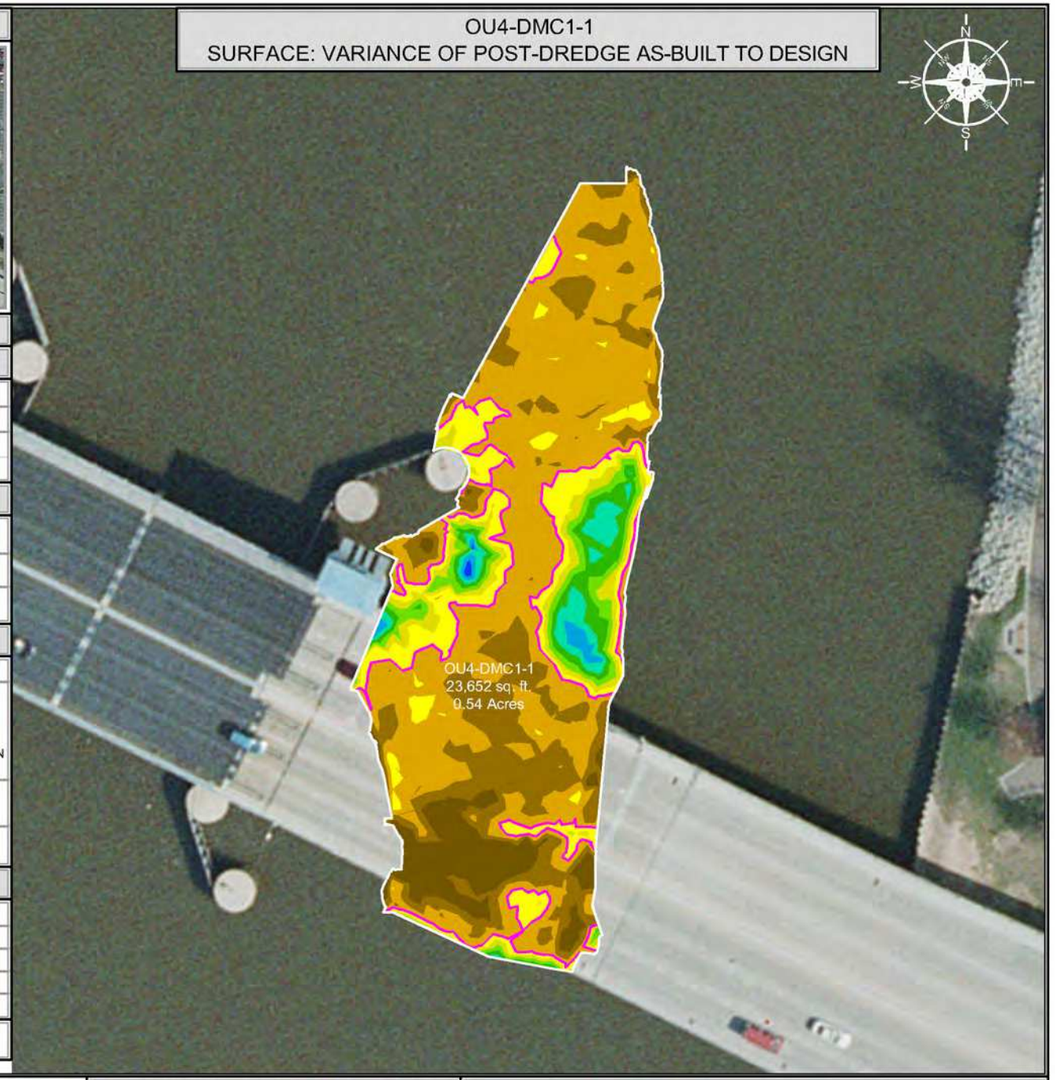
2018 AS-BUILT VOLUMES (CU. YD.)

1,962.35	TOTAL VOLUME DREDGED
1,655.98	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
205.15	CONFIRMED HIGH SUBGRADE VOLUME
1.06	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
213.52	OVERCUT VOLUME REMAINING
215.39	OVERCUT VOLUME DREDGED
90.98	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

23,652.07	AREA (SQ. FT.)
366.47	ABOVE DESIGN ELEVATION
17,225.94	AT OR BELOW DESIGN ELEVATION
6,059.66	CONFIRMED HIGH SUBGRADE
5.76 "	AVERAGE DEPTH OF OVERCUT [1]
98	PERCENT COMPLETE [2]

OU4-DMC1-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-23-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'
560.00'	-	561.00'
561.00'	-	562.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

THIS DOCUMENT IS THE PROPERTY OF LOWER FOX RIVER REMEDIATION LLC PREPARED BY TETRA TECH EC, INC. (TtEC), AND IS PROVIDED UPON THE CONDITION THAT IT WILL NOT BE REPRODUCED, COPIED, OR ISSUED TO A THIRD PARTY. IT IS PROVIDED TO BE USED SOLELY FOR THE ORIGINAL INTENDED PURPOSE, AND SOLELY FOR THE EXECUTION OR REVIEW OF THE ENGINEERING AND CONSTRUCTION OF THE SUBJECT PROJECT.

OU# - D# - #
OU# = OPERABLE UNIT
D# = DREDGE AREA
= DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.75'	-	-1.00'	1,816.27
BELOW RAL	-1.00'	-	-0.50'	4,743.72
BELOW RAL	-0.50'	-	0.00'	10,683.17
ABOVE RAL	0.00'	-	0.50'	2,951.71
ABOVE RAL	0.50'	-	1.00'	1,068.91
ABOVE RAL	1.00'	-	1.50'	834.57
ABOVE RAL	1.50'	-	2.00'	814.04
ABOVE RAL	2.00'	-	2.50'	573.30
ABOVE RAL	2.50'	-	3.00'	167.82
ABOVE RAL	3.00'	-	3.52'	15.78

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DMC1-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: July 30, 2018
LAST REVISED: November 29, 2018
CHECKED BY: REG

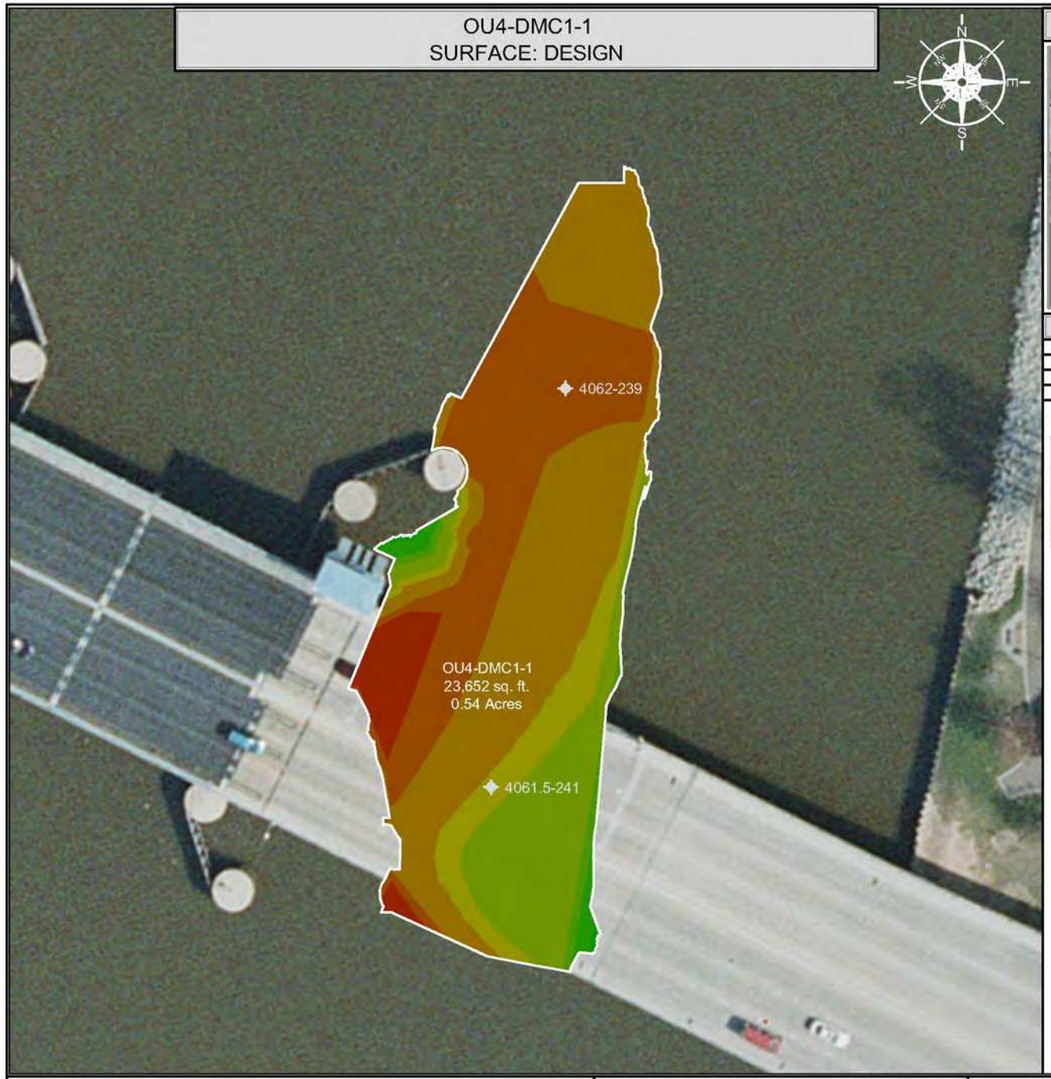
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-103

OU4-DMC1-1
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LLOC\Active Engineering\Dredge Files\2018\OU4 DMC1-1\DWG\Post Dredge\OU4 DMC1-1.dwg

OU4-DMC1-1
SURFACE: DESIGN



INDEX MAP



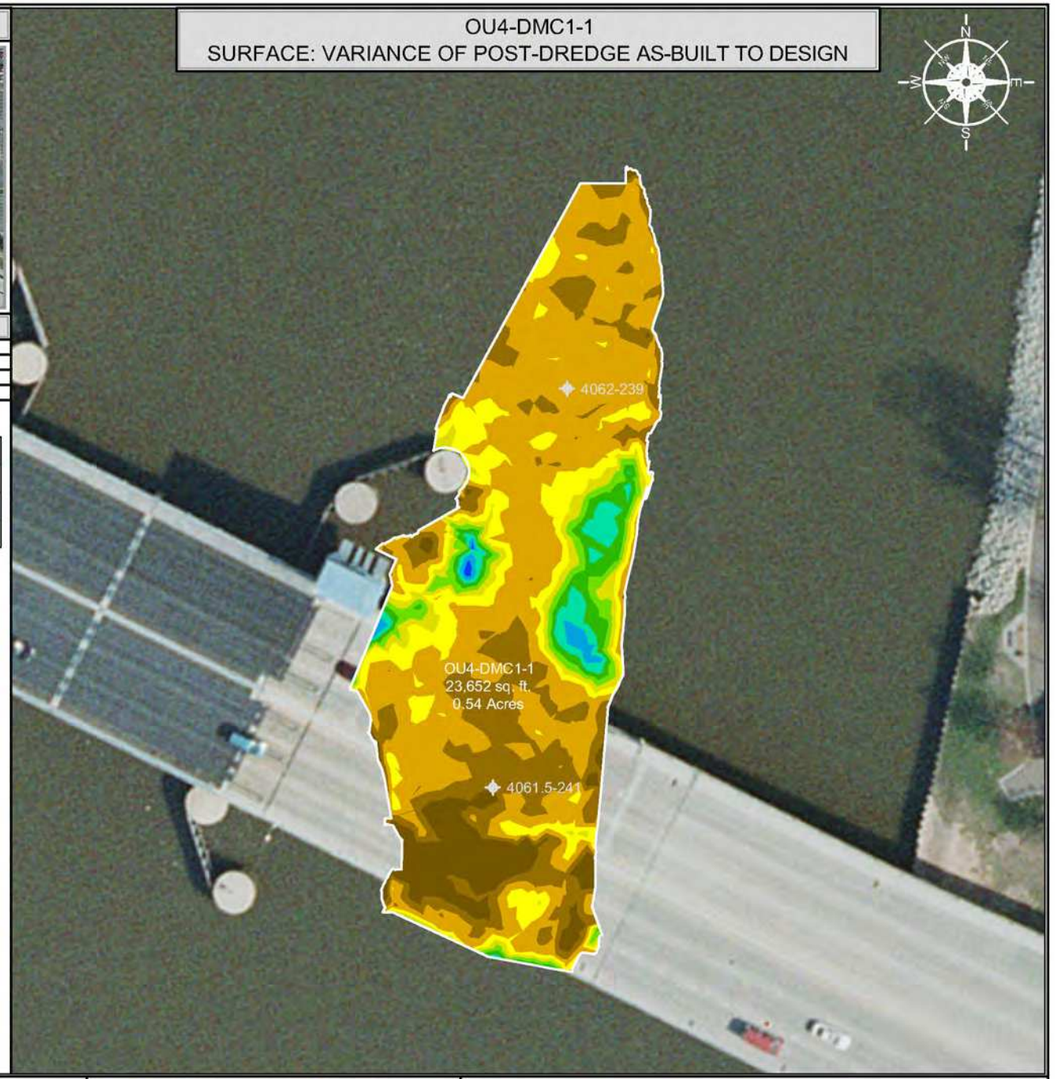
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	3,160 µg/kg (3.16 ppm)
0.5' - 1.0'	486 µg/kg (0.486 ppm)
1.0' - 1.5'	71.2 µg/kg (0.0712 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4061.5-241	252407.53	2484732.06
4062-239	252565.36	2484761.44

OU4-DMC1-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-23-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'
560.00'	-	561.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-DMC1-1-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-DMC1-1-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-DMC1-1-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 8-22-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF TWO SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 8-28-2018

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT
DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.75'	-	-1.00'	1,816.27
BELOW RAL	-1.00'	-	-0.50'	4,743.72
BELOW RAL	-0.50'	-	0.00'	10,683.17
ABOVE RAL	0.00'	-	0.50'	2,951.71
ABOVE RAL	0.50'	-	1.00'	1,068.91
ABOVE RAL	1.00'	-	1.50'	834.57
ABOVE RAL	1.50'	-	2.00'	814.04
ABOVE RAL	2.00'	-	2.50'	573.30
ABOVE RAL	2.50'	-	3.00'	167.82
ABOVE RAL	3.00'	-	3.52'	15.78

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DMC1-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: July 30, 2018
LAST REVISED: November 29, 2018
CHECKED BY: REG

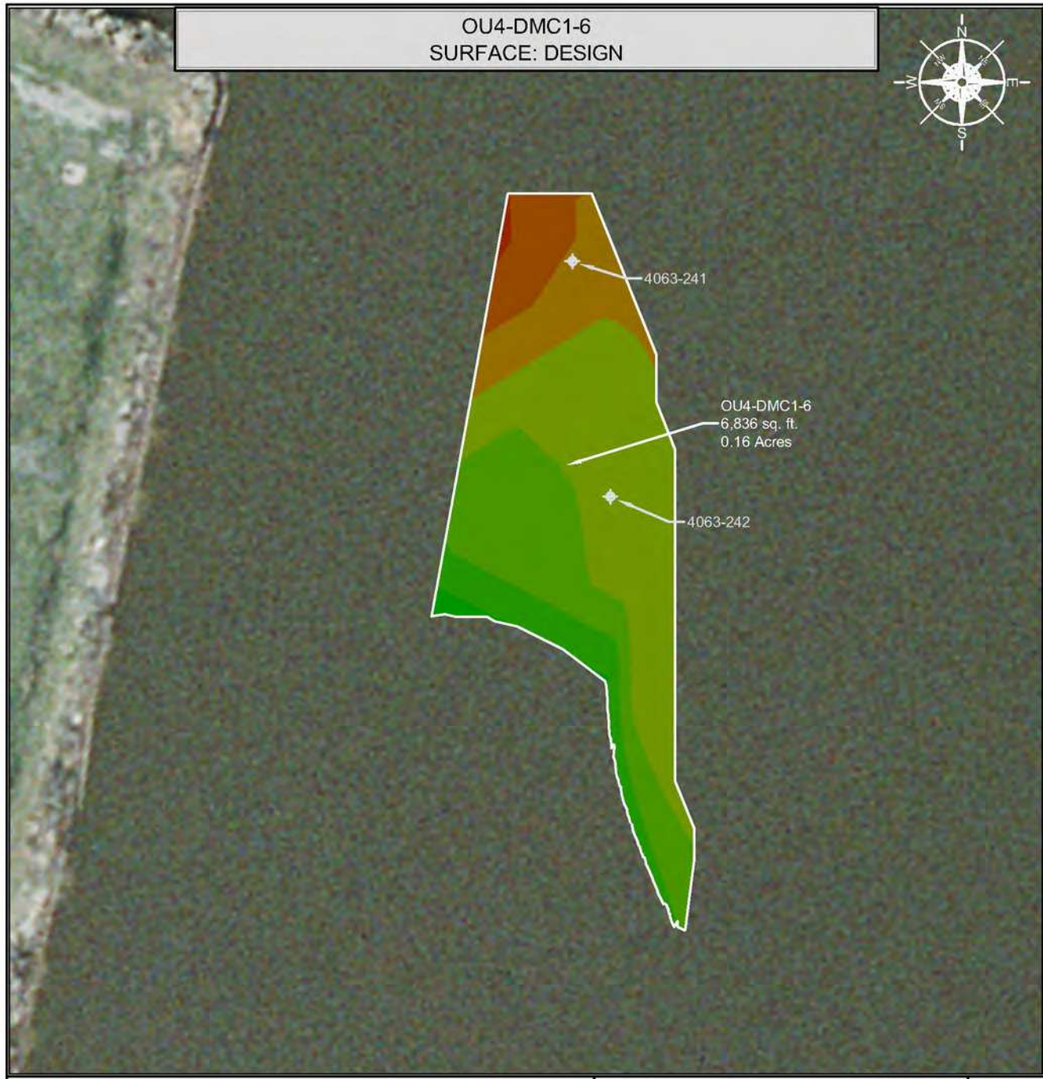
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-104

OU4-DMC1-1
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LLC\NZH\EngineeringDredge Files\2018\OU4 DMC1-1\DWG\Post Dredge\OU4 DMC1-1.dwg

OU4-DMC1-6
SURFACE: DESIGN



INDEX MAP



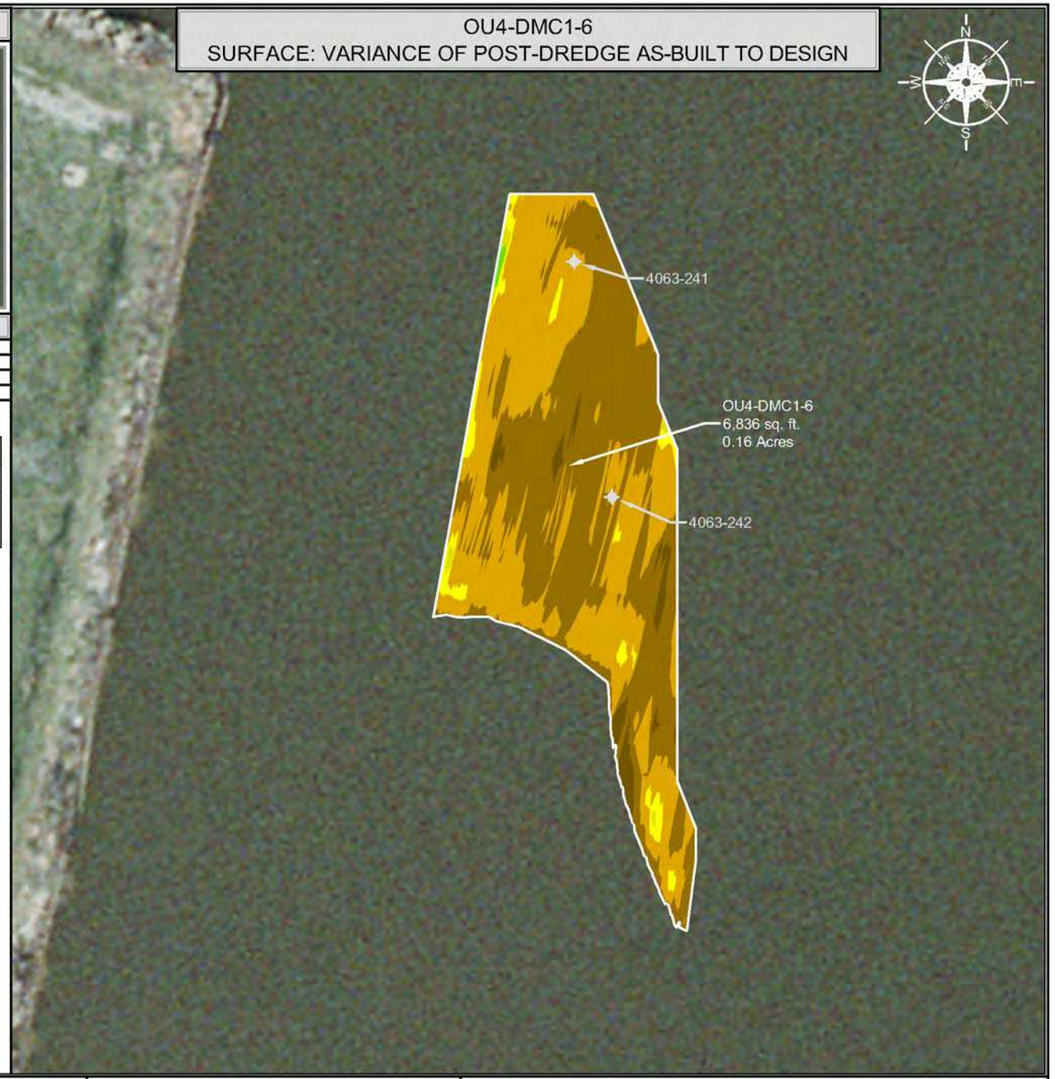
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	663 µg/kg (0.663 ppm)
0.5' - 1.0'	72.8 µg/kg (0.0728 ppm)
1.0' - 1.5'	<25.4 µg/kg (<0.0254 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4063-241	253088.77	2484611.36
4063-242	253026.69	2484621.38

OU4-DMC1-6
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-25-2017

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-DMC1-6-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-DMC1-6-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-DMC1-6-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 8-27-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF TWO SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 8-31-2018

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT
DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.06'	-	-1.00'	200.09
BELOW RAL	-1.00'	-	-0.50'	3,409.78
BELOW RAL	-0.50'	-	0.00'	2,943.16
ABOVE RAL	0.00'	-	0.25'	227.71
ABOVE RAL	0.25'	-	0.50'	38.56
ABOVE RAL	0.50'	-	0.69'	17.17

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DMC1-6.dwg
DRAWN BY: DAVID.FRISQUE
DATE: October 26, 2017
LAST REVISED: November 30, 2018
CHECKED BY: REG

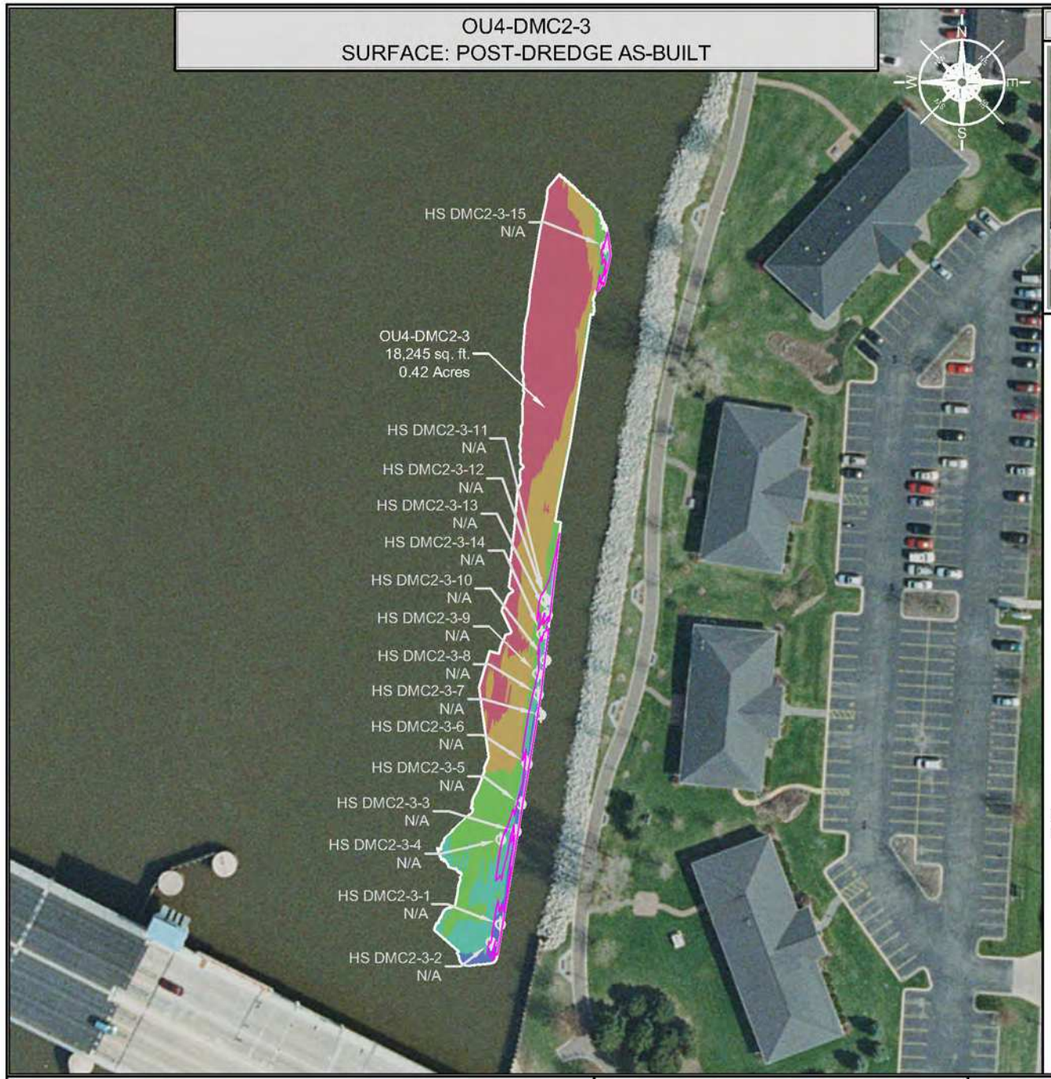
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-105

OU4-DMC1-6
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LOCAL\2\Hist Engineering\Design Files\2017\OU4 DMC1 - 6\DWG\Post Dredge\OU4 DMC1-6.dwg

OU4-DMC2-3
SURFACE: POST-DREDGE AS-BUILT



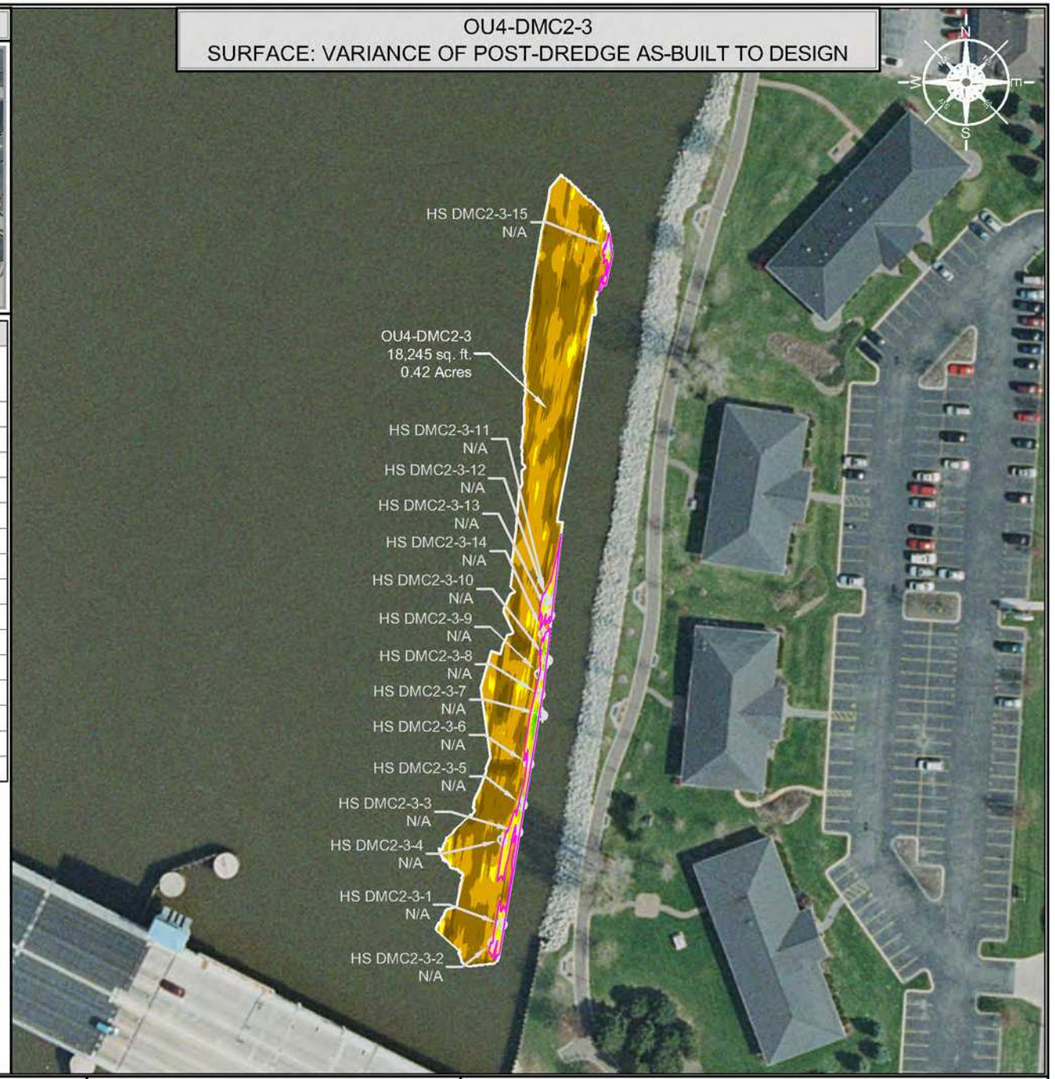
INDEX MAP



HIGH SUBGRADE SAMPLE AS-BUILT RESULTS			
SAMPLE ID	NORTHING	EASTING	THICKNESS OF SOFT SEDIMENT (FEET)
HS DMC2-3-1	252493.68	2484895.58	N/A
HS DMC2-3-2	252481.55	2484889.57	N/A
HS DMC2-3-3	252554.87	2484905.97	N/A
HS DMC2-3-4	252549.48	2484896.05	N/A
HS DMC2-3-5	252572.79	2484909.07	N/A
HS DMC2-3-6	252599.64	2484913.22	N/A
HS DMC2-3-7	252631.80	2484922.27	N/A
HS DMC2-3-8	252645.21	2484920.72	N/A
HS DMC2-3-9	252658.85	2484920.34	N/A
HS DMC2-3-10	252667.88	2484925.61	N/A
HS DMC2-3-11	252708.24	2484925.17	N/A
HS DMC2-3-12	252707.54	2484925.08	N/A
HS DMC2-3-13	252697.65	2484926.73	N/A
HS DMC2-3-14	252685.26	2484922.74	N/A
HS DMC2-3-15	252940.80	2484965.00	N/A

NR = NO RECOVERY
NA = NO CORE COLLECTION REQUIRED DUE TO POLING DEPTH

OU4-DMC2-3
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-15-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'

DRAWING NOTES

1. HIGH SUBGRADE SAMPLES AND POLING DATA WERE COLLECTED ON 6-20-2018 AND LOGGED ON 6-20-2018

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.17'	-	-1.00'	1,471.30
	-1.00'	-	-0.50'	7,671.32
	-0.50'	-	0.00'	7,252.26
ABOVE RAL	0.00'	-	0.50'	1,231.16
	0.50'	-	1.00'	420.03
	1.00'	-	1.50'	162.67
	1.50'	-	2.00'	32.61
	2.00'	-	2.50'	3.13
	2.50'	-	2.83'	0.35

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DMC2-3.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 19, 2018
LAST REVISED: November 30, 2018
CHECKED BY: REG

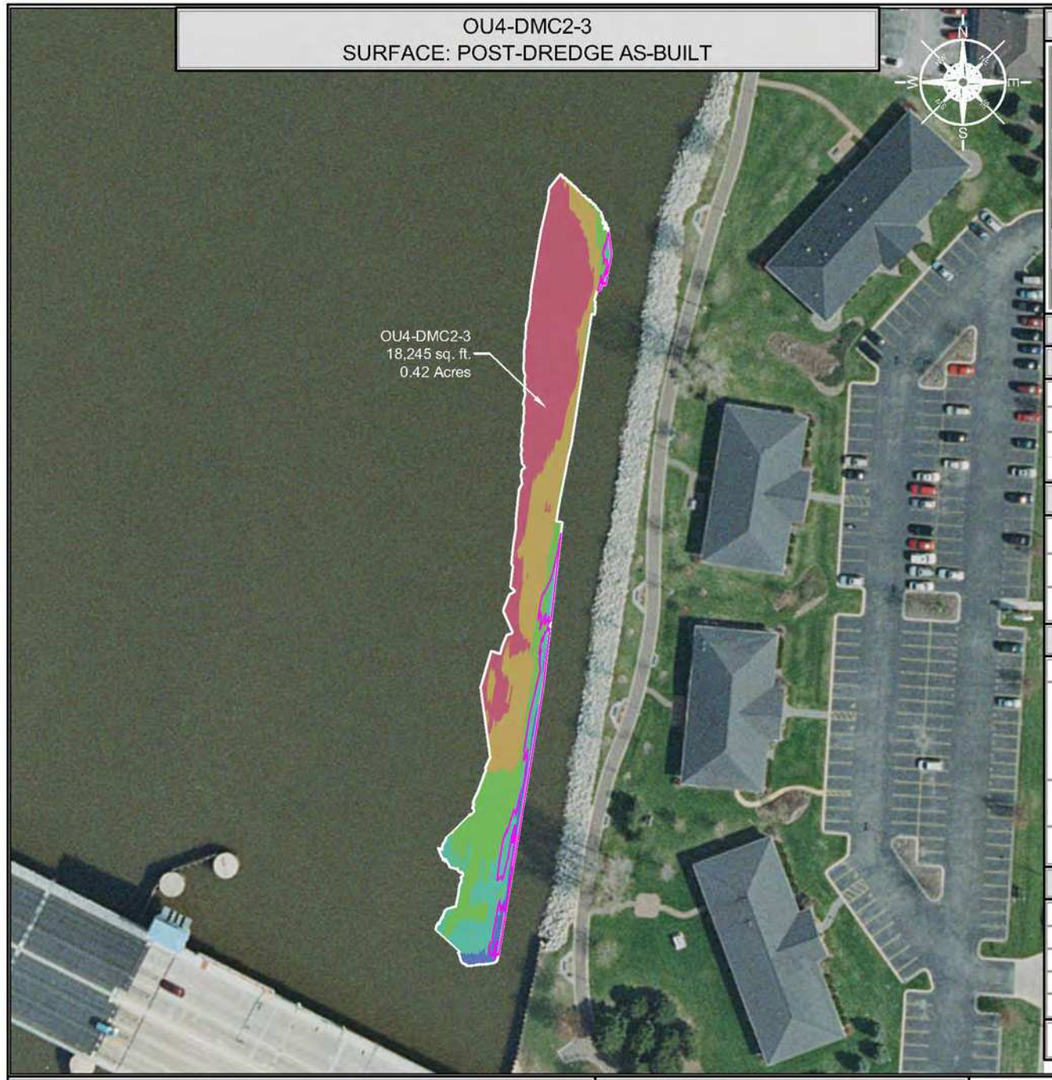
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-106

**OU4-DMC2-3
PRIMARY DREDGE HIGH SUBGRADE RESULTS**

P:\LLC\CAD\Field Engineering\Dredge Files\2018\OU4 DMC2-3\DWG\Post Dredge\OU4-DMC2-3.dwg

OU4-DMC2-3
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

637.83	INITIAL RAL VOLUME
308.50	INITIAL OVERCUT VOLUME
946.33	RAL + OVERCUT VOLUME
827.79	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

635.16	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
311.10	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
946.26	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

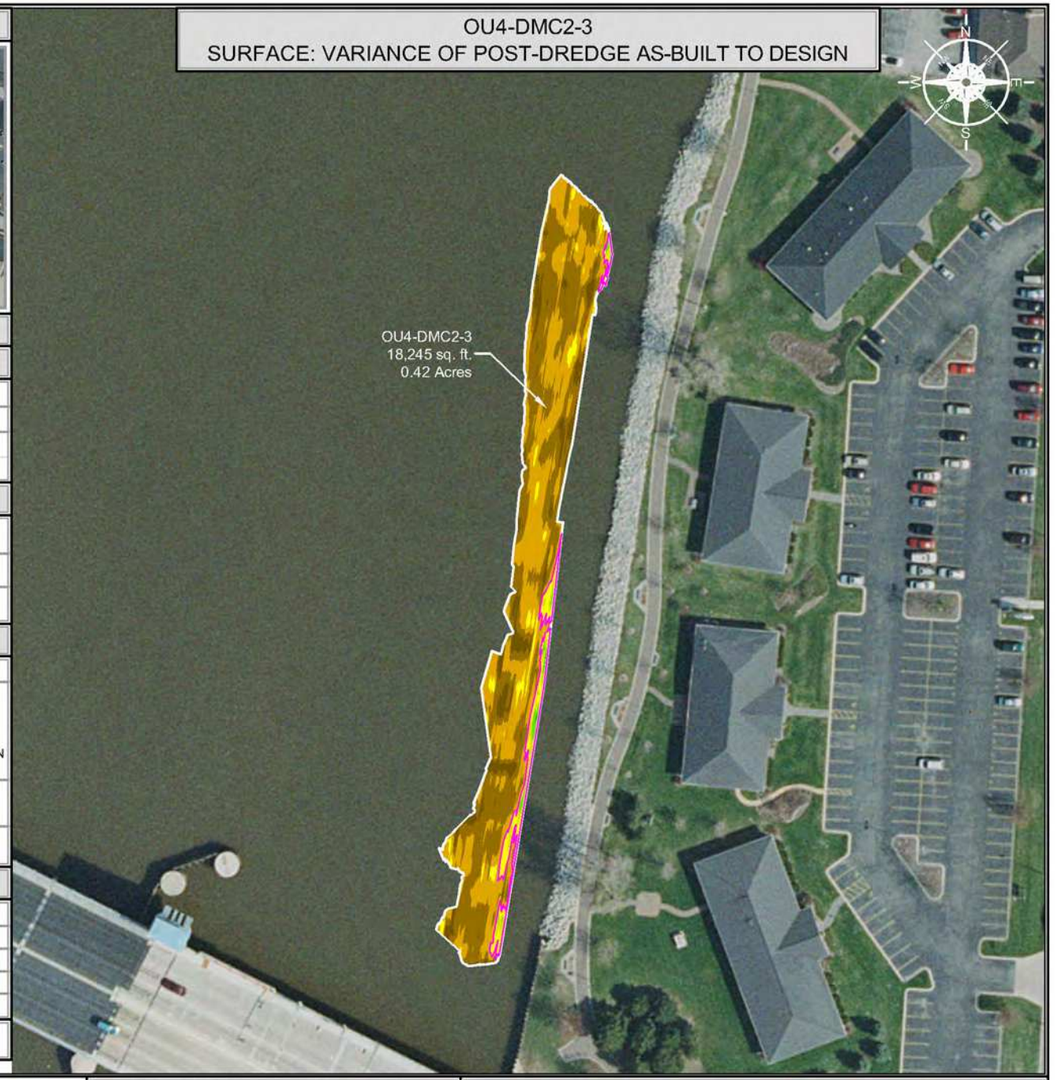
2018 AS-BUILT VOLUMES (CU. YD.)

952.68	TOTAL VOLUME DREDGED
606.46	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
26.33	CONFIRMED HIGH SUBGRADE VOLUME
2.37	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
89.84	OVERCUT VOLUME REMAINING
250.64	OVERCUT VOLUME DREDGED
95.58	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

18,244.83	AREA (SQ. FT.)
520.92	ABOVE DESIGN ELEVATION
16,394.88	AT OR BELOW DESIGN ELEVATION
1,329.03	CONFIRMED HIGH SUBGRADE
6.84 "	AVERAGE DEPTH OF OVERCUT [1]
97	PERCENT COMPLETE [2]

OU4-DMC2-3
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-15-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.17'	-	-1.00'	1,471.30
BELOW RAL	-1.00'	-	-0.50'	7,671.32
BELOW RAL	-0.50'	-	0.00'	7,252.26
ABOVE RAL	0.00'	-	0.50'	1,231.16
ABOVE RAL	0.50'	-	1.00'	420.03
ABOVE RAL	1.00'	-	1.50'	162.67
ABOVE RAL	1.50'	-	2.00'	32.61
ABOVE RAL	2.00'	-	2.50'	3.13
ABOVE RAL	2.50'	-	2.83'	0.35

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DMC2-3.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 19, 2018
LAST REVISED: November 30, 2018
CHECKED BY: REG

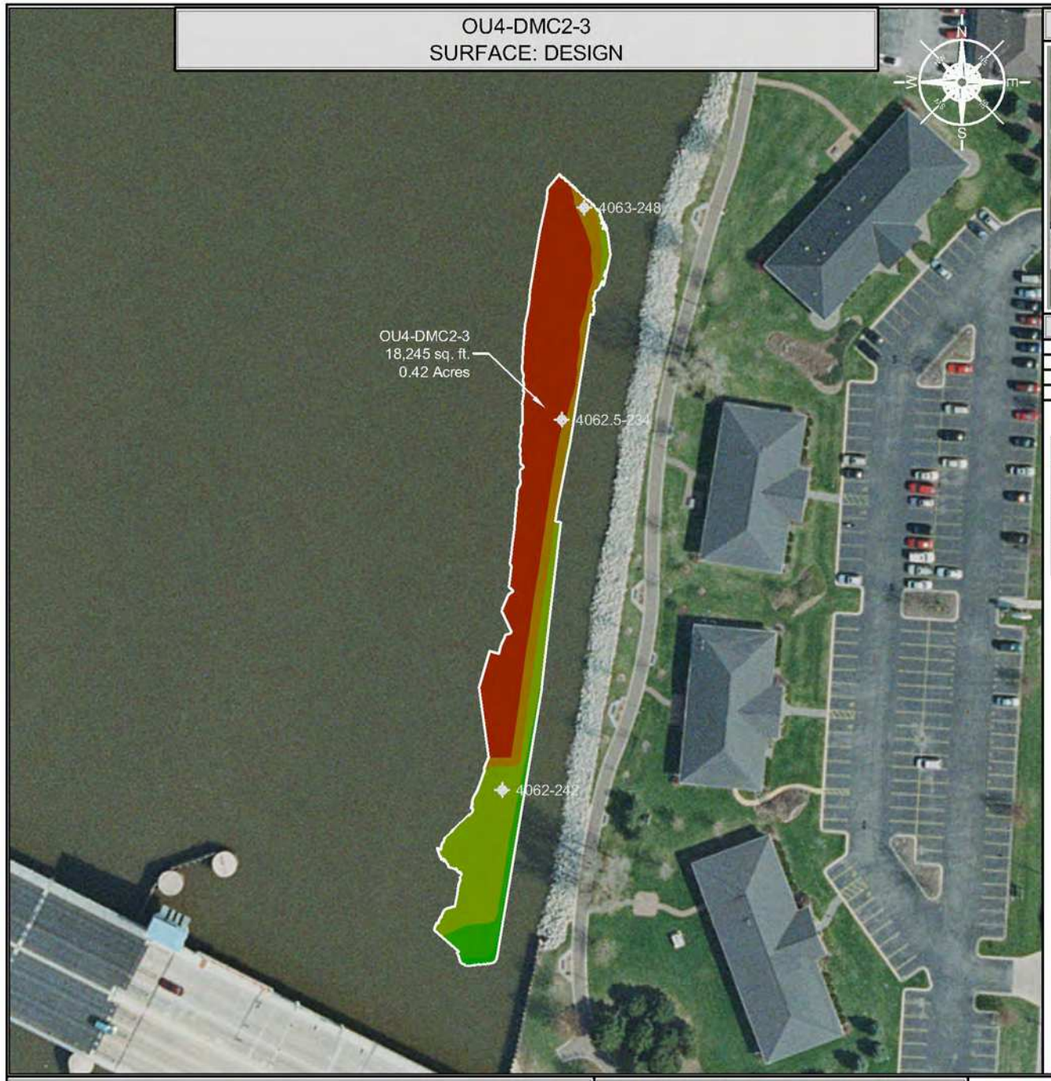
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-107

OU4-DMC2-3
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LLOC\LD\Field Engineering\Dredge Files\2018\OU4 DMC2-3\DWG\Post Dredge\OU4 DMC2-3.dwg

OU4-DMC2-3
SURFACE: DESIGN



INDEX MAP



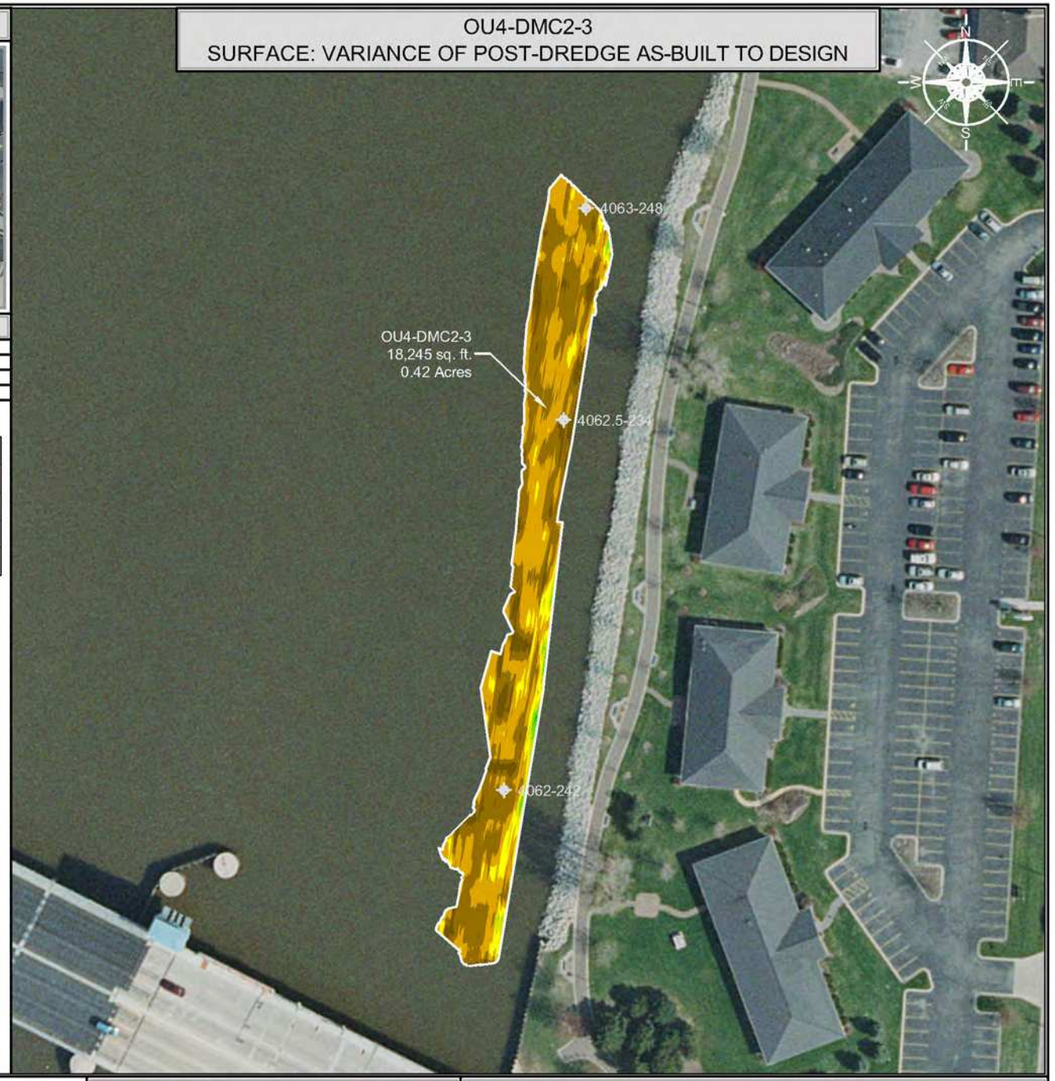
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	8,410 µg/kg (8.41 ppm)
0.5' - 1.0'	221 µg/kg (0.221 ppm)
1.0' - 1.5'	<25.1 µg/kg (<0.0251 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4062-242	252582.26	2484896.88
4062.5-234	252826.54	2484936.13
4063-248	252966.39	2484951.06

OU4-DMC2-3
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-15-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
551.00'	-	553.00'
553.00'	-	555.00'
555.00'	-	557.00'
557.00'	-	559.00'
559.00'	-	561.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-DMC2-3-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-DMC2-3-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-DMC2-3-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 8-24-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF THREE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 8-30-2018

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OU# - D# - #
OPERABLE UNIT · DREDGE AREA · DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.17'	-	-1.00'	1,471.30
BELOW RAL	-1.00'	-	-0.50'	7,671.32
BELOW RAL	-0.50'	-	0.00'	7,252.26
ABOVE RAL	0.00'	-	0.50'	1,231.16
ABOVE RAL	0.50'	-	1.00'	420.03
ABOVE RAL	1.00'	-	1.50'	162.67
ABOVE RAL	1.50'	-	2.00'	32.61
ABOVE RAL	2.00'	-	2.50'	3.13
ABOVE RAL	2.50'	-	2.83'	0.35

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DMC2-3.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 19, 2018
LAST REVISED: November 30, 2018
CHECKED BY: REG

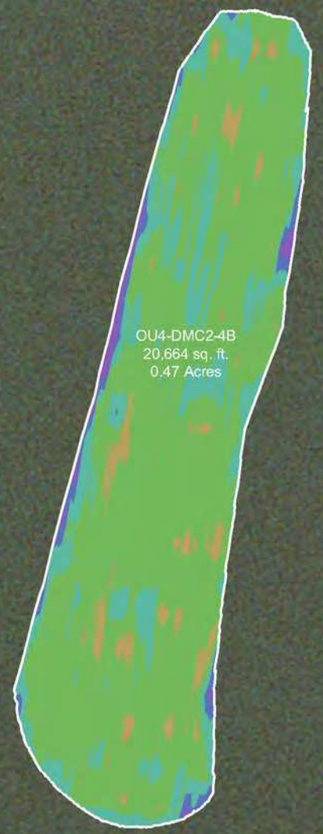
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-108

OU4-DMC2-3
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

P:\LLC\CAD\Field Engineering\Dredge Files\2018\OU4 DMC2-3\DWG\Post Dredge\OU4-DMC2-3.dwg

OU4-DMC2-4B
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

384.01	INITIAL RAL VOLUME
369.42	INITIAL OVERCUT VOLUME
753.43	RAL + OVERCUT VOLUME
613.48	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

381.19	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
369.35	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
750.54	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

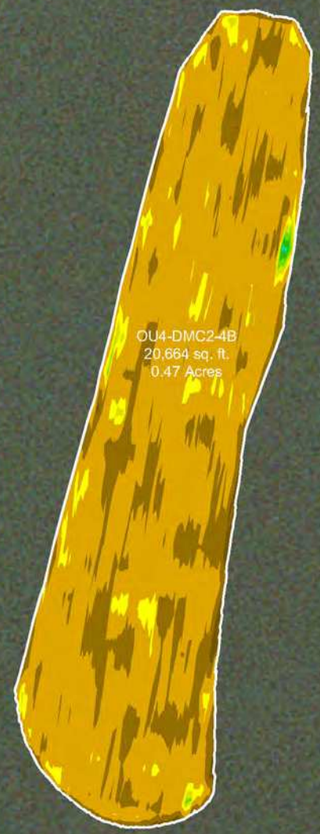
2018 AS-BUILT VOLUMES (CU. YD.)

638.17	TOTAL VOLUME DREDGED
375.93	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
5.26	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
134.69	OVERCUT VOLUME REMAINING
237.96	OVERCUT VOLUME DREDGED
24.28	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

20,663.62	AREA (SQ. FT.)
970.94	ABOVE DESIGN ELEVATION
19,692.68	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
4.31 "	AVERAGE DEPTH OF OVERCUT [1]
95	PERCENT COMPLETE [2]

OU4-DMC2-4B
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-14-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
545.00'	-	545.50'
545.50'	-	546.00'
546.00'	-	546.50'
546.50'	-	547.00'
547.00'	-	547.50'
547.50'	-	548.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.70'	-	-1.00'	210.87
BELOW RAL	-1.00'	-	-0.50'	4,334.30
BELOW RAL	-0.50'	-	0.00'	15,147.51
ABOVE RAL	0.00'	-	0.25'	807.67
ABOVE RAL	0.25'	-	0.50'	105.91
ABOVE RAL	0.50'	-	0.75'	34.65
ABOVE RAL	0.75'	-	1.00'	18.56
ABOVE RAL	1.00'	-	1.13'	4.07

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DMC2-4B.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 22, 2018
LAST REVISED: June 22, 2018
CHECKED BY: REG

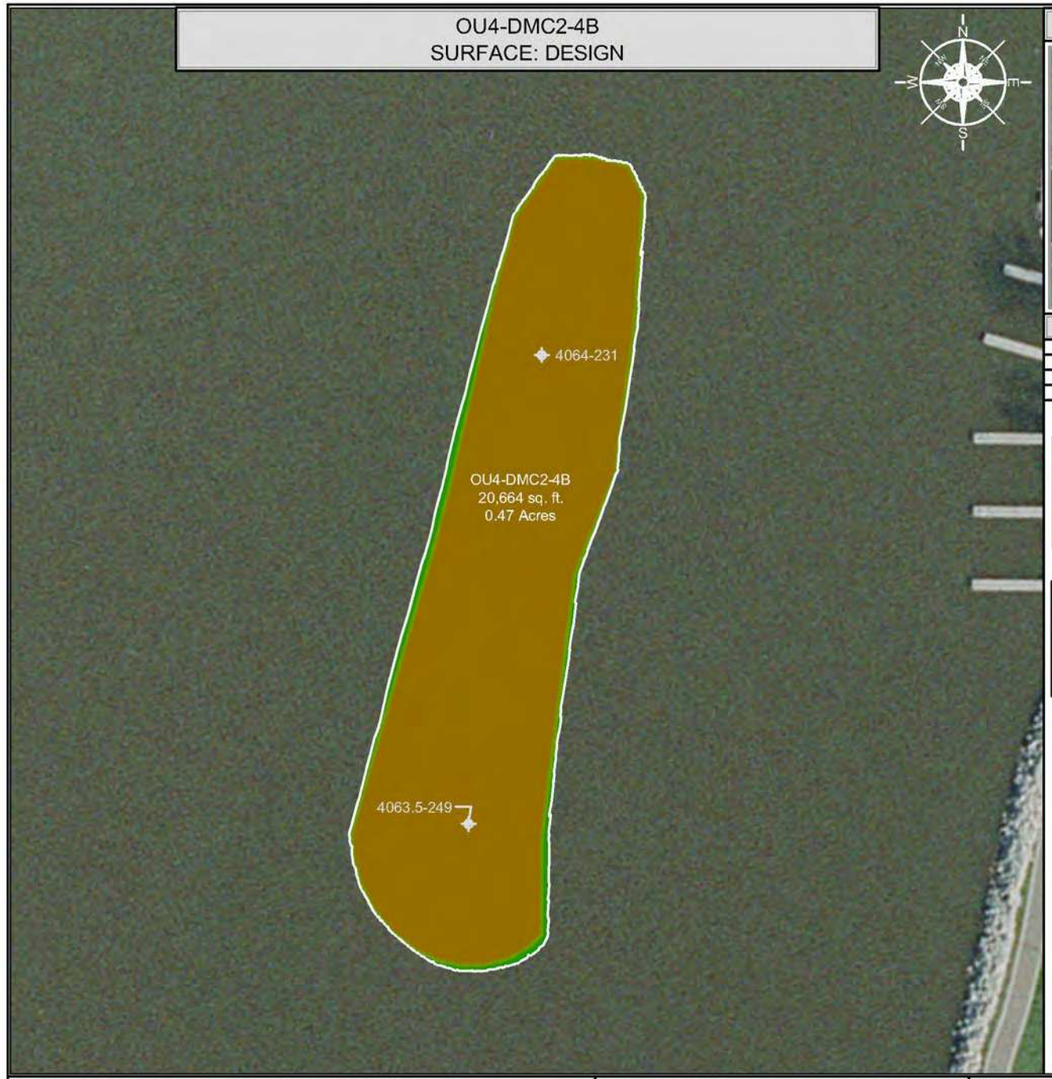
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-109

OU4-DMC2-4B
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

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OU4-DMC2-4B
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	2,660 µg/kg (2.66 ppm)
0.5' - 1.0'	5,300 µg/kg (5.3 ppm)
1.0' - 1.5'	31.3 µg/kg (0.0313 ppm)

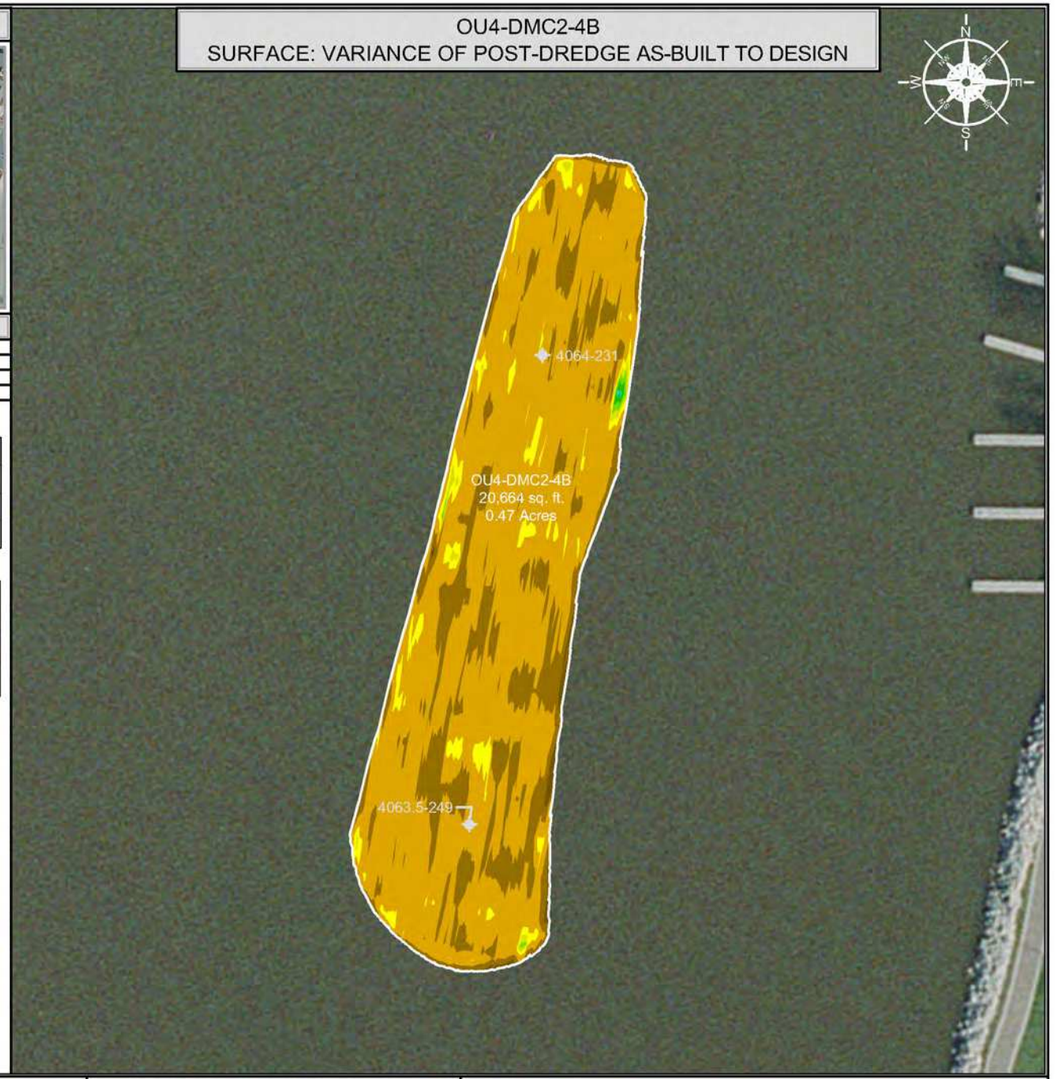
CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4063.5-249	253252.50	2484861.29
4064-231	253438.10	2484890.27

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION
4063.5-249	A: 7,460 µg/kg (7.46 ppm) B: 9,300 µg/kg (9.3 ppm) C: 62.1 µg/kg (0.0621 ppm)
4064-231	A: 27.0 µg/kg (0.027 ppm) B: <25.7 µg/kg (<0.0257 ppm) C: <25.7 µg/kg (<0.0257 ppm)

OU4-DMC2-4B
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-18-DMC2-4B-4063.5-249-A
2. TTFR-18-DMC2-4B-4063.5-249-B
3. TTFR-18-DMC2-4B-4063.5-249-C
4. TTFR-18-DMC2-4B-4064-231-A
5. TTFR-18-DMC2-4B-4064-231-B
6. TTFR-18-DMC2-4B-4064-231-C

SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-14-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
546.00'	-	546.50'
546.50'	-	547.00'
547.00'	-	547.50'
547.50'	-	548.00'
548.00'	-	548.50'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-DMC2-4B-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-DMC2-4B-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-DMC2-4B-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 9-10-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF TWO SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 9-14-2018 and 9-25-2018

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OU# - D# - #
- OU# = OPERABLE UNIT
- D# = DREDGE AREA
- # = DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.70'	-	-1.00'	210.87
BELOW RAL	-1.00'	-	-0.50'	4,334.30
BELOW RAL	-0.50'	-	0.00'	15,147.51
ABOVE RAL	0.00'	-	0.25'	807.67
ABOVE RAL	0.25'	-	0.50'	105.91
ABOVE RAL	0.50'	-	0.75'	34.65
ABOVE RAL	0.75'	-	1.00'	18.56
ABOVE RAL	1.00'	-	1.13'	4.07

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DMC2-4B.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 22, 2018
LAST REVISED: June 22, 2018
CHECKED BY: REG

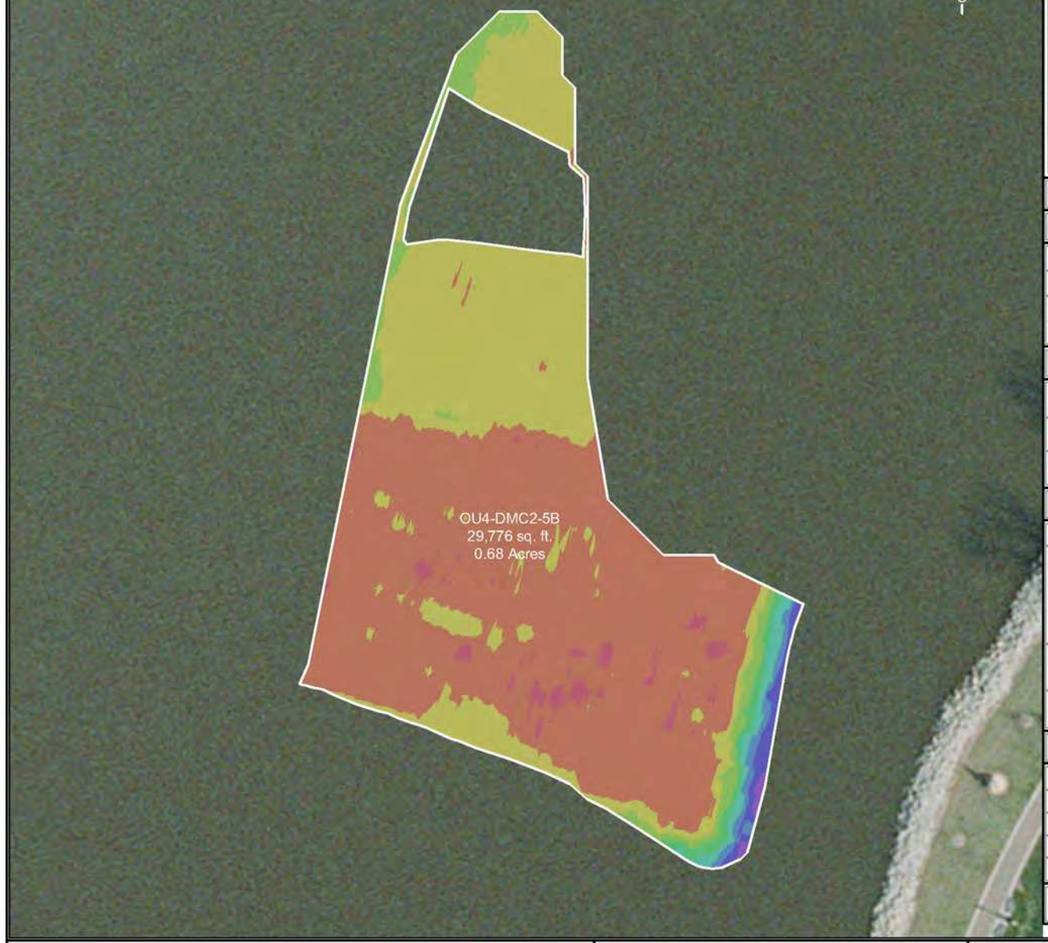
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-110

OU4-DMC2-4B
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

P:\LLOC\GIS\Fild Engineering\Dredge Files\2018\OU4 DMC2-4B\DWG\Post Dredge\OU4 DMC2-4B.dwg

OU4-DMC2-5B
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

1,052.10	INITIAL RAL VOLUME
389.80	INITIAL OVERCUT VOLUME
1,441.90	RAL + OVERCUT VOLUME
1,350.18	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

1,052.10	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
389.80	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
1,441.90	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

2018 AS-BUILT VOLUMES (CU. YD.)

1,464.06	TOTAL VOLUME DREDGED
1,046.03	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
6.07	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
85.65	OVERCUT VOLUME REMAINING
314.83	OVERCUT VOLUME DREDGED
103.20	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

29,775.75	AREA (SQ. FT.)
977.22	ABOVE DESIGN ELEVATION
28,798.53	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
4.70 "	AVERAGE DEPTH OF OVERCUT [1]
97	PERCENT COMPLETE [2]

OU4-DMC2-5B
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-13-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-3.62'	-	-1.00'	8,581.16
BELOW RAL	-1.00'	-	-0.50'	9,976.78
BELOW RAL	-0.50'	-	0.00'	10,240.59
ABOVE RAL	0.00'	-	0.25'	661.75
ABOVE RAL	0.25'	-	0.50'	146.94
ABOVE RAL	0.50'	-	0.75'	64.80
ABOVE RAL	0.75'	-	0.98'	18.17

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DMC2-5B.dwg
DRAWN BY: DAVID.FRISQUE
DATE: September 28, 2018
LAST REVISED: November 30, 2018
CHECKED BY: REG

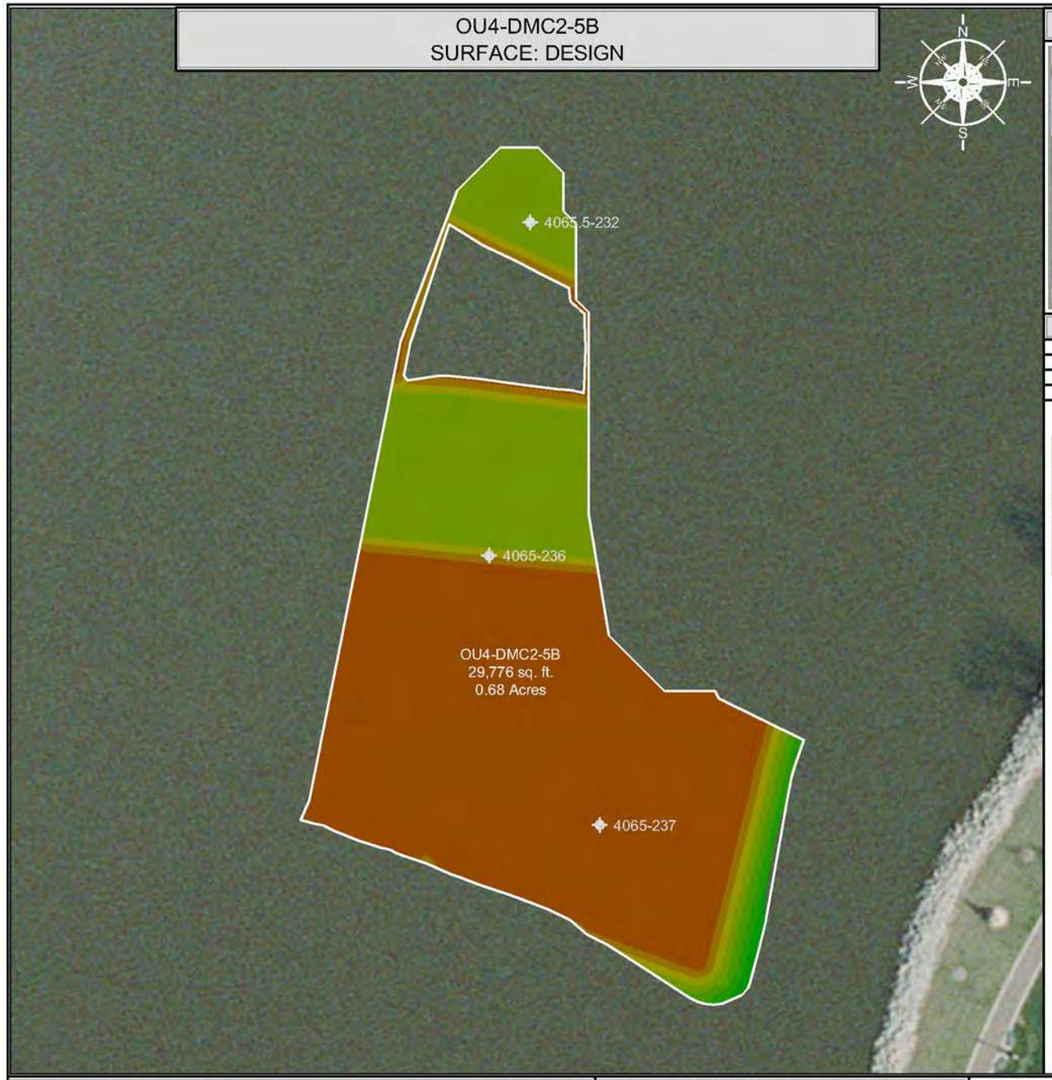
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-111

OU4-DMC2-5B
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LCC\CAD\Field Engineering\Dredge Files\2018\OU4 DMC2 5B\DWG\Final Dredge\OU4 DMC2 5B.dwg

OU4-DMC2-5B
SURFACE: DESIGN



INDEX MAP



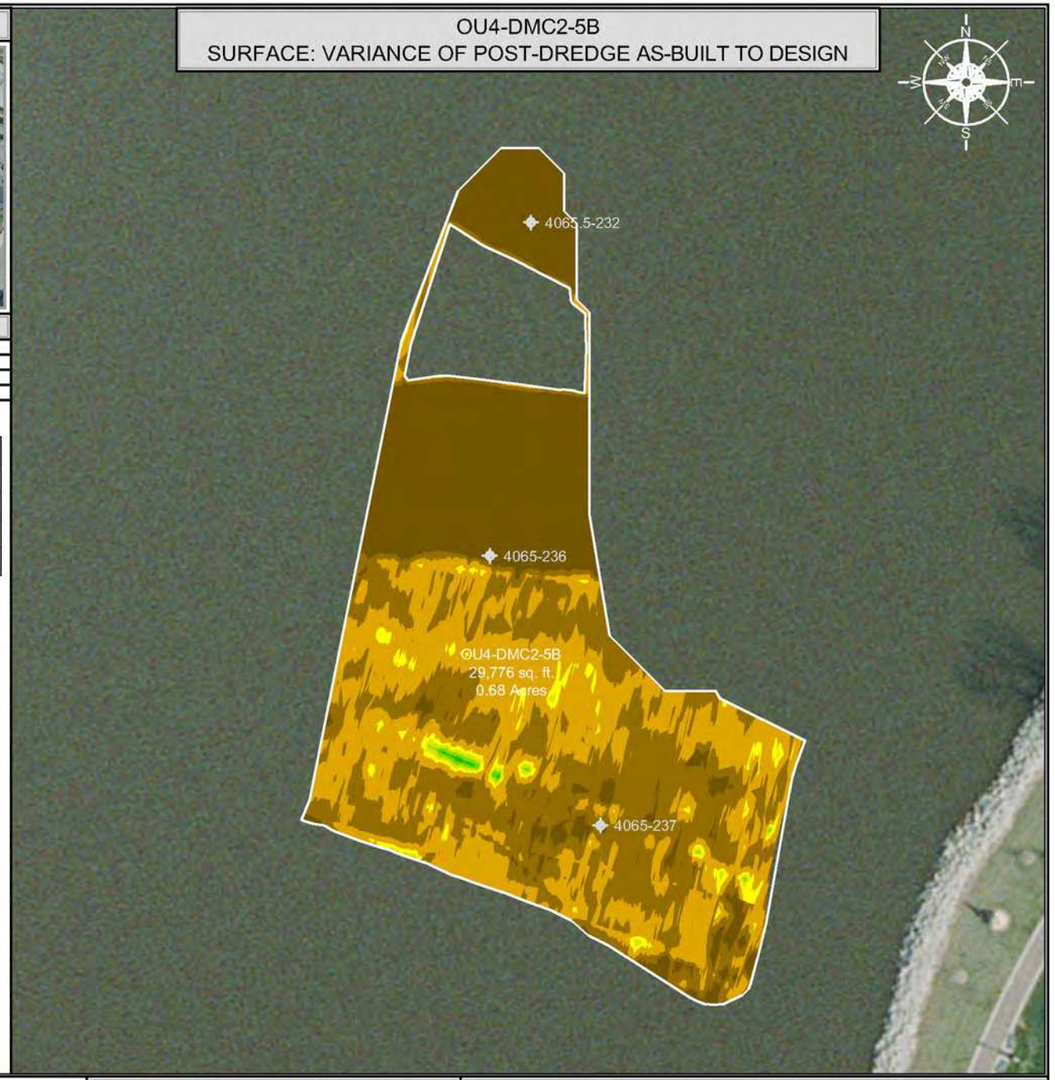
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	623 µg/kg (0.623 ppm)
0.5' - 1.0'	<25.3 µg/kg (<0.0253 ppm)
1.0' - 1.5'	<25.3 µg/kg (<0.0253 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4065-236	253870.30	2484969.16
4065-237	253763.65	2485012.94
4065.5-232	254002.18	2484985.47

OU4-DMC2-5B
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-13-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-DMC2-5B-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-DMC2-5B-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-DMC2-5B-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 9-25-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF THREE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 10-1-2018

THIS DOCUMENT IS THE PROPERTY OF LOWER FOX RIVER REMEDIATION LLC PREPARED BY TETRA TECH EC, INC. (TEC), AND IS PROVIDED UPON THE CONDITION THAT IT WILL NOT BE REPRODUCED, COPIED, OR ISSUED TO A THIRD PARTY. IT IS PROVIDED TO BE USED SOLELY FOR THE ORIGINAL INTENDED PURPOSE, AND SOLELY FOR THE EXECUTION OR REVIEW OF THE ENGINEERING AND CONSTRUCTION OF THE SUBJECT PROJECT.

OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT
DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-3.62'	-	-1.00'	8,581.16
BELOW RAL	-1.00'	-	-0.50'	9,976.78
BELOW RAL	-0.50'	-	0.00'	10,240.59
ABOVE RAL	0.00'	-	0.25'	661.75
ABOVE RAL	0.25'	-	0.50'	146.94
ABOVE RAL	0.50'	-	0.75'	64.80
ABOVE RAL	0.75'	-	0.98'	18.17

TETRA TECH EC, INC.
1611 STATE STREET
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TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DMC2-5B.dwg
DRAWN BY: DAVID.FRISQUE
DATE: September 28, 2018
LAST REVISED: November 30, 2018
CHECKED BY: REG

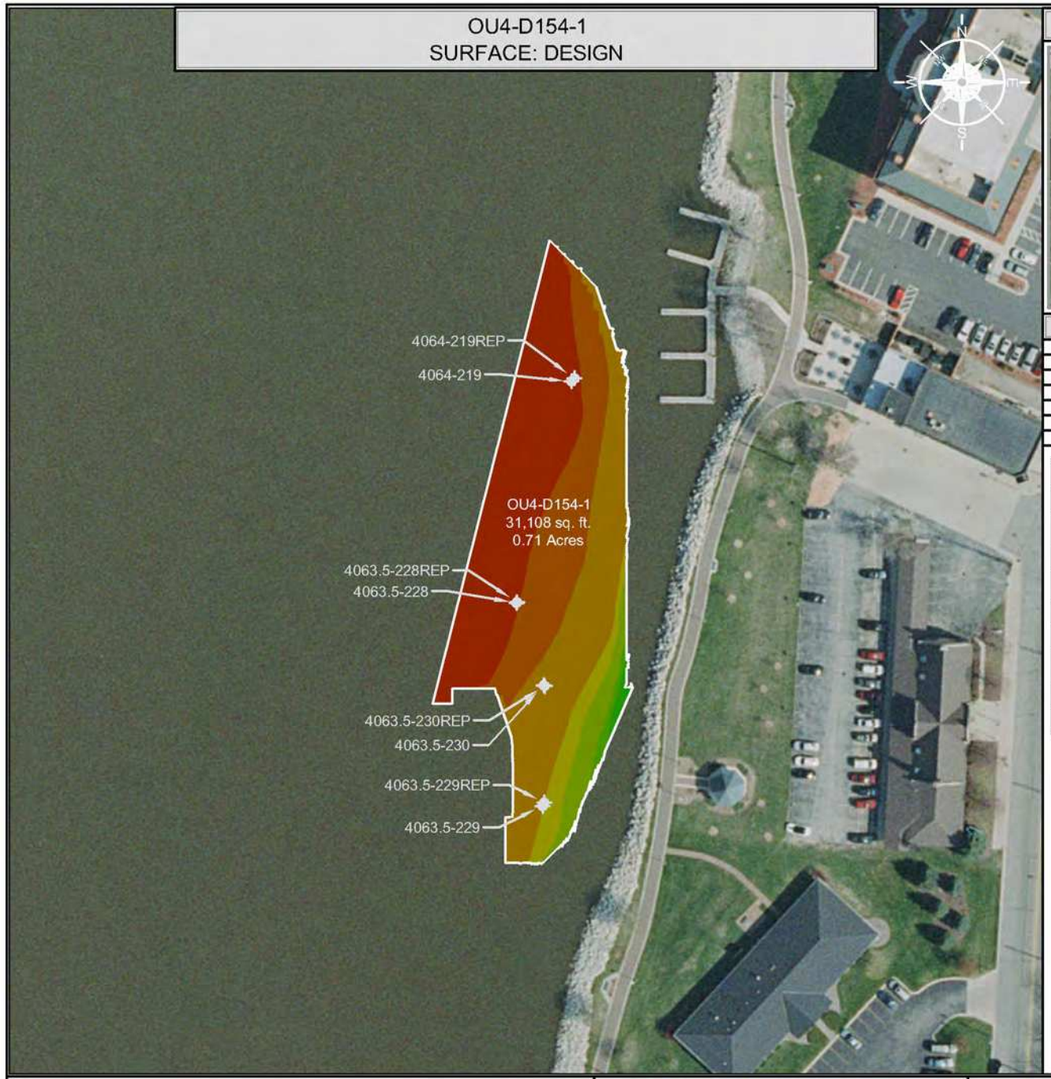
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-112

OU4-DMC2-5B
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LOCAL\EHHEI Engineering\Dredge Files\2018\OU4 DMC2-5B\DWG\Post Dredge\OU4-DMC2-5B.dwg

OU4-D154-1
SURFACE: DESIGN



INDEX MAP



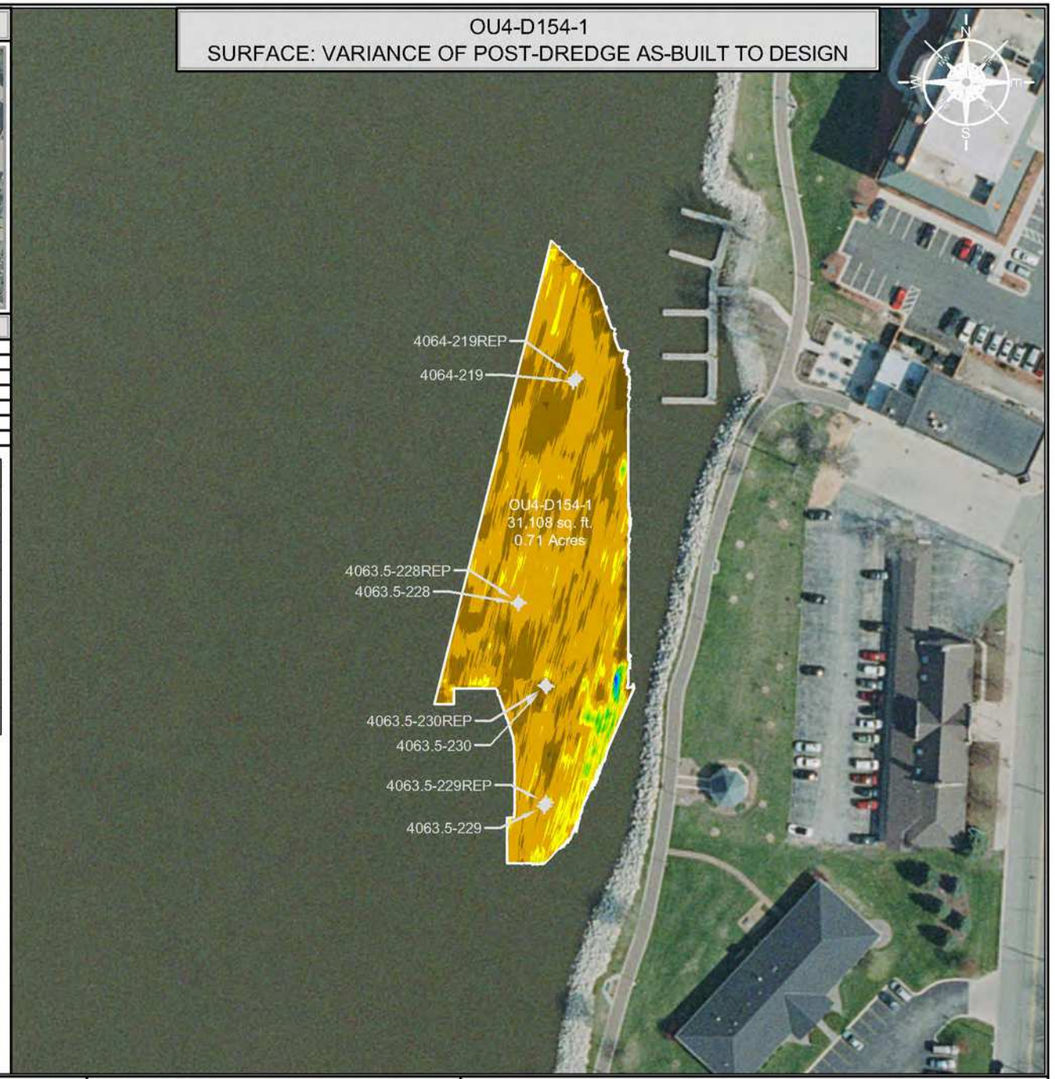
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	1,360 µg/kg (1.36 ppm)
0.5' - 1.0'	247 µg/kg (0.247 ppm)
1.0' - 1.5'	<25.2 µg/kg (<0.0252 ppm)
0.0' - 0.5' REP	1,060 µg/kg (1.06 ppm)
0.5' - 1.0' REP	395 µg/kg (0.395 ppm)
1.0' - 1.5' REP	64.7 µg/kg (0.0647 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4063.5-230REP	253158.30	2484984.68
4063.5-229REP	253081.49	2484984.34
4063.5-228REP	253213.58	2484966.36
4063.5-230	253158.72	2484983.91
4063.5-229	253079.09	2484983.17
4063.5-228	253213.07	2484965.99
4064-219REP	253361.31	2485004.24
4064-219	253359.24	2485002.25

OU4-D154-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-14-2016

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
546.00'	-	548.00'
548.00'	-	550.00'
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'
562.00'	-	564.00'
564.00'	-	566.00'
566.00'	-	568.00'
568.00'	-	570.00'
570.00'	-	572.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-17-D154-1-A
2. 0.5' - 1.0' SAMPLE ID TTFR-17-D154-1-B
3. 1.0' - 1.5' SAMPLE ID TTFR-17-D154-1-C
4. 0.0' - 0.5' SAMPLE ID TTFR-17-D154-1REP-A
5. 0.5' - 1.0' SAMPLE ID TTFR-17-D154-1REP-B
6. 1.0' - 1.5' SAMPLE ID TTFR-17-D154-1REP-C
7. CONFIRMATION SAMPLES WERE COLLECTED ON 10-26-2017
8. CONFIRMATION SAMPLES ARE A COMPOSITE OF EIGHT SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
9. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 10-31-2017

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OU# - D# - #
- OU# — OPERABLE UNIT
- D# — DREDGE AREA
- # — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.58'	-	-1.00'	767.52
	-1.00'	-	-0.50'	9,263.57
	-0.50'	-	0.00'	18,438.05
ABOVE RAL	0.00'	-	0.25'	1,736.11
	0.25'	-	0.50'	559.88
	0.50'	-	0.75'	215.50
	0.75'	-	1.00'	65.00
	1.00'	-	1.25'	29.91
	1.25'	-	1.50'	18.23
	1.50'	-	1.75'	7.67
	1.75'	-	2.00'	1.43

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D154-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 14, 2016
LAST REVISED: November 30, 2018
CHECKED BY: REG

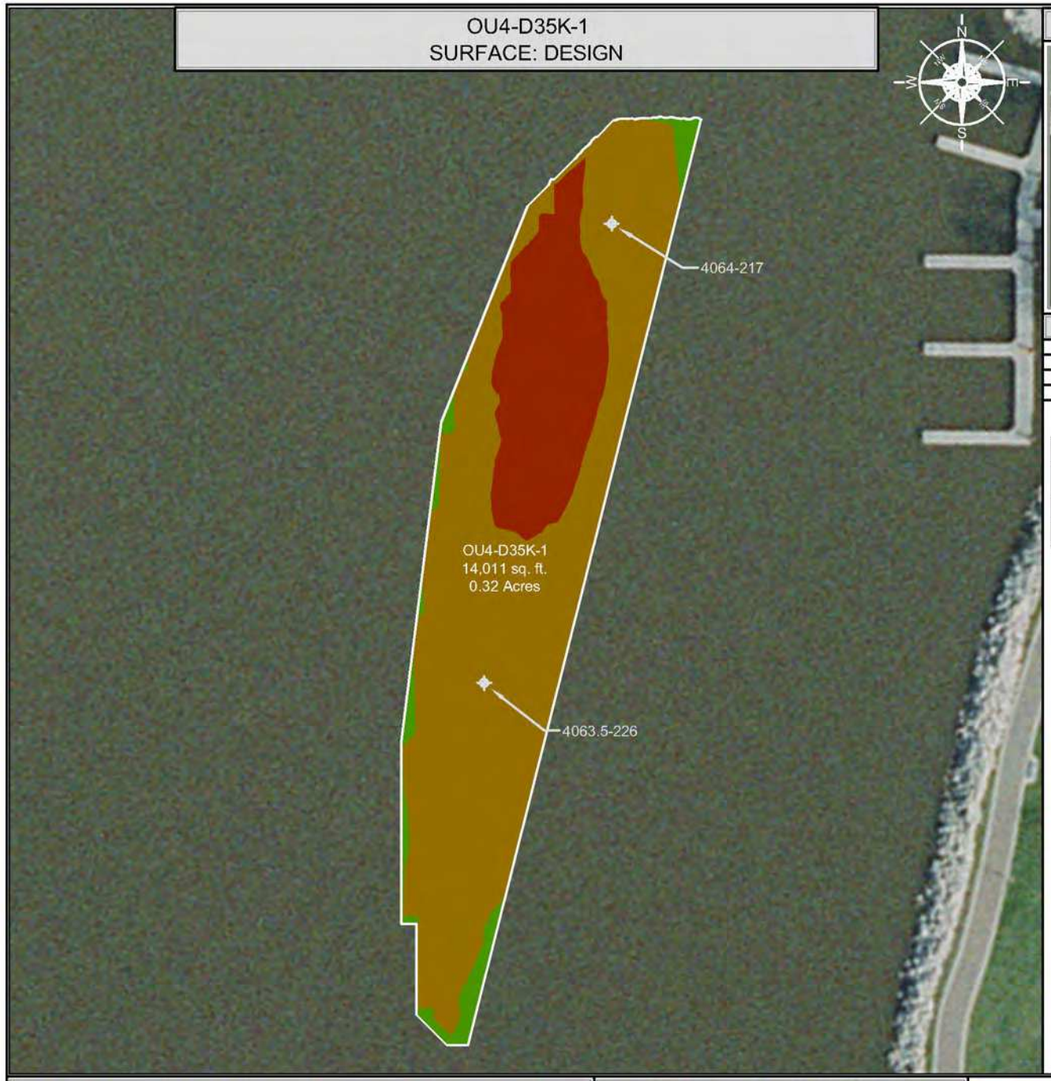
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-113

OU4-D154-1
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LOCAD\Plot Enclosure\2Design Files\2016\OU4 D154\DWG\Post Design\OU4 D154-1.dwg

OU4-D35K-1
SURFACE: DESIGN



INDEX MAP



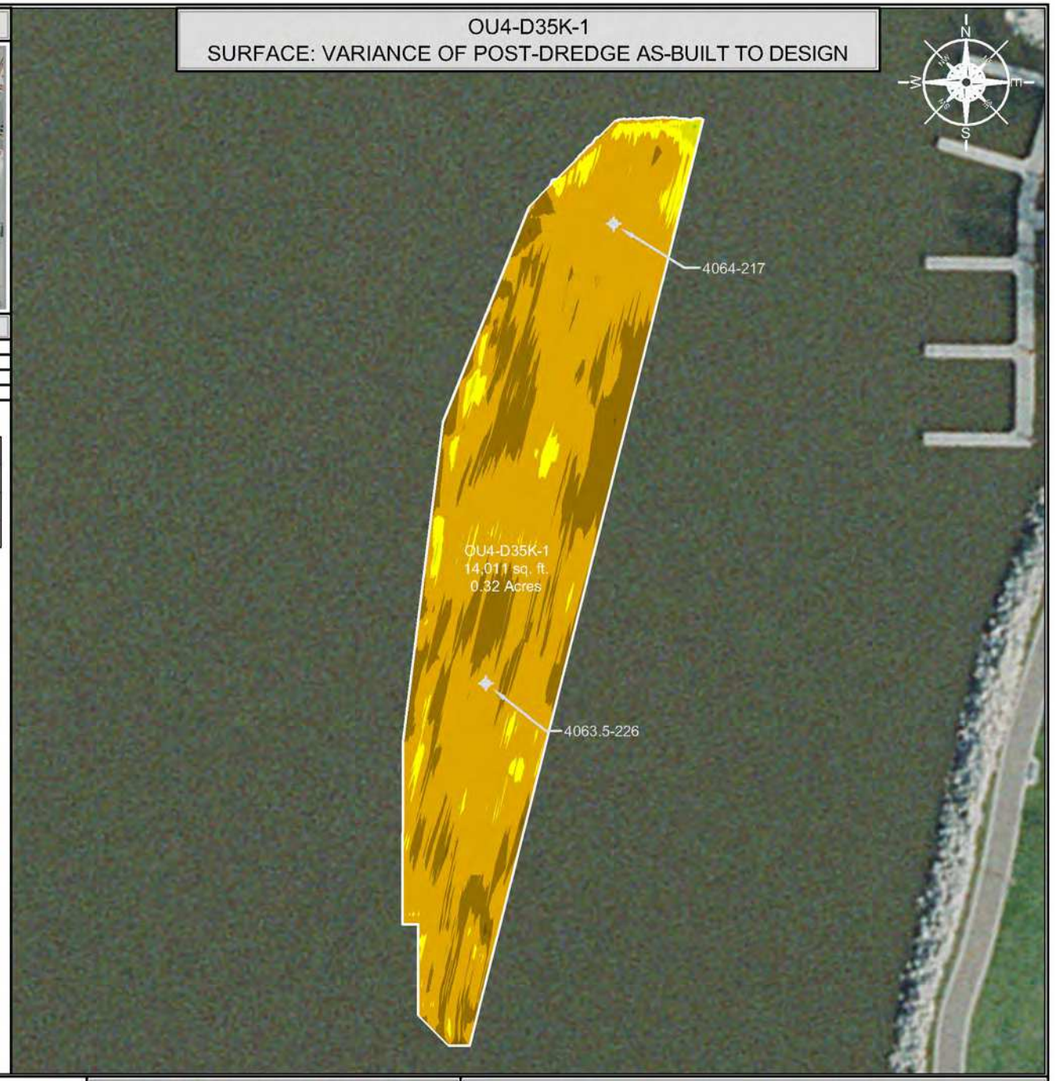
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	1,070 µg/kg (1.07 ppm)
0.5' - 1.0'	82.9 µg/kg (0.0829 ppm)
1.0' - 1.5'	<25.3 µg/kg (<0.0253 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4063.5-226	253266.12	2484915.94
4064-217	253417.62	2484958.08

OU4-D35K-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 50')

50 25 0 50 100

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-14-2016

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-17-D35K-1-A
2. 0.5' - 1.0' SAMPLE ID TTFR-17-D35K-1-B
3. 1.0' - 1.5' SAMPLE ID TTFR-17-D35K-1-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 10-27-2017
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF TWO SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 11-2-2017

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OU# - D# - #

- OU#: OPERABLE UNIT
- D#: DREDGE AREA
- #: DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.35'	-	-1.00'	29.08
BELOW RAL	-1.00'	-	-0.50'	3,414.42
BELOW RAL	-0.50'	-	0.00'	9,847.96
ABOVE RAL	0.00'	-	0.25'	661.17
ABOVE RAL	0.25'	-	0.50'	57.17
ABOVE RAL	0.50'	-	0.60'	1.27

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35K-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 14, 2016
LAST REVISED: December 6, 2018
CHECKED BY: REG

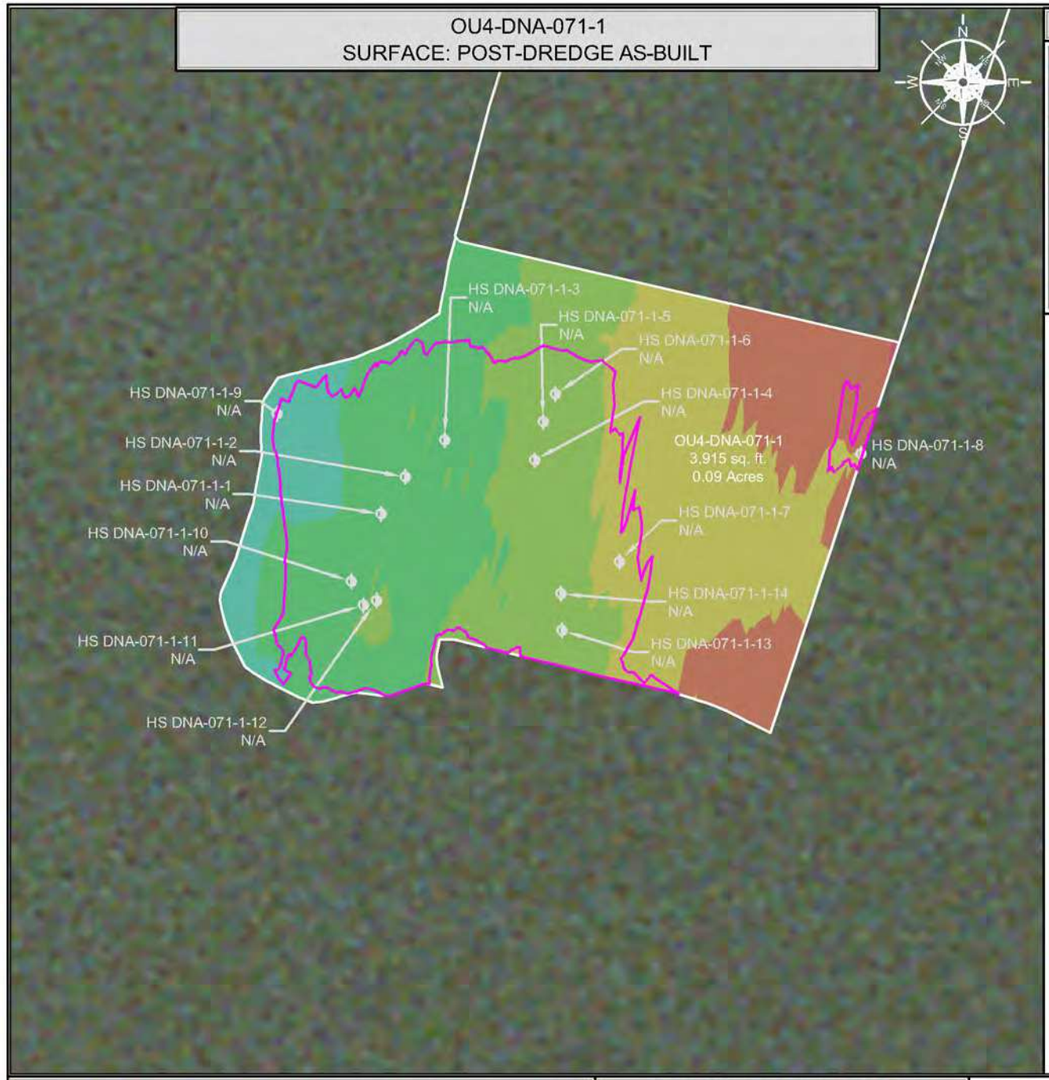
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-114

OU4-D35K-1
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

P:\LLC\CAD\Field Engineering\2Design Files\2016\OU4-D35K\EWD\Post Dredge\OU4-D35K-1.dwg

OU4-DNA-071-1
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP

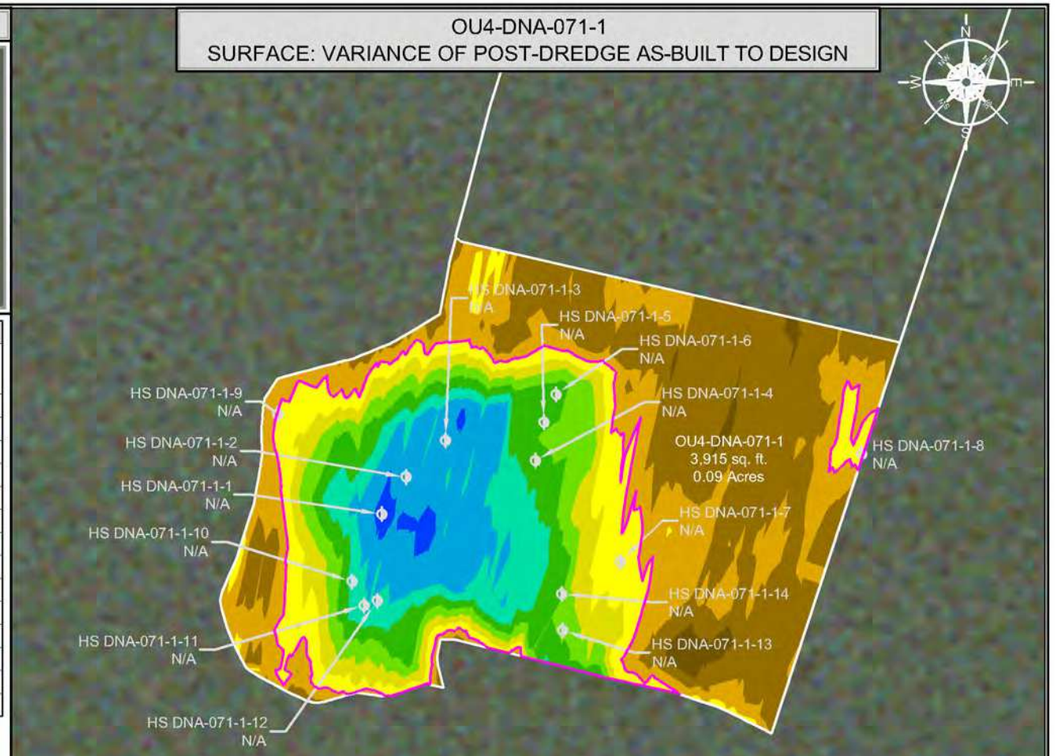


HIGH SUBGRADE SAMPLE AS-BUILT RESULTS

SAMPLE ID	NORTHING	EASTING	THICKNESS OF SOFT SEDIMENT (FEET)
HS DNA-071-1-1	253833.55	2484761.27	N/A
HS DNA-071-1-2	253838.43	2484764.47	N/A
HS DNA-071-1-3	253843.27	2484769.69	N/A
HS DNA-071-1-4	253840.60	2484781.51	N/A
HS DNA-071-1-5	253845.66	2484782.67	N/A
HS DNA-071-1-6	253849.35	2484784.30	N/A
HS DNA-071-1-7	253827.25	2484792.74	N/A
HS DNA-071-1-8	253841.46	2484824.59	N/A
HS DNA-071-1-9	253846.72	2484747.57	N/A
HS DNA-071-1-10	253824.64	2484757.35	N/A
HS DNA-071-1-11	253821.49	2484758.94	N/A
HS DNA-071-1-12	253822.10	2484760.69	N/A
HS DNA-071-1-13	253818.19	2484785.15	N/A
HS DNA-071-1-14	253823.01	2484784.98	N/A

NR = NO RECOVERY
NA = NO CORE COLLECTION REQUIRED DUE TO POLING DEPTH

OU4-DNA-071-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 20')

20 10 0 20 40

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-12-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
545.00'	-	547.00'
547.00'	-	549.00'
549.00'	-	551.00'
551.00'	-	553.00'
553.00'	-	555.00'
555.00'	-	557.00'
557.00'	-	559.00'
559.00'	-	561.00'
561.00'	-	563.00'

DRAWING NOTES

1. HIGH SUBGRADE SAMPLES AND POLING DATA WERE COLLECTED ON 9-18-2018 AND LOGGED ON 9-18-2018

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.39'	-	-1.00'	52.78
	-1.00'	-	-0.50'	1,115.56
	-0.50'	-	0.00'	817.58
ABOVE RAL	0.00'	-	0.50'	437.38
	0.50'	-	1.00'	263.02
	1.00'	-	1.50'	273.37
	1.50'	-	2.00'	296.63
	2.00'	-	2.50'	267.40
	2.50'	-	3.00'	357.41
	3.00'	-	3.29'	33.68

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DNA-071-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: September 17, 2018
LAST REVISED: November 30, 2018
CHECKED BY: REG

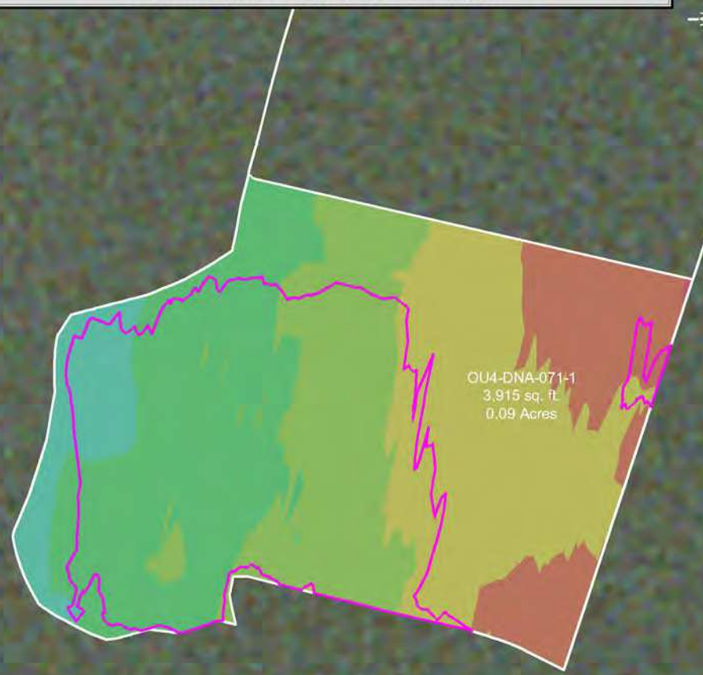
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-115

**OU4-DNA-071-1
PRIMARY DREDGE HIGH SUBGRADE RESULTS**

P:\LCC\ACD\Field Engineering\Dredge Files\2018\OU4 DNA-071\DWG\Post Dredge\OU4-DNA-071-1.dwg

OU4-DNA-071-1
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

475.70	INITIAL RAL VOLUME
72.06	INITIAL OVERCUT VOLUME
547.76	RAL + OVERCUT VOLUME
400.48	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

291.79	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
71.83	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
363.62	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

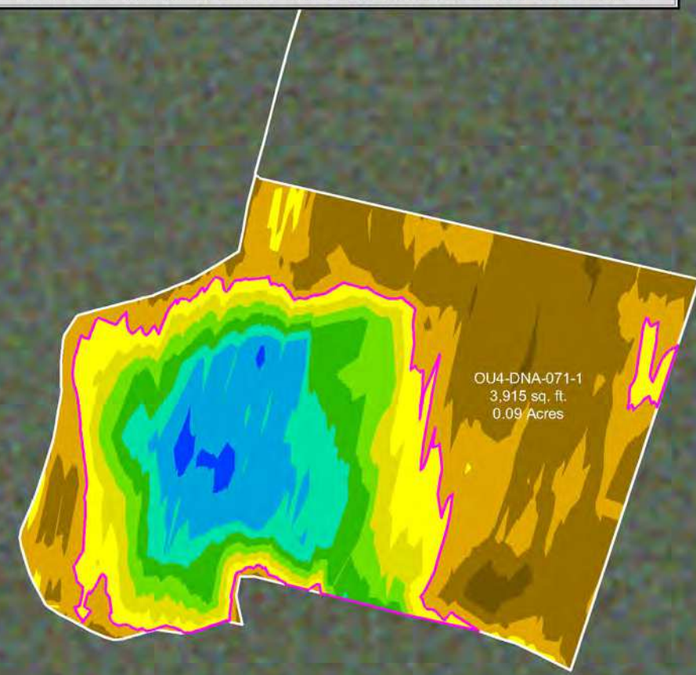
2018 AS-BUILT VOLUMES (CU. YD.)

226.00	TOTAL VOLUME DREDGED
187.04	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
104.68	CONFIRMED HIGH SUBGRADE VOLUME
0.07	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
42.53	OVERCUT VOLUME REMAINING
29.82	OVERCUT VOLUME DREDGED
9.14	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

3,914.80	AREA (SQ. FT.)
31.40	ABOVE DESIGN ELEVATION
1,985.91	AT OR BELOW DESIGN ELEVATION
1,897.49	CONFIRMED HIGH SUBGRADE
6.36 "	AVERAGE DEPTH OF OVERCUT [1]
99	PERCENT COMPLETE [2]

OU4-DNA-071-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 20')

20 10 0 20 40

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-12-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
545.00'	-	547.00'
547.00'	-	549.00'
549.00'	-	551.00'
551.00'	-	553.00'
553.00'	-	555.00'
555.00'	-	557.00'
557.00'	-	559.00'
559.00'	-	561.00'
561.00'	-	563.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
- OU# — OPERABLE UNIT
- D# — DREDGE AREA
- # — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.39'	-	-1.00'	52.78
BELOW RAL	-1.00'	-	-0.50'	1,115.56
BELOW RAL	-0.50'	-	0.00'	817.58
ABOVE RAL	0.00'	-	0.50'	437.38
ABOVE RAL	0.50'	-	1.00'	263.02
ABOVE RAL	1.00'	-	1.50'	273.37
ABOVE RAL	1.50'	-	2.00'	296.63
ABOVE RAL	2.00'	-	2.50'	267.40
ABOVE RAL	2.50'	-	3.00'	357.41
ABOVE RAL	3.00'	-	3.29'	33.68

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DNA-071-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: September 17, 2018
LAST REVISED: November 30, 2018
CHECKED BY: REG

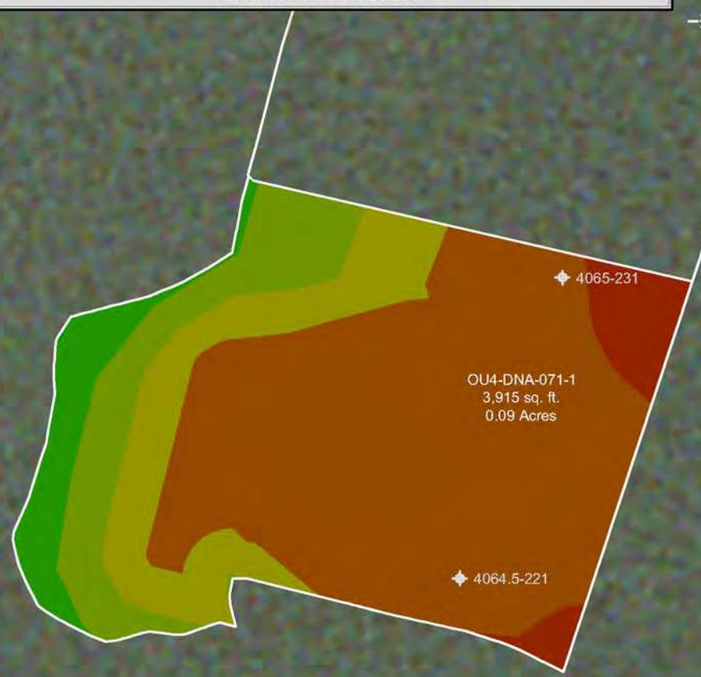
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-116

OU4-DNA-071-1
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\ALLOC\4D\Field Engineering\Dredge Files\2018\OU4 DNA 071\DWG\Post Dredge\OU4 DNA 071-1.dwg

OU4-DNA-071-1
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	2,980 µg/kg (2.98 ppm)

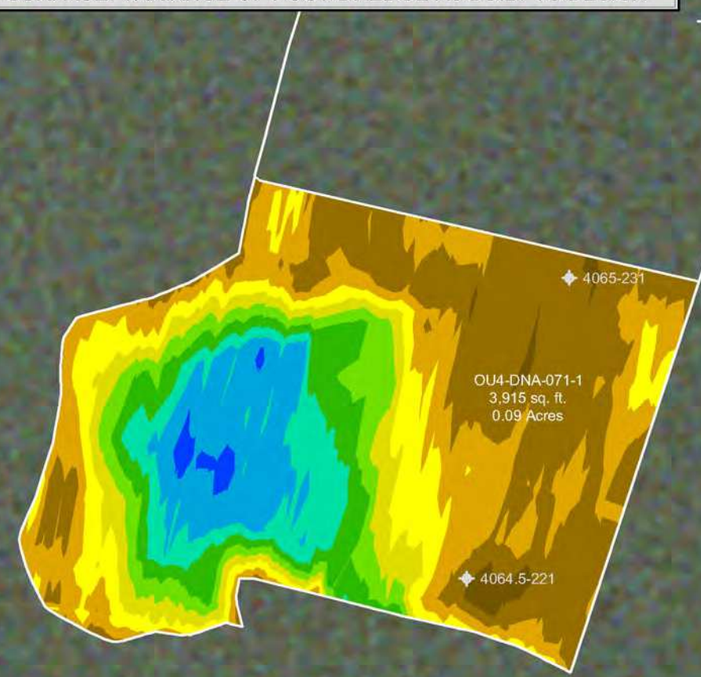
CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4064.5-221	253817.00	2484798.99
4065-231	253856.67	2484812.52

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION
4065-231	A: <25.1 µg/kg (<0.0251) ppm)
4064.5-221	A: 5,350 µg/kg (5.35) ppm) D: 13,300 µg/kg (13.3) ppm) B: 6,130 µg/kg (6.13) ppm) E: 15,100 µg/kg (15.1) ppm) C: 9,570 µg/kg (9.57) ppm)

OU4-DNA-071-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-18-DNA-071-1-4065-231-A
2. TTFR-18-DNA-071-1-4064.5-221-A
3. TTFR-18-DNA-071-1-4064.5-221-B
4. TTFR-18-DNA-071-1-4064.5-221-C
5. TTFR-18-DNA-071-1-4064.5-221-D
6. TTFR-18-DNA-071-1-4064.5-221-E

SCALE (1" = 20')

20 10 0 20 40

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-12-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
547.00'	-	549.00'
549.00'	-	551.00'
551.00'	-	553.00'
553.00'	-	555.00'
555.00'	-	557.00'
557.00'	-	559.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-DNA-071-1-A
2. CONFIRMATION SAMPLES WERE COLLECTED ON 9-24-2018
3. CONFIRMATION SAMPLES ARE A COMPOSITE OF TWO SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
4. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 9-28-2018, 10-3-2018, and 10-4-2018

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OU# - D# - #
OU# = OPERABLE UNIT; D# = DREDGE AREA; # = DREDGE MANAGEMENT UNIT
DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.39'	-	-1.00'	52.78
BELOW RAL	-1.00'	-	-0.50'	1,115.56
BELOW RAL	-0.50'	-	0.00'	817.58
ABOVE RAL	0.00'	-	0.50'	437.38
ABOVE RAL	0.50'	-	1.00'	263.02
ABOVE RAL	1.00'	-	1.50'	273.37
ABOVE RAL	1.50'	-	2.00'	296.63
ABOVE RAL	2.00'	-	2.50'	267.40
ABOVE RAL	2.50'	-	3.00'	357.41
ABOVE RAL	3.00'	-	3.29'	33.68

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DNA-071-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: September 17, 2018
LAST REVISED: November 30, 2018
CHECKED BY: REG

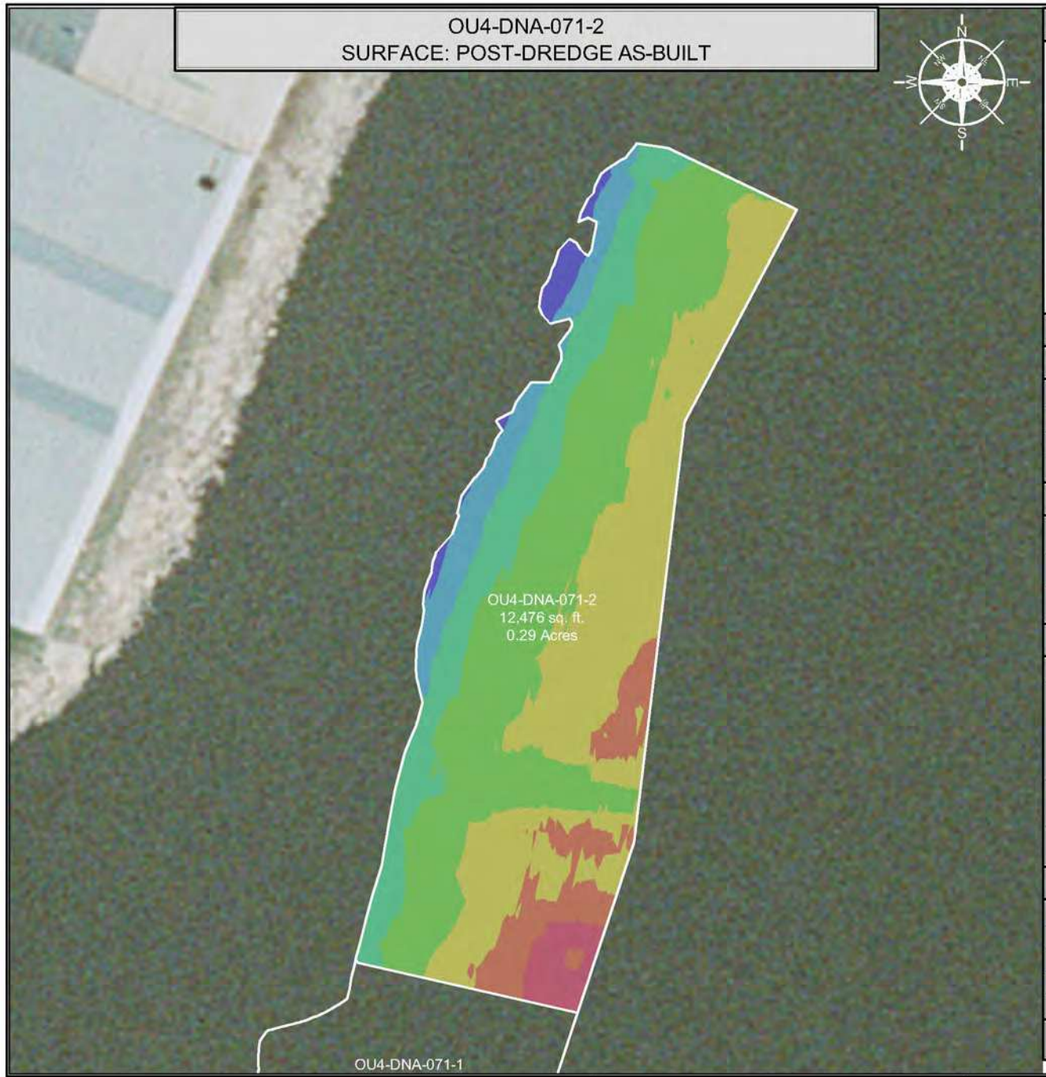
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-117

OU4-DNA-071-1
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

P:\LLOC\GIS\Field Ent\mxd\gDredge Files\2018\OU4-DNA-071\DWG\Post Dredge\OU4-DNA-071-1.dwg

OU4-DNA-071-2
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

548.27	INITIAL RAL VOLUME
207.65	INITIAL OVERCUT VOLUME
755.92	RAL + OVERCUT VOLUME
671.01	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

434.99	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
178.21	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
613.20	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

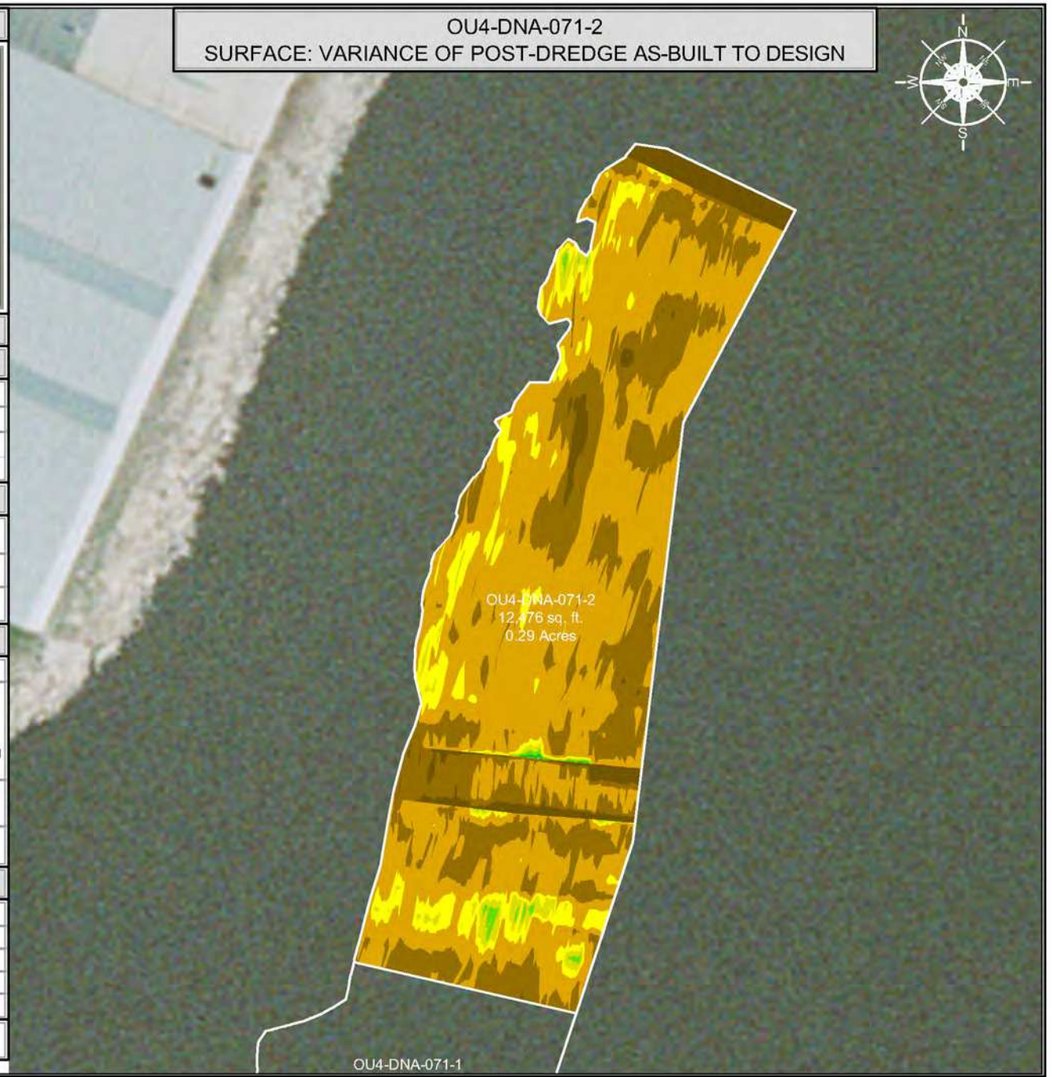
2018 AS-BUILT VOLUMES (CU. YD.)

567.01	TOTAL VOLUME DREDGED
427.29	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
7.70	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
77.21	OVERCUT VOLUME REMAINING
110.61	OVERCUT VOLUME DREDGED
29.11	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

12,475.98	AREA (SQ. FT.)
1,216.72	ABOVE DESIGN ELEVATION
11,259.26	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
4.02 "	AVERAGE DEPTH OF OVERCUT [1]
90	PERCENT COMPLETE [2]

OU4-DNA-071-2
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-12-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
546.00'	-	548.00'
548.00'	-	550.00'
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT
DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-6.01'	-	-1.00'	595.53
BELOW RAL	-1.00'	-	-0.50'	3,614.24
BELOW RAL	-0.50'	-	0.00'	7,049.49
ABOVE RAL	0.00'	-	0.25'	938.07
ABOVE RAL	0.25'	-	0.50'	225.46
ABOVE RAL	0.50'	-	0.75'	46.44
ABOVE RAL	0.75'	-	1.00'	5.44
ABOVE RAL	1.00'	-	1.21'	0.69

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DNA-071-2.dwg
DRAWN BY: DAVID.FRISQUE
DATE: September 28, 2018
LAST REVISED: November 30, 2018
CHECKED BY: REG

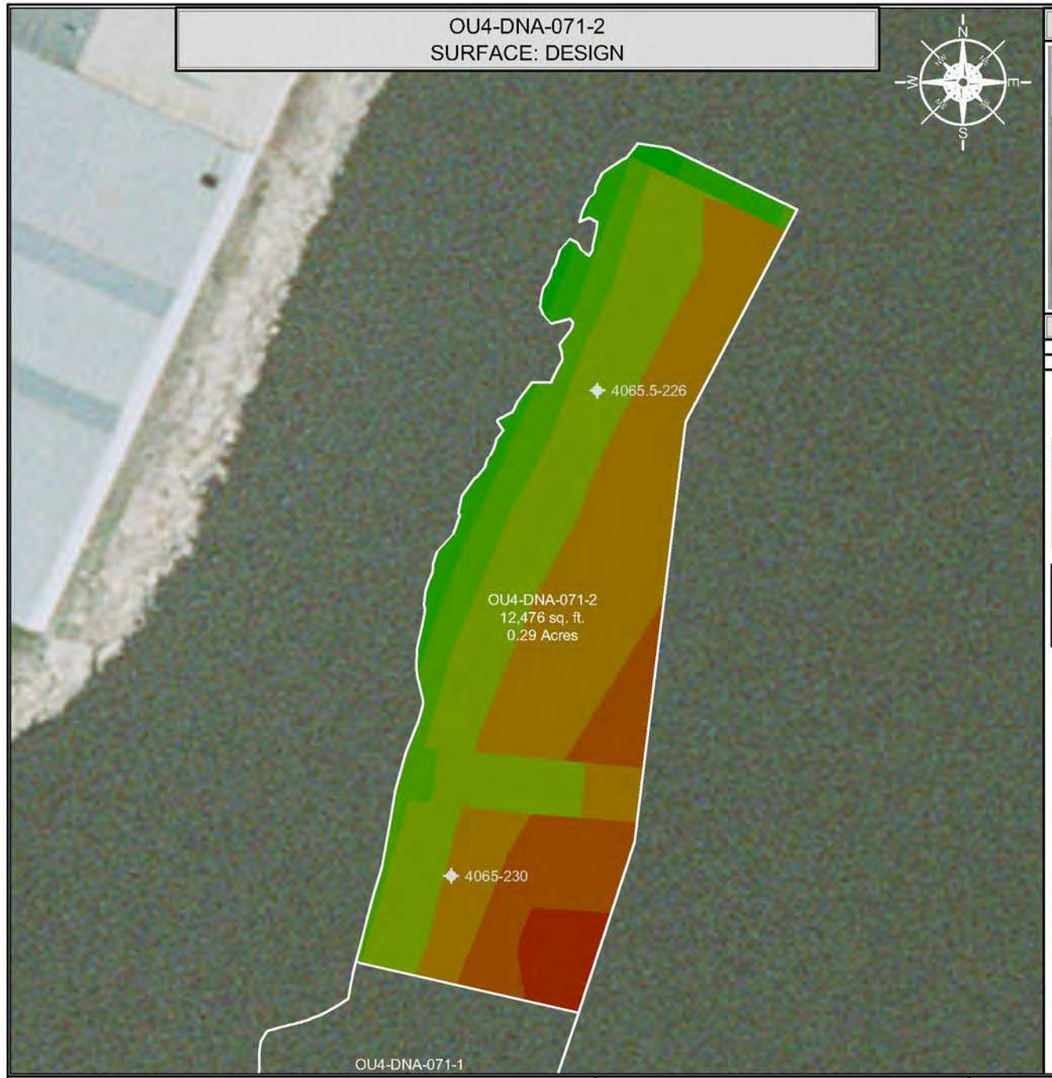
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-118

OU4-DNA-071-2
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

F:\LCAD\Field Engineering\Dredge Files\2018\OU4 DNA-071\DWG\Post Dredge\OU4-DNA-071-2.dwg

OU4-DNA-071-2
SURFACE: DESIGN



INDEX MAP

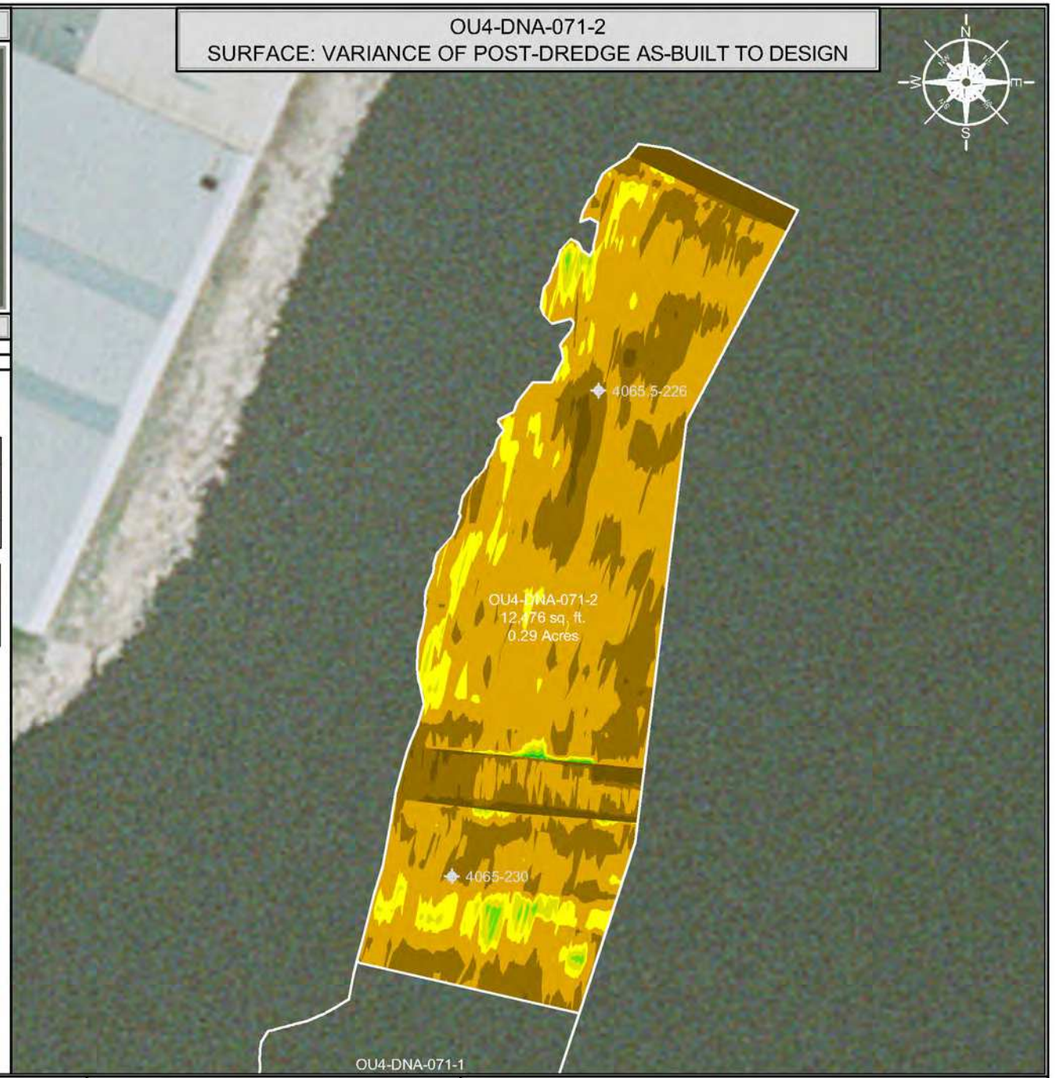


CONFIRMATION SAMPLE RESULTS	
INTERVAL	CONCENTRATION
0.0' - 0.5'	160 µg/kg (0.16 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS		
SAMPLE ID	NORTHING	EASTING
4065-230	253892.37	2484796.10
4065.5-226	254020.44	2484834.72

DISCRETE SAMPLE RESULTS	
LOCATION	CONCENTRATION
4065-230	B: 226 µg/kg (0.226) ppm) C: 195 µg/kg (0.195) ppm)

OU4-DNA-071-2
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-18-DNA-071-2-4065-230-B
2. TTFR-18-DNA-071-2-4065-230-C

SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-12-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
547.00'	-	549.00'
549.00'	-	551.00'
551.00'	-	553.00'
553.00'	-	555.00'
555.00'	-	557.00'
557.00'	-	559.00'
559.00'	-	561.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-DNA-071-2-A
2. CONFIRMATION SAMPLES WERE COLLECTED ON 9-25-2018
3. CONFIRMATION SAMPLES ARE A COMPOSITE OF TWO SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
4. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 10-1-2018

THIS DOCUMENT IS THE PROPERTY OF LOWER FOX RIVER REMEDIATION LLC PREPARED BY TETRA TECH EC, INC. (TtEC), AND IS PROVIDED UPON THE CONDITION THAT IT WILL NOT BE REPRODUCED, COPIED, OR ISSUED TO A THIRD PARTY. IT IS PROVIDED TO BE USED SOLELY FOR THE ORIGINAL INTENDED PURPOSE, AND SOLELY FOR THE EXECUTION OR REVIEW OF THE ENGINEERING AND CONSTRUCTION OF THE SUBJECT PROJECT.

OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT
DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-6.01'	-	-1.00'	595.53
BELOW RAL	-1.00'	-	-0.50'	3,614.24
BELOW RAL	-0.50'	-	0.00'	7,049.49
ABOVE RAL	0.00'	-	0.25'	938.07
ABOVE RAL	0.25'	-	0.50'	225.46
ABOVE RAL	0.50'	-	0.75'	46.44
ABOVE RAL	0.75'	-	1.00'	5.44
ABOVE RAL	1.00'	-	1.21'	0.69

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DNA-071-2.dwg
DRAWN BY: DAVID.FRISQUE
DATE: September 28, 2018
LAST REVISED: November 30, 2018
CHECKED BY: REG

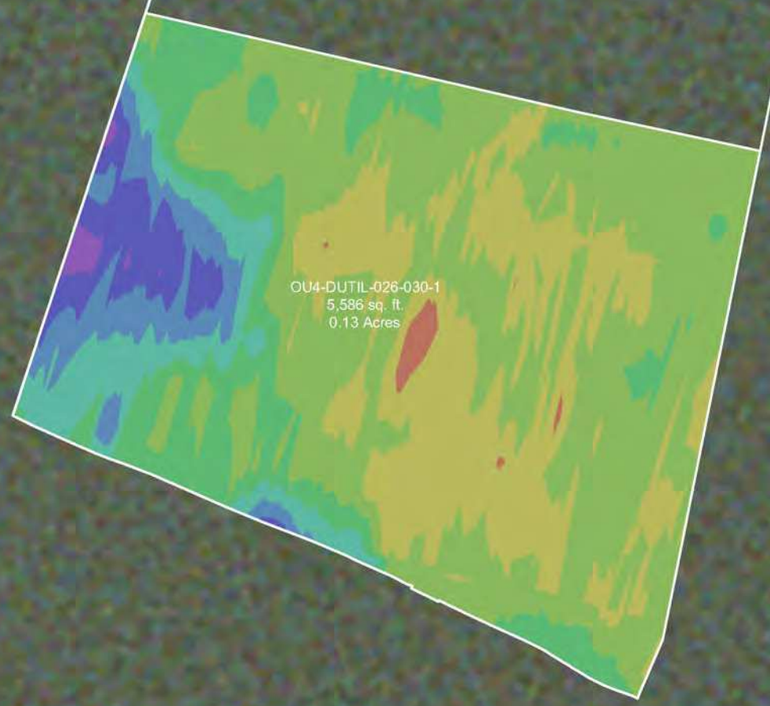
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-119

OU4-DNA-071-2
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LLC\Data\Field Engineering\Dredge Files\2018\OU4 DNA 071-2\DWG\Post Dredge\OU4 DNA 071-2.dwg

OU4-DUTIL-026-030-1
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

590.28	INITIAL RAL VOLUME
103.16	INITIAL OVERCUT VOLUME
693.44	RAL + OVERCUT VOLUME
671.85	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

502.42	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
103.15	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
605.57	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

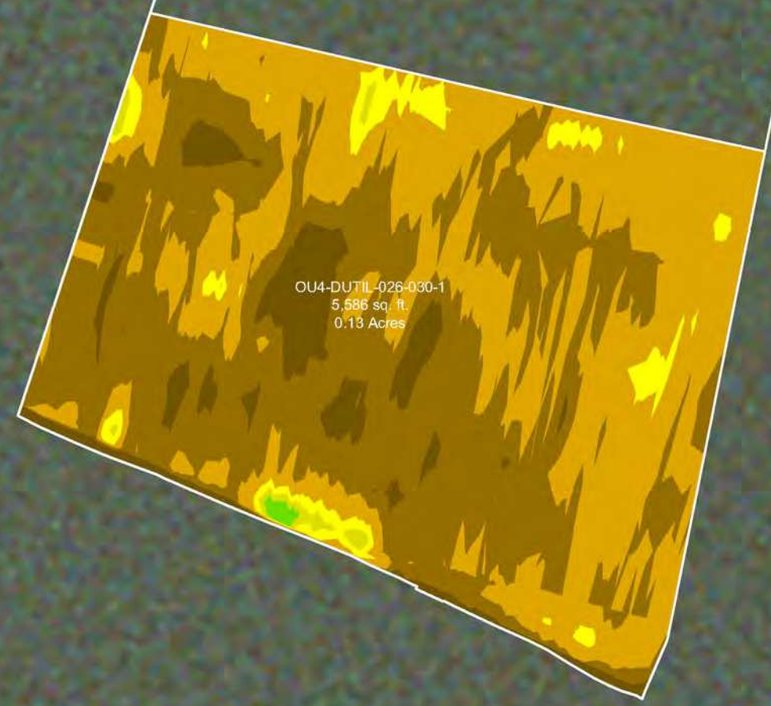
2018 AS-BUILT VOLUMES (CU. YD.)

613.40	TOTAL VOLUME DREDGED
501.11	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
1.31	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
20.28	OVERCUT VOLUME REMAINING
82.96	OVERCUT VOLUME DREDGED
29.33	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

5,586.03	AREA (SQ. FT.)
241.27	ABOVE DESIGN ELEVATION
5,344.76	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
6.81 "	AVERAGE DEPTH OF OVERCUT [1]
96	PERCENT COMPLETE [2]

OU4-DUTIL-026-030-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 20')

20 10 0 20 40

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-13-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
545.00'	-	545.50'
545.50'	-	546.00'
546.00'	-	546.50'
546.50'	-	547.00'
547.00'	-	547.50'
547.50'	-	548.00'
548.00'	-	548.50'
548.50'	-	549.00'
549.00'	-	549.50'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-3.32'	-	-1.00'	400.04
BELOW RAL	-1.00'	-	-0.50'	2,553.05
BELOW RAL	-0.50'	-	0.00'	2,391.67
ABOVE RAL	0.00'	-	0.25'	194.43
ABOVE RAL	0.25'	-	0.50'	35.47
ABOVE RAL	0.50'	-	0.75'	10.11

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DUTIL-026-030-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: September 28, 2018
LAST REVISED: November 30, 2018
CHECKED BY: REG

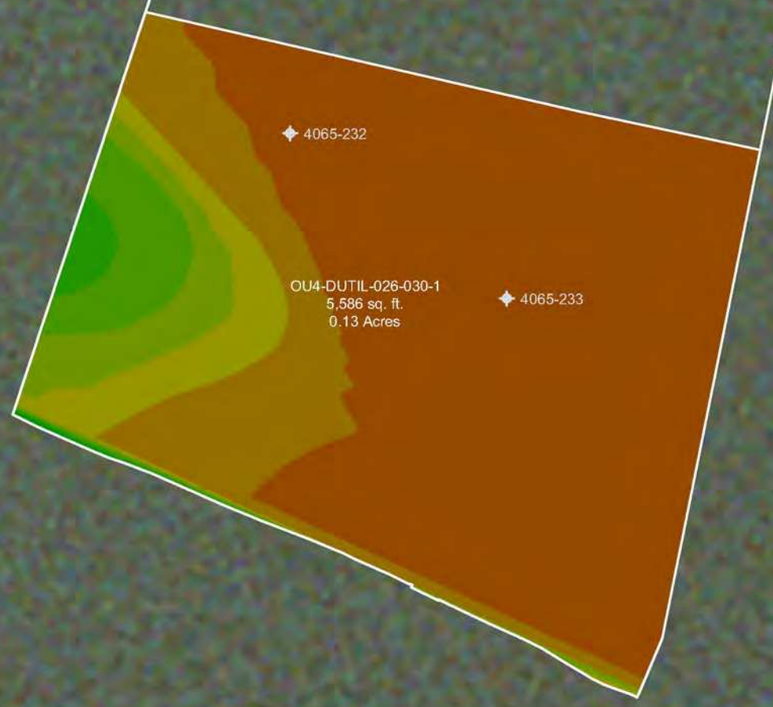
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-120

OU4-DUTIL-026-030-1
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\ALLOC\42\Field Engineering\gDredge Files\2018\OU4 DUTIL 026_030\DWG\Final Dredge\OU4 DUTIL 026-030-1.dwg

OU4-DUTIL-026-030-1
SURFACE: DESIGN



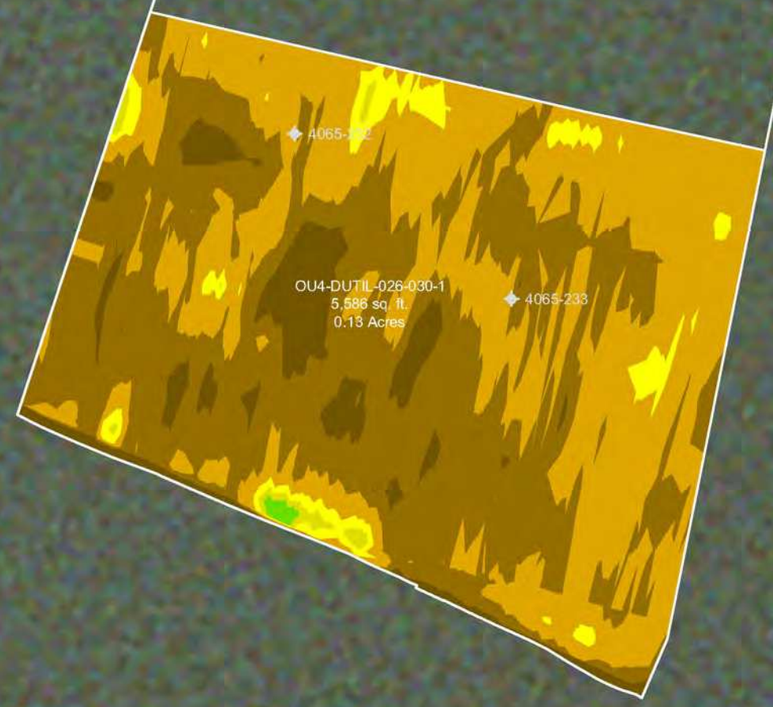
INDEX MAP



CONFIRMATION SAMPLE AS-BUILT LOCATIONS		
SAMPLE ID	NORTHING	EASTING
4065-232	253840.16	2484848.74
4065-233	253818.36	2484877.34

DISCRETE SAMPLE RESULTS	
LOCATION	CONCENTRATION
4065-233	A: 151 µg/kg (0.151) ppm) B: <25.5 µg/kg (<0.0255) ppm) C: <25.6 µg/kg (<0.0256) ppm)
4065-232	N/A

OU4-DUTIL-026-030-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-18-DUTIL-026_030-1-4065-233-A
2. TTFR-18-DUTIL-026_030-1-4065-233-B
3. TTFR-18-DUTIL-026_030-1-4065-233-C

SCALE (1" = 20')

20 10 0 20 40

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-13-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
546.00'	-	546.50'
546.50'	-	547.00'
547.00'	-	547.50'
547.50'	-	548.00'
548.00'	-	548.50'
548.50'	-	549.00'
549.00'	-	549.50'
549.50'	-	550.00'
550.00'	-	550.50'
550.50'	-	551.00'

DRAWING NOTES

1. CONFIRMATION SAMPLES WERE COLLECTED ON 9-24-2018
2. CONFIRMATION SAMPLES ARE DISCRETES OF ONE SAMPLE TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
3. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 9-28-2018

THIS DOCUMENT IS THE PROPERTY OF LOWER FOX RIVER REMEDIATION LLC PREPARED BY TETRA TECH EC, INC. (TtEC), AND IS PROVIDED UPON THE CONDITION THAT IT WILL NOT BE REPRODUCED, COPIED, OR ISSUED TO A THIRD PARTY. IT IS PROVIDED TO BE USED SOLELY FOR THE ORIGINAL INTENDED PURPOSE, AND SOLELY FOR THE EXECUTION OR REVIEW OF THE ENGINEERING AND CONSTRUCTION OF THE SUBJECT PROJECT.

OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-3.32'	-	-1.00'	400.04
BELOW RAL	-1.00'	-	-0.50'	2,553.05
BELOW RAL	-0.50'	-	0.00'	2,391.67
ABOVE RAL	0.00'	-	0.25'	194.43
ABOVE RAL	0.25'	-	0.50'	35.47
ABOVE RAL	0.50'	-	0.75'	10.11

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DUTIL-026-030-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: September 28, 2018
LAST REVISED: November 30, 2018
CHECKED BY: REG

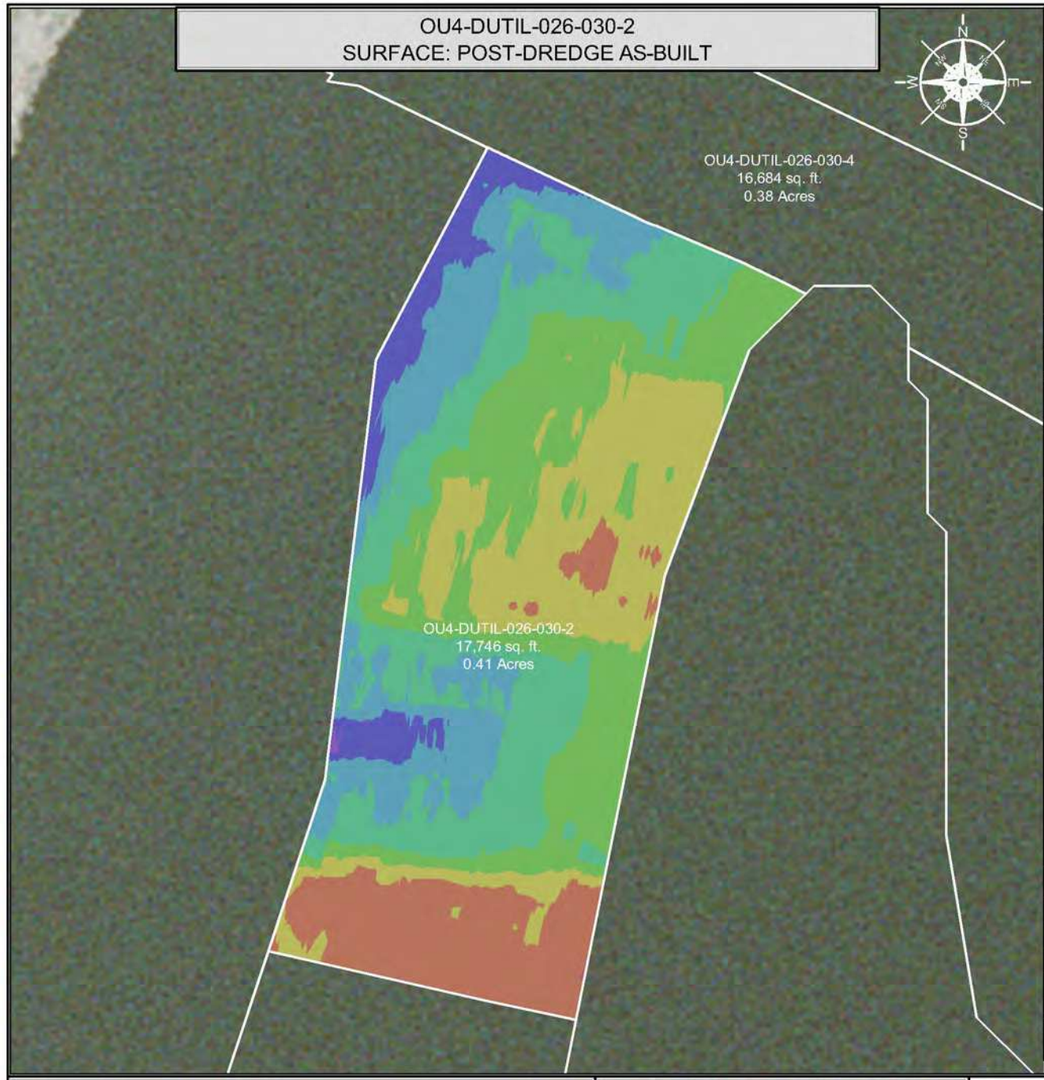
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-121

OU4-DUTIL-026-030-1
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LDC\CAD\Field Engineering\Design Files\2018\OU4 DUTIL-026_030\DWG\Final Design\OU4 DUTIL-026-030-1.dwg

OU4-DUTIL-026-030-2
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

992.25	INITIAL RAL VOLUME
257.95	INITIAL OVERCUT VOLUME
1,250.20	RAL + OVERCUT VOLUME
1,204.60	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

705.14	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
246.11	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
951.25	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

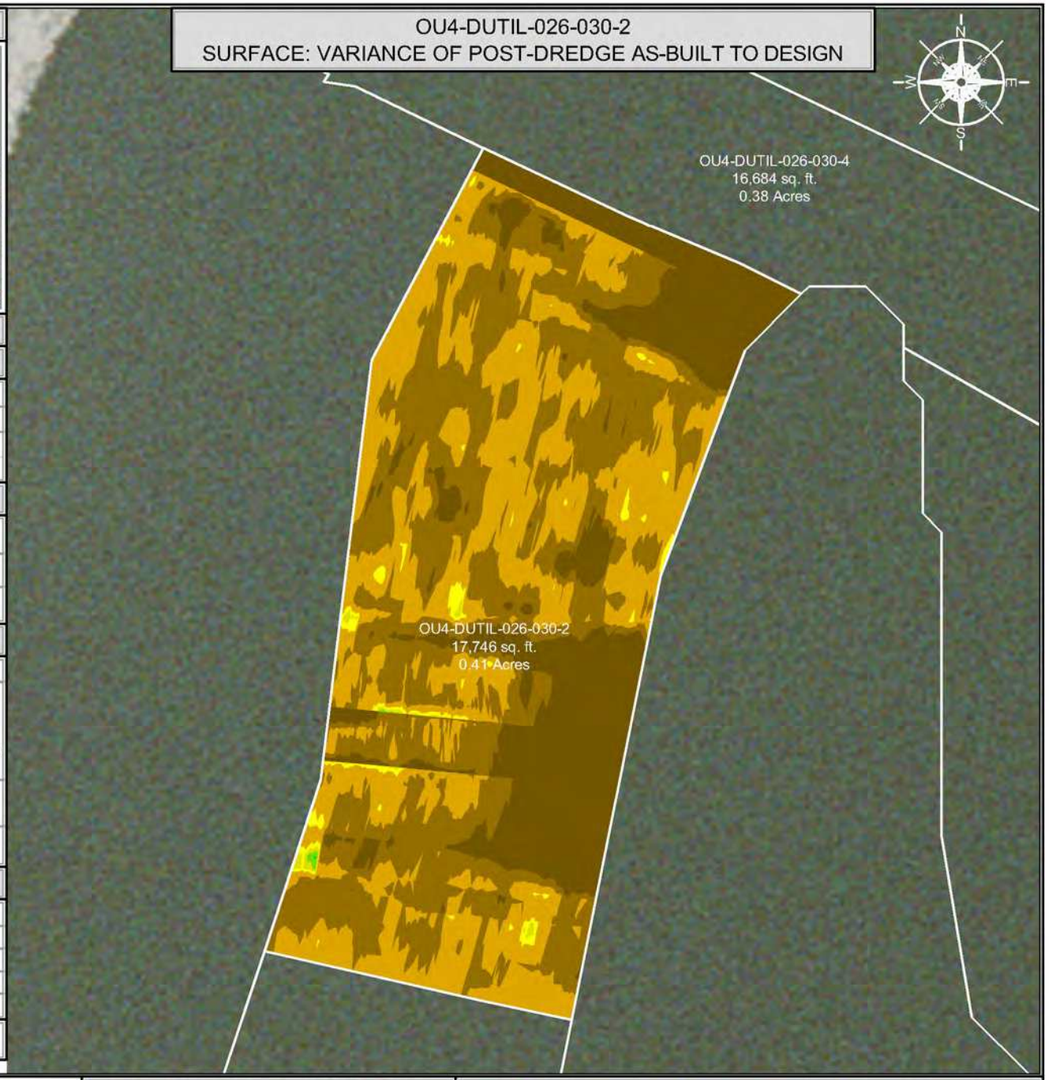
2018 AS-BUILT VOLUMES (CU. YD.)

1,000.28	TOTAL VOLUME DREDGED
703.61	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
1.53	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
44.07	OVERCUT VOLUME REMAINING
207.01	OVERCUT VOLUME DREDGED
89.66	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

17,746.02	AREA (SQ. FT.)
269.21	ABOVE DESIGN ELEVATION
17,476.81	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
5.50 "	AVERAGE DEPTH OF OVERCUT [1]
98	PERCENT COMPLETE [2]

OU4-DUTIL-026-030-2
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-13-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

THIS DOCUMENT IS THE PROPERTY OF LOWER FOX RIVER REMEDIATION LLC PREPARED BY TETRA TECH EC, INC. (TtEC), AND IS PROVIDED UPON THE CONDITION THAT IT WILL NOT BE REPRODUCED, COPIED, OR ISSUED TO A THIRD PARTY. IT IS PROVIDED TO BE USED SOLELY FOR THE ORIGINAL INTENDED PURPOSE, AND SOLELY FOR THE EXECUTION OR REVIEW OF THE ENGINEERING AND CONSTRUCTION OF THE SUBJECT PROJECT.

OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-5.35'	-	-1.00'	4,104.90
BELOW RAL	-1.00'	-	-0.50'	7,134.03
BELOW RAL	-0.50'	-	0.00'	6,237.89
ABOVE RAL	0.00'	-	0.25'	210.80
ABOVE RAL	0.25'	-	0.50'	48.83
ABOVE RAL	0.50'	-	0.75'	9.28
ABOVE RAL	0.75'	-	0.81'	0.30

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DUTIL-026-030-2.dwg
DRAWN BY: DAVID.FRISQUE
DATE: September 28, 2018
LAST REVISED: November 30, 2018
CHECKED BY: REG

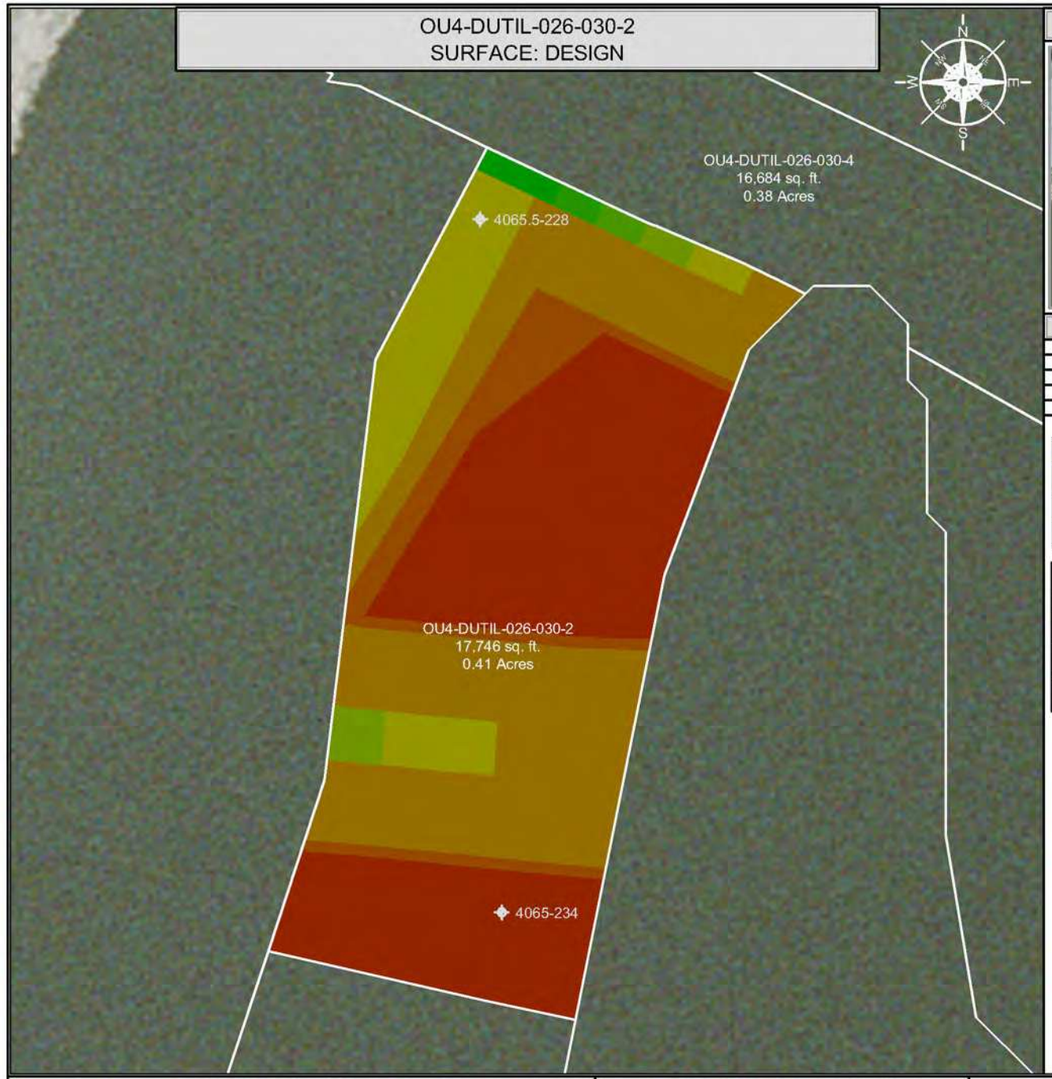
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-122

OU4-DUTIL-026-030-2
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\ALLOC\42\Field Engineering\Dredge Files\2018\OU4 DUTIL -026-030\DWG\Final Dredge\OU4 DUTIL -026-030-2.dwg

OU4-DUTIL-026-030-2
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	86.4 µg/kg (0.0864 ppm)
0.5' - 1.0'	181 µg/kg (0.181 ppm)
1.0' - 1.5'	4,170 µg/kg (4.17 ppm)
1.5' - 2.0'	4,750 µg/kg (4.75 ppm)

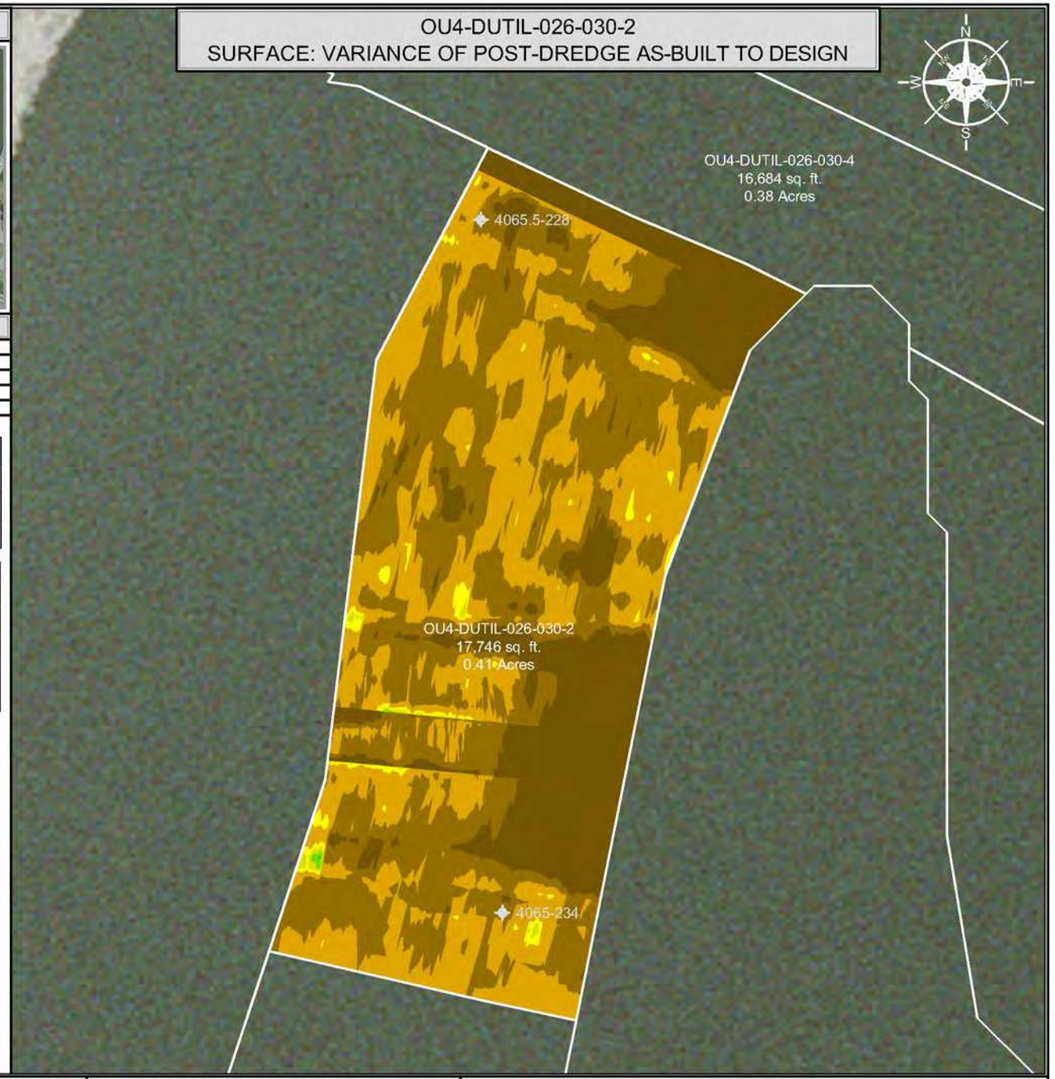
CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4065-234	253866.33	2484891.28
4065.5-228	254049.18	2484885.59

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION
4065.5-228	A: 33.1 µg/kg (0.0331) ppm) D: <25.4 µg/kg (<0.0254) ppm) B: <25.4 µg/kg (<0.0254) ppm) E: <25.2 µg/kg (<0.0252) ppm) C: <25.3 µg/kg (<0.0253) ppm)
4065-234	A: 221 µg/kg (0.221) ppm) D: 10,600 µg/kg (10.6) ppm) B: 432 µg/kg (0.432) ppm) E: 7,280 µg/kg (7.28) ppm) C: 7,500 µg/kg (7.5) ppm)
4065-234RVT	D: 1,470 µg/kg (1.47) ppm) G: 3,580 µg/kg (3.58) ppm) E: 95.6 µg/kg (0.0956) ppm) F: 1,280 µg/kg (1.28) ppm)

OU4-DUTIL-026-030-2
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-18-DUTIL-026_030-2-4065.5-228-A
2. TTFR-18-DUTIL-026_030-2-4065.5-228-B
3. TTFR-18-DUTIL-026_030-2-4065.5-228-C
4. TTFR-18-DUTIL-026_030-2-4065.5-228-D
5. TTFR-18-DUTIL-026_030-2-4065.5-228-E
6. TTFR-18-DUTIL-026_030-2-4065-234-A
7. TTFR-18-DUTIL-026_030-2-4065-234-B
8. TTFR-18-DUTIL-026_030-2-4065-234-C
9. TTFR-18-DUTIL-026_030-2-4065-234-D
10. TTFR-18-DUTIL-026_030-2-4065-234-E
11. TTFR-18-DUTIL-026_030-2-4065-234RVT-D
12. TTFR-18-DUTIL-026_030-2-4065-234RVT-E
13. TTFR-18-DUTIL-026_030-2-4065-234RVT-F
14. TTFR-18-DUTIL-026_030-2-4065-234RVT-G

SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-13-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-DUTIL-026-030-2-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-DUTIL-026-030-2-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-DUTIL-026-030-2-C
4. 1.5' - 2.0' SAMPLE ID TTFR-18-DUTIL-026-030-2-D
5. CONFIRMATION SAMPLES WERE COLLECTED ON 9-25-2018 and 10-12-2018
6. CONFIRMATION SAMPLES ARE A COMPOSITE OF TWO SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
7. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 10-1-2018, 10-4-2018, 10-10-2018, 10-11-2018, and 10-18-2018

THIS DOCUMENT IS THE PROPERTY OF LOWER FOX RIVER REMEDIATION LLC PREPARED BY TETRA TECH EC, INC. (TtEC), AND IS PROVIDED UPON THE CONDITION THAT IT WILL NOT BE REPRODUCED, COPIED, OR ISSUED TO A THIRD PARTY. IT IS PROVIDED TO BE USED SOLELY FOR THE ORIGINAL INTENDED PURPOSE, AND SOLELY FOR THE EXECUTION OR REVIEW OF THE ENGINEERING AND CONSTRUCTION OF THE SUBJECT PROJECT.

OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-5.35'	-	-1.00'	4,104.90
	-1.00'	-	-0.50'	7,134.03
	-0.50'	-	0.00'	6,237.89
ABOVE RAL	0.00'	-	0.25'	210.80
	0.25'	-	0.50'	48.83
	0.50'	-	0.75'	9.28
	0.75'	-	0.81'	0.30

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DUTIL-026-030-2.dwg
DRAWN BY: DAVID.FRISQUE
DATE: September 28, 2018
LAST REVISED: November 30, 2018
CHECKED BY: REG

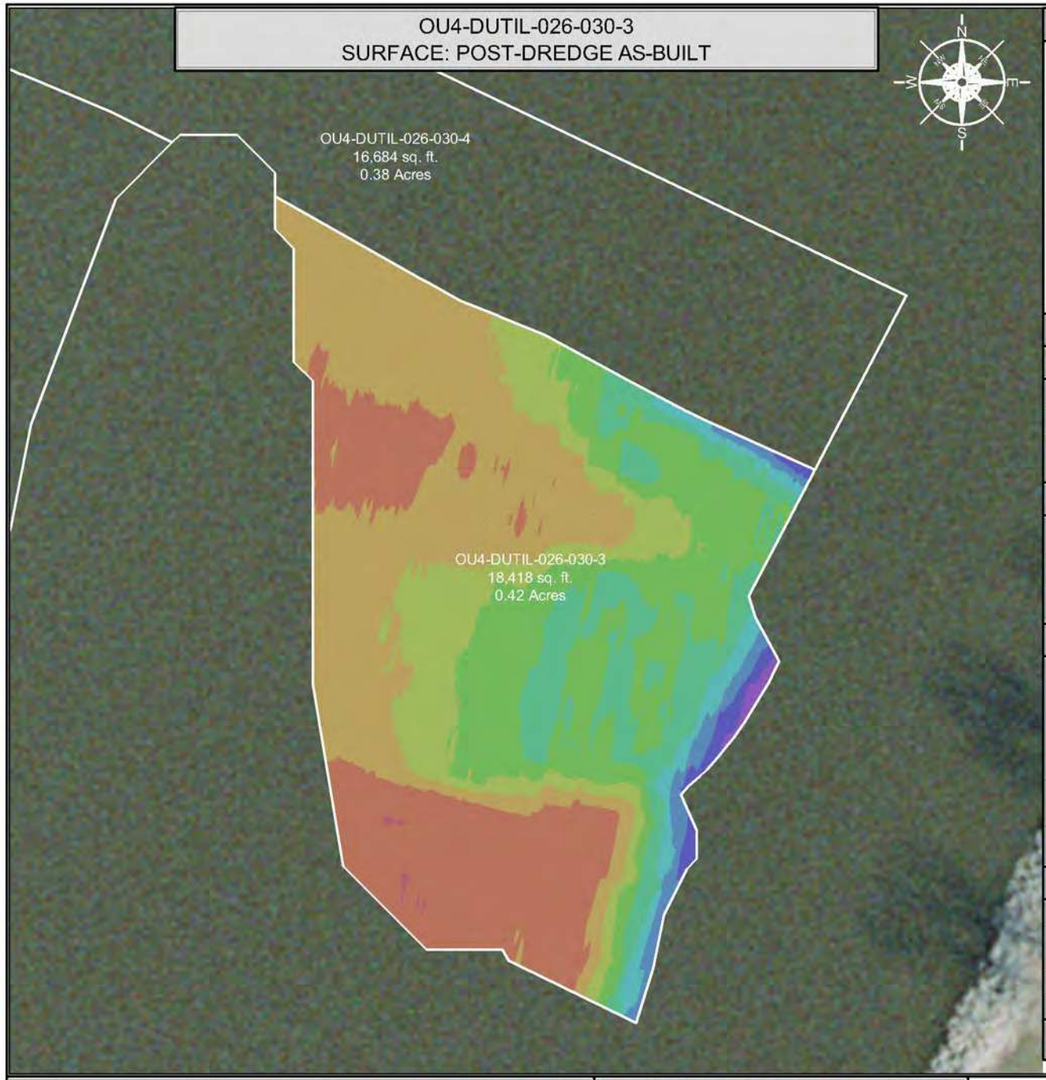
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-123

OU4-DUTIL-026-030-2
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LDC\CAD\Field Engineering\Design Files\2018\OU4 DUTIL-026_030\DWG\Final Design\OU4 DUTIL-026-030-2.dwg

OU4-DUTIL-026-030-3
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

550.04	INITIAL RAL VOLUME
186.05	INITIAL OVERCUT VOLUME
736.09	RAL + OVERCUT VOLUME
685.71	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

545.68	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
186.06	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
731.74	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

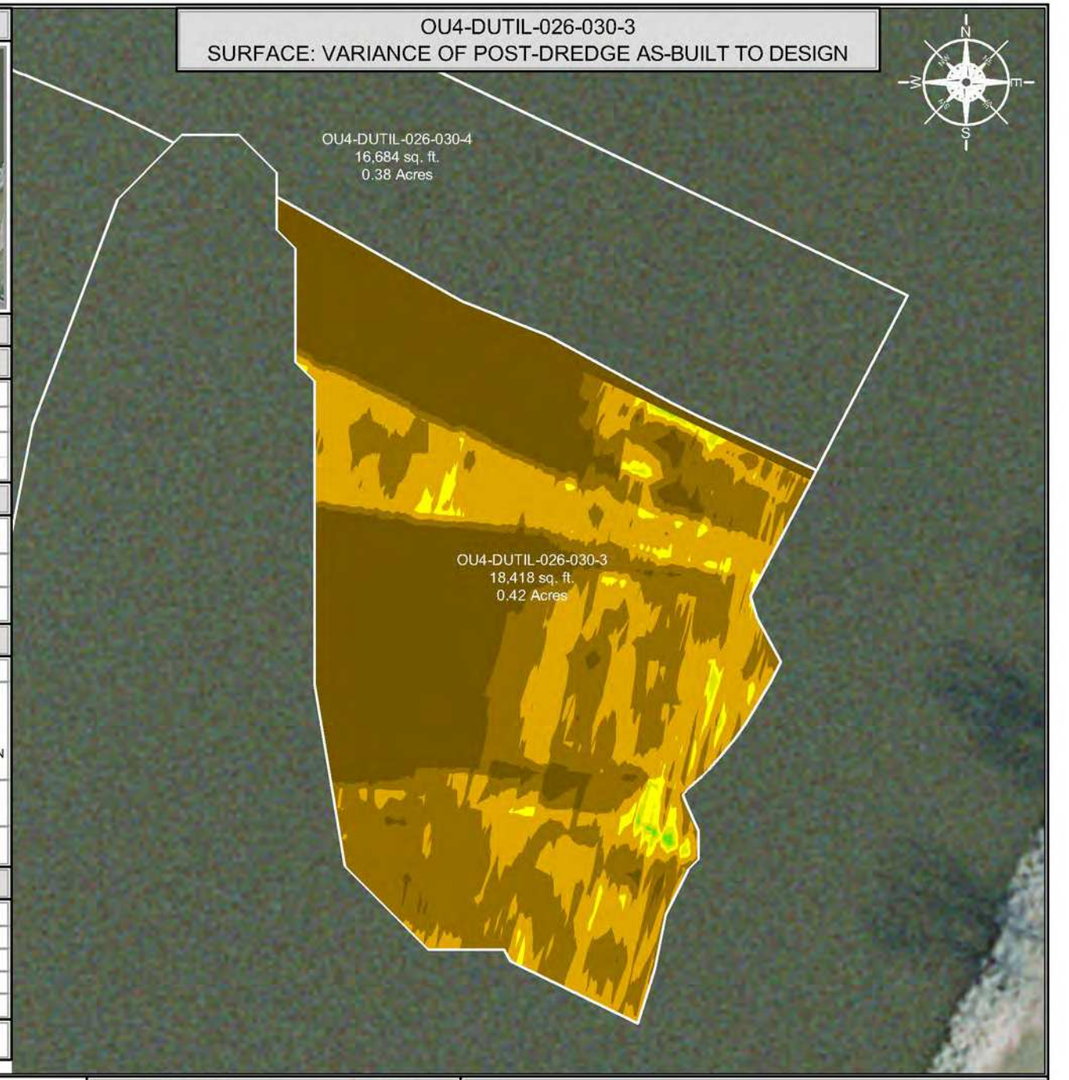
2018 AS-BUILT VOLUMES (CU. YD.)

770.51	TOTAL VOLUME DREDGED
543.05	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
2.63	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
47.75	OVERCUT VOLUME REMAINING
150.82	OVERCUT VOLUME DREDGED
76.64	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

18,417.65	AREA (SQ. FT.)
481.80	ABOVE DESIGN ELEVATION
17,935.85	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
4.11 "	AVERAGE DEPTH OF OVERCUT [1]
97	PERCENT COMPLETE [2]

OU4-DUTIL-026-030-3
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-13-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-5.52'	-	-1.00'	6,692.12
BELOW RAL	-1.00'	-	-0.50'	5,916.31
BELOW RAL	-0.50'	-	0.00'	5,327.42
ABOVE RAL	0.00'	-	0.25'	388.86
ABOVE RAL	0.25'	-	0.50'	79.95
ABOVE RAL	0.50'	-	0.75'	12.85
ABOVE RAL	0.75'	-	0.79'	0.13

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DUTIL-026-030-3.dwg
DRAWN BY: DAVID.FRISQUE
DATE: September 28, 2018
LAST REVISED: September 28, 2018
CHECKED BY: REG

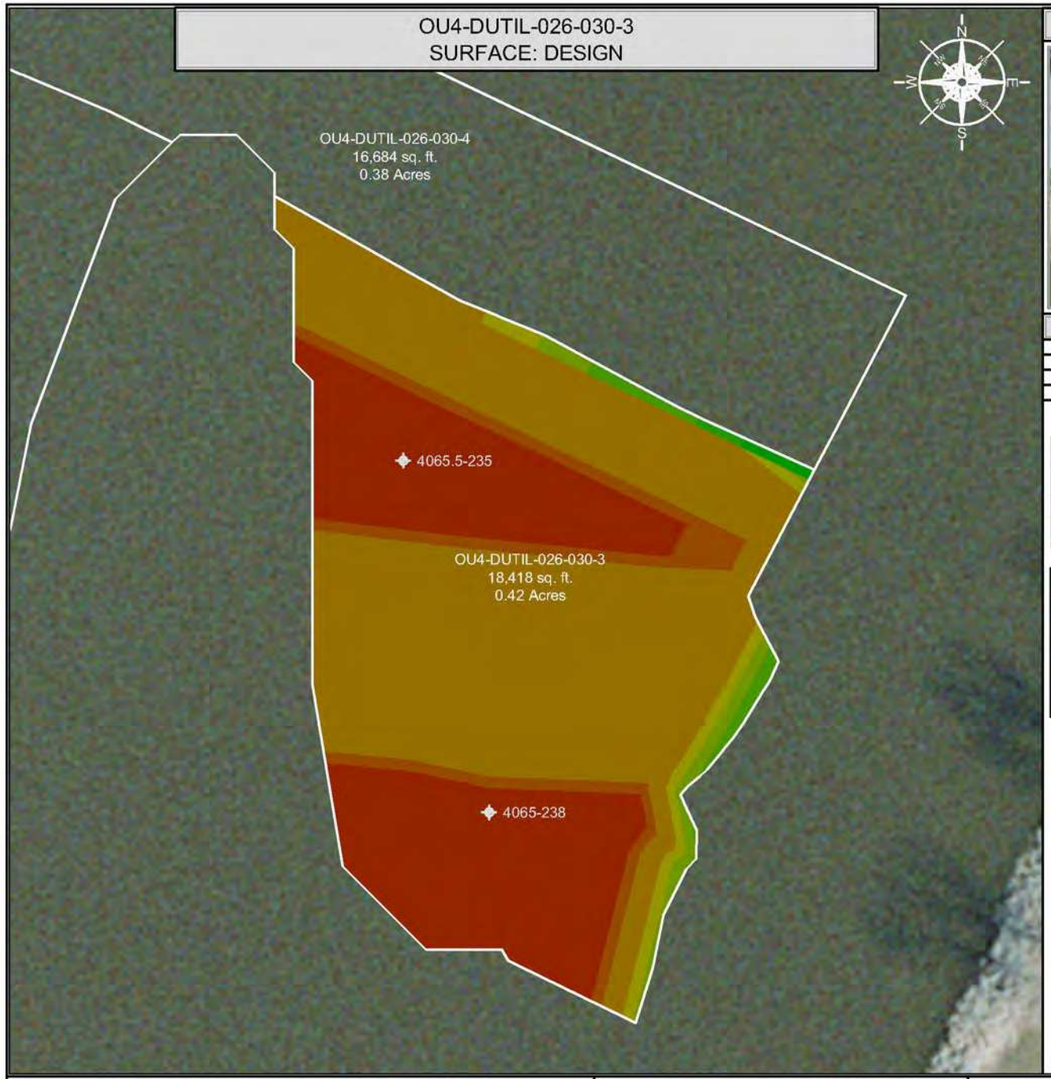
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-124

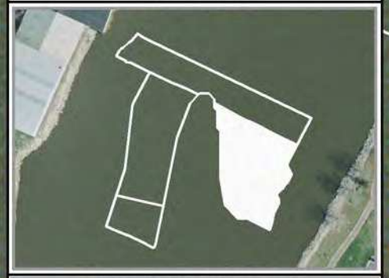
OU4-DUTIL-026-030-3
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\ALLOC\AS\Field Engineering\Dredge Files\2018\OU4 DUTIL -026_030\DWG\Final Dredge\OU4 DUTIL -026-030-3.dwg

OU4-DUTIL-026-030-3
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	6,650 µg/kg (6.65 ppm)
0.5' - 1.0'	8,850 µg/kg (8.85 ppm)
1.0' - 1.5'	3,440 µg/kg (3.44 ppm)

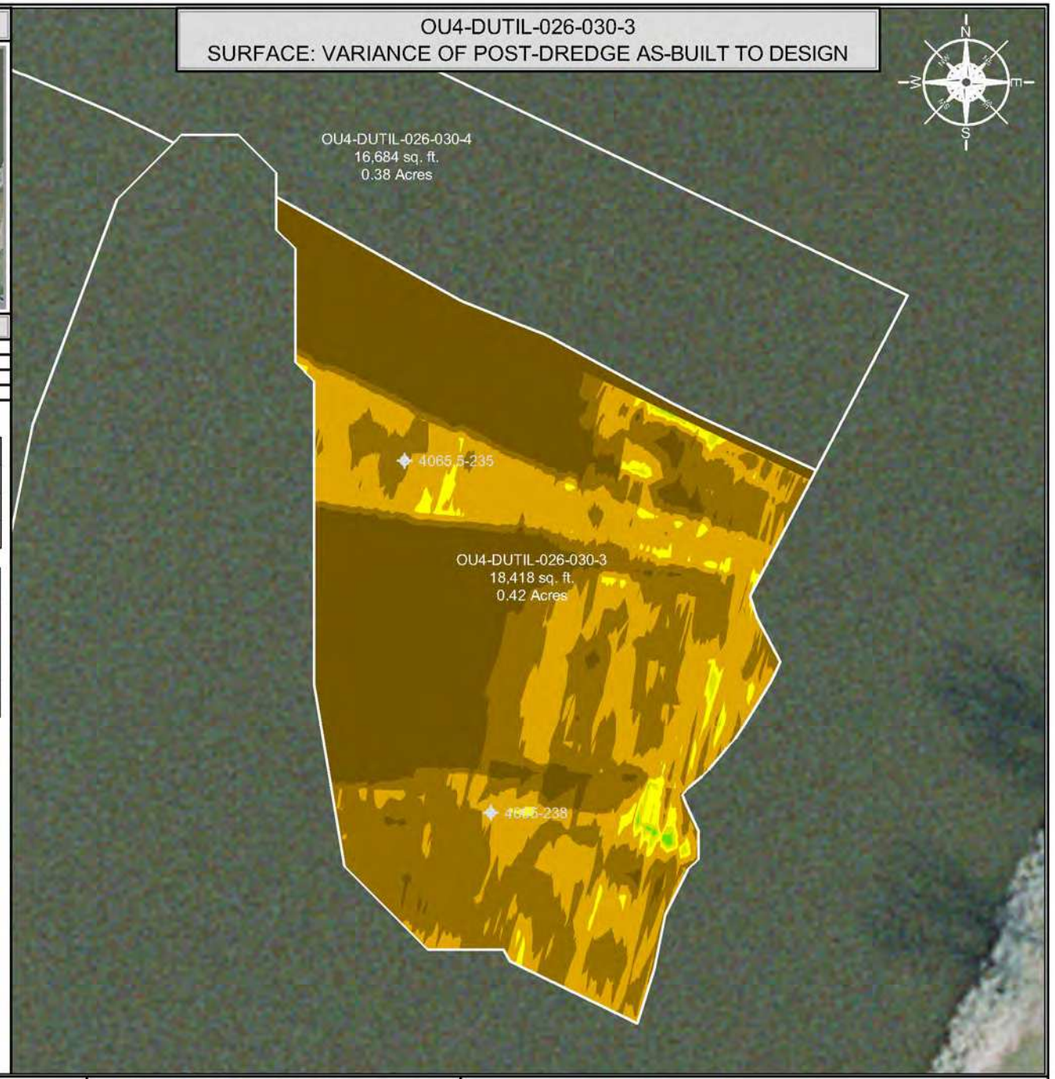
CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4065-238	253852.89	2485055.11
4065.5-235	253945.71	2485032.42

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION
4065.5-235	A: 14,600 µg/kg (14.6) ppm) D: 8,050 µg/kg (8.05) ppm) B: 18,300 µg/kg (18.3) ppm) C: 5,850 µg/kg (5.85) ppm)
4065.5-235RVT	C: 15,100 µg/kg (15.1) ppm) F: 141 µg/kg (0.141) ppm) D: 11,800 µg/kg (11.8) ppm) G: 92.6 µg/kg (0.0926) ppm) E: 1,050 µg/kg (1.05) ppm)
4065-238	A: 992 µg/kg (0.992) ppm) D: <25.2 µg/kg (<0.0252) ppm) B: <26.2 µg/kg (<0.0262) ppm) C: <25.6 µg/kg (<0.0256) ppm)

OU4-DUTIL-026-030-3
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-18-DUTIL-026_030-3-4065.5-235-A
2. TTFR-18-DUTIL-026_030-3-4065.5-235-B
3. TTFR-18-DUTIL-026_030-3-4065.5-235-C
4. TTFR-18-DUTIL-026_030-3-4065.5-235-D
5. TTFR-18-DUTIL-026_030-3-4065.5-235RVT-C
6. TTFR-18-DUTIL-026_030-3-4065.5-235RVT-D
7. TTFR-18-DUTIL-026_030-3-4065.5-235RVT-E
8. TTFR-18-DUTIL-026_030-3-4065.5-235RVT-F
9. TTFR-18-DUTIL-026_030-3-4065.5-235RVT-G
10. TTFR-18-DUTIL-026_030-3-4065-238-A
11. TTFR-18-DUTIL-026_030-3-4065-238-B
12. TTFR-18-DUTIL-026_030-3-4065-238-C
13. TTFR-18-DUTIL-026_030-3-4065-238-D

SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-13-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-DUTIL-026-030-3-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-DUTIL-026-030-3-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-DUTIL-026-030-3-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 9-25-2018 and 10-8-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF TWO SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 10-1-2018, 10-4-2018, 10-8-2018, and 10-12-2018

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT
DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-5.52'	-	-1.00'	6,692.12
BELOW RAL	-1.00'	-	-0.50'	5,916.31
BELOW RAL	-0.50'	-	0.00'	5,327.42
ABOVE RAL	0.00'	-	0.25'	388.86
ABOVE RAL	0.25'	-	0.50'	79.95
ABOVE RAL	0.50'	-	0.75'	12.85
ABOVE RAL	0.75'	-	0.79'	0.13

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DUTIL-026-030-3.dwg
DRAWN BY: DAVID.FRISQUE
DATE: September 28, 2018
LAST REVISED: September 28, 2018
CHECKED BY: REG

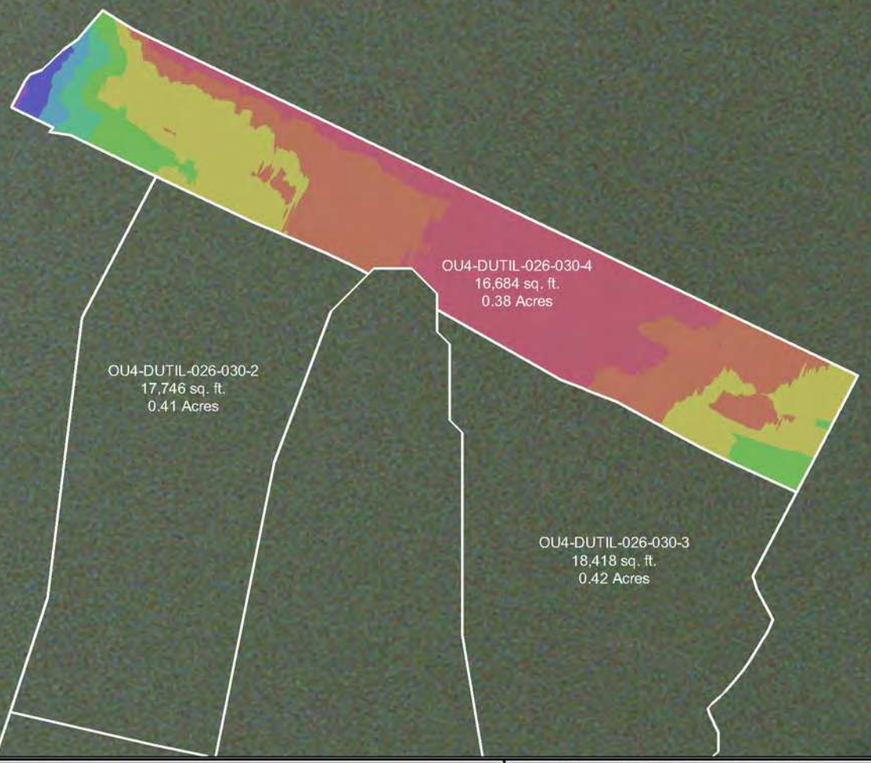
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-125

OU4-DUTIL-026-030-3
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LLC\42\Hist Engineering\Dredge Files\2018\OU4 DUTIL-026-030\DWG\Post Design\OU4 DUTIL-026-030-3.dwg

OU4-DUTIL-026-030-4
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

314.57	INITIAL RAL VOLUME
141.17	INITIAL OVERCUT VOLUME
455.74	RAL + OVERCUT VOLUME
405.78	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

228.50	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
132.82	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
361.32	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

2018 AS-BUILT VOLUMES (CU. YD.)

488.35	TOTAL VOLUME DREDGED
216.82	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
11.68	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
38.28	OVERCUT VOLUME REMAINING
116.34	OVERCUT VOLUME DREDGED
155.19	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

16,683.78	AREA (SQ. FT.)
1,014.44	ABOVE DESIGN ELEVATION
15,669.34	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
5.61 "	AVERAGE DEPTH OF OVERCUT [1]
94	PERCENT COMPLETE [2]

OU4-DUTIL-026-030-4
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-13-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
546.00'	-	548.00'
548.00'	-	550.00'
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-5.67'	-	-1.00'	9,976.98
BELOW RAL	-1.00'	-	-0.50'	3,119.83
BELOW RAL	-0.50'	-	0.00'	2,572.53
ABOVE RAL	0.00'	-	0.50'	760.53
ABOVE RAL	0.50'	-	1.00'	158.37
ABOVE RAL	1.00'	-	1.50'	40.59
ABOVE RAL	1.50'	-	1.92'	11.63

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DUTIL-026-030-4.dwg
DRAWN BY: DAVID.FRISQUE
DATE: September 28, 2018
LAST REVISED: November 30, 2018
CHECKED BY: REG

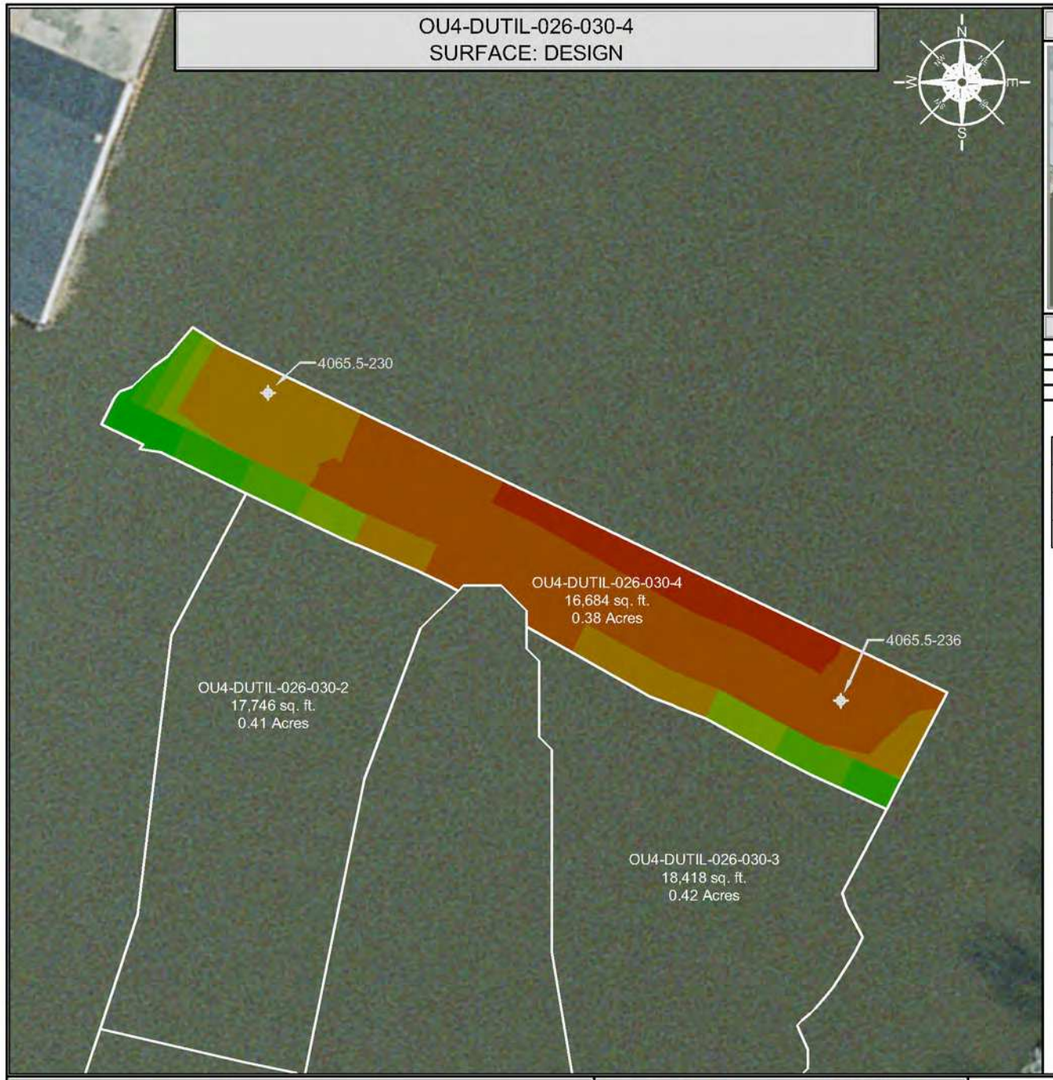
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-126

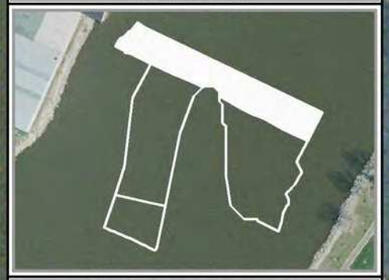
OU4-DUTIL-026-030-4
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\ALLOC\ADR\Field Engineering\gDredge Files\2018\OU4 DUTIL -026-030\DWG\Final Dredge\OU4 DUTIL -026-030-4.dwg

OU4-DUTIL-026-030-4
SURFACE: DESIGN



INDEX MAP



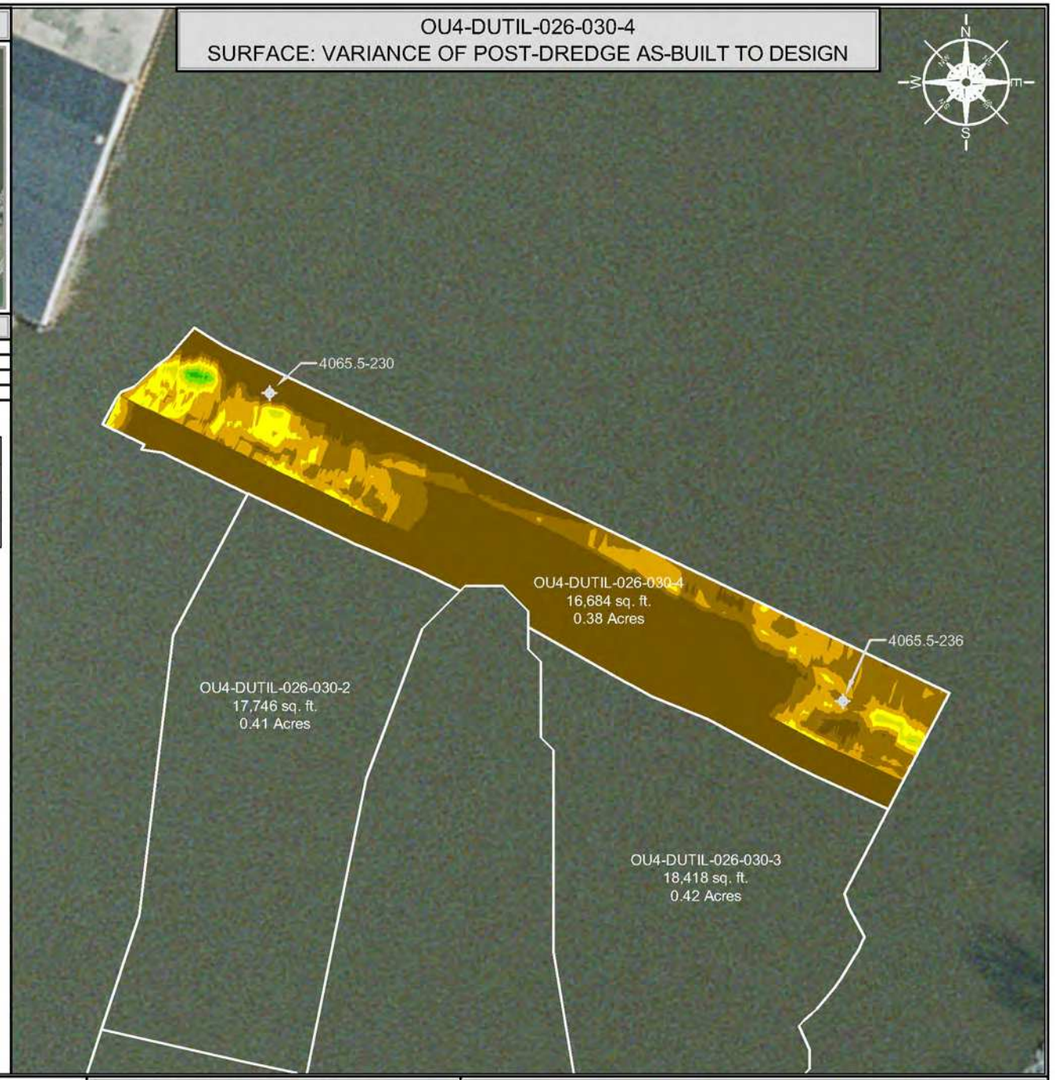
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	1,420 µg/kg (1.42 ppm)
0.5' - 1.0'	2,050 µg/kg (2.05 ppm)
1.0' - 1.5'	818 µg/kg (0.818 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4065.5-236	253986.04	2485122.96
4065.5-230	254107.90	2484896.13

OU4-DUTIL-026-030-4
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-13-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
547.00'	-	549.00'
549.00'	-	551.00'
551.00'	-	553.00'
553.00'	-	555.00'
555.00'	-	557.00'
557.00'	-	559.00'
559.00'	-	561.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-DUTIL-026-030-4-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-DUTIL-026-030-4-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-DUTIL-026-030-4-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 9-25-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF TWO SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 10-1-2018

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OU# - D# - #
OPERABLE UNIT · DREDGE AREA · DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-5.67'	-	-1.00'	9,976.98
BELOW RAL	-1.00'	-	-0.50'	3,119.83
BELOW RAL	-0.50'	-	0.00'	2,572.53
ABOVE RAL	0.00'	-	0.50'	760.53
ABOVE RAL	0.50'	-	1.00'	158.37
ABOVE RAL	1.00'	-	1.50'	40.59
ABOVE RAL	1.50'	-	1.92'	11.63

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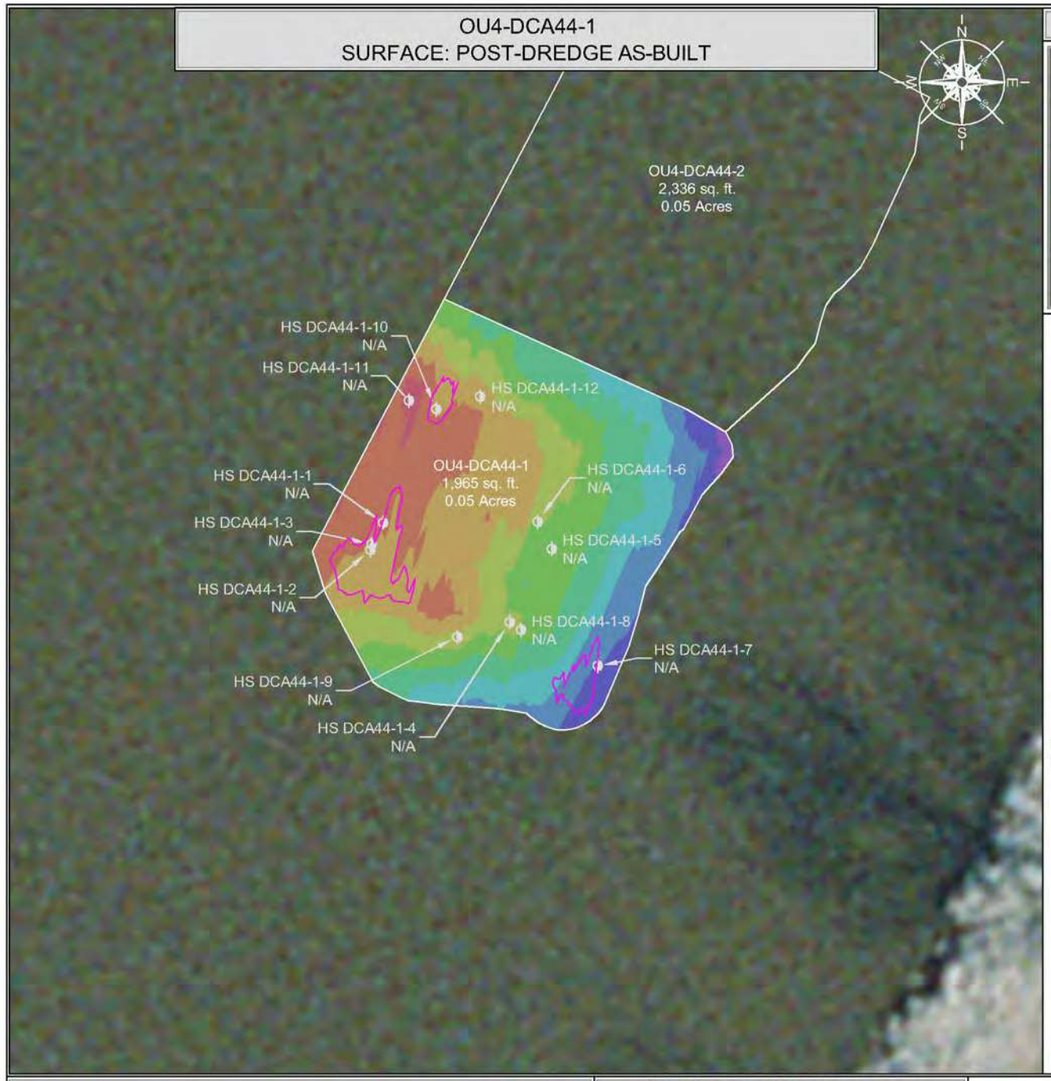
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-127

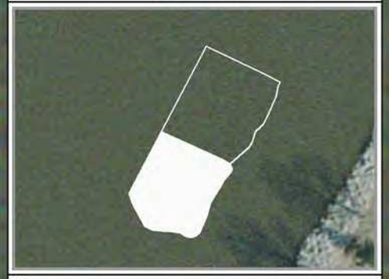
OU4-DUTIL-026-030-4
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LOCAD\PHEI Engineering\3Ddesign\Files\2018\OU4 DUTIL 026_030\DWG\Post Design\OU4 DUTIL 026-030-4.dwg

OU4-DCA44-1
SURFACE: POST-DREDGE AS-BUILT



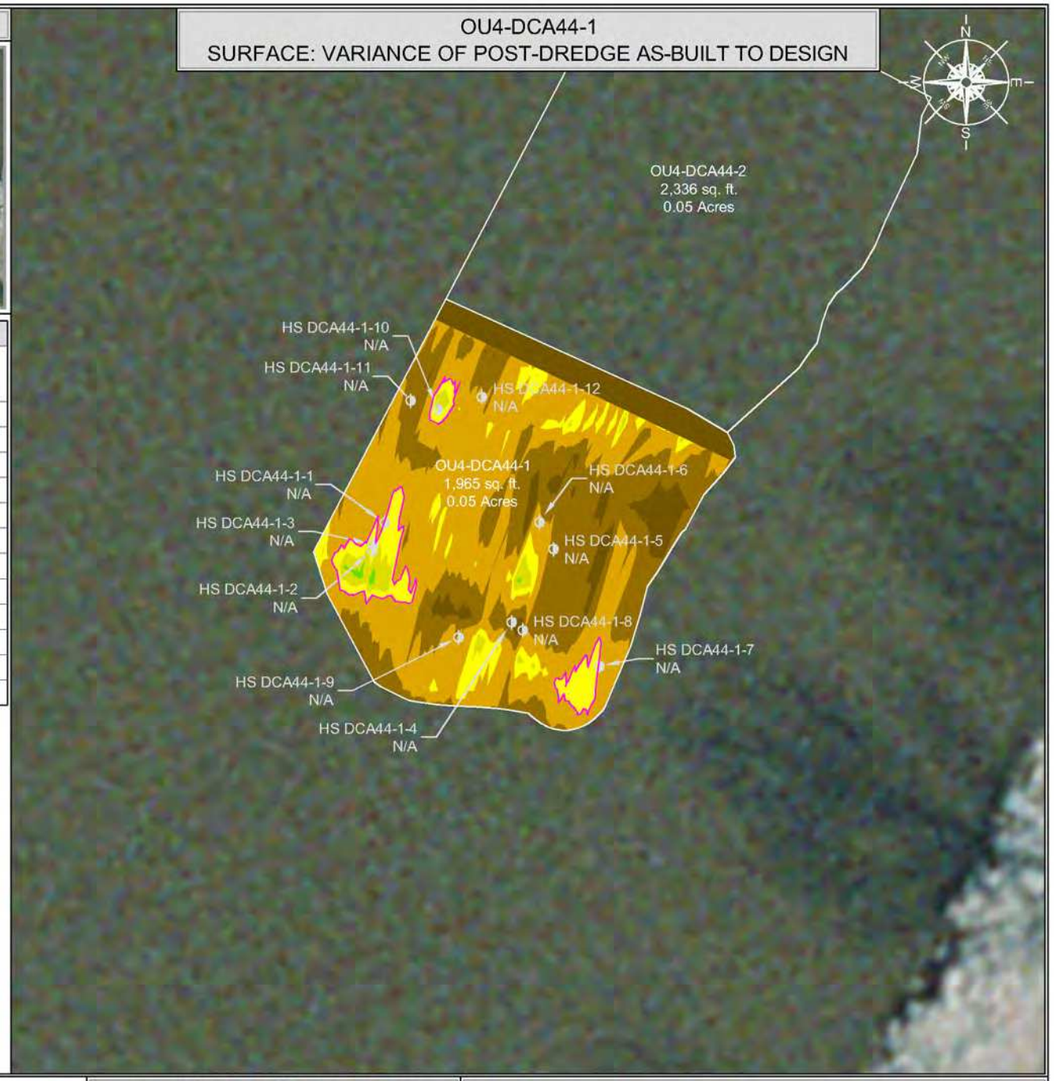
INDEX MAP



HIGH SUBGRADE SAMPLE AS-BUILT RESULTS			
SAMPLE ID	NORTHING	EASTING	THICKNESS OF SOFT SEDIMENT (FEET)
HS DCA44-1-1	253913.71	2485132.95	N/A
HS DCA44-1-2	253910.07	2485131.24	N/A
HS DCA44-1-3	253910.88	2485131.40	N/A
HS DCA44-1-4	253900.58	2485149.63	N/A
HS DCA44-1-5	253910.26	2485155.19	N/A
HS DCA44-1-6	253913.81	2485153.31	N/A
HS DCA44-1-7	253894.81	2485161.26	N/A
HS DCA44-1-8	253899.56	2485151.10	N/A
HS DCA44-1-9	253898.63	2485142.70	N/A
HS DCA44-1-10	253928.66	2485139.95	N/A
HS DCA44-1-11	253929.82	2485136.35	N/A
HS DCA44-1-12	253930.33	2485145.75	N/A

NR = NO RECOVERY
NA = NO CORE COLLECTION REQUIRED DUE TO POLING DEPTH

OU4-DCA44-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 20')

20 10 0 20 40

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-13-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'

DRAWING NOTES

1. HIGH SUBGRADE SAMPLES AND POLING DATA WERE COLLECTED ON 9-18-2018 AND LOGGED ON 9-18-2018

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OU# - D# - #
OPERABLE UNIT
DREDGE AREA
DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-5.86'	-	-1.00'	228.91
BELOW RAL	-1.00'	-	-0.50'	599.65
BELOW RAL	-0.50'	-	0.00'	910.31
ABOVE RAL	0.00'	-	0.25'	181.83
ABOVE RAL	0.25'	-	0.50'	40.90
ABOVE RAL	0.50'	-	0.68'	3.41

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DCA44-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: September 17, 2018
LAST REVISED: September 28, 2018
CHECKED BY: REG

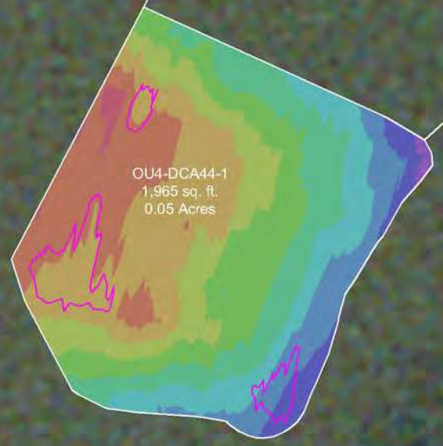
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-128

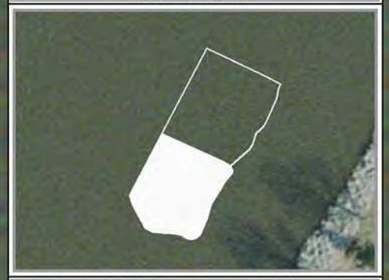
**OU4-DCA44-1
PRIMARY DREDGE HIGH SUBGRADE RESULTS**

P:\LLOC\LOS\Field Engineering\gDredge Files\2018\OU4 DCA44\DWG\Post Dredge\OU4-DCA44-1.dwg

OU4-DCA44-1
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

139.81	INITIAL RAL VOLUME
33.35	INITIAL OVERCUT VOLUME
173.16	RAL + OVERCUT VOLUME
159.62	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

127.87	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
33.26	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
161.13	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

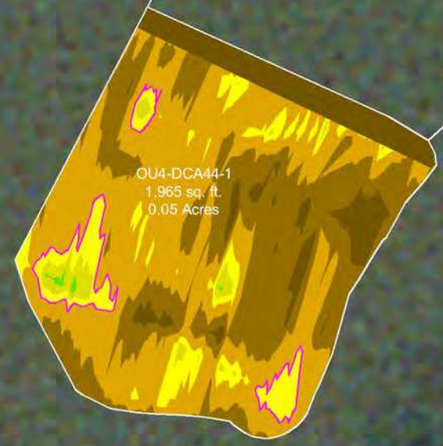
2018 AS-BUILT VOLUMES (CU. YD.)

156.80	TOTAL VOLUME DREDGED
126.63	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.77	CONFIRMED HIGH SUBGRADE VOLUME
0.47	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
12.30	OVERCUT VOLUME REMAINING
21.30	OVERCUT VOLUME DREDGED
8.87	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

1,965.01	AREA (SQ. FT.)
107.35	ABOVE DESIGN ELEVATION
1,738.87	AT OR BELOW DESIGN ELEVATION
118.79	CONFIRMED HIGH SUBGRADE
5.62 "	AVERAGE DEPTH OF OVERCUT [1]
95	PERCENT COMPLETE [2]

OU4-DCA44-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 20')

20 10 0 20 40

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-13-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OU# = OPERABLE UNIT; D# = DREDGE AREA; # = DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-5.86'	-	-1.00'	228.91
BELOW RAL	-1.00'	-	-0.50'	599.65
BELOW RAL	-0.50'	-	0.00'	910.31
ABOVE RAL	0.00'	-	0.25'	181.83
ABOVE RAL	0.25'	-	0.50'	40.90
ABOVE RAL	0.50'	-	0.68'	3.41

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DCA44-1.dwg
DRAWN BY: DAVID.FRISQUE
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LAST REVISED: September 28, 2018
CHECKED BY: REG

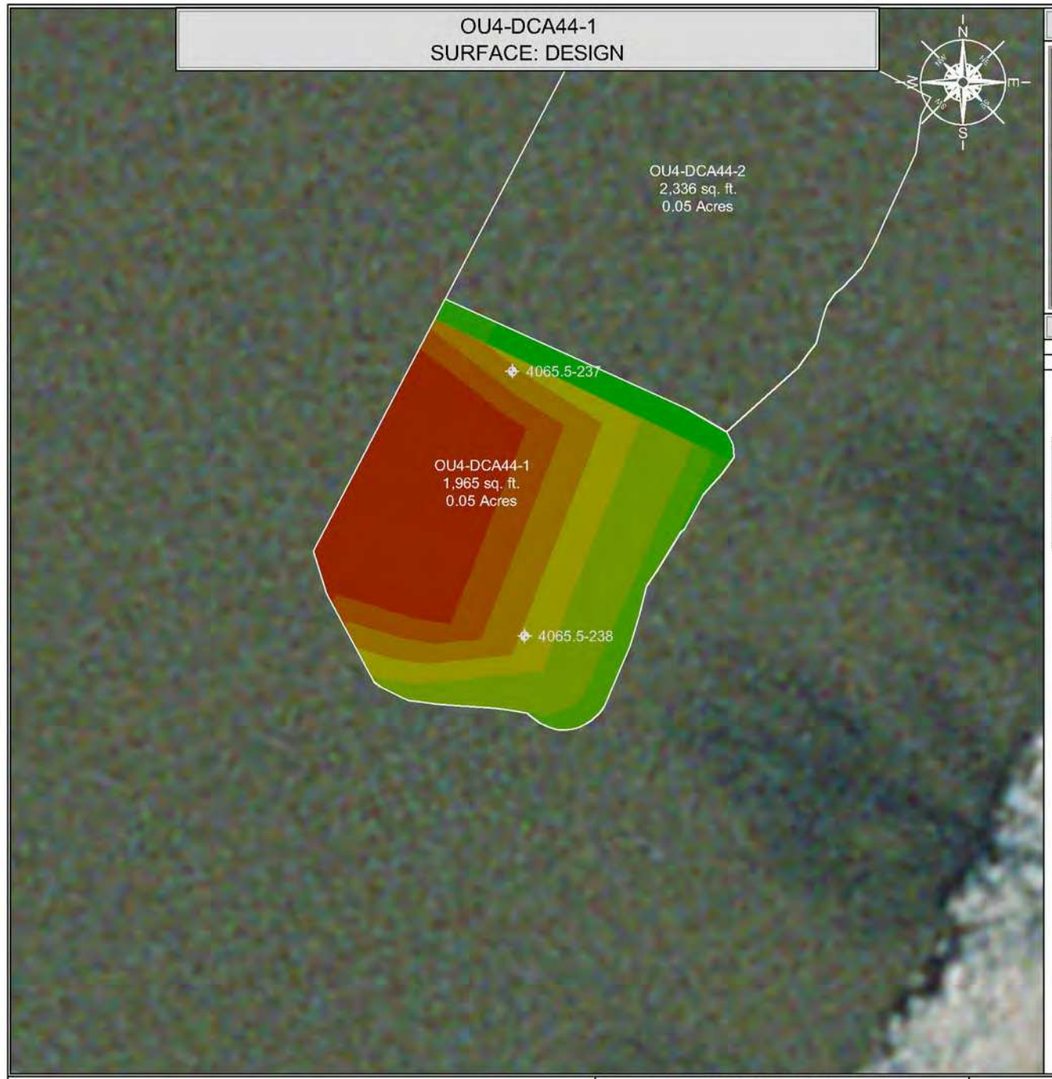
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-129

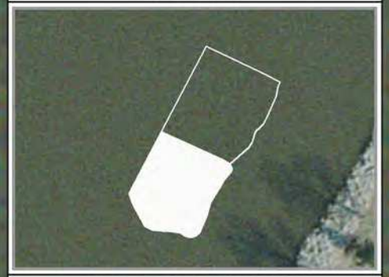
OU4-DCA44-1
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

F:\LLC\CAD\Fidel Eng\sweka-s3\Design Files\2018\OU4 DCA44\DWG\Final Design\OU4 DCA44-1.dwg

OU4-DCA44-1
SURFACE: DESIGN



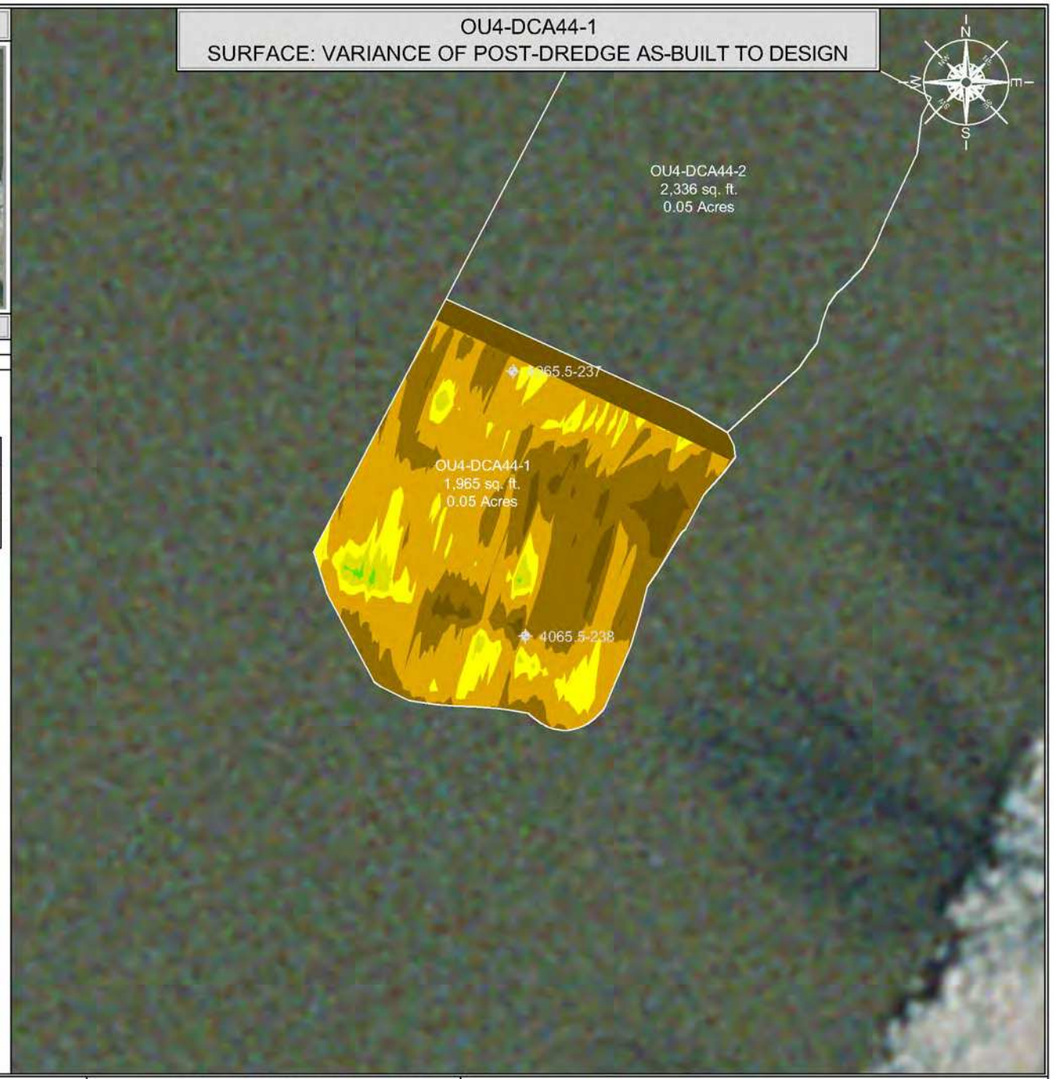
INDEX MAP



CONFIRMATION SAMPLE RESULTS	
INTERVAL	CONCENTRATION
0.0' - 0.5'	1,840 µg/kg (1.84 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS		
SAMPLE ID	NORTHING	EASTING
4065.5-237	253933.71	2485149.85
4065.5-238	253898.78	2485151.48

OU4-DCA44-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 20')

20 10 0 20 40

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-13-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'
560.00'	-	561.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-DCA44-1-A
2. CONFIRMATION SAMPLES WERE COLLECTED ON 9-25-2018
3. CONFIRMATION SAMPLES ARE A COMPOSITE OF TWO SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
4. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 10-1-2018

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OU# - D# - #
- OU# — OPERABLE UNIT
- D# — DREDGE AREA
- # — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-5.86'	-	-1.00'	228.91
BELOW RAL	-1.00'	-	-0.50'	599.65
BELOW RAL	-0.50'	-	0.00'	910.31
ABOVE RAL	0.00'	-	0.25'	181.83
ABOVE RAL	0.25'	-	0.50'	40.90
ABOVE RAL	0.50'	-	0.68'	3.41

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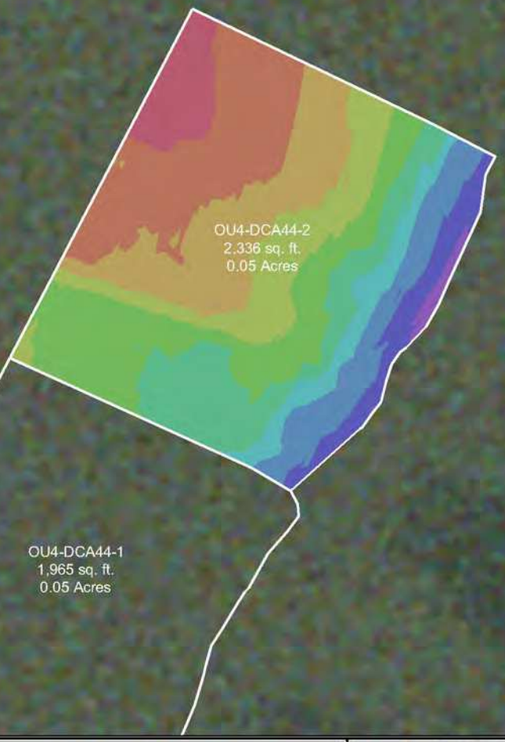
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-130

OU4-DCA44-1
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LOCADD\Plot Files\name=2Dredge Files\2018\OU4 DCA44\DWG\Post Dredge\OU4 DCA44-1.dwg

OU4-DCA44-2
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

100.13	INITIAL RAL VOLUME
32.04	INITIAL OVERCUT VOLUME
132.17	RAL + OVERCUT VOLUME
121.79	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

84.25	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
31.62	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
115.87	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

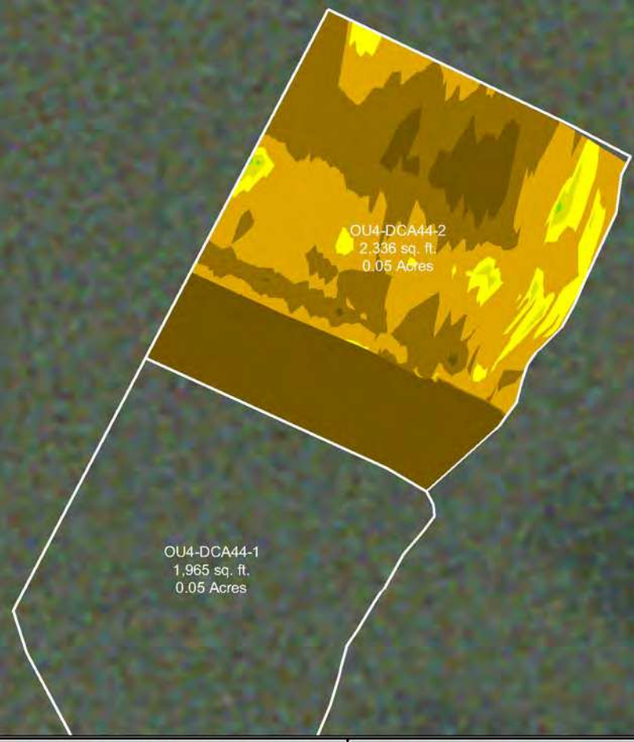
2018 AS-BUILT VOLUMES (CU. YD.)

117.19	TOTAL VOLUME DREDGED
83.44	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
0.81	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
9.57	OVERCUT VOLUME REMAINING
27.61	OVERCUT VOLUME DREDGED
6.14	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

2,335.63	AREA (SQ. FT.)
169.25	ABOVE DESIGN ELEVATION
2,166.38	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
5.05 "	AVERAGE DEPTH OF OVERCUT [1]
93	PERCENT COMPLETE [2]

OU4-DCA44-2
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 20')

20 10 0 20 40

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-13-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

THIS DOCUMENT IS THE PROPERTY OF LOWER FOX RIVER REMEDIATION LLC PREPARED BY TETRA TECH EC, INC. (TtEC), AND IS PROVIDED UPON THE CONDITION THAT IT WILL NOT BE REPRODUCED, COPIED, OR ISSUED TO A THIRD PARTY. IT IS PROVIDED TO BE USED SOLELY FOR THE ORIGINAL INTENDED PURPOSE, AND SOLELY FOR THE EXECUTION OR REVIEW OF THE ENGINEERING AND CONSTRUCTION OF THE SUBJECT PROJECT.

OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-5.72'	-	-1.00'	696.90
BELOW RAL	-1.00'	-	-0.50'	681.90
BELOW RAL	-0.50'	-	0.00'	787.58
ABOVE RAL	0.00'	-	0.25'	134.19
ABOVE RAL	0.25'	-	0.50'	23.21
ABOVE RAL	0.50'	-	0.64'	1.34

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DCA44-2.dwg
DRAWN BY: DAVID.FRISQUE
DATE: September 28, 2018
LAST REVISED: November 30, 2018
CHECKED BY: REG

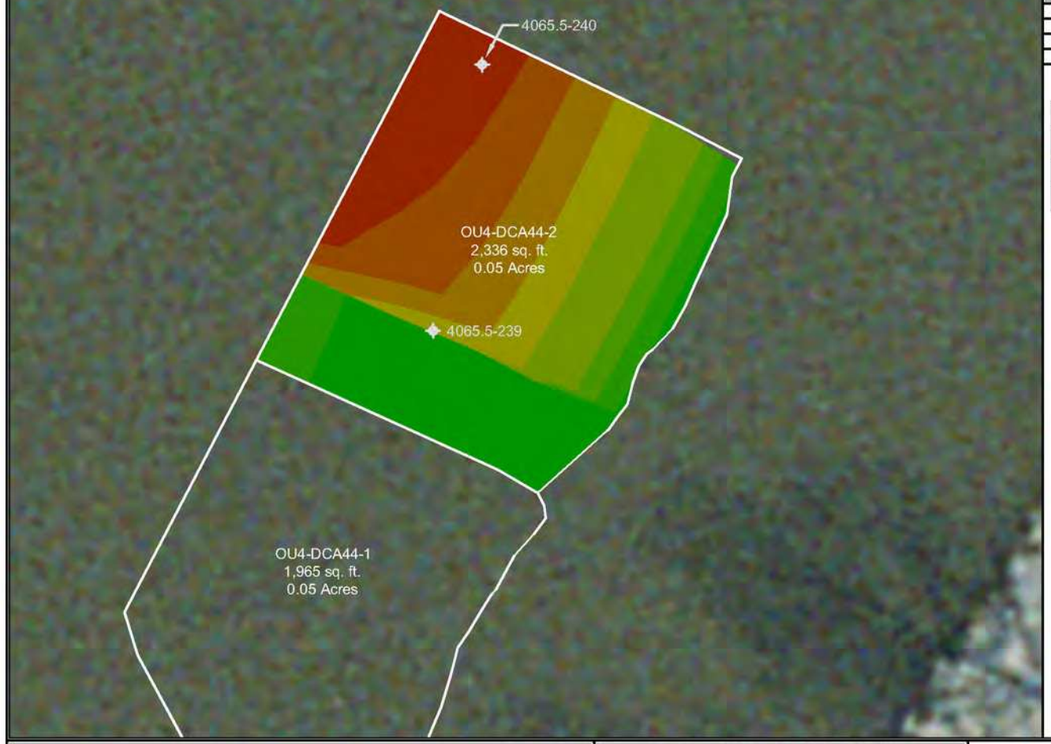
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-131

OU4-DCA44-2
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LOC\LD\Field Engineering\Dredge Files\2018\OU4 DCA44\DWG\Post Dredge\OU4 DCA44-2.dwg

OU4-DCA44-2
SURFACE: DESIGN



INDEX MAP



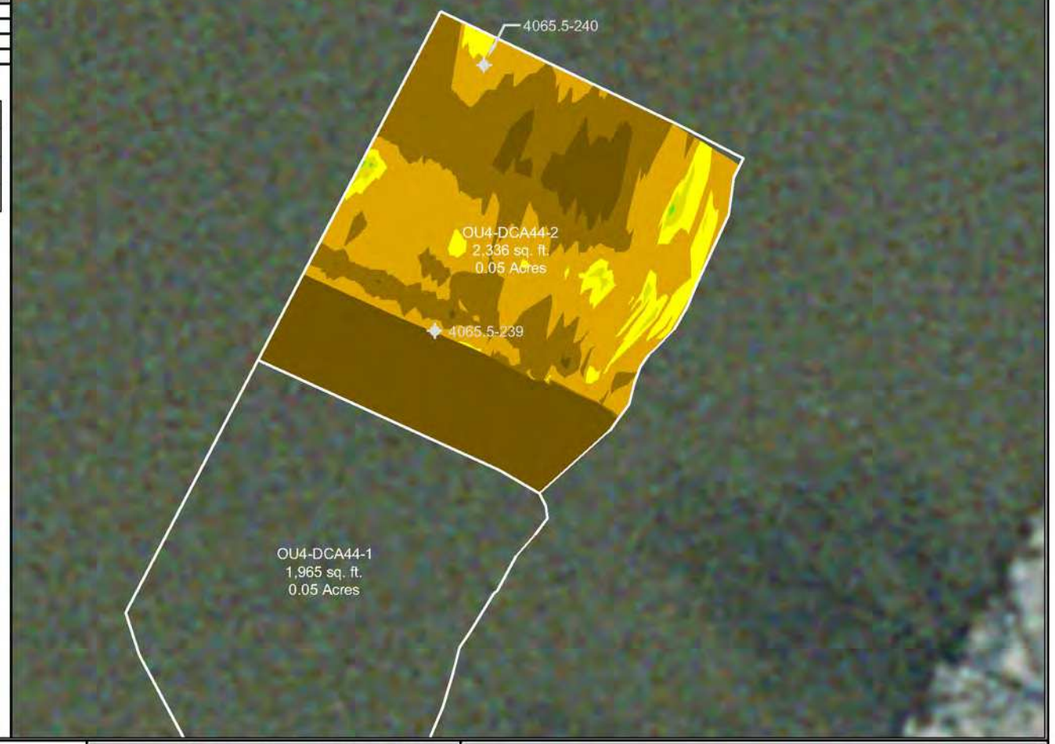
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	2,000 µg/kg (2 ppm)
0.5' - 1.0'	1,290 µg/kg (1.29 ppm)
1.0' - 1.5'	262 µg/kg (0.262 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4065.5-240	253982.20	2485170.79
4065.5-239	253947.11	2485164.32

OU4-DCA44-2
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 20')

20 10 0 20 40

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-13-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'
560.00'	-	561.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-DCA44-2-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-DCA44-2-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-DCA44-2-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 9-25-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF TWO SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 10-3-2018

THIS DOCUMENT IS THE PROPERTY OF LOWER FOX RIVER REMEDIATION LLC PREPARED BY TETRA TECH EC, INC. (TtEC), AND IS PROVIDED UPON THE CONDITION THAT IT WILL NOT BE REPRODUCED, COPIED, OR ISSUED TO A THIRD PARTY. IT IS PROVIDED TO BE USED SOLELY FOR THE ORIGINAL INTENDED PURPOSE, AND SOLELY FOR THE EXECUTION OR REVIEW OF THE ENGINEERING AND CONSTRUCTION OF THE SUBJECT PROJECT.

OU# - D# - #
OPERABLE UNIT · DREDGE AREA · DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-5.72'	-	-1.00'	696.90
BELOW RAL	-1.00'	-	-0.50'	681.90
BELOW RAL	-0.50'	-	0.00'	787.58
ABOVE RAL	0.00'	-	0.25'	134.19
ABOVE RAL	0.25'	-	0.50'	23.21
ABOVE RAL	0.50'	-	0.64'	1.34

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DCA44-2.dwg
DRAWN BY: DAVID.FRISQUE
DATE: September 28, 2018
LAST REVISED: November 30, 2018
CHECKED BY: REG

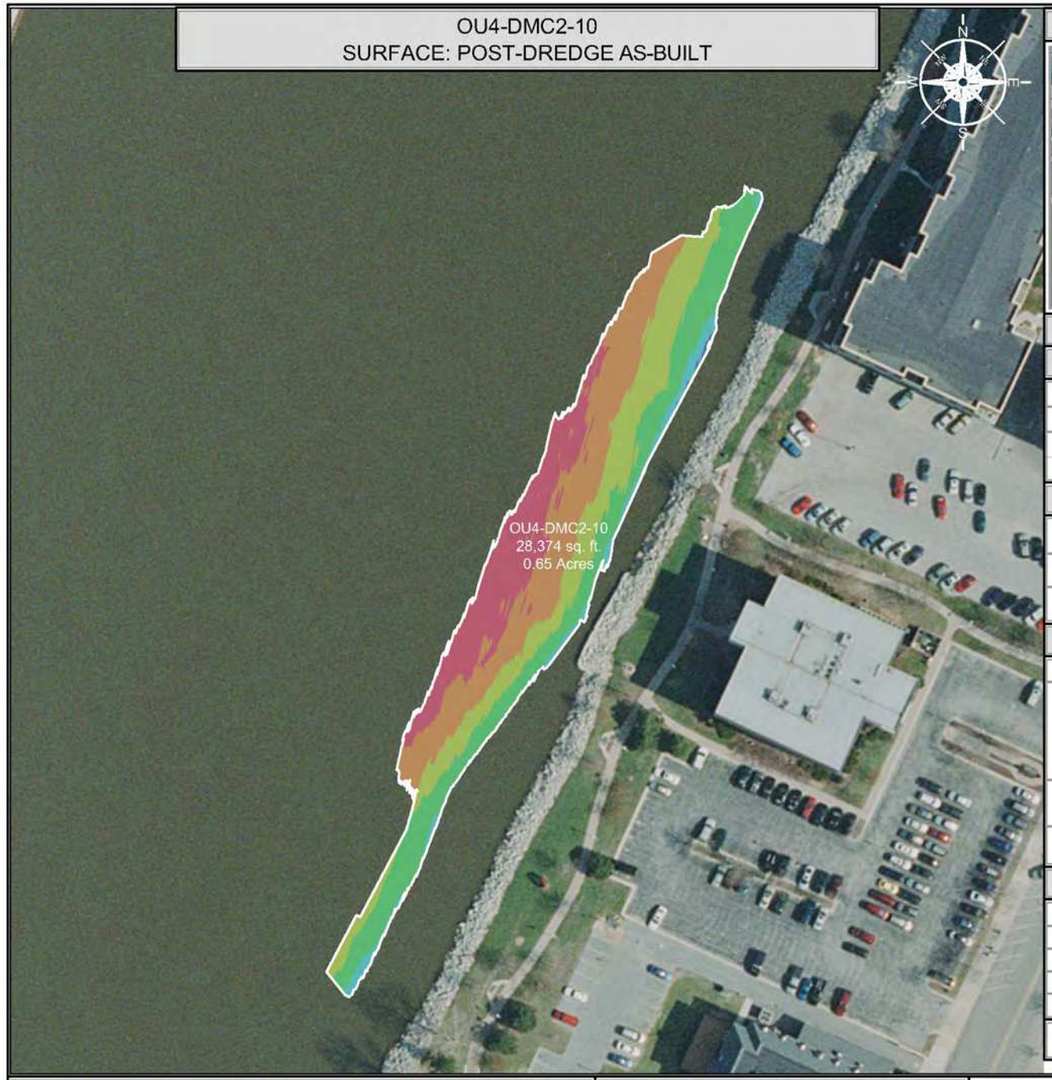
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-132

OU4-DCA44-2
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LCD\Civil\Field Engineering\Design Files\2018\OU4 DCA44\DWG\Post Design\OU4 DCA44-2.dwg

OU4-DMC2-10
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

1,563.75	INITIAL RAL VOLUME
499.65	INITIAL OVERCUT VOLUME
2,063.40	RAL + OVERCUT VOLUME
1,932.24	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

1,607.24	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
500.56	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
2,107.80	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

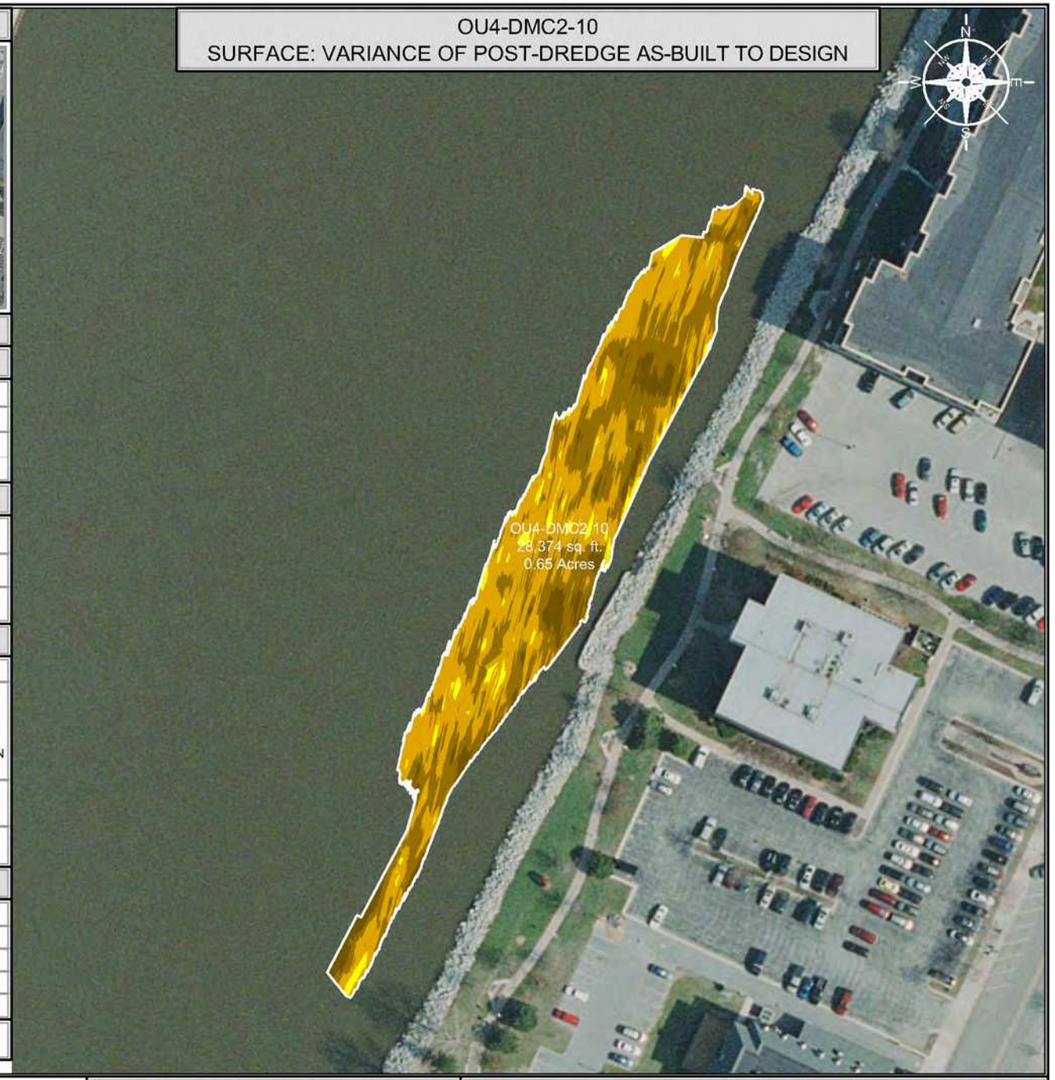
2018 AS-BUILT VOLUMES (CU. YD.)

2,111.25	TOTAL VOLUME DREDGED
1,600.11	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
7.13	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
124.03	OVERCUT VOLUME REMAINING
380.37	OVERCUT VOLUME DREDGED
130.77	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

28,374.41	AREA (SQ. FT.)
1,296.23	ABOVE DESIGN ELEVATION
27,078.18	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
6.12 "	AVERAGE DEPTH OF OVERCUT [1]
95	PERCENT COMPLETE [2]

OU4-DMC2-10
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-29-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'
562.00'	-	564.00'
564.00'	-	566.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-3.31'	-	-1.00'	2,421.57
BELOW RAL	-1.00'	-	-0.50'	11,137.73
BELOW RAL	-0.50'	-	0.00'	13,518.89
ABOVE RAL	0.00'	-	0.50'	1,244.72
ABOVE RAL	0.50'	-	1.00'	45.19
ABOVE RAL	1.00'	-	1.50'	5.35
ABOVE RAL	1.50'	-	2.00'	0.96
ABOVE RAL	2.00'	-	2.05'	0.01

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DMC2-10.dwg
DRAWN BY: DAVID.FRISQUE
DATE: July 11, 2018
LAST REVISED: November 30, 2018
CHECKED BY: REG

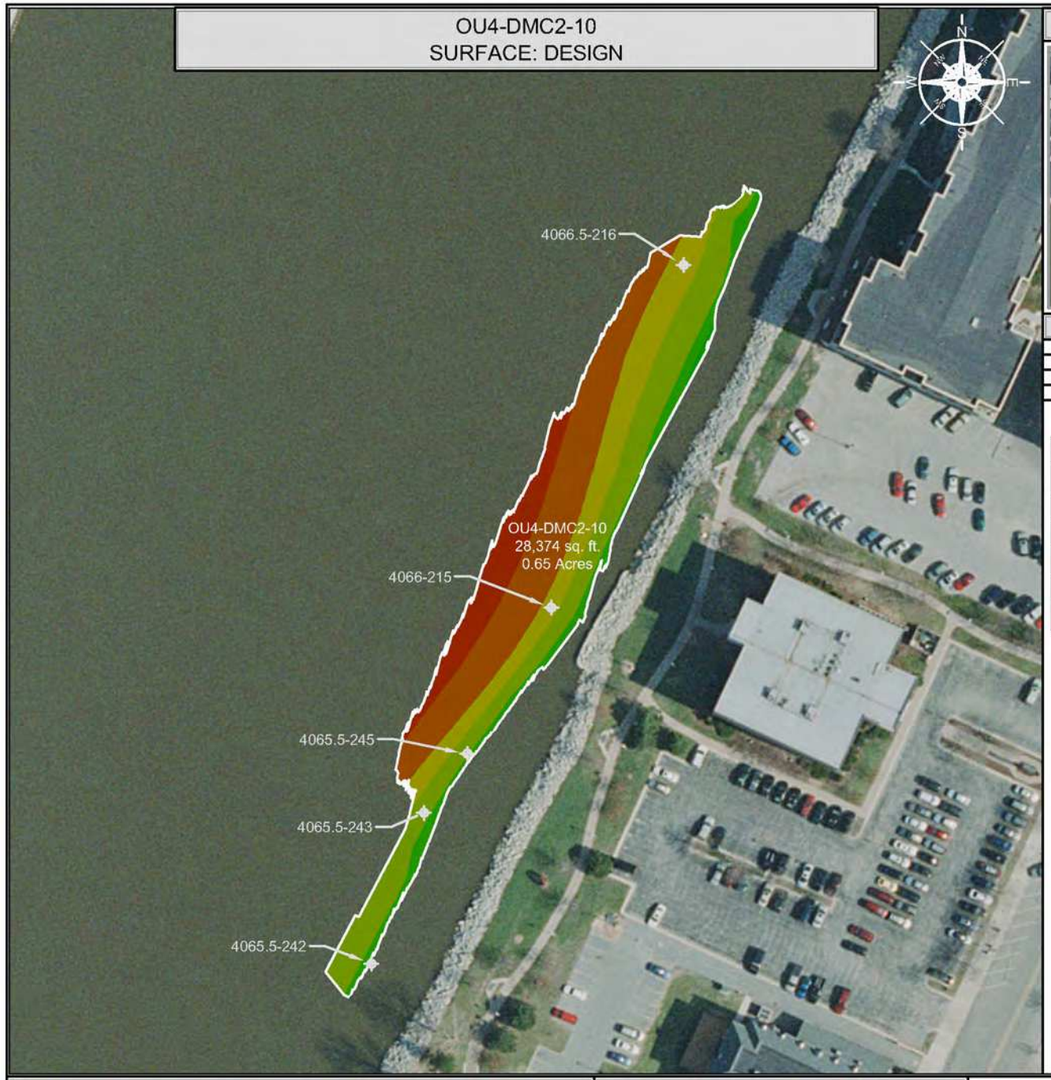
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-133

OU4-DMC2-10
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\ALLOC\ADR\Field Engineering\Dredge Files\2018\OU4 DMC2-10\DWG\Post Dredge\OU4 DMC2-10.dwg

OU4-DMC2-10
SURFACE: DESIGN



INDEX MAP



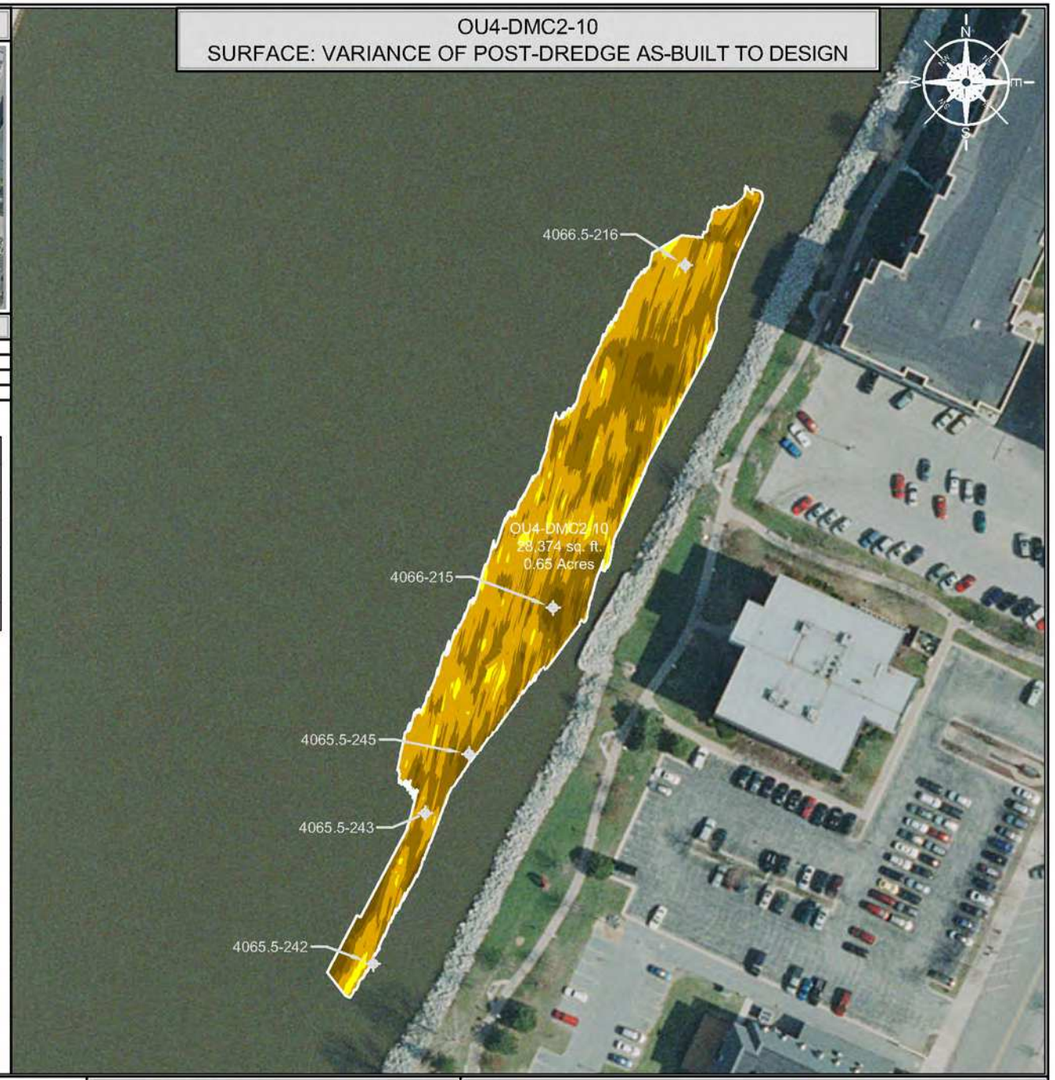
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	198 µg/kg (0.198 ppm)
0.5' - 1.0'	<25.4 µg/kg (<0.0254 ppm)
1.0' - 1.5'	<25.1 µg/kg (<0.0251 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4065.5-245	254080.51	2485270.78
4065.5-243	254041.63	2485241.97
4065.5-242	253942.19	2485207.36
4066-215	254177.02	2485326.25
4066.5-216	254402.88	2485413.28

OU4-DMC2-10
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-29-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'
562.00'	-	564.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-DMC2-10-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-DMC2-10-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-DMC2-10-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 9-26-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF FIVE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 10-1-2018

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OU# - D# - #
- OU# — OPERABLE UNIT
- D# — DREDGE AREA
- # — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-3.31'	-	-1.00'	2,421.57
BELOW RAL	-1.00'	-	-0.50'	11,137.73
BELOW RAL	-0.50'	-	0.00'	13,518.89
ABOVE RAL	0.00'	-	0.50'	1,244.72
ABOVE RAL	0.50'	-	1.00'	45.19
ABOVE RAL	1.00'	-	1.50'	5.35
ABOVE RAL	1.50'	-	2.00'	0.96
ABOVE RAL	2.00'	-	2.05'	0.01

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DMC2-10.dwg
DRAWN BY: DAVID.FRISQUE
DATE: July 11, 2018
LAST REVISED: November 30, 2018
CHECKED BY: REG

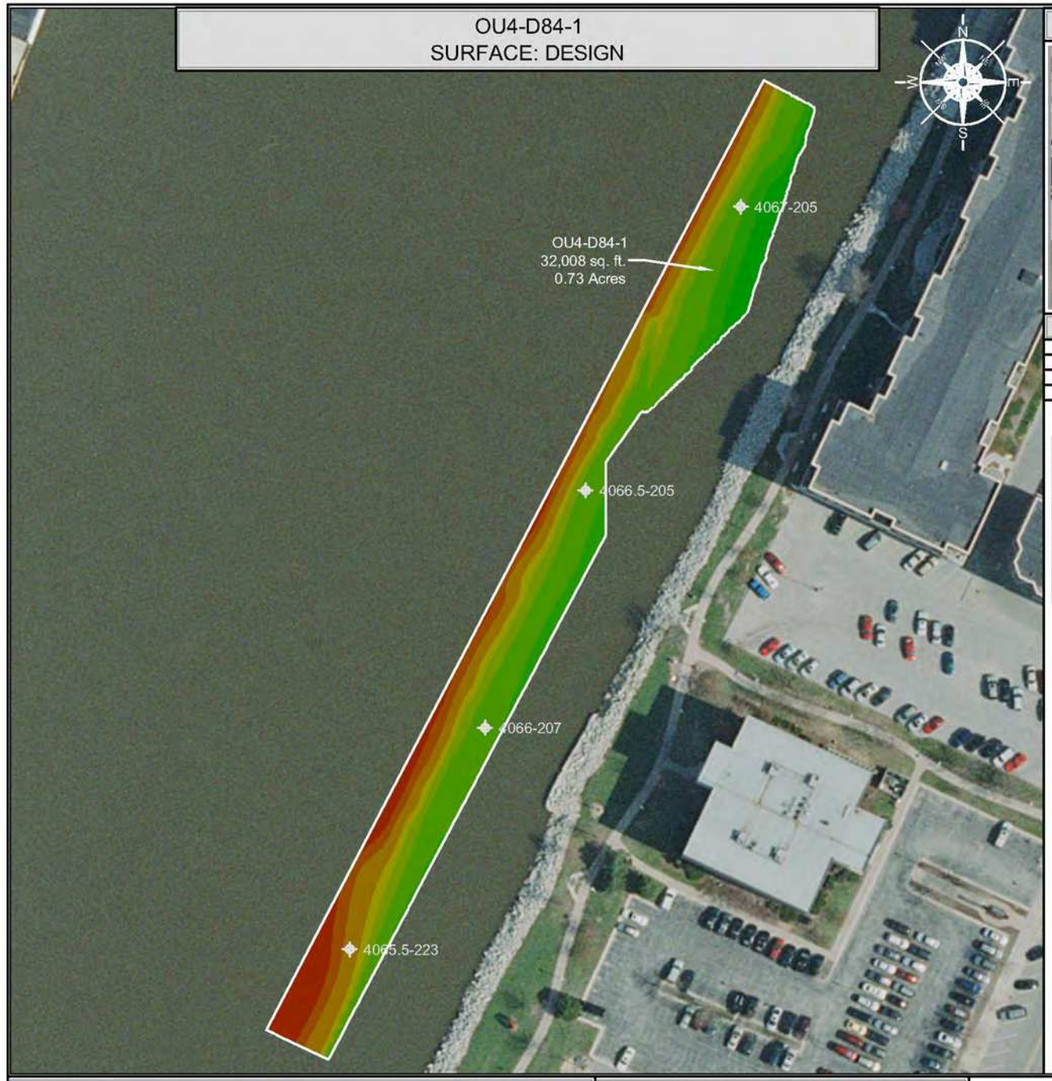
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-134

OU4-DMC2-10
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LDC\ADP\Hist Eng\Arcmap\3Ddesign Files\2018\OU4 DMC2-10\DWG\Post Dredge\OU4 DMC2-10.dwg

OU4-D84-1
SURFACE: DESIGN



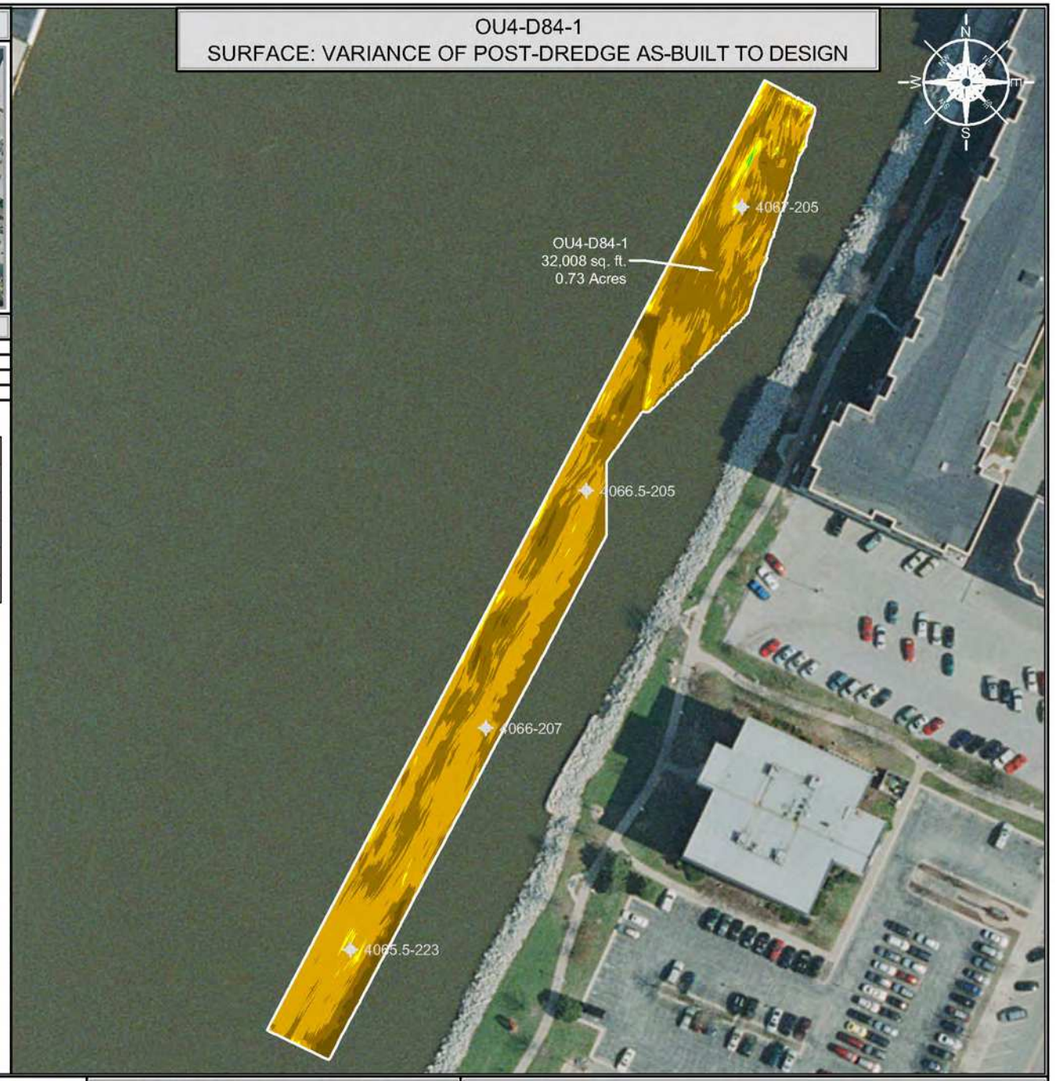
INDEX MAP



CONFIRMATION SAMPLE RESULTS	
INTERVAL	CONCENTRATION
0.0' - 0.5'	773 µg/kg (0.773 ppm)
0.5' - 1.0'	1,490 µg/kg (1.49 ppm)
1.0' - 1.5'	547 µg/kg (0.547 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS		
SAMPLE ID	NORTHING	EASTING
4065.5-223	254045.69	2485213.34
4066-207	254191.74	2485302.58
4066.5-205	254348.34	2485368.88
4067-205	254535.41	2485471.46

OU4-D84-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-10-2016

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'
560.00'	-	561.00'
561.00'	-	562.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-17-D84-1-A
2. 0.5' - 1.0' SAMPLE ID TTFR-17-D84-1-B
3. 1.0' - 1.5' SAMPLE ID TTFR-17-D84-1-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 10-27-2017
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF FOUR SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 11-2-2017

THIS DOCUMENT IS THE PROPERTY OF LOWER FOX RIVER REMEDIATION LLC PREPARED BY TETRA TECH EC, INC. (TtEC), AND IS PROVIDED UPON THE CONDITION THAT IT WILL NOT BE REPRODUCED, COPIED, OR ISSUED TO A THIRD PARTY. IT IS PROVIDED TO BE USED SOLELY FOR THE ORIGINAL INTENDED PURPOSE, AND SOLELY FOR THE EXECUTION OR REVIEW OF THE ENGINEERING AND CONSTRUCTION OF THE SUBJECT PROJECT.

OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.73'	-	-1.00'	1,429.70
BELOW RAL	-1.00'	-	-0.50'	13,418.74
BELOW RAL	-0.50'	-	0.00'	16,224.21
ABOVE RAL	0.00'	-	0.25'	805.36
ABOVE RAL	0.25'	-	0.50'	107.35
ABOVE RAL	0.50'	-	0.75'	15.55
ABOVE RAL	0.75'	-	1.00'	5.05
ABOVE RAL	1.00'	-	1.30'	2.03

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D84-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: November 18, 2016
LAST REVISED: November 30, 2018
CHECKED BY: REG

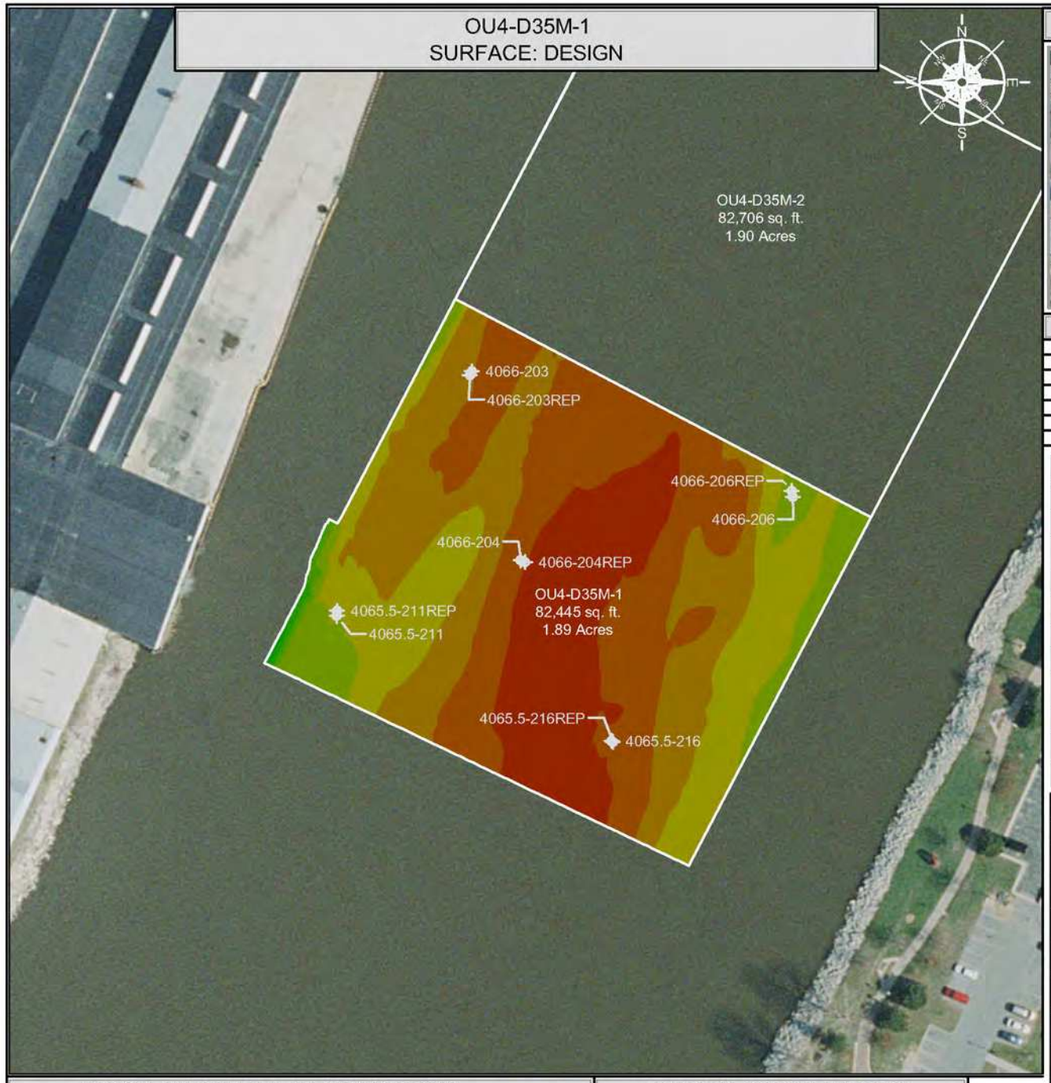
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-135

OU4-D84-1
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

P:\LLC\CAD\Field Engineering\Design Files\2018\OU4 D84\DWG\Post Design\OU4-D84-1.dwg

OU4-D35M-1
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	2,150 µg/kg (2.15 ppm)
0.5' - 1.0'	485 µg/kg (0.485 ppm)
1.0' - 1.5'	197 µg/kg (0.197 ppm)
0.0' - 0.5' REP	3,210 µg/kg (3.21 ppm)
0.5' - 1.0' REP	1,280 µg/kg (1.28 ppm)
1.0' - 1.5' REP	1,550 µg/kg (1.55 ppm)

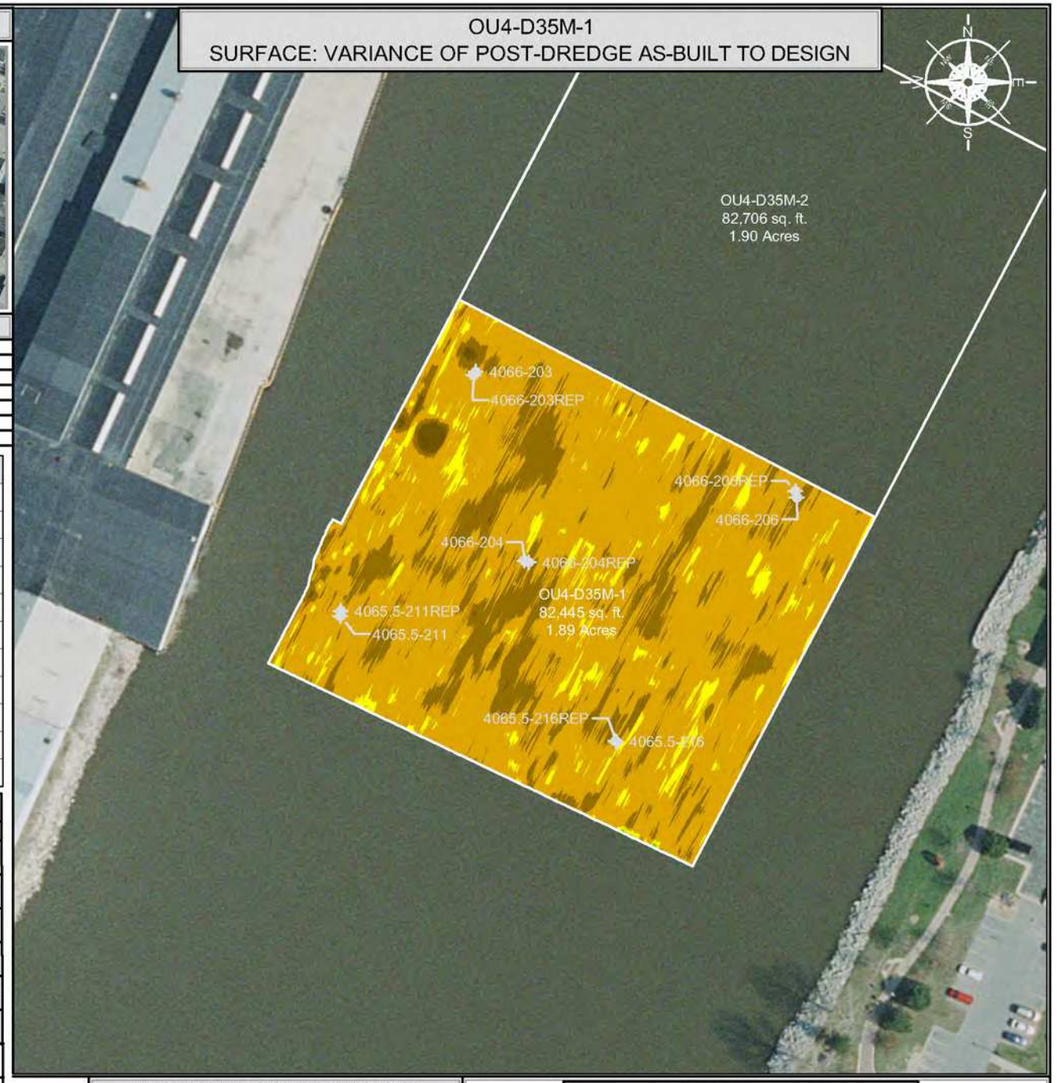
CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4065.5-211	254157.34	2484926.12
4065.5-211REP	254160.72	2484926.34
4065.5-216	254074.93	2485107.53
4065.5-216REP	254074.25	2485108.24
4066-203	254318.65	2485015.30
4066-203REP	254316.04	2485014.01
4066-204	254194.01	2485047.43
4066-204REP	254192.82	2485050.48
4066-206	254235.71	2485227.18
4066-206REP	254239.78	2485226.25

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION
4065.5-211	A: 1,450 µg/kg (1.45) ppm) D: 2,170 µg/kg (2.17) ppm) B: 1,610 µg/kg (1.61) ppm) E: 2,260 µg/kg (2.26) ppm) C: 1,370 µg/kg (1.37) ppm) F: 2,790 µg/kg (2.79) ppm)
4065.5-211RVT	G: 5,800 µg/kg (5.8) ppm) J2: <25.0 µg/kg (<0.025) ppm) H: 3,110 µg/kg (3.11) ppm) K: 80.0 µg/kg (0.08) ppm) J: <25.0 µg/kg (<0.025) ppm) L: <25.1 µg/kg (<0.0251) ppm)
4065.5-216	A: 15,700 µg/kg (15.7) ppm) D: <25.2 µg/kg (<0.0252) ppm) B: 151 µg/kg (0.151) ppm) C: <25.3 µg/kg (<0.0253) ppm)
4066-203	A: 2,180 µg/kg (2.18) ppm) D: <25.2 µg/kg (<0.0252) ppm) B: 559 µg/kg (0.559) ppm) C: 112 µg/kg (0.112) ppm)
4066-204	A: 265 µg/kg (0.265) ppm) D: <25.2 µg/kg (<0.0252) ppm) B: 31.0 µg/kg (0.031) ppm) E: <25.2 µg/kg (<0.0252) ppm) C: <25.3 µg/kg (<0.0253) ppm)
4066-206	A: 164 µg/kg (0.164) ppm) D: <25.0 µg/kg (<0.025) ppm) B: <25.1 µg/kg (<0.0251) ppm) C: <25.2 µg/kg (<0.0252) ppm)
4065.5-211REP	A: 1,520 µg/kg (1.52) ppm) D: 2,230 µg/kg (2.23) ppm) B: 1,900 µg/kg (1.9) ppm) C: 2,390 µg/kg (2.39) ppm)
4065.5-211REPRVT	E: 2,500 µg/kg (2.5) ppm) H: 4,530 µg/kg (4.53) ppm) F: 2,920 µg/kg (2.92) ppm) G: 3,230 µg/kg (3.23) ppm)
4065.5-211REPRVT	J: 908 µg/kg (0.908) ppm) K: <25.0 µg/kg (<0.025) ppm) L: <25.1 µg/kg (<0.0251) ppm)
4065.5-216REP	A: 9,540 µg/kg (9.54) ppm) D: <25.2 µg/kg (<0.0252) ppm) B: 119 µg/kg (0.119) ppm) E: <25.1 µg/kg (<0.0251) ppm) C: <25.2 µg/kg (<0.0252) ppm)

OU4-D35M-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION
4066-203REP	A: 3,370 µg/kg (3.37) ppm) D: <25.2 µg/kg (<0.0252) ppm) B: 1,250 µg/kg (1.25) ppm) C: <25.3 µg/kg (<0.0253) ppm)
4066-204REP	A: 132 µg/kg (0.132) ppm) D: <25.2 µg/kg (<0.0252) ppm) B: 64.1 µg/kg (0.0641) ppm) E: <25.2 µg/kg (<0.0252) ppm) C: 64.5 µg/kg (0.0645) ppm)
4066-206REP	A: 2,550 µg/kg (2.55) ppm) D: 3,020 µg/kg (3.02) ppm) B: 2,760 µg/kg (2.76) ppm) E: 25.2 µg/kg (0.0252) ppm) C: 3,420 µg/kg (3.42) ppm)

DISCRETE SAMPLE IDENTIFICATION

1. TTFR-17-D35M-1-4065.5-211-A
2. TTFR-17-D35M-1-4065.5-211-B
3. TTFR-17-D35M-1-4065.5-211-C
4. TTFR-17-D35M-1-4065.5-211-D
5. TTFR-17-D35M-1-4065.5-211-E
6. TTFR-17-D35M-1-4065.5-211-F
7. TTFR-17-D35M-1-4065.5-211RVT-G
8. TTFR-17-D35M-1-4065.5-211RVT-H
9. TTFR-17-D35M-1-4065.5-211RVT-J
10. TTFR-17-D35M-1-4065.5-211RVT-J2
11. TTFR-17-D35M-1-4065.5-211RVT-K
12. TTFR-17-D35M-1-4065.5-211RVT-L
13. TTFR-17-D35M-1-4065.5-216-A
14. TTFR-17-D35M-1-4065.5-216-B
15. TTFR-17-D35M-1-4065.5-216-C
16. TTFR-17-D35M-1-4065.5-216-D
17. TTFR-17-D35M-1-4066-203-A
18. TTFR-17-D35M-1-4066-203-B
19. TTFR-17-D35M-1-4066-203-C
20. TTFR-17-D35M-1-4066-203-D
21. TTFR-17-D35M-1-4066-204-A
22. TTFR-17-D35M-1-4066-204-B
23. TTFR-17-D35M-1-4066-204-C
24. TTFR-17-D35M-1-4066-204-D
25. TTFR-17-D35M-1-4066-204-E
26. TTFR-17-D35M-1-4066-206-A
27. TTFR-17-D35M-1-4066-206-B
28. TTFR-17-D35M-1-4066-206-C
29. TTFR-17-D35M-1-4066-206-D
30. TTFR-17-D35M-1-4065.5-211REP-A
31. TTFR-17-D35M-1-4065.5-211REP-B
32. TTFR-17-D35M-1-4065.5-211REP-C
33. TTFR-17-D35M-1-4065.5-211REP-D
34. TTFR-17-D35M-1-4065.5-211REPRVT-E
35. TTFR-17-D35M-1-4065.5-211REPRVT-F
36. TTFR-17-D35M-1-4065.5-211REPRVT-G
37. TTFR-17-D35M-1-4065.5-211REPRVT-H
38. TTFR-17-D35M-1-4065.5-211REPRVT-J
39. TTFR-17-D35M-1-4065.5-211REPRVT-K
40. TTFR-17-D35M-1-4065.5-211REPRVT-L
41. TTFR-17-D35M-1-4065.5-216REP-A
42. TTFR-17-D35M-1-4065.5-216REP-B
43. TTFR-17-D35M-1-4065.5-216REP-C
44. TTFR-17-D35M-1-4065.5-216REP-D
45. TTFR-17-D35M-1-4065.5-216REP-E
46. TTFR-17-D35M-1-4066-203REP-A
47. TTFR-17-D35M-1-4066-203REP-B
48. TTFR-17-D35M-1-4066-203REP-C
49. TTFR-17-D35M-1-4066-203REP-D
50. TTFR-17-D35M-1-4066-204REP-A
51. TTFR-17-D35M-1-4066-204REP-B
52. TTFR-17-D35M-1-4066-204REP-C
53. TTFR-17-D35M-1-4066-204REP-D
54. TTFR-17-D35M-1-4066-204REP-E
55. TTFR-17-D35M-1-4066-206REP-A
56. TTFR-17-D35M-1-4066-206REP-B
57. TTFR-17-D35M-1-4066-206REP-C
58. TTFR-17-D35M-1-4066-206REP-D
59. TTFR-17-D35M-1-4066-206REP-E

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'

SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-18-2016

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-17-D35M-1-A
2. 0.5' - 1.0' SAMPLE ID TTFR-17-D35M-1-B
3. 1.0' - 1.5' SAMPLE ID TTFR-17-D35M-1-C
4. 0.0' - 0.5' SAMPLE ID TTFR-17-D35M-1REP-A
5. 0.5' - 1.0' SAMPLE ID TTFR-17-D35M-1REP-B
6. 1.0' - 1.5' SAMPLE ID TTFR-17-D35M-1REP-C
7. CONFIRMATION SAMPLES WERE COLLECTED ON 10-27-2017 and 11-17-2017
8. CONFIRMATION SAMPLES ARE A COMPOSITE OF TEN SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
9. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 11-2-2017, 11-14-2017, 11-15-2017, and 11-28-2017

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OU# - D# - #
- OU# — OPERABLE UNIT
- D# — DREDGE AREA
- # — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-3.30'	-	-1.00'	489.89
	-1.00'	-	-0.50'	14,788.53
	-0.50'	-	0.00'	62,748.31
ABOVE RAL	0.00'	-	0.25'	4,349.12
	0.25'	-	0.50'	52.14
	0.50'	-	0.75'	12.62
	0.75'	-	1.00'	3.84
	1.00'	-	1.20'	0.12

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35M-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 20, 2016
LAST REVISED: December 6, 2018
CHECKED BY: REG

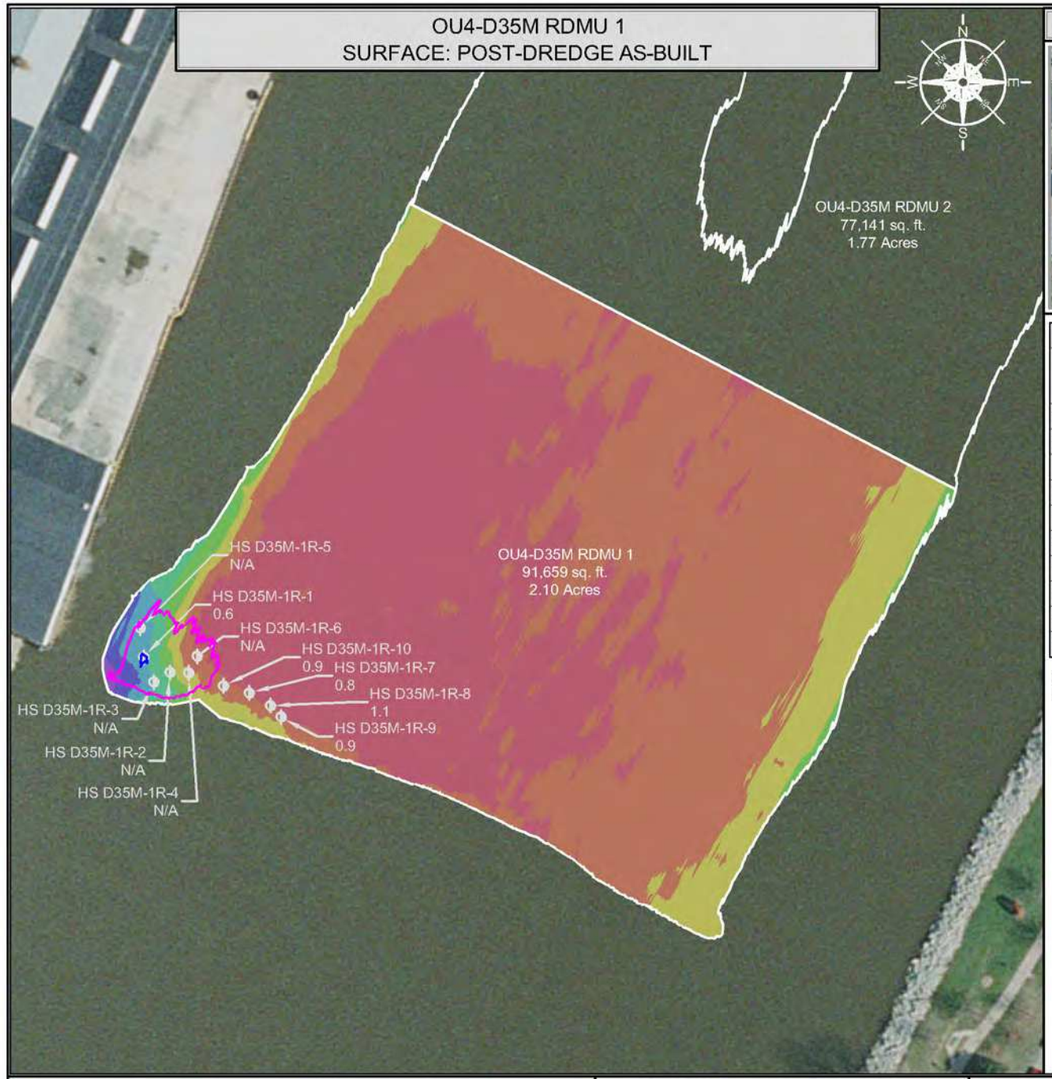
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-136

OU4-D35M-1
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

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OU4-D35M RDMU 1
SURFACE: POST-DREDGE AS-BUILT



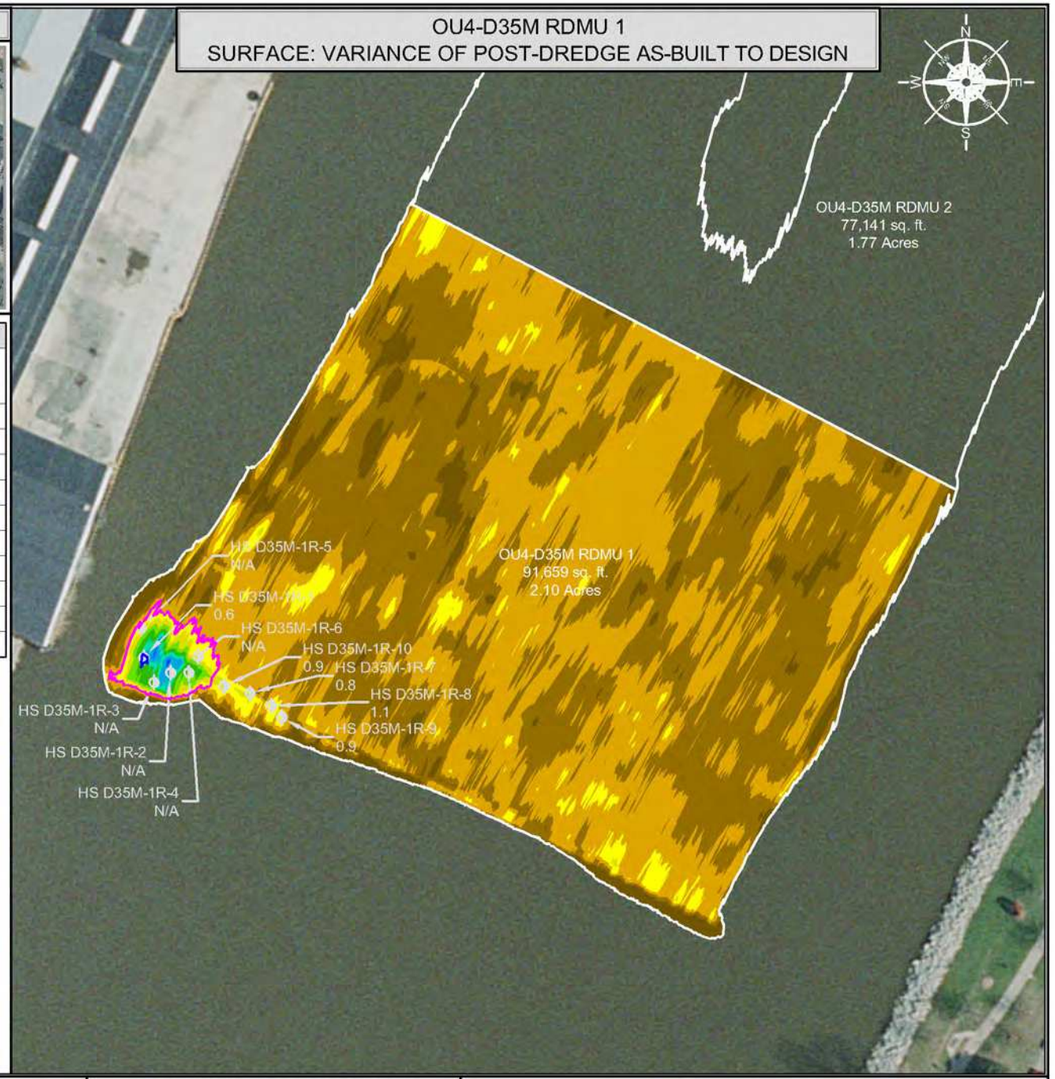
INDEX MAP



HIGH SUBGRADE SAMPLE AS-BUILT RESULTS			
SAMPLE ID	NORTHING	EASTING	THICKNESS OF SOFT SEDIMENT (FEET)
HS D35M-1R-1	254129.00	2484859.17	0.6
HS D35M-1R-2	254121.05	2484873.17	N/A
HS D35M-1R-3	254116.02	2484864.57	N/A
HS D35M-1R-4	254120.87	2484882.96	N/A
HS D35M-1R-5	254144.50	2484857.53	N/A
HS D35M-1R-6	254129.59	2484887.56	N/A
HS D35M-1R-7	254110.30	2484915.11	0.8
HS D35M-1R-8	254103.54	2484926.18	1.1
HS D35M-1R-9	254097.55	2484931.77	0.9
HS D35M-1R-10	254113.96	2484901.48	0.9

NR = NO RECOVERY
NA = NO CORE COLLECTION REQUIRED DUE TO POLING DEPTH

OU4-D35M RDMU 1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE
LIMITS OF SOFT SEDIMENTS
(WITHIN AREAS OF HIGH SUBGRADE)

SCALE (1" = 80')

80 40 0 80 160

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 8-15-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
545.00'	-	547.00'
547.00'	-	549.00'
549.00'	-	551.00'
551.00'	-	553.00'
553.00'	-	555.00'
555.00'	-	557.00'
557.00'	-	559.00'
559.00'	-	561.00'

DRAWING NOTES

1. HIGH SUBGRADE SAMPLES AND POLING DATA WERE COLLECTED ON 8-17-2018 AND LOGGED ON 8-20-2018

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-3.72'	-	-1.00'	5,780.13
BELOW RAL	-1.00'	-	-0.50'	41,403.80
BELOW RAL	-0.50'	-	0.00'	39,780.01
ABOVE RAL	0.00'	-	0.50'	3,345.02
ABOVE RAL	0.50'	-	1.00'	417.72
ABOVE RAL	1.00'	-	1.50'	278.06
ABOVE RAL	1.50'	-	2.00'	293.04
ABOVE RAL	2.00'	-	2.50'	185.95
ABOVE RAL	2.50'	-	3.00'	165.13
ABOVE RAL	3.00'	-	3.15'	9.68

LIMITS OF HIGH SUBGRADE
LIMITS OF SOFT SEDIMENTS
(WITHIN AREAS OF HIGH SUBGRADE)

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

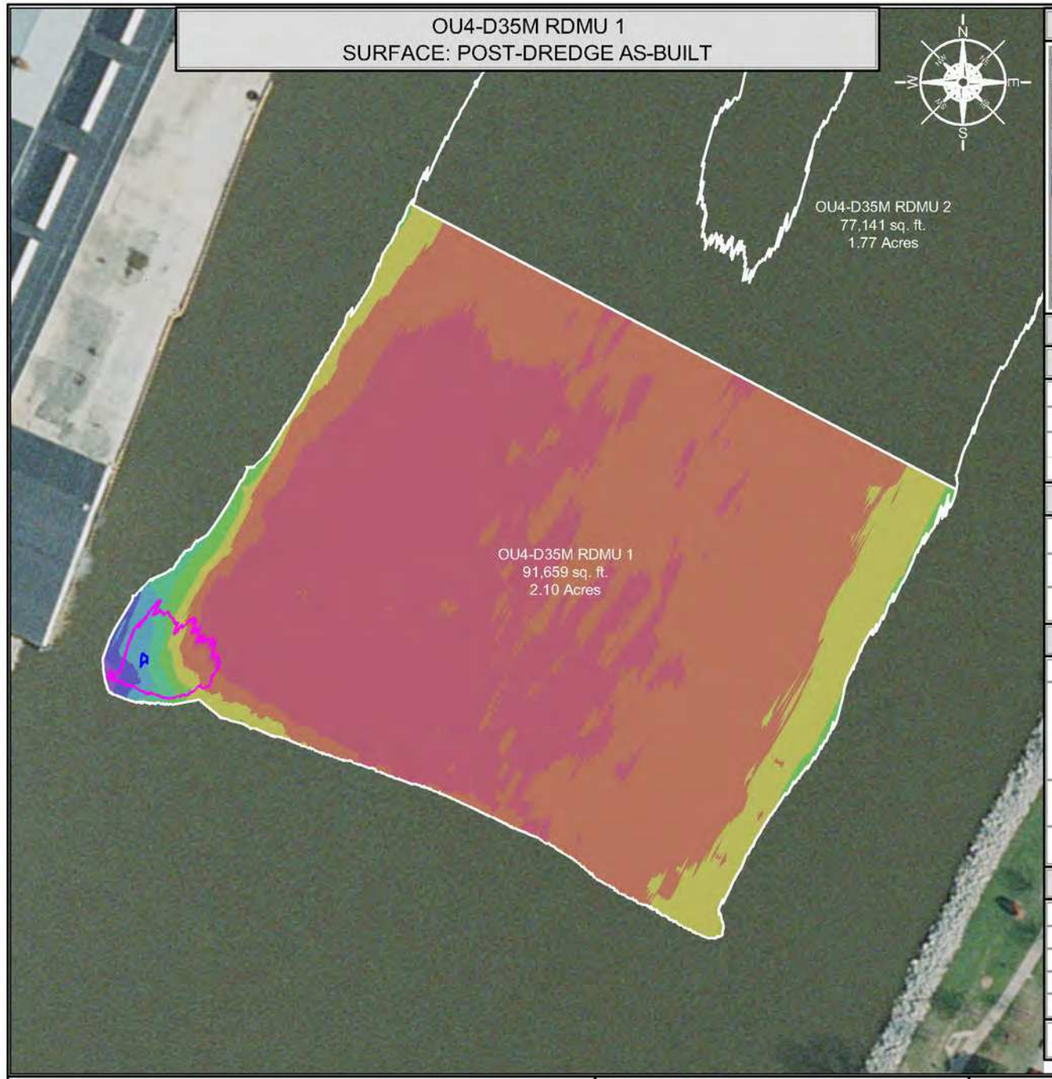
CAD FILE: OU4-D35M RDMU 1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: August 16, 2018
LAST REVISED: December 4, 2018
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-137

OU4-D35M RDMU 1
1st RESIDUAL DREDGE HIGH SUBGRADE RESULTS

P:\LLC\OU4\Fig\Engineering\Design Files\2018\OU4-D35M RDMU\DWG\Post Dredge\OU4 D35M RDMU 1.dwg



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

3,653.83	INITIAL RAL VOLUME
1,521.20	INITIAL OVERCUT VOLUME
5,175.03	RAL + OVERCUT VOLUME
4,706.71	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

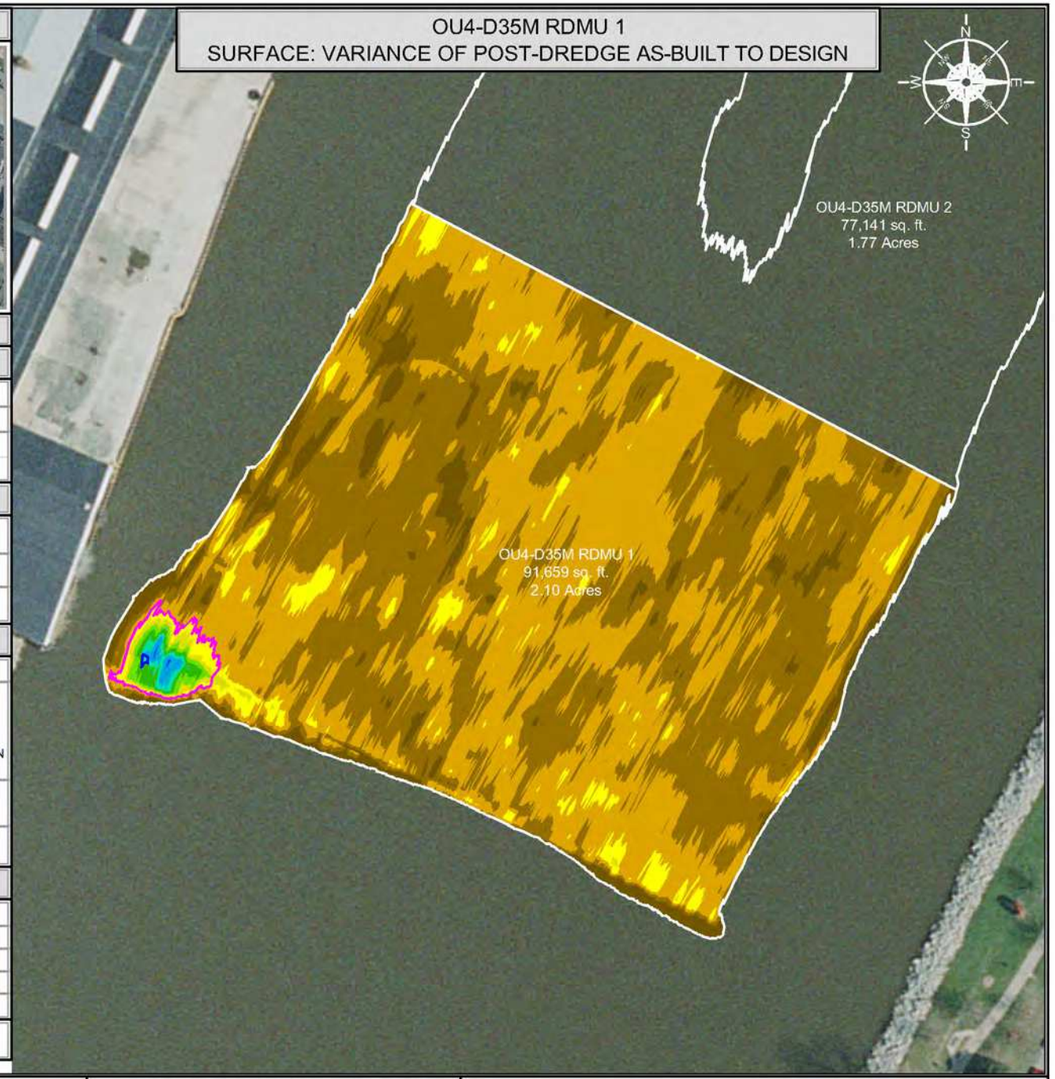
4,245.82	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
1,615.18	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
5,861.00	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

2018 AS-BUILT VOLUMES (CU. YD.)

5,857.40	TOTAL VOLUME DREDGED
4,151.92	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
76.62	CONFIRMED HIGH SUBGRADE VOLUME
17.15	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
374.55	OVERCUT VOLUME REMAINING
1,243.56	OVERCUT VOLUME DREDGED
461.92	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

91,658.54	AREA (SQ. FT.)
3,005.98	ABOVE DESIGN ELEVATION
86,963.94	AT OR BELOW DESIGN ELEVATION
1,688.62	CONFIRMED HIGH SUBGRADE
6.35 "	AVERAGE DEPTH OF OVERCUT [1]
97	PERCENT COMPLETE [2]



LIMITS OF HIGH SUBGRADE
LIMITS OF SOFT SEDIMENTS
(WITHIN AREAS OF HIGH SUBGRADE)

SCALE (1" = 80')

80 40 0 80 160

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 8-15-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
545.00'	-	547.00'
547.00'	-	549.00'
549.00'	-	551.00'
551.00'	-	553.00'
553.00'	-	555.00'
555.00'	-	557.00'
557.00'	-	559.00'
559.00'	-	561.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-3.72'	-	-1.00'	5,780.13
BELOW RAL	-1.00'	-	-0.50'	41,403.80
BELOW RAL	-0.50'	-	0.00'	39,780.01
ABOVE RAL	0.00'	-	0.50'	3,345.02
ABOVE RAL	0.50'	-	1.00'	417.72
ABOVE RAL	1.00'	-	1.50'	278.06
ABOVE RAL	1.50'	-	2.00'	293.04
ABOVE RAL	2.00'	-	2.50'	185.95
ABOVE RAL	2.50'	-	3.00'	165.13
ABOVE RAL	3.00'	-	3.15'	9.68

LIMITS OF HIGH SUBGRADE
LIMITS OF SOFT SEDIMENTS
(WITHIN AREAS OF HIGH SUBGRADE)

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35M RDMU 1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: August 16, 2018
LAST REVISED: December 4, 2018
CHECKED BY: REG

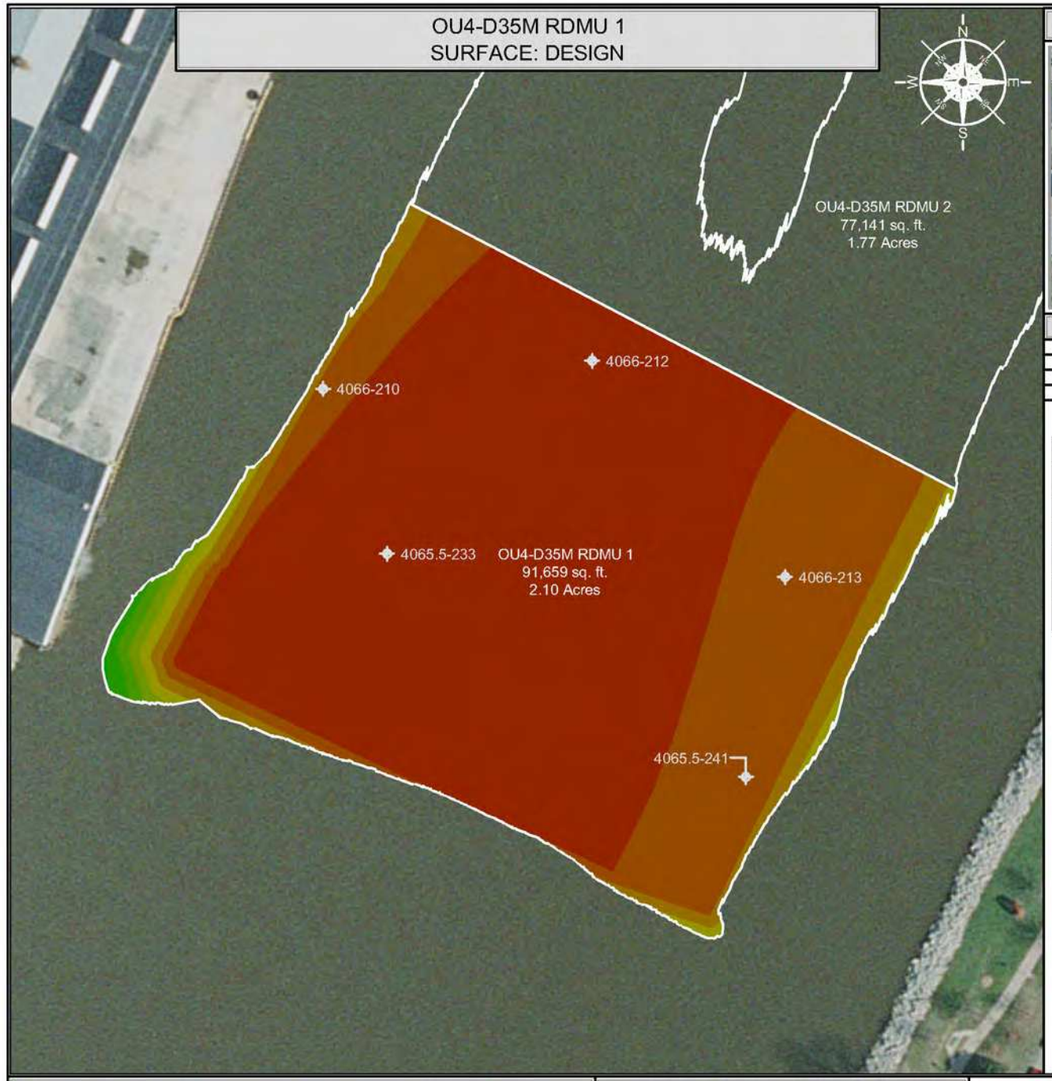
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-138

OU4-D35M RDMU 1
1st RESIDUAL DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LLC\CAD\Field Engineering\Dredge Files\2018\OU4 D35M RDMU\DWG\Post Dredge\OU4 D35M RDMU 1.dwg

OU4-D35M RDMU 1
SURFACE: DESIGN



INDEX MAP



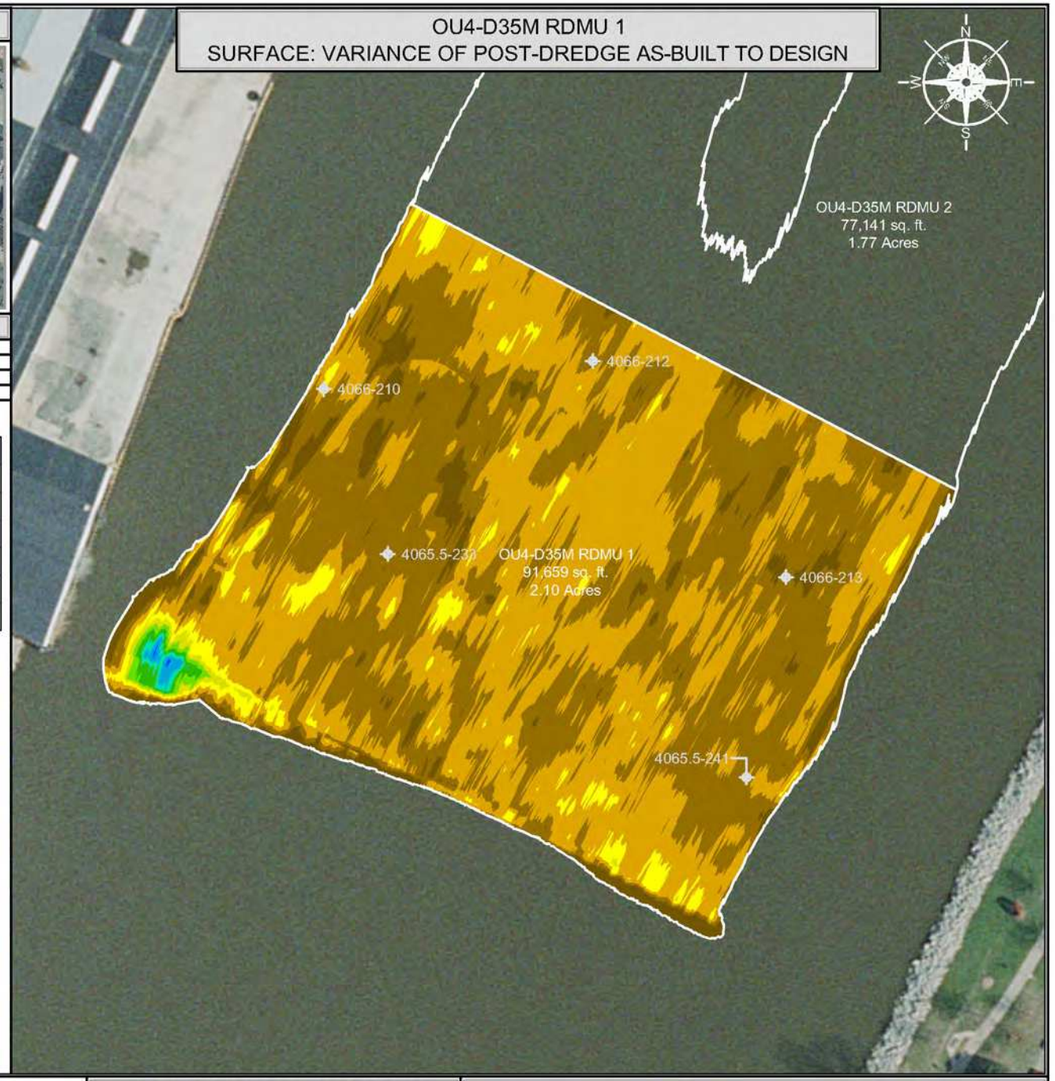
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	630 µg/kg (0.63 ppm)
0.5' - 1.0'	1,890 µg/kg (1.89 ppm)
1.0' - 1.5'	897 µg/kg (0.897 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4065.5-233	254183.71	2484987.77
4065.5-241	254065.93	2485177.21
4066-212	254285.48	2485095.97
4066-210	254270.74	2484954.05
4066-213	254171.40	2485197.89

OU4-D35M RDMU 1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 80')

80 40 0 80 160

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 8-15-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
546.00'	-	548.00'
548.00'	-	550.00'
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-D35M-1-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-D35M-1-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-D35M-1-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 9-26-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF FIVE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 10-1-2018

THIS DOCUMENT IS THE PROPERTY OF LOWER FOX RIVER REMEDIATION LLC PREPARED BY TETRA TECH EC, INC. (TEC), AND IS PROVIDED UPON THE CONDITION THAT IT WILL NOT BE REPRODUCED, COPIED, OR ISSUED TO A THIRD PARTY. IT IS PROVIDED TO BE USED SOLELY FOR THE ORIGINAL INTENDED PURPOSE, AND SOLELY FOR THE EXECUTION OR REVIEW OF THE ENGINEERING AND CONSTRUCTION OF THE SUBJECT PROJECT.

OU# - D# - #
- OU# = OPERABLE UNIT
- D# = DREDGE AREA
- # = DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-3.72'	-	-1.00'	5,780.13
BELOW RAL	-1.00'	-	-0.50'	41,403.80
BELOW RAL	-0.50'	-	0.00'	39,780.01
ABOVE RAL	0.00'	-	0.50'	3,345.02
ABOVE RAL	0.50'	-	1.00'	417.72
ABOVE RAL	1.00'	-	1.50'	278.06
ABOVE RAL	1.50'	-	2.00'	293.04
ABOVE RAL	2.00'	-	2.50'	185.95
ABOVE RAL	2.50'	-	3.00'	165.13
ABOVE RAL	3.00'	-	3.15'	9.68

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35M RDMU 1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: August 16, 2018
LAST REVISED: December 4, 2018
CHECKED BY: REG

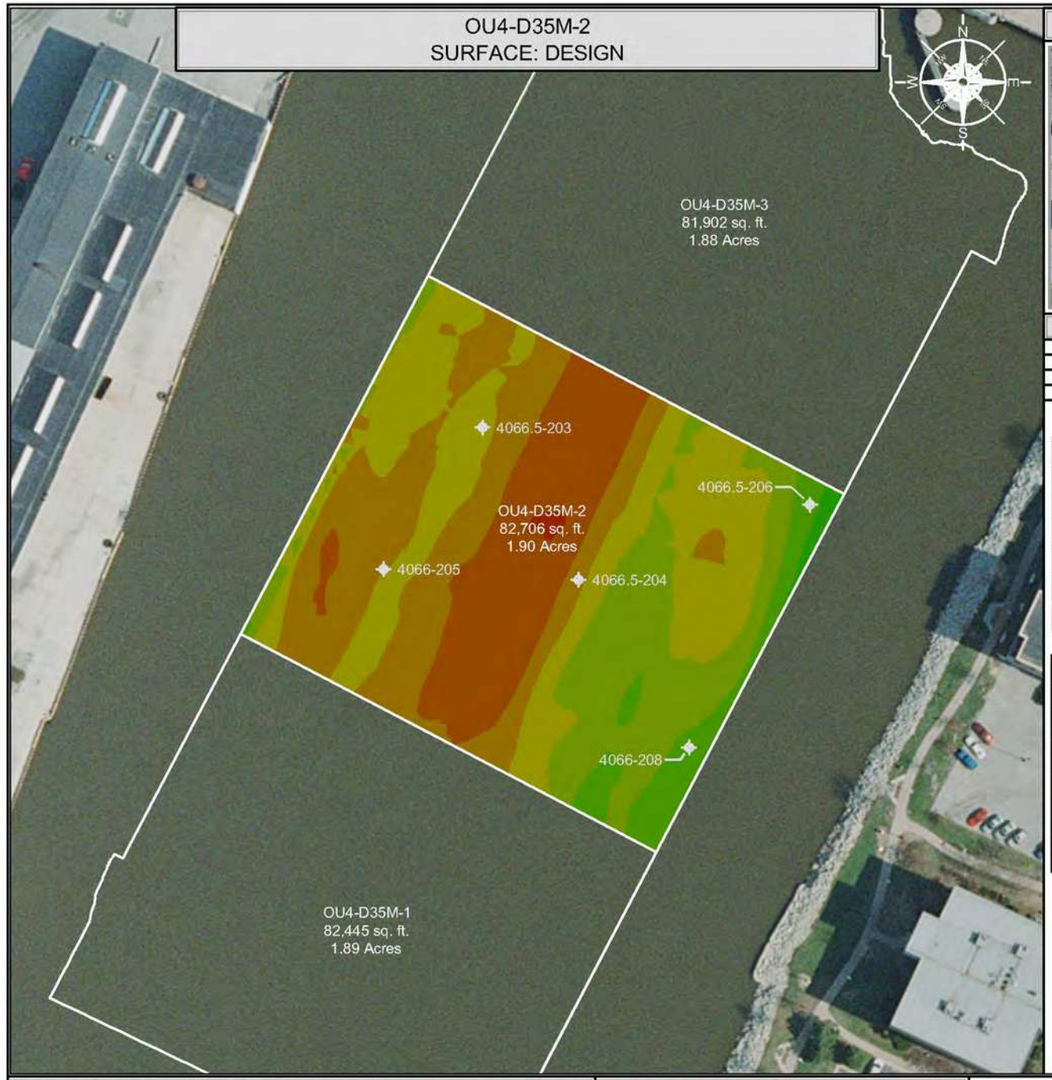
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-139

OU4-D35M RDMU 1
1st RESIDUAL DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LOCADD\Field Engineering\Design Files\2018\OU4-D35M RDMU\DWG\Post Dredge\OU4-D35M RDMU 1.dwg

OU4-D35M-2
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	2,160 µg/kg (2.16 ppm)
0.5' - 1.0'	1,680 µg/kg (1.68 ppm)
1.0' - 1.5'	<25.4 µg/kg (<0.0254 ppm)

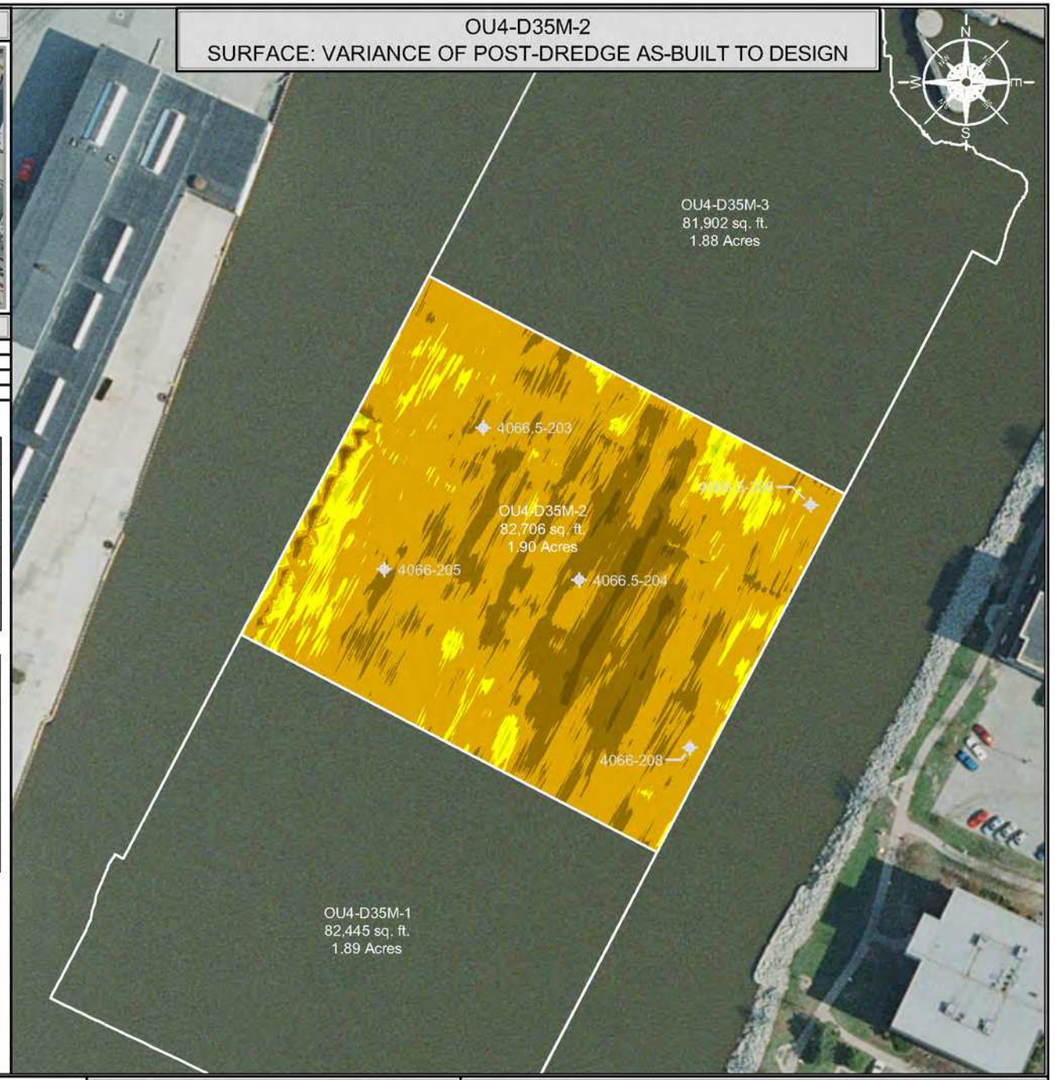
CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4066-208	254291.36	2485300.39
4066-205	254409.02	2485098.71
4066.5-206	254451.52	2485380.12
4066.5-204	254402.07	2485227.38
4066.5-203	254502.44	2485163.95

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION
4066.5-203	A: 4,630 µg/kg (4.63) ppm) B: 5,190 µg/kg (5.19) ppm) C: <25.5 µg/kg (<0.0255) ppm)
4066.5-204	A: 2,930 µg/kg (2.93) ppm) B: <25.4 µg/kg (<0.0254) ppm) C: <25.4 µg/kg (<0.0254) ppm)
4066.5-206	A: 1,210 µg/kg (1.21) ppm) B: 532 µg/kg (0.532) ppm) C: <25.1 µg/kg (<0.0251) ppm)
4066-205	A: 1,680 µg/kg (1.68) ppm) B: <25.5 µg/kg (<0.0255) ppm) C: <25.6 µg/kg (<0.0256) ppm)
4066-208	A: 218 µg/kg (0.218) ppm) B: <25.1 µg/kg (<0.0251) ppm) C: <25.1 µg/kg (<0.0251) ppm)

OU4-D35M-2
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-17-D35M-2-4066.5-203-A
2. TTFR-17-D35M-2-4066.5-203-B
3. TTFR-17-D35M-2-4066.5-203-C
4. TTFR-17-D35M-2-4066.5-204-A
5. TTFR-17-D35M-2-4066.5-204-B
6. TTFR-17-D35M-2-4066.5-204-C
7. TTFR-17-D35M-2-4066.5-206-A
8. TTFR-17-D35M-2-4066.5-206-B
9. TTFR-17-D35M-2-4066.5-206-C
10. TTFR-17-D35M-2-4066-205-A
11. TTFR-17-D35M-2-4066-205-B
12. TTFR-17-D35M-2-4066-205-C
13. TTFR-17-D35M-2-4066-208-A
14. TTFR-17-D35M-2-4066-208-B
15. TTFR-17-D35M-2-4066-208-C

SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-16-2016

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-17-D35M-2-A
2. 0.5' - 1.0' SAMPLE ID TTFR-17-D35M-2-B
3. 1.0' - 1.5' SAMPLE ID TTFR-17-D35M-2-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 10-26-2017
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF FIVE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 10-31-2017 and 1-15-2018

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.62'	-	-1.00'	1,661.65
	-1.00'	-	-0.50'	19,667.50
	-0.50'	-	0.00'	53,867.94
ABOVE RAL	0.00'	-	0.25'	6,810.53
	0.25'	-	0.50'	680.04
	0.50'	-	0.75'	18.48
	0.75'	-	1.00'	0.02
	1.00'	-	1.25'	0.01
	1.25'	-	1.50'	0.00
	1.50'	-	1.70'	0.00

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35M-2.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 17, 2016
LAST REVISED: December 4, 2018
CHECKED BY: REG

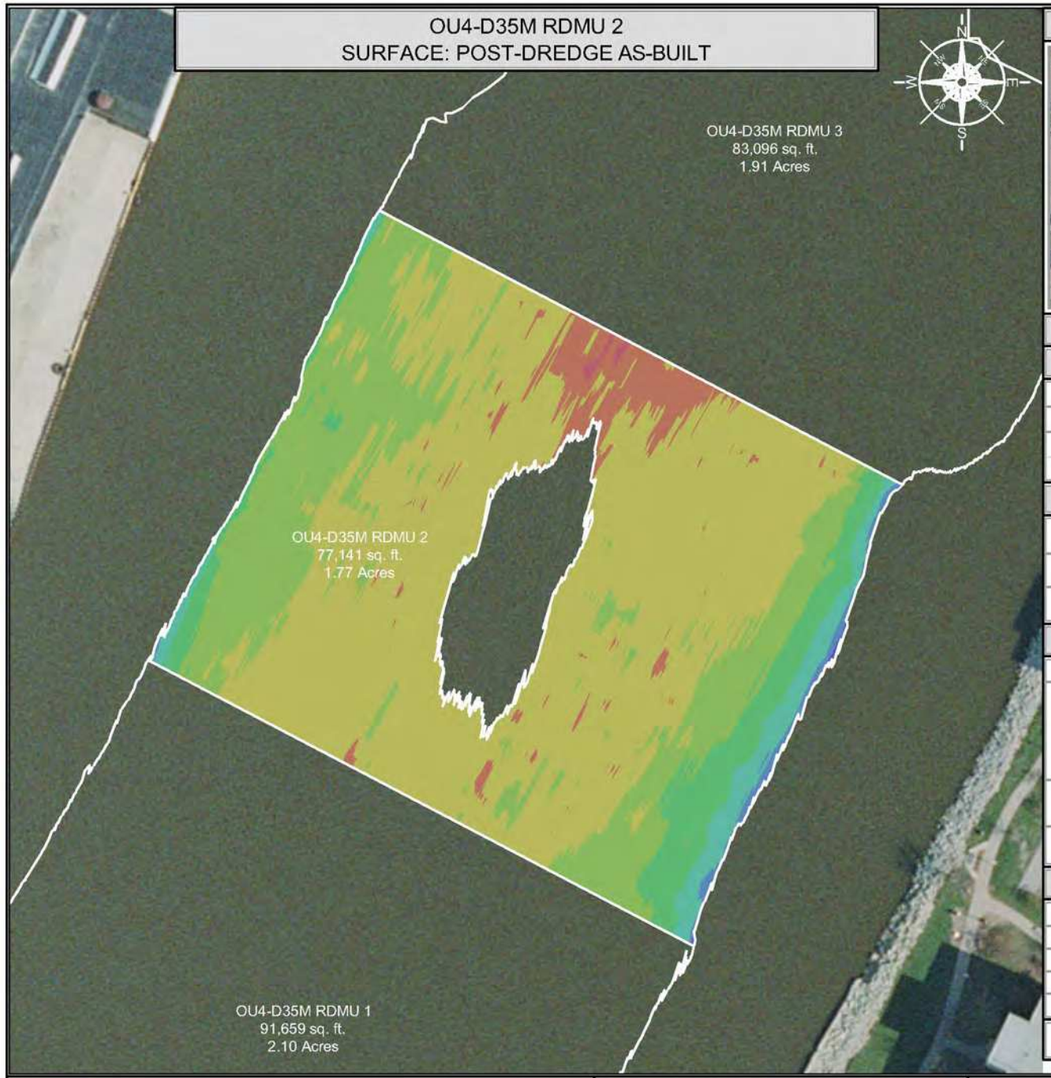
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-140

OU4-D35M-2
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

I:\LOCAD\Hilot Engineering\sDredge P#ios\2016\0014 035M2\WG\Post Dredge\OU4 D35M2.dwg

OU4-D35M RDMU 2
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

1,749.44	INITIAL RAL VOLUME
1,092.11	INITIAL OVERCUT VOLUME
2,841.55	RAL + OVERCUT VOLUME
2,384.44	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

2,192.66	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
1,290.15	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
3,482.81	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

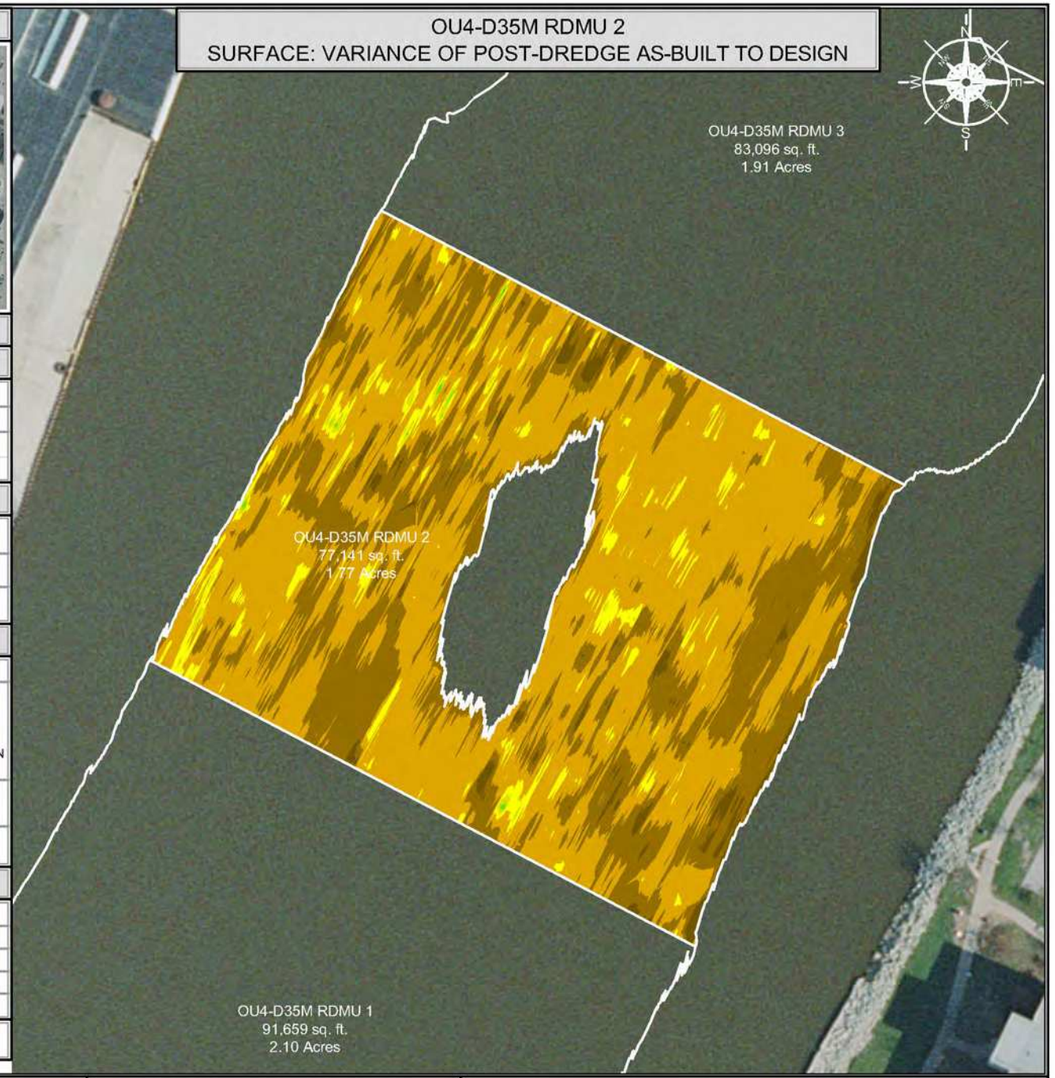
2018 AS-BUILT VOLUMES (CU. YD.)

3,245.71	TOTAL VOLUME DREDGED
2,177.43	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
14.75	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
442.36	OVERCUT VOLUME REMAINING
863.56	OVERCUT VOLUME DREDGED
204.72	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

77,141.49	AREA (SQ. FT.)
3,634.98	ABOVE DESIGN ELEVATION
73,506.51	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
4.71 "	AVERAGE DEPTH OF OVERCUT [1]
95	PERCENT COMPLETE [2]

OU4-D35M RDMU 2
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 80')

80 40 0 80 160

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 8-9-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.90'	-	-1.00'	1,988.59
	-1.00'	-	-0.50'	25,382.67
	-0.50'	-	0.00'	46,148.56
ABOVE RAL	0.00'	-	0.25'	3,232.52
	0.25'	-	0.50'	360.46
	0.50'	-	0.75'	41.10
	0.75'	-	0.86'	0.90

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35M RDMU 2.dwg
DRAWN BY: DAVID.FRISQUE
DATE: August 13, 2018
LAST REVISED: December 4, 2018
CHECKED BY: REG

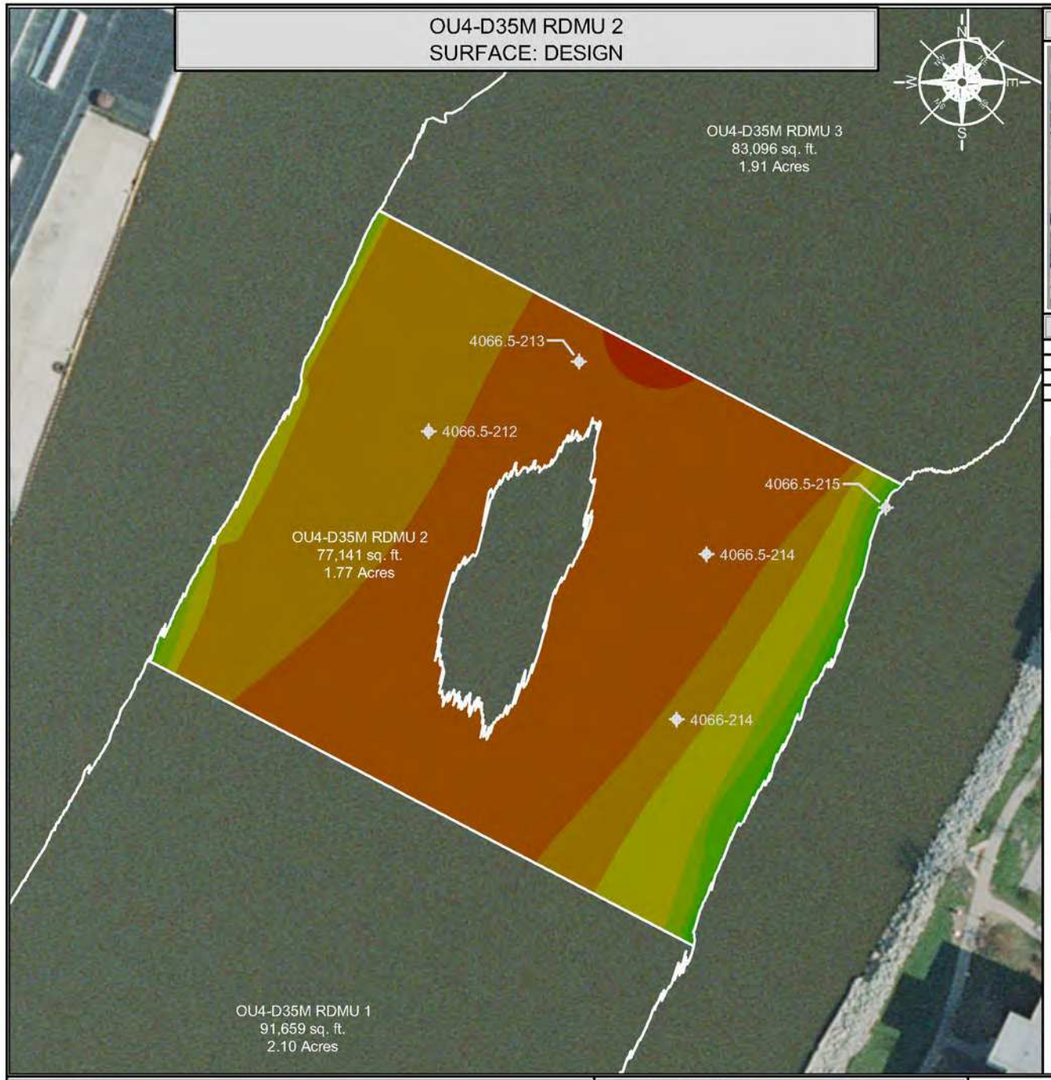
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-141

OU4-D35M RDMU 2
1st RESIDUAL DREDGE BATHYMETRY, VOLUMES AND AREAS

F:\LOCAD\Field Engineering\Dredge Files\2018\OU4 D35M RDMU\DWG\Post Dredge\OU4-D35M RDMU 2.dwg

OU4-D35M RDMU 2
SURFACE: DESIGN



INDEX MAP



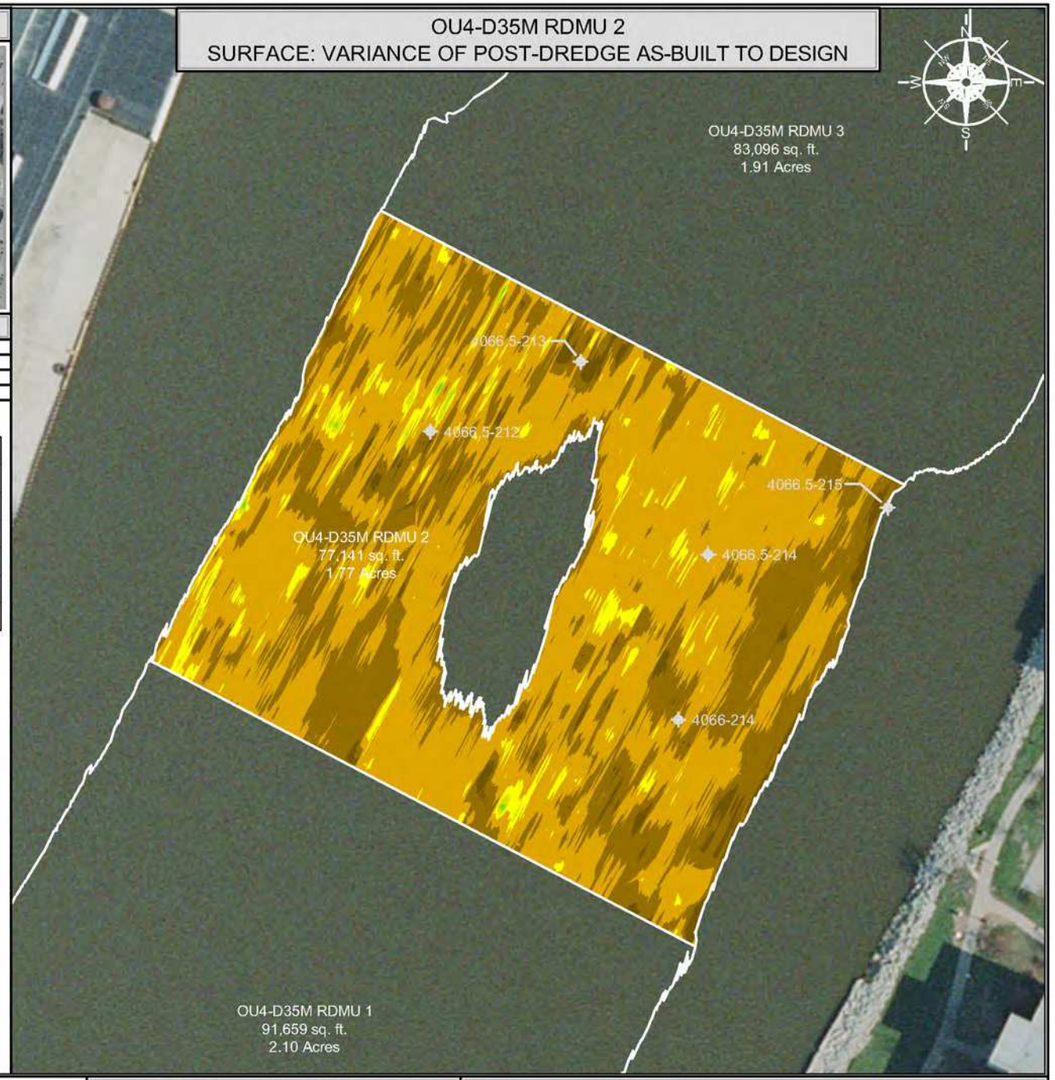
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	852 µg/kg (0.852 ppm)
0.5' - 1.0'	1,500 µg/kg (1.5 ppm)
1.0' - 1.5'	<25.3 µg/kg (<0.0253 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4066-214	254337.23	2485279.03
4066.5-213	254526.08	2485227.48
4066.5-212	254489.33	2485148.13
4066.5-215	254449.04	2485389.45
4066.5-214	254424.44	2485294.82

OU4-D35M RDMU 2
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 80')

80 40 0 80 160

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 8-9-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-D35M-2-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-D35M-2-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-D35M-2-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 9-26-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF FIVE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 10-2-2018

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.90'	-	-1.00'	1,988.59
BELOW RAL	-1.00'	-	-0.50'	25,382.67
BELOW RAL	-0.50'	-	0.00'	46,148.56
ABOVE RAL	0.00'	-	0.25'	3,232.52
ABOVE RAL	0.25'	-	0.50'	360.46
ABOVE RAL	0.50'	-	0.75'	41.10
ABOVE RAL	0.75'	-	0.86'	0.90

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35M RDMU 2.dwg
DRAWN BY: DAVID.FRISQUE
DATE: August 13, 2018
LAST REVISED: December 4, 2018
CHECKED BY: REG

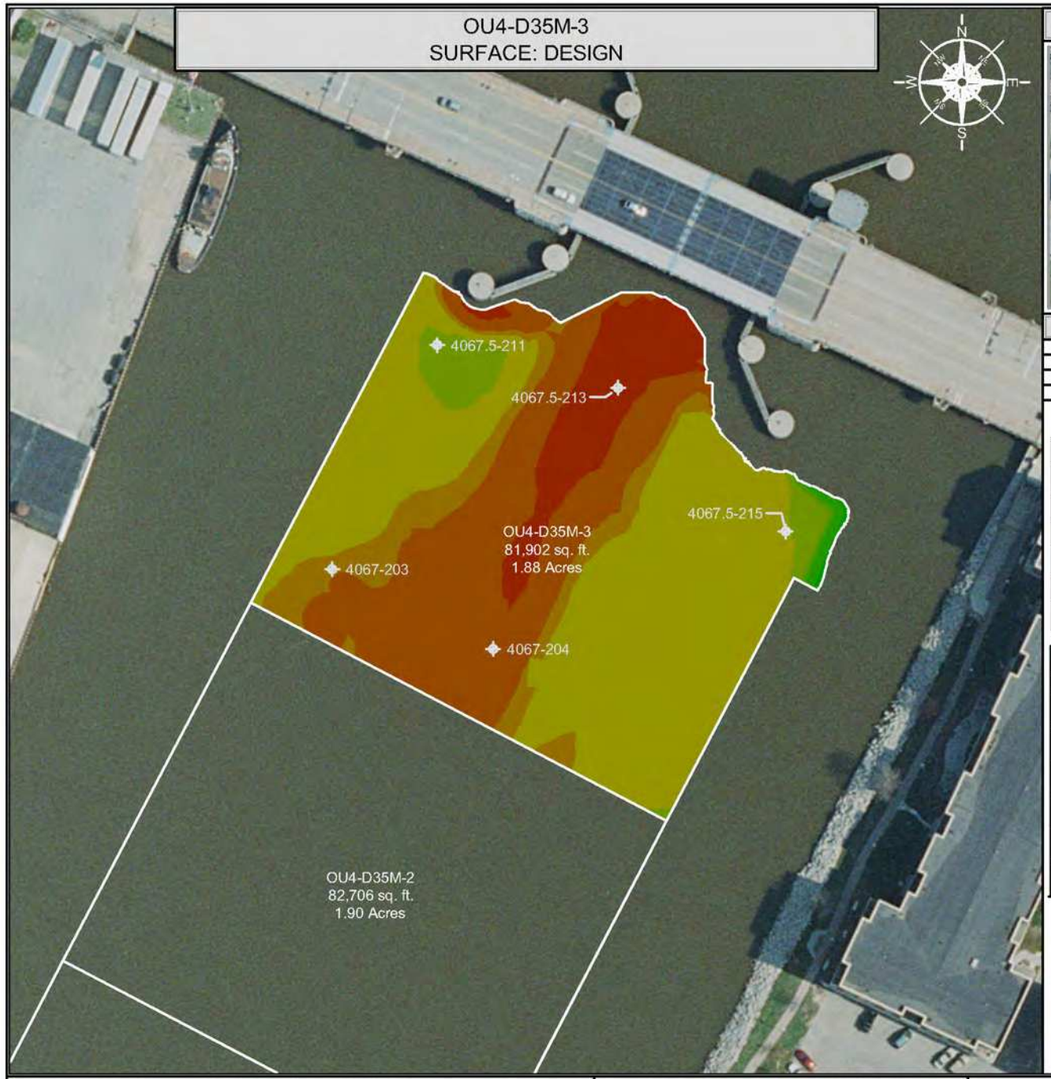
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-142

OU4-D35M RDMU 2
1st RESIDUAL DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\TLCAD\NHH Engineering\Dredge Files\2018\OU4 D35M RDMU\2\WG\Post Dredge\OU4 D35M RDMU 2.dwg

OU4-D35M-3
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	3,870 µg/kg (3.87 ppm)
0.5' - 1.0'	6,720 µg/kg (6.72 ppm)
1.0' - 1.5'	600 µg/kg (0.6 ppm)

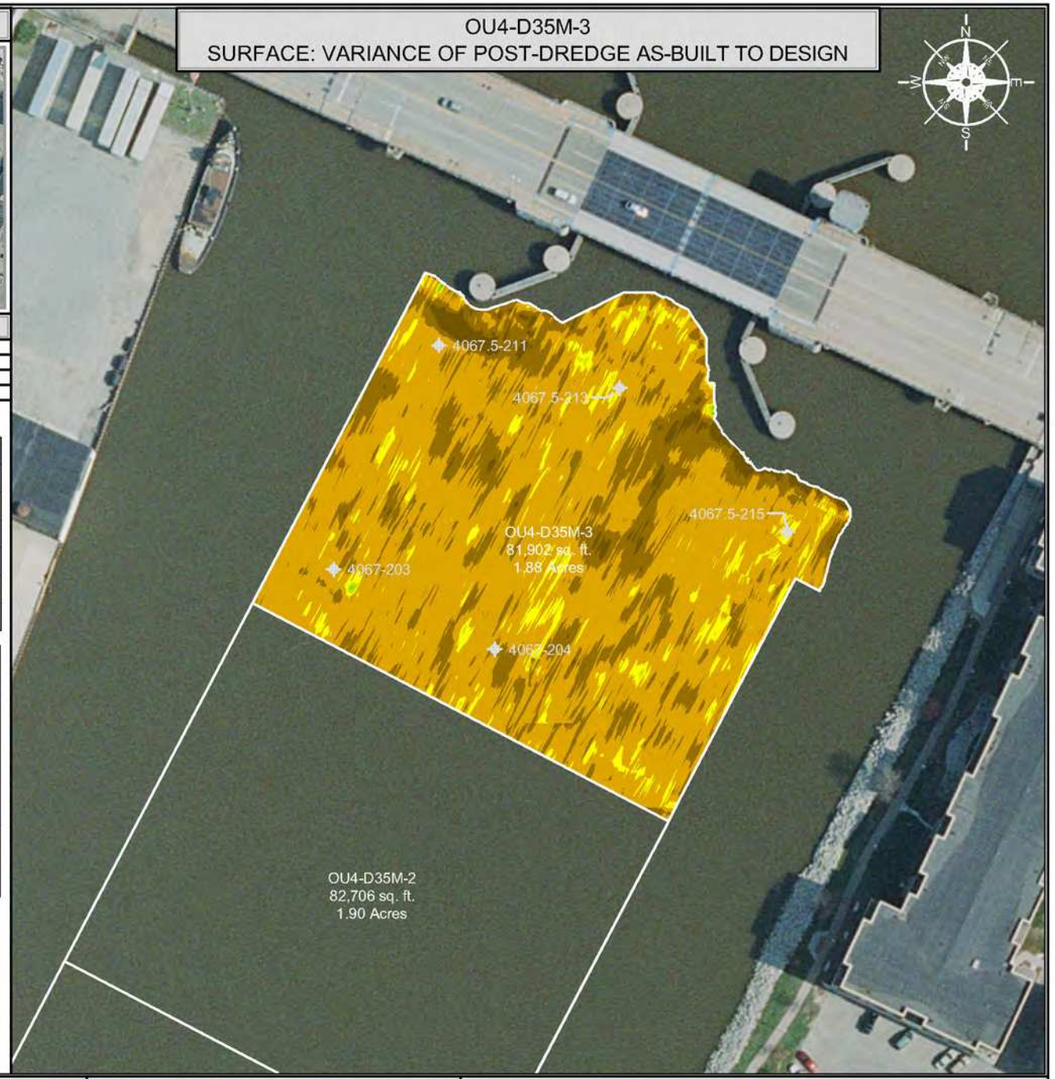
CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4067-204	254572.06	2485288.15
4067-203	254624.79	2485181.90
4067.5-215	254649.65	2485481.15
4067.5-213	254744.35	2485370.57
4067.5-211	254772.48	2485251.26

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION
4067.5-211	A: 2,660 µg/kg (2.66) ppm) B: 885 µg/kg (0.885) ppm) C: 34.9 µg/kg (0.0349) ppm)
4067.5-213	A: 314 µg/kg (0.314) ppm) B: 28.7 µg/kg (0.0287) ppm) C: <25.2 µg/kg (<0.0252) ppm)
4067.5-215	A: 1,350 µg/kg (1.35) ppm) D: 2,460 µg/kg (2.46) ppm) B: 1,490 µg/kg (1.49) ppm) E: 2,510 µg/kg (2.51) ppm) C: 2,380 µg/kg (2.38) ppm)
4067.5-215RVT	F: 2,990 µg/kg (2.99) ppm) H: 4,840 µg/kg (4.84) ppm) F2: 2,960 µg/kg (2.96) ppm) J: <25.1 µg/kg (<0.0251) ppm) G: 11,500 µg/kg (11.5) ppm)
4067-203	A: 9,670 µg/kg (9.67) ppm) B: 18,200 µg/kg (18.2) ppm) C: 849 µg/kg (0.849) ppm)
4067-204	A: 5,450 µg/kg (5.45) ppm) B: 3,900 µg/kg (3.9) ppm) C: <25.2 µg/kg (<0.0252) ppm)

OU4-D35M-3
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-17-D35M-3-4067.5-211-A
2. TTFR-17-D35M-3-4067.5-211-B
3. TTFR-17-D35M-3-4067.5-211-C
4. TTFR-17-D35M-3-4067.5-213-A
5. TTFR-17-D35M-3-4067.5-213-B
6. TTFR-17-D35M-3-4067.5-213-C
7. TTFR-17-D35M-3-4067.5-215-A
8. TTFR-17-D35M-3-4067.5-215-B
9. TTFR-17-D35M-3-4067.5-215-C
10. TTFR-17-D35M-3-4067.5-215-D
11. TTFR-17-D35M-3-4067.5-215-E
12. TTFR-17-D35M-3-4067.5-215RVT-F
13. TTFR-17-D35M-3-4067.5-215RVT-F2
14. TTFR-17-D35M-3-4067.5-215RVT-G
15. TTFR-17-D35M-3-4067.5-215RVT-H
16. TTFR-17-D35M-3-4067.5-215RVT-J
17. TTFR-17-D35M-3-4067-203-A
18. TTFR-17-D35M-3-4067-203-B
19. TTFR-17-D35M-3-4067-203-C
20. TTFR-17-D35M-3-4067-204-A
21. TTFR-17-D35M-3-4067-204-B
22. TTFR-17-D35M-3-4067-204-C

SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-22-2016

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-17-D35M-3-A
2. 0.5' - 1.0' SAMPLE ID TTFR-17-D35M-3-B
3. 1.0' - 1.5' SAMPLE ID TTFR-17-D35M-3-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 10-27-2017 and 11-28-2017
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF FIVE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 11-2-2017, 11-14-2017, 11-22-2017, and 12-1-2017

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT
DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-3.36'	-	-1.00'	2,050.44
BELOW RAL	-1.00'	-	-0.50'	17,927.80
BELOW RAL	-0.50'	-	0.00'	56,952.55
ABOVE RAL	0.00'	-	0.25'	4,591.40
ABOVE RAL	0.25'	-	0.50'	335.40
ABOVE RAL	0.50'	-	0.75'	34.32
ABOVE RAL	0.75'	-	1.00'	1.30

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35M-3.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 27, 2016
LAST REVISED: December 4, 2018
CHECKED BY: REG

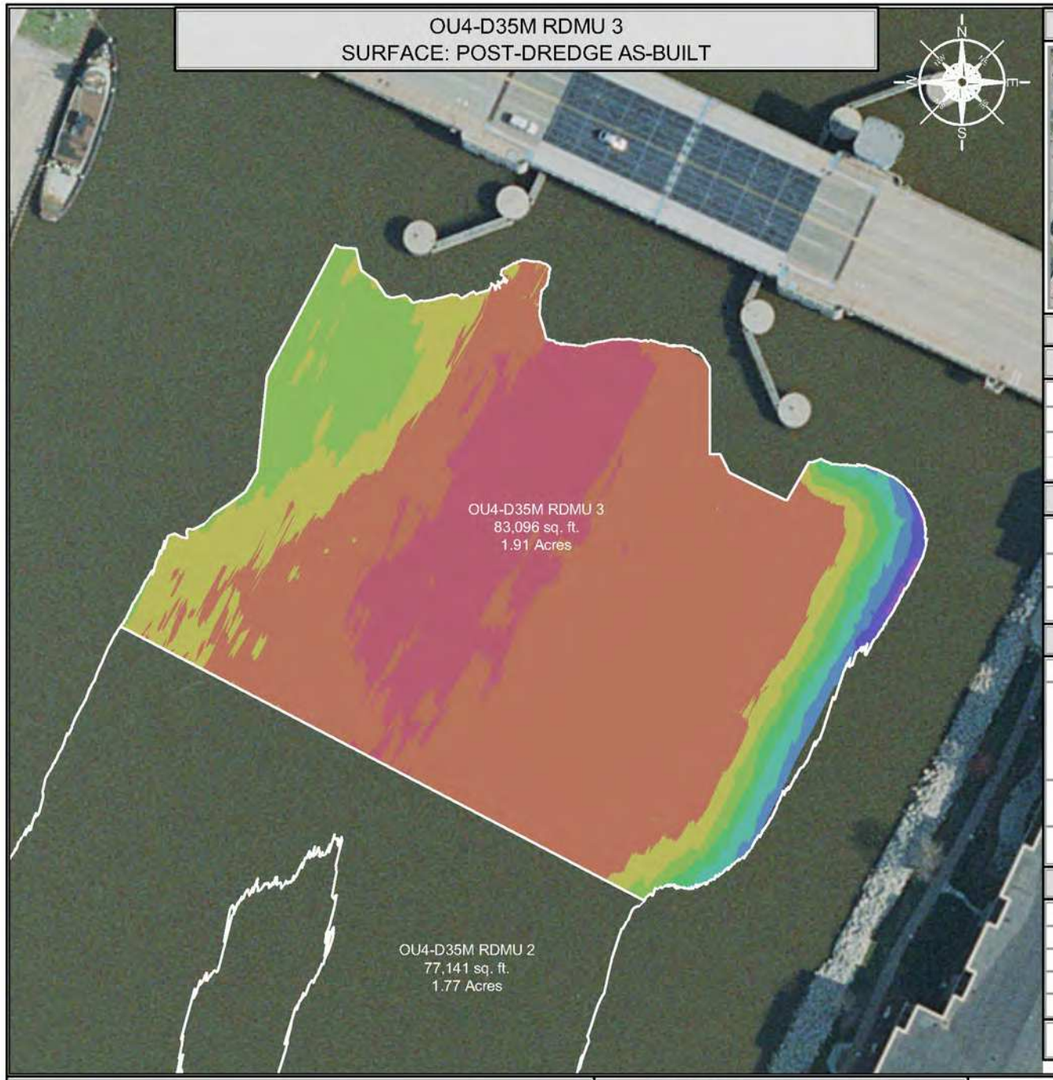
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-143

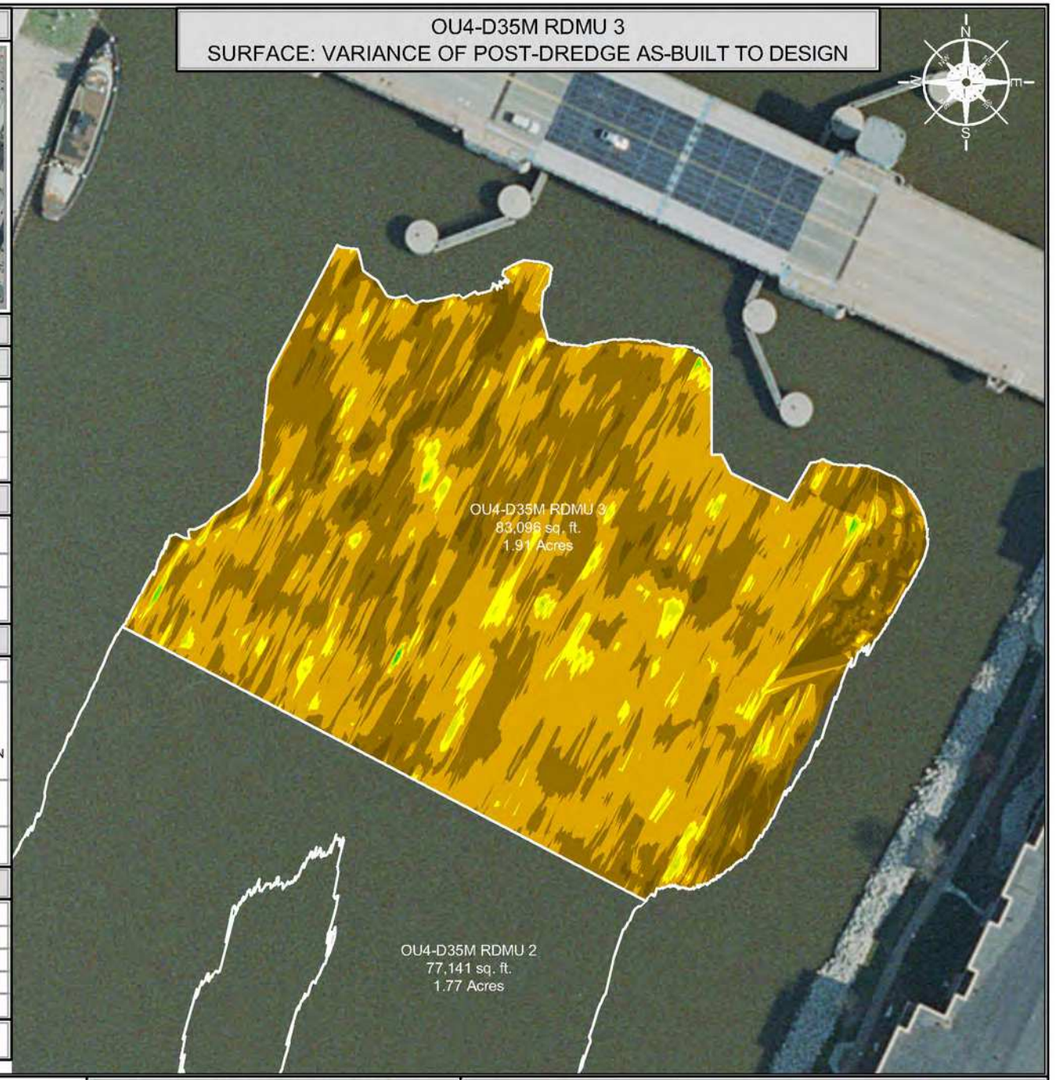
OU4-D35M-3
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LC\ACIVIL\Hist Engineering\Dredge Files\2016\OU4-D35M\DWG\Post Dredge\OU4 D35M-3.dwg

OU4-D35M RDMU 3
SURFACE: POST-DREDGE AS-BUILT



OU4-D35M RDMU 3
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

4,623.49	INITIAL RAL VOLUME
1,486.73	INITIAL OVERCUT VOLUME
6,110.22	RAL + OVERCUT VOLUME
5,723.28	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

5,370.88	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
1,514.46	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
6,885.34	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

2018 AS-BUILT VOLUMES (CU. YD.)

6,873.24	TOTAL VOLUME DREDGED
5,350.49	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
20.39	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
366.55	OVERCUT VOLUME REMAINING
1,145.14	OVERCUT VOLUME DREDGED
377.61	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

83,096.44	AREA (SQ. FT.)
4,303.44	ABOVE DESIGN ELEVATION
78,793.00	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
6.26 "	AVERAGE DEPTH OF OVERCUT [1]
95	PERCENT COMPLETE [2]

SCALE (1" = 80')

80 40 0 80 160

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 7-28-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
544.00'	-	546.00'
546.00'	-	548.00'
548.00'	-	550.00'
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.77'	-	-1.00'	5,419.98
BELOW RAL	-1.00'	-	-0.50'	33,886.39
BELOW RAL	-0.50'	-	0.00'	39,486.63
ABOVE RAL	0.00'	-	0.25'	3,347.60
ABOVE RAL	0.25'	-	0.50'	565.12
ABOVE RAL	0.50'	-	0.75'	68.24
ABOVE RAL	0.75'	-	1.00'	10.00
ABOVE RAL	1.00'	-	1.15'	1.81

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35M RDMU 3.dwg
DRAWN BY: DAVID.FRISQUE
DATE: July 30, 2018
LAST REVISED: December 4, 2018
CHECKED BY: REG

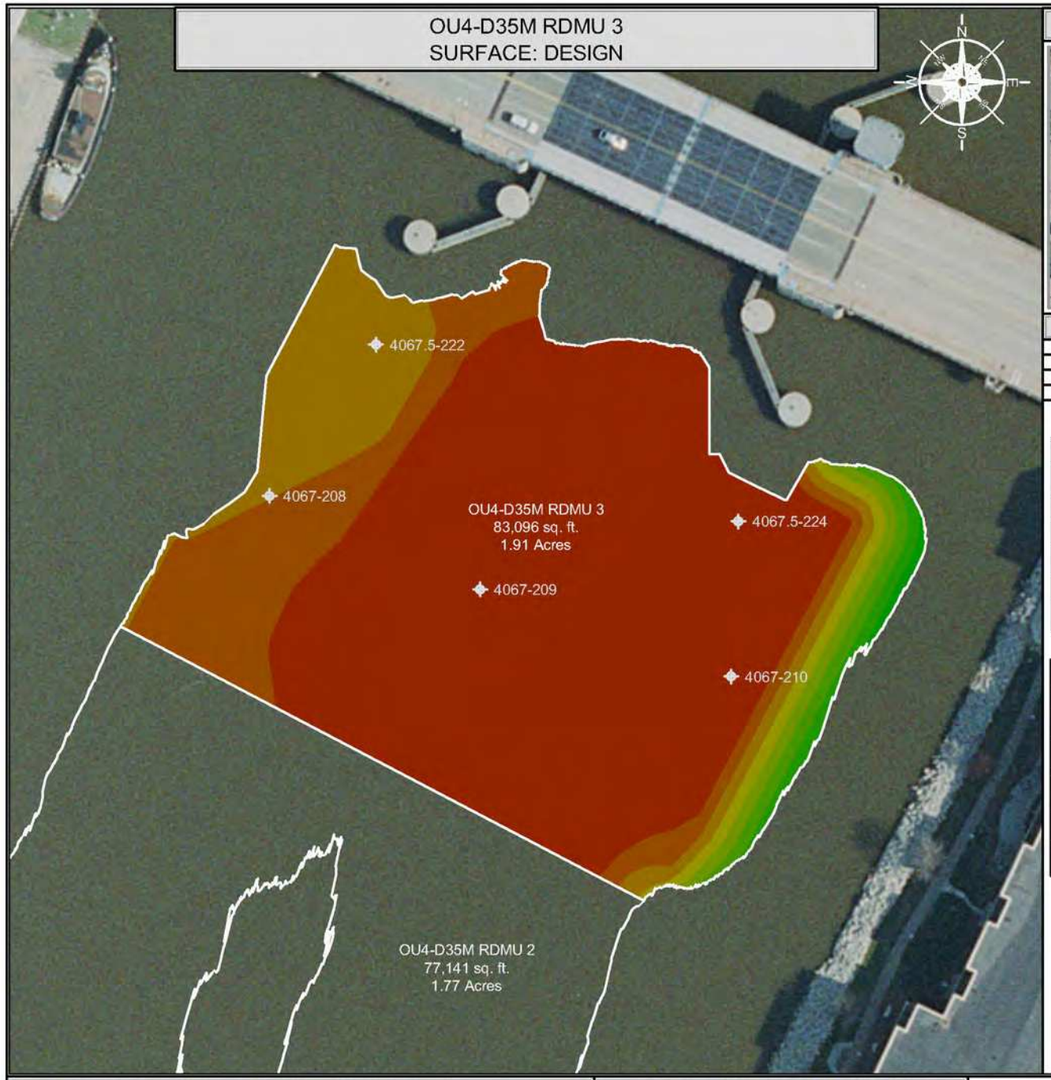
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-144

OU4-D35M RDMU 3
1st RESIDUAL DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\ALLOC\42\Field Engineering\Dredge Files\2018\OU4-D35M RDMU\DWG\Post Dredge\OU4 D35M RDMU 3.dwg

OU4-D35M RDMU 3
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	3,760 µg/kg (3.76 ppm)
0.5' - 1.0'	2,160 µg/kg (2.16 ppm)
1.0' - 1.5'	2,010 µg/kg (2.01 ppm)

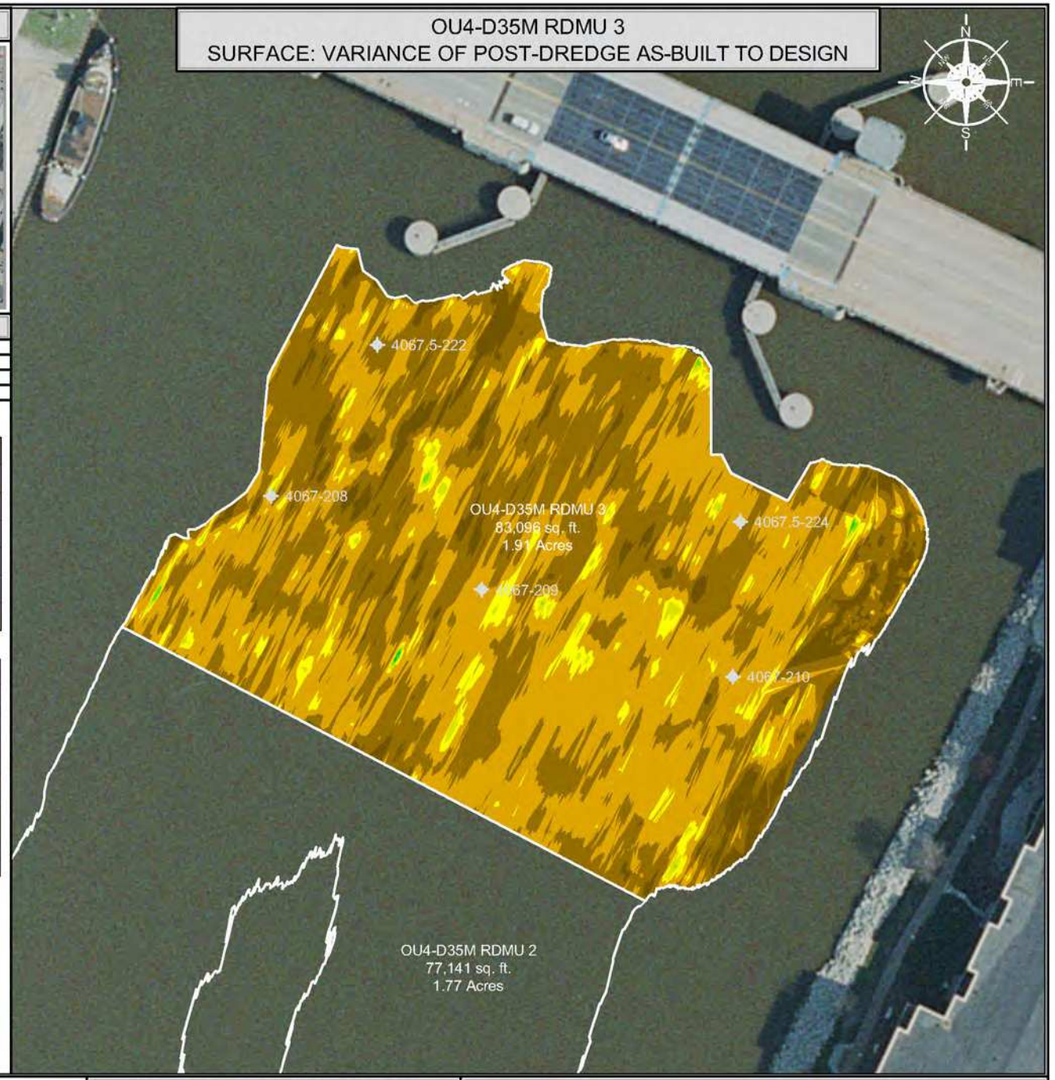
CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4067-208	254674.80	2485200.68
4067-209	254625.40	2485311.83
4067-210	254579.43	2485444.43
4067.5-224	254661.31	2485448.18
4067.5-222	254754.52	2485256.76

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION
4067.5-222	A: 1,090 µg/kg (1.09) ppm) D: <25.4 µg/kg (<0.0254) ppm) B: <25.5 µg/kg (<0.0255) ppm) C: <25.5 µg/kg (<0.0255) ppm)
4067.5-224	A: 1,430 µg/kg (1.43) ppm) B: 26.1 µg/kg (0.0261) ppm) C: <25.2 µg/kg (<0.0252) ppm)
4067-208	A: 6,510 µg/kg (6.51) ppm) D: <25.4 µg/kg (<0.0254) ppm) B: 9,390 µg/kg (9.39) ppm) C: 8,330 µg/kg (8.33) ppm)
4067-209	A: 6,550 µg/kg (6.55) ppm) B: 104 µg/kg (0.104) ppm) C: <25.4 µg/kg (<0.0254) ppm)
4067-210	A: 2,460 µg/kg (2.46) ppm) D: <25.2 µg/kg (<0.0252) ppm) B: 403 µg/kg (0.403) ppm) E: <25.2 µg/kg (<0.0252) ppm) C: <25.2 µg/kg (<0.0252) ppm)

OU4-D35M RDMU 3
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-18-D35M-3-4067.5-222-A
2. TTFR-18-D35M-3-4067.5-222-B
3. TTFR-18-D35M-3-4067.5-222-C
4. TTFR-18-D35M-3-4067.5-222-D
5. TTFR-18-D35M-3-4067.5-224-A
6. TTFR-18-D35M-3-4067.5-224-B
7. TTFR-18-D35M-3-4067.5-224-C
8. TTFR-18-D35M-3-4067-208-A
9. TTFR-18-D35M-3-4067-208-B
10. TTFR-18-D35M-3-4067-208-C
11. TTFR-18-D35M-3-4067-208-D
12. TTFR-18-D35M-3-4067-209-A
13. TTFR-18-D35M-3-4067-209-B
14. TTFR-18-D35M-3-4067-209-C
15. TTFR-18-D35M-3-4067-210-A
16. TTFR-18-D35M-3-4067-210-B
17. TTFR-18-D35M-3-4067-210-C
18. TTFR-18-D35M-3-4067-210-D
19. TTFR-18-D35M-3-4067-210-E

SCALE (1" = 80')

80 40 0 80 160

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 7-28-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
546.00'	-	548.00'
548.00'	-	550.00'
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-D35M-3-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-D35M-3-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-D35M-3-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 9-27-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF FIVE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 10-3-2018 and 10-8-2018

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OU# - D# - #
OPERABLE UNIT · DREDGE AREA · DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.77'	-	-1.00'	5,419.98
BELOW RAL	-1.00'	-	-0.50'	33,886.39
BELOW RAL	-0.50'	-	0.00'	39,486.63
ABOVE RAL	0.00'	-	0.25'	3,347.60
ABOVE RAL	0.25'	-	0.50'	565.12
ABOVE RAL	0.50'	-	0.75'	68.24
ABOVE RAL	0.75'	-	1.00'	10.00
ABOVE RAL	1.00'	-	1.15'	1.81

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35M RDMU 3.dwg
DRAWN BY: DAVID.FRISQUE
DATE: July 30, 2018
LAST REVISED: December 4, 2018
CHECKED BY: REG

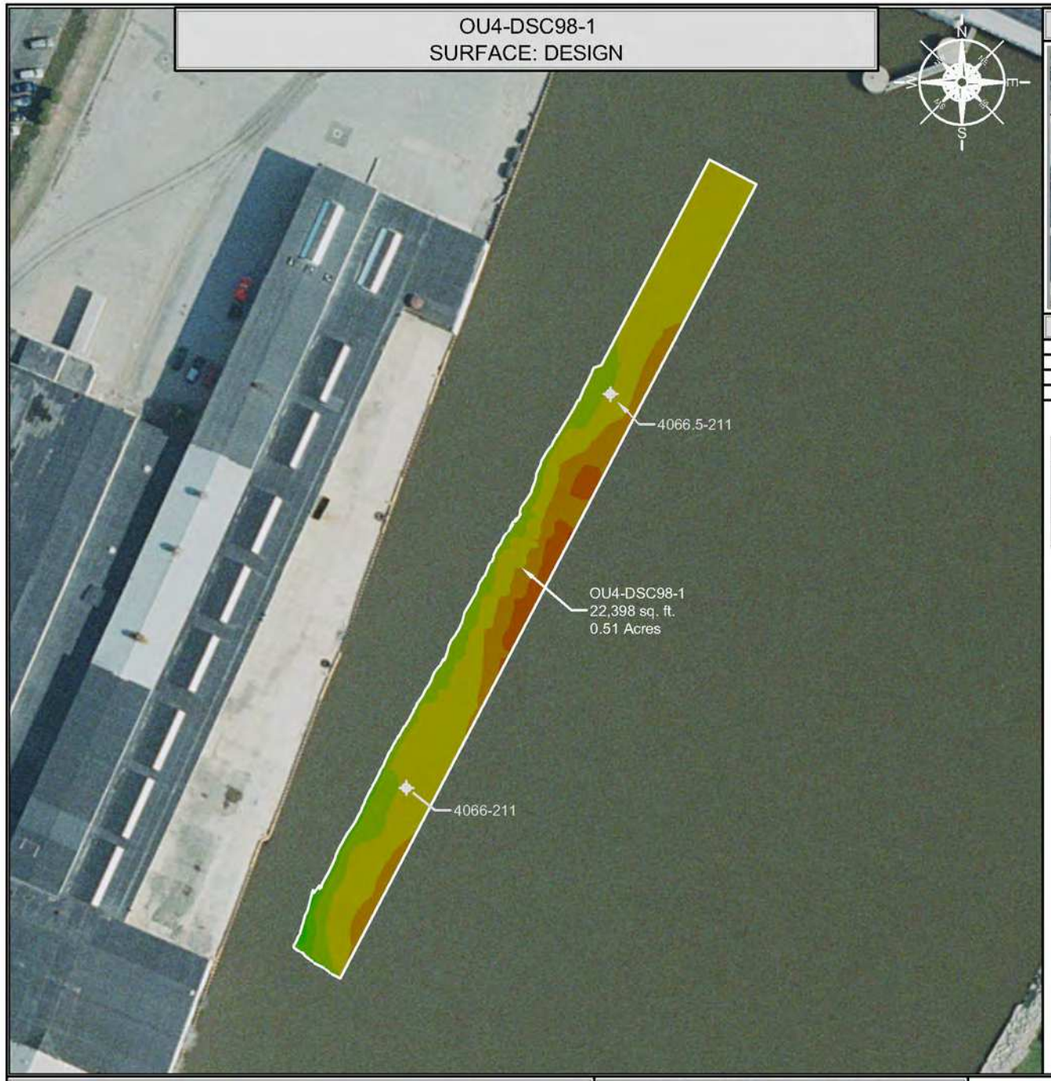
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-145

OU4-D35M RDMU 3
1st RESIDUAL DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

P:\LCO\4D\Field Engineering\Dredge Files\2018\OU4 D35M RDMU\DWG\Final Dredge\OU4-D35M RDMU 3.dwg

OU4-DSC98-1
SURFACE: DESIGN



INDEX MAP



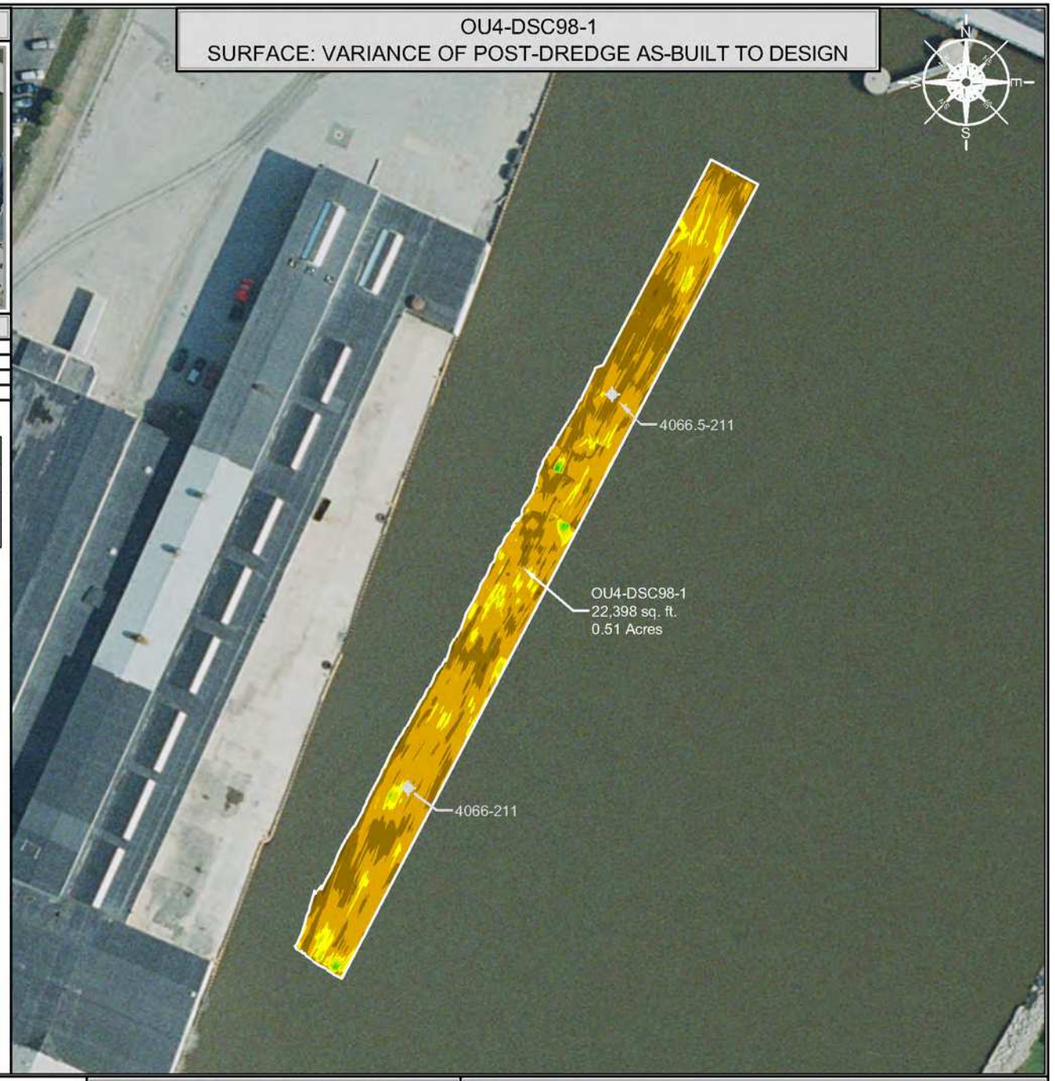
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	75.4 µg/kg (0.0754 ppm)
0.5' - 1.0'	<25.3 µg/kg (<0.0253 ppm)
1.0' - 1.5'	<25.3 µg/kg (<0.0253 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4066-211	254343.85	2484970.42
4066.5-211	254603.67	2485105.15

OU4-DSC98-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-21-2016

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-DSC98-1-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-DSC98-1-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-DSC98-1-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 9-27-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF TWO SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 10-3-2018

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.75'	-	-1.00'	358.17
BELOW RAL	-1.00'	-	-0.50'	7,458.07
BELOW RAL	-0.50'	-	0.00'	12,643.58
ABOVE RAL	0.00'	-	0.25'	1,546.30
ABOVE RAL	0.25'	-	0.50'	319.58
ABOVE RAL	0.50'	-	0.75'	56.11
ABOVE RAL	0.75'	-	1.00'	14.51
ABOVE RAL	1.00'	-	1.20'	1.61

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DSC98-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 22, 2016
LAST REVISED: December 4, 2018
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-146

OU4-DSC98-1
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LCAD\2Field Engineering\Dredge Piles\2016\OU4-DSC98\DWG\Post Dredge\OU4-DSC98-1.dwg

OU4-DMC2-12
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

119.02	INITIAL RAL VOLUME
25.04	INITIAL OVERCUT VOLUME
144.06	RAL + OVERCUT VOLUME
138.63	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

110.45	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
24.94	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
135.39	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

2018 AS-BUILT VOLUMES (CU. YD.)

139.97	TOTAL VOLUME DREDGED
110.22	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
0.23	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
5.20	OVERCUT VOLUME REMAINING
19.76	OVERCUT VOLUME DREDGED
9.99	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

1,386.07	AREA (SQ. FT.)
53.22	ABOVE DESIGN ELEVATION
1,332.85	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
7.23 "	AVERAGE DEPTH OF OVERCUT [1]
96	PERCENT COMPLETE [2]

OU4-DMC2-12
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 30')

30 15 0 30 60

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 7-26-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

THIS DOCUMENT IS THE PROPERTY OF LOWER FOX RIVER REMEDIATION LLC PREPARED BY TETRA TECH EC, INC. (TtEC), AND IS PROVIDED UPON THE CONDITION THAT IT WILL NOT BE REPRODUCED, COPIED, OR ISSUED TO A THIRD PARTY. IT IS PROVIDED TO BE USED SOLELY FOR THE ORIGINAL INTENDED PURPOSE, AND SOLELY FOR THE EXECUTION OR REVIEW OF THE ENGINEERING AND CONSTRUCTION OF THE SUBJECT PROJECT.

OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.19'	-	-1.00'	182.23
BELOW RAL	-1.00'	-	-0.50'	551.51
BELOW RAL	-0.50'	-	0.00'	599.11
ABOVE RAL	0.00'	-	0.25'	48.82
ABOVE RAL	0.25'	-	0.48'	4.40

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DMC2-12.dwg
DRAWN BY: DAVID.FRISQUE
DATE: September 28, 2018
LAST REVISED: November 30, 2018
CHECKED BY: REG

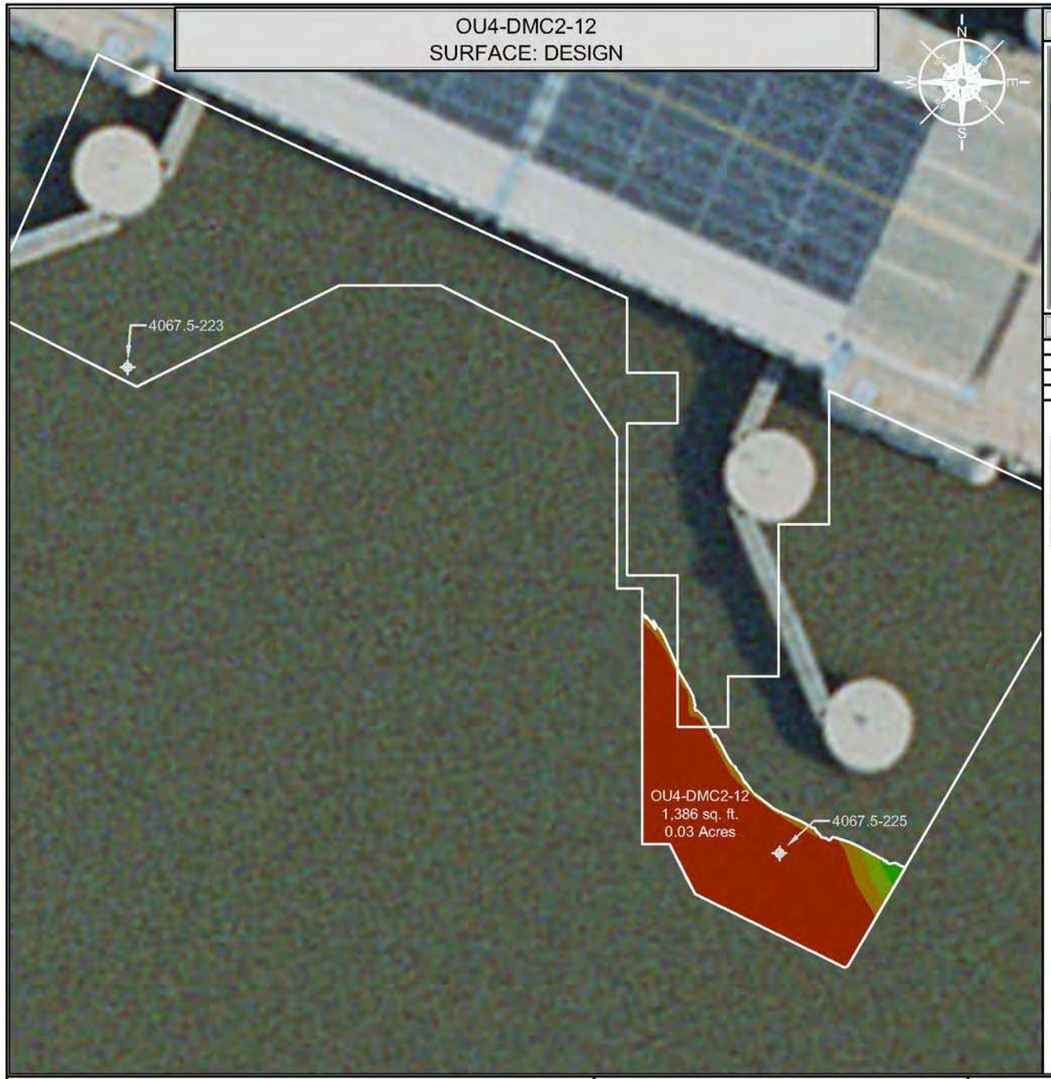
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-147

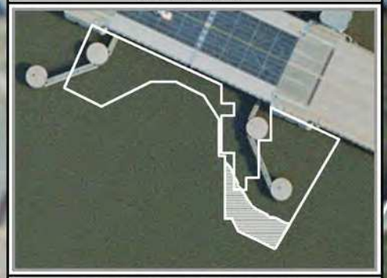
OU4-DMC2-12
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

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OU4-DMC2-12
SURFACE: DESIGN



INDEX MAP



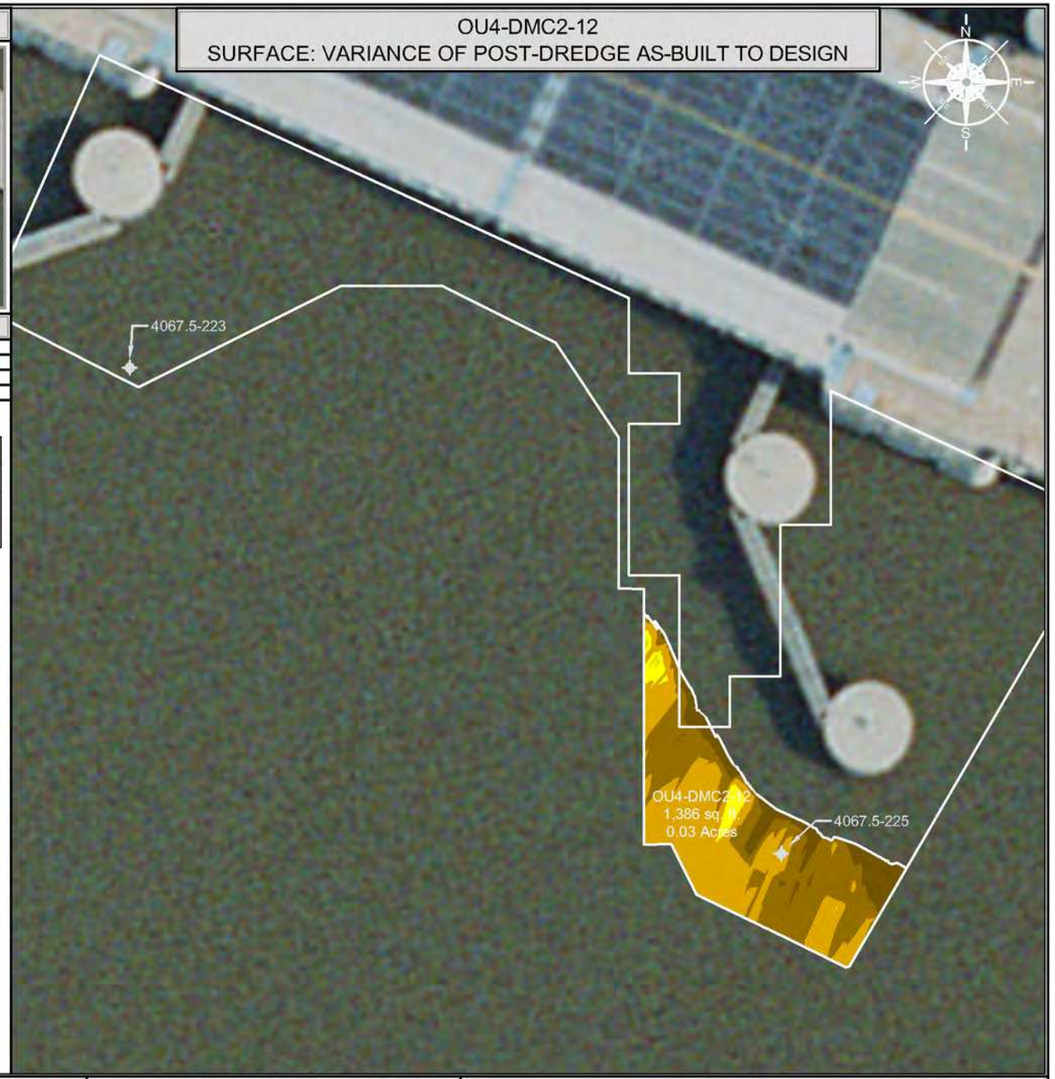
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	1,710 µg/kg (1.71 ppm)
0.5' - 1.0'	184 µg/kg (0.184 ppm)
1.0' - 1.5'	<25.3 µg/kg (<0.0253 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4067.5-223	254791.12	2485331.10
4067.5-225	254694.94	2485460.13

OU4-DMC2-12
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 30')

30 15 0 30 60

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 7-26-2018

DESIGN COLOR LEGEND

	MIN. EL.		MAX. EL.
	547.00'	-	548.00'
	548.00'	-	549.00'
	549.00'	-	550.00'
	550.00'	-	551.00'
	551.00'	-	552.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-DMC2-12-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-DMC2-12-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-DMC2-12-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 9-28-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF TWO SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 10-4-2018

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OU# - D# - #

OU# = OPERABLE UNIT; D# = DREDGE AREA; # = DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

		MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL		-2.19'	-	-1.00'	182.23
		-1.00'	-	-0.50'	551.51
		-0.50'	-	0.00'	599.11
ABOVE RAL		0.00'	-	0.25'	48.82
		0.25'	-	0.48'	4.40

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DMC2-12.dwg
DRAWN BY: DAVID.FRISQUE
DATE: September 28, 2018
LAST REVISED: November 30, 2018
CHECKED BY: REG

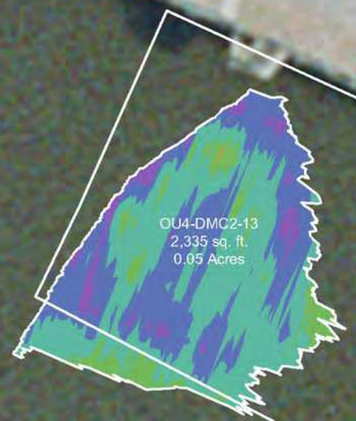
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-148

OU4-DMC2-12
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LOCAL\2\Hist Engineering\Dredge Files\2018\OU4 DMC2-12\DWG\Post Dredge\OU4 DMC2-12.dwg

OU4-DMC2-13
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

26.41	INITIAL RAL VOLUME
32.50	INITIAL OVERCUT VOLUME
58.91	RAL + OVERCUT VOLUME
47.40	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

25.55	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
29.52	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
55.07	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

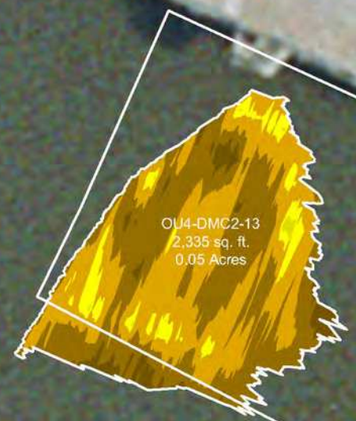
2018 AS-BUILT VOLUMES (CU. YD.)

52.99	TOTAL VOLUME DREDGED
24.89	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
0.66	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
10.85	OVERCUT VOLUME REMAINING
22.76	OVERCUT VOLUME DREDGED
5.34	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

2,335.09	AREA (SQ. FT.)
161.75	ABOVE DESIGN ELEVATION
2,173.34	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
4.19 "	AVERAGE DEPTH OF OVERCUT [1]
93	PERCENT COMPLETE [2]

OU4-DMC2-13
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 30')

30 15 0 30 60

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 7-10-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
551.00'	-	551.50'
551.50'	-	552.00'
552.00'	-	552.50'
552.50'	-	553.00'
553.00'	-	553.50'
553.50'	-	554.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.74'	-	-1.00'	120.85
BELOW RAL	-1.00'	-	-0.50'	1,046.25
BELOW RAL	-0.50'	-	0.00'	1,006.24
ABOVE RAL	0.00'	-	0.25'	152.87
ABOVE RAL	0.25'	-	0.46'	8.87

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DMC2-13.dwg
DRAWN BY: DAVID.FRISQUE
DATE: July 23, 2018
LAST REVISED: November 30, 2018
CHECKED BY: REG

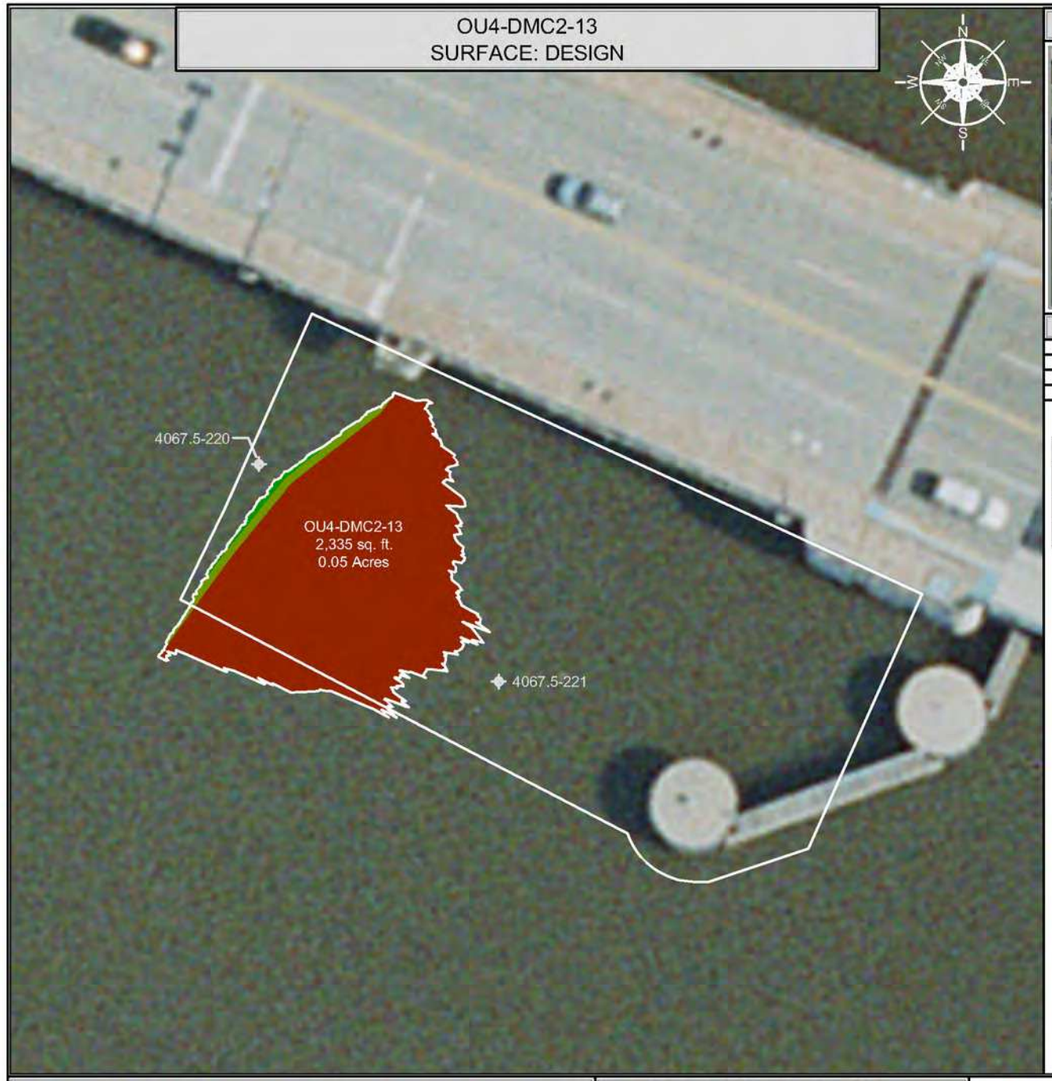
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-149

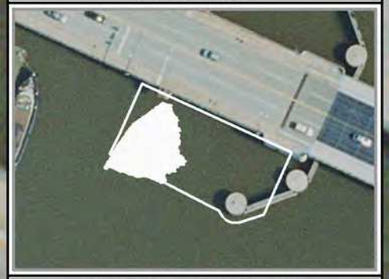
OU4-DMC2-13
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\ALLOC\42\Field Engineering\gDredge Files\2018\OU4 DMC2-13\DWG\Post Dredge\OU4 DMC2-13.dwg

OU4-DMC2-13
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	792 µg/kg (0.792 ppm)
0.5' - 1.0'	<25.4 µg/kg (<0.0254 ppm)
1.0' - 1.5'	<25.3 µg/kg (<0.0253 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4067.5-220	254878.76	2485193.93
4067.5-221	254835.71	2485241.34

OU4-DMC2-13
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 30')

30 15 0 30 60

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 7-10-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
553.00'	-	553.50'
553.50'	-	554.00'
554.00'	-	554.50'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-DMC2-13-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-DMC2-13-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-DMC2-13-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 9-28-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF TWO SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 10-4-2018

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OU# - D# - #
OPERABLE UNIT · DREDGE AREA · DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.74'	-	-1.00'	120.85
BELOW RAL	-1.00'	-	-0.50'	1,046.25
BELOW RAL	-0.50'	-	0.00'	1,006.24
ABOVE RAL	0.00'	-	0.25'	152.87
ABOVE RAL	0.25'	-	0.46'	8.87

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DMC2-13.dwg
DRAWN BY: DAVID.FRISQUE
DATE: July 23, 2018
LAST REVISED: November 30, 2018
CHECKED BY: REG

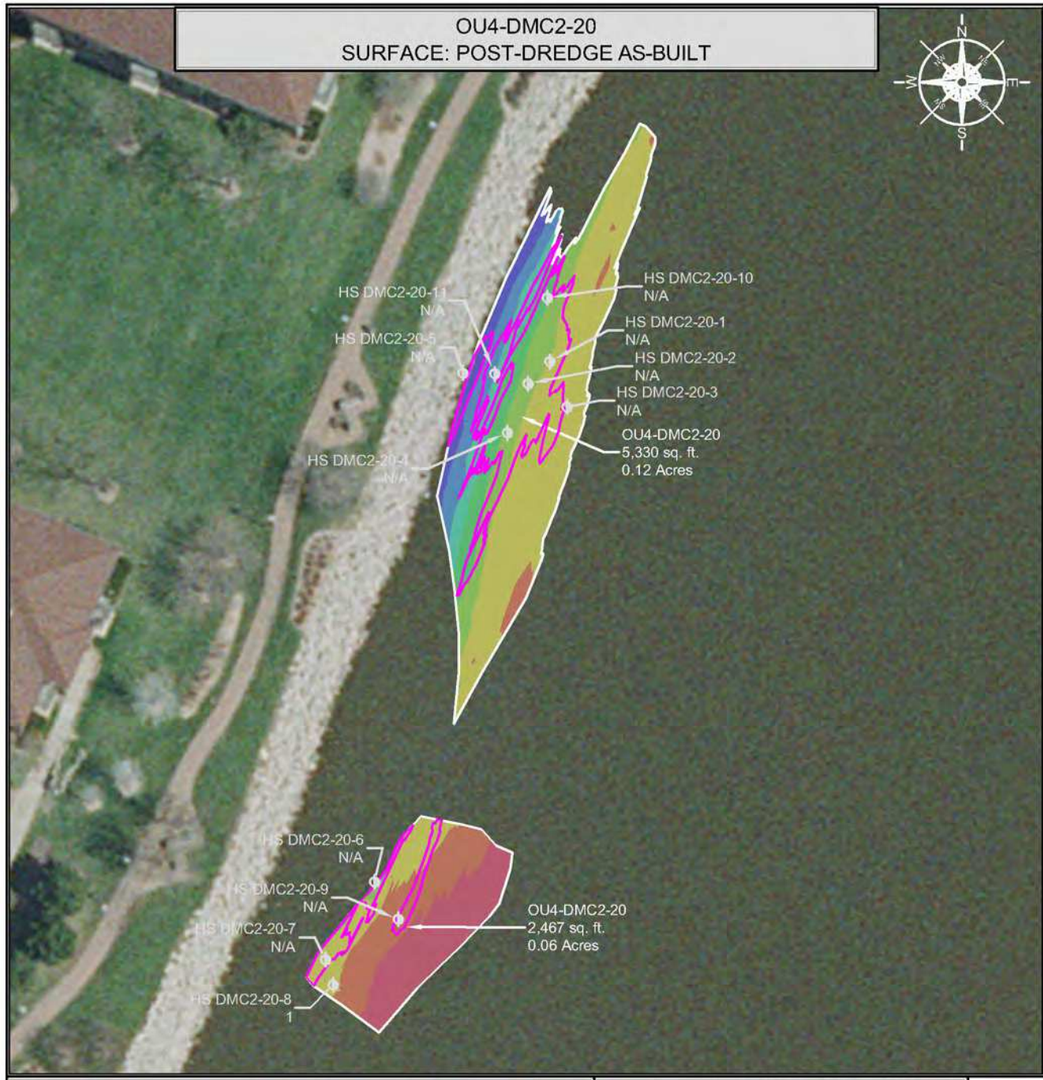
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-150

OU4-DMC2-13
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

P:\LCO\ACD\Field Engineering\2Dmdgs\Files\2018\OU4 DMC2 13\2DWG\Post Dredge\OU4 DMC2 13.dwg

OU4-DMC2-20
SURFACE: POST-DREDGE AS-BUILT



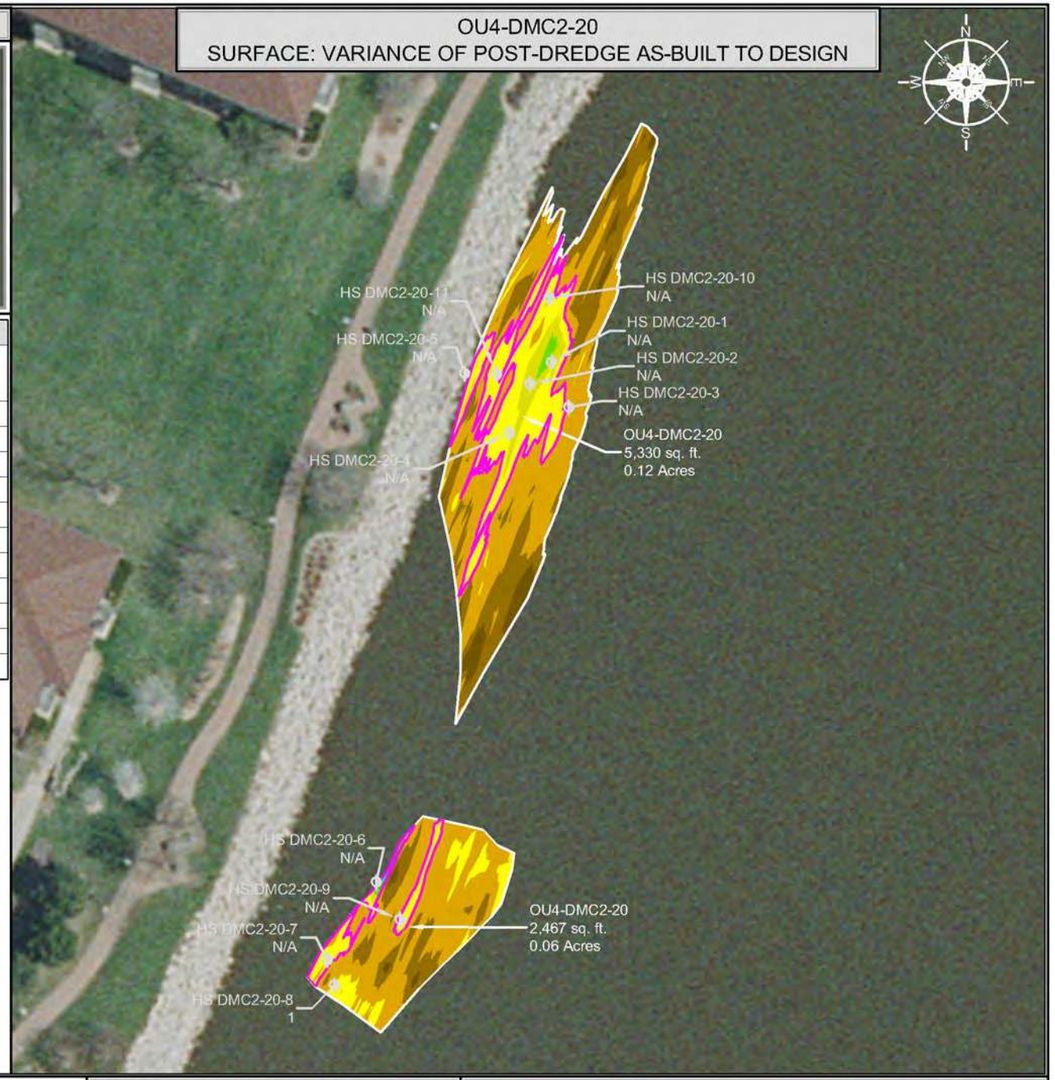
INDEX MAP



HIGH SUBGRADE SAMPLE AS-BUILT RESULTS			
SAMPLE ID	NORTHING	EASTING	THICKNESS OF SOFT SEDIMENT (FEET)
HS DMC2-20-1	255310.09	2485246.63	N/A
HS DMC2-20-2	255302.83	2485239.39	N/A
HS DMC2-20-3	255295.14	2485252.22	N/A
HS DMC2-20-4	255286.64	2485232.60	N/A
HS DMC2-20-5	255306.36	2485217.98	N/A
HS DMC2-20-6	255138.55	2485188.76	N/A
HS DMC2-20-7	255112.93	2485172.59	N/A
HS DMC2-20-8	255104.60	2485175.03	1
HS DMC2-20-9	255126.25	2485196.55	N/A
HS DMC2-20-10	255331.15	2485245.81	N/A
HS DMC2-20-11	255306.09	2485228.45	N/A

NR = NO RECOVERY
NA = NO CORE COLLECTION REQUIRED DUE TO POLING DEPTH

OU4-DMC2-20
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 50')

50 25 0 50 100

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-26-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
559.00'	-	561.00'
561.00'	-	563.00'
563.00'	-	565.00'
565.00'	-	567.00'
567.00'	-	569.00'
569.00'	-	571.00'
571.00'	-	573.00'
573.00'	-	575.00'
575.00'	-	577.00'

DRAWING NOTES

1. HIGH SUBGRADE SAMPLES AND POLING DATA WERE COLLECTED ON 10-31-2018 AND LOGGED ON 10-31-2018

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OU# - D# - #
OPERABLE UNIT | DREDGE AREA | DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.69'	-	-1.00'	269.81
BELOW RAL	-1.00'	-	-0.50'	1,662.93
BELOW RAL	-0.50'	-	0.00'	3,908.02
ABOVE RAL	0.00'	-	0.50'	1,657.77
ABOVE RAL	0.50'	-	1.00'	240.97
ABOVE RAL	1.00'	-	1.50'	44.49
ABOVE RAL	1.50'	-	2.00'	7.81
ABOVE RAL	2.00'	-	2.50'	4.81
ABOVE RAL	2.50'	-	2.68'	0.96

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DMC2-20.dwg
DRAWN BY: DAVID.FRISQUE
DATE: October 31, 2018
LAST REVISED: December 4, 2018
CHECKED BY: REG

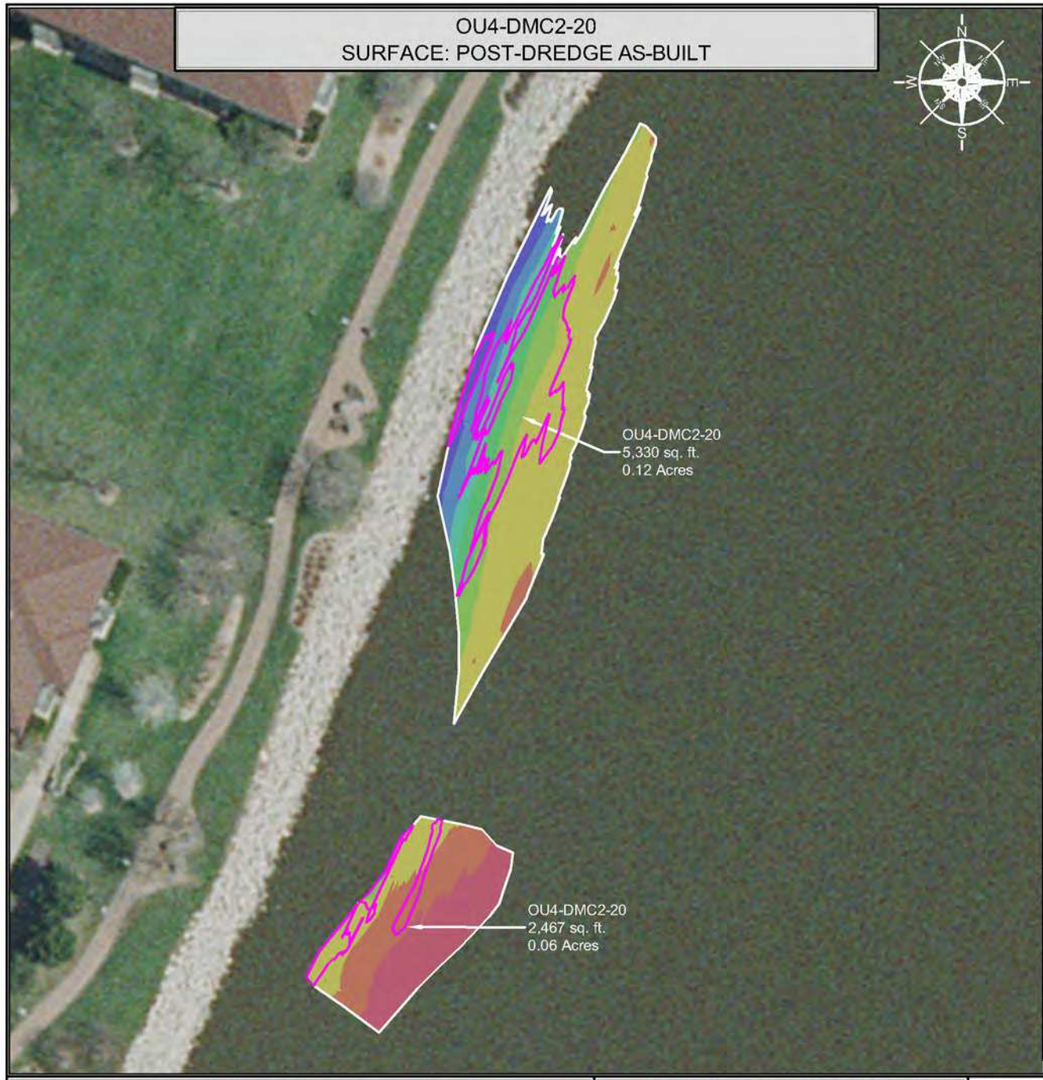
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-151

OU4-DMC2-20
PRIMARY DREDGE HIGH SUBGRADE RESULTS

F:\LC\CAD\Field Engineering\3Dmdps Files\2018\OU4 DMC2-20\DWG\Post Dredge\OU4-DMC2-20.dwg

OU4-DMC2-20
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

360.03	INITIAL RAL VOLUME
139.97	INITIAL OVERCUT VOLUME
500.00	RAL + OVERCUT VOLUME
408.17	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

362.34	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
140.67	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
503.01	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

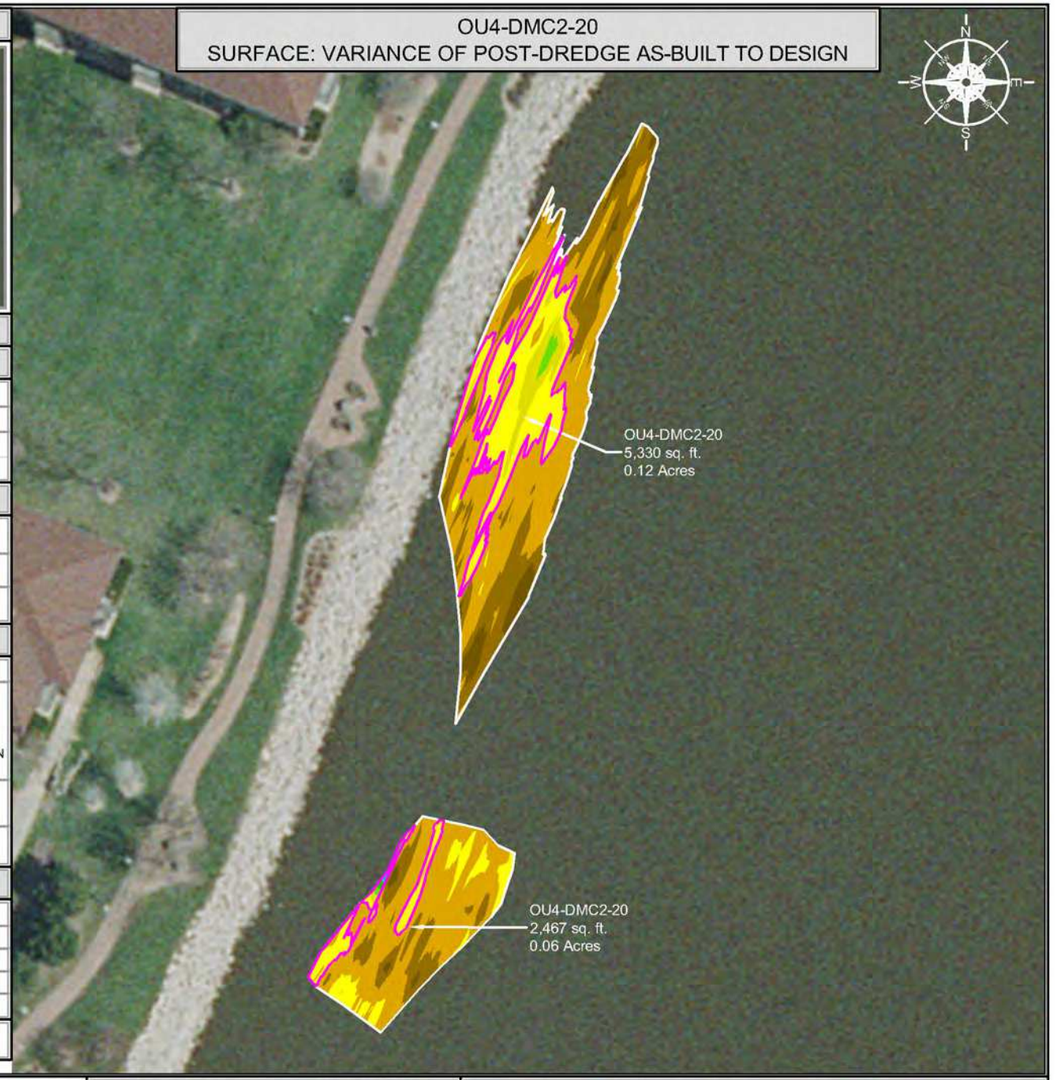
2018 AS-BUILT VOLUMES (CU. YD.)

431.71	TOTAL VOLUME DREDGED
342.66	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
17.70	CONFIRMED HIGH SUBGRADE VOLUME
1.52	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
72.61	OVERCUT VOLUME REMAINING
70.97	OVERCUT VOLUME DREDGED
18.08	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

7,797.57	AREA (SQ. FT.)
275.00	ABOVE DESIGN ELEVATION
5,840.76	AT OR BELOW DESIGN ELEVATION
1,681.81	CONFIRMED HIGH SUBGRADE
4.94 "	AVERAGE DEPTH OF OVERCUT [1]
96	PERCENT COMPLETE [2]

OU4-DMC2-20
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 50')

50 25 0 50 100

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-26-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
559.00'	-	561.00'
561.00'	-	563.00'
563.00'	-	565.00'
565.00'	-	567.00'
567.00'	-	569.00'
569.00'	-	571.00'
571.00'	-	573.00'
573.00'	-	575.00'
575.00'	-	577.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.69'	-	-1.00'	269.81
BELOW RAL	-1.00'	-	-0.50'	1,662.93
BELOW RAL	-0.50'	-	0.00'	3,908.02
ABOVE RAL	0.00'	-	0.50'	1,657.77
ABOVE RAL	0.50'	-	1.00'	240.97
ABOVE RAL	1.00'	-	1.50'	44.49
ABOVE RAL	1.50'	-	2.00'	7.81
ABOVE RAL	2.00'	-	2.50'	4.81
ABOVE RAL	2.50'	-	2.68'	0.96

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DMC2-20.dwg
DRAWN BY: DAVID.FRISQUE
DATE: October 31, 2018
LAST REVISED: December 4, 2018
CHECKED BY: REG

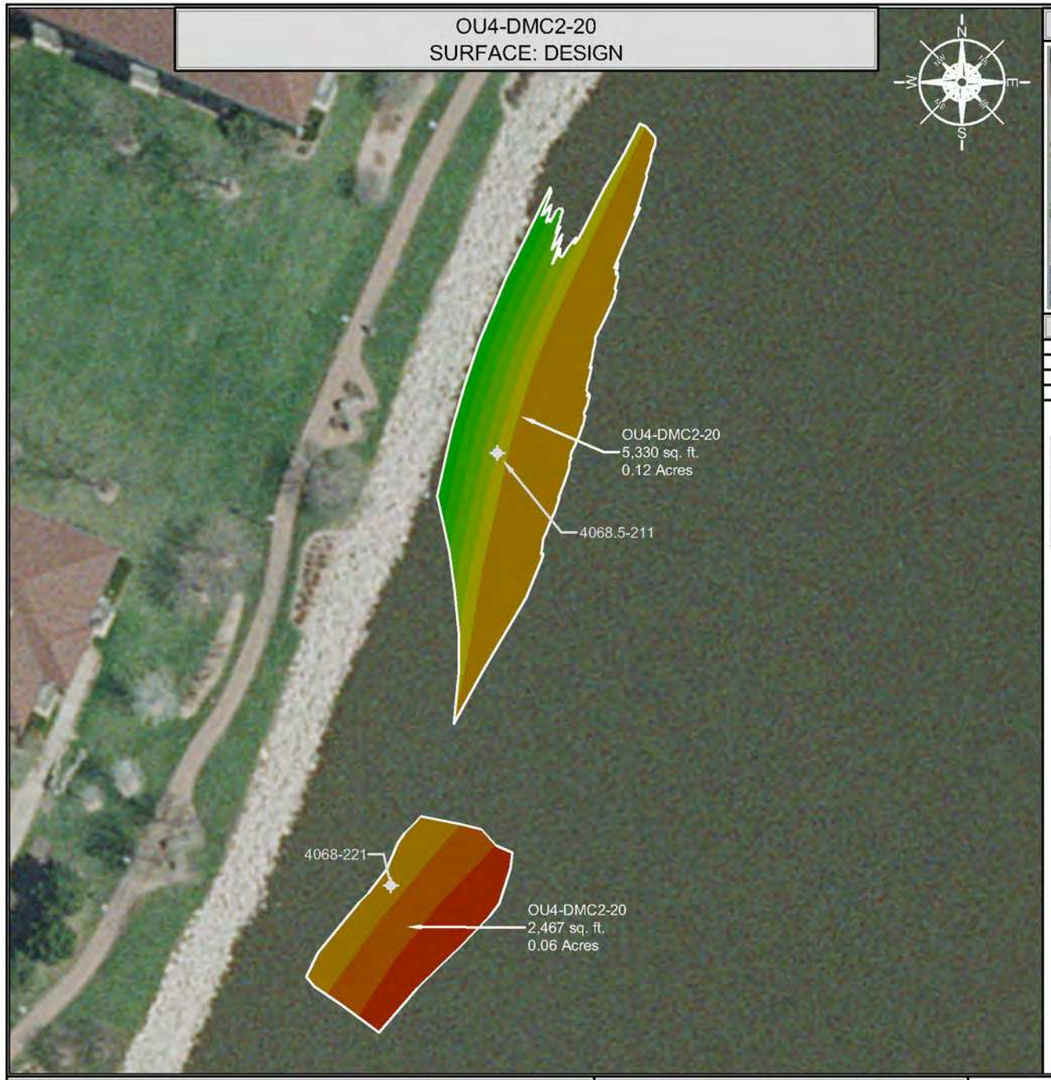
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-152

OU4-DMC2-20
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LLOC\LD\Field Engineering\Dredge Files\2018\OU4 DMC2-20\DWG\Post Dredge\OU4 DMC2-20.dwg

OU4-DMC2-20
SURFACE: DESIGN



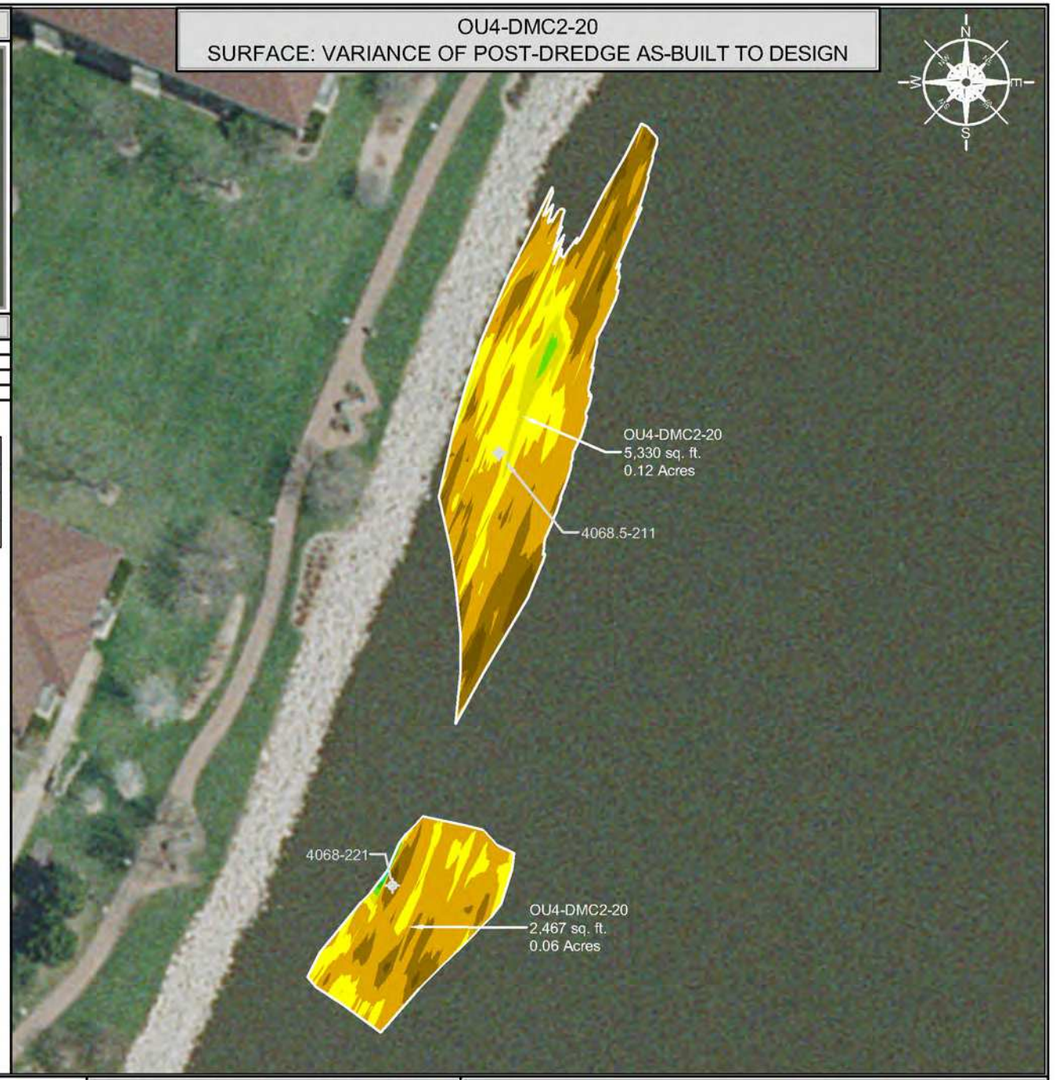
INDEX MAP



CONFIRMATION SAMPLE RESULTS	
INTERVAL	CONCENTRATION
0.0' - 0.5'	33.4 µg/kg (0.0334 ppm)
0.5' - 1.0'	469 µg/kg (0.469 ppm)
1.0' - 1.5'	140 µg/kg (0.14 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS		
SAMPLE ID	NORTHING	EASTING
4068-221	255137.40	2485194.09
4068.5-211	255280.03	2485229.33

OU4-DMC2-20
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 50')

50 25 0 50 100

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-26-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
559.00'	-	561.00'
561.00'	-	563.00'
563.00'	-	565.00'
565.00'	-	567.00'
567.00'	-	569.00'
569.00'	-	571.00'
571.00'	-	573.00'
573.00'	-	575.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-DMC2-20-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-DMC2-20-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-DMC2-20-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 11-15-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF TWO SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 12-3-2018

THIS DOCUMENT IS THE PROPERTY OF LOWER FOX RIVER REMEDIATION LLC PREPARED BY TETRA TECH EC, INC. (TtEC), AND IS PROVIDED UPON THE CONDITION THAT IT WILL NOT BE REPRODUCED, COPIED, OR ISSUED TO A THIRD PARTY. IT IS PROVIDED TO BE USED SOLELY FOR THE ORIGINAL INTENDED PURPOSE, AND SOLELY FOR THE EXECUTION OR REVIEW OF THE ENGINEERING AND CONSTRUCTION OF THE SUBJECT PROJECT.

OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.69'	-	-1.00'	269.81
BELOW RAL	-1.00'	-	-0.50'	1,662.93
BELOW RAL	-0.50'	-	0.00'	3,908.02
ABOVE RAL	0.00'	-	0.50'	1,657.77
ABOVE RAL	0.50'	-	1.00'	240.97
ABOVE RAL	1.00'	-	1.50'	44.49
ABOVE RAL	1.50'	-	2.00'	7.81
ABOVE RAL	2.00'	-	2.50'	4.81
ABOVE RAL	2.50'	-	2.68'	0.96

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DMC2-20.dwg
DRAWN BY: DAVID.FRISQUE
DATE: October 31, 2018
LAST REVISED: December 4, 2018
CHECKED BY: REG

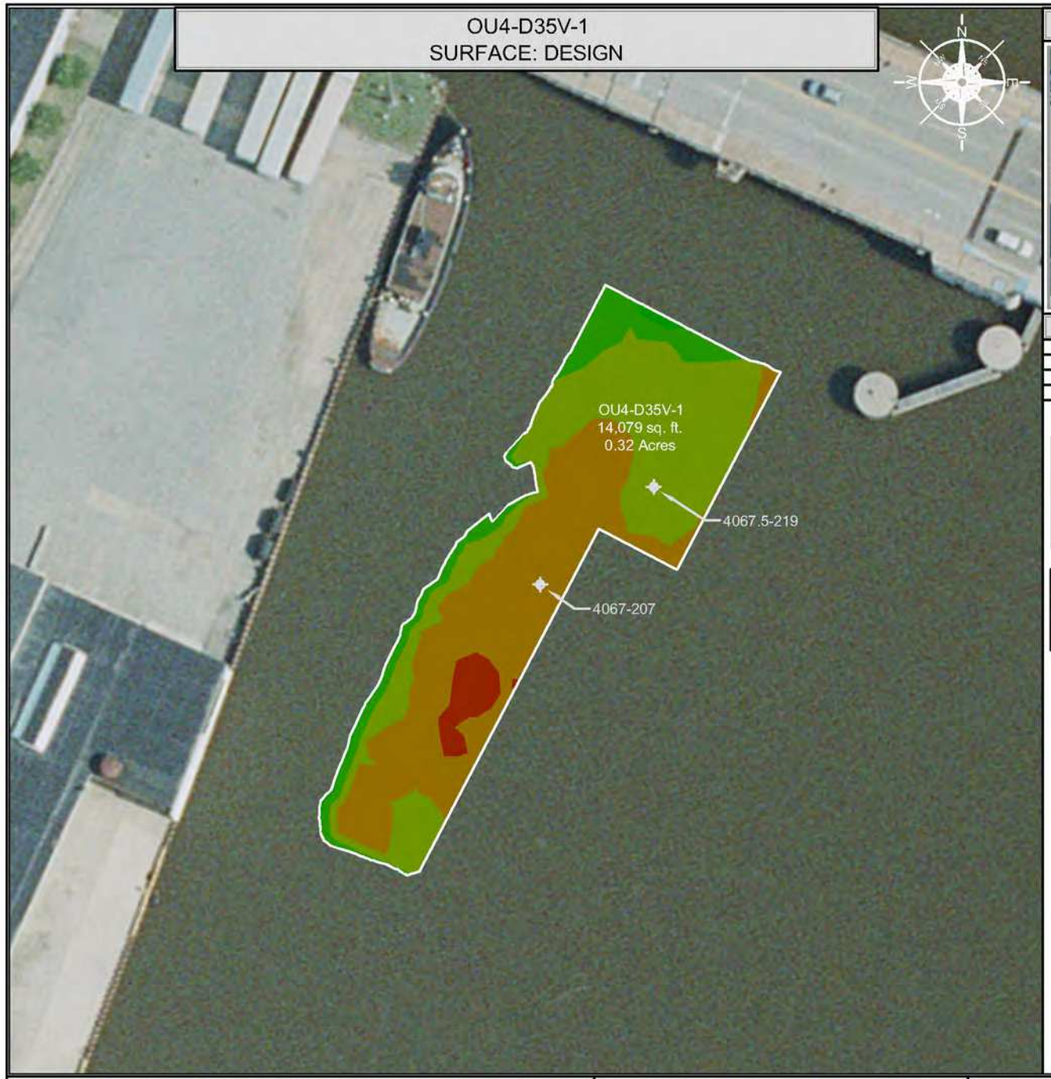
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-153

OU4-DMC2-20
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LCAD\Field Engineering\Dredge Files\2018\OU4 (DMC2-20)\DWG\Post Dredge\OU4 (DMC2-20).dwg

OU4-D35V-1
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	5,700 µg/kg (5.7 ppm)
0.5' - 1.0'	896 µg/kg (0.896 ppm)
1.0' - 1.5'	829 µg/kg (0.829 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4067-207	254736.33	2485147.13
4067.5-219	254774.98	2485192.04

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION
4067.5-219	A: 5,970 µg/kg (5.97) ppm) D: <25.3 µg/kg (<0.0253) ppm) B: 1,480 µg/kg (1.48) ppm) C: 1,000 µg/kg (1) ppm)

OU4-D35V-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-18-D35V-1-4067.5-219-A
2. TTFR-18-D35V-1-4067.5-219-B
3. TTFR-18-D35V-1-4067.5-219-C
4. TTFR-18-D35V-1-4067.5-219-D

SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-9-2016

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-D35V-1-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-D35V-1-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-D35V-1-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 9-27-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF TWO SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 10-3-2018 and 11-27-2018, and 11-29-2018

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-4.47'	-	-1.00'	4,030.53
BELOW RAL	-1.00'	-	-0.50'	6,553.98
BELOW RAL	-0.50'	-	0.00'	3,283.80
ABOVE RAL	0.00'	-	0.25'	149.22
ABOVE RAL	0.25'	-	0.50'	27.67
ABOVE RAL	0.50'	-	0.75'	20.53
ABOVE RAL	0.75'	-	1.00'	13.21

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35V-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: November 18, 2016
LAST REVISED: December 4, 2018
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-154

OU4-D35V-1
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

P:\LOCAL\Field Engineering\Dredge Files\2018\OU4 D35V\DWG\Post Dredge\OU4 D35V-1.dwg

OU4-D35X-1
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	3,770 µg/kg (3.77 ppm)
0.5' - 1.0'	2,290 µg/kg (2.29 ppm)
1.0' - 1.5'	1,820 µg/kg (1.82 ppm)

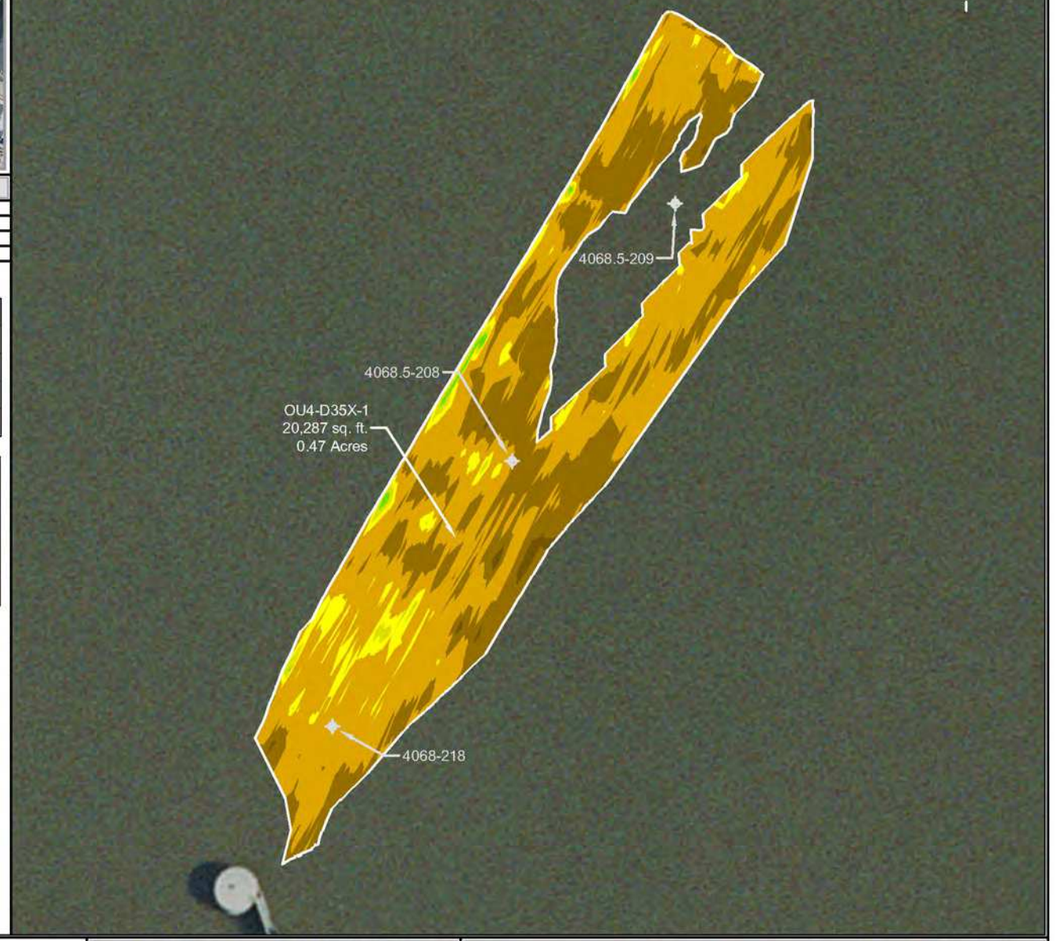
CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4068-218	255044.91	2485397.04
4068.5-209	255251.80	2485532.67
4068.5-208	255149.89	2485468.07

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION
4068.5-208	A: 3,340 µg/kg (3.34) ppm) D: 2,320 µg/kg (2.32) ppm) B: 179 µg/kg (0.179) ppm) E: 2,340 µg/kg (2.34) ppm) C: 4,500 µg/kg (4.5) ppm) RVTF: <26.3 µg/kg (<0.0252) ppm)
4068.5-209	A: 5,150 µg/kg (5.15) ppm) D: <25.1 µg/kg (<0.0251) ppm) B: 5,880 µg/kg (5.88) ppm) C: <25.1 µg/kg (<0.0251) ppm)
4068-218	A: 3,060 µg/kg (3.06) ppm) D: <25.0 µg/kg (<0.025) ppm) B: <25.4 µg/kg (<0.0254) ppm) C: <25.2 µg/kg (<0.0252) ppm)

OU4-D35X-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-17-D35X-1-4068.5-208-A
2. TTFR-17-D35X-1-4068.5-208-B
3. TTFR-17-D35X-1-4068.5-208-C
4. TTFR-17-D35X-1-4068.5-208-D
5. TTFR-17-D35X-1-4068.5-208-E
6. TTFR-17-D35X-1-4068.5-208RVT-F
7. TTFR-17-D35X-1-4068.5-209-A
8. TTFR-17-D35X-1-4068.5-209-B
9. TTFR-17-D35X-1-4068.5-209-C
10. TTFR-17-D35X-1-4068.5-209-D
11. TTFR-17-D35X-1-4068-218-A
12. TTFR-17-D35X-1-4068-218-B
13. TTFR-17-D35X-1-4068-218-C
14. TTFR-17-D35X-1-4068-218-D

SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 8-16-2017

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-17-D35X-1-A
2. 0.5' - 1.0' SAMPLE ID TTFR-17-D35X-1-B
3. 1.0' - 1.5' SAMPLE ID TTFR-17-D35X-1-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 11-6-2017 and 11-28-2017
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF THREE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 11-10-2017, 11-16-2017, 11-20-2017, and 12-1-2017

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT
DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.34'	-	-1.00'	152.69
BELOW RAL	-1.00'	-	-0.50'	7,022.72
BELOW RAL	-0.50'	-	0.00'	11,729.35
ABOVE RAL	0.00'	-	0.25'	1,106.77
ABOVE RAL	0.25'	-	0.50'	215.34
ABOVE RAL	0.50'	-	0.75'	59.61
ABOVE RAL	0.75'	-	0.80'	0.15

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35X-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: August 30, 2017
LAST REVISED: December 4, 2018
CHECKED BY: REG

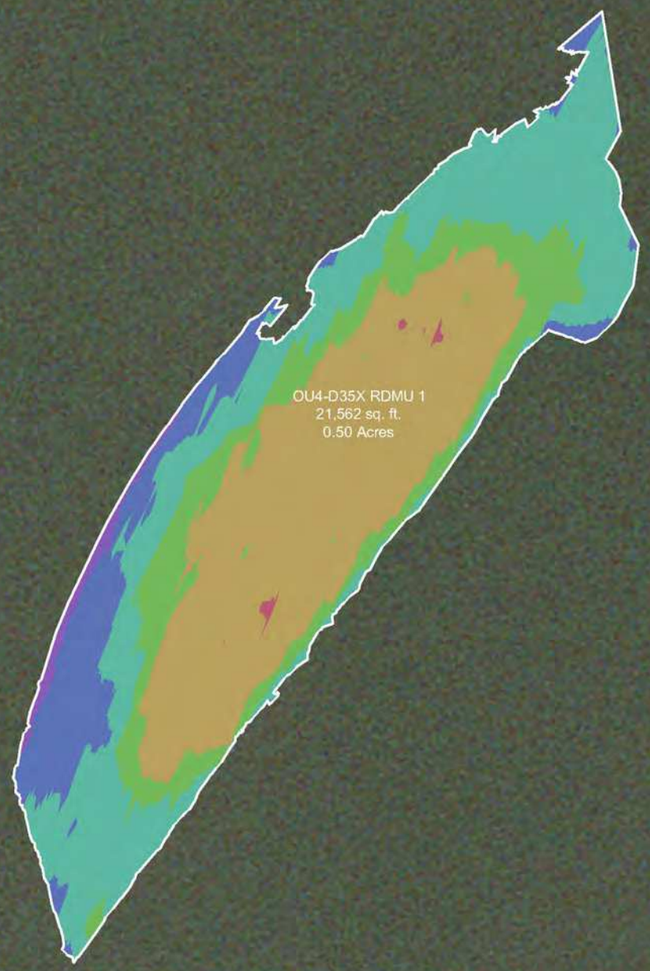
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-155

OU4-D35X-1
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LLC\42\Hist Engineering\Dredge Files\2017\OU4-D35X\GIS\Post Dredge\OU4-D35X-1.dwg

OU4-D35X RDMU 1
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

1,071.62	INITIAL RAL VOLUME
389.51	INITIAL OVERCUT VOLUME
1,461.13	RAL + OVERCUT VOLUME
1,381.33	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

1,378.13	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
398.09	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
1,776.22	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

2018 AS-BUILT VOLUMES (CU. YD.)

1,823.56	TOTAL VOLUME DREDGED
1,375.75	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
2.38	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
77.42	OVERCUT VOLUME REMAINING
320.71	OVERCUT VOLUME DREDGED
127.10	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

21,562.38	AREA (SQ. FT.)
671.37	ABOVE DESIGN ELEVATION
20,891.01	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
6.95 "	AVERAGE DEPTH OF OVERCUT [1]
97	PERCENT COMPLETE [2]

OU4-D35X RDMU 1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 50')

50 25 0 50 100

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-8-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT
DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.26'	-	-1.00'	1,847.57
BELOW RAL	-1.00'	-	-0.50'	9,822.14
BELOW RAL	-0.50'	-	0.00'	9,221.30
ABOVE RAL	0.00'	-	0.25'	619.64
ABOVE RAL	0.25'	-	0.46'	51.51

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35X RDMU 1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: November 9, 2018
LAST REVISED: December 4, 2018
CHECKED BY: REG

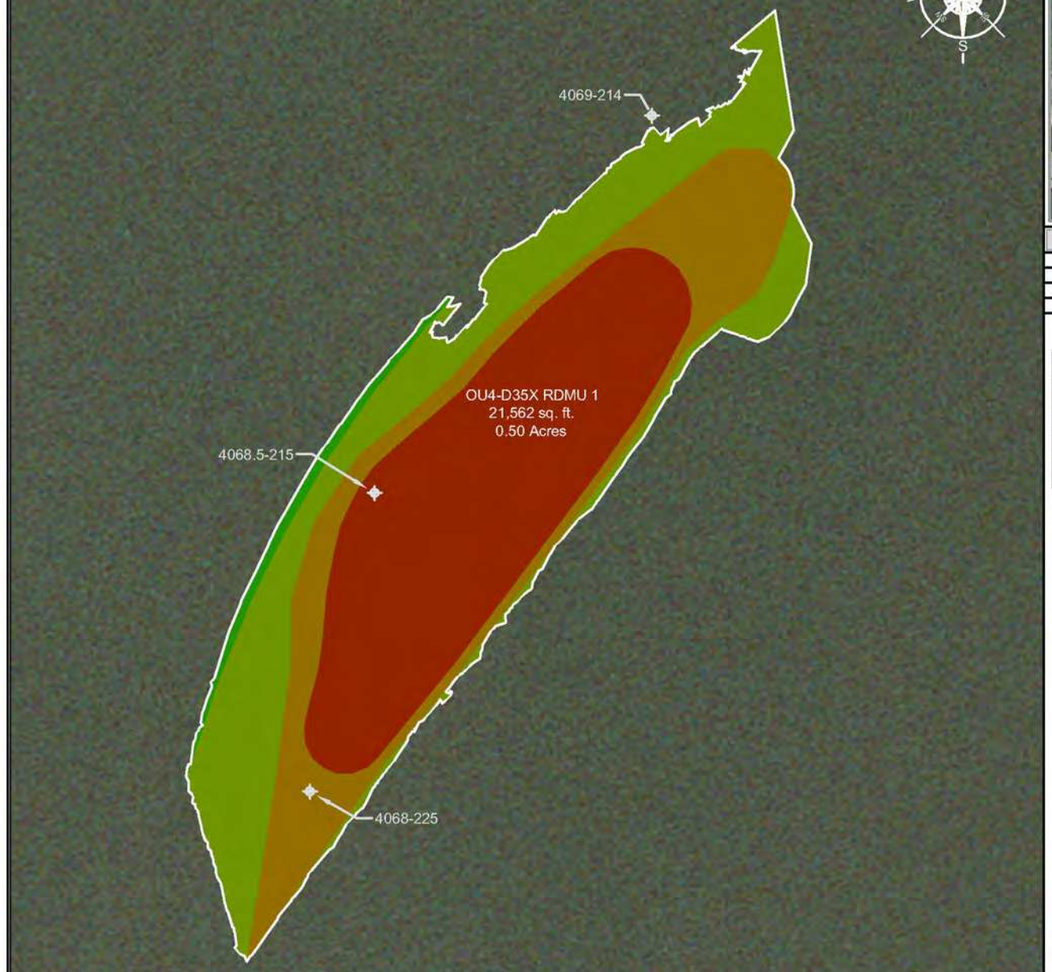
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-156

OU4-D35X RDMU 1
1st RESIDUAL DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\ALL CAD\Field Engineering\Dredge Files\2018\OU4-D35X RDMU\DWG\Post Dredge\OU4 D35X RDMU 1.dwg

OU4-D35X RDMU 1
SURFACE: DESIGN



INDEX MAP



CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	4,000 µg/kg (4 ppm)
0.5' - 1.0'	1,590 µg/kg (1.59 ppm)
1.0' - 1.5'	<25.2 µg/kg (<0.0252 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4068-225	255059.20	2485422.38
4068.5-215	255157.71	2485443.69
4069-214	255282.14	2485535.24

OU4-D35X RDMU 1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 50')

50 25 0 50 100

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-8-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-D35X-1-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-D35X-1-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-D35X-1-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 11-16-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF THREE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 12-3-2018

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OU# - D# - #
- OU# — OPERABLE UNIT
- D# — DREDGE AREA
- # — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.26'	-	-1.00'	1,847.57
BELOW RAL	-1.00'	-	-0.50'	9,822.14
BELOW RAL	-0.50'	-	0.00'	9,221.30
ABOVE RAL	0.00'	-	0.25'	619.64
ABOVE RAL	0.25'	-	0.46'	51.51

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

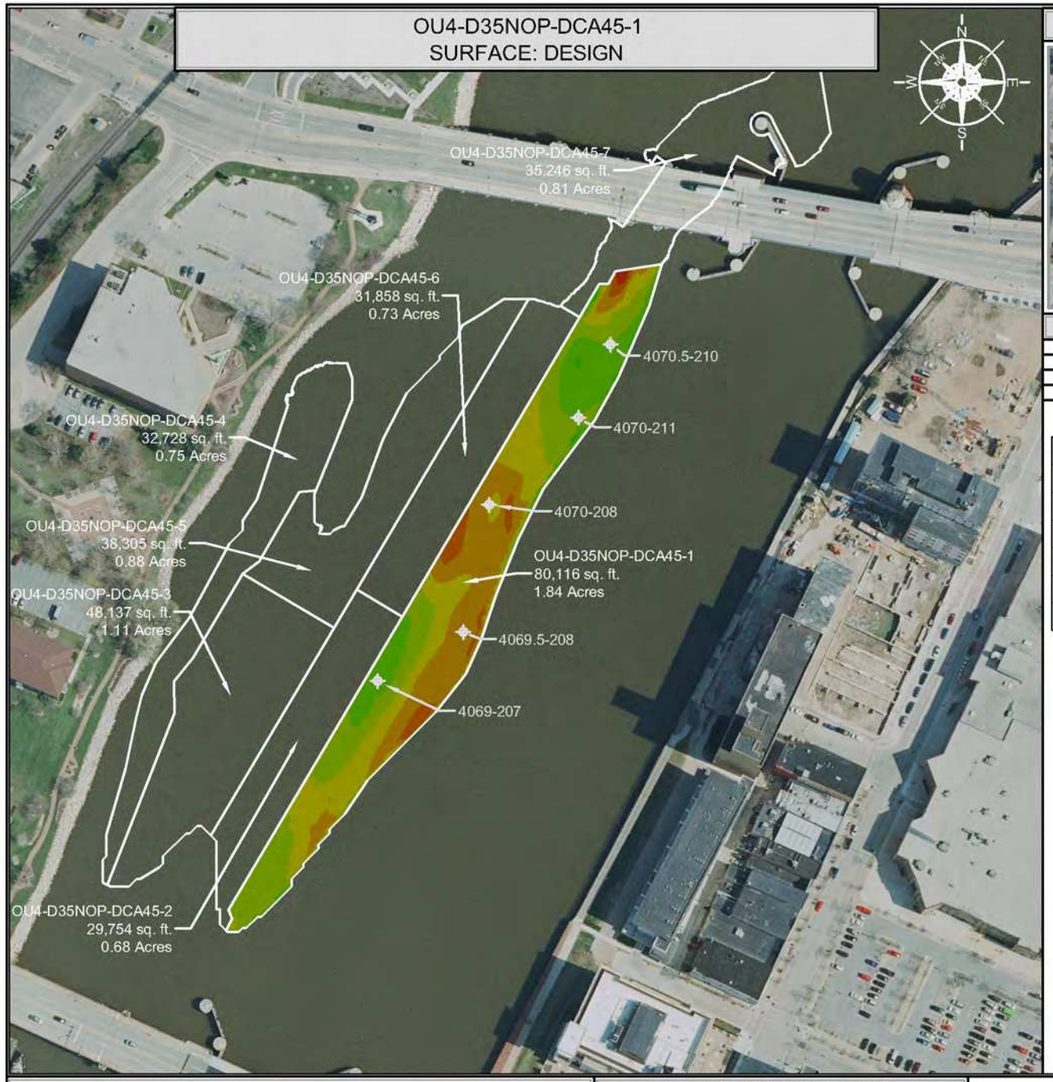
CAD FILE: OU4-D35X RDMU 1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: November 9, 2018
LAST REVISED: December 4, 2018
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

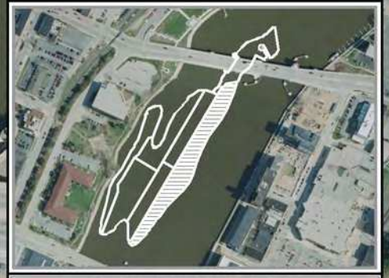
FIGURE 4-157

OU4-D35X RDMU 1
1st RESIDUAL DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LOCAD\Field Engineering\Design Files\2018\OU4-D35X RDMU\NEW\Post Dredge\OU4-D35X RDMU 1.dwg



INDEX MAP

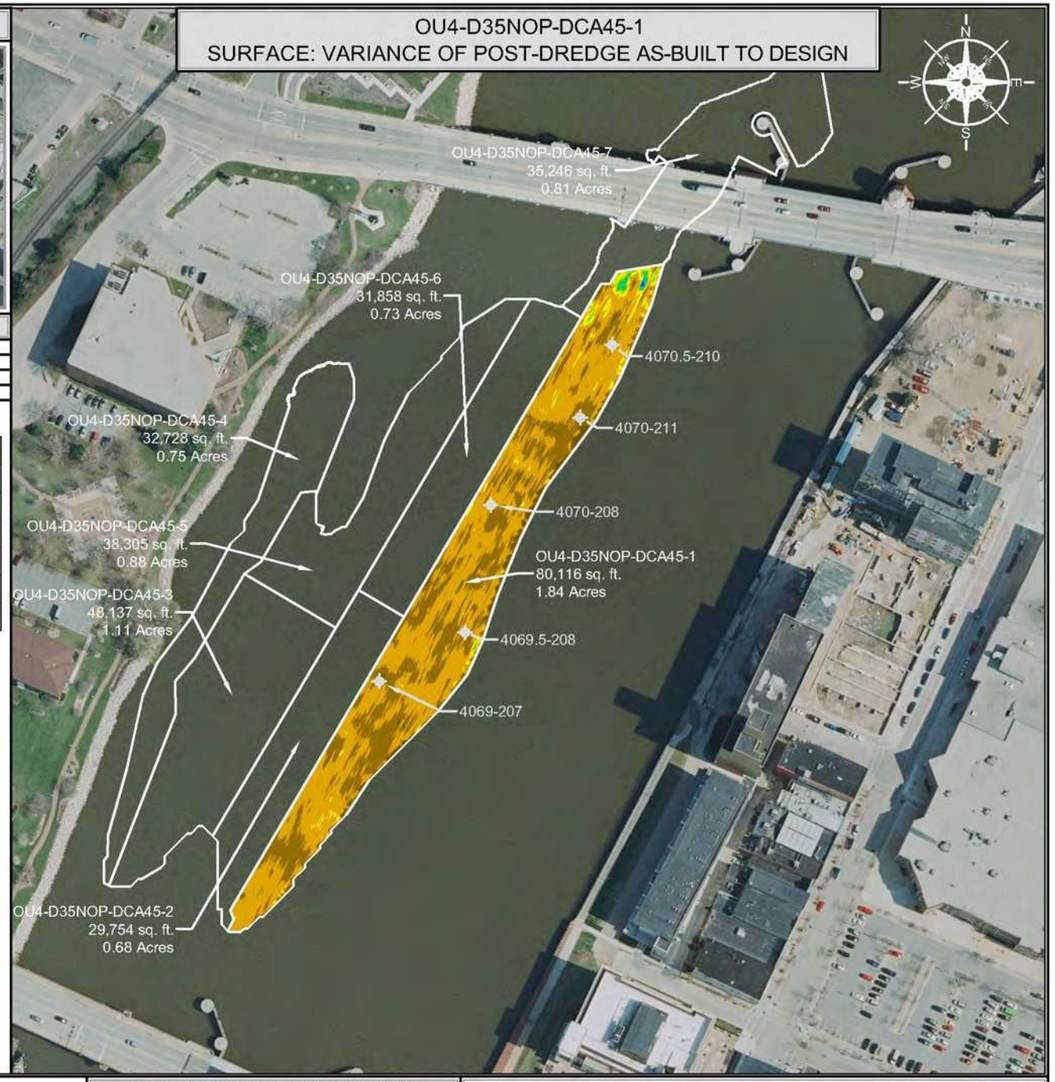


CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	1,500 µg/kg (1.5 ppm)
0.5' - 1.0'	1,180 µg/kg (1.18 ppm)
1.0' - 1.5'	418 µg/kg (0.418 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4069-207	255408.36	2485586.11
4069.5-208	255472.81	2485699.34
4070-211	255755.94	2485851.34
4070-208	255640.95	2485733.34
4070.5-210	255852.15	2485893.52



SCALE (1" = 200')

200 100 0 200 400

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-29-2015

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-17-D35NOP-DCA45-1-A
2. 0.5' - 1.0' SAMPLE ID TTFR-17-D35NOP-DCA45-1-B
3. 1.0' - 1.5' SAMPLE ID TTFR-17-D35NOP-DCA45-1-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 11-29-2017
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF FIVE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 12-6-2017

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.43'	-	-1.00'	2,143.36
BELOW RAL	-1.00'	-	-0.50'	27,913.63
BELOW RAL	-0.50'	-	0.00'	47,144.26
ABOVE RAL	0.00'	-	0.25'	1,659.53
ABOVE RAL	0.25'	-	0.50'	593.29
ABOVE RAL	0.50'	-	0.75'	319.64
ABOVE RAL	0.75'	-	1.00'	176.49
ABOVE RAL	1.00'	-	1.25'	101.58
ABOVE RAL	1.25'	-	1.50'	41.03
ABOVE RAL	1.50'	-	1.75'	17.98
ABOVE RAL	1.75'	-	1.90'	3.67

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35NOP-DCA45-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: July 1, 2016
LAST REVISED: December 5, 2018
CHECKED BY: REG

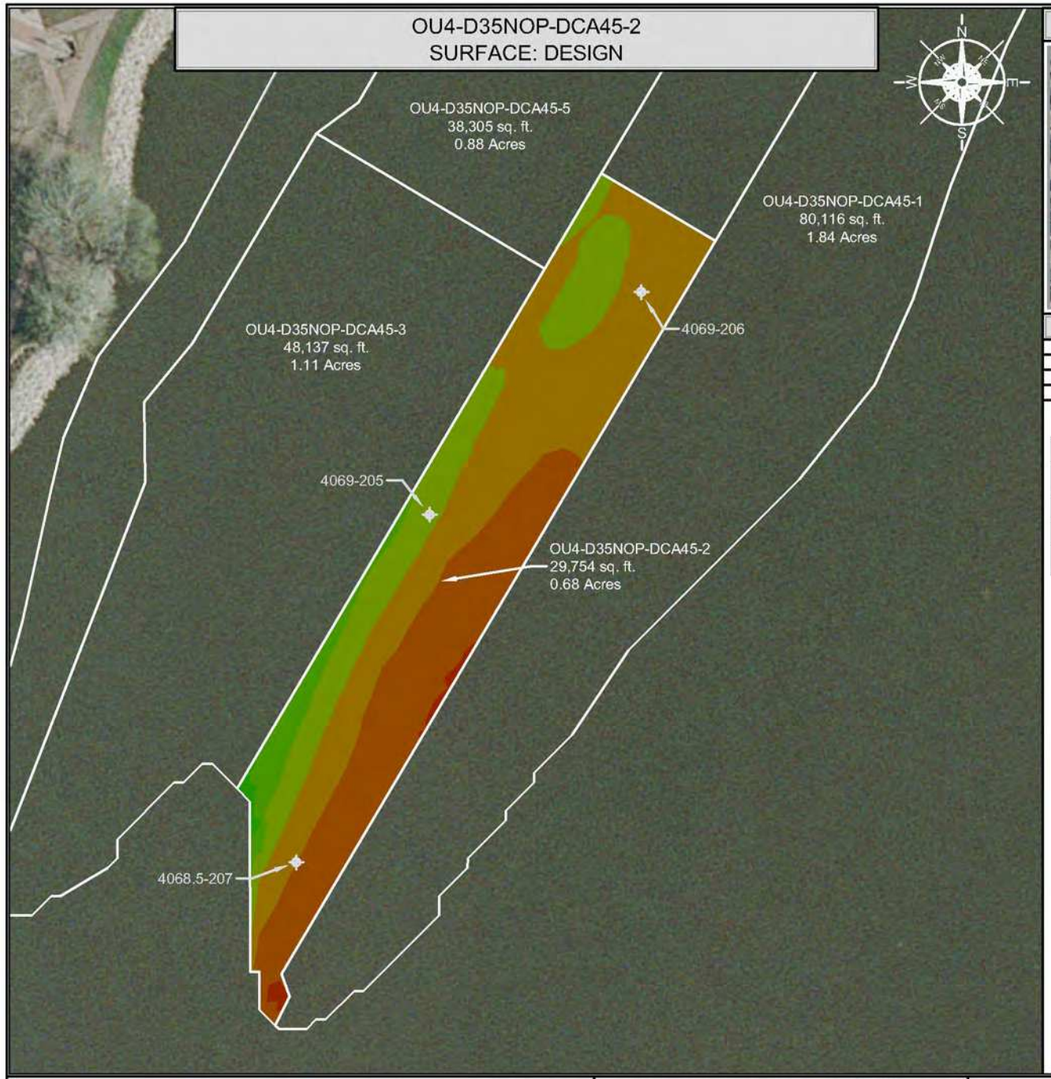
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-158

OU4-D35NOP-DCA45-1
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LOCAD\Fitzgerald Engineering\3Dmdge Files\2016\OU4 D35NOP-DCA45\OU4Post Dredge\OU4-D35NOP-DCA45-1.dwg

OU4-D35NOP-DCA45-2
SURFACE: DESIGN



INDEX MAP



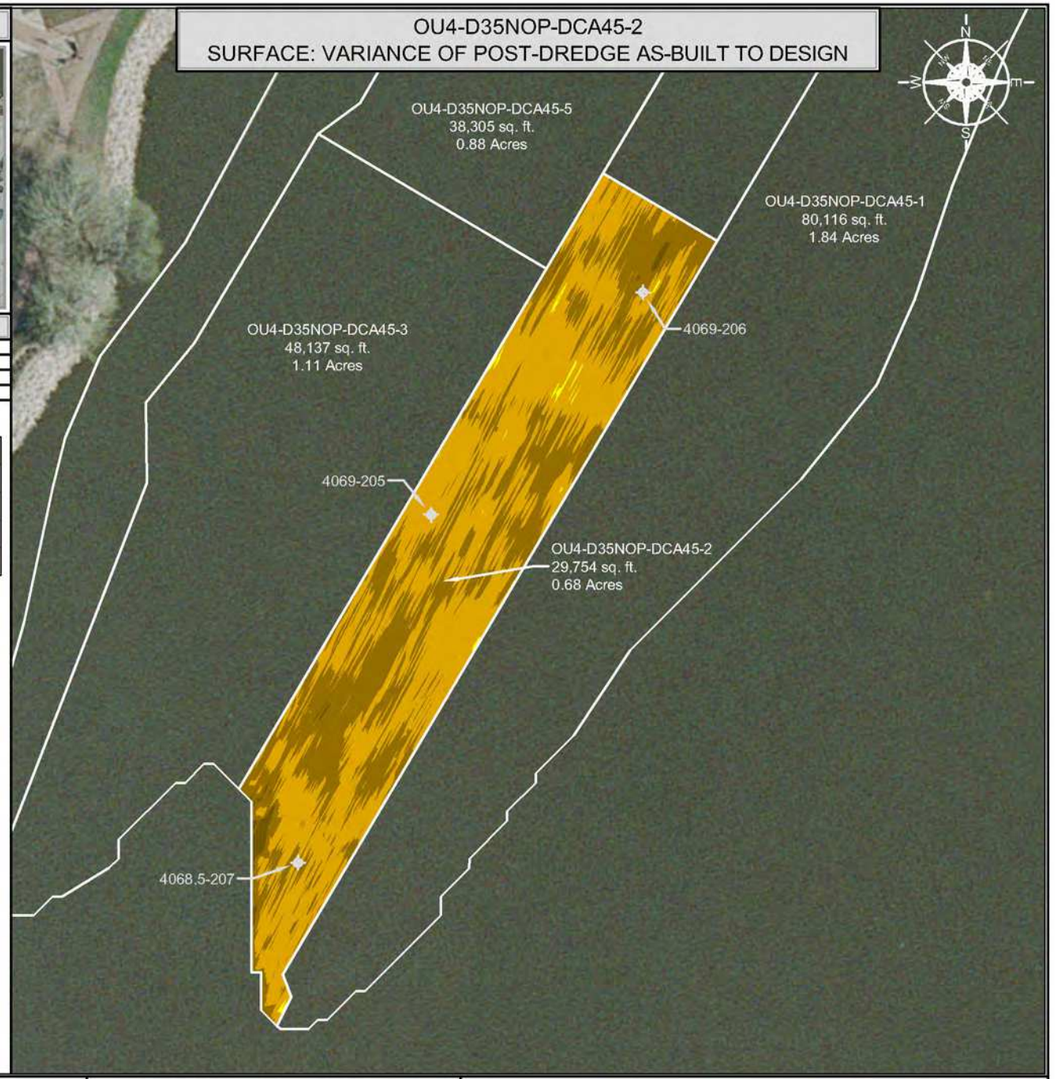
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	1,220 µg/kg (1.22 ppm)
0.5' - 1.0'	254 µg/kg (0.254 ppm)
1.0' - 1.5'	<25.3 µg/kg (<0.0253 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4068.5-207	255165.23	2485397.50
4069-206	255466.21	2485579.61
4069-205	255348.77	2485467.84

OU4-D35NOP-DCA45-2
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 80')

80 40 0 80 160

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-24-2016

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-17-D35NOP-DCA45-2-A
2. 0.5' - 1.0' SAMPLE ID TTFR-17-D35NOP-DCA45-2-B
3. 1.0' - 1.5' SAMPLE ID TTFR-17-D35NOP-DCA45-2-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 11-7-2017
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF THREE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 11-10-2017

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OU# - D# - #
OPERABLE UNIT · DREDGE AREA · DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.82'	-	-1.00'	337.31
BELOW RAL	-1.00'	-	-0.50'	11,824.61
BELOW RAL	-0.50'	-	0.00'	17,453.46
ABOVE RAL	0.00'	-	0.25'	134.10
ABOVE RAL	0.25'	-	0.40'	4.38

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

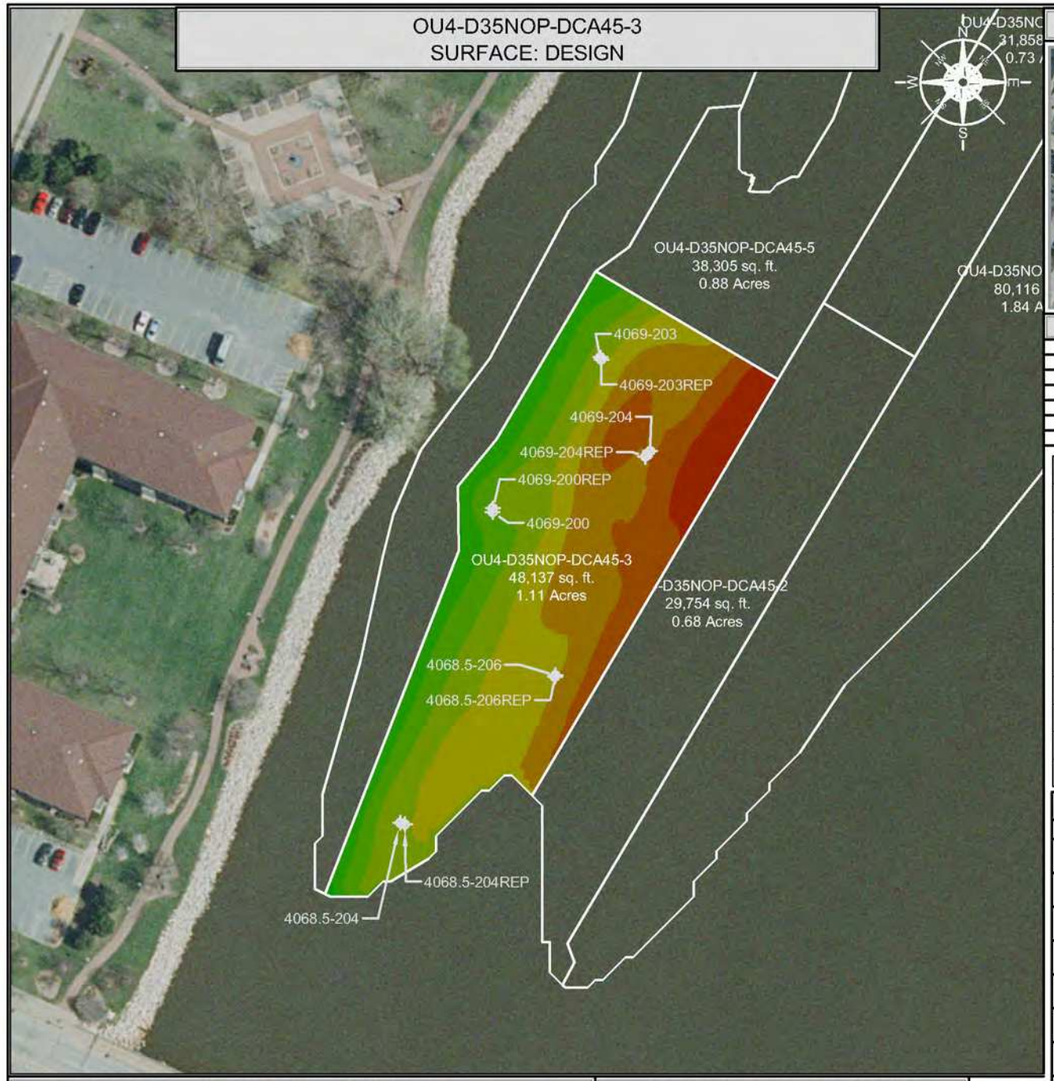
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DRAWN BY: DAVID.FRISQUE
DATE: June 27, 2016
LAST REVISED: December 5, 2018
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

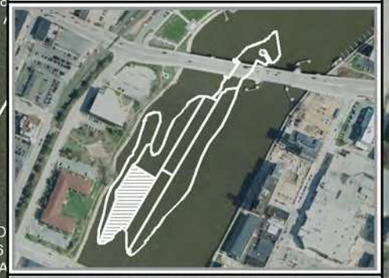
FIGURE 4-159

OU4-D35NOP-DCA45-2
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LLC\OU4\Fig4-2\Engineering\Design Files\2016\OU4-D35NOP-DCA45\GIS\Post Design\OU4-D35NOP-DCA45-2.dwg



INDEX MAP



CONFIRMATION SAMPLE RESULTS

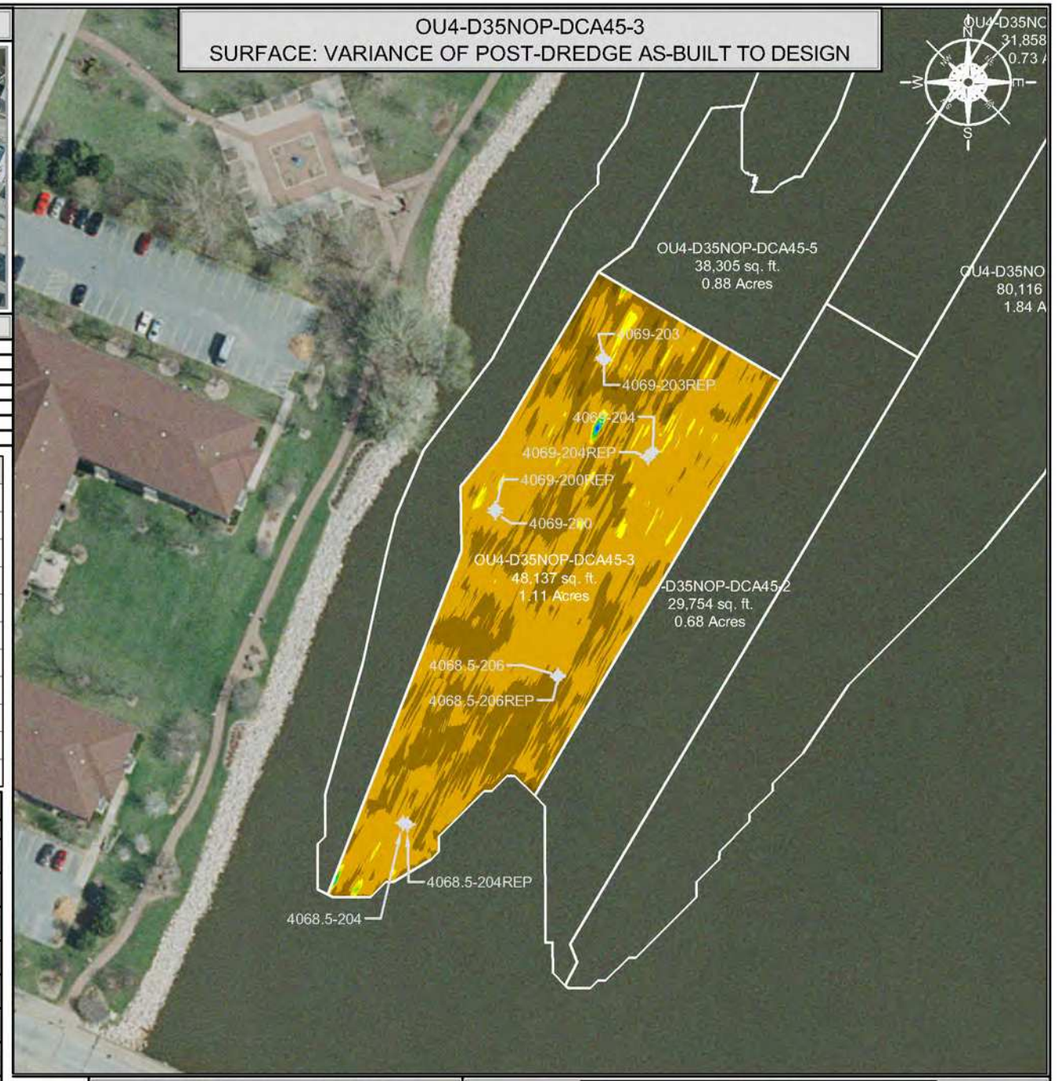
INTERVAL	CONCENTRATION
0.0' - 0.5'	6,120 µg/kg (6.12 ppm)
0.5' - 1.0'	7,470 µg/kg (7.47 ppm)
1.0' - 1.5'	3,560 µg/kg (3.56 ppm)
0.0' - 0.5' REP	2,760 µg/kg (2.76 ppm)
0.5' - 1.0' REP	6,620 µg/kg (6.62 ppm)
1.0' - 1.5' REP	2,560 µg/kg (2.56 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4068.5-204	255186.27	2485279.37
4068.5-204REP	255185.27	2485282.36
4068.5-206	255283.55	2485381.55
4068.5-206REP	255282.58	2485381.25
4069-200	255391.16	2485340.07
4069-200REP	255393.65	2485340.36
4069-203	255493.18	2485411.21
4069-203REP	255491.54	2485411.91
4069-204	255431.25	2485444.06
4069-204REP	255427.57	2485440.76

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION
4068.5-204	A: 1,960 µg/kg (1.96) ppm) D: 236 µg/kg (0.236) ppm) B: 4,820 µg/kg (4.82) ppm) E: <25.4 µg/kg (<0.0254) ppm) C: 744 µg/kg (0.744) ppm)
4068.5-206	A: 3,750 µg/kg (3.75) ppm) D: <25.4 µg/kg (<0.0254) ppm) B: 34.1 µg/kg (0.0341) ppm) C: <25.4 µg/kg (<0.0254) ppm)
4069-200	A: 555 µg/kg (0.555) ppm) D: <25.4 µg/kg (<0.0254) ppm) B: 820 µg/kg (0.82) ppm) C: 81.5 µg/kg (0.0815) ppm)
4069-203	A: 17,600 µg/kg (17.6) ppm) D: 2,840 µg/kg (2.84) ppm) B: 18,000 µg/kg (18) ppm) E: 1,020 µg/kg (1.02) ppm) C: 11,900 µg/kg (11.9) ppm)
4069-203RVT	F: 667 µg/kg (0.667) ppm) J: 207 µg/kg (0.207) ppm) G: 840 µg/kg (0.84) ppm) H: 311 µg/kg (0.311) ppm)
4069-203RVT	K: 163 µg/kg (0.163) ppm) N: 93.5 µg/kg (0.0935) ppm) L: 177 µg/kg (0.177) ppm) M: 149 µg/kg (0.149) ppm)
4069-204	A: 5,390 µg/kg (5.39) ppm) D: <25.1 µg/kg (<0.0251) ppm) B: 8,730 µg/kg (8.73) ppm) E: <25.3 µg/kg (<0.0253) ppm) C: 284 µg/kg (0.284) ppm)
4068.5-204REP	A: 1,140 µg/kg (1.14) ppm) D: 165 µg/kg (0.165) ppm) B: 8,250 µg/kg (8.25) ppm) E: <25.4 µg/kg (<0.0254) ppm) C: 778 µg/kg (0.778) ppm)
4068.5-206REP	A: 1,810 µg/kg (1.81) ppm) D: <25.4 µg/kg (<0.0254) ppm) B: 29.4 µg/kg (0.0294) ppm) E: <25.4 µg/kg (<0.0254) ppm) C: <25.3 µg/kg (<0.0253) ppm)
4069-200REP	A: 699 µg/kg (0.699) ppm) D: <25.3 µg/kg (<0.0253) ppm) B: 427 µg/kg (0.427) ppm) E: <25.3 µg/kg (<0.0253) ppm) C: 38.5 µg/kg (0.0385) ppm)



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-17-D35NOP-DCA45-3-4068.5-204-A
2. TTFR-17-D35NOP-DCA45-3-4068.5-204-B
3. TTFR-17-D35NOP-DCA45-3-4068.5-204-C
4. TTFR-17-D35NOP-DCA45-3-4068.5-204-D
5. TTFR-17-D35NOP-DCA45-3-4068.5-204-E
6. TTFR-17-D35NOP-DCA45-3-4068.5-206-A
7. TTFR-17-D35NOP-DCA45-3-4068.5-206-B
8. TTFR-17-D35NOP-DCA45-3-4068.5-206-C
9. TTFR-17-D35NOP-DCA45-3-4068.5-206-D
10. TTFR-17-D35NOP-DCA45-3-4069-200-A
11. TTFR-17-D35NOP-DCA45-3-4069-200-B
12. TTFR-17-D35NOP-DCA45-3-4069-200-C
13. TTFR-17-D35NOP-DCA45-3-4069-200-D
14. TTFR-17-D35NOP-DCA45-3-4069-203-A
15. TTFR-17-D35NOP-DCA45-3-4069-203-B
16. TTFR-17-D35NOP-DCA45-3-4069-203-C
17. TTFR-17-D35NOP-DCA45-3-4069-203-D
18. TTFR-17-D35NOP-DCA45-3-4069-203-E
19. TTFR-17-D35NOP-DCA45-3-4069-203RVT-F
20. TTFR-17-D35NOP-DCA45-3-4069-203RVT-G
21. TTFR-17-D35NOP-DCA45-3-4069-203RVT-H
22. TTFR-17-D35NOP-DCA45-3-4069-203RVT-J
23. TTFR-17-D35NOP-DCA45-3-4069-203RVT-K
24. TTFR-17-D35NOP-DCA45-3-4069-203RVT-L
25. TTFR-17-D35NOP-DCA45-3-4069-203RVT-M
26. TTFR-17-D35NOP-DCA45-3-4069-203RVT-N
27. TTFR-17-D35NOP-DCA45-3-4069-204-A
28. TTFR-17-D35NOP-DCA45-3-4069-204-B
29. TTFR-17-D35NOP-DCA45-3-4069-204-C
30. TTFR-17-D35NOP-DCA45-3-4069-204-D
31. TTFR-17-D35NOP-DCA45-3-4069-204-E
32. TTFR-17-D35NOP-DCA45-3-4068.5-204REP-A
33. TTFR-17-D35NOP-DCA45-3-4068.5-204REP-B
34. TTFR-17-D35NOP-DCA45-3-4068.5-204REP-C
35. TTFR-17-D35NOP-DCA45-3-4068.5-204REP-D
36. TTFR-17-D35NOP-DCA45-3-4068.5-204REP-E
37. TTFR-17-D35NOP-DCA45-3-4068.5-206REP-A
38. TTFR-17-D35NOP-DCA45-3-4068.5-206REP-B
39. TTFR-17-D35NOP-DCA45-3-4068.5-206REP-C
40. TTFR-17-D35NOP-DCA45-3-4068.5-206REP-D
41. TTFR-17-D35NOP-DCA45-3-4068.5-206REP-E
42. TTFR-17-D35NOP-DCA45-3-4069-200REP-A
43. TTFR-17-D35NOP-DCA45-3-4069-200REP-B
44. TTFR-17-D35NOP-DCA45-3-4069-200REP-C
45. TTFR-17-D35NOP-DCA45-3-4069-200REP-D
46. TTFR-17-D35NOP-DCA45-3-4069-200REP-E
47. TTFR-17-D35NOP-DCA45-3-4069-203REP-A
48. TTFR-17-D35NOP-DCA45-3-4069-203REP-B
49. TTFR-17-D35NOP-DCA45-3-4069-203REP-C
50. TTFR-17-D35NOP-DCA45-3-4069-203REP-D
51. TTFR-17-D35NOP-DCA45-3-4069-203REP-E
52. TTFR-17-D35NOP-DCA45-3-4069-203REPRVT-F
53. TTFR-17-D35NOP-DCA45-3-4069-203REPRVT-G
54. TTFR-17-D35NOP-DCA45-3-4069-203REPRVT-H
55. TTFR-17-D35NOP-DCA45-3-4069-203REPRVT-J
56. TTFR-17-D35NOP-DCA45-3-4069-203REPRVT-K
57. TTFR-17-D35NOP-DCA45-3-4069-203REPRVT-L
58. TTFR-17-D35NOP-DCA45-3-4069-203REPRVT-M
59. TTFR-17-D35NOP-DCA45-3-4069-203REPRVT-N
60. TTFR-17-D35NOP-DCA45-3-4069-204REP-A
61. TTFR-17-D35NOP-DCA45-3-4069-204REP-B
62. TTFR-17-D35NOP-DCA45-3-4069-204REP-C
63. TTFR-17-D35NOP-DCA45-3-4069-204REP-D
64. TTFR-17-D35NOP-DCA45-3-4069-204REP-E

DESIGN COLOR LEGEND

	MIN. EL.		MAX. EL.
	552.00'	-	553.00'
	553.00'	-	554.00'
	554.00'	-	555.00'
	555.00'	-	556.00'
	556.00'	-	557.00'
	557.00'	-	558.00'
	558.00'	-	559.00'
	559.00'	-	560.00'
	560.00'	-	561.00'
	561.00'	-	562.00'

SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-29-2016

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-17-D35NOP-DCA45-3-A
2. 0.5' - 1.0' SAMPLE ID TTFR-17-D35NOP-DCA45-3-B
3. 1.0' - 1.5' SAMPLE ID TTFR-17-D35NOP-DCA45-3-C
4. 0.0' - 0.5' SAMPLE ID TTFR-17-D35NOP-DCA45-3REP-A
5. 0.5' - 1.0' SAMPLE ID TTFR-17-D35NOP-DCA45-3REP-B
6. 1.0' - 1.5' SAMPLE ID TTFR-17-D35NOP-DCA45-3REP-C
7. CONFIRMATION SAMPLES WERE COLLECTED ON 11-6-2017 and 11-28-2017
8. CONFIRMATION SAMPLES ARE A COMPOSITE OF TEN SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
9. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 11-10-2017, 11-16-2017, 11-20-2017, and 12-1-2017

THIS DOCUMENT IS THE PROPERTY OF LOWER FOX RIVER REMEDIATION LLC PREPARED BY TETRA TECH EC, INC. (TtEC), AND IS PROVIDED UPON THE CONDITION THAT IT WILL NOT BE REPRODUCED, COPIED, OR ISSUED TO A THIRD PARTY. IT IS PROVIDED TO BE USED SOLELY FOR THE ORIGINAL INTENDED PURPOSE, AND SOLELY FOR THE EXECUTION OR REVIEW OF THE ENGINEERING AND CONSTRUCTION OF THE SUBJECT PROJECT.

OU# - D# - #

OU# = OPERABLE UNIT; D# = DREDGE AREA; # = DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

		MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL		-1.47'	-	-1.00'	417.46
		-1.00'	-	-0.50'	17,685.68
		-0.50'	-	0.00'	29,145.62
ABOVE RAL		0.00'	-	0.25'	713.24
		0.25'	-	0.50'	74.57
		0.50'	-	0.75'	39.77
		0.75'	-	1.00'	26.18
		1.00'	-	1.25'	18.60
		1.25'	-	1.50'	9.80
		1.50'	-	1.75'	5.44
		1.75'	-	1.90'	0.72

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION
4069-204REP	A: 3,100 µg/kg (3.1) ppm) D: <25.2 µg/kg (<0.0252) ppm) B: 3,520 µg/kg (3.52) ppm) E: <25.3 µg/kg (<0.0253) ppm) C: <25.3 µg/kg (<0.0253) ppm)

DISCRETE SAMPLE RESULTS

LOCATION	CONCENTRATION
4069-203REP	A: 4,490 µg/kg (4.49) ppm) D: 6,700 µg/kg (6.7) ppm) B: 19,200 µg/kg (19.2) ppm) E: 1,060 µg/kg (1.06) ppm) C: 9,420 µg/kg (9.42) ppm)
4069-203REPRVT	F: 925 µg/kg (0.925) ppm) J: 106 µg/kg (0.106) ppm) G: 564 µg/kg (0.564) ppm) H: 283 µg/kg (0.283) ppm)
4069-203REPRVT	K: 105 µg/kg (0.105) ppm) N: 121 µg/kg (0.121) ppm) L: 168 µg/kg (0.168) ppm) M: 70.0 µg/kg (0.07) ppm)

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35NOP-DCA45-3.dwg
DRAWN BY: DAVID.FRISQUE
DATE: July 1, 2016
LAST REVISED: December 5, 2018
CHECKED BY: REG

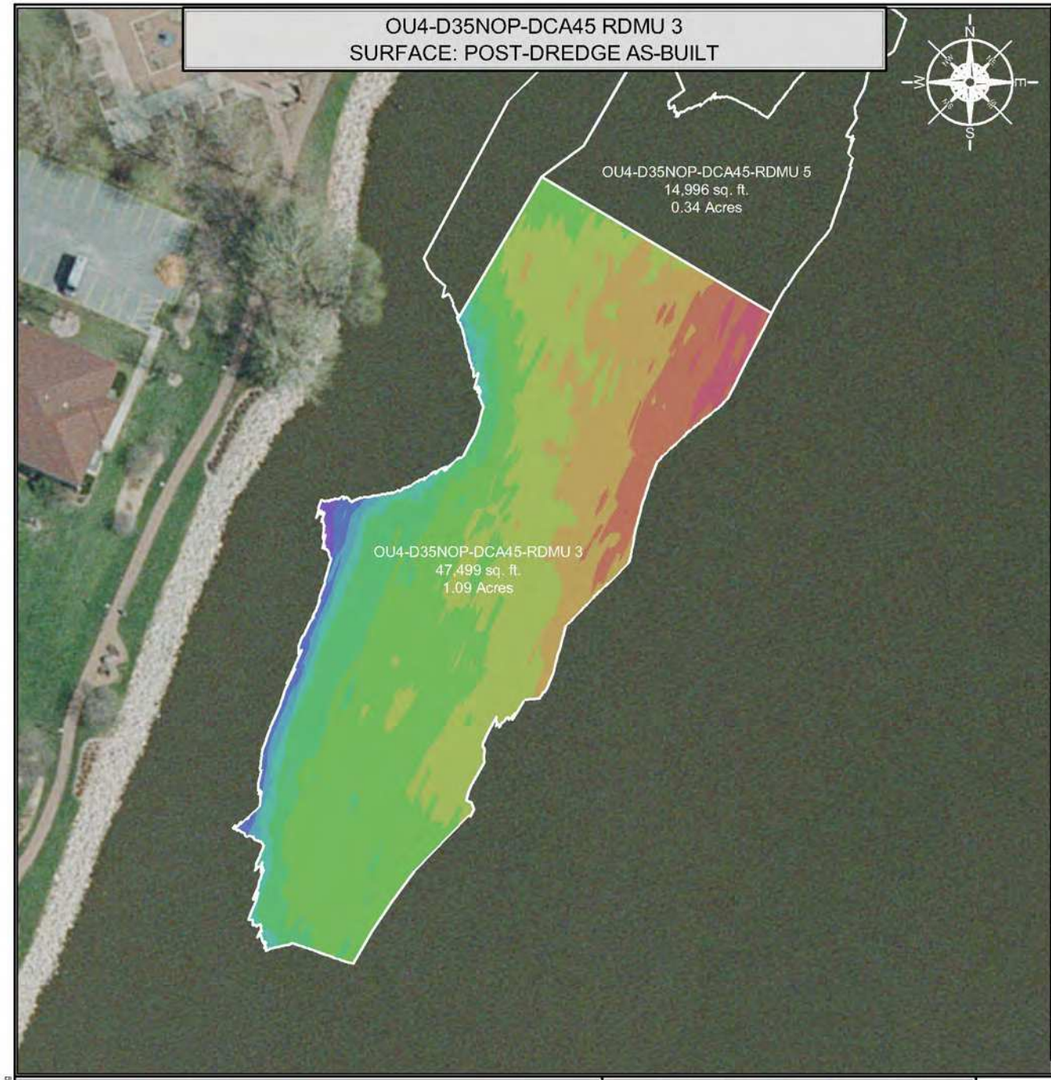
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-160

OU4-D35NOP-DCA45-3
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

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OU4-D35NOP-DCA45 RDMU 3
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

1,315.08	INITIAL RAL VOLUME
857.61	INITIAL OVERCUT VOLUME
2,172.69	RAL + OVERCUT VOLUME
1,944.81	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

1,654.79	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
877.90	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
2,532.69	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

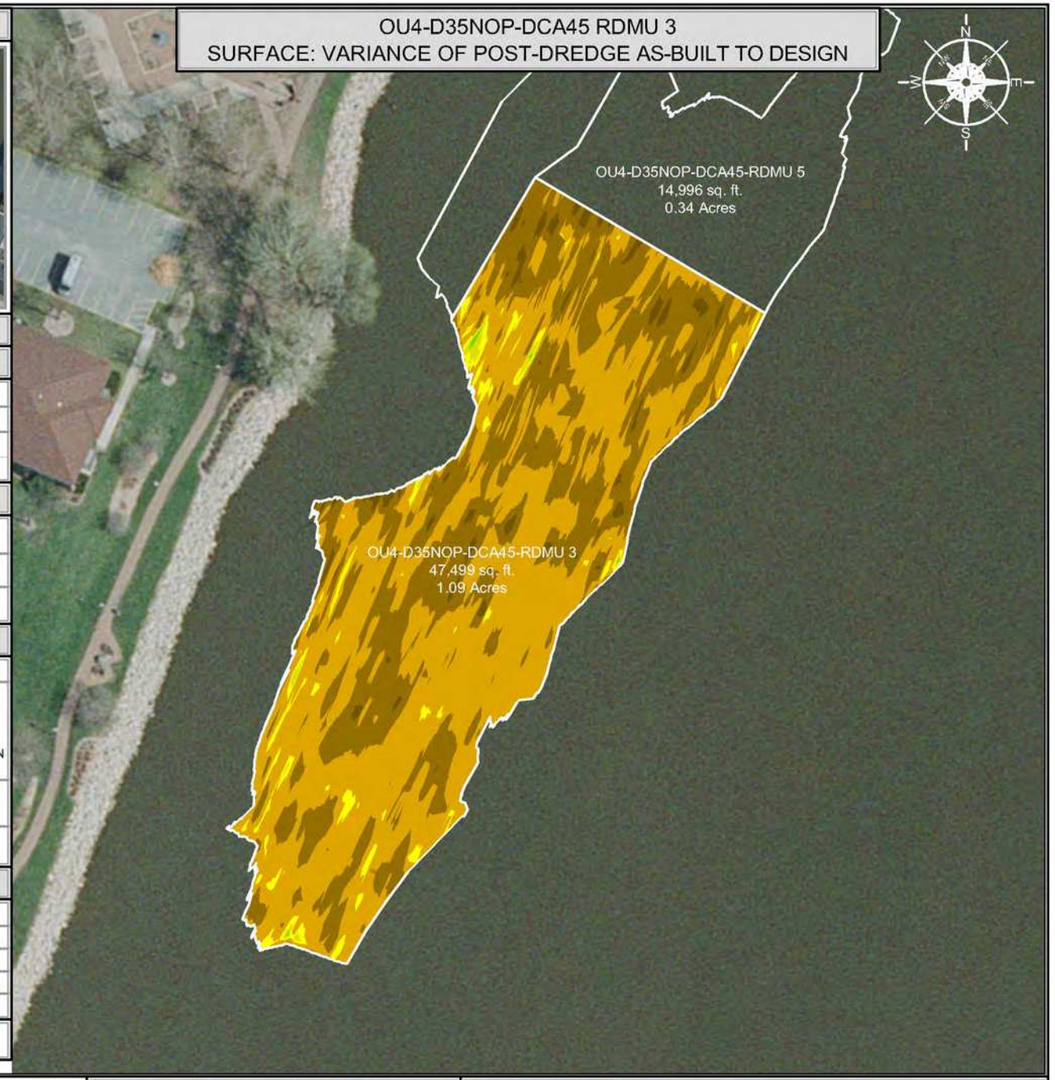
2018 AS-BUILT VOLUMES (CU. YD.)

2,448.56	TOTAL VOLUME DREDGED
1,647.74	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
6.93	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
220.95	OVERCUT VOLUME REMAINING
655.87	OVERCUT VOLUME DREDGED
144.95	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

47,498.65	AREA (SQ. FT.)
1,479.35	ABOVE DESIGN ELEVATION
46,019.30	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
5.64 "	AVERAGE DEPTH OF OVERCUT [1]
97	PERCENT COMPLETE [2]

OU4-D35NOP-DCA45 RDMU 3
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 80')

80 40 0 80 160

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-26-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'
560.00'	-	561.00'
561.00'	-	562.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.58'	-	-1.00'	1,036.28
BELOW RAL	-1.00'	-	-0.50'	18,191.44
BELOW RAL	-0.50'	-	0.00'	26,791.58
ABOVE RAL	0.00'	-	0.25'	1,248.16
ABOVE RAL	0.25'	-	0.50'	207.90
ABOVE RAL	0.50'	-	0.73'	23.27

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35NOP-DCA45 RDMU 3.dwg
DRAWN BY: DAVID.FRISQUE
DATE: November 5, 2018
LAST REVISED: December 5, 2018
CHECKED BY: REG

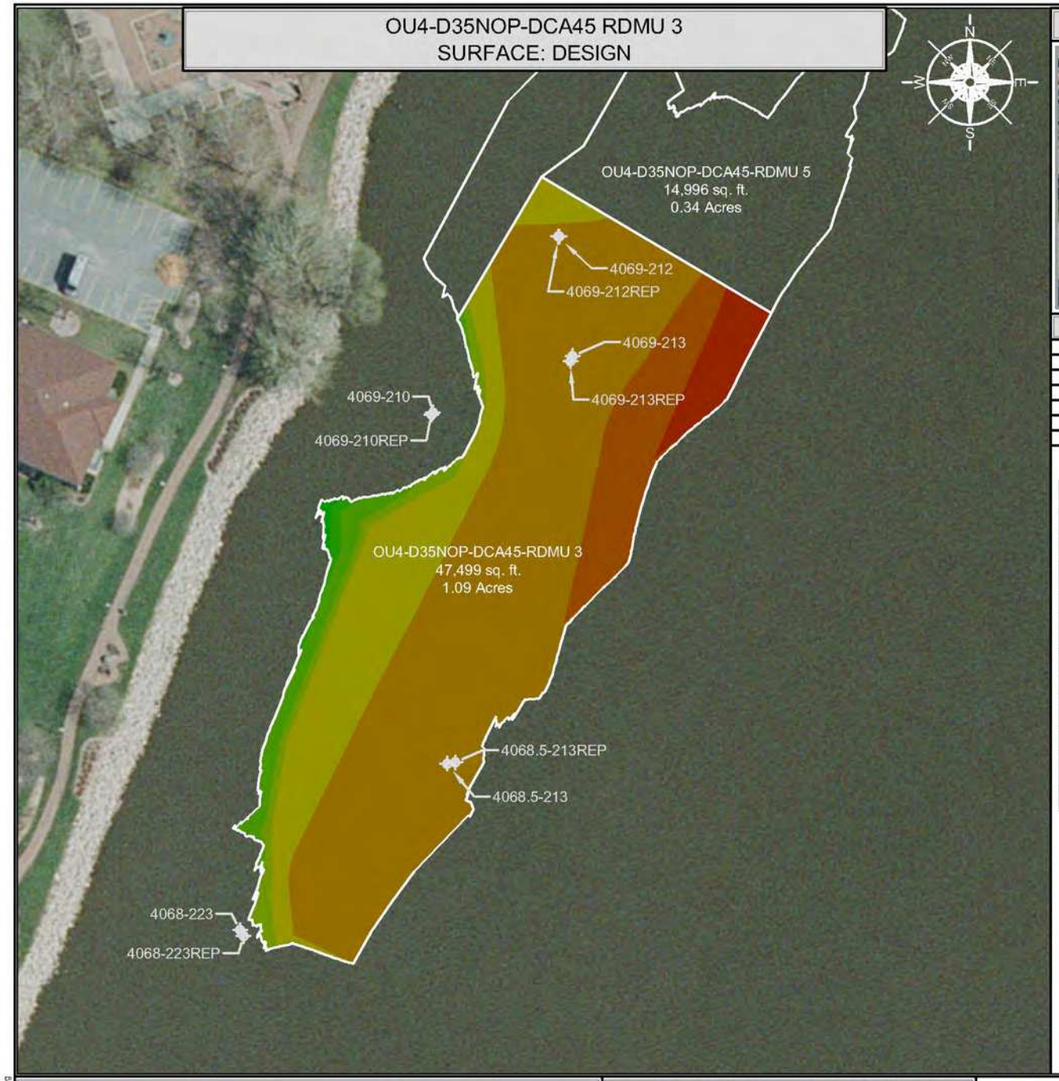
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-161

OU4-D35NOP-DCA45 RDMU 3
1st RESIDUAL DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LLOC\GIS\Field Ent\mxd\gDredge Files\2018\OU4-D35NOP-DCA45 RDMU\2018\GIS\Final Design\OU4-D35NOP-DCA45 RDMU 3.mxd

OU4-D35NOP-DCA45 RDMU 3
SURFACE: DESIGN



INDEX MAP



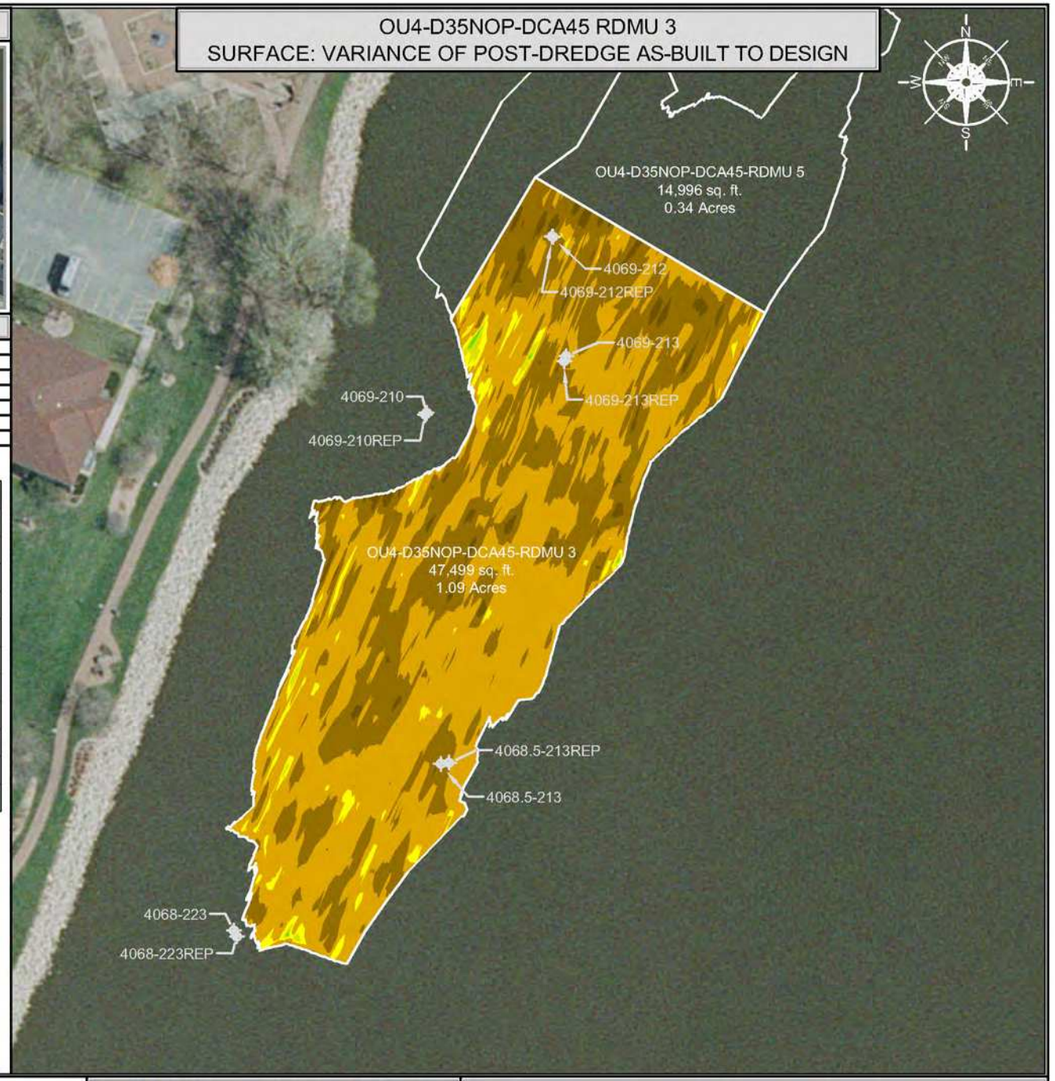
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	1,980 µg/kg (1.98 ppm)
0.5' - 1.0'	116 µg/kg (0.116 ppm)
1.0' - 1.5'	33.0 µg/kg (0.033 ppm)
0.0' - 0.5' REP	2,150 µg/kg (2.15 ppm)
0.5' - 1.0' REP	273 µg/kg (0.273 ppm)
1.0' - 1.5' REP	132 µg/kg (0.132 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4068-223REP	255149.31	2485250.77
4068-223	255152.39	2485249.16
4068.5-213REP	255240.99	2485362.75
4068.5-213	255240.23	2485358.32
4069-212REP	255518.37	2485417.56
4069-210REP	255424.41	2485350.01
4069-212	255518.49	2485416.90
4069-213	255455.44	2485424.58
4069-210	255425.52	2485350.85
4069-213REP	255452.69	2485423.46

OU4-D35NOP-DCA45 RDMU 3
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 80')

80 40 0 80 160

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-26-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'
560.00'	-	561.00'
561.00'	-	562.00'
562.00'	-	563.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-D35NOP-DCA45-3-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-D35NOP-DCA45-3-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-D35NOP-DCA45-3-C
4. 0.0' - 0.5' SAMPLE ID TTFR-18-D35NOP-DCA45-3REP-A
5. 0.5' - 1.0' SAMPLE ID TTFR-18-D35NOP-DCA45-3REP-B
6. 1.0' - 1.5' SAMPLE ID TTFR-18-D35NOP-DCA45-3REP-C
7. CONFIRMATION SAMPLES WERE COLLECTED ON 11-15-2018
8. CONFIRMATION SAMPLES ARE A COMPOSITE OF TEN SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
9. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 12-3-2018

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT
DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.58'	-	-1.00'	1,036.28
BELOW RAL	-1.00'	-	-0.50'	18,191.44
BELOW RAL	-0.50'	-	0.00'	26,791.58
ABOVE RAL	0.00'	-	0.25'	1,248.16
ABOVE RAL	0.25'	-	0.50'	207.90
ABOVE RAL	0.50'	-	0.73'	23.27

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35NOP-DCA45 RDMU 3.dwg
DRAWN BY: DAVID.FRISQUE
DATE: November 5, 2018
LAST REVISED: December 5, 2018
CHECKED BY: REG

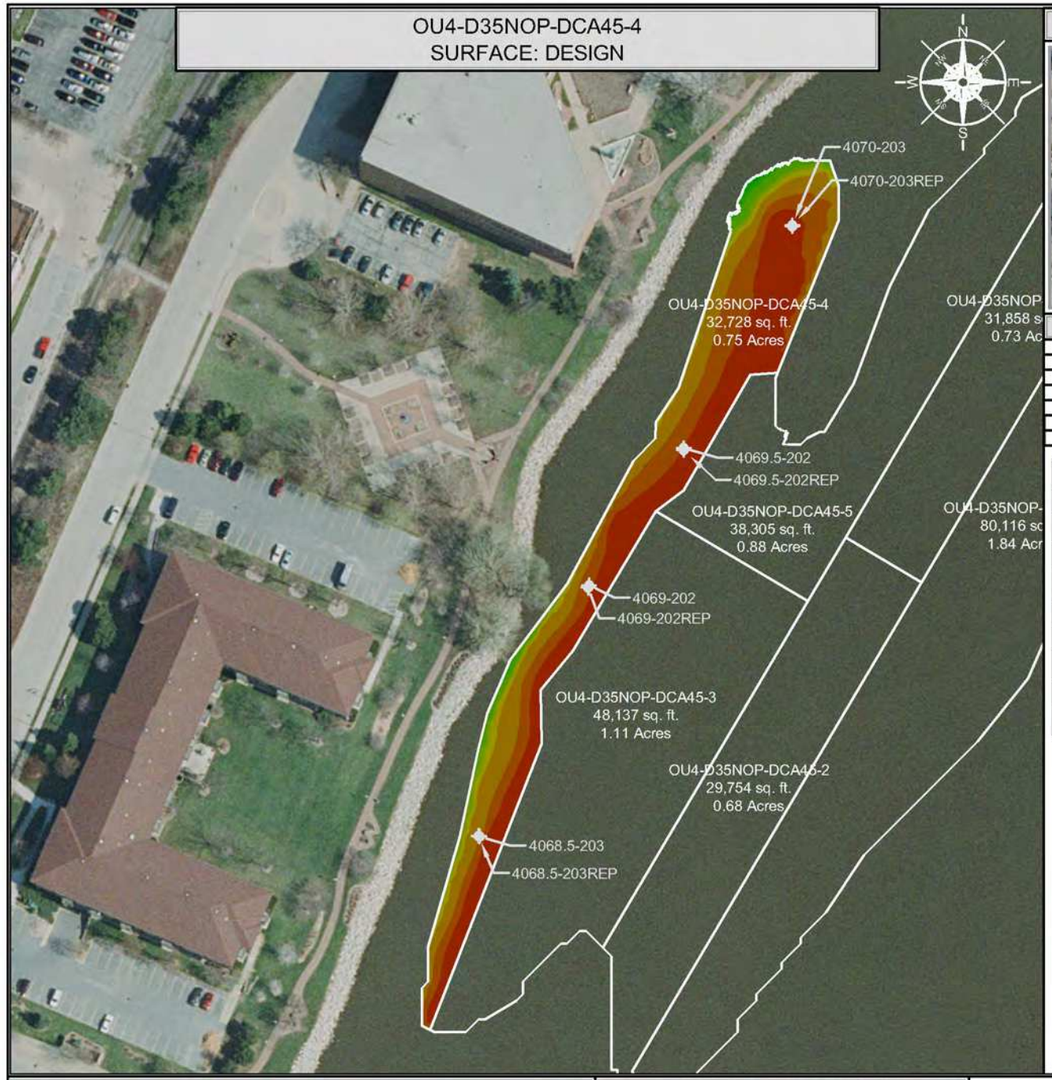
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-162

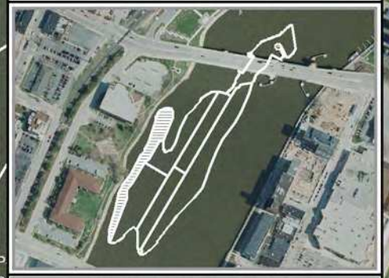
OU4-D35NOP-DCA45 RDMU 3
1st RESIDUAL DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

P:\LOCAL\Field Engineering\Dredge Files\2018\OU4 D35NOP DCA45 RDMU3\WG\Final Design\OU4 D35NOP DCA45 RDMU 3.dwg

OU4-D35NOP-DCA45-4
SURFACE: DESIGN



INDEX MAP



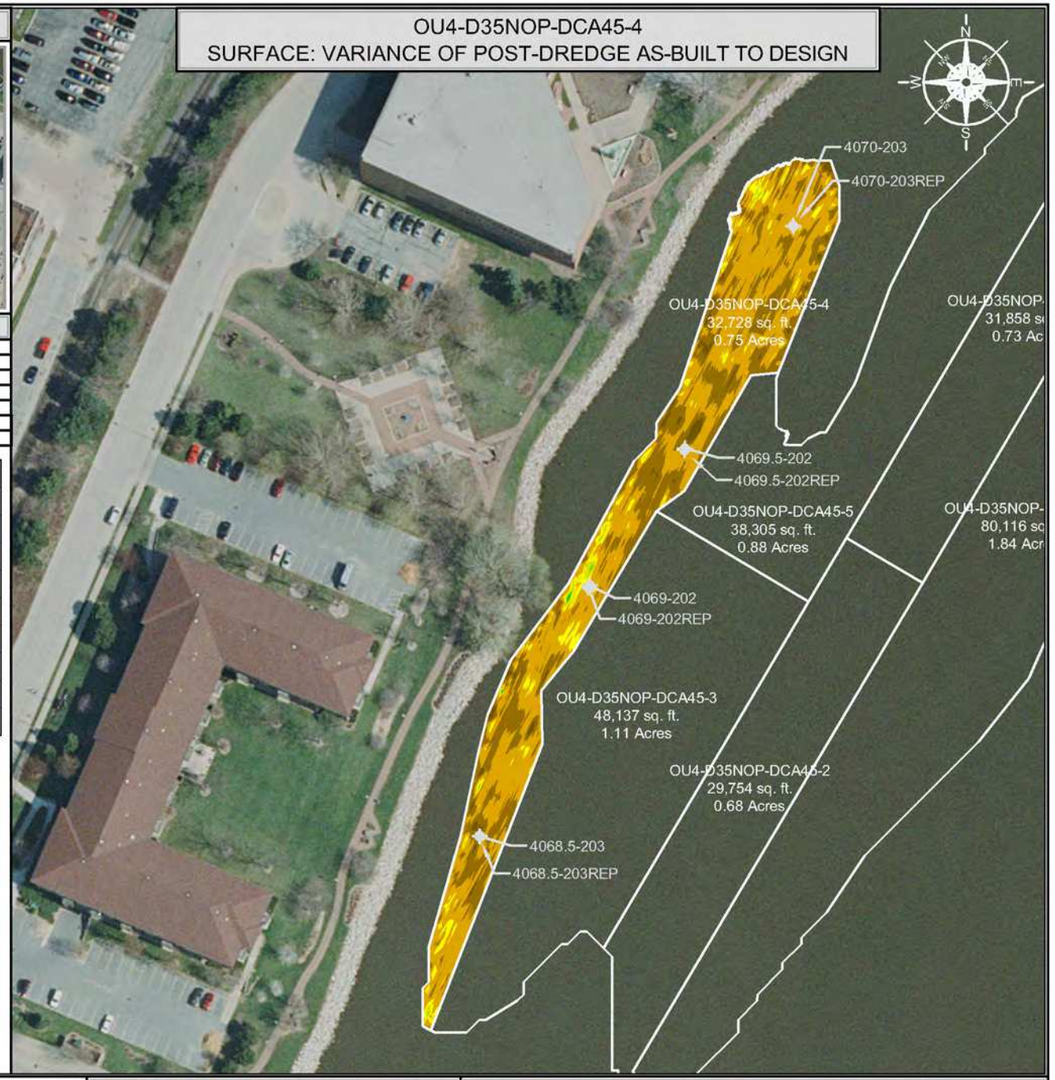
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	130 µg/kg (0.13 ppm)
0.5' - 1.0'	29.6 µg/kg (0.0296 ppm)
1.0' - 1.5'	<25.2 µg/kg (<0.0252 ppm)
0.0' - 0.5' REP	104 µg/kg (0.104 ppm)
0.5' - 1.0' REP	<25.2 µg/kg (<0.0252 ppm)
1.0' - 1.5' REP	<25.2 µg/kg (<0.0252 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4068.5-203REP	255292.82	2485268.05
4068.5-203	255292.41	2485268.69
4069-202REP	255489.18	2485354.73
4069-202	255491.11	2485355.44
4069.5-202REP	255598.18	2485430.36
4069.5-202	255599.60	2485430.47
4070-203REP	255775.27	2485516.45
4070-203	255775.86	2485516.34

OU4-D35NOP-DCA45-4
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 120')

120 60 0 120 240

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-29-2016

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
559.00'	-	560.00'
560.00'	-	561.00'
561.00'	-	562.00'
562.00'	-	563.00'
563.00'	-	564.00'
564.00'	-	565.00'
565.00'	-	566.00'
566.00'	-	567.00'
567.00'	-	568.00'
568.00'	-	569.00'
569.00'	-	570.00'
570.00'	-	571.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-17-D35NOP-DCA45-4-A
2. 0.5' - 1.0' SAMPLE ID TTFR-17-D35NOP-DCA45-4-B
3. 1.0' - 1.5' SAMPLE ID TTFR-17-D35NOP-DCA45-4-C
4. 0.0' - 0.5' SAMPLE ID TTFR-17-D35NOP-DCA45-4REP-A
5. 0.5' - 1.0' SAMPLE ID TTFR-17-D35NOP-DCA45-4REP-B
6. 1.0' - 1.5' SAMPLE ID TTFR-17-D35NOP-DCA45-4REP-C
7. CONFIRMATION SAMPLES WERE COLLECTED ON 11-29-2017
8. CONFIRMATION SAMPLES ARE A COMPOSITE OF EIGHT SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
9. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 12-6-2017

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OU# - D# - #
- OU#: OPERABLE UNIT
- D#: DREDGE AREA
- #: DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.25'	-	-1.00'	779.30
BELOW RAL	-1.00'	-	-0.50'	11,020.73
BELOW RAL	-0.50'	-	0.00'	18,937.76
ABOVE RAL	0.00'	-	0.25'	1,579.08
ABOVE RAL	0.25'	-	0.50'	341.44
ABOVE RAL	0.50'	-	0.75'	57.39
ABOVE RAL	0.75'	-	1.00'	12.54
ABOVE RAL	1.00'	-	1.10'	0.08

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35NOP-DCA45-4.dwg
DRAWN BY: DAVID.FRISQUE
DATE: July 1, 2016
LAST REVISED: December 5, 2018
CHECKED BY: REG

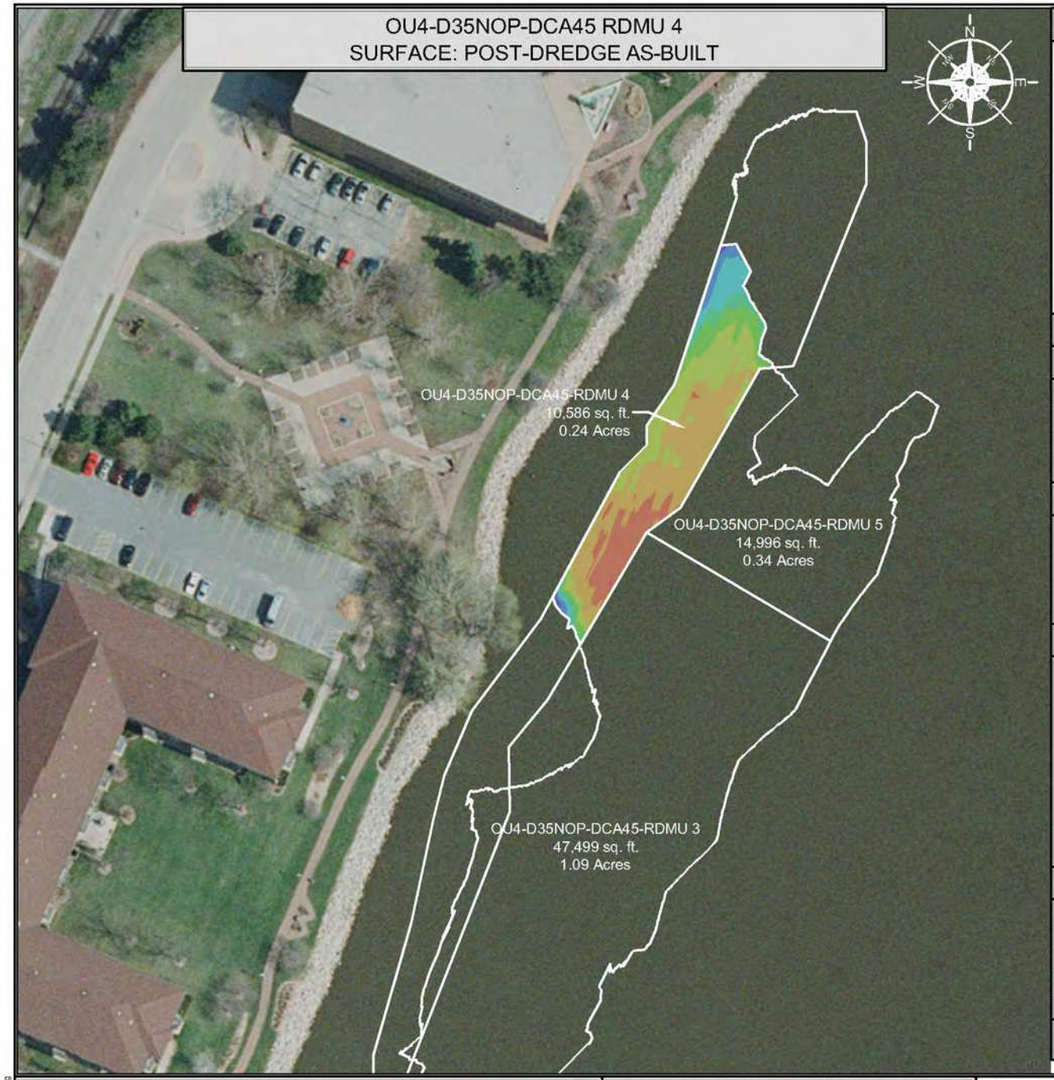
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-163

OU4-D35NOP-DCA45-4
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

I:\LC\CAD\Fiild Eng\sheets\sDesign Files\2016\OU4 D35NOP-DCA45\DWG\Post Design\OU4-D35NOP-DCA45-4.dwg

OU4-D35NOP-DCA45 RDMU 4
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

1,209.09	INITIAL RAL VOLUME
194.11	INITIAL OVERCUT VOLUME
1,403.20	RAL + OVERCUT VOLUME
1,343.89	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

1,260.72	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
195.86	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
1,456.58	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

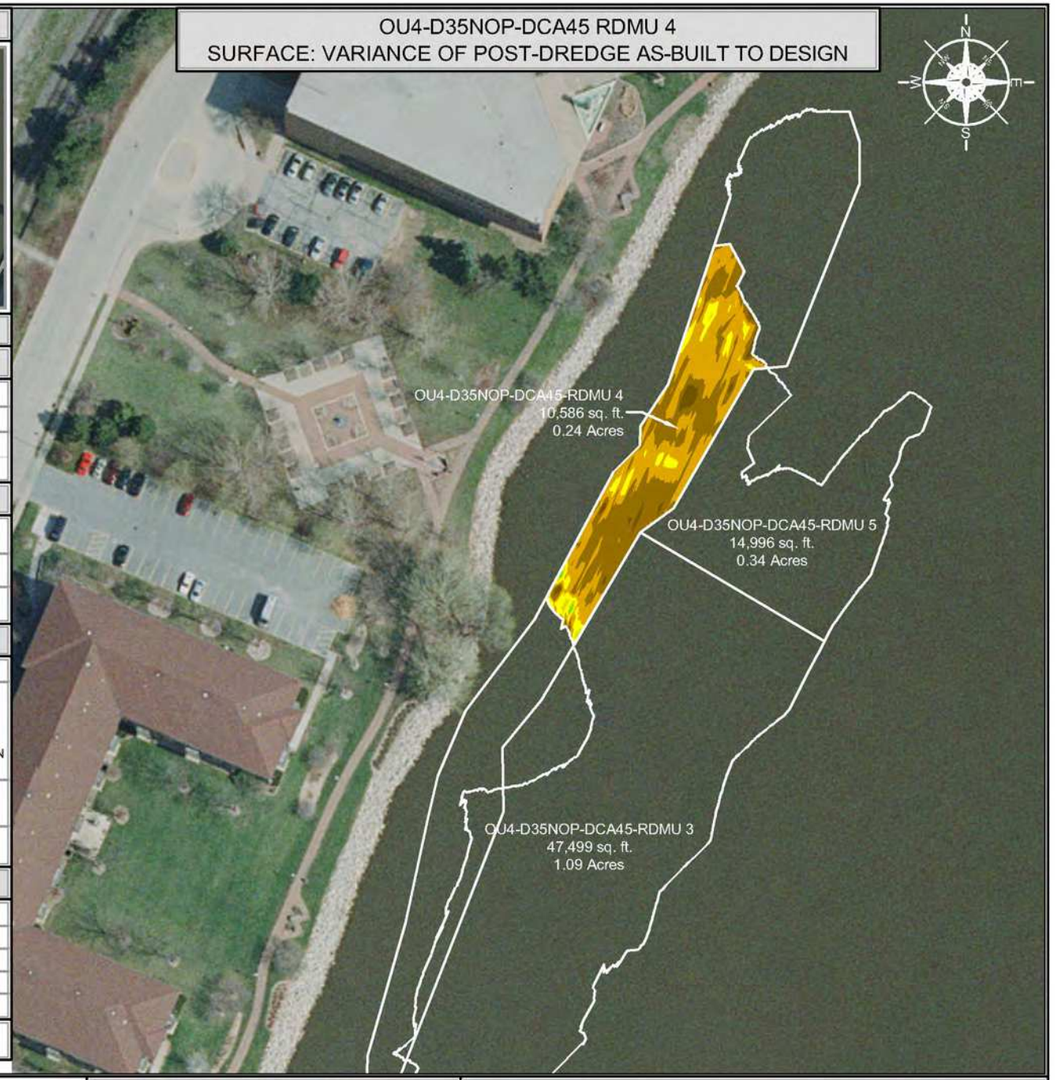
2018 AS-BUILT VOLUMES (CU. YD.)

1,433.59	TOTAL VOLUME DREDGED
1,252.76	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
7.94	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
51.37	OVERCUT VOLUME REMAINING
144.37	OVERCUT VOLUME DREDGED
36.46	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

10,585.59	AREA (SQ. FT.)
880.35	ABOVE DESIGN ELEVATION
9,705.24	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
6.04 "	AVERAGE DEPTH OF OVERCUT [1]
92	PERCENT COMPLETE [2]

OU4-D35NOP-DCA45 RDMU 4
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-26-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'
560.00'	-	561.00'
561.00'	-	562.00'
562.00'	-	563.00'
563.00'	-	564.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.92'	-	-1.00'	340.12
BELOW RAL	-1.00'	-	-0.50'	4,453.98
BELOW RAL	-0.50'	-	0.00'	4,911.14
ABOVE RAL	0.00'	-	0.50'	764.31
ABOVE RAL	0.50'	-	1.00'	93.17
ABOVE RAL	1.00'	-	1.50'	22.26
ABOVE RAL	1.50'	-	1.60'	0.61

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35NOP-DCA45 RDMU 4.dwg
DRAWN BY: DAVID.FRISQUE
DATE: November 5, 2018
LAST REVISED: December 5, 2018
CHECKED BY: REG

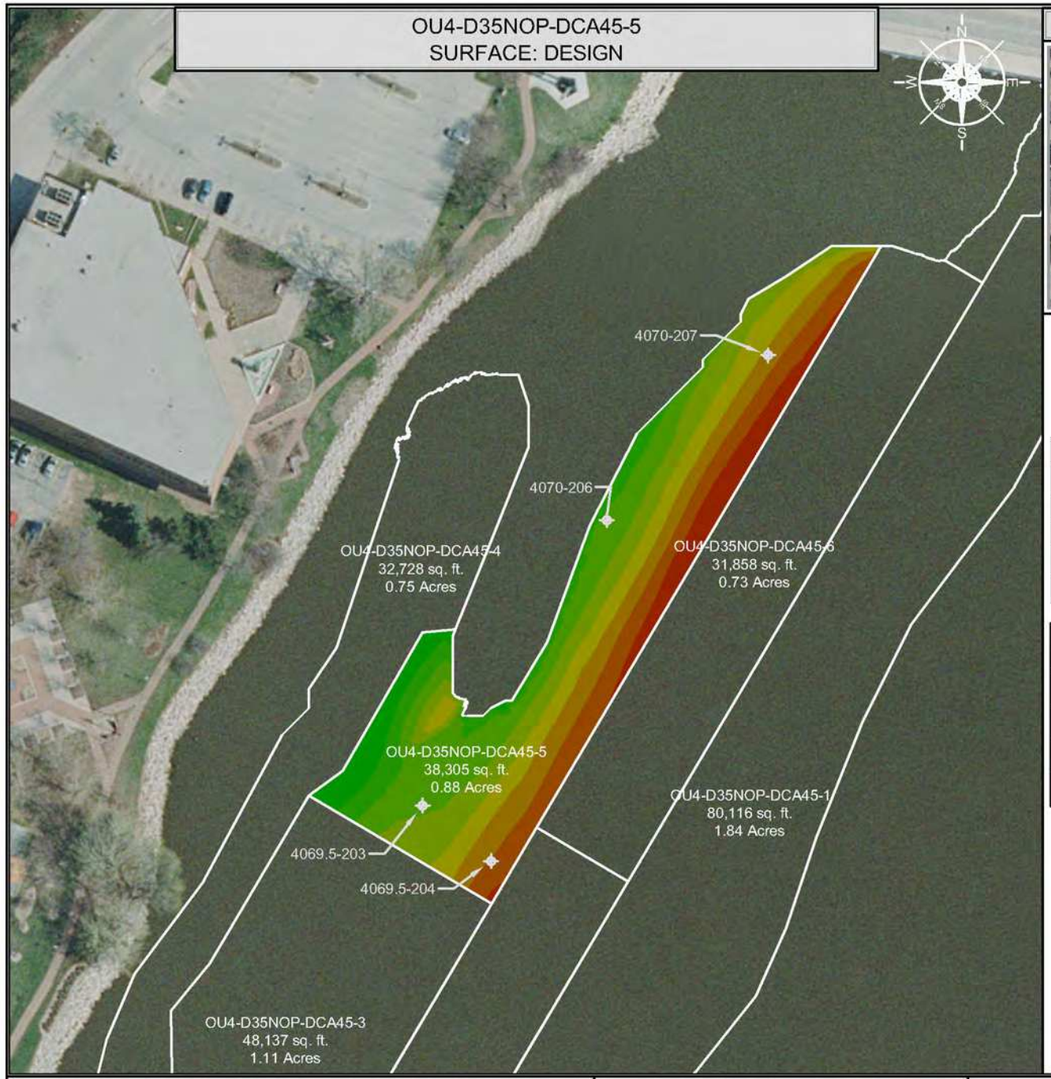
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-164

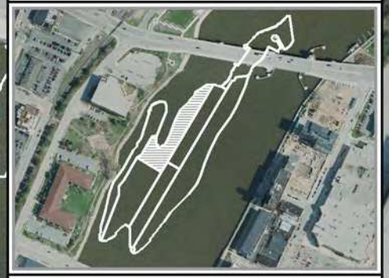
OU4-D35NOP-DCA45 RDMU 4
1st RESIDUAL DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LLOC\GIS\Field Engineering\Dredge Files\2018\OU4-D35NOP-DCA45 RDMU 4\DWG\Final Dredge\OU4-D35NOP-DCA45 RDMU 4.dwg

OU4-D35NOP-DCA45-5
SURFACE: DESIGN



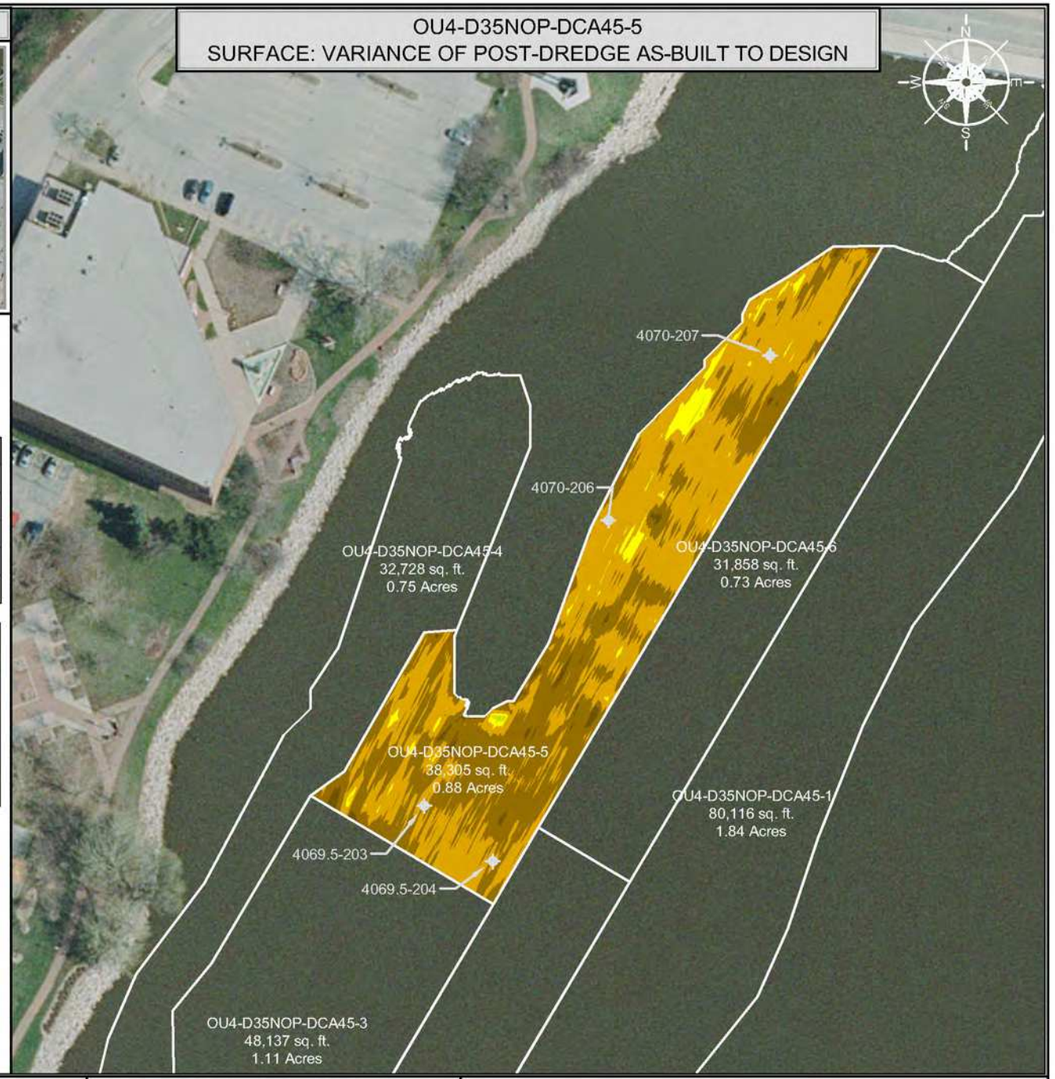
INDEX MAP



CONFIRMATION SAMPLE AS-BUILT LOCATIONS		
SAMPLE ID	NORTHING	EASTING
4069.5-204	255506.54	2485528.24
4069.5-203	255543.28	2485483.11
4070-207	255840.34	2485711.19
4070-206	255731.56	2485604.58

DISCRETE SAMPLE RESULTS	
LOCATION	CONCENTRATION
4069.5-203	A: 8,470 µg/kg (8.47) ppm) B: <25.3 µg/kg (<0.0253) ppm) C: <25.4 µg/kg (<0.0254) ppm)
4069.5-204	A: 6,650 µg/kg (6.65) ppm) B: 1,310 µg/kg (1.31) ppm) C: <25.4 µg/kg (<0.0254) ppm)
4070-206	A: 634 µg/kg (0.634) ppm) B: 392 µg/kg (0.392) ppm) C: <25.3 µg/kg (<0.0253) ppm)
4070-207	A: 602 µg/kg (0.602) ppm) B: <25.0 µg/kg (<0.025) ppm) C: <25.0 µg/kg (<0.025) ppm)

OU4-D35NOP-DCA45-5
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



DISCRETE SAMPLE IDENTIFICATION

1. TTFR-17-D35NOP-DCA45-5-4069.5-203-A
2. TTFR-17-D35NOP-DCA45-5-4069.5-203-B
3. TTFR-17-D35NOP-DCA45-5-4069.5-203-C
4. TTFR-17-D35NOP-DCA45-5-4069.5-204-A
5. TTFR-17-D35NOP-DCA45-5-4069.5-204-B
6. TTFR-17-D35NOP-DCA45-5-4069.5-204-C
7. TTFR-17-D35NOP-DCA45-5-4070-206-A
8. TTFR-17-D35NOP-DCA45-5-4070-206-B
9. TTFR-17-D35NOP-DCA45-5-4070-206-C
10. TTFR-17-D35NOP-DCA45-5-4070-207-A
11. TTFR-17-D35NOP-DCA45-5-4070-207-B
12. TTFR-17-D35NOP-DCA45-5-4070-207-C

SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-29-2016

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'
560.00'	-	561.00'

DRAWING NOTES

1. CONFIRMATION SAMPLES WERE COLLECTED ON 11-29-2017
2. CONFIRMATION SAMPLES ARE DISCRETES OF FOUR SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
3. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 12-4-2017

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OU# - D# - #
- OU# — OPERABLE UNIT
- D# — DREDGE AREA
- # — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.39'	-	-1.00'	609.17
	-1.00'	-	-0.50'	16,081.05
	-0.50'	-	0.00'	20,463.17
ABOVE RAL	0.00'	-	0.25'	1,085.90
	0.25'	-	0.50'	64.45
	0.50'	-	0.60'	1.47

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35NOP-DCA45-5.dwg
DRAWN BY: DAVID.FRISQUE
DATE: July 1, 2016
LAST REVISED: December 5, 2018
CHECKED BY: REG

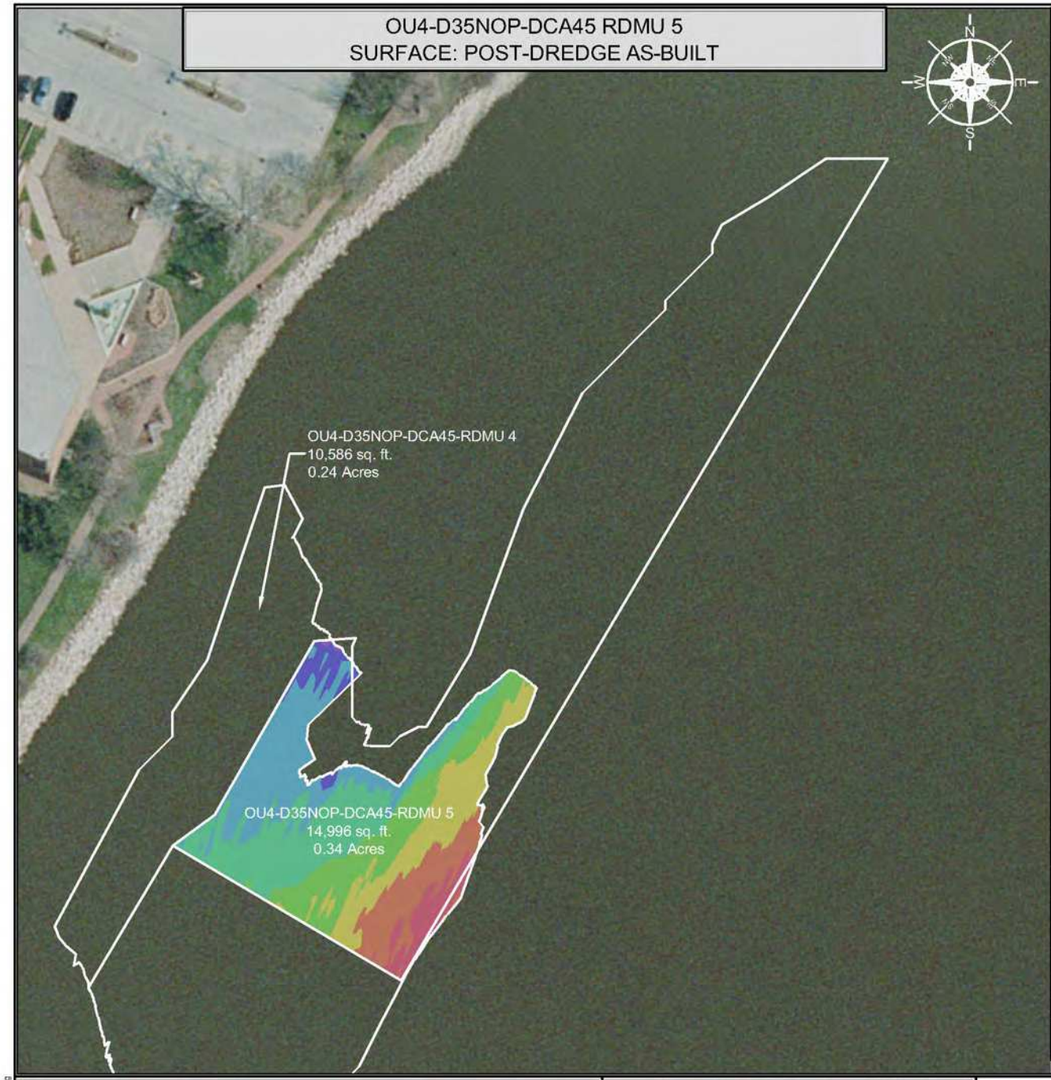
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-165

OU4-D35NOP-DCA45-5
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LOCAD\Field Engineering\Dredge Files\2018\OU4-D35NOP-DCA45\EWD\Post Dredge\OU4-D35NOP-DCA45-5.dwg

OU4-D35NOP-DCA45 RDMU 5
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

561.04	INITIAL RAL VOLUME
274.45	INITIAL OVERCUT VOLUME
835.49	RAL + OVERCUT VOLUME
745.70	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

616.98	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
276.44	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
893.42	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

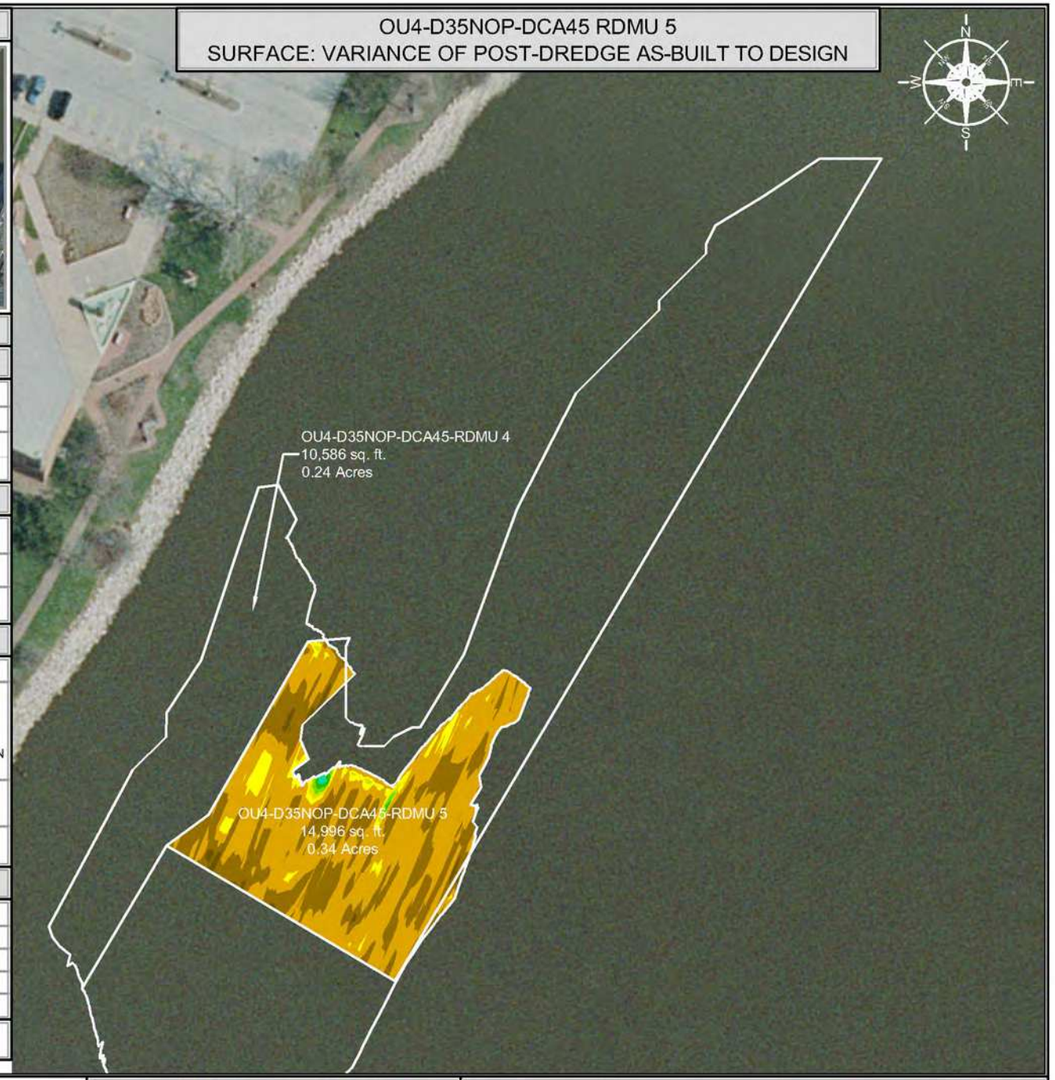
2018 AS-BUILT VOLUMES (CU. YD.)

837.48	TOTAL VOLUME DREDGED
610.54	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
6.36	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
83.43	OVERCUT VOLUME REMAINING
193.31	OVERCUT VOLUME DREDGED
33.63	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

14,995.87	AREA (SQ. FT.)
870.07	ABOVE DESIGN ELEVATION
14,125.80	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
5.21 "	AVERAGE DEPTH OF OVERCUT [1]
94	PERCENT COMPLETE [2]

OU4-D35NOP-DCA45 RDMU 5
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 80')

80 40 0 80 160

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-26-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.77'	-	-1.00'	234.28
BELOW RAL	-1.00'	-	-0.50'	4,938.81
BELOW RAL	-0.50'	-	0.00'	8,952.71
ABOVE RAL	0.00'	-	0.25'	677.09
ABOVE RAL	0.25'	-	0.50'	88.76
ABOVE RAL	0.50'	-	0.75'	51.51
ABOVE RAL	0.75'	-	1.00'	36.34
ABOVE RAL	1.00'	-	1.20'	16.37

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35NOP-DCA45 RDMU 5.dwg
DRAWN BY: DAVID.FRISQUE
DATE: November 5, 2018
LAST REVISED: December 5, 2018
CHECKED BY: REG

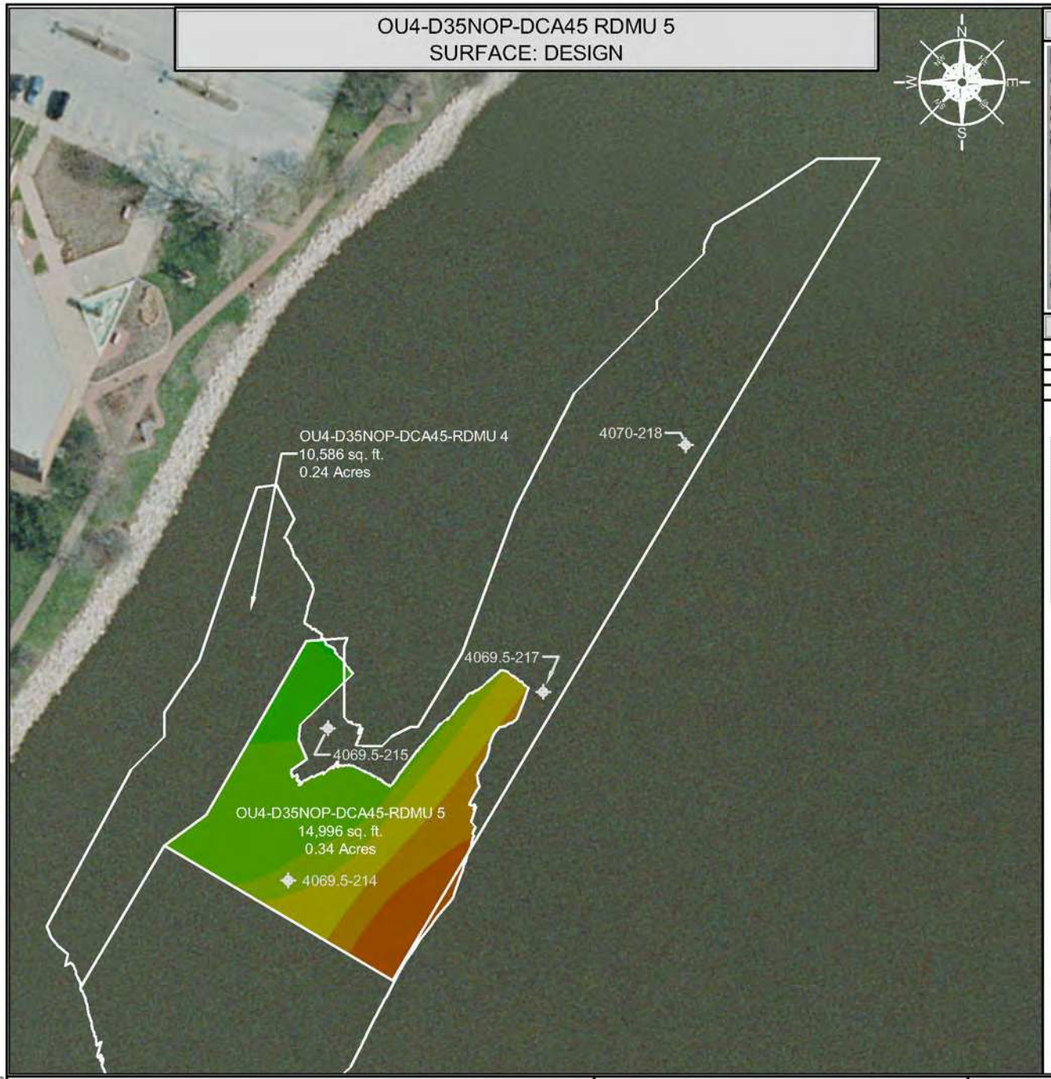
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-166

OU4-D35NOP-DCA45 RDMU 5
1st RESIDUAL DREDGE BATHYMETRY, VOLUMES AND AREAS

I:\LC\CAD\Field Engineering\3Dmdgp Files\2018\OU4 D35NOP-DCA45 RDMU\DWG\Post Dredge\OU4-D35NOP-DCA45 RDMU 5.dwg

OU4-D35NOP-DCA45 RDMU 5
SURFACE: DESIGN



INDEX MAP



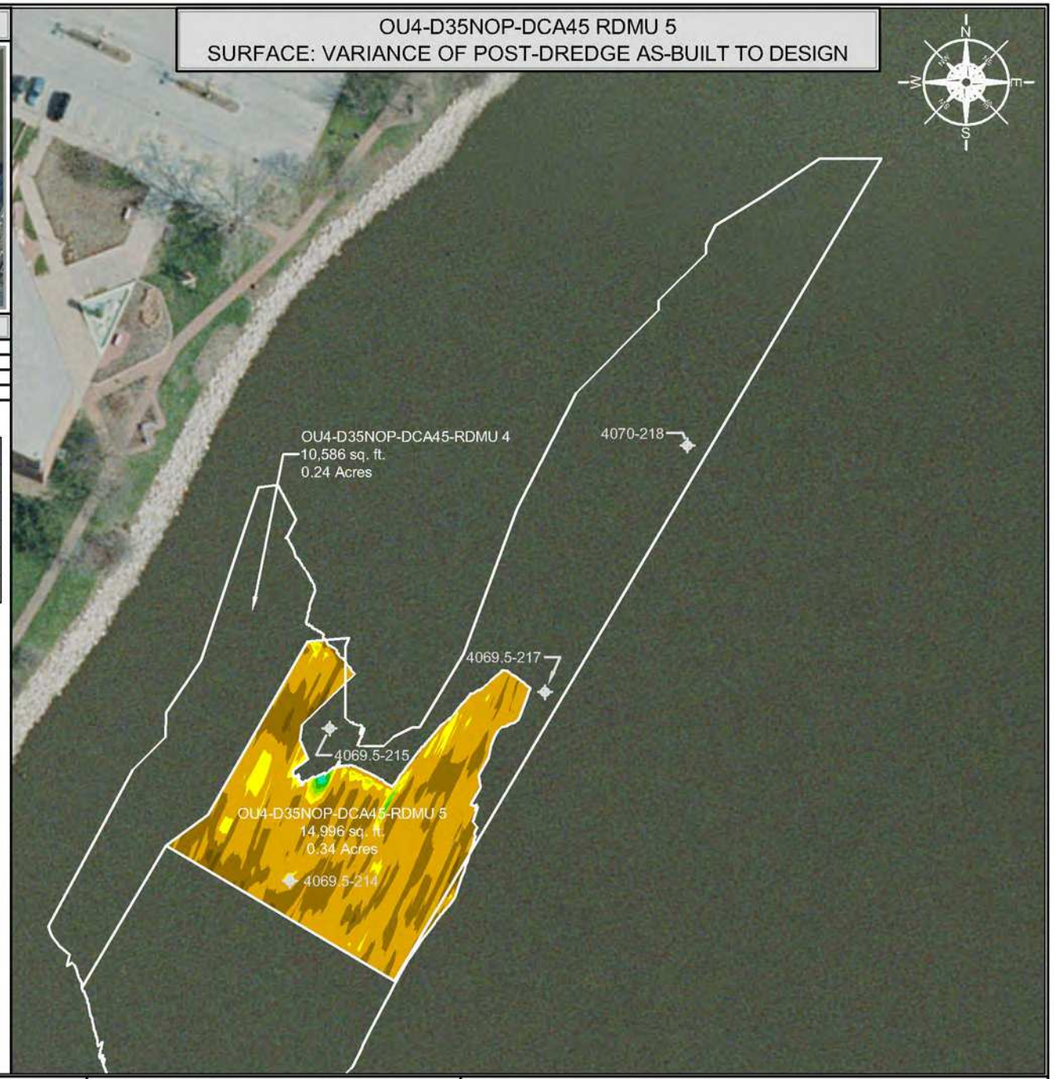
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	1,460 µg/kg (1.46 ppm)
0.5' - 1.0'	964 µg/kg (0.964 ppm)
1.0' - 1.5'	1,010 µg/kg (1.01 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4069.5-217	255630.88	2485608.12
4069.5-215	255611.72	2485494.43
4069.5-214	255531.38	2485473.54
4070-218	255761.11	2485683.32

OU4-D35NOP-DCA45 RDMU 5
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 80')

80 40 0 80 160

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-26-2018

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-D35NOP-DCA45-5-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-D35NOP-DCA45-5-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-D35NOP-DCA45-5-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 11-16-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF FOUR SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 12-5-2018

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OU# - D# - #
- OU# — OPERABLE UNIT
- D# — DREDGE AREA
- # — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.77'	-	-1.00'	234.28
BELOW RAL	-1.00'	-	-0.50'	4,938.81
BELOW RAL	-0.50'	-	0.00'	8,952.71
ABOVE RAL	0.00'	-	0.25'	677.09
ABOVE RAL	0.25'	-	0.50'	88.76
ABOVE RAL	0.50'	-	0.75'	51.51
ABOVE RAL	0.75'	-	1.00'	36.34
ABOVE RAL	1.00'	-	1.20'	16.37

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35NOP-DCA45 RDMU 5.dwg
DRAWN BY: DAVID.FRISQUE
DATE: November 5, 2018
LAST REVISED: December 5, 2018
CHECKED BY: REG

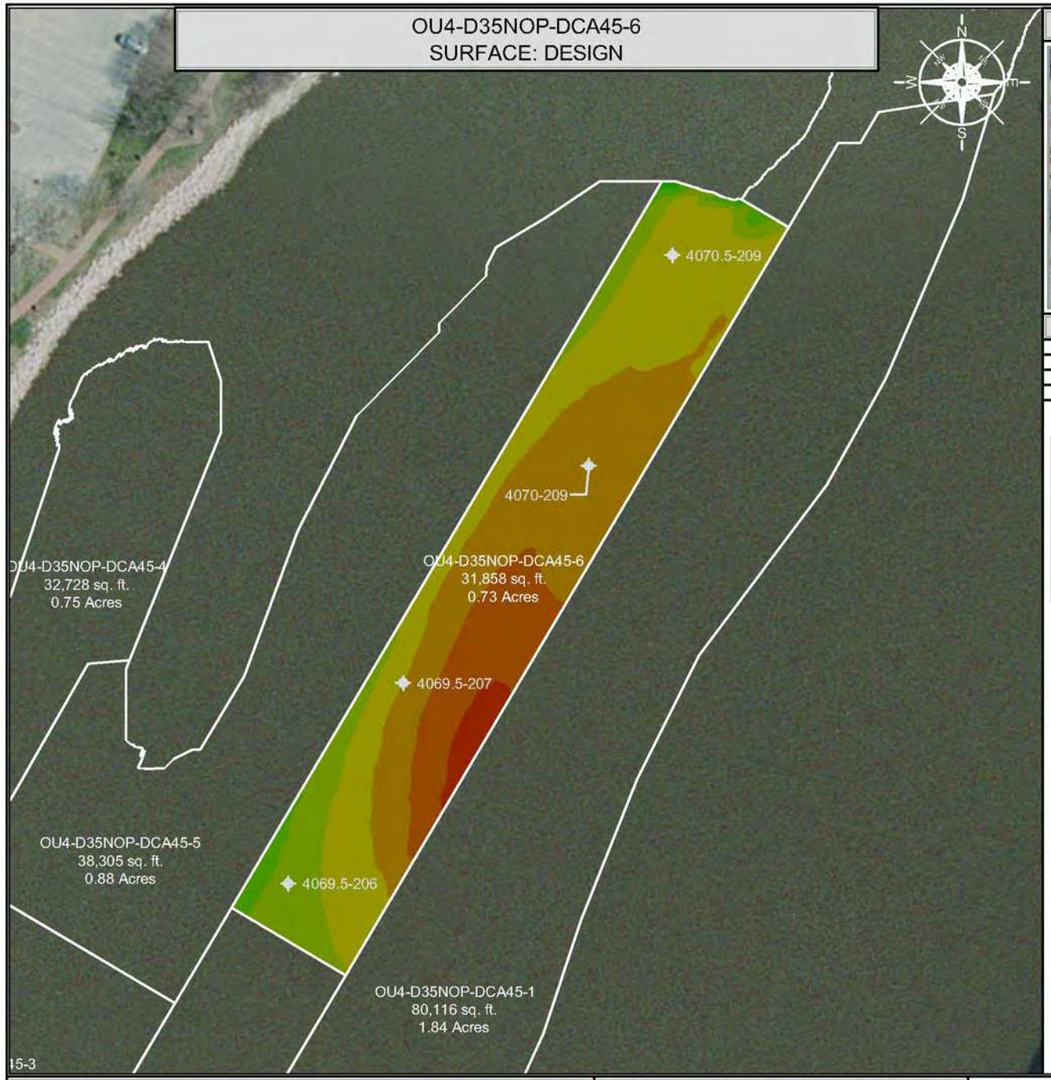
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-167

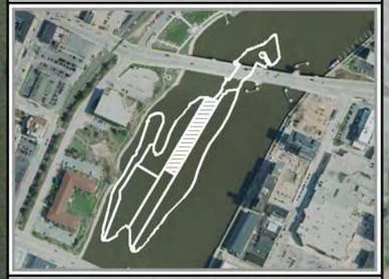
OU4-D35NOP-DCA45 RDMU 5
1st RESIDUAL DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

I:\LC\CAD\Field Engineering\3Dmcgn Files\2018\OU4 D35NOP-DCA45 RDMU\DWG\Post Dredge\OU4 D35NOP-DCA45 RDMU 5.dwg

OU4-D35NOP-DCA45-6
SURFACE: DESIGN



INDEX MAP



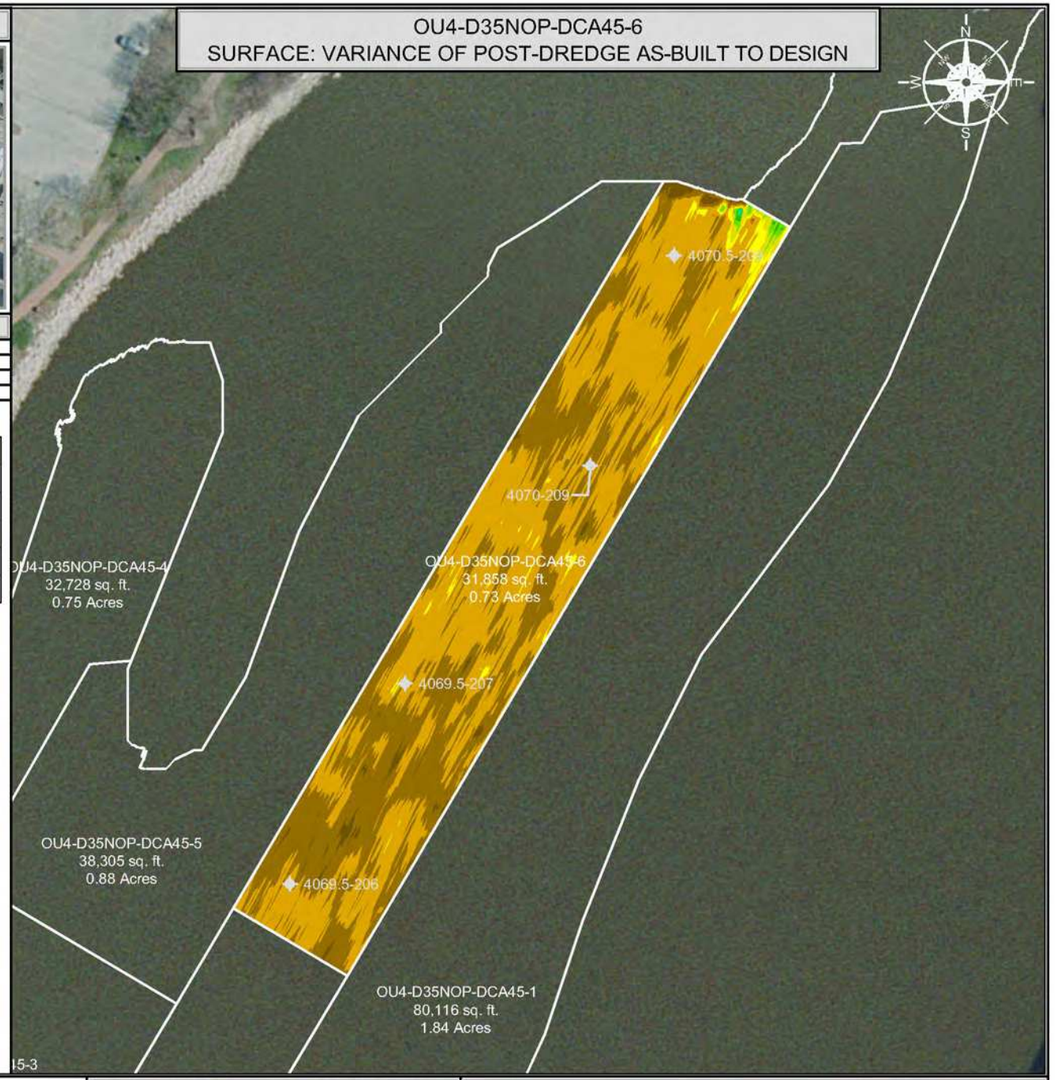
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	1,480 µg/kg (1.48 ppm)
0.5' - 1.0'	715 µg/kg (0.715 ppm)
1.0' - 1.5'	172 µg/kg (0.172 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4069.5-207	255647.40	2485649.11
4069.5-206	255541.71	2485588.51
4070-209	255762.23	2485747.02
4070.5-209	255873.23	2485791.20

OU4-D35NOP-DCA45-6
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 80')

80 40 0 80 160

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-24-2016

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-17-D35NOP-DCA45-6-A
2. 0.5' - 1.0' SAMPLE ID TTFR-17-D35NOP-DCA45-6-B
3. 1.0' - 1.5' SAMPLE ID TTFR-17-D35NOP-DCA45-6-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 11-30-2017
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF FOUR SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 12-7-2017

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OU# - D# - #

- OU# — OPERABLE UNIT
- D# — DREDGE AREA
- # — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.12'	-	-1.00'	498.16
BELOW RAL	-1.00'	-	-0.50'	12,942.08
BELOW RAL	-0.50'	-	0.00'	17,530.82
ABOVE RAL	0.00'	-	0.25'	524.53
ABOVE RAL	0.25'	-	0.50'	233.18
ABOVE RAL	0.50'	-	0.75'	96.90
ABOVE RAL	0.75'	-	1.00'	26.96
ABOVE RAL	1.00'	-	1.30'	5.71

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35NOP-DCA45-6.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 27, 2016
LAST REVISED: December 5, 2018
CHECKED BY: REG

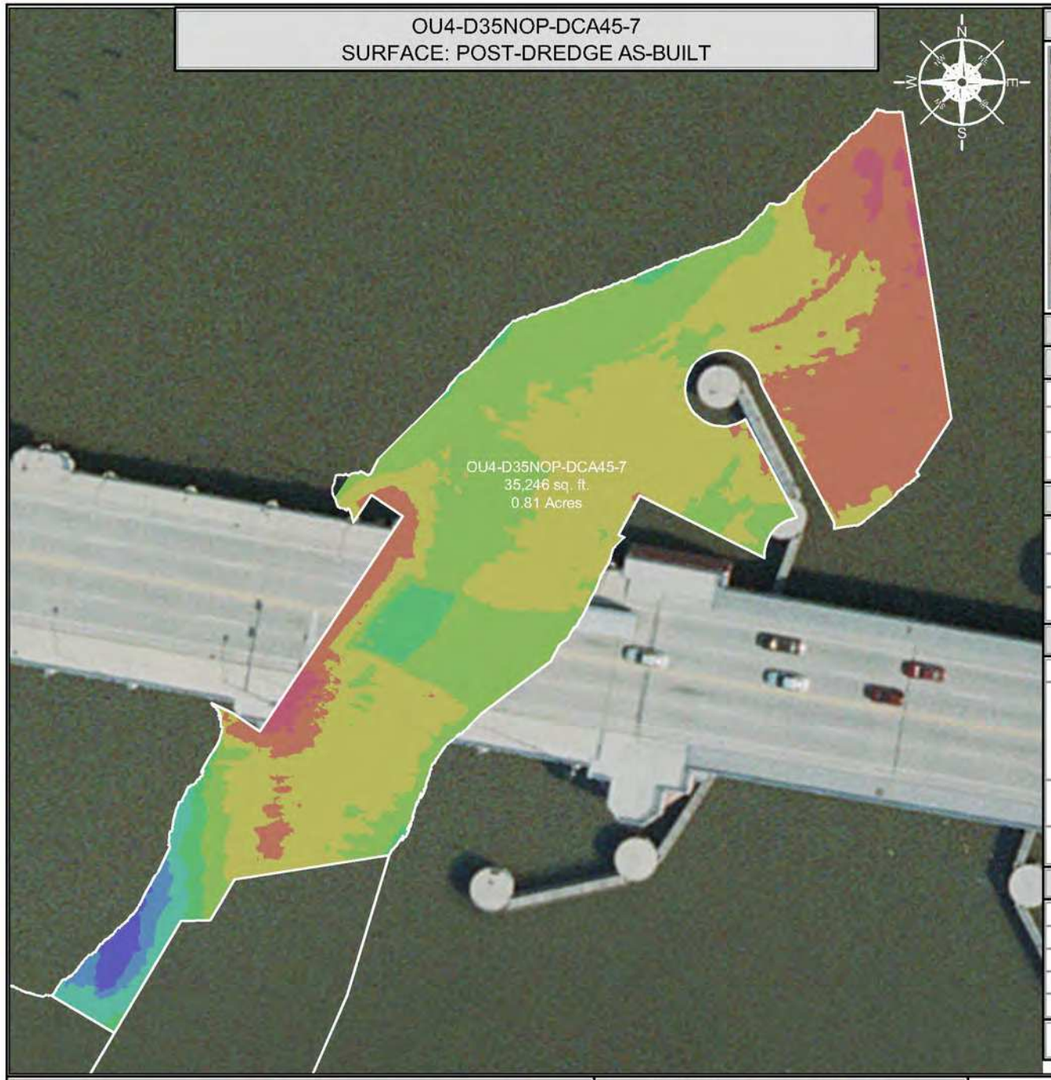
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-168

OU4-D35NOP-DCA45-6
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

P:\LOC\OU\Field Eng\mxd\gDredge Files\2016\OU4-D35NOP-DCA45\GIS\Post Dredge\OU4-D35NOP-DCA45-6.dwg

OU4-D35NOP-DCA45-7
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

1,199.99	INITIAL RAL VOLUME
588.48	INITIAL OVERCUT VOLUME
1,788.47	RAL + OVERCUT VOLUME
1,486.24	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

266.44	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
440.49	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
706.93	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

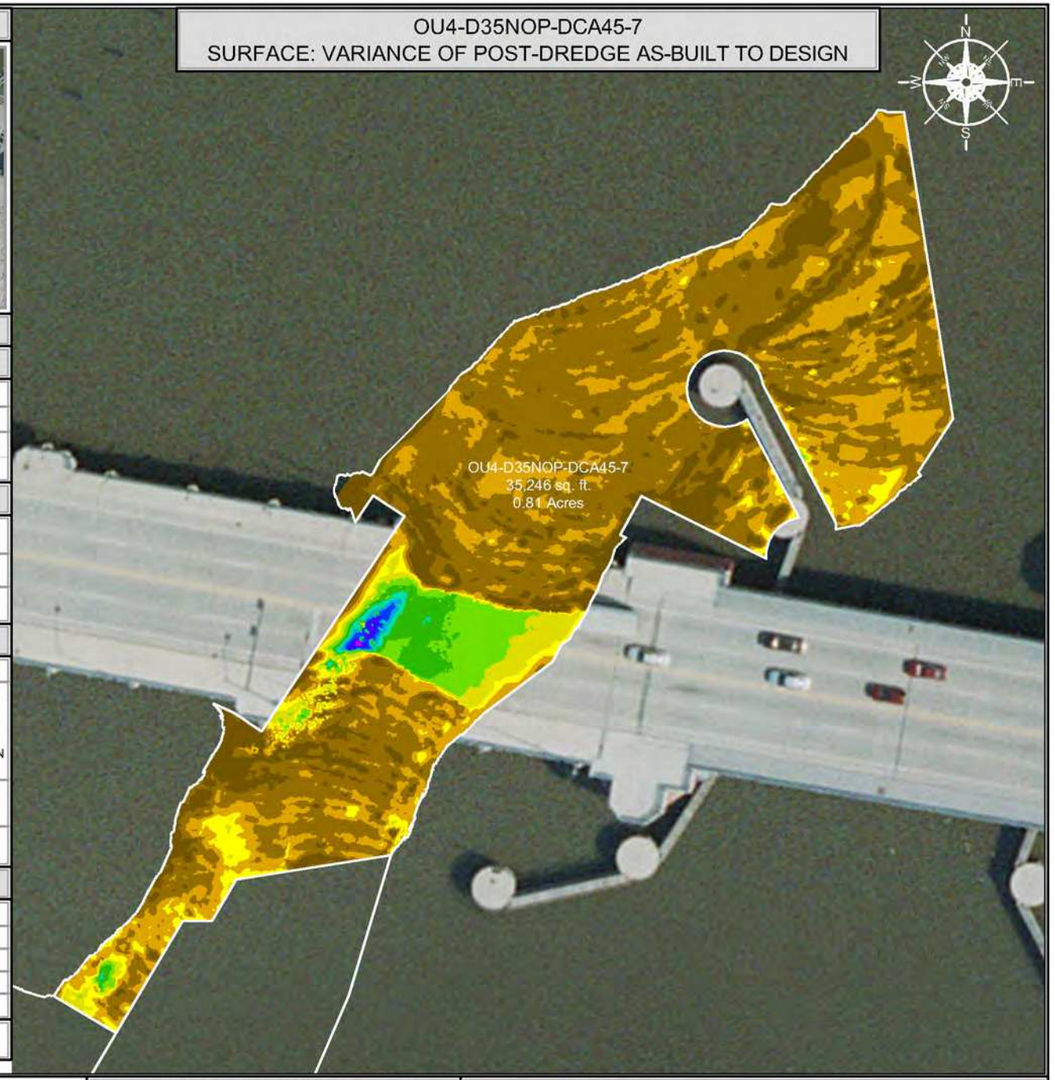
2018 AS-BUILT VOLUMES (CU. YD.)

716.77	TOTAL VOLUME DREDGED
98.84	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
167.60	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
134.63	OVERCUT VOLUME REMAINING
359.81	OVERCUT VOLUME DREDGED
258.12	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

35,246.47	AREA (SQ. FT.)
4,570.52	ABOVE DESIGN ELEVATION
30,675.95	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
6.53 "	AVERAGE DEPTH OF OVERCUT [1]
87	PERCENT COMPLETE [2]

OU4-D35NOP-DCA45-7
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-12-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
543.00'	-	545.00'
545.00'	-	547.00'
547.00'	-	549.00'
549.00'	-	551.00'
551.00'	-	553.00'
553.00'	-	555.00'
555.00'	-	557.00'
557.00'	-	559.00'
559.00'	-	561.00'

A/OT ACCEPTED ON AN EXCEPTION BASIS

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-4.99'	-	-1.00'	5,211.73
BELOW RAL	-1.00'	-	-0.50'	17,313.45
BELOW RAL	-0.50'	-	0.00'	8,150.77
ABOVE RAL	0.00'	-	0.50'	1,423.71
ABOVE RAL	0.50'	-	1.00'	948.99
ABOVE RAL	1.00'	-	1.50'	1,147.18
ABOVE RAL	1.50'	-	2.00'	705.13
ABOVE RAL	2.00'	-	2.50'	131.98
ABOVE RAL	2.50'	-	3.00'	70.86
ABOVE RAL	3.00'	-	3.50'	62.98
ABOVE RAL	3.50'	-	4.00'	44.66
ABOVE RAL	4.00'	-	4.29'	4.63

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D35NOP-DCA45-7.dwg
DRAWN BY: DAVID.FRISQUE
DATE: November 15, 2018
LAST REVISED: December 5, 2018
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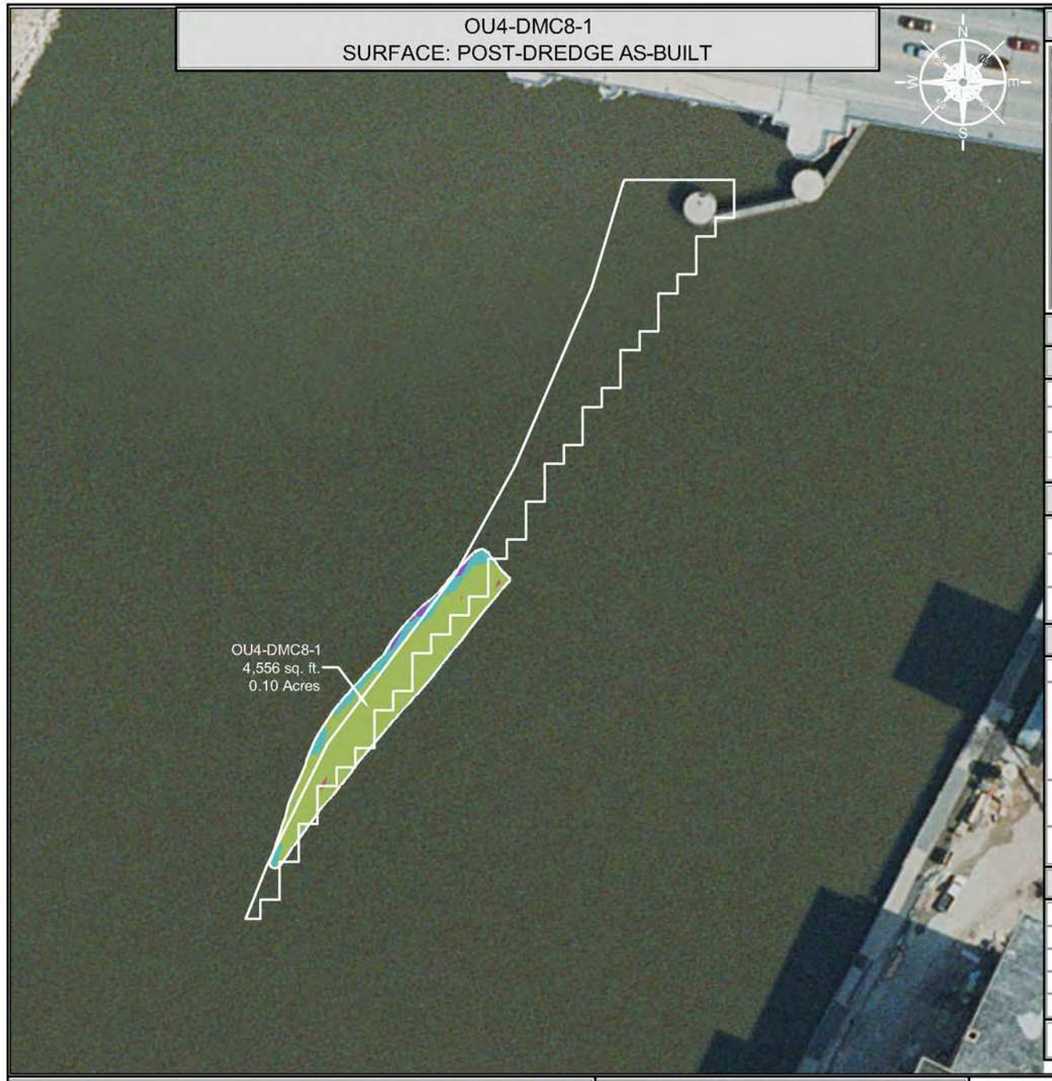
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-169

OU4-D35NOP-DCA45-7
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\ALLOC\42\Field Engineering\Dredge Files\2018\OU4-D35NOP-DCA45\GIS\Post Dredge\OU4-D35NOP-DCA45-7.dwg

OU4-DMC8-1
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

133.45	INITIAL RAL VOLUME
79.90	INITIAL OVERCUT VOLUME
213.35	RAL + OVERCUT VOLUME
202.84	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

115.53	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
78.68	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
194.21	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

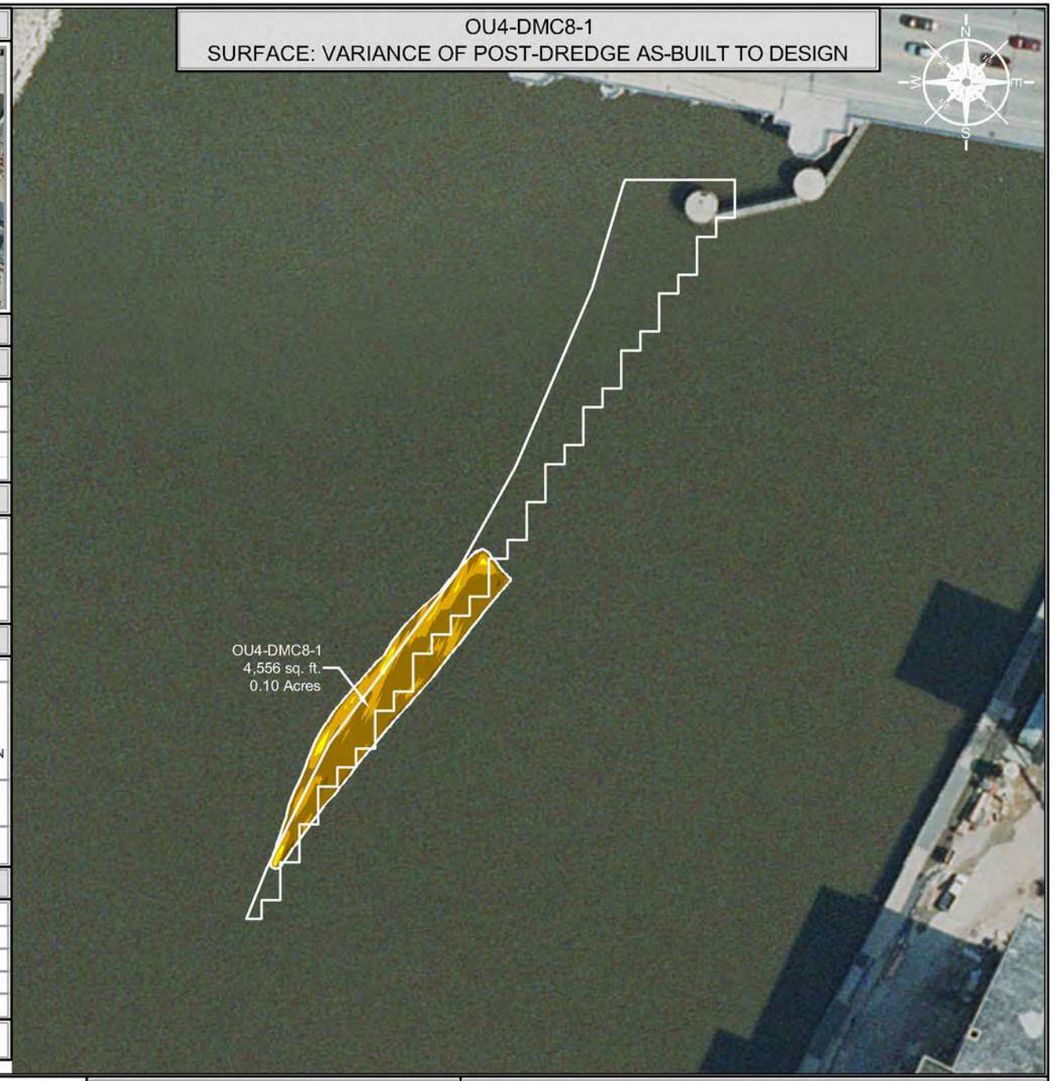
2018 AS-BUILT VOLUMES (CU. YD.)

208.66	TOTAL VOLUME DREDGED
114.93	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
0.60	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
9.91	OVERCUT VOLUME REMAINING
68.77	OVERCUT VOLUME DREDGED
24.96	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

4,555.53	AREA (SQ. FT.)
119.31	ABOVE DESIGN ELEVATION
4,436.22	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
6.85 "	AVERAGE DEPTH OF OVERCUT [1]
97	PERCENT COMPLETE [2]

OU4-DMC8-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.70'	-	-1.00'	229.08
BELOW RAL	-1.00'	-	-0.50'	2,975.50
BELOW RAL	-0.50'	-	0.00'	1,231.64
ABOVE RAL	0.00'	-	0.25'	97.10
ABOVE RAL	0.25'	-	0.53'	22.02

SCALE (1" = 80')

80 40 0 80 160

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-25-2018

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OU# = OPERABLE UNIT; D# = DREDGE AREA; # = DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DMC8-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: November 5, 2018
LAST REVISED: November 5, 2018
CHECKED BY: REG

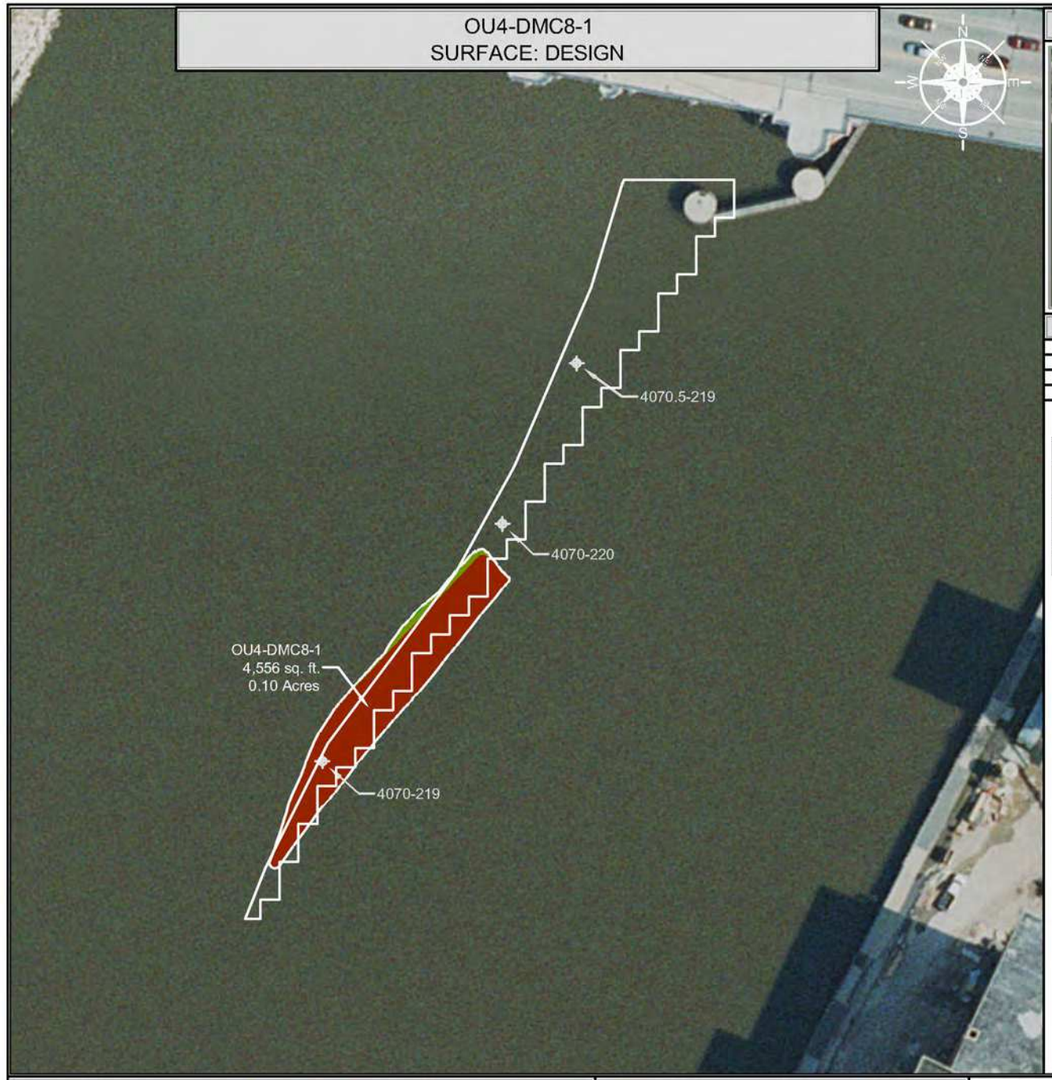
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-170

OU4-DMC8-1
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LLOC\Drafted Engineering\Dredge Files\2018\OU4-DMC8-1\DWG\Post Dredge\OU4-DMC8-1.dwg

OU4-DMC8-1
SURFACE: DESIGN



INDEX MAP



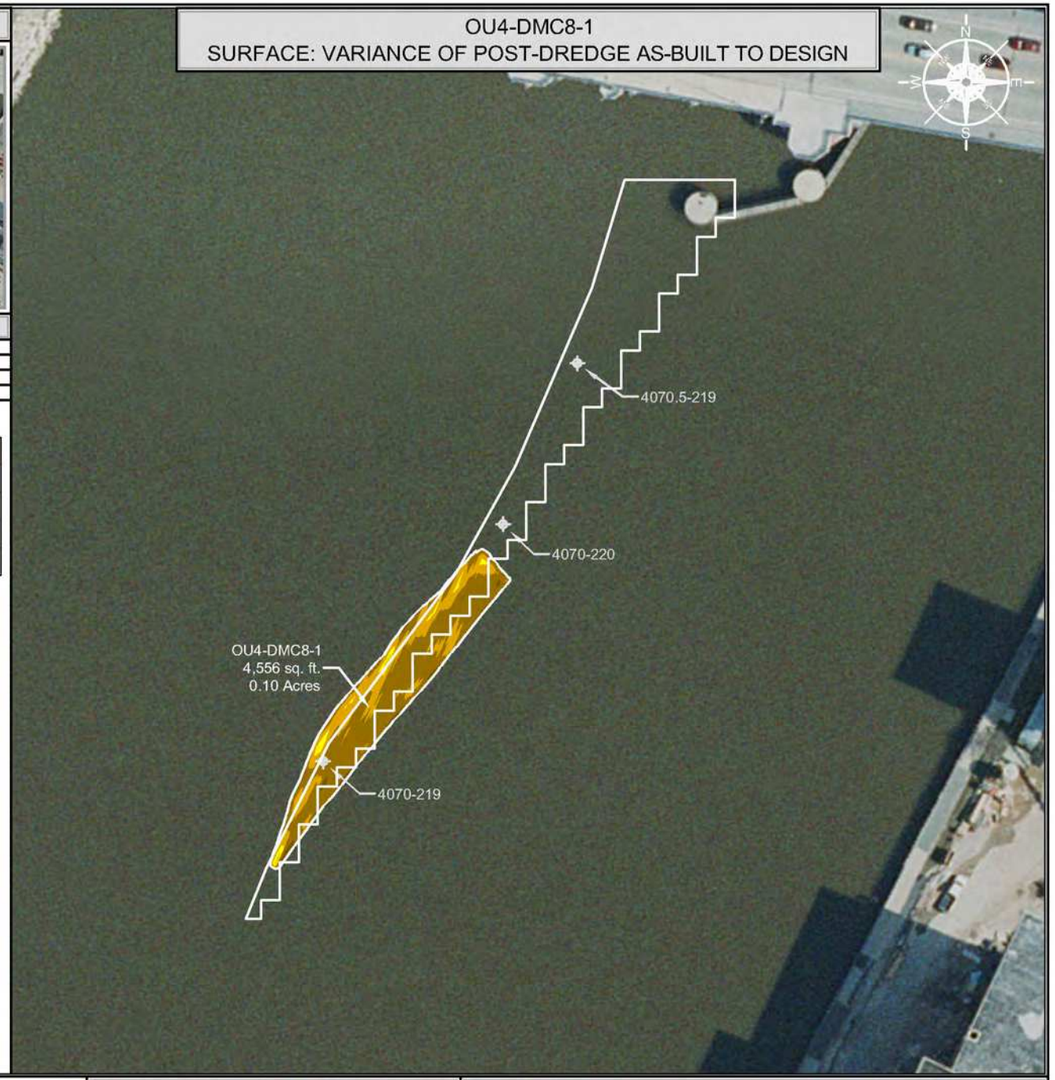
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	359 µg/kg (0.359 ppm)
0.5' - 1.0'	<25.1 µg/kg (<0.0251 ppm)
1.0' - 1.5'	<25.1 µg/kg (<0.0251 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4070-220	255778.35	2485897.77
4070-219	255653.10	2485802.72
4070.5-219	255863.11	2485937.00

OU4-DMC8-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 80')

80 40 0 80 160

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-25-2018

DESIGN COLOR LEGEND

	MIN. EL.		MAX. EL.
	550.00'	-	551.00'
	551.00'	-	552.00'
	552.00'	-	553.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-DMC8-1-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-DMC8-1-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-DMC8-1-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 11-16-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF THREE SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 12-5-2018

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OU# - D# - #
OU# = OPERABLE UNIT; D# = DREDGE AREA; # = DREDGE MANAGEMENT UNIT
DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

		MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL		-1.70'	-	-1.00'	229.08
BELOW RAL		-1.00'	-	-0.50'	2,975.50
BELOW RAL		-0.50'	-	0.00'	1,231.64
ABOVE RAL		0.00'	-	0.25'	97.10
ABOVE RAL		0.25'	-	0.53'	22.02

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DMC8-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: November 5, 2018
LAST REVISED: November 5, 2018
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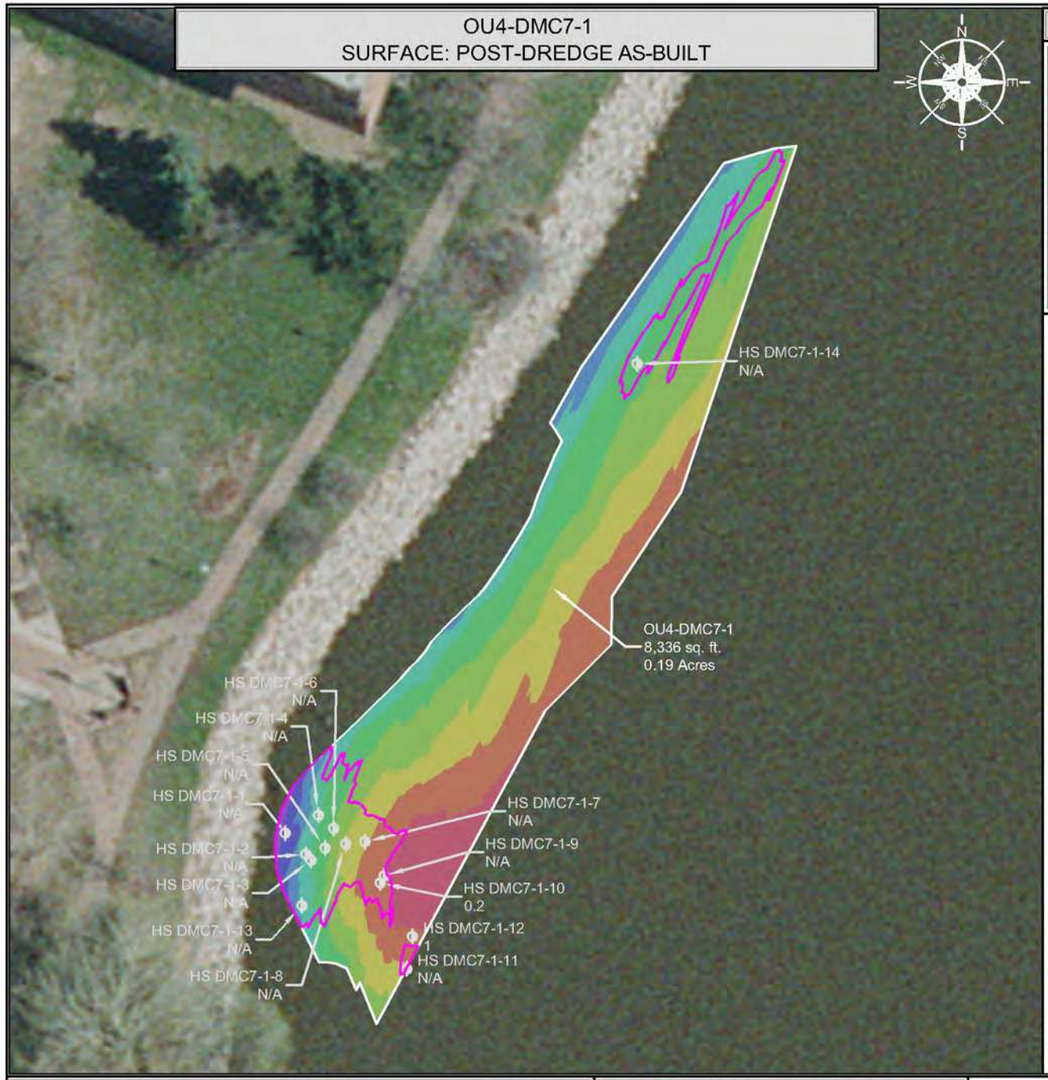
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-171

OU4-DMC8-1
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LCAD\Field Engineering\Dredge Piles\2018\OU4 (DMC8-1 thru DMC8-4)\DWG\Post Dredge\OU4 (DMC8-1.dwg

OU4-DMC7-1
SURFACE: POST-DREDGE AS-BUILT



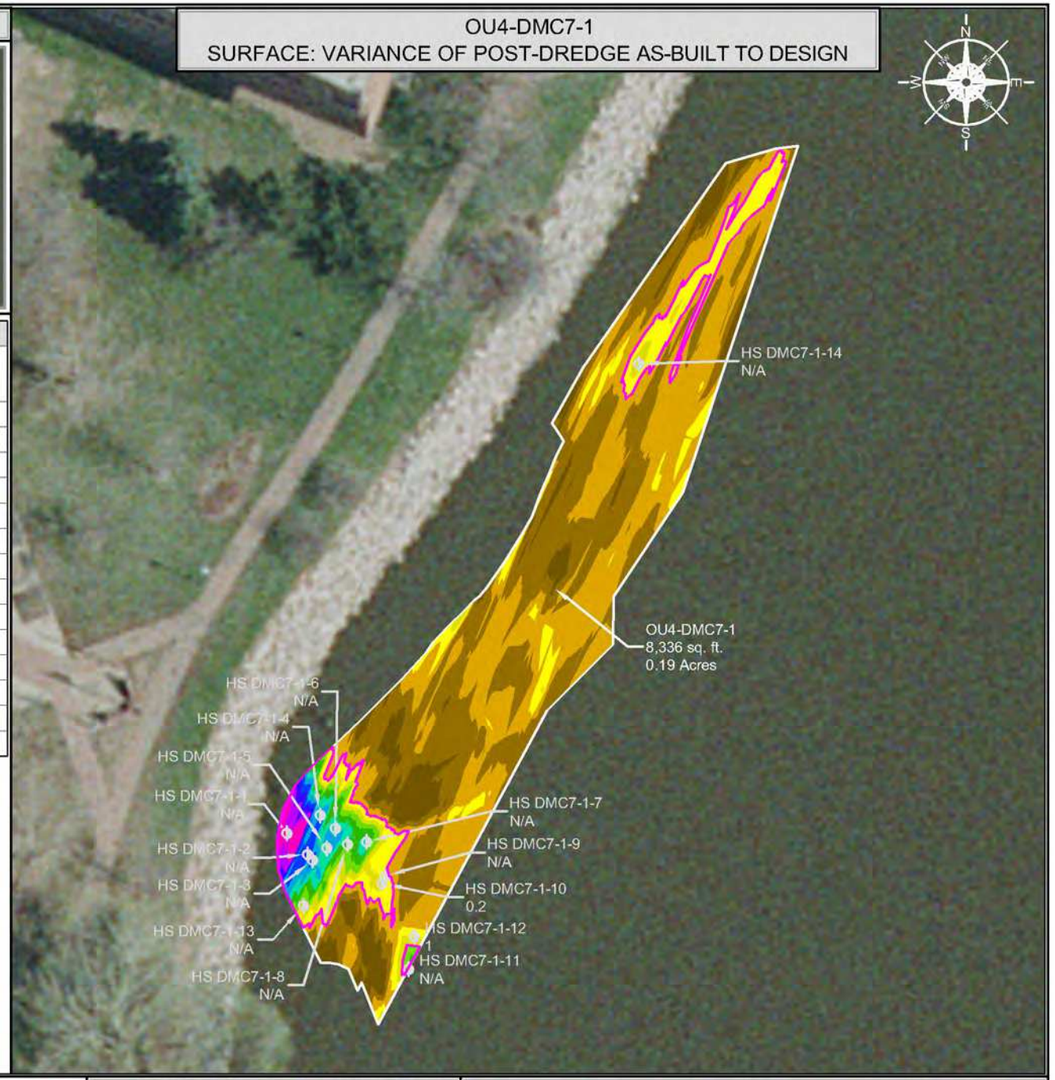
INDEX MAP



HIGH SUBGRADE SAMPLE AS-BUILT RESULTS			
SAMPLE ID	NORTHING	EASTING	THICKNESS OF SOFT SEDIMENT (FEET)
HS DMC7-1-1	255557.55	2485321.94	N/A
HS DMC7-1-2	255551.95	2485327.40	N/A
HS DMC7-1-3	255550.38	2485328.73	N/A
HS DMC7-1-4	255562.24	2485330.75	N/A
HS DMC7-1-5	255553.62	2485332.48	N/A
HS DMC7-1-6	255558.78	2485334.74	N/A
HS DMC7-1-7	255555.27	2485343.02	N/A
HS DMC7-1-8	255554.57	2485337.88	N/A
HS DMC7-1-9	255546.27	2485347.99	N/A
HS DMC7-1-10	255544.37	2485346.96	0.2
HS DMC7-1-11	255521.72	2485354.04	N/A
HS DMC7-1-12	255530.29	2485355.55	1
HS DMC7-1-13	255538.40	2485326.34	N/A
HS DMC7-1-14	255681.34	2485414.85	N/A

NR = NO RECOVERY
NA = NO CORE COLLECTION REQUIRED DUE TO POLING DEPTH

OU4-DMC7-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-26-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
555.00'	-	557.00'
557.00'	-	559.00'
559.00'	-	561.00'
561.00'	-	563.00'
563.00'	-	565.00'
565.00'	-	567.00'
567.00'	-	569.00'
569.00'	-	571.00'
571.00'	-	573.00'

DRAWING NOTES

1. HIGH SUBGRADE SAMPLES AND POLING DATA WERE COLLECTED ON 10-31-2018 AND LOGGED ON 10-31-2018

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OU# - D# - #
OPERABLE UNIT
DREDGE AREA
DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.82'	-	-1.00'	667.70
	-1.00'	-	-0.50'	2,852.60
	-0.50'	-	0.00'	3,137.45
ABOVE RAL	0.00'	-	0.50'	864.87
	0.50'	-	1.00'	194.99
	1.00'	-	1.50'	115.38
	1.50'	-	2.00'	111.53
	2.00'	-	2.50'	109.18
	2.50'	-	3.00'	88.35
	3.00'	-	3.50'	64.70
	3.50'	-	4.00'	26.55
	4.00'	-	4.50'	47.93
	4.50'	-	5.75'	54.64

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DMC7-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: October 31, 2018
LAST REVISED: November 5, 2018
CHECKED BY: REG

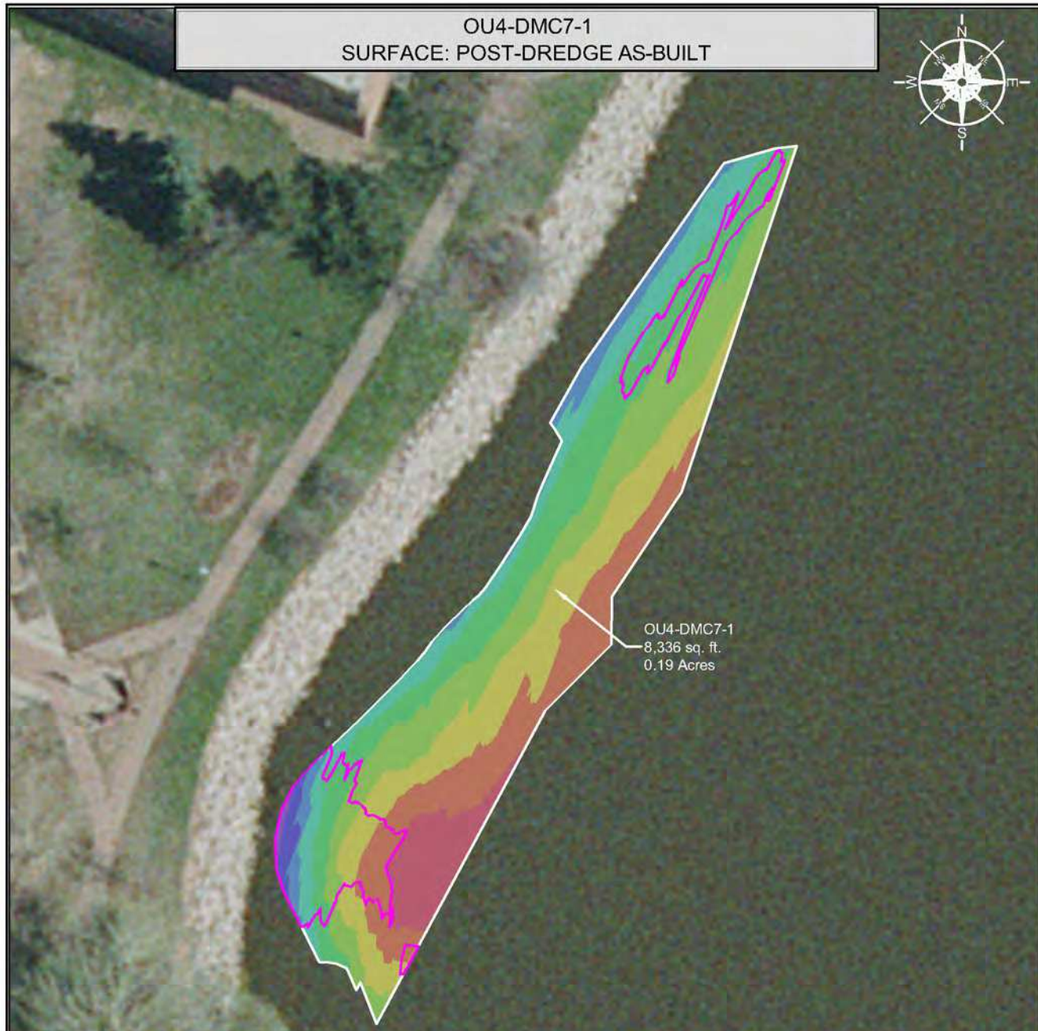
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-172

OU4-DMC7-1
PRIMARY DREDGE HIGH SUBGRADE RESULTS

P:\LLOC\Oil\Field Engineering\Dredge Files\2018\OU4-DMC7-1\DWG\Post Dredge\OU4-DMC7-1.dwg

OU4-DMC7-1
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

943.54	INITIAL RAL VOLUME
152.48	INITIAL OVERCUT VOLUME
1,096.02	RAL + OVERCUT VOLUME
969.34	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

946.07	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
152.71	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
1,098.78	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

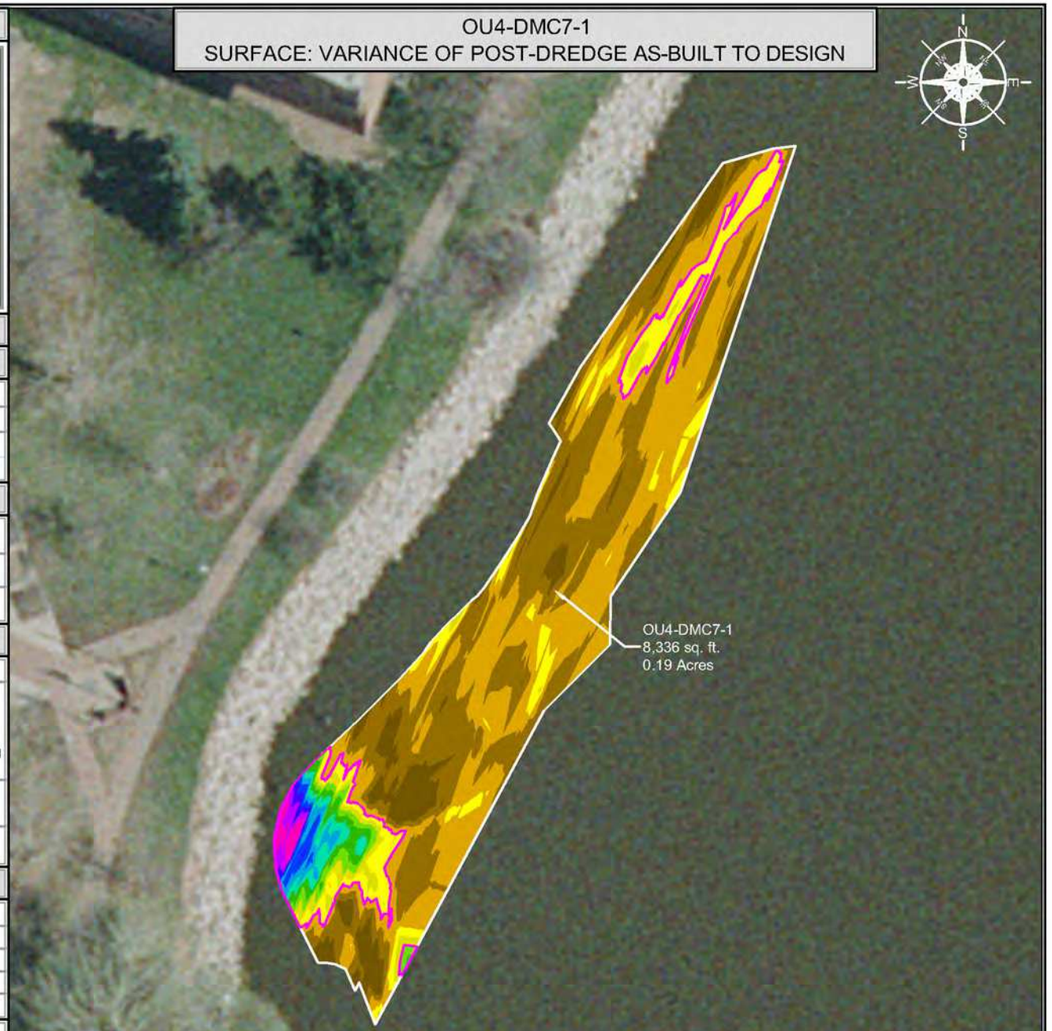
2018 AS-BUILT VOLUMES (CU. YD.)

1,018.35	TOTAL VOLUME DREDGED
872.64	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
67.41	CONFIRMED HIGH SUBGRADE VOLUME
3.09	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
56.18	OVERCUT VOLUME REMAINING
104.01	OVERCUT VOLUME DREDGED
41.70	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

8,335.86	AREA (SQ. FT.)
358.88	ABOVE DESIGN ELEVATION
6,657.74	AT OR BELOW DESIGN ELEVATION
1,319.24	CONFIRMED HIGH SUBGRADE
7.09 "	AVERAGE DEPTH OF OVERCUT [1]
96	PERCENT COMPLETE [2]

OU4-DMC7-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-26-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
555.00'	-	557.00'
557.00'	-	559.00'
559.00'	-	561.00'
561.00'	-	563.00'
563.00'	-	565.00'
565.00'	-	567.00'
567.00'	-	569.00'
569.00'	-	571.00'
571.00'	-	573.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT | DREDGE AREA | DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.82'	-	-1.00'	667.70
BELOW RAL	-1.00'	-	-0.50'	2,852.60
BELOW RAL	-0.50'	-	0.00'	3,137.45
ABOVE RAL	0.00'	-	0.50'	864.87
ABOVE RAL	0.50'	-	1.00'	194.99
ABOVE RAL	1.00'	-	1.50'	115.38
ABOVE RAL	1.50'	-	2.00'	111.53
ABOVE RAL	2.00'	-	2.50'	109.18
ABOVE RAL	2.50'	-	3.00'	88.35
ABOVE RAL	3.00'	-	3.50'	64.70
ABOVE RAL	3.50'	-	4.00'	26.55
ABOVE RAL	4.00'	-	4.50'	47.93
ABOVE RAL	4.50'	-	5.75'	54.64

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DMC7-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: October 31, 2018
LAST REVISED: November 5, 2018
CHECKED BY: REG

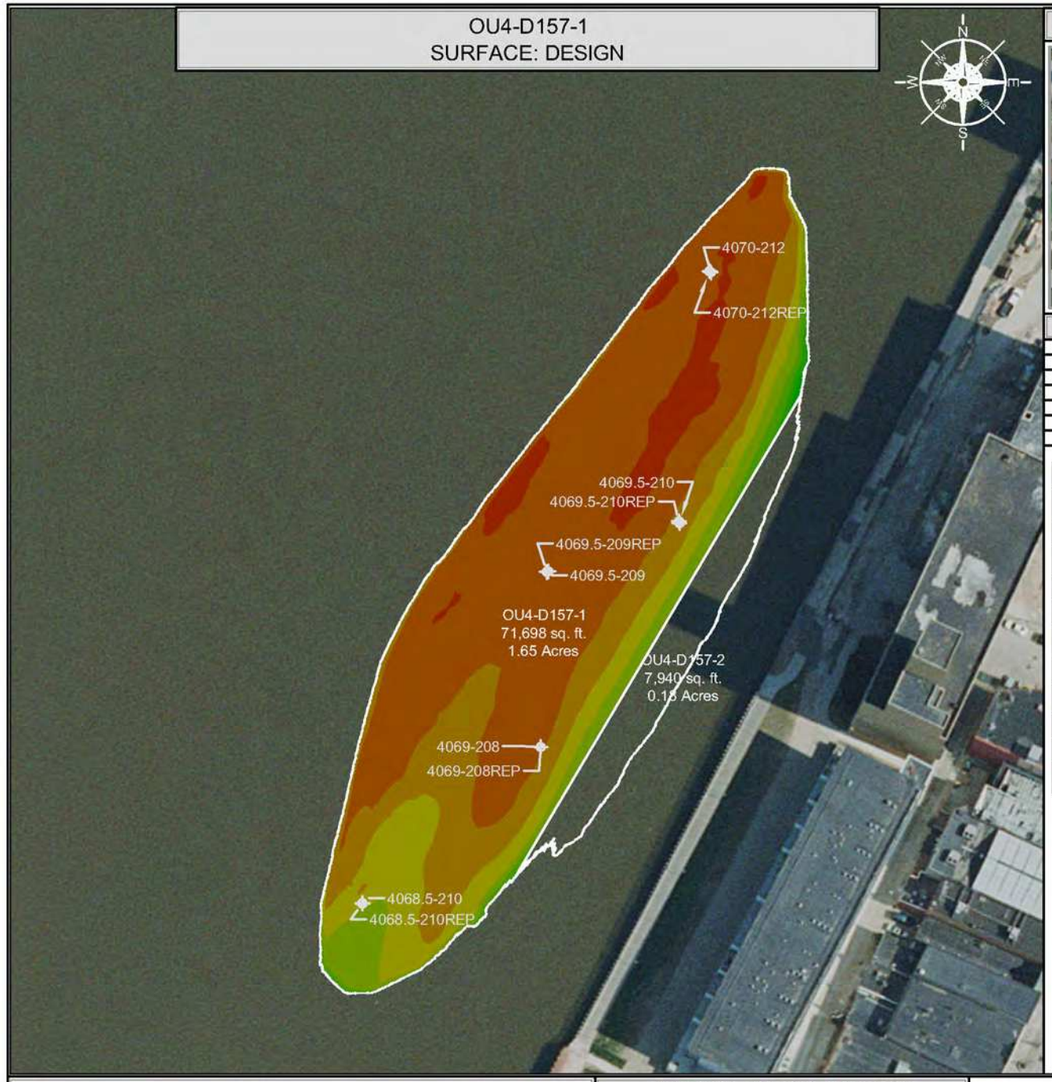
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-173

OU4-DMC7-1
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\ALLOC\42\Field Engineering\gDredge Files\2018\OU4 DMC7-1\DWG\Post Dredge\OU4 DMC7-1.dwg

OU4-D157-1
SURFACE: DESIGN



INDEX MAP



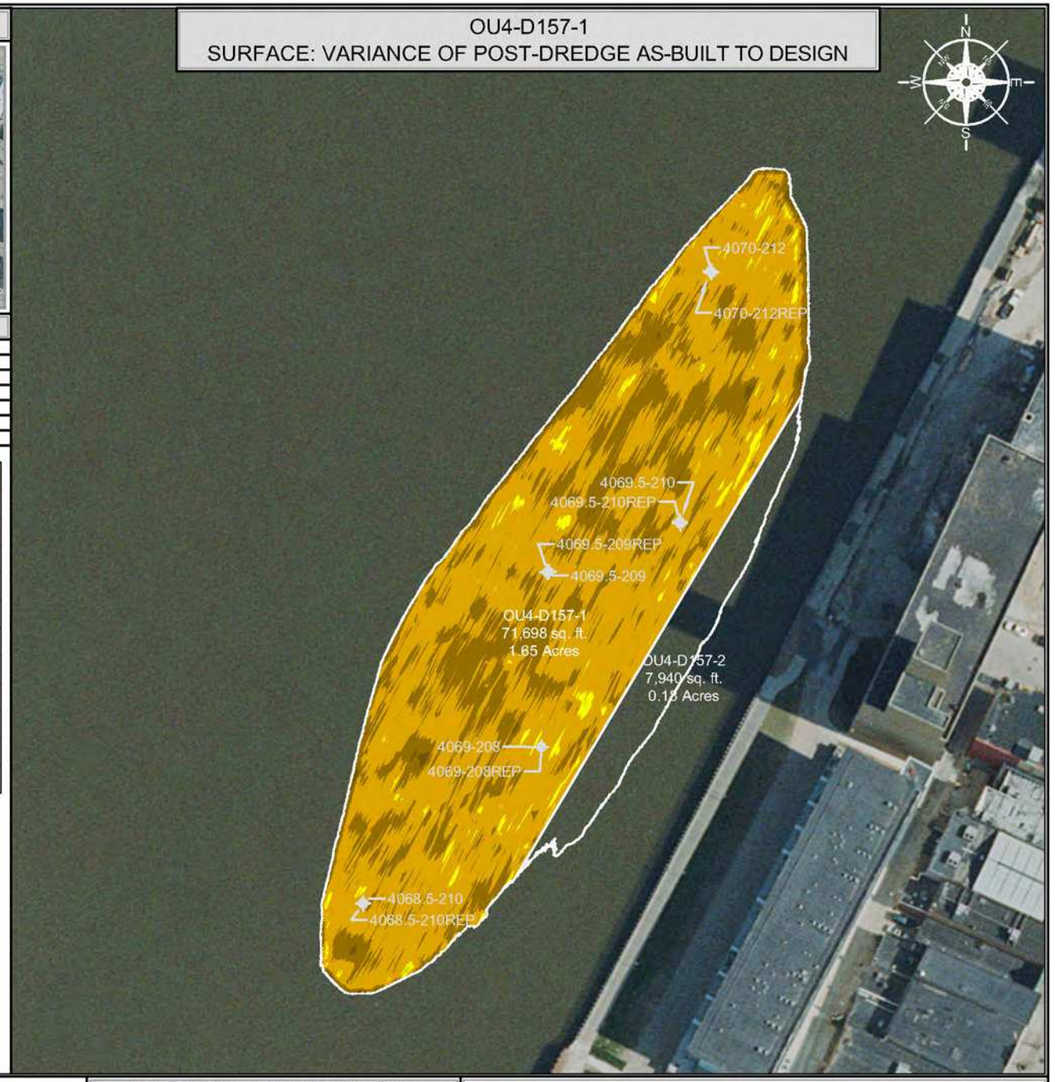
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	2,010 µg/kg (2.01 ppm)
0.5' - 1.0'	1,490 µg/kg (1.49 ppm)
1.0' - 1.5'	227 µg/kg (0.227 ppm)
0.0' - 0.5' REP	2,090 µg/kg (2.09 ppm)
0.5' - 1.0' REP	1,220 µg/kg (1.22 ppm)
1.0' - 1.5' REP	164 µg/kg (0.164 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4068.5-210REP	255187.56	2485706.90
4068.5-210	255187.90	2485706.96
4069-208	255290.87	2485824.47
4069-208REP	255290.82	2485824.43
4069.5-210REP	255439.58	2485915.73
4069.5-209REP	255406.18	2485828.51
4069.5-210	255438.41	2485916.03
4069.5-209	255406.58	2485829.64
4070-212REP	255604.75	2485936.00
4070-212	255603.89	2485936.74

OU4-D157-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-24-2016

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-17-D157-1-A
2. 0.5' - 1.0' SAMPLE ID TTFR-17-D157-1-B
3. 1.0' - 1.5' SAMPLE ID TTFR-17-D157-1-C
4. 0.0' - 0.5' SAMPLE ID TTFR-17-D157-1REP-A
5. 0.5' - 1.0' SAMPLE ID TTFR-17-D157-1REP-B
6. 1.0' - 1.5' SAMPLE ID TTFR-17-D157-1REP-C
7. CONFIRMATION SAMPLES WERE COLLECTED ON 11-29-2017
8. CONFIRMATION SAMPLES ARE A COMPOSITE OF TEN SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
9. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 12-6-2017

THIS DOCUMENT IS THE PROPERTY OF LOWER FOX RIVER REMEDIATION LLC PREPARED BY TETRA TECH EC, INC. (TtEC), AND IS PROVIDED UPON THE CONDITION THAT IT WILL NOT BE REPRODUCED, COPIED, OR ISSUED TO A THIRD PARTY. IT IS PROVIDED TO BE USED SOLELY FOR THE ORIGINAL INTENDED PURPOSE, AND SOLELY FOR THE EXECUTION OR REVIEW OF THE ENGINEERING AND CONSTRUCTION OF THE SUBJECT PROJECT.

OU# - D# - #
- OU# — OPERABLE UNIT
- D# — DREDGE AREA
- # — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.07'	-	-1.00'	1,003.50
BELOW RAL	-1.00'	-	-0.50'	20,676.89
BELOW RAL	-0.50'	-	0.00'	48,401.76
ABOVE RAL	0.00'	-	0.25'	1,580.87
ABOVE RAL	0.25'	-	0.50'	33.59
ABOVE RAL	0.50'	-	0.70'	1.39

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D157-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 27, 2016
LAST REVISED: December 6, 2018
CHECKED BY: REG

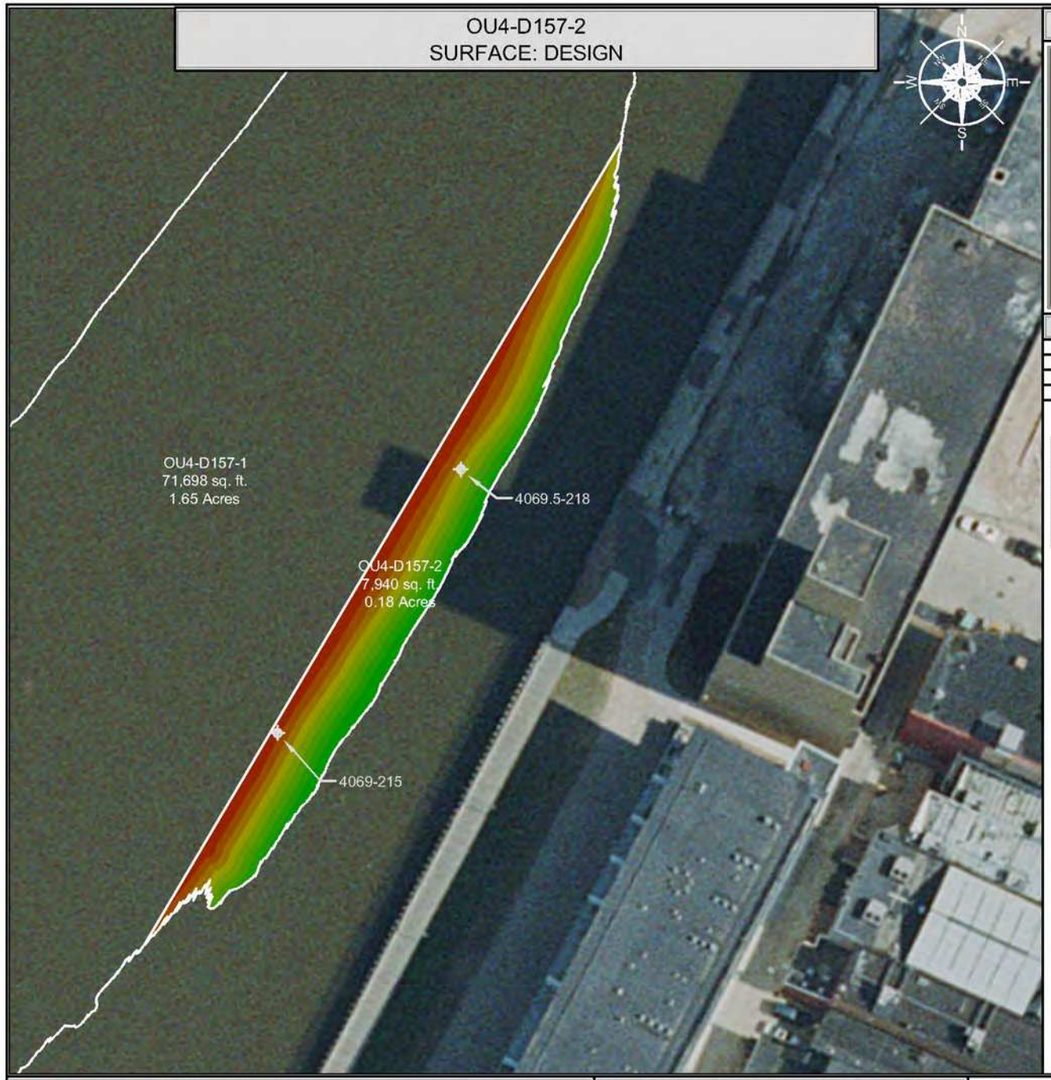
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-174

OU4-D157-1
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

F:\LOCAD\Hilst Engineering\pDredge Files\2016\634 D157\DWG\Post Dredge\OU4 D157-1.dwg

OU4-D157-2
SURFACE: DESIGN



INDEX MAP



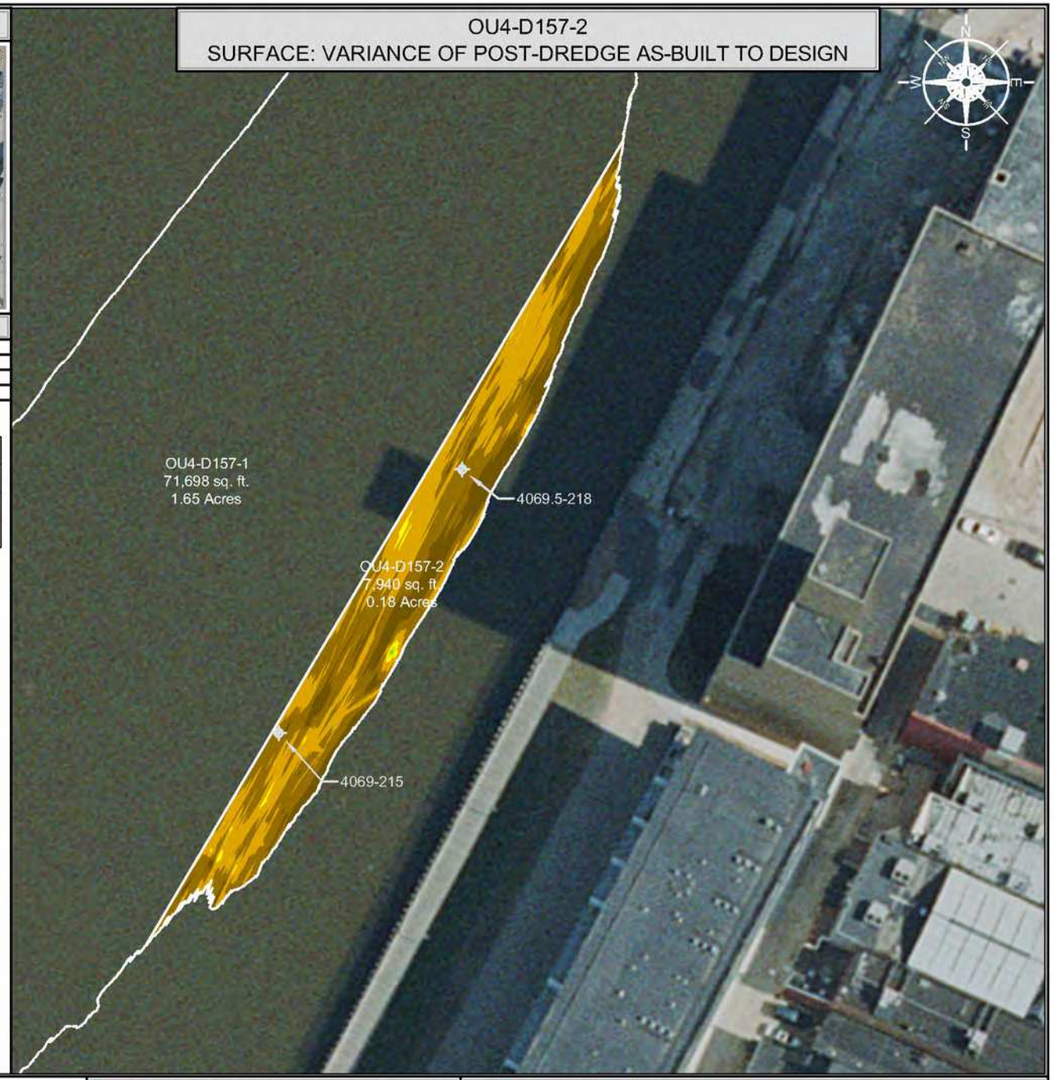
CONFIRMATION SAMPLE RESULTS

INTERVAL	CONCENTRATION
0.0' - 0.5'	112 µg/kg (0.112 ppm)
0.5' - 1.0'	<25.1 µg/kg (<0.0251 ppm)
1.0' - 1.5'	<25.1 µg/kg (<0.0251 ppm)

CONFIRMATION SAMPLE AS-BUILT LOCATIONS

SAMPLE ID	NORTHING	EASTING
4069-215	255288.75	2485860.12
4069.5-218	255393.02	2485932.68

OU4-D157-2
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-29-2016

DESIGN COLOR LEGEND

MIN. EL.		MAX. EL.
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'
560.00'	-	561.00'
561.00'	-	562.00'

DRAWING NOTES

1. 0.0' - 0.5' SAMPLE ID TTFR-18-D157-2-A
2. 0.5' - 1.0' SAMPLE ID TTFR-18-D157-2-B
3. 1.0' - 1.5' SAMPLE ID TTFR-18-D157-2-C
4. CONFIRMATION SAMPLES WERE COLLECTED ON 11-16-2018
5. CONFIRMATION SAMPLES ARE A COMPOSITE OF TWO SAMPLES TAKEN FROM RANDOM LOCATIONS AS SHOWN ON THE DRAWING
6. ANALYTICAL RESULTS WERE OBTAINED FROM PACE ANALYTICAL SERVICES, INC. ON 12-3-2018

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.30'	-	-1.00'	1,346.74
BELOW RAL	-1.00'	-	-0.50'	3,580.68
BELOW RAL	-0.50'	-	0.00'	2,935.52
ABOVE RAL	0.00'	-	0.25'	68.08
ABOVE RAL	0.25'	-	0.50'	7.81
ABOVE RAL	0.50'	-	0.70'	1.59

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D157-2.dwg
DRAWN BY: DAVID.FRISQUE
DATE: July 1, 2016
LAST REVISED: December 6, 2018
CHECKED BY: REG

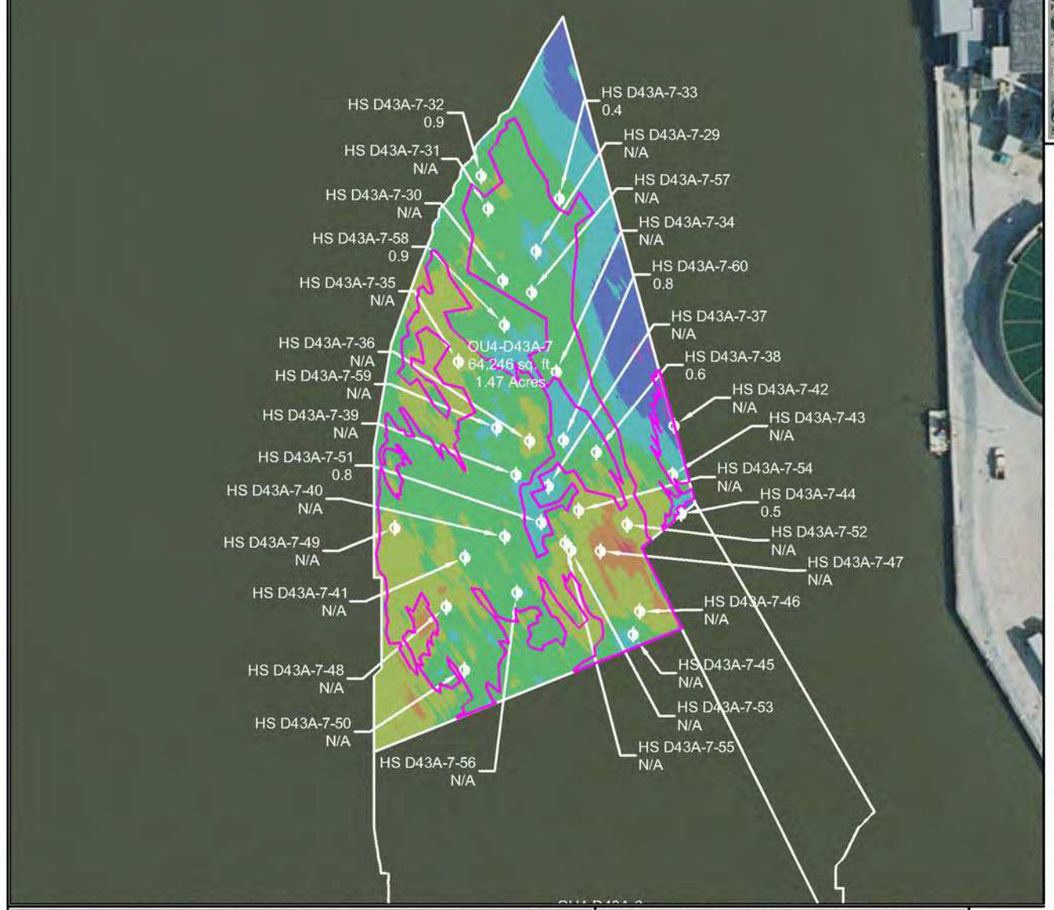
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-175

OU4-D157-2
PRIMARY DREDGE CONFIRMATION SAMPLE RESULTS AND LOCATIONS

P:\LOCAL\Field Engineering\Dredge Files\2018\OU4 D157\DWG\Post Dredge\OU4 D157-2.dwg

OU4-D43A-7
SURFACE: POST-DREDGE AS-BUILT



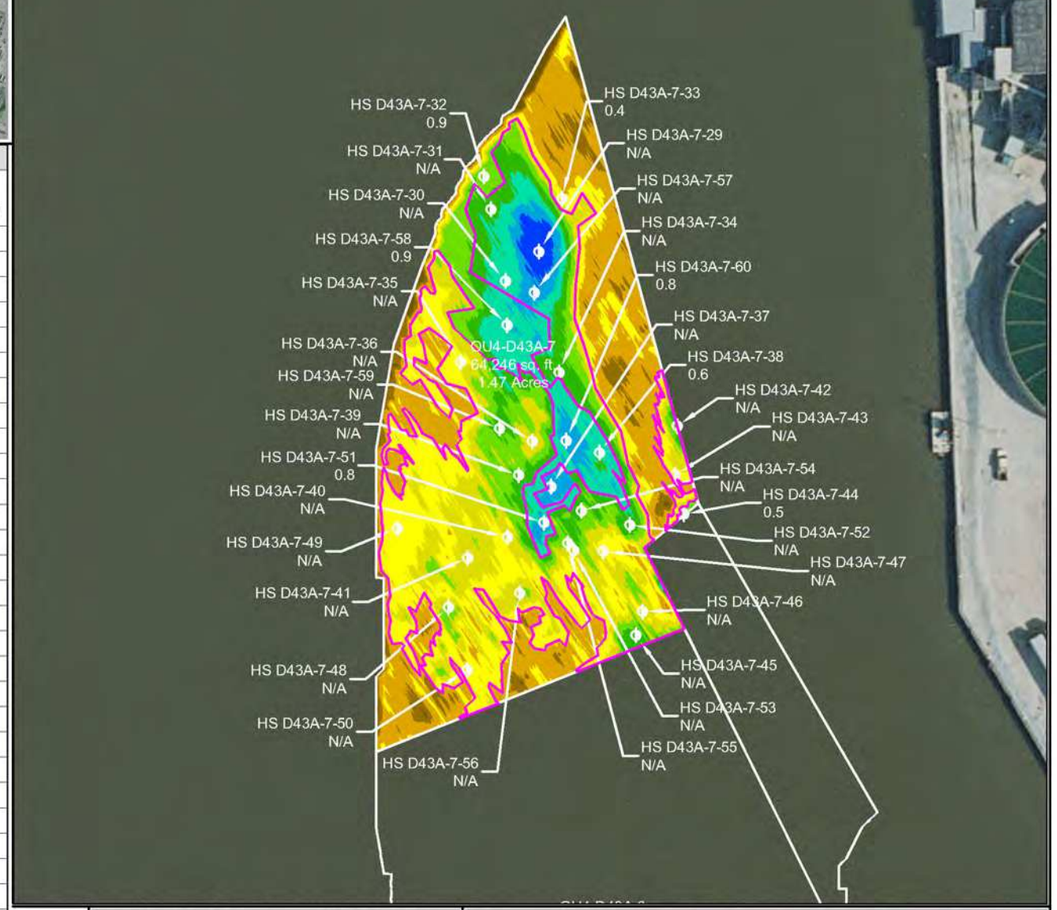
INDEX MAP



HIGH SUBGRADE SAMPLE AS-BUILT RESULTS

SAMPLE ID	NORTHING	EASTING	THICKNESS OF SOFT SEDIMENT (FEET)
HS D43A-7-29	257773.21	2487435.24	N/A
HS D43A-7-30	257753.80	2487413.09	N/A
HS D43A-7-31	257801.16	2487403.45	N/A
HS D43A-7-32	257822.89	2487398.95	0.9
HS D43A-7-33	257808.00	2487450.40	0.4
HS D43A-7-34	257693.50	2487448.44	N/A
HS D43A-7-35	257700.40	2487383.70	N/A
HS D43A-7-36	257647.99	2487430.77	N/A
HS D43A-7-37	257618.31	2487443.24	N/A
HS D43A-7-38	257640.65	2487475.01	0.6
HS D43A-7-39	257625.79	2487421.79	N/A
HS D43A-7-40	257584.97	2487414.45	N/A
HS D43A-7-41	257571.19	2487388.13	N/A
HS D43A-7-42	257658.11	2487526.33	N/A
HS D43A-7-43	257625.84	2487525.24	N/A
HS D43A-7-44	257600.07	2487530.79	0.5
HS D43A-7-45	257520.37	2487499.28	N/A
HS D43A-7-46	257535.75	2487503.62	N/A
HS D43A-7-47	257575.50	2487477.54	N/A
HS D43A-7-48	257538.64	2487375.69	N/A
HS D43A-7-49	257590.68	2487341.80	N/A
HS D43A-7-50	257497.19	2487387.73	N/A
HS D43A-7-51	257594.49	2487438.45	0.8
HS D43A-7-52	257592.97	2487495.15	N/A
HS D43A-7-53	257576.03	2487458.02	N/A
HS D43A-7-54	257602.20	2487463.29	N/A
HS D43A-7-55	257580.82	2487454.28	N/A
HS D43A-7-56	257547.97	2487422.48	N/A
HS D43A-7-57	257745.98	2487432.10	N/A
HS D43A-7-58	257724.73	2487414.35	0.9
HS D43A-7-59	257656.60	2487409.20	N/A
HS D43A-7-60	257648.48	2487453.34	0.8

OU4-D43A-7
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-16-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'

DRAWING NOTES

1. HIGH SUBGRADE SAMPLES AND POLING DATA WERE COLLECTED ON 10-23-2018 AND LOGGED ON 10-23-2018

NR = NO RECOVERY
NA = NO CORE COLLECTION REQUIRED DUE TO POLING DEPTH

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OU# - D# - #
OPERABLE UNIT | DREDGE AREA | DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.88'	-	-1.00'	479.62
BELOW RAL	-1.00'	-	-0.50'	2,855.59
BELOW RAL	-0.50'	-	0.00'	15,421.82
ABOVE RAL	0.00'	-	0.50'	14,937.33
ABOVE RAL	0.50'	-	1.00'	9,589.14
ABOVE RAL	1.00'	-	1.50'	6,786.54
ABOVE RAL	1.50'	-	2.00'	5,565.00
ABOVE RAL	2.00'	-	2.50'	5,724.40
ABOVE RAL	2.50'	-	3.00'	2,165.36
ABOVE RAL	3.00'	-	3.67'	721.63

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D43A-7.dwg
DRAWN BY: DAVID.FRISQUE
DATE: October 2, 2018
LAST REVISED: December 6, 2018
CHECKED BY: REG

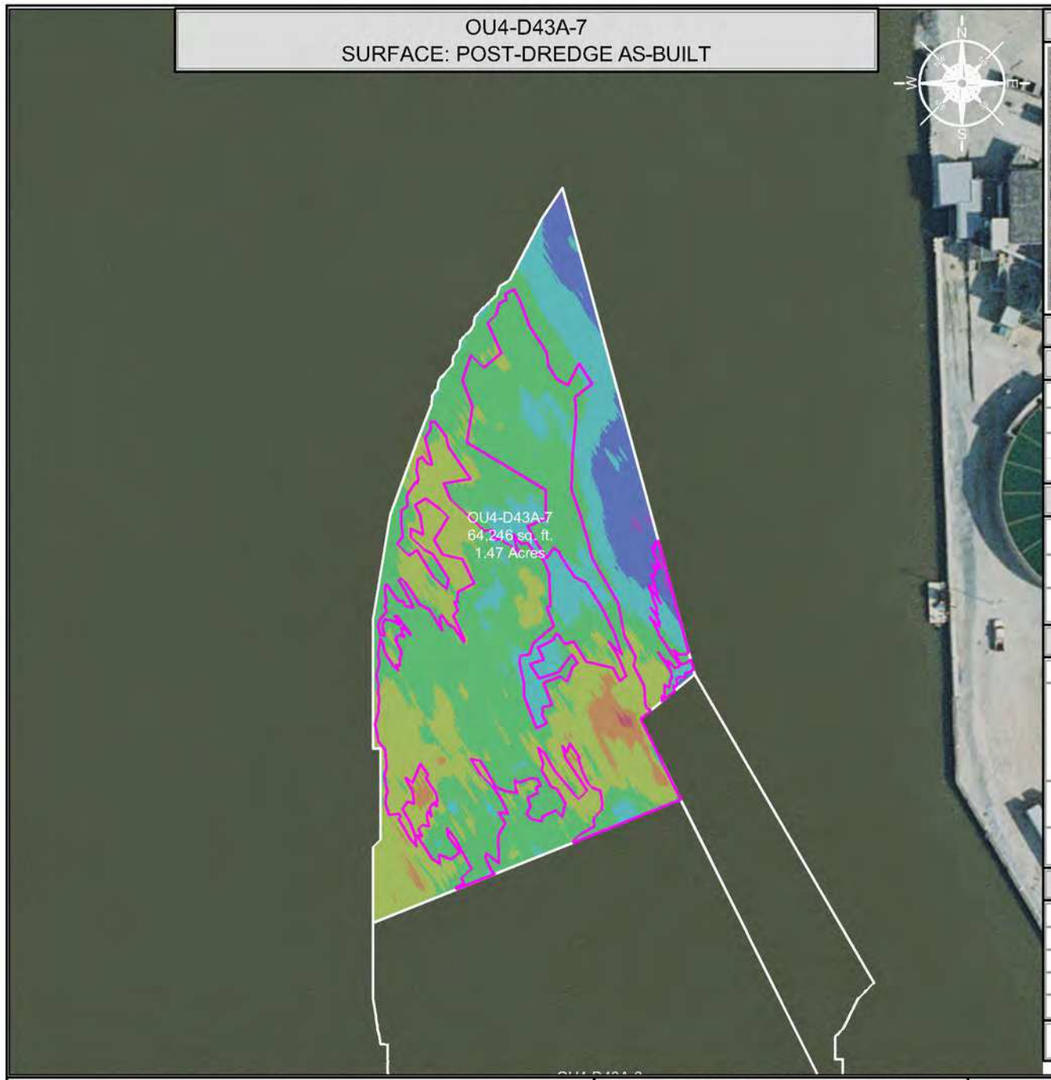
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-176

OU4-D43A-7
PRIMARY DREDGE HIGH SUBGRADE RESULTS

F:\LOC\D\Field Engineering\Dredge Files\2018\OU4 D43A\DWG\Post Dredge\OU4 D43A-7.dwg

OU4-D43A-7
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

4,761.53	INITIAL RAL VOLUME
1,156.98	INITIAL OVERCUT VOLUME
5,918.51	RAL + OVERCUT VOLUME
3,075.69	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

2,757.95	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
1,111.72	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
3,869.67	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

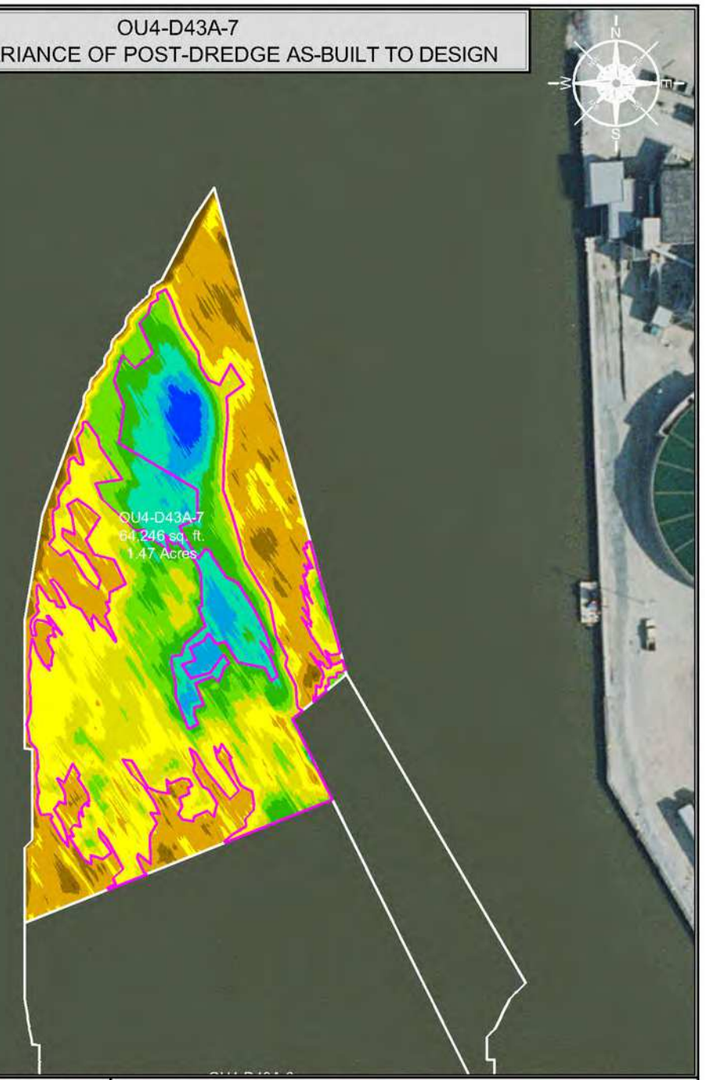
2018 AS-BUILT VOLUMES (CU. YD.)

1,160.73	TOTAL VOLUME DREDGED
915.94	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
1,307.53	CONFIRMED HIGH SUBGRADE VOLUME
534.48	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
1,000.81	OVERCUT VOLUME REMAINING
228.35	OVERCUT VOLUME DREDGED
16.44	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

64,246.43	AREA (SQ. FT.)
10,018.95	ABOVE DESIGN ELEVATION
18,757.03	AT OR BELOW DESIGN ELEVATION
35,470.45	CONFIRMED HIGH SUBGRADE
4.23 "	AVERAGE DEPTH OF OVERCUT [1]
84	PERCENT COMPLETE [2]

OU4-D43A-7
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-16-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'

A/OT ACCEPTED ON AN EXCEPTION BASIS

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.88'	-	-1.00'	479.62
	-1.00'	-	-0.50'	2,855.59
	-0.50'	-	0.00'	15,421.82
ABOVE RAL	0.00'	-	0.50'	14,937.33
	0.50'	-	1.00'	9,589.14
	1.00'	-	1.50'	6,786.54
	1.50'	-	2.00'	5,565.00
	2.00'	-	2.50'	5,724.40
	2.50'	-	3.00'	2,165.36
	3.00'	-	3.67'	721.63

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D43A-7.dwg
DRAWN BY: DAVID.FRISQUE
DATE: October 2, 2018
LAST REVISED: January 11, 2019
CHECKED BY: REG

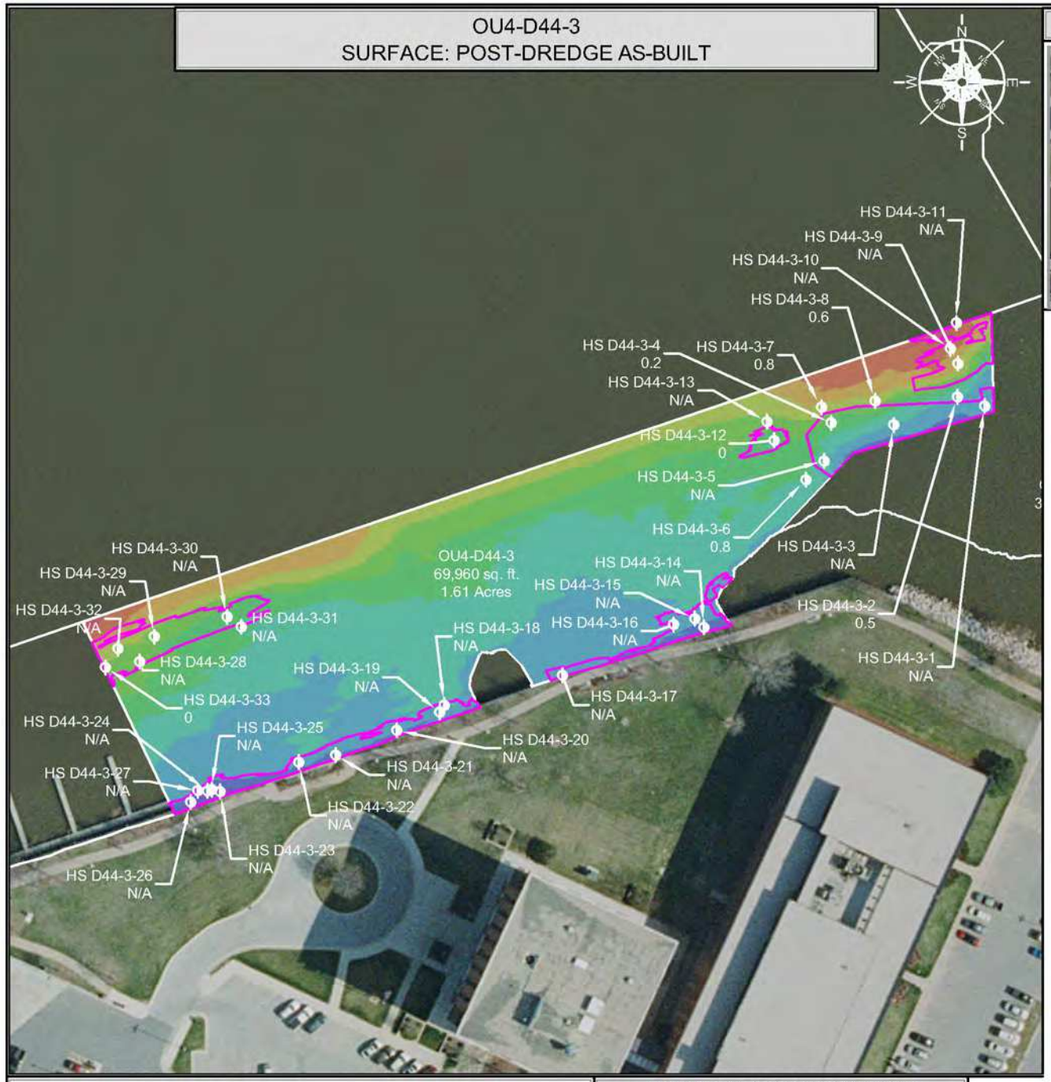
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-177

OU4-D43A-7
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

F:\LOC\CAD\Hist Enc\sheets\3Dredge\Files\2018\OU4\D43A\DWG\Post Dredge\OU4 D43A-7.dwg

OU4-D44-3
SURFACE: POST-DREDGE AS-BUILT



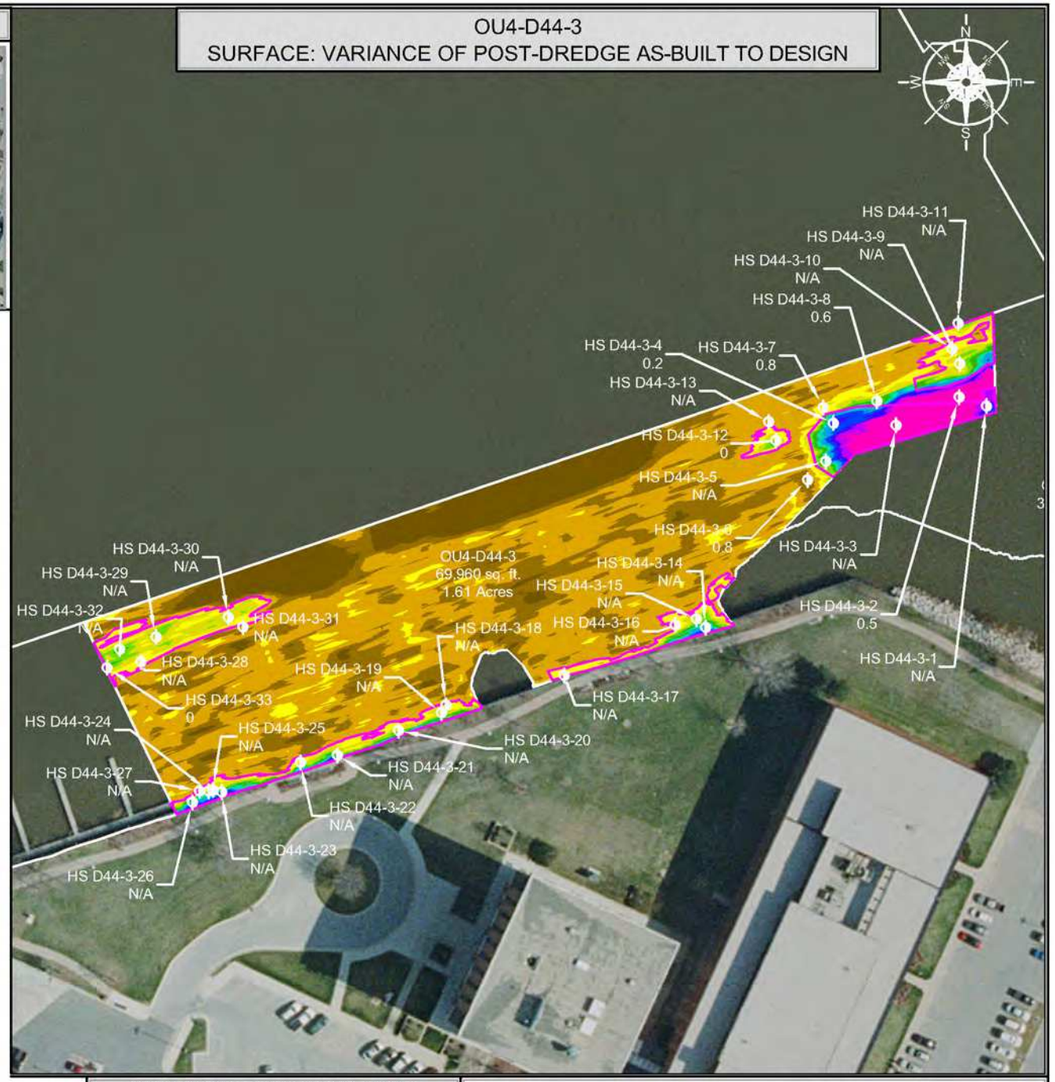
INDEX MAP



HIGH SUBGRADE SAMPLE AS-BUILT RESULTS

SAMPLE ID	NORTHING	EASTING	THICKNESS OF SOFT SEDIMENT (FEET)
HS D44-3-1	256938.90	2487833.90	N/A
HS D44-3-2	256944.89	2487816.06	0.5
HS D44-3-3	256926.29	2487774.17	N/A
HS D44-3-4	256927.66	2487732.85	0.2
HS D44-3-5	256902.58	2487728.13	N/A
HS D44-3-6	256890.18	2487715.93	0.8
HS D44-3-7	256937.97	2487726.29	0.8
HS D44-3-8	256942.13	2487761.75	0.6
HS D44-3-9	256966.84	2487816.42	N/A
HS D44-3-10	256976.68	2487811.36	N/A
HS D44-3-11	256993.58	2487815.24	N/A
HS D44-3-12	256916.20	2487695.01	0
HS D44-3-13	256928.45	2487690.31	N/A
HS D44-3-14	256792.89	2487648.77	N/A
HS D44-3-15	256798.59	2487642.60	N/A
HS D44-3-16	256794.67	2487628.80	N/A
HS D44-3-17	256761.28	2487555.42	N/A
HS D44-3-18	256741.56	2487477.54	N/A
HS D44-3-19	256736.68	2487474.32	N/A
HS D44-3-20	256724.96	2487446.07	N/A
HS D44-3-21	256708.63	2487405.83	N/A
HS D44-3-22	256703.91	2487381.54	N/A
HS D44-3-23	256684.53	2487329.60	N/A
HS D44-3-24	256684.97	2487320.99	N/A
HS D44-3-25	256685.73	2487323.94	N/A
HS D44-3-26	256677.61	2487310.14	N/A
HS D44-3-27	256685.10	2487314.84	N/A
HS D44-3-28	256770.30	2487276.28	N/A
HS D44-3-29	256786.77	2487286.07	N/A
HS D44-3-30	256799.72	2487334.01	N/A
HS D44-3-31	256793.25	2487343.51	N/A
HS D44-3-32	256778.67	2487262.19	N/A
HS D44-3-33	256766.44	2487253.93	0

OU4-D44-3
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-29-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'
562.00'	-	564.00'
564.00'	-	566.00'
566.00'	-	568.00'
568.00'	-	570.00'
570.00'	-	572.00'

DRAWING NOTES

1. HIGH SUBGRADE SAMPLES AND POLING DATA WERE COLLECTED ON 9-27-2018 AND LOGGED ON 9-27-2018

NR = NO RECOVERY
NA = NO CORE COLLECTION REQUIRED DUE TO POLING DEPTH

THIS DOCUMENT IS THE PROPERTY OF LOWER FOX RIVER REMEDIATION LLC PREPARED BY TETRA TECH EC, INC. (TtEC), AND IS PROVIDED UPON THE CONDITION THAT IT WILL NOT BE REPRODUCED, COPIED, OR ISSUED TO A THIRD PARTY. IT IS PROVIDED TO BE USED SOLELY FOR THE ORIGINAL INTENDED PURPOSE, AND SOLELY FOR THE EXECUTION OR REVIEW OF THE ENGINEERING AND CONSTRUCTION OF THE SUBJECT PROJECT.

OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-3.95'	-	-1.00'	7,660.39
BELOW RAL	-1.00'	-	-0.50'	15,447.57
BELOW RAL	-0.50'	-	0.00'	33,254.30
ABOVE RAL	0.00'	-	0.50'	5,194.88
ABOVE RAL	0.50'	-	1.00'	2,472.65
ABOVE RAL	1.00'	-	1.50'	965.45
ABOVE RAL	1.50'	-	2.00'	635.22
ABOVE RAL	2.00'	-	2.50'	538.48
ABOVE RAL	2.50'	-	3.00'	506.83
ABOVE RAL	3.00'	-	3.50'	500.43
ABOVE RAL	3.50'	-	4.00'	341.31
ABOVE RAL	4.00'	-	4.50'	430.10
ABOVE RAL	4.50'	-	6.54'	2,012.65

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D44-3.dwg
DRAWN BY: DAVID.FRISQUE
DATE: September 25, 2018
LAST REVISED: January 11, 2019
CHECKED BY: REG

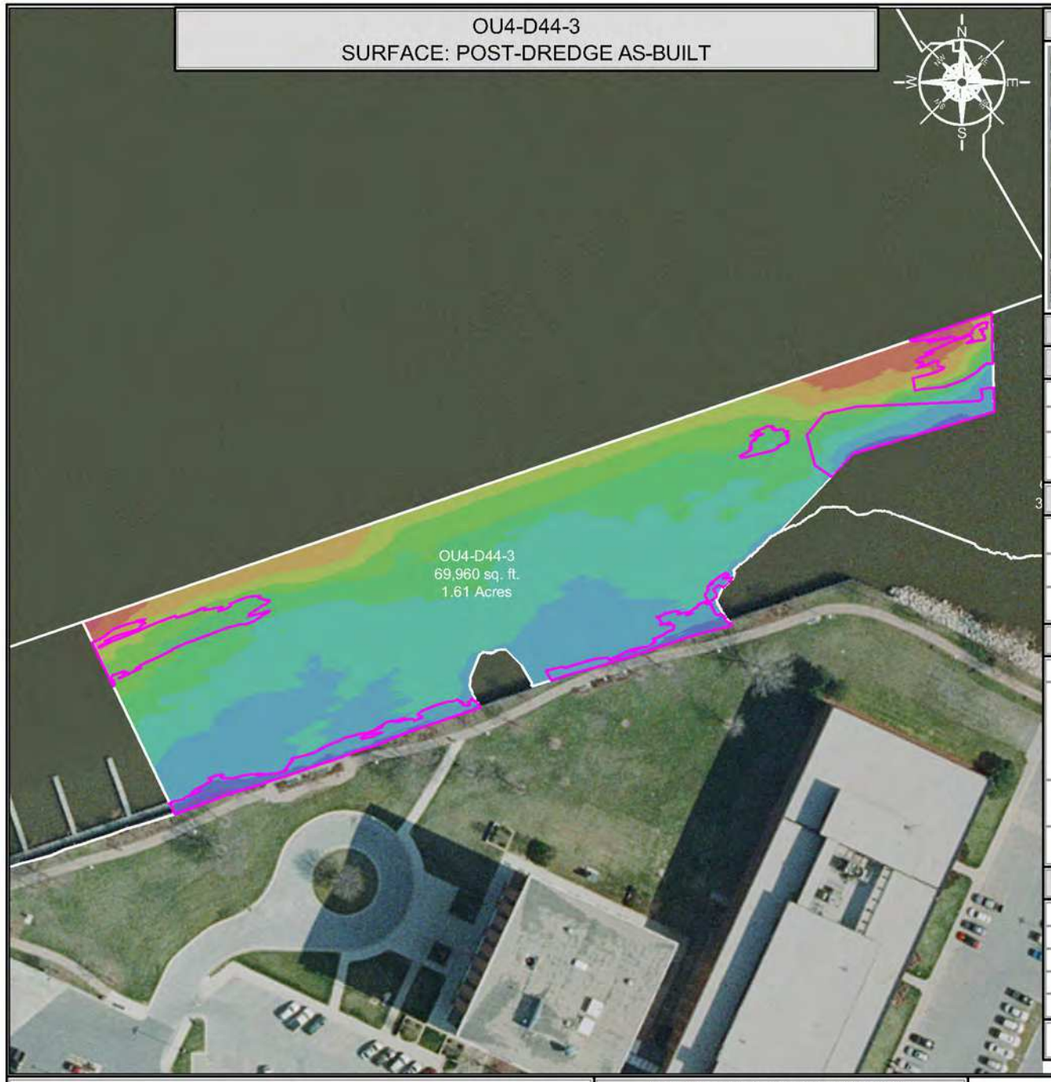
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-178

OU4-D44-3
PRIMARY DREDGE HIGH SUBGRADE RESULTS

F:\LOC\CAD\Field Engineering\Dredge Files\2018\OU4 D44\DWG\Post Dredge\OU4 D44-3.dwg

OU4-D44-3
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

4,500.78	INITIAL RAL VOLUME
1,068.42	INITIAL OVERCUT VOLUME
5,569.20	RAL + OVERCUT VOLUME
4,197.88	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

2,353.82	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
918.72	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
3,272.54	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

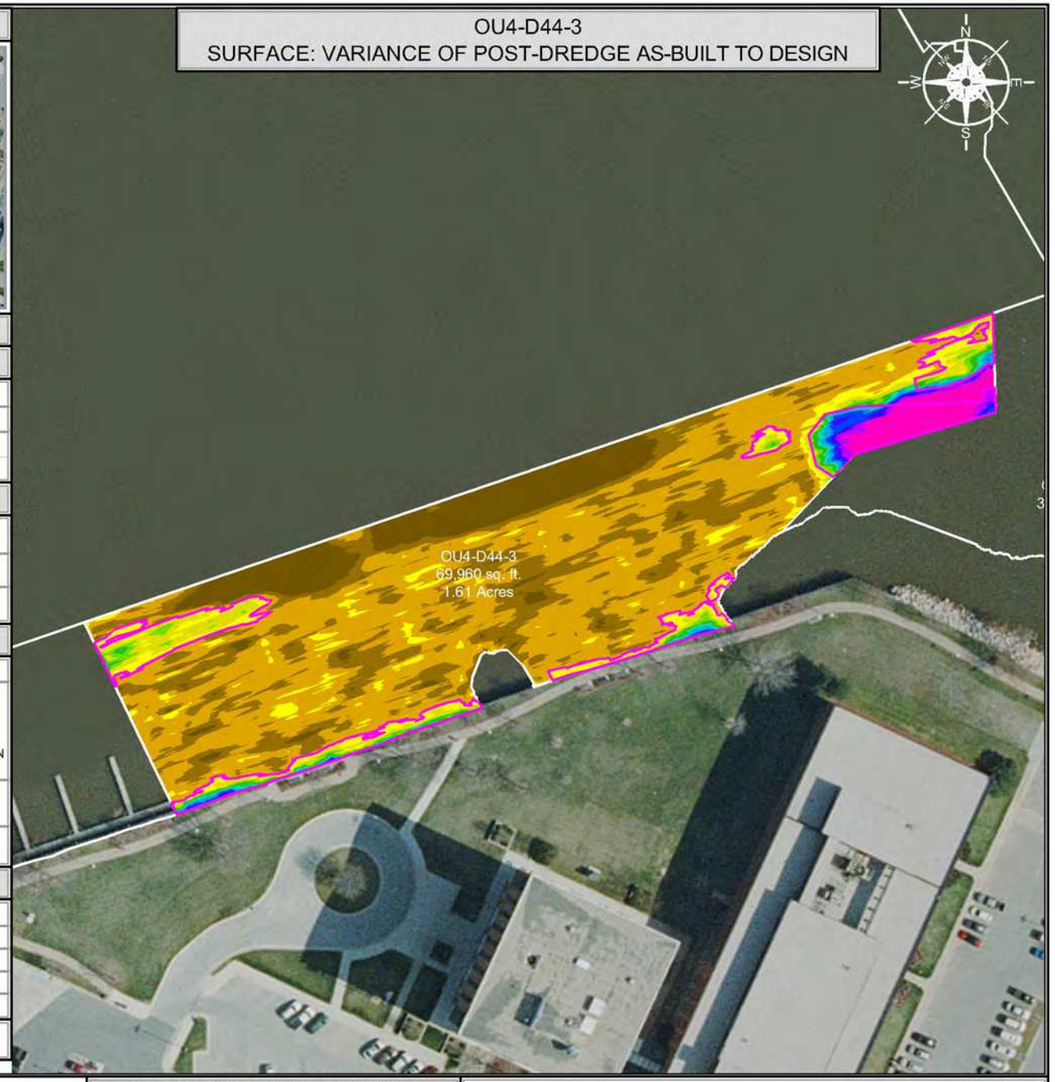
2018 AS-BUILT VOLUMES (CU. YD.)

2,167.27	TOTAL VOLUME DREDGED
1,528.64	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
676.48	CONFIRMED HIGH SUBGRADE VOLUME
176.74	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
518.10	OVERCUT VOLUME REMAINING
688.10	OVERCUT VOLUME DREDGED
0.00	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

69,960.28	AREA (SQ. FT.)
3,668.69	ABOVE DESIGN ELEVATION
56,362.26	AT OR BELOW DESIGN ELEVATION
9,929.33	CONFIRMED HIGH SUBGRADE
3.67 "	AVERAGE DEPTH OF OVERCUT [1]
95 PERCENT COMPLETE [2]	

OU4-D44-3
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-29-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'
562.00'	-	564.00'
564.00'	-	566.00'
566.00'	-	568.00'
568.00'	-	570.00'
570.00'	-	572.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

THIS DOCUMENT IS THE PROPERTY OF LOWER FOX RIVER REMEDIATION LLC PREPARED BY TETRA TECH EC, INC. (TtEC), AND IS PROVIDED UPON THE CONDITION THAT IT WILL NOT BE REPRODUCED, COPIED, OR ISSUED TO A THIRD PARTY. IT IS PROVIDED TO BE USED SOLELY FOR THE ORIGINAL INTENDED PURPOSE, AND SOLELY FOR THE EXECUTION OR REVIEW OF THE ENGINEERING AND CONSTRUCTION OF THE SUBJECT PROJECT.

OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-3.95'	-	-1.00'	7,660.39
BELOW RAL	-1.00'	-	-0.50'	15,447.57
BELOW RAL	-0.50'	-	0.00'	33,254.30
ABOVE RAL	0.00'	-	0.50'	5,194.88
ABOVE RAL	0.50'	-	1.00'	2,472.65
ABOVE RAL	1.00'	-	1.50'	965.45
ABOVE RAL	1.50'	-	2.00'	635.22
ABOVE RAL	2.00'	-	2.50'	538.48
ABOVE RAL	2.50'	-	3.00'	506.83
ABOVE RAL	3.00'	-	3.50'	500.43
ABOVE RAL	3.50'	-	4.00'	341.31
ABOVE RAL	4.00'	-	4.50'	430.10
ABOVE RAL	4.50'	-	6.54'	2,012.65

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D44-3.dwg
DRAWN BY: DAVID.FRISQUE
DATE: September 25, 2018
LAST REVISED: January 11, 2019
CHECKED BY: REG

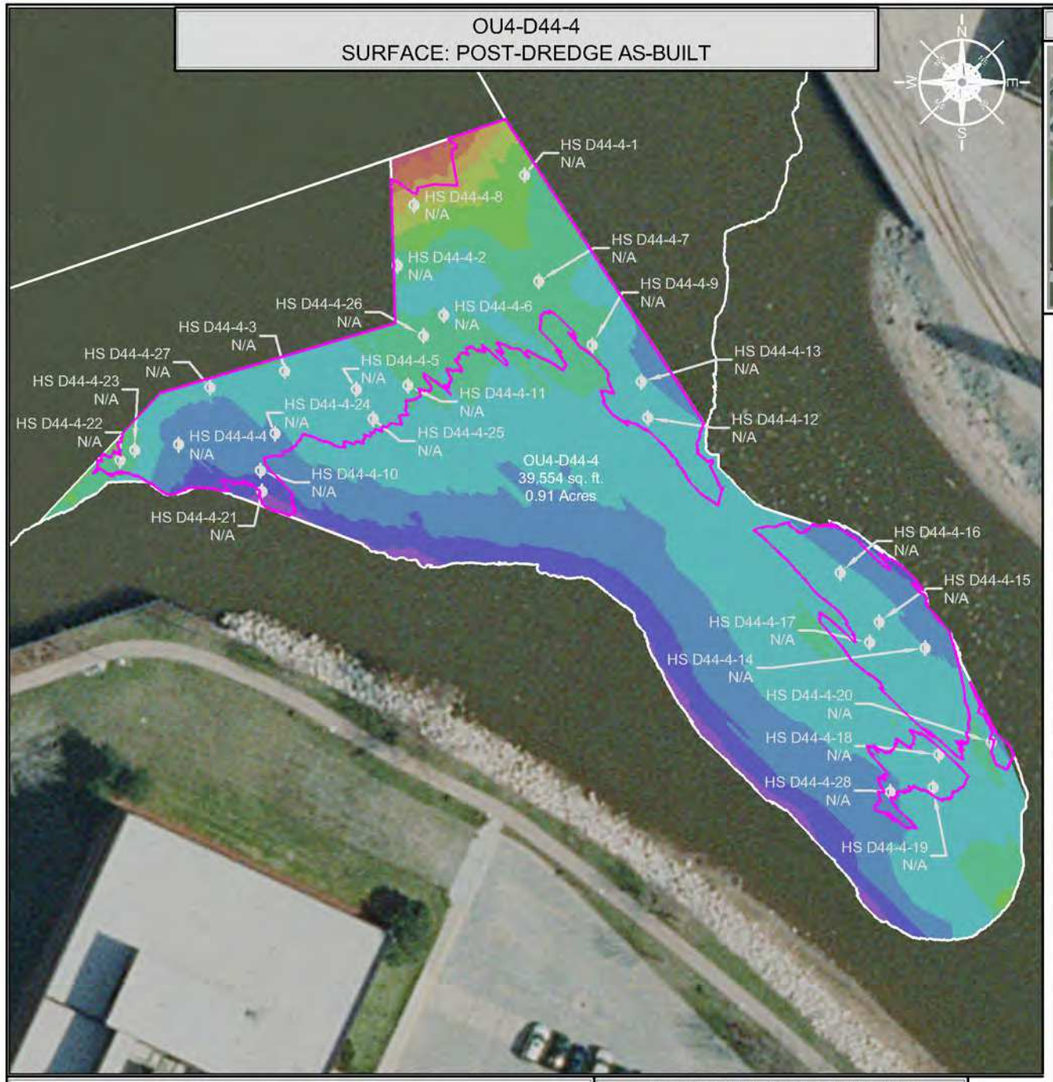
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-179

OU4-D44-3
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LLOC\Drafting\Engineering\Dredge Files\2018\OU4 D44\DWG\Post Dredge\OU4 D44 3.dwg

OU4-D44-4
SURFACE: POST-DREDGE AS-BUILT



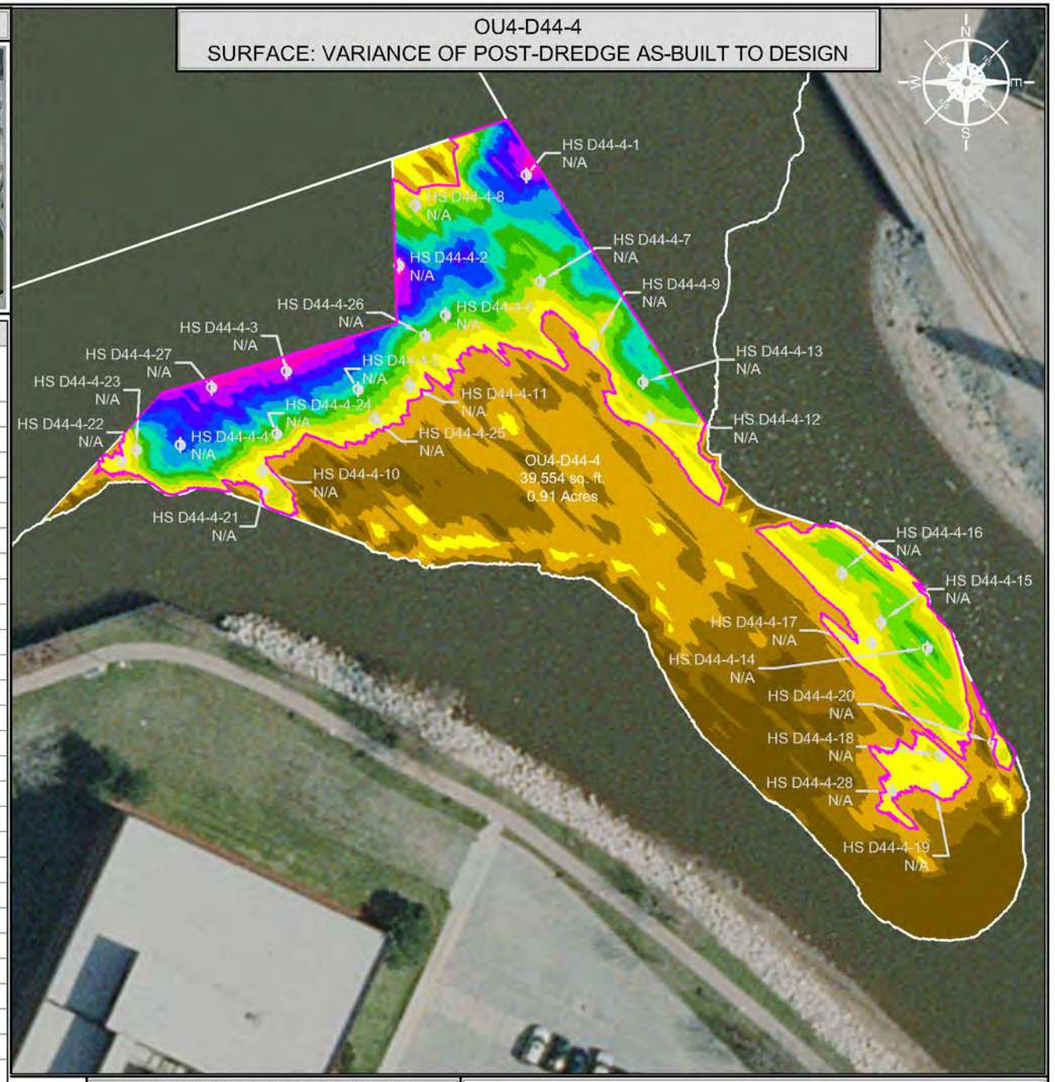
INDEX MAP



HIGH SUBGRADE SAMPLE AS-BUILT RESULTS			
SAMPLE ID	NORTHING	EASTING	THICKNESS OF SOFT SEDIMENT (FEET)
HS D44-4-1	256993.56	2487891.35	N/A
HS D44-4-2	256957.71	2487840.86	N/A
HS D44-4-3	256915.95	2487796.37	N/A
HS D44-4-4	256886.86	2487754.33	N/A
HS D44-4-5	256908.84	2487824.66	N/A
HS D44-4-6	256938.22	2487859.29	N/A
HS D44-4-7	256951.45	2487896.81	N/A
HS D44-4-8	256981.70	2487847.42	N/A
HS D44-4-9	256926.31	2487918.03	N/A
HS D44-4-10	256876.56	2487786.69	N/A
HS D44-4-11	256910.27	2487845.17	N/A
HS D44-4-12	256897.46	2487940.11	N/A
HS D44-4-13	256911.67	2487937.53	N/A
HS D44-4-14	256806.46	2488049.93	N/A
HS D44-4-15	256816.66	2488031.62	N/A
HS D44-4-16	256836.13	2488016.20	N/A
HS D44-4-17	256808.58	2488027.84	N/A
HS D44-4-18	256764.15	2488055.28	N/A
HS D44-4-19	256751.18	2488053.06	N/A
HS D44-4-20	256769.13	2488076.02	N/A
HS D44-4-21	256868.40	2487787.22	N/A
HS D44-4-22	256880.66	2487731.07	N/A
HS D44-4-23	256884.76	2487736.97	N/A
HS D44-4-24	256891.31	2487792.45	N/A
HS D44-4-25	256897.11	2487831.31	N/A
HS D44-4-26	256929.99	2487851.24	N/A
HS D44-4-27	256909.55	2487766.67	N/A
HS D44-4-28	256749.49	2488036.03	N/A

NR = NO RECOVERY
NA = NO CORE COLLECTION REQUIRED DUE TO POLING DEPTH

OU4-D44-4
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-8-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'
562.00'	-	564.00'
564.00'	-	566.00'
566.00'	-	568.00'
568.00'	-	570.00'
570.00'	-	572.00'
572.00'	-	574.00'

DRAWING NOTES

1. HIGH SUBGRADE SAMPLES AND POLING DATA WERE COLLECTED ON 11-8-2018 AND LOGGED ON 11-8-2018

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-8.17'	-	-1.00'	5,570.12
BELOW RAL	-1.00'	-	-0.50'	7,822.99
BELOW RAL	-0.50'	-	0.00'	9,547.09
ABOVE RAL	0.00'	-	0.50'	4,281.62
ABOVE RAL	0.50'	-	1.00'	2,788.13
ABOVE RAL	1.00'	-	1.50'	2,120.30
ABOVE RAL	1.50'	-	2.00'	1,639.38
ABOVE RAL	2.00'	-	2.50'	1,587.24
ABOVE RAL	2.50'	-	3.00'	1,340.89
ABOVE RAL	3.00'	-	3.50'	1,150.52
ABOVE RAL	3.50'	-	4.00'	846.00
ABOVE RAL	4.00'	-	4.50'	560.39
ABOVE RAL	4.50'	-	5.23'	260.46

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D44-4.dwg
DRAWN BY: DAVID.FRISQUE
DATE: November 8, 2018
LAST REVISED: November 9, 2018
CHECKED BY: REG

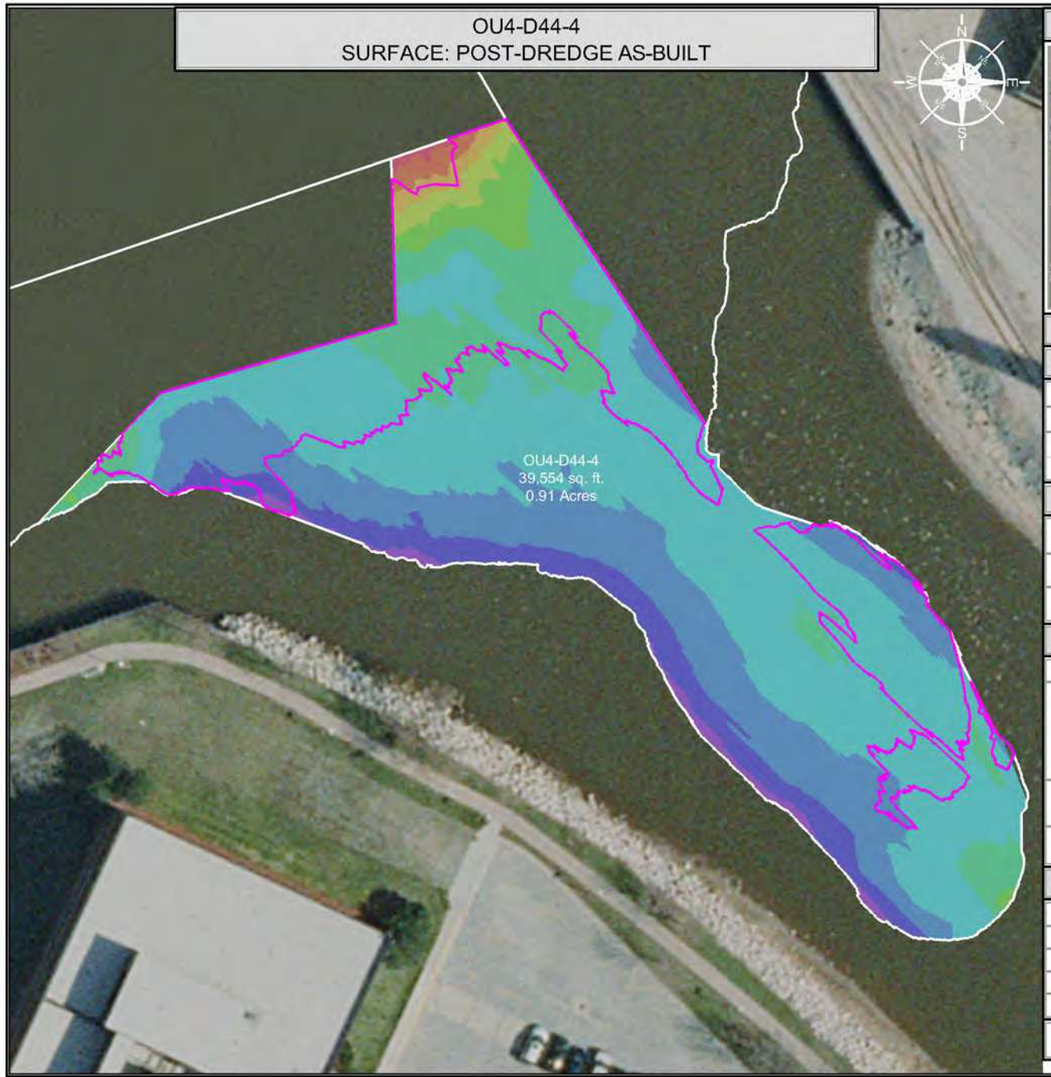
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-180

OU4-D44-4
PRIMARY DREDGE HIGH SUBGRADE RESULTS

F:\LCAD\Field Engineering\Dredge Files\2018\OU4 D44\DWG\Post Dredge\OU4 D44-4.dwg

OU4-D44-4
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

4,417.23	INITIAL RAL VOLUME
746.77	INITIAL OVERCUT VOLUME
5,164.00	RAL + OVERCUT VOLUME
3,800.22	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

4,417.23	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
746.77	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
5,164.00	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

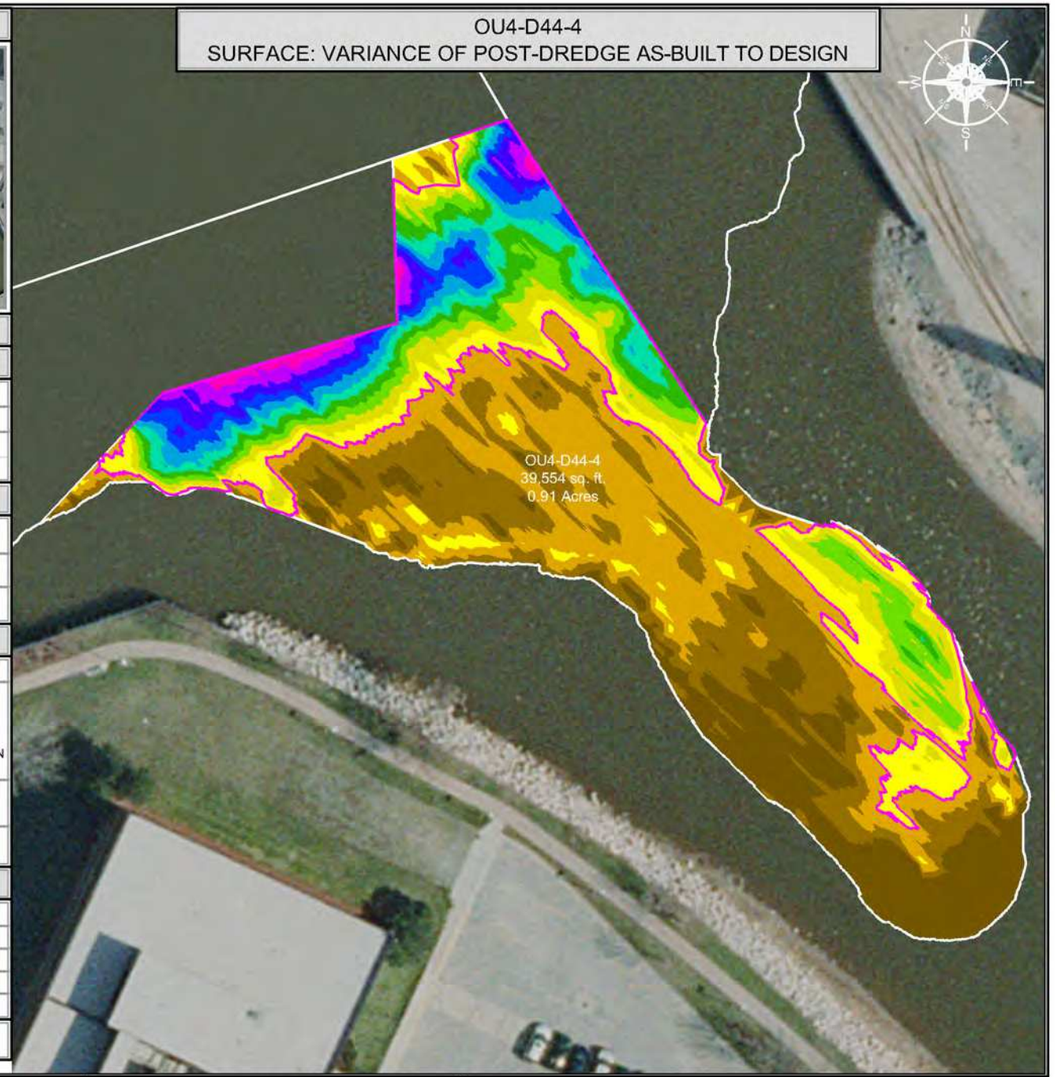
2018 AS-BUILT VOLUMES (CU. YD.)

4,142.46	TOTAL VOLUME DREDGED
3,406.47	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
968.65	CONFIRMED HIGH SUBGRADE VOLUME
3.37	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
391.76	OVERCUT VOLUME REMAINING
352.86	OVERCUT VOLUME DREDGED
383.13	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

39,553.75	AREA (SQ. FT.)
645.14	ABOVE DESIGN ELEVATION
22,940.20	AT OR BELOW DESIGN ELEVATION
15,968.41	CONFIRMED HIGH SUBGRADE
10.39 "	AVERAGE DEPTH OF OVERCUT [1]
98	PERCENT COMPLETE [2]

OU4-D44-4
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-8-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'
562.00'	-	564.00'
564.00'	-	566.00'
566.00'	-	568.00'
568.00'	-	570.00'
570.00'	-	572.00'
572.00'	-	574.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

THIS DOCUMENT IS THE PROPERTY OF LOWER FOX RIVER REMEDIATION LLC PREPARED BY TETRA TECH EC, INC. (TtEC), AND IS PROVIDED UPON THE CONDITION THAT IT WILL NOT BE REPRODUCED, COPIED, OR ISSUED TO A THIRD PARTY. IT IS PROVIDED TO BE USED SOLELY FOR THE ORIGINAL INTENDED PURPOSE, AND SOLELY FOR THE EXECUTION OR REVIEW OF THE ENGINEERING AND CONSTRUCTION OF THE SUBJECT PROJECT.

OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-8.17'	-	-1.00'	5,570.12
	-1.00'	-	-0.50'	7,822.99
	-0.50'	-	0.00'	9,547.09
ABOVE RAL	0.00'	-	0.50'	4,281.62
	0.50'	-	1.00'	2,788.13
	1.00'	-	1.50'	2,120.30
	1.50'	-	2.00'	1,639.38
	2.00'	-	2.50'	1,587.24
	2.50'	-	3.00'	1,340.89
	3.00'	-	3.50'	1,150.52
	3.50'	-	4.00'	846.00
	4.00'	-	4.50'	560.39
	4.50'	-	5.23'	260.46

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D44-4.dwg
DRAWN BY: DAVID.FRISQUE
DATE: November 8, 2018
LAST REVISED: December 6, 2018
CHECKED BY: REG

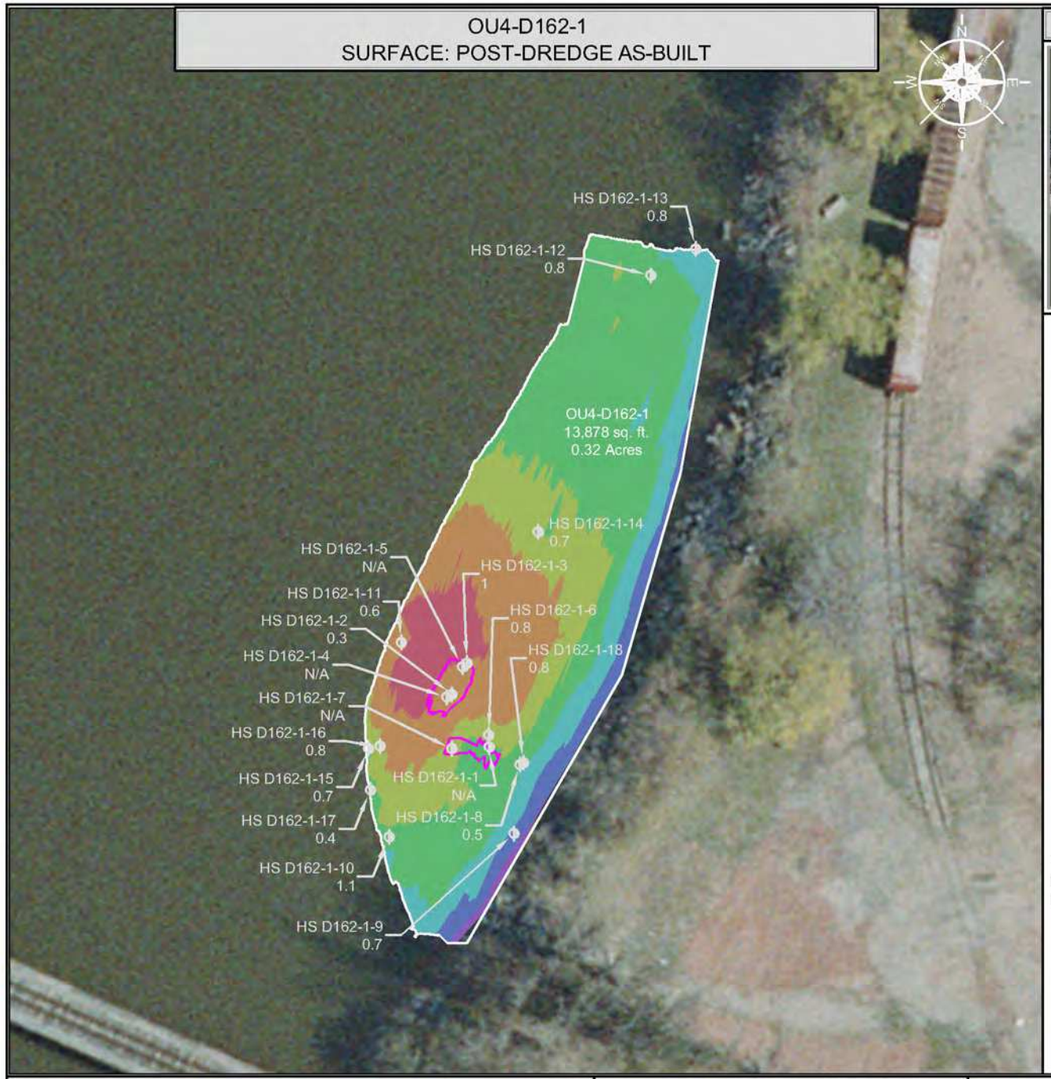
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-181

OU4-D44-4
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

F:\LLOC\CAD\Field Engineering\Dredge Files\2018\OU4 D44\DWG\Post Dredge\OU4 D44-4.dwg

OU4-D162-1
SURFACE: POST-DREDGE AS-BUILT



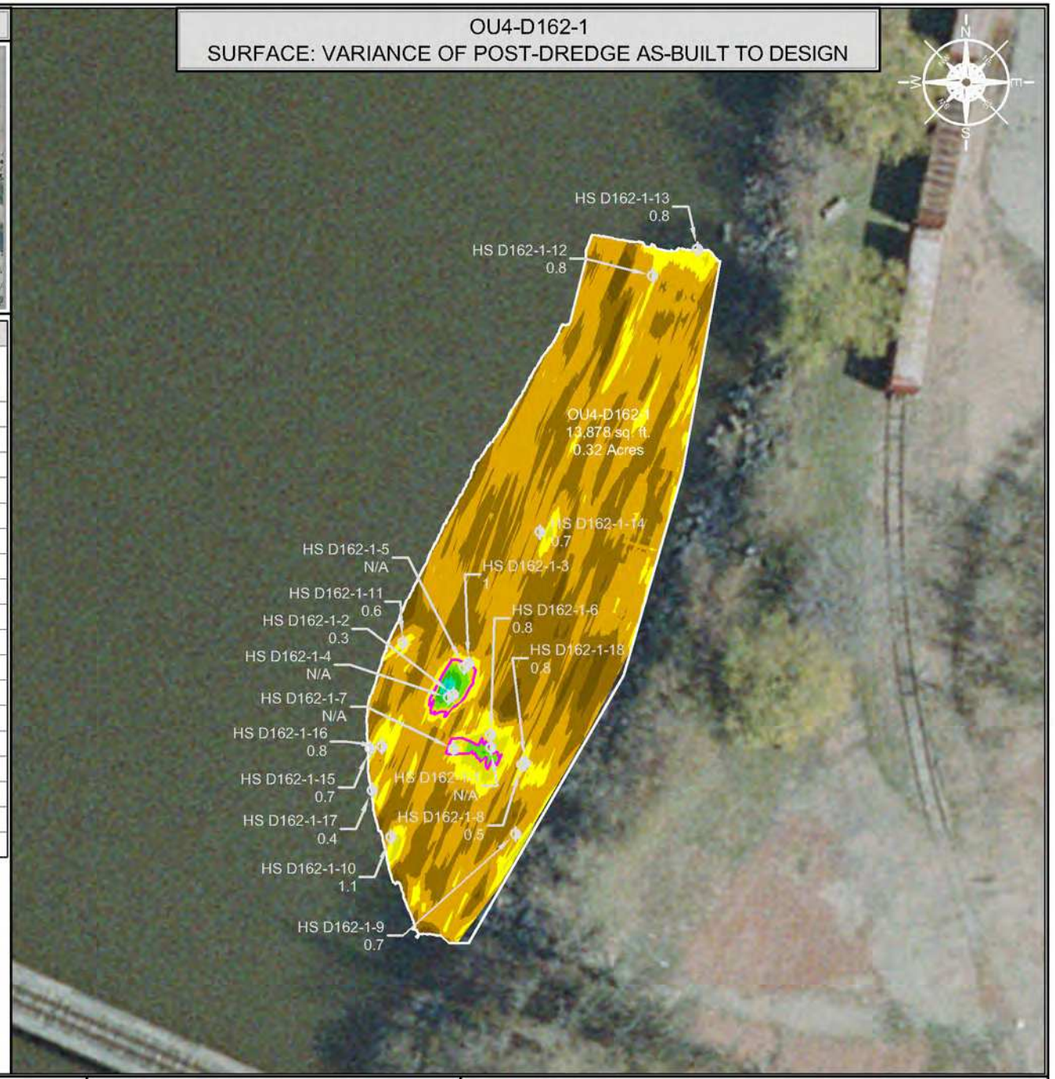
INDEX MAP



HIGH SUBGRADE SAMPLE AS-BUILT RESULTS			
SAMPLE ID	NORTHING	EASTING	THICKNESS OF SOFT SEDIMENT (FEET)
HS D162-1-1	258354.17	2487579.82	N/A
HS D162-1-2	258371.62	2487567.52	0.3
HS D162-1-3	258381.91	2487572.51	1
HS D162-1-4	258370.69	2487565.79	N/A
HS D162-1-5	258380.67	2487571.01	N/A
HS D162-1-6	258358.32	2487579.69	0.8
HS D162-1-7	258353.68	2487567.55	N/A
HS D162-1-8	258348.45	2487590.03	0.5
HS D162-1-9	258325.68	2487588.07	0.7
HS D162-1-10	258324.67	2487546.80	1.1
HS D162-1-11	258388.81	2487550.80	0.6
HS D162-1-12	258509.81	2487633.14	0.8
HS D162-1-13	258518.52	2487647.99	0.8
HS D162-1-14	258425.25	2487595.99	0.7
HS D162-1-15	258353.79	2487540.08	0.7
HS D162-1-16	258354.52	2487543.77	0.8
HS D162-1-17	258340.09	2487540.68	0.4
HS D162-1-18	258349.11	2487591.16	0.8

NR = NO RECOVERY
NA = NO CORE COLLECTION REQUIRED DUE TO POLING DEPTH

OU4-D162-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 50')

50 25 0 50 100

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 8-8-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
566.00'	-	568.00'
568.00'	-	570.00'
570.00'	-	572.00'
572.00'	-	574.00'
574.00'	-	576.00'
576.00'	-	578.00'
578.00'	-	580.00'

DRAWING NOTES

1. HIGH SUBGRADE SAMPLES AND POLING DATA WERE COLLECTED ON 8-10-2018 AND LOGGED ON 8-13-2018

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OU# - D# - #
OPERABLE UNIT | DREDGE AREA | DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.95'	-	-1.00'	482.85
	-1.00'	-	-0.50'	4,833.82
	-0.50'	-	0.00'	6,888.32
ABOVE RAL	0.00'	-	0.50'	1,156.35
	0.50'	-	1.00'	245.26
	1.00'	-	1.50'	94.10
	1.50'	-	2.00'	37.08
	2.00'	-	2.50'	23.02
	2.50'	-	2.72'	1.87

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D162-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: August 9, 2018
LAST REVISED: August 21, 2018
CHECKED BY: REG

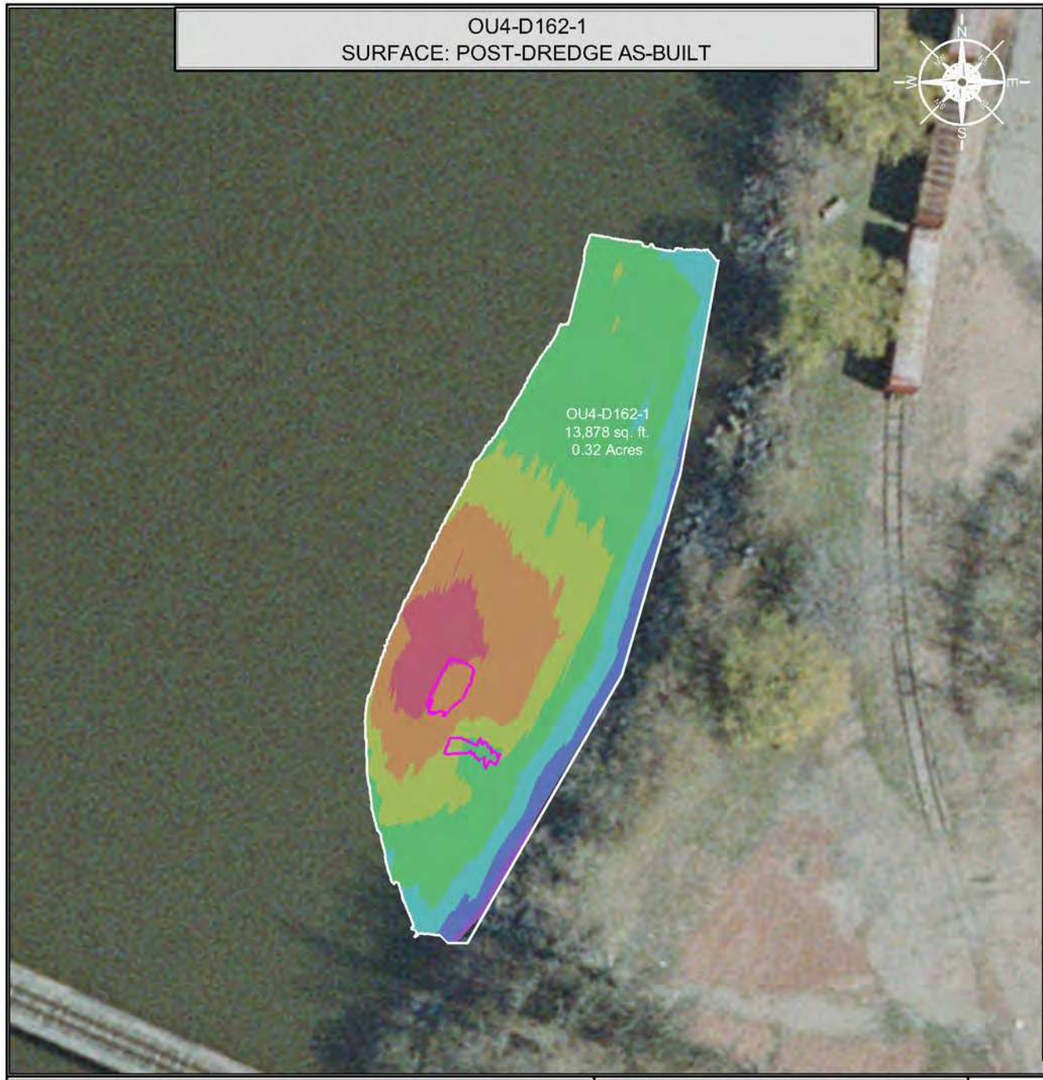
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-182

OU4-D162-1
PRIMARY DREDGE HIGH SUBGRADE RESULTS

I:\ELC\CAD\Hist Enclosures\sDredge Files\2018\OU4 D162\DWG\Post Dredge\OU4-D162-1.dwg

OU4-D162-1
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

918.35	INITIAL RAL VOLUME
250.35	INITIAL OVERCUT VOLUME
1,168.70	RAL + OVERCUT VOLUME
1,064.94	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

918.35	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
250.35	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
1,168.70	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

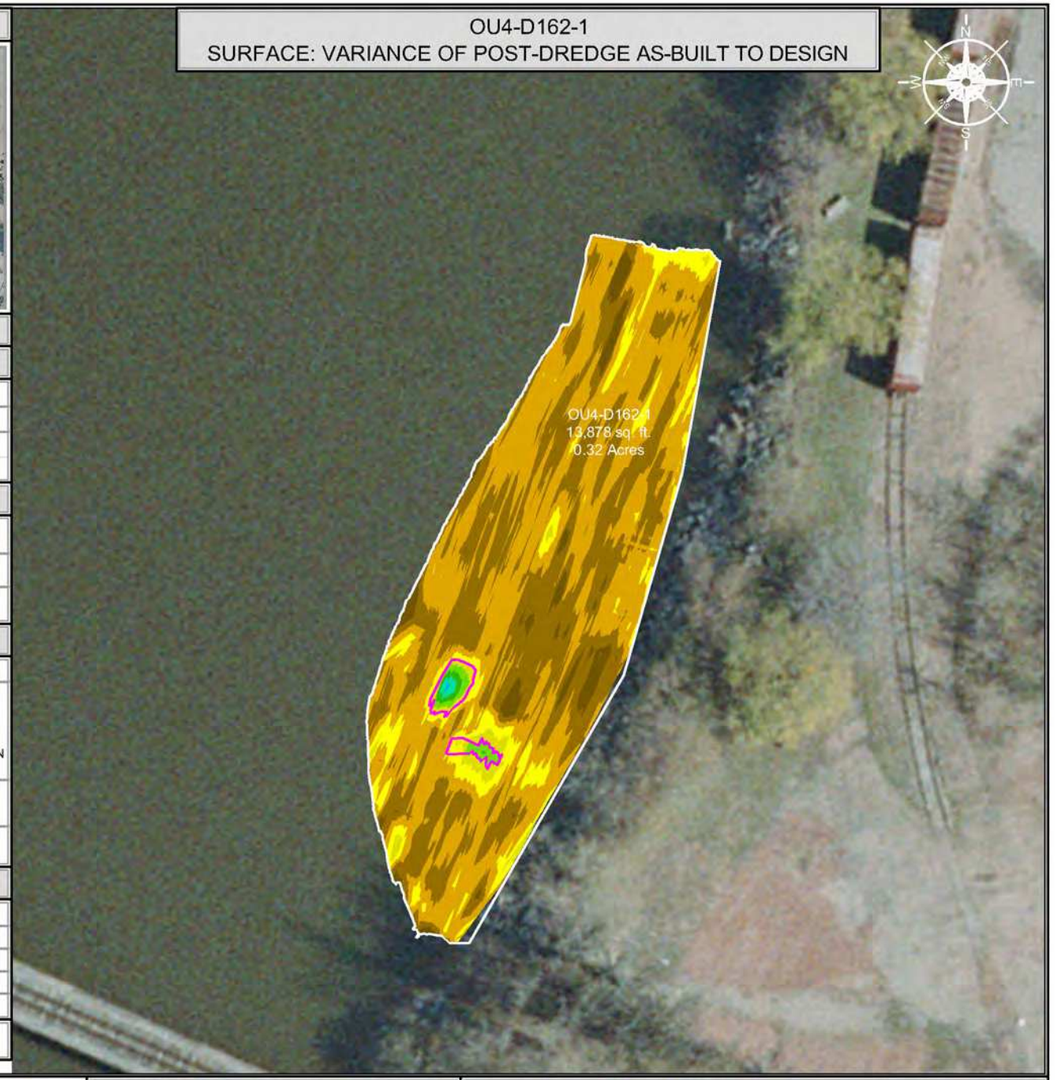
2018 AS-BUILT VOLUMES (CU. YD.)

1,110.48	TOTAL VOLUME DREDGED
896.04	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
10.69	CONFIRMED HIGH SUBGRADE VOLUME
11.67	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
81.40	OVERCUT VOLUME REMAINING
171.43	OVERCUT VOLUME DREDGED
43.01	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

13,877.61	AREA (SQ. FT.)
1,427.73	ABOVE DESIGN ELEVATION
12,204.99	AT OR BELOW DESIGN ELEVATION
244.89	CONFIRMED HIGH SUBGRADE
5.69 "	AVERAGE DEPTH OF OVERCUT [1]
90	PERCENT COMPLETE [2]

OU4-D162-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 50')

50 25 0 50 100

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 8-8-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
566.00'	-	568.00'
568.00'	-	570.00'
570.00'	-	572.00'
572.00'	-	574.00'
574.00'	-	576.00'
576.00'	-	578.00'
578.00'	-	580.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.95'	-	-1.00'	482.85
BELOW RAL	-1.00'	-	-0.50'	4,833.82
BELOW RAL	-0.50'	-	0.00'	6,888.32
ABOVE RAL	0.00'	-	0.50'	1,156.35
ABOVE RAL	0.50'	-	1.00'	245.26
ABOVE RAL	1.00'	-	1.50'	94.10
ABOVE RAL	1.50'	-	2.00'	37.08
ABOVE RAL	2.00'	-	2.50'	23.02
ABOVE RAL	2.50'	-	2.72'	1.87

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D162-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: August 9, 2018
LAST REVISED: August 21, 2018
CHECKED BY: REG

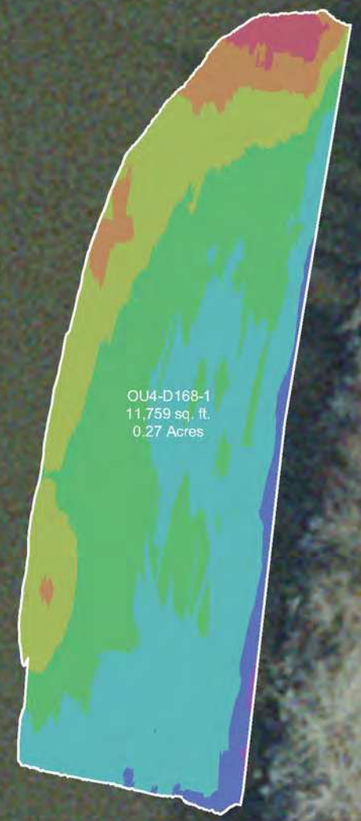
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-183

OU4-D162-1
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LLOC\LD\Field Engineering\Dredge Files\2018\OU4-D162\DWG\Post-Dredge\OU4-D162-1.dwg

OU4-D168-1
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

452.00	INITIAL RAL VOLUME
218.56	INITIAL OVERCUT VOLUME
670.56	RAL + OVERCUT VOLUME
588.71	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

452.00	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
218.56	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
670.56	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

2018 AS-BUILT VOLUMES (CU. YD.)

632.33	TOTAL VOLUME DREDGED
449.08	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
2.91	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
78.94	OVERCUT VOLUME REMAINING
138.64	OVERCUT VOLUME DREDGED
44.61	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

11,758.92	AREA (SQ. FT.)
874.78	ABOVE DESIGN ELEVATION
10,884.14	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
5.46 "	AVERAGE DEPTH OF OVERCUT [1]
93	PERCENT COMPLETE [2]

OU4-D168-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 3-29-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
562.00'	-	564.00'
564.00'	-	566.00'
566.00'	-	568.00'
568.00'	-	570.00'
570.00'	-	572.00'
572.00'	-	574.00'
574.00'	-	576.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.84'	-	-1.00'	719.72
BELOW RAL	-1.00'	-	-0.50'	3,278.95
BELOW RAL	-0.50'	-	0.00'	6,885.47
ABOVE RAL	0.00'	-	0.25'	822.77
ABOVE RAL	0.25'	-	0.49'	52.01

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D168-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: January 11, 2019
LAST REVISED: January 11, 2019
CHECKED BY: REG

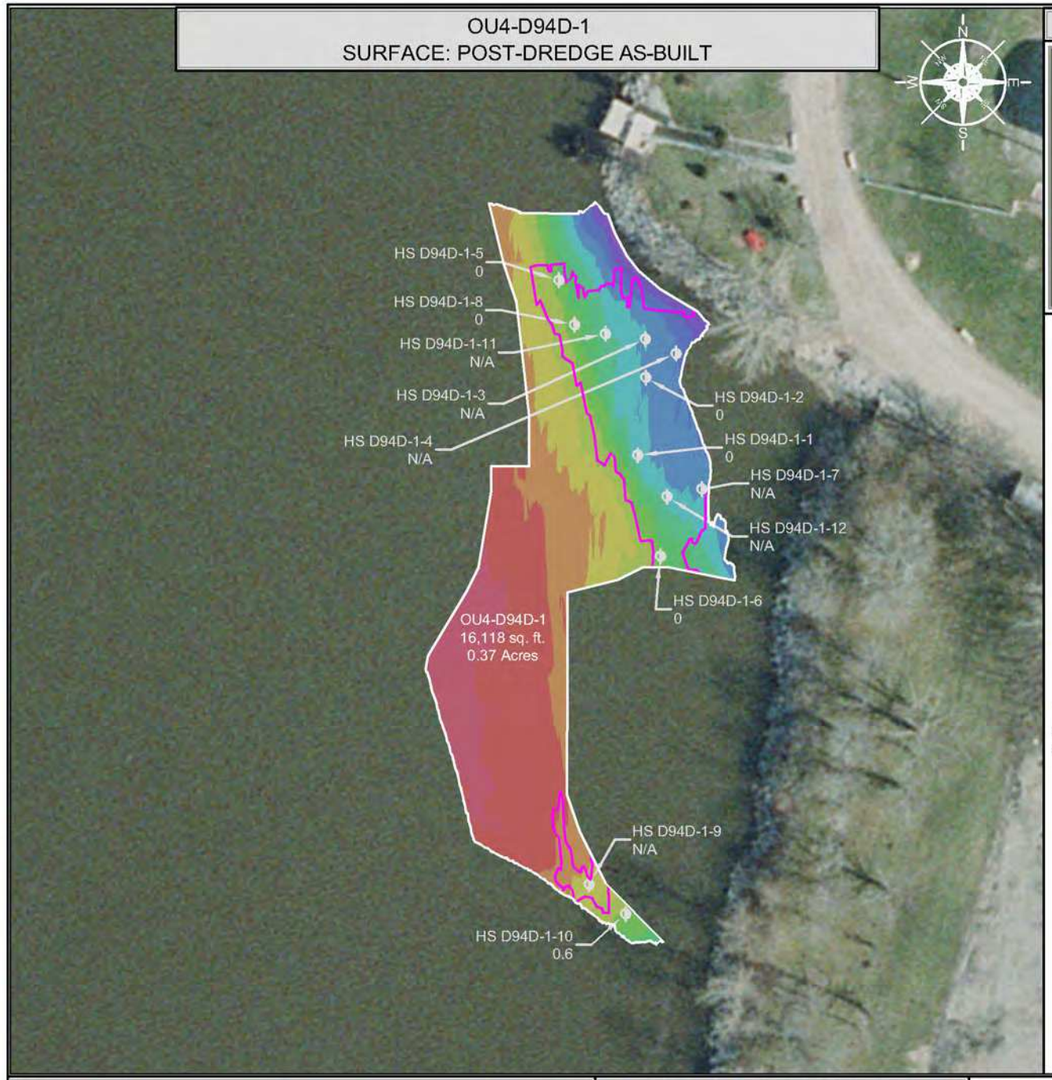
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-184

OU4-D168-1
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

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OU4-D94D-1
SURFACE: POST-DREDGE AS-BUILT



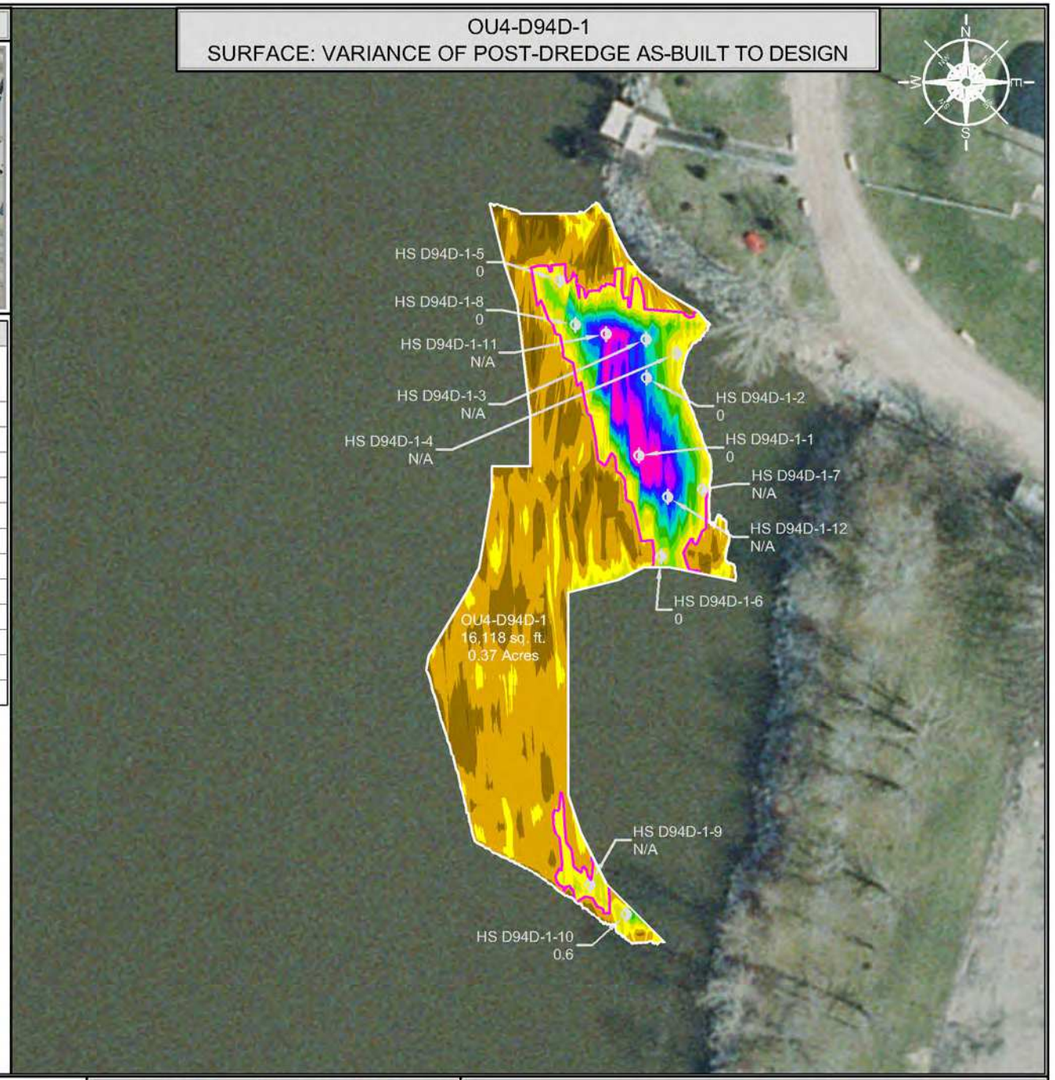
INDEX MAP



HIGH SUBGRADE SAMPLE AS-BUILT RESULTS			
SAMPLE ID	NORTHING	EASTING	THICKNESS OF SOFT SEDIMENT (FEET)
HS D94D-1-1	260040.03	2487924.05	0
HS D94D-1-2	260070.81	2487927.08	0
HS D94D-1-3	260086.02	2487926.87	N/A
HS D94D-1-4	260080.34	2487939.09	N/A
HS D94D-1-5	260109.32	2487892.70	0
HS D94D-1-6	260000.11	2487932.91	0
HS D94D-1-7	260026.68	2487949.42	N/A
HS D94D-1-8	260091.75	2487898.94	0
HS D94D-1-9	259870.28	2487904.84	N/A
HS D94D-1-10	259858.50	2487919.15	0.6
HS D94D-1-11	260088.13	2487911.19	N/A
HS D94D-1-12	260023.64	2487935.58	N/A

NR = NO RECOVERY
NA = NO CORE COLLECTION REQUIRED DUE TO POLING DEPTH

OU4-D94D-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 3-29-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'
562.00'	-	564.00'
564.00'	-	566.00'
566.00'	-	568.00'
568.00'	-	570.00'
570.00'	-	572.00'
572.00'	-	574.00'
574.00'	-	576.00'
576.00'	-	578.00'

DRAWING NOTES

1. HIGH SUBGRADE SAMPLES AND POLING DATA WERE COLLECTED ON 4-2-2018 AND LOGGED ON 4-2-2018

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OU# - D# - #
OPERABLE UNIT | DREDGE AREA | DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.08'	-	-1.00'	310.89
BELOW RAL	-1.00'	-	-0.50'	3,095.53
BELOW RAL	-0.50'	-	0.00'	6,869.50
ABOVE RAL	0.00'	-	0.50'	2,019.81
ABOVE RAL	0.50'	-	1.00'	899.56
ABOVE RAL	1.00'	-	1.50'	488.30
ABOVE RAL	1.50'	-	2.00'	404.75
ABOVE RAL	2.00'	-	2.50'	390.35
ABOVE RAL	2.50'	-	3.00'	325.67
ABOVE RAL	3.00'	-	3.50'	333.58
ABOVE RAL	3.50'	-	4.00'	322.66
ABOVE RAL	4.00'	-	4.50'	325.70
ABOVE RAL	4.50'	-	5.65'	332.16

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D94D-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: March 30, 2018
LAST REVISED: January 16, 2019
CHECKED BY: REG

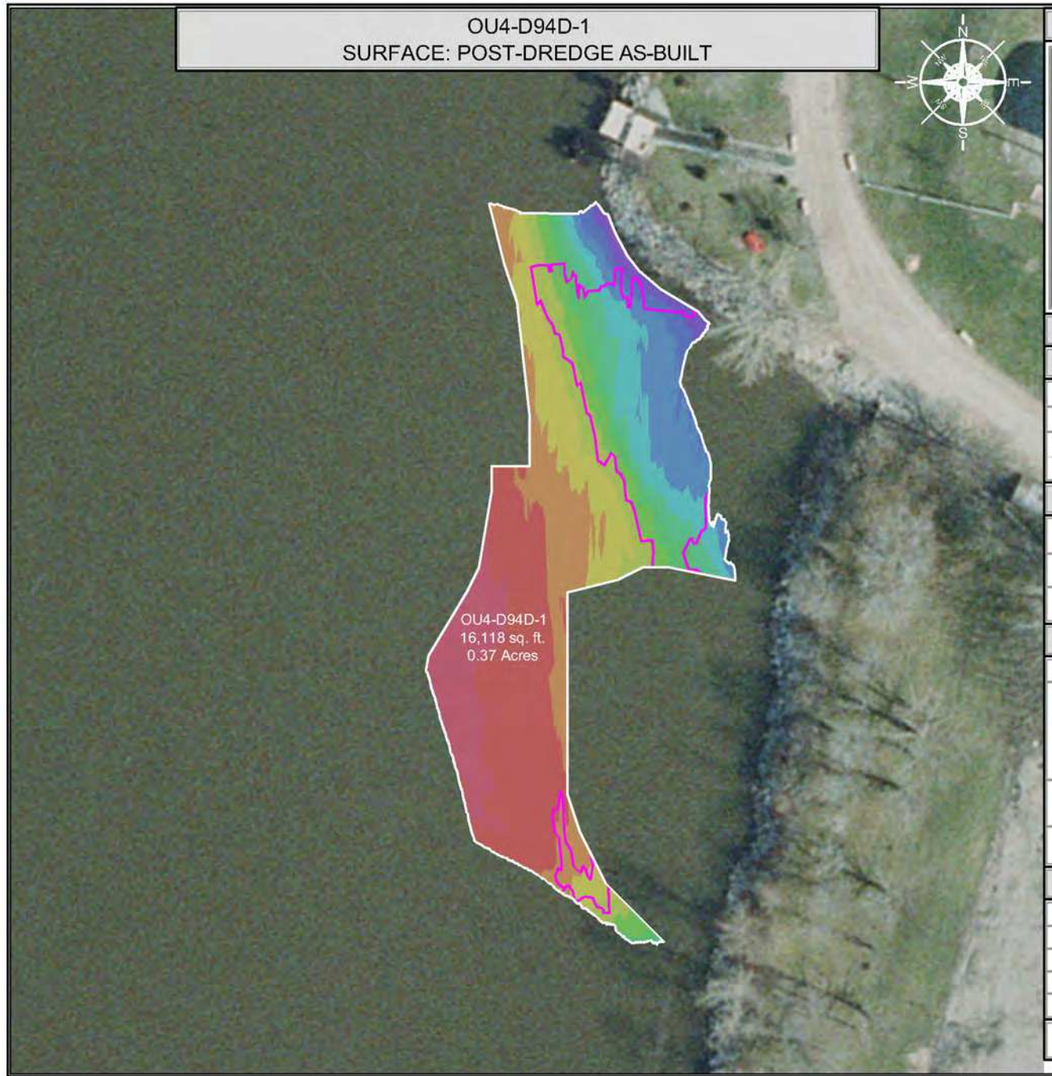
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-185

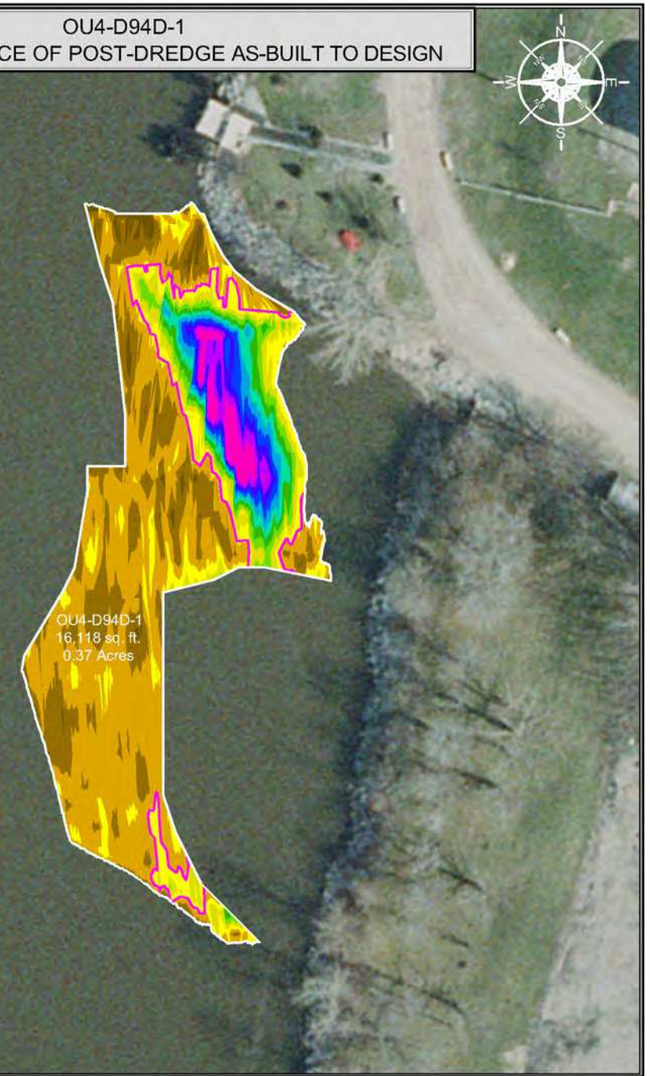
OU4-D94D-1
PRIMARY DREDGE HIGH SUBGRADE RESULTS

F:\LCAD\LFRR\Engineering\Dredge Files\2018\OU4 D94D1\WG\Post Dredge\OU4 D94D-1.dwg

OU4-D94D-1
SURFACE: POST-DREDGE AS-BUILT



OU4-D94D-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

1,228.43	INITIAL RAL VOLUME
294.47	INITIAL OVERCUT VOLUME
1,522.90	RAL + OVERCUT VOLUME
1,008.71	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

390.82	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
214.69	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
605.51	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

2018 AS-BUILT VOLUMES (CU. YD.)

167.01	TOTAL VOLUME DREDGED
41.98	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
339.86	CONFIRMED HIGH SUBGRADE VOLUME
8.98	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
165.35	OVERCUT VOLUME REMAINING
116.41	OVERCUT VOLUME DREDGED
8.62	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

16,118.48	AREA (SQ. FT.)
1,131.49	ABOVE DESIGN ELEVATION
10,275.92	AT OR BELOW DESIGN ELEVATION
4,711.07	CONFIRMED HIGH SUBGRADE
3.94 "	AVERAGE DEPTH OF OVERCUT [1]
93	PERCENT COMPLETE [2]

LIMITS OF HIGH SUBGRADE

SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 3-29-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'
562.00'	-	564.00'
564.00'	-	566.00'
566.00'	-	568.00'
568.00'	-	570.00'
570.00'	-	572.00'
572.00'	-	574.00'
574.00'	-	576.00'
576.00'	-	578.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT
DREDGE AREA
DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.08'	-	-1.00'	310.89
	-1.00'	-	-0.50'	3,095.53
	-0.50'	-	0.00'	6,869.50
ABOVE RAL	0.00'	-	0.50'	2,019.81
	0.50'	-	1.00'	899.56
	1.00'	-	1.50'	488.30
	1.50'	-	2.00'	404.75
	2.00'	-	2.50'	390.35
	2.50'	-	3.00'	325.67
	3.00'	-	3.50'	333.58
	3.50'	-	4.00'	322.66
	4.00'	-	4.50'	325.70
	4.50'	-	5.65'	332.16

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D94D-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: March 30, 2018
LAST REVISED: January 16, 2019
CHECKED BY: REG

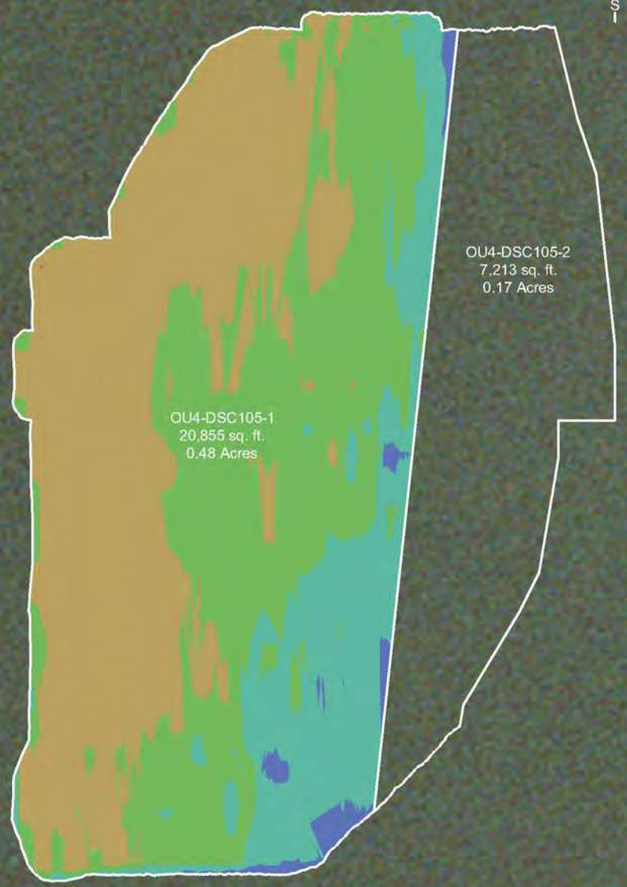
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-186

OU4-D94D-1
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

F:\LLOCAD\Fluid Engineering\Dredge Files\2018\OU4 D94D\DWG\Post Dredge\OU4 D94D-1.dwg

OU4-DSC105-1
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

1,072.37	INITIAL RAL VOLUME
391.75	INITIAL OVERCUT VOLUME
1,464.12	RAL + OVERCUT VOLUME
1,362.80	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

31.56	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
225.30	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
256.86	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

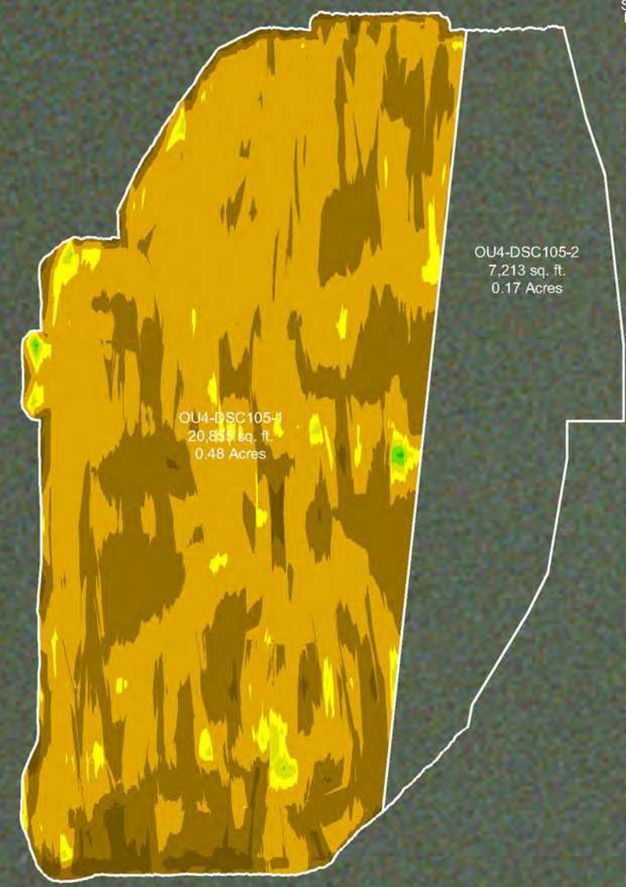
2018 AS-BUILT VOLUMES (CU. YD.)

233.27	TOTAL VOLUME DREDGED
27.57	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
3.99	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
97.33	OVERCUT VOLUME REMAINING
150.08	OVERCUT VOLUME DREDGED
55.62	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

20,855.29	AREA (SQ. FT.)
738.81	ABOVE DESIGN ELEVATION
20,116.48	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
3.31 "	AVERAGE DEPTH OF OVERCUT [1]
96	PERCENT COMPLETE [2]

OU4-DSC105-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 3-29-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.34'	-	-1.00'	621.66
BELOW RAL	-1.00'	-	-0.50'	7,239.72
BELOW RAL	-0.50'	-	0.00'	12,255.10
ABOVE RAL	0.00'	-	0.25'	596.61
ABOVE RAL	0.25'	-	0.50'	120.30
ABOVE RAL	0.50'	-	0.75'	19.57
ABOVE RAL	0.75'	-	0.85'	2.33

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DSC105-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: April 4, 2018
LAST REVISED: January 16, 2019
CHECKED BY: REG

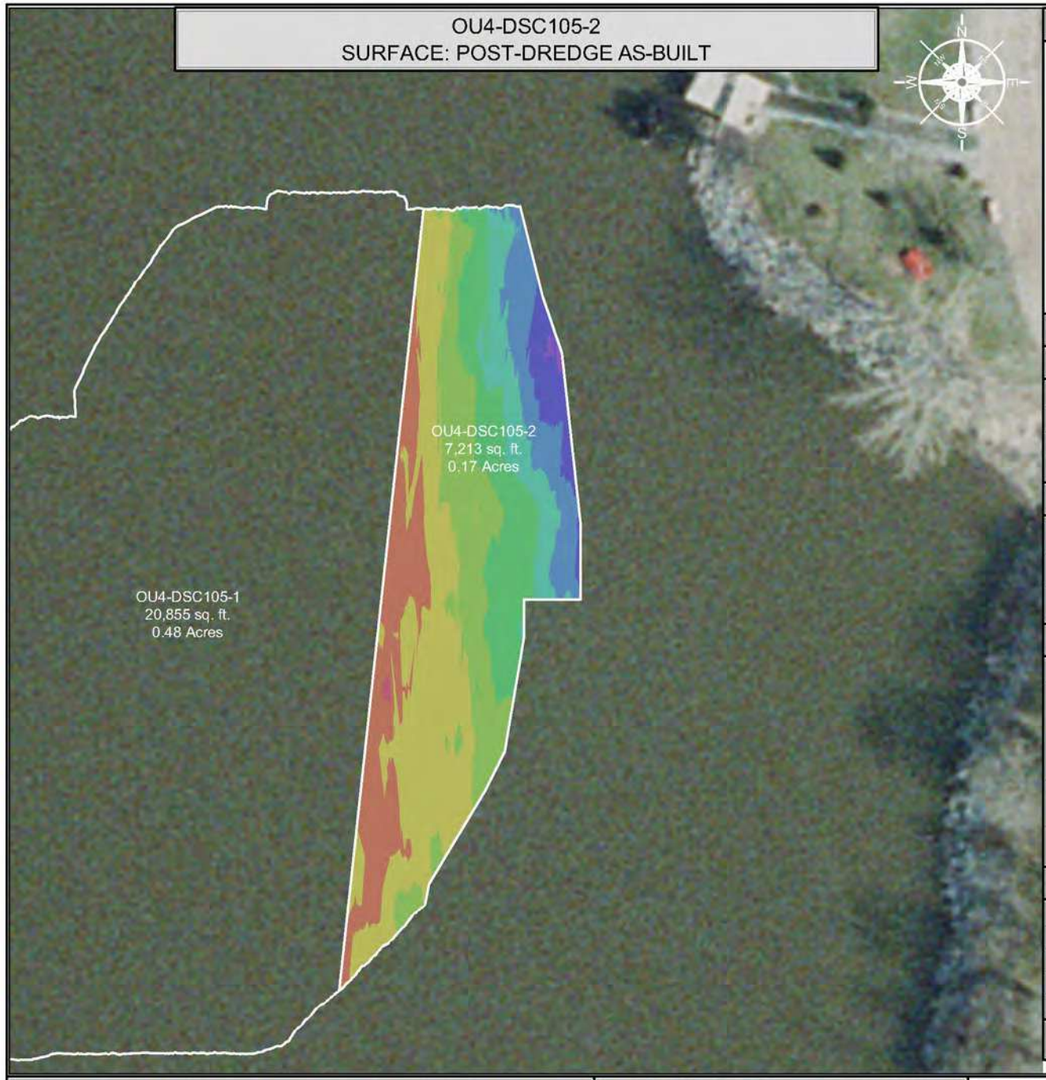
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-187

OU4-DSC105-1
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\ALLOC\42\Field Engineering\Dredge Files\2018\OU4 DSC105\DWG\Post Dredge\OU4 DSC105-1.dwg

OU4-DSC105-2
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

273.25	INITIAL RAL VOLUME
134.37	INITIAL OVERCUT VOLUME
407.62	RAL + OVERCUT VOLUME
364.39	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

32.26	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
95.92	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
128.18	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

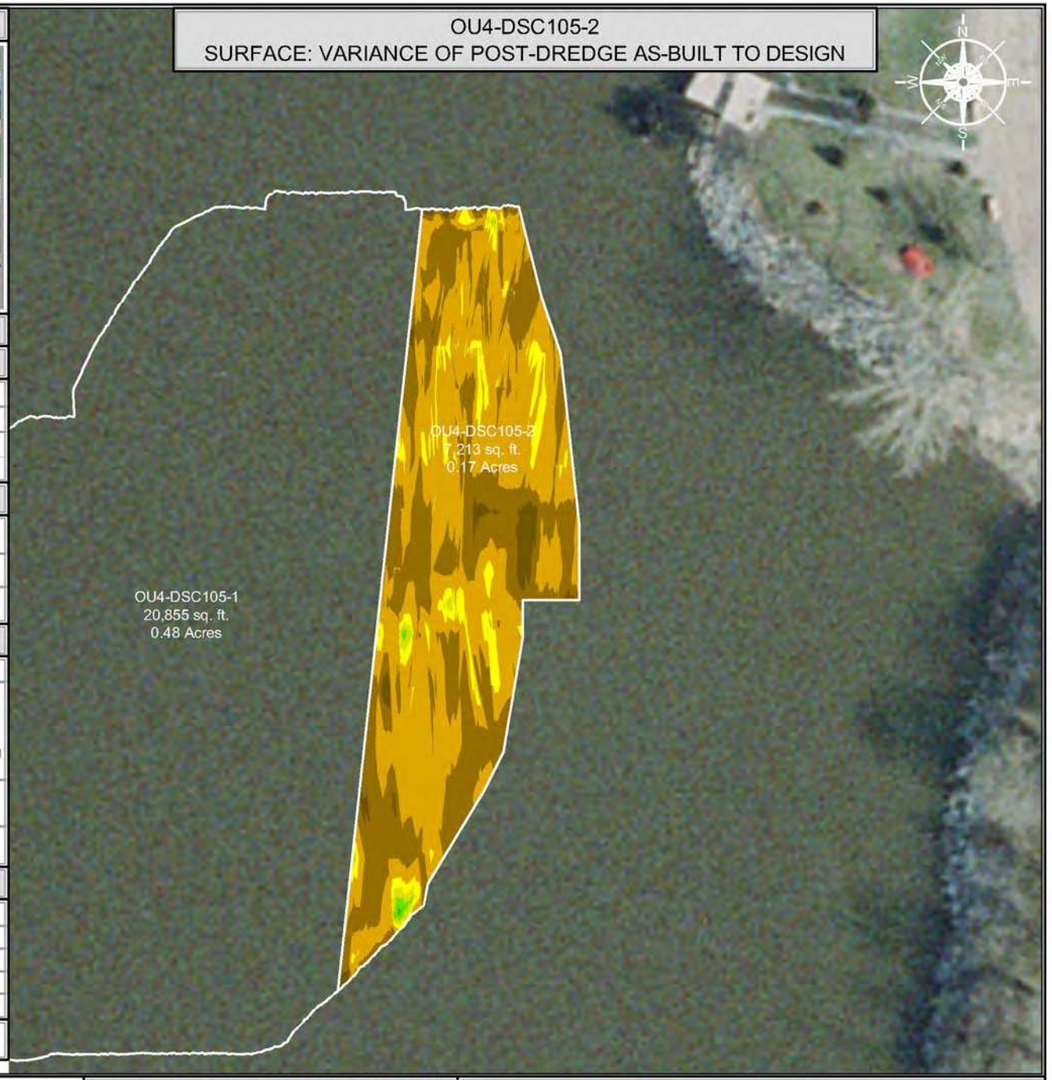
2018 AS-BUILT VOLUMES (CU. YD.)

117.91	TOTAL VOLUME DREDGED
29.60	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
2.66	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
40.57	OVERCUT VOLUME REMAINING
68.95	OVERCUT VOLUME DREDGED
19.36	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

7,213.08	AREA (SQ. FT.)
518.33	ABOVE DESIGN ELEVATION
6,694.75	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
4.27 "	AVERAGE DEPTH OF OVERCUT [1]
93	PERCENT COMPLETE [2]

OU4-DSC105-2
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 3-29-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.96'	-	-1.00'	184.16
BELOW RAL	-1.00'	-	-0.50'	2,712.33
BELOW RAL	-0.50'	-	0.00'	3,798.26
ABOVE RAL	0.00'	-	0.25'	433.52
ABOVE RAL	0.25'	-	0.50'	64.33
ABOVE RAL	0.50'	-	0.75'	19.17
ABOVE RAL	0.75'	-	0.85'	1.30

TETRA TECH EC, INC.
1611 STATE STREET
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TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DSC105-2.dwg
DRAWN BY: DAVID.FRISQUE
DATE: April 4, 2018
LAST REVISED: December 6, 2018
CHECKED BY: REG

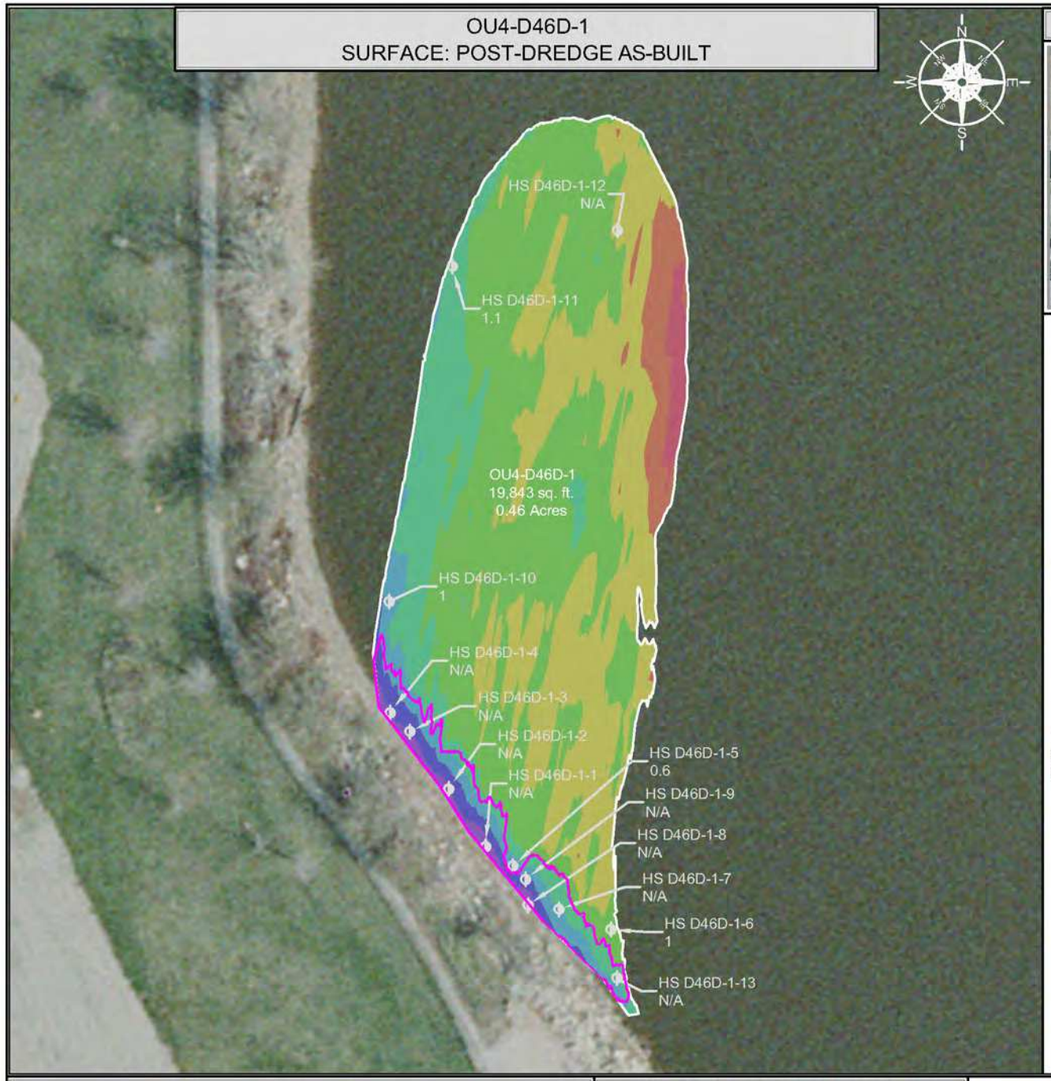
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-188

OU4-DSC105-2
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LLOC\LD\Field Engineering\Dredge Files\2018\OU4 DSC105\DWG\Post Dredge\OU4 DSC105-2.dwg

OU4-D46D-1
SURFACE: POST-DREDGE AS-BUILT



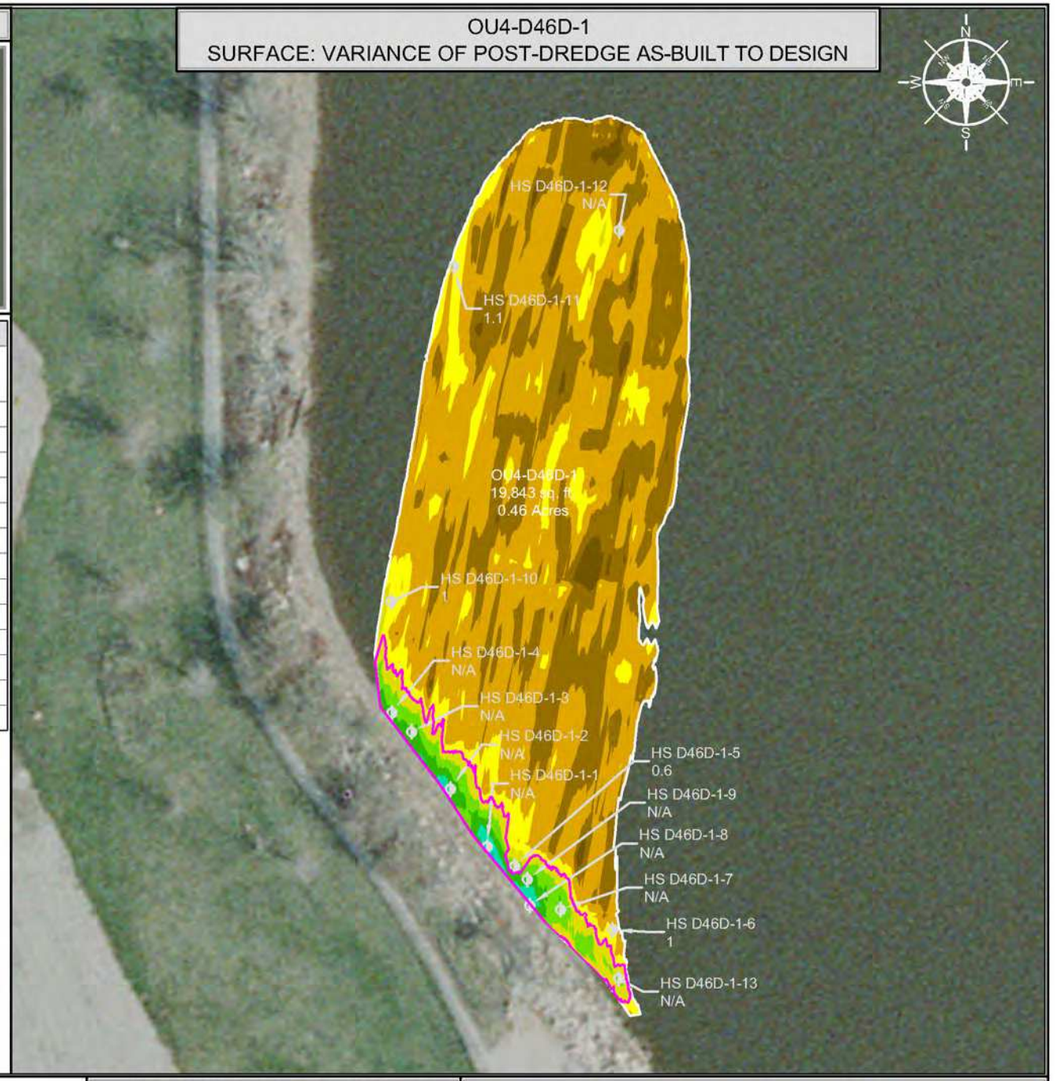
INDEX MAP



HIGH SUBGRADE SAMPLE AS-BUILT RESULTS			
SAMPLE ID	NORTHING	EASTING	THICKNESS OF SOFT SEDIMENT (FEET)
HS D46D-1-1	260246.99	2487365.49	N/A
HS D46D-1-2	260265.96	2487353.41	N/A
HS D46D-1-3	260284.85	2487340.52	N/A
HS D46D-1-4	260291.15	2487333.97	N/A
HS D46D-1-5	260240.59	2487374.52	0.6
HS D46D-1-6	260219.62	2487406.84	1
HS D46D-1-7	260226.27	2487389.72	N/A
HS D46D-1-8	260227.60	2487379.49	N/A
HS D46D-1-9	260236.19	2487378.68	N/A
HS D46D-1-10	260327.77	2487333.69	1
HS D46D-1-11	260438.34	2487354.57	1.1
HS D46D-1-12	260450.22	2487408.93	N/A
HS D46D-1-13	260203.55	2487408.80	N/A

NR = NO RECOVERY
NA = NO CORE COLLECTION REQUIRED DUE TO POLING DEPTH

OU4-D46D-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 50')

50 25 0 50 100

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 7-31-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
571.00'	-	572.00'
572.00'	-	573.00'
573.00'	-	574.00'
574.00'	-	575.00'
575.00'	-	576.00'
576.00'	-	577.00'
577.00'	-	578.00'
578.00'	-	579.00'

DRAWING NOTES

1. HIGH SUBGRADE SAMPLES AND POLING DATA WERE COLLECTED ON 8-3-2018 AND LOGGED ON 8-3-2018

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.07'	-	-1.00'	362.67
	-1.00'	-	-0.50'	5,938.81
	-0.50'	-	0.00'	10,174.05
ABOVE RAL	0.00'	-	0.50'	1,932.24
	0.50'	-	1.00'	587.93
	1.00'	-	1.50'	460.67
	1.50'	-	2.00'	286.71
	2.00'	-	2.50'	97.46
	2.50'	-	2.62'	2.28

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D46D-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: August 1, 2018
LAST REVISED: December 6, 2018
CHECKED BY: REG

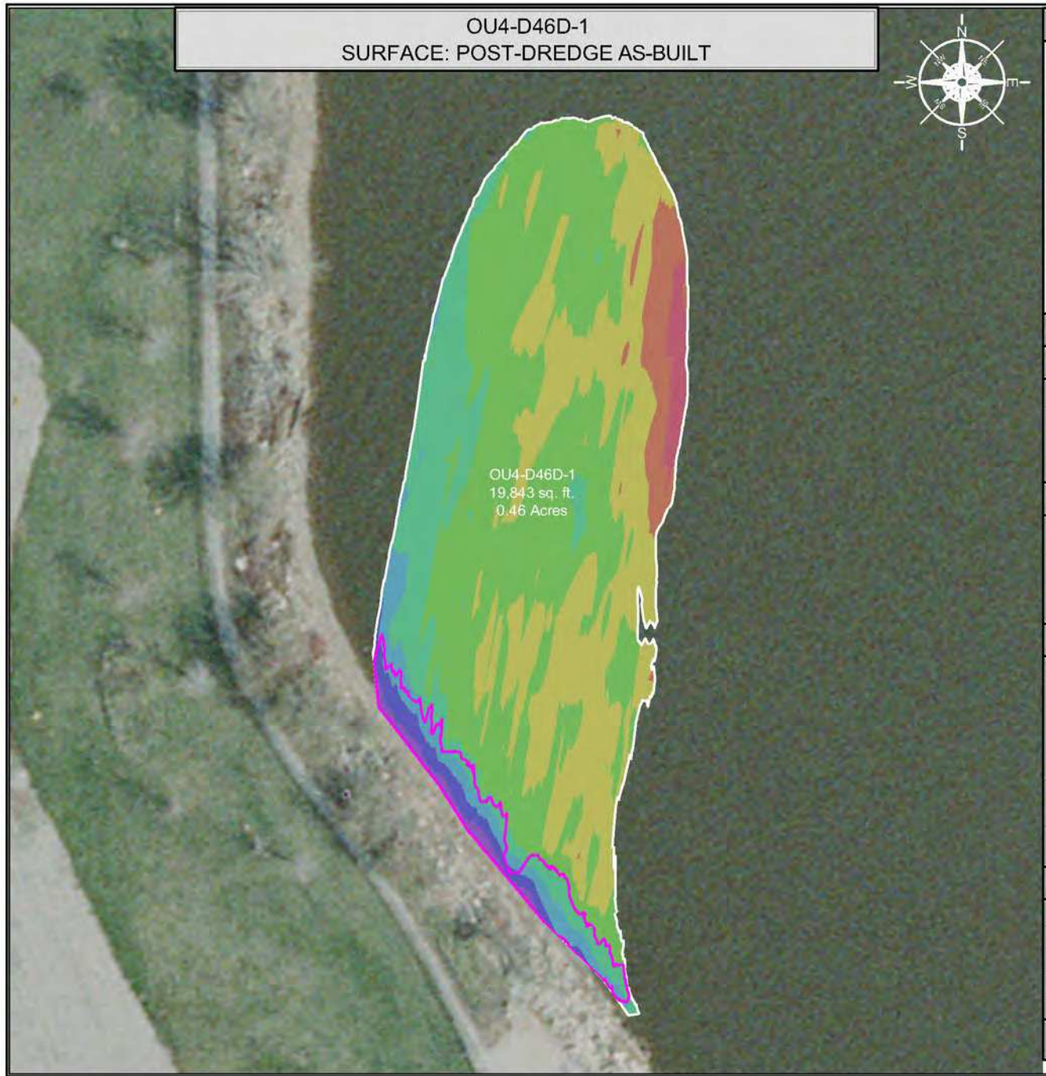
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-189

OU4-D46D-1
PRIMARY DREDGE HIGH SUBGRADE RESULTS

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OU4-D46D-1
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

876.55	INITIAL RAL VOLUME
379.07	INITIAL OVERCUT VOLUME
1,255.62	RAL + OVERCUT VOLUME
1,036.65	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

876.55	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
379.07	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
1,255.62	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

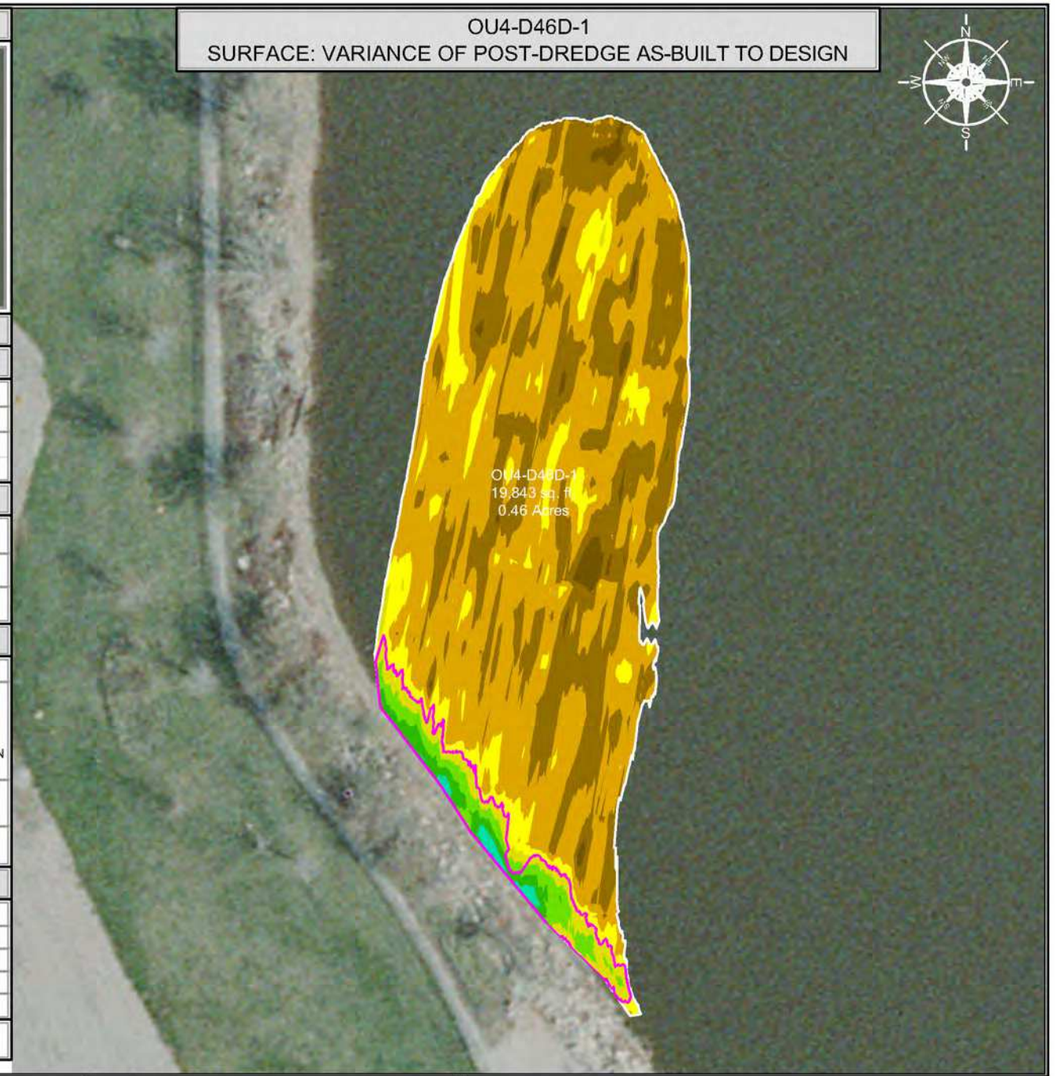
2018 AS-BUILT VOLUMES (CU. YD.)

1,073.29	TOTAL VOLUME DREDGED
800.66	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
60.95	CONFIRMED HIGH SUBGRADE VOLUME
14.94	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
143.08	OVERCUT VOLUME REMAINING
227.81	OVERCUT VOLUME DREDGED
44.82	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

19,842.85	AREA (SQ. FT.)
2,023.67	ABOVE DESIGN ELEVATION
16,475.53	AT OR BELOW DESIGN ELEVATION
1,343.65	CONFIRMED HIGH SUBGRADE
5.36 "	AVERAGE DEPTH OF OVERCUT [1]
90	PERCENT COMPLETE [2]

OU4-D46D-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 50')

50 25 0 50 100

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 7-31-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
571.00'	-	572.00'
572.00'	-	573.00'
573.00'	-	574.00'
574.00'	-	575.00'
575.00'	-	576.00'
576.00'	-	577.00'
577.00'	-	578.00'
578.00'	-	579.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.07'	-	-1.00'	362.67
	-1.00'	-	-0.50'	5,938.81
	-0.50'	-	0.00'	10,174.05
ABOVE RAL	0.00'	-	0.50'	1,932.24
	0.50'	-	1.00'	587.93
	1.00'	-	1.50'	460.67
	1.50'	-	2.00'	286.71
	2.00'	-	2.50'	97.46
	2.50'	-	2.62'	2.28

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D46D-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: August 1, 2018
LAST REVISED: December 6, 2018
CHECKED BY: REG

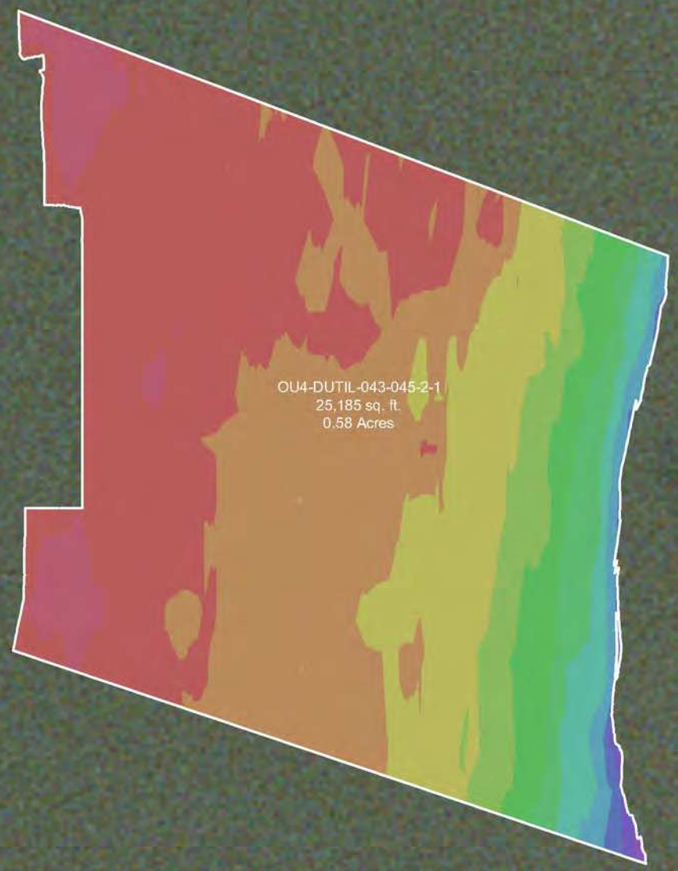
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-190

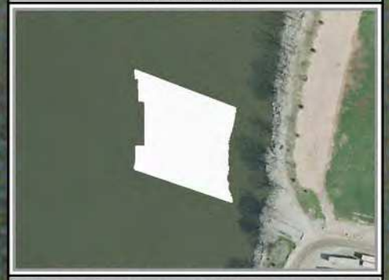
OU4-D46D-1
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

F:\LCAD\Field Engineering\Dredge Files\2018\OU4 D46D\DWG\Post Dredge\OU4-D46D-1.dwg

OU4-DUTIL-043-045-2-1
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

852.76	INITIAL RAL VOLUME
463.00	INITIAL OVERCUT VOLUME
1,315.76	RAL + OVERCUT VOLUME
1,153.06	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

792.33	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
453.89	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
1,246.22	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

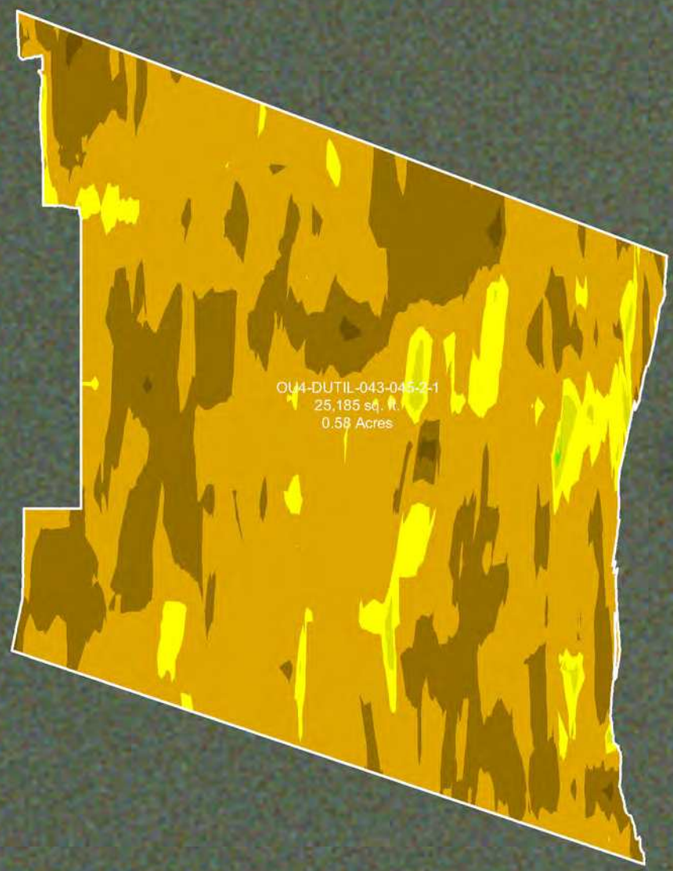
2018 AS-BUILT VOLUMES (CU. YD.)

1,118.15	TOTAL VOLUME DREDGED
784.42	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
7.79	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
154.91	OVERCUT VOLUME REMAINING
297.19	OVERCUT VOLUME DREDGED
36.54	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

25,184.79	AREA (SQ. FT.)
1,832.23	ABOVE DESIGN ELEVATION
23,352.56	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
4.63 "	AVERAGE DEPTH OF OVERCUT [1]
93	PERCENT COMPLETE [2]

OU4-DUTIL-043-045-2-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-18-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.36'	-	-1.00'	115.63
BELOW RAL	-1.00'	-	-0.50'	7,159.35
BELOW RAL	-0.50'	-	0.00'	16,077.58
ABOVE RAL	0.00'	-	0.25'	1,627.93
ABOVE RAL	0.25'	-	0.50'	199.37
ABOVE RAL	0.50'	-	0.61'	4.86

TETRA TECH EC, INC.
1611 STATE STREET
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CAD FILE: OU4-DUTIL-043-045-2.dwg
DRAWN BY: DAVID.FRISQUE
DATE: October 3, 2018
LAST REVISED: December 6, 2018
CHECKED BY: REG

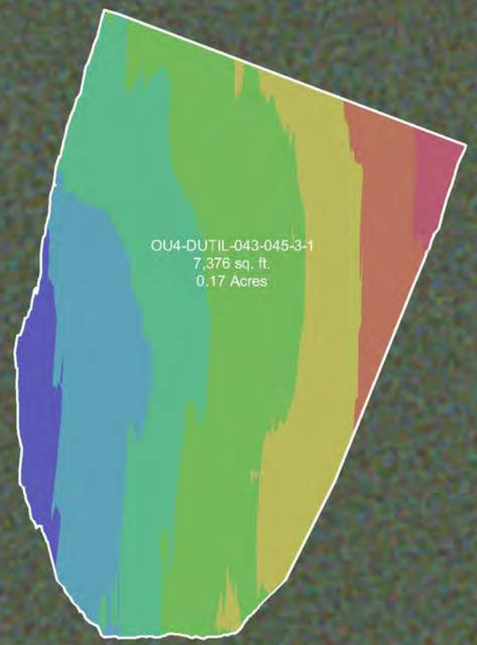
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-191

OU4-DUTIL-043-045-2
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\ALLOC\AS\Field Engineering\Dredge Files\2018\OU4 DUTIL 043-045-2\DWG\Post Dredge\OU4 DUTIL 043-045-2.dwg

OU4-DUTIL-043-045-3-1
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

149.25	INITIAL RAL VOLUME
131.37	INITIAL OVERCUT VOLUME
280.62	RAL + OVERCUT VOLUME
233.75	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

149.25	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
131.37	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
280.62	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

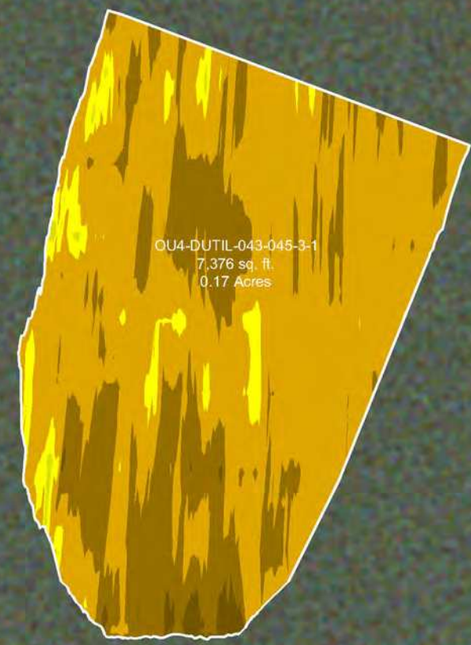
2018 AS-BUILT VOLUMES (CU. YD.)

244.07	TOTAL VOLUME DREDGED
146.82	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
1.56	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
45.31	OVERCUT VOLUME REMAINING
83.60	OVERCUT VOLUME DREDGED
13.65	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

7,376.18	AREA (SQ. FT.)
402.70	ABOVE DESIGN ELEVATION
6,973.48	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
4.52 "	AVERAGE DEPTH OF OVERCUT [1]
95	PERCENT COMPLETE [2]

OU4-DUTIL-043-045-3-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 30')

30 15 0 30 60

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 8-22-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
559.00'	-	561.00'
561.00'	-	563.00'
563.00'	-	565.00'
565.00'	-	567.00'
567.00'	-	569.00'
569.00'	-	571.00'
571.00'	-	573.00'
573.00'	-	575.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.64'	-	-1.00'	91.44
BELOW RAL	-1.00'	-	-0.50'	1,918.05
BELOW RAL	-0.50'	-	0.00'	4,963.99
ABOVE RAL	0.00'	-	0.25'	369.18
ABOVE RAL	0.25'	-	0.40'	26.11

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DUTIL-043-045-3-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: August 27, 2018
LAST REVISED: December 6, 2018
CHECKED BY: REG

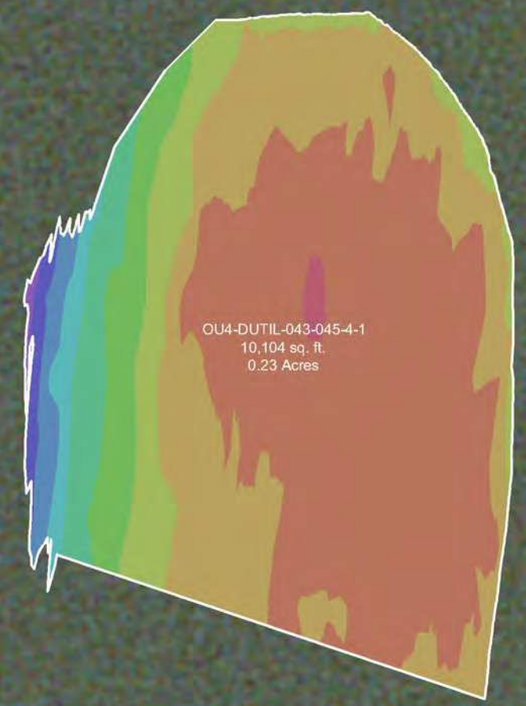
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-192

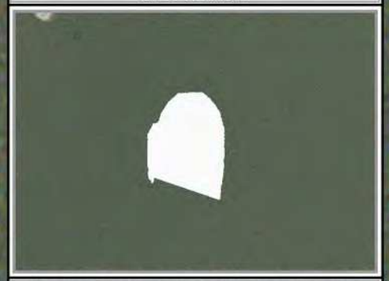
OU4-DUTIL-043-045-3-1
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\ALL CAD\Field Engineering\Dredge Files\2018\OU4 DUTIL 043-045-3\DWG\Post Dredge\OU4 DUTIL 043-045-3-1.dwg

OU4-DUTIL-043-045-4-1
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

284.00	INITIAL RAL VOLUME
181.22	INITIAL OVERCUT VOLUME
465.22	RAL + OVERCUT VOLUME
418.74	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

241.20	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
173.17	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
414.37	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

2018 AS-BUILT VOLUMES (CU. YD.)

379.65	TOTAL VOLUME DREDGED
240.09	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
1.09	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
45.39	OVERCUT VOLUME REMAINING
124.79	OVERCUT VOLUME DREDGED
14.77	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

10,104.12	AREA (SQ. FT.)
237.73	ABOVE DESIGN ELEVATION
9,866.39	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
4.58 "	AVERAGE DEPTH OF OVERCUT [1]
98	PERCENT COMPLETE [2]

OU4-DUTIL-043-045-4-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 30')

30 15 0 30 60

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-18-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.48'	-	-1.00'	71.42
	-1.00'	-	-0.50'	3,272.75
	-0.50'	-	0.00'	6,522.22
ABOVE RAL	0.00'	-	0.25'	197.29
	0.25'	-	0.50'	31.69
	0.50'	-	0.66'	8.74

TETRA TECH EC, INC.
1611 STATE STREET
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CAD FILE: OU4-DUTIL-043-045-4-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: October 3, 2018
LAST REVISED: December 6, 2018
CHECKED BY: REG

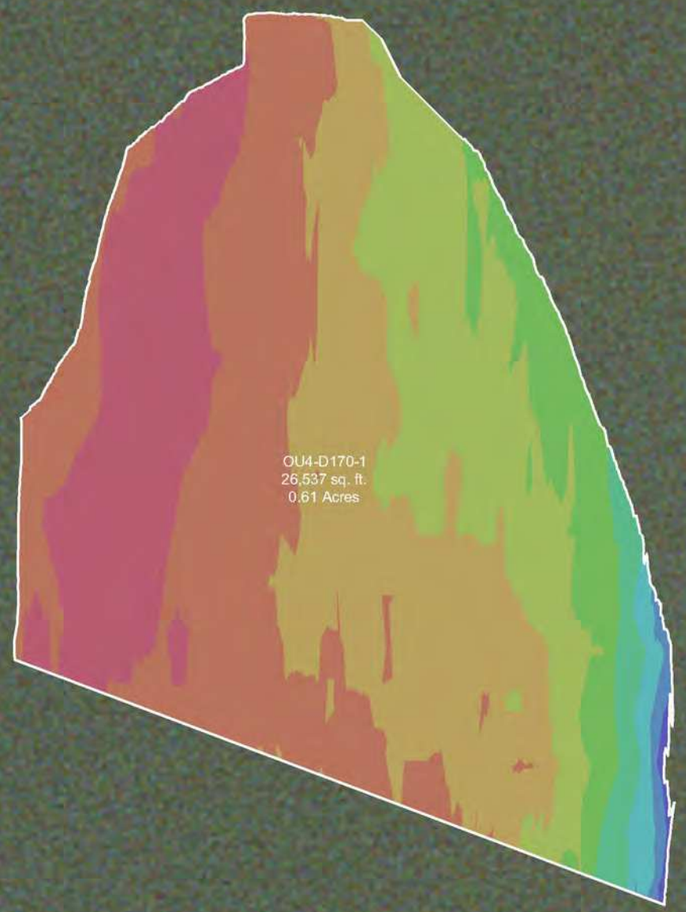
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-193

OU4-DUTIL-043-045-4-1
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

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OU4-D170-1
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

635.63	INITIAL RAL VOLUME
474.80	INITIAL OVERCUT VOLUME
1,110.43	RAL + OVERCUT VOLUME
961.60	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

362.08	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
412.53	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
774.61	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

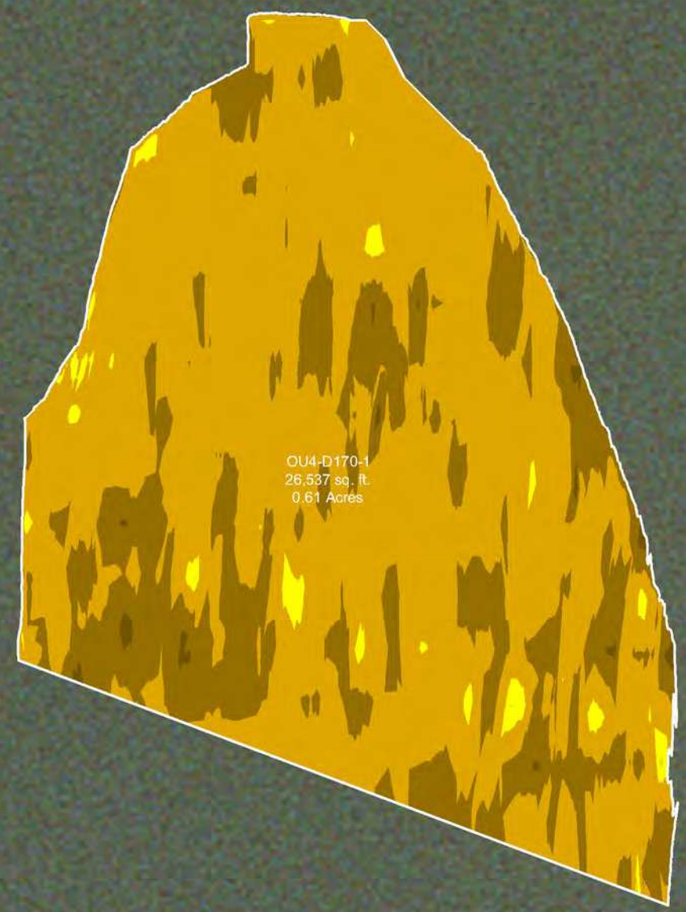
2018 AS-BUILT VOLUMES (CU. YD.)

662.09	TOTAL VOLUME DREDGED
360.70	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
1.13	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
147.70	OVERCUT VOLUME REMAINING
269.77	OVERCUT VOLUME DREDGED
31.62	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

26,536.68	AREA (SQ. FT.)
425.08	ABOVE DESIGN ELEVATION
26,111.60	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
3.74 "	AVERAGE DEPTH OF OVERCUT [1]
98	PERCENT COMPLETE [2]

OU4-D170-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-18-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
- OU# — OPERABLE UNIT
- D# — DREDGE AREA
- # — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.25'	-	-1.00'	132.37
BELOW RAL	-1.00'	-	-0.50'	6,750.25
BELOW RAL	-0.50'	-	0.00'	19,228.98
ABOVE RAL	0.00'	-	0.25'	422.48
ABOVE RAL	0.25'	-	0.32'	2.60

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
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CAD FILE: OU4-D170-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: October 3, 2018
LAST REVISED: December 6, 2018
CHECKED BY: REG

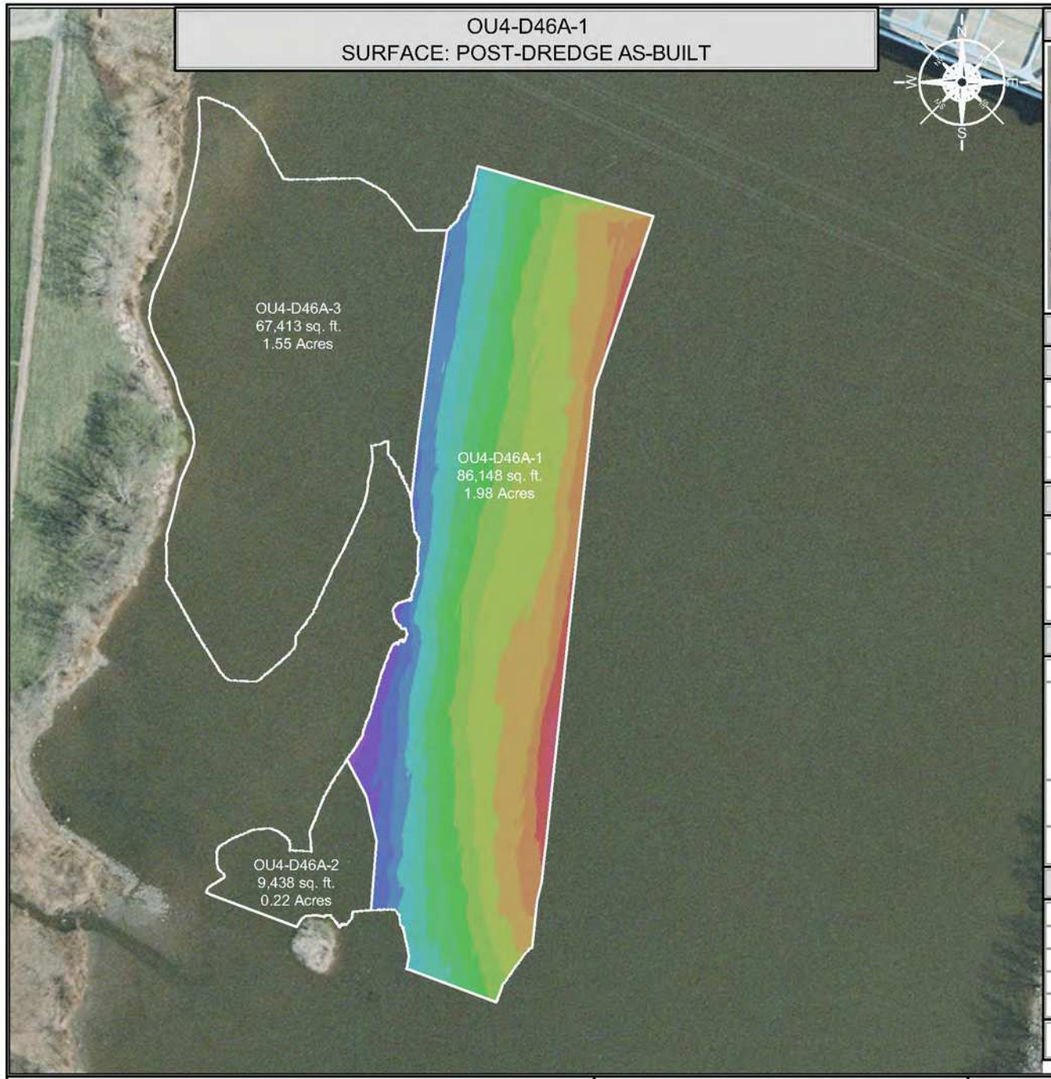
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-194

OU4-D170-1
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

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OU4-D46A-1
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

7,586.97	INITIAL RAL VOLUME
1,602.59	INITIAL OVERCUT VOLUME
9,189.56	RAL + OVERCUT VOLUME
8,875.57	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

299.89	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
846.02	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
1,145.91	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

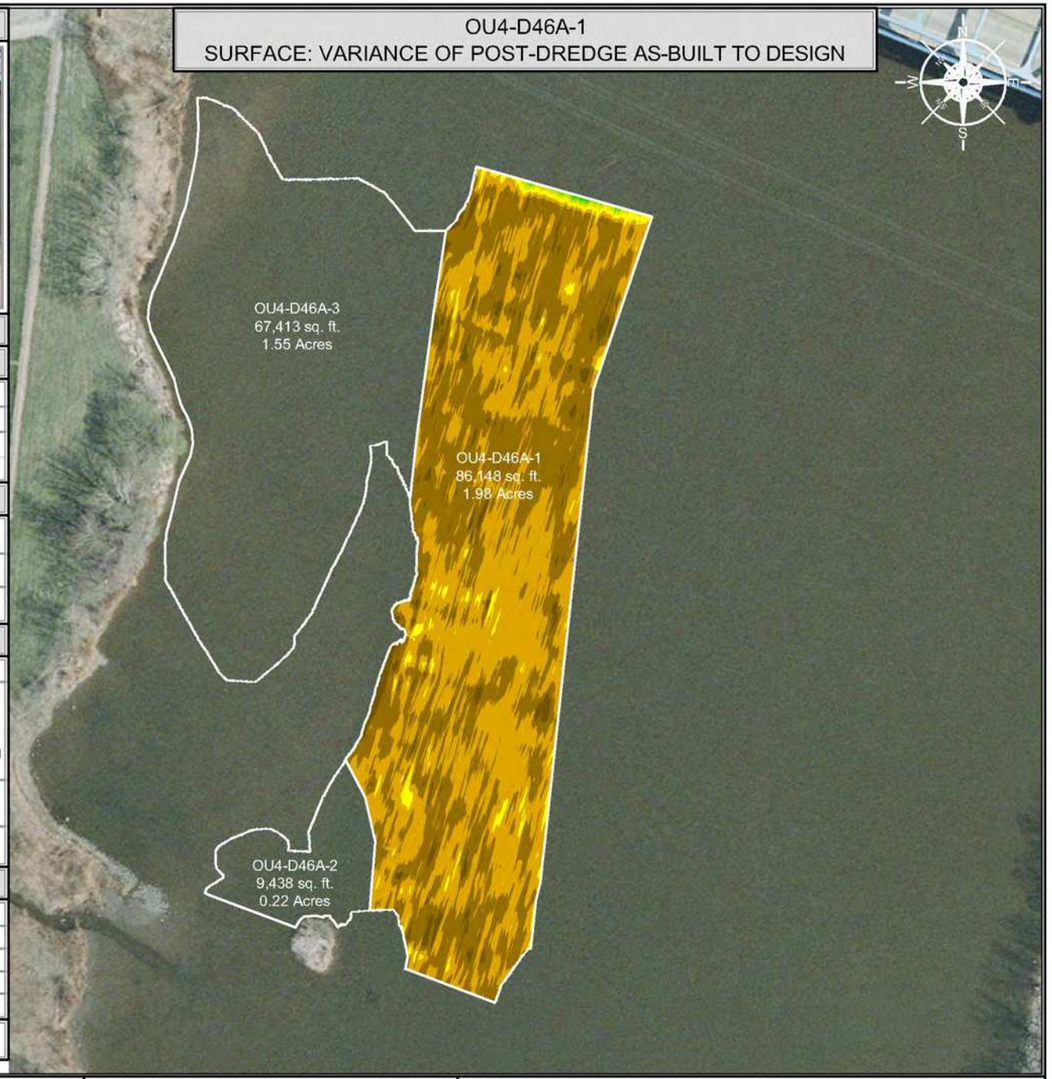
2018 AS-BUILT VOLUMES (CU. YD.)

1,163.58	TOTAL VOLUME DREDGED
273.39	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
26.50	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
287.49	OVERCUT VOLUME REMAINING
648.76	OVERCUT VOLUME DREDGED
241.43	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

86,147.69	AREA (SQ. FT.)
2,445.16	ABOVE DESIGN ELEVATION
83,702.53	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
3.45 "	AVERAGE DEPTH OF OVERCUT [1]
97	PERCENT COMPLETE [2]

OU4-D46A-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 120')

120 60 0 120 240

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 7-28-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
548.00'	-	550.00'
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'
562.00'	-	564.00'
564.00'	-	566.00'
566.00'	-	568.00'
568.00'	-	570.00'
570.00'	-	572.00'
572.00'	-	574.00'
574.00'	-	576.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.29'	-	-1.00'	3,376.97
BELOW RAL	-1.00'	-	-0.50'	41,365.64
BELOW RAL	-0.50'	-	0.00'	38,959.92
ABOVE RAL	0.00'	-	0.50'	1,971.66
ABOVE RAL	0.50'	-	1.00'	298.59
ABOVE RAL	1.00'	-	1.50'	137.54
ABOVE RAL	1.50'	-	2.00'	35.55
ABOVE RAL	2.00'	-	2.25'	1.82

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D46A-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: July 30, 2018
LAST REVISED: December 6, 2018
CHECKED BY: REG

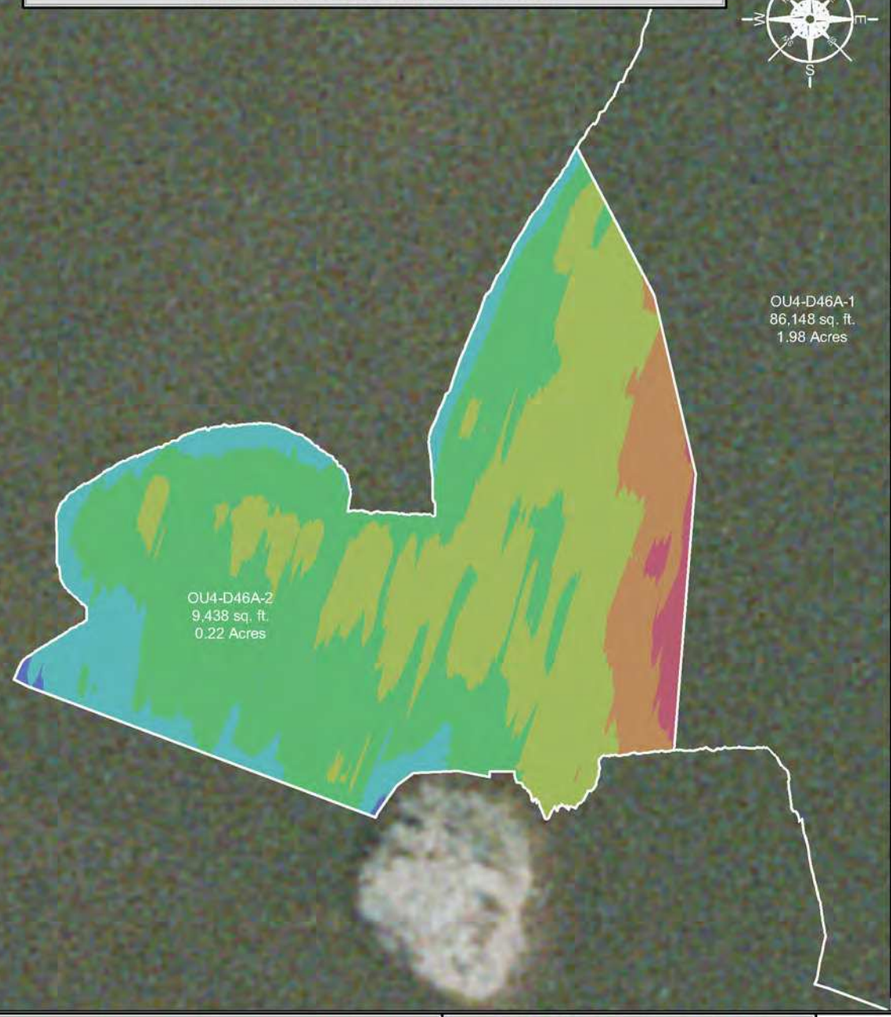
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-195

OU4-D46A-1
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LLOC\LS\Field Engineering\Dredge Files\2018\OU4 D46A\DWG\Post Dredge\OU4 D46A-1.dwg

OU4-D46A-2
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

422.47	INITIAL RAL VOLUME
168.61	INITIAL OVERCUT VOLUME
591.08	RAL + OVERCUT VOLUME
538.46	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

89.52	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
128.58	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
218.10	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

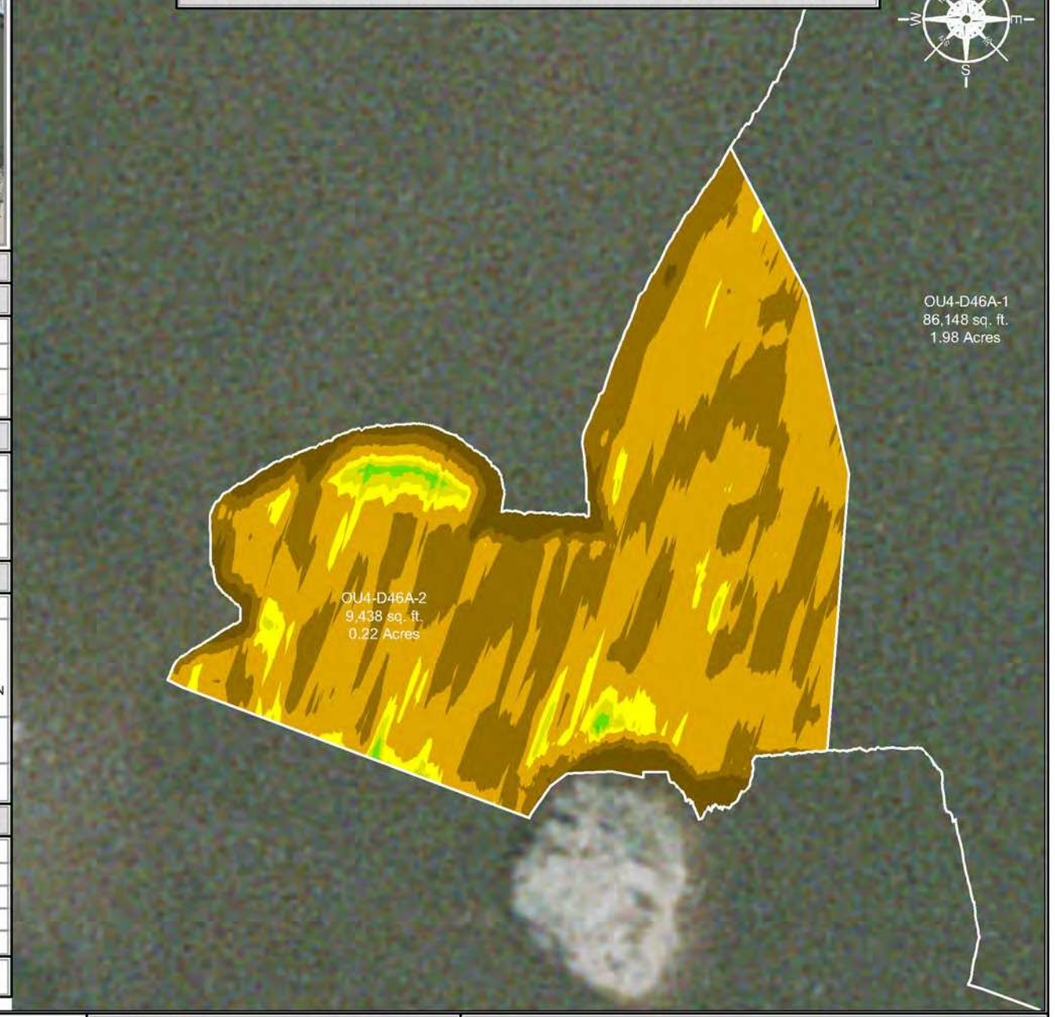
2018 AS-BUILT VOLUMES (CU. YD.)

198.08	TOTAL VOLUME DREDGED
84.97	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
4.55	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
48.07	OVERCUT VOLUME REMAINING
84.74	OVERCUT VOLUME DREDGED
28.37	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

9,437.99	AREA (SQ. FT.)
665.12	ABOVE DESIGN ELEVATION
8,772.87	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
4.18 "	AVERAGE DEPTH OF OVERCUT [1]
93	PERCENT COMPLETE [2]

OU4-D46A-2
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 30')

30 15 0 30 60

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 7-28-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
571.00'	-	572.00'
572.00'	-	573.00'
573.00'	-	574.00'
574.00'	-	575.00'
575.00'	-	576.00'
576.00'	-	577.00'
577.00'	-	578.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-3.53'	-	-1.00'	544.64
BELOW RAL	-1.00'	-	-0.50'	3,360.97
BELOW RAL	-0.50'	-	0.00'	4,867.26
ABOVE RAL	0.00'	-	0.25'	478.50
ABOVE RAL	0.25'	-	0.50'	144.51
ABOVE RAL	0.50'	-	0.75'	41.80
ABOVE RAL	0.75'	-	0.80'	0.30

TETRA TECH EC, INC.
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TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D46A-2.dwg
DRAWN BY: DAVID.FRISQUE
DATE: July 31, 2018
LAST REVISED: December 6, 2018
CHECKED BY: REG

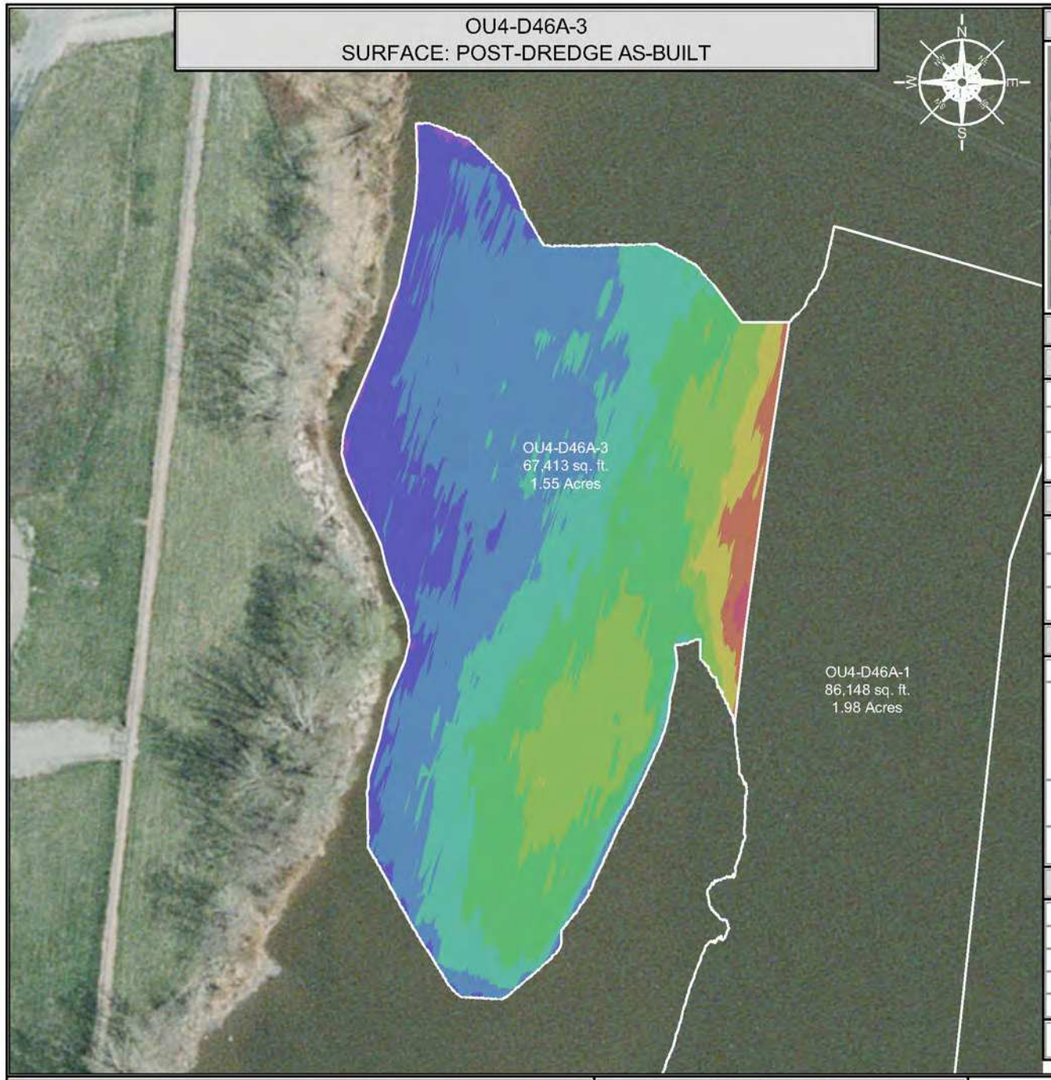
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-196

OU4-D46A-2
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\ALLOC\D\Field Engineering\Dredge Files\2018\OU4 D46A\DWG\Post Dredge\OU4 D46A-2.dwg

OU4-D46A-3
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

2,623.91	INITIAL RAL VOLUME
1,233.10	INITIAL OVERCUT VOLUME
3,857.01	RAL + OVERCUT VOLUME
3,663.99	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

1,375.91	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
999.23	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
2,375.14	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

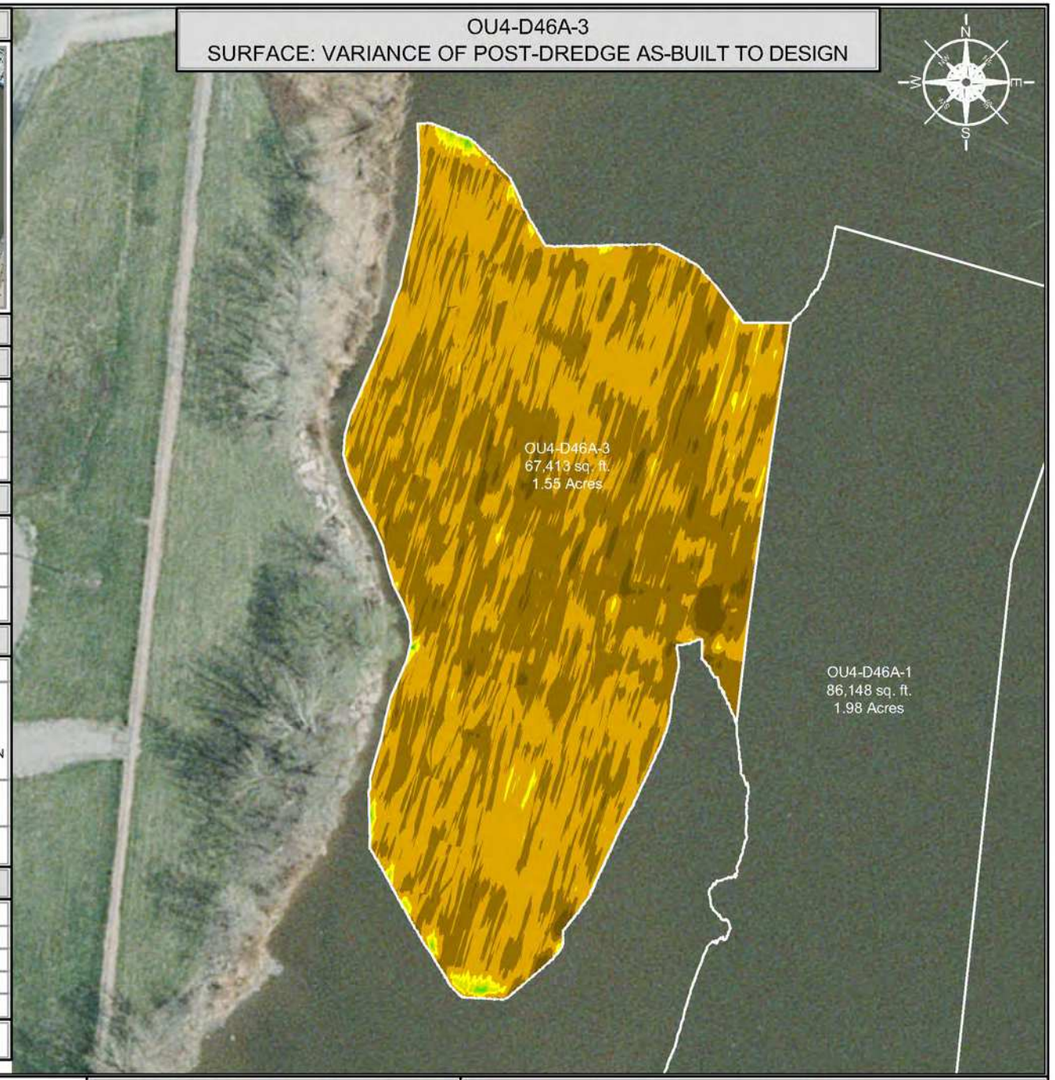
2018 AS-BUILT VOLUMES (CU. YD.)

2,383.57	TOTAL VOLUME DREDGED
1,369.36	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
6.55	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
186.47	OVERCUT VOLUME REMAINING
819.99	OVERCUT VOLUME DREDGED
194.22	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

67,412.80	AREA (SQ. FT.)
996.63	ABOVE DESIGN ELEVATION
66,416.17	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
4.95 "	AVERAGE DEPTH OF OVERCUT [1]
99	PERCENT COMPLETE [2]

OU4-D46A-3
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 80')

80 40 0 80 160

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 7-28-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
569.00'	-	570.00'
570.00'	-	571.00'
571.00'	-	572.00'
572.00'	-	573.00'
573.00'	-	574.00'
574.00'	-	575.00'
575.00'	-	576.00'
576.00'	-	577.00'
577.00'	-	578.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.05'	-	-1.00'	1,678.15
BELOW RAL	-1.00'	-	-0.50'	32,139.08
BELOW RAL	-0.50'	-	0.00'	32,598.93
ABOVE RAL	0.00'	-	0.25'	729.73
ABOVE RAL	0.25'	-	0.50'	214.20
ABOVE RAL	0.50'	-	0.75'	50.64
ABOVE RAL	0.75'	-	0.98'	2.06

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D46A-3.dwg
DRAWN BY: DAVID.FRISQUE
DATE: July 30, 2018
LAST REVISED: December 6, 2018
CHECKED BY: REG

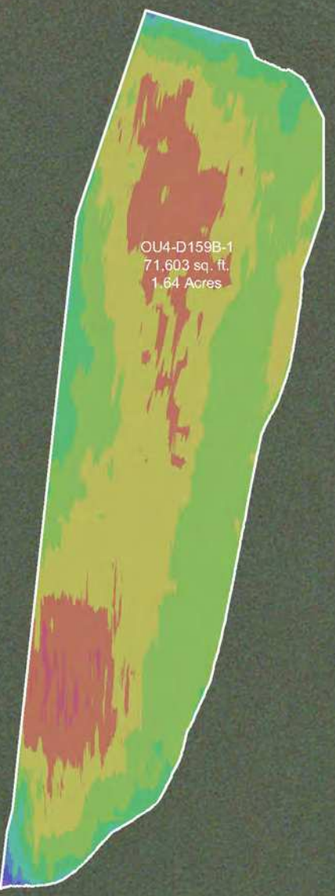
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-197

OU4-D46A-3
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LLOC\LD\Field Engineering\Dredge Files\2018\OU4-D46A\DWG\Post Dredge\OU4-D46A-3.dwg

OU4-D159B-1
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

7,495.13	INITIAL RAL VOLUME
1,323.26	INITIAL OVERCUT VOLUME
8,818.39	RAL + OVERCUT VOLUME
8,450.08	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

151.28	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
741.20	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
892.48	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

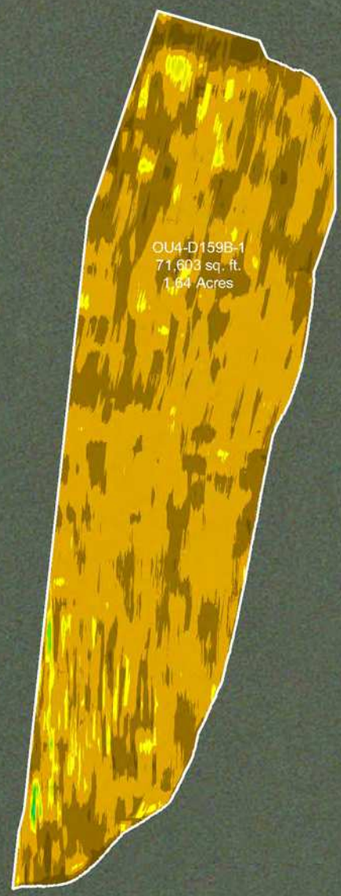
2018 AS-BUILT VOLUMES (CU. YD.)

739.64	TOTAL VOLUME DREDGED
136.62	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
14.64	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
353.67	OVERCUT VOLUME REMAINING
441.71	OVERCUT VOLUME DREDGED
161.31	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

71,602.55	AREA (SQ. FT.)
2,612.93	ABOVE DESIGN ELEVATION
68,989.62	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
2.83 "	AVERAGE DEPTH OF OVERCUT [1]
96	PERCENT COMPLETE [2]

OU4-D159B-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 4-2-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.71'	-	-1.00'	2,013.39
BELOW RAL	-1.00'	-	-0.50'	23,953.06
BELOW RAL	-0.50'	-	0.00'	43,023.17
ABOVE RAL	0.00'	-	0.25'	2,122.94
ABOVE RAL	0.25'	-	0.50'	368.53
ABOVE RAL	0.50'	-	0.75'	90.86
ABOVE RAL	0.75'	-	1.00'	21.53
ABOVE RAL	1.00'	-	1.15'	6.82

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D159B-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: April 4, 2018
LAST REVISED: January 16, 2019
CHECKED BY: REG

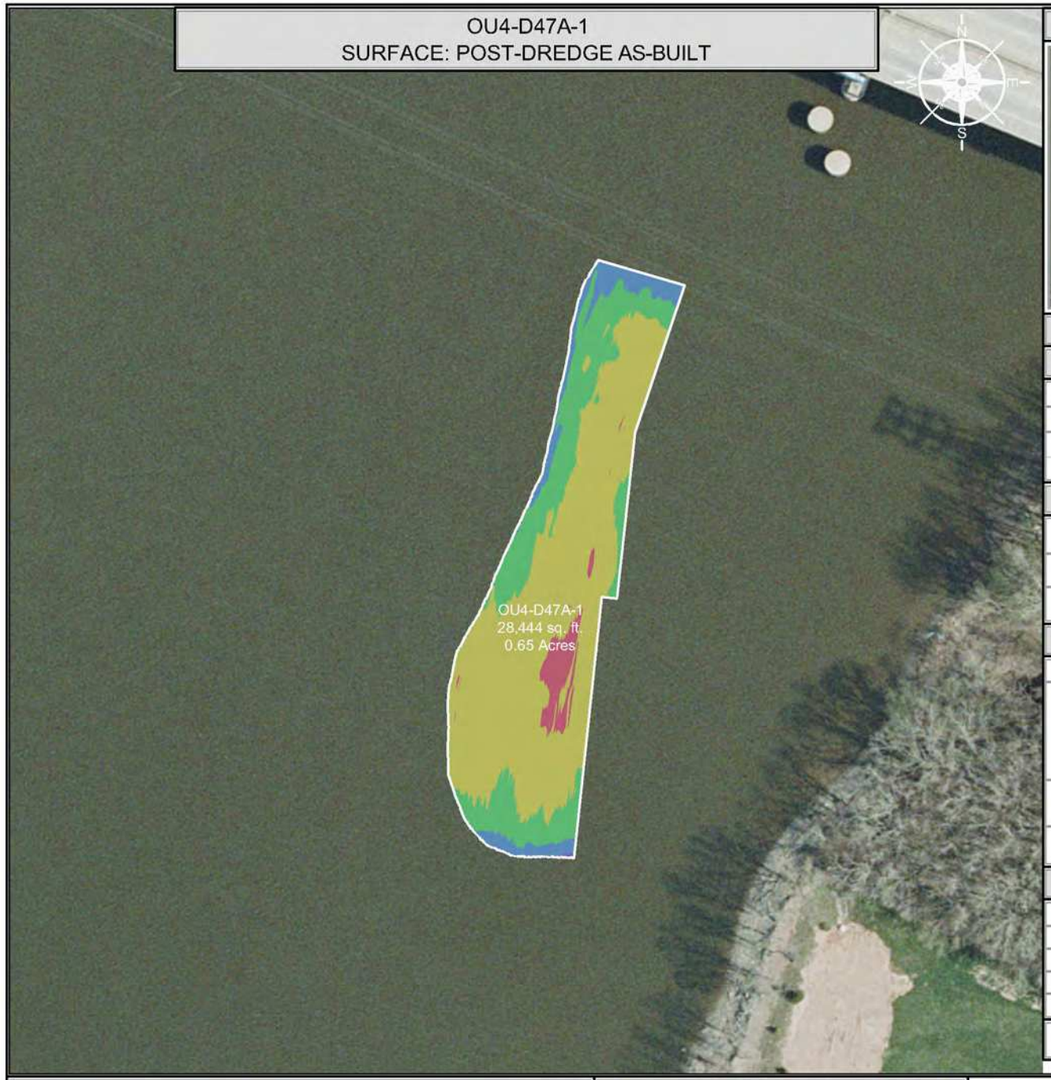
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-198

OU4-D159B-1
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

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OU4-D47A-1
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

2,421.53	INITIAL RAL VOLUME
530.07	INITIAL OVERCUT VOLUME
2,951.60	RAL + OVERCUT VOLUME
2,788.71	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

190.97	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
439.80	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
630.77	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

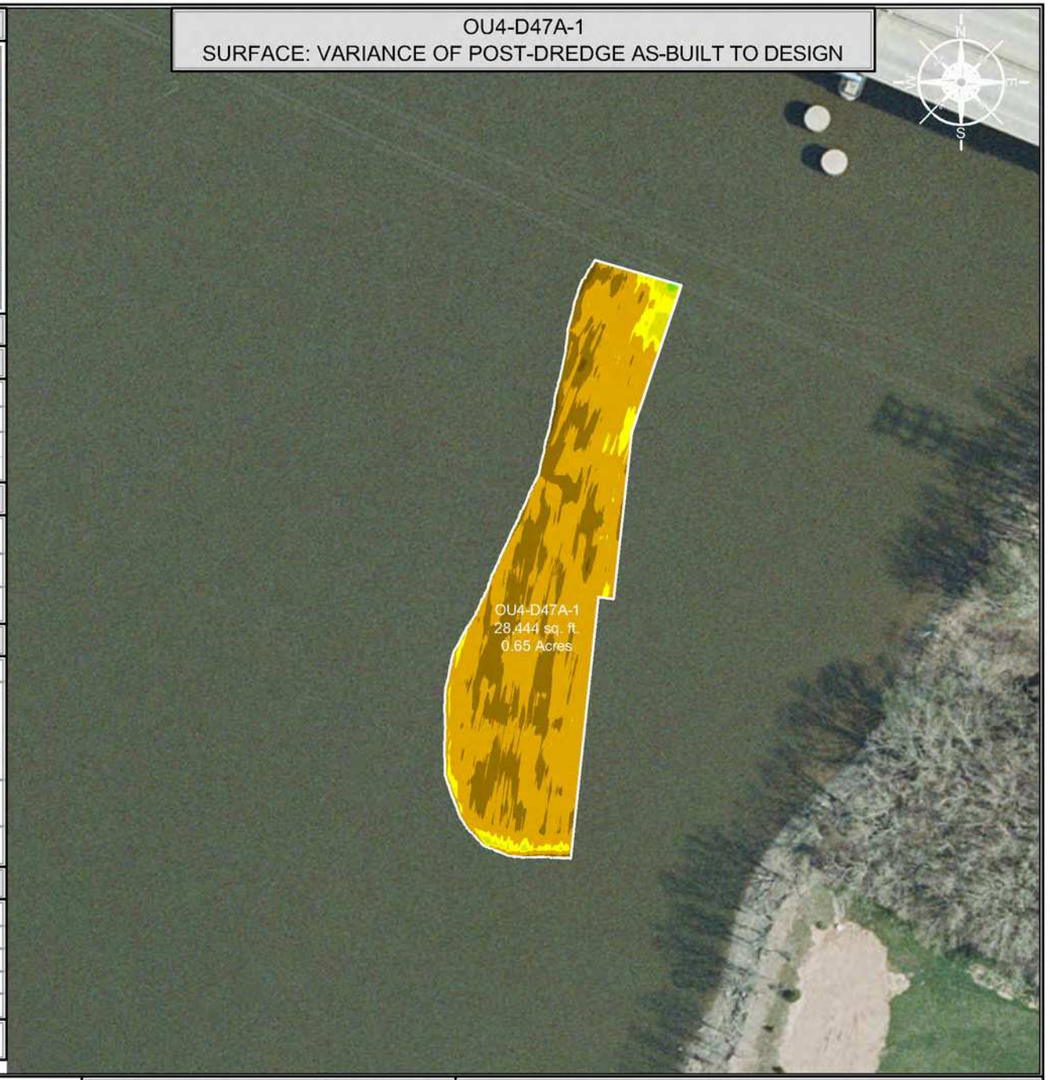
2018 AS-BUILT VOLUMES (CU. YD.)

504.07	TOTAL VOLUME DREDGED
179.70	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
10.43	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
152.46	OVERCUT VOLUME REMAINING
289.92	OVERCUT VOLUME DREDGED
34.45	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

28,443.79	AREA (SQ. FT.)
1,631.42	ABOVE DESIGN ELEVATION
26,812.37	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
3.92 "	AVERAGE DEPTH OF OVERCUT [1]
94	PERCENT COMPLETE [2]

OU4-D47A-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.70'	-	-1.00'	291.36
BELOW RAL	-1.00'	-	-0.50'	8,131.88
BELOW RAL	-0.50'	-	0.00'	18,389.13
ABOVE RAL	0.00'	-	0.25'	1,229.05
ABOVE RAL	0.25'	-	0.50'	372.39
ABOVE RAL	0.50'	-	0.78'	29.98

SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 7-18-2018

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT
DREDGE MANAGEMENT UNIT (DMU)

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D47A-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: April 9, 2018
LAST REVISED: January 16, 2019
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-199

OU4-D47A-1
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

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OU4-D160A-1
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

692.11	INITIAL RAL VOLUME
166.49	INITIAL OVERCUT VOLUME
858.60	RAL + OVERCUT VOLUME
829.60	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

12.23	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
57.75	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
69.98	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

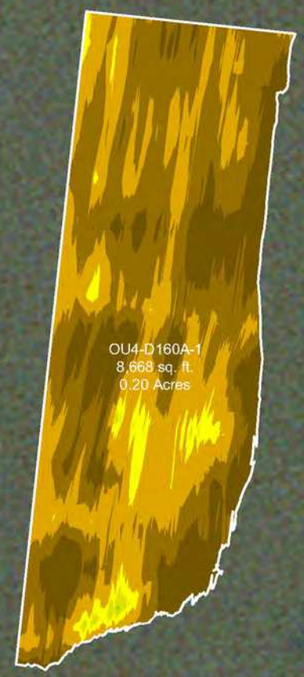
2018 AS-BUILT VOLUMES (CU. YD.)

106.20	TOTAL VOLUME DREDGED
10.57	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
1.66	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
27.34	OVERCUT VOLUME REMAINING
53.74	OVERCUT VOLUME DREDGED
41.89	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

8,668.18	AREA (SQ. FT.)
352.34	ABOVE DESIGN ELEVATION
8,315.84	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
3.73 "	AVERAGE DEPTH OF OVERCUT [1]
96	PERCENT COMPLETE [2]

OU4-D160A-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 4-2-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
549.00'	-	551.00'
551.00'	-	553.00'
553.00'	-	555.00'
555.00'	-	557.00'
557.00'	-	559.00'
559.00'	-	561.00'
561.00'	-	563.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.14'	-	-1.00'	1,821.46
BELOW RAL	-1.00'	-	-0.50'	3,691.41
BELOW RAL	-0.50'	-	0.00'	2,802.97
ABOVE RAL	0.00'	-	0.25'	309.82
ABOVE RAL	0.25'	-	0.50'	41.63
ABOVE RAL	0.50'	-	0.57'	0.88

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D160A-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: April 4, 2018
LAST REVISED: December 6, 2018
CHECKED BY: REG

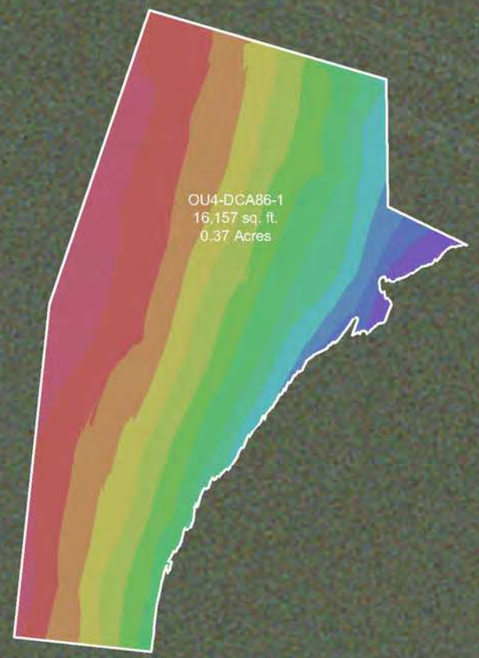
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-200

OU4-D160A-1
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LLOC\LD\Field Engineering\Dredge Files\2018\OU4 D160\MDWG\Post Dredge\OU4 D160A-1.dwg

OU4-DCA86-1
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

2,625.93	INITIAL RAL VOLUME
299.97	INITIAL OVERCUT VOLUME
2,925.90	RAL + OVERCUT VOLUME
2,837.01	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

589.10	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
235.59	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
824.69	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

2018 AS-BUILT VOLUMES (CU. YD.)

769.97	TOTAL VOLUME DREDGED
581.88	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
4.61	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
84.28	OVERCUT VOLUME REMAINING
157.93	OVERCUT VOLUME DREDGED
30.16	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

16,156.62	AREA (SQ. FT.)
957.98	ABOVE DESIGN ELEVATION
15,198.64	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
4.01 "	AVERAGE DEPTH OF OVERCUT [1]
94	PERCENT COMPLETE [2]

OU4-DCA86-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 50')

50 25 0 50 100

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 7-18-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
549.00'	-	551.00'
551.00'	-	553.00'
553.00'	-	555.00'
555.00'	-	557.00'
557.00'	-	559.00'
559.00'	-	561.00'
561.00'	-	563.00'
563.00'	-	565.00'
565.00'	-	567.00'
567.00'	-	569.00'
569.00'	-	571.00'
571.00'	-	573.00'
573.00'	-	575.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT | DREDGE AREA | DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.53'	-	-1.00'	307.12
BELOW RAL	-1.00'	-	-0.50'	5,726.47
BELOW RAL	-0.50'	-	0.00'	9,165.05
ABOVE RAL	0.00'	-	0.25'	818.93
ABOVE RAL	0.25'	-	0.50'	121.57
ABOVE RAL	0.50'	-	0.75'	12.11
ABOVE RAL	0.75'	-	1.11'	5.37

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DCA86-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: July 23, 2018
LAST REVISED: December 6, 2018
CHECKED BY: REG

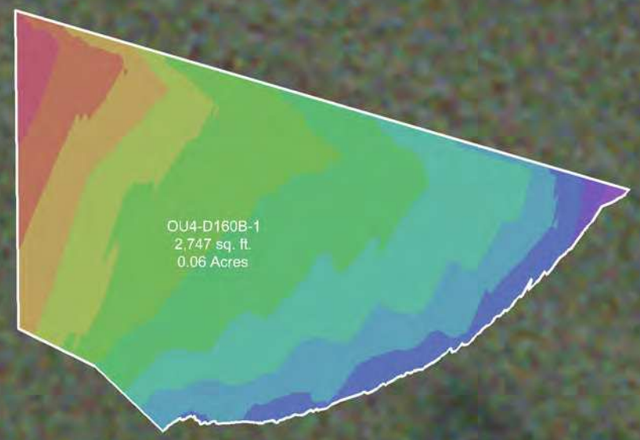
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-201

OU4-DCA86-1
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

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OU4-D160B-1
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

302.27	INITIAL RAL VOLUME
53.57	INITIAL OVERCUT VOLUME
355.84	RAL + OVERCUT VOLUME
338.64	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

302.27	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
53.57	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
355.84	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

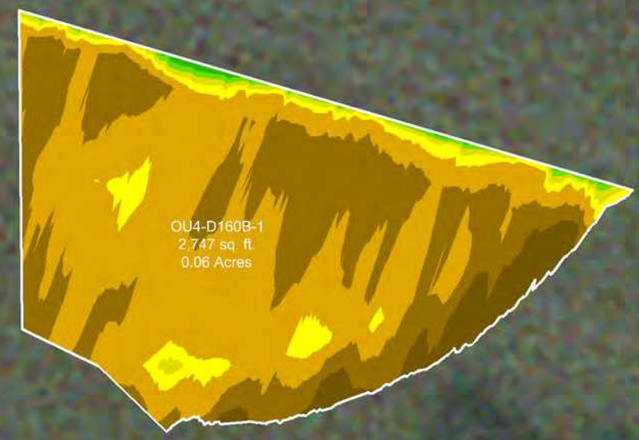
2018 AS-BUILT VOLUMES (CU. YD.)

342.12	TOTAL VOLUME DREDGED
296.42	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
2.22	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
14.98	OVERCUT VOLUME REMAINING
36.02	OVERCUT VOLUME DREDGED
9.68	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

2,747.25	AREA (SQ. FT.)
247.44	ABOVE DESIGN ELEVATION
2,499.81	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
5.92 "	AVERAGE DEPTH OF OVERCUT [1]
91	PERCENT COMPLETE [2]

OU4-D160B-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 20')

20 10 0 20 40

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 7-18-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
565.00'	-	566.00'
566.00'	-	567.00'
567.00'	-	568.00'
568.00'	-	569.00'
569.00'	-	570.00'
570.00'	-	571.00'
571.00'	-	572.00'
572.00'	-	573.00'
573.00'	-	574.00'
574.00'	-	575.00'
575.00'	-	576.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.76'	-	-1.00'	155.85
BELOW RAL	-1.00'	-	-0.50'	928.67
BELOW RAL	-0.50'	-	0.00'	1,415.29
ABOVE RAL	0.00'	-	0.25'	157.10
ABOVE RAL	0.25'	-	0.50'	53.36
ABOVE RAL	0.50'	-	0.75'	26.67
ABOVE RAL	0.75'	-	1.10'	10.31

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D160B-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: July 23, 2018
LAST REVISED: December 6, 2018
CHECKED BY: REG

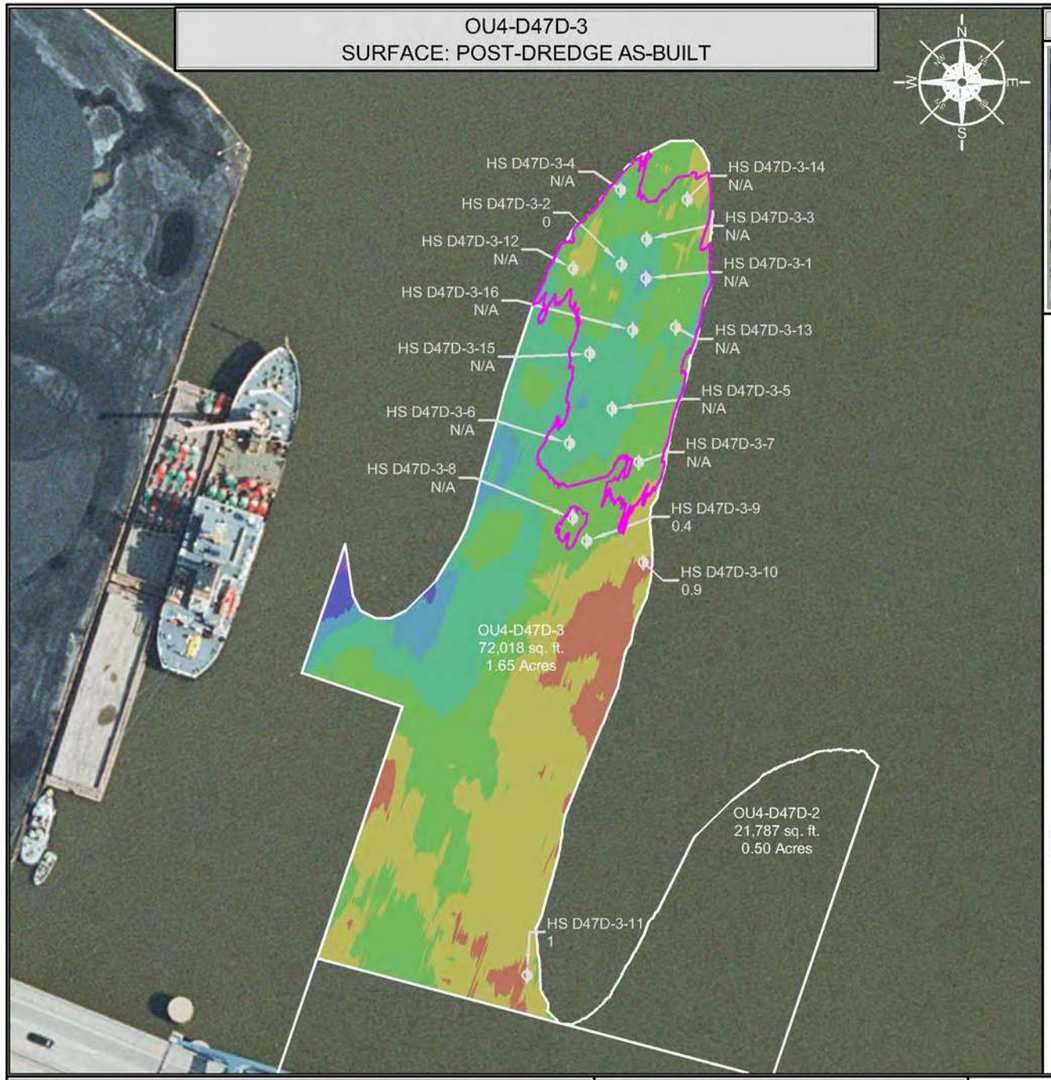
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-202

OU4-D160B-1
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LLOC\ADR\Rdd Env\Work\gDredge Files\2018\OU4-D160B\DWG\Post Dredge\OU4-D160B-1.dwg

OU4-D47D-3
SURFACE: POST-DREDGE AS-BUILT



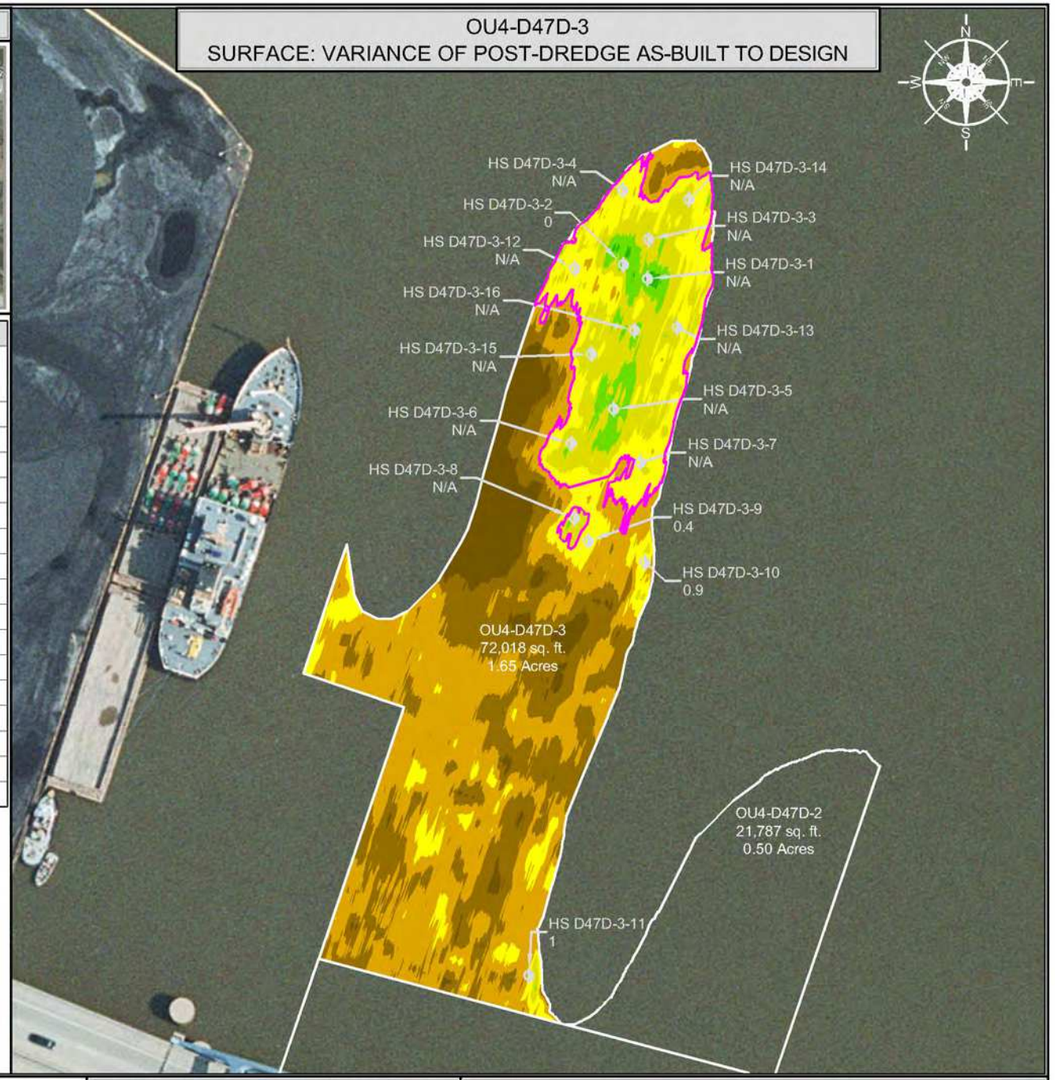
INDEX MAP



HIGH SUBGRADE SAMPLE AS-BUILT RESULTS			
SAMPLE ID	NORTHING	EASTING	THICKNESS OF SOFT SEDIMENT (FEET)
HS D47D-3-1	262222.27	2488036.19	N/A
HS D47D-3-2	262231.52	2488020.16	0
HS D47D-3-3	262248.06	2488037.03	N/A
HS D47D-3-4	262280.59	2488019.76	N/A
HS D47D-3-5	262136.26	2488014.00	N/A
HS D47D-3-6	262113.54	2487985.80	N/A
HS D47D-3-7	262101.03	2488031.71	N/A
HS D47D-3-8	262064.21	2487988.03	N/A
HS D47D-3-9	262049.08	2487997.18	0.4
HS D47D-3-10	262035.11	2488034.65	0.9
HS D47D-3-11	261762.74	2487958.02	1
HS D47D-3-12	262228.83	2487988.28	N/A
HS D47D-3-13	262189.99	2488056.02	N/A
HS D47D-3-14	262274.42	2488063.60	N/A
HS D47D-3-15	262172.62	2487999.36	N/A
HS D47D-3-16	262188.22	2488027.58	N/A

NR = NO RECOVERY
NA = NO CORE COLLECTION REQUIRED DUE TO POLING DEPTH

OU4-D47D-3
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-22-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'

DRAWING NOTES

1. HIGH SUBGRADE SAMPLES AND POLING DATA WERE COLLECTED ON 10-25-2018 AND LOGGED ON 10-25-2015

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-3.26'	-	-1.00'	5,599.14
	-1.00'	-	-0.50'	17,579.05
	-0.50'	-	0.00'	27,434.70
ABOVE RAL	0.00'	-	0.50'	11,686.07
	0.50'	-	1.00'	7,564.77
	1.00'	-	1.50'	2,030.15
	1.50'	-	2.00'	123.63
	2.00'	-	2.04'	0.23

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D47D-3.dwg
DRAWN BY: DAVID.FRISQUE
DATE: October 23, 2018
LAST REVISED: December 6, 2018
CHECKED BY: REG

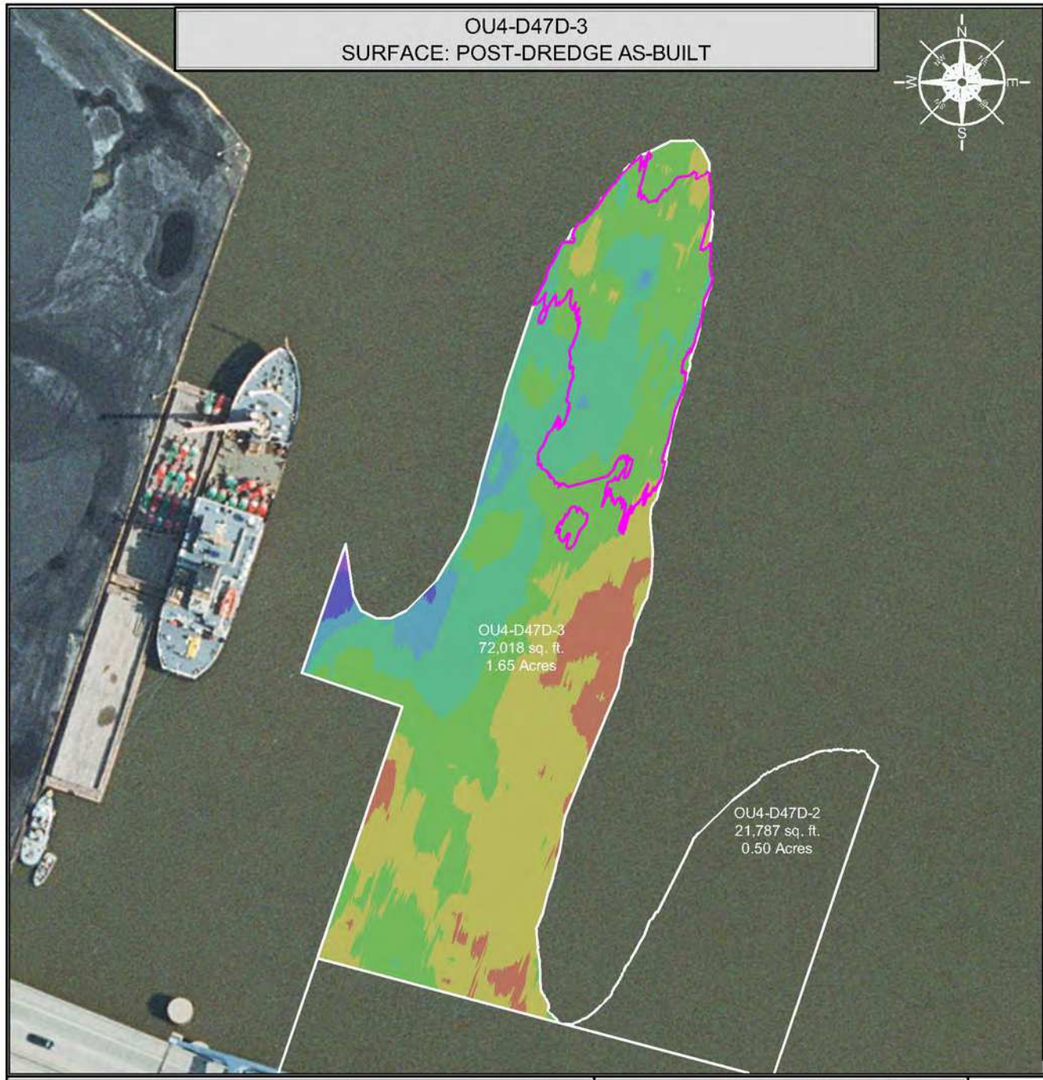
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-203

OU4-D47D-3
PRIMARY DREDGE HIGH SUBGRADE RESULTS

F:\LOCAD\Fld Engineering\Dredge Files\2018\OU4 D47D\DWG\Post Dredge\OU4-D47D-3.dwg

OU4-D47D-3
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

3,096.20	INITIAL RAL VOLUME
1,152.60	INITIAL OVERCUT VOLUME
4,248.80	RAL + OVERCUT VOLUME
3,233.80	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

899.20	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
983.93	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
1,883.13	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

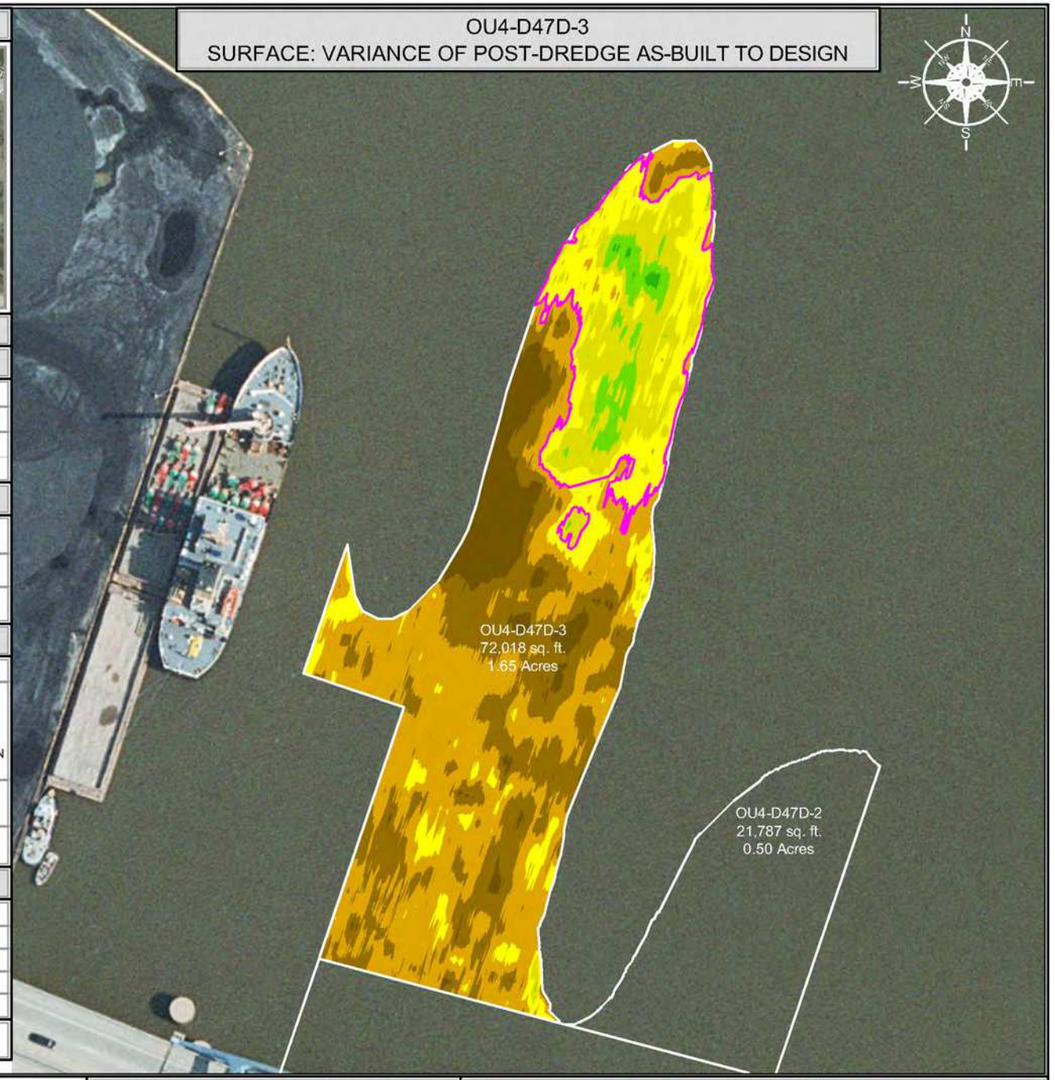
2018 AS-BUILT VOLUMES (CU. YD.)

1,075.98	TOTAL VOLUME DREDGED
502.56	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
367.28	CONFIRMED HIGH SUBGRADE VOLUME
29.23	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
618.49	OVERCUT VOLUME REMAINING
401.15	OVERCUT VOLUME DREDGED
172.27	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

72,017.74	AREA (SQ. FT.)
4,251.15	ABOVE DESIGN ELEVATION
50,612.89	AT OR BELOW DESIGN ELEVATION
17,153.70	CONFIRMED HIGH SUBGRADE
3.67 "	AVERAGE DEPTH OF OVERCUT [1]
94	PERCENT COMPLETE [2]

OU4-D47D-3
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-22-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-3.26'	-	-1.00'	5,599.14
BELOW RAL	-1.00'	-	-0.50'	17,579.05
BELOW RAL	-0.50'	-	0.00'	27,434.70
ABOVE RAL	0.00'	-	0.50'	11,686.07
ABOVE RAL	0.50'	-	1.00'	7,564.77
ABOVE RAL	1.00'	-	1.50'	2,030.15
ABOVE RAL	1.50'	-	2.00'	123.63
ABOVE RAL	2.00'	-	2.04'	0.23

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D47D-3.dwg
DRAWN BY: DAVID.FRISQUE
DATE: October 23, 2018
LAST REVISED: December 6, 2018
CHECKED BY: REG

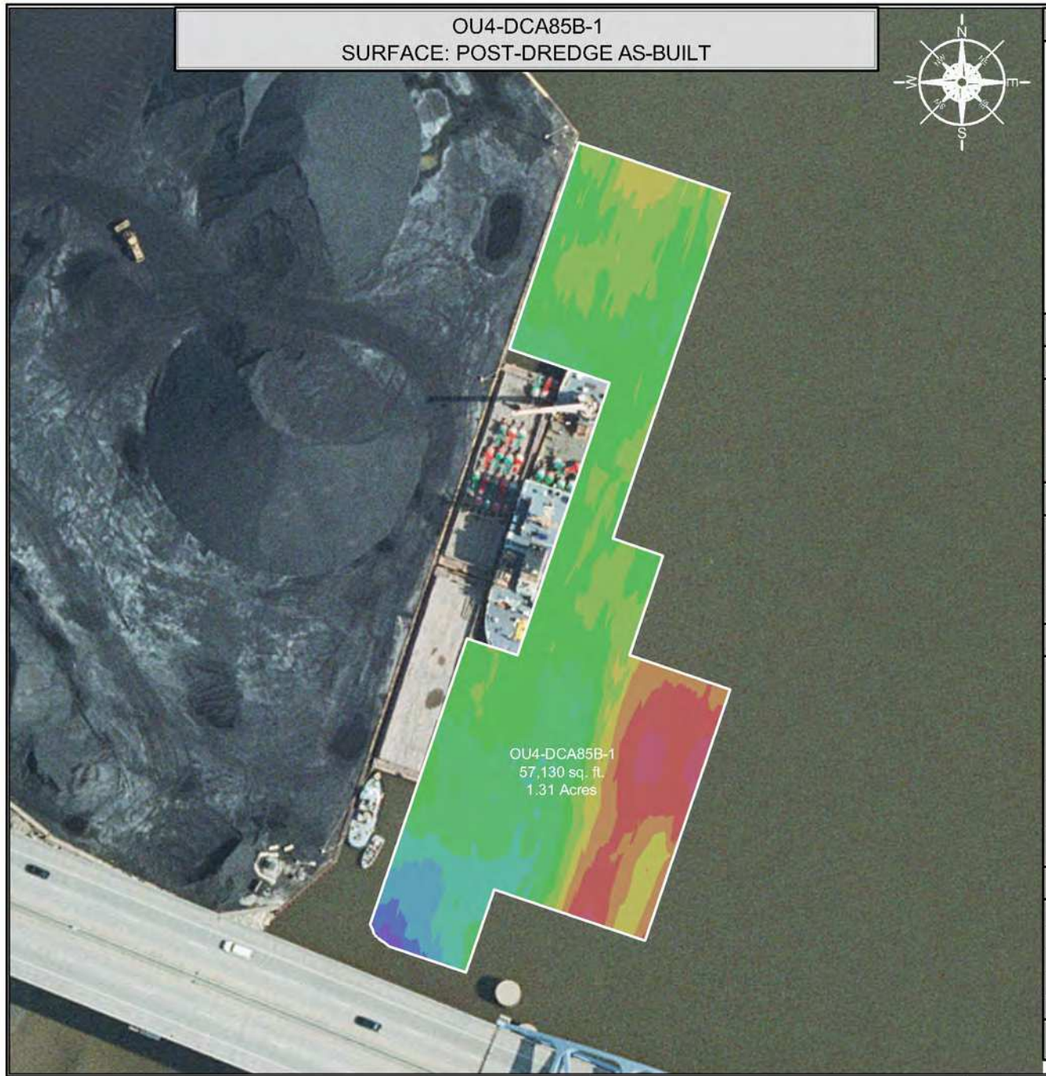
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-204

OU4-D47D-3
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\ALLOC\42\Field Engineering\Dredge Files\2018\OU4 D47D\GIS\Post Dredge\OU4 D47D-3.dwg

OU4-DCA85B-1
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

7,561.22	INITIAL RAL VOLUME
1,035.59	INITIAL OVERCUT VOLUME
8,596.81	RAL + OVERCUT VOLUME
8,246.56	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

2,526.86	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
977.39	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
3,504.25	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

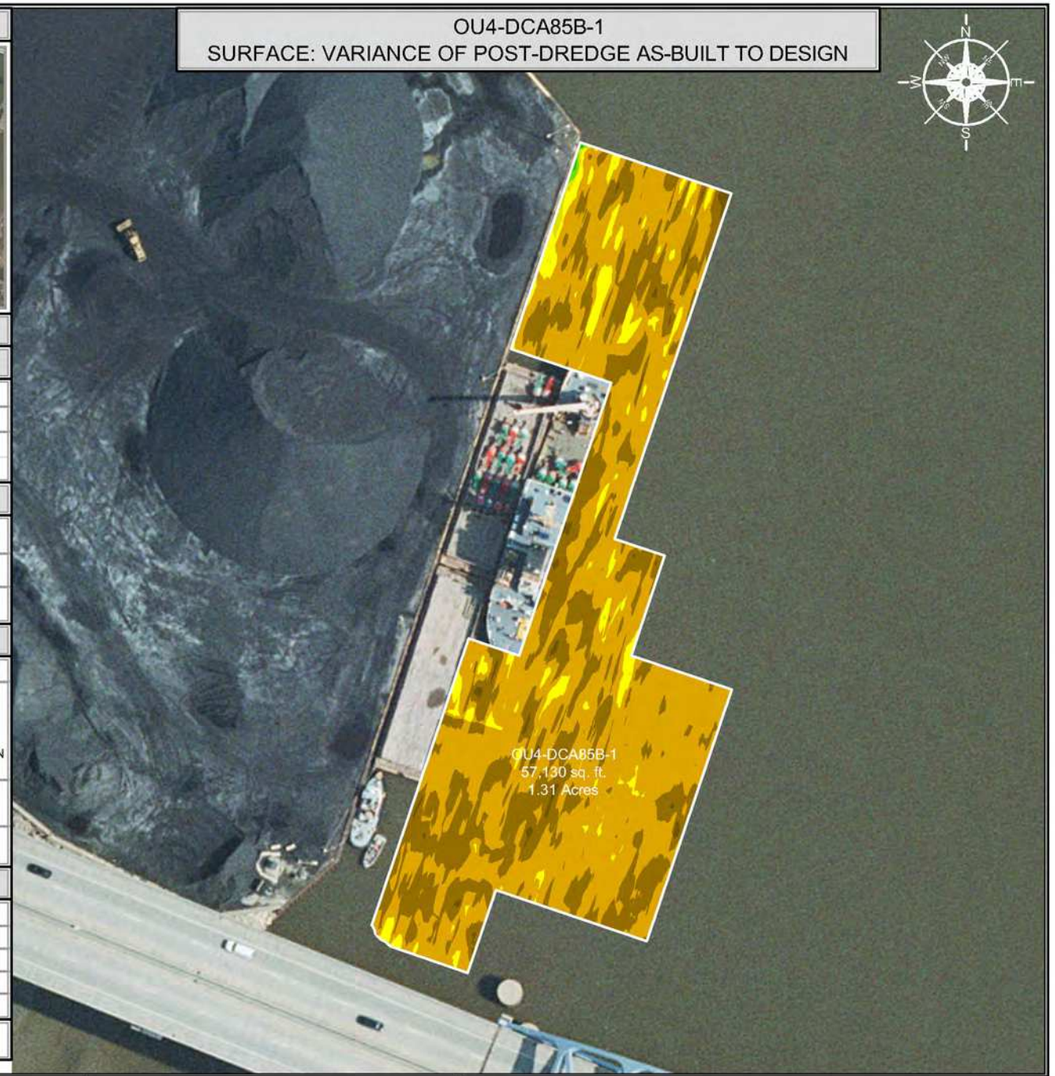
2018 AS-BUILT VOLUMES (CU. YD.)

3,305.10	TOTAL VOLUME DREDGED
2,529.49	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
26.05	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
324.20	OVERCUT VOLUME REMAINING
662.49	OVERCUT VOLUME DREDGED
113.12	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

57,130.21	AREA (SQ. FT.)
3,336.41	ABOVE DESIGN ELEVATION
53,793.80	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
4.67 "	AVERAGE DEPTH OF OVERCUT [1]
94	PERCENT COMPLETE [2]

OU4-DCA85B-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-29-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT
DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.54'	-	-1.00'	605.22
	-1.00'	-	-0.50'	18,430.95
	-0.50'	-	0.00'	34,757.64
ABOVE RAL	0.00'	-	0.50'	3,079.86
	0.50'	-	1.00'	168.80
	1.00'	-	1.50'	55.14
	1.50'	-	2.00'	28.71
	2.00'	-	2.40'	3.90

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DCA85B-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: October 3, 2018
LAST REVISED: December 6, 2018
CHECKED BY: REG

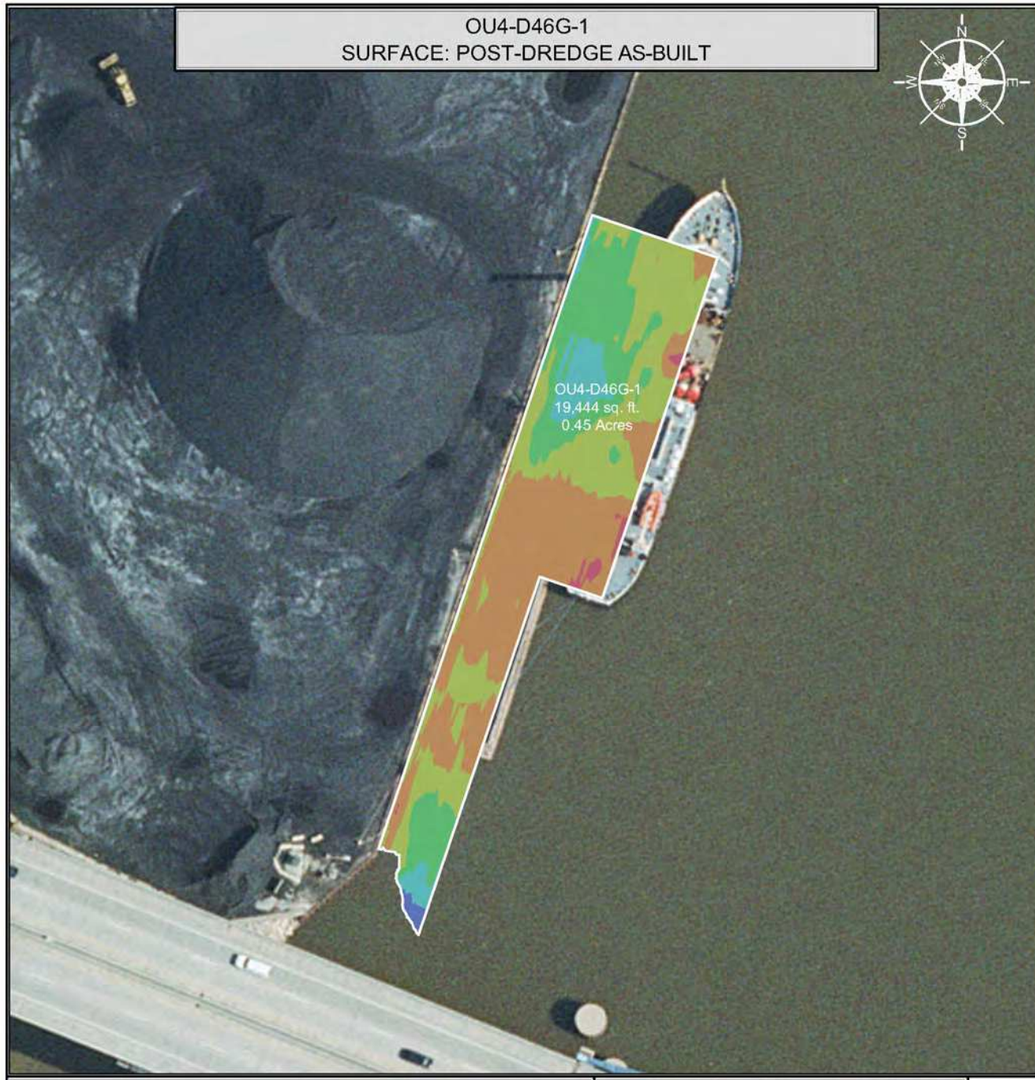
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-205

OU4-DCA85B-1
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

F:\LCAD\Field Engineering\Design Files\2018\OU4 DCA85B\DWG\Post Dredge\OU4-DCA85B-1.dwg

OU4-D46G-1
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

1,485.09	INITIAL RAL VOLUME
320.53	INITIAL OVERCUT VOLUME
1,805.62	RAL + OVERCUT VOLUME
1,676.70	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

772.64	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
279.46	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
1,052.10	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

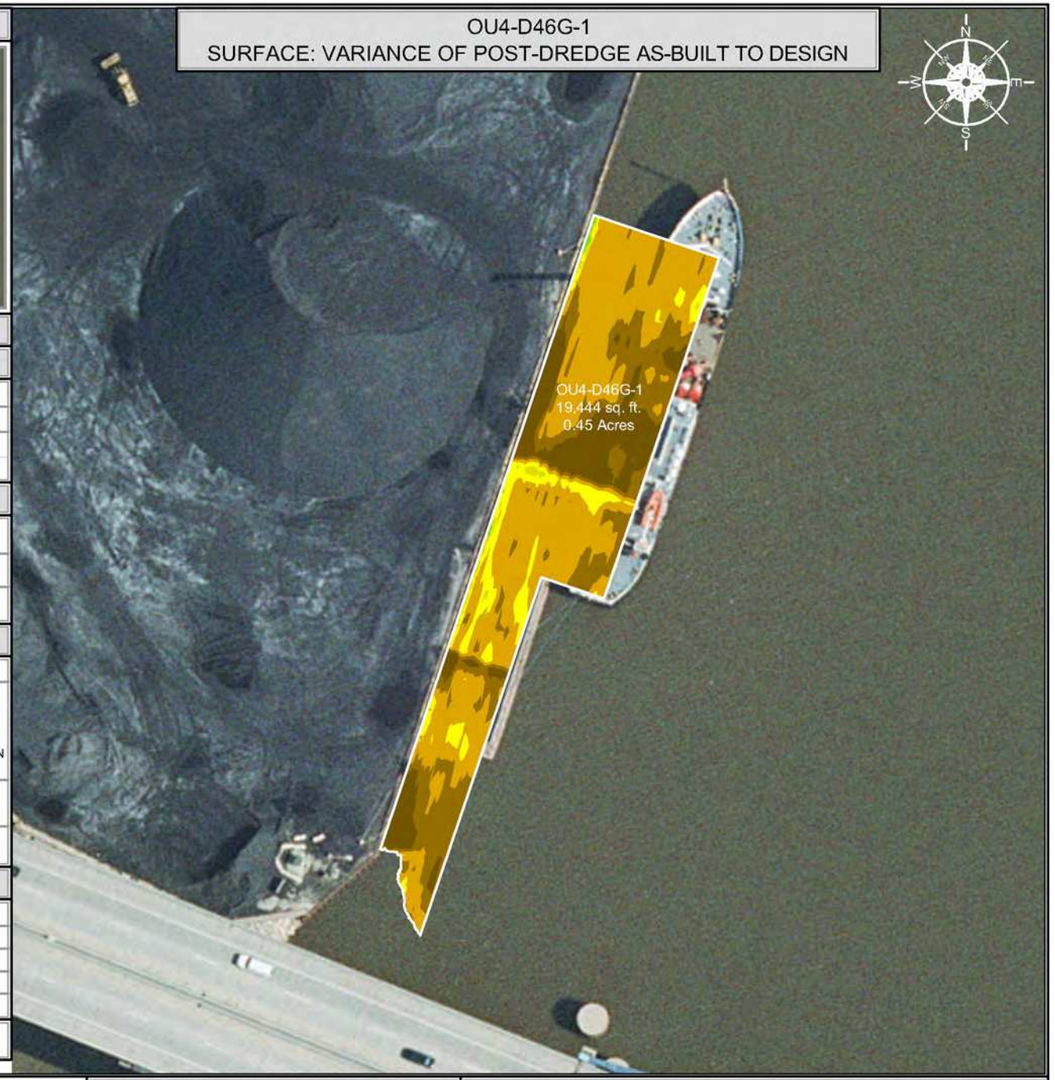
2018 AS-BUILT VOLUMES (CU. YD.)

1,048.30	TOTAL VOLUME DREDGED
756.08	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
18.50	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
110.42	OVERCUT VOLUME REMAINING
184.32	OVERCUT VOLUME DREDGED
107.90	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

19,443.99	AREA (SQ. FT.)
1,846.24	ABOVE DESIGN ELEVATION
17,597.75	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
5.38 "	AVERAGE DEPTH OF OVERCUT [1]
91	PERCENT COMPLETE [2]

OU4-D46G-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 80')

80 40 0 80 160

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-8-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-3.26'	-	-1.00'	3,143.42
BELOW RAL	-1.00'	-	-0.50'	4,659.91
BELOW RAL	-0.50'	-	0.00'	9,794.42
ABOVE RAL	0.00'	-	0.50'	1,560.02
ABOVE RAL	0.50'	-	1.00'	216.41
ABOVE RAL	1.00'	-	1.50'	54.94
ABOVE RAL	1.50'	-	1.94'	14.86

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D46G-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: October 15, 2018
LAST REVISED: December 6, 2018
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-206

OU4-D46G-1
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\ALLOC\425\Rdd Env\Arnew\gDredge Files\2018\OU4 D46G\DWG\Post Dredge\OU4 D46G-1.dwg

OU4-D46E-1
SURFACE: POST-DREDGE AS-BUILT



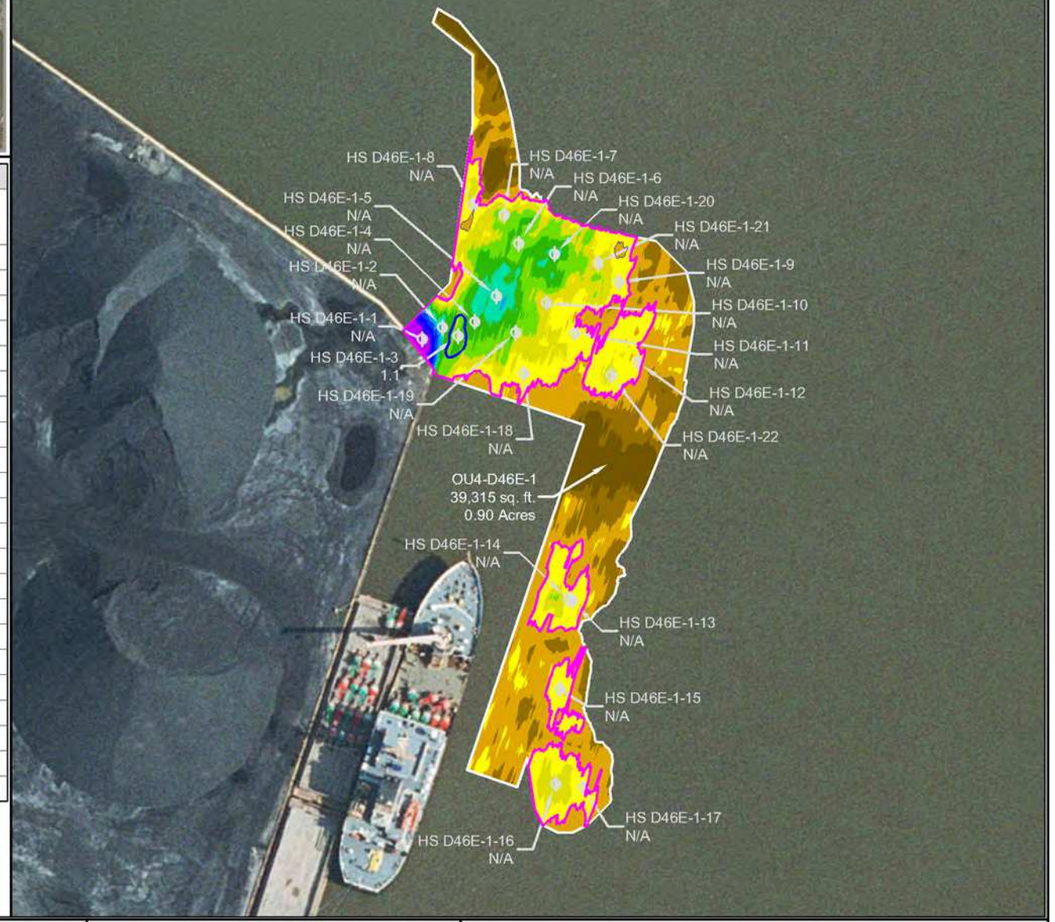
INDEX MAP



HIGH SUBGRADE SAMPLE AS-BUILT RESULTS			
SAMPLE ID	NORTHING	EASTING	THICKNESS OF SOFT SEDIMENT (FEET)
HS D46E-1-1	262323.21	2487768.75	N/A
HS D46E-1-2	262330.95	2487781.93	N/A
HS D46E-1-3	262325.31	2487792.37	1.1
HS D46E-1-4	262334.69	2487803.51	N/A
HS D46E-1-5	262351.61	2487817.68	N/A
HS D46E-1-6	262386.18	2487832.25	N/A
HS D46E-1-7	262405.31	2487822.56	N/A
HS D46E-1-8	262411.98	2487802.10	N/A
HS D46E-1-9	262360.87	2487898.44	N/A
HS D46E-1-10	262347.00	2487850.73	N/A
HS D46E-1-11	262327.41	2487869.44	N/A
HS D46E-1-12	262308.14	2487910.89	N/A
HS D46E-1-13	262150.86	2487867.53	N/A
HS D46E-1-14	262151.87	2487865.07	N/A
HS D46E-1-15	262092.34	2487859.28	N/A
HS D46E-1-16	262029.88	2487856.54	N/A
HS D46E-1-17	262027.43	2487874.82	N/A
HS D46E-1-18	262300.68	2487835.78	N/A
HS D46E-1-19	262327.56	2487830.22	N/A
HS D46E-1-20	262379.36	2487855.93	N/A
HS D46E-1-21	262373.43	2487884.50	N/A
HS D46E-1-22	262299.51	2487893.33	N/A

NR = NO RECOVERY
NA = NO CORE COLLECTION REQUIRED DUE TO POLING DEPTH

OU4-D46E-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE
LIMITS OF SOFT SEDIMENTS
(WITHIN AREAS OF HIGH SUBGRADE)

SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-22-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'

DRAWING NOTES

1. HIGH SUBGRADE SAMPLES AND POLING DATA WERE COLLECTED ON 10-24-2018 AND LOGGED ON 10-25-2018

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OU# - D# - #
OPERABLE UNIT | DREDGE AREA | DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-3.43'	-	-1.00'	3,038.32
BELOW RAL	-1.00'	-	-0.50'	5,198.28
BELOW RAL	-0.50'	-	0.00'	12,337.56
ABOVE RAL	0.00'	-	0.50'	8,594.00
ABOVE RAL	0.50'	-	1.00'	3,913.56
ABOVE RAL	1.00'	-	1.50'	2,745.68
ABOVE RAL	1.50'	-	2.00'	2,042.46
ABOVE RAL	2.00'	-	2.50'	853.39
ABOVE RAL	2.50'	-	3.00'	126.84
ABOVE RAL	3.00'	-	3.50'	86.28
ABOVE RAL	3.50'	-	4.00'	80.29
ABOVE RAL	4.00'	-	4.50'	69.86
ABOVE RAL	4.50'	-	6.42'	228.70

LIMITS OF HIGH SUBGRADE
LIMITS OF SOFT SEDIMENTS
(WITHIN AREAS OF HIGH SUBGRADE)

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D46E-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: October 23, 2018
LAST REVISED: December 7, 2018
CHECKED BY: REG

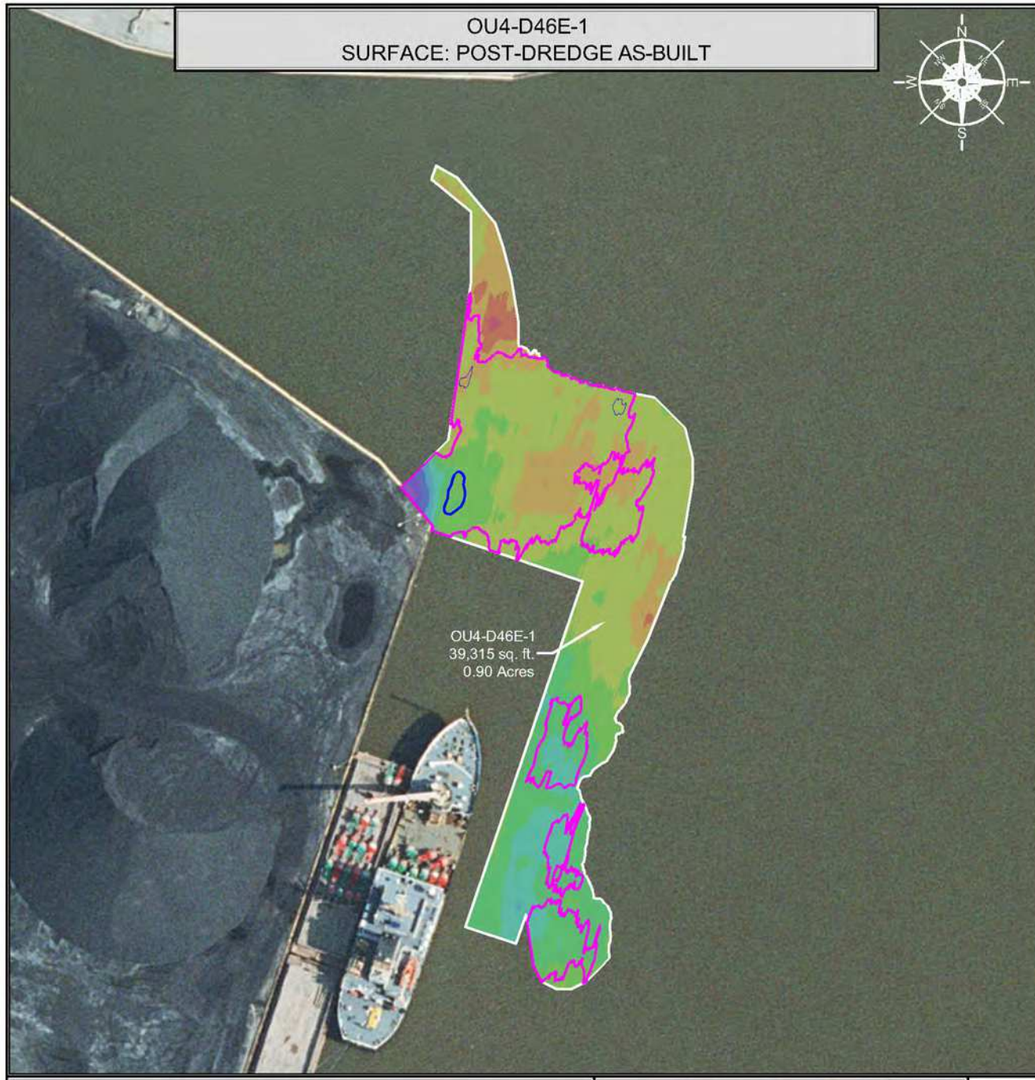
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-207

OU4-D46E-1
PRIMARY DREDGE HIGH SUBGRADE RESULTS

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OU4-D46E-1
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

2,139.39	INITIAL RAL VOLUME
610.26	INITIAL OVERCUT VOLUME
2,749.65	RAL + OVERCUT VOLUME
1,690.26	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

1,574.16	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
633.27	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
2,207.43	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

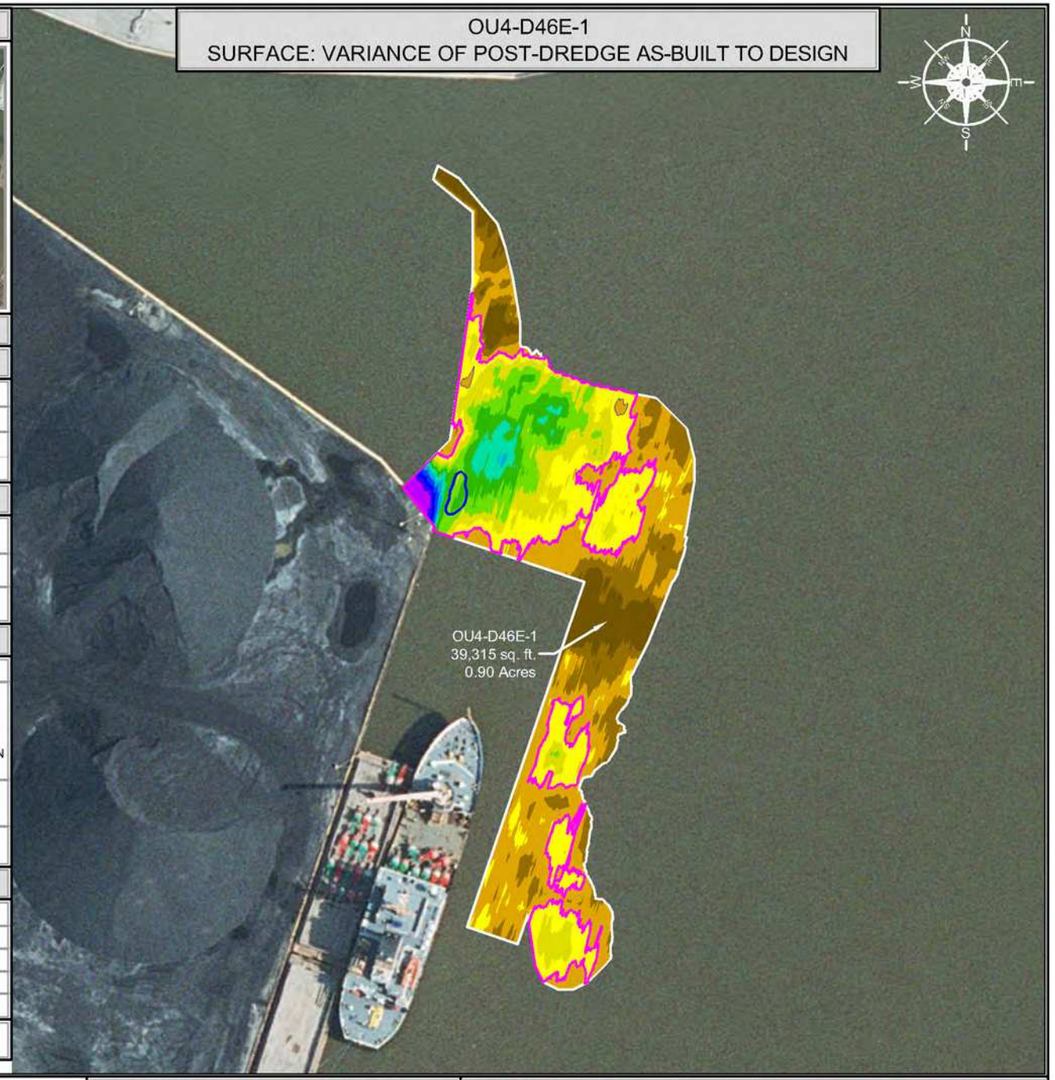
2018 AS-BUILT VOLUMES (CU. YD.)

1,326.15	TOTAL VOLUME DREDGED
1,017.26	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
575.55	CONFIRMED HIGH SUBGRADE VOLUME
15.31	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
468.53	OVERCUT VOLUME REMAINING
219.27	OVERCUT VOLUME DREDGED
89.62	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

39,315.23	AREA (SQ. FT.)
986.38	ABOVE DESIGN ELEVATION
20,574.16	AT OR BELOW DESIGN ELEVATION
17,754.69	CONFIRMED HIGH SUBGRADE
4.86 "	AVERAGE DEPTH OF OVERCUT [1]
97	PERCENT COMPLETE [2]

OU4-D46E-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE
LIMITS OF SOFT SEDIMENTS
(WITHIN AREAS OF HIGH SUBGRADE)

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OU# = OPERABLE UNIT
D# = DREDGE AREA
= DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-3.43'	-	-1.00'	3,038.32
BELOW RAL	-1.00'	-	-0.50'	5,198.28
BELOW RAL	-0.50'	-	0.00'	12,337.56
ABOVE RAL	0.00'	-	0.50'	8,594.00
ABOVE RAL	0.50'	-	1.00'	3,913.56
ABOVE RAL	1.00'	-	1.50'	2,745.68
ABOVE RAL	1.50'	-	2.00'	2,042.46
ABOVE RAL	2.00'	-	2.50'	853.39
ABOVE RAL	2.50'	-	3.00'	126.84
ABOVE RAL	3.00'	-	3.50'	86.28
ABOVE RAL	3.50'	-	4.00'	80.29
ABOVE RAL	4.00'	-	4.50'	69.86
ABOVE RAL	4.50'	-	6.42'	228.70

LIMITS OF HIGH SUBGRADE
LIMITS OF SOFT SEDIMENTS
(WITHIN AREAS OF HIGH SUBGRADE)

SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-22-2018

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D46E-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: October 23, 2018
LAST REVISED: December 7, 2018
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-208

OU4-D46E-1
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

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OU4-D77C-1
SURFACE: POST-DREDGE AS-BUILT



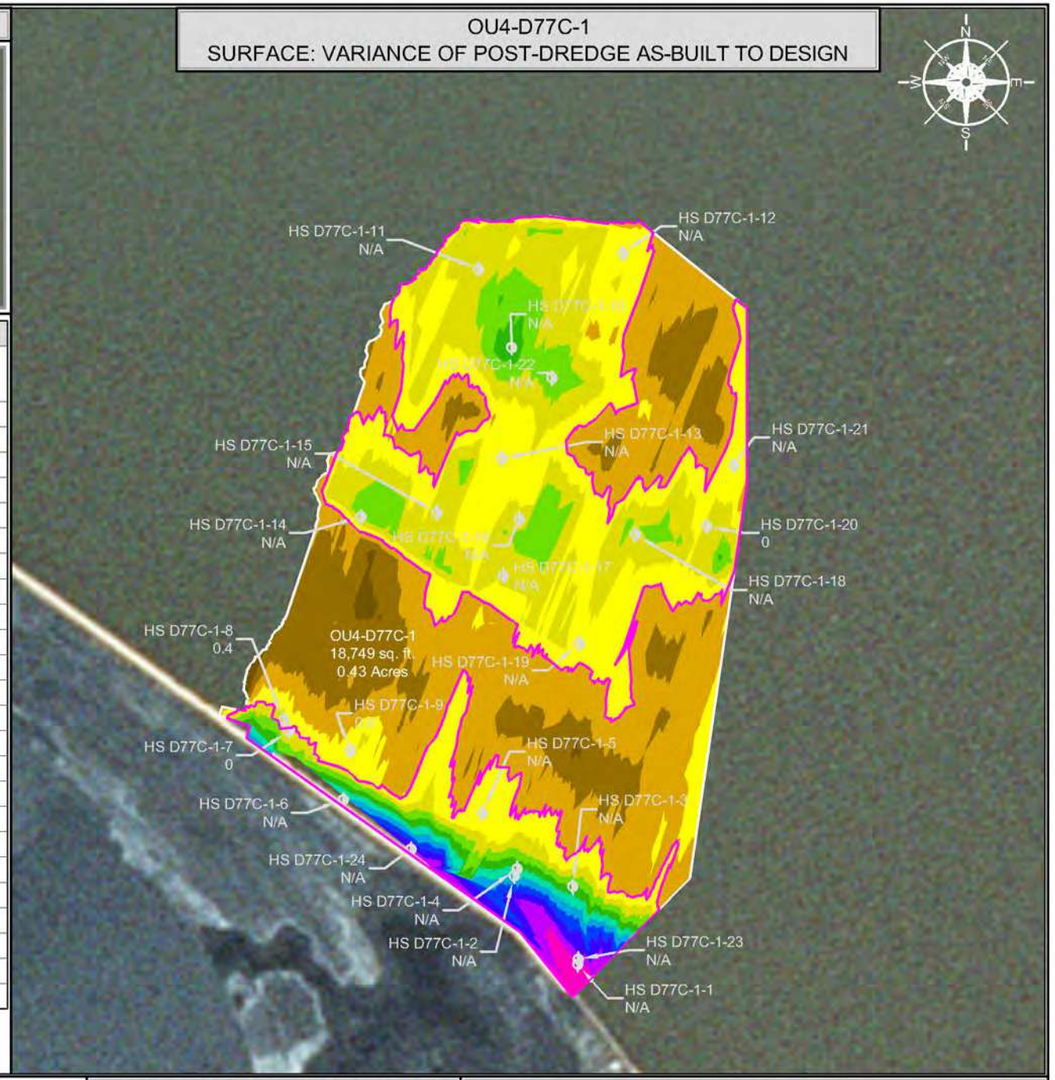
INDEX MAP



HIGH SUBGRADE SAMPLE AS-BUILT RESULTS			
SAMPLE ID	NORTHING	EASTING	THICKNESS OF SOFT SEDIMENT (FEET)
HS D77C-1-1	262337.47	2487757.34	N/A
HS D77C-1-2	262360.84	2487740.61	N/A
HS D77C-1-3	262358.00	2487756.06	N/A
HS D77C-1-4	262362.74	2487741.28	N/A
HS D77C-1-5	262377.33	2487732.17	N/A
HS D77C-1-6	262380.93	2487695.44	N/A
HS D77C-1-7	262399.03	2487681.17	0
HS D77C-1-8	262402.04	2487679.73	0.4
HS D77C-1-9	262393.84	2487697.28	0.6
HS D77C-1-10	262500.27	2487739.89	N/A
HS D77C-1-11	262520.96	2487731.15	N/A
HS D77C-1-12	262525.06	2487769.16	N/A
HS D77C-1-13	262471.06	2487737.23	N/A
HS D77C-1-14	262455.57	2487700.18	N/A
HS D77C-1-15	262456.70	2487720.20	N/A
HS D77C-1-16	262454.98	2487741.86	N/A
HS D77C-1-17	262440.01	2487737.65	N/A
HS D77C-1-18	262450.88	2487772.58	N/A
HS D77C-1-19	262422.18	2487757.69	N/A
HS D77C-1-20	262453.03	2487791.26	0
HS D77C-1-21	262469.16	2487798.46	N/A
HS D77C-1-22	262492.18	2487750.53	N/A
HS D77C-1-23	262338.89	2487757.45	N/A
HS D77C-1-24	262367.89	2487713.33	N/A

NR = NO RECOVERY
NA = NO CORE COLLECTION REQUIRED DUE TO POLING DEPTH

OU4-D77C-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-22-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'

DRAWING NOTES

1. HIGH SUBGRADE SAMPLES AND POLING DATA WERE COLLECTED ON 10-24-2018 AND LOGGED ON 10-25-2018

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.49'	-	-1.00'	93.53
	-1.00'	-	-0.50'	2,395.85
	-0.50'	-	0.00'	5,645.16
ABOVE RAL	0.00'	-	0.50'	4,858.31
	0.50'	-	1.00'	3,314.75
	1.00'	-	1.50'	1,136.00
	1.50'	-	2.00'	277.58
	2.00'	-	2.50'	177.37
	2.50'	-	3.00'	153.77
	3.00'	-	3.50'	158.32
	3.50'	-	4.00'	185.22
	4.00'	-	4.50'	157.21
	4.50'	-	5.46'	93.10

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

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DATE: October 23, 2018
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CHECKED BY: REG

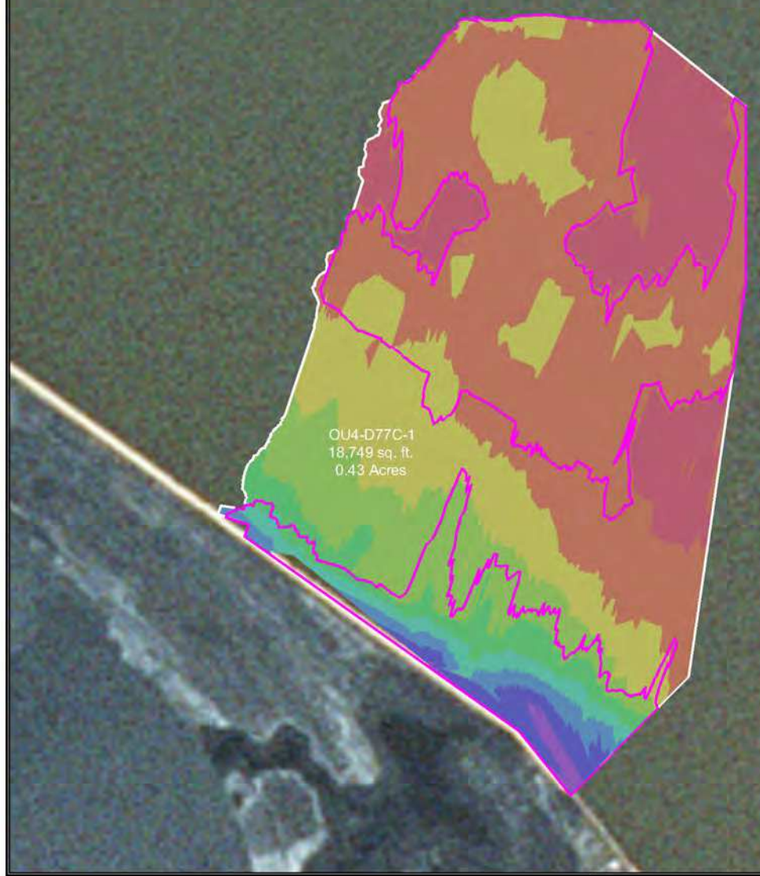
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-209

OU4-D77C-1
PRIMARY DREDGE HIGH SUBGRADE RESULTS

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OU4-D77C-1
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

668.10	INITIAL RAL VOLUME
309.25	INITIAL OVERCUT VOLUME
977.35	RAL + OVERCUT VOLUME
412.22	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

668.10	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
309.25	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
977.35	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

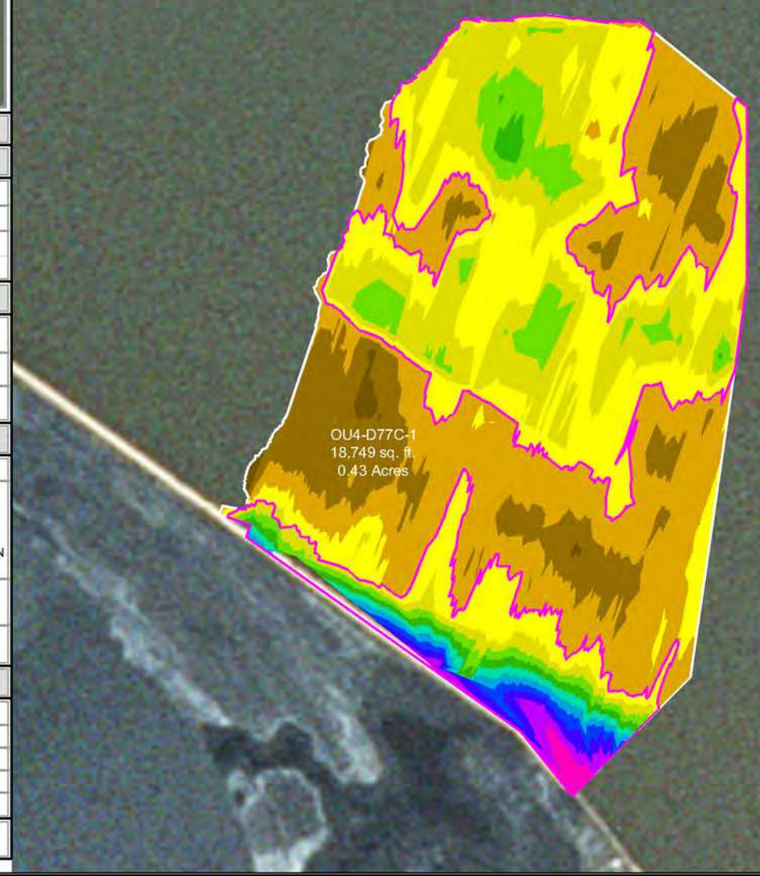
2018 AS-BUILT VOLUMES (CU. YD.)

498.34	TOTAL VOLUME DREDGED
374.14	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
314.82	CONFIRMED HIGH SUBGRADE VOLUME
2.31	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
248.00	OVERCUT VOLUME REMAINING
120.72	OVERCUT VOLUME DREDGED
3.48	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

18,748.99	AREA (SQ. FT.)
484.13	ABOVE DESIGN ELEVATION
8,134.54	AT OR BELOW DESIGN ELEVATION
10,130.32	CONFIRMED HIGH SUBGRADE
4.95 "	AVERAGE DEPTH OF OVERCUT [1]
97	PERCENT COMPLETE [2]

OU4-D77C-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-22-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.49'	-	-1.00'	93.53
	-1.00'	-	-0.50'	2,395.85
	-0.50'	-	0.00'	5,645.16
ABOVE RAL	0.00'	-	0.50'	4,858.31
	0.50'	-	1.00'	3,314.75
	1.00'	-	1.50'	1,136.00
	1.50'	-	2.00'	277.58
	2.00'	-	2.50'	177.37
	2.50'	-	3.00'	153.77
	3.00'	-	3.50'	158.32
	3.50'	-	4.00'	185.22
	4.00'	-	4.50'	157.21
	4.50'	-	5.46'	93.10

LIMITS OF HIGH SUBGRADE

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TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D77C-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: October 23, 2018
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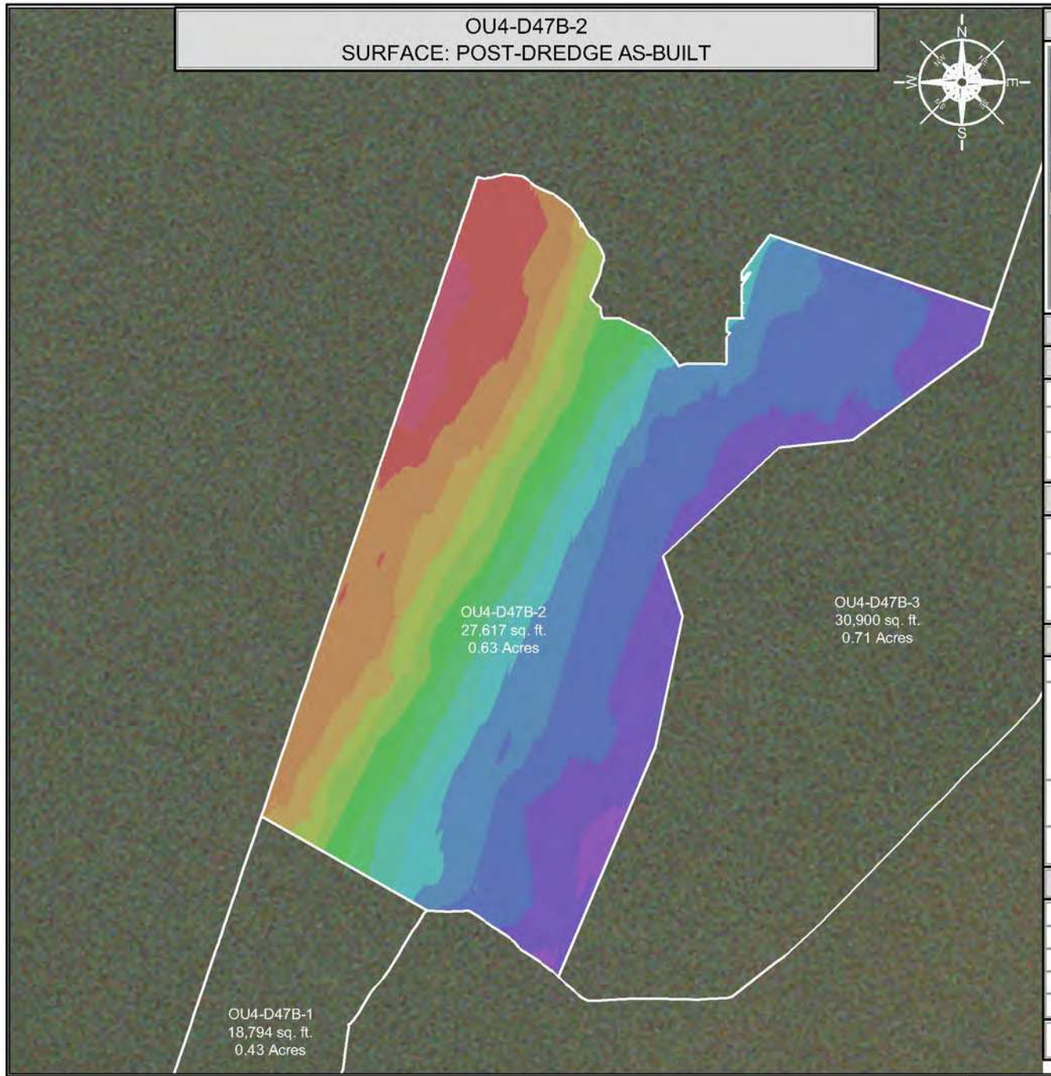
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-210

OU4-D77C-1
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LLC\CAD\Field Engineering\Dredge Files\2018\OU4-D77C\EWE\Post Dredge\OU4-D77C-1.dwg

OU4-D47B-2
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

1,183.73	INITIAL RAL VOLUME
457.49	INITIAL OVERCUT VOLUME
1,641.22	RAL + OVERCUT VOLUME
1,496.58	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

1,173.98	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
456.54	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
1,630.52	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

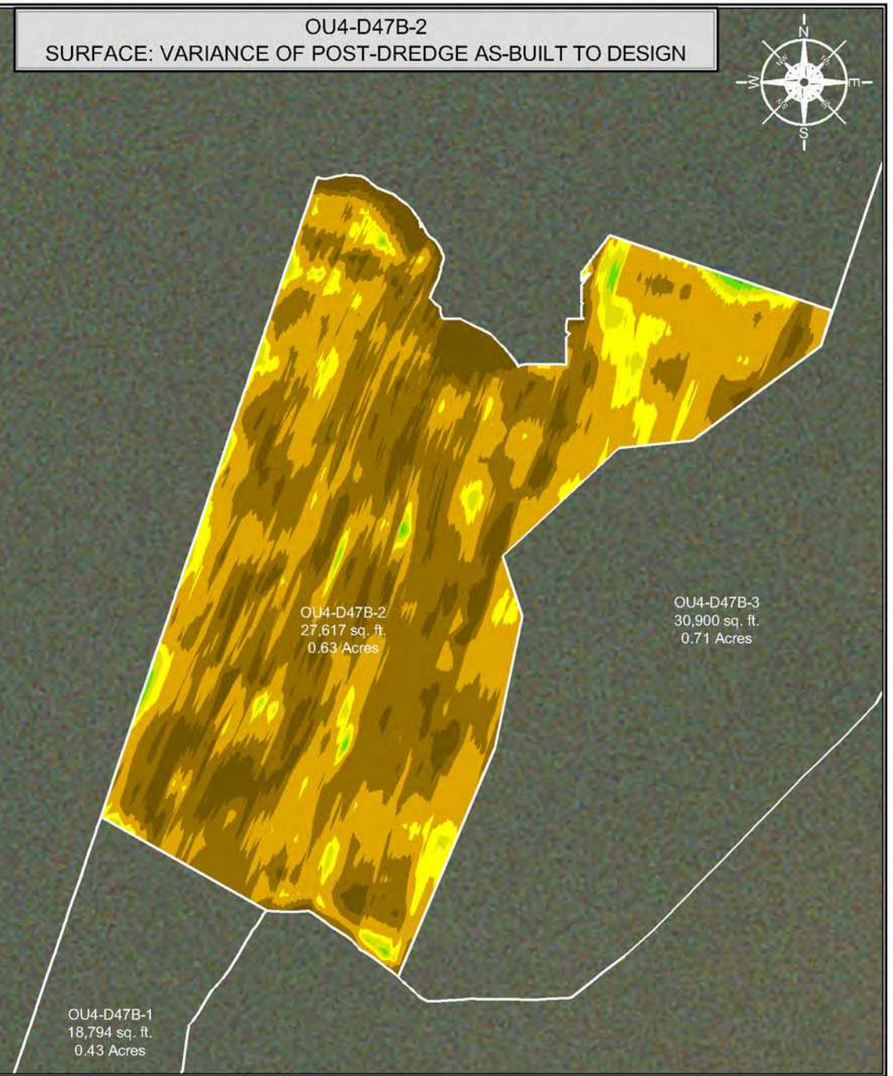
2018 AS-BUILT VOLUMES (CU. YD.)

1,649.22	TOTAL VOLUME DREDGED
1,158.02	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
15.96	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
128.68	OVERCUT VOLUME REMAINING
346.34	OVERCUT VOLUME DREDGED
144.86	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

27,617.44	AREA (SQ. FT.)
2,437.39	ABOVE DESIGN ELEVATION
25,180.05	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
6.32 "	AVERAGE DEPTH OF OVERCUT [1]
91	PERCENT COMPLETE [2]

OU4-D47B-2
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 50')

50 25 0 50 100

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 5-23-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
548.00'	-	550.00'
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'
562.00'	-	564.00'
564.00'	-	566.00'
566.00'	-	568.00'
568.00'	-	570.00'
570.00'	-	572.00'
572.00'	-	574.00'
574.00'	-	576.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-4.96'	-	-1.00'	3,294.69
	-1.00'	-	-0.50'	11,311.52
	-0.50'	-	0.00'	10,573.84
ABOVE RAL	0.00'	-	0.25'	1,844.72
	0.25'	-	0.50'	488.07
	0.50'	-	0.75'	99.40
	0.75'	-	0.90'	5.19

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D47B-2.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 1, 2018
LAST REVISED: December 7, 2018
CHECKED BY: REG

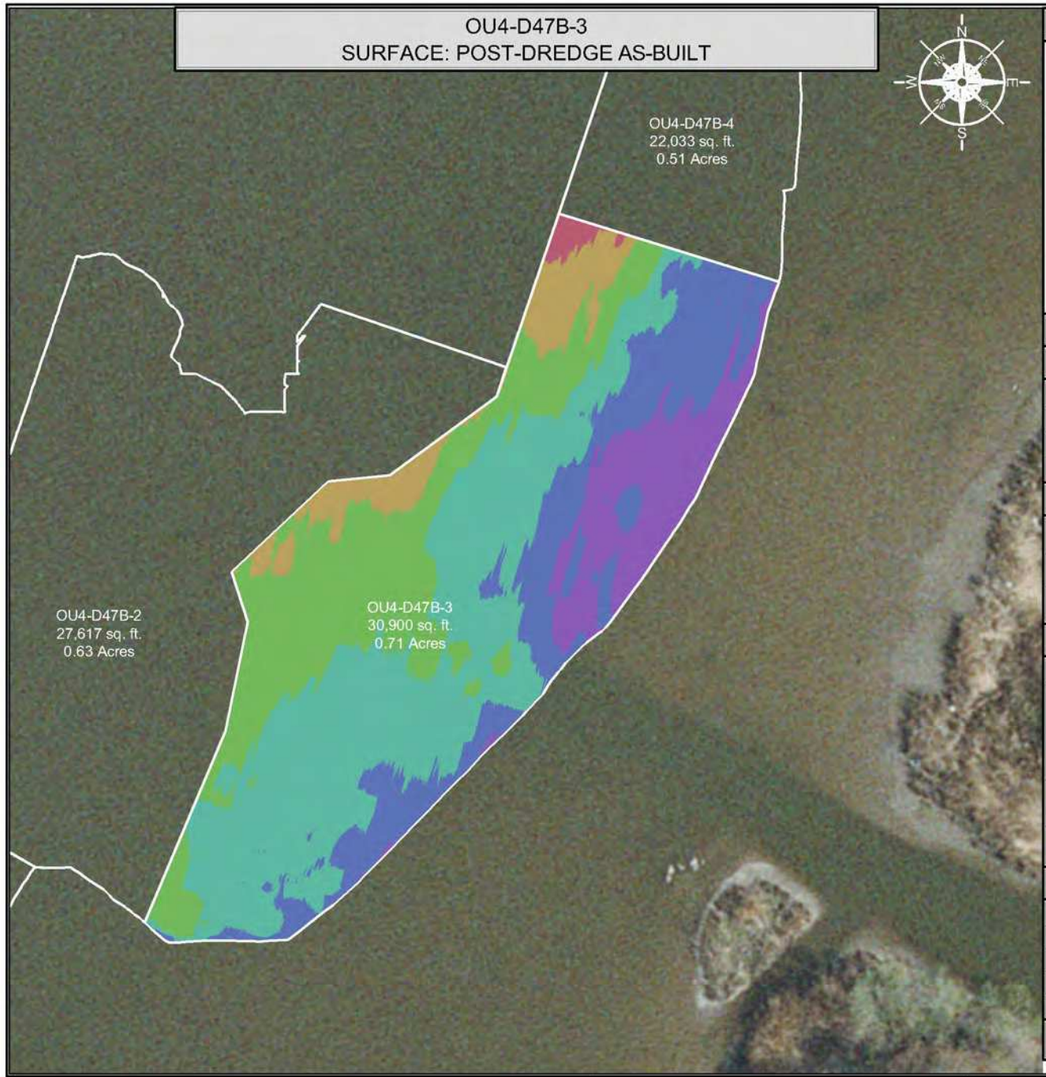
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-211

OU4-D47B-2
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

F:\LOCADD\Field Engineering\Dredge Files\2018\OU4 D47B\DWG\Post Dredge\OU4-D47B-2.dwg

OU4-D47B-3
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

1,335.10	INITIAL RAL VOLUME
562.81	INITIAL OVERCUT VOLUME
1,897.91	RAL + OVERCUT VOLUME
1,677.03	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

1,159.90	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
533.64	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
1,693.54	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

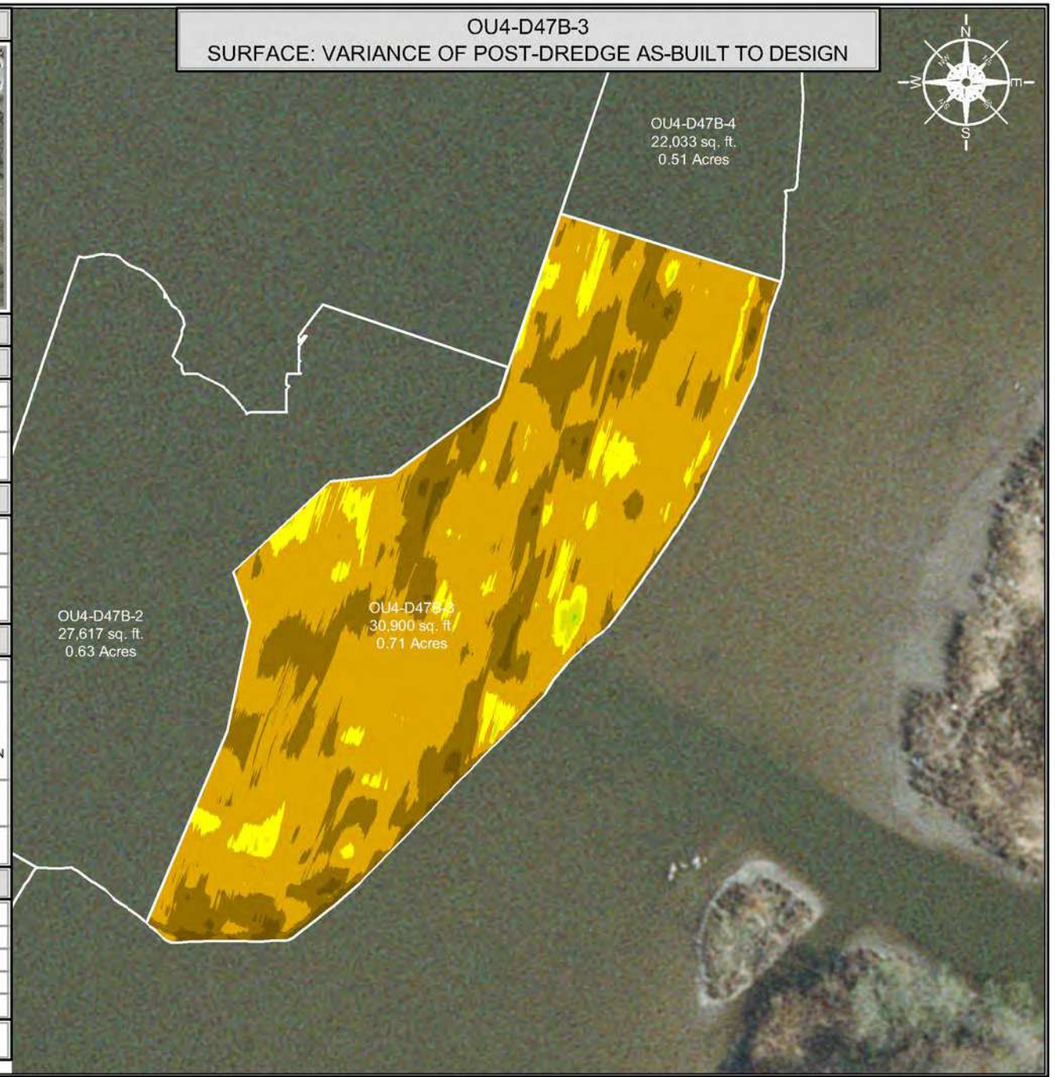
2018 AS-BUILT VOLUMES (CU. YD.)

1,522.57	TOTAL VOLUME DREDGED
1,149.99	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
8.38	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
212.50	OVERCUT VOLUME REMAINING
313.07	OVERCUT VOLUME DREDGED
59.51	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

30,900.12	AREA (SQ. FT.)
2,206.06	ABOVE DESIGN ELEVATION
28,694.06	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
4.21 "	AVERAGE DEPTH OF OVERCUT [1]
93	PERCENT COMPLETE [2]

OU4-D47B-3
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 5-7-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
571.00'	-	572.00'
572.00'	-	573.00'
573.00'	-	574.00'
574.00'	-	575.00'
575.00'	-	576.00'
576.00'	-	577.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.07'	-	-1.00'	729.32
	-1.00'	-	-0.50'	8,005.52
	-0.50'	-	0.00'	19,959.22
ABOVE RAL	0.00'	-	0.25'	2,053.89
	0.25'	-	0.50'	149.05
	0.50'	-	0.55'	3.10

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
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CAD FILE: OU4-D47B-3.dwg
DRAWN BY: DAVID.FRISQUE
DATE: May 21, 2018
LAST REVISED: December 7, 2018
CHECKED BY: REG

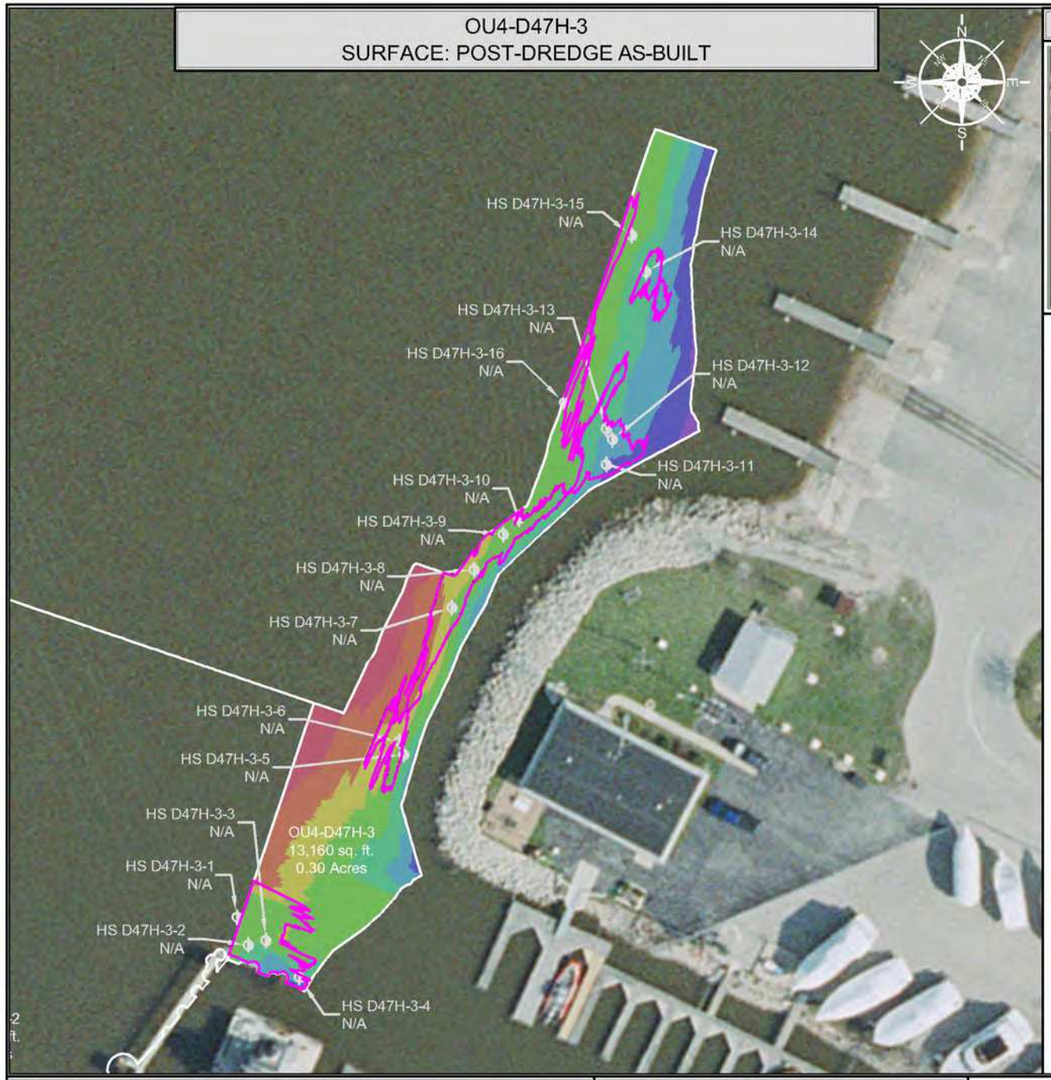
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-212

OU4-D47B-3
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

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OU4-D47H-3
SURFACE: POST-DREDGE AS-BUILT



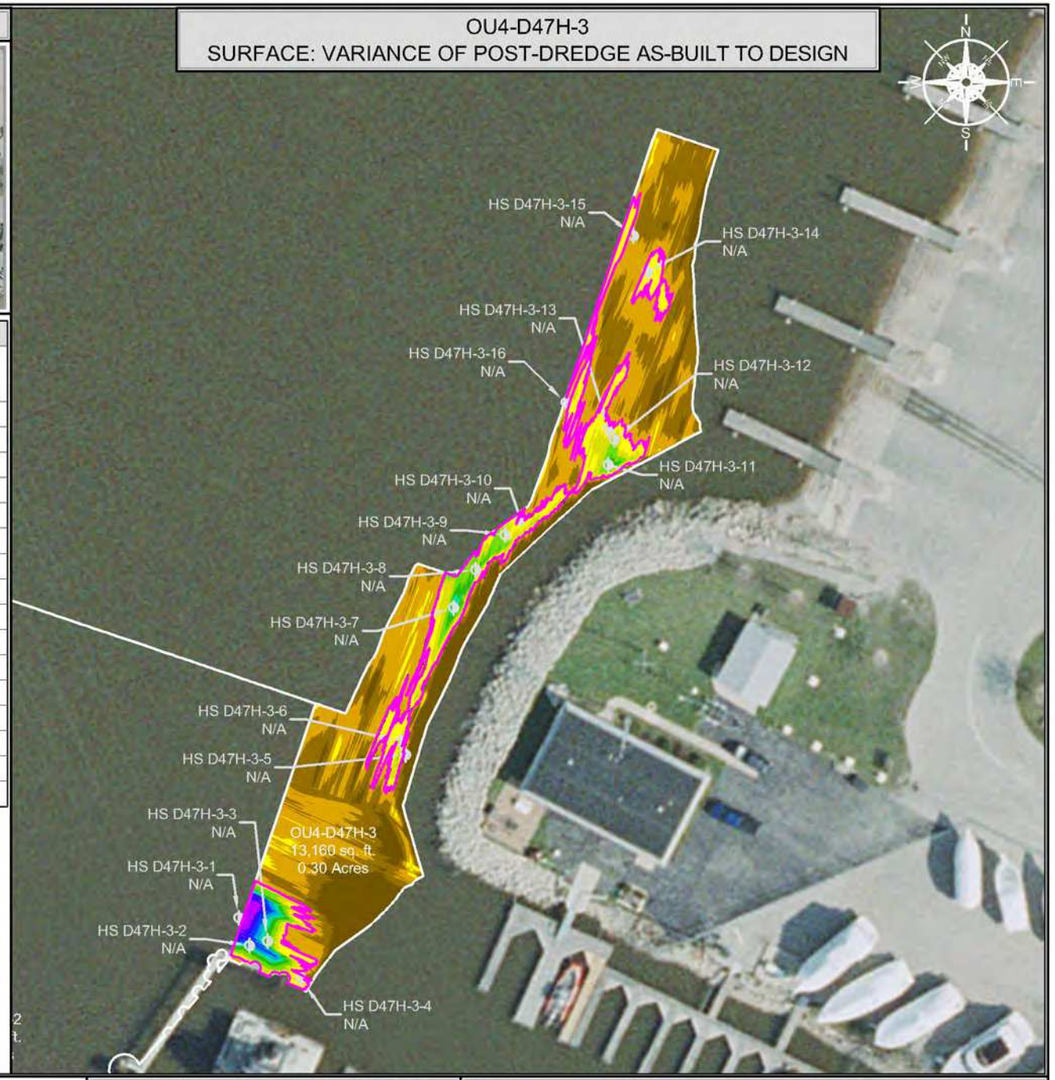
INDEX MAP



HIGH SUBGRADE SAMPLE AS-BUILT RESULTS			
SAMPLE ID	NORTHING	EASTING	THICKNESS OF SOFT SEDIMENT (FEET)
HS D47H-3-1	262794.20	2488627.66	N/A
HS D47H-3-2	262783.30	2488632.01	N/A
HS D47H-3-3	262785.10	2488639.10	N/A
HS D47H-3-4	262770.40	2488652.34	N/A
HS D47H-3-5	262858.70	2488693.60	N/A
HS D47H-3-6	262863.90	2488691.84	N/A
HS D47H-3-7	262916.90	2488712.58	N/A
HS D47H-3-8	262931.90	2488721.48	N/A
HS D47H-3-9	262945.80	2488732.97	N/A
HS D47H-3-10	262952.00	2488739.23	N/A
HS D47H-3-11	262973.50	2488773.89	N/A
HS D47H-3-12	262983.40	2488776.18	N/A
HS D47H-3-13	262987.60	2488773.92	N/A
HS D47H-3-14	263049.80	2488789.39	N/A
HS D47H-3-15	263064.10	2488783.87	N/A
HS D47H-3-16	262998.00	2488757.17	N/A

NR = NO RECOVERY
NA = NO CORE COLLECTION REQUIRED DUE TO POLING DEPTH

OU4-D47H-3
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 4-27-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
557.00'	-	559.00'
559.00'	-	561.00'
561.00'	-	563.00'
563.00'	-	565.00'
565.00'	-	567.00'
567.00'	-	569.00'
569.00'	-	571.00'
571.00'	-	573.00'

DRAWING NOTES

1. HIGH SUBGRADE SAMPLES AND POLING DATA WERE COLLECTED ON 5-3-2018 AND LOGGED ON 5-3-2018

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OU# - D# - #
OPERABLE UNIT | DREDGE AREA | DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-4.04'	-	-1.00'	1,845.75
BELOW RAL	-1.00'	-	-0.50'	3,638.13
BELOW RAL	-0.50'	-	0.00'	4,697.19
ABOVE RAL	0.00'	-	0.50'	1,676.56
ABOVE RAL	0.50'	-	1.00'	527.54
ABOVE RAL	1.00'	-	1.50'	328.72
ABOVE RAL	1.50'	-	2.00'	146.66
ABOVE RAL	2.00'	-	2.50'	85.12
ABOVE RAL	2.50'	-	3.00'	60.35
ABOVE RAL	3.00'	-	3.50'	59.96
ABOVE RAL	3.50'	-	4.00'	56.27
ABOVE RAL	4.00'	-	4.55'	50.91

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D47H-3.dwg
DRAWN BY: DAVID.FRISQUE
DATE: May 11, 2018
LAST REVISED: December 7, 2018
CHECKED BY: REG

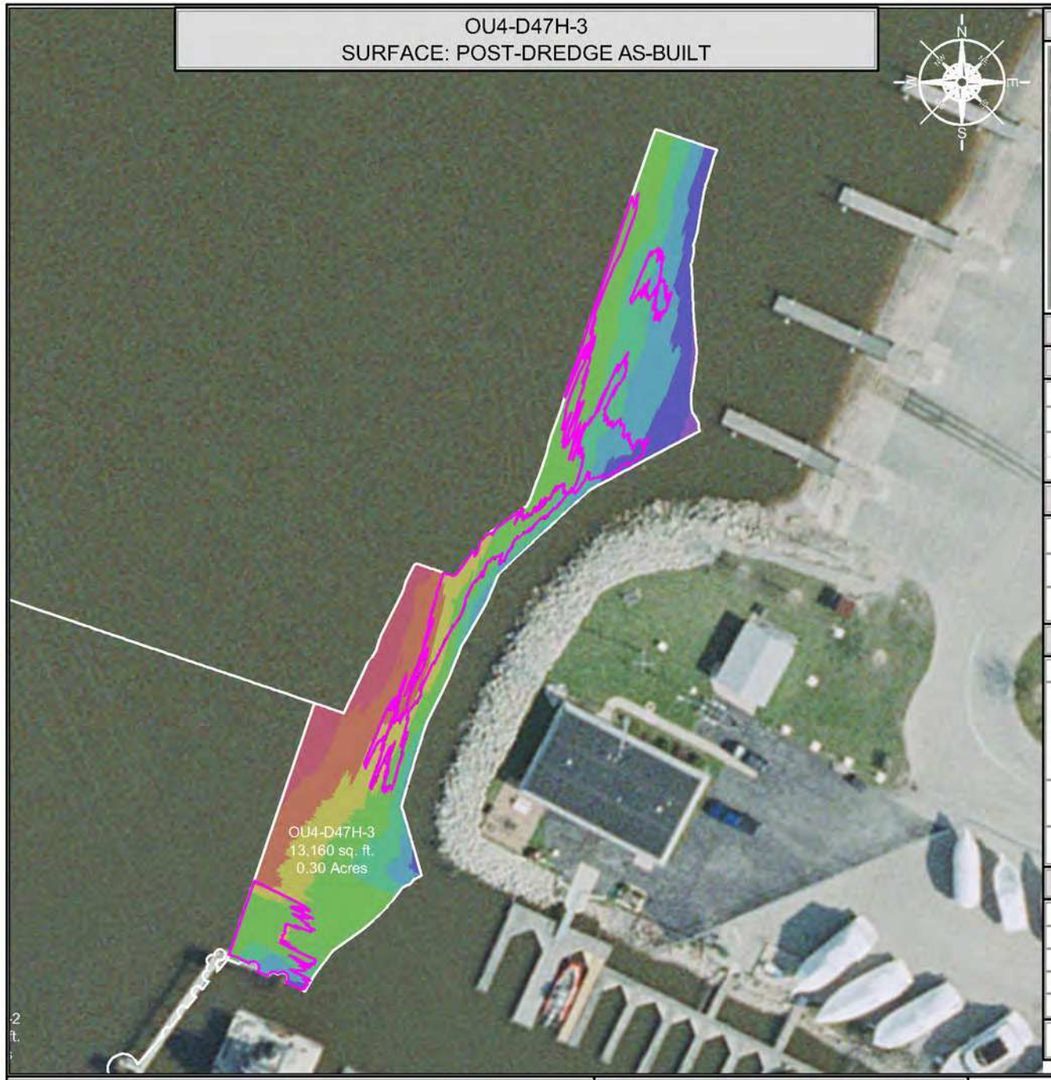
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-213

OU4-D47H-3
PRIMARY DREDGE HIGH SUBGRADE RESULTS

F:\LOCAD\Fdd Engineering\Dredge Files\2018\OU4 D47H\DWG\Post Dredge\OU4-D47H-3.dwg

OU4-D47H-3
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

1,738.12	INITIAL RAL VOLUME
234.94	INITIAL OVERCUT VOLUME
1,973.06	RAL + OVERCUT VOLUME
1,791.43	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

186.68	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
147.27	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
333.95	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

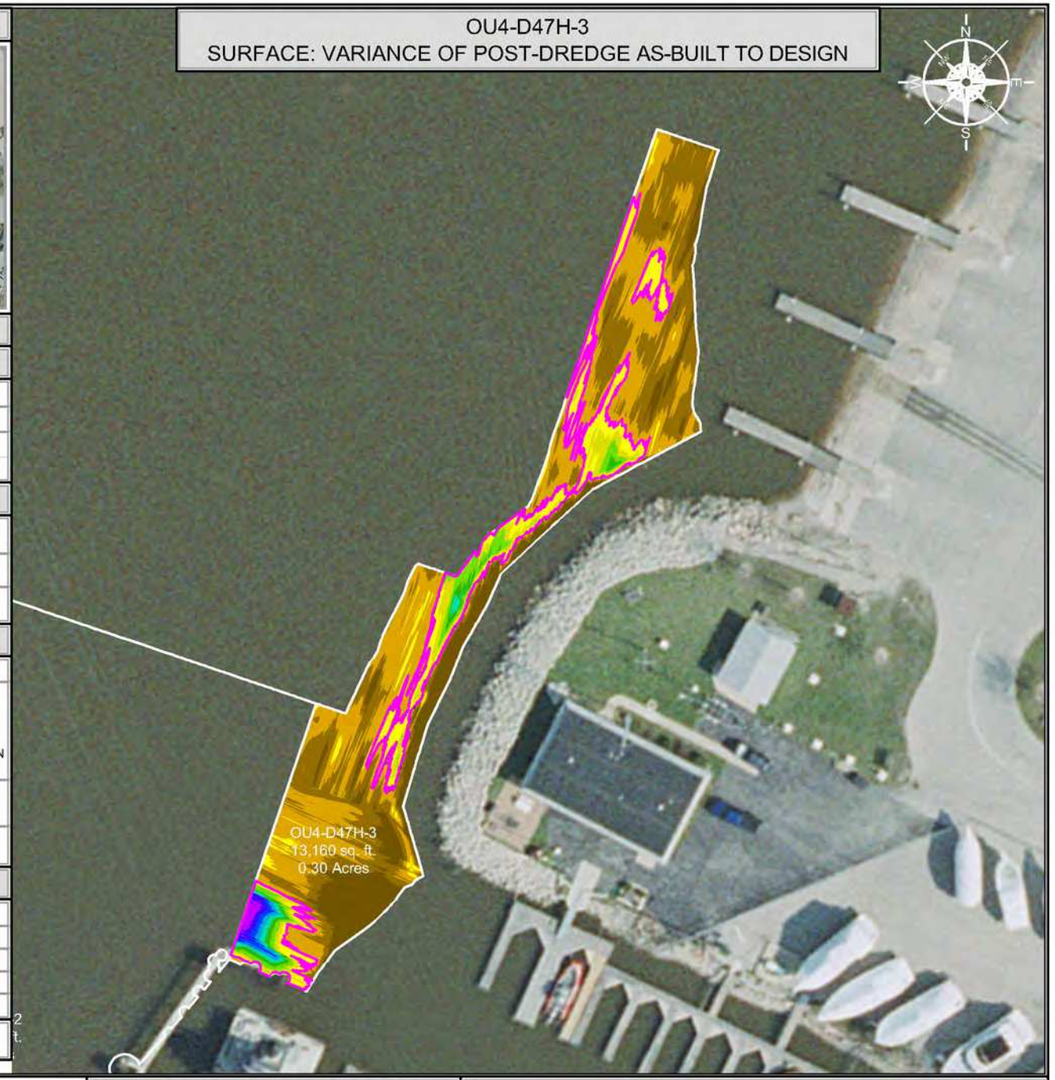
2018 AS-BUILT VOLUMES (CU. YD.)

259.22	TOTAL VOLUME DREDGED
111.43	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
85.60	CONFIRMED HIGH SUBGRADE VOLUME
0.96	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
95.07	OVERCUT VOLUME REMAINING
94.19	OVERCUT VOLUME DREDGED
53.60	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

13,160.10	AREA (SQ. FT.)
239.53	ABOVE DESIGN ELEVATION
10,168.01	AT OR BELOW DESIGN ELEVATION
2,752.56	CONFIRMED HIGH SUBGRADE
4.71 "	AVERAGE DEPTH OF OVERCUT [1]
98	PERCENT COMPLETE [2]

OU4-D47H-3
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 4-27-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
557.00'	-	559.00'
559.00'	-	561.00'
561.00'	-	563.00'
563.00'	-	565.00'
565.00'	-	567.00'
567.00'	-	569.00'
569.00'	-	571.00'
571.00'	-	573.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT
DREDGE AREA
DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-4.04'	-	-1.00'	1,845.75
BELOW RAL	-1.00'	-	-0.50'	3,638.13
BELOW RAL	-0.50'	-	0.00'	4,697.19
ABOVE RAL	0.00'	-	0.50'	1,676.56
ABOVE RAL	0.50'	-	1.00'	527.54
ABOVE RAL	1.00'	-	1.50'	328.72
ABOVE RAL	1.50'	-	2.00'	146.66
ABOVE RAL	2.00'	-	2.50'	85.12
ABOVE RAL	2.50'	-	3.00'	60.35
ABOVE RAL	3.00'	-	3.50'	59.96
ABOVE RAL	3.50'	-	4.00'	56.27
ABOVE RAL	4.00'	-	4.55'	50.91

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

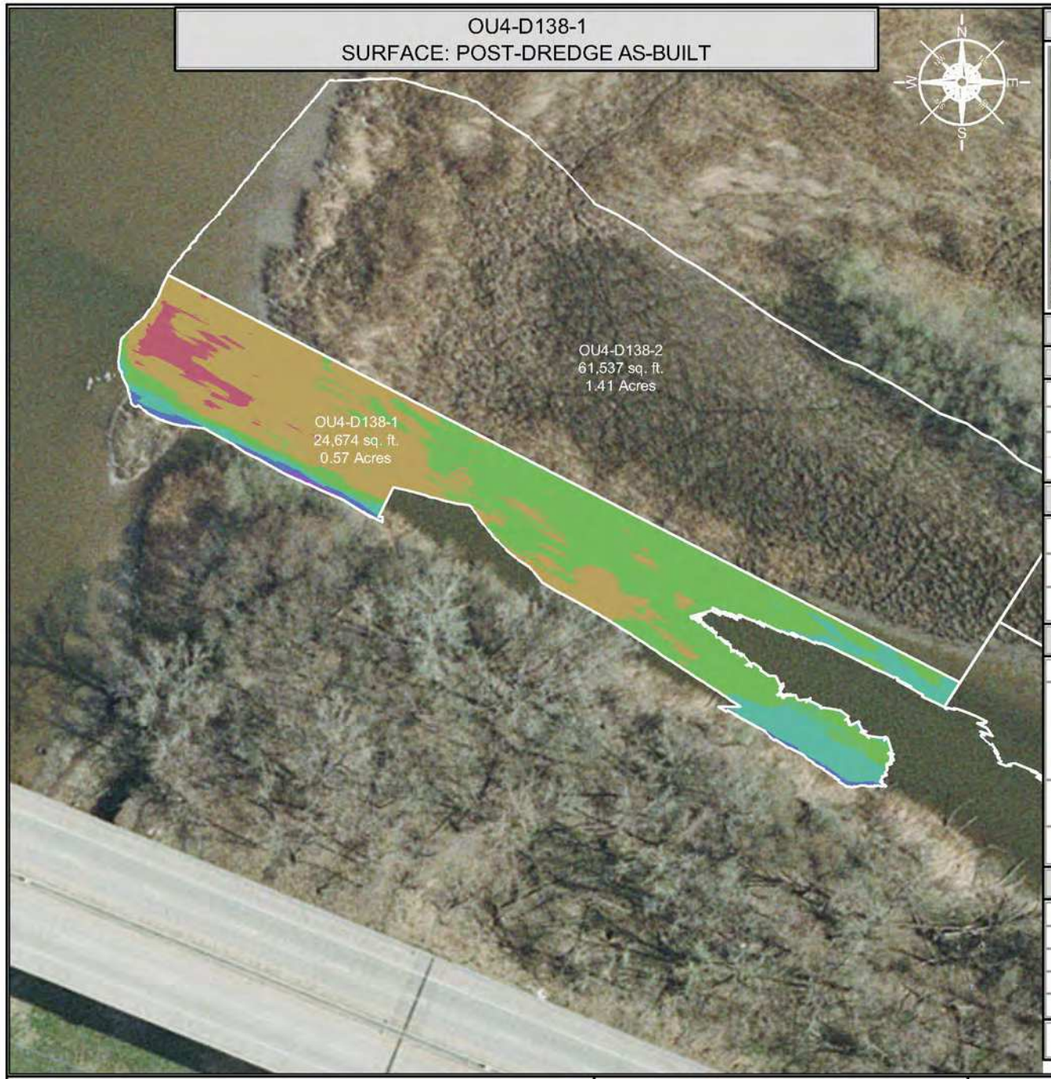
CAD FILE: OU4-D47H-3.dwg
DRAWN BY: DAVID.FRISQUE
DATE: May 11, 2018
LAST REVISED: December 7, 2018
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-214

OU4-D47H-3
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LLOC\LD\Field Engineering\Dredge Files\2018\OU4-D47H\GIS\Post Dredge\OU4-D47H-3.dwg



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

1,162.44	INITIAL RAL VOLUME
454.71	INITIAL OVERCUT VOLUME
1,617.15	RAL + OVERCUT VOLUME
1,383.32	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

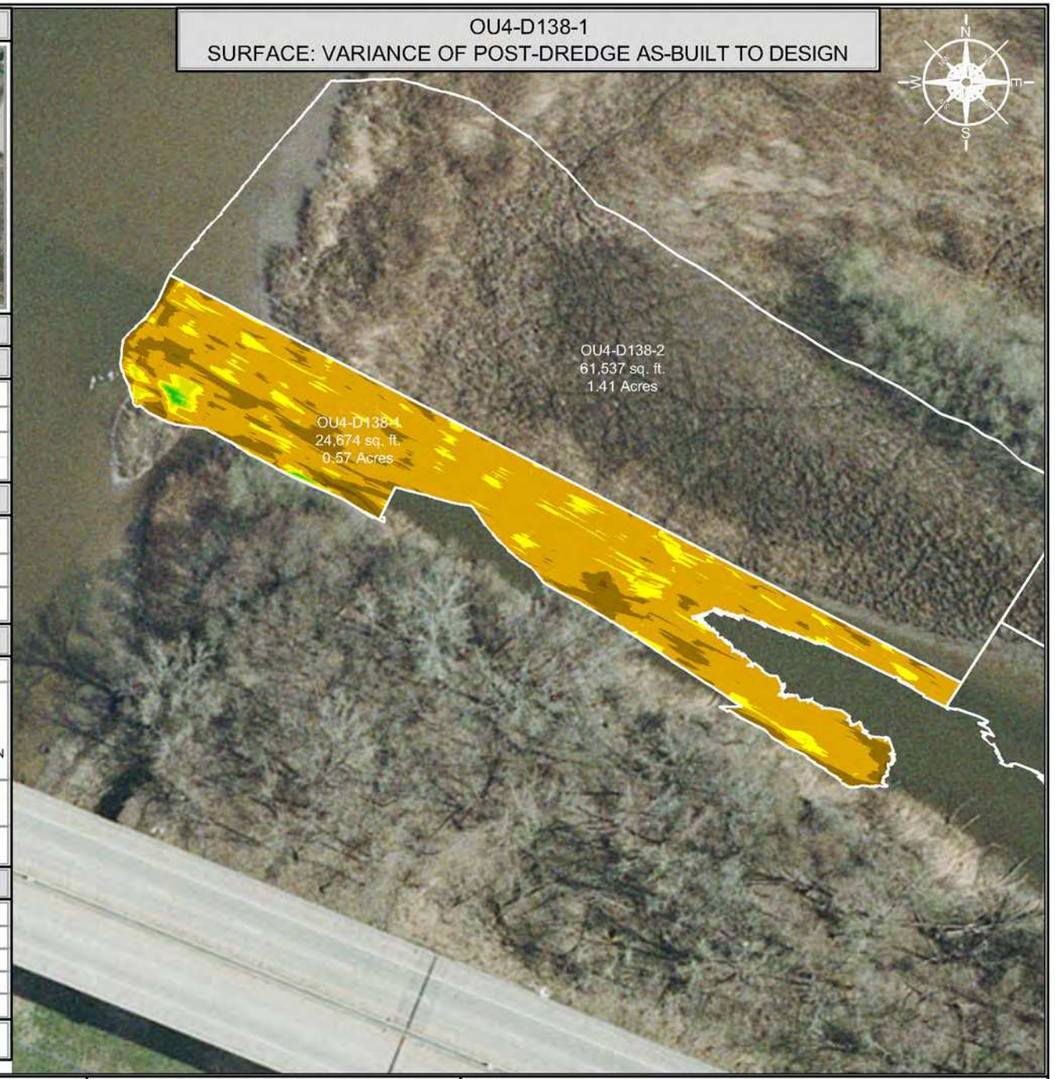
1,162.44	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
454.71	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
1,617.15	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

2018 AS-BUILT VOLUMES (CU. YD.)

1,411.92	TOTAL VOLUME DREDGED
1,154.47	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
9.79	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
224.04	OVERCUT VOLUME REMAINING
231.23	OVERCUT VOLUME DREDGED
26.22	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

24,673.77	AREA (SQ. FT.)
2,293.36	ABOVE DESIGN ELEVATION
22,380.41	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
3.73 "	AVERAGE DEPTH OF OVERCUT [1]
91	PERCENT COMPLETE [2]



AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
573.00'	-	574.00'
574.00'	-	575.00'
575.00'	-	576.00'
576.00'	-	577.00'
577.00'	-	578.00'
578.00'	-	579.00'

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.12'	-	-1.00'	185.30
	-1.00'	-	-0.50'	3,860.44
	-0.50'	-	0.00'	18,334.67
ABOVE RAL	0.00'	-	0.25'	2,016.86
	0.25'	-	0.50'	187.66
	0.50'	-	0.75'	57.75
	0.75'	-	1.00'	29.97
	1.00'	-	1.08'	1.11

SCALE (1" = 80')

80 40 0 80 160

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 7-2-2018

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

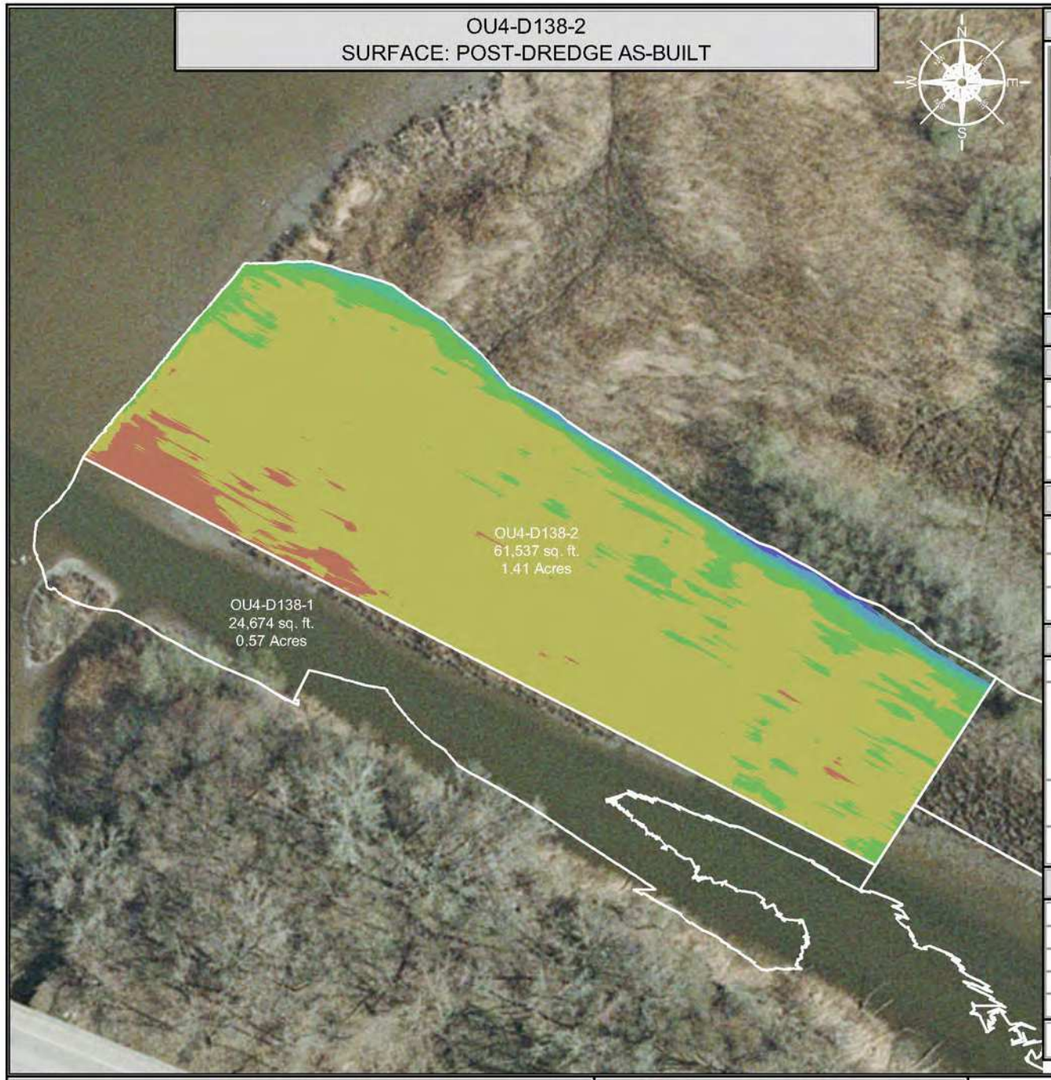
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DRAWN BY: DAVID.FRISQUE
DATE: July 11, 2018
LAST REVISED: January 16, 2019
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

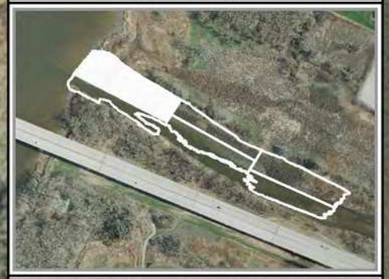
FIGURE 4-215

OU4-D138-1
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LLC\CAD\Field Engineering\Dredge Files\2018\OU4-D138\DWG\Post Dredge\OU4-D138-1.dwg



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

6,183.41	INITIAL RAL VOLUME
1,148.15	INITIAL OVERCUT VOLUME
7,331.56	RAL + OVERCUT VOLUME
6,784.58	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

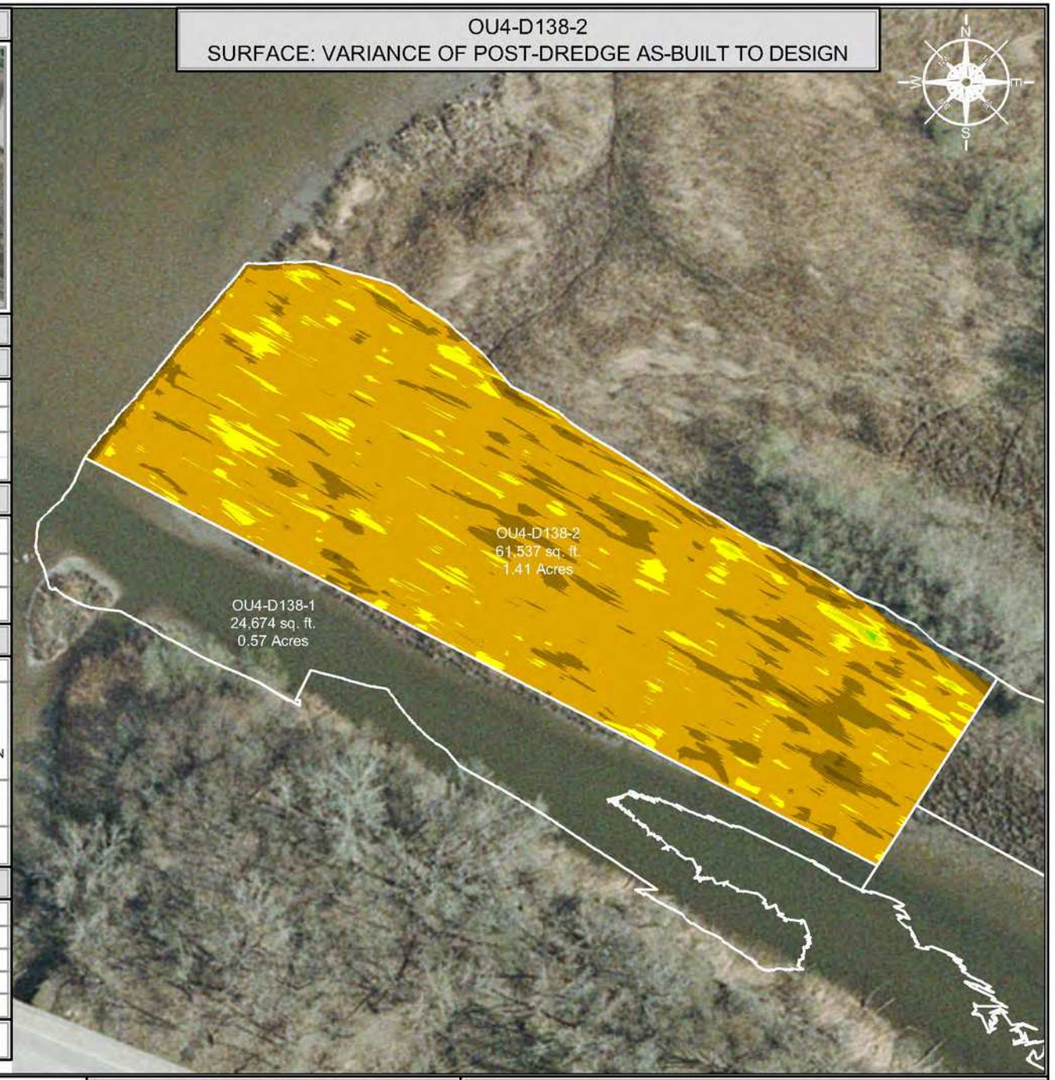
6,183.41	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
1,148.15	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
7,331.56	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

2018 AS-BUILT VOLUMES (CU. YD.)

6,815.45	TOTAL VOLUME DREDGED
6,170.90	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
12.51	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
534.47	OVERCUT VOLUME REMAINING
591.80	OVERCUT VOLUME DREDGED
52.75	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

61,536.52	AREA (SQ. FT.)
4,407.66	ABOVE DESIGN ELEVATION
57,128.86	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
3.66 "	AVERAGE DEPTH OF OVERCUT [1]
93	PERCENT COMPLETE [2]



SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 7-2-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
573.00'	-	574.00'
574.00'	-	575.00'
575.00'	-	576.00'
576.00'	-	577.00'
577.00'	-	578.00'
578.00'	-	579.00'
579.00'	-	580.00'
580.00'	-	581.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.44'	-	-1.00'	418.57
BELOW RAL	-1.00'	-	-0.50'	8,102.88
BELOW RAL	-0.50'	-	0.00'	48,607.41
ABOVE RAL	0.00'	-	0.25'	3,876.73
ABOVE RAL	0.25'	-	0.50'	194.21
ABOVE RAL	0.50'	-	0.63'	12.62

TETRA TECH EC, INC.
1611 STATE STREET
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CAD FILE: OU4-D138-2.dwg
DRAWN BY: DAVID.FRISQUE
DATE: July 11, 2018
LAST REVISED: December 7, 2018
CHECKED BY: REG

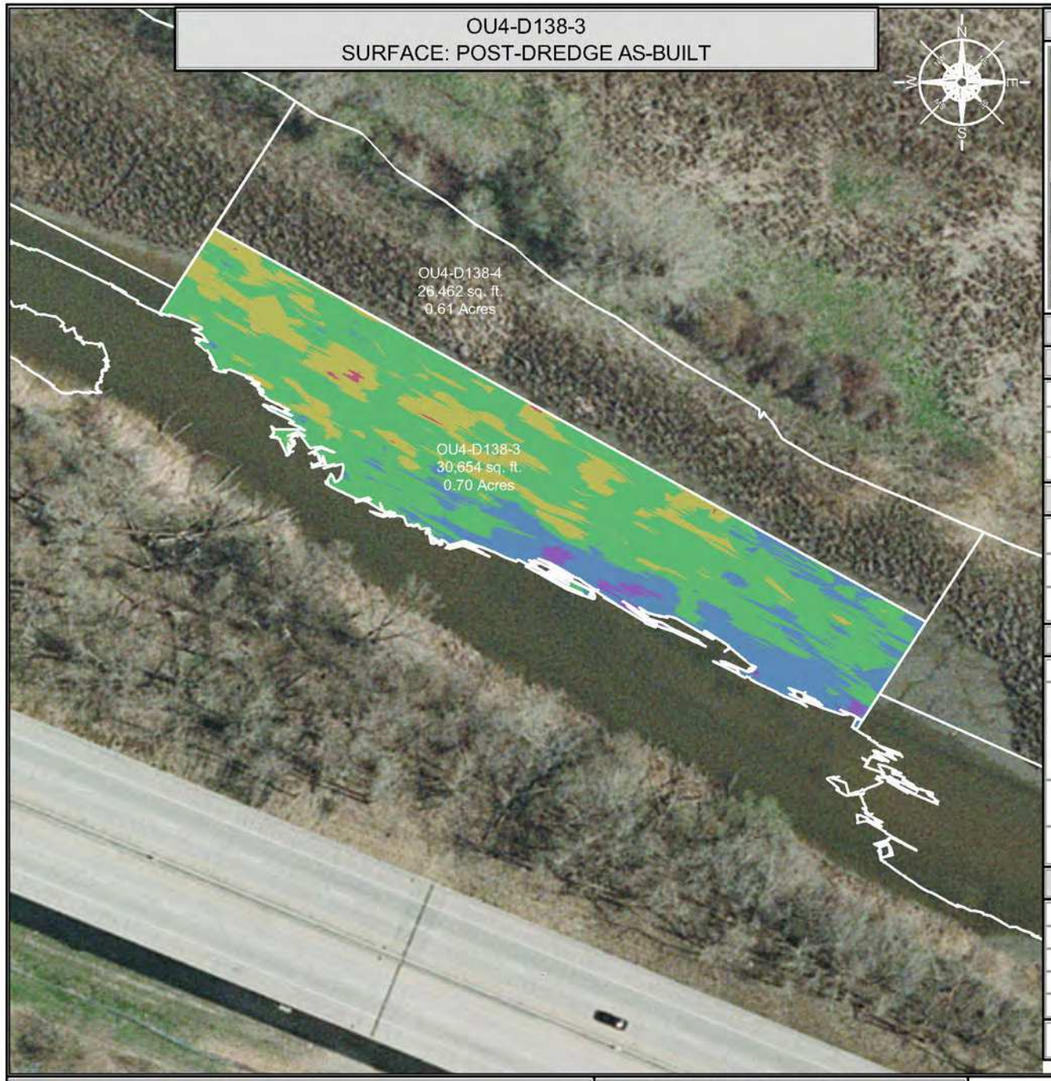
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-216

OU4-D138-2
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\ALLOC\42\Field Engineering\Dredge Files\2018\OU4 D138\DWG\Post Dredge\OU4 D138-2.dwg

OU4-D138-3
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

1,303.73	INITIAL RAL VOLUME
566.97	INITIAL OVERCUT VOLUME
1,870.70	RAL + OVERCUT VOLUME
1,668.41	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

1,303.73	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
566.97	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
1,870.70	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

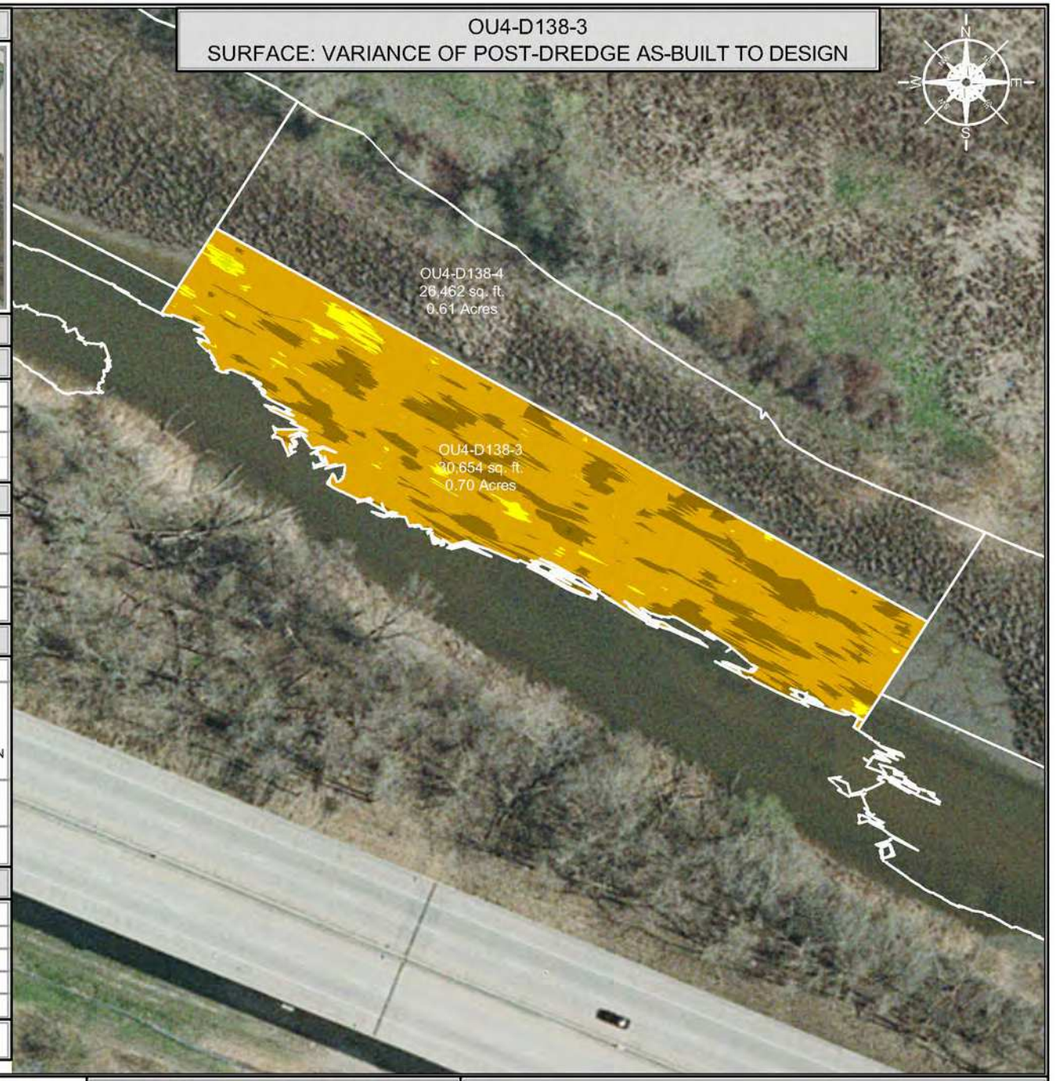
2018 AS-BUILT VOLUMES (CU. YD.)

1,700.86	TOTAL VOLUME DREDGED
1,301.02	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
2.71	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
199.58	OVERCUT VOLUME REMAINING
367.36	OVERCUT VOLUME DREDGED
32.48	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

30,653.65	AREA (SQ. FT.)
889.48	ABOVE DESIGN ELEVATION
29,764.17	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
4.35 "	AVERAGE DEPTH OF OVERCUT [1]
97	PERCENT COMPLETE [2]

OU4-D138-3
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 80')

80 40 0 80 160

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-24-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
575.00'	-	575.50'
575.50'	-	576.00'
576.00'	-	576.50'
576.50'	-	577.00'
577.00'	-	577.50'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT
DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.23'	-	-1.00'	41.35
BELOW RAL	-1.00'	-	-0.50'	6,771.31
BELOW RAL	-0.50'	-	0.00'	22,952.26
ABOVE RAL	0.00'	-	0.25'	849.29
ABOVE RAL	0.25'	-	0.50'	40.01
ABOVE RAL	0.50'	-	0.54'	0.18

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D138-3.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 25, 2018
LAST REVISED: December 7, 2018
CHECKED BY: REG

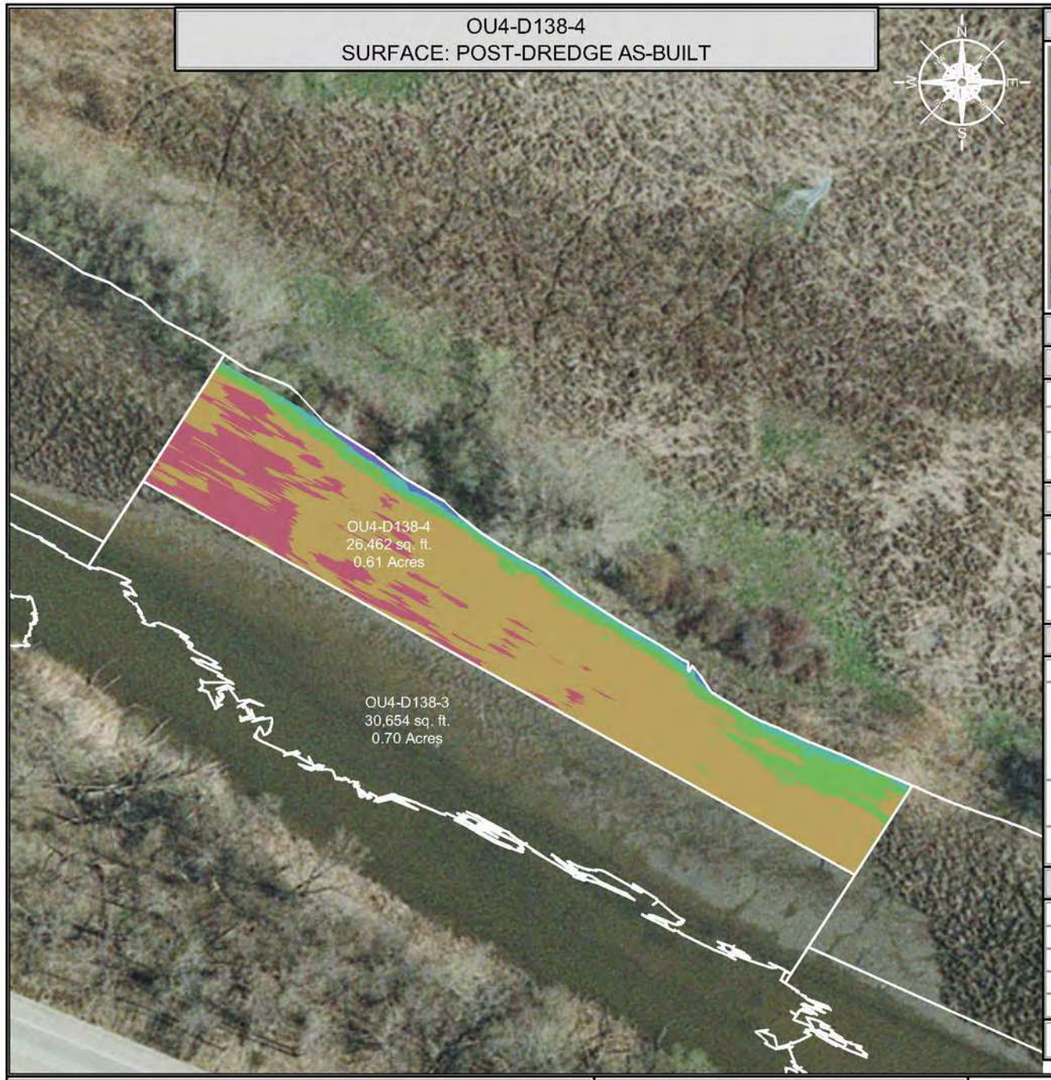
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-217

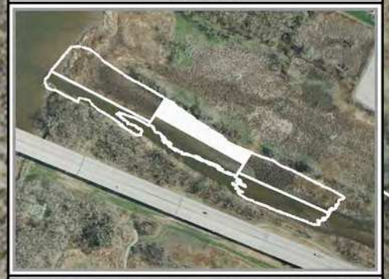
OU4-D138-3
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

F:\LLC\ACAD\Fish Engineering\Design Files\2018\OU4-D138\DWG\Final Design\OU4-D138-3.dwg

OU4-D138-4
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

2,005.57	INITIAL RAL VOLUME
497.04	INITIAL OVERCUT VOLUME
2,502.61	RAL + OVERCUT VOLUME
2,351.64	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

2,005.57	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
497.04	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
2,502.61	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

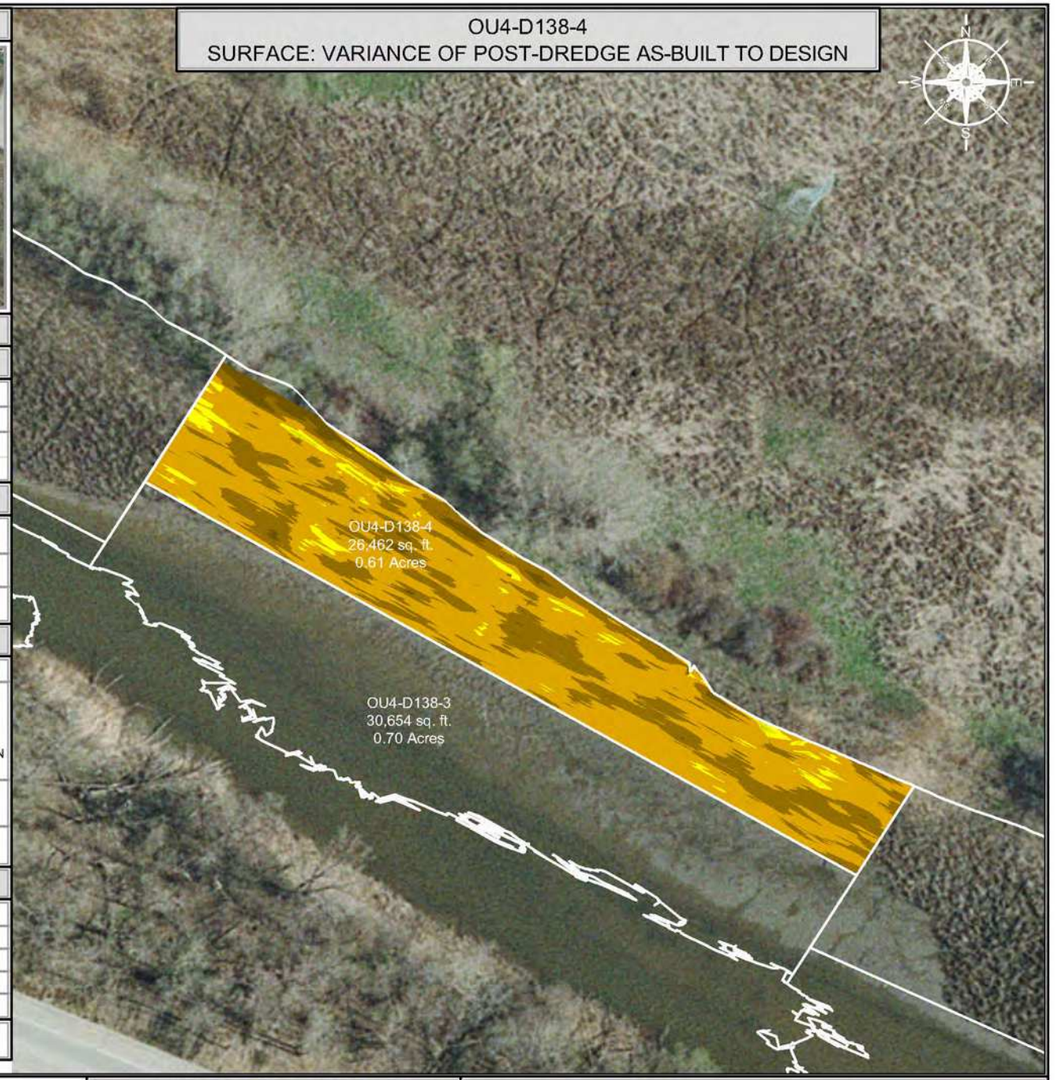
2018 AS-BUILT VOLUMES (CU. YD.)

2,404.53	TOTAL VOLUME DREDGED
2,001.52	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
4.05	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
146.92	OVERCUT VOLUME REMAINING
332.12	OVERCUT VOLUME DREDGED
70.89	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

26,461.94	AREA (SQ. FT.)
1,352.48	ABOVE DESIGN ELEVATION
25,109.46	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
5.20 "	AVERAGE DEPTH OF OVERCUT [1]
95	PERCENT COMPLETE [2]

OU4-D138-4
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 80')

80 40 0 80 160

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 7-2-2018

AS-BUILT COLOR LEGEND

	MIN. EL.		MAX. EL.
	575.00'	-	576.00'
	576.00'	-	577.00'
	577.00'	-	578.00'
	578.00'	-	579.00'
	579.00'	-	580.00'
	580.00'	-	581.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

		MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL		-2.16'	-	-1.00'	800.56
		-1.00'	-	-0.50'	7,817.23
		-0.50'	-	0.00'	16,491.67
ABOVE RAL		0.00'	-	0.25'	985.44
		0.25'	-	0.50'	80.05
		0.50'	-	0.70'	4.13

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D138-4.dwg
DRAWN BY: DOUG.FRISQUE
DATE: July 11, 2018
LAST REVISED: December 7, 2018
CHECKED BY: REG

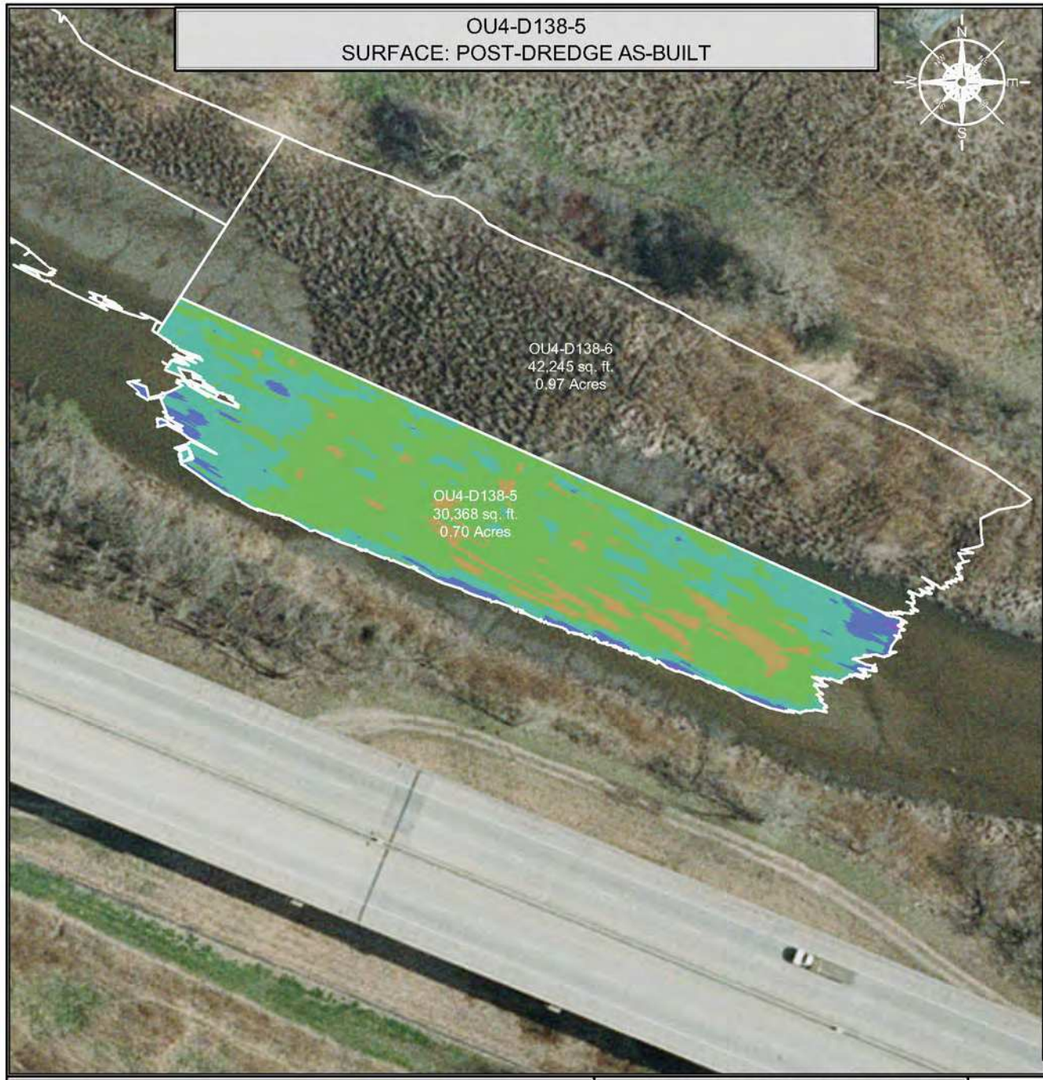
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-218

OU4-D138-4
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\ALLOC\42\Field Eng\Arcview\gDredge Files\2018\OU4 D138\DWG\Post Dredge\OU4-D138-4.mxd

OU4-D138-5
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

740.41	INITIAL RAL VOLUME
544.94	INITIAL OVERCUT VOLUME
1,285.35	RAL + OVERCUT VOLUME
989.03	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

740.41	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
544.94	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
1,285.35	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

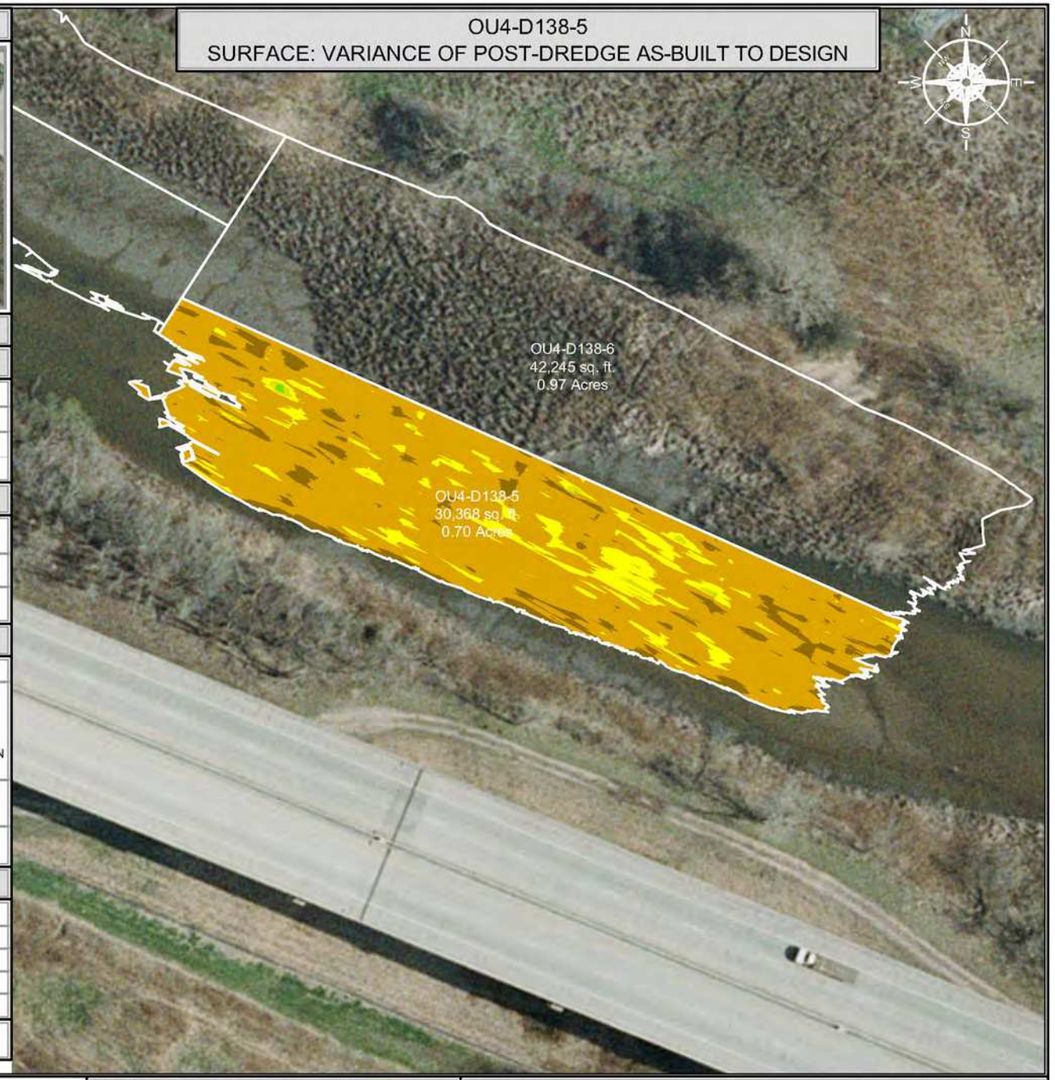
2018 AS-BUILT VOLUMES (CU. YD.)

1,007.74	TOTAL VOLUME DREDGED
729.26	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
11.15	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
285.17	OVERCUT VOLUME REMAINING
266.97	OVERCUT VOLUME DREDGED
11.51	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

30,368.19	AREA (SQ. FT.)
2,941.08	ABOVE DESIGN ELEVATION
27,427.11	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
3.29 "	AVERAGE DEPTH OF OVERCUT [1]
90	PERCENT COMPLETE [2]

OU4-D138-5
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 80')

80 40 0 80 160

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-29-2018

AS-BUILT COLOR LEGEND

	MIN. EL.		MAX. EL.
	575.00'	-	575.50'
	575.50'	-	576.00'
	576.00'	-	576.50'
	576.50'	-	577.00'
	577.00'	-	577.50'
	577.50'	-	578.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

		MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL		-1.29'	-	-1.00'	28.58
		-1.00'	-	-0.50'	2,773.22
		-0.50'	-	0.00'	24,625.31
ABOVE RAL		0.00'	-	0.25'	2,738.03
		0.25'	-	0.50'	186.93
		0.50'	-	0.65'	16.12

TETRA TECH EC, INC.
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CAD FILE: OU4-D138-5.dwg
DRAWN BY: DAVID.FRISQUE
DATE: July 11, 2018
LAST REVISED: December 7, 2018
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-219

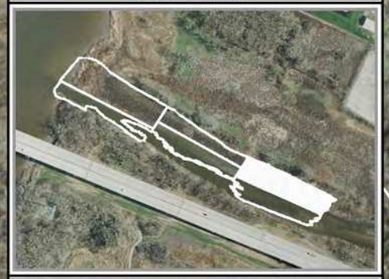
OU4-D138-5
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\ALLOC\42\Field Engineering\Dredge Files\2018\OU4-D138\DWG\Post Dredge\OU4-D138-5.dwg

OU4-D138-6
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

2,052.46	INITIAL RAL VOLUME
799.06	INITIAL OVERCUT VOLUME
2,851.52	RAL + OVERCUT VOLUME
2,460.17	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

2,052.46	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
799.06	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
2,851.52	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

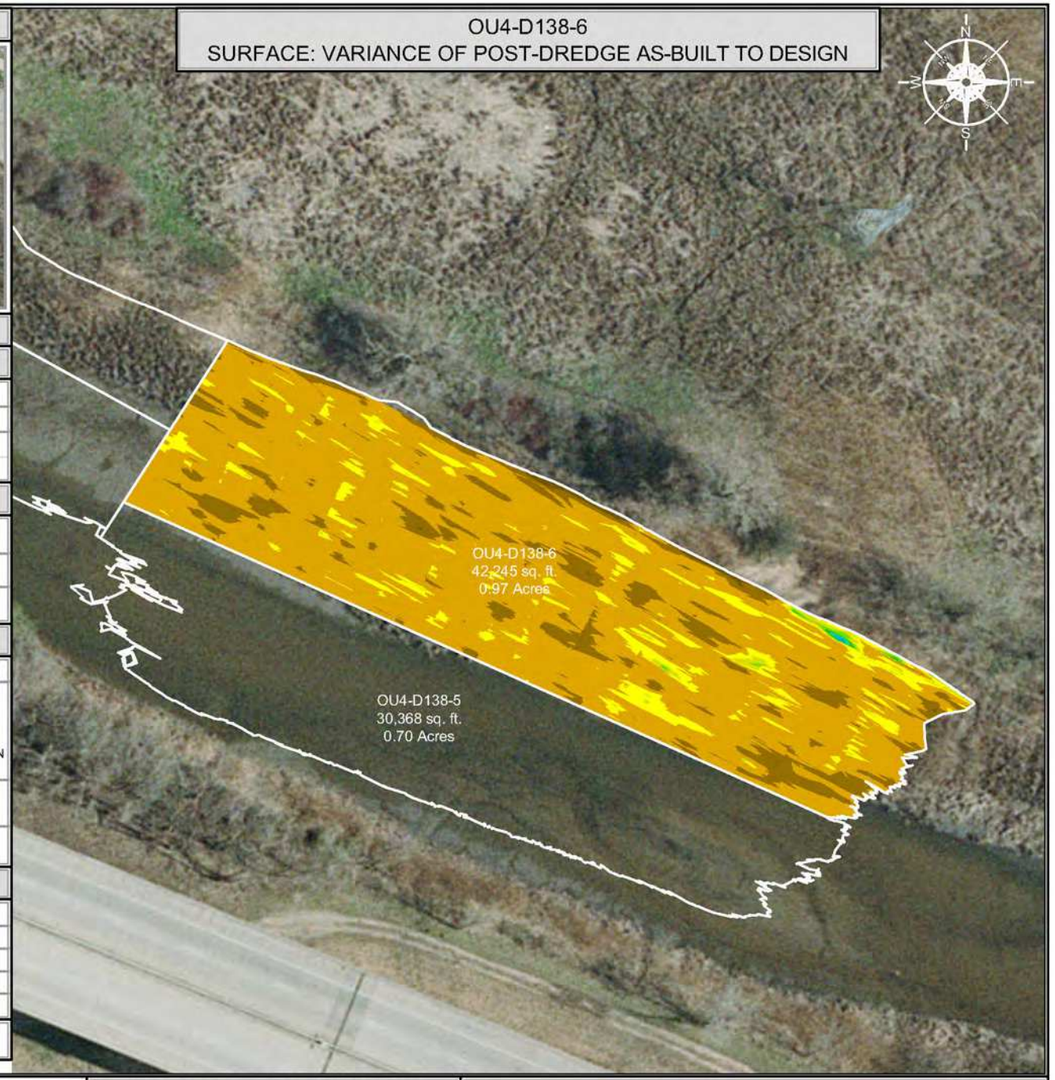
2018 AS-BUILT VOLUMES (CU. YD.)

2,470.30	TOTAL VOLUME DREDGED
2,033.68	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
18.78	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
372.57	OVERCUT VOLUME REMAINING
407.02	OVERCUT VOLUME DREDGED
29.60	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

42,244.69	AREA (SQ. FT.)
3,992.19	ABOVE DESIGN ELEVATION
38,252.50	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
3.70 "	AVERAGE DEPTH OF OVERCUT [1]
91	PERCENT COMPLETE [2]

OU4-D138-6
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 80')

80 40 0 80 160

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 6-29-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
575.00'	-	576.00'
576.00'	-	577.00'
577.00'	-	578.00'
578.00'	-	579.00'
579.00'	-	580.00'
580.00'	-	581.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.61'	-	-1.00'	201.72
BELOW RAL	-1.00'	-	-0.50'	5,217.48
BELOW RAL	-0.50'	-	0.00'	32,833.30
ABOVE RAL	0.00'	-	0.25'	3,350.41
ABOVE RAL	0.25'	-	0.50'	352.62
ABOVE RAL	0.50'	-	0.75'	95.45
ABOVE RAL	0.75'	-	1.00'	23.87
ABOVE RAL	1.00'	-	1.25'	12.99
ABOVE RAL	1.25'	-	1.55'	8.57

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
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CAD FILE: OU4-D138-6.dwg
DRAWN BY: DAVID.FRISQUE
DATE: July 11, 2018
LAST REVISED: December 7, 2018
CHECKED BY: REG

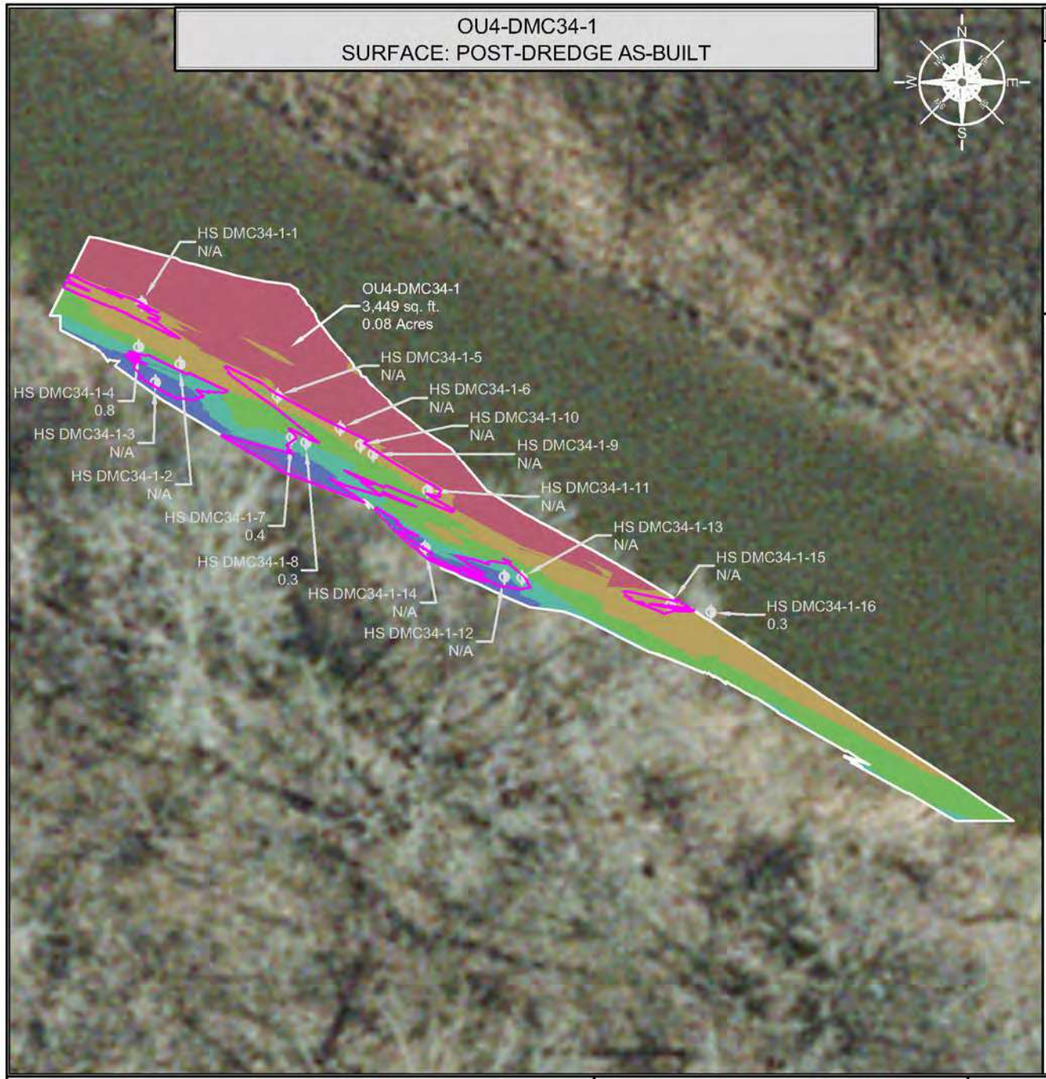
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-220

OU4-D138-6
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\ALLOC\42\Field Eng\Arcwatch\Dredge Files\2018\OU4-D138\DWG\Post-Dredge\OU4-D138-6.dwg

OU4-DMC34-1
SURFACE: POST-DREDGE AS-BUILT



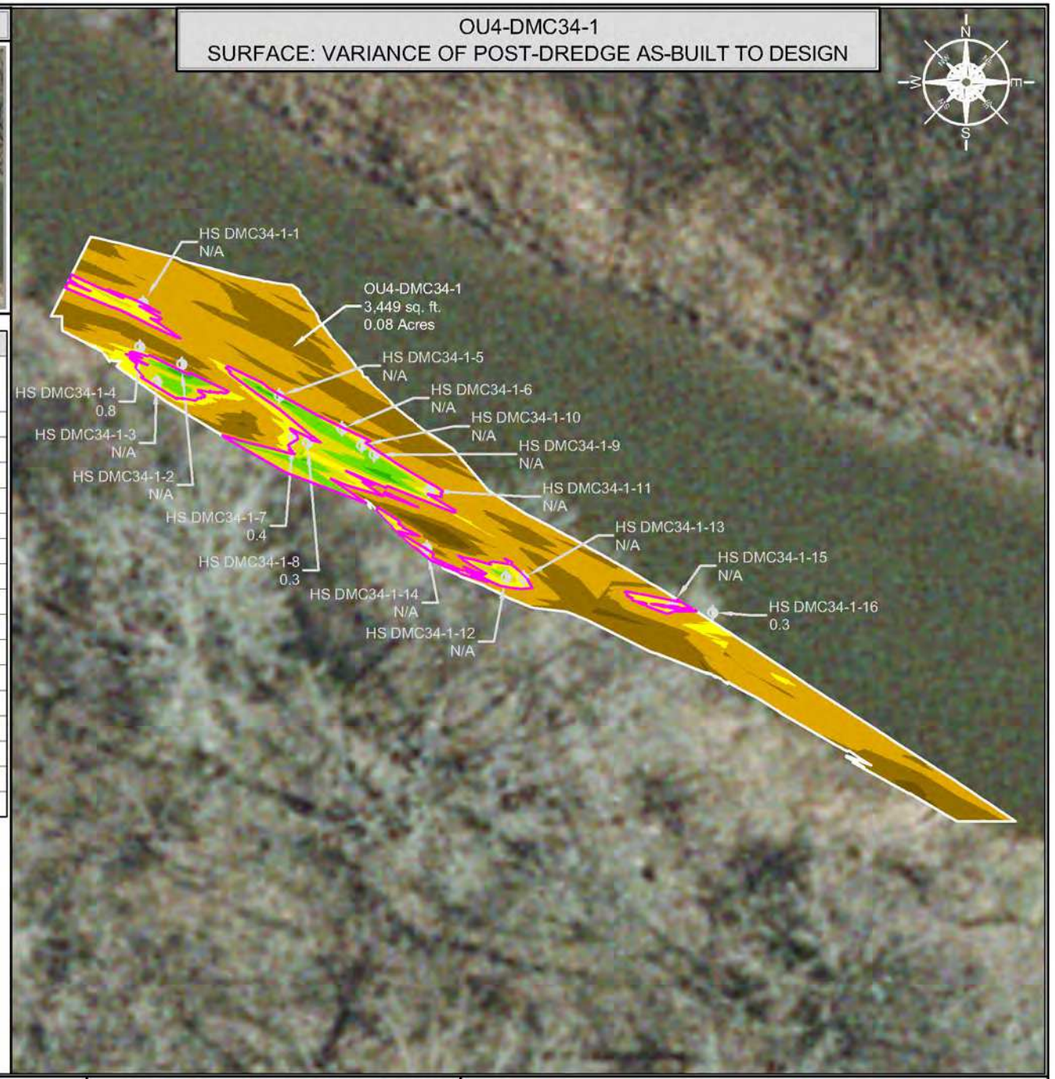
INDEX MAP



HIGH SUBGRADE SAMPLE AS-BUILT RESULTS			
SAMPLE ID	NORTHING	EASTING	THICKNESS OF SOFT SEDIMENT (FEET)
HS DMC34-1-1	261592.50	2488596.03	N/A
HS DMC34-1-2	261580.44	2488603.66	N/A
HS DMC34-1-3	261576.85	2488598.75	N/A
HS DMC34-1-4	261583.83	2488595.43	0.8
HS DMC34-1-5	261574.16	2488623.00	N/A
HS DMC34-1-6	261567.70	2488635.39	N/A
HS DMC34-1-7	261565.94	2488625.77	0.4
HS DMC34-1-8	261564.92	2488628.58	0.3
HS DMC34-1-9	261562.61	2488641.83	N/A
HS DMC34-1-10	261564.41	2488639.32	N/A
HS DMC34-1-11	261555.43	2488652.63	N/A
HS DMC34-1-12	261538.30	2488667.85	N/A
HS DMC34-1-13	261538.15	2488671.32	N/A
HS DMC34-1-14	261544.12	2488652.21	N/A
HS DMC34-1-15	261532.76	2488700.74	N/A
HS DMC34-1-16	261531.31	2488708.72	0.3

NR = NO RECOVERY
NA = NO CORE COLLECTION REQUIRED DUE TO POLING DEPTH

OU4-DMC34-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 30')

30 15 0 30 60

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 7-2-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
574.00'	-	575.00'
575.00'	-	576.00'
576.00'	-	577.00'
577.00'	-	578.00'
578.00'	-	579.00'
579.00'	-	580.00'

DRAWING NOTES

1. HIGH SUBGRADE SAMPLES AND POLING DATA WERE COLLECTED ON 7-11-2018 AND LOGGED ON 7-12-2018

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.87'	-	-1.00'	54.24
	-1.00'	-	-0.50'	961.77
	-0.50'	-	0.00'	1,762.98
ABOVE RAL	0.00'	-	0.25'	301.42
	0.25'	-	0.50'	212.36
	0.50'	-	0.75'	144.29
	0.75'	-	1.00'	11.92
	1.00'	-	1.04'	0.02

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
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CAD FILE: OU4-DMC34-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: July 10, 2018
LAST REVISED: December 10, 2018
CHECKED BY: REG

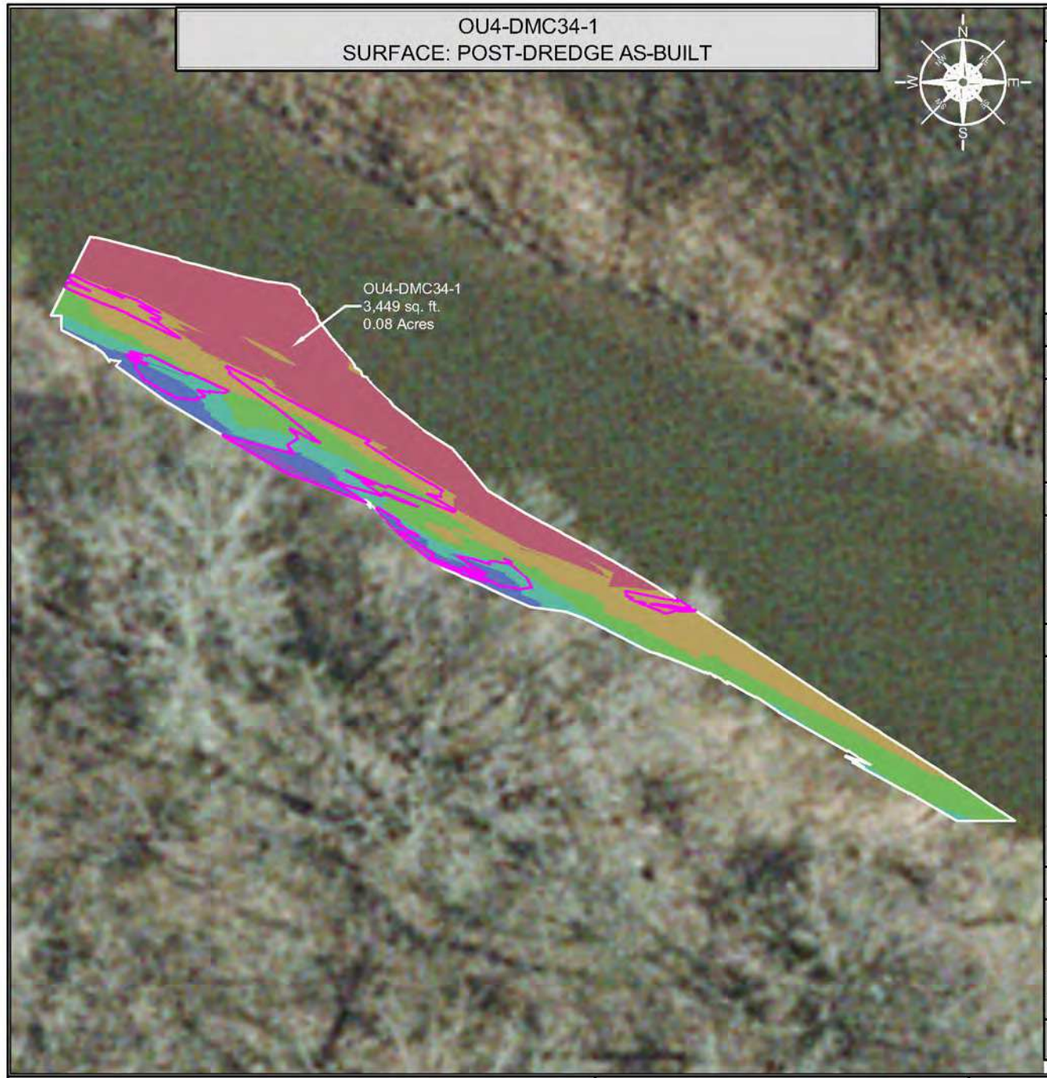
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-221

OU4-DMC34-1
PRIMARY DREDGE HIGH SUBGRADE RESULTS

F:\LC\CAD\Hold Engineering\3Dmdgs\Files\2018\OU4 DMC34-1\DWG\Post Dredge\OU4 DMC34-1.dwg

OU4-DMC34-1
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

108.53	INITIAL RAL VOLUME
65.63	INITIAL OVERCUT VOLUME
174.16	RAL + OVERCUT VOLUME
141.38	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

108.53	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
65.63	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
174.16	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

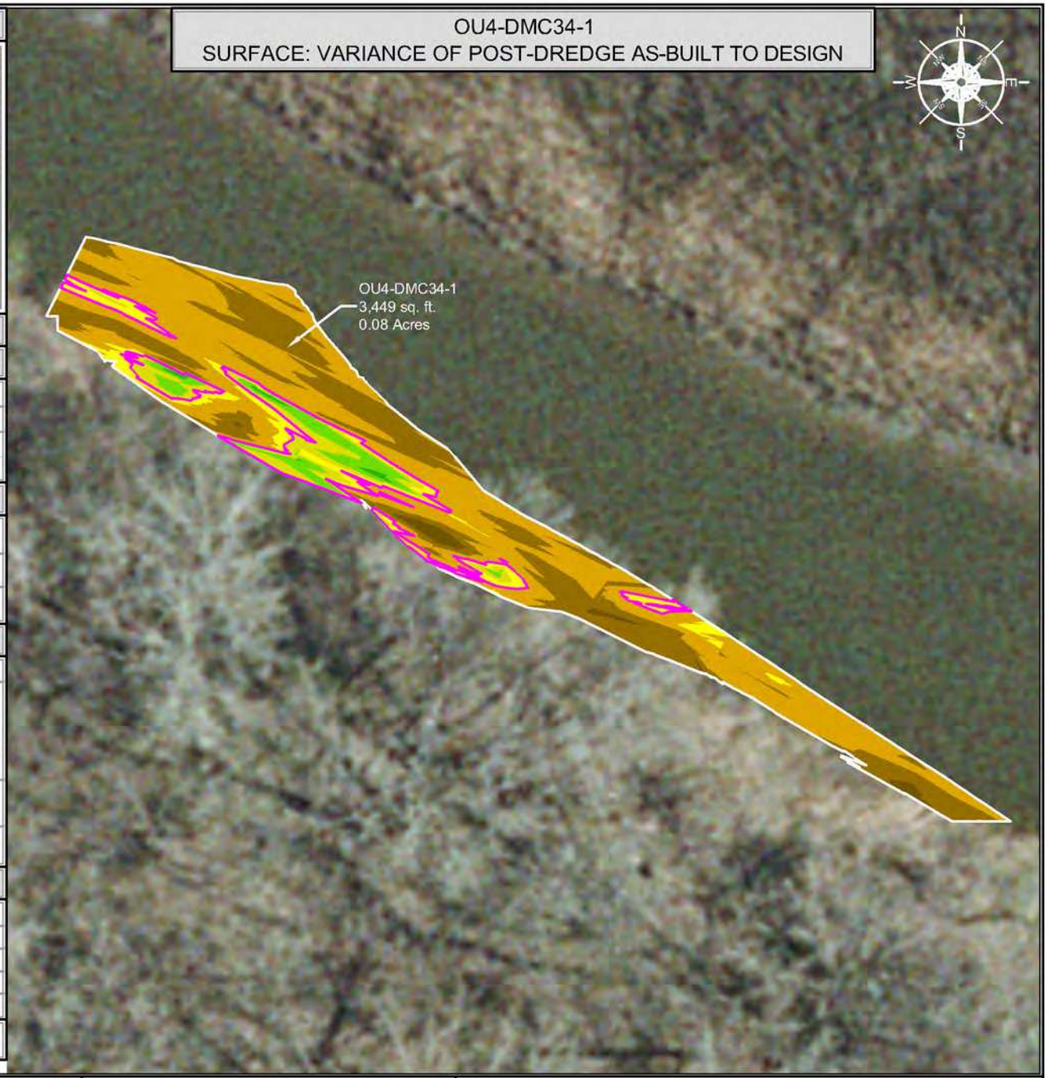
2018 AS-BUILT VOLUMES (CU. YD.)

148.10	TOTAL VOLUME DREDGED
100.97	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
7.23	CONFIRMED HIGH SUBGRADE VOLUME
0.54	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
25.01	OVERCUT VOLUME REMAINING
39.53	OVERCUT VOLUME DREDGED
7.60	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

3,449.00	AREA (SQ. FT.)
124.64	ABOVE DESIGN ELEVATION
2,778.99	AT OR BELOW DESIGN ELEVATION
545.37	CONFIRMED HIGH SUBGRADE
5.49 "	AVERAGE DEPTH OF OVERCUT [1]
96	PERCENT COMPLETE [2]

OU4-DMC34-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 30')

30 15 0 30 60

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 7-2-2018

AS-BUILT COLOR LEGEND

	MIN. EL.		MAX. EL.
	574.00'	-	575.00'
	575.00'	-	576.00'
	576.00'	-	577.00'
	577.00'	-	578.00'
	578.00'	-	579.00'
	579.00'	-	580.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

		MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL		-1.87'	-	-1.00'	54.24
		-1.00'	-	-0.50'	961.77
		-0.50'	-	0.00'	1,762.98
ABOVE RAL		0.00'	-	0.25'	301.42
		0.25'	-	0.50'	212.36
		0.50'	-	0.75'	144.29
		0.75'	-	1.00'	11.92
		1.00'	-	1.04'	0.02

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

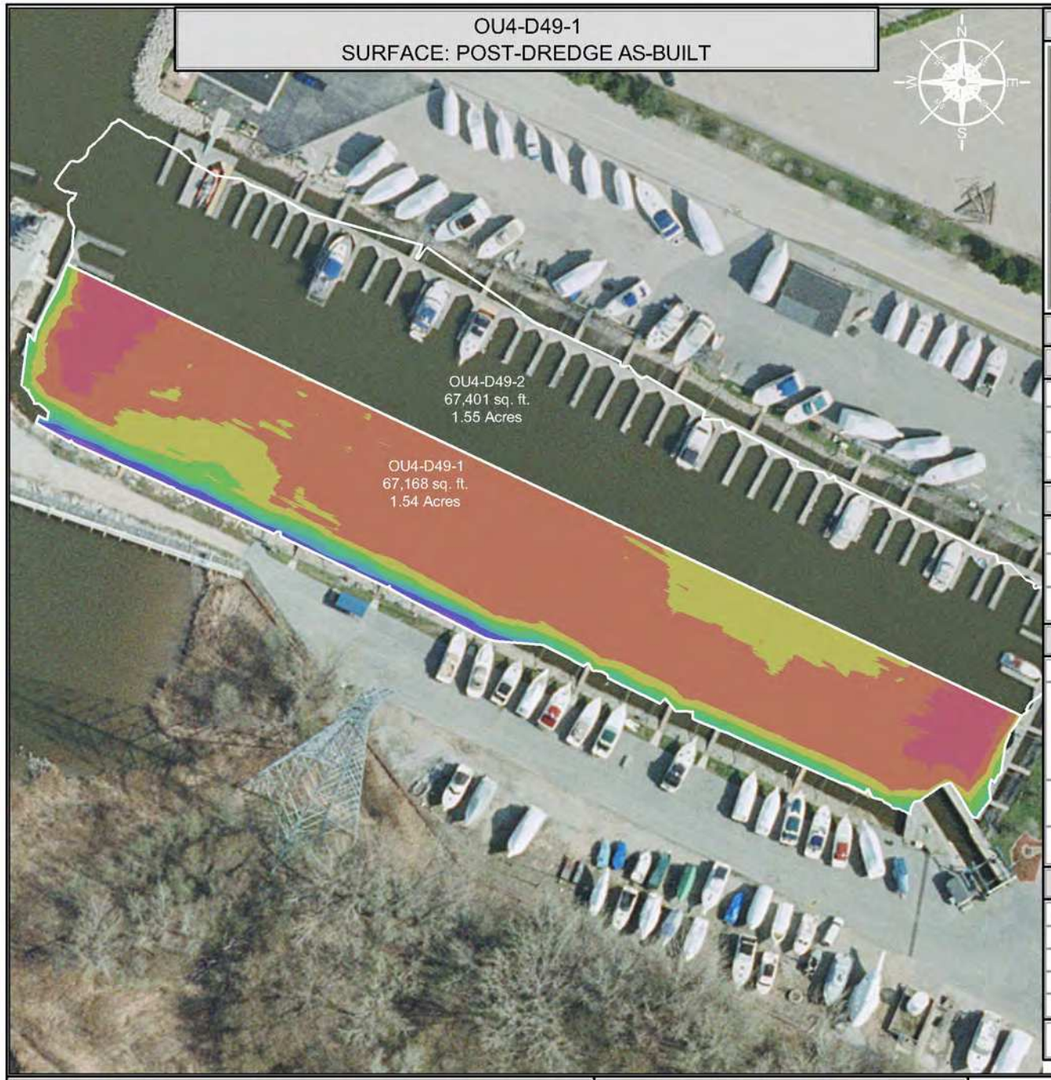
CAD FILE: OU4-DMC34-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: July 10, 2018
LAST REVISED: December 10, 2018
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-222

OU4-DMC34-1
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

F:\LOCAD\Fluid Engineering\Dredge Files\2018\OU4 DMC34 1\EWD\Post Dredge\OU4 DMC34-1.dwg



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

7,873.69	INITIAL RAL VOLUME
1,254.71	INITIAL OVERCUT VOLUME
9,128.40	RAL + OVERCUT VOLUME
8,996.60	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

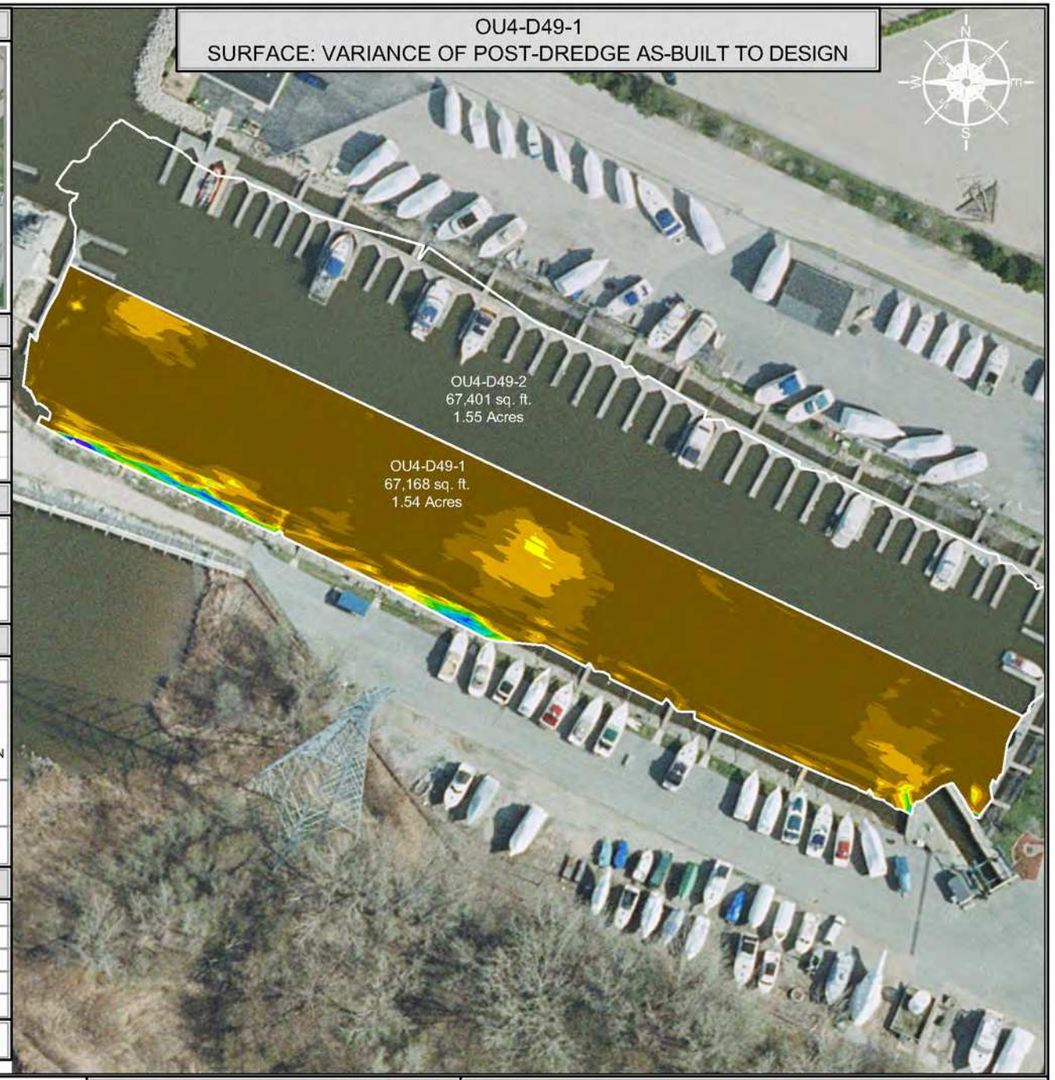
178.66	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
363.45	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
542.11	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

2018 AS-BUILT VOLUMES (CU. YD.)

2,691.43	TOTAL VOLUME DREDGED[3]
122.76	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
55.67	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
76.13	OVERCUT VOLUME REMAINING
322.38	OVERCUT VOLUME DREDGED
2,246.29	VOLUME DREDGED BELOW OVERCUT ELEVATION[3]

2018 AS-BUILT AREAS (SQ. FT.)

67,168.33	AREA (SQ. FT.)
2,156.63	ABOVE DESIGN ELEVATION
65,011.70	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
12.80 "	AVERAGE DEPTH OF OVERCUT[1,3]
97	PERCENT COMPLETE[2]



SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 4-10-2018

AS-BUILT COLOR LEGEND

	MIN. EL.		MAX. EL.
	565.00'	-	567.00'
	567.00'	-	569.00'
	569.00'	-	571.00'
	571.00'	-	573.00'
	573.00'	-	575.00'
	575.00'	-	577.00'
	577.00'	-	579.00'
	579.00'	-	581.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE
[3] ADDITIONAL VOLUME DUE TO MICRO/UNDER DESIGN BELOW PRIMARY DREDGE AREA.

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

		MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL		-4.59'	-	-1.00'	50,062.34
		-1.00'	-	-0.50'	10,163.02
		-0.50'	-	0.00'	4,786.34
ABOVE RAL		0.00'	-	0.25'	542.98
		0.25'	-	0.50'	325.59
		0.50'	-	0.75'	303.14
		0.75'	-	1.00'	322.71
		1.00'	-	1.25'	266.90
		1.25'	-	1.50'	256.36
		1.50'	-	1.75'	91.86
		1.75'	-	2.00'	23.64
		2.00'	-	2.11'	6.00

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

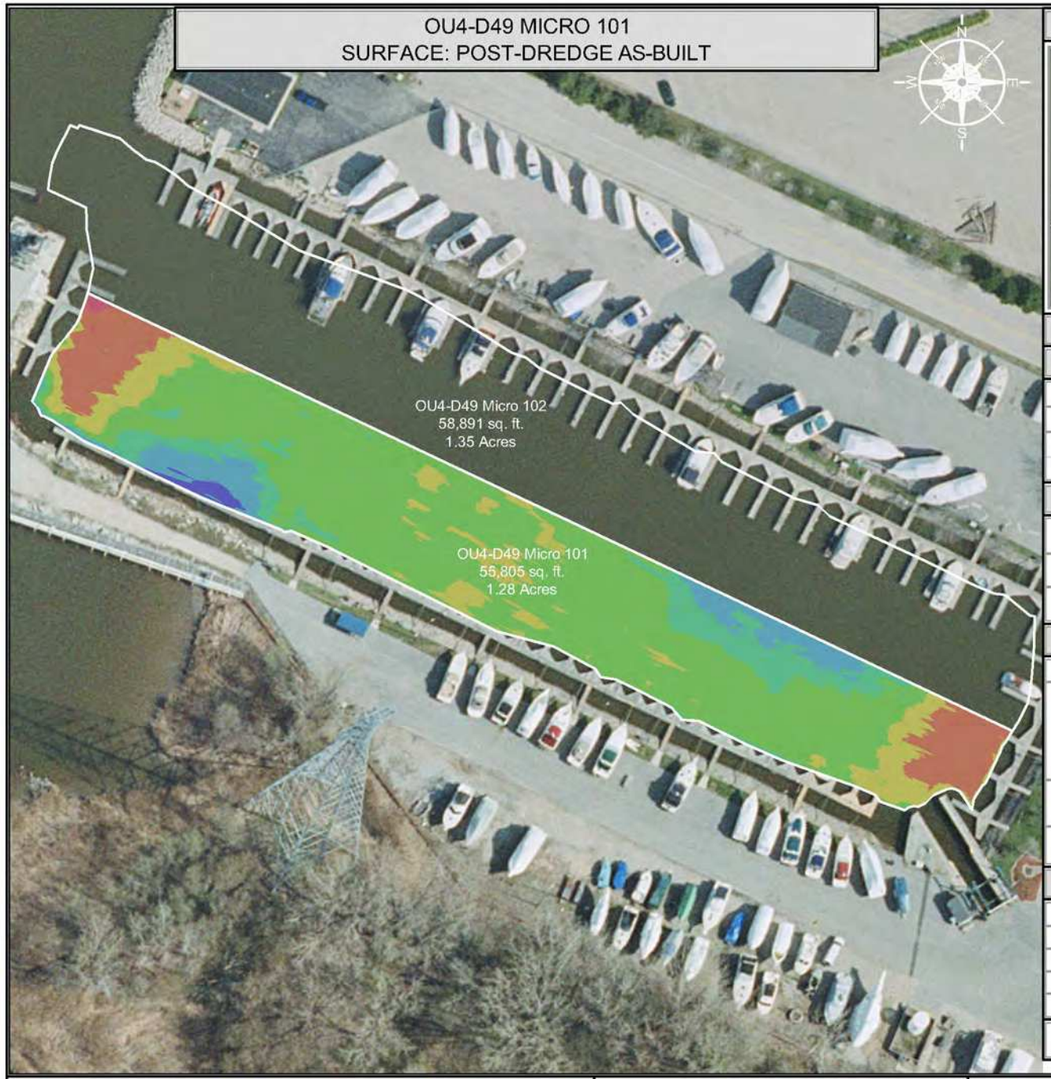
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DRAWN BY: DAVID.FRISQUE
DATE: May 2, 2018
LAST REVISED: December 10, 2018
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-223

OU4-D49-1
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LLOC\LD\Field Engineering\Dredge Files\2018\OU4 D49\DWG\Post Dredge\OU4-D49-1.dwg



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

1,786.66	INITIAL RAL VOLUME
969.49	INITIAL OVERCUT VOLUME
2,756.15	RAL + OVERCUT VOLUME
2,224.44	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

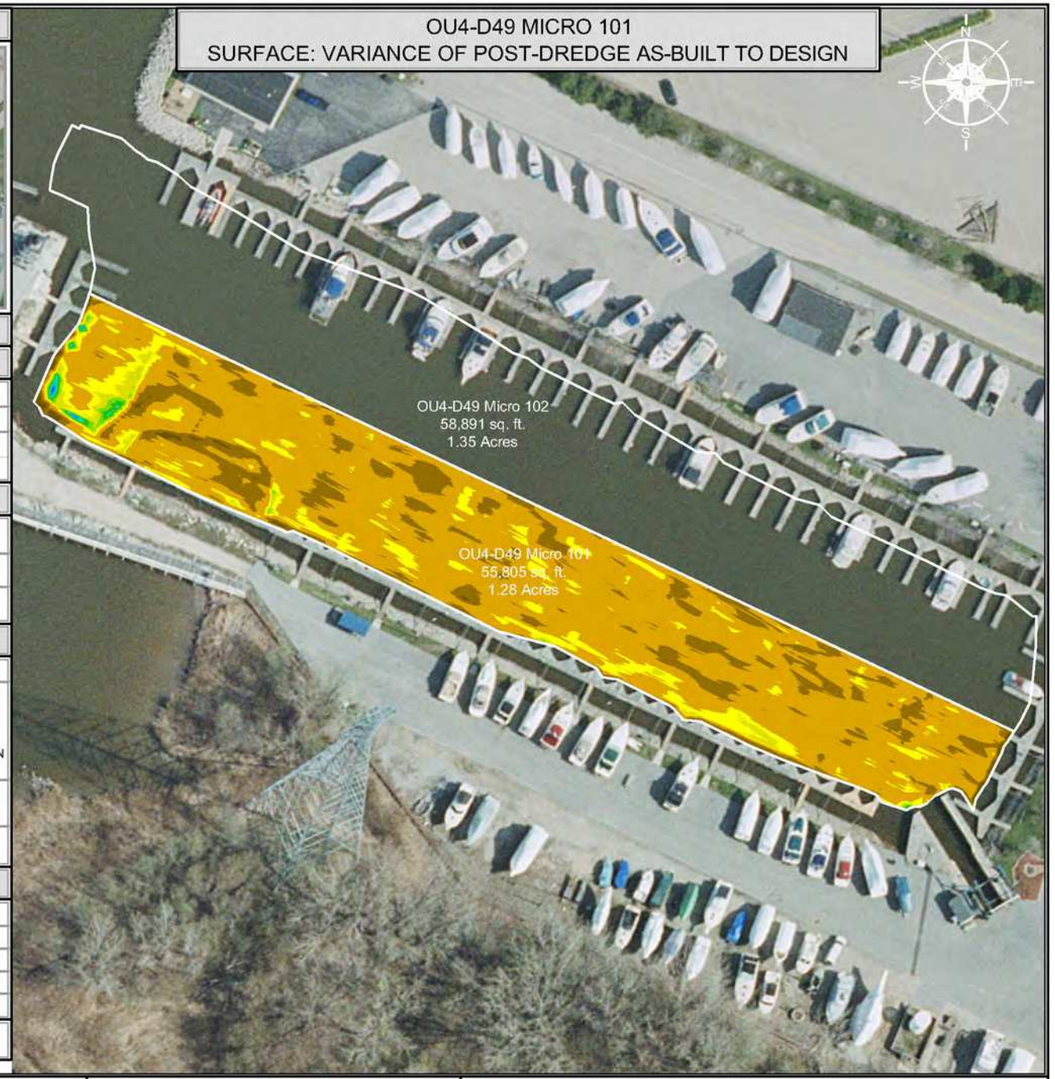
1,786.66	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
969.49	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
2,756.15	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

2018 AS-BUILT VOLUMES (CU. YD.)

2,313.92	TOTAL VOLUME DREDGED
1,742.50	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
44.16	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
487.55	OVERCUT VOLUME REMAINING
512.22	OVERCUT VOLUME DREDGED
59.20	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

55,804.73	AREA (SQ. FT.)
6,604.45	ABOVE DESIGN ELEVATION
49,200.28	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
3.76 "	AVERAGE DEPTH OF OVERCUT [1]
88	PERCENT COMPLETE [2]



SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 4-10-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
565.00'	-	566.00'
566.00'	-	567.00'
567.00'	-	568.00'
568.00'	-	569.00'
569.00'	-	570.00'
570.00'	-	571.00'
571.00'	-	572.00'
572.00'	-	573.00'

A/OT ACCEPTED ON EXCEPTION BASIS

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.01'	-	-1.00'	506.58
BELOW RAL	-1.00'	-	-0.50'	8,929.79
BELOW RAL	-0.50'	-	0.00'	39,763.91
ABOVE RAL	0.00'	-	0.25'	5,052.52
ABOVE RAL	0.25'	-	0.50'	1,038.61
ABOVE RAL	0.50'	-	0.75'	262.22
ABOVE RAL	0.75'	-	1.00'	149.78
ABOVE RAL	1.00'	-	1.25'	69.08
ABOVE RAL	1.25'	-	1.50'	28.79
ABOVE RAL	1.50'	-	1.65'	3.45

TETRA TECH EC, INC.
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CAD FILE: OU4-D49 Micro 101.dwg
DRAWN BY: DAVID.FRISQUE
DATE: May 2, 2018
LAST REVISED: December 10, 2018
CHECKED BY: REG

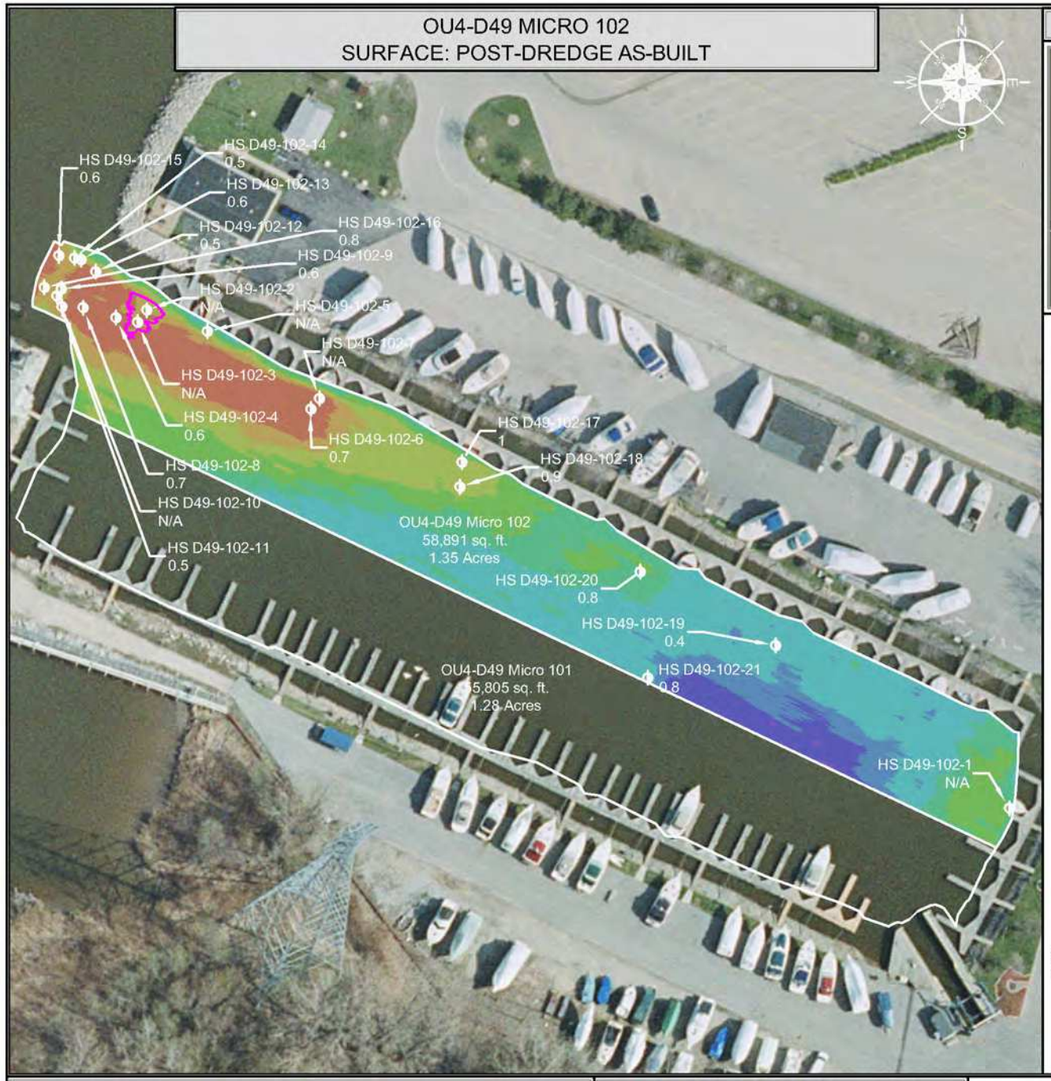
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-224

OU4-D49 Micro 101
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LLOC\42\Field Engineering\Dredge Files\2018\OU4-D49\DWG\Post Dredge\OU4-D49 Micro 101.dwg

OU4-D49 MICRO 102
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP

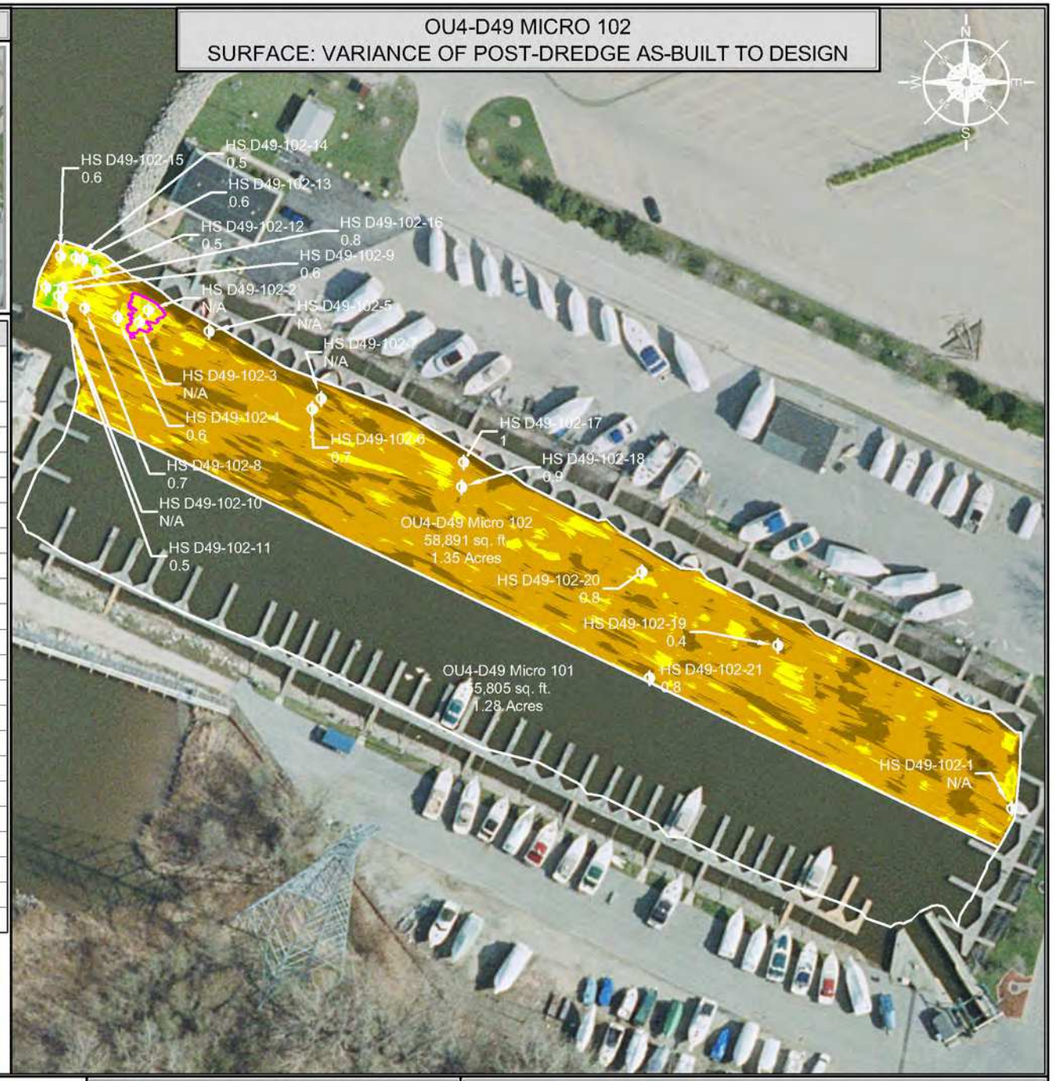


HIGH SUBGRADE SAMPLE AS-BUILT RESULTS

SAMPLE ID	NORTHING	EASTING	THICKNESS OF SOFT SEDIMENT (FEET)
HS D49-102-1	262444.09	2489295.04	N/A
HS D49-102-2	262772.62	2488725.68	N/A
HS D49-102-3	262764.63	2488719.68	N/A
HS D49-102-4	262767.72	2488705.30	0.6
HS D49-102-5	262758.66	2488765.73	N/A
HS D49-102-6	262707.48	2488833.81	0.7
HS D49-102-7	262714.43	2488839.56	N/A
HS D49-102-8	262774.21	2488683.75	0.7
HS D49-102-9	262786.74	2488669.16	0.6
HS D49-102-10	262774.96	2488669.51	N/A
HS D49-102-11	262782.08	2488666.39	0.5
HS D49-102-12	262798.00	2488691.92	0.5
HS D49-102-13	262806.08	2488682.34	0.6
HS D49-102-14	262807.06	2488677.82	0.5
HS D49-102-15	262808.46	2488667.72	0.6
HS D49-102-16	262787.73	2488658.13	0.8
HS D49-102-17	262672.38	2488933.52	1
HS D49-102-18	262656.10	2488932.36	0.9
HS D49-102-19	262551.39	2489140.72	0.4
HS D49-102-20	262600.12	2489051.16	0.8
HS D49-102-21	262530.12	2489056.16	0.8

NR = NO RECOVERY
NA = NO CORE COLLECTION REQUIRED DUE TO POLING DEPTH

OU4-D49 MICRO 102
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 4-27-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
562.00'	-	563.00'
563.00'	-	564.00'
564.00'	-	565.00'
565.00'	-	566.00'
566.00'	-	567.00'
567.00'	-	568.00'
568.00'	-	569.00'
569.00'	-	570.00'
570.00'	-	571.00'
571.00'	-	572.00'

DRAWING NOTES

1. HIGH SUBGRADE SAMPLES AND POLING DATA WERE COLLECTED ON 4-24-2018 AND LOGGED ON 4-25-2018

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.97'	-	-1.00'	1,781.79
BELOW RAL	-1.00'	-	-0.50'	10,795.92
BELOW RAL	-0.50'	-	0.00'	40,087.02
ABOVE RAL	0.00'	-	0.50'	5,395.04
ABOVE RAL	0.50'	-	1.00'	682.81
ABOVE RAL	1.00'	-	1.50'	130.70
ABOVE RAL	1.50'	-	2.00'	0.77
ABOVE RAL	2.00'	-	2.14'	0.05

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D49 Micro 102.dwg
DRAWN BY: DAVID.FRISQUE
DATE: April 23, 2018
LAST REVISED: December 10, 2018
CHECKED BY: REG

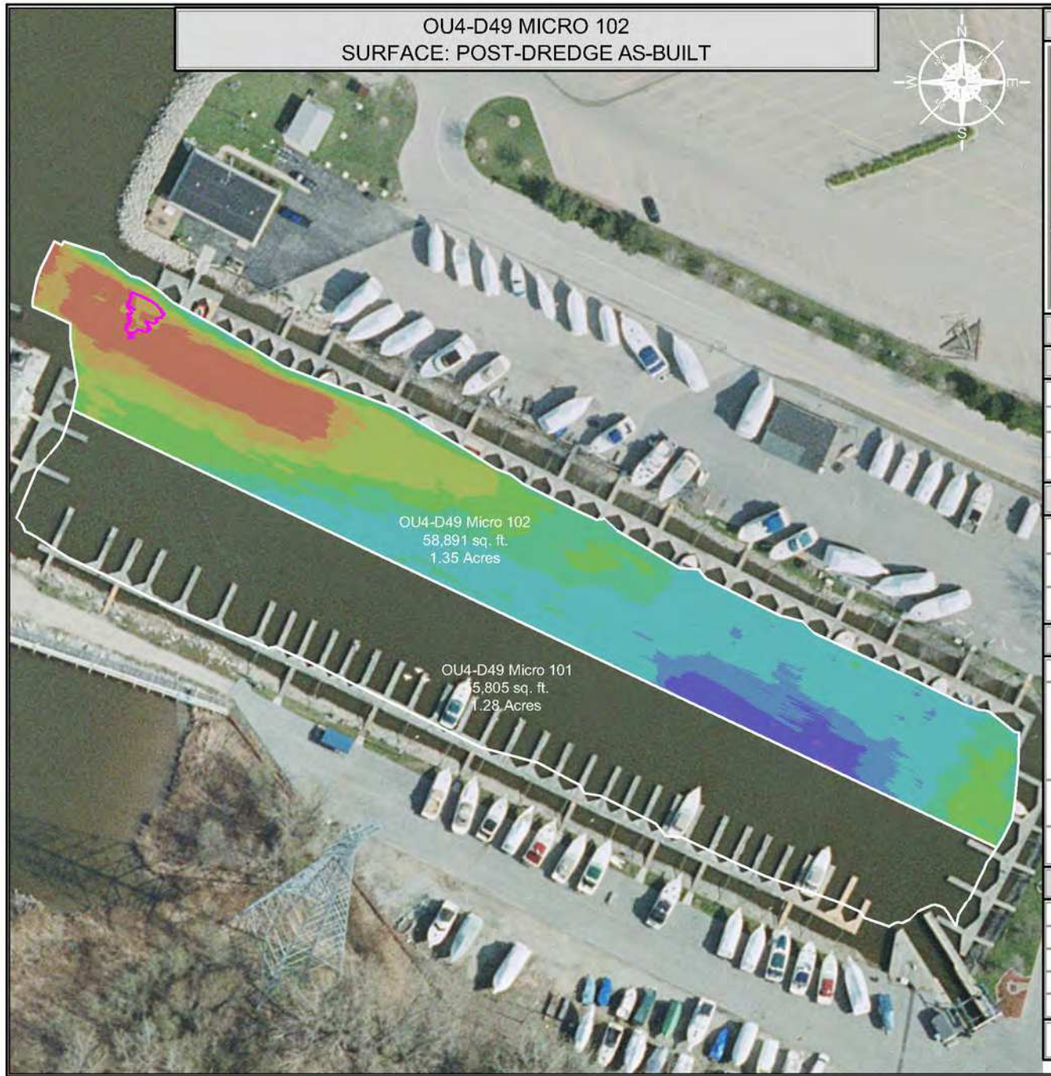
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-225

OU4-D49 Micro 102
PRIMARY DREDGE HIGH SUBGRADE RESULTS

F:\LLC\Cad\Field Eng\mxd's\Dredge Fill\es\2018\OU4 D49\DWG\Post Dredge\OU4 D49 Micro 102.dwg

OU4-D49 MICRO 102
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

2,869.69	INITIAL RAL VOLUME
1,074.90	INITIAL OVERCUT VOLUME
3,944.59	RAL + OVERCUT VOLUME
3,413.18	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

2,990.64	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
1,075.45	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
4,066.09	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

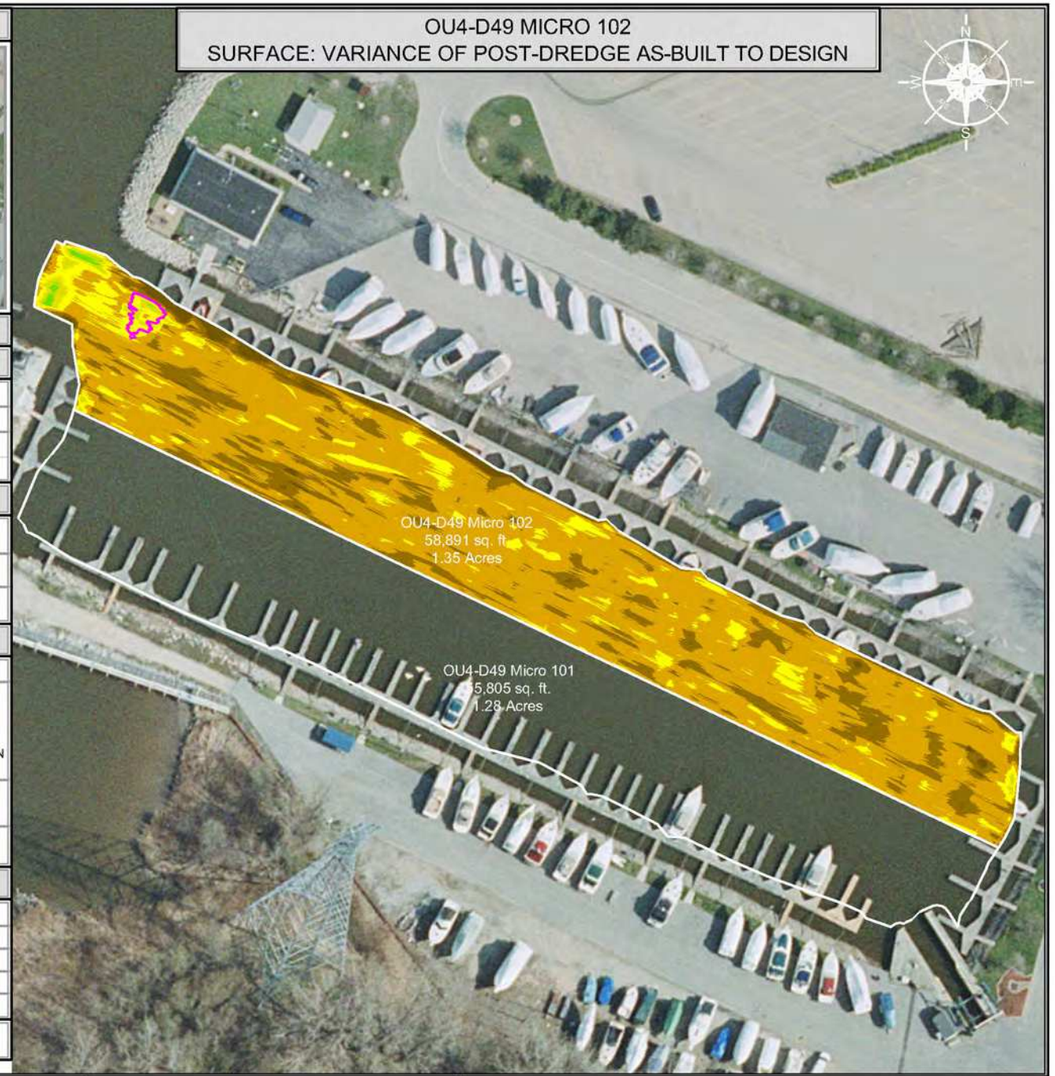
2018 AS-BUILT VOLUMES (CU. YD.)

3,566.28	TOTAL VOLUME DREDGED
2,851.90	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
5.81	CONFIRMED HIGH SUBGRADE VOLUME
42.07	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
483.53	OVERCUT VOLUME REMAINING
595.60	OVERCUT VOLUME DREDGED
118.78	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

58,891.12	AREA (SQ. FT.)
5,818.65	ABOVE DESIGN ELEVATION
52,664.73	AT OR BELOW DESIGN ELEVATION
407.74	CONFIRMED HIGH SUBGRADE
4.39 "	AVERAGE DEPTH OF OVERCUT [1]
90	PERCENT COMPLETE [2]

OU4-D49 MICRO 102
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



LIMITS OF HIGH SUBGRADE

SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 4-27-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
562.00'	-	563.00'
563.00'	-	564.00'
564.00'	-	565.00'
565.00'	-	566.00'
566.00'	-	567.00'
567.00'	-	568.00'
568.00'	-	569.00'
569.00'	-	570.00'
570.00'	-	571.00'
571.00'	-	572.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.97'	-	-1.00'	1,781.79
	-1.00'	-	-0.50'	10,795.92
	-0.50'	-	0.00'	40,087.02
ABOVE RAL	0.00'	-	0.50'	5,395.04
	0.50'	-	1.00'	682.81
	1.00'	-	1.50'	130.70
	1.50'	-	2.00'	0.77
	2.00'	-	2.14'	0.05

LIMITS OF HIGH SUBGRADE

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

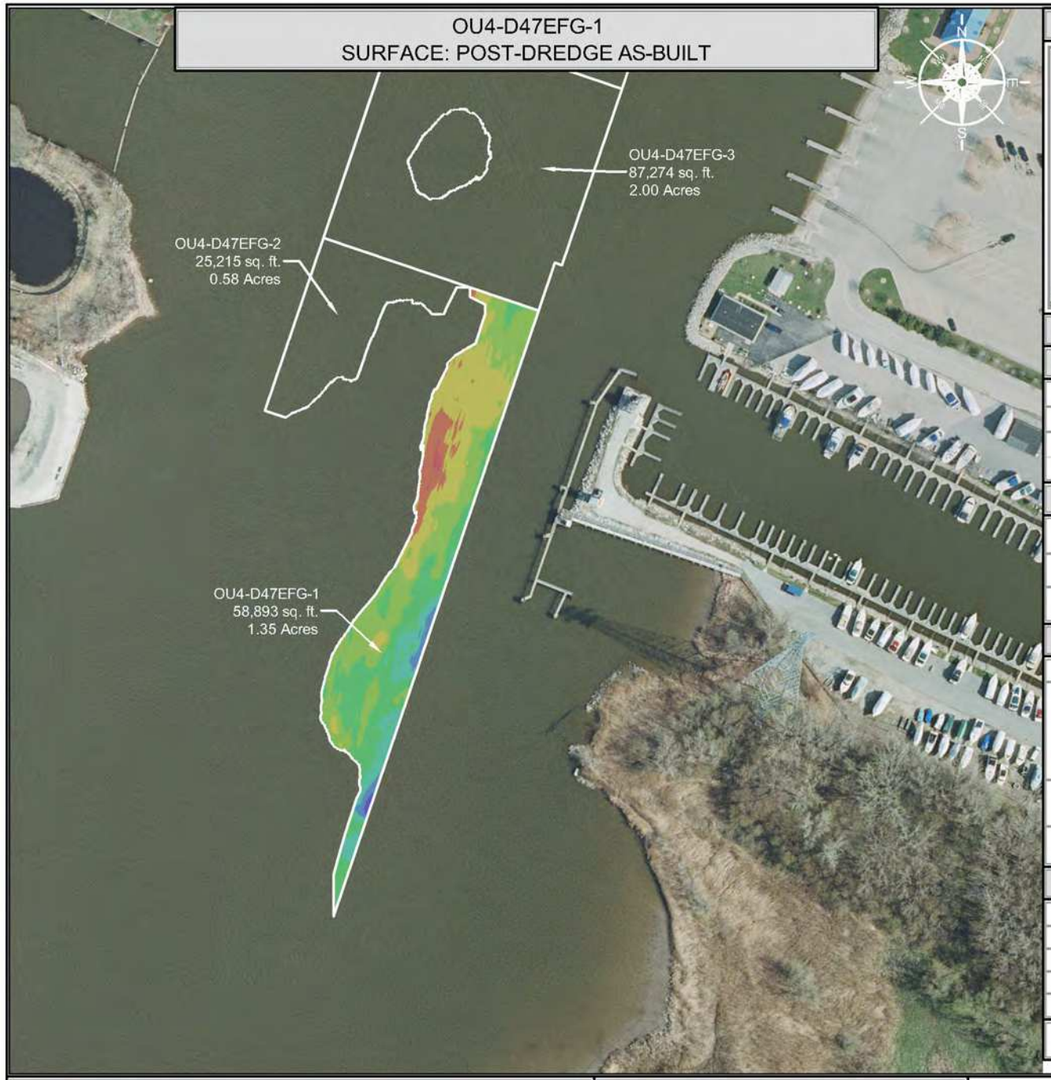
CAD FILE: OU4-D49 Micro 102.dwg
DRAWN BY: DAVID.FRISQUE
DATE: April 23, 2018
LAST REVISED: December 10, 2018
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-226

OU4-D49 Micro 102
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

F:\LDC\CAD\Field Engineering\Dredge Files\2018\OU4 D49\DWG\Post Dredge\OU4 D49 Micro 102.dwg



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

2,180.81	INITIAL RAL VOLUME
971.40	INITIAL OVERCUT VOLUME
3,152.21	RAL + OVERCUT VOLUME
2,811.20	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

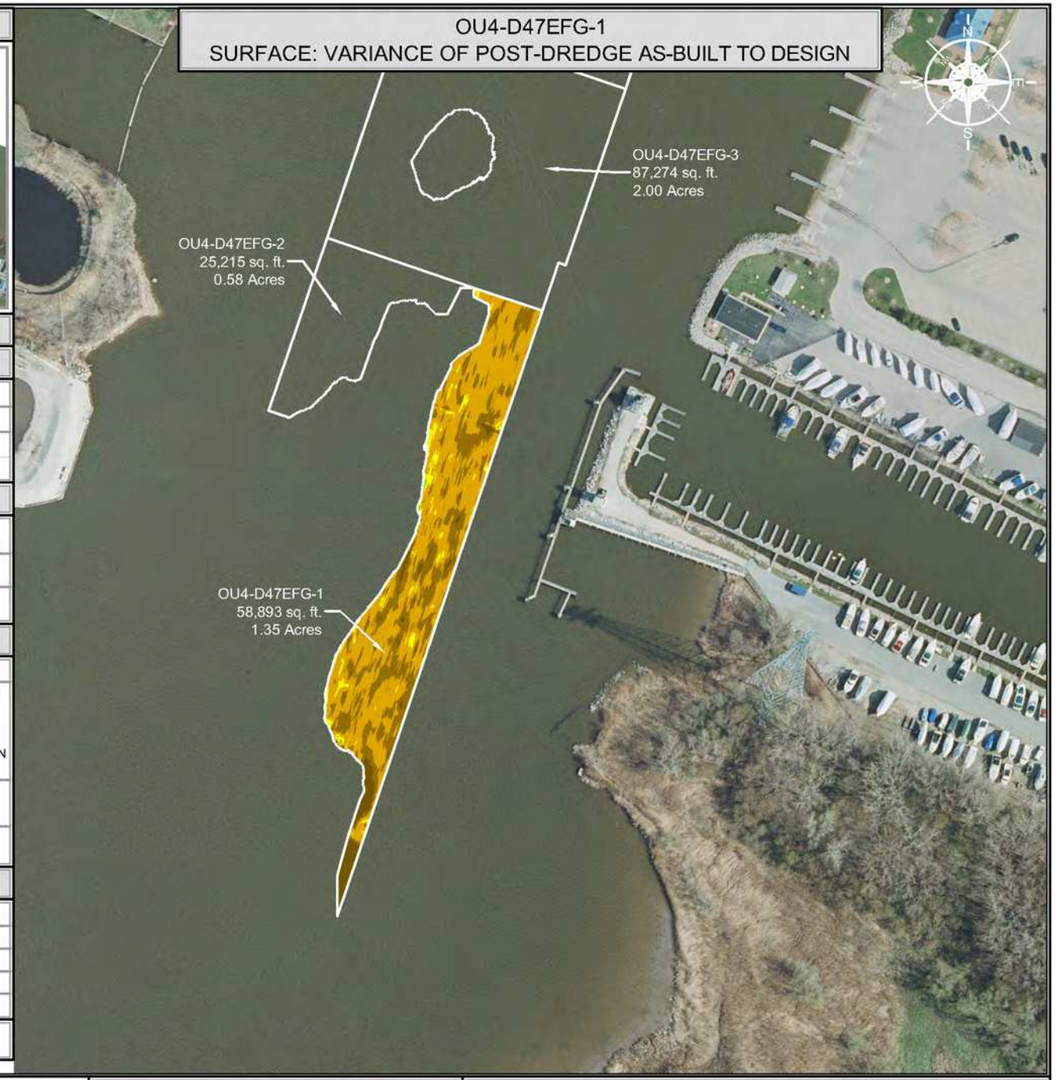
1,003.53	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
834.61	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
1,838.14	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

2018 AS-BUILT VOLUMES (CU. YD.)

1,624.88	TOTAL VOLUME DREDGED
987.73	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
15.80	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
325.21	OVERCUT VOLUME REMAINING
531.16	OVERCUT VOLUME DREDGED
105.99	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

58,892.80	AREA (SQ. FT.)
2,831.50	ABOVE DESIGN ELEVATION
56,061.30	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
3.68 "	AVERAGE DEPTH OF OVERCUT [1]
95	PERCENT COMPLETE [2]



SCALE (1" = 200')

200 100 0 200 400

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 4-28-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-4.07'	-	-1.00'	3,274.30
BELOW RAL	-1.00'	-	-0.50'	17,669.78
BELOW RAL	-0.50'	-	0.00'	35,117.22
ABOVE RAL	0.00'	-	0.25'	2,307.08
ABOVE RAL	0.25'	-	0.50'	383.51
ABOVE RAL	0.50'	-	0.75'	119.17
ABOVE RAL	0.75'	-	1.00'	21.72
ABOVE RAL	1.00'	-	1.04'	0.02

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D47EFG-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: May 2, 2018
LAST REVISED: December 10, 2018
CHECKED BY: REG

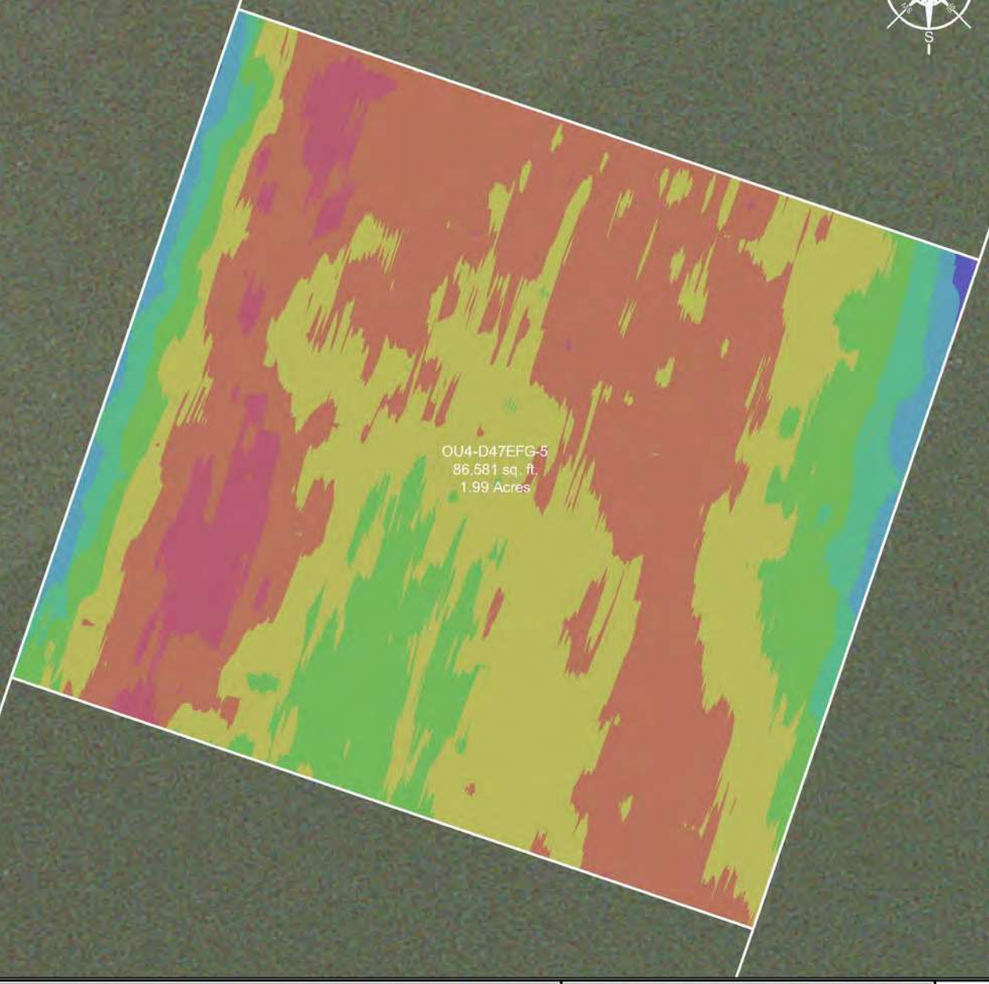
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-227

OU4-D47EFG-1
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

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OU4-D47EFG-5
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

13,404.34	INITIAL RAL VOLUME
1,547.16	INITIAL OVERCUT VOLUME
14,951.50	RAL + OVERCUT VOLUME
14,494.89	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

6,783.17	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
1,549.54	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
8,332.71	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

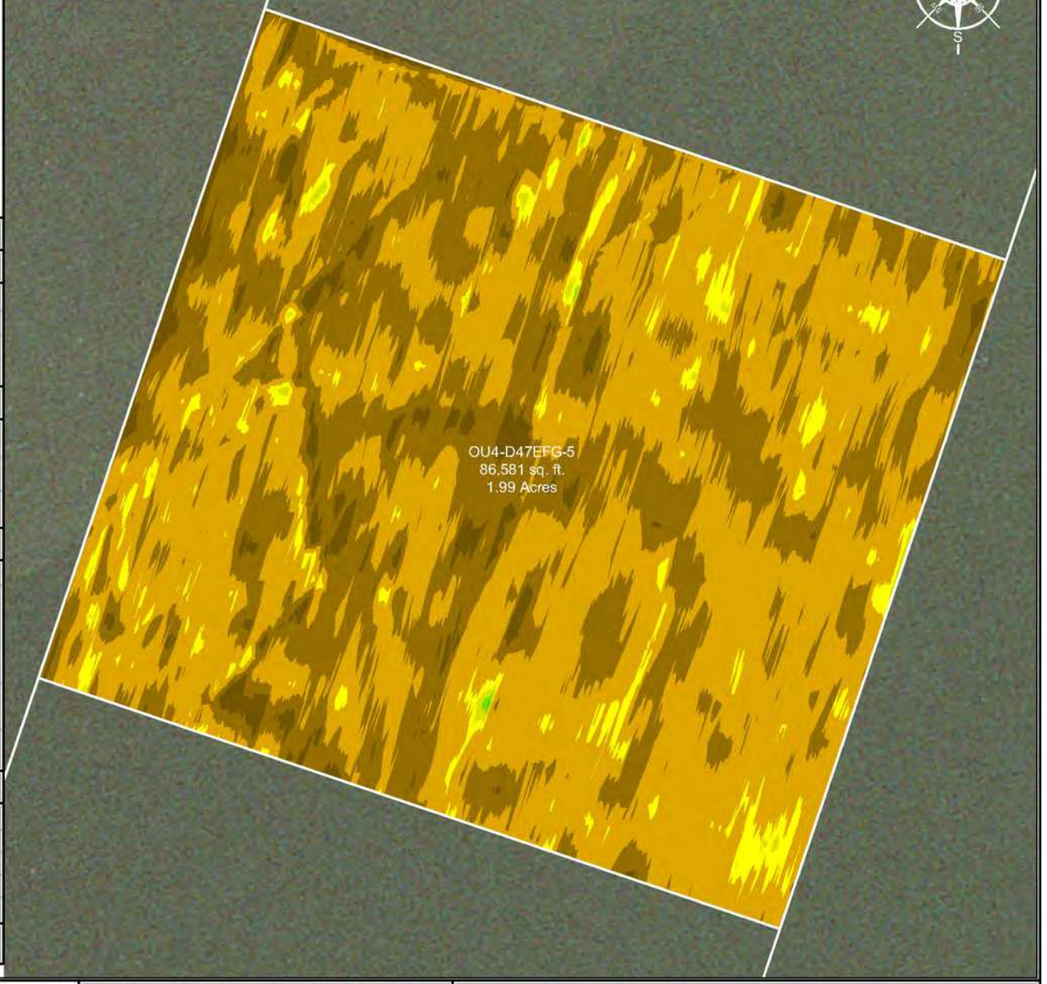
2018 AS-BUILT VOLUMES (CU. YD.)

8,147.60	TOTAL VOLUME DREDGED
6,765.89	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
13.27	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
443.34	OVERCUT VOLUME REMAINING
1,111.68	OVERCUT VOLUME DREDGED
270.03	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

86,580.98	AREA (SQ. FT.)
3,603.04	ABOVE DESIGN ELEVATION
82,977.94	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
5.40 "	AVERAGE DEPTH OF OVERCUT [1]
96	PERCENT COMPLETE [2]

OU4-D47EFG-5
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-7-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.44'	-	-1.00'	3,161.73
BELOW RAL	-1.00'	-	-0.50'	31,046.19
BELOW RAL	-0.50'	-	0.00'	48,770.02
ABOVE RAL	0.00'	-	0.25'	3,316.87
ABOVE RAL	0.25'	-	0.50'	262.33
ABOVE RAL	0.50'	-	0.75'	23.30
ABOVE RAL	0.75'	-	0.83'	0.52

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D47EFG-5.dwg
DRAWN BY: DAVID.FRISQUE
DATE: November 9, 2018
LAST REVISED: December 10, 2018
CHECKED BY: REG

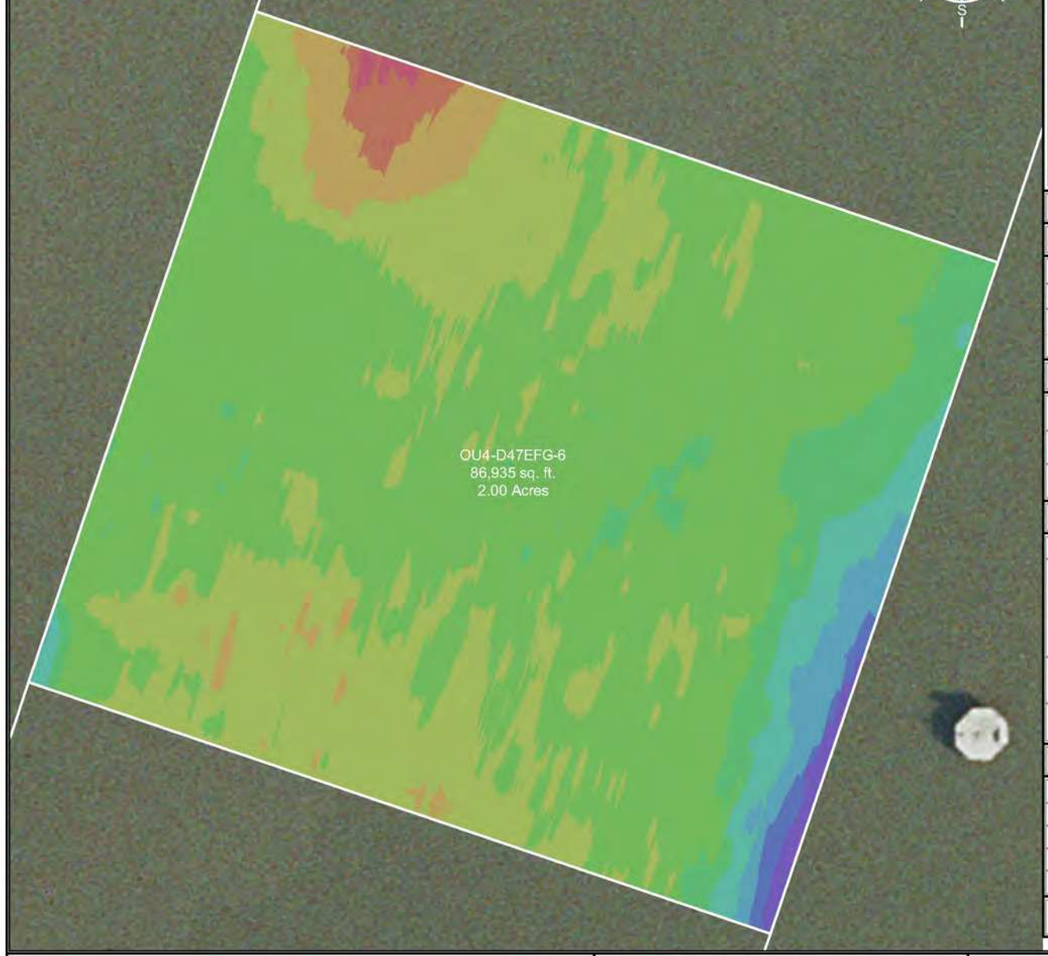
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-228

OU4-D47EFG-5
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\ALLOC\42\Field Engineering\Dredge Files\2018\OU4-D47EFG\GIS\Post Dredge\OU4-D47EFG-5.mxd

OU4-D47EFG-6
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

11,628.66	INITIAL RAL VOLUME
1,592.03	INITIAL OVERCUT VOLUME
13,220.69	RAL + OVERCUT VOLUME
12,980.01	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

11,628.66	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
1,592.03	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
13,220.69	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

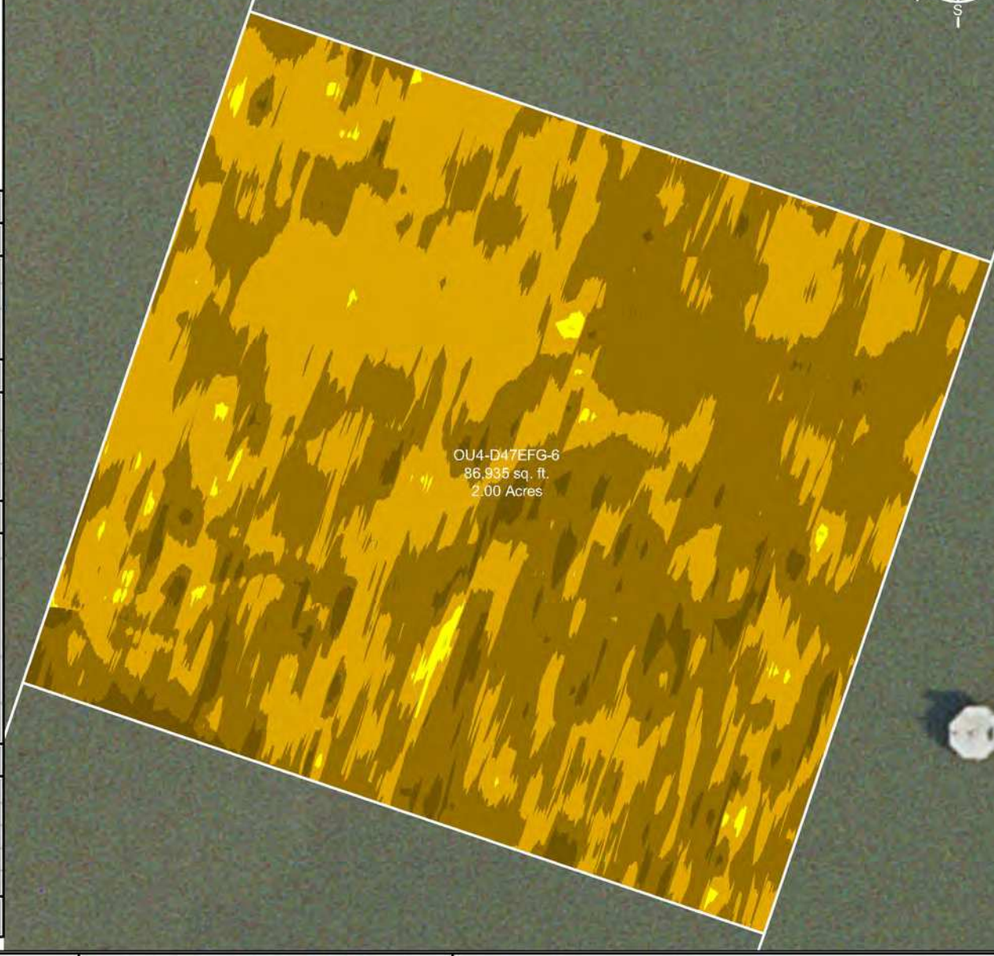
2018 AS-BUILT VOLUMES (CU. YD.)

13,389.17	TOTAL VOLUME DREDGED
11,626.54	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
2.12	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
238.56	OVERCUT VOLUME REMAINING
1,359.49	OVERCUT VOLUME DREDGED
403.14	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

86,934.88	AREA (SQ. FT.)
707.73	ABOVE DESIGN ELEVATION
86,227.15	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
6.62 "	AVERAGE DEPTH OF OVERCUT [1]
99	PERCENT COMPLETE [2]

OU4-D47EFG-6
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-12-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
543.00'	-	544.00'
544.00'	-	545.00'
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.29'	-	-1.00'	4,027.86
	-1.00'	-	-0.50'	45,632.52
	-0.50'	-	0.00'	36,566.77
ABOVE RAL	0.00'	-	0.25'	691.77
	0.25'	-	0.56'	15.67

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
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CAD FILE: OU4-D47EFG-6.dwg
DRAWN BY: DAVID.FRISQUE
DATE: November 15, 2018
LAST REVISED: December 10, 2018
CHECKED BY: REG

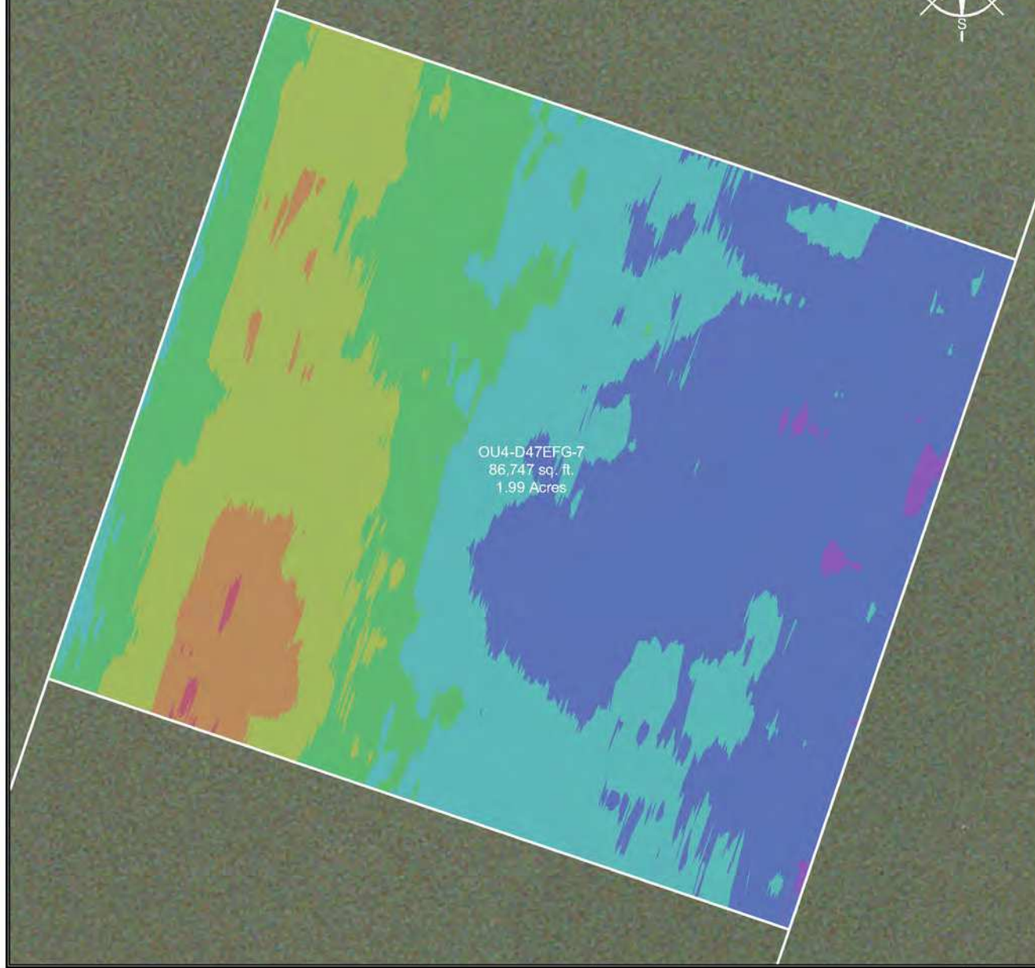
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-229

OU4-D47EFG-6
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LLC\CAD\Hold Engineering\Dredge Files\2018\OU4 D47EFG\DWG\Post Dredge\OU4 D47EFG-6.dwg

OU4-D47EFG-7
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

13,751.75	INITIAL RAL VOLUME
1,606.40	INITIAL OVERCUT VOLUME
15,358.15	RAL + OVERCUT VOLUME
14,747.88	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

13,751.75	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
1,606.40	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
15,358.15	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

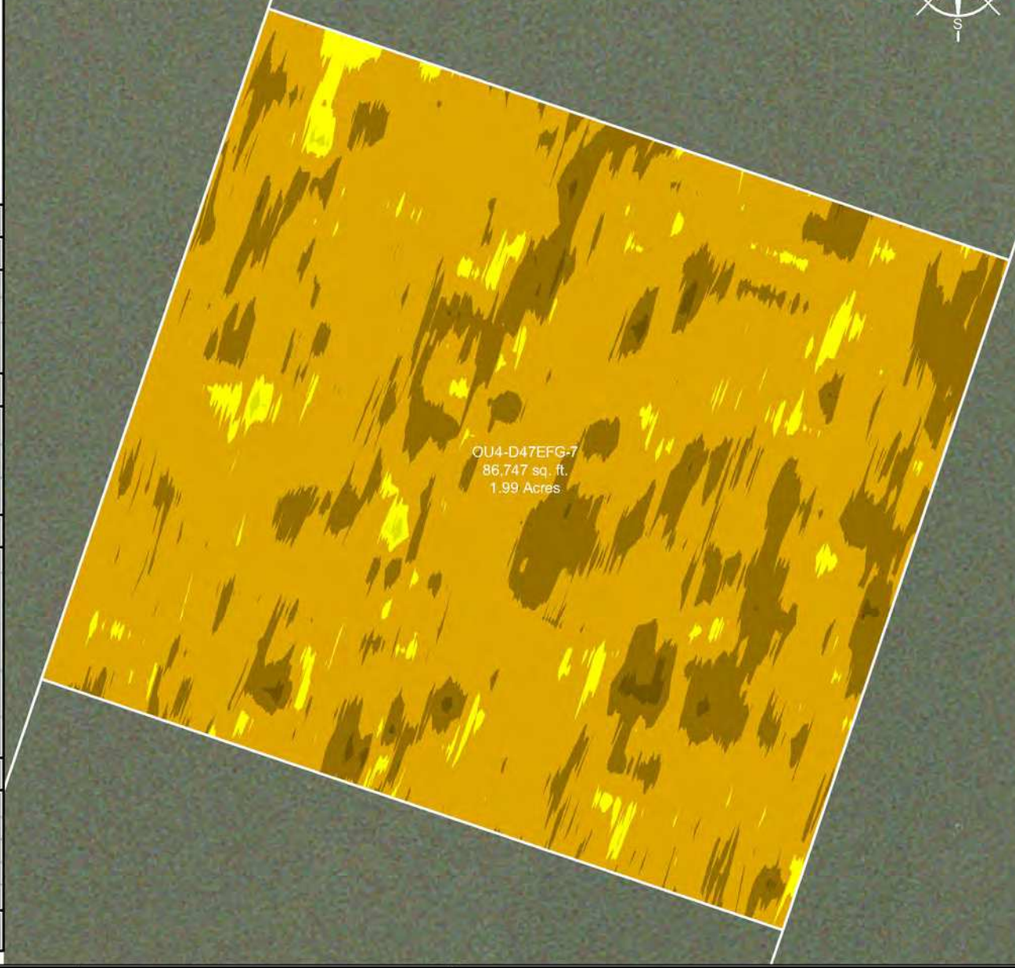
2018 AS-BUILT VOLUMES (CU. YD.)

14,802.99	TOTAL VOLUME DREDGED
13,699.01	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
8.48	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
601.79	OVERCUT VOLUME REMAINING
1,002.31	OVERCUT VOLUME DREDGED
101.67	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

86,746.52	AREA (SQ. FT.)
2,968.20	ABOVE DESIGN ELEVATION
83,778.32	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
4.27 "	AVERAGE DEPTH OF OVERCUT [1]
97	PERCENT COMPLETE [2]

OU4-D47EFG-7
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-7-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
543.00'	-	544.00'
544.00'	-	545.00'
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.46'	-	-1.00'	501.51
BELOW RAL	-1.00'	-	-0.50'	17,432.72
BELOW RAL	-0.50'	-	0.00'	65,844.09
ABOVE RAL	0.00'	-	0.25'	2,881.44
ABOVE RAL	0.25'	-	0.50'	86.76

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D47EFG-7.dwg
DRAWN BY: DAVID.FRISQUE
DATE: November 9, 2018
LAST REVISED: December 10, 2018
CHECKED BY: REG

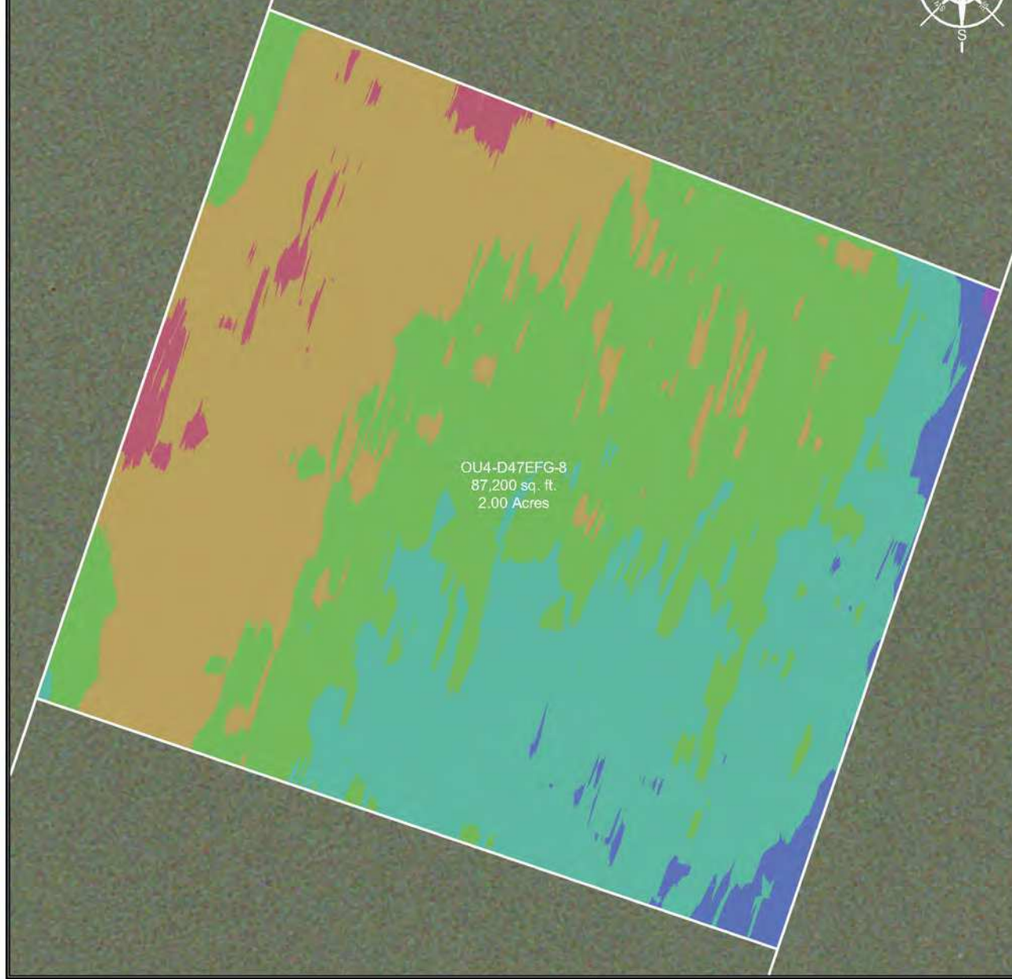
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-230

OU4-D47EFG-7
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LLC\CAD\Field Engineering\Dredge Files\2018\OU4-D47EFG\DWG\Post Dredge\OU4-D47EFG-7.dwg

OU4-D47EFG-8
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

17,241.33	INITIAL RAL VOLUME
1,614.82	INITIAL OVERCUT VOLUME
18,856.15	RAL + OVERCUT VOLUME
18,260.07	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

17,241.33	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
1,614.82	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
18,856.15	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

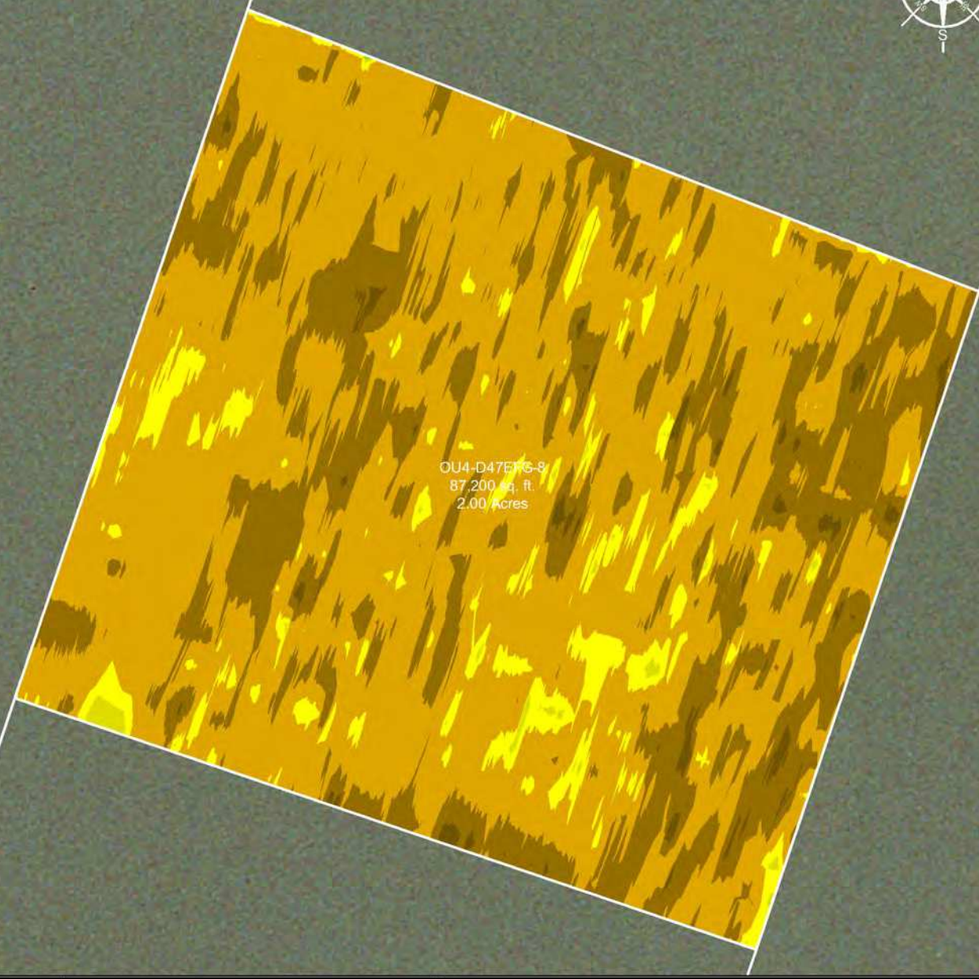
2018 AS-BUILT VOLUMES (CU. YD.)

18,391.91	TOTAL VOLUME DREDGED
17,203.47	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
20.03	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
576.05	OVERCUT VOLUME REMAINING
1,038.07	OVERCUT VOLUME DREDGED
150.37	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

87,200.29	AREA (SQ. FT.)
5,543.80	ABOVE DESIGN ELEVATION
81,656.49	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
4.72 "	AVERAGE DEPTH OF OVERCUT [1]
94	PERCENT COMPLETE [2]

OU4-D47EFG-8
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
544.00'	-	545.00'
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.83'	-	-1.00'	1,024.97
	-1.00'	-	-0.50'	22,716.98
	-0.50'	-	0.00'	57,914.54
ABOVE RAL	0.00'	-	0.25'	5,167.06
	0.25'	-	0.50'	372.82
	0.50'	-	0.77'	3.92

SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-26-2018

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

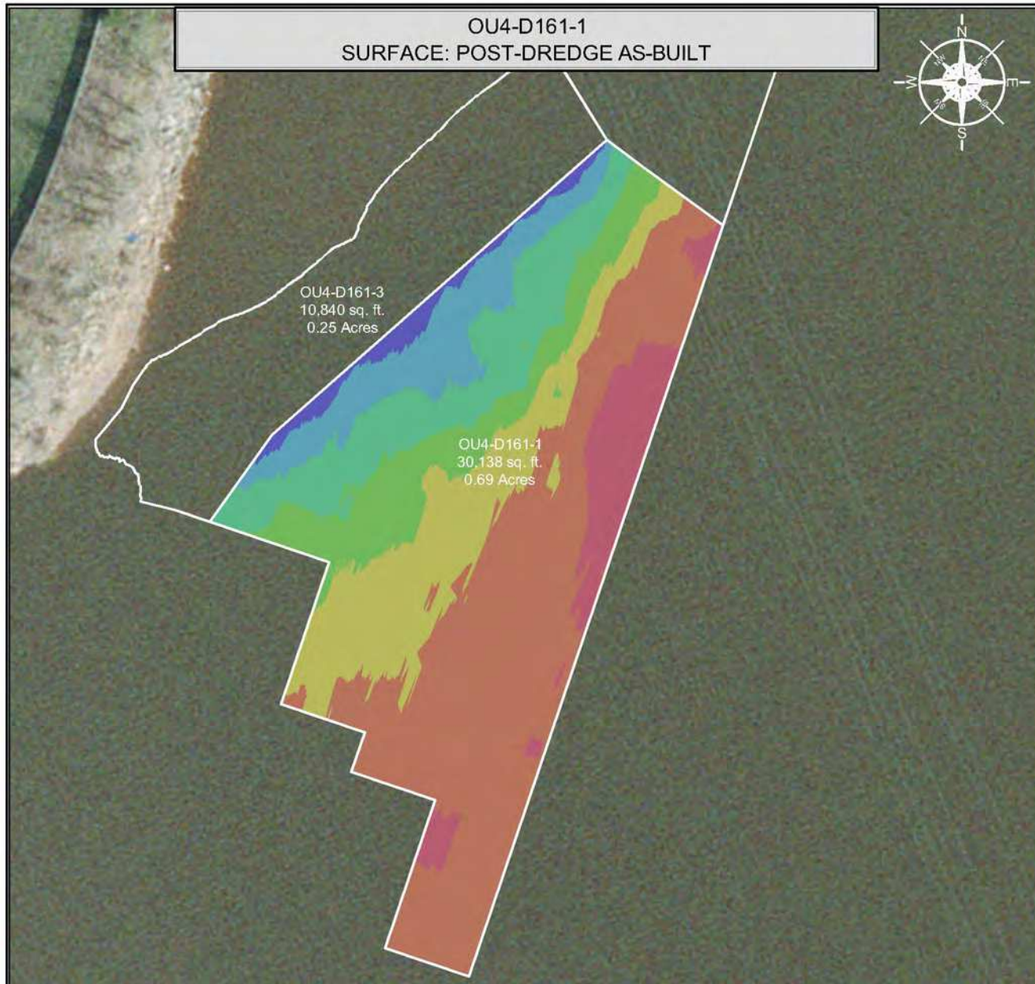
CAD FILE: OU4-D47EFG-8.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 1, 2018
LAST REVISED: December 10, 2018
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-231

OU4-D47EFG-8
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LLC\DATA\Field Engineering\Dredge Files\2018\OU4-D47EFG\DWG\Post Dredge\OU4-D47EFG-8.dwg



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

9,318.79	INITIAL RAL VOLUME
557.51	INITIAL OVERCUT VOLUME
9,876.30	RAL + OVERCUT VOLUME
9,860.61	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

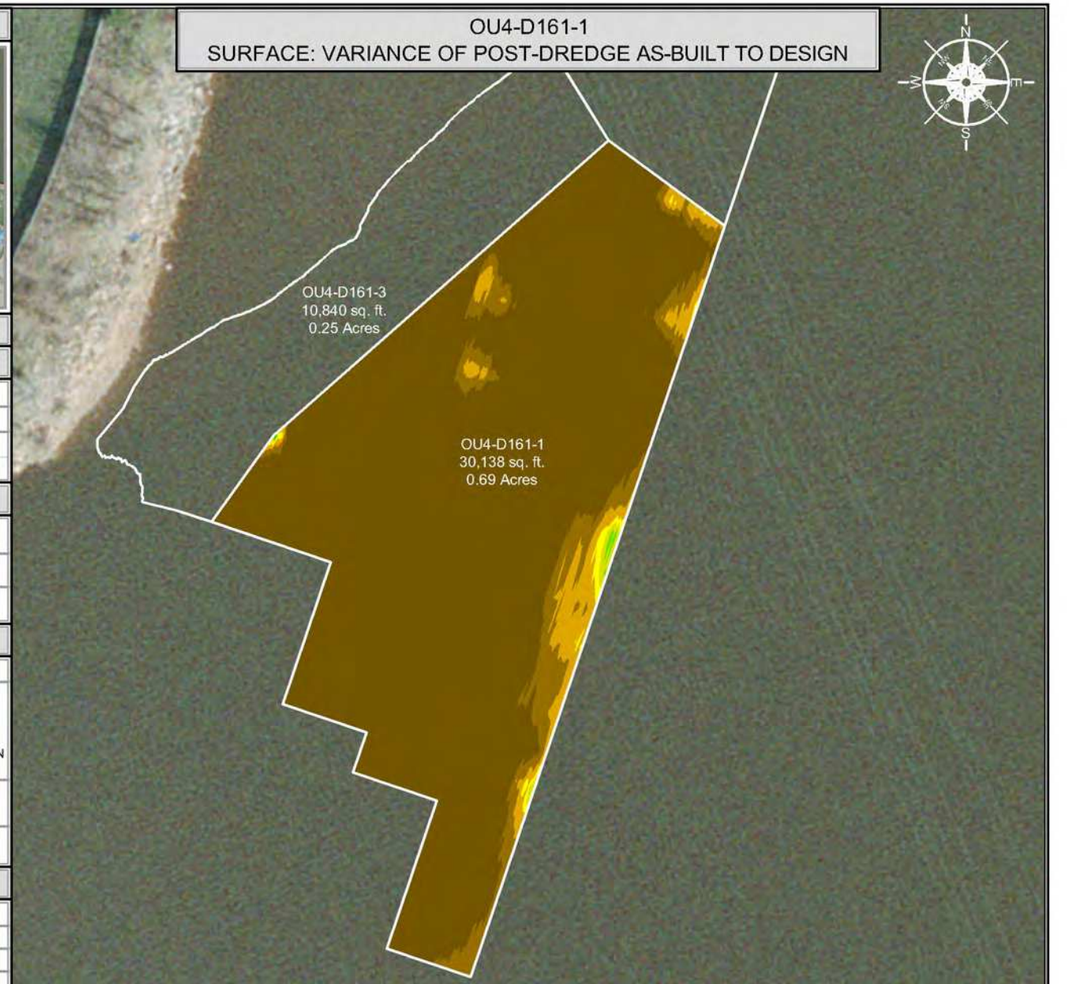
805.46	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
505.37	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
1,310.83	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

2018 AS-BUILT VOLUMES (CU. YD.)

3,814.21	TOTAL VOLUME DREDGED[3]
803.00	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
2.46	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
13.23	OVERCUT VOLUME REMAINING
495.48	OVERCUT VOLUME DREDGED
2,515.73	VOLUME DREDGED BELOW OVERCUT ELEVATION[3]

2018 AS-BUILT AREAS (SQ. FT.)

30,137.80	AREA (SQ. FT.)
291.61	ABOVE DESIGN ELEVATION
29,846.19	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
32.69 "	AVERAGE DEPTH OF OVERCUT[1,3]
99	PERCENT COMPLETE[2]



SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 8-25-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
547.00'	-	549.00'
549.00'	-	551.00'
551.00'	-	553.00'
553.00'	-	555.00'
555.00'	-	557.00'
557.00'	-	559.00'
559.00'	-	561.00'
561.00'	-	563.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE
[3] ADDITIONAL VOLUME DUE TO MICRO/UNDER DESIGN BELOW PRIMARY DREDGE AREA.

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-5.54'	-	-1.00'	26,763.65
BELOW RAL	-1.00'	-	-0.50'	1,974.12
BELOW RAL	-0.50'	-	0.00'	1,108.42
ABOVE RAL	0.00'	-	0.25'	137.65
ABOVE RAL	0.25'	-	0.50'	92.04
ABOVE RAL	0.50'	-	0.75'	28.15
ABOVE RAL	0.75'	-	0.95'	1.21

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D161-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: September 10, 2018
LAST REVISED: December 10, 2018
CHECKED BY: REG

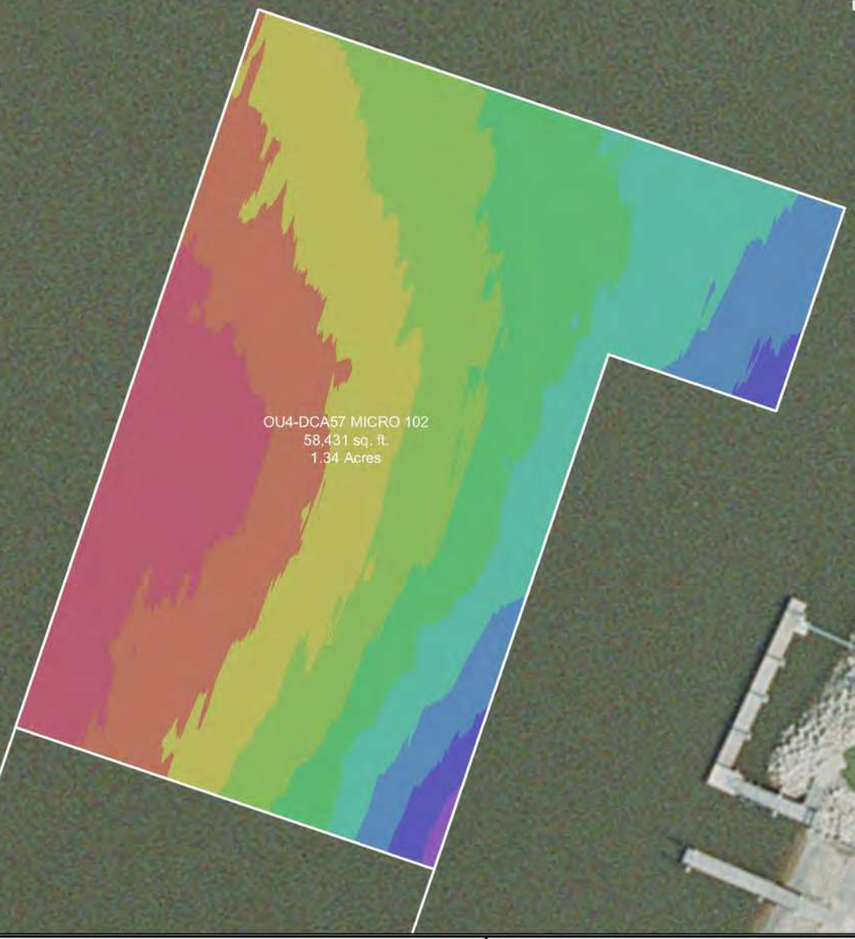
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-232

OU4-D161-1
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\ALLOC\42\Field Engineering\Dredge Files\2018\OU4-D161\DWG\Post-Dredge\OU4-D161-1.dwg

OU4-DCA57 MICRO 102
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

2,376.59	INITIAL RAL VOLUME
1,079.58	INITIAL OVERCUT VOLUME
3,456.17	RAL + OVERCUT VOLUME
3,288.23	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

3,192.34	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
1,081.41	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
4,273.75	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

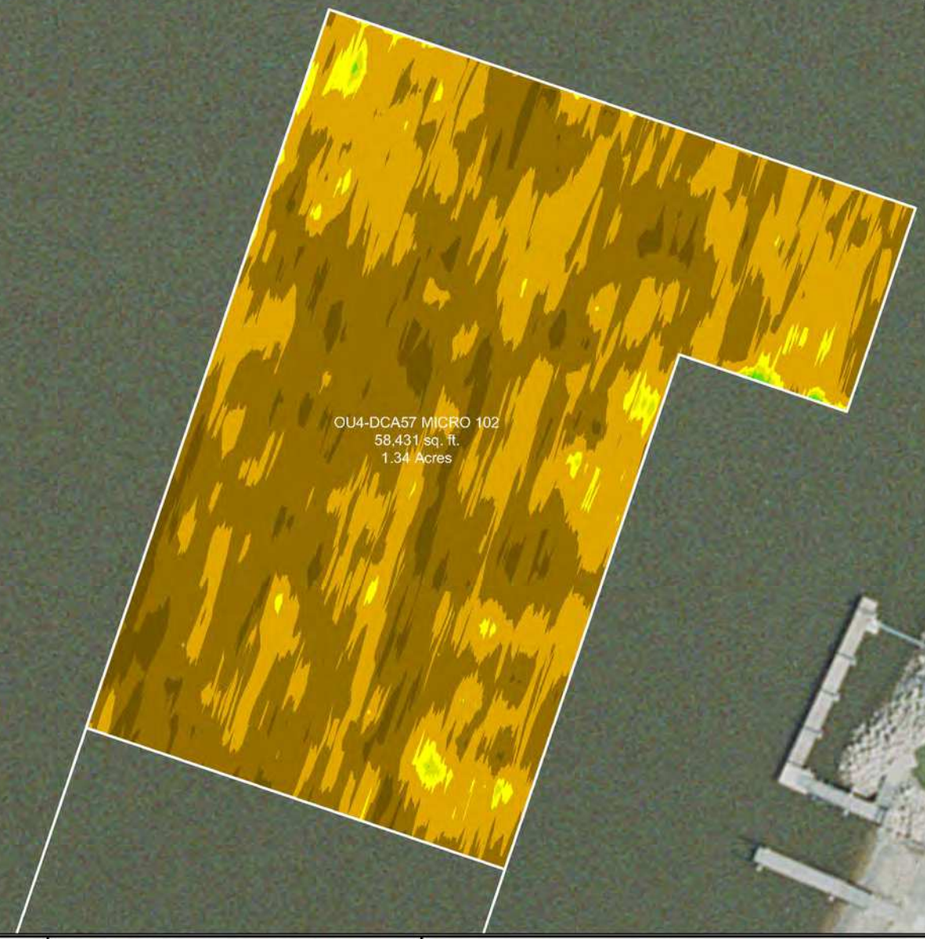
2018 AS-BUILT VOLUMES (CU. YD.)

4,431.78	TOTAL VOLUME DREDGED
3,185.99	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
6.35	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
161.59	OVERCUT VOLUME REMAINING
919.82	OVERCUT VOLUME DREDGED
325.97	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

58,431.37	AREA (SQ. FT.)
1,301.76	ABOVE DESIGN ELEVATION
57,129.61	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
7.07 "	AVERAGE DEPTH OF OVERCUT [1]
98	PERCENT COMPLETE [2]

OU4-DCA57 MICRO 102
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-12-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
545.00'	-	547.00'
547.00'	-	549.00'
549.00'	-	551.00'
551.00'	-	553.00'
553.00'	-	555.00'
555.00'	-	557.00'
557.00'	-	559.00'
559.00'	-	561.00'
561.00'	-	563.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.78'	-	-1.00'	3,755.10
	-1.00'	-	-0.50'	31,220.93
	-0.50'	-	0.00'	22,153.58
ABOVE RAL	0.00'	-	0.25'	1,099.11
	0.25'	-	0.50'	163.68
	0.50'	-	0.75'	35.48
	0.75'	-	0.94'	3.49

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DCA57 Micro 102.dwg
DRAWN BY: DAVID.FRISQUE
DATE: November 15, 2018
LAST REVISED: December 10, 2018
CHECKED BY: REG

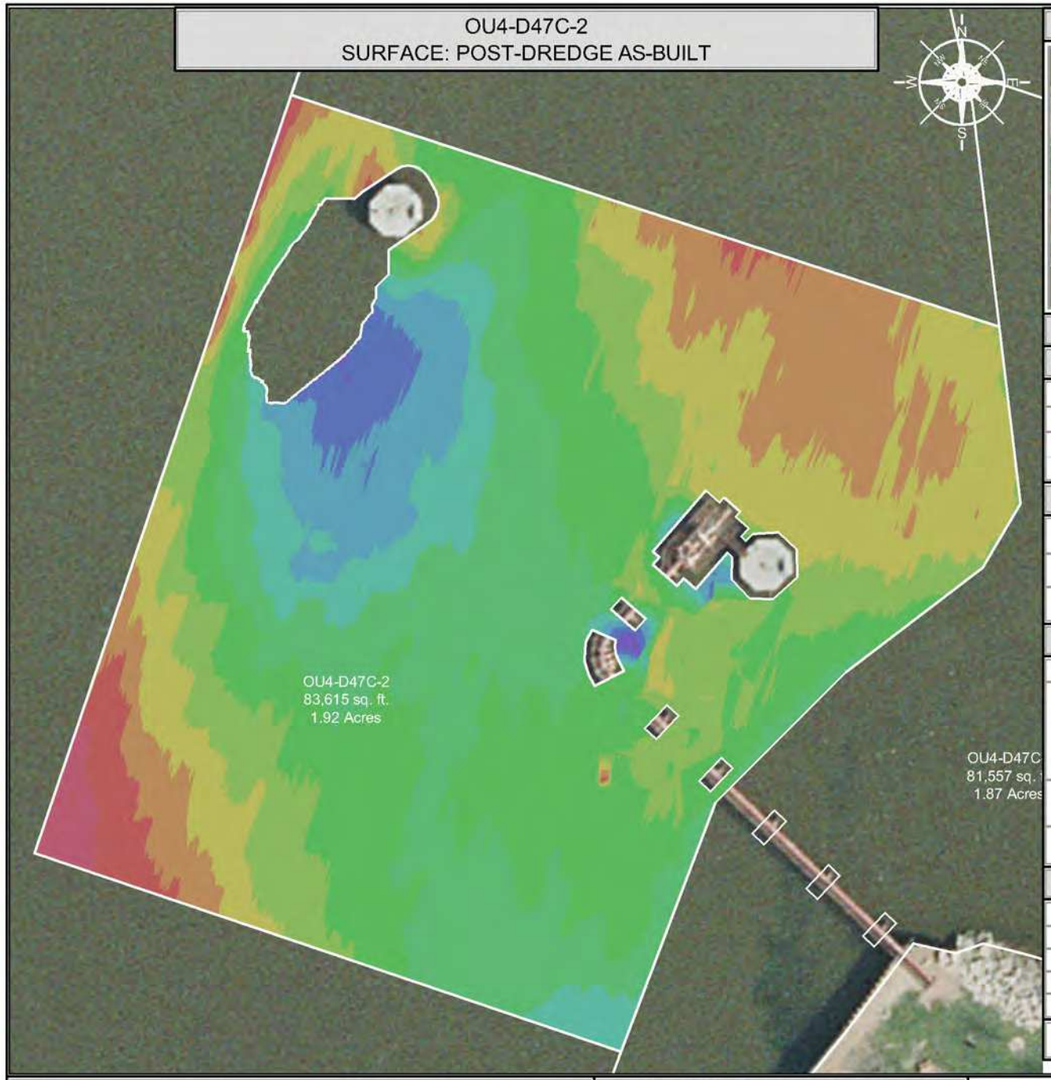
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-233

OU4-DCA57 Micro 102
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LLC\DATA\Field Engineering\Dredge Files\2018\OU4 DCA57\DWG\Post Dredge\OU4 DCA57 Micro 102.dwg

OU4-D47C-2
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

18,601.42	INITIAL RAL VOLUME
1,519.81	INITIAL OVERCUT VOLUME
20,121.23	RAL + OVERCUT VOLUME
19,561.62	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

141.99	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
693.49	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
835.48	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

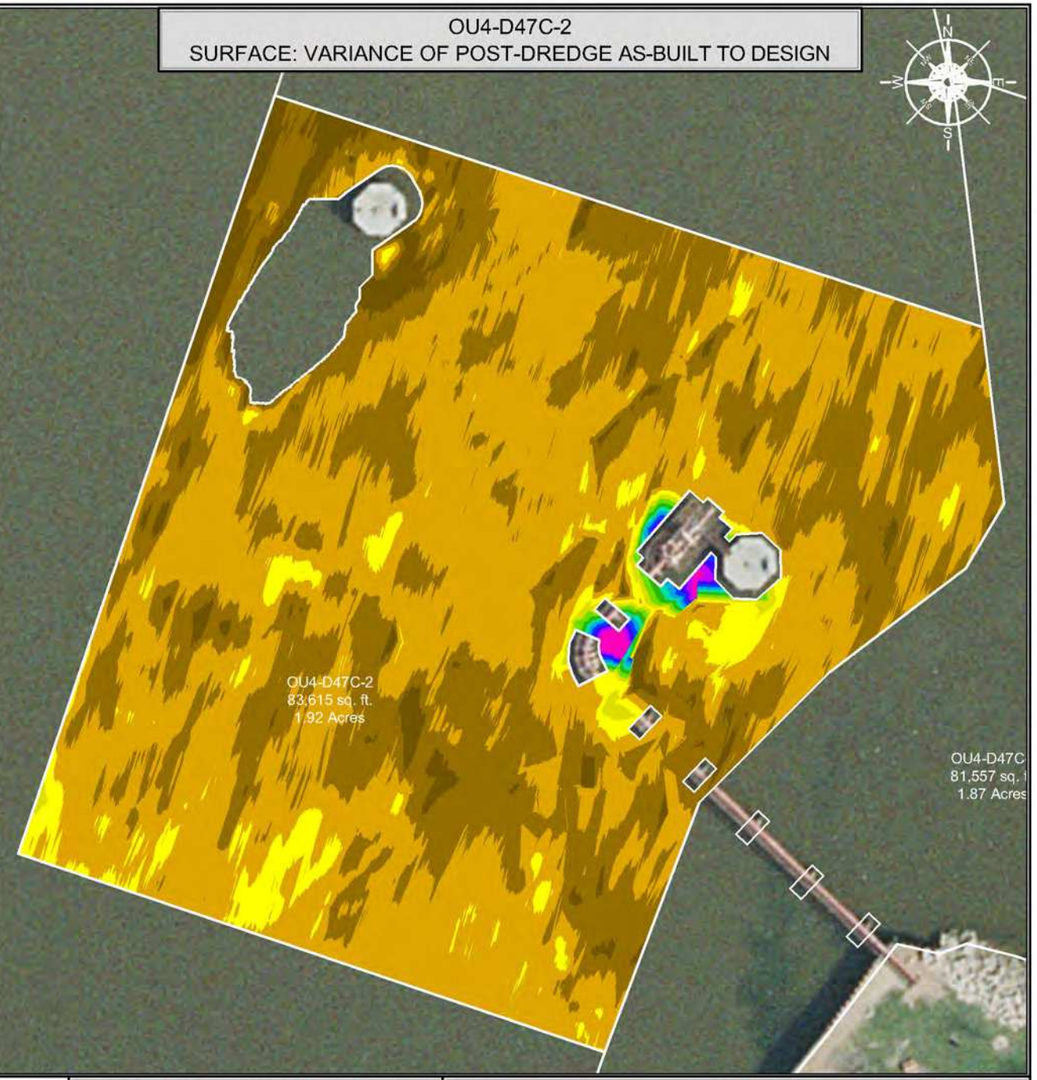
2018 AS-BUILT VOLUMES (CU. YD.)

586.17	TOTAL VOLUME DREDGED
17.48	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
123.86	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
435.75	OVERCUT VOLUME REMAINING
440.50	OVERCUT VOLUME DREDGED
128.19	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

83,614.76	AREA (SQ. FT.)
5,238.82	ABOVE DESIGN ELEVATION
78,375.94	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
2.35 "	AVERAGE DEPTH OF OVERCUT [1]
94	PERCENT COMPLETE [2]

OU4-D47C-2
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 5-24-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'
560.00'	-	561.00'
561.00'	-	562.00'
562.00'	-	563.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT | DREDGE AREA | DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-4.40'	-	-1.00'	3,420.77
BELOW RAL	-1.00'	-	-0.50'	29,445.64
BELOW RAL	-0.50'	-	0.00'	45,523.08
ABOVE RAL	0.00'	-	0.50'	3,931.05
ABOVE RAL	0.50'	-	1.00'	406.82
ABOVE RAL	1.00'	-	1.50'	191.26
ABOVE RAL	1.50'	-	2.00'	132.31
ABOVE RAL	2.00'	-	2.50'	112.47
ABOVE RAL	2.50'	-	3.00'	96.22
ABOVE RAL	3.00'	-	3.50'	81.73
ABOVE RAL	3.50'	-	4.00'	81.95
ABOVE RAL	4.00'	-	4.50'	79.82
ABOVE RAL	4.50'	-	6.27'	125.19

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-D47C-2.dwg
DRAWN BY: DAVID.FRISQUE
DATE: November 14, 2018
LAST REVISED: January 16, 2019
CHECKED BY: REG

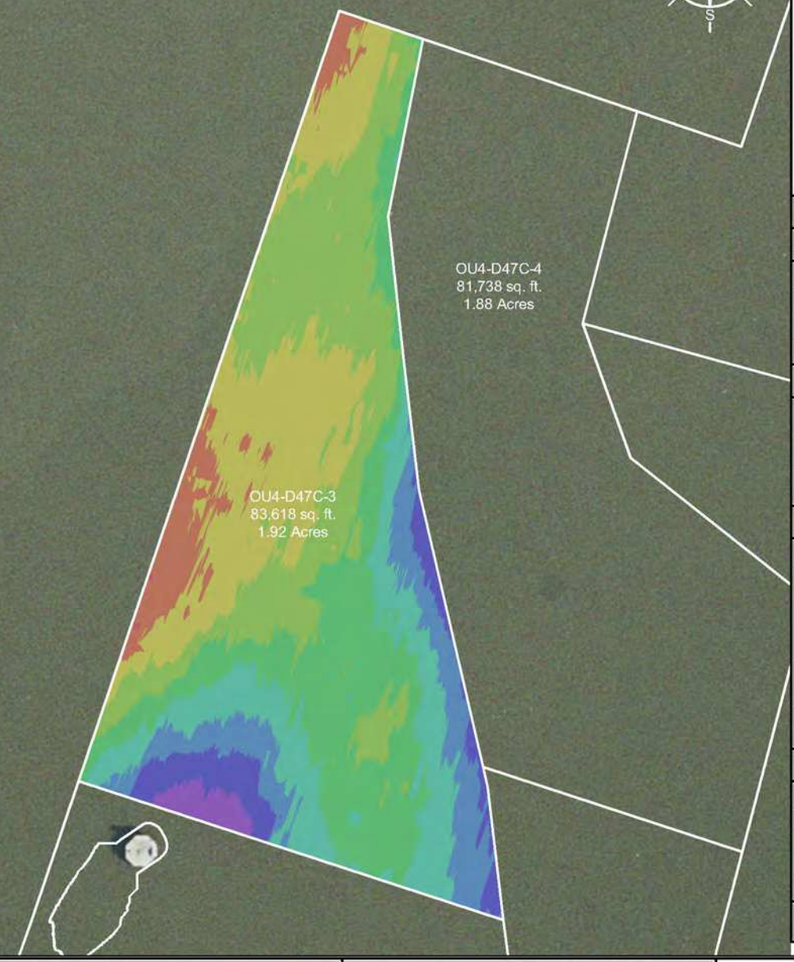
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-234

OU4-D47C-2
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

I:\LLOC\LD\Field Engineering\Dredge Files\2018\OU4 D47C\DWG\Post Dredge\OU4 D47C-2.dwg

OU4-D47C-3
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

26,093.89	INITIAL RAL VOLUME
1,547.47	INITIAL OVERCUT VOLUME
27,641.36	RAL + OVERCUT VOLUME
27,399.65	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

499.55	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
1,274.25	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
1,773.80	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

2018 AS-BUILT VOLUMES (CU. YD.)

1,911.35	TOTAL VOLUME DREDGED
496.99	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
2.56	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
239.15	OVERCUT VOLUME REMAINING
1,071.06	OVERCUT VOLUME DREDGED
343.30	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

83,617.97	AREA (SQ. FT.)
1,063.20	ABOVE DESIGN ELEVATION
82,554.77	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
5.55 "	AVERAGE DEPTH OF OVERCUT [1]
99	PERCENT COMPLETE [2]

OU4-D47C-3
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 5-23-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.91'	-	-1.00'	2,191.91
BELOW RAL	-1.00'	-	-0.50'	47,085.93
BELOW RAL	-0.50'	-	0.00'	33,276.93
ABOVE RAL	0.00'	-	0.25'	1,030.16
ABOVE RAL	0.25'	-	0.50'	21.14
ABOVE RAL	0.50'	-	0.60'	0.65

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
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CAD FILE: OU4-D47C-3.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 1, 2018
LAST REVISED: December 10, 2018
CHECKED BY: REG

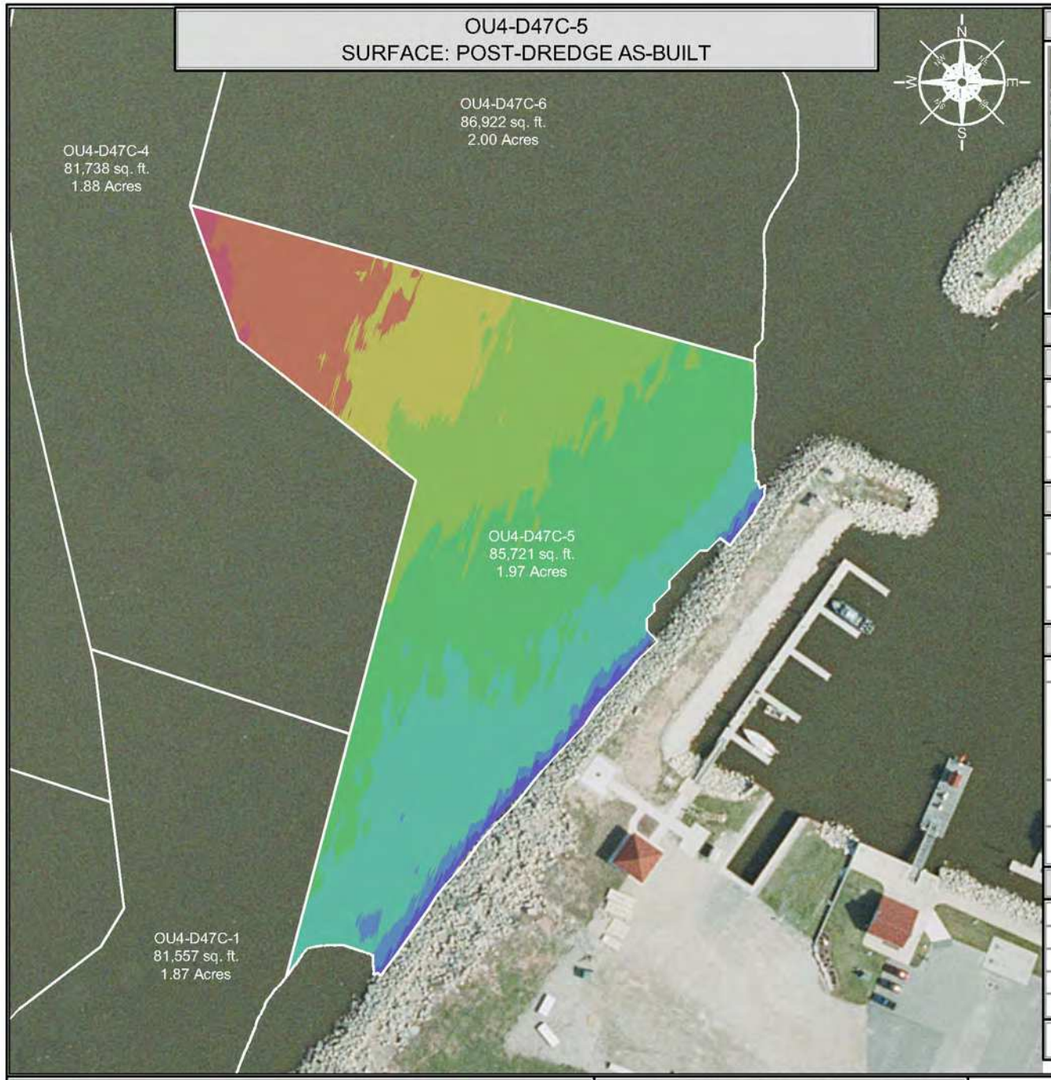
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-235

OU4-D47C-3
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

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OU4-D47C-5
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

5,673.91	INITIAL RAL VOLUME
1,583.64	INITIAL OVERCUT VOLUME
7,257.55	RAL + OVERCUT VOLUME
6,544.46	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

5,337.79	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
1,525.61	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
6,863.40	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

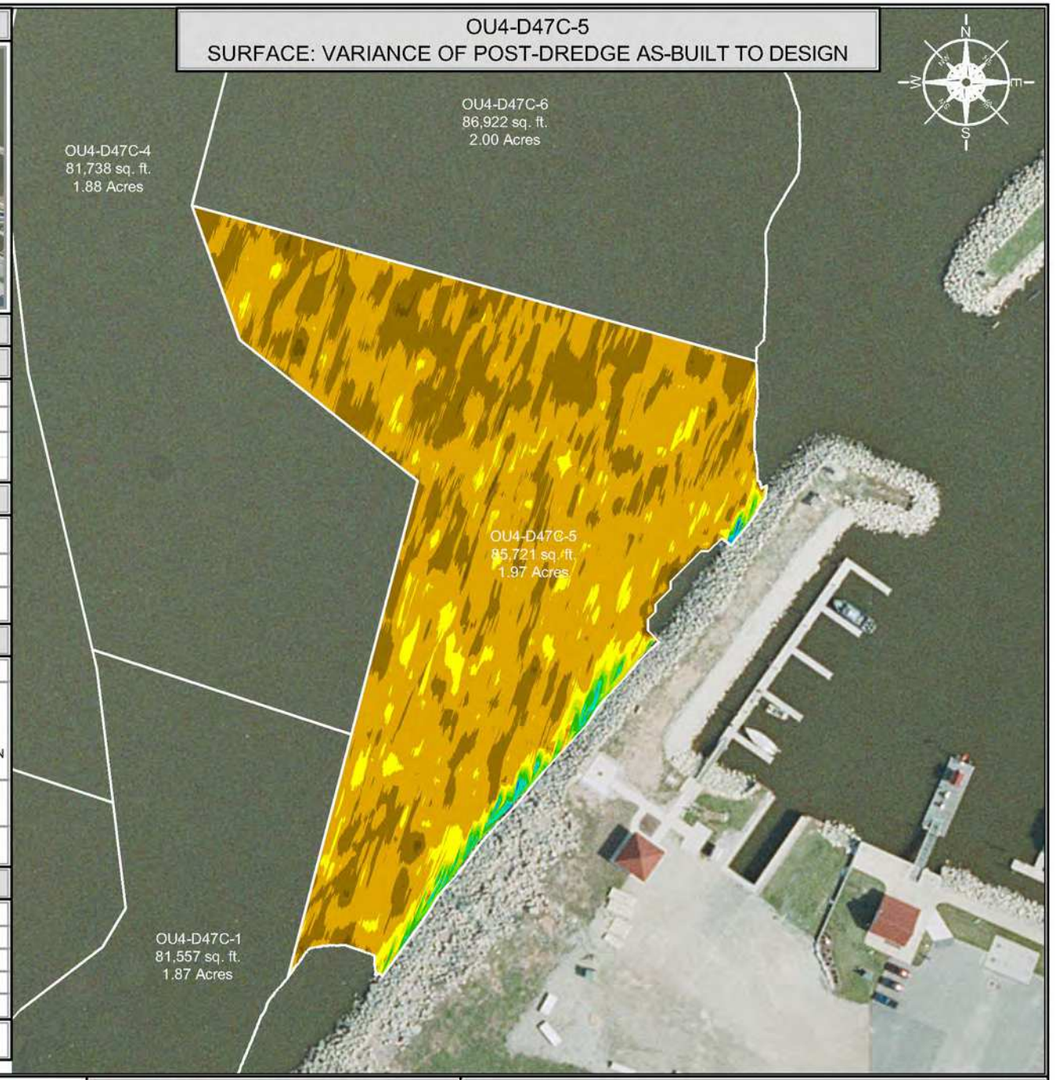
2018 AS-BUILT VOLUMES (CU. YD.)

6,303.12	TOTAL VOLUME DREDGED
5,186.10	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
151.69	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
561.40	OVERCUT VOLUME REMAINING
976.15	OVERCUT VOLUME DREDGED
140.87	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

85,720.94	AREA (SQ. FT.)
7,609.80	ABOVE DESIGN ELEVATION
78,111.14	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
4.63 "	AVERAGE DEPTH OF OVERCUT [1]
91	PERCENT COMPLETE [2]

OU4-D47C-5
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 4-26-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
562.00'	-	564.00'
564.00'	-	566.00'
566.00'	-	568.00'
568.00'	-	570.00'
570.00'	-	572.00'
572.00'	-	574.00'
574.00'	-	576.00'
576.00'	-	578.00'
578.00'	-	580.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.21'	-	-1.00'	648.75
BELOW RAL	-1.00'	-	-0.50'	25,556.89
BELOW RAL	-0.50'	-	0.00'	51,905.50
ABOVE RAL	0.00'	-	0.50'	4,871.79
ABOVE RAL	0.50'	-	1.00'	744.40
ABOVE RAL	1.00'	-	1.50'	698.77
ABOVE RAL	1.50'	-	2.00'	615.51
ABOVE RAL	2.00'	-	2.50'	355.00
ABOVE RAL	2.50'	-	3.00'	73.87
ABOVE RAL	3.00'	-	3.26'	9.93

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
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CAD FILE: OU4-D47C-5.dwg
DRAWN BY: DAVID.FRISQUE
DATE: May 2, 2018
LAST REVISED: December 10, 2018
CHECKED BY: REG

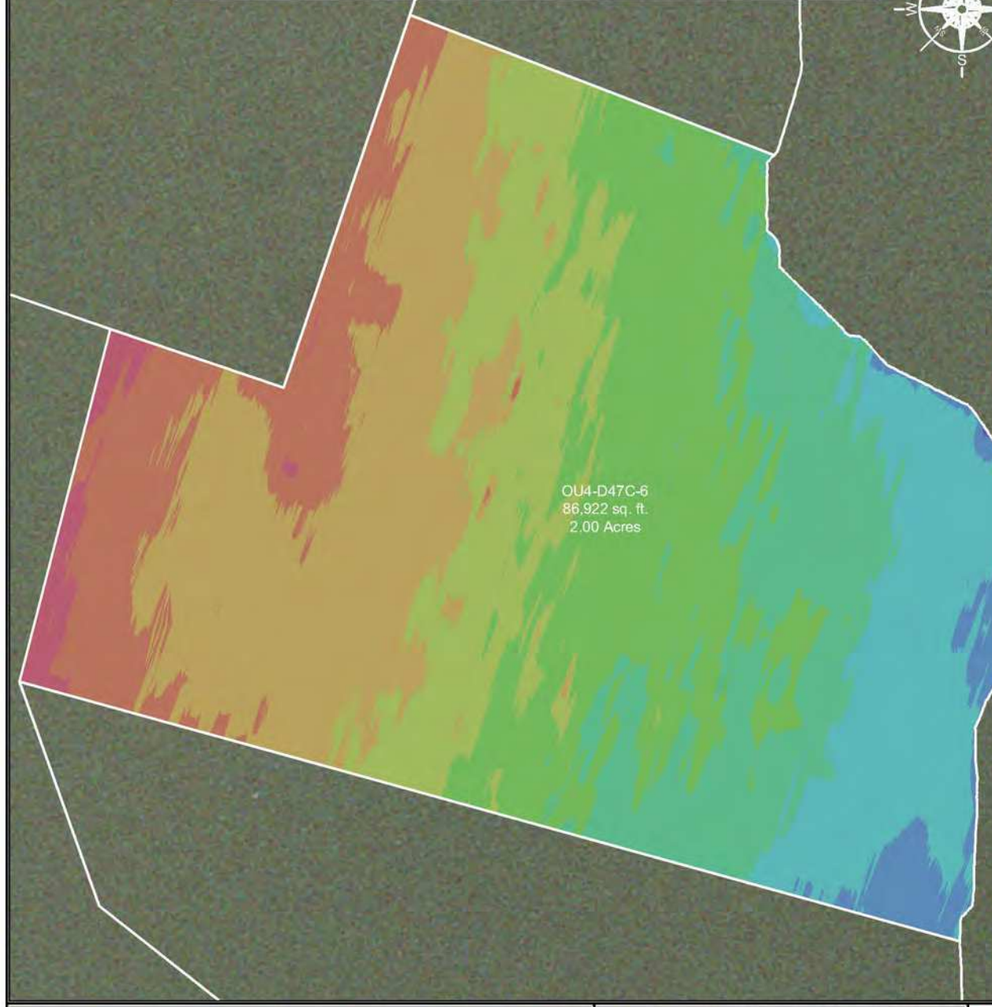
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-236

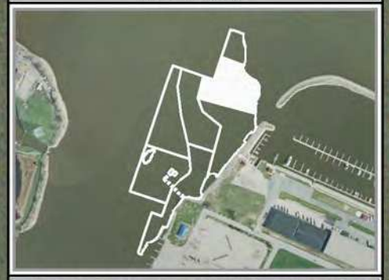
OU4-D47C-5
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

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OU4-D47C-6
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

7,470.96	INITIAL RAL VOLUME
1,614.45	INITIAL OVERCUT VOLUME
9,085.41	RAL + OVERCUT VOLUME
8,662.37	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

7,397.83	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
1,599.19	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
8,997.02	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

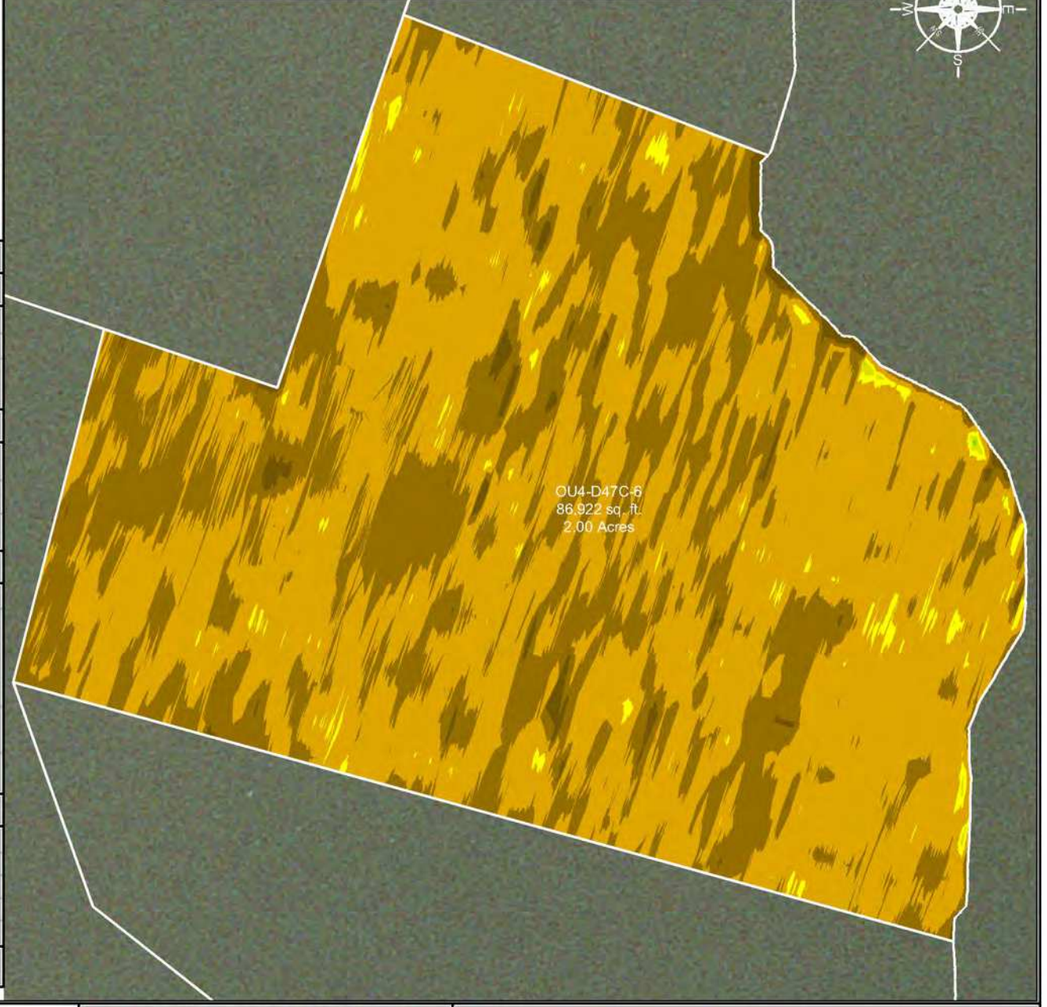
2018 AS-BUILT VOLUMES (CU. YD.)

8,758.47	TOTAL VOLUME DREDGED
7,394.45	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
3.38	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
419.66	OVERCUT VOLUME REMAINING
1,182.00	OVERCUT VOLUME DREDGED
182.02	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

86,921.69	AREA (SQ. FT.)
1,165.90	ABOVE DESIGN ELEVATION
85,755.79	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
5.15 "	AVERAGE DEPTH OF OVERCUT [1]
99	PERCENT COMPLETE [2]

OU4-D47C-6
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 4-26-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
563.00'	-	564.00'
564.00'	-	565.00'
565.00'	-	566.00'
566.00'	-	567.00'
567.00'	-	568.00'
568.00'	-	569.00'
569.00'	-	570.00'
570.00'	-	571.00'
571.00'	-	572.00'
572.00'	-	573.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.67'	-	-1.00'	1,198.30
BELOW RAL	-1.00'	-	-0.50'	29,206.40
BELOW RAL	-0.50'	-	0.00'	55,351.10
ABOVE RAL	0.00'	-	0.25'	1,099.93
ABOVE RAL	0.25'	-	0.50'	63.01
ABOVE RAL	0.50'	-	0.67'	2.96

TETRA TECH EC, INC.
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DRAWN BY: DAVID.FRISQUE
DATE: May 2, 2018
LAST REVISED: December 10, 2018
CHECKED BY: REG

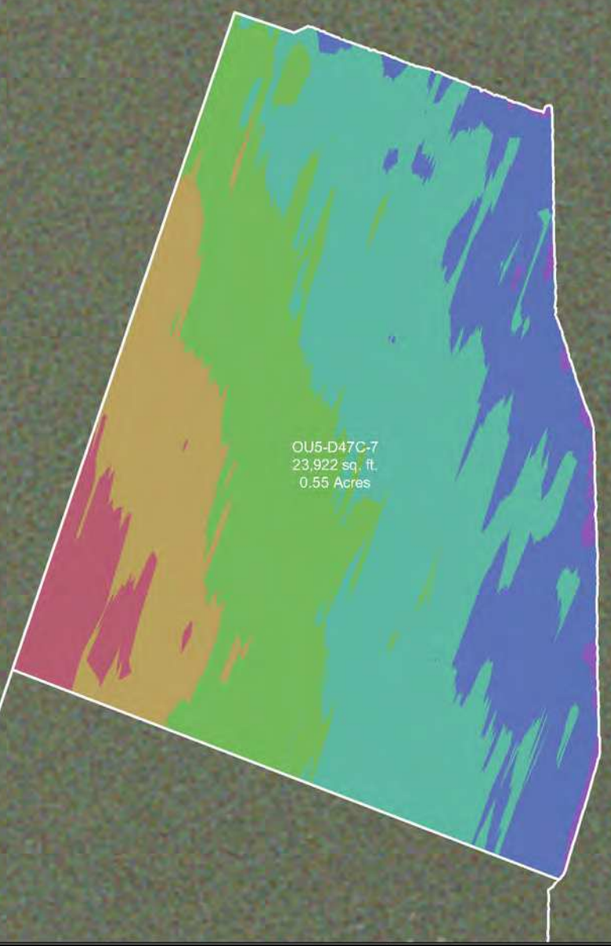
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-237

OU4-D47C-6
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\ALLOC\42\Field Eng\Arcwatch\Dredge Files\2018\OU4 D47C\DWG\Post Dredge\OU4 D47C-6.dwg

OU5-D47C-7
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

1,321.47	INITIAL RAL VOLUME
448.36	INITIAL OVERCUT VOLUME
1,769.83	RAL + OVERCUT VOLUME
1,720.33	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

1,321.47	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
448.36	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
1,769.83	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

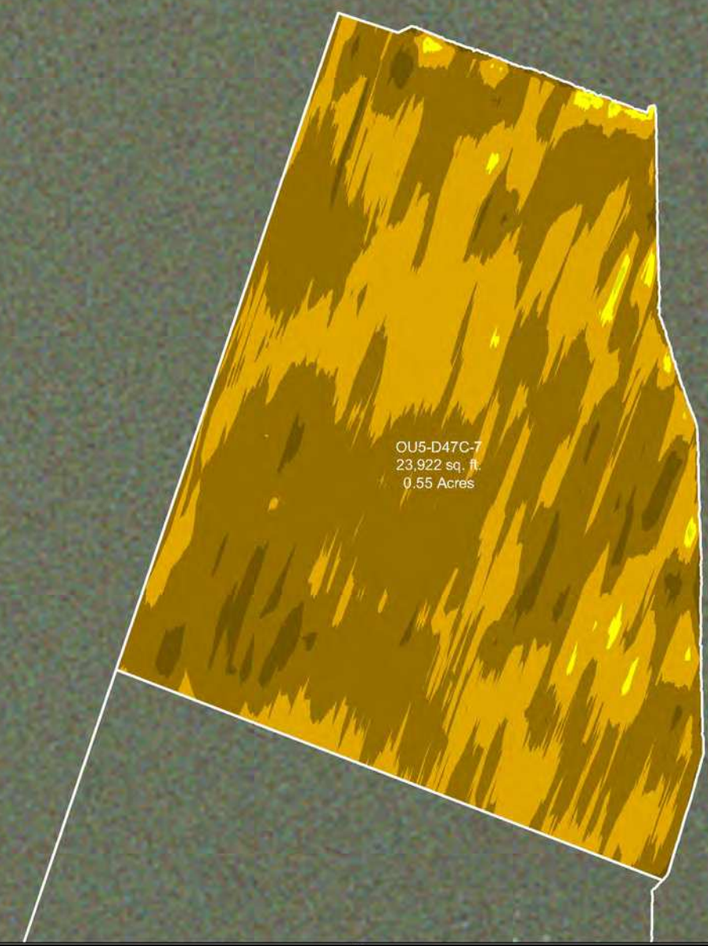
2018 AS-BUILT VOLUMES (CU. YD.)

1,829.89	TOTAL VOLUME DREDGED
1,320.73	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
0.74	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
48.76	OVERCUT VOLUME REMAINING
394.34	OVERCUT VOLUME DREDGED
114.82	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

23,922.19	AREA (SQ. FT.)
206.26	ABOVE DESIGN ELEVATION
23,715.93	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
6.96 "	AVERAGE DEPTH OF OVERCUT [1]
99	PERCENT COMPLETE [2]

OU5-D47C-7
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 4-26-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
564.00'	-	565.00'
565.00'	-	566.00'
566.00'	-	567.00'
567.00'	-	568.00'
568.00'	-	569.00'
569.00'	-	570.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.81'	-	-1.00'	950.92
BELOW RAL	-1.00'	-	-0.50'	14,107.62
BELOW RAL	-0.50'	-	0.00'	8,657.39
ABOVE RAL	0.00'	-	0.25'	187.70
ABOVE RAL	0.25'	-	0.43'	16.99

TETRA TECH EC, INC.
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CAD FILE: OU5-D47C-7.dwg
DRAWN BY: DAVID.FRISQUE
DATE: May 2, 2018
LAST REVISED: December 10, 2018
CHECKED BY: REG

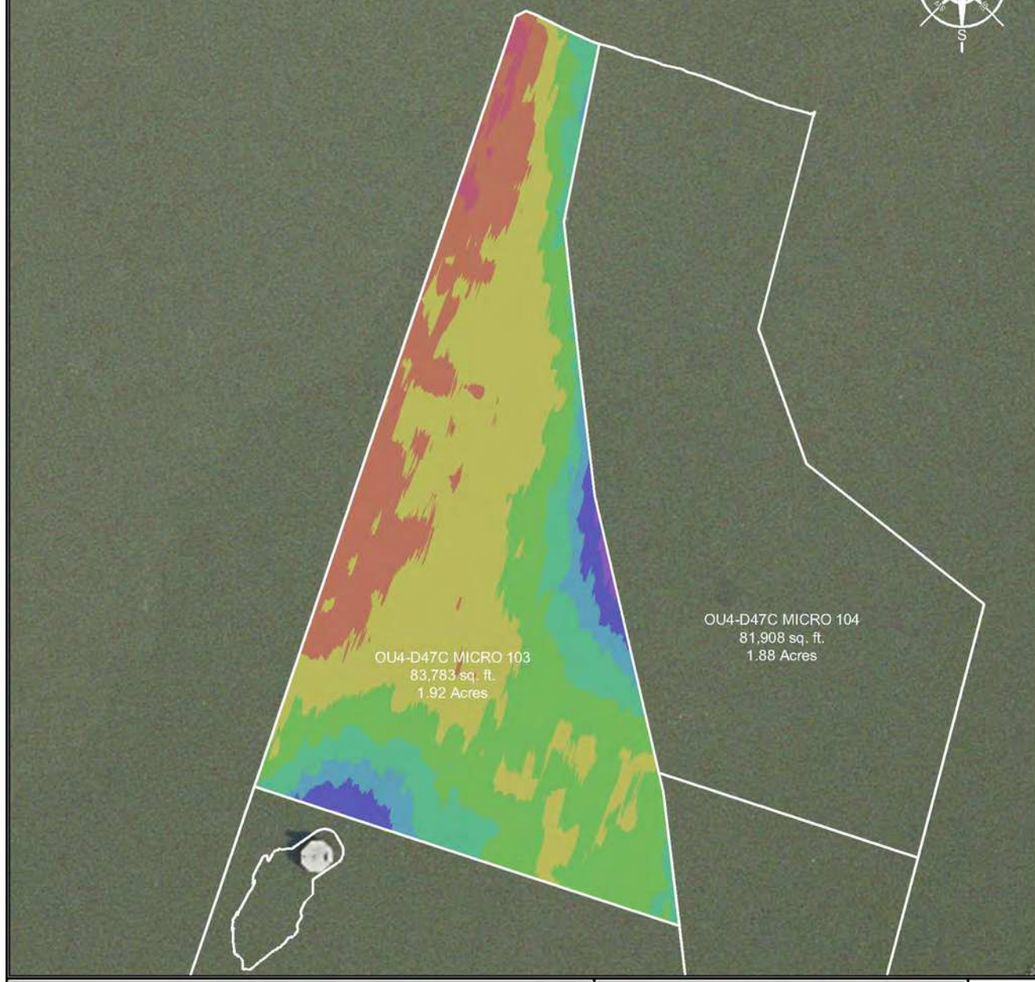
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-238

OU5-D47C-7
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

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OU4-D47C MICRO 103
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

5,273.53	INITIAL RAL VOLUME
1,542.17	INITIAL OVERCUT VOLUME
6,815.70	RAL + OVERCUT VOLUME
6,482.64	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

5,146.56	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
1,537.32	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
6,683.88	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

2018 AS-BUILT VOLUMES (CU. YD.)

6,619.30	TOTAL VOLUME DREDGED
5,139.05	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
7.51	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
325.55	OVERCUT VOLUME REMAINING
1,212.01	OVERCUT VOLUME DREDGED
268.24	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

83,782.60	AREA (SQ. FT.)
1,958.07	ABOVE DESIGN ELEVATION
81,824.53	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
5.86 "	AVERAGE DEPTH OF OVERCUT [1]
98	PERCENT COMPLETE [2]

OU4-D47C MICRO 103
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-12-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.86'	-	-1.00'	2,223.44
BELOW RAL	-1.00'	-	-0.50'	35,819.20
BELOW RAL	-0.50'	-	0.00'	43,781.89
ABOVE RAL	0.00'	-	0.25'	1,784.34
ABOVE RAL	0.25'	-	0.56'	173.73

TETRA TECH EC, INC.
1611 STATE STREET
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CAD FILE: OU4-D47C Micro 103.dwg
DRAWN BY: DAVID.FRISQUE
DATE: November 15, 2018
LAST REVISED: January 11, 2019
CHECKED BY: REG

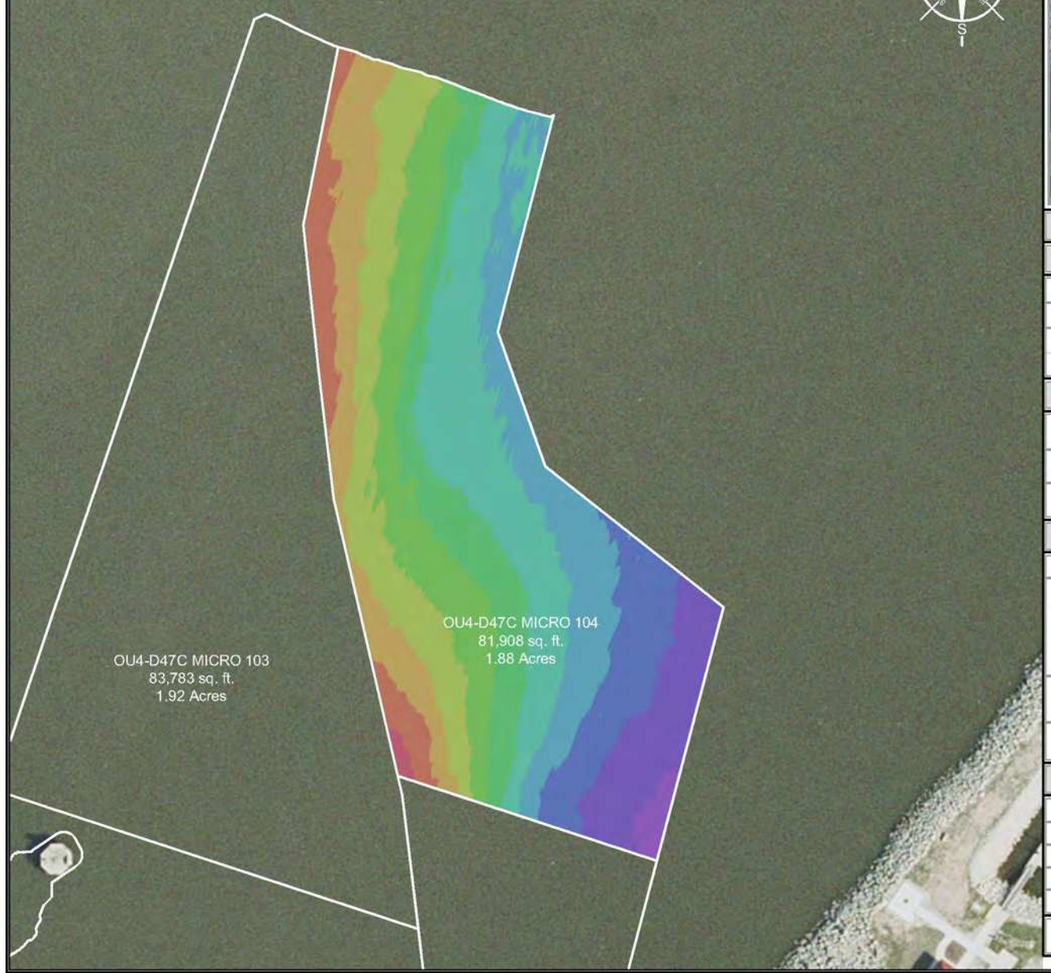
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-239

OU4-D47C Micro 103
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

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OU4-D47C MICRO 104
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

1,733.90	INITIAL RAL VOLUME
1,256.36	INITIAL OVERCUT VOLUME
2,990.26	RAL + OVERCUT VOLUME
2,644.78	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

2,176.50	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
1,303.04	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
3,479.54	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

2018 AS-BUILT VOLUMES (CU. YD.)

3,418.63	TOTAL VOLUME DREDGED
2,168.11	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
8.39	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
337.09	OVERCUT VOLUME REMAINING
1,013.12	OVERCUT VOLUME DREDGED
237.40	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

81,907.86	AREA (SQ. FT.)
2,066.68	ABOVE DESIGN ELEVATION
79,841.18	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
5.07 "	AVERAGE DEPTH OF OVERCUT [1]
97	PERCENT COMPLETE [2]

OU4-D47C MICRO 104
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-12-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
549.00'	-	551.00'
551.00'	-	553.00'
553.00'	-	555.00'
555.00'	-	557.00'
557.00'	-	559.00'
559.00'	-	561.00'
561.00'	-	563.00'
563.00'	-	565.00'
565.00'	-	567.00'
567.00'	-	569.00'
569.00'	-	571.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.87'	-	-1.00'	3,288.71
	-1.00'	-	-0.50'	32,222.19
	-0.50'	-	0.00'	44,330.28
ABOVE RAL	0.00'	-	0.25'	1,843.27
	0.25'	-	0.50'	185.07
	0.50'	-	0.75'	36.10
	0.75'	-	0.91'	2.24

TETRA TECH EC, INC.
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DRAWN BY: DAVID.FRISQUE
DATE: November 15, 2018
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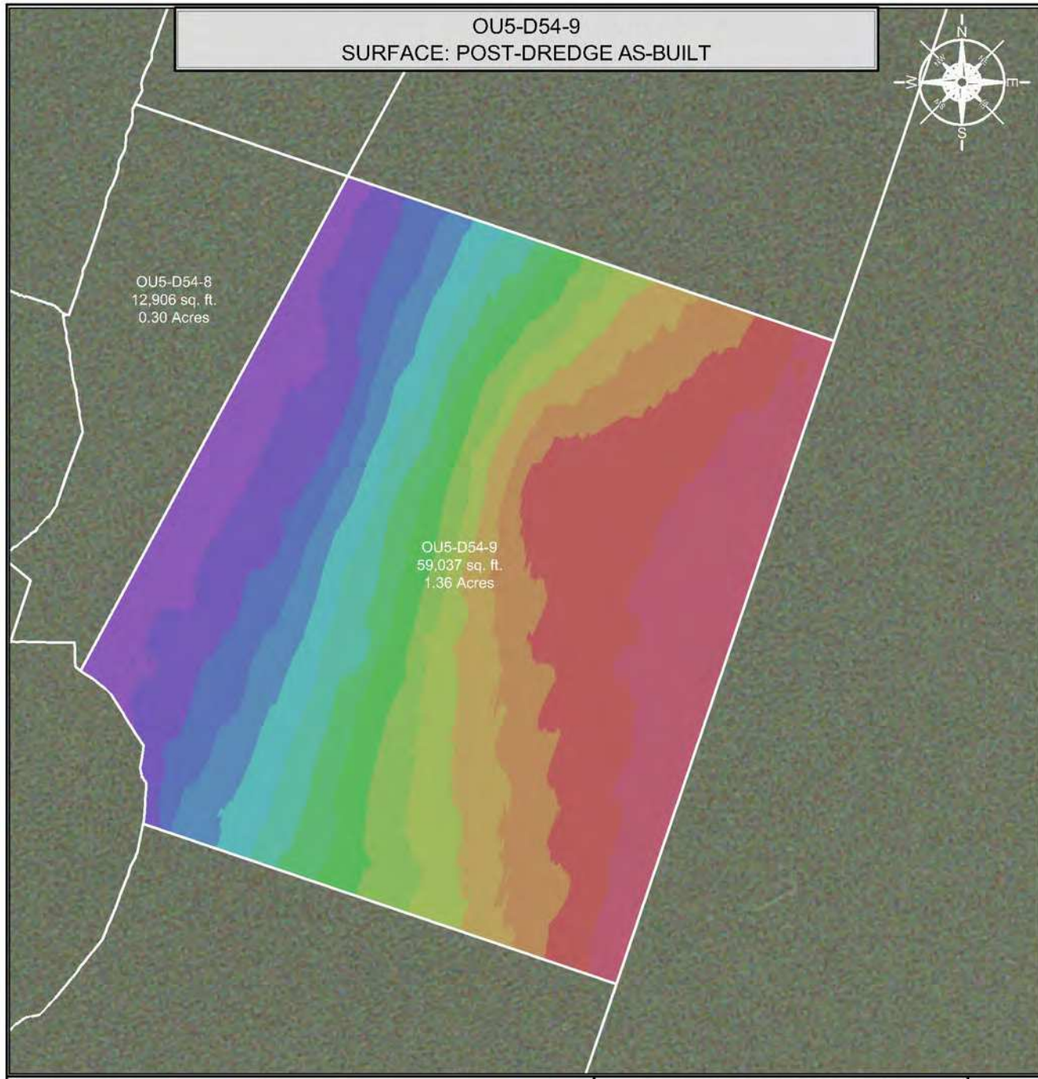
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-240

OU4-D47C Micro 104
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

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OU5-D54-9
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

25,219.82	INITIAL RAL VOLUME
1,093.95	INITIAL OVERCUT VOLUME
26,313.77	RAL + OVERCUT VOLUME
26,106.57	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

25,219.82	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
1,093.95	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
26,313.77	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

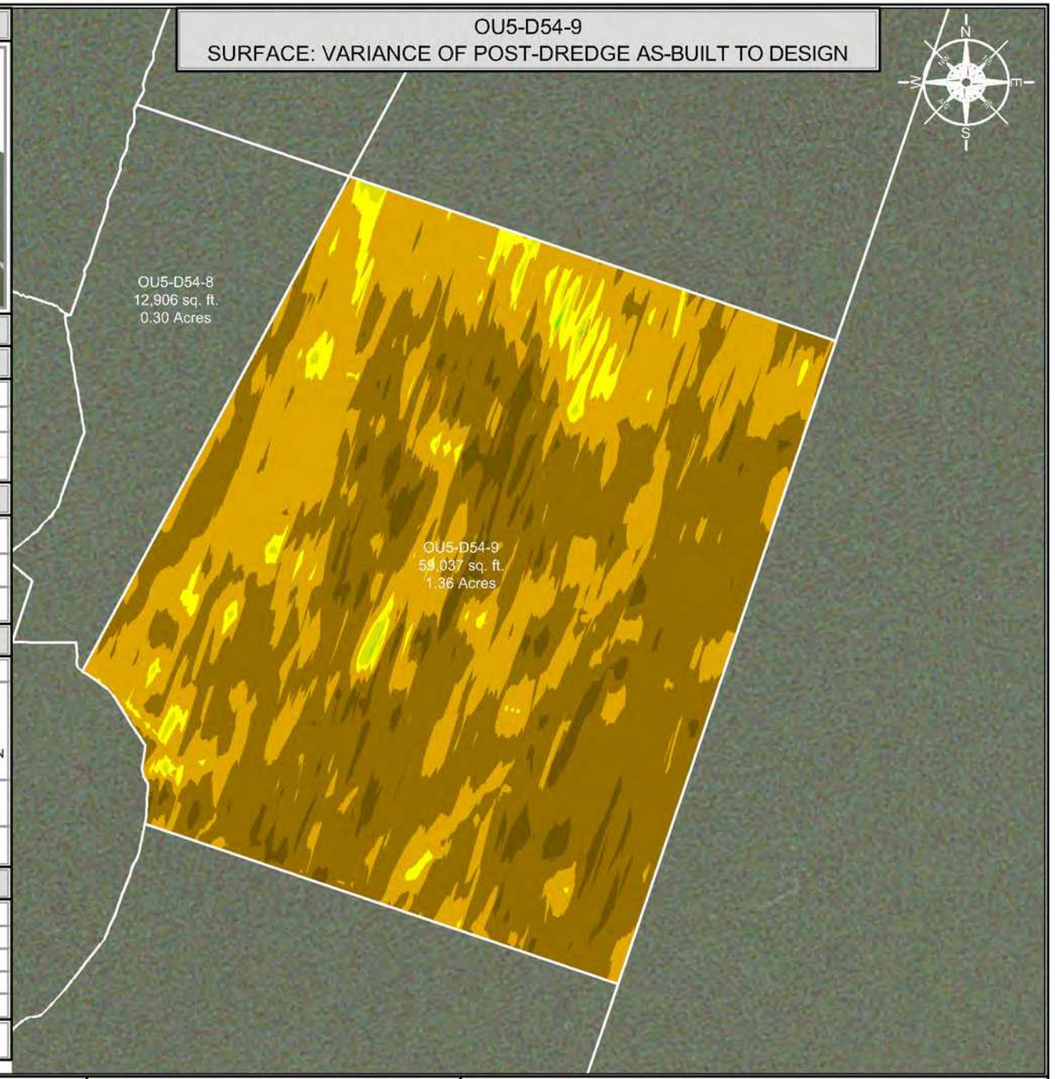
2018 AS-BUILT VOLUMES (CU. YD.)

26,428.02	TOTAL VOLUME DREDGED
25,208.81	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
11.01	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
196.19	OVERCUT VOLUME REMAINING
896.77	OVERCUT VOLUME DREDGED
322.44	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

59,036.75	AREA (SQ. FT.)
2,262.40	ABOVE DESIGN ELEVATION
56,774.35	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
6.96 "	AVERAGE DEPTH OF OVERCUT [1]
96	PERCENT COMPLETE [2]

OU5-D54-9
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 8-14-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
546.00'	-	548.00'
548.00'	-	550.00'
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'
562.00'	-	564.00'
564.00'	-	566.00'
566.00'	-	568.00'
568.00'	-	570.00'
570.00'	-	572.00'
572.00'	-	574.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT | DREDGE AREA | DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.98'	-	-1.00'	3,189.92
	-1.00'	-	-0.50'	32,001.93
	-0.50'	-	0.00'	21,582.50
ABOVE RAL	0.00'	-	0.25'	1,925.66
	0.25'	-	0.50'	321.79
	0.50'	-	0.70'	14.95

TETRA TECH EC, INC.
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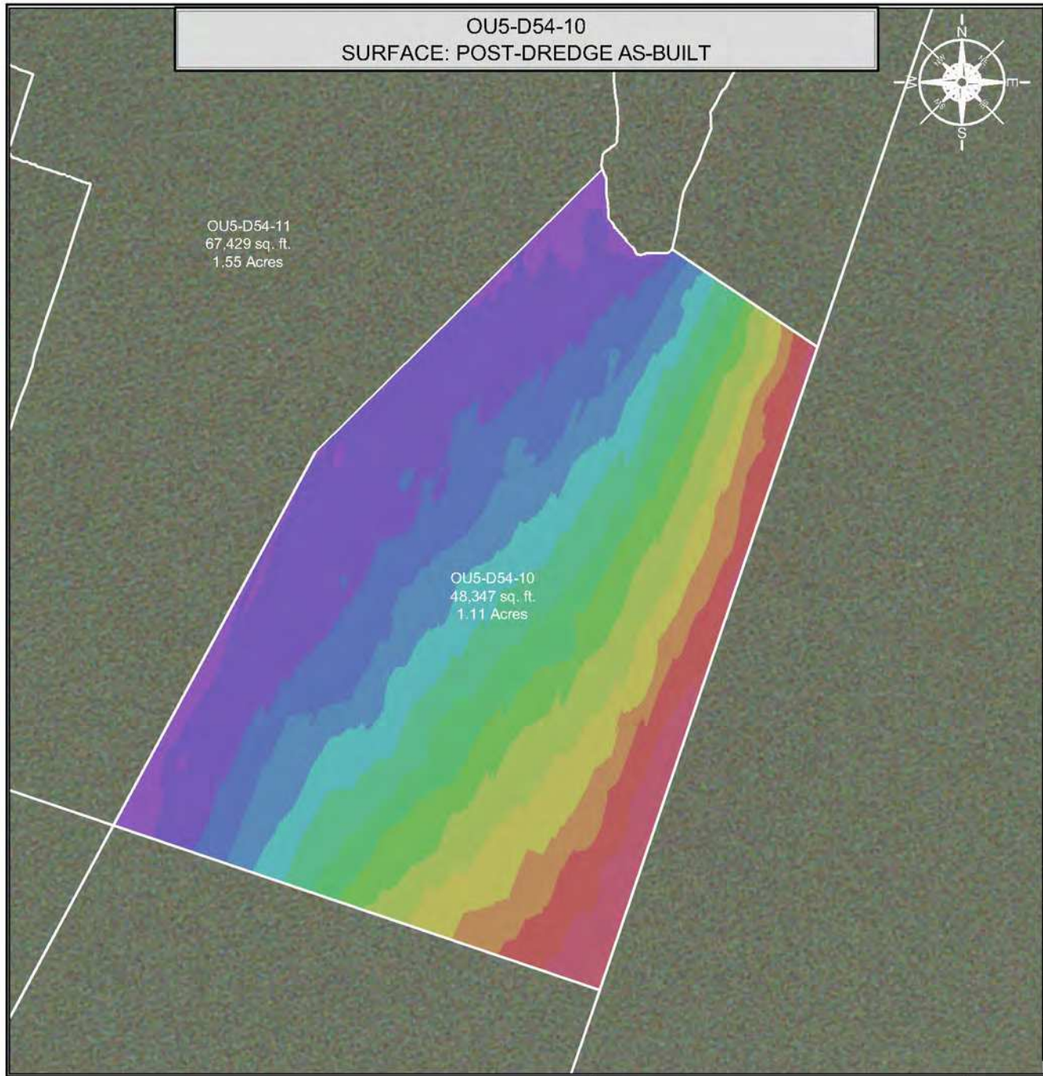
CAD FILE: OU5-D54-9.dwg
DRAWN BY: DAVID.FRISQUE
DATE: August 21, 2018
LAST REVISED: August 21, 2018
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-241

OU5-D54-9
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

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INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

13,407.29	INITIAL RAL VOLUME
895.67	INITIAL OVERCUT VOLUME
14,302.96	RAL + OVERCUT VOLUME
14,034.93	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

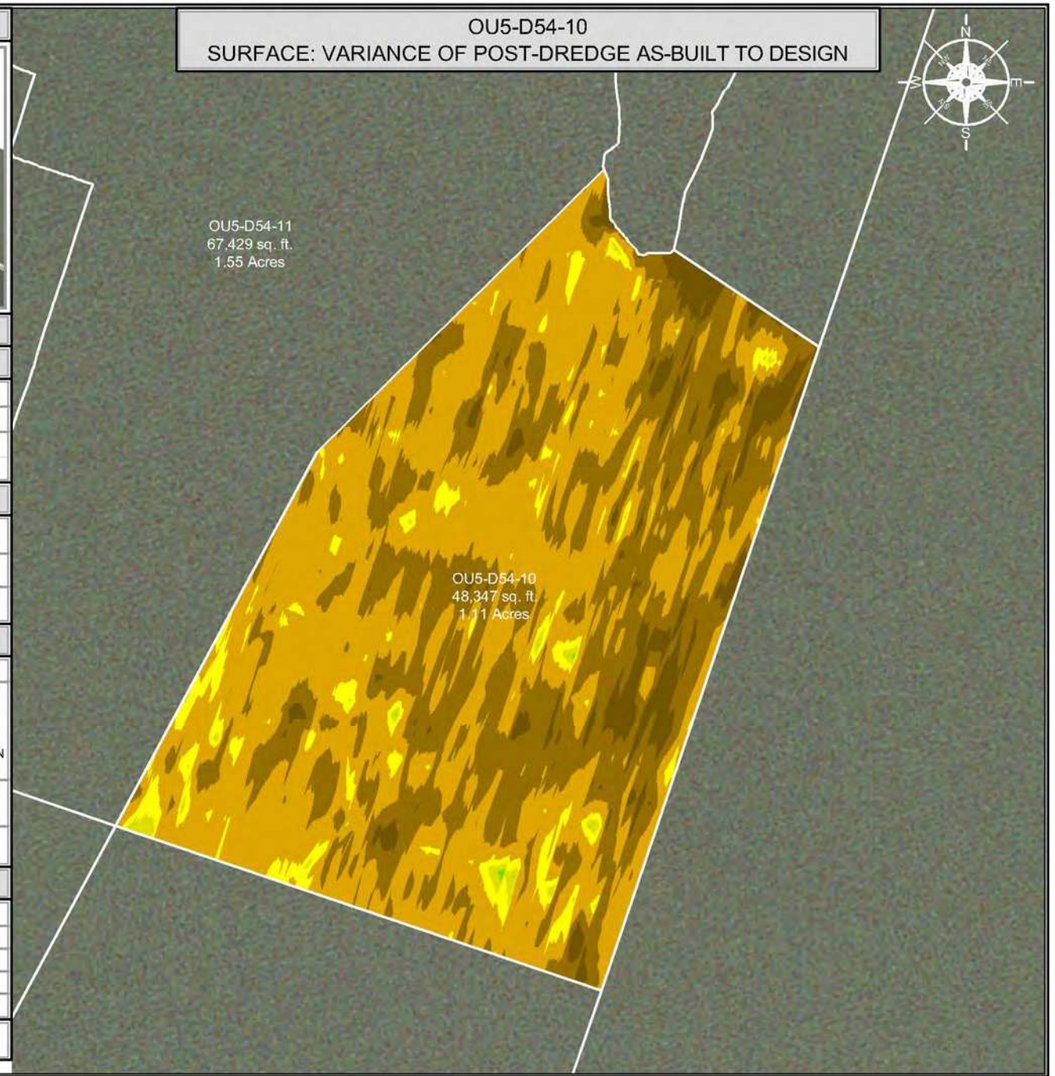
13,407.29	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
895.67	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
14,302.96	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

2018 AS-BUILT VOLUMES (CU. YD.)

14,233.34	TOTAL VOLUME DREDGED
13,396.00	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
11.29	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
256.74	OVERCUT VOLUME REMAINING
638.21	OVERCUT VOLUME DREDGED
199.13	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

48,347.45	AREA (SQ. FT.)
2,584.41	ABOVE DESIGN ELEVATION
45,763.04	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
5.93 "	AVERAGE DEPTH OF OVERCUT [1]
95	PERCENT COMPLETE [2]



SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 8-14-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
547.00'	-	549.00'
549.00'	-	551.00'
551.00'	-	553.00'
553.00'	-	555.00'
555.00'	-	557.00'
557.00'	-	559.00'
559.00'	-	561.00'
561.00'	-	563.00'
563.00'	-	565.00'
565.00'	-	567.00'
567.00'	-	569.00'
569.00'	-	571.00'
571.00'	-	573.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT
DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.17'	-	-1.00'	2,818.35
	-1.00'	-	-0.50'	17,325.27
	-0.50'	-	0.00'	25,619.42
ABOVE RAL	0.00'	-	0.25'	2,276.28
	0.25'	-	0.50'	298.08
	0.50'	-	0.68'	10.04

TETRA TECH EC, INC.
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DRAWN BY: DAVID.FRISQUE
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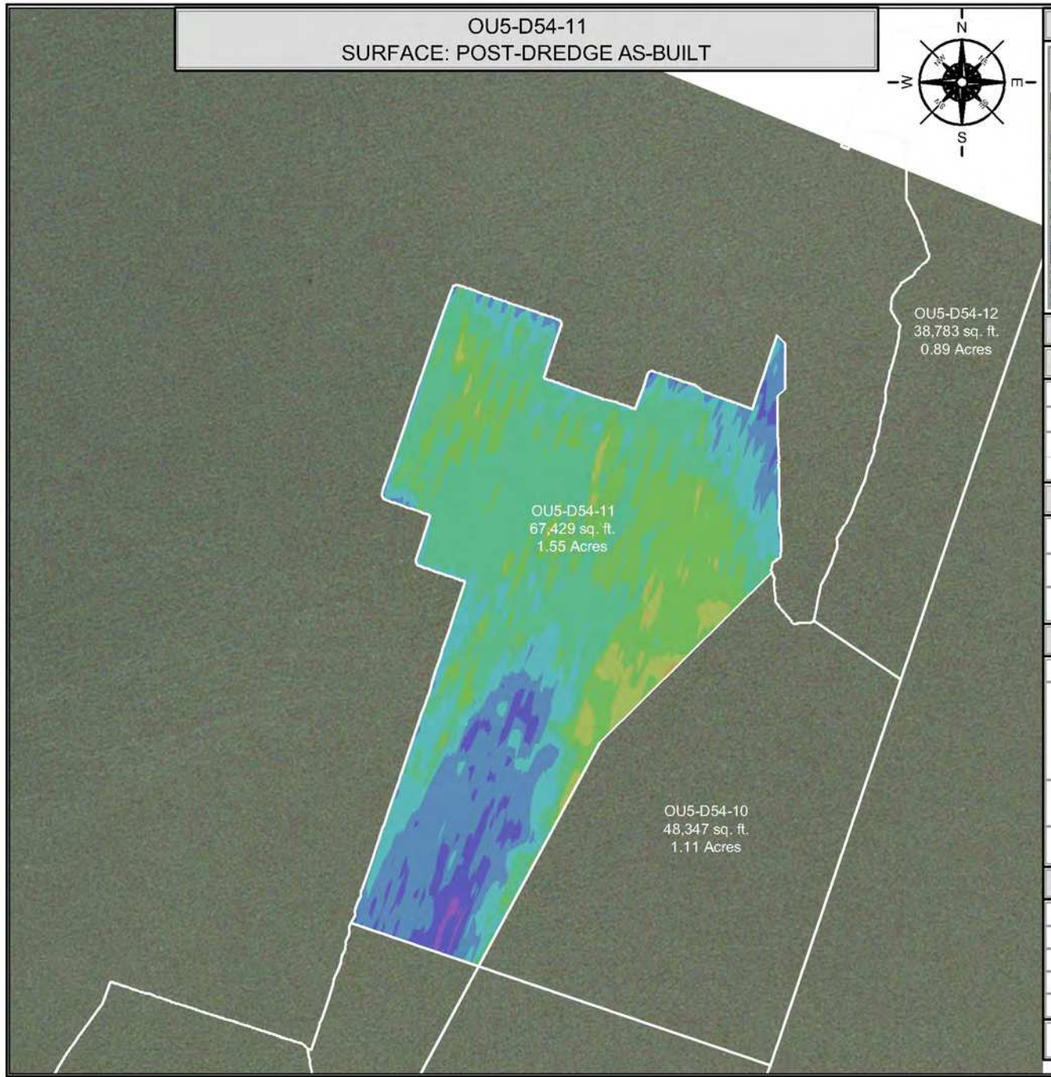
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-242

OU5-D54-10
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

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OU5-D54-11
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

2,737.67	INITIAL RAL VOLUME
1,267.07	INITIAL OVERCUT VOLUME
4,004.74	RAL + OVERCUT VOLUME
3,483.97	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

2,737.67	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
1,267.07	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
4,004.74	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

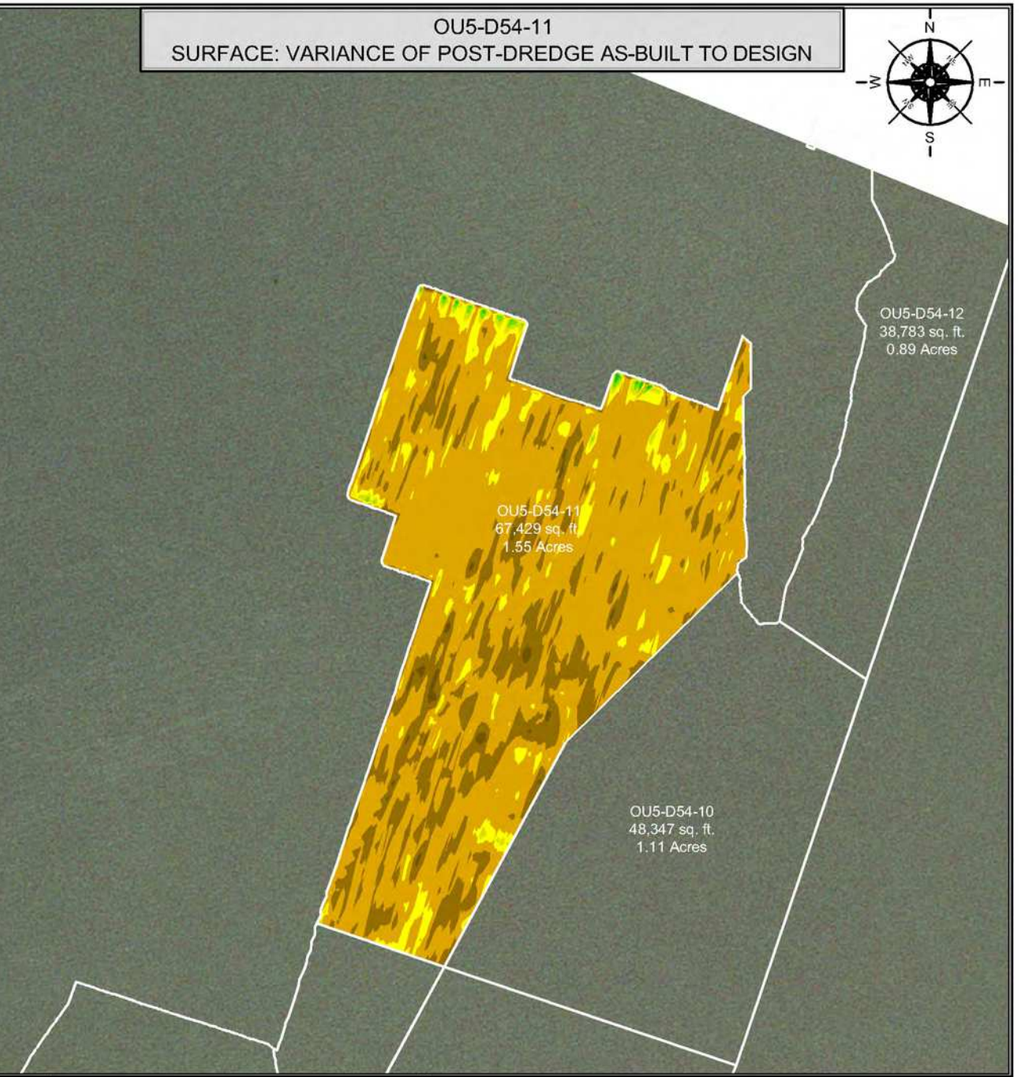
2018 AS-BUILT VOLUMES (CU. YD.)

3,552.70	TOTAL VOLUME DREDGED
2,712.28	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
25.35	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
495.42	OVERCUT VOLUME REMAINING
752.92	OVERCUT VOLUME DREDGED
87.50	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

67,429.38	AREA (SQ. FT.)
5,100.47	ABOVE DESIGN ELEVATION
62,328.91	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
4.37 "	AVERAGE DEPTH OF OVERCUT [1]
92	PERCENT COMPLETE [2]

OU5-D54-11
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 8-14-2018

AS-BUILT COLOR LEGEND

	MIN. EL.		MAX. EL.
	569.00'	-	569.50'
	569.50'	-	570.00'
	570.00'	-	570.50'
	570.50'	-	571.00'
	571.00'	-	571.50'
	571.50'	-	572.00'
	572.00'	-	572.50'
	572.50'	-	573.00'
	573.00'	-	573.50'
	573.50'	-	574.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

		MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL		-1.72'	-	-1.00'	539.84
BELOW RAL		-1.00'	-	-0.50'	14,363.66
BELOW RAL		-0.50'	-	0.00'	47,425.42
ABOVE RAL		0.00'	-	0.25'	4,356.03
ABOVE RAL		0.25'	-	0.50'	543.37
ABOVE RAL		0.50'	-	0.75'	164.99
ABOVE RAL		0.75'	-	1.08'	36.08

TETRA TECH EC, INC.
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CAD FILE: OU5-D54-11.dwg
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LAST REVISED: January 16, 2019
CHECKED BY: REG

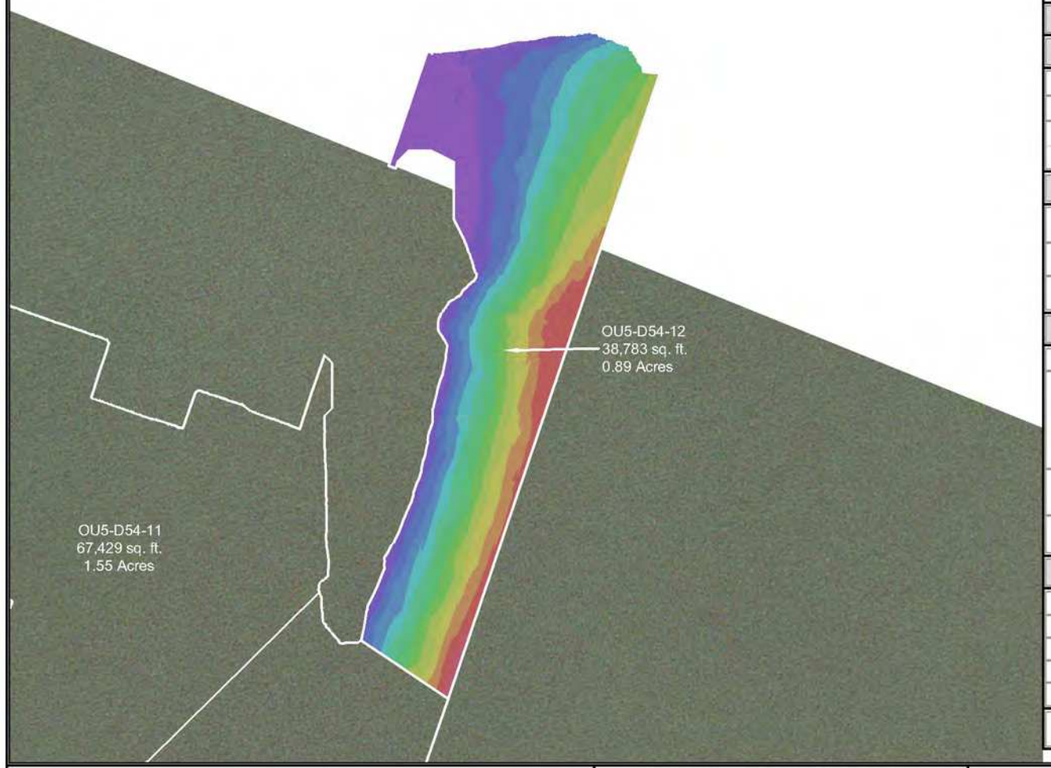
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-243

OU5-D54-11
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LLC\CAD\Field Engineering\Dredge Files\2018\OU4 D54\DWG\Post Dredge\OU5-D54-11.dwg

OU5-D54-12
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

5,592.49	INITIAL RAL VOLUME
703.66	INITIAL OVERCUT VOLUME
6,296.15	RAL + OVERCUT VOLUME
6,146.98	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

5,592.49	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
703.66	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
6,296.15	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

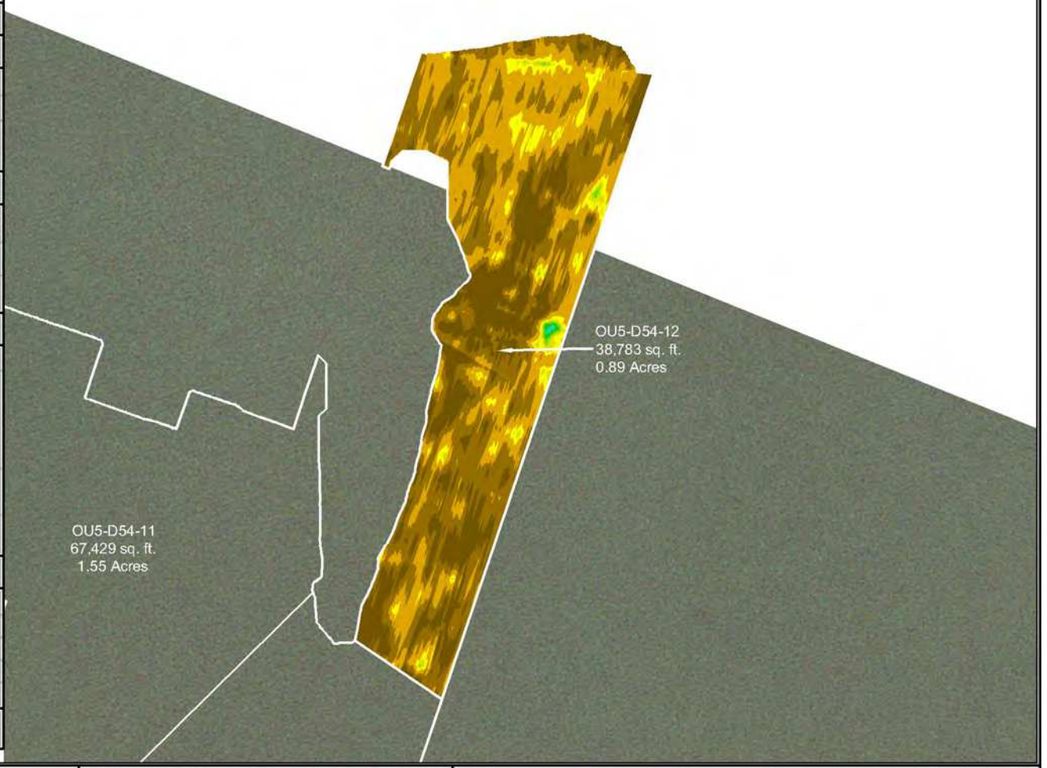
2018 AS-BUILT VOLUMES (CU. YD.)

6,506.34	TOTAL VOLUME DREDGED
5,577.12	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
15.37	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
133.80	OVERCUT VOLUME REMAINING
601.33	OVERCUT VOLUME DREDGED
327.89	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

38,783.31	AREA (SQ. FT.)
2,227.46	ABOVE DESIGN ELEVATION
36,555.85	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
8.24 "	AVERAGE DEPTH OF OVERCUT [1]
94	PERCENT COMPLETE [2]

OU5-D54-12
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 7-13-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
547.00'	-	549.00'
549.00'	-	551.00'
551.00'	-	553.00'
553.00'	-	555.00'
555.00'	-	557.00'
557.00'	-	559.00'
559.00'	-	561.00'
561.00'	-	563.00'
563.00'	-	565.00'
565.00'	-	567.00'
567.00'	-	569.00'
569.00'	-	571.00'
571.00'	-	573.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.83'	-	-1.00'	8,465.58
	-1.00'	-	-0.50'	15,818.95
	-0.50'	-	0.00'	12,271.32
ABOVE RAL	0.00'	-	0.25'	1,688.34
	0.25'	-	0.50'	389.84
	0.50'	-	0.75'	85.59
	0.75'	-	1.00'	40.88
	1.00'	-	1.35'	22.58

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU5-D54-12.dwg
DRAWN BY: DAVID.FRISQUE
DATE: July 23, 2018
LAST REVISED: January 16, 2019
CHECKED BY: REG

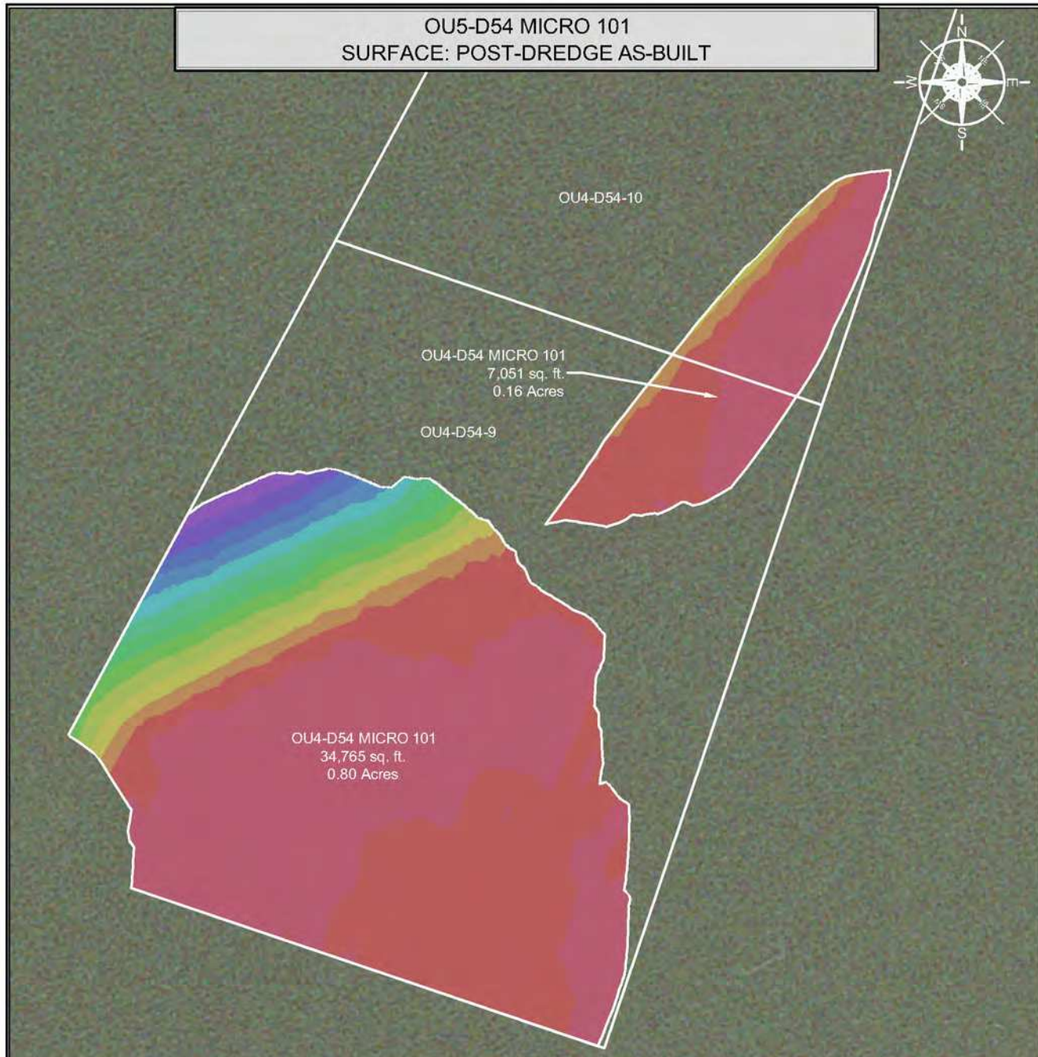
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-244

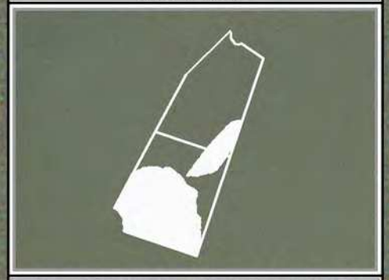
OU5-D54-12
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LLC\CAD\Field Engineering\Dredge Files\2018\OU4 D54\DWG\Post Dredge\OU5-D54-12.dwg

OU5-D54 MICRO 101
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

11,483.71	INITIAL RAL VOLUME
860.33	INITIAL OVERCUT VOLUME
12,344.04	RAL + OVERCUT VOLUME
12,201.75	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

11,384.85	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
828.35	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
12,213.20	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

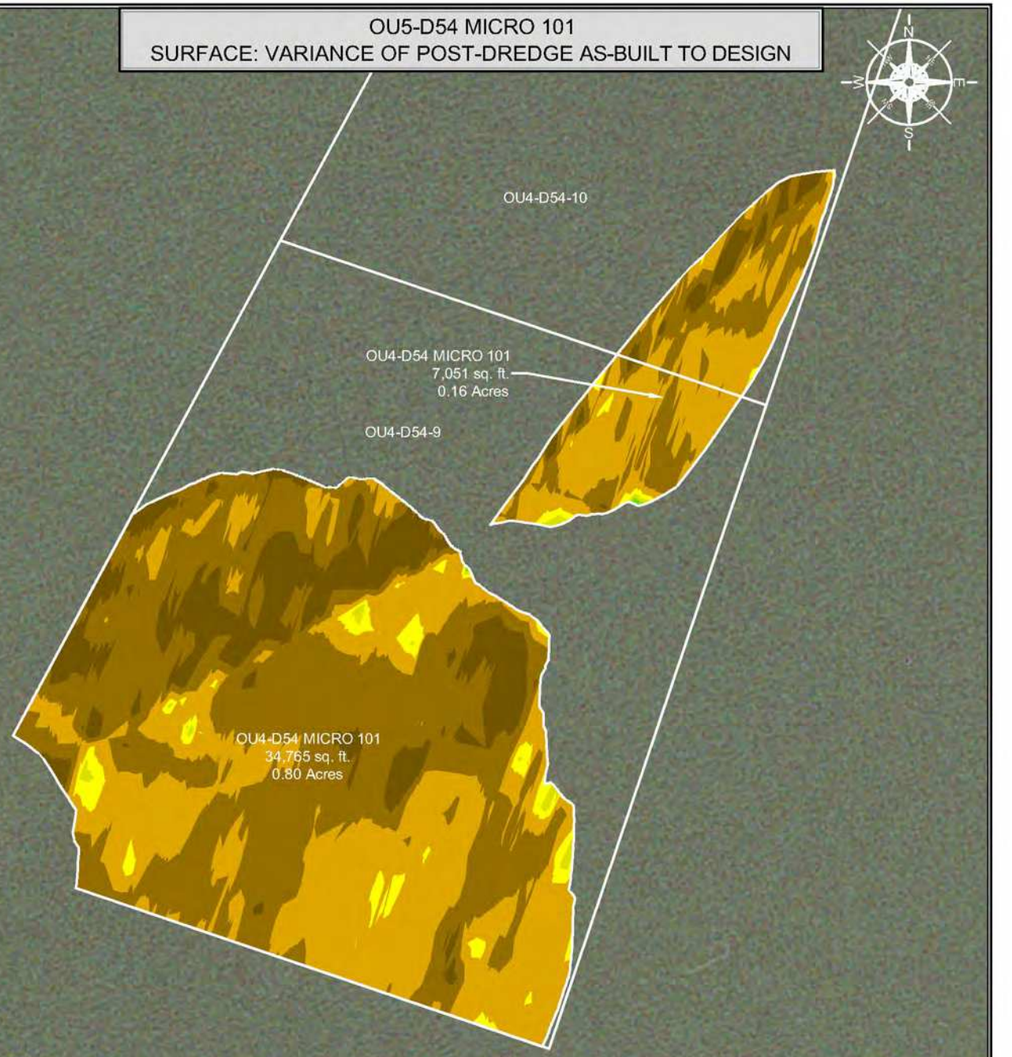
2018 AS-BUILT VOLUMES (CU. YD.)

12,296.36	TOTAL VOLUME DREDGED
11,377.07	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
6.16	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
136.13	OVERCUT VOLUME REMAINING
630.72	OVERCUT VOLUME DREDGED
288.57	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

41,815.69	AREA (SQ. FT.)
1,300.52	ABOVE DESIGN ELEVATION
40,515.17	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
7.35 "	AVERAGE DEPTH OF OVERCUT [1]
97	PERCENT COMPLETE [2]

OU5-D54 MICRO 101
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-29-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
546.00'	-	548.00'
548.00'	-	550.00'
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'
562.00'	-	564.00'
564.00'	-	566.00'
566.00'	-	568.00'
568.00'	-	570.00'
570.00'	-	572.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT | DREDGE AREA | DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.07'	-	-1.00'	5,360.80
BELOW RAL	-1.00'	-	-0.50'	19,297.70
BELOW RAL	-0.50'	-	0.00'	15,856.67
ABOVE RAL	0.00'	-	0.25'	1,104.85
ABOVE RAL	0.25'	-	0.50'	183.30
ABOVE RAL	0.50'	-	0.75'	11.32
ABOVE RAL	0.75'	-	0.86'	1.05

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU5-D54 Micro 101.dwg
DRAWN BY: DAVID.FRISQUE
DATE: October 3, 2018
LAST REVISED: January 11, 2019
CHECKED BY: REG

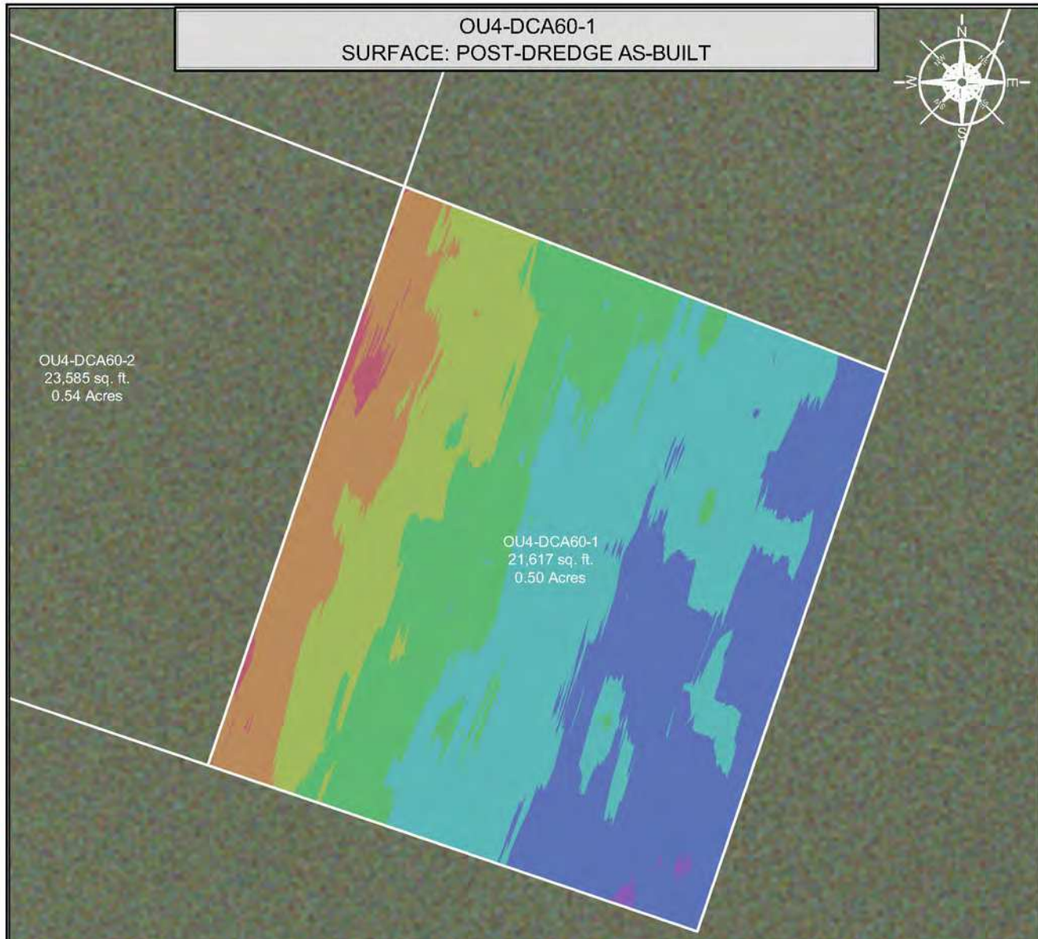
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-245

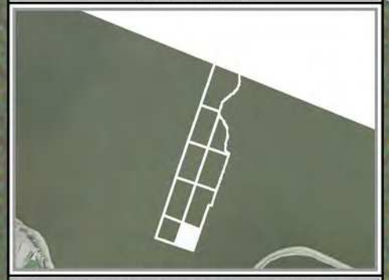
OU5-D54 Micro 101
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\ALLDOCS\Field Engineering\Dredge Files\2018\OU4-D54\DWG\Post Dredge\OU5-D54 Micro 101.dwg

OU4-DCA60-1
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

2,889.52	INITIAL RAL VOLUME
400.31	INITIAL OVERCUT VOLUME
3,289.83	RAL + OVERCUT VOLUME
3,179.48	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

2,889.52	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
400.31	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
3,289.83	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

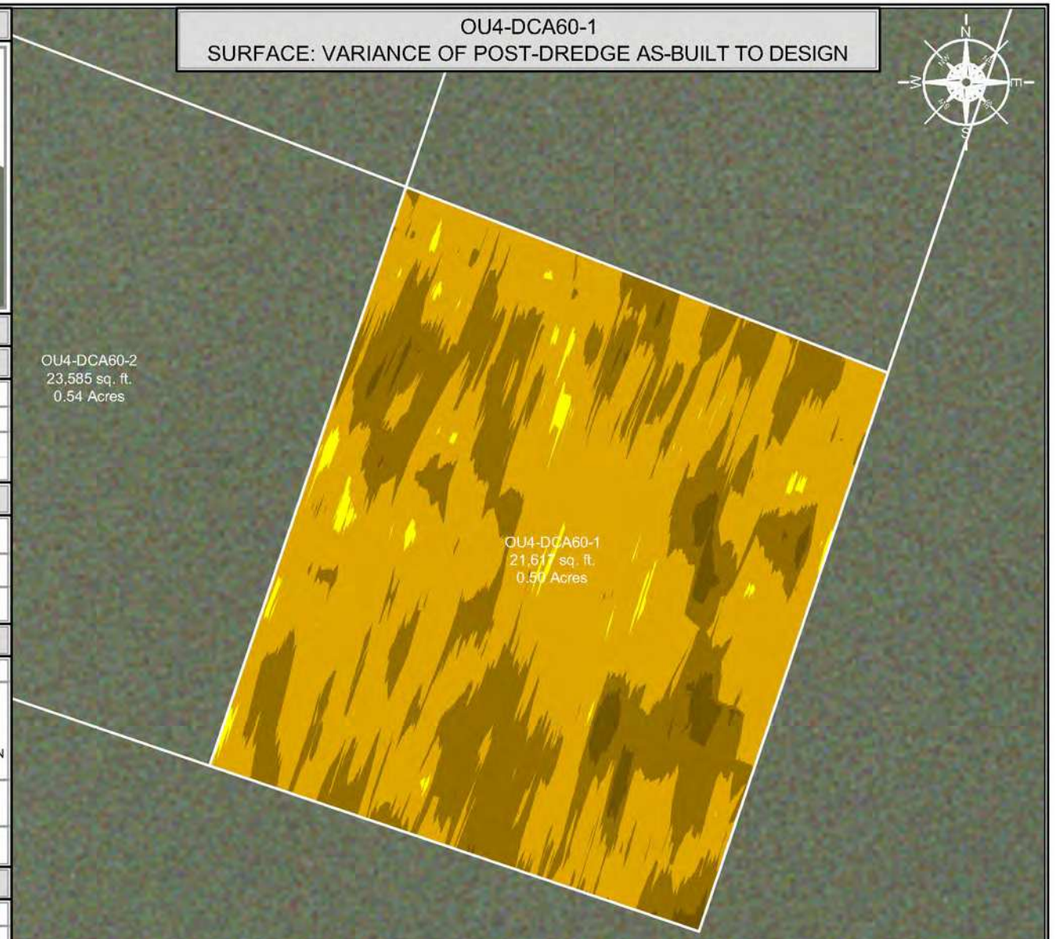
2018 AS-BUILT VOLUMES (CU. YD.)

3,236.18	TOTAL VOLUME DREDGED
2,888.90	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
0.62	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
109.73	OVERCUT VOLUME REMAINING
290.58	OVERCUT VOLUME DREDGED
56.70	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

21,617.16	AREA (SQ. FT.)
297.33	ABOVE DESIGN ELEVATION
21,319.83	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
5.28 "	AVERAGE DEPTH OF OVERCUT [1]
99	PERCENT COMPLETE [2]

OU4-DCA60-1
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 4-26-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
559.00'	-	560.00'
560.00'	-	561.00'
561.00'	-	562.00'
562.00'	-	563.00'
563.00'	-	564.00'
564.00'	-	565.00'
565.00'	-	566.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
- OU# — OPERABLE UNIT
- D# — DREDGE AREA
- # — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.94'	-	-1.00'	534.52
BELOW RAL	-1.00'	-	-0.50'	7,092.60
BELOW RAL	-0.50'	-	0.00'	13,692.71
ABOVE RAL	0.00'	-	0.30'	297.33

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DCA60-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: May 2, 2018
LAST REVISED: January 11, 2019
CHECKED BY: REG

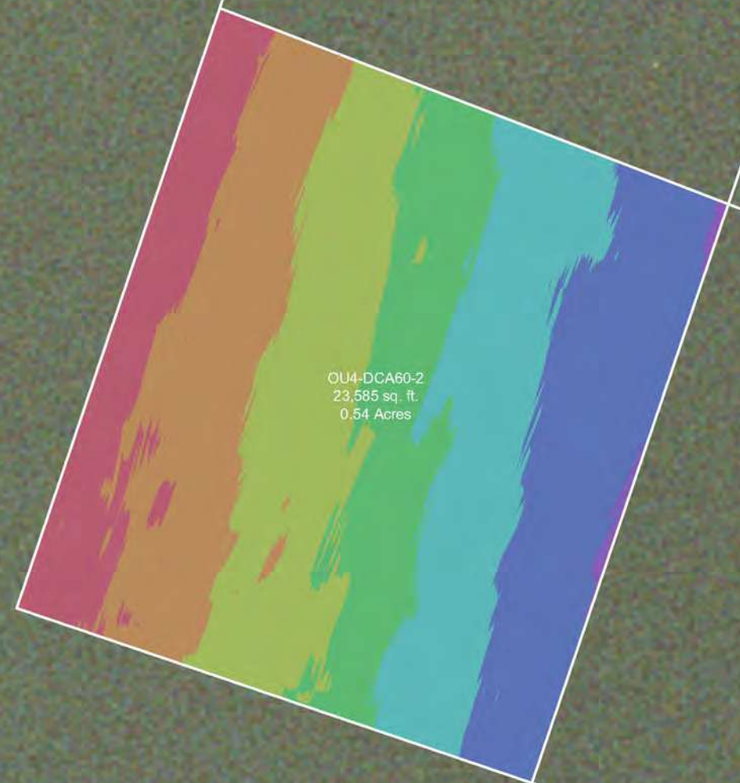
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-246

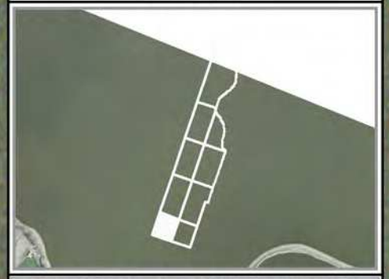
OU4-DCA60-1
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

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OU4-DCA60-2
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

6,900.37	INITIAL RAL VOLUME
436.75	INITIAL OVERCUT VOLUME
7,337.12	RAL + OVERCUT VOLUME
7,205.15	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

6,900.37	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
436.75	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
7,337.12	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

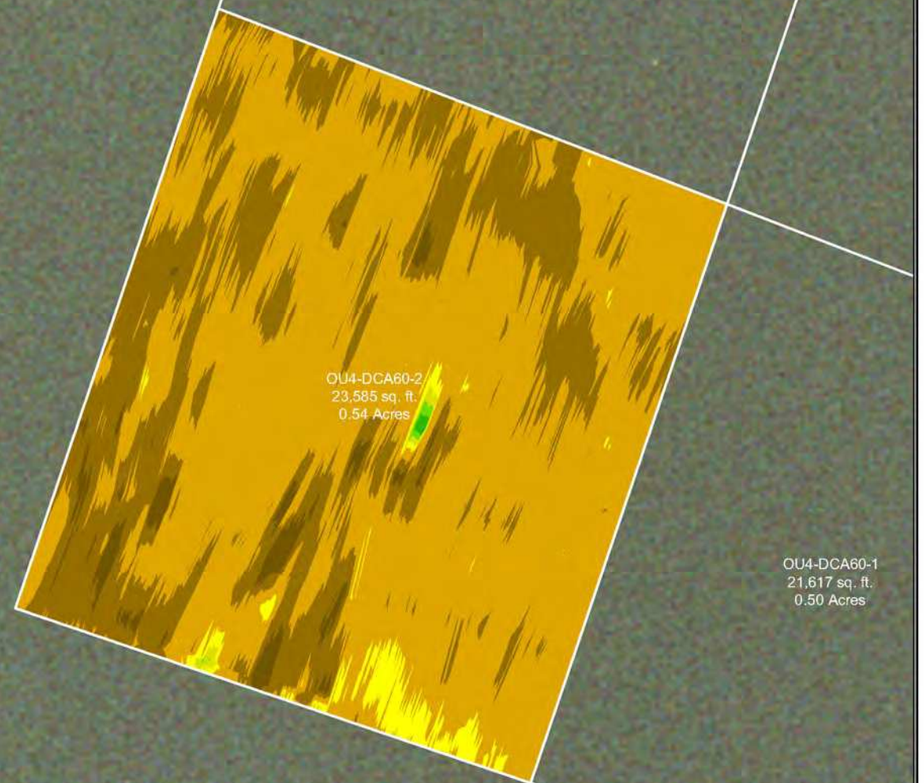
2018 AS-BUILT VOLUMES (CU. YD.)

7,258.66	TOTAL VOLUME DREDGED
6,897.18	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
3.19	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
128.78	OVERCUT VOLUME REMAINING
307.97	OVERCUT VOLUME DREDGED
53.51	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

23,584.80	AREA (SQ. FT.)
620.97	ABOVE DESIGN ELEVATION
22,963.83	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
5.10 "	AVERAGE DEPTH OF OVERCUT [1]
97	PERCENT COMPLETE [2]

OU4-DCA60-2
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
548.00'	-	550.00'
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.22'	-	-1.00'	522.70
	-1.00'	-	-0.50'	6,686.64
	-0.50'	-	0.00'	15,754.50
ABOVE RAL	0.00'	-	0.25'	535.75
	0.25'	-	0.50'	55.12
	0.50'	-	0.75'	18.22
	0.75'	-	1.00'	11.74
	1.00'	-	1.02'	0.14

SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 5-16-2018

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-DCA60-2.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 1, 2018
LAST REVISED: January 11, 2019
CHECKED BY: REG

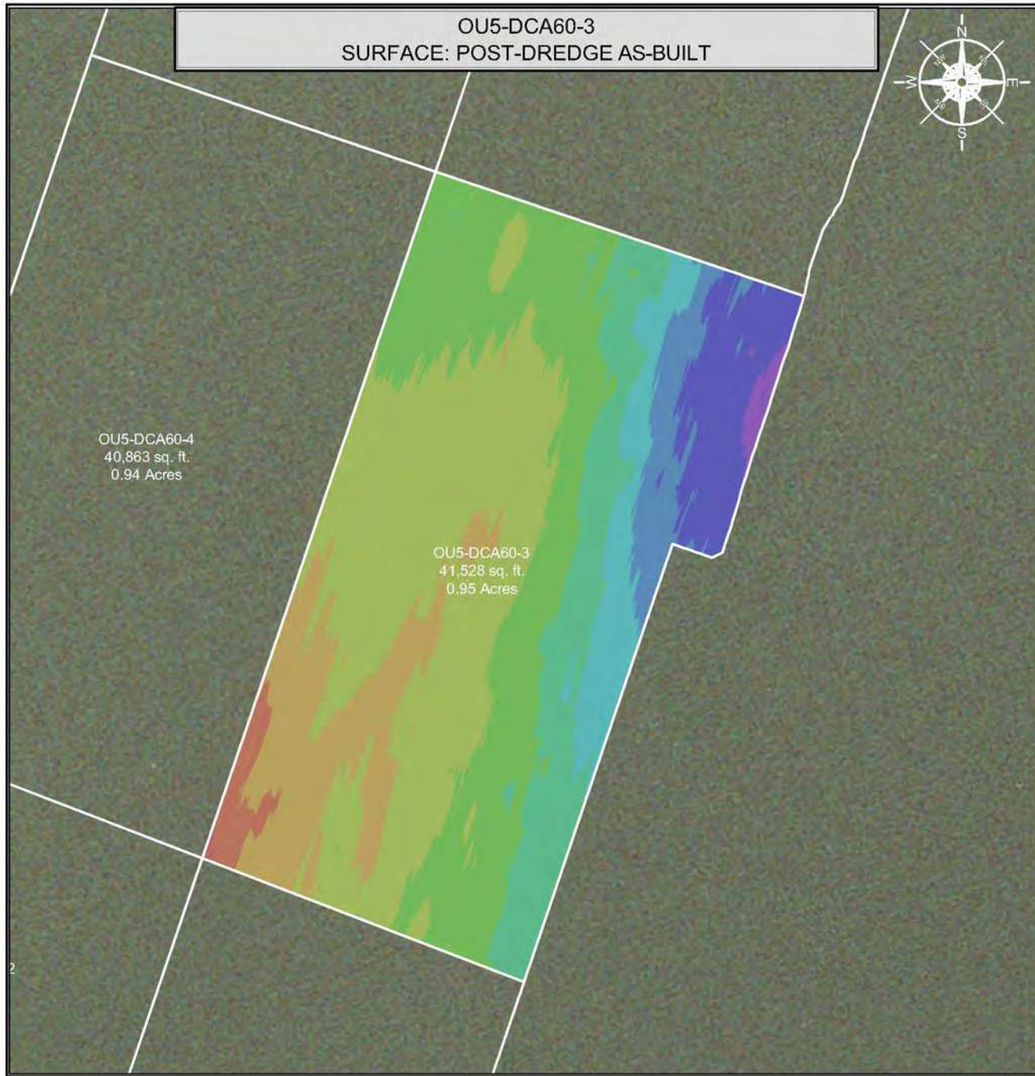
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-247

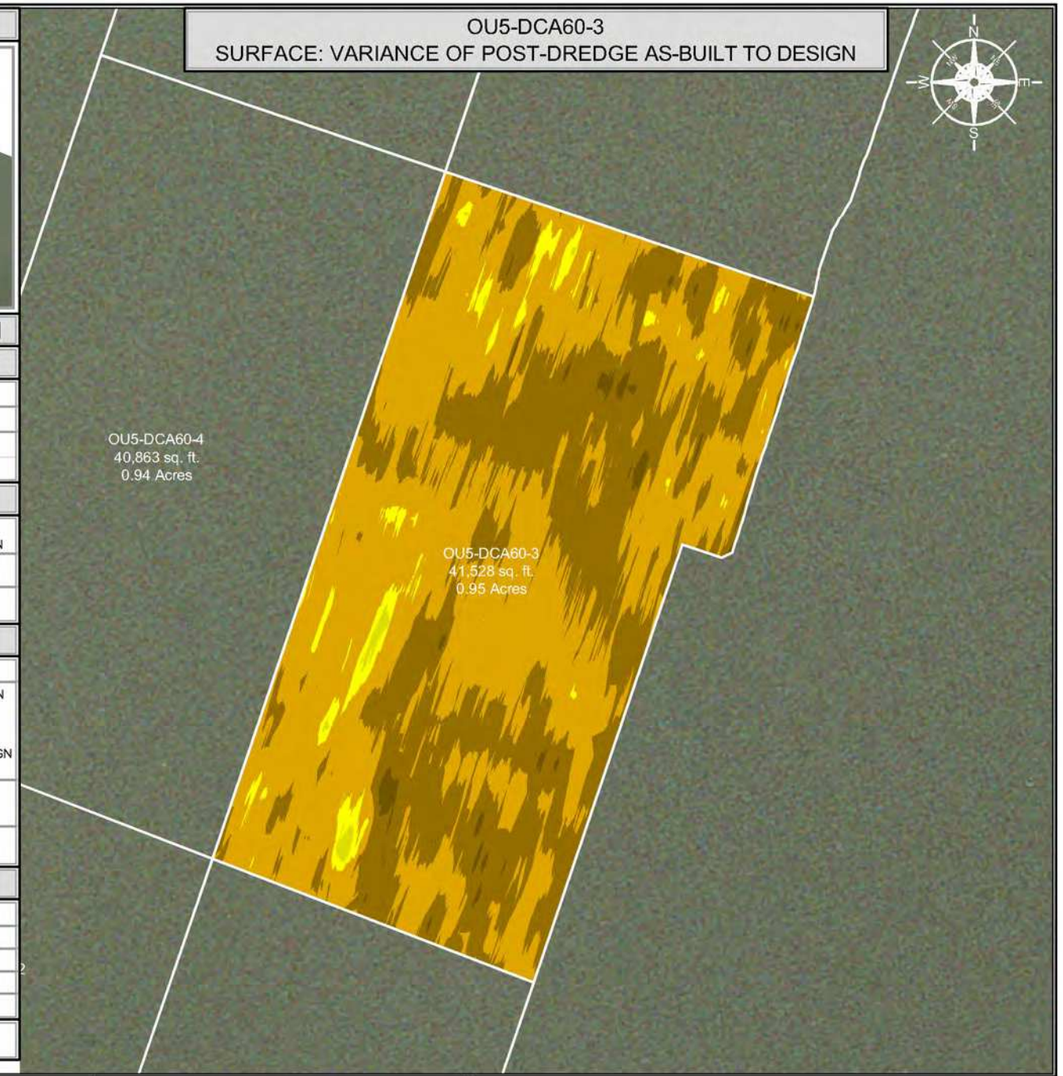
OU4-DCA60-2
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LCD\CAD\Hold Engineering\Design Files\2018\OU4 DCA60\DWG\Post Design\OU4 DCA60-2.dwg

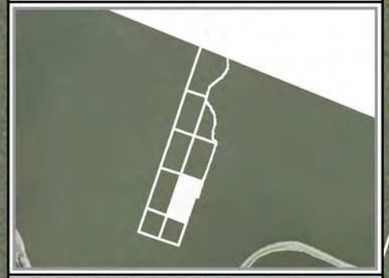
OU5-DCA60-3
SURFACE: POST-DREDGE AS-BUILT



OU5-DCA60-3
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

6,021.31	INITIAL RAL VOLUME
768.22	INITIAL OVERCUT VOLUME
6,789.53	RAL + OVERCUT VOLUME
6,596.86	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

6,021.31	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
768.22	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
6,789.53	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

2018 AS-BUILT VOLUMES (CU. YD.)

6,694.23	TOTAL VOLUME DREDGED
6,016.07	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
5.25	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
187.42	OVERCUT VOLUME REMAINING
579.22	OVERCUT VOLUME DREDGED
98.94	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

41,527.73	AREA (SQ. FT.)
1,234.54	ABOVE DESIGN ELEVATION
40,293.19	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
5.45 "	AVERAGE DEPTH OF OVERCUT [1]
97	PERCENT COMPLETE [2]

SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 4-26-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
559.00'	-	560.00'
560.00'	-	561.00'
561.00'	-	562.00'
562.00'	-	563.00'
563.00'	-	564.00'
564.00'	-	565.00'
565.00'	-	566.00'
566.00'	-	567.00'
567.00'	-	568.00'
568.00'	-	569.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT / DREDGE AREA / DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.95'	-	-1.00'	464.00
BELOW RAL	-1.00'	-	-0.50'	16,387.88
BELOW RAL	-0.50'	-	0.00'	23,441.31
ABOVE RAL	0.00'	-	0.25'	1,074.39
ABOVE RAL	0.25'	-	0.59'	160.15

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU5-DCA60-3.dwg
DRAWN BY: DAVID.FRISQUE
DATE: May 2, 2018
LAST REVISED: January 11, 2019
CHECKED BY: REG

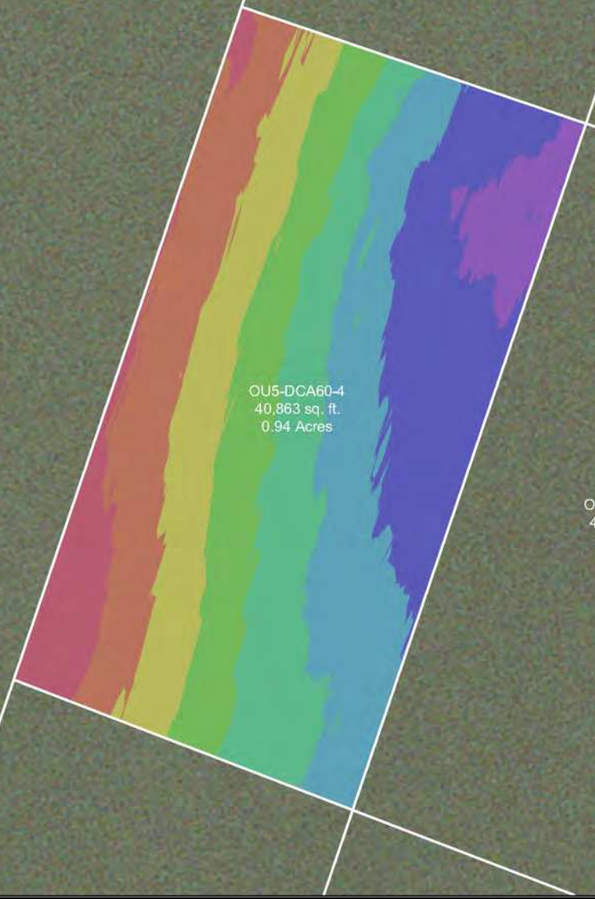
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-248

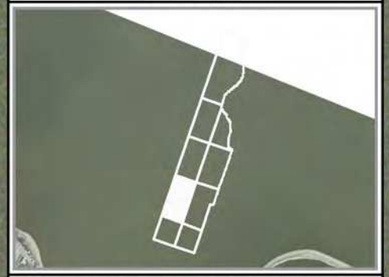
OU5-DCA60-3
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

F:\LOCAD\Field Engineering\Dredge Files\2018\OU4 DCA60\WG\Post Dredge\OU5 DCA60-3.dwg

OU5-DCA60-4
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

8,904.82	INITIAL RAL VOLUME
756.73	INITIAL OVERCUT VOLUME
9,661.55	RAL + OVERCUT VOLUME
9,454.97	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

8,904.85	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
756.70	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
9,661.55	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

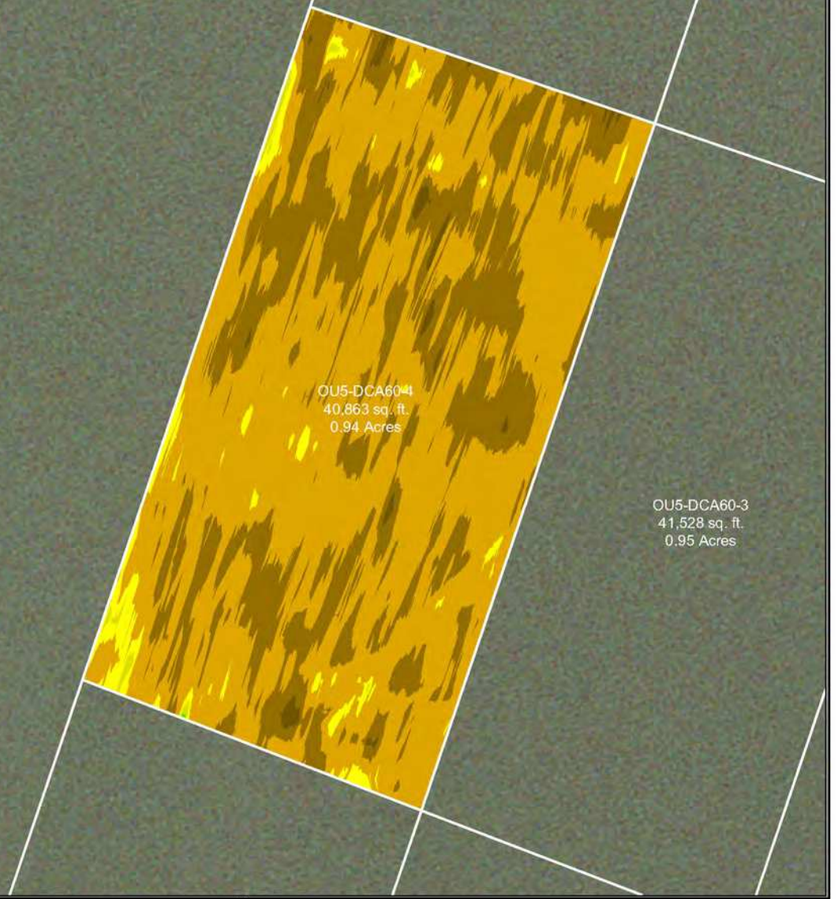
2018 AS-BUILT VOLUMES (CU. YD.)

9,527.28	TOTAL VOLUME DREDGED
8,898.35	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
6.47	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
200.11	OVERCUT VOLUME REMAINING
556.62	OVERCUT VOLUME DREDGED
72.31	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

40,863.37	AREA (SQ. FT.)
1,411.86	ABOVE DESIGN ELEVATION
39,451.51	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
5.17 "	AVERAGE DEPTH OF OVERCUT [1]
97	PERCENT COMPLETE [2]

OU5-DCA60-4
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
549.00'	-	551.00'
551.00'	-	553.00'
553.00'	-	555.00'
555.00'	-	557.00'
557.00'	-	559.00'
559.00'	-	561.00'
561.00'	-	563.00'
563.00'	-	565.00'

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.78'	-	-1.00'	354.18
	-1.00'	-	-0.50'	12,889.92
	-0.50'	-	0.00'	26,207.41
ABOVE RAL	0.00'	-	0.25'	1,221.97
	0.25'	-	0.50'	186.59
	0.50'	-	0.64'	3.29

SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 4-26-2018

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT | DREDGE AREA | DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU5-DCA60-4.dwg
DRAWN BY: DAVID.FRISQUE
DATE: May 2, 2018
LAST REVISED: January 11, 2019
CHECKED BY: REG

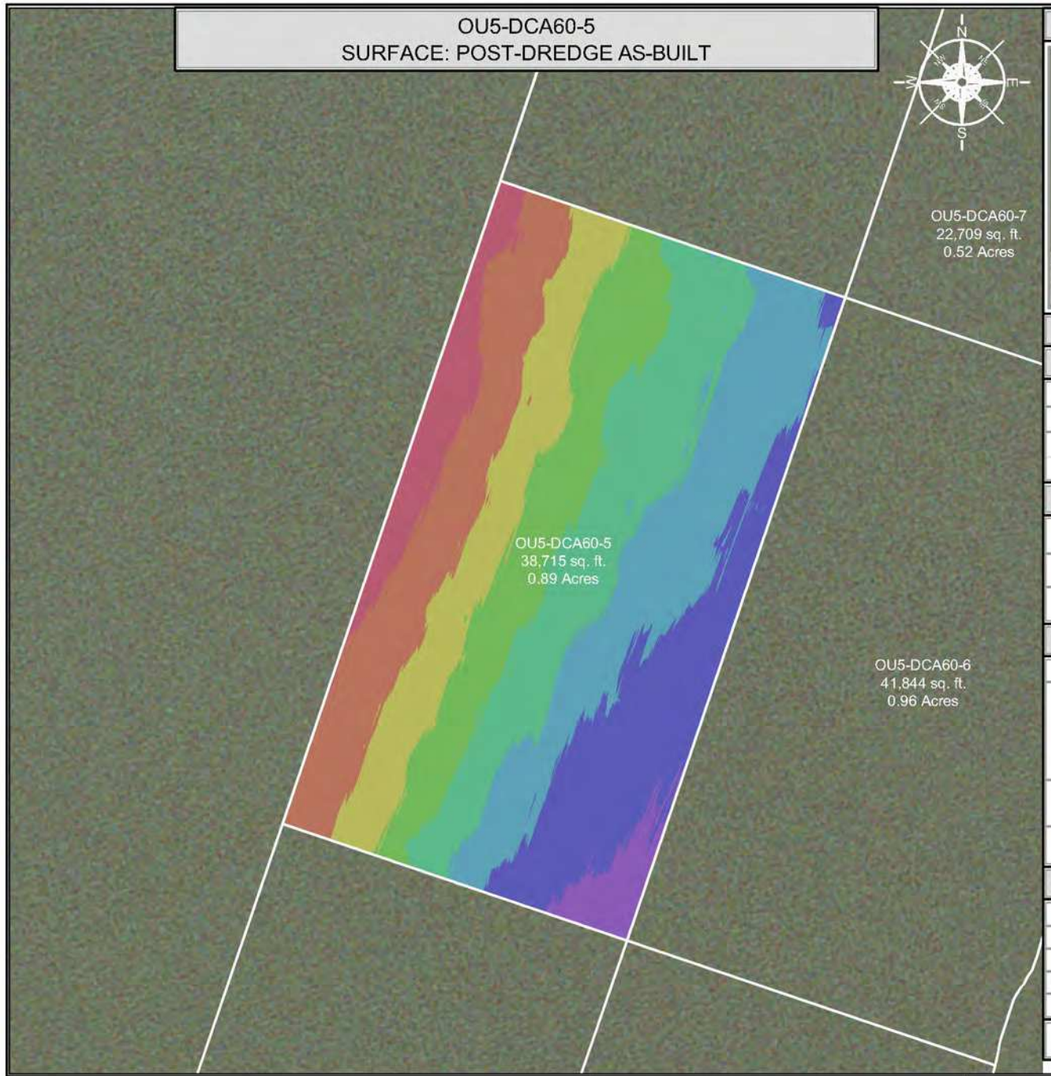
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-249

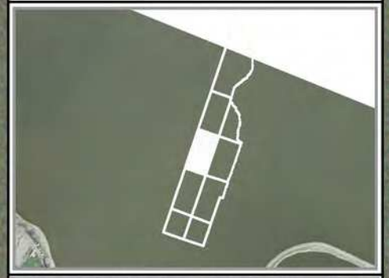
OU5-DCA60-4
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LLC\DATA\Hold Engineering\Dredge Files\2018\OU4 DCA60\MXD\Post Dredge\OU5 DCA60-4.dwg

OU5-DCA60-5
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

10,586.27	INITIAL RAL VOLUME
716.95	INITIAL OVERCUT VOLUME
11,303.22	RAL + OVERCUT VOLUME
11,177.99	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

10,586.27	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
716.95	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
11,303.22	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

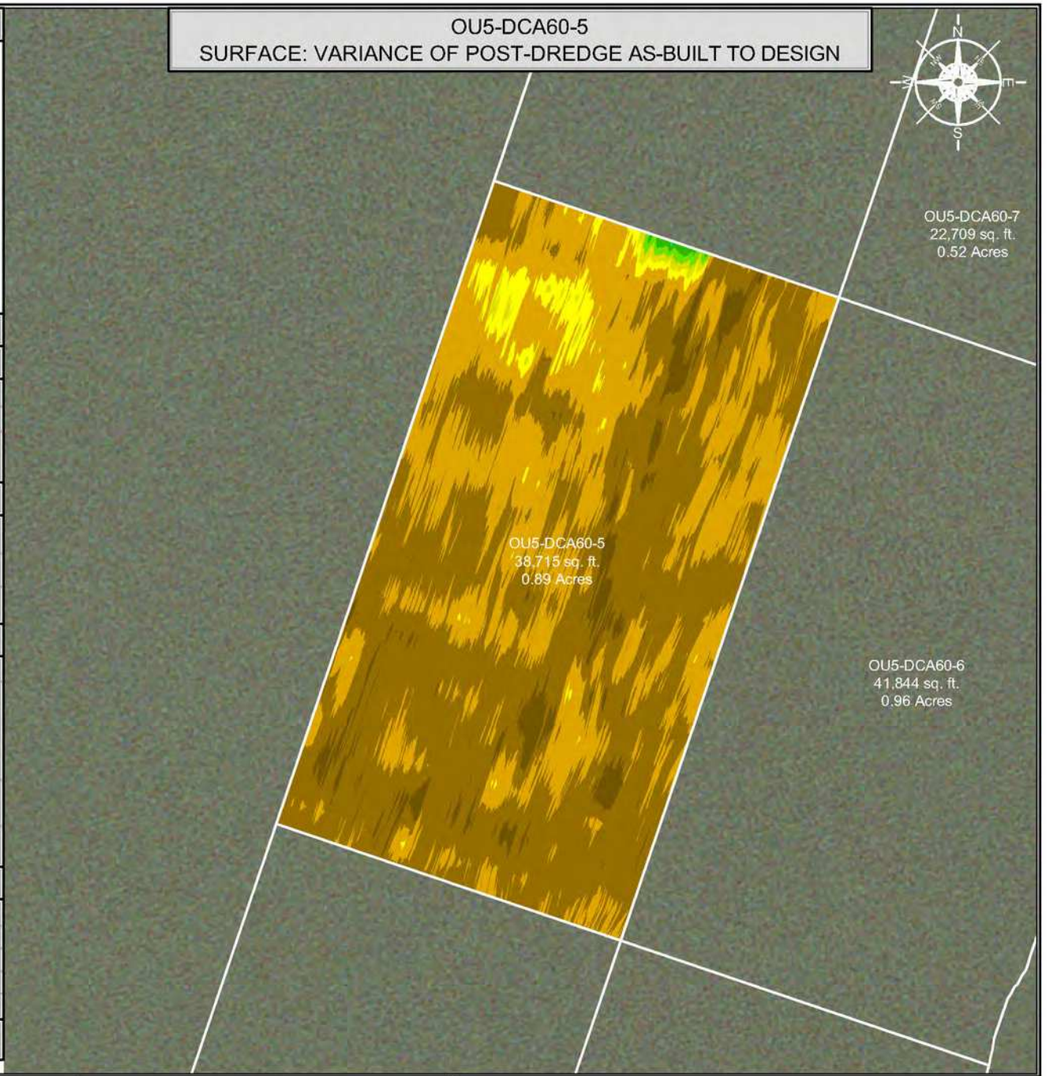
2018 AS-BUILT VOLUMES (CU. YD.)

11,375.28	TOTAL VOLUME DREDGED
10,575.92	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
10.35	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
114.88	OVERCUT VOLUME REMAINING
602.07	OVERCUT VOLUME DREDGED
197.29	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

38,715.46	AREA (SQ. FT.)
1,441.22	ABOVE DESIGN ELEVATION
37,274.24	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
6.95 "	AVERAGE DEPTH OF OVERCUT [1]
96	PERCENT COMPLETE [2]

OU5-DCA60-5
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 5-24-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
548.00'	-	550.00'
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'
562.00'	-	564.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.94'	-	-1.00'	1,717.60
	-1.00'	-	-0.50'	21,896.62
	-0.50'	-	0.00'	13,660.02
ABOVE RAL	0.00'	-	0.25'	1,094.96
	0.25'	-	0.50'	193.42
	0.50'	-	0.75'	94.98
	0.75'	-	1.00'	56.10
	1.00'	-	1.10'	1.75

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU5-DCA60-5.dwg
DRAWN BY: DAVID.FRISQUE
DATE: June 1, 2018
LAST REVISED: January 11, 2019
CHECKED BY: REG

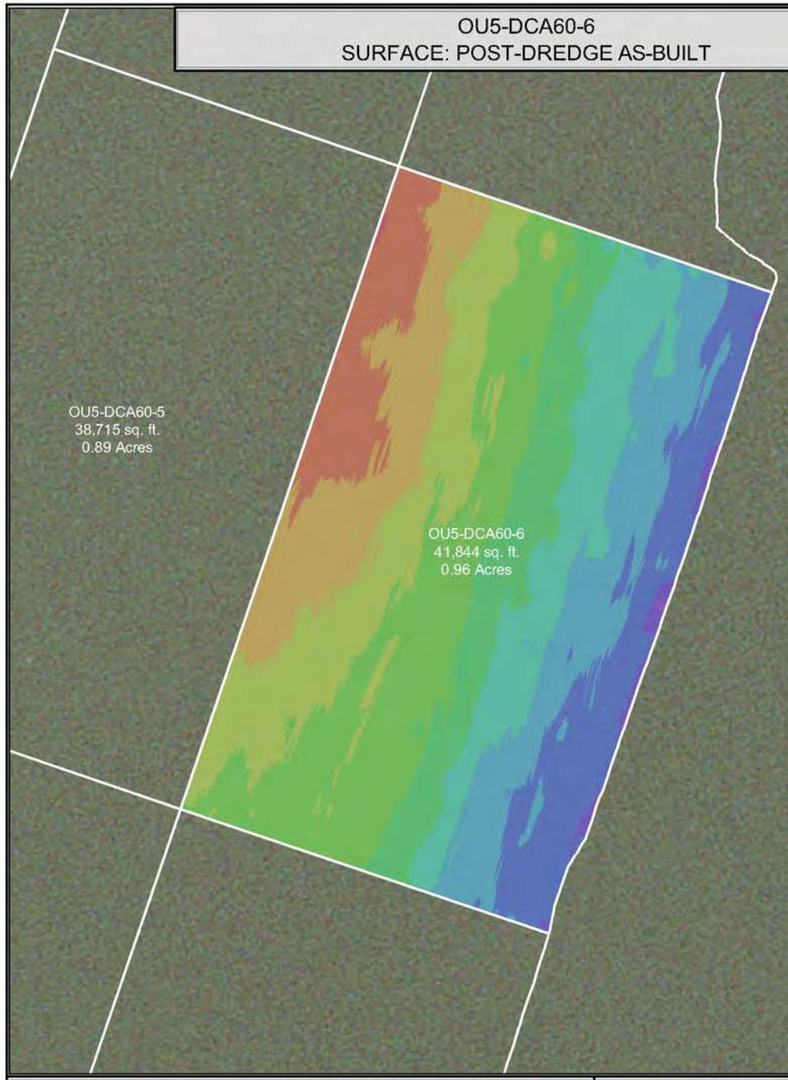
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-250

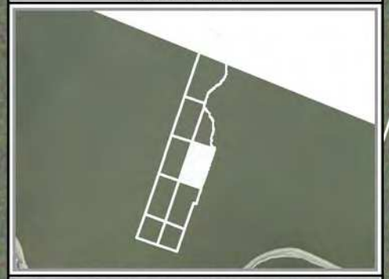
OU5-DCA60-5
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

F:\LDC\ACAD\Hold Engineering\Dredge Files\2018\OU4 DCA60\DWG\Post Dredge\OU5 DCA60 5.dwg

OU5-DCA60-6
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

5,513.12	INITIAL RAL VOLUME
777.88	INITIAL OVERCUT VOLUME
6,291.00	RAL + OVERCUT VOLUME
6,121.30	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

5,513.12	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
777.88	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
6,291.00	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

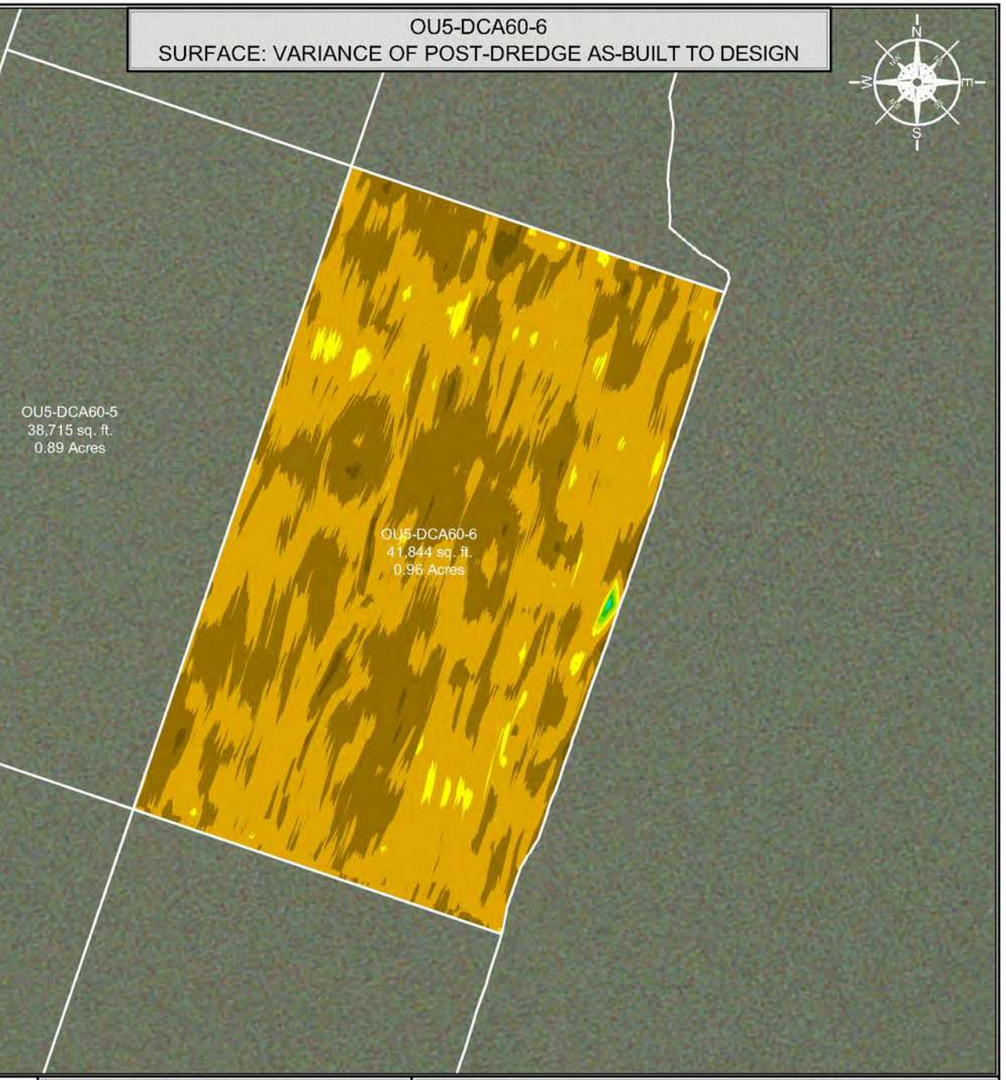
2018 AS-BUILT VOLUMES (CU. YD.)

6,205.41	TOTAL VOLUME DREDGED
5,495.95	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
3.49	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
166.21	OVERCUT VOLUME REMAINING
607.03	OVERCUT VOLUME DREDGED
102.43	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

41,843.67	AREA (SQ. FT.)
757.21	ABOVE DESIGN ELEVATION
41,086.46	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
5.59 "	AVERAGE DEPTH OF OVERCUT [1]
98	PERCENT COMPLETE [2]

OU5-DCA60-6
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 5-4-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
559.00'	-	560.00'
560.00'	-	561.00'
561.00'	-	562.00'
562.00'	-	563.00'
563.00'	-	564.00'
564.00'	-	565.00'
565.00'	-	566.00'
566.00'	-	567.00'
567.00'	-	568.00'
568.00'	-	569.00'
569.00'	-	570.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-1.68'	-	-1.00'	494.38
BELOW RAL	-1.00'	-	-0.50'	16,467.55
BELOW RAL	-0.50'	-	0.00'	24,124.53
ABOVE RAL	0.00'	-	0.25'	683.73
ABOVE RAL	0.25'	-	0.50'	34.64
ABOVE RAL	0.50'	-	0.75'	19.60
ABOVE RAL	0.75'	-	1.00'	12.90
ABOVE RAL	1.00'	-	1.29'	6.34

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU5-DCA60-6.dwg
DRAWN BY: DAVID.FRISQUE
DATE: May 21, 2018
LAST REVISED: January 11, 2019
CHECKED BY: REG

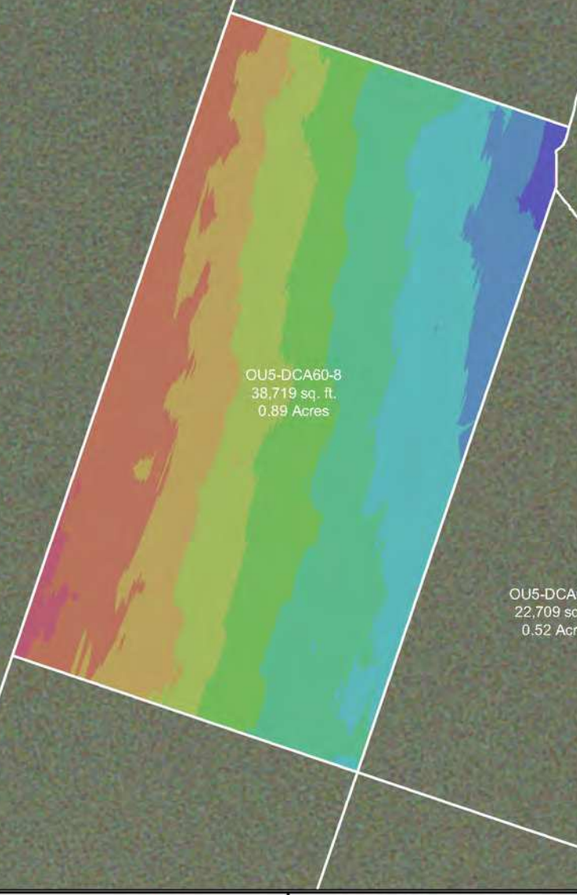
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-251

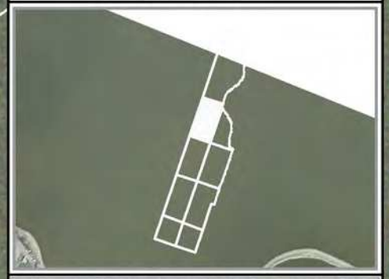
OU5-DCA60-6
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\ALLOC\42\Field Env\mxd\gDredge Files\2018\OU4 DC-A60\DWG\Post Dredge\OU5 DCA60-6.dwg

OU5-DCA60-8
SURFACE: POST-DREDGE AS-BUILT



INDEX MAP



DREDGE AREA INFORMATION

DREDGE VOLUME ROLLUP (ALL YEARS)

10,369.91	INITIAL RAL VOLUME
717.35	INITIAL OVERCUT VOLUME
11,087.26	RAL + OVERCUT VOLUME
10,901.90	VOLUME DREDGED THRU 2018

2018 DREDGE VOLUMES

10,369.91	RAL VOLUME ABOVE DESIGN DREDGE ELEVATION FOR THE 2018 DREDGE SEASON
717.35	OVERCUT VOLUME FOR THE 2018 DREDGE SEASON
11,087.26	RAL + OVERCUT VOLUME FOR THE 2018 DREDGE SEASON

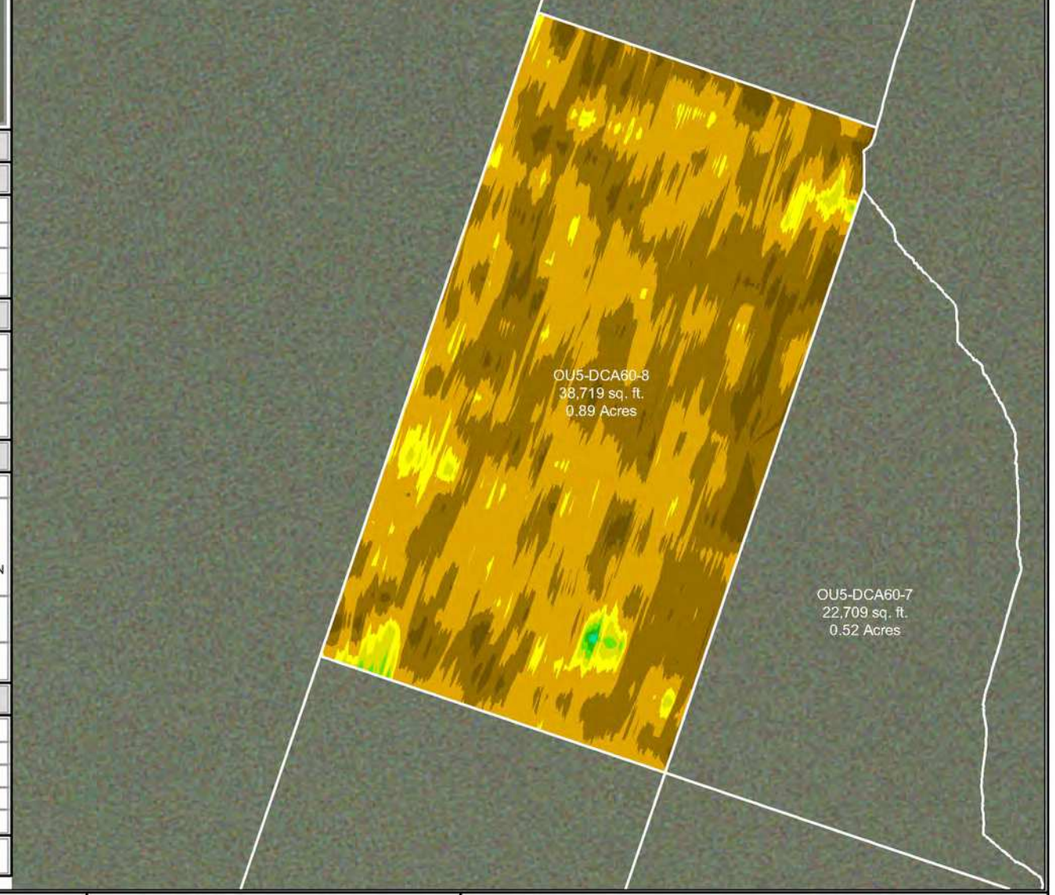
2018 AS-BUILT VOLUMES (CU. YD.)

11,084.98	TOTAL VOLUME DREDGED
10,356.04	RAL VOLUME DREDGED ABOVE THE DESIGN DREDGE ELEVATION
0.00	CONFIRMED HIGH SUBGRADE VOLUME
13.87	RAL VOLUME REMAINING ABOVE THE DESIGN DREDGE ELEVATION
171.49	OVERCUT VOLUME REMAINING
545.55	OVERCUT VOLUME DREDGED
183.39	VOLUME DREDGED BELOW OVERCUT ELEVATION

2018 AS-BUILT AREAS (SQ. FT.)

38,719.27	AREA (SQ. FT.)
2,013.56	ABOVE DESIGN ELEVATION
36,705.71	AT OR BELOW DESIGN ELEVATION
0.00	CONFIRMED HIGH SUBGRADE
6.43 "	AVERAGE DEPTH OF OVERCUT [1]
95	PERCENT COMPLETE [2]

OU5-DCA60-8
SURFACE: VARIANCE OF POST-DREDGE AS-BUILT TO DESIGN



SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 7-12-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
548.00'	-	550.00'
550.00'	-	552.00'
552.00'	-	554.00'
554.00'	-	556.00'
556.00'	-	558.00'
558.00'	-	560.00'
560.00'	-	562.00'
562.00'	-	564.00'
564.00'	-	566.00'
566.00'	-	568.00'

[1] AVERAGE DEPTH OF OVERCUT IS CALCULATED BY DIVIDING THE VOLUME DREDGED BELOW THE DESIGN DREDGE ELEVATION BY THE AREA DREDGED AT OR BELOW GRADE.
[2] PERCENT COMPLETE INCLUDES AREA OF CONFIRMED HIGH SUBGRADE

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OU# - D# - #
OPERABLE UNIT — DREDGE AREA — DREDGE MANAGEMENT UNIT

DREDGE MANAGEMENT UNIT (DMU)

VARIANCE COLOR LEGEND

	MIN. EL.		MAX. EL.	AREA (sq.ft.)
BELOW RAL	-2.06'	-	-1.00'	2,325.78
	-1.00'	-	-0.50'	16,687.59
	-0.50'	-	0.00'	17,692.34
ABOVE RAL	0.00'	-	0.25'	1,447.21
	0.25'	-	0.50'	440.76
	0.50'	-	0.75'	91.65
	0.75'	-	1.00'	25.01
	1.00'	-	1.24'	8.87

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU5-DCA60-8.dwg
DRAWN BY: DAVID.FRISQUE
DATE: July 23, 2018
LAST REVISED: January 11, 2019
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 4-252

OU5-DCA60-8
PRIMARY DREDGE BATHYMETRY, VOLUMES AND AREAS

P:\LLC\DATA\Hold Engineering\Dredge Files\2018\OU4 DC\60\DWG\Post Dredge\DU5 DC\60 8.dwg

5. SEDIMENT DESANDING AND DEWATERING

This section provides an overview of the sediment screening (or scalping), desanding, thickening, and dewatering processes used in the SDDP. These processes provided the following benefits:

- Removed debris larger than 6 millimeters (mm) to protect downstream dewatering equipment
- Separated sand from the sediment for potential beneficial reuse
- Thickened the sediment slurry prior to introducing it into the filter presses, thereby providing a uniform slurry, which enhances the efficiency of dewatering operations
- Achieved efficiencies of the screening, thickening, and dewatering unit operations that were above expectations
- Provided a reliable dewatering system capable of keeping pace with the dredging production rate

Separation of the sand is beneficial to the process because, without it, sediment dewatering rates would be significantly lower due to the need to dewater the sand. Separation reduces consumption of landfill volume and reduces costs for transportation and disposal. Additionally, processing sand through the dewatering equipment would increase its wear, resulting in increased maintenance and repair.

Additional details on the SDDP process and equipment are included in Volumes 1 (Tetra Tech et al. 2009a) and 2 (Tetra Tech et al. 2012a) of the 100 Percent Design Report for the project, and Section 5, Part 5.1 of the 2009 Remedial Action Summary Report (2009 RA Summary Report; Tetra Tech et al. 2011b).

This section also provides a summary of the analytical results for the separated sand (coarse and fine, non-TSCA) and filter cake.

5.1 Overview

During 2018, the SDDP successfully produced 17,030 drops of filter cake from the eight membrane filter presses (see Appendix A, Photograph 42). Overall, the SDDP operated at an efficiency of 75 percent uptime and an average of 106 filter press drops per day.

5.2 Chemical Addition

No further modifications were made to optimize the dosing of polymer, since modifications made in prior years worked as planned.

5.3 Sediment Screening and Thickening

The sediment screening and thickening process is described in Section 5, Part 5.3 of the 2009 RA Summary Report (Tetra Tech et al. 2011b).

5.4 Sand Pad Management

Sand was separated into coarse (150 microns to 6mm) and fine (63 microns to 150 microns) fractions as part of the sand separation process. Scalping debris (i.e., debris larger than 6mm) was placed in a roll-off to approximately 50 to 75 percent capacity, then moved to the sand pad to drain before mixing with the filter cake. During 2018, spreading the scalpings thinly on the sand pad for observation continued, as described in Section 5.5.1. Photographs 17 and 18 in Appendix A show stockpiled sand on the sand pad.

A front-end loader with bucket attachment was used to remove sand from underneath the coarse and fine sand conveyors as the sand was generated. The sand was transported to the northern portion of the sand pad for screening and for collection of samples for laboratory analysis. Following receipt of acceptable laboratory results, as defined in the low hazard waste exemption, sand approved for beneficial reuse was transported to a sand storage area on the eastern side of the LFRR Processing Facility building (Appendix A, Photographs 20, 21, and 22). Any sand separated from non-TSCA sediment that was not suitable for beneficial reuse was loaded and transported into the filter cake storage area for transportation to the ADS Hickory Meadows Landfill and disposal as waste. During 2018, no TSCA sediment was dredged, and, therefore, no separated sand was derived from dredging TSCA sediment.

Operations staff inspected the concrete pad, trench drains, and concrete tank on a weekly basis in accordance with the Site-Wide Operations and Maintenance Plan (Tetra Tech et al. 2011a). Residual sand and/or debris that accumulated in the trench drains and the concrete tank was removed as necessary throughout the operations season.

5.5 Sand and Filter Cake Sampling and Analyses

After scalpings were removed, the SDDP process yielded two separate sediment components: a mixture of fine and coarse sand, and filter cake. The separated sediment components were sampled throughout 2018 for various chemical and geotechnical parameters, at the site and at off-site laboratories. A total of 1,433 samples were analyzed in 2018, including 112 sand samples and 1,321 filter cake samples. Filter cake and sand sampling was based on the QAPP, CQAPP, beneficial reuse, and landfill disposal requirements. Data associated with these samples are included in Appendices G, H, I, and J. Photograph 19 in Appendix A shows personnel conducting a BRM rinsate test. This section summarizes SDDP sand, scalping, and filter cake sampling procedures, as well as chemical and geotechnical analysis results.

5.5.1 Separated Sand and Scalpings Testing

A description of the sampling of sand generated by the SDDP is included in Section 5, Part 5.5.1 of the 2009 RA Summary Report (Tetra Tech et al. 2011b). In 2018, fine and coarse sand were not separated. Therefore, the combined fine and coarse sand was tested together rather than separately as in previous years. The combined coarse and fine sand is reported here as BRM sand. Volumes of sand generated as BRM exclude any fine or coarse sand separated from non-TSCA sediment that appeared to contain significant proportions of organics, and was, therefore, disposed of with the filter cake. Table 5-1 summarizes the analytical and geotechnical sample parameters required by low hazard exemption (LHE) for BRM sand produced by the SDDP. Table 5-2 summarizes the analytical and geotechnical sampling frequency for non-TSCA BRM sand. The sampling frequency is based on the running volume reported by SDDP operators at the time of sampling. Pace Analytical conducted the chemical analyses and American Engineering Testing, Inc. (AET) conducted geotechnical analyses.

Table 5-3 presents the quantities of scalpings and non-TSCA sand not suitable as BRM. Scalpings and non-TSCA sand quantities listed in Table 5-3 were determined using a truck scale as the sand and scalpings were brought into Building B in roll-off containers. The proportions of sand were obtained from the SDDP weigh scale conveyors. The final daily sand production volumes were calculated by subtracting tons of highly organic sand (weighed on the truck scales) from belt scale weights reported by SPRI.

As initiated in 2017, as scalpings were generated, they were moved to a screening area on the northern end of the sand pad and spread out in a layer approximately 2 inches thick (Appendix A, Photographs 38 and 39). Scalpings were then observed for reactive properties or nonconforming substances, including ammunition, or scalpings that could spontaneously combust, ignite, smolder, or produce smoke, sparks or flames. The scalpings remained thinly spread for a period of 1 hour while observations were made and

documented. They were then mixed and re-spread thinly for a second hour of observations. The scalpings were then mixed with the filter cake for off-site disposal at the ADS Hickory Meadows Landfill.

Table 5-1. 2018 SDDP LHE BRM Sand Chemical and Geotechnical Analysis Parameters and Methods

Parameter	Test Method
Chemical Parameters	
PCBs (Aroclors)	SW-846 EPA 8082A
Percent Solids	ASTM D2974-07a
Total 2,3,7,8 TCDD	EPA 1613B
Total 2,3,7,8 TCDF	EPA 1613B
DDT, DDD, DDE	SW-846 EPA 8081B
Arsenic	SW-846 EPA 6000/7000
Barium	SW-846 EPA 6000/7000
Cadmium	SW-846 EPA 6000/7000
Chromium	SW-846 EPA 6000/7000
Copper	SW-846 EPA 6000/7000
Cyanide	SW-846 EPA 9012A
Iron	SW-846 EPA 6000/7000
Lead	SW-846 EPA 6000/7000
Manganese	SW-846 EPA 6000/7000
Mercury	SW-846 EPA 6000/7000
Nickel	SW-846 EPA 6000/7000
Selenium	SW-846 EPA 6000/7000
Zinc	SW-846 EPA 6000/7000
Geotechnical Parameters	
Grain Size	ASTM D 422-63-07
TOC/FOC	ASTM D 2974-07A
Percent Moisture/Percent Solids	ASTM D 2116

Acronyms and Abbreviations:
ASTM – ASTM International
BRM – beneficial reuse material
DDD – dichlorodiphenyldichloroethane
DDE – dichlorodiphenyldichloroethylene
DDT – dichlorodiphenyltrichloroethane
EPA – United States Environmental Protection Agency
FOC – free organic carbon
LHE – low hazard exemption
PCBs – polychlorinated biphenyls
SDDP – Sediment Desanding and Dewatering Plant
TCDD – tetrachlorodibenzodioxin
TCDF – tetrachlorodibenzofuran
TOC – total organic carbon

Table 5-2. 2018 Non-TSCA BRM Sand Sampling Frequency and Associated Reported SDDP Production Volumes

Sampling Date	Sample and Required Frequency per the QAPP	Actual Production Volume (cy)[1, 2]
3/29/2018	1,000-cy stockpile sample	1,559
4/2/2018	2,000-cy stockpile sample	3,206
4/3/2018	3,000-cy stockpile sample	4,115
4/5/2018	4,000-cy stockpile sample	5,941
4/6/2018	5,000-cy stockpile sample	6,876
4/9/2018	6,000-cy stockpile sample	7,759
4/11/2018	7,000-cy stockpile sample	8,941
4/13/2018	8,000-cy stockpile sample	10,097
4/18/2018	9,000-cy stockpile sample	11,274
4/19/2018	10,000-cy stockpile sample	12,062
5/7/2018	20,000-cy stockpile sample	20,114
6/1/2018	30,000-cy stockpile sample	30,411
6/26/2018	40,000-cy stockpile sample	40,689
7/11/2018	50,000-cy stockpile sample	48,498
7/25/2018	60,000-cy stockpile sample	60,311
8/13/2018	70,000-cy stockpile sample	73,014
9/12/2018	80,000-cy stockpile sample	82,818
9/21/2018	90,000-cy stockpile sample	92,334
9/28/2018	100,000-cy stockpile sample	99,945
10/29/2018	110,000-cy stockpile sample	111,793

Notes:

1 All sand volumes were calculated assuming a unit weight of 95 pounds per cubic foot (2,565 pounds/cy) for sampling volume frequency purposes only. Not intended for use in end-of-year volume calculations.

2 Reported daily production tonnages were consistently different (overreported) compared to daily visual sand stockpile observations on the Sand Pad.

Acronyms and Abbreviations:

cy – cubic yards
BRM – beneficial reuse material
QAPP – Quality Assurance Project Plan
SDDP – sediment desanding and dewatering plant
TSCA – Toxic Substances Control Act

Table 5-3. 2018 Scalpings and Sand Not Suitable as BRM Quantities (Tons)

	Total Weight Produced	Shipped to the Hickory Meadows Landfill with Filter Cake	Shipped to the Ridgeview Landfill	Remaining On Site as Stockpiled
Scalpings (after draining)	5,098.31	5,098.31	0	0
Non-TSCA Sand	1,847.86	1,847.86	0	0
Non-TSCA Scalpings from MGP SFA	993.93	993.93	0	0
Non-TSCA Sand from MGP SFA	11,322.85	11,322.85	0	0

Acronyms and Abbreviations:
BRM – beneficial reuse material
MGP SFA – Manufactured Gas Plant South Focus Area
TSCA – Toxic Substances Control Act

5.5.1.1 Separated Sand Chemical Results

A total of 92 non-TSCA BRM sand samples were collected for chemical analysis throughout SDDP operations. Of the 92 samples, 20 were analyzed for all LHE parameters based on production volume requirements and 72 samples were analyzed only for PCB arochlors. Sand samples that were analyzed only for PCBs were typically composites of daily grab samples. All BRM sand sample results were compared to the LHE acceptance criteria limits before the sand represented by those results was transported off-site. The average total PCB concentration for non-TSCA BRM sand was 0.12 milligrams per kilogram (mg/kg) with 95 percent confidence interval average of 0.14 mg/kg. This average is below the WDNR's BRM criterion of 0.49 mg/kg. Results of the analyses of the non-TSCA sand for metals, pesticides, and dioxins showed three individual parameter exceedances for PCBs, chromium, and lead. Despite these individual exceedances, the running arithmetic averages at 95 percent confidence remained below the LHE acceptance limits throughout the production season. Additionally, all sand stockpiles with individual parameter exceedances were accepted for use as BRM by WDNR Waste and Materials Management Northeast/Northern Region. Appendix G (Table G-1) presents the BRM sand sample results.

5.5.1.2 Separated Sand Geotechnical Results

Twenty BRM sand samples were sent to AET for geotechnical analysis during 2018 operations. All BRM sand samples were analyzed for unit weight, and 12 samples were analyzed for permeability. The BRM sand moisture and solids results are included in Table 5-5. Appendix H provides the BRM sand grain-size distribution results. In previous years, Table 5-4 presented fine sand moisture and solids results. Only Table 5-5 is presented in this report, because the 2018 sand testing was not separated by coarse and fine sand. Tables were not renumbered to preserve the continuity of table names through multiple years.

Table 5-5. 2018 BRM Sand Moisture/Solids Results

Sample No.	Sampling Date	Ash Content (ASTM: D2974) (%)	Organic Matter (ASTM: D2974) (%)	Moisture Content (ASTM: D2216) Proportion of As-Received Mass (%)	Solids Content Proportion of As-Received Mass (ASTM: D2216) (%)	Moisture Content Proportion of dry mass (ASTM: D2216) (%)	Unit Weight (ASTM: C29) PCF	Grain Size (ASTM: C136)	Permeability (ASTM: D2434) cm/sec
TTFR-18-BRS-001G	3/29/2018	99.51	0.49	6.8	93.2	7.3	94.4	X	9.78E-03
TTFR-18-BRS-002G	4/2/2018	98.78	1.22	16.5	83.5	19.7	89.4	X	4.44E-03
TTFR-18-BRS-003G	4/3/2018	99.52	0.48	13.9	86.1	16.2	87.4	X	6.47E-03
TTFR-18-BRS-004G	4/5/2018	99.72	0.28	13.8	86.2	16.0	93.8	X	---
TTFR-18-BRS-005G	4/6/2018	99.72	0.28	15.1	84.9	17.7	93.8	X	---
TTFR-18-BRS-006G	4/9/2018	99.68	0.32	14.3	85.7	16.6	91.4	X	---
TTFR-18-BRS-007G	---	---	---	---	---	---	---	---	---
TTFR-18-BRS-008G	---	---	---	---	---	---	---	---	---
TTFR-18-BRS-009G	4/18/2018	99.76	0.24	12.4	87.6	14.2	95.0	X	---
TTFR-18-BRS-010G	4/19/2018	99.63	0.37	11.3	88.7	12.7	91.3	X	---
TTFR-18-BRS-011G	5/7/2018	99.36	0.64	5.2	94.8	5.5	93.7	X	1.22E-02
TTFR-18-BRS-012G	6/1/2018	99.29	0.71	14.9	85.1	17.5	88.3	X	3.93E-03
TTFR-18-BRS-013G	6/26/2018	99.18	0.82	14.2	85.8	16.6	88.8	X	8.88E-03
TTFR-18-BRS-014G	7/11/2018	99.62	0.38	17.7	82.3	21.4	92..2	X	5.76E-03
TTFR-18-BRS-015G	7/25/2018	99.58	0.42	15.3	84.7	18.0	89.6	X	7.92E-03
TTFR-18-BRS-016G	8/13/2018	99.3	0.7	11.2	88.8	12.6	93.4	X	4.88E-03
TTFR-18-BRS-017G	9/12/2018	99.42	0.58	17.2	82.8	20.7	86.9	X	4.56E-03
TTFR-18-BRS-018G	9/21/2018	99.28	0.72	16.7	83.3	20.0	90.8	X	4.99E-03
TTFR-18-BRS-019G	9/28/2018	99.28	0.72	21.1	78.9	26.8	88.1	X	5.20E-03
TTFR-18-BRS-020G	10/29/2018	99.02	0.98	13.3	86.7	15.3	93.4	X	

Notes:
--- – not applicable

Abbreviations and Acronyms:
ASTM – ASTM International
BRM – beneficial reuse material
cm/sec – centimeters per second
PCF – pounds per cubic foot

5.5.2 Filter Cake Testing

Filter cake generated from the SDDP during the 2018 dredging season was stockpiled in the LFRR Processing Facility Building B and sampled prior to disposal. Filter cake was sampled in accordance with

QAPP SOP 004 (Tetra Tech et al. 2016), which is based on the standard practice for sampling aggregates, ASTM Method D75-03. In accordance with SOP 004, filter cake produced from the SDDP was required to meet specific acceptance criteria before it could be disposed of. Daily stockpiles were produced within a 24-hour production period starting from 1400 of the first day to 1400 the following day. The daily stockpile included scalpings and high organics sand, periodically mixed in with the filter cake throughout the 24-hour production period. A daily stockpile sample was constructed by combining filter cake from six separate sub-stockpiles within the 24-hour period. Each sub-stockpile represented 4 hours of filter cake produced. Geotechnical testing was performed on one sample from each sub-stockpile. A daily composite sample was also created by combining portions from each sub-stockpile. The composite sample was sampled for geotechnical and analytical parameters. Portions of the daily composite samples were also used as sub-samples to create 10,000 cubic yard, and 30,000 cubic yard composite samples for geotechnical testing, and a weekly composite for analytical testing.

Filter cake RaPID Assay PCB screening (> or <50 ppm) was performed once a day in the Sample Preparation Area (Appendix A, Photograph 25). Aliquots of daily stockpile samples were retained to form a weekly composite sample, which was sent to Pace Analytical for PCB analysis. Dedicated sampling shovels and spoons, and plastic-lined pails and tubs were used to prevent cross contamination of samples.

Sampling frequencies were based on production volumes, as specified by ADS and in QAPP SOP 004 (Tetra Tech et al. 2016). ADS required a weekly filter cake PCB analysis and analyses for specified geotechnical parameters. SOP 004 required further geotechnical testing once every 10,000 cy for the first 30,000 cy produced, and then every 30,000 cy thereafter. Moisture content, vane shear, and unconfined compressive strength were analyzed at a rate of one sample for approximately every 10,000 cy. Grain size distribution, triaxial shear, specific gravity, and hydraulic conductivity tests were completed at the rate of once for approximately every 30,000 cy. Consolidation tests were performed at the rate of one sample every 30,000 cy.

A total of 1,321 filter cake samples, consisting of 187 chemical samples and 1,134 geotechnical samples, were tested at the site or sent to subcontracted laboratories for analyses. Table 5-6 summarizes the chemical and geotechnical sample parameters required for filter cake.

Table 5-6. 2018 SDDP Filter Cake Chemical and Geotechnical Analysis Parameters and Methods

Parameter	Test Method	Table	Appendix
PCBs (Total Aroclors)	SW-846 EPA 8082A		
Percent Solids/Moisture, Moisture Content	ASTM D 2216	Table 5-7	J-6
TOC	ASTM D 2974-07a		
Grain Size Distribution	ASTM D 422-63-07		J-1
Hydraulic Conductivity	ASTM D 5084 Method D	Table 5-8	J-2
One Dimensional Consolidation	ASTM D 2435 Method B	Table 5-8	J-3
Dry Density	ASTM D 4254	Table 5-7	
Specific Gravity	ASTM D854	Table 5-7	J-7
Consolidated, Undrained, Direct Simple Shear	ASTM D 6528-07	Table 5-7	
Vane Shear	ASTM D 4648-05	Table 5-8	
Triaxial Compression	ASTM D 4767-04		J-9
Unconfined Compression Strength	ASTM D 2166-06		

Abbreviations and Acronyms:
ASTM – ASTM International
EPA – U.S. Environmental Protection Agency
PCBs – polychlorinated biphenyls
SDDP – Sediment Desanding and Dewatering Plant
TOC – total organic carbon

5.5.2.1 Results of Chemical Analyses of Filter Cake

A total of 187 non-TSCA composite filter cake samples were collected, 36 of which were sent to Pace Analytical for PCB analysis, and 151 of which were tested in-house for RaPID assay PCB screening. The 36 filter cake samples sent to Pace Analytical were weekly composite samples typically consisting of five daily 24-hour grab samples. Four of the 36 daily filter cake composite samples (TTFR-18-FCI-001 through -004) were sent to Pace Analytical because the RaPID Assay tests could not be performed due to the April 2018 partial roof collapse.

The results of the 36 composite non-TSCA filter cake PCB analyses ranged from 0.65 mg/kg to 5.80 mg/kg, with an average concentration of mg/kg. No TSCA sediment was processed in 2018, therefore, no TSCA filter cake PCB analyses were conducted. Appendix I, Table I-1 summarizes the results of chemical analyses of filter cake samples.

Daily filter cake RaPID assay screening results were distributed to ADS prior to shipping filter cake the following day. Weekly filter cake composite PCB results were also distributed to ADS to verify RaPID assay screening results.

5.5.2.2 Results of Geotechnical Analyses of Filter Cake

In 2018, Tetra Tech QC staff collected 1,134 geotechnical samples; 16 samples were analyzed by AET, and 1,118 samples were analyzed on site at the LFRR Processing Facility (see Appendix A, Photograph 24). The 16 filter cake samples analyzed by AET averaged 61.8 percent solids; the lowest result was 59.6 percent solids and the highest result was 64.4 percent solids.

The filter cake geotechnical analyses were completed in accordance with WDNR's Conditional Plan of Operations Approval Modification – Special Waste Acceptance Plan for Dredged Material Disposal at the ADS Hickory Meadows Landfill (WDNR 2008), and Attachment 1, QAPP Worksheet #19. The results of geotechnical testing are presented in Appendix J. Selected geotechnical test results are presented in Tables 5-7 and 5-8.

5.5.3 QC for Sampling Separated Sand and Filter Cake

The QC process for oversight of sampling of separated sand and filter cake is described in Section 5, Part 5.5.3 of the 2009 RA Summary Report (Tetra Tech et al. 2011b). Appendix G, Table G-2 presents the sand rinsate results.

Table 5-7. 2018 Filter Cake Solids, Moisture, Density, Shear Strength, and Specific Gravity Test Results 1,2,3

Sample No.	Sampling Date	Sample Type	Weight in Mold (grams)	Moisture Content (% of Wet Weight) (ASTM D2216)	Solids Content (%) (ASTM D2216)	Wet Density (pcf) (ASTM D2216)	Weight of Dry Sample (grams)	Dry Density (pcf) (ASTM D4254)	Shear Strength (pcf)[3] (ASTM D2166-06)	Water Content (% of Dry Weight) (ASTM D2216)	Specific Gravity (ASTM D854)
TTFR-18-FC-001C	4/2/2018	10,000 cy	1420	40.16%	59.84%	94.011	1013.16	67.08	1253	67.10%	
TTFR-18-FC-002C	4/10/2018	10,000 cy	1420	40.30%	59.70%	94.011	1012.13	67.01	1629	67.50%	
TTFR-18-FC-003C	4/13/2018	10,000 cy	1390	41.60%	58.40%	92.025	981.63	64.99	1692	71.24%	
TTFR-18-FC-004C	4/13/2018	30,000 cy	1420	40.61%	59.39%	94.011	1009.89	66.86	1525	68.38%	
TTFR-18-FC-005C	4/25/2018	10,000 cy	1410	40.44%	59.56%	93.349	1003.99	66.47	1692	67.90%	
TTFR-18-FC-006C	4/26/2018	10,000 cy	1480	36.75%	63.25%	97.983	1082.30	71.65	2381	58.09%	
TTFR-18-FC-007C	5/3/2018	10,000 cy	1410	40.33%	59.67%	93.349	1004.77	66.52	1838	67.59%	
TTFR-18-FC-008C	5/3/2018	30,000 cy	1430	38.58%	61.42%	94.673	1031.86	68.31	1754	62.82%	2.443
TTFR-18-FC-009C	5/9/2018	10,000 cy	1420	38.17%	61.83%	94.011	1027.70	68.04	3551	61.74%	
TTFR-18-FC-010C	5/15/2018	10,000 cy	1400	39.41%	60.59%	92.687	1004.22	66.48	2966	65.05%	
TTFR-18-FC-011C	5/21/2018	10,000 cy	1400	37.34%	62.66%	92.687	1019.40	67.49	2840	59.58%	
TTFR-18-FC-012C	5/21/2018	30,000 cy	1390	38.46%	61.54%	92.025	1003.89	66.46	3007	62.50%	
TTFR-18-FC-013C	5/29/2018	10,000 cy	1440	37.61%	62.39%	95.335	1046.42	69.28	2381	60.29%	
TTFR-18-FC-014c	5/30/2018	10,000 cy	1400	40.96%	59.04%	92.687	993.16	65.75	1713	69.39%	
TTFR-18-FC-015C	6/4/2018	10,000 cy	1390	39.98%	60.02%	92.025	993.01	65.74	2297	66.61%	
TTFR-18-FC-016C	6/4/2018	30,000 cy	1420	39.48%	60.52%	94.011	1018.07	67.40	2673	65.23%	2.476
TTFR-18-FC-017C	6/12/2018	10,000 cy	1400	40.41%	59.59%	92.687	997.09	66.01	2130	67.81%	
TTFR-18-FC-018C	6/15/2018	10,000 cy	1420	39.90%	60.10%	94.011	1014.98	67.20	1295	66.40%	
TTFR-18-FC-019C	6/20/2018	10,000 cy	1370	40.32%	59.68%	90.701	976.33	64.64	2548	67.56%	
TTFR-18-FC-020C	6/22/2018	30,000 cy	1400	40.57%	59.43%	92.687	995.97	65.94	2256	68.25%	2.394
TTFR-18-FC-021C	6/26/2018	10,000 cy	1400	39.59%	60.41%	92.687	1002.97	66.40	2673	65.52%	
TTFR-18-FC-022C	7/9/2018	10,000 cy	1410	39.12%	60.88%	93.349	1013.50	67.10	2590	64.26%	
TTFR-18-FC-023C	7/18/2018	10,000 cy	1450	36.93%	63.07%	95.997	1058.97	70.11	2924	58.54%	
TTFR-18-FC-024C	7/19/2018	30,000 cy	1410	38.41%	61.59%	93.349	1018.68	67.44	3049	62.38%	2.485
TTFR-18-FC-025C	7/24/2018	10,000 cy	1390	39.24%	60.76%	92.025	998.28	66.09	2715	64.58%	
TTFR-18-FC-026C	7/26/2018	10,000 cy	1390	38.84%	61.16%	92.025	1001.16	66.28	2590	63.50%	
TTFR-18-FC-027C	8/2/2018	10,000 cy	1420	39.65%	60.35%	94.011	1016.84	67.32	2548	65.70%	
TTFR-18-FC-028C	8/2/2018	30,000 cy	1410	39.23%	60.77%	93.349	1012.72	67.05	3049	64.55%	2.432
TTFR-18-FC-029C	8/8/2018	10,000 cy	1400	38.85%	61.15%	92.687	1008.26	66.75	2673	63.54%	
TTFR-18-FC-030C	8/16/2018	10,000 cy	1470	37.04%	62.96%	97.321	1072.67	71.02	2966	58.83%	
TTFR-18-FC-031C	8/21/2018	10,000 cy	1510	36.06%	63.94%	99.969	1109.80	73.47	2423	56.40%	
TTFR-18-FC-032C	8/22/2018	30,000 cy	1470	37.03%	62.97%	97.321	1072.73	71.02	2506	58.81%	2.443
TTFR-18-FC-033C	9/4/2018	10,000 cy	1570	33.24%	66.76%	103.942	1178.33	78.01	2339	49.79%	
TTFR-18-FC-034C	9/5/2018	10,000 cy	1440	36.89%	63.11%	95.335	1051.95	69.64	2799	58.45%	
TTFR-18-FC-035C	9/12/2018	10,000 cy	1420	38.04%	61.96%	94.011	1028.67	68.10	3133	61.40%	
TTFR-18-FC-036C	9/14/2018	30,000 cy	1480	36.24%	63.76%	97.983	1086.32	71.92	2966	56.84%	
TTFR-18-FC-037C	9/17/2018	10,000 cy	1450	37.91%	62.09%	95.997	1051.40	69.61	2673	61.06%	
TTFR-18-FC-038C	9/27/2018	10,000 cy	1460	37.67%	62.33%	96.659	1060.50	70.21	2757	60.44%	
TTFR-18-FC-039C	10/3/2018	10,000 cy	1480	36.93%	63.07%	97.983	1080.87	71.56	2506	58.54%	
TTFR-18-FC-040C	10/4/2018	30,000 cy	1450	37.67%	62.33%	95.997	1053.24	69.73	2590	60.44%	
TTFR-18-FC-041C	10/15/2018	10,000 cy	1510	35.19%	64.81%	99.969	1116.97	73.95	2590	54.29%	
TTFR-18-FC-042C	10/18/2018	10,000 cy	1490	36.79%	63.21%	98.645	1089.28	72.12	2464	58.20%	
TTFR-18-FC-043C	10/23/2018	10,000 cy	1500	36.69%	63.31%	99.307	1097.38	72.65	2297	57.95%	
TTFR-18-FC-044C	10/25/2018	30,000 cy	1510	35.85%	64.15%	99.969	1111.56	73.59	2423	55.87%	
TTFR-18-FC-045C	10/30/2018	10,000 cy	1480	36.12%	63.88%	97.983	1087.28	71.98	2464	56.54%	
TTFR-18-FC-046C	11/12/2018	10,000 cy	1520	35.46%	64.54%	100.632	1122.09	74.29	2214	54.95%	
TTFR-18-FC-047C	11/2/2018	10,000 cy	1480	37.48%	62.52%	97.983	1076.54	71.27	2590	59.94%	

Table 5-7. 2018 Filter Cake Solids, Moisture, Density, Shear Strength, and Specific Gravity Test Results [1,2,3] (Continued)

Sample No.	Sampling Date	Sample Type	Weight in Mold (grams)	Moisture Content (% of Wet Weight) (ASTM D2216)	Solids Content (%) (ASTM D2216)	Wet Density (pcf) (ASTM D2216)	Weight of Dry Sample (grams)	Dry Density (pcf) (ASTM D4254)	Shear Strength (pcf)[3] (ASTM D2166-06)	Water Content (% of Dry Weight) (ASTM D2216)	Specific Gravity (ASTM D854)
TTFR-18-FC-048C	11/2/2018	30,000 cy	1500	36.35%	63.65%	99.307	1100.14	72.83	2339	57.10%	

Notes:
[1] All samples were compacted with a 5.5-pound hammer falling 12 inches, three lifts with 25 blows per lift.
[2] All samples were tested at the LFRR Processing Facility by the Tetra Tech QC Department with periodic Foth oversight, except specific gravity, which was analyzed by AET.
[3] A minimum 800 psf shear strength is one of four parameters required by the landfill for classification as direct disposal waste.

Abbreviations and Acronyms:
ASTM – ASTM International
cy – cubic yards
Foth – Foth Infrastructure and Environment LLC
LFRR – Lower Fox River Remediation
pcf – pounds per cubic foot
psf – pounds per square foot
QC – quality control
TSF – tons per square foot
Tetra Tech – Tetra Tech, Inc.

Table 5-8. 2018 Filter Cake, Consolidation/Compressibility, and Hydraulic Conductivity Results

Sample No.	Sampling Date	Vane Shear (ASTM: D4648)[1]		One-Dimensional Consolidation and Compressibility (ASTM: D2435)		Hydraulic Conductivity (ASTM: D5084)
		Dry Density (pcf)	Cohesive Shear Strength (psf)	Sample Data Initial/Final	Moisture Content Initial/Final	Saturated Vertical (cm/sec) avg @ 20 °C
TTFR-18-FC-001C	4/2/2018	57.1	752	---	---	---
TTFR-18-FC-001C (SET Retest)	4/2/2018	59.3	877	---	---	---
TTFR-18-FC-002C	4/10/2018	56.1	992	---	---	---
TTFR-18-FC-003C	---	---	---	---	---	---
TTFR-18-FC-004C	---	---	---	---	---	---
TTFR-18-FC-008C	5/3/2018	---	---	Total Height (in.): 1.0000/0.7578; Height of Solids (in.): 0.3877/0.3877; Height of Void (in.): 0.6123/0.3701; Void Ratio: 1.5791/0.9545; Dry Density (pcf):59.03/77.85; Moist Density (pcf): 96.325/111.170	Wt Soil + Tare Moist (g): 52.35/230.54; Wt Soil+Tare Dry (g): 42.65/200.21; Wt Tare (g): 27.32/129.34; Wt Moisture (g): 9.7/30.33; Wt Dry Soil (g): 15.33/70.87; % Moisture:63.18/42.80	5.97×10^{-8}
TTFR-18-FC-012C	5/21/2018	---	---	Total Height (in.): 1.0000/0.7829; Height of Solids (in.): 0.3902/0.3902; Height of Void (in.): 0.6098/0.3927; Void Ratio: 1.5627/1.0063; Dry Density (pcf):60.21/76.67; Moist Density (pcf): 96.926/108.825	Wt Soil + Tare Moist (g): 52.38/251.14; Wt Soil+Tare Dry (g): 42.84/220.87; Wt Tare (g): 27.20/148.69; Wt Moisture (g): 9.54/30.27; Wt Dry Soil (g): 15.64/72.18; % Moisture:60.98/41.94	1.16×10^{-7}
TTFR-18-FC-016C	6/4/2018	---	---	Total Height (in.): 1.0000/0.7827; Height of Solids (in.): 0.3977/0.3977; Height of Void (in.): 0.6023/0.3850; Void Ratio: 1.5144/0.9680; Dry Density (pcf):59.33/73.79; Moist Density (pcf): 95.794/108.243	Wt Soil + Tare Moist (g): 60.65/195.20; Wt Soil+Tare Dry (g): 49.84/162.79; Wt Tare (g): 32.25/93.38; Wt Moisture (g): 10.81/32.41; Wt Dry Soil (g): 17.59/69.41; % Moisture:61.46/46.69	6.62×10^{-8}
TTFR-18-FC-020C	6/22/2018	---	---	Total Height (in.): 1.0000/0.7742; Height of Solids (in.): 0.3771/0.3771; Height of Void (in.): 0.6229/0.3971; Void Ratio: 1.6517/1.0529; Dry Density (pcf):58.40/73.76; Moist Density (pcf): 95.373/108.073	Wt Soil + Tare Moist (g): 49.46/265.76; Wt Soil+Tare Dry (g): 40.58/233.83; Wt Tare (g): 26.57/165.20; Wt Moisture (g): 8.88/31.93; Wt Dry Soil (g): 14.01/68.63; % Moisture:63.31/46.52	3.47×10^{-8}
TTFR-18-FC-024C	7/19/2018	---	---	Total Height (in.): 1.0020/0.7847; Height of Solids (in.): 0.3867/0.3867; Height of Void (in.): 0.6153/0.3980; Void Ratio: 1.5915/1.0295; Dry Density (pcf):58.48/74.60; Moist Density (pcf): 94.445/108.923	Wt Soil + Tare Moist (g): 57.53/274.93; Wt Soil+Tare Dry (g): 47.70/240.35; Wt Tare (g): 31.72/165.19; Wt Moisture (g): 9.83/34.58; Wt Dry Soil (g): 15.98/75.16; % Moisture:61.50/46.01	1.30×10^{-7}
TTFR-18-FC-028C	8/2/2018	---	---	Total Height (in.): 1.0000/0.7989; Height of Solids (in.): 0.3759/0.3759; Height of Void (in.): 0.6241/0.4230; Void Ratio: 1.6601/1.1251; Dry Density (pcf):57.23/71.17; Moist Density (pcf): 93.279/105.922	Wt Soil + Tare Moist (g): 38.51/250.43; Wt Soil+Tare Dry (g): 29.23/217.05; Wt Tare (g): 14.49/148.69; Wt Moisture (g): 9.28/33.38 ; Wt Dry Soil (g): 14.74/68.36; % Moisture:62.99/48.83	1.20×10^{-7}
TTFR-18-FC-032C	8/22/2018	---	---	Total Height (in.): 1.0020/0.7876; Height of Solids (in.): 0.4042/0.4042; Height of Void (in.): 0.5978/0.3834; Void Ratio: 1.4789/0.9485; Dry Density (pcf):61.77/78.50; Moist Density (pcf): 97.55/111.431	Wt Soil + Tare Moist (g): 60.86/319.00; Wt Soil+Tare Dry (g): 50.46/285.72; Wt Tare (g): 32.52/206.39; Wt Moisture (g): 10.4/33.28; Wt Dry Soil (g): 17.94/79.33; % Moisture:57.93/41.95	8.36×10^{-8}
TTFR-18-FC-036C	9/17/2018	---	---	Total Height (in.): 1.0000/0.7949; Height of Solids (in.): 0.4225/0.4224; Height of Void (in.): 0.5775/0.3725; Void Ratio: 1.3670/.8816.; Dry Density (pcf):64.21/80.66; Moist Density (pcf): 99.17/112.35	Wt Soil + Tare Moist (g): 56.85/242.23; Wt Soil+Tare Dry (g): 48.15/209.93; Wt Tare (g): 32.18/127.72; Wt Moisture (g): 8.70/32.30 ; Wt Dry Soil (g): 15.97/82.21; % Moisture:54.45/39.29	5.77×10^{-8}
TTFR-18-FC-040C	10/4/2018	---	---	Total Height (in.): 0.9993/0.7649; Height of Solids (in.): 0.4074/0.4074; Height of Void (in.): 0.5919/0.3575; Void Ratio: 1.4529/0.8776; Dry Density (pcf):61.30/79.99; Moist Density (pcf): 97.36/112.46	Wt Soil + Tare Moist (g): 55.25/313.59; Wt Soil+Tare Dry (g): 42.96/281.79; Wt Tare (g): 22.10/203.44; Wt Moisture (g): 12.29/31.80 ; Wt Dry Soil (g): 20.86/78.35; % Moisture:58.83/40.59	8.12×10^{-8}
TTFR-18-FC-044C	10/25/2018	---	---	Total Height (in.): 1.0000/0.7781; Height of Solids (in.): 0.4220/0.4220; Height of Void (in.): 0.5780/0.3561; Void Ratio: 1.3697/0.8438; Dry Density (pcf):64.48/82.59; Moist Density (pcf): 100.07/114.50	Wt Soil + Tare Moist (g): 53.87/262.42; Wt Soil+Tare Dry (g): 43.92/230.72; Wt Tare (g): 25.88/148.68; Wt Moisture (g): 9.95/31.70; Wt Dry Soil (g): 18.04/82.04; % Moisture:55.19/38.64	6.12×10^{-8}
TTFR-18-FC-048C	11/12/2018	---	---	Total Height (in.): 1.0000/0.7844; Height of Solids (in.): 0.4082/0.4082; Height of Void (in.): 0.5918/0.3762; Void Ratio: 1.4495/0.9214; Dry Density (pcf):63.91/81.18; Moist Density (pcf): 99.55/113.66	Wt Soil + Tare Moist (g): 46.42/313.50; Wt Soil+Tare Dry (g): 38.40/282.88; Wt Tare (g): 24.03/206.35; Wt Moisture (g): 8.02/30.62; Wt Dry Soil (g): 14.37/76.53; % Moisture:55.76/40.01	5.87×10^{-8}

Notes:
[1] Sample was remolded into 4-inch proctor mold at as-received moisture content. Requirement Alternative: Cohesive Shear Strength – minimum 800 psf.
[2] --- not analyzed for this constituent
Laboratory samples were analyzed by American Engineering Testing, Inc. (AET)

Abbreviations and Acronyms:
avg – average
ASTM – ASTM International
°C – degrees Celsius
cm/sec – centimeters per second
g – grams
in – inches
Moist – moisture
pcf – pounds per cubic foot
psf – pounds per square foot
wt – weight

6. LOAD-OUT, TRANSPORT, AND DISPOSAL OF FILTER CAKE AND BENEFICIAL REUSE SAND

This section provides an overview of the activities conducted in 2018 regarding the transportation and disposal of filter cake and sand qualifying as BRM.

6.1 Load-Out, Transport, and Disposal of Filter Cake, Debris, and Scalpings

From January 9 to January 11, 2018, used filter cloths were disposed of at the ADS Hickory Meadows Landfill. On March 14, 2018, used PPE was disposed of at the ADS Hickory Meadows Landfill. Load-out, transportation, and disposal (LTD) of filter cake began on March 28, 2018. The LLC contracted with GFT to transport non-TSCA filter cake, scalpings, separated sand that was ineligible for beneficial reuse, non-TSCA river debris (none in 2018), and other non-TSCA waste (e.g., PPE, spent filter cloths), and with ADS to dispose of these wastes at its Hickory Meadows Landfill. No TSCA sediments were dredged, or wastes generated. Photograph 23 (Appendix A) shows filter cake storage in Building B.

Typically, 16 to 20 semi-dump and/or quad-axle straight dump trucks, each hauling an average of four to five loads per day, transported non-TSCA waste to the Hickory Meadows Landfill. No sediment LTD activities occurred on Saturdays or Sundays. Full-scale LTD operations for the 2018 operations season began on March 28, 2018 and shipping of filter cake was concluded on December 7, 2018.

6.1.1 Loading and Transport of Non-TSCA Filter Cake

Tetra Tech began daily loading of filter cake between 5:30 and 6:00 a.m. and continued until approximately 3:00 p.m. Monday through Friday. The weekday hours of operation at the landfill were 6:30 a.m. to 4:00 p.m. The LTD schedule was re-evaluated on a weekly basis to ensure that the work was completed efficiently. An operator controlled and monitored loading operations at the truck scales from inside the control room. The trucks were weighed during loading to prevent overloading, which would result in the need for rehandling of excessive weight loads.

Once each truck was loaded to the allowable weight, the load and the truck were visually inspected to ensure that no filter cake remained on the exterior of the truck (Appendix A, Photographs 26 and 27). The filter cake loads were covered with tarps and the tailgates were closed and visually observed to ensure there was no accumulated sediment on the outside of the truck. The scale operator then presented the truck driver with the appropriate shipping documents. Finally, each truck exited the site through the south perimeter gate. However, trucks were washed on a wash pad just beyond the scale if sediment (that could not be removed by broom) was observed during the visual inspection (Appendix A, Photograph 30).

Trucks were weighed at the ADS Hickory Meadows Landfill before proceeding into the disposal area. After the loads were dumped, the trucks were inspected, and, if necessary, brushed clean to remove filter cake that may have contacted and remained on the truck exterior or tires during dumping. After this inspection, which is standard practice at the landfill, the drivers secured the tailgate of the truck before leaving the landfill and returning to the LFRR Processing Facility. Photographs 28 and 29 in Appendix A show the filter cake disposal operations at the landfill.

From January 9, 2018 to December 7, 2018, 318,541.65 tons of non-TSCA waste resulting from the 2018 operations season were disposed of at the ADS Hickory Meadows Landfill. This consisted of filter cake, scalpings, a limited amount of separated sand with apparent high organic content, miscellaneous PPE, spent media (sand, gravel, and GAC) from the multi-media WTP sand filters and GAC vessels, filter press cloths, and other miscellaneous wastes from LFRR Processing Facility operations.

6.1.2 Loading and Transport of TSCA Filter Cake and TSCA-Related Wastes

No TSCA sediment was dredged, and no TSCA filter cake or wastes were generated in 2018.

6.1.3 Filter Cake Load-Out Rates

An average of 2,068.45 tons per day of non-TSCA waste from sediment dredging, desanding, and dewatering operations was loaded through December 7, 2018. The filter cake load-out rates for 2018 are provided in Table 6-1.

Table 6-1. 2018 Filter Cake and Miscellaneous Wastes Load-Out Rates

Date	Maximum Daily Tonnage	Average Daily Tonnage	Total Tons Loaded Out
January	4.37	2.07[4]	6.2
February	0	0	0
March	1,731.06[2]	1,146.06[4]	3,438.18
April[1]	2,775.94[2]	2,450.25[4]	49,005.01
May[1]	2,968.79[2]	2,438.28[4]	56,080.44
June[1]	2,971.60[2]	2,615.55[4]	54,926.51
July[1]	2,521.38[2]	1,847.58[4]	33,256.48
August[1]	3,064.38[2]	2,189.78[4]	52,554.77
September[1]	2,293.24[2]	1,970.90[4]	37,447.03
October[1]	3,047.83[2]	1,782.50[4]	46,345
November[1]	2,605.33[2]	1,694.62[4]	15,251.62
December	1,375.39[2]	1,195.41[4]	5,977.06
TOTAL Non-TSCA	**2,971.60[3]**	**2,068.45[5]**	**318,541.65**
PCBs in MGP SFA	**3,064.38[3]**	**2,102.74[5]**	**35,746.65**
TOTAL 2018	**3,064.38[3]**	**2,071.86[5]**	**354,288.30**

Notes:
1 The "Total Tons Loaded Out" column includes filter cake and miscellaneous waste, such as PPE, spent multi-media, filter media, scalpings, and high organic content sand, which were combined with the filter cake.
2 Highest daily tonnage for any day of the month.
3 Highest day tonnage for all of 2018.
4 Average daily tonnage by month.
5 Average daily tonnage, averaged over all of 2018.

Abbreviations and Acronyms:
MGP SFA – Manufactured Gas Plant South Focus Area
PCBs – polychlorinated biphenyls
PPE – personal protective equipment
TSCA – Toxic Substances Control Act

6.2 Off-Site Beneficial Reuse Sand Shipments

During the 2018 dredge season, 5,148 truckloads of separated sand qualifying as BRM, weighing 114,767 tons, were transported. An estimated 18,000 tons of BRM sand was stored on site following the 2018 season. All BRM sand was derived from dredging non-TSCA sediment.

A total of 1,847.86 tons, or 1.6 percent of the total amount of separated sand produced from non-TSCA dredging, was not designated as BRM because it appeared to have a high organic content, and/or it was observed to contain pieces of coal. This sand was disposed of as waste at the ADS Hickory Meadows Landfill. In addition, the sand processed in the SDDP from the MGP area, 11,322.85 tons, was not designated as BRM due to its potential to contain MGP-related chemicals.

The BRM-qualifying sand was used at two locations during 2018: 1) the ADS Hickory Meadows Landfill received 18,213.19 tons of sand for construction purposes at its landfill; and 2) the LLC and Tetra Tech

repeated arrangements made previously and shipped 96,553.81 tons of sand to the G-P Green Bay West Landfill site in Green Bay, Wisconsin.

Shipments of non-TSCA sand to the ADS Hickory Meadows Landfill for use as BRM began on May 10, 2018 and was concluded on August 13, 2018. Shipments of non-TSCA sand to the G-P Landfill began on May 7, 2018 and was concluded on October 18, 2018. Photographs related to BRM sand shipments are included in Appendix A (Photographs 17 and 18). Appendix O provides information on all separated sand shipped off-site as BRM during 2018.

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7. WATER TREATMENT

During 2018, 950 million gallons of treated water were discharged to the Fox River. Accounting for some of the treated water being recycled back through the system for backwashing of WTP equipment and for process usage in the SDDP, the total volume of water treated in the WTP was 1.07 billion gallons. The following sections provide additional detail on the operation and performance of the WTP.

7.1 General Process Description

The wastewater treatment system for the RA of OUs 2–5 was designed to reduce the level of suspended solids and dissolved organics in the water generated from sediment desanding and dewatering operations, as well as any water collected on the outdoor concrete sand and scalpings pad. When operated 5 days per week and 24 hours per day, the wastewater treatment system was designed with sufficient capacity and redundancy to support dredging by up to three dredges, as well as the subsequent dewatering operations.

The wastewater treatment system includes multi-media filtration, bag filtration, and GAC adsorption. Use of the cartridge filtration step in the water treatment process was discontinued several years ago and was not part of the process in 2018. Section 7 of the 2010 RA Summary Report (Tetra Tech et al. 2012b) includes the current process flow diagram of the water treatment system, which shows how the individual unit processes interconnect. A complete description of the WTP process is included in the 100 Percent Design Report, Volume 1 (Tetra Tech et al. 2009a).

During 2018, water samples were collected from the WTP effluent to monitor for compliance with discharge goals for PCBs, biochemical oxygen demand (BOD), ultra-low-level mercury (ULLHg), ammonia, and total suspended solids (TSS) (Appendix A, Photograph 31). Sampling and analysis for carbonaceous BOD (cBOD) was also performed during 2018 as an ancillary analyte to BOD. Continuous monitors, installed in the influent and effluent holding tanks, supported the recording of pH levels in these tanks and provided real-time pH readings throughout the day. Sodium hypochlorite was not used in 2018; therefore, samples were not collected for total residual chlorine (TRC).

7.2 WTP Operations

7.2.1 Sand Filters

The WTP design included 24 multi-media (anthracite, sand, garnet, and gravel) filter vessels that served as the initial filtration step to remove suspended solids in the water pumped to the WTP from the SDDP prior to the bag filtration system. These vessels are also referred to as sand filters since sand is the primary filtering medium.

Since the 2015 production season, the sand filters have been operated with sand as a single filtering layer, with an underlying gravel support layer. The decision to change from multiple filtration media to a sand-only filtration medium was made because residual polymer fouling was causing the different filtration media to become mixed, thus reducing the filtration efficiency. The use of sand as a single medium has not negatively impacted either filtration efficiency or to overall system performance.

During the initial startup of the WTP for the 2018 dredging season on March 26, 2018, only 20 of the 24 sand filters were needed to operate the system at the flow rate received from the SDDP. The other four sand filters were kept offline and in reserve allowing them to remain free of residual polymer fouling. The four reserve filters were placed into service on May 21, 2018 to maintain the maximum flowrate and lower differential pressures when the other sand filters became fouled.

New media (sand and support gravel) were installed in all vessels prior to beginning the 2018 production season. As observed in previous years, indications of fouling of the sand filtering medium due to residual polymer were observed within 4 weeks of the 2018 dredging season startup.

Inspections of the sand filtration media were performed on a weekly basis. On average, four sand filters were inspected each week. Inspections consisted of temporarily removing the sand filter from service, partially draining the water from the filter, opening the vessel to measure the level of the media, and observing the media for indications of fouling. If excessive fouling was observed, sand filters were air lanced, and then backwashed to reduce fouling and maintain the design hydraulic flowrate.

Despite the maintenance efforts, fouling of the sand filter media could not be eliminated and change-out of the filter media was eventually necessary. Replacement of the sand filter media and support gravel in sand filters 5 through 8, 11, 12, 13, 15, and 16 was performed on August 25 and 26, 2018. The filter media and support gravel in sand filters 23 and 24 were replaced on October 20, 2018.

7.2.2 Bag Filters

The bag filters removed additional suspended solids from water after being passed through the initial sand filtration system. During the 2018 season, nominal orifice 1-micron, 5-micron, and 10-micron bag filters were used in the bag filtration system. A total of 23,244 1-micron, 1,680 5-micron, and 300 10-micron bag filters were used during the 2018 production season (Appendix A, Photograph 33).

Bag filter usage varied substantially based on the loading of influent solids and residual polymer to the WTP. Therefore, selection of bag filters of the appropriate micron rating was based on achieving maximum filtration efficiency while maintaining a manageable change-out schedule for the WTP operators.

7.2.3 Cartridge Filters

Cartridge filters were not used because of the extremely short useful life experienced in previous years. The short useful life was likely the result of the cartridges becoming ‘blinded off’ due to residual polymer accumulation since solids loading to the cartridge filters was very low. It is unlikely that cartridge filters will be used again on the project.

7.2.4 Granular Activated Carbon Adsorption Filters

The GAC filters removed trace amounts of PCBs in the water transferred from the SDDP so that the WTP effluent would meet its discharge performance goal. During the 2017–2018 winter shutdown, the GAC media—especially the GAC media in the lead vessels—was found to be fouled with residual polymer. The fouled GAC media in the lead vessels were removed for disposal and new re-activated carbon was installed to replace them. The carbon in the lag vessels was transferred from vessel to vessel and treated with hydrogen peroxide to reduce the level of fouling. After treatment of the GAC in the lag vessels, new re-activated carbon was added to replace any carbon that may have been lost due to attrition that occurred during the normal operations season.

The 2018 season started with all 18 GAC vessels in series (lead-lag) configuration with a full load of 20,000 pounds of GAC in each vessel. Carbon levels in the lead GAC vessels were measured twice during the production season. In June 2018, carbon levels were within several inches of the measurements made at the beginning of the season and topping off the GAC vessels was not required. Measurements made in September 2018 indicated that carbon levels in several of the lead GAC vessels had dropped. All the carbon from one of the lead GAC vessels was emptied and transferred to the GAC vessels with low levels to top

them off. Carbon was not replaced in the empty vessel. It was kept empty and offline to facilitate maintenance during the last two months of the production season.

Maintenance was performed throughout the season, including regular backwashing, and periodic backwashing with diluted hydrogen peroxide. Chemical soaking of the carbon vessels with hydrogen peroxide was performed, when necessary.

Despite the maintenance efforts, the differential pressures eventually increased to levels at which the required flow could not be sustained. In September 2018, with A/OT concurrence, Tetra Tech began to place GAC vessels in parallel configuration (lead/lead) to maintain the required flow rate through the system. Only the minimum number of GAC vessels necessary to maintain the flow from the SDDP were placed in lead configuration. By the end of the season, eight of the nine GAC vessel pairs were operated in parallel configuration during periods of high flow.

WTP and QC personnel monitored and tested the GAC system by collecting weekly grab samples for PCB analysis at the influent, mid-point, and effluent of select GAC pairs to gauge potential PCB breakthrough. From September 2018 through November 2018, this included collection of PCB grab samples from the GAC vessels operated in parallel configuration. All GAC water samples collected to evaluate for breakthrough were non-detect for PCBs during the 2018 production season.

7.3 Performance

The WTP was designed to reduce the level of suspended solids and dissolved organics, such as PCBs, in the effluent water. WTP discharge performance goals, established by the WDNR, are presented in Table 7-1. Operation of the WTP during the 2018 RA activities began on March 26, 2018. The system typically operated 24 hours per day, Monday through Friday, through November 9, 2018. Analytical results from sampling the WTP influent and effluent are included in Table K-1 (Appendix K).

Table 7-1. WTP Effluent Discharge Performance Goals

Parameter	WDNR Performance Goal
TSS (mg/L)	5 mg/L (monthly average)
TSS (mg/L)	10 mg/L (daily maximum)
BOD (mg/L or lb/day)	< 10 mg/L and 1,300 lb/day
PCBs (µg/L)	< LOD (with a 0.1 to 0.5 µg/L LOD)
Minimum flow (gpm)	3,125 gpm
Ammonia (mg/L)	8.41 mg/L multiplied by diffuser dilution ratio (at a pH of 8.0) or ~202 mg/L
pH (SU)	6–9 SUs
Low-level mercury (ng/L)	<LOD (with an LOD of 0.2 ng/L)
Total residual chlorine (mg/L)	<0.1 mg/L daily maximum

Acronyms and Abbreviations:
µg/L – micrograms per liter
BOD – biochemical oxygen demand
gpm – gallons per minute
lb – pounds
LOD – limit of detection
mg/L – milligrams per liter
ng/L – nanograms per liter
PCBs – polychlorinated biphenyls
SU – Standard Unit
TSS – total suspended solids
WDNR – Wisconsin Department of Natural Resources
WTP – Water Treatment Plant

QA monitoring results for effluent are discussed in Section 9.2.

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8. DREDGING PRODUCTIVITY

Dredging productivity is discussed in Section 4.9.

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9. ENVIRONMENTAL MONITORING

During 2018, the sampling team performed environmental monitoring of the following parameters:

- Surface water quality during dredging, sand spreading, armor stone placement, quarry spall placement, and in-river debris removal
- WTP influent/effluent quality
- Air quality at the perimeter of the facility

Noise monitoring was not conducted during 2018. The following subsections provide additional details on environmental monitoring activities.

9.1 Surface Water Quality during Dredging

Tetra Tech conducted surface water monitoring during dredging, sand spreading, armor stone placement, quarry spall placement, and debris removal operations to identify the occurrence and duration of remediation-activity-induced turbidity. Surface water quality monitoring was performed in OU4/OU5 in accordance with the CQAPP (Tetra Tech et al. 2015a). This section discusses the water quality monitoring for dredging, spreader operations, mechanical placement, and debris removal.

As specified in the CQAPP (Tetra Tech et al. 2015a), water quality monitoring was conducted in accordance with WDNR regulations (Chapter NR 105 2010) to ensure the in-water construction operations did not cause TSS concentrations, at the downstream compliance point, to increase by more than 80 milligrams per liter (mg/L) above background levels (i.e., upstream sampling location). As stated in the CQAPP, the nephelometric turbidity unit (NTU) to TSS (mg/L) correlation of 1:1 was established during remedial dredging operations in OU1. The A/OT decided during the early OU2–5 design phase that the correlation established in OU1 would be used for turbidity monitoring during remediation of OU2–5. Turbidity was measured in situ using real-time monitoring sondes (YSI 600 OMS V2), which were mounted on rafts (Appendix A, Photograph 35) and deployed in the Fox River. The sondes recorded and saved turbidity measurements at 15-minute intervals and immediately sent the data via cellular modem to a dedicated computer station located in the Tetra Tech QC office at the LFRR Processing Facility. The dedicated computer station utilized Loggernet Pro software to interpret real-time turbidity trends and facilitate compiling the raw data into daily reports. Thirteen real-time, multi-parameter water quality sondes (YSI 600 OMS V2) with turbidity sensors (YSI 6136) were used for this purpose.

Real-time turbidity measurements from two rafts were used to detect differences between the upstream and downstream turbidity measurements and to provide notification when the following thresholds were exceeded: greater than 40 NTU difference (*warning level*), and greater than 80 NTU difference (*action level*). Turbidity rafts were placed approximately 500 feet upstream and approximately 250 to 500 feet downstream from in-river remediation operations. During remedial operations, the distance from the remedial activity to the stationary turbidity monitors changed with the movement of the activity. Daily planning meetings were conducted with J.F. Brennan and Tetra Tech turbidity personnel to communicate movements of remedial activities occurring during daytime and nighttime hours. Turbidity rafts were placed strategically to cover movements of dredges, spreading plants, and mechanical placement barges during all hours of operations.

During 2018, when a significant relocation of a remedial activity took place from one area to another, J.F. Brennan notified Tetra Tech of the planned movement, which allowed ample time to relocate the turbidity rafts. At the beginning of the 2018 dredge season, Tetra Tech turbidity personnel conducted a training session for the first- and second-shift J.F. Brennan boat crews authorizing and instructing them in proper

movement of turbidity monitoring rafts and sonde placement. J.F. Brennan personnel were instructed to move rafts that would otherwise interfere with the dredges, spreaders, and/or respective pipelines. J.F. Brennan boat crews were also instructed on sonde placement in relation to the water surface and river bottom to prevent deploying sondes too close to the river bottom.

The locations of turbidity rafts were representative of the water that passed through the dredging and spreading areas (i.e., not in the main river channel where the water is flowing faster and not so close to the equipment as to be potentially in the way of in-water operations). If necessary, turbidity rafts were placed in modified locations if the rafts would interfere with commercial shipping, or if remediation equipment (e.g., dredge/spreading pipelines or booster pumps) or river conditions (e.g., shallow depth, bridges or active shipping docks) were likely to interfere with the performance of the turbidity raft and the representativeness of the turbidity measurements. Tetra Tech QC personnel verified the monitoring locations with a handheld, Trimble GeoXH GPS device, which operates with a 10-centimeter accuracy, as reported by the equipment manufacturer.

The turbidity raft locations were evaluated by QC personnel daily and re-positioned based on the distance requirements to remedial activities. If warranted, turbidity rafts were re-positioned multiple times per day based on the current or anticipated equipment location. Coordinates of the dredge, spreader, or barge, and turbidity raft locations were recorded in a GPS device, and plotted on a geo-referenced orthophotograph using ArcGIS software to illustrate the relative locations of the rafts. These graphic figures were used throughout the 2018 dredging season to augment the daily turbidity report. All 2018 turbidity figures are included in Appendix L.

Tetra Tech monitored the readings using the real-time turbidity meters and confirmed the validity of the results by collecting weekly handheld field measurements next to each turbidity raft location. Turbidity meters were calibrated weekly, according to manufacturer specifications, with a two-point calibration regime utilizing certified calibration standards. Tetra Tech personnel documented all handheld sonde and raft sonde calibration values on a dedicated field form. Additionally, Foth personnel conducted periodic QA audits of the sonde calibration procedure.

Procedures to modify or cease remedial operations if turbidity warning or action levels were reached are specified in the CQAPP (Tetra Tech et al. 2015a). Remediation-induced exceedances (*action level*) occur when there are four consecutive readings greater than 80 NTU above the background turbidity reading. No remedial action-induced turbidity exceedances were observed during 2018. However, during 2018, there were six times when turbidity readings exceeded 80 NTU for four or more readings. Subsequent investigation indicated that all the exceedances were related to high post-rain turbidity in the East River. None of the exceedances was due to remedial activities. Table 9-1 summarizes the exceedance events. Table 9-2 presents the seasonal minimum, maximum, average, and standard deviation of mean turbidity values collected using upstream and downstream monitoring rafts. Dredge locations and periods of operation were compiled using J.F. Brennan daily reports and were used to compute monthly turbidity calculations during dredging. During 2018 operational months, the average upstream turbidity in OU4/OU5 was 21.5 NTU, the average downstream turbidity was 20.9 NTU, and the average difference (downstream-upstream or delta) of turbidity was -0.6 NTU. This value indicates that, on average, downstream turbidity was slightly lower than upstream turbidity. Complete daily turbidity monitoring data collected during dredging operations in OU4 are presented in Appendix L.

Based on increased effects from wind, waves, and ice in the Fox River north of the I-43 bridge, in 2018, the Agencies approved manual turbidity monitoring, in lieu of raft-based turbidity monitoring, due to safety concerns. This change is summarized in the *Standard Operating Procedure Turbidity Monitoring and Sonde Calibration* Tech Memo submitted to the A/OT on August 13, 2018. (Tetra Tech 2018a)

Table 9-1. 2018 Summary of Elevated Turbidity Monitoring Data

Dredge	Date	Time (24 hr)	Upstream (NTU)	Downstream (NTU)	Delta (NTU)	Duration (hrs)	Raft IDs	Comment
Ottawa River	9/18/2018	2:00 – 2:45	50.1 – 57.4	130.1 – 137.4	81.0 – 134.3	1	6 Upstream 13 Downstream	Raft 6 was upstream in the Fox River, while Raft 13 was downstream in the Fox River receiving discharge from the East River. Turbidity disparity between Fox River and East River post-rain event.
Ottawa River	9/18/2018	13:30 – 15:45	32.1 – 51.0	165.5 – 283.8	121.7 – 251.7	2.5	6 Upstream 13 Downstream	Raft 6 was upstream in the Fox River, while Raft 13 was downstream in the Fox River receiving discharge from the East River. Turbidity disparity between Fox River and East River post-rain event.
Ottawa River	10/9/2018	2:00 – 7:30	127.8 – 241.7	28.6 – 80.8	-88.0 – -191.9	5.75	12 Upstream 11 Downstream	High post-rain turbidity in East River. The downstream raft was sheltered by the MGP containment structure and had less turbidity than the upstream raft receiving unrestricted East River flow.
Ottawa River	10/9/2018	8:30 – 11:00	119.6 – 231.9	33.5 – 75.9	-84.1 – -193.3	2.75	12 Upstream 11 Downstream	High post-rain turbidity in East River. The downstream raft was sheltered by the MGP containment structure and had less turbidity than the upstream raft receiving unrestricted East River flow.
Ottawa River	10/9/2018	11:30 – 23:15	142.4 – 222.5	52.3 – 120.2	-85.1 – -153.9	11.75	12 Upstream 11 Downstream	High post-rain turbidity in East River. The downstream raft was sheltered by the MGP containment structure and had less turbidity than the upstream raft receiving unrestricted East River flow.
Ottawa River	10/10/2018	6:45 – 8:00	141.0 – 149.8	38.1 – 66.7	-90.6 – -104.7	1.5	12 Upstream 11 Downstream	High post-rain turbidity in East River. The downstream raft was sheltered by the MGP containment structure and had less turbidity than the upstream raft receiving unrestricted East River flow.

Abbreviations and Acronyms
hr – hour
ID – Identification
MGP – Manufactured Gas Plant
N/A – not applicable
NTU – nephelometric turbidity unit

Table 9-2. 2018 Summary of Turbidity Monitoring Data Collected by In Situ Turbidity Monitoring Rafts1, 2

OU	Month	Upstream Turbidity (NTU)				Downstream Turbidity (NTU)				Delta (Downstream-Upstream) (NTU)			
		Min	Max	Avg	Std Dev	Min	Max	Avg	Std Dev	Min	Max	Avg	Std Dev
OU4/ OU5	March	1.0	9.5	3.2	1.1	1.5	14.0	3.7	1.3	-4.7	9.4	0.5	1.2
	April	0.4	306.0	13.7	16.9	0.3	99.5	14.8	17.5	-281.6	35.4	1.1	6.0
	May	2.5	243.1	15.3	25.5	2.3	229.8	15.3	24.5	-132.2	48.0	0.0	4.6
	June	3.6	160.6	17.0	11.7	3.1	312.4	17.7	12.3	-152.0	290.1	0.7	6.5
	July	13.8	103.1	29.1	6.0	14.1	83.4	28.9	5.8	-57.5	55.6	-0.2	4.7
	August	9.9	427.1	27.2	13.7	10.6	105.0	26.8	10.9	-390.9	65.6	-0.4	11.1
	September	11.5	271.3	39.1	21.1	9.5	283.8	41.2	25.1	-223.2	251.7	2.1	17.0
	October	4.6	241.7	27.2	27.3	3.9	148.3	22.6	16.5	-193.3	110.2	-4.6	20.1
	November	3.4	121.1	22.1	19.5	4.0	74.5	17.5	9.8	-89.7	44.5	-4.6	14.0
Season Average		**5.6**	**209.3**	**21.5**	**15.9**	**5.5**	**150.1**	**20.9**	**13.7**	**-169.5**	**101.2**	**-0.6**	**9.5**

Notes:

[1] Any upstream or downstream turbidity readings less than zero were not used in the table calculations. Additionally, any isolated upstream or downstream turbidity readings greater than 1,000 NTU were not used in the table calculations, as these would have been indicative of the presence of large debris, fauna, or other non-sediment substances.

[2] Upstream and downstream turbidity data were excluded from turbidity calculations when the dredges were non-operational for a period of 90 or more continuous minutes.

Abbreviations and Acronyms:

Avg – average
Max – maximum
Min – minimum
NTU – nephelometric turbidity unit
OU – Operable Unit
Std Dev – standard deviation

9.2 WTP Influent and Effluent Quality

WTP discharge performance goals are provided in Section 7 (Table 7-1). WTP influent and treated effluent streams were sampled prior to discharge to the Fox River using refrigerated and sealed in situ chemical oxidation (ISCO) samplers. WTP personnel conducted the sampling under the oversight of Tetra Tech QC personnel, and procedures were periodically audited by Foth.

Weekly influent composite sampling started on March 27, 2018 and ended on November 10, 2018. Influent sampling is not required in the QAPP, but was conducted to evaluate operational performance.

Daily effluent sampling began on March 26, 2018 and ended on November 10, 2018. Daily flow-proportional composite effluent water samples were sent to Pace Analytical throughout the dredging season and tested for PCBs, ammonia, TSS, BOD, and cBOD. Additionally, staff collected monthly grab samples for pH and weekly grab samples for low-level mercury (LLHg). During startup and shutdown of the WTP, shorter time frame composite (<24 hours) samples and grab samples were taken. Appendix K (Table K-1) contains the effluent sample results.

Effluent field duplicates were collected every 20 samples, as specified in the QAPP. Tables 9-3 and 9-4 present summaries of laboratory analytical results for WTP influent and effluent. Tables K-1 and K-2 in Appendix K contain a complete data set for influent and effluent sampling. As described below, TSS, ammonia, and pH concentrations consistently met the WDNR's performance discharge goals; however, there were exceedances for BOD and LLHg, which are described below. Information pertaining to each of the constituents analyzed in influent and effluent samples is provided below.

PCBs. The WDNR's performance discharge goal for PCBs was met on 163 of 163 operational days. Over the operational season, PCBs were not detected in the effluent samples. Effluent PCB concentrations averaged less than 0.13U micrograms per liter (µg/L) (non-detect), with influent concentrations averaging 0.17 µg/L.

TSS. Effluent TSS concentrations met the daily discharge goal of less than 10 mg/L on 163 of 163 operational days. Effluent TSS averaged 1.2J mg/L and influent TSS averaged 2.1 mg/L.

Ammonia. Ammonia was below the discharge goal of 202 mg/L on 163 of 163 operational days. Effluent ammonia levels averaged 30.7 mg/L, and influent levels averaged 33.6 mg/L.

TRC. The Agencies approved TRC testing on the WTP effluent in April 2013. This test was performed to verify that residual chlorine was not present in the effluent after chemical treatment activities were conducted in the off-season. Since chemical treatment of the filter media did not include the use of sodium hypochlorite, TRC testing was not conducted.

BOD. Effluent BOD fluctuated throughout 2018, averaging 23.2 mg/L (1,153 pounds/day), with influent concentrations averaging 2.2 mg/L (123 pounds/day). The discharge goal of less than 10 mg/L (1,300 pounds/day) was met on 88 of 163 operational days. Generally, when the effluent water temperature rose above approximately 20 degrees Celsius, BOD levels increased. After noting a similar trend during the 2010 production season, the A/OT instructed Tetra Tech to analyze for cBOD in addition to BOD, because conventional BOD analysis often includes both carbonaceous and nitrogenous fractions of BOD. During the operations season, 163 side-by-side composite cBOD samples were taken because microbes in the effluent, which oxidize ammonia, might have given a false BOD result. The cBOD sampling resulted in 152 of 163 non-detect (<2.0 mg/L) results, with the remaining 11 samples ranging in concentration from 2.0 to 4.5 mg/L (0.3 to 269 pounds/day). Taking cBOD results into consideration, the discharge goal was met on 163 of 163 operational days, with an average effluent concentration of 2.1 mg/L (100 pounds/day).

pH. Effluent pH met the discharge goal of six to nine standard units (SUs) on 158.5 of 158.5 operational days. Real-time pH averaged between 7.1 and 7.2 SUs in the effluent and between 7.3 and 7.4 SUs in the influent. On March 29, 2018, a minimum pH value of 4.6 was reported on the WTP programmable logic controller (PLC) report for the effluent tank pH probe at 2:00 PM. This value was artificially low due to pH probe calibration activities occurring at that time. Additionally, both influent and effluent pH data were not logged from 7:00 AM on September 20, 2018 through 6:00 PM on September 25, approximately 4.5 days, because the WTP PLC data logger had been inadvertently deactivated. Monthly grab pH samples sent to Pace Analytical were, on average, within 0.5 SU of the corresponding real-time influent and effluent pH meter readings.

ULLHg. Throughout full-time WTP operation, effluent water grab samples were collected once per week for ULLHg analysis. The Agencies' authorization to perform grab ULLHg samples for reporting purposes is summarized in the A/OT Comments on the 100 Percent Design Report, Volume 1 (Tetra Tech 2009a). ULLHg grab samples were taken from a sampling port connected to the effluent ISCO composite sampler, which was connected to the main effluent discharge pipe.

Field blanks were collected with each ULLHg grab sample. All ULLHg sampling was performed in accordance with QAPP SOP 002. The results of the ULLHg analyses are summarized in Table 9-5 and detailed in Table K-1 (Appendix K). The WDNR's ULLHg performance discharge goal of less than the limit of detection of 0.2 nanograms per liter (ng/L) was exceeded in 22 of 33 effluent ULLHg samples collected during 2018. The concentration of mercury (Hg) averaged 0.306 ng/L. One of the 33 ULLHg blank samples had a ULLHg detect.

Two samples, TTFR-18-EFF-123 and TTFR-18-138, collected on September 18, 2018 and October 90, 2018, respectively, were reported with a "D3" qualifier. The "D3" qualifier means the sample was diluted due to the presence of high levels of non-target analytes or matrix interference. The dilution to remove the interference then raised the limit of detection from 0.200 ng/L to 1.0 ng/L and 2.0 ng/L, respectively.

The WTP was not designed nor equipped for the removal of trace concentrations of Hg; however, the WTP does remove the preponderant amount of Hg from the dredging slurry. For example, ULLHg analyses of the WTP influent water and dredge slurry in 2009 yielded Hg concentrations many orders of magnitude higher (approximately 1,400 ng/L) than the WTP effluent water concentrations. While the primary objective of this remediation project is to remove PCB-contaminated sediment, a secondary benefit is to remove more than 99.9 percent of Hg from the dredge slurry. Since an SOP has not been established for sampling ULLHg in the influent slurry, this efficiency calculation is presented only as additional pertinent information. ULLHg grab sample and blank results are summarized in Table 9-5.

Table 9-3. 2018 Summary of Laboratory Analytical Results for WTP Influent and Effluent[1]

		PCBs, Total (mg/L)	BOD (mg/L)	BOD (lb/day)	cBOD[2] (mg/L)	cBOD[2] (lb/day)	Total Suspended Solids (mg/L)	Nitrogen, Ammonia (mg/L)	pH (Standard Units) Pace[4]	pH (Standard Units) Real Time[3] Min	pH (Standard Units) Real Time[3] Max
Discharge Goals		Non-detect (with a 0.1 – 0.5 µg/L LOD	10	1,300			10 mg/L daily max 5 mg/L monthly avg	202	6-9 SU		
Min	**Influent**	<0.13U	<2.0U	72	N/A	N/A	<0.95U	12.9	7.5	7.1	6.8
	Effluent	<0.12U	<2.0U	1.0	<2.0U	0.3	<0.95U	<0.25U	7.1	6.5	7.0
Max	**Influent**	0.53	6.0	374	N/A	N/A	12.0	51.9	7.7	7.6	7.7
	Effluent	<0.14U	179	9,450	4.5	269	3.0	54.2	8.8	7.7	8.8
Avg	**Influent**	0.17J	2.2	123	N/A	N/A	2.1	33.6	7.6	7.3	7.4
	Effluent	<0.13U	23.2	1,153	2.1	100	1.2J	30.7	7.6	7.1	7.2
Std Dev	**Influent**	0.094	0.7	49	N/A	N/A	1.2	11.5	0.1	0.1	0.1
	Effluent	0.003	32.0	1,655	0.3	28	0.4	12.1	0.5	0.2	0.2

Notes:

[1] For values less than the LOD, the LOD value was used for minimum, maximum, average, and standard deviation calculations.

[2] cBOD analyses were not performed on influent composite samples.

[3] Real-time influent and effluent minimum and maximum pH values are reported based on hourly readings taken over a 24-hour period from each pH meter.

[4] pH measured in the analytical laboratory by Pace Analytical.

J – Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

U – Indicates the compound was analyzed for, but not detected.

Abbreviations and Acronyms:

µg/L – micrograms per liter
Avg – average
BOD – biological oxygen demand
cBOD – carbonaceous biochemical oxygen demand
lb/day – pounds per day
LOD – limit of detection
Max – maximum
mg/L – milligrams per liter
Min – minimum
N/A – not applicable
PCBs – polychlorinated biphenyls
Std Dev – standard deviation
SU – standard unit
WTP – Wastewater Treatment Plant

Table 9-4. 2018 Monthly Averages of Laboratory Analytical Results for Water Treatment Plant Influent and Effluent[1]

		PCBs, Total (mg/L)	BOD (mg/L)	BOD (lb/day)	cBOD[2] (mg/L)	cBOD[2] (lb/day)	Total Suspended Solids (mg/L)	Nitrogen, Ammonia (mg/L)	pH (Standard Units) Lab	pH (Standard Units) Real Time[3] Min	pH (Standard Units) Real Time[3] Max
January	**Influent**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Effluent	<0.13U	<2.0U	4	<2.0U	4	1.0J	<0.25U	7.4	N/A	N/A
March	**Influent**	<0.13U	<2.0U	111	N/A	N/A	1.8J	21.4	NA	7.3	7.5
	Effluent	<0.13U	3.4	96	<2.0U	71	1.4J	14.6	8.8	7.6	7.9
April	**Influent**	0.14J	<2.0U	100	N/A	N/A	2.1	41.6	7.6	7.3	7.5
	Effluent	<0.13U	<2.0U	93	<2.0U	93	1.5J	41.8	7.6	7.4	7.6
May	**Influent**	<0.13U	<2.0U	115	N/A	N/A	1.8	38.9	7.6	7.3	7.4
	Effluent	<0.13U	10.5	522	2.1	109	1.3J	36.7	7.5	7.2	7.4
June	**Influent**	<0.13U	3.0	178	N/A	N/A	2.0	32.7	7.5	7.2	7.4
	Effluent	<0.13U	84.6	4,283	2.1	106	1.2J	32.4	7.4	6.9	7.2
July	**Influent**	0.15J	<2.0U	110	N/A	N/A	2.5	30.6	7.5	7.2	7.3
	Effluent	<0.13U	40.7	2,093	2.0	103	1.1J	30.4	7.4	7.0	7.2
August	**Influent**	0.25J	2.1	122	N/A	N/A	2.4	32.0	7.6	7.4	7.5
	Effluent	<0.13U	24.3	1,288	2.0	105	1.0J	25.9	7.4	6.9	7.1
September	**Influent**	0.23J	<2.0U	108	N/A	N/A	2.1	38.1	7.5	7.4	7.5
	Effluent	<0.13U	16.4	807	2.1	106	1.1J	30.7	7.4	7.0	7.1
October	**Influent**	0.16J	2.1	126	N/A	N/A	2.1	25.4	7.7	7.3	7.4
	Effluent	<0.13U	2.3	121	<2.0U	104	1.2J	23.6	7.4	7.0	7.1
November	**Influent**	<0.13U	2.2	133	N/A	N/A	2.1	33.5	7.5	7.1	7.3
	Effluent	<0.13U	<2.0U	81	2.1	84	1.1J	33.0	7.6	7.6	7.1
December	**Influent**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Effluent	<0.13U	33.5	39	2.5	4	1.7J	39.3	7.4	N/A	N/A

Notes:

[1] For values less than the LOD, the LOD value was used to calculate the average.

[2] cBOD analyses were not performed on influent composite samples.

[3] Real-time influent and effluent minimum and maximum pH values are reported based on hourly readings taken over a 24-hour period from each pH meter.

J – Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

U – Indicates the compound was analyzed for, but not detected.

Acronyms and Abbreviations:

BOD – biochemical oxygen demand
cBOD – carbonaceous biochemical oxygen demand
lb/day – pounds per day
LOD – limit of detection
Max – maximum
mg/L – milligrams per liter
Min – minimum
N/A – not applicable
PCBs – polychlorinated biphenyls

Table 9-5. 2018 Ultra-Low-Level Mercury Sample Results

Date	Sample ID	Flag	Result	LOD	Code	Comments
3/27/2018	TTFR-18-EFF-006	<	0.20	0.20	U	
	TTFR-18-EFF-006-BLANK	<	0.20	0.20	U	
04/03/2018	TTFR-18-EFF-011		0.223[1]	0.200	J	
	TTFR-18-EFF-011-BLANK	<	0.20	0.20	U	
4/10/2018	TTFR-18-EFF-016		0.266[1]	0.200	J	
	TTFR-18-EFF-016-BLANK	<	0.20	0.20	U	
4/19/2018	TTFR-18-EFF-022		0.280[1]	0.200	J	
	TTFR-18-EFF-022-BLANK	<	0.20	0.20	U	
4/24/2018	TTFR-18-EFF-025		0.504[1]	0.200		
	TTFR-18-EFF-025-BLANK	<	0.20	0.20	U	
5/1/2018	TTFR-18-EFF-030		0.205[1]	0.200	J	
	TTFR-18-EFF-030-BLANK	<	0.20	0.20	U	
5/8/2018	TTFR-18-EFF-035	<	0.20	0.20	U	
	TTFR-18-EFF-035-BLANK	<	0.20	0.20	U	
5/15/2018	TTFR-18-EFF-040		0.233[1]	0.200	J	
	TTFR-18-EFF-040-BLANK	<	0.20	0.20	U	
5/22/2018	TTFR-18-EFF-045		0.235[1]	0.200	J	
	TTFR-18-EFF-045-BLANK	<	0.20	0.20	U	
5/30/2018	TTFR-18-EFF-050		0.286[1]	0.200	J	
	TTFR-18-EFF-050-BLANK	<	0.20	0.20	U	
6/5/2018	TTFR-18-EFF-054	<	0.20	0.20	U	
	TTFR-18-EFF-054-BLANK	<	0.20	0.20	U	
6/14/2018	TTFR-18-EFF-059		0.217[1]	0.200	J	
	TTFR-18-EFF-059-BLANK	<	0.20	0.20	U	
6/19/2018	TTFR-18-EFF-064		0.213[1]	0.200	J	
	TTFR-18-EFF-064-BLANK	<	0.20	0.20	U	
6/26/2018	TTFR-18-EFF-069		0.218[1]	0.200	J	
	TTFR-18-EFF-069-BLANK	<	0.20	0.20	U	
7/10/2018	TTFR-18-EFF-074		0.224[1]	0.200	J	
	TTFR-18-EFF-074-BLANK	<	0.20	0.20	U	
7/17/2018	TTFR-18-EFF-079		0.305[1]	0.200	J	
	TTFR-18-EFF-079-BLANK	<	0.20	0.20	U	
7/24/2018	TTFR-18-EFF-084		0.249[1]	0.200	J	
	TTFR-18-EFF-084-BLANK	<	0.20	0.20	U	
7/31/2018	TTFR-18-EFF-089		0.222[1]	0.200	J	
	TTFR-18-EFF-089-BLANK	<	0.20	0.20	U	
8/7/2018	TTFR-18-EFF-094		0.229[1]	0.200	J	
	TTFR-18-EFF-094-BLANK	<	0.20	0.20	U	
8/14/2018	TTFR-18-EFF-099	<	0.20	0.20	U	

Date	Sample ID	Flag	Result	LOD	Code	Comments
	TTFR-18-EFF-099-BLANK	<	0.20	0.20	U	
08/21/2018	TTFR-18-EFF-104	<	0.20	0.20	U	
	TTFR-18-EFF-104-BLANK	<	0.20	0.20	U	
8/28/2018	TTFR-18-EFF-109	<	0.20	0.20	U	
	TTFR-18-EFF-109-BLANK	<	0.20	0.20	U	
9/5/2018	TTFR-18-EFF-114	<	0.20	0.20	U	
	TTFR-18-EFF-114-BLANK	<	0.20	0.20	U	
9/11/2018	TTFR-18-EFF-118	<	0.20	0.20	U	
	TTFR-18-EFF-118-BLANK	<	0.20	0.20	U	
9/18/2018	TTFR-18-EFF-123	<	1.00[1]	1.00	UD3	
	TTFR-18-EFF-123-BLANK	<	0.20	0.20	U	
9/25/2018	TTFR-18-EFF-128	<	0.20	0.20	U	
	TTFR-18-EFF-128-BLANK	<	0.20	0.20	U	
10/2/2018	TTFR-18-EFF-133	<	0.20	0.20	U	
	TTFR-18-EFF-133-BLANK	<	0.20	0.20	U	
10/9/2018	TTFR-18-EFF-138	<	2.0	2.0	UD3	
	TTFR-18-EFF-138-BLANK	<	0.20	0.20	U	
10/16/2018	TTFR-18-EFF-143	<	0.20	0.20	U	
	TTFR-18-EFF-143-BLANK	<	0.20	0.20	U	
10/23/2018	TTFR-18-EFF-148		0.203[1]	0.20	J	
	TTFR-18-EFF-148-BLANK	<	0.20	0.20	U	
10/30/2018	TTFR-18-EFF-153	<	0.20	0.20	U	
	TTFR-18-EFF-153-BLANK	<	0.20	0.20	U	
11/6/2018	TTFR-18-EFF-158		0.503[1]	0.200		
	TTFR-18-EFF-158-BLANK		0.314	0.200		
			0.189	Calculated Concentration		
11/16/2018	TTFR-18-EFF-163	<	0.20	0.20	U	
	TTFR-18-EFF-163-BLANK	<	0.20	0.20	U	

Notes:
[1] Concentrations in yellow exceed the WDNR performance goal, which is the LOD (0.2 ng/L).
J – Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
U – Indicates the compound was analyzed for, but not detected.
UD3 – The compound was not detected, but has a higher detection limit due to matrix interference from a non-target analyte.

Abbreviations and Acronyms:
ID – Identification
LOD – limit of detection
ng/L – nanograms per liter
WDNR – Wisconsin Department of Natural Resources

9.3 Sand Storage Area Surface Water Sampling

Sand storage area surface water sampling was not performed in 2018. Prior to the start of the 2016 season, modifications were implemented such that this water source is pumped to the WTP for treatment.

9.4 Perimeter Air Monitoring

During construction operations, sediment was pumped as a slurry in an enclosed pipeline to the LFRR Processing Facility, where it was desanded and dewatered. The dewatered constituents of the dredged sediment were stockpiled, loaded into trucks, and disposed of off-site. The potential for emissions to emanate from the filter cake was controlled by enclosing the dewatering operations and stockpiling and loading filter cake inside the LFRR Processing Facility, which was designed to contain, filter, and otherwise capture airborne emissions of PCBs. The air monitoring approach consisted of monitoring for particulates as a surrogate for PCBs, which potentially could be derived from airborne particles from the sand storage pad, separated sand stockpile, or due to handling or transportation of sand.

Ambient air monitoring was conducted at the perimeter of the LFRR Processing Facility site using two perimeter air monitoring stations that measured particulates that were less than 10 micrometers in diameter (PM_{10}) (Appendix A, Photograph 41). Figure 9-1 shows the locations of the air monitoring stations. Each air monitoring station (Perimeter Northwest and Perimeter Southeast) was equipped with one particulate monitor (PM_{10}).

Perimeter air monitoring provided a means to demonstrate that the particulates (measured as PM_{10}) derived from LFRR Processing Facility activities met the regulatory standard of 150 micrograms per cubic meter ($\mu g/m^3$). Ambient air was sampled and analyzed for particulates in accordance with the CQAPP (Tetra Tech et al. 2015a) to help ensure that particulates derived from river sediment that was desanded, dewatered, and staged at the LFRR Processing Facility were not creating potentially unacceptable impacts to air quality.

Perimeter air monitoring was performed to accomplish the following objectives:

- Monitor and evaluate the effectiveness of dust emission controls by monitoring for particulates (as PM_{10}) at the perimeter of the facility
- Establish continuous monitoring for particulates (as PM_{10}) as a useful surrogate indicator of potential exposure to PCBs

9.4.1 Pre-Remedial Action Baseline Air Monitoring

Per the Phase 2B Air Monitoring SAP (AMSAP) (Tetra Tech 2013a), Environmental Health and Safety (EHS) staff conducted site-specific pre-RA air monitoring for PM_{10} particulates prior to sediment dredging.

9.4.2 Meteorological Data

Concurrent with air monitoring, meteorological data were collected from the on-site weather station that was co-located with the PSE monitoring station (see Figure 9-1) within the boundaries of the LFRR Processing Facility site. Data were recorded on a real-time basis, and included wind speed and direction, ambient temperature, humidity, and pressure.

9.4.3 Particulate Sampling Results

The AMSAP (Tetra Tech 2013a) designated 150 $\mu g/m^3$ as an acceptable acute action level for particulates. Since PCB concentrations in the filter cake, which is stockpiled and loaded in Building B, are typically in the low ppm range, and similar concentrations are detected near the separated sand, which is stockpiled and loaded outside east of the LFRR Processing Facility, operating below 150 $\mu g/m^3$ should ensure that airborne respirable dust PCB concentrations are maintained at a safe level. The 150 $\mu g/m^3$ value also corresponds to the 24-hour average National Ambient Air Quality Standards for PM_{10}.

Calibration of the Dust Trak II ambient air monitors were performed in accordance with the manufacturer's specifications. The monitors were in operation during hauling of BRM beginning on March 6, 2018. Baseline readings were obtained prior to performing dredging operations from March 13, 2018 to March 17, 2018. Both Dust Trak II dust monitors were in operation beginning on March 20, 2018, when dredging operations began, and operated through the end of dredging and trucking activities on November 29, 2018. Once per week, EHS personnel retrieved the instruments and downloaded the data, which were compiled and reviewed by QC personnel.

The particulate monitoring yielded perimeter concentrations lower than ambient air quality standards. Monthly averages for particulate data obtained from PM_{10} sampling are included in Table 9-6. Daily PM_{10} results are contained in Table K-2 of Appendix K. Daily particulate sampling resulted in no 8-hour time-weighted average exceedances. The average PM_{10} concentration from both monitoring locations over the 2018 season was 18.9 µg/m^3, which is well below the limit of 150 µg/m^3.

Table 9-6. 2018 Monthly Average Particulate Levels

Month	PNW Sampling Station					PSE Sampling Station				
	Avg.		Max	Min	TWA (8 Hr)	Avg.		Max	Min	TWA (8 Hr)
	µg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	µg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3
March	15.0	0.015	0.079	0.001	0.012	21.9	0.022	0.132	0.004	0.020
April	13.9	0.014	0.061	0.002	0.012	21.0	0.021	0.065	0.006	0.019
May	15.0	0.015	0.081	0.000	0.012	26.0	0.026	0.581	0.004	0.027
June	12.3	0.012	0.085	0.000	0.009	22.0	0.022	0.494	0.002	0.023
July	12.0	0.012	0.078	0.000	0.008	23.2	0.023	0.322	0.005	0.026
August	24.7	0.025	0.268	0.000	0.023	40.7	0.041	0.248	0.003	0.045
September	13.4	0.013	0.101	0.000	0.011	18.6	0.019	0.671	0.000	0.019
October	14.0	0.014	0.157	0.000	0.013	19.6	0.020	0.118	0.001	0.019
November	10.9	0.011	0.123	0.001	0.009	12.6	0.013	0.067	0.000	0.009
December	17.6	0.018	0.057	0.002	0.014	22.6	0.023	0.091	0.000	0.016

Notes:

Negative values were changed to zero and used in summarizing dataset.

Part of April data is missing due to winter storm causing temporary equipment failure.

Abbreviations and Acronyms:
µg/m^3 – micrograms per liter
Avg. – average
Hr – hour
Max – maximum
mg/m^3 – milligrams per cubic meter
Min – minimum
PNW – Perimeter Northwest
PSE – Perimeter Southeast
TWA – time-weighted average

9.4.4 Airborne PCB Sampling Results

High-volume PCB sampling was not conducted in 2018.

9.5 Environmental Noise and Vibration Monitoring

9.5.1 Noise Monitoring

Noise monitoring was not conducted during 2018.

9.5.2 Vibration Monitoring

Vibration monitoring was not conducted in 2018.

9.6 Sand and Armor Stone Placement Surface Water Quality Monitoring

During sand and armor stone spreading operations in OU4, surface water monitoring was performed via in situ turbidity monitoring. These methods were used upstream and downstream of covering and capping operations to determine the effect, if any, of sand and armor stone placement on surface water turbidity. J.F. Brennan deployed silt curtains when needed to contain suspended solids around the spreader *Green Bay* and the *Mechanical Placement Barge.* The primary means of minimizing surface water turbidity during spreading operations was to maintain the fraction of fines in the sand and armor stone to less than one percent passing the #200 sieve size, as discussed in Sections 10.2 and 11.3.

9.6.1 Turbidity

Turbidity monitoring during cover and capping operations began on July 28, 2018 and ended on November 15, 2018. Turbidity monitoring was performed with one upstream turbidity raft located approximately 500 feet from the spreader or barge and one downstream turbidity raft located approximately 250 to 500 feet from the spreader or barge (Appendix A, Photograph 35).

No cover and capping-induced turbidity exceedances were observed during cover and cap activities, as shown in Table 9-7.

Table 9-7. 2018 Summary of Elevated Turbidity Monitoring Data during Cover/Cap Placement

Spreader	Date	Time (24 hr)	Upstream (NTU)	Downstream (NTU)	Delta (NTU)	Duration	Rafts	Comment
Green Bay	N/A	No elevated turbidity was measured in 2018						None
Mechanical	N/A	No elevated turbidity was measured in 2018						None

Abbreviations and Acronyms:
hr – hour
NTU – nephelometric turbidity units
N/A – not applicable

The average annual upstream turbidity for cap/cover activities was 25.3 NTUs, while the average annual downstream turbidity was 27.7 NTUs. On average, downstream turbidity was greater than the upstream turbidity by 2.4 NTUs. Table 9-8 summarizes 2018 turbidity monitoring data during cap/cover activities. Appendix L provides a complete listing of all turbidity monitoring data collected during sand, armor stone, and quarry spall placement activities.

Table 9-8. 2018 Comparison of Upstream and Downstream In Situ Turbidity Readings during Cover/Cap Activities[1,2]

	Month	Upstream Turbidity (NTU)				Downstream Turbidity (NTU)				Delta (Downstream-Upstream) (NTU)			
		Min	Max	Avg	Std Dev	Min	Max	Avg	Std Dev	Min	Max	Avg	Std Dev
OU4/ OU5	July	14.1	72.6	23.0	10.5	14.7	75.4	28.5	11.4	-44.5	54.7	5.4	15.8
	August	11.4	97.6	27.9	13.6	10.7	119.3	31.2	13.2	-31.6	39.9	3.3	7.3
	September	15.0	115.6	36.5	12.5	13.5	134.3	38.3	14.1	-84.7	104.1	1.8	10.8
	October	7.0	79.3	21.2	11.2	7.1	110.0	22.3	12.6	-23.3	85.1	1.1	6.1
	November	8.0	42.7	17.9	9.2	6.9	68.7	18.0	11.5	-8.4	53.6	0.1	5.2
Season Average		**11.1**	**81.6**	**25.3**	**11.4**	**10.6**	**101.5**	**27.7**	**12.6**	**-38.5**	**67.5**	**2.3**	**9.0**

Notes:

1. Any upstream or downstream turbidity readings less than zero were not used in the calculations. Additionally, any isolated upstream or downstream turbidity readings greater than 1,000 NTU were not used in the calculations as these would have been indicative of the presence of large debris, fauna, or other non-sediment substances.
2. Upstream and downstream turbidity data were excluded from turbidity calculations when spreader was non-operational for a period of 90 or more continuous minutes.

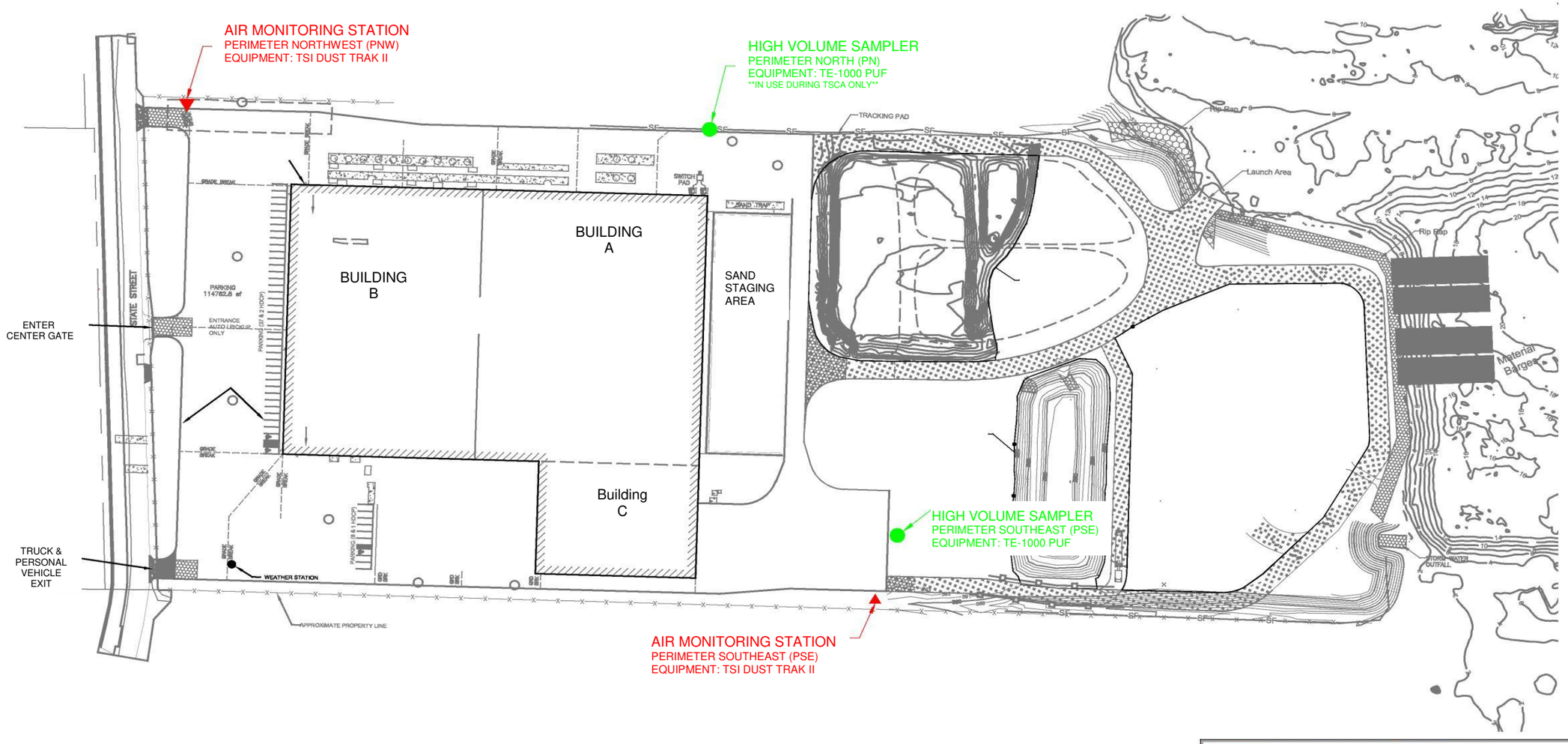
Abbreviations and Acronyms:

Avg – average
Max – maximum
Min – minimum
NTU – nephelometric turbidity units
OU – Operable Unit
Std Dev – standard deviation

9.6.2 Plume Monitoring

As specified in Section 4.3.1.2 of the CQAPP (Tetra Tech et al. 2015a), Tetra Tech conducted routine visual observations of water quality to identify potential turbidity plumes that may not have been detected or accurately measured by the raft-mounted turbidity meters. Plume monitoring occurred when turbidity plumes were visible during cover and cap aggregate placement from the spreader *Green Bay* and the mechanical spreader. Handheld turbidity measurements were taken at the upstream turbidity raft location, at the stern of the spreading vessel, and at 50-foot increments in any direction a plume was visible. Measurement locations were determined using a handheld Trimble GeoXH GPS device. At each location, a profile of the water column turbidity was obtained. Measurements were taken based on water depth. If the water depth was less than 6 feet, one measurement was taken with the handheld turbidity sonde at half the depth. If the water depth was 6 feet or greater, two measurements were taken, one at half depth and one at quarter depth. These profile values were evaluated to determine vertical variation in turbidity that was used as a reference for the variations in turbidity with relation to the distance from the aggregate spreader vessel. Analysis of these data profiles shows a gradual decrease of turbidity with increasing distance from the spreading vessel. During plume monitoring events, no instances were recorded of turbidity measurements exceeding the goal of 80 NTUs greater than background measurements at 500 feet or greater from spreaders during 2018 cap and cover operations. Daily plume monitoring reports are presented in Appendix L.

FIGURE 9-1
AIR MONITORING LOCATION PLAN



NOTE: THE AIR MONITORING STATIONS AND HIGH-VOLUME SAMPLER LOCATIONS SHOWN ABOVE ARE APPOXIMATE.

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CAD FILE: AMSAP Figure 9-1 - Air Monitoring Locations.
DRAWN BY: DOUG FRISQUE
DATE: April 18, 2019
LAST REVISED: December 14, 2018
CHECKED BY: REG

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10. SAND PLACEMENT

This section summarizes 2018 sand placement operations by the spreader *Green Bay* and provides the following information:

- An area-by-area summary of the spreading operations, including dates to track the movement of the spreader *Green Bay* through OU4
- Summary tables of completed sand placement areas, daily production rates, and volume estimates for sand cover placement
- Information on QA/QC performed on the sand sources
- A description of placement operations, including pre-placement activities, such as the staging of cap and cover aggregates
- Methods for tracking the progress and efficiency of sand cover placement
- Thickness measurement techniques and results from QA sampling of the sand cover
- Methods for tracking sand volume and mass balances
- Estimates of the total sand volume used and the volume lost
- Statistical analysis of the sand thickness data to demonstrate specifications for sand cover thickness were achieved

According to J.F. Brennan estimates from the sand stockpile, approximately 75,510 cy of sand was placed during 2018 (see Table 10-7). **Figures 10-1 through 10-47**, included as paper copies at the end of this report, show primary remedy and residual sand cover as-built thickness results, post-cover as-built surface elevations, and sand cover management unit (SCMU) information.

10.1 Sand Placement Overview

The spreader *Green Bay* began sand placement on July 30, 2018 and completed sand placement on November 13, 2018. The spreader *Green Bay* (see Appendix A, Photographs 6 and 7) was used for all sand placement that required use of the broadcast spreader; this included the construction of all primary sand covers and residual sand covers. Additionally, buttress sand was also placed using the Mechanical Placement Plant (Appendix A, Photograph 8).

Sand spreading operations were supported from the LFRR Processing Facility staging area. From this location, crews could stage loading equipment and booster pumps, and supply all aggregate required by the spreader. A pre-season stockpile survey completed by J.F. Brennan for all sand that was stockpiled at the LFRR Processing Facility before the beginning of 2018 placement operations showed 2,947 cy of sand was available to start the season.

Sand was spread in 47 SCMU and Cap Management Unit locations: 4 remedy sand covers, 39 residual sand covers, 2 engineered caps, and one SRA cap. Engineered caps and SRA caps also received armor stone. Table 10-1 provides a summary of sand spreading operations during 2018.

Beginning in May 2018, J.F. Brennan mobilized the spreader *Green Bay*, assembled the land plant and spreader at the LFRR Processing Facility, and began spreading sand on July 30, 2018. Operations completed at the LFRR Processing Facility included setting up the metering hopper, conveyor belt, slurry

tank, booster, and control shack. The spreader *Green Bay* was operated 12 hours per day, Monday through Friday until the end of the season on November 13, 2018.

10.2 Primary Remedy and Residual Sand Cover Design

The 2017/2018 and Beyond RA Work Plan (Tetra Tech et al. 2018) presented the planned scope of work for placing sand covers (as the primary RA) in 2018. The engineering basis for the sand covers as a primary RA was provided in the 100 Percent Design Report, Volume 2 (Tetra Tech and Anchor QEA 2012a). The remedy included placement of 6-inch-thick sand covers to remediate sediment deposits that had the following characteristics:

- Maximum PCB concentrations were no greater than 2 ppm in any two core sample intervals
- All other PCB concentrations in the core samples were ≤1.0 ppm RAL

In addition, sand covers were used to address post-dredge residuals where the following typical conditions were met, in accordance with the CQAPP (Tetra Tech et al. 2015a):

- PCB concentrations of the 0- to 6-inch post-dredge DMU composite samples (i.e., the "A" interval) were ≤ 10 ppm
- PCB concentrations of the post-dredge DMU composite samples for each individual interval (6-inch segments) below the upper 0- to 6-inch interval were ≤ 1.0 ppm, unless an exception was made and approved by the A/OT (as described below)

The Project Plan (Appendix C of the 100 Percent Design Report, Volume 2) required that the sand meet the gradation summarized in Table 10-2 and was classified as SP, SW, or SW-SM using the Unified Soil Classification System.

10.3 Sand Source QA/QC

Badgerland Aggregates provided the sand for covering and capping (see Appendix A, Photograph 36). The covering and capping sand provided by Badgerland Aggregates was transported from its Q-pit in Manitowoc County. In accordance with the CQAPP (Tetra Tech et al. 2015a), before using any imported aggregate, a Borrow Source Characterization Report was prepared for each new borrow pit, verifying that each aggregate met the specified physical and chemical properties. The Borrow Source Characterization Reports from Badgerland Aggregates (also known as F. Radandt & Sons) are presented in Appendix N-1.

Table 10-1. 2018 Completed Sand Placement

Area	Unit	Schedule	Cap A 3-inch Sand (acres)	Cap B 6-inch Sand (acres)	Cap C 6-inch Sand (acres)	Sand Cover (acres)	Residual Sand Cover 6-inch (acres)	Residual Sand Cover 9-inch (acres)	Residual Sand Cover 12-inch (acres)	Shoreline Cap (acres)	SRA Cap (acres)	Pre-Spread QC Survey Date	Post-Spread QC Survey Date	Observations/Challenges
SCFIK-089	1	07/30-08/01	--	--	--	0.63	--	--	--	--	--	3/6/2018	8/21/2018	N/A
SC53	1	07/30-08/01	--	--	--	0.89	--	--	--	--	--	3/6/2018	8/25/2018	N/A
CB58	1	09/21-09/24	--	0.09	--	--	--	--	--	--	--	3/6/2018	11/2/2018	Significant mixing during QC sampling
CC22	1	09/18-09/20	--	--	0.23	--	--	--	--	--	--	3/6/2018	11/2/2018	Significant mixing during QC sampling
SCFIK-097	1	10/30-10/30	--	--	--	0.03	--	--	--	--	--	3/8/2018	11/19/2018	Used open pipe discharge due to location along shoreline
SCNA-098	1	09/21/09/25	--	--	--	0.55	--	--	--	--	--	3/5/2018	11/1/2018	N/A
SRA-06	1	09/05-10/23	--	--	--	--	--	--	--	--	1.43	8/31/2018	11/14/2018	N/A
SRA-06	2	08/29-11/03	--	--	--	--	--	--	--	--	1.44	6/11/2018	11/13/2018	Due to shallow water, the eastern lane was spread with the moon pool removed
SCD38	12	09/11-09/11	--	--	--	--	1.44	--	--	--	--	3/8/2018	11/2/2018	Area started in 2017 and finished this year
SCD67	4	08/30-08/31	--	--	--	--	5.29	--	--	--	--	3/2/2018	9/14/2018	N/A
SCD35CD	13	09/04-09/10	--	--	--	--	0.00	--	--	--	--	3/2/2018	9/14/2018	N/A
SCD82	1	09/10-11/06	--	--	--	--	0.53	--	--	--	--	3/8/2018	11/19/2018	N/A
SCD82	2	09/07-09/10	--	--	--	--	0.42	--	--	--	--	3/22/2018	11/19/2018	Due to ship traffic, QC data were provided for acceptance
SCD82	3A	09/07/11/06	--	--	--	--	0.87	--	--	--	--	11/5/2018	11/7/2018	Due to the schedule of moving the ST Crapo, volumetric QC data were used
SCDUTIL-020	1A	10/30-10/30	--	--	--	--	--	1.52	--	--	--	10/10/2018	11/19/2018	Used open pipe discharge due to location along shoreline
SCDUTIL-020	1B	10/30-10/30	--	--	--	--	0.80	--	--	--	--	6/1/2018	11/19/2018	N/A
SCDUTIL-020	1C	08/31-09/06	--	--	--	--	0.72	--	--	--	--	3/2/2018	9/14/2018	N/A
SCD40A	2	07/31-08/08	--	--	--	--	0.07	--	--	--	--	4/20/2018	8/21/2018	N/A
SCD40A	3	08/01-08/08	--	--	--	--	0.03	--	--	--	--	4/18/2018	8/21/2018	N/A
SCD35EFG	1	08/08-08/14	--	--	--	--	0.06	--	--	--	--	3/2/2018	8/21/2018	N/A
SCD35EFG	2	08/13-08/14	--	--	--	--	2.11	--	--	--	--	3/2/2018	8/21/2018	N/A
SCD35EFG	3	08/08-08/14	--	--	--	--	1.46	--	--	--	--	3/6/2018	8/21/2018	N/A
SCD35EFG	4	08/13-08/23	--	--	--	--	1.58	--	--	--	--	3/6/2018	8/25/2018	N/A
SCD35EFG	5	08/08-08/22	--	--	--	--	0.40	--	--	--	--	3/6/2018	8/25/2018	N/A
SCD35EFG	6	08/15-08/27	--	--	--	--	1.83	--	--	--	--	3/8/2018	11/1/2018	N/A
SCD35EFG	7	08/15-08/27	--	--	--	--	0.52	--	--	--	--	3/8/2018	11/1/2018	N/A
SCD35EFG	8	08/27-08/28	--	--	--	--	1.71	--	--	--	--	3/8/2018	11/1/2018	Significant debris in the northern portion of the area resulted in challenges collecting QC samples.
SCD35EFG	9	08/17-08/27	--	--	--	--	1.95	--	--	--	--	3/8/2018	11/1/2018	Significant debris in the northern portion of the area

Area	Unit	Schedule	Cap A 3-inch Sand (acres)	Cap B 6-inch Sand (acres)	Cap C 6-inch Sand (acres)	Sand Cover (acres)	Residual Sand Cover 6-inch (acres)	Residual Sand Cover 9-inch (acres)	Residual Sand Cover 12-inch (acres)	Shoreline Cap (acres)	SRA Cap (acres)	Pre-Spread QC Survey Date	Post-Spread QC Survey Date	Observations/Challenges
														resulted in challenges collecting QC samples.
SCD39	1	08/15-08/15	--	--	--	--	0.27	--	--	--	--	3/2/2018	8/21/2018	N/A
SCD39	3	10/24-10/26	--	--	--	--	0.44	--	--	--	--	3/8/2018	11/2/2018	N/A
SCD39	4	09/12-09/21	--	--	--	--	1.67	--	--	--	--	3/8/2018	11/19/2018	N/A
SCD39	5	09/12-09/24	--	--	--	--	0.27	--	--	--	--	3/8/2018	11/19/2018	N/A
SCD39	6	08/15-09/12	--	--	--	--	1.50	--	--	--	--	6/13/2018	11/2/2018	N/A
SCD39	7	09/12-09/24	--	--	--	--	1.45	--	--	--	--	3/8/2018	11/1/2018	N/A
SCD39	8	08/23-09/17	--	--	--	--	1.76	--	--	--	--	3/8/2018	11/1/2018	N/A
SCDFIK-091	1	09/24-09/24	--	--	--	--	0.97	--	--	--	--	3/8/2018	11/19/2018	N/A
SCDFIK-092	1	08/16-08/16	--	--	--	--	2.12	--	--	--	--	4/10/2018	8/25/2018	N/A
SCDFIK-093	1	09/24-09/24	--	--	--	--	0.84	--	--	--	--	3/8/2018	11/2/2018	Due to the location along the shoreline, the moon pool was removed to complete the coverage
SCD68A	1	09/24-09/28	--	--	--	--	0.09	--	--	--	--	3/5/2018	11/1/2018	Due to the location along the shoreline, the moon pool was removed to allow complete coverage
SCD35H	2	10/01-10/09	--	--	--	--	--	0.46	--	--	--	3/5/2018	10/31/2018	
SCD35H	3	10/09-10/13	--	--	--	--	0.14	--	--	--	--	3/5/2018	10/31/2018	N/A
SCD35H	4	10/01-10/10	--	--	--	--	0.30	--	--	--	--	3/5/2018	10/31/2018	N/A
SCD35H	6	10/12-10/18	--	--	--	--	2.05	--	--	--	--	3/5/2018	10/31/2018	N/A
SCD35H	7	10/13-10/30	--	--	--	--	1.63	--	--	--	--	3/5/2018	10/31/2018	N/A
SCD68B	2	09/21-10/01	--	--	--	--	1.45	--	--	--	--	3/5/2018	10/31/2018	N/A
SCD68B	3	09/26-10/29	--	--	--	--	1.53	--	--	--	--	3/5/2018	10/31/2018	N/A
SCD68B	4	10/18-10/29	--	--	--	--	1.51	--	--	--	--	3/5/2018	10/31/2018	N/A
Totals			0	0.09	0.23	2.10	41.78	1.98	0	0	2.87			

Abbreviations and Acronyms:
N/A – Not Applicable
QC – quality control
SRA – special remediation area

Table 10-2. Grain Size Specification for Sand

Grain Size Curve	Unified Soil Sieve Size – Percent Passing				
	1 ½ inch	#4	#10	#40	#200
Sand (maximum)	100	100	85	40	1
Sand (minimum)	100	60	45	5	0

In accordance with specification Section 35 43 00, part 2.2, Appendix C of the 100 Percent Design Report (Tetra Tech et al. 2012a), the sand supplier was required to provide grain-size distribution analyses (ASTM C136) for each source to ensure the product specifications were being met prior to delivery. This QC testing was performed for sand supplied by Badgerland Aggregates at the rate of one test per 5,000 cy. Appendix N-3 contains the QC geotechnical data for the supplied sand. Sample collection procedures were observed for compliance with ASTM D75M-14 standards and grain-size distribution analysis was verified by independent testing. Appendix N-2 contains verification QC geotechnical data.

In early 2014, Tetra Tech and the A/OT agreed to the use of a rolling average evaluation of gradation tests to determine acceptance of sand used for engineered caps and sand covers. In summary, this agreement established guidelines whereby sand could exceed the specified 85 percent passing the #10 sieve size (up to and including 87 percent), and/or exceed the specified 1 percent passing limit on the #200 sieve size by up to and including 2 percent, under the following conditions:

- If test results for more than one sieve size were out of specification, Tetra Tech would notify the sand supplier, the LLC, and the A/OT to determine the appropriate path forward.
- #10 Sieve: Not more than two consecutive tests per pit could be greater than 85 percent passing the #10 sieve. Tetra Tech would notify the sand supplier, the LLC, and the A/OT of the specific pit(s) that were out of specification as soon as one test result exceeded 85 percent passing on the #10 sieve. Tetra Tech would follow up with the sand supplier to again emphasize the importance of meeting the project specifications requirements.
- #200 Sieve: Not more than two consecutive tests per pit could be greater than 1 percent passing the #200 sieve. Tetra Tech would notify the sand supplier, the LLC, and the A/OT of the specific pit(s) that were out of specification as soon as one test result exceeded 1 percent passing on the #200 sieve. Tetra Tech would follow up with the sand supplier to again emphasize the importance of striving to meet the project specifications.
- If the sand was to be used as the chemical isolation layer under an engineered cap, the armor stone was to have an actual D_{15} (armor stone) to actual D_{85} (sand) ratio of 5 to 1 or less (D_{15}/D_{85}).

Although the rolling average guidelines were available for use, they were not used in 2018 because all capping sand met project gradation specifications. Delivered quantities were consistently tracked. After making a delivery, the driver placed the weight ticket for the load in a mail box at the LFRR Processing Facility.

10.4 Sand Cover Placement Operations

10.4.1 Pre-Placement Activities

Before the start of sand covering operations for the 2018 season, the LFRR Processing Facility was set up as the base for pumping operations and stockpiling of aggregates.

The LFRR Processing Facility site was used for:

- A staging location for cap and cover aggregates; approximately 100 truckloads of aggregate were delivered to the site daily during the height of cap and cover operations

- A staging area for a slurry plant, which was used to mix aggregates with water and pump the slurry to the spreader plant on the river in OU4
- A personnel muster and shift-change location

10.4.2 Sand Delivery and Placement

See the 2009 RA Work Plan (Tetra Tech et al. 2009b) for a description of sand delivery and placement.

10.4.3 Quality Control Sand Cover Measurements

See the 2014 CQAPP (Tetra Tech et al. 2015a) for information on sand cover quality measurement activities.

10.5 Sand Cover Placement Progress and Production Tracking

Using the QC data collected during operations, J.F. Brennan monitored production progress during sand placement. J.F. Brennan created CADD drawings daily, highlighting the progress that the spreader had made during the previous 24-hour period. This progress data allowed Tetra Tech and J.F. Brennan to better manage and schedule sand placement and QA activities, and ensure the availability of an adequate amount of sand.

10.5.1 Percent Uptime

As with dredging, percent uptime is a key measure of productivity for the sand spreading portion of the project. Percent uptime is the percentage of time that the spreader is operating compared to the time it is available for operations (not including scheduled off days such as holidays or weekends). Table 10-3 summarizes each of the 21 downtime categories that caused spreader delays. Tables 10-3 and 10-4 summarize information from J.F. Brennan's Daily Reports and present a calculated percent uptime (efficiency). The percent uptime for sand spreading operations with the spreader *Green Bay* was 76 percent. The 76 percent uptime calculation includes 200.5 hours for sand spreading delays. Most of the delay time includes barge movement, moving boosters, computer troubleshooting, spreader maintenance, and startup/shutdown procedures.

10.5.2 Sand Cover Placement Efficiency

Sand placement began on July 30, 2018 and was concluded on November 13, 2018. During this time, J.F. Brennan compiled 814.5 GOH. Further, J.F. Brennan tabulated the volume (cy) of sand spread each operational day. A total of 73,987 cy of sand was spread as calculated by J.F. Brennan's in-line belt scale located at the LFRR Processing Facility. By dividing the total cy of sand placed by the GOH during sand cap and cover placement, it was determined that roughly 91 cy/GOH were placed during the 2018 sand placement activities. Tables 10-3 and 10-4 present daily efficiencies, as well as overall efficiency, for the spreader.

Table 10-3. 2018 Spreading Delay Summary for Sand Cover and Armor Stone

Cause of Delay		Time Consumption/Delays (hours)	
		Spreader *Green Bay*	
OPERATIONAL (Aggregate Spreading)	Obstructions	0.25	
	Mob to New Area	0.75	
	Clean/Repair Spinners	0.00	
	Belt/Belt Scale	6.25	
	Spreader Maintenance	3.00	
(Execution)	Move Spreader	36.75	
	Move Pipeline	11.75	
	Repair HDPE Pipeline	14.00	
	Rotate Pipeline	0.00	
	Repair Steel Pipeline	0.00	
(Mechanical)	Sensors, DredgePack®, GPS	3.00	
	Spreader's Generator/Spuds	1.00	
	Startup/Shutdown	61.75	
	Separators	8.00	
	Shaker Screen	0.00	
PROJECT	Land Plant	7.50	
	Land Boosters	4.00	
	Water Boosters	8.00	
	Wash Pipeline	7.00	
OUTSIDE	Water Quality and Weather	0.00	
	Miscellaneous	27.50	
Total Delays		**200.5**	**hours**
Total Net Operational Hours		**626.50**	**hours**
Total Gross Operational Hours		**827.00**	**Hours**
Total Overall Efficiency		**76%**	
Sand Net Operational Hours		**619.50**	**hours**
Sand Gross Service Hours		**814.50**	**hours**
Sand Efficiency		**76%**	
Armor Stone Net Operational Hours		**7.00**	**hours**
Armor Stone Gross Service Hours		**12.50**	**hours**
Armor Stone Efficiency		**56%**	

Abbreviations and Acronyms:
GPS – global positioning system
HDPE – high-density polyethylene
Mob – mobilization

Table 10-4. 2018 *Green Bay* Daily Estimated Sand Cover Placement Production Rates

Date	NOH	GOH	Avg. Efficiency	Avg. cy/ GOH[1]	Belt Scale (cy)	SF	Area
30-Jul	8.00	12.00	67%	71	850	22,680	SCFIK-089, SC53-1
31-July	9.25	12.00	77%	80	957	40,957	SCFIK-089, SC53-1, SCD40A-2
1-Aug	8.00	12.00	67%	70	835	24,530	SCFIK-089, SC53-1, SCD40A-2
2-Aug	3.25	12.00	27%	31	373	41,875	SCD40A-2, 3
3-Aug	10.25	12.00	85%	107	1288	48,629	SCD40A-2, 3
6-Aug	9.75	12.00	81%	103	1237	33,357	SCD40A-2, 3
7-Aug	9.25	12.00	77%	102	1224	38,788	SCD40A-2, 3
8-Aug	9.00	12.00	75%	97	1170	43,415	SCD40A-2,3, SCD35EFG-1, 3, 5
9-Aug	10.25	12.00	85%	109	1304	42,726	SCD35EFG-1, 3, 5
10-Aug	9.50	12.00	79%	104	1253	41,764	SCD35EFG-1, 3, 5
13-Aug	10.00	12.00	83%	106	1269	40,311	SCD35EFG-1, 2, 3, 4, 5
14-Aug	10.50	12.00	88%	110	1321	35,228	SCD35EFG-1, 2, 3, 4, 5
15-Aug	9.00	12.00	75%	103	1231	39,015	SCD39-1, 6, SCD35EFG-4, 5, 6, 7
16-Aug	10.25	12.00	85%	110	1325	34,731	SCD35EFG-5, 6, SCDFIK-092-1
17-Aug	9.50	12.00	79%	93	1120	48,255	SCD35EFG-5, 6, 7, 9
20-Aug	10.75	12.00	90%	134	1606	47,500	SCD35EFG-5, 6, 9
21-Aug	10.50	12.00	88%	134	1604	42,709	SCD35EFG-4, 5, 6, 9
22-Aug	10.25	12.00	85%	129	1546	28,598	SCD35EFG-4, 5, 6, 9, SCD39-6
23-Aug	6.75	12.00	56%	84	1003	31,416	SCD35EFG-4, 6, 9, SCD39-6, 8
24-Aug	9.75	12.00	81%	111	1338	13,595	SCD35EFG-9, SCD39-6, 8
27-Aug	4.50	12.00	38%	55	660	27,417	SCD35EFG-6, 7, 8, 9
28-Aug	8.75	12.00	73%	85	1015	16,951	SCD35EFG-8, SCD39 - 6, 8
29-Aug	6.75	12.00	56%	79	950	24,448	SCD39-8, SRA-06-2
30-Aug	11.25	12.00	94%	133	1601	29,373	SCD67-4, SRA-06-2
31-Aug	11.00	12.00	92%	127	1524	23,535	SCDUTIL-020-1C, SCD67-4, SRA-06-2
4-Sep	8.75	12.00	73%	106	1278	26,881	SCD35CD-13, SRA-06-2
5-Sep	10.25	12.00	85%	124	1483	21,291	SCDUTIL-020-1C, SCD35CD-13, SRA-06-1
6-Sep	7.00	12.00	58%	85	1024	33,687	SCD35CD-13, SRA-06-1
7-Sep	9.50	12.00	79%	101	1210	30,525	SCD82- 3A, 2,
10-Sep	8.25	12.00	69%	95	1135	31,145	SCD82-1, 2, 3A, SRA-06-1, SCD35CD-13, SCDUTIL-020-1B
11-Sep	7.50	12.00	63%	72	868	26,707	SCD82-1, SCD38-12, SCDUTIL-020-1B, SRA-06-1
12-Sep	7.75	12.00	65%	90	1078	33,771	SCD39-4, 5, 6
13-Sep	11.00	12.00	92%	116	1393	28,285	SCD39-4, 5, 7
14-Sep	7.50	12.00	63%	77	920	33,478	SCD39-5, 7, 8
17-Sep	9.50	12.00	79%	96	1148	30,300	SCD39-5, 7, 8
18-Sep	8.75	12.00	73%	91	1095	35,380	SCD39-5, 7, CC22
19-Sep	10.00	12.00	83%	112	1340	35,325	SCD39-4, 5, 7, CC22

Date	NOH	GOH	Avg. Efficiency	Avg. cy/ GOH[1]	Belt Scale (cy)	SF	Area
20-Sep	9.75	12.00	81%	110	1324	34,164	SCD39-4, 5, 7, CC22
21-Sep	10.50	12.00	88%	103	1231	26,660	SCD39-4, 5, 7, CB58, SCNA-098, SCD68B-2
24-Sep	7.50	12.00	63%	64	770	26,179	SCDFIK-091, SCDFIK-093, CB58, SCD39- 5, 7, SCD68A-1
25-Sep	9.75	12.00	81%	79	953	28,626	SCD68A-1, SCD68B-2, SCNA-098
26-Sep	9.00	12.00	75%	85	1018	45,780	SCD68B-2, SCD68B-3, CC22
27-Sep	11.00	12.00	92%	104	1244	34,021	SCD68B-2, 3
28-Sep	10.75	12.00	90%	93	1120	20,547	SCD68B-2, 3, SCD68A-1
1-Oct	7.75	12.00	65%	65	775	22,017	SCD68B-2, SCD35H-2, 4
2-Oct	10.50	12.00	88%	78	940	25,554	SCD35H-2, 4
3-Oct	10.50	12.00	88%	82	990	16,137	SCD35H-2, 4
4-Oct	5.00	12.00	42%	49	588	24,692	SCD35H-2, 4
5-Oct	10.75	12.00	90%	93	1112	23,642	SCD35H-2, 4
8-Oct	9.75	12.00	81%	86	1026	30,019	SCD35H-2
9-Oct	9.75	12.00	81%	94	1126	25,498	SCD35H-2, 3, 4
10-Oct	7.75	12.00	65%	78	938	10,500	SCD35H-3, 4
11-Oct	3.00	12.00	25%	30	355	31,116	SCD35H-3
12-Oct	10.00	12.00	83%	90	1077	32,912	SCD35H-3, 6
15-Oct	9.75	12.00	81%	94	1123	38,297	SCD35H-3, 6, 7
16-Oct	11.00	12.00	92%	100	1200	39,902	SCD35H-6, 7
17-Oct	11.25	12.00	94%	104	1246	35,464	SCD35H-6, 7
18-Oct	10.00	12.00	83%	93	1120	15,209	SCD35H-6, 7, SCD68B-3, 4
19-Oct	9.00	12.00	75%	76	909	20,479	SCD82-1, SRA-06-1
22-Oct	10.25	12.00	85%	84	1010	31,175	SCD82-1, SCDUTIL-020-1B, SRA-06-1
23-Oct	11.00	12.00	92%	94	1129	37,404	SCD82-1, SRA-06-1
24-Oct	11.00	12.00	92%	92	1103	31,941	SCD82-1, SCD39-3
25-Oct	11.25	12.00	94%	96	1155	36,880	SCD39-3
26-Oct	10.50	12.00	88%	90	1083	41,379	SCD39-3, SCD68B-3, 4
29-Oct	10.25	12.00	85%	90	1081	7,729	SCD68B-3, 4, SCD35H-7
30-Oct	6.00	12.00	50%	37	446	12,004	SCD35H-7, SCFIK-097, SCDUTIL-020-1A
5-Nov	4.00	6.00	67%	63	381	18,233	SCD82-3A
6-Nov	6.00	7.00	86%	92	645	7,140	SCD82-3A, SCD82-1
13-Nov	3.50	9.50	37%	20	193	4,019	SRA-06-2
TOTALS	**619.50**	**814.5**	**76%[2]**	**91[3]**	**73,987**	**2,063,897**	

Notes:
All data derived from J.F. Brennan Daily Reports
[1] Average cy/GOH by date
[2] Average seasonal efficiency
[3] Average seasonal cy/GOH

Abbreviations and Acronyms:
Avg. – Average
cy – cubic yards
GOH – gross operational hours
NOH – net operational hours
SF – square foot

10.6 Sand Cover Thickness Verification

Sand cover thickness verification procedures and verification results for the 2018 season are presented in this section. Bathymetric QC surveys related to sand cover placement were performed on the dates shown in Table 10-1.

The primary purpose of the QA sand cover thickness verification was to confirm adequate thickness of the sand cover after placement. Sand thickness verification cores were measured and photographed to document the thickness of the sand cover and the amount of mixing of the sand with the underlying soft sediment.

Core locations were initially randomly selected within a sand cover area with a sample quantity sufficient to support valid statistical analysis. Pre-set boundaries and offsets were also considered to ensure core locations were not too near each other, on the edge of the sand cover, nor too close to another core location.

Appendix M contains the sand cover thickness QA sampling results. The sand cover thickness verification locations and results are shown on the figures located in the separate figures file included with this report.

10.6.1 Thickness Measurement Procedures

Tetra Tech conducted sand thickness verification sampling within 1 to 2 days after the sand was spread in an area. Verification sampling was conducted as soon as possible after sand placement to limit consolidation effects, and so that additional sand placement, when required, could be completed promptly.

The core location map and coordinates were provided to the field team. The field crew navigated to the core locations using RTK GPS. The water elevation was measured and documented at each core location. If possible, cores were collected within 3 feet of the targeted core locations. However, during times of high wind, rough water, and/or high water velocity, the locations could be as much as 10 feet from the targeted locations, as approved by the A/OT. The actual core location coordinates were surveyed and recorded in the electronic database.

At each core location, a measurement from the water surface to the placed sand surface was obtained using a 6-inch disk attached to a graduated pole (tenths of a foot). A check valve sampler was advanced through the sand and into the underlying soft sediment. The sampler was retrieved and placed adjacent to a white board for measuring and photographing. The sand thickness and sand/sediment-mixing-layer thickness were measured and recorded on the white board and in the GPS data collector. Three photographs were taken of each core, which allowed photographic coverage of the entire core and a close-up of the sand and sediment mixing zone. If the sand/sediment mixing zone was present, 50 percent of the thickness of this layer could be added to the sand thickness to satisfy the minimum 6-inch thickness requirement. The contents of the sand core were placed back into the river following documentation.

If observations of the sand/sediment mixing layer in a core made it difficult to interpret sand thickness based on the field method described in the previous paragraph, a core was occasionally brought to the core processing area, cut open, and the sand thickness was measured in a less disturbed condition.

If the sand core did not recover the minimum sand thickness requirement, generally a thickness of 6 inches, 9 inches, or 12 inches, the location was resampled. If the second core attempt also recovered less than the required thickness of sand, it was assumed that there was an area of insufficient thickness and four additional thickness cores were collected around the original location to determine the extent of the insufficient sand thickness. The same thickness measurement procedures described above for sand covers/layers also applied to the placement of sand covers or layers for engineered and SRA caps.

10.6.2 3-Inch Sand Layer for Engineered Cap Results

No 3-inch sand covers or sand layers for engineered caps were constructed in 2018; therefore, no 3-inch sand thickness verification sampling was performed.

10.6.3 6-Inch Sand Cover and Layer for Engineered Cap Results

Thickness verification sampling for 6-inch sand covers and 6-inch sand layers associated with engineered type B and C caps demonstrated that 2018 placement efforts were successful in achieving the specified thicknesses. Sand covers were placed in 47 areas: six were primary remedy sand covers and 39 were residual sand covers, and one was in cap SRA-06. A total of 474 sand cover and engineered cap sand layer thickness verification cores: 31 were collected from primary sand covers and layers and 443 were collected from residual sand covers. A total of 31 of 31 cores for primary sand covers or layers for engineered cap cores (100 percent) and 430 of 443 cores for residual sand cover (97.1 percent) met the 6-inch thickness requirement. Appendix M contains the sand cover and layer sampling results.

10.6.4 9-Inch Sand Cover Results

Based on results of the 9-inch sand cover thickness verification sampling activities, 9-inch sand cover placement was determined to be successful in OU4 in 2018. Nine-inch sand covers were placed in four areas; two were primary remedy sand covers and two were residual sand cover areas. A total of 67 residual sand cover thickness verification cores were collected: 37 were collected from primary sand covers and 30 were collected from residual sand covers. A total of 36 of 37 primary sand cover cores (97.3 percent) and 29 of 30 residual sand cover cores (96.7 percent) met the 9-inch thickness requirement. Appendix M contains the sand cover sampling results.

10.6.5 12-Inch Sand Cover Results

In 2018, no 12-inch sand covers or sand layers for engineered caps were constructed; therefore, no 12-inch sand thickness verification sampling was performed.

10.7 Buttress Placement Operations

Buttress placement activities occurred during the 2018 season using the Mechanical Placement Plant. No new buttresses or berms were placed in 2018. However, in area D68B-5, additional dredging in an adjacent area resulted in the need to temporarily remove a portion of buttress. Once the dredging was completed, the buttress was restored. The D68B-5 buttress consisted of capping sand and D_{50} = 0.5- to 1-inch armor stone. To restore the buttress required 814.1 cy of aggregate, including 655.2 cy of sand, and 158.9 cy of D_{50} = 0.5- to 1-inch armor stone. Removal of the D68B-5 buttress was conducted from July 23 to July 25, 2018 and replacement of the sand and armor stone buttress was completed between October 23 and 25, 2018.

Preplacement buttress operations were conducted in a staging area at the LFRR Processing Facility site. This location provided a staging of buttress aggregates and a loading site for the Mechanical Placement Barge. The staging area at the LFRR Processing Facility site also served as a muster point for J.F. Brennan spreading crews.

Placement operations occurred 12 hours per day. During the season, buttress operations operated 30 GOH, of which 12.75 were NOH.

Table 10-5. 2018 Buttress Placement

Buttress Type	Management Area	Volume (cy)
Sand	D68B-5	655.2
D_{50} = 0.5- to 1-inch armor stone	D68B-5	158.9
Total		**814.1**

Abbreviations and Acronyms:
cy – cubic yards

10.8 Sand Cover Volume Tracking and Mass Balances

During the 2018 sand placement operations, J.F. Brennan used three methods to determine the volume of aggregate being placed. These methods included a belt scale on the spreader *Green Bay*, a belt scale on the land-based metering hoppers, and stockpile surveys combined with tonnages delivered.

Each day, the spreader computer recorded the "step detail" that displayed when, where, and how much sand was placed over a given day, based on the belt scale of the spreader. The belt scales at the land plant simply recorded the total number of tons per day that was sent to the spreader. The following week, these computed values were compared to verify they were all similar. If one of the values seemed to be incorrect, an investigation was completed to determine what caused the discrepancy. The use of these three methods to estimate a daily total volume placed helped to ensure that if one method failed or was skewed, the inconsistency could be immediately identified.

In addition to the daily checks, the weight of aggregate delivered to the site each week was tabulated. Based on the data from stockpile surveys performed at the end of each operating week, the volume of aggregate that was gained or lost from the stockpile for a given week was determined. Comparison of the total volume delivered and the net volume change in the stockpile each week provided the estimate of the total volume placed for the week.

An overall mass balance of the aggregates and square footage covered each week was produced weekly to illustrate the effectiveness of the aggregate placement operation (see Table 10-6).

10.9 Summary of Sand Cover Volume for 2018

The volume of sand delivered to the LFRR Processing Facility for sand placement activities was compared to the calculated volume placed for each sand cover and engineered cap. QC and QA thickness cores were collected to determine sand cover thickness in each sand cover. Thickness measurements were collected for each sand cover, including individual thickness measurements and overall average thickness. By using the QA average sand thickness per sand cover measured, the volume of sand placed in each sand cover was calculated by multiplying the design square footage of the sand cover by the QA average sand thickness.

10.9.1 Comparison of Delivered and Placed Sand Volumes

Throughout the 2018 season, Tetra Tech compiled individual truck weight tickets and calculated the total amount of sand delivered to the LFRR Processing Facility site. Based on a compilation of the weight tickets received, 125,587.7 tons of sand (or 80,737.7 cy of sand, using the laboratory-determined density of the sand from the pit from which sand was obtained) were delivered to the LFRR Processing Facility site. At the end of the operations season, J.F. Brennan performed a depletion survey of the remaining sand stockpile. From the survey data, the volume of unused sand at the end of 2018 operations was 5,976.8 cy. By adding the volume of sand delivered during the 2018 season (80,737.7 cy) to the volume of sand that was carried over from the 2017 season (2,946.5 cy), then subtracting the volume of sand remaining on the LFRR

Processing Facility site after 2018 operations (5,976.8 cy), it was determined that an estimated 77,707.4 cy was used for all 2018 sand placement. This estimate includes 655.2 cy of buttress sand.

Comparing the aggregate quantity delivered to the calculated aggregate quantity placed (see Table 10-6), a difference was realized. The difference in volume between the two calculations is believed to be due to sand loss and settling during placement due to consolidation of void spaces in the sand, as well as the precision of the methods of measurement used.

Table 10-6. 2018 QA Sand Cover/Sand Layer of Cap/Armor Stone Placement Volume Estimates

Area	QA Average Thickness (in)	Placed Square Footage (sq. ft.)	Calculated Volume Placed (cy)
6-Inch Residual Sand Cover			
SCD38-12	6.70	23,223.00	480.23
SCD67-4	7.83	18,364.00	443.80
SCD35CD-13	7.80	37,886.00	912.07
SCD82-1	8.00	66,100.00	1,632.10
SCD82-2	7.80	34,875.00	839.58
SCD82-3A	6.28	31,569.00	611.89
SCDUTIL-020-1B	10.64	1,200.00	39.41
SCDUTIL-020-1C	11.17	2,684.00	92.53
SCD40A-2	8.32	91,861.00	2,358.90
SCD40A-3	8.33	63,596.00	1,635.05
SCD35EFG-1	8.10	68,955.00	1,723.88
SCD35EFG-2	7.80	17,452.00	420.14
SCD35EFG-3	7.92	79,718.00	1,948.66
SCD35EFG-4	8.30	22,490.00	576.13
SCD35EFG-5	7.90	74,602.00	1,819.00
SCD35EFG-6	7.58	84,898.00	1,986.19
SCD35EFG-7	9.20	11,632.00	330.29
SCD35EFG-8	7.90	19,063.00	464.81
SCD35EFG-9	7.80	72,832.00	1,753.36
SCD39-1	7.50	11,697.00	270.76
SCD39-3	8.50	65,435.00	1,716.66
SCD39-4	7.80	63,219.00	1,521.94
SCD39-5	8.20	76,855.00	1,945.10
SCD39-6	7.40	42,038.00	960.13
SCD39-7	7.40	92,500.00	2,112.65
SCD39-8	8.56	36,750.00	970.93
SCDFIK-091-1	7.00	3,727.00	80.52
SCDFIK-092-1	8.00	19,905.00	491.48
SCDFIK-093-1	5.00	6,287.00	97.02
SCD68A-1	7.60	13,159.00	308.67

SCD35H-3	6.90	71,099.00	1,514.15
SCD35H-4	9.06	63,089.00	1,764.16
SCD35H-6	7.42	66,496.00	1,522.84
SCD35H-7	8.47	65,845.00	1,721.32
SCD68B-2	8.10	59,886.00	1,497.15
SCD68B-3	8.44	90,602.00	2,360.13
SCD68B-4	8.32	60,258.00	1,547.37
	Subtotal	**1,731,847.00**	**42,471.00**
9-Inch Residual Sand Cover			
SCDUTIL-020-1A	13.20	3,217.00	131.06
SCD35H-2	11.10	89,379.00	3,062.06
	Subtotal	**92,596.00**	**3,193.12**
12-Inch Residual Sand Cover			
	0.00	0.00	0.00
	Subtotal	**0.00**	**0.00**
Cap A Residual Sand			
	0.00	0.00	0.00
	Subtotal	**0.00**	**0.00**
Cap B Residual Sand			
	0.00	0.00	0.00
	Subtotal	**0.00**	**0.00**
Cap C Residual Sand			
	0.00	0.00	0.00
	Subtotal	**0.00**	**0.00**
6-Inch Remedy Sand Cover			
SCFIK-089-1	8.70	27,475.00	737.75
SC53-1	8.30	38,675.00	990.75
SCFIK-097-1	13.00	1,310.00	52.56
SCNA-098-1	9.10	24,030.00	674.92
	Subtotal	**91,490.00**	**2,455.98**
9-Inch Remedy Sand Cover			
	0.00	0.00	0.00
	Subtotal	**0.00**	**0.00**
SRA Cap Sand			
	11.17	154,952.00	5,342.00
	Subtotal	**154,952.00**	**5,342.00**
Cap A Remedy Sand			
	0.00	0.00	0.00
	Subtotal	**0.00**	**0.00**

Cap B Remedy Sand			
CB58-1	7.25	3,801.00	85.05
	Subtotal	**3,801.00**	**85.05**
Cap C Remedy Sand			
CC22-1	8.38	10,024.00	259.26
	Subtotal	**10,024.00**	**259.26**

SRA Cap Stone			
	Volumetric Cap	122,473.00	13,597.00
	Subtotal	**122,473.00**	**13,597.00**
Cap A Residual Stone			
	0.00	0.00	0.00
	Subtotal	**0.00**	**0.00**
Cap B Residual Stone			
	0.00	0.00	0.00
	Subtotal	**0.00**	**0.00**
Cap C Residual Stone			
	0.00	0.00	0.00
	Subtotal	**0.00**	**0.00**
Cap A Remedy Armor Stone			
	0.00	0.00	0.00
	Subtotal	**0.00**	**0.00**
Cap B Remedy Armor Stone			
CB58-1	5.67	3,801.00	66.52
	Subtotal	**3,801.00**	**66.52**
Cap C Remedy Armor Stone			
CC22-1	5.00	10,024.00	154.69
	Subtotal	**10,024.00**	**154.69**
Total (all sand placement)		**53,806.41**	
Total (all armor stone placement)		**13,818.21**	

Abbreviations and Acronyms:
cy – cubic yards
in – inches
QA – Quality Assurance
SRA – Special Remediation Area

10.9.2 Pre-Placement Sand Usage Estimates

Prior to the 2018 operations season, sand usage estimates were based on previous experience, which indicated that consideration should be given to the following factors: vertical over-placement (spread height), horizontal over-placement, and consolidation of the underlying soft sediment. Considering the items identified above, it was estimated that approximately 10 percent by volume of "dry" sand was lost (i.e., could not be accounted for by the various measurements) during or soon after placement. Considering

these assumptions, the estimated volume of sand used for the 2018 project was 77,707 cy. The calculated volume of sand used was 75,510 cy (see Table 10-7), which is a difference of 2,197 cy. The differences between calculated volume and estimated volume are related to the different data used for the different formulations.

10.10 Statistical Analysis of Sand Thickness Data

Post-placement measurements of the sand covers were taken to demonstrate achievement of the specified sand cover thickness requirements. The thickness verification coring was performed to provide statistical confidence that specification requirements had been met. The minimum placement thickness in sand cover areas was 6 inches (see Table 10-8). To verify that the minimum placement thickness was achieved, specific statistical methods were developed during work in OU1 and have been used consistently in the RA for OUs 2–5. Those methods indicated that specifications would be met when the following criteria were met:

- The applied design thickness was met or exceeded throughout at least 80 percent of the SCMU area.
- The probability of applied design thickness being met in less than 80 percent of the SCMU area was no more than 10 percent (90 percent statistical confidence interval).

Minimum thickness coverage of at least 80 percent of an SCMU area can be demonstrated with nonparametric lower confidence limits on a proportional basis. This method evaluated the observed proportion of verification samples exceeding the minimum thickness within an SCMU area. This method calculates whether there is a statistical confidence that the true proportion (if measurements were taken at all possible locations) is at least 0.8.

Table 10-7. 2018 Total Spreading Mass Balance

Spreader Sand Totals																
Week #	Hours		CY					Square Footage	Spread Heights				Yards/Gross Hour			
	NOH	GOH	Tons In	Land Plant	Barge Scale	Pile	Design CY	Design	Land Scale	Barge Scale	Pile	Design	Land Scale	Scale	Pile	
19	38.75	60.00	7,954	4,303	5,124	4,904	2,408	130,042	10.72	12.77	12.22	6.00	72	85	82	
20	47.75	60.00	7249.89	6,187	7,169	7,043	3,832	206,915	9.69	11.23	11.03	6.00	103	119	117	
21	49.25	60.00	9609	6,266	4,539	6,826	3,537	191,049	10.63	7.70	11.58	6.00	104	76	114	
22	48.00	60.00	10760.02	6,151	7,098	7,232	3,676	198,478	10.04	11.59	11.81	6.00	103	118	121	
23	42.25	60.00	14357.09	5,522	5,749	5,193	2,268	111,784	16.01	16.66	15.05	6.57	92	96	87	
24	35.50	48.00	12203.69	4,813	4,995	6,061	2,115	105,394	14.80	15.36	18.63	6.50	100	104	126	
25	42.00	60.00	7854.72	5,906	5,394	5,614	2,882	150,433	12.72	11.62	12.09	6.21	98	90	94	
26	48.50	60.00	9006.13	6,041	6,137	5,656	3,123	168,647	11.61	11.79	10.87	6.00	101	102	94	
27	48.00	60.00	6928.61	6,621	5,105	5,218	2,963	161,266	13.30	10.26	10.48	5.95	110	85	87	
28	44.50	60.00	10124.94	7,221	4,405	4,370	2,544	108,947	21.48	13.10	13.00	7.57	120	73	73	
29	40.25	60.00	7280.12	5,313	4,522	5,234	2,485	120,775	14.25	12.13	14.04	6.67	89	75	87	
30	51.00	60.00	7668.31	4,987	5,598	4,328	3,102	161,784	9.99	11.21	8.67	6.21	83	93	72	
31	54.00	60.00	7297.1	7,070	5,481	6,031	3,103	157,879	14.51	11.25	12.38	6.37	118	91	101	
32	16.25	24.00	0	1,528	1,528	1,294	826	49,108	10.08	10.08	8.54	5.45	64	64	54	
33	10.00	13.00	0	1,026	1,026	1,069	560	30,237	10.99	10.99	11.45	6.00	79	79	82	
34	3.50	9.50	0	193	193	(564)	112	4,019	15.59	15.56	-45.49	9.00	20	20	-59	
Totals	**619.50**	**814.5**	**118,294**	**79,147**	**74,063**	**75,510**	**39,535**	**2,056,757**	**12.47 in**	**11.67 in**	**11.9 in**	**6.2 in**	97	91	93	
					Plus 3" Tolerance		**58,579**	**47.22 Acres**								
					Theoretical Volume		**64,437**									
					120% Theoretical Volume		**77,324**									
					% Over Design Neat Line		**91%**									

* Missing Data from 8/16/18 to 1157, 8/17/18 due to Dredgepack Computer Malfunction
*This table does not include work performed in the MGP-SFA area or D68B-5 Buttress area

Abbreviations and Acronyms:
cy – cubic yards
GOH – gross operational hours
NOH – net operational hours

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Table 10-8. 2018 Sand/Armor Stone Cap Volume Compensating for Over-placement and Consolidation

RA Type	Estimate Spread Height to Achieve Set Standards (in)	Total Square Footage[1] (sf)	Estimated[1] (cy)	Total Horizontal Over-Placement and Consolidation[2] (cy)
6-Inch Residual Sand Cover	9	1,731,847	48,107	52,918
9-Inch Residual Sand Cover	12	92,596	3,429	3,772
12-Inch Residual Sand Cover	18	0	0	0
Cap A Residual Sand	6	0	0	0
Cap B Residual Sand	9	0	0	0
Cap C Residual Sand	15	0	0	0
6-Inch Remedy Sand Cover	9	91,490	2,541	2,796
9-Inch Remedy Sand Cover	12	0	0	0
Cap A Remedy Sand	6	0	0	0
Cap B Remedy Sand	9	3,801	106	116
Cap C Remedy Sand	15	10,024	464	510
Sand Total		**1,929,758**	**54,647**	**60,112**
Cap A Residual Armor Stone	7	0	0	0
Cap B Residual Armor Stone	7	0	0	0
Cap C Residual Armor Stone	6	0	0	0
Cap A Remedy Armor Stone	7	0	0	0
Cap B Remedy Armor Stone	7	3,801	82	89
Cap C Remedy Armor Stone	6	10,024	186	200
Stone Total		**13,825**	**268**	**289**
Residual Quarry Spall		0	0	0
Remedy Quarry Spall		0	0	0
Quarry Spall Total		**0**	**0**	**0**

Notes:
[1] These quantities count spreader lane overlap once, where applicable.
[2] The agreed over-placement factors are 10%, 8%, and 15% for sand, armor stone, and quarry spall, respectively.

Abbreviations and Acronyms:
cy – cubic yards
in - inches
RA – Remedial Action
sf – square foot

In practice, the number of samples needed to demonstrate coverage specifications are met can be calculated in advance for a given sample size. To demonstrate 80 percent coverage with the above-specified statistical confidence, the following steps are taken:

1. Collect *n* sample thickness measurements within SCMU area.
2. Determine *x*, the number of push core samples exceeding the minimum thickness specification.

3. Find the row corresponding to n in Table 10-9 and compare x to the number found in the second column. If x is equal to or greater than the Table 10-9 value, the specified minimum thickness requirement for that area will have been met. At a minimum, 11 samples are required per SCMU area to demonstrate 80 percent coverage with 90 percent certainty.

Table 10-9. Number of Samples Needed to Document Attainment of Minimum Thickness Requirement per SCMU Area[1]

Number of Samples Collected (*n*)	Number of Samples Needed to Document Exceedance of the Minimum Thickness Requirement (*x*)	Number of Samples Collected (*n*)	Number of Samples Needed to Document Exceedance of the Minimum Thickness Requirement (*x*)
11	11	21	20
12	12	22	21
13	13	23	22
14	14	24	23
15	15	25	23
16	16	26	24
17	17	27	25
18	17	28	26
19	18	29	27
20	19	30	28

Notes:
[1] Based on nonparametric 90 percent confidence limits.

Abbreviations and Acronyms:
SCMU – Sand Cover Management Unit

2018 REMEDIAL ACTION SUMMARY REPORT
LOWER FOX RIVER OPERABLE UNITS 2-5

DCN: LFRR-19-0001

Sand Placement Drawings

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Figure 10-2 OU4 2018 Sand Cover, Residual Sand Cover, and Buttress Areas

Figure 10-3 OU4-SCD38-12 Sand Layer Thickness Results
OU4-SCD38-12 Post-Cover As-built Elevations
OU4-SCD38-12 Site Information

Figure 10-4 OU4-SCD67-4 Sand Layer Thickness Results
OU4-SCD67-4 Post-Cover As-built Elevations
OU4-SCD67-4 Site Information

Figure 10-5 OU4-SCD35CD-13 Sand Layer Thickness Results
OU4-SCD35CD-13 Post-Cover As-built Elevations
OU4-SCD35CD-13 Site Information

Figure 10-6 OU4-SCD82-1 Sand Layer Thickness Results
OU4-SCD82-1 Post-Cover As-built Elevations
OU4-SCD82-1 Site Information

Figure 10-7 OU4-SCD82-2 Sand Layer Thickness Results
OU4-SCD82-2 Post-Cover As-built Elevations
OU4-SCD82-2 Site Information

Figure 10-8 OU4-SCD82-3A Sand Layer Thickness Results
OU4-SCD82-3A Post-Cover As-built Elevations
OU4-SCD82-3A Site Information

Figure 10-9 OU4-SCDUTIL-020-1A Sand Layer Thickness Results
OU4-SCDUTIL-020-1A Post-Cover As-built Elevations
OU4-SCDUTIL-020-1A Site Information

Figure 10-10 OU4-SCDUTIL-020-1B Sand Layer Thickness Results
OU4-SCDUTIL-020-1B Post-Cover As-built Elevations
OU4-SCDUTIL-020-1B Site Information

Figure 10-11 OU4-SCDUTIL-020-1C Sand Layer Thickness Results
OU4-SCDUTIL-020-1C Post-Cover As-built Elevations
OU4-SCDUTIL-020-1C Site Information

Figure 10-12 OU4-SCD40A-2 Sand Layer Thickness Results
OU4-SCD40A-2 Post-Cover As-built Elevations
OU4-SCD40A-2 Site Information

Figure 10-13 OU4-SCD40A-3 Sand Layer Thickness Results
OU4-SCD40A-3 Post-Cover As-built Elevations
OU4-SCD40A-3 Site Information

Figure 10-14 OU4-SCD35EFG-1 Sand Layer Thickness Results
OU4-SCD35EFG-1 Post-Cover As-built Elevations
OU4-SCD35EFG-1 Site Information

Figure 10-15 OU4-SCD35EFG-2 Sand Layer Thickness Results
OU4-SCD35EFG-2 Post-Cover As-built Elevations
OU4-SCD35EFG-2 Site Information

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OU4-SCD35EFG-3 Site Information

Figure 10-17 OU4-SCD35EFG-4 Sand Layer Thickness Results
OU4-SCD35EFG-4 Post-Cover As-built Elevations
OU4-SCD35EFG-4 Site Information

Figure 10-18 OU4-SCD35EFG-5 Sand Layer Thickness Results
OU4-SCD35EFG-5 Post-Cover As-built Elevations
OU4-SCD35EFG-5 Site Information

Figure 10-19 OU4-SCD35EFG-6 Sand Layer Thickness Results
OU4-SCD35EFG-6 Post-Cover As-built Elevations
OU4-SCD35EFG-6 Site Information

Figure 10-20 OU4-SCD35EFG-7 Sand Layer Thickness Results
OU4-SCD35EFG-7 Post-Cover As-built Elevations
OU4-SCD35EFG-7 Site Information

Figure 10-21 OU4-SCD35EFG-8 Sand Layer Thickness Results
OU4-SCD35EFG-8 Post-Cover As-built Elevations
OU4-SCD35EFG-8 Site Information

Figure 10-22 OU4-SCD35EFG-9 Sand Layer Thickness Results
OU4-SCD35EFG-9 Post-Cover As-built Elevations
OU4-SCD35EFG-9 Site Information

Figure 10-23 OU4-SCD39-1 Sand Layer Thickness Results
OU4-SCD39-1 Post-Cover As-built Elevations
OU4-SCD39-1 Site Information

Figure 10-24 OU4-SCD39-3 Sand Layer Thickness Results
OU4-SCD39-3 Post-Cover As-built Elevations
OU4-SCD39-3 Site Information

Figure 10-25 OU4-SCD39-4 Sand Layer Thickness Results
OU4-SCD39-4 Post-Cover As-built Elevations
OU4-SCD39-4 Site Information

Figure 10-26 OU4-SCD39-5 Sand Layer Thickness Results
OU4-SCD39-5 Post-Cover As-built Elevations
OU4-SCD39-5 Site Information

Figure 10-27 OU4-SCD39-6 Sand Layer Thickness Results
OU4-SCD39-6 Post-Cover As-built Elevations
OU4-SCD39-6 Site Information

Figure 10-28 OU4-SCD39-7 Sand Layer Thickness Results
OU4-SCD39-7 Post-Cover As-built Elevations
OU4-SCD39-7 Site Information

Figure 10-29 OU4-SCD39-8 Sand Layer Thickness Results
OU4-SCD39-8 Post-Cover As-built Elevations
OU4-SCD39-8 Site Information

2018 Summary Drawing Figure List

Figure 10-30 OU4-SCFIK-089-1 Sand Layer Thickness Results
OU4-SCFIK-089-1 Post-Cover As-built Elevations
OU4-SCFIK-089-1 Site Information

Figure 10-31 OU4-SC53-1 Sand Layer Thickness Results
OU4-SC53-1 Post-Cover As-built Elevations
OU4-SC53-1 Site Information

Figure 10-32 OU4-SCDFIK-091-1 Sand Layer Thickness Results
OU4-SCDFIK-091-1 Post-Cover As-built Elevations
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Figure 10-33 OU4-SCDFIK-093-1 Sand Layer Thickness Results
OU4-SCDFIK-093-1 Post-Cover As-built Elevations
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Figure 10-34 OU4-SCDFIK-092-1 Sand Layer Thickness Results
OU4-SCDFIK-092-1 Post-Cover As-built Elevations
OU4-SCDFIK-092-1 Site Information

Figure 10-35 OU4-SCFIK-097-1 Sand Layer Thickness Results
OU4-SCFIK-097-1 Post-Cover As-built Elevations
OU4-SCFIK-097-1 Site Information

Figure 10-36 OU4-SCD68A-1 Sand Layer Thickness Results
OU4-SCD68A-1 Post-Cover As-built Elevations
OU4-SCD68A-1 Site Information

Figure 10-37 OU4-SCNA-098-1 Sand Layer Thickness Results
OU4-SCNA-098-1 Post-Cover As-built Elevations
OU4-SCNA-098-1 Site Information

Figure 10-38 OU4-D68B-BUTTRESS Sand Layer Thickness Results
OU4-D68B-BUTTRESS Post-Cover As-built Elevations
OU4-D68B-BUTTRESS Site Information

Figure 10-39 OU4-SCD35H-2 Sand Layer Thickness Results
OU4-SCD35H-2 Post-Cover As-built Elevations
OU4-SCD35H-2 Site Information

Figure 10-40 OU4-SCD35H-3 Sand Layer Thickness Results
OU4-SCD35H-3 Post-Cover As-built Elevations
OU4-SCD35H-3 Site Information

Figure 10-41 OU4-SCD35H-4 Sand Layer Thickness Results
OU4-SCD35H-4 Post-Cover As-built Elevations
OU4-SCD35H-4 Site Information

Figure 10-42 OU4-SCD35H-6 Sand Layer Thickness Results
OU4-SCD35H-6 Post-Cover As-built Elevations
OU4-SCD35H-6 Site Information

Figure 10-43 OU4-SCD35H-7 Sand Layer Thickness Results
OU4-SCD35H-7 Post-Cover As-built Elevations
OU4-SCD35H-7 Site Information

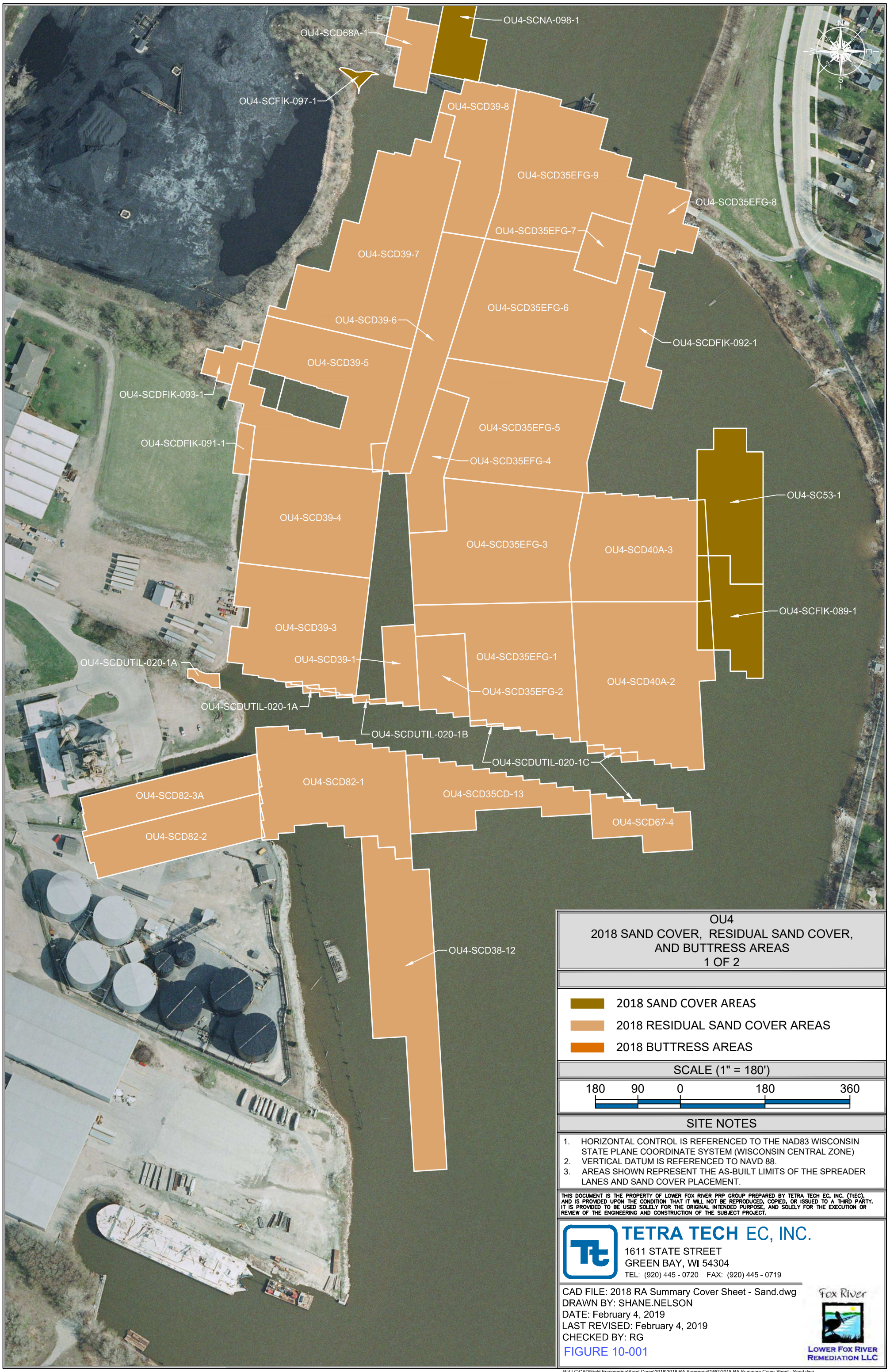
2018 Summary Drawing Figure List

Figure 10-44 OU4-SCD68B-2 Sand Layer Thickness Results
OU4-SCD68B-2 Post-Cover As-built Elevations
OU4-SCD68B-2 Site Information

Figure 10-45 OU4-SCD68B-3 Sand Layer Thickness Results
OU4-SCD68B-3 Post-Cover As-built Elevations
OU4-SCD68B-3 Site Information

Figure 10-46 OU4-SCD68B-4 Sand Layer Thickness Results
OU4-SCD68B-4 Post-Cover As-built Elevations
OU4-SCD68B-4 Site Information

Figure 10-47 OU4-D70-BUTTRESS Sand Layer Thickness Results
OU4-D70-BUTTRESS Post-Cover As-built Elevations
OU4-D70-BUTTRESS Site Information



OU4
2018 SAND COVER, RESIDUAL SAND COVER, AND BUTTRESS AREAS
1 OF 2

2018 SAND COVER AREAS

2018 RESIDUAL SAND COVER AREAS

2018 BUTTRESS AREAS

SCALE (1" = 180')

180 90 0 180 360

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88.
3. AREAS SHOWN REPRESENT THE AS-BUILT LIMITS OF THE SPREADER LANES AND SAND COVER PLACEMENT.

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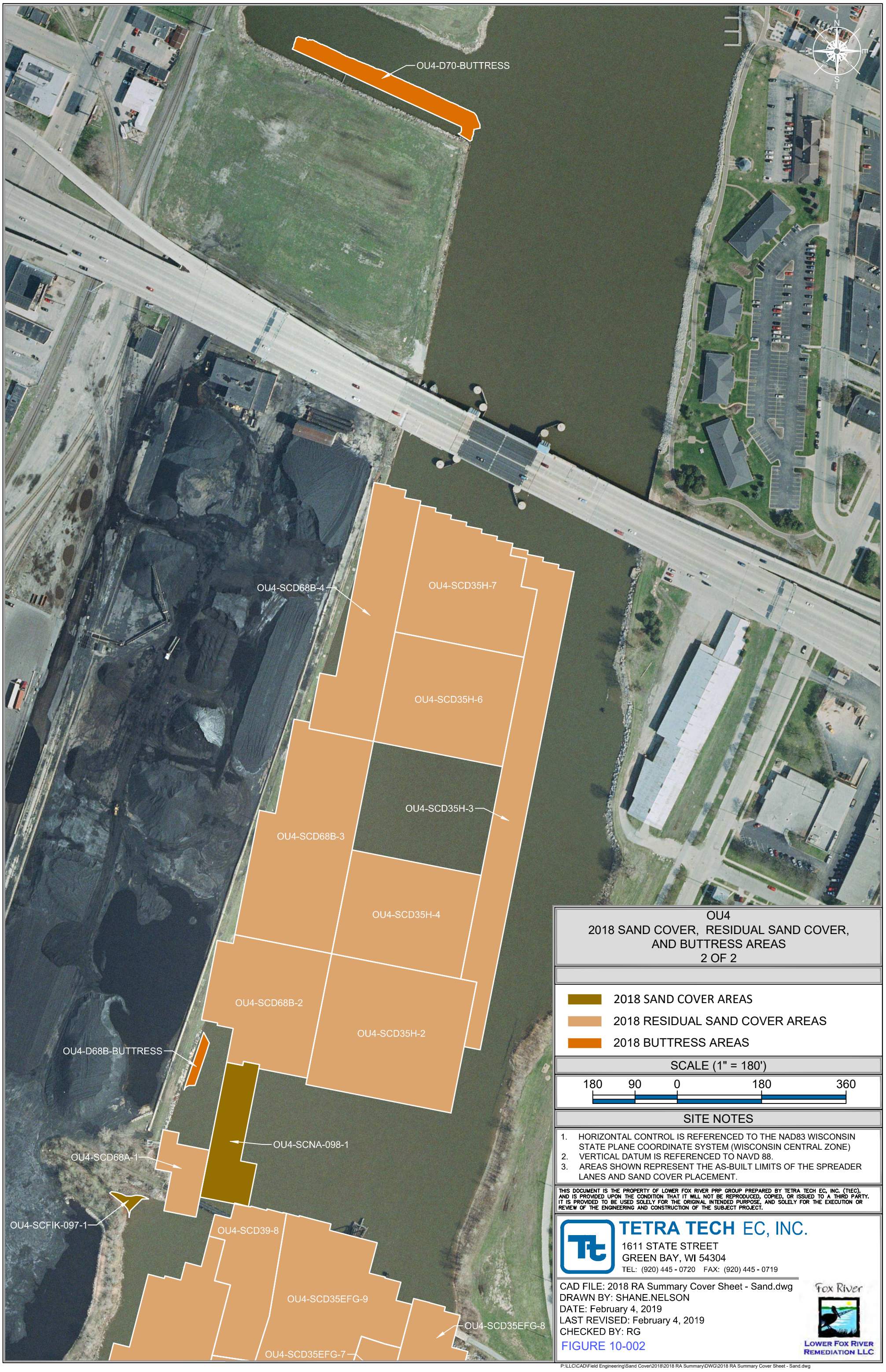
TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: 2018 RA Summary Cover Sheet - Sand.dwg
DRAWN BY: SHANE.NELSON
DATE: February 4, 2019
LAST REVISED: February 4, 2019
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FIGURE 10-001

Fox River
LOWER FOX RIVER REMEDIATION LLC

P:\LLC\CAD\Field Engineering\Sand Cover\2018\2018 RA Summary\DWG\2018 RA Summary Cover Sheet - Sand.dwg



OU4
2018 SAND COVER, RESIDUAL SAND COVER, AND BUTTRESS AREAS
2 OF 2

2018 SAND COVER AREAS

2018 RESIDUAL SAND COVER AREAS

2018 BUTTRESS AREAS

SCALE (1" = 180')

180 90 0 180 360

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88.
3. AREAS SHOWN REPRESENT THE AS-BUILT LIMITS OF THE SPREADER LANES AND SAND COVER PLACEMENT.

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FIGURE 10-002

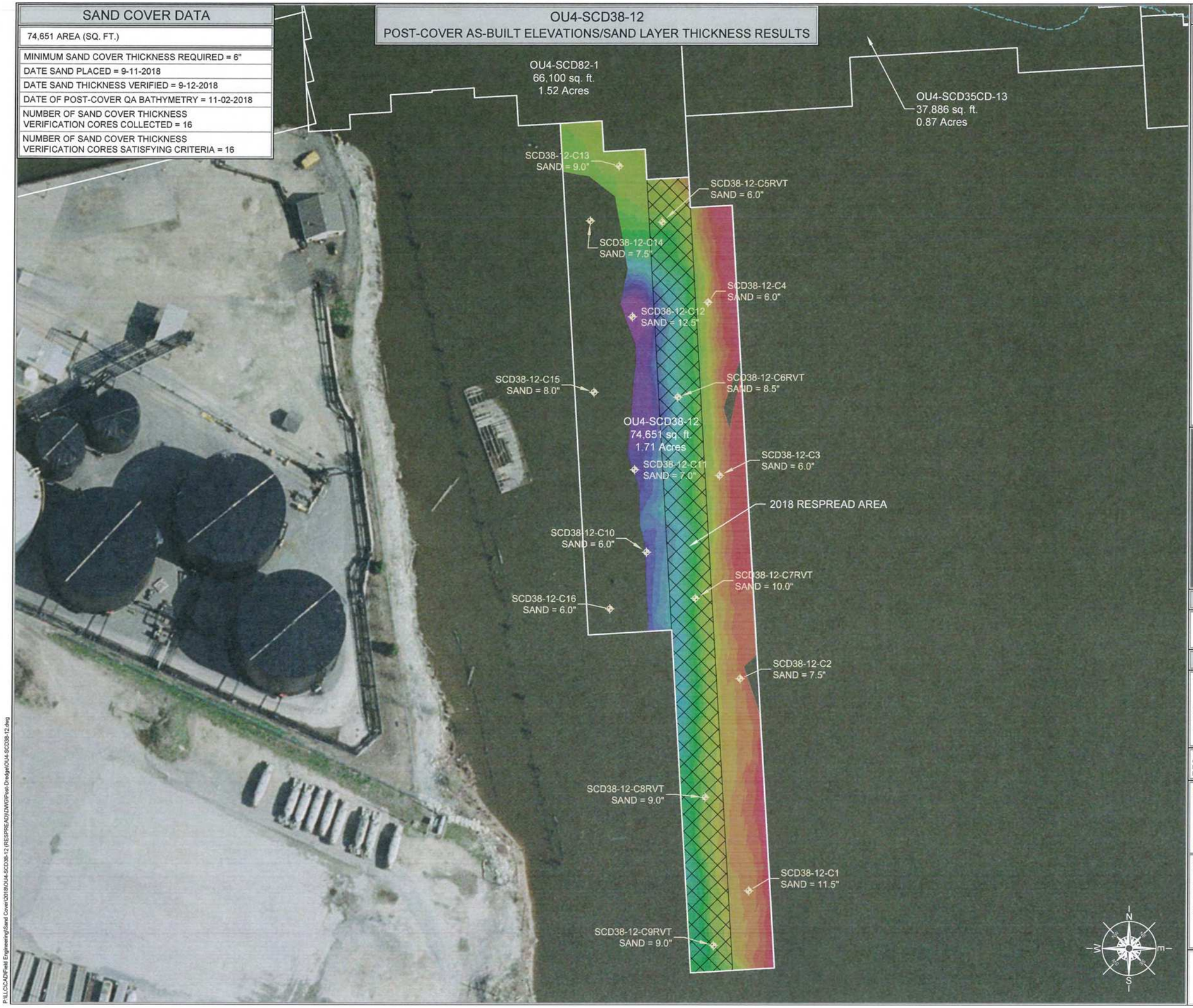
Fox River
LOWER FOX RIVER REMEDIATION LLC

P:\LLC\CAD\Field Engineering\Sand Cover\2018\2018 RA Summary\DWG\2018 RA Summary Cover Sheet - Sand.dwg

OU4-SCD38-12
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS

SAND COVER DATA

74,651 AREA (SQ. FT.)
MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 9-11-2018
DATE SAND THICKNESS VERIFIED = 9-12-2018
DATE OF POST-COVER QA BATHYMETRY = 11-02-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 16
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 16



LEGEND

MIN. EL.		MAX. EL.
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'
560.00'	-	561.00'
561.00'	-	562.00'
562.00'	-	563.00'
563.00'	-	564.00'
564.00'	-	565.00'
565.00'	-	566.00'
566.00'	-	567.00'
567.00'	-	568.00'
568.00'	-	569.00'
569.00'	-	570.00'
570.00'	-	571.00'
571.00'	-	572.00'

OU# - # - #
OPERABLE UNIT | CAP/COVER AREA | CAP/COVER MANAGEMENT UNIT

——— CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 80')

80 40 0 80 160

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-02-2018

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DATE: December 6, 2018
LAST REVISED: December 7, 2018
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-003

OU4-SCD38-12
1st RESIDUAL SAND COVER THICKNESS RESULTS AND LOCATIONS

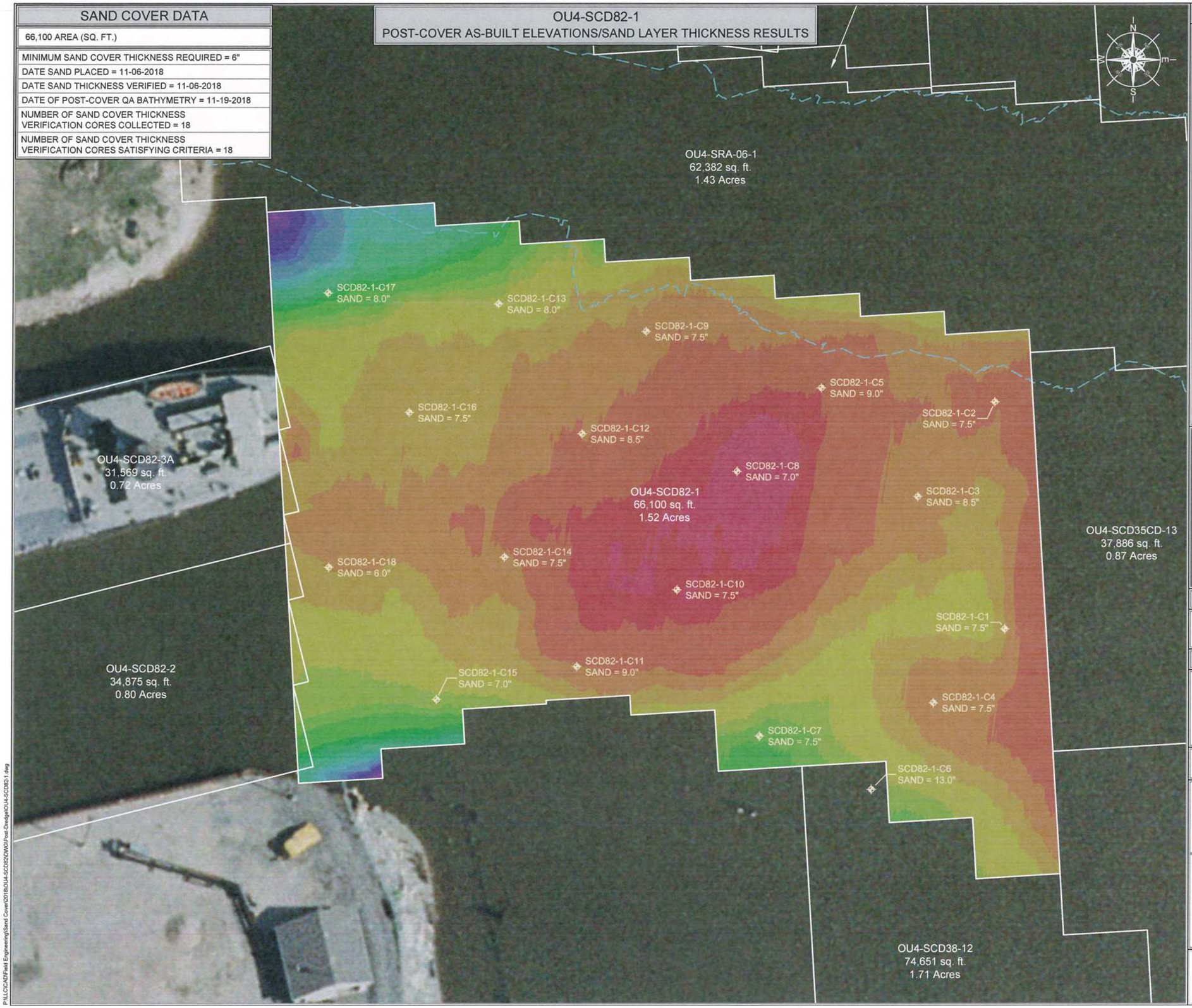
P:\LLOC\ADI\Field Engineering\Sand Cover\2018\OU4-SCD38-12 (RESPREAD)\DWG\Post-Dredge\OU4-SCD38-12.dwg

OU4-SCD82-1
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS

SAND COVER DATA

66,100 AREA (SQ. FT.)

MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 11-06-2018
DATE SAND THICKNESS VERIFIED = 11-06-2018
DATE OF POST-COVER QA BATHYMETRY = 11-19-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 18
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 18



LEGEND

MIN. EL.		MAX. EL.	MIN. EL.		MAX. EL.
546.00'	-	547.00'	561.00'	-	562.00'
547.00'	-	548.00'	562.00'	-	563.00'
548.00'	-	549.00'	563.00'	-	564.00'
549.00'	-	550.00'	564.00'	-	565.00'
550.00'	-	551.00'	565.00'	-	566.00'
551.00'	-	552.00'	566.00'	-	567.00'
552.00'	-	553.00'	567.00'	-	568.00'
553.00'	-	554.00'	568.00'	-	569.00'
554.00'	-	555.00'	569.00'	-	570.00'
555.00'	-	556.00'	570.00'	-	571.00'
556.00'	-	557.00'	571.00'	-	572.00'
557.00'	-	558.00'	572.00'	-	573.00'
558.00'	-	559.00'	573.00'	-	574.00'
559.00'	-	560.00'			
560.00'	-	561.00'			

OU# - # - #
OPERABLE UNIT | CAP/COVER AREA | CAP/COVER MANAGEMENT UNIT

SRA MANAGEMENT UNIT
CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-19-2018

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TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-SCD82-1.dwg
DRAWN BY: SHANE.NELSON
DATE: December 7, 2018
LAST REVISED: December 7, 2018
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

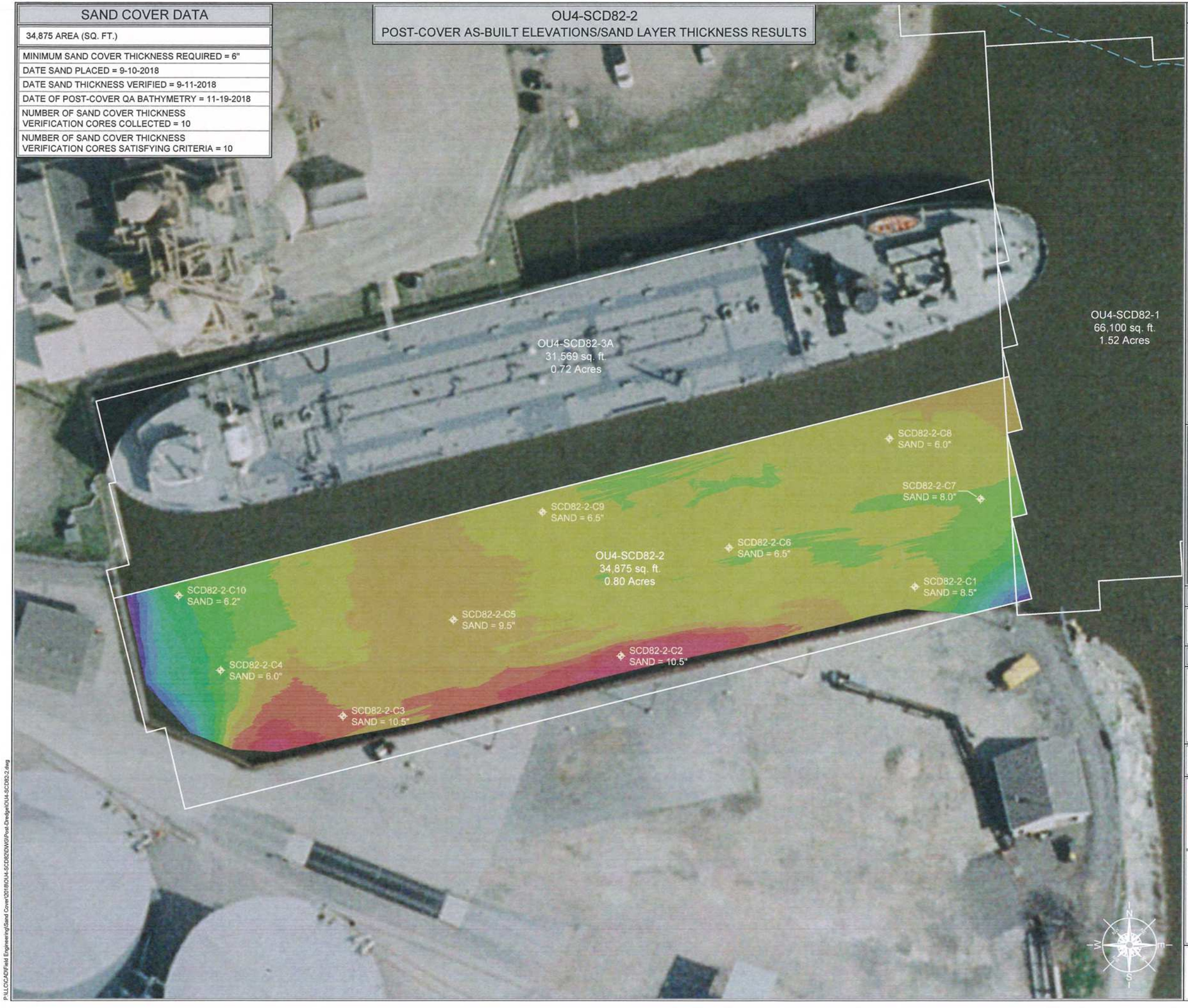
FIGURE 10-004

OU4-SCD82-1
1st RESIDUAL SAND COVER THICKNESS RESULTS AND LOCATIONS

P:\LLC\CAD\Field Engineering\Sand Cover\2018\OU4-SCD82\DWG\Post-Dredge\OU4-SCD82-1.dwg

OU4-SCD82-2
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS

SAND COVER DATA
34,875 AREA (SQ. FT.)
MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 9-10-2018
DATE SAND THICKNESS VERIFIED = 9-11-2018
DATE OF POST-COVER QA BATHYMETRY = 11-19-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 10
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 10



LEGEND

MIN. EL.		MAX. EL.
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'
560.00'	-	561.00'
561.00'	-	562.00'
562.00'	-	563.00'
563.00'	-	564.00'

OU# - # - #
- OU# = OPERABLE UNIT
- # = CAP/COVER AREA
- # = CAP/COVER MANAGEMENT UNIT

SRA MANAGEMENT UNIT
CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-19-2018

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DATE: December 7, 2018
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Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-005

OU4-SCD82-2
1st RESIDUAL SAND COVER THICKNESS RESULTS AND LOCATIONS

P:\LLC\CAD\Field Engineering\Sand Cover\2018\BO\U4-SCD82\DWG\Post-Dredge\OU4-SCD82-2.dwg

OU4-SCD82-3A
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS

SAND COVER DATA

31,569 AREA (SQ. FT.)
MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 11-06-2018
DATE SAND THICKNESS VERIFIED = *
DATE OF POST-COVER QA BATHYMETRY = 11-07-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = *
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = *

* J.F. BRENNAN QC DATA WAS USED FOR SAND VERIFICATION IN VOLUMETRIC SAND COVER AREA

VOLUMETRIC SAND COVER AREA

OU4-SCD82-3A
31,569 sq. ft.
0.72 Acres

OU4-SCD82-1
66,100 sq. ft.
1.52 Acres

OU4-SCD82-2
34,875 sq. ft.
0.80 Acres

N
W
E
S

LEGEND

MIN. EL.		MAX. EL.
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'
560.00'	-	561.00'
561.00'	-	562.00'

OU# - # - #
OPERABLE UNIT | CAP/COVER AREA | CAP/COVER MANAGEMENT UNIT

SRA MANAGEMENT UNIT
CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-07-2018

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1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-SCD82-3A.dwg
DRAWN BY: SHANE.NELSON
DATE: December 7, 2018
LAST REVISED: December 7, 2018
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Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-006

OU4-SCD82-3A
1st RESIDUAL SAND COVER
THICKNESS RESULTS AND LOCATIONS

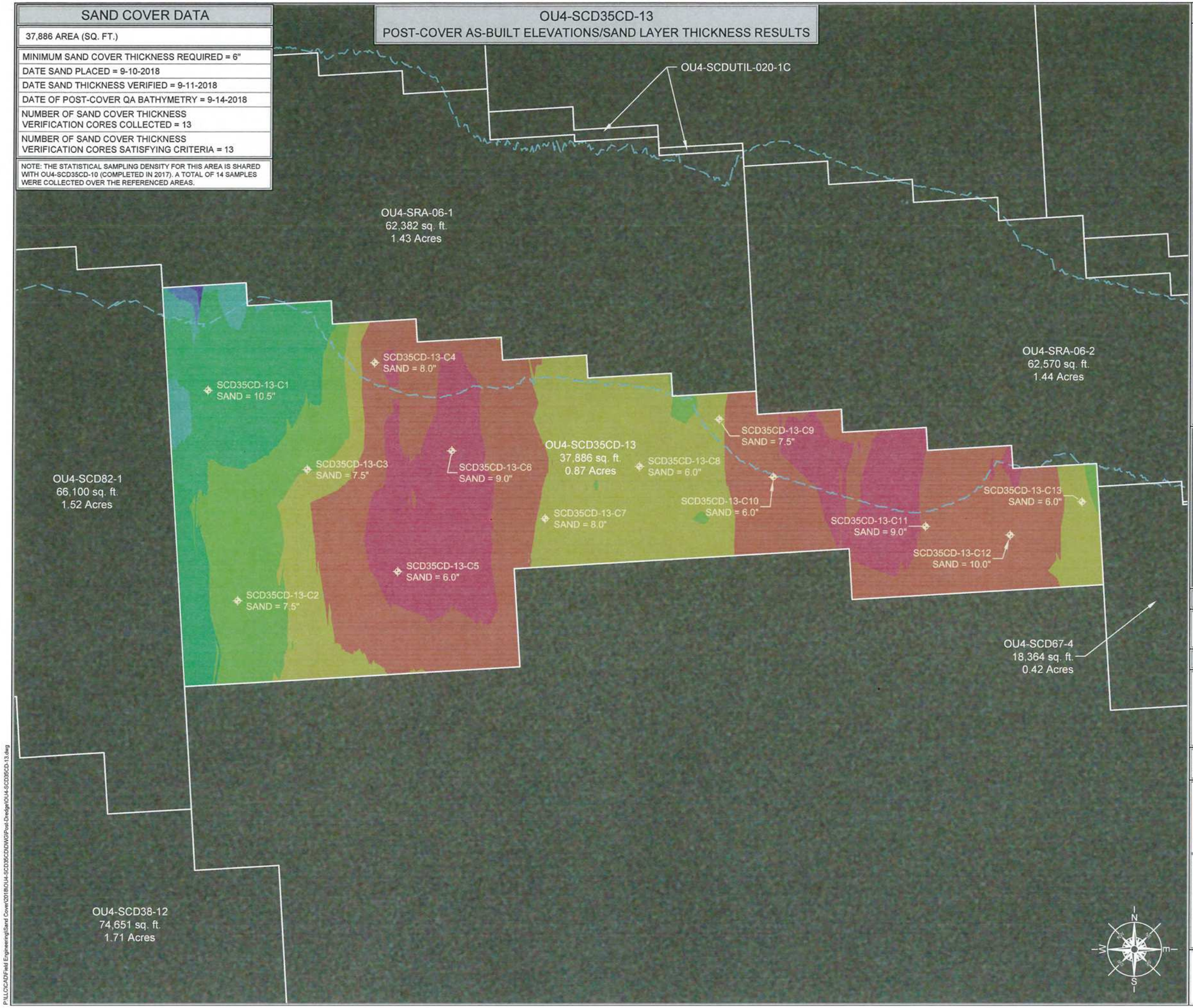
P:\LLC\C\ADF\eld Engineering\Sand Cover\2018\OU4-SCD82\DWG\Post Dredge\OU4-SCD82-3A.dwg

OU4-SCD35CD-13
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS

SAND COVER DATA

37,886 AREA (SQ. FT.)
MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 9-10-2018
DATE SAND THICKNESS VERIFIED = 9-11-2018
DATE OF POST-COVER QA BATHYMETRY = 9-14-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 13
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 13

NOTE: THE STATISTICAL SAMPLING DENSITY FOR THIS AREA IS SHARED WITH OU4-SCD35CD-10 (COMPLETED IN 2017). A TOTAL OF 14 SAMPLES WERE COLLECTED OVER THE REFERENCED AREAS.



LEGEND

MIN. EL.		MAX. EL.
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'

OU# - # - #
OPERABLE UNIT | CAP/COVER AREA | CAP/COVER MANAGEMENT UNIT

- – – – SRA MANAGEMENT UNIT
- ——— CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-14-2018

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DATE: December 7, 2018
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Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-007

OU4-SCD35CD-13
1st RESIDUAL SAND COVER THICKNESS RESULTS AND LOCATIONS

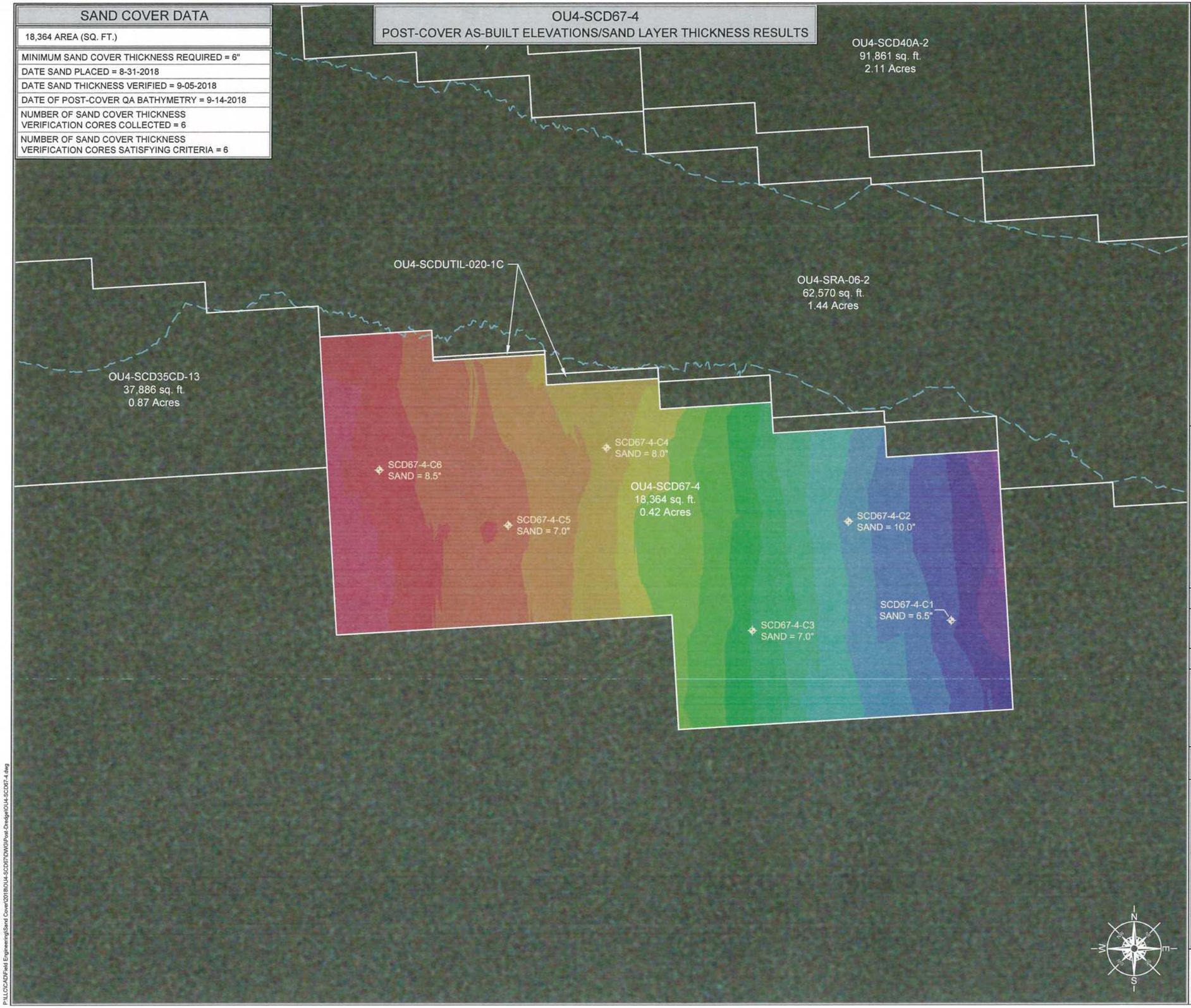
P:\LLC\CAD\Field Engineering\Sand Cover\2018\OU4-SCD35CD\NWP\Post-Dredge\OU4-SCD35CD-13.dwg

OU4-SCD67-4
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS

SAND COVER DATA

18,364 AREA (SQ. FT.)

MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 8-31-2018
DATE SAND THICKNESS VERIFIED = 9-05-2018
DATE OF POST-COVER QA BATHYMETRY = 9-14-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 6
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 6



LEGEND

MIN. EL.		MAX. EL.
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'
560.00'	-	561.00'
561.00'	-	562.00'
562.00'	-	563.00'
563.00'	-	564.00'
564.00'	-	565.00'

OU# - # - #
OPERABLE UNIT | CAP/COVER AREA | CAP/COVER MANAGEMENT UNIT

SRA MANAGEMENT UNIT

CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 30')

30 15 0 30 60

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-14-2018

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1611 STATE STREET
GREEN BAY, WI 54304
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DRAWN BY: SHANE.NELSON
DATE: December 7, 2018
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Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-008

OU4-SCD67-4
1st RESIDUAL SAND COVER
THICKNESS RESULTS AND LOCATIONS

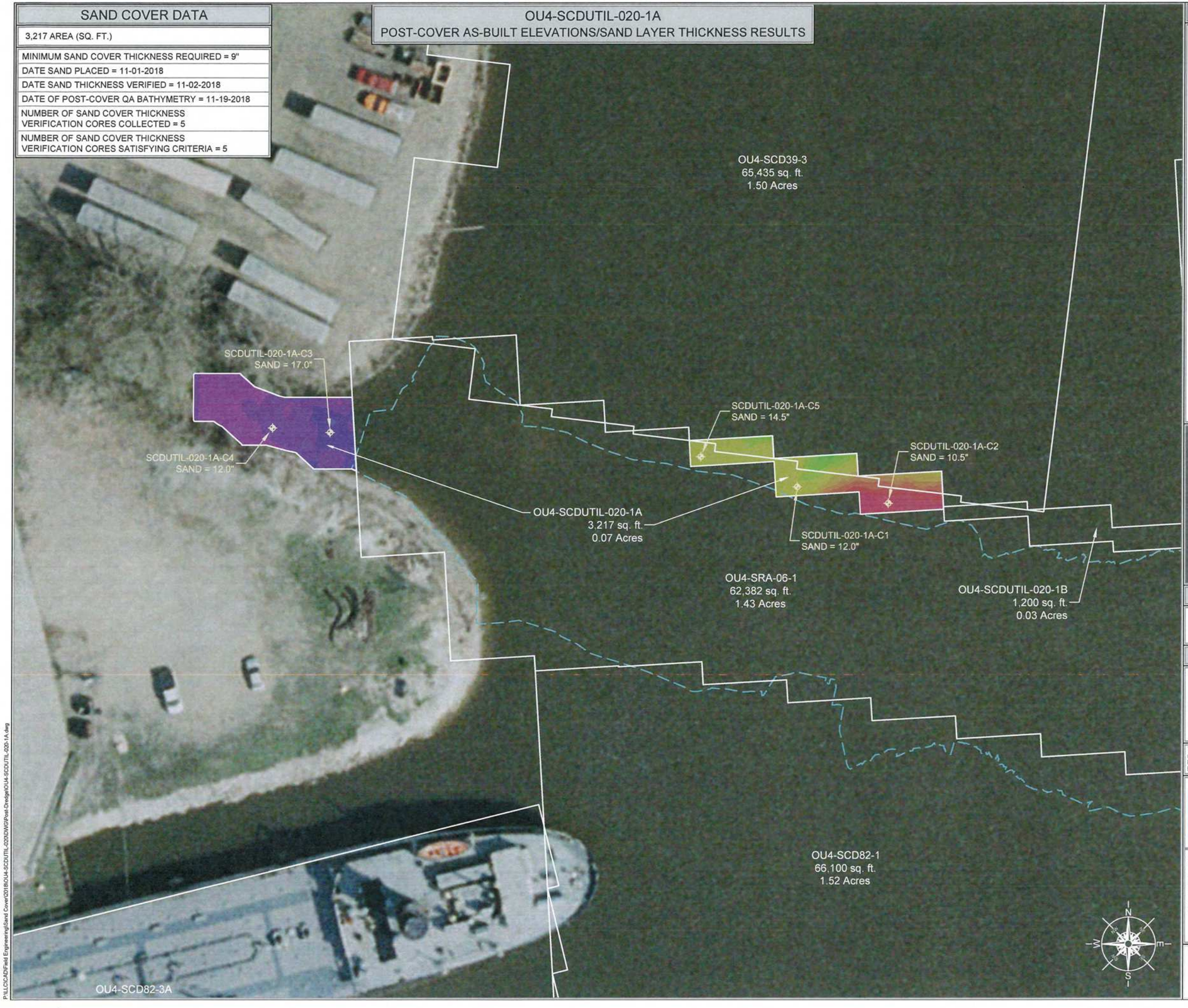
P:\LLC\CAD\Field Engineering\Sand Cover\2018\OU4-SCD67\DWG\Post-Dredge\OU4-SCD67-4.dwg

OU4-SCDUTIL-020-1A
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS

SAND COVER DATA

3,217 AREA (SQ. FT.)

MINIMUM SAND COVER THICKNESS REQUIRED = 9"
DATE SAND PLACED = 11-01-2018
DATE SAND THICKNESS VERIFIED = 11-02-2018
DATE OF POST-COVER QA BATHYMETRY = 11-19-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 5
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 5



LEGEND

MIN. EL.		MAX. EL.
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'
560.00'	-	561.00'
561.00'	-	562.00'
562.00'	-	563.00'
563.00'	-	564.00'
564.00'	-	565.00'
565.00'	-	566.00'
566.00'	-	567.00'
567.00'	-	568.00'
568.00'	-	569.00'
569.00'	-	570.00'
570.00'	-	571.00'
571.00'	-	572.00'
572.00'	-	573.00'
573.00'	-	574.00'
574.00'	-	575.00'

MIN. EL.		MAX. EL.
575.00'	-	576.00'
576.00'	-	577.00'
577.00'	-	578.00'
578.00'	-	579.00'
579.00'	-	580.00'

OU# - # - #
- OU#: OPERABLE UNIT
- #: CAP/COVER AREA
- #: CAP/COVER MANAGEMENT UNIT

SRA MANAGEMENT UNIT
CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-19-2018

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TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-SCDUTIL-020-1A.dwg
DRAWN BY: SHANE.NELSON
DATE: December 7, 2018
LAST REVISED: December 10, 2018
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-009

OU4-SCDUTIL-020-1A
1st RESIDUAL SAND COVER THICKNESS RESULTS AND LOCATIONS

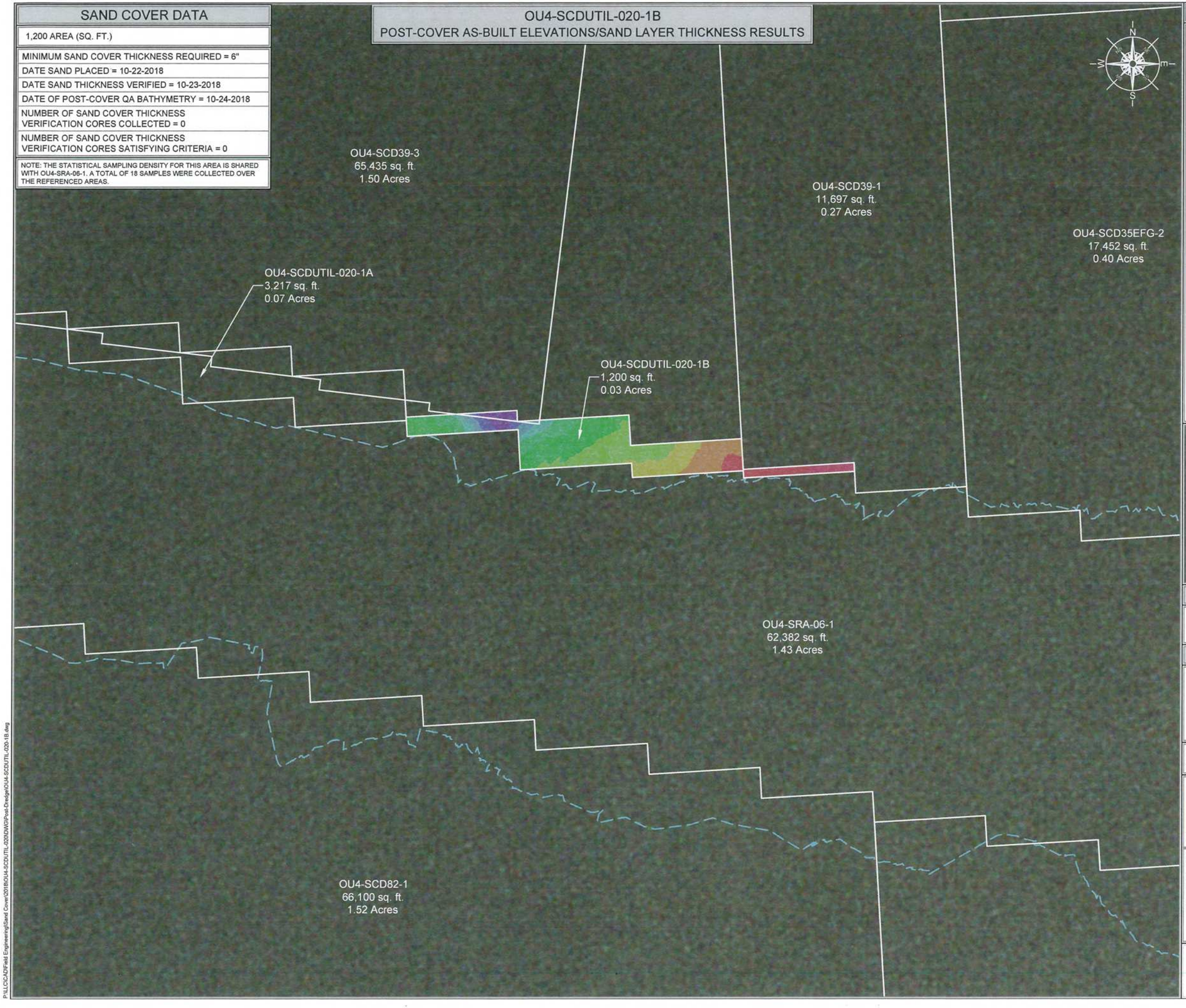
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OU4-SCDUTIL-020-1B
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS

SAND COVER DATA

1,200 AREA (SQ. FT.)
MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 10-22-2018
DATE SAND THICKNESS VERIFIED = 10-23-2018
DATE OF POST-COVER QA BATHYMETRY = 10-24-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 0
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 0

NOTE: THE STATISTICAL SAMPLING DENSITY FOR THIS AREA IS SHARED WITH OU4-SRA-06-1. A TOTAL OF 18 SAMPLES WERE COLLECTED OVER THE REFERENCED AREAS.



LEGEND

MIN. EL.		MAX. EL.
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'
560.00'	-	561.00'
561.00'	-	562.00'
562.00'	-	563.00'

OU# - # - #
- OU#: OPERABLE UNIT
- #: CAP/COVER AREA
- #: CAP/COVER MANAGEMENT UNIT

SRA MANAGEMENT UNIT
CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 30')

30 15 0 30 60

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-24-2018

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TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-SCDUTIL-020-1B.dwg
DRAWN BY: SHANE.NELSON
DATE: December 11, 2018
LAST REVISED: December 12, 2018
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-010

OU4-SCDUTIL-020-1B
1st RESIDUAL SAND COVER
THICKNESS RESULTS AND LOCATIONS

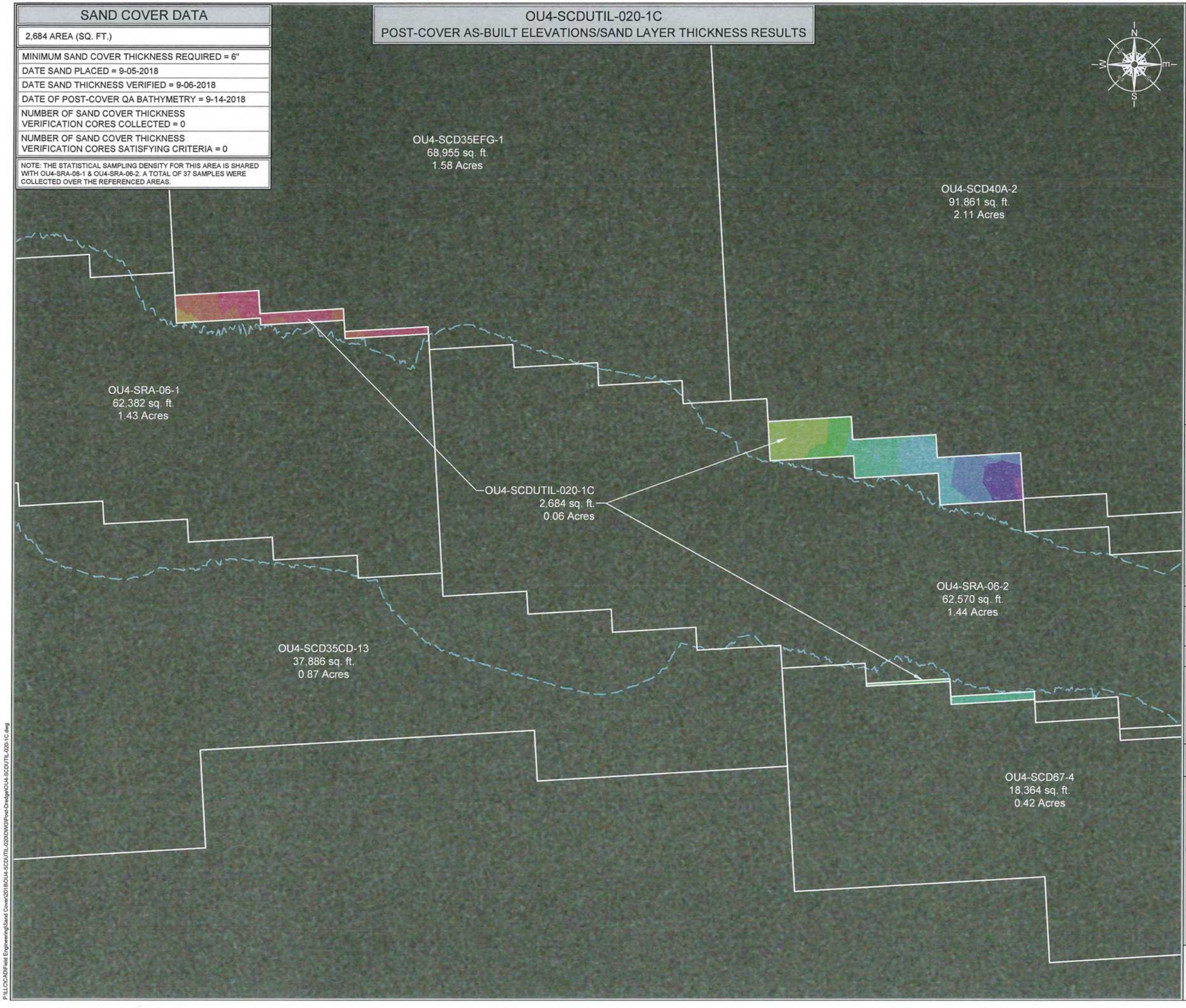
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OU4-SCDUTIL-020-1C
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS

SAND COVER DATA

2,684 AREA (SQ. FT.)
MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 9-05-2018
DATE SAND THICKNESS VERIFIED = 9-06-2018
DATE OF POST-COVER QA BATHYMETRY = 9-14-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 0
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 0

NOTE: THE STATISTICAL SAMPLING DENSITY FOR THIS AREA IS SHARED WITH OU4-SRA-06-1 & OU4-SRA-06-2. A TOTAL OF 37 SAMPLES WERE COLLECTED OVER THE REFERENCED AREAS.



LEGEND

MIN. EL.		MAX. EL.
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'

OU# - # - #
OPERABLE UNIT | CAP/COVER AREA | CAP/COVER MANAGEMENT UNIT

– – – SRA MANAGEMENT UNIT
——— CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER	CA = TYPE "A" CAP
SHC = SHORELINE CAP	CB = TYPE "B" CAP
SCD = RESIDUAL SAND COVER	CC = TYPE "C" CAP

SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 9-14-2018

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TETRA TECH EC, INC.
1611 STATE STREET
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DRAWN BY: SHANE.NELSON
DATE: December 12, 2018
LAST REVISED: December 12, 2018
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-011

OU4-SCDUTIL-020-1C
1st RESIDUAL SAND COVER
THICKNESS RESULTS AND LOCATIONS

P:\LLOC\CAD\Field Engineering\Sand Cover\2018\OU4-SCDUTIL-020\DWG\Post-Dredge\OU4-SCDUTIL-020-1C.dwg

OU4-SCD40A-2
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS

SAND COVER DATA

91,861 AREA (SQ. FT.)
MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 8-08-2018
DATE SAND THICKNESS VERIFIED = 8-09-2018
DATE OF POST-COVER QA BATHYMETRY = 8-21-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 25
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 25

OU4-SCD35EFG-3
79,718 sq. ft.
1.83 Acres

OU4-SCD40A-3
63,596 sq. ft.
1.46 Acres

OU4-SCFIK-089-1
27,475 sq. ft.
0.63 Acres

OU4-SCD35EFG-1
68,955 sq. ft.
1.58 Acres

OU4-SCD40A-2
91,861 sq. ft.
2.11 Acres

OU4-SCDUTIL-020-1C
2,684 sq. ft.
0.06 Acres

OU4-SRA-06-2
62,570 sq. ft.
1.44 Acres

OU4-SCD35CD-13
37,886 sq. ft.
0.87 Acres

SCD40A-2-C12 SAND = 8.0"
SCD40A-2-C5 SAND = 7.5"
SCD40A-2-C24 SAND = 11.5"
SCD40A-2-C18 SAND = 9.0"
SCD40A-2-C11 SAND = 8.0"
SCD40A-2-C4 SAND = 6.5"
SCD40A-2-C25 SAND = 7.0"
SCD40A-2-C13 SAND = 10.0"
SCD40A-2-C19 SAND = 7.0"
SCD40A-2-C6 SAND = 7.0"
SCD40A-2-C17 SAND = 6.0"
SCD40A-2-C3 SAND = 6.5"
SCD40A-2-C23 SAND = 6.5"
SCD40A-2-C10 SAND = 11.0"
SCD40A-2-C14 SAND = 9.5"
SCD40A-2-C20 SAND = 10.0"
SCD40A-2-C7 SAND = 7.5"
SCD40A-2-C16 SAND = 9.0"
SCD40A-2-C2 SAND = 8.5"
SCD40A-2-C22 SAND = 8.5"
SCD40A-2-C9 SAND = 9.5"
SCD40A-2-C21 SAND = 7.0"
SCD40A-2-C15 SAND = 9.5"
SCD40A-2-C8 SAND = 9.0"
SCD40A-2-C1 SAND = 8.5"

LEGEND

MIN. EL.	MAX. EL.
542.00'	543.00'
543.00'	544.00'
544.00'	545.00'
545.00'	546.00'
546.00'	547.00'
547.00'	548.00'
548.00'	549.00'
549.00'	550.00'
550.00'	551.00'
551.00'	552.00'
552.00'	553.00'
553.00'	554.00'
554.00'	555.00'
555.00'	556.00'
556.00'	557.00'
557.00'	558.00'
558.00'	559.00'
559.00'	560.00'
560.00'	561.00'
561.00'	562.00'
562.00'	563.00'
563.00'	564.00'
564.00'	565.00'
565.00'	566.00'
566.00'	567.00'
567.00'	568.00'
568.00'	569.00'
569.00'	570.00'
570.00'	571.00'

OU# - # - #
OPERABLE UNIT — CAP/COVER AREA — CAP/COVER MANAGEMENT UNIT

SRA MANAGEMENT UNIT
CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 50')

50 25 0 50 100

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 8-21-2018

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TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-SCD40A-2.dwg
DRAWN BY: SHANE.NELSON
DATE: December 12, 2018
LAST REVISED: December 12, 2018
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-012

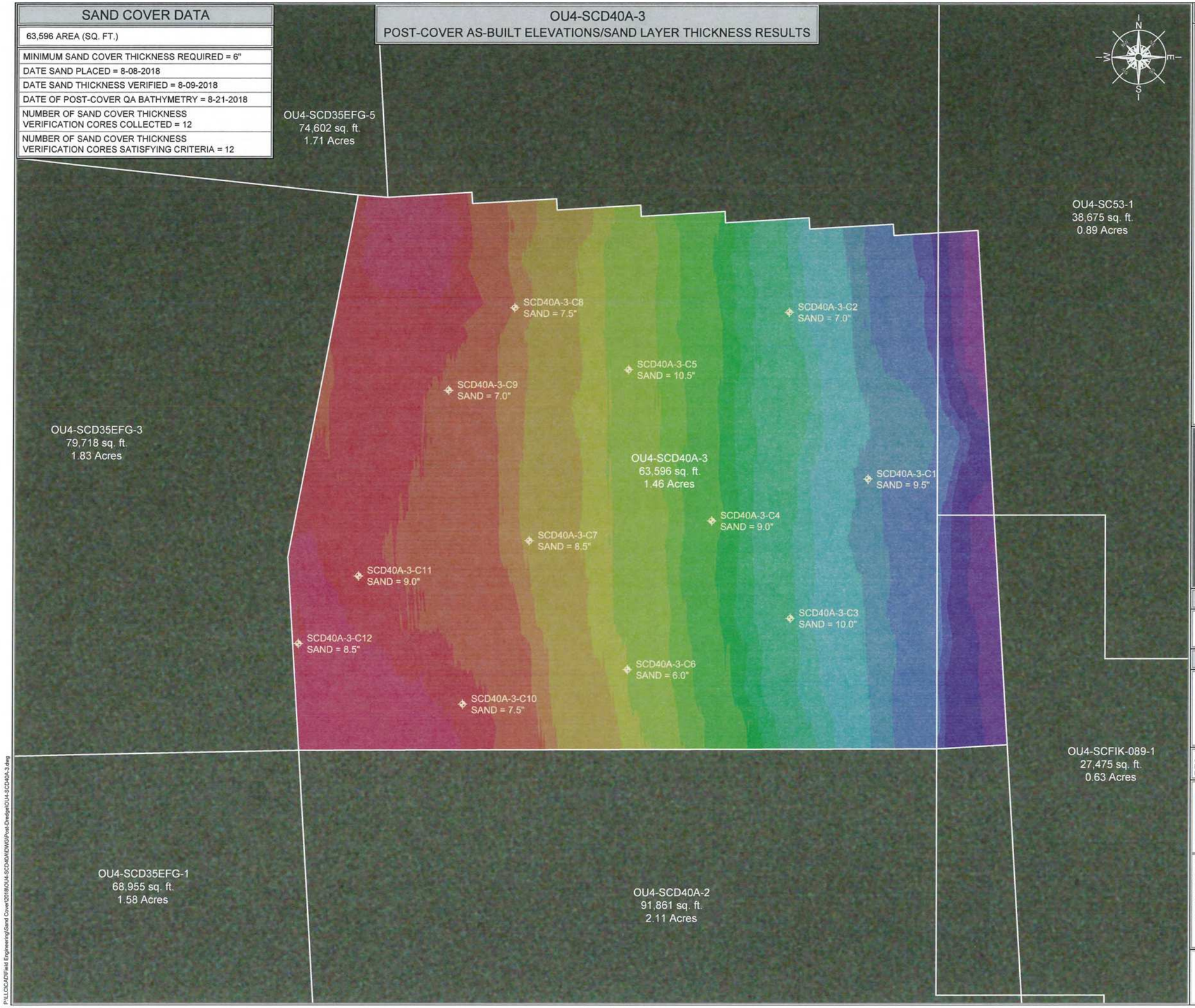
OU4-SCD40A-2
1st RESIDUAL SAND COVER THICKNESS RESULTS AND LOCATIONS

P:\LLC\CADD\Field Engineering\Sand Cover\2018\OU4-SCD40A\DWG\Post-Dredge\OU4-SCD40A-2.dwg

OU4-SCD40A-3
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS

SAND COVER DATA

63,596 AREA (SQ. FT.)
MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 8-08-2018
DATE SAND THICKNESS VERIFIED = 8-09-2018
DATE OF POST-COVER QA BATHYMETRY = 8-21-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 12
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 12



LEGEND

MIN. EL.		MAX. EL.	MIN. EL.		MAX. EL.
543.00'	-	544.00'	563.00'	-	564.00'
544.00'	-	545.00'	564.00'	-	565.00'
545.00'	-	546.00'	565.00'	-	566.00'
546.00'	-	547.00'	566.00'	-	567.00'
547.00'	-	548.00'	567.00'	-	568.00'
548.00'	-	549.00'	568.00'	-	569.00'
549.00'	-	550.00'	569.00'	-	570.00'
550.00'	-	551.00'	570.00'	-	571.00'
551.00'	-	552.00'	571.00'	-	572.00'
552.00'	-	553.00'	572.00'	-	573.00'
553.00'	-	554.00'			
554.00'	-	555.00'			
555.00'	-	556.00'			
556.00'	-	557.00'			
557.00'	-	558.00'			
558.00'	-	559.00'			
559.00'	-	560.00'			
560.00'	-	561.00'			
561.00'	-	562.00'			
562.00'	-	563.00'			

OU# - # - #
- OU#: OPERABLE UNIT
- #: CAP/COVER AREA
- #: CAP/COVER MANAGEMENT UNIT

CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER	CA = TYPE "A" CAP
SHC = SHORELINE CAP	CB = TYPE "B" CAP
SCD = RESIDUAL SAND COVER	CC = TYPE "C" CAP

SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 8-21-2018

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TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-SCD40A-3.dwg
DRAWN BY: SHANE.NELSON
DATE: December 12, 2018
LAST REVISED: December 12, 2018
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-013

OU4-SCD40A-3
1st RESIDUAL SAND COVER THICKNESS RESULTS AND LOCATIONS

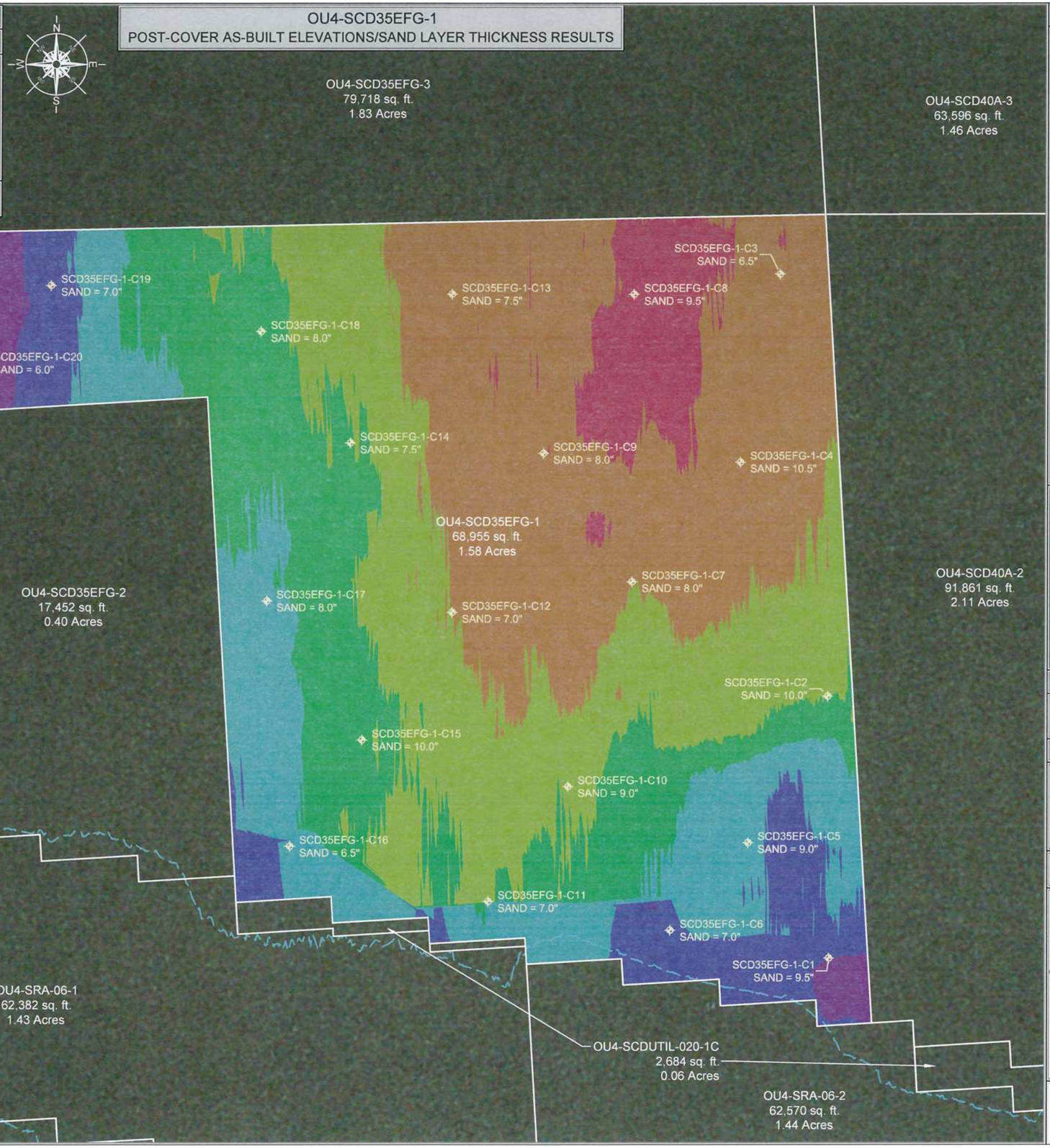
P:\LLC\CAD\Field Engineering\Sand Cover\2018\OU4-SCD40A\DWG\Post-Dredge\OU4-SCD40A-3.dwg

OU4-SCD35EFG-1
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS

SAND COVER DATA

68,955 AREA (SQ. FT.)
MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 8-14-2018
DATE SAND THICKNESS VERIFIED = 8-15-2018
DATE OF POST-COVER QA BATHYMETRY = 8-21-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 20
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 20

NOTE: THE STATISTICAL SAMPLING DENSITY FOR THIS AREA IS SHARED WITH OU4-SCD35EFG-2. A TOTAL OF 25 SAMPLES WERE COLLECTED OVER THE REFERENCED AREAS.



LEGEND

MIN. EL.		MAX. EL.
542.00'	-	543.00'
543.00'	-	544.00'
544.00'	-	545.00'
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'

OU# - # - #
- OU#: OPERABLE UNIT
- #: CAP/COVER AREA
- #: CAP/COVER MANAGEMENT UNIT

SRA MANAGEMENT UNIT

CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 8-21-2018

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1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-SCD35EFG-1.dwg
DRAWN BY: SHANE.NELSON
DATE: December 12, 2018
LAST REVISED: December 12, 2018
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-014

OU4-SCD35EFG-1
1st RESIDUAL SAND COVER THICKNESS RESULTS AND LOCATIONS

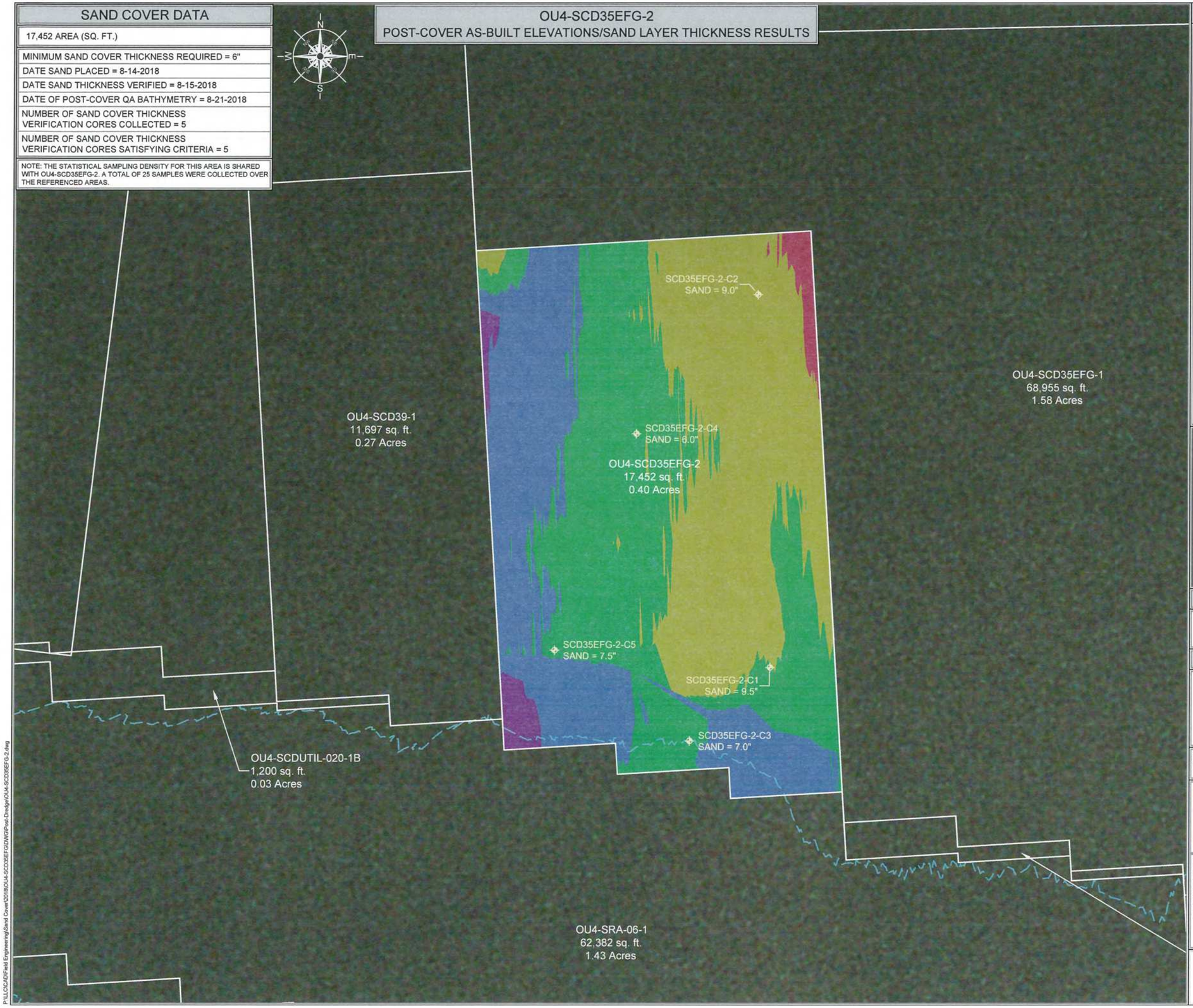
P:\LLOC\ADF\eld Engineering\Sand Cover\2018\OU4-SCD35EFG\DWG\Post-Dredge\OU4-SCD35EFG-1.dwg

SAND COVER DATA

17,452 AREA (SQ. FT.)
MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 8-14-2018
DATE SAND THICKNESS VERIFIED = 8-15-2018
DATE OF POST-COVER QA BATHYMETRY = 8-21-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 5
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 5

NOTE: THE STATISTICAL SAMPLING DENSITY FOR THIS AREA IS SHARED WITH OU4-SCD35EFG-2. A TOTAL OF 25 SAMPLES WERE COLLECTED OVER THE REFERENCED AREAS.

OU4-SCD35EFG-2
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS



LEGEND

MIN. EL.		MAX. EL.
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'

OU# - # - #
OPERABLE UNIT | CAP/COVER AREA | CAP/COVER MANAGEMENT UNIT

- - - SRA MANAGEMENT UNIT
——— CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 30')

30 15 0 30 60

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 8-21-2018

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TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-SCD35EFG-2.dwg
DRAWN BY: SHANE.NELSON
DATE: December 12, 2018
LAST REVISED: December 12, 2018
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-015

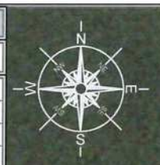
OU4-SCD35EFG-2
1st RESIDUAL SAND COVER THICKNESS RESULTS AND LOCATIONS

P:\LLC\CAD\Field Engineering\Sand Cover\2018\OU4-SCD35EFG\DWG\Post-Dredge\OU4-SCD35EFG-2.dwg

OU4-SCD35EFG-3
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS

SAND COVER DATA

79,718 AREA (SQ. FT.)
MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 8-14-2018
DATE SAND THICKNESS VERIFIED = 8-15-2018
DATE OF POST-COVER QA BATHYMETRY = 8-21-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 18
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 18



OU4-SCD35EFG-5
74,602 sq. ft.
1.71 Acres

OU4-SCD35EFG-4
22,490 sq. ft.
0.52 Acres

SCD35EFG-3-C4
SAND = 8.5"

SCD35EFG-3-C9
SAND = 9.0"

SCD35EFG-3-C18
SAND = 10.0"

SCD35EFG-3-C13
SAND = 6.0"

SCD35EFG-3-C5
SAND = 7.0"

SCD35EFG-3-C8
SAND = 7.0"

SCD35EFG-3-C12
SAND = 9.0"

SCD35EFG-3-C16
SAND = 8.5"

SCD35EFG-3-C17
SAND = 6.5"

OU4-SCD35EFG-3
79,718 sq. ft.
1.83 Acres

OU4-SCD40A-3
63,596 sq. ft.
1.46 Acres

SCD35EFG-3-C2
SAND = 6.0"

SCD35EFG-3-C6
SAND = 7.0"

SCD35EFG-3-C10
SAND = 9.0"

SCD35EFG-3-C14
SAND = 7.0"

SCD35EFG-3-C1
SAND = 6.5"

SCD35EFG-3-C3
SAND = 8.5"

SCD35EFG-3-C11
SAND = 11.0"

SCD35EFG-3-C15
SAND = 6.0"

SCD35EFG-3-C7
SAND = 10.0"

OU4-SCD35EFG-1
68,955 sq. ft.
1.58 Acres

OU4-SCD40A-2
91,861 sq. ft.
2.11 Acres

LEGEND

MIN. EL.		MAX. EL.
542.00'	-	543.00'
543.00'	-	544.00'
544.00'	-	545.00'
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'

OU# - # - #
OPERABLE UNIT — CAP/COVER AREA — CAP/COVER MANAGEMENT UNIT

——— CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 8-21-2018

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1611 STATE STREET
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DATE: December 12, 2018
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CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-016

OU4-SCD35EFG-3
1st RESIDUAL SAND COVER THICKNESS RESULTS AND LOCATIONS

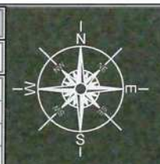
P:\LLC\CAD\Field Engineering\Sand Cover\2018\OU4-SCD35EFG\GDW\01Post-Dredge\OU4-SCD35EFG-3.dwg

OU4-SCD35EFG-4
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS

SAND COVER DATA

22,490 AREA (SQ. FT.)
MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 8-22-2018
DATE SAND THICKNESS VERIFIED = 8-24-2018
DATE OF POST-COVER QA BATHYMETRY = 8-25-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 6
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 6

NOTE: THE STATISTICAL SAMPLING DENSITY FOR THIS AREA IS SHARED WITH OU4-SCD35EFG-5. A TOTAL OF 25 SAMPLES WERE COLLECTED OVER THE REFERENCED AREAS.



OU4-SCD39-5
76,855 sq. ft.
1.76 Acres

OU4-SCD39-6
42,038 sq. ft.
0.97 Acres

SCD35EFG-4-C6
SAND = 8.0"

SCD35EFG-4-C5
SAND = 7.0"

OU4-SCD35EFG-5
74,602 sq. ft.
1.71 Acres

OU4-SCD35EFG-4
22,490 sq. ft.
0.52 Acres

SCD35EFG-4-C4
SAND = 9.0"

SCD35EFG-4-C3
SAND = 8.5"

SCD35EFG-4-C2
SAND = 7.0"

SCD35EFG-4-C1
SAND = 10.5"

OU4-SCD39-4
63,219 sq. ft.
1.45 Acres

OU4-SCD35EFG-3
79,718 sq. ft.
1.83 Acres

LEGEND

MIN. EL.		MAX. EL.
544.00'	-	545.00'
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'

OU# - # - #
OPERABLE UNIT — CAP/COVER AREA — CAP/COVER MANAGEMENT UNIT

——— CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
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Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-017

OU4-SCD35EFG-4
1st RESIDUAL SAND COVER
THICKNESS RESULTS AND LOCATIONS

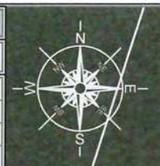
P:\LLC\CAD\Field Engineering\Sand Cover\2018\OU4-SCD35EFG\DWG\Post-Dredge\OU4-SCD35EFG-4.dwg

OU4-SCD35EFG-5
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS

SAND COVER DATA

74,602 AREA (SQ. FT.)
MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 8-22-2018
DATE SAND THICKNESS VERIFIED = 8-24-2018
DATE OF POST-COVER QA BATHYMETRY = 8-25-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 19
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 19

NOTE: THE STATISTICAL SAMPLING DENSITY FOR THIS AREA IS SHARED WITH OU4-SCD35EFG-4. A TOTAL OF 25 SAMPLES WERE COLLECTED OVER THE REFERENCED AREAS.



OU4-SCD35EFG-6
84,898 sq. ft.
1.95 Acres

SCD35EFG-5-C18
SAND = 8.5"

SCD35EFG-5-C19
SAND = 7.0"

SCD35EFG-5-C16
SAND = 8.0"

SCD35EFG-5-C12
SAND = 7.0"

SCD35EFG-5-C8
SAND = 8.5"

SCD35EFG-5-C3
SAND = 8.5"

OU4-SCD39-6
42,038 sq. ft.
0.97 Acres

SCD35EFG-5-C11
SAND = 6.5"

SCD35EFG-5-C2
SAND = 7.0"

SCD35EFG-5-C15
SAND = 7.0"

OU4-SCD35EFG-5
74,602 sq. ft.
1.71 Acres

SCD35EFG-5-C7
SAND = 7.5"

SCD35EFG-5-C4
SAND = 10.0"

SCD35EFG-5-C13
SAND = 8.5"

SCD35EFG-5-C9
SAND = 7.5"

SCD35EFG-5-C17
SAND = 7.5"

SCD35EFG-5-C10
SAND = 9.0"

SCD35EFG-5-C5
SAND = 10.5"

OU4-SCD35EFG-4
22,490 sq. ft.
0.52 Acres

SCD35EFG-5-C14
SAND = 7.5"

SCD35EFG-5-C1
SAND = 7.0"

SCD35EFG-5-C6
SAND = 7.0"

OU4-SCD35EFG-3
79,718 sq. ft.
1.83 Acres

OU4-SCD40A-3
63,596 sq. ft.
1.46 Acres

LEGEND

MIN. EL.		MAX. EL.
544.00'	-	545.00'
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'

OU# - # - #
OPERABLE UNIT | CAP/COVER AREA | CAP/COVER MANAGEMENT UNIT

——— CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 8-25-2018

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1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

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DRAWN BY: SHANE.NELSON
DATE: December 12, 2018
LAST REVISED: December 12, 2018
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-018

OU4-SCD35EFG-5
1st RESIDUAL SAND COVER THICKNESS RESULTS AND LOCATIONS

P:\LLC\CAD\Field Engineering\Sand Cover\2018\OU4-SCD35EFG\GIS\Post-Dredge\OU4-SCD35EFG-5.dwg

OU4-SCD35EFG-6
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS

SAND COVER DATA

84,898 AREA (SQ. FT.)
MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 8-27-2018
DATE SAND THICKNESS VERIFIED = 8-24-2018
DATE OF POST-COVER QA BATHY= 8-25-2018 & 11-01-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 25
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 25

OU4-SCD39-8
36,750 sq. ft.
0.84 Acres

OU4-SCD35EFG-9
72,832 sq. ft.
1.67 Acres

OU4-SCD35EFG-7
11,632 sq. ft.
0.27 Acres

OU4-SCD35EFG-8
19,063 sq. ft.
0.44 Acres

OU4-SCD39-6
42,038 sq. ft.
0.97 Acres

OU4-SCD35EFG-6
84,898 sq. ft.
1.95 Acres

OU4-SCDFIK-092-1
19,905 sq. ft.
0.46 Acres

OU4-SCD35EFG-5
74,602 sq. ft.
1.71 Acres

SCD35EFG-6-C23
SAND = 8.5"

SCD35EFG-6-C18
SAND = 6.0"

SCD35EFG-6-C13
SAND = 8.5"

SCD35EFG-6-C24
SAND = 9.0"

SCD35EFG-6-C19
SAND = 6.0"

SCD35EFG-6-C3
SAND = 6.0"

SCD35EFG-6-C8
SAND = 8.0"

SCD35EFG-6-C14
SAND = 7.0"

SCD35EFG-6-C9
SAND = 7.0"

SCD35EFG-6-C22
SAND = 7.5"

SCD35EFG-6-C17
SAND = 6.5"

SCD35EFG-6-C4
SAND = 6.5"

SCD35EFG-6-C12
SAND = 8.5"

SCD35EFG-6-C7
SAND = 7.0"

SCD35EFG-6-C25
SAND = 13.0"

SCD35EFG-6-C20
SAND = 8.0"

SCD35EFG-6-C2
SAND = 7.0"

SCD35EFG-6-C15
SAND = 6.0"

SCD35EFG-6-C10
SAND = 6.0"

SCD35EFG-6-C5
SAND = 11.0"

SCD35EFG-6-C21
SAND = 7.5"

SCD35EFG-6-C16
SAND = 8.0"

SCD35EFG-6-C11
SAND = 6.5"

SCD35EFG-6-C1
SAND = 7.0"

SCD35EFG-6-C6
SAND = 7.5"

LEGEND

MIN. EL.		MAX. EL.
542.00'	-	543.00'
543.00'	-	544.00'
544.00'	-	545.00'
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'

OU# - # - #
OPERABLE UNIT | CAP/COVER AREA | CAP/COVER MANAGEMENT UNIT

——— CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
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CAD FILE: OU4-SCD35EFG-6.dwg
DRAWN BY: SHANE.NELSON
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LAST REVISED: December 12, 2018
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-019

OU4-SCD35EFG-6
1st RESIDUAL SAND COVER THICKNESS RESULTS AND LOCATIONS

P:\LLC\CAD\Field Engineering\Sand Cover\2018\OU4-SCD35EFG\DWG\Post-Design\OU4-SCD35EFG-6.dwg

OU4-SCD35EFG-7
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS

SAND COVER DATA

11,632 AREA (SQ. FT.)
MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 8-27-2018
DATE SAND THICKNESS VERIFIED = 8-29-2018
DATE OF POST-COVER QA BATHY= 11-01-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 3
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 3

NOTE: THE STATISTICAL SAMPLING DENSITY FOR THIS AREA IS SHARED WITH OU4-SCD35EFG-9. A TOTAL OF 21 SAMPLES WERE COLLECTED OVER THE REFERENCED AREAS.

OU4-SCD35EFG-9
72,832 sq. ft.
1.67 Acres

OU4-SCD35EFG-8
19,063 sq. ft.
0.44 Acres

SCD35EFG-7-C2
SAND = 7.5"

OU4-SCD35EFG-7
11,632 sq. ft.
0.27 Acres

SCD35EFG-7-C3
SAND = 11.5"

SCD35EFG-7-C1
SAND = 8.5"

OU4-SCD35EFG-6
84,898 sq. ft.
1.95 Acres

OU4-SCDFIK-092-1
19,905 sq. ft.
0.46 Acres

LEGEND

MIN. EL.		MAX. EL.
540.00'	-	541.00'
541.00'	-	542.00'
542.00'	-	543.00'
543.00'	-	544.00'
544.00'	-	545.00'
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'

OU# - # - #
OPERABLE UNIT | CAP/COVER AREA | CAP/COVER MANAGEMENT UNIT

CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 30')

30 15 0 30 60

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
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CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-020

OU4-SCD35EFG-7
1st RESIDUAL SAND COVER
THICKNESS RESULTS AND LOCATIONS

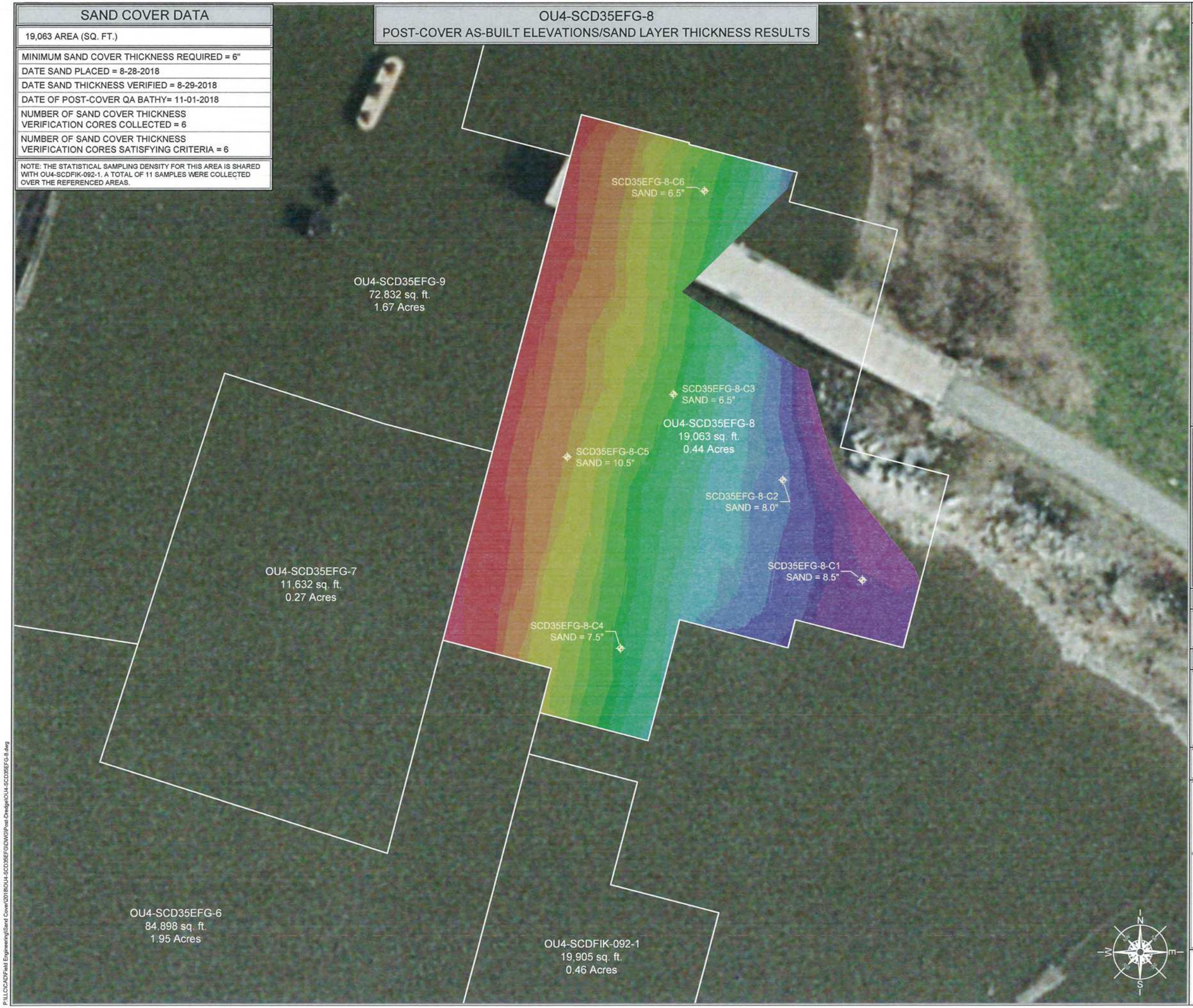
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OU4-SCD35EFG-8
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS

SAND COVER DATA

19,063 AREA (SQ. FT.)
MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 8-28-2018
DATE SAND THICKNESS VERIFIED = 8-29-2018
DATE OF POST-COVER QA BATHY= 11-01-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 6
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 6

NOTE: THE STATISTICAL SAMPLING DENSITY FOR THIS AREA IS SHARED WITH OU4-SCDFIK-092-1. A TOTAL OF 11 SAMPLES WERE COLLECTED OVER THE REFERENCED AREAS.



LEGEND

MIN. EL.		MAX. EL.	MIN. EL.		MAX. EL.
546.00'	-	547.00'	566.00'	-	567.00'
547.00'	-	548.00'	567.00'	-	568.00'
548.00'	-	549.00'	568.00'	-	569.00'
549.00'	-	550.00'	569.00'	-	570.00'
550.00'	-	551.00'	570.00'	-	571.00'
551.00'	-	552.00'	571.00'	-	572.00'
552.00'	-	553.00'	572.00'	-	573.00'
553.00'	-	554.00'	573.00'	-	574.00'
554.00'	-	555.00'	574.00'	-	575.00'
555.00'	-	556.00'	575.00'	-	576.00'
556.00'	-	557.00'	576.00'	-	577.00'
557.00'	-	558.00'	577.00'	-	578.00'
558.00'	-	559.00'	578.00'	-	579.00'
559.00'	-	560.00'			
560.00'	-	561.00'			
561.00'	-	562.00'			
562.00'	-	563.00'			
563.00'	-	564.00'			
564.00'	-	565.00'			
565.00'	-	566.00'			

OU# - # - #
- OU#: OPERABLE UNIT
- #: CAP/COVER AREA
- #: CAP/COVER MANAGEMENT UNIT

CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER	CA = TYPE "A" CAP
SHC = SHORELINE CAP	CB = TYPE "B" CAP
SCD = RESIDUAL SAND COVER	CC = TYPE "C" CAP

SCALE (1" = 30')

30 15 0 30 60

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-01-2018

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TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
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CAD FILE: OU4-SCD35EFG-8.dwg
DRAWN BY: SHANE.NELSON
DATE: December 21, 2018
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Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-021

OU4-SCD35EFG-8
1st RESIDUAL SAND COVER THICKNESS RESULTS AND LOCATIONS

P:\LLC\CAD\Field Engineering\Sand Cover\2018\OU4-SCD35EFG\DWG\Post-Dredge\OU4-SCD35EFG-8.dwg

OU4-SCD35EFG-9
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS

SAND COVER DATA

72,832 AREA (SQ. FT.)
MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 8-27-2018
DATE SAND THICKNESS VERIFIED = 9-07-2018
DATE OF POST-COVER QA BATHY= 11-01-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 18
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 14*

NOTE: THE STATISTICAL SAMPLING DENSITY FOR THIS AREA IS SHARED WITH OU4-SCD35EFG-7. A TOTAL OF 21 SAMPLES WERE COLLECTED OVER THE REFERENCED AREAS.

* J.F. BRENNAN QC DATA WAS USED FOR ADDITIONAL SAND VERIFICATION ON AN EXCEPTION BASIS.

SCD35EFG-9-C18
SAND = 6.0"

SCD35EFG-9-C13
SAND = 9.0"

SCD35EFG-9-C12
SAND = 9.0"

SCD35EFG-9-C8
SAND = 1.7"

SCD35EFG-9-C7
SAND = 10.5"

SCD35EFG-9-C17
SAND = 10.0"

SCD35EFG-9-C14
SAND = 8.5"

SCD35EFG-9-C3
SAND = 7.0"

SCD35EFG-9-C6
SAND = 9.5"

SCD35EFG-9-C1
SAND = 8.5"

SCD35EFG-9-C9
SAND = 5.4"

SCD35EFG-9-C4
SAND = 3.4"

SCD35EFG-9-C16
SAND = 7.0"

SCD35EFG-9-C2
SAND = 11.0"

SCD35EFG-9-C11
SAND = 8.5"

SCD35EFG-9-C5
SAND = 3.9"

SCD35EFG-9-C15
SAND = 7.5"

SCD35EFG-9-C10
SAND = 13.5"

OU4-SCD39-8
36,750 sq. ft.
0.84 Acres

OU4-SCD35EFG-9
72,832 sq. ft.
1.67 Acres

OU4-SCD35EFG-8
19,063 sq. ft.
0.44 Acres

OU4-SCD35EFG-7
11,632 sq. ft.
0.27 Acres

OU4-SCD39-6
42,038 sq. ft.
0.97 Acres

OU4-SCD35EFG-6
84,898 sq. ft.
1.95 Acres

OU4-SCDFIK-092-1
19,905 sq. ft.
0.46 Acres

N
W
E
S

LEGEND

MIN. EL.		MAX. EL.
536.00'	-	537.00'
537.00'	-	538.00'
538.00'	-	539.00'
539.00'	-	540.00'
540.00'	-	541.00'
541.00'	-	542.00'
542.00'	-	543.00'
543.00'	-	544.00'
544.00'	-	545.00'
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'

OU# - # - #
OPERABLE UNIT | CAP/COVER AREA | CAP/COVER MANAGEMENT UNIT

——— CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 50')

50 25 0 50 100

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-01-2018

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TETRA TECH EC, INC.
1611 STATE STREET
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DRAWN BY: SHANE.NELSON
DATE: December 21, 2018
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CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-022

OU4-SCD35EFG-9
1st RESIDUAL SAND COVER THICKNESS RESULTS AND LOCATIONS

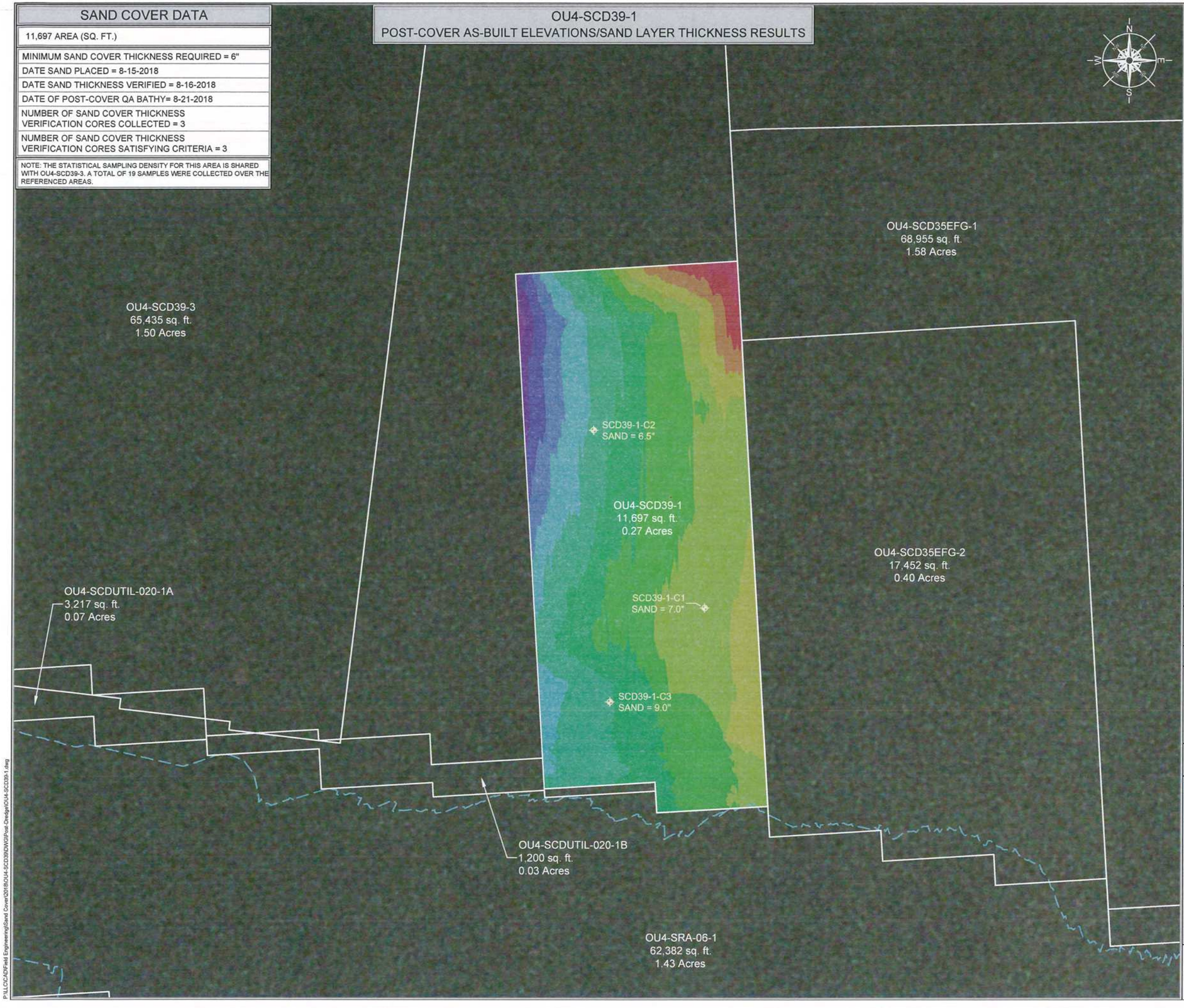
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OU4-SCD39-1
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS

SAND COVER DATA

11,697 AREA (SQ. FT.)
MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 8-15-2018
DATE SAND THICKNESS VERIFIED = 8-16-2018
DATE OF POST-COVER QA BATHY= 8-21-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 3
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 3

NOTE: THE STATISTICAL SAMPLING DENSITY FOR THIS AREA IS SHARED WITH OU4-SCD39-3. A TOTAL OF 19 SAMPLES WERE COLLECTED OVER THE REFERENCED AREAS.



LEGEND

MIN. EL.		MAX. EL.
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'

OU# - # - #
- OU#: OPERABLE UNIT
- #: CAP/COVER AREA
- #: CAP/COVER MANAGEMENT UNIT

——— CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 30')

30 15 0 30 60

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 8-21-2018

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1611 STATE STREET
GREEN BAY, WI 54304
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DRAWN BY: SHANE.NELSON
DATE: December 21, 2018
LAST REVISED: December 21, 2018
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-023

OU4-SCD39-1
1st RESIDUAL SAND COVER THICKNESS RESULTS AND LOCATIONS

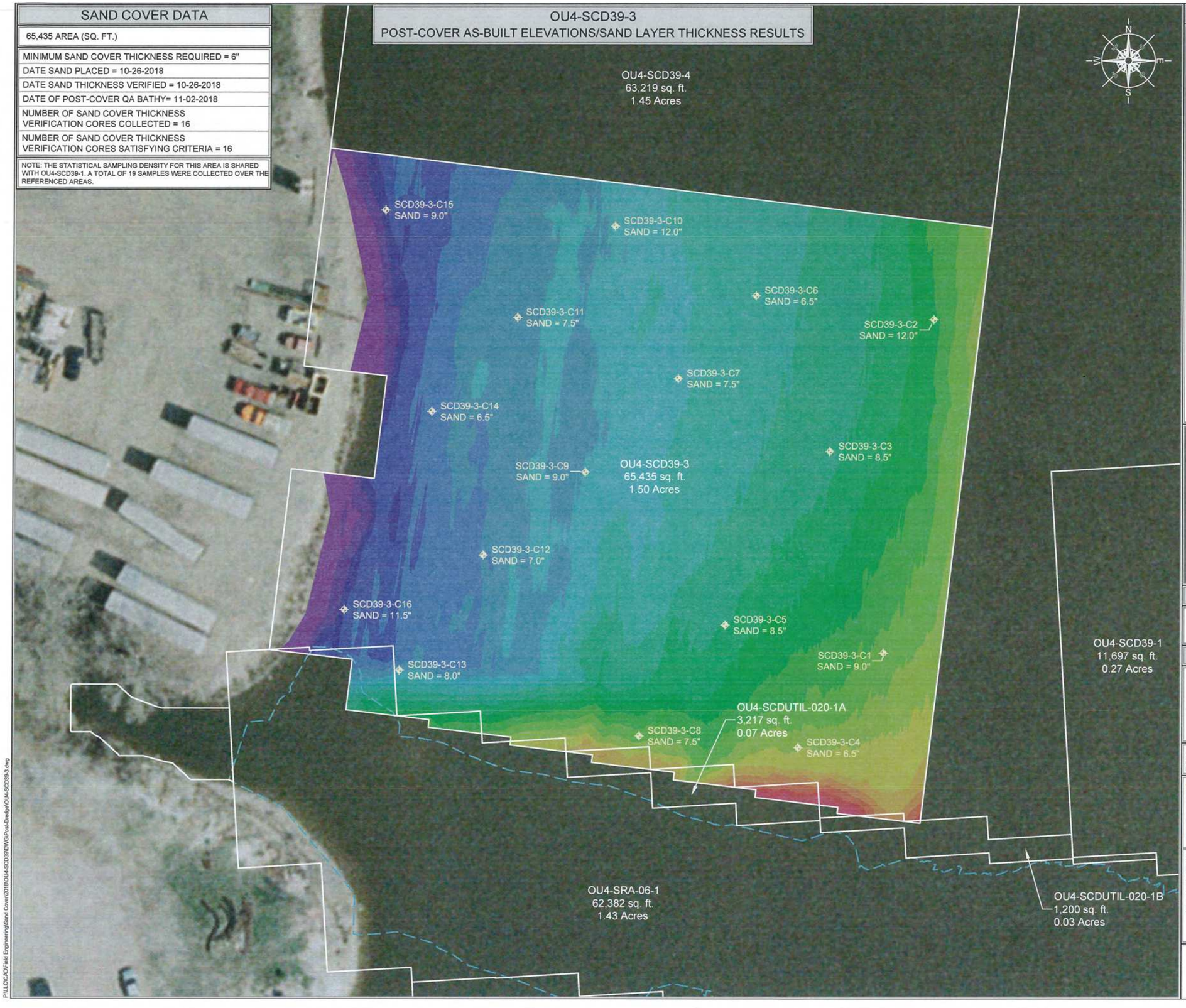
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OU4-SCD39-3
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS

SAND COVER DATA

65,435 AREA (SQ. FT.)
MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 10-26-2018
DATE SAND THICKNESS VERIFIED = 10-26-2018
DATE OF POST-COVER QA BATHY= 11-02-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 16
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 16

NOTE: THE STATISTICAL SAMPLING DENSITY FOR THIS AREA IS SHARED WITH OU4-SCD39-1. A TOTAL OF 19 SAMPLES WERE COLLECTED OVER THE REFERENCED AREAS.



LEGEND

MIN. EL.		MAX. EL.
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'
560.00'	-	561.00'
561.00'	-	562.00'
562.00'	-	563.00'
563.00'	-	564.00'
564.00'	-	565.00'
565.00'	-	566.00'
566.00'	-	567.00'
567.00'	-	568.00'
568.00'	-	569.00'
569.00'	-	570.00'
570.00'	-	571.00'
571.00'	-	572.00'
572.00'	-	573.00'
573.00'	-	574.00'
574.00'	-	575.00'
575.00'	-	576.00'
576.00'	-	577.00'
577.00'	-	578.00'
578.00'	-	579.00'

OU# - # - #
OPERABLE UNIT | CAP/COVER AREA | CAP/COVER MANAGEMENT UNIT

CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-02-2018

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DATE: December 21, 2018
LAST REVISED: December 21, 2018
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Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-024

OU4-SCD39-3
1st RESIDUAL SAND COVER THICKNESS RESULTS AND LOCATIONS

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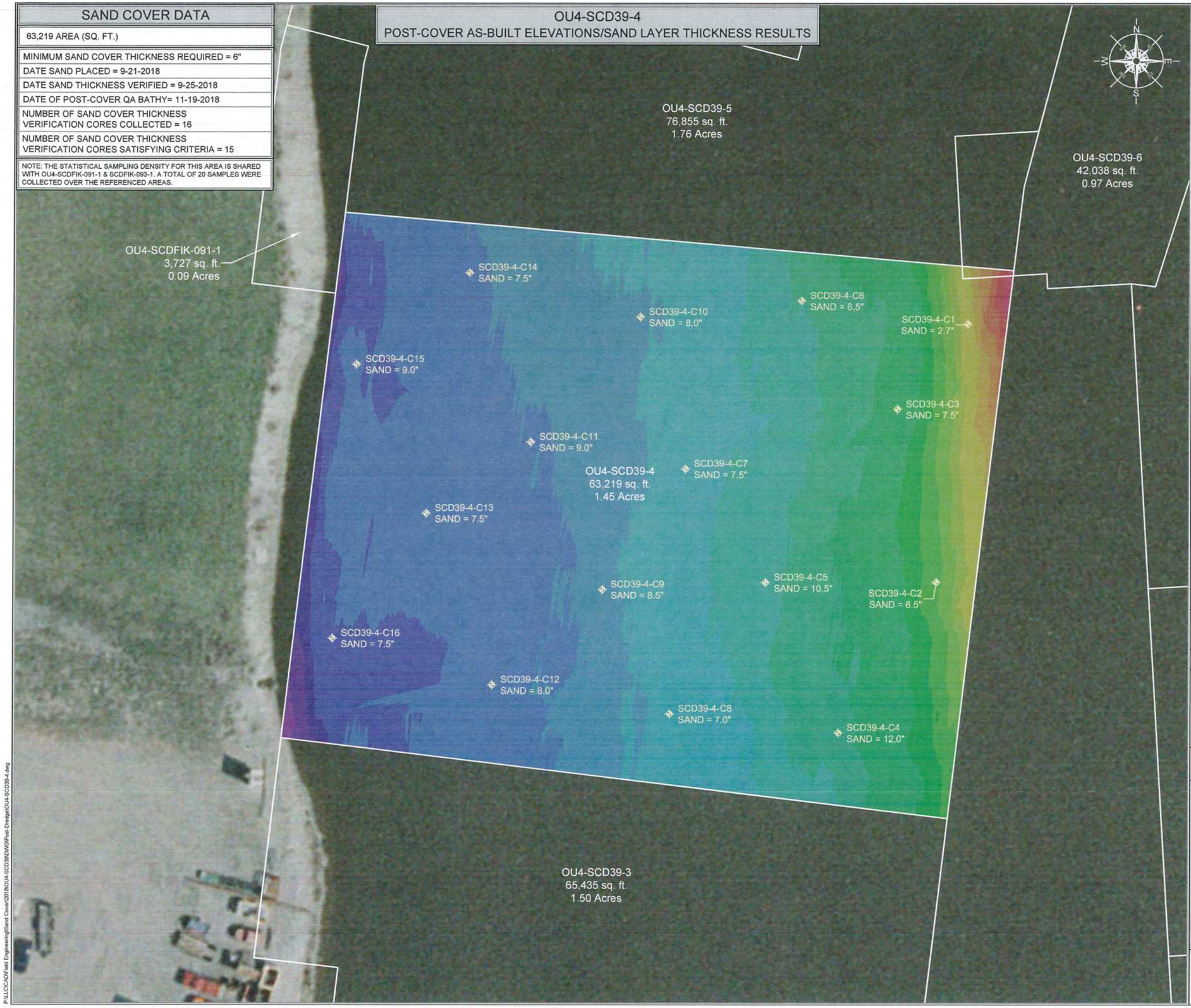
OU4-SCD39-4
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS

SAND COVER DATA

63,219 AREA (SQ. FT.)

MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 9-21-2018
DATE SAND THICKNESS VERIFIED = 9-25-2018
DATE OF POST-COVER QA BATHY= 11-19-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 16
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 15

NOTE: THE STATISTICAL SAMPLING DENSITY FOR THIS AREA IS SHARED WITH OU4-SCDFIK-091-1 & SCDFIK-093-1. A TOTAL OF 20 SAMPLES WERE COLLECTED OVER THE REFERENCED AREAS.



LEGEND

MIN. EL.		MAX. EL.	MIN. EL.		MAX. EL.
554.00'	-	555.00'	574.00'	-	575.00'
555.00'	-	556.00'	575.00'	-	576.00'
556.00'	-	557.00'	576.00'	-	577.00'
557.00'	-	558.00'	577.00'	-	578.00'
558.00'	-	559.00'	578.00'	-	579.00'
559.00'	-	560.00'			
560.00'	-	561.00'			
561.00'	-	562.00'			
562.00'	-	563.00'			
563.00'	-	564.00'			
564.00'	-	565.00'			
565.00'	-	566.00'			
566.00'	-	567.00'			
567.00'	-	568.00'			
568.00'	-	569.00'			
569.00'	-	570.00'			
570.00'	-	571.00'			
571.00'	-	572.00'			
572.00'	-	573.00'			
573.00'	-	574.00'			

OU# - # - #

OU# = OPERABLE UNIT; # = CAP/COVER AREA; # = CAP/COVER MANAGEMENT UNIT

CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-19-2018

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TETRA TECH EC, INC.
1611 STATE STREET
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DRAWN BY: SHANE.NELSON
DATE: December 21, 2018
LAST REVISED: December 21, 2018
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Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-025

OU4-SCD39-4
1st RESIDUAL SAND COVER
THICKNESS RESULTS AND LOCATIONS

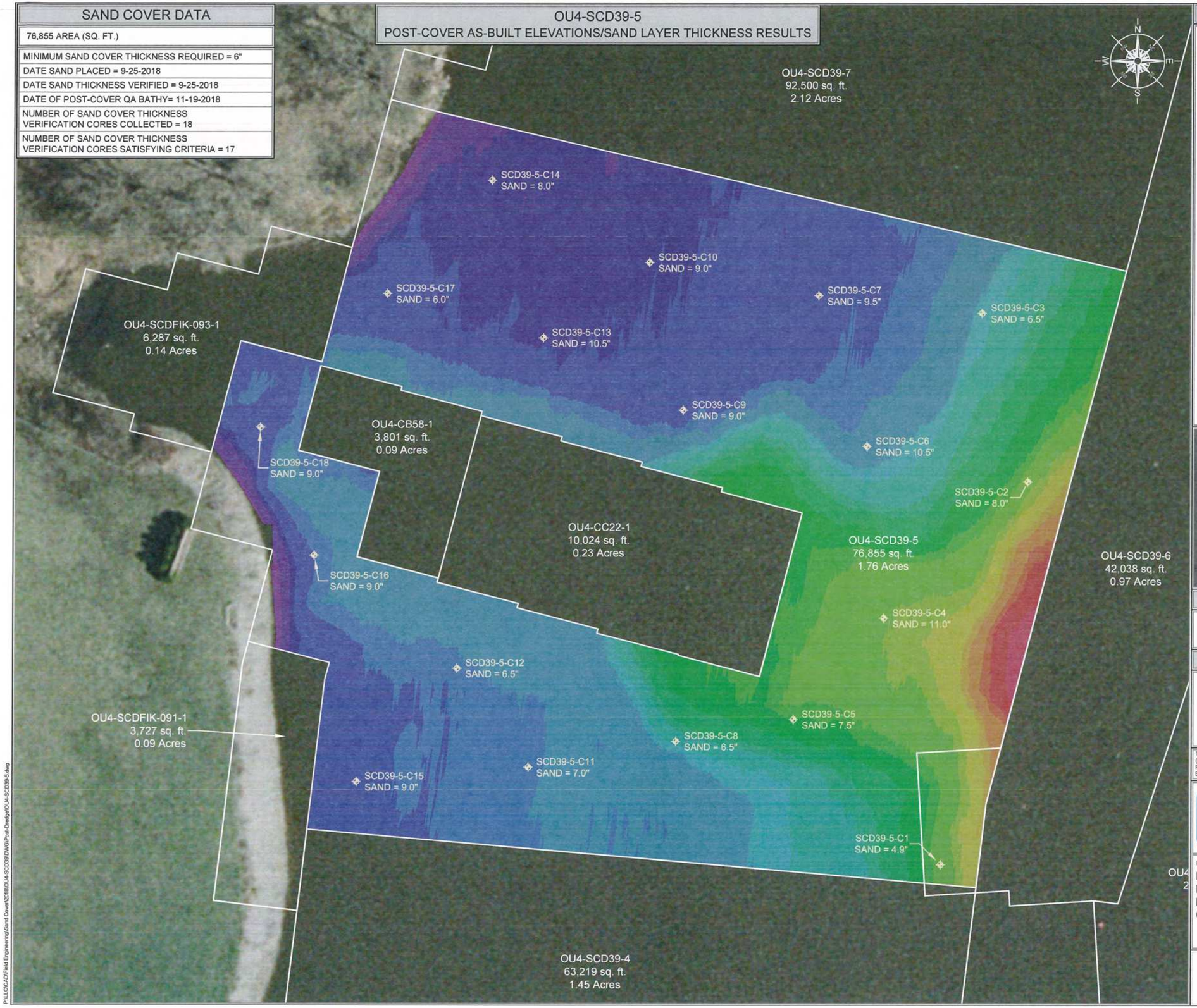
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SAND COVER DATA

76,855 AREA (SQ. FT.)

MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 9-25-2018
DATE SAND THICKNESS VERIFIED = 9-25-2018
DATE OF POST-COVER QA BATHY= 11-19-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 18
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 17

OU4-SCD39-5
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS



LEGEND

MIN. EL.		MAX. EL.	MIN. EL.		MAX. EL.
547.00'	-	548.00'	567.00'	-	568.00'
548.00'	-	549.00'	568.00'	-	569.00'
549.00'	-	550.00'	569.00'	-	570.00'
550.00'	-	551.00'	570.00'	-	571.00'
551.00'	-	552.00'	571.00'	-	572.00'
552.00'	-	553.00'	572.00'	-	573.00'
553.00'	-	554.00'	573.00'	-	574.00'
554.00'	-	555.00'	574.00'	-	575.00'
555.00'	-	556.00'	575.00'	-	576.00'
556.00'	-	557.00'	576.00'	-	577.00'
557.00'	-	558.00'	577.00'	-	578.00'
558.00'	-	559.00'	578.00'	-	579.00'
559.00'	-	560.00'			
560.00'	-	561.00'			
561.00'	-	562.00'			
562.00'	-	563.00'			
563.00'	-	564.00'			
564.00'	-	565.00'			
565.00'	-	566.00'			
566.00'	-	567.00'			

OU# - # - #

- OU#: OPERABLE UNIT
- #: CAP/COVER AREA
- #: CAP/COVER MANAGEMENT UNIT

——— CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER	CA = TYPE "A" CAP
SHC = SHORELINE CAP	CB = TYPE "B" CAP
SCD = RESIDUAL SAND COVER	CC = TYPE "C" CAP

SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-19-2018

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TETRA TECH EC, INC.
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CAD FILE: OU4-SCD39-5.dwg
DRAWN BY: SHANE.NELSON
DATE: December 21, 2018
LAST REVISED: December 21, 2018
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-026

OU4-SCD39-5
1st RESIDUAL SAND COVER THICKNESS RESULTS AND LOCATIONS

P:\LLC\CAD\Field Engineering\Sand Cover\2018\OU4-SCD39\DWG\Post-Dredge\OU4-SCD39-5.dwg

OU4-SCD39-6
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS

SAND COVER DATA

42,038 AREA (SQ. FT.)
MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 8-28-2018
DATE SAND THICKNESS VERIFIED = 9-13-2018
DATE OF POST-COVER QA BATHY= 11-02-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 8
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 7*

* J.F. BRENNAN QC DATA WAS USED FOR ADDITIONAL SAND VERIFICATION ON AN EXCEPTION BASIS.

OU4-SCD39-7
92,500 sq. ft.
2.12 Acres

OU4-SCD39-8
36,750 sq. ft.
0.84 Acres

OU4-SCD35EFG-9
72,832 sq. ft.
1.67 Acres

SCD39-6-C7
SAND = 7.5"

SCD39-6-C8
SAND = 9.5"

SCD39-6-C6
SAND = 4.3"

SCD39-6-C5
SAND = 6.0"

OU4-SCD39-6
42,038 sq. ft.
0.97 Acres

SCD39-6-C4
SAND = 8.0"

SCD39-6-C3
SAND = 6.0"

SCD39-6-C2
SAND = 10.0"

SCD39-6-C1
SAND = 7.5"

OU4-SCD35EFG-6
84,898 sq. ft.
1.95 Acres

OU4-SCD39-5
76,855 sq. ft.
1.76 Acres

OU4-CB58-1
3,801 sq. ft.
0.09 Acres

OU4-CC22-1
10,024 sq. ft.
0.23 Acres

OU4-SCD35EFG-5
74,602 sq. ft.
1.71 Acres

OU4-SCD39-4
63,219 sq. ft.
1.45 Acres

OU4-SCD35EFG-4
22,490 sq. ft.
0.52 Acres

LEGEND

MIN. EL.		MAX. EL.
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'
560.00'	-	561.00'
561.00'	-	562.00'
562.00'	-	563.00'
563.00'	-	564.00'
564.00'	-	565.00'

OU# - # - #
OU# = OPERABLE UNIT
= CAP/COVER AREA
= CAP/COVER MANAGEMENT UNIT

——— CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-02-2018

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TETRA TECH EC, INC.
1611 STATE STREET
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TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-SCD39-6.dwg
DRAWN BY: SHANE.NELSON
DATE: January 16, 2019
LAST REVISED: January 16, 2019
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-027

OU4-SCD39-6
1st RESIDUAL SAND COVER
THICKNESS RESULTS AND LOCATIONS

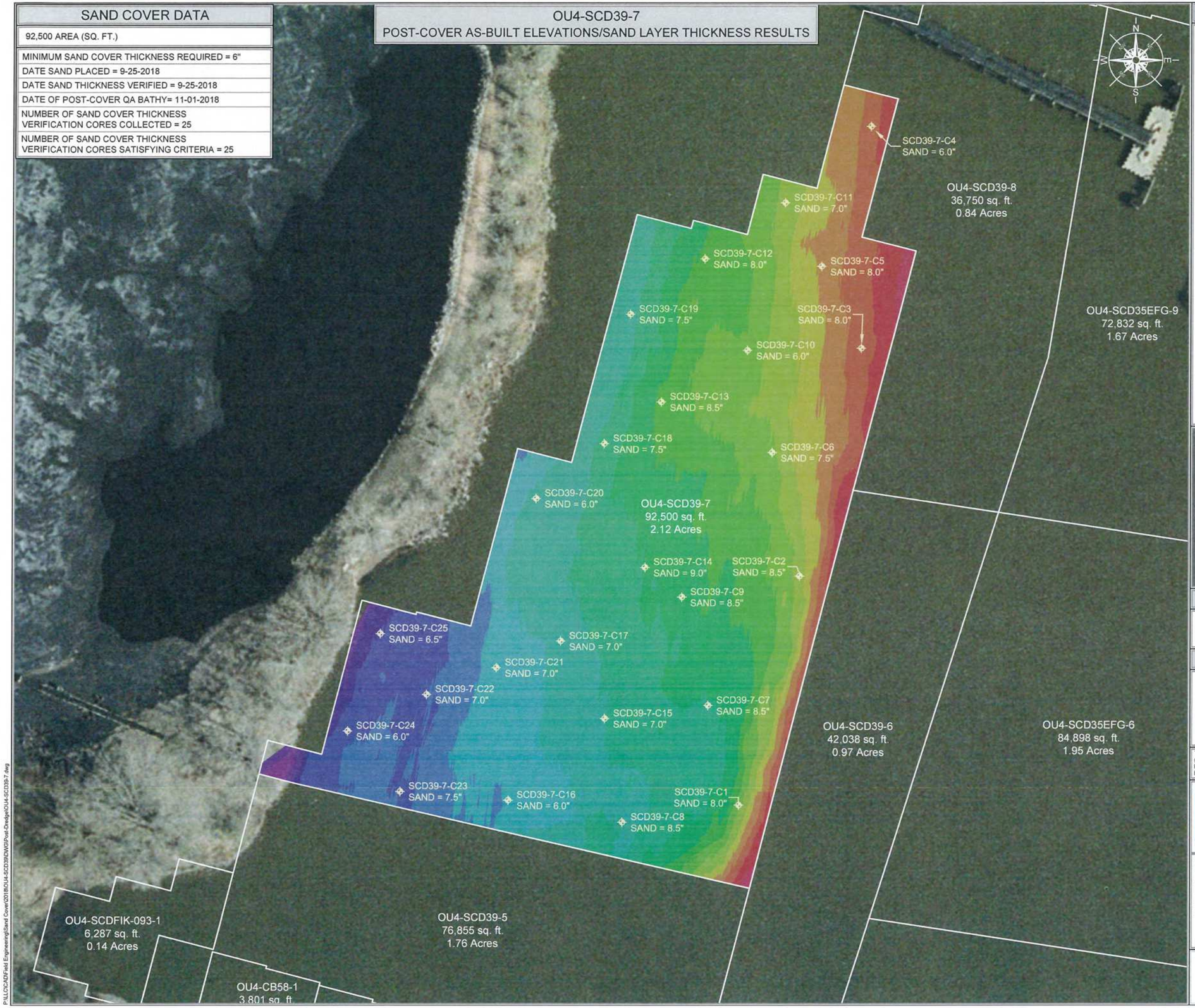
P:\LLC\CAD\Field Engineering\Sand Cover\2018\OU4-SCD39\DWG\Post-Design\OU4-SCD39-6.dwg

SAND COVER DATA

92,500 AREA (SQ. FT.)

MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 9-25-2018
DATE SAND THICKNESS VERIFIED = 9-25-2018
DATE OF POST-COVER QA BATHY= 11-01-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 25
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 25

OU4-SCD39-7
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS



LEGEND

MIN. EL.		MAX. EL.
562.00'	-	563.00'
563.00'	-	564.00'
564.00'	-	565.00'
565.00'	-	566.00'
566.00'	-	567.00'
567.00'	-	568.00'
568.00'	-	569.00'
569.00'	-	570.00'
570.00'	-	571.00'
571.00'	-	572.00'
572.00'	-	573.00'
573.00'	-	574.00'
574.00'	-	575.00'
575.00'	-	576.00'
576.00'	-	577.00'
577.00'	-	578.00'
578.00'	-	579.00'

OU# - # - #
- OU#: OPERABLE UNIT
- #: CAP/COVER AREA
- #: CAP/COVER MANAGEMENT UNIT

CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-01-2018

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TETRA TECH EC, INC.
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Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-028

OU4-SCD39-7
1st RESIDUAL SAND COVER THICKNESS RESULTS AND LOCATIONS

P:\LOC\CAD\Field Engineering\Sand Cover\2018\OU4-SCD39\DWG\Post-Dredge\OU4-SCD39-7.dwg

OU4-SCD39-8
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS

SAND COVER DATA

36,750 AREA (SQ. FT.)
MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 9-17-2018
DATE SAND THICKNESS VERIFIED = 9-18-2018
DATE OF POST-COVER QA BATHY= 11-01-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 8
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 8

OU4-SCD68A-1
13,159 sq. ft.
0.30 Acres

OU4-SCNA-098-1
24,030 sq. ft.
0.55 Acres

SCD39-8-C5
SAND = 7.5"

SCD39-8-C8
SAND = 7.0"

SCD39-8-C4
SAND = 12.0"

SCD39-8-C7
SAND = 6.0"

SCD39-8-C3
SAND = 9.5"

OU4-SCD39-8
36,750 sq. ft.
0.84 Acres

SCD39-8-C6
SAND = 10.0"

SCD39-8-C1
SAND = 9.5"

SCD39-8-C2
SAND = 7.0"

OU4-SCD35EFG-9
72,832 sq. ft.
1.67 Acres

OU4-SCD39-7
92,500 sq. ft.
2.12 Acres

OU4-SCD39-6
42,038 sq. ft.
0.97 Acres

OU4-SCD35EFG-6
84,898 sq. ft.

LEGEND

MIN. EL.		MAX. EL.
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'
560.00'	-	561.00'
561.00'	-	562.00'
562.00'	-	563.00'
563.00'	-	564.00'
564.00'	-	565.00'
565.00'	-	566.00'

OU# - # - #
OU# = OPERABLE UNIT
= CAP/COVER AREA
= CAP/COVER MANAGEMENT UNIT

——— CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-01-2018

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TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-SCD39-8.dwg
DRAWN BY: SHANE.NELSON
DATE: January 16, 2019
LAST REVISED: January 16, 2019
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-029

OU4-SCD39-8
1st RESIDUAL SAND COVER
THICKNESS RESULTS AND LOCATIONS

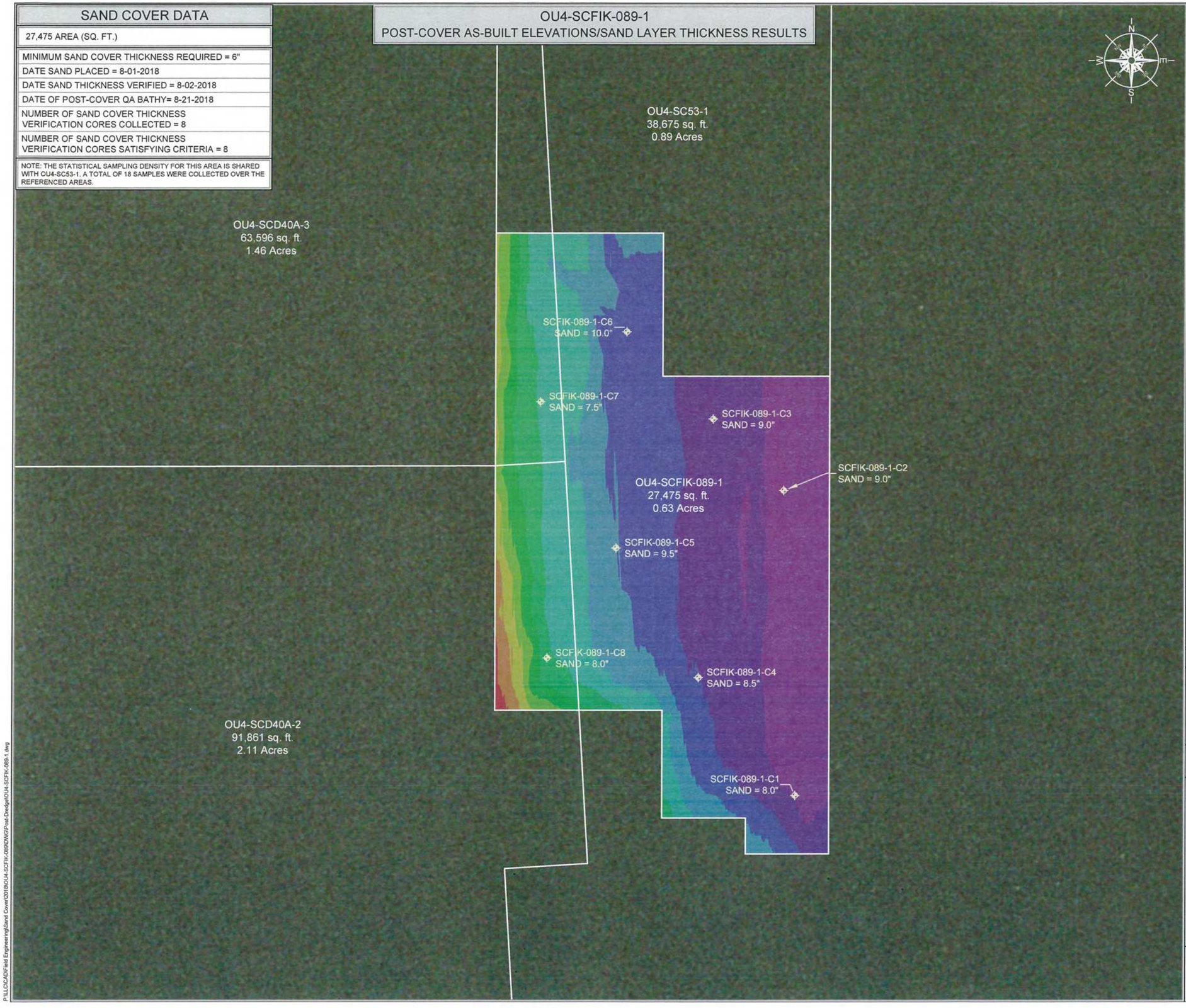
P:\LLC\CAD\Final Engineering\Sand Cover\2018\OU4-SCD39\DWG\Post Dredge\OU4-SCD39-8.dwg

SAND COVER DATA

27,475 AREA (SQ. FT.)
MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 8-01-2018
DATE SAND THICKNESS VERIFIED = 8-02-2018
DATE OF POST-COVER QA BATHY= 8-21-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 8
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 8

NOTE: THE STATISTICAL SAMPLING DENSITY FOR THIS AREA IS SHARED WITH OU4-SC53-1. A TOTAL OF 18 SAMPLES WERE COLLECTED OVER THE REFERENCED AREAS.

OU4-SCFIK-089-1
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS



LEGEND

MIN. EL.		MAX. EL.
563.00'	-	564.00'
564.00'	-	565.00'
565.00'	-	566.00'
566.00'	-	567.00'
567.00'	-	568.00'
568.00'	-	569.00'
569.00'	-	570.00'
570.00'	-	571.00'
571.00'	-	572.00'
572.00'	-	573.00'
573.00'	-	574.00'
574.00'	-	575.00'

OU# - # - #
- OU#: OPERABLE UNIT
- #: CAP/COVER AREA
- #: CAP/COVER MANAGEMENT UNIT

CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER	CA = TYPE "A" CAP
SHC = SHORELINE CAP	CB = TYPE "B" CAP
SCD = RESIDUAL SAND COVER	CC = TYPE "C" CAP

SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 8-21-2018

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1611 STATE STREET
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CAD FILE: OU4-SCFIK-089-1.dwg
DRAWN BY: SHANE.NELSON
DATE: January 16, 2019
LAST REVISED: January 16, 2019
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-030

OU4-SCFIK-089-1
REMEDY SAND COVER THICKNESS RESULTS AND LOCATIONS

P:\LLC\CAD\Field Engineering\Sand Cover\2018\OU4-SCFIK-089\DWG\Post Dredge\OU4-SCFIK-089-1.dwg

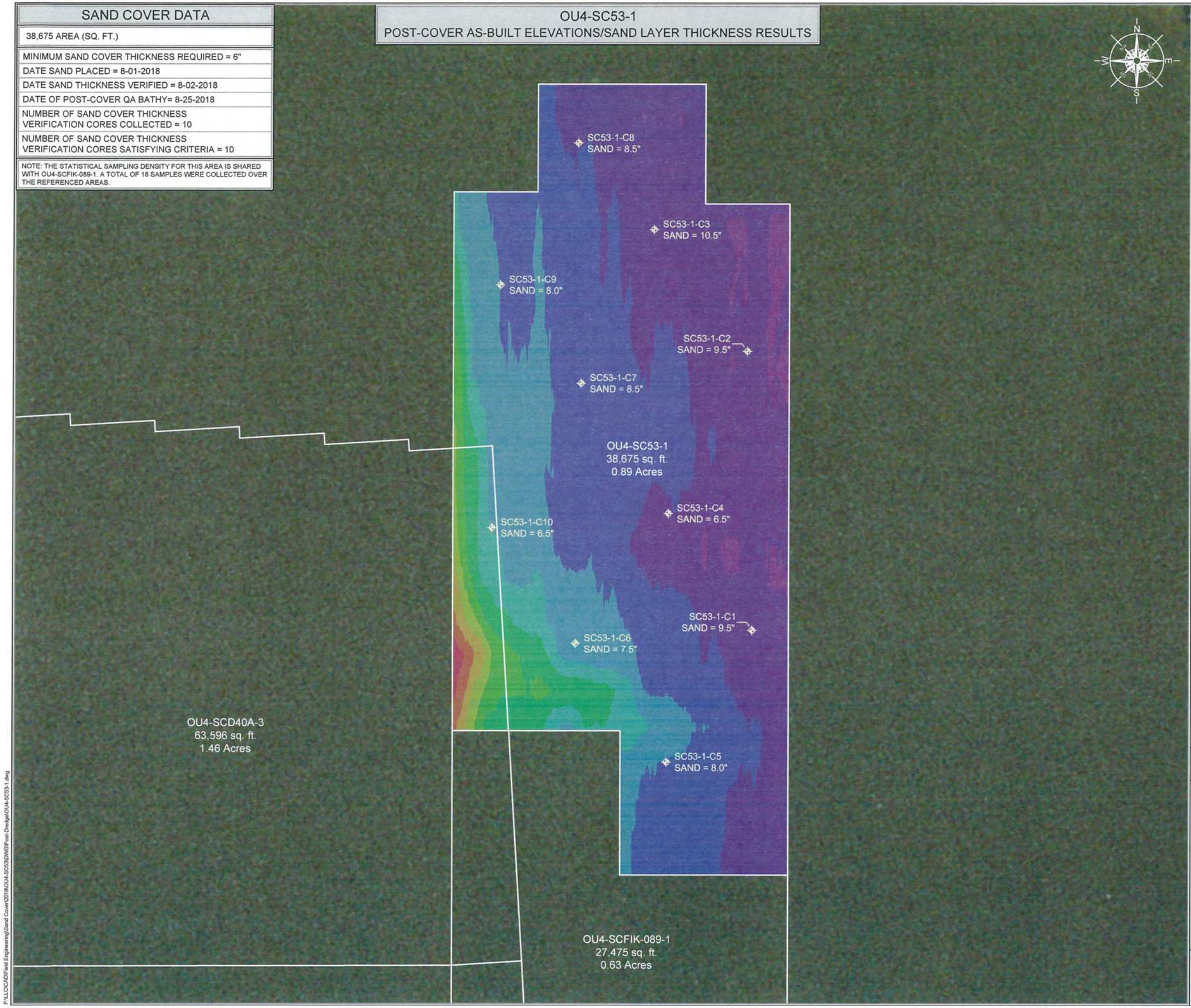
OU4-SC53-1
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS

SAND COVER DATA

38,675 AREA (SQ. FT.)

MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 8-01-2018
DATE SAND THICKNESS VERIFIED = 8-02-2018
DATE OF POST-COVER QA BATHY= 8-25-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 10
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 10

NOTE: THE STATISTICAL SAMPLING DENSITY FOR THIS AREA IS SHARED WITH OU4-SCFIK-089-1. A TOTAL OF 18 SAMPLES WERE COLLECTED OVER THE REFERENCED AREAS.



LEGEND

MIN. EL.		MAX. EL.
565.00'	-	566.00'
566.00'	-	567.00'
567.00'	-	568.00'
568.00'	-	569.00'
569.00'	-	570.00'
570.00'	-	571.00'
571.00'	-	572.00'
572.00'	-	573.00'
573.00'	-	574.00'
574.00'	-	575.00'
575.00'	-	576.00'

OU# - # - #
OPERABLE UNIT | CAP/COVER AREA | CAP/COVER MANAGEMENT UNIT

——— CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 8-25-2018

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1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-SC53-1.dwg
DRAWN BY: SHANE.NELSON
DATE: January 16, 2019
LAST REVISED: January 16, 2019
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-031

OU4-SC53-1
REMEDY SAND COVER THICKNESS RESULTS AND LOCATIONS

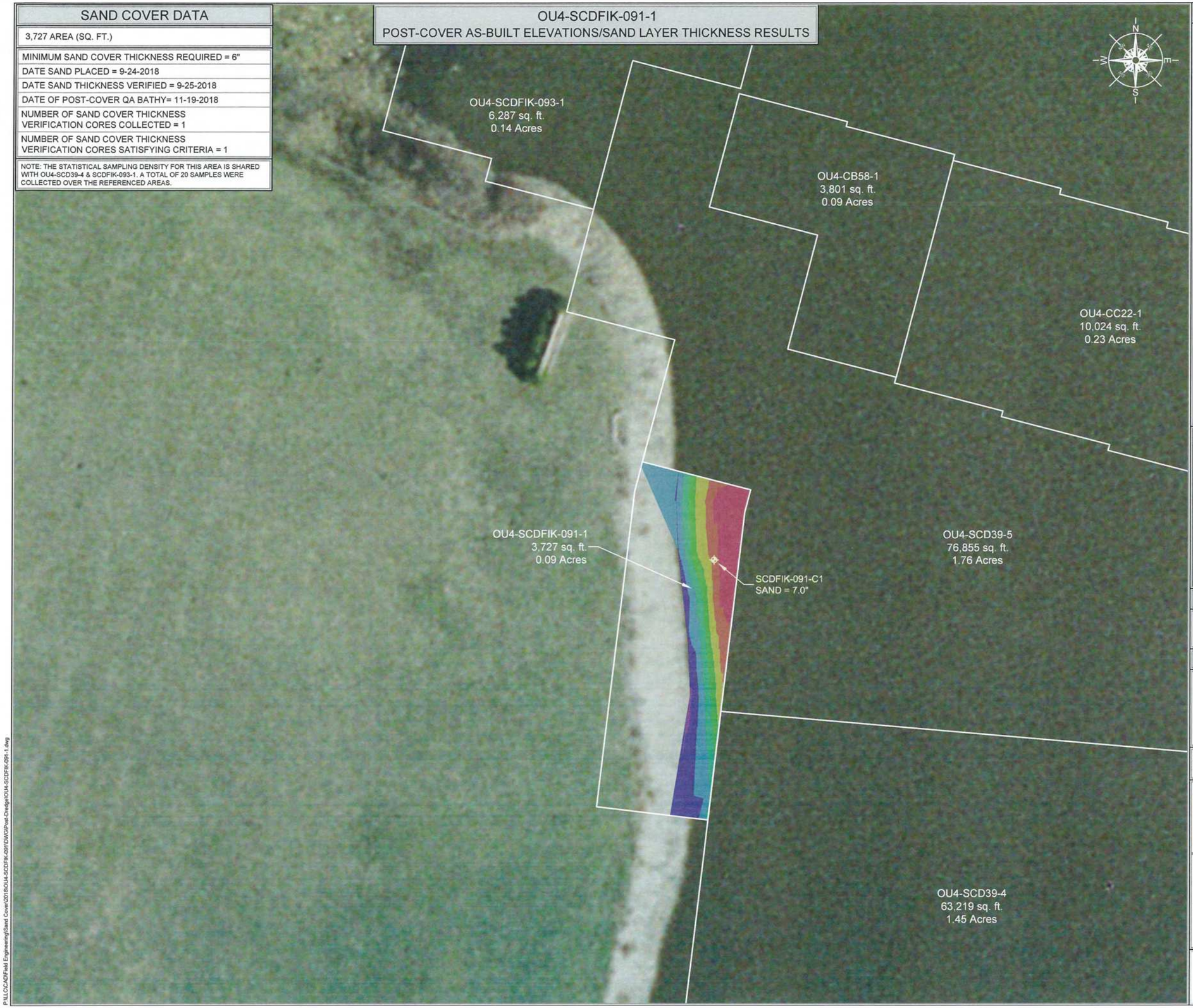
P:\LC\EC\DP\Field Engineering\Sand Cover\2018\OU4-SC53\DWG\Post-Dredge\OU4-SC53-1.dwg

SAND COVER DATA

3,727 AREA (SQ. FT.)
MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 9-24-2018
DATE SAND THICKNESS VERIFIED = 9-25-2018
DATE OF POST-COVER QA BATHY= 11-19-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 1
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 1

NOTE: THE STATISTICAL SAMPLING DENSITY FOR THIS AREA IS SHARED WITH OU4-SCD39-4 & SCDFIK-093-1. A TOTAL OF 20 SAMPLES WERE COLLECTED OVER THE REFERENCED AREAS.

OU4-SCDFIK-091-1
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS



LEGEND

MIN. EL.		MAX. EL.
572.00'	-	573.00'
573.00'	-	574.00'
574.00'	-	575.00'
575.00'	-	576.00'
576.00'	-	577.00'
577.00'	-	578.00'
578.00'	-	579.00'
579.00'	-	580.00'

OU# - # - #
- OU#: OPERABLE UNIT
- #: CAP/COVER AREA
- #: CAP/COVER MANAGEMENT UNIT

——— CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 30')

30 15 0 30 60

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-19-2018

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TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-SCDFIK-091-1.dwg
DRAWN BY: SHANE.NELSON
DATE: January 16, 2019
LAST REVISED: January 16, 2019
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-032

OU4-SCDFIK-091-1
1st RESIDUAL SAND COVER THICKNESS RESULTS AND LOCATIONS

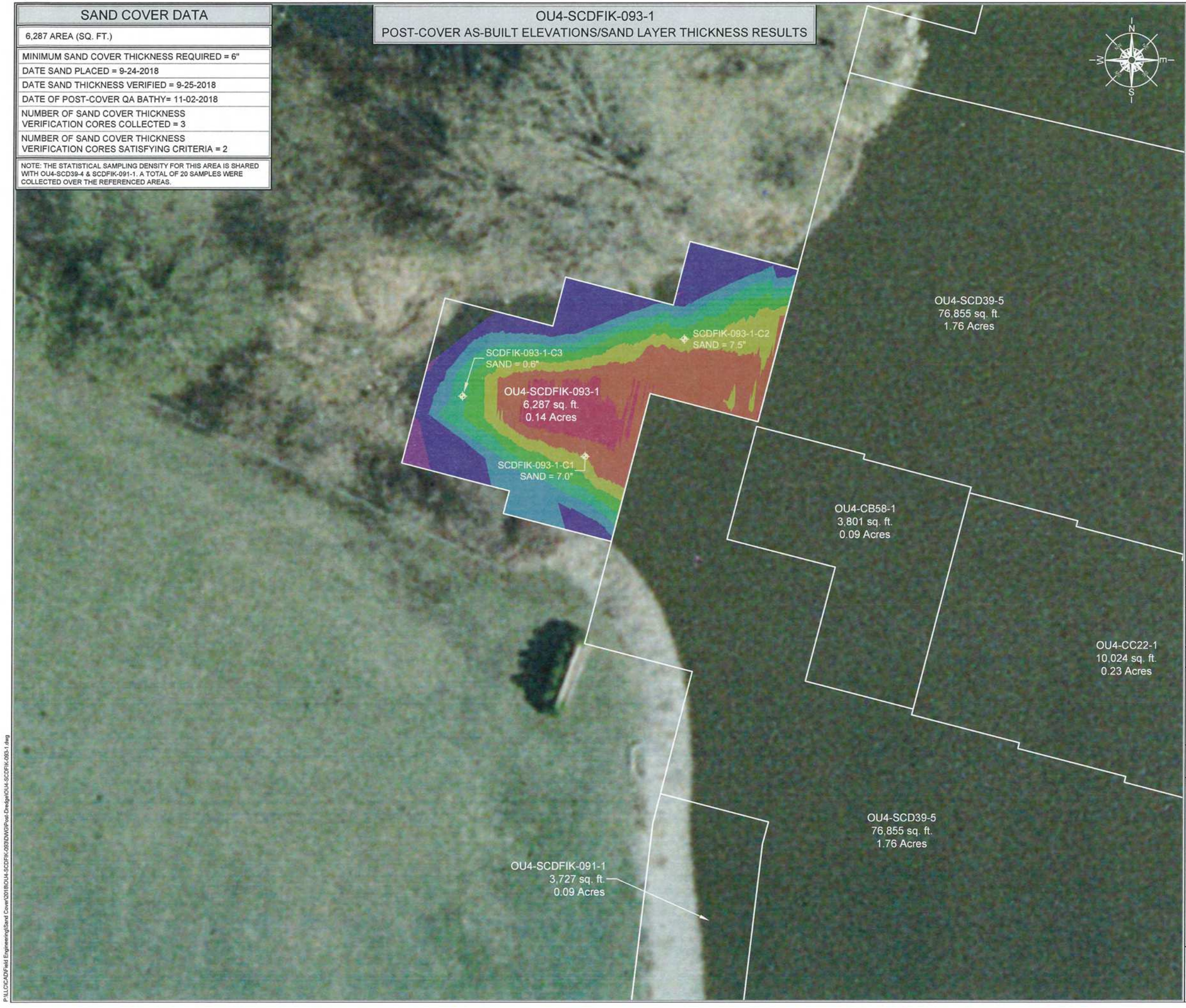
P:\LLC\CAD\Field Engineering\Sand Cover\2018\OU4-SCDFIK-091\DWG\Post-Dredge\OU4-SCDFIK-091-1.dwg

OU4-SCDFIK-093-1
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS

SAND COVER DATA

6,287 AREA (SQ. FT.)
MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 9-24-2018
DATE SAND THICKNESS VERIFIED = 9-25-2018
DATE OF POST-COVER QA BATHY= 11-02-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 3
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 2

NOTE: THE STATISTICAL SAMPLING DENSITY FOR THIS AREA IS SHARED WITH OU4-SCD39-4 & SCDFIK-091-1. A TOTAL OF 20 SAMPLES WERE COLLECTED OVER THE REFERENCED AREAS.



LEGEND

MIN. EL.		MAX. EL.
571.00'	-	572.00'
572.00'	-	573.00'
573.00'	-	574.00'
574.00'	-	575.00'
575.00'	-	576.00'
576.00'	-	577.00'
577.00'	-	578.00'
578.00'	-	579.00'

OU# - # - #
OPERABLE UNIT | CAP/COVER AREA | CAP/COVER MANAGEMENT UNIT

——— CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 30')

30 15 0 30 60

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-02-2018

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TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-SCDFIK-093-1.dwg
DRAWN BY: SHANE.NELSON
DATE: January 16, 2019
LAST REVISED: January 16, 2019
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-033

OU4-SCDFIK-093-1
1st RESIDUAL SAND COVER THICKNESS RESULTS AND LOCATIONS

P:\LLC\CAD\Field Engineering\Sand Cover\2018\OU4-SCDFIK-093\DWG\Port Dredge\OU4-SCDFIK-093-1.dwg

OU4-SCDFIK-092-1
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS

SAND COVER DATA

19,905 AREA (SQ. FT.)

MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 8-16-2018
DATE SAND THICKNESS VERIFIED = 8-20-2018
DATE OF POST-COVER QA BATHY= 8-25-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 5
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 5

NOTE: THE STATISTICAL SAMPLING DENSITY FOR THIS AREA IS SHARED WITH OU4-SCD35EFG-8. A TOTAL OF 11 SAMPLES WERE COLLECTED OVER THE REFERENCED AREAS.

OU4-SCD35EFG-7
11,632 sq. ft.
0.27 Acres

OU4-SCD35EFG-8
19,063 sq. ft.
0.44 Acres

OU4-SCD35EFG-6
84,898 sq. ft.
1.95 Acres

OU4-SCDFIK-092-1
19,905 sq. ft.
0.46 Acres

SCDFIK-092-1-C4
SAND = 7.0"

SCDFIK-092-1-C3
SAND = 10.5"

SCDFIK-092-1-C5
SAND = 7.0"

SCDFIK-092-1-C1
SAND = 8.5"

SCDFIK-092-1-C2
SAND = 7.0"

OU4-SCD35EFG-5
74,602 sq. ft.
1.71 Acres

LEGEND

MIN. EL.		MAX. EL.
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'
560.00'	-	561.00'
561.00'	-	562.00'
562.00'	-	563.00'
563.00'	-	564.00'
564.00'	-	565.00'
565.00'	-	566.00'
566.00'	-	567.00'
567.00'	-	568.00'
568.00'	-	569.00'
569.00'	-	570.00'
570.00'	-	571.00'
571.00'	-	572.00'
572.00'	-	573.00'

OU# - # - #
OPERABLE UNIT — CAP/COVER AREA — CAP/COVER MANAGEMENT UNIT

——— CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 8-25-2018

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TETRA TECH EC, INC.
1611 STATE STREET
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TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-SCDFIK-092-1.dwg
DRAWN BY: SHANE.NELSON
DATE: December 21, 2018
LAST REVISED: December 21, 2018
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-034

OU4-SCDFIK-092-1
1st RESIDUAL SAND COVER THICKNESS RESULTS AND LOCATIONS

P:\LCR\CAD\Field Engineering\Sand Cover\2018\OU4-SCDFIK-092\DWG\Post-Dredge\OU4-SCDFIK-092-1.dwg

SAND COVER DATA

1,310 AREA (SQ. FT.)
MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 10-30-2018
DATE SAND THICKNESS VERIFIED = 10-31-2018
DATE OF POST-COVER QA BATHY= 11-19-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 1
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 1

OU4-SCFIK-097-1
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS



LEGEND

MIN. EL.		MAX. EL.
577.00'	-	578.00'
578.00'	-	579.00'
579.00'	-	580.00'
580.00'	-	581.00'

OU# - # - #
OPERABLE UNIT | CAP/COVER AREA | CAP/COVER MANAGEMENT UNIT

——— CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 30')

30 15 0 30 60

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-19-2018

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CAD FILE: OU4-SCFIK-097-1.dwg
DRAWN BY: SHANE.NELSON
DATE: January 16, 2019
LAST REVISED: January 16, 2019
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-035

OU4-SCFIK-097-1
REMEDY SAND COVER THICKNESS RESULTS AND LOCATIONS

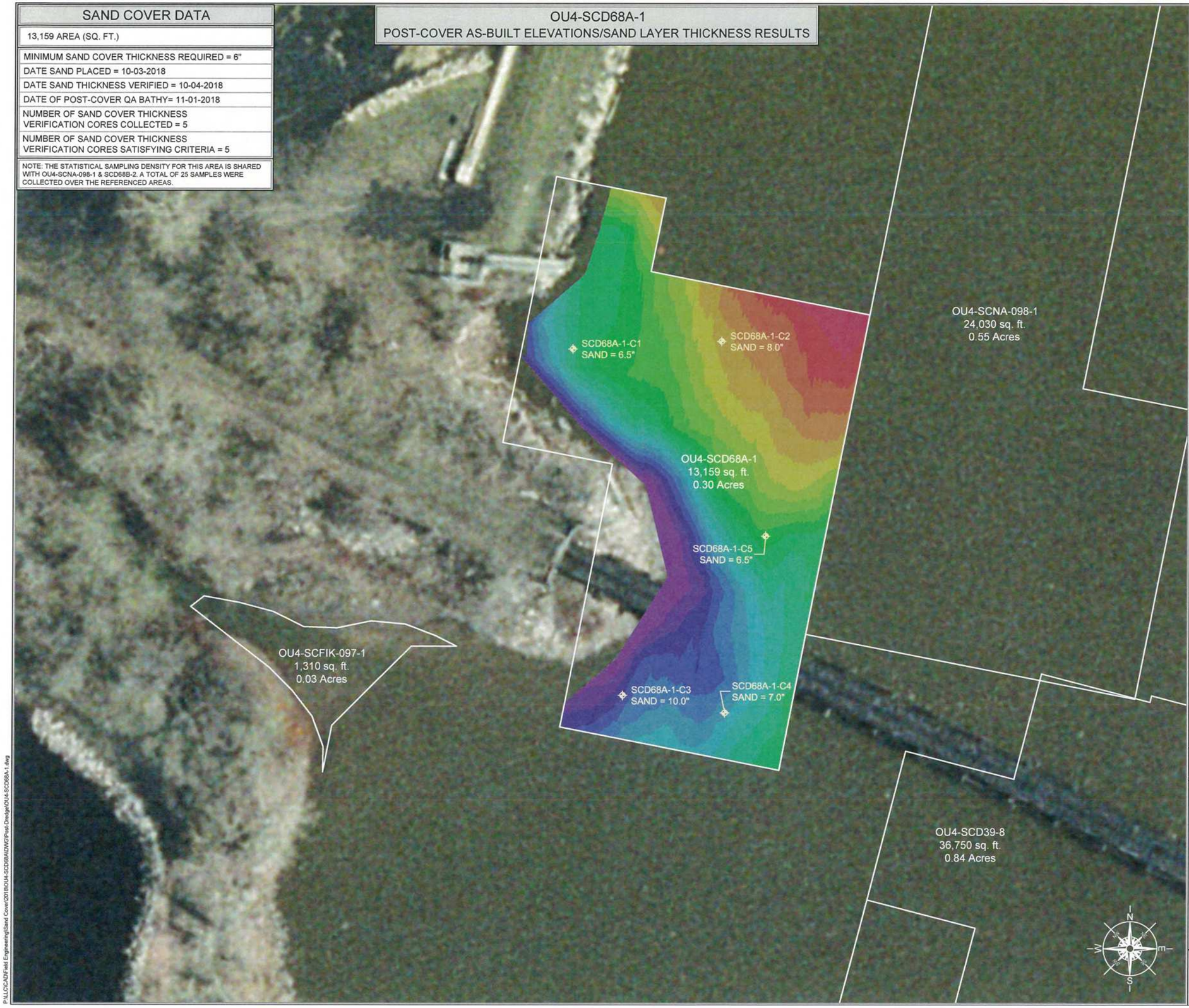
P:\LLC\CAD\Field Engineering\Sand Cover\2018\OU4-SCFIK-097\DWG\Post-Dredge\OU4-SCFIK-097-1.dwg

OU4-SCD68A-1
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS

SAND COVER DATA

13,159 AREA (SQ. FT.)
MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 10-03-2018
DATE SAND THICKNESS VERIFIED = 10-04-2018
DATE OF POST-COVER QA BATHY= 11-01-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 5
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 5

NOTE: THE STATISTICAL SAMPLING DENSITY FOR THIS AREA IS SHARED WITH OU4-SCNA-098-1 & SCD68B-2. A TOTAL OF 25 SAMPLES WERE COLLECTED OVER THE REFERENCED AREAS.



LEGEND

MIN. EL.		MAX. EL.
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'
560.00'	-	561.00'
561.00'	-	562.00'
562.00'	-	563.00'
563.00'	-	564.00'
564.00'	-	565.00'
565.00'	-	566.00'
566.00'	-	567.00'
567.00'	-	568.00'
568.00'	-	569.00'
569.00'	-	570.00'
570.00'	-	571.00'
571.00'	-	572.00'
572.00'	-	573.00'
573.00'	-	574.00'
574.00'	-	575.00'
575.00'	-	576.00'
576.00'	-	577.00'
577.00'	-	578.00'
578.00'	-	579.00'

OU# - # - #
OPERABLE UNIT — CAP/COVER AREA — CAP/COVER MANAGEMENT UNIT

——— CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 30')

30 15 0 30 60

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-01-2018

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CAD FILE: OU4-SCD68A-1.dwg
DRAWN BY: SHANE.NELSON
DATE: January 18, 2019
LAST REVISED: January 18, 2019
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-036

OU4-SCD68A-1
1st RESIDUAL SAND COVER
THICKNESS RESULTS AND LOCATIONS

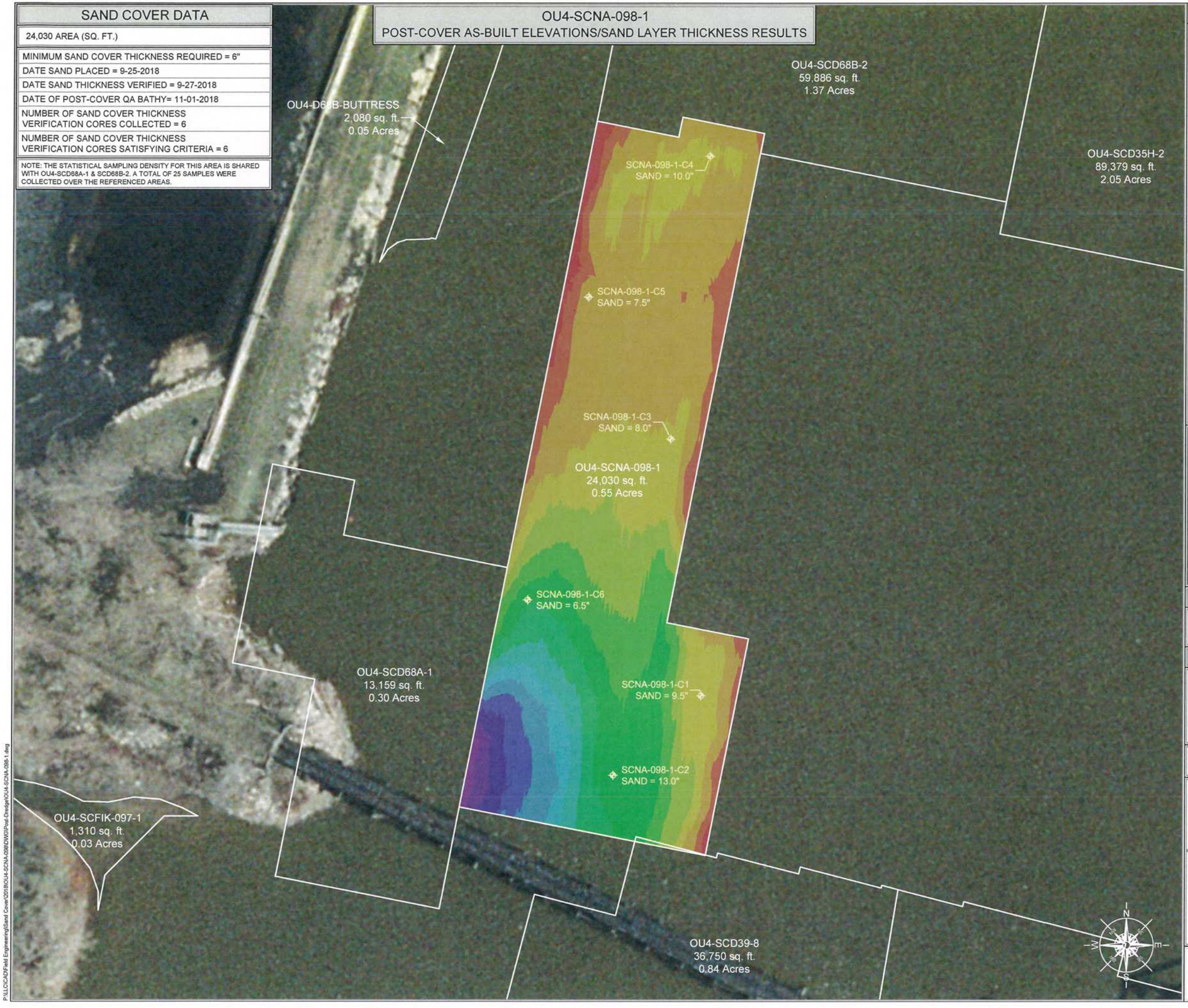
P:\LLOIC\ADM\Field Engineering\Sand Cover\2018\OU4-SCD68A\MXD\Post-Dredge\OU4-SCD68A-1.dwg

SAND COVER DATA

24,030 AREA (SQ. FT.)
MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 9-25-2018
DATE SAND THICKNESS VERIFIED = 9-27-2018
DATE OF POST-COVER QA BATHY= 11-01-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 6
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 6

NOTE: THE STATISTICAL SAMPLING DENSITY FOR THIS AREA IS SHARED WITH OU4-SCD68A-1 & SCD68B-2. A TOTAL OF 25 SAMPLES WERE COLLECTED OVER THE REFERENCED AREAS.

OU4-SCNA-098-1
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS



LEGEND

MIN. EL.		MAX. EL.
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'
560.00'	-	561.00'
561.00'	-	562.00'
562.00'	-	563.00'
563.00'	-	564.00'
564.00'	-	565.00'
565.00'	-	566.00'
566.00'	-	567.00'
567.00'	-	568.00'
568.00'	-	569.00'
569.00'	-	570.00'

OU# - # - #

OU# = OPERABLE UNIT
= CAP/COVER AREA
= CAP/COVER MANAGEMENT UNIT

——— CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-01-2018

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TETRA TECH EC, INC.
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CAD FILE: OU4-SCNA-098-1.dwg
DRAWN BY: SHANE.NELSON
DATE: January 21, 2019
LAST REVISED: January 21, 2019
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-037

OU4-SCNA-098-1
REMEDY SAND COVER THICKNESS RESULTS AND LOCATIONS

P:\LLC\CAD\Field Engineering\Sand Cover\2018\OU4-SCNA-098\CWS\Post-Dredge\OU4-SCNA-098-1.dwg

OU4-D68B-BUTTRESS
POST-BUTTRESS AS-BUILT ELEVATIONS

BUTTRESS DATA
2,080 AREA (SQ. FT.)
MIN. SAND/STONE (D50 = 0.75") THICKNESS REQUIRED = N/A
DATE SAND/STONE (D50 = 0.75") PLACED = 10-25-2018
DATE SAND/STONE (D50 = 0.75") THICKNESS VERIFIED = *
DATE OF POST-BUTTRESS QA BATHY= 10-25-2018
NUMBER OF SAND/STONE (D50 = 0.75") THICKNESS VERIFICATION CORES COLLECTED = *
NUMBER OF SAND/STONE (D50 = 0.75") THICKNESS VERIFICATION CORES SATISFYING CRITERIA = *

* J.F. BRENNAN QC DATA WAS USED FOR SAND AND STONE (D50=0.75") BUTTRESS VERIFICATION.

OU4-SCD68B-2
59,886 sq. ft.
1.37 Acres

OU4-D68B-BUTTRESS
2,080 sq. ft.
0.05 Acres

OU4-SCNA-098-1
24,030 sq. ft.
0.55 Acres

N
W
E
S

LEGEND

MIN. EL.		MAX. EL.
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'

OU# - # - #
- OU#: OPERABLE UNIT
- #: CAP/COVER AREA
- #: CAP/COVER MANAGEMENT UNIT

——— CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 20')

20 10 0 20 40

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-25-2018

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CAD FILE: OU4-D68B-BUTTRESS.dwg
DRAWN BY: SHANE.NELSON
DATE: January 24, 2019
LAST REVISED: February 6, 2019
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-038

OU4-D68B-BUTTRESS
REMEDY BUTTRESS BATHYMETRY AND AREAS

P:\LLC\CAD\Field Engineering\Capping\2018\OU4-D68B BUTTRESS\DWG\Post-Dredge\OU4-D68B-BUTTRESS.dwg

OU4-SCD35H-2
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS

SAND COVER DATA

89,379 AREA (SQ. FT.)
MINIMUM SAND COVER THICKNESS REQUIRED = 9"
DATE SAND PLACED = 10-09-2018
DATE SAND THICKNESS VERIFIED = 10-10-2018
DATE OF POST-COVER QA BATHY= 10-31-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 25
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 24

OU4-SCD68B-3
90,602 sq. ft.
2.08 Acres

OU4-SCD35H-4
63,089 sq. ft.
1.45 Acres

OU4-SCD35H-3
71,099 sq. ft.
1.63 Acres

OU4-SCD68B-2
59,886 sq. ft.
1.37 Acres

OU4-SCD35H-2
89,379 sq. ft.
2.05 Acres

OU4-SCNA-098-1
24,030 sq. ft.
0.55 Acres

SCD35H-2-C25 SAND = 14.0"
SCD35H-2-C19 SAND = 9.5"
SCD35H-2-C14 SAND = 14.0"
SCD35H-2-C4 SAND = 9.0"
SCD35H-2-C20 SAND = 12.0"
SCD35H-2-C9 SAND = 19.0"
SCD35H-2-C15 SAND = 9.0"
SCD35H-2-C24 SAND = 13.5"
SCD35H-2-C3 SAND = 18.0"
SCD35H-2-C10 SAND = 9.5"
SCD35H-2-C18 SAND = 11.5"
SCD35H-2-C5 SAND = 9.0"
SCD35H-2-C13 SAND = 11.0"
SCD35H-2-C21 SAND = 9.0"
SCD35H-2-C2 SAND = 10.5"
SCD35H-2-C8 SAND = 10.0"
SCD35H-2-C16 SAND = 10.5"
SCD35H-2-C11 SAND = 9.5"
SCD35H-2-C23 SAND = 12.5"
SCD35H-2-C17 SAND = 10.0"
SCD35H-2-C6 SAND = 9.5"
SCD35H-2-C22 SAND = 13.5"
SCD35H-2-C12 SAND = 10.5"
SCD35H-2-C7 SAND = 3.8"
SCD35H-2-C1 SAND = 9.5"

LEGEND

MIN. EL.		MAX. EL.
542.00'	-	543.00'
543.00'	-	544.00'
544.00'	-	545.00'
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'

OU# - # - #
OU# = OPERABLE UNIT
= CAP/COVER AREA
= CAP/COVER MANAGEMENT UNIT

CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 50')

50 25 0 50 100

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-31-2018

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CAD FILE: OU4-SCD35H-2.dwg
DRAWN BY: SHANE.NELSON
DATE: January 21, 2019
LAST REVISED: January 22, 2019
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-039

OU4-SCD35H-2
1st RESIDUAL SAND COVER
THICKNESS RESULTS AND LOCATIONS

P:\LLC\CAD\Field Engineering\Sand Cover\2018\OU4-SCD35H\DWG\Post-Dredge\OU4-SCD35H-2.dwg

OU4-SCD35H-3
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS

SAND COVER DATA

71,099 AREA (SQ. FT.)

MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 10-15-2018
DATE SAND THICKNESS VERIFIED = 10-16-2018
DATE OF POST-COVER QA BATHY= 10-31-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 18
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 17

OU4-SCD68B-4
60,258 sq. ft.
1.38 Acres

OU4-SCD35H-7
65,845 sq. ft.
1.51 Acres

OU4-SCD35H-6
66,496 sq. ft.
1.53 Acres

OU4-SCD68B-3
90,602 sq. ft.
2.08 Acres

OU4-SCD35H-3
71,099 sq. ft.
1.63 Acres

OU4-SCD35H-4
63,089 sq. ft.
1.45 Acres

OU4-SCD35H-2
89,379 sq. ft.
2.05 Acres

SCD35H-3-C18
SAND = 7.0"

SCD35H-3-C17
SAND = 6.0"

SCD35H-3-C10
SAND = 4.3"

SCD35H-3-C11
SAND = 6.0"

SCD35H-3-C9
SAND = 6.5"

SCD35H-3-C12
SAND = 7.0"

SCD35H-3-C8
SAND = 7.0"

SCD35H-3-C13
SAND = 7.0"

SCD35H-3-C7
SAND = 7.0"

SCD35H-3-C14
SAND = 6.0"

SCD35H-3-C6
SAND = 9.0"

SCD35H-3-C5
SAND = 9.0"

SCD35H-3-C15
SAND = 7.0"

SCD35H-3-C4
SAND = 7.5"

SCD35H-3-C16
SAND = 8.0"

SCD35H-3-C3
SAND = 6.0"

SCD35H-3-C2
SAND = 8.0"

SCD35H-3-C1
SAND = 6.0"

LEGEND

MIN. EL.		MAX. EL.
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'

OU# - # - #
- OU#: OPERABLE UNIT
- #: CAP/COVER AREA
- #: CAP/COVER MANAGEMENT UNIT

——— CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 100')

100 50 0 100 200

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-31-2018

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CAD FILE: OU4-SCD35H-3.dwg
DRAWN BY: SHANE.NELSON
DATE: January 22, 2019
LAST REVISED: January 24, 2019
CHECKED BY: REG

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LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-040

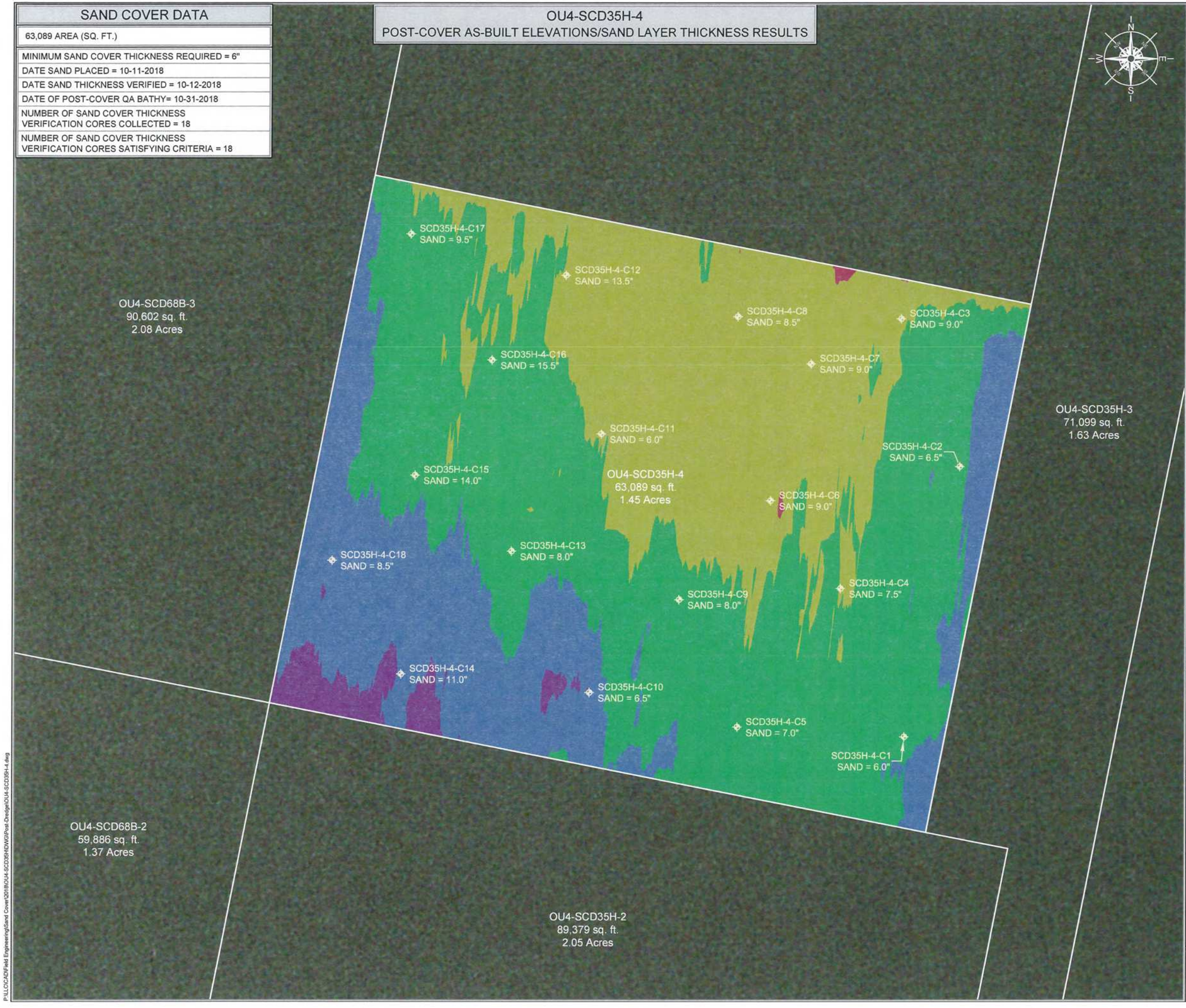
OU4-SCD35H-3
1st RESIDUAL SAND COVER
THICKNESS RESULTS AND LOCATIONS

P:\LLC\CAD\Field Engineering\Sand Cover\2018\OU4-SCD35H\DWG\Post-Dredge\OU4-SCD35H-3.dwg

OU4-SCD35H-4
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS

SAND COVER DATA

63,089 AREA (SQ. FT.)
MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 10-11-2018
DATE SAND THICKNESS VERIFIED = 10-12-2018
DATE OF POST-COVER QA BATHY= 10-31-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 18
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 18



LEGEND

MIN. EL.		MAX. EL.
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'

OU# - # - #
OPERABLE UNIT — CAP/COVER AREA — CAP/COVER MANAGEMENT UNIT

CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-31-2018

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DATE: January 22, 2019
LAST REVISED: February 6, 2019
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Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-041

OU4-SCD35H-4
1st RESIDUAL SAND COVER THICKNESS RESULTS AND LOCATIONS

P:\LLC\CAD\Field Engineering\Sand Cover\2018\OU4-SCD35H\DWG\Post-Dredge\OU4-SCD35H-4.dwg

OU4-SCD35H-6
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS

SAND COVER DATA

66,496 AREA (SQ. FT.)
MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 10-18-2018
DATE SAND THICKNESS VERIFIED = 10-19-2018
DATE OF POST-COVER QA BATHY= 10-31-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 18
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 18

OU4-SCD35H-7
65,845 sq. ft.
1.51 Acres

OU4-SCD68B-4
60,258 sq. ft.
1.38 Acres

SCD35H-6-C18
SAND = 8.5"

SCD35H-6-C12
SAND = 7.5"

SCD35H-6-C7
SAND = 8.5"

SCD35H-6-C3
SAND = 8.0"

SCD35H-6-C13
SAND = 8.5"

SCD35H-6-C16
SAND = 6.5"

SCD35H-6-C8
SAND = 7.5"

SCD35H-6-C2
SAND = 6.0"

SCD35H-6-C11
SAND = 6.5"

SCD35H-6-C17
SAND = 8.0"

OU4-SCD35H-6
66,496 sq. ft.
1.53 Acres

SCD35H-6-C4
SAND = 9.0"

OU4-SCD35H-3
71,099 sq. ft.
1.63 Acres

SCD35H-6-C14
SAND = 7.0"

SCD35H-6-C6
SAND = 7.5"

SCD35H-6-C9
SAND = 6.5"

SCD35H-6-C15
SAND = 6.0"

SCD35H-6-C1
SAND = 10.0"

SCD35H-6-C10
SAND = 6.0"

SCD35H-6-C5
SAND = 6.0"

OU4-SCD68B-3
90,602 sq. ft.
2.08 Acres

LEGEND

MIN. EL.		MAX. EL.
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'

OU# - # - #
OPERABLE UNIT — CAP/COVER AREA — CAP/COVER MANAGEMENT UNIT

CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-31-2018

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DRAWN BY: SHANE.NELSON
DATE: January 22, 2019
LAST REVISED: January 22, 2019
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-042

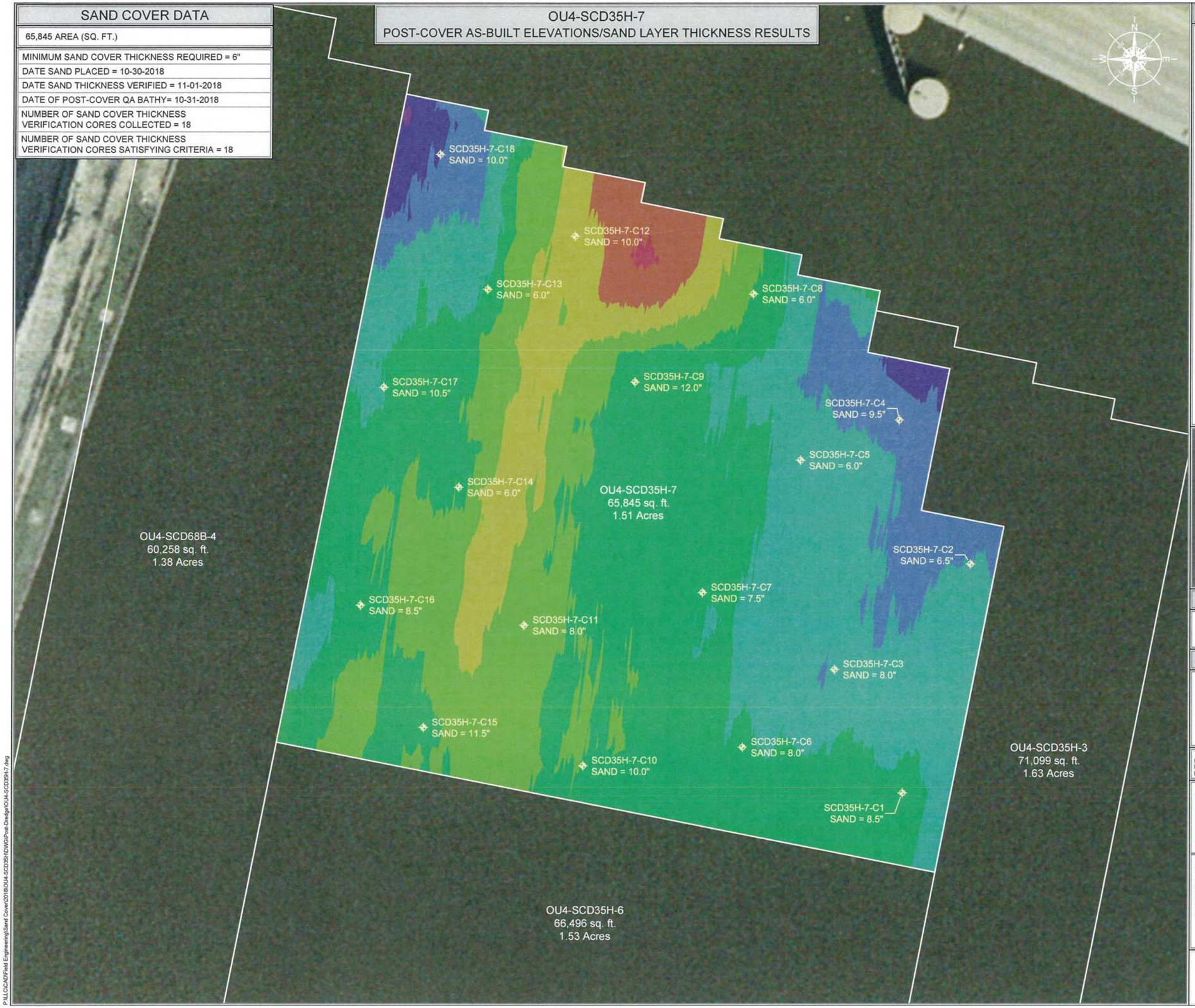
OU4-SCD35H-6
1st RESIDUAL SAND COVER
THICKNESS RESULTS AND LOCATIONS

P:\LLC\CAD\Field Engineering\Sand Cover\2019\BG\1A-SCD35H\DWG\Post-Dredge\OU4-SCD35H-6.dwg

OU4-SCD35H-7
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS

SAND COVER DATA

65,845 AREA (SQ. FT.)
MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 10-30-2018
DATE SAND THICKNESS VERIFIED = 11-01-2018
DATE OF POST-COVER QA BATHY= 10-31-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 18
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 18



LEGEND

MIN. EL.		MAX. EL.
543.00'	-	544.00'
544.00'	-	545.00'
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'

OU# - # - #
OPERABLE UNIT — CAP/COVER AREA — CAP/COVER MANAGEMENT UNIT

——— CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-31-2018

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CAD FILE: OU4-SCD35H-7.dwg
DRAWN BY: SHANE.NELSON
DATE: January 22, 2019
LAST REVISED: January 24, 2019
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-043

OU4-SCD35H-7
1st RESIDUAL SAND COVER THICKNESS RESULTS AND LOCATIONS

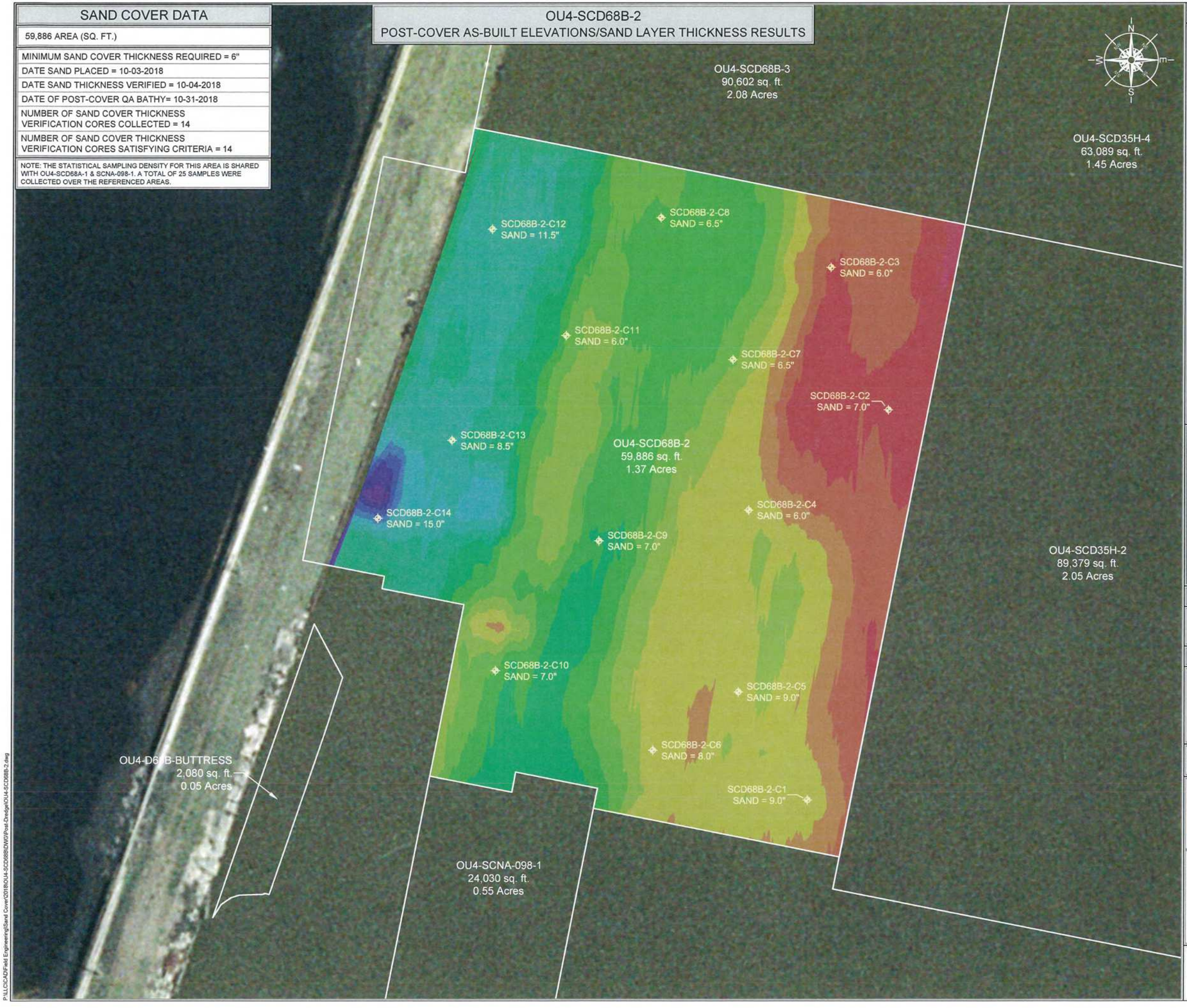
P:\LLC\SCAD\Field Engineering\Sand Cover\2018\OU4-SCD35H\ACWD\Post-Dredge\OU4-SCD35H-7.dwg

OU4-SCD68B-2
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS

SAND COVER DATA

59,886 AREA (SQ. FT.)
MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 10-03-2018
DATE SAND THICKNESS VERIFIED = 10-04-2018
DATE OF POST-COVER QA BATHY= 10-31-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 14
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 14

NOTE: THE STATISTICAL SAMPLING DENSITY FOR THIS AREA IS SHARED WITH OU4-SCD68A-1 & SCNA-098-1. A TOTAL OF 25 SAMPLES WERE COLLECTED OVER THE REFERENCED AREAS.



LEGEND

MIN. EL.		MAX. EL.
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'
560.00'	-	561.00'
561.00'	-	562.00'
562.00'	-	563.00'
563.00'	-	564.00'
564.00'	-	565.00'
565.00'	-	566.00'

OU# - # - #
- OU#: OPERABLE UNIT
- #: CAP/COVER AREA
- #: CAP/COVER MANAGEMENT UNIT

CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-31-2018

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1611 STATE STREET
GREEN BAY, WI 54304
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CAD FILE: OU4-SCD68B-2.dwg
DRAWN BY: SHANE.NELSON
DATE: January 24, 2019
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Fox River
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FIGURE 10-044

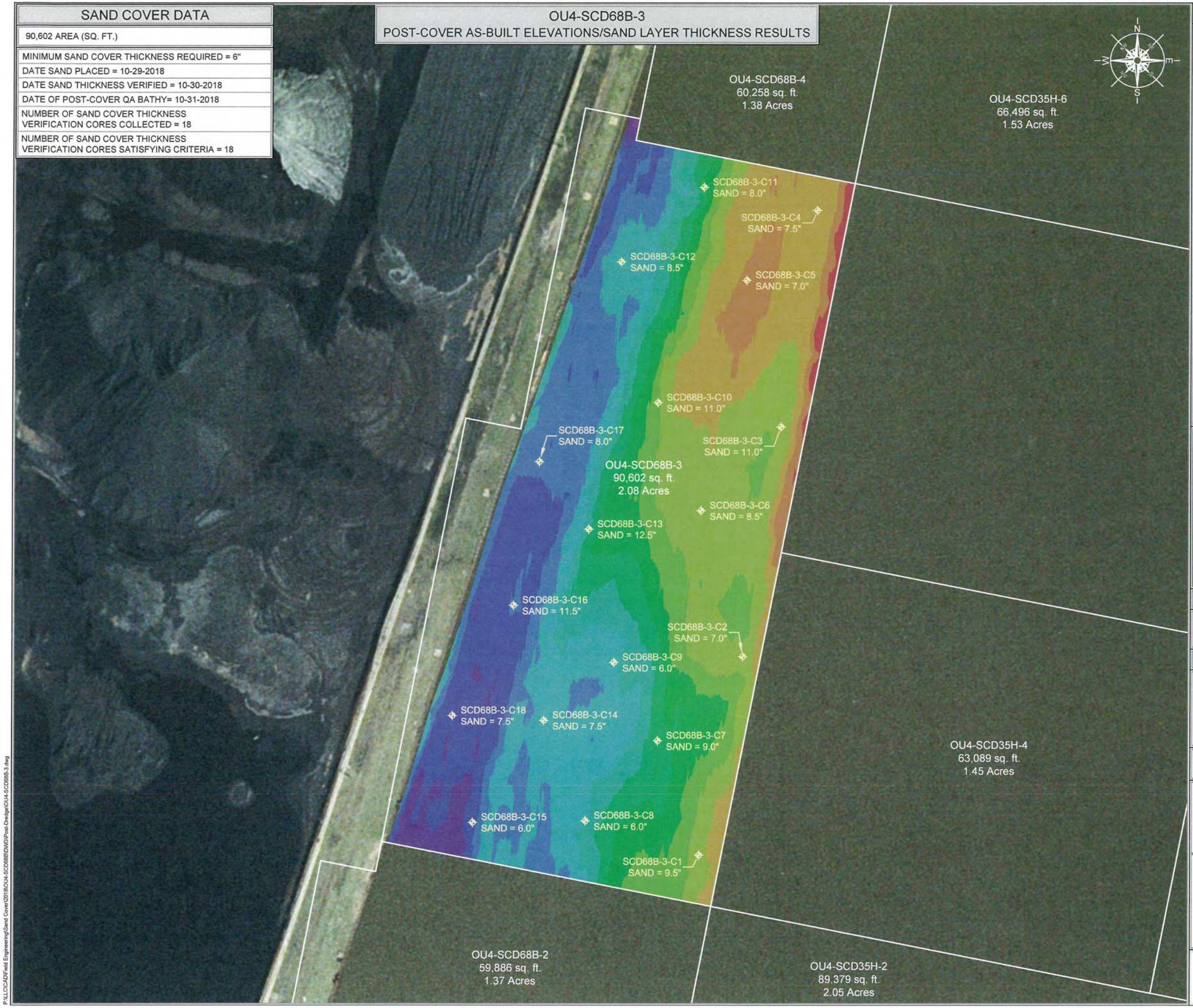
OU4-SCD68B-2
1st RESIDUAL SAND COVER THICKNESS RESULTS AND LOCATIONS

P:\LLC\CAD\Field Engineering\Sand Cover\2019\OU4-SCD68B\MXD\Post-Dredge\OU4-SCD68B-2.dwg

OU4-SCD68B-3
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS

SAND COVER DATA

90,602 AREA (SQ. FT.)
MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 10-29-2018
DATE SAND THICKNESS VERIFIED = 10-30-2018
DATE OF POST-COVER QA BATHY= 10-31-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 18
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 18



LEGEND

MIN. EL.		MAX. EL.
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'

OU# - # - #

OU# = OPERABLE UNIT
= CAP/COVER AREA
= CAP/COVER MANAGEMENT UNIT

——— CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-31-2018

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CAD FILE: OU4-SCD68B-3.dwg
DRAWN BY: SHANE.NELSON
DATE: January 24, 2019
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Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-045

OU4-SCD68B-3
1st RESIDUAL SAND COVER THICKNESS RESULTS AND LOCATIONS

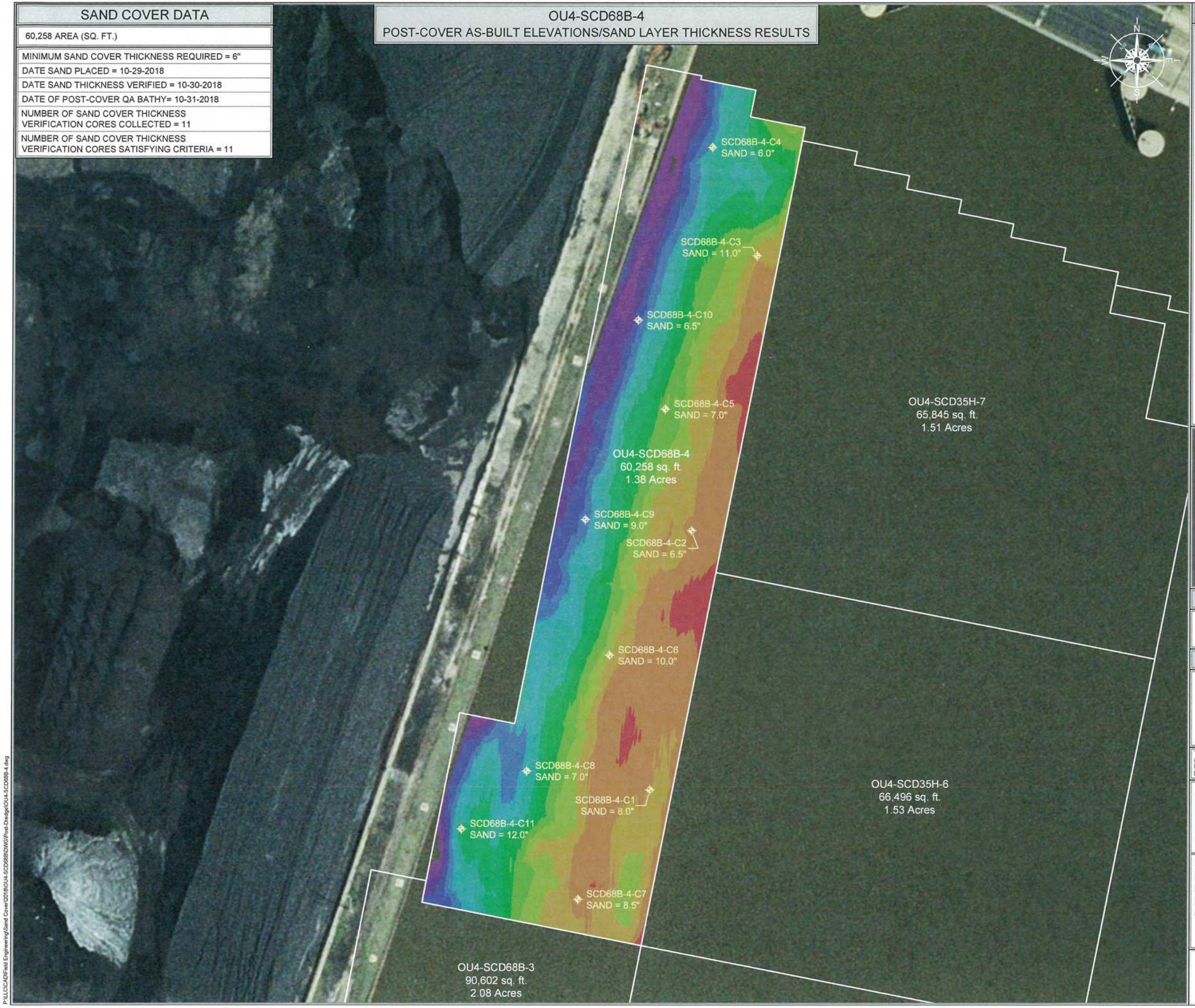
P:\LLC\CAD\Field Engineering\Sand Cover\2018\OU4-SCD68B\DWG\Post Dredge\OU4-SCD68B-3.dwg

SAND COVER DATA

60,258 AREA (SQ. FT.)

MINIMUM SAND COVER THICKNESS REQUIRED = 6"
DATE SAND PLACED = 10-29-2018
DATE SAND THICKNESS VERIFIED = 10-30-2018
DATE OF POST-COVER QA BATHY= 10-31-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 11
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 11

OU4-SCD68B-4
POST-COVER AS-BUILT ELEVATIONS/SAND LAYER THICKNESS RESULTS



LEGEND

MIN. EL.		MAX. EL.
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'

OU# - # - #

OU# = OPERABLE UNIT; # = CAP/COVER AREA; # = CAP/COVER MANAGEMENT UNIT

——— CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-31-2018

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CAD FILE: OU4-SCD68B-4.dwg
DRAWN BY: SHANE.NELSON
DATE: January 24, 2019
LAST REVISED: January 24, 2019
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-046

OU4-SCD68B-4
1st RESIDUAL SAND COVER THICKNESS RESULTS AND LOCATIONS

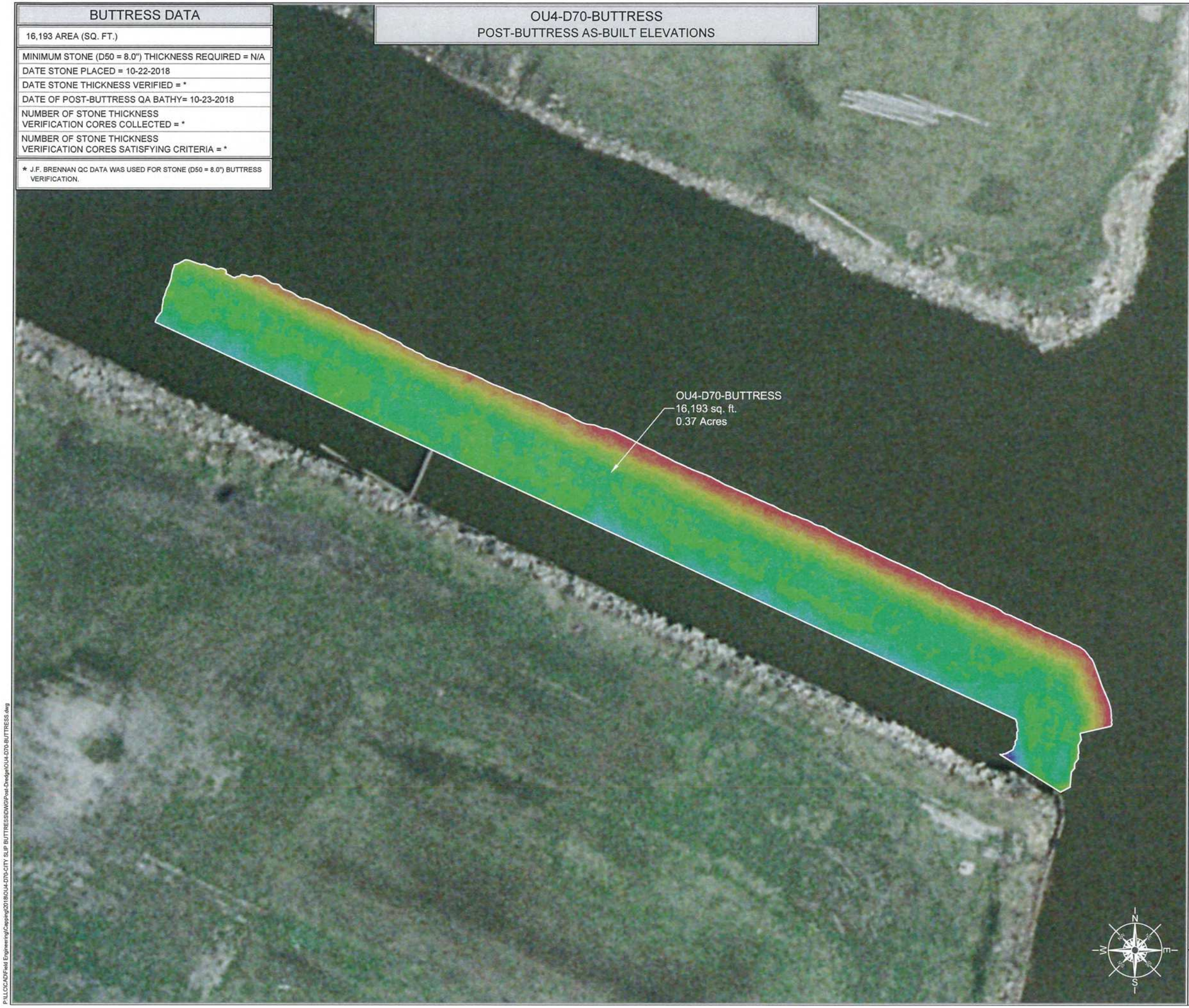
P:\LLC\CAD\Field Engineering\Sand Cover\2018\OU4-SCD68B\DWG\Post-Dredge\OU4-SCD68B-4.dwg

BUTTRESS DATA

16,193 AREA (SQ. FT.)
MINIMUM STONE (D50 = 8.0") THICKNESS REQUIRED = N/A
DATE STONE PLACED = 10-22-2018
DATE STONE THICKNESS VERIFIED = *
DATE OF POST-BUTTRESS QA BATHY= 10-23-2018
NUMBER OF STONE THICKNESS VERIFICATION CORES COLLECTED = *
NUMBER OF STONE THICKNESS VERIFICATION CORES SATISFYING CRITERIA = *

* J.F. BRENNAN QC DATA WAS USED FOR STONE (D50 = 8.0") BUTTRESS VERIFICATION.

OU4-D70-BUTTRESS
POST-BUTTRESS AS-BUILT ELEVATIONS



LEGEND

MIN. EL.		MAX. EL.
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'
560.00'	-	561.00'
561.00'	-	562.00'
562.00'	-	563.00'
563.00'	-	564.00'
564.00'	-	565.00'
565.00'	-	566.00'
566.00'	-	567.00'
567.00'	-	568.00'
568.00'	-	569.00'
569.00'	-	570.00'
570.00'	-	571.00'
571.00'	-	572.00'
572.00'	-	573.00'
573.00'	-	574.00'
574.00'	-	575.00'

OU# - # - #

OU# = OPERABLE UNIT
= CAP/COVER AREA
= CAP/COVER MANAGEMENT UNIT

——— CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 40')

40 20 0 40 80

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 10-23-2018

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CAD FILE: OU4-D70-BUTTRESS.dwg
DRAWN BY: SHANE.NELSON
DATE: January 25, 2019
LAST REVISED: February 6, 2019
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 10-047

OU4-D70-BUTTRESS
REMEDY BUTTRESS BATHYMETRY AND AREAS

P:\LLC\CAD\Field Engineering\Capping\2018\OU4-D70-CITY SUP BUTTRESS\DWG\Post-Dredge\OU4-D70-BUTTRESS.dwg

11. ARMOR STONE PLACEMENT

This section summarizes cap placement, design, and thickness verification, including the Mechanical Placement Plant summary information for the following:

- An area-by-area summary of the armor stone spreading operations, including dates to track the movement of the Mechanical Placement Plant through OU4
- Summary tables of completed armor stone placement areas, daily production rates, and volume estimates for armor stone placed
- Descriptions of engineered cap designs
- Information on QA/QC for the armor stone sources
- A description of placement operations, including pre-placement activities, such as the staging of cap and cover aggregates
- Methods for tracking the progress and efficiency of armor stone placement
- Thickness measurement techniques and results from QA sampling of the armor stone placement
- Methods for tracking armor stone volume and mass balances
- Estimates of the total volume of armor stone volume used
- Statistical analysis of the armor stone thickness data to demonstrate that 2018 activities achieved the specified cap thickness requirements

The volume of armor stone placed during the 2018 season was 15,825 cy (see Table 11-3), all of which was placed by the Mechanical Placement Plant. **Figures 11-1 through 11-7**, showing cap as-built thickness results, post-cap as-built surface elevations, and cap site information, are included in the figures at the end of this report.

11.1 Armor Stone Placement Overview

On September 25, 2018 the Mechanical Placement Plant began armor stone spreading in SRA-06 in utility corridor 20 (DUTIL-020). Armor stone placement was concluded on November 15, 2018 in SRA-06. Armor stone was also placed in cap CB58 and CC22 on November 7, 2018. Schedules for the engineered cap spreading and mechanical placement operations are provided in Table 11-1 and Table 11-2.

All armor stone placement operations were staged at the LFRR Processing Facility site.

Table 11-1. 2018 Completed Armor Stone Spreading Schedule

Area	Unit	Schedule	Cap A (acres)	Cap B (acres)	Cap C (acres)	Shoreline Cap (acres)	SRA Cap (acres)	Pre-Spread QC Survey Date	Post-Spread QC Survey Date	Observations/ Challenges
CB58	1	11/7	--	0.09	--	--	--	10/31/2018	11/8/2018	N/A
CC22	1	11/7	--	--	0.23[1]	--	--	10/31/2018	11/8/2018	N/A
SRA-06	1-2	9/24-11/13	--	--	--	--	2.81	9/19/2018	11/15/2018	N/A

Notes

1 Cap CC22 not counted as a completed cap. Sand and armor stone were placed, but the quarry spall placement was not completed.

Abbreviations and Acronyms:
NA – Not Applicable
QC – quality control
SRA – Special Remediation Area

Table 11-2. 2018 Completed Quarry Spall Mechanical Placement Schedule

Area	Unit	Schedule	Cap C (acres)	Pre-Placement QA Survey Date	Post-Placement QA Survey Date	Observations/Challenges
		No quarry spall management units were completed in 2018				
TOTALS						

Abbreviations and Acronyms:
QA – quality assurance

11.2 Engineered Cap Placement Design

The 2017/2018 and Beyond Phase 2B Work Plan (Tetra Tech et al. 2018) presented the planned scope of work for placing engineered caps in OU4. The engineering basis for the caps is provided in the 100 Percent Design Report, Volume 2 (Tetra Tech et al. 2012a).

The caps consist of a sand chemical isolation layer overlain by a gravel-sized armor stone. For Type C caps, the armor stone layer functions as a filter layer between the underlying sand and an overlying larger diameter quarry spall. The thickness of the chemical isolation layer was dependent on the PCB concentration in the top 6 inches of sediment below the cap, as summarized below. For locations in the navigation channel, a Type C cap was used. The sediment concentration governing the type of cap (A, B, or C) placed in cap areas was based on surface sediment sampling or the presence of PCBs at a concentration of 50 ppm or higher at any depth, in accordance with the CQAPP (Tetra Tech et al. 2015a).

- **Cap A** – This is a sand and gravel cap applicable where PCB concentrations are less than 10 ppm in the surficial layer of the sediment. The cap consists of a minimum of 3 inches of sand (equivalent to a targeted average thickness of 6 inches within the placement area, considering project over-placement allowances), overlain by a minimum of 4 inches of placed armor stone (an average of 7 inches with project over-placement allowances). Therefore, A caps have a minimum thickness of 7 inches, or an average thickness of 13 inches with anticipated over-placement allowances. No Type A caps were placed in 2018.
- **Cap B** – This is a sand and gravel cap applicable where PCB concentrations are greater than or equal to 10 ppm and less than 50 ppm in the surficial layer of the sediment. The cap consists of a minimum of 6 inches of placed sand (average of 9 inches with project over-placement allowances), overlain by a minimum 4 inches of placed armor stone (average of 7 inches with project over-placement allowances). Therefore, B caps have a minimum thickness of 10 inches, or an average thickness of 16 inches with anticipated over-placement allowances.
- **Cap C** – These caps are applicable to conditions where PCB concentrations are equal to or greater than 50 ppm anywhere in the sediment column, except for the top 18 inches. This cap consists of a minimum 6 inches of placed sand (average of 9 inches with project over-placement allowances), overlain by a minimum of 3 inches of placed filter layer armor stone (average of 6 inches with project over-placement allowances), overlain by a minimum of 12 inches of a quarry spall erosion protection layer (average of 18 inches with project over-placement allowances). Therefore, a C cap has a minimum thickness of 21 inches, or an average thickness of 33 inches with anticipated over-placement allowances. Armor stone was installed over C cap CC22. Quarry stone mechanical placement was initiated, but not completed. Therefore, no Type C caps were completed in 2018.
- **SRA Cap –** An SRA Cap was placed in SRA-06 located in the Green Bay Water Utility-owned utility 20 corridor (DUTIL-020). The SRA-06 cap, consisting of sand and D50 = 1.5-inch armor stone, is described in the SRA-06 Tech Memo (Tetra Tech 2018b).

Additional details of the specifications for the cap sand and armor stone components are provided in the 100 Percent Design Report, Volume 2 (Tetra Tech et al. 2012a).

11.3 Armor Stone Cap Source Information and QA/QC

Badgerland Aggregates provided the armor stone used for capping in 2018. The armor stone supplied by Badgerland Aggregates came from the Manitowoc County Q pit. In accordance with the CQAPP (Tetra Tech et al. 2015a), prior to the use of any imported aggregate, a Borrow Source Characterization Report (Appendix N) was prepared for each aggregate source to document that each source met the specified

physical and chemical properties. The armor stone delivered by Badgerland Aggregates met all project specification requirements.

In accordance with the 100 Percent Design Report, Volume 2 (Appendix C, Section 35 43 00), suppliers are required to perform testing for particle size according to ASTM C136 standards. Badgerland Aggregates performed this testing at a rate of one test per 5,000 cy. Additionally, the supplier was required to provide one analysis for soundness (ASTM C88) and abrasion (ASTM C535) per proposed source. The results of these testing activities are included in Appendix N.

Delivered quantities were consistently tracked. After making a delivery of armor stone to the LFRR Processing Facility, the driver dropped off the weight ticket for the load in a mailbox on the LFRR Processing Facility.

11.4 Armor Stone Placement Operations

Armor stone placement activities were performed mechanically. This procedure involved a land-based sand/armor stone handler and wheeled loader to load barges. Barges were then transported to the placement sites using a tug boat. At the placement site, an excavator on the deck of a barge offloaded the cap sand and armor stone into designated locations with the assistance of GPS.

The volume of placed armor stone was measured and tracked. To collect QC measurements, buckets were positioned in armor stone areas prior to armor stone placement to evaluate armor stone thickness and spread variability. The results of the QC measurements were provided to the LLC and A/OT and are provided in Section 11.6. The elevations of the top of cap sand and armor stone layers that were placed using mechanical means were typically determined using poling data in conjunction with multi-beam echosounder results.

11.5 Armor Stone Cover Progress and Production Tracking

On each day of placement, J.F. Brennan identified lanes within working areas where the armor stone was placed in the previous 24-hour period. Monitoring progress data allowed Tetra Tech and J.F. Brennan to better manage and schedule QA/QC activities and cap placement activities, and to ensure the availability of an adequate volume of armor stone. Table 11-3 summarizes the Mechanical Placement Plant armor stone production rates, by day and subarea.

Table 11-3. 2018 Daily Estimated Armor Stone Placement Rates[1]

Date	NOH	GOH	Average Efficiency	Average cy/GOH	Volume per Day – Barge Survey (cy)	SF	Area
9/24/2018	0	12	0%	0.00	0.00	-	SRA-06-2
9/25/2018	1.75	12	15%	15.06	180.70	1,456	SRA-06-2
9/26/2018	7.25	12	60%	58.43	701.20	8,773	SRA-06-2
9/27/2018	7.25	12	60%	72.73	872.70	6,720	SRA-06-2
9/28/2018	5	12	42%	54.59	655.10	4,175	SRA-06-2
10/1/2018	6.25	12	52%	73.88	886.60	4,401	SRA-06-2
10/2/2018	6.5	12	54%	71.93	863.10	10,034	SRA-06-2
10/3/2018	8	12	67%	86.76	1041.10	8,381	SRA-06-2
10/4/2018	6.75	12	56%	91.27	1095.25	7,638	SRA-06-2
10/5/2018	6.75	12	56%	51.60	619.20	9,617	SRA-06-2
10/8/2018	3.5	6	58%	39.60	237.60	4,210	SRA-06-2

Date	NOH	GOH	Average Efficiency	Average cy/GOH	Volume per Day – Barge Survey (cy)	SF	Area
10/9/2018	7	12	58%	31.14	373.70	2,237	SRA-06-2
10/10/2018	8.5	12	71%	30.38	364.60	2,568	SRA-06-2
10/11/2018	8.25	12	69%	34.11	409.30	5,365	SRA-06-2
10/12/2018	8.75	12	73%	34.34	412.10	4,382	SRA-06-2
10/13/2018	4.25	6	71%	31.63	189.80	3,855	SRA-06-2
10/15/2018	0	6	0%	0.00	0.00	-	SRA-06-2
10/16/2018	4	12	33%	18.54	222.50	3,922	SRA-06-2
10/25/2016	3.25	6	54%	48.28	289.70	3,041	SRA-06-1
10/26/2018	5	9	56%	83.26	749.30	4,325	SRA-06-1
10/27/2018	4	6	67%	80.67	484.00	4,451	SRA-06-1
10/29/2019	7	12	58%	59.56	714.70	9,041	SRA-06-1
10/30/2019	8	12	67%	41.35	496.20	9,687	SRA-06-1
10/31/2019	6.75	12	56%	38.28	459.40	7,778	SRA-06-1
11/1/2019	4.75	12	40%	38.99	467.90	4,435	SRA-06-1
11/2/2019	8	12	67%	79.63	955.60	8,124	SRA-06-1
11/5/2018	7	12	58%	39.86	478.30	6,624	SRA-06-1
11/6/2018	7.5	18	42%	26.18	471.20	9,045	SRA-06-1
11/7/2018	7	18.5	38%	33.50	619.70	19,200	SRA-06-1, CC22, CB58
11/13/2018	1.75	2.5	70%	40.00	100.00	1,540	SRA-06-1
11/14/2018	6	12	50%	21.33	255.90	6,105	SRA-06-1,2
11/15/2018	3.25	12	27%	13.23	158.80	3,789	SRA-06-1,2
TOTALS	**179**	**354**	**51%[2]**	**44.70[3]**	**15,825**	**184,919**	

Notes:
[1] All data are derived from J.F. Brennan daily reports.
[2] Average seasonal efficiency
[3] Average seasonal cy/GOH

Abbreviations and Acronyms:
cy – cubic yards
GOH – gross operational hours
J.F. Brennan – J.F. Brennan Company, Inc.
NOH – net operational hours
SF – square feet

11.6 Engineered Cap Thickness Verification and Environmental Monitoring

The 2018 field season engineered cap thickness verification and environmental monitoring procedures and results are presented in this section. In general, QA activities were performed separately from J.F. Brennan's QC activities. A representative from the A/OT was normally present when QA activities were performed and Foth personnel audited approximately 20 percent of the QA activities.

Following sand placement, the thickness of sand and armor stone cap layers was confirmed by sampling. The sand cover thickness was measured using coring techniques previously described in Section 10. Coring locations were randomly selected within an engineered cap area. Enough cores were collected to support valid statistical analysis. Pre-set boundaries and offsets were also considered to ensure locations were not too near, or on the edge of the engineered cap, or too close to another core location.

The sand cover and cap layer thickness results are provided in Appendix M. The poling locations are shown on drawings in a separate figures file and are summarized in Table 10-6.

11.6.1 Cap Sand Layer Thickness

Cap sand layer thickness verification sampling was performed in accordance with the Sand Cover Thickness Verification Sampling SOP (attachment to the CQAPP) (Tetra Tech et al. 2015a). The results of the cap sand layer thickness verification sampling showed that placement of the cap sand layers installed in 2018 caps met thickness specification requirements.

Cap sand layers were placed on four primary remedy cap sand layers. A total of 43 thickness verification cores were collected (2 Cap B cores, 4 Cap C cores, and 37 SRA Cap cores) from primary cap sand layers. In the Cap B areas, both cores (100 percent) passed the 6-inch minimum sand thickness requirement with clean sand thickness only. The thickness of the Cap B sand ranged from 6 to 8.5 inches, with an average of 7.25 inches. In the Cap C areas, all four cores (100 percent) passed the 6-inch minimum sand thickness requirement with clean sand thickness only. The thickness of the Cap C sand ranged from 6.5 to 13 inches, with an average of 8.38 inches. In the SRA Cap areas, 36 of the 37 cores (97.3 percent) passed the 9-inch minimum sand thickness requirement with clean sand thickness only. The thickness of the SRA Cap sand ranged from 7 to 20.5 inches, with an average of 11.17 inches.

11.6.2 Chemical Isolation Cores

Cap B and Cap C areas both required the collection of chemical isolation layer cores to document the baseline PCB concentrations. This work was performed to provide a baseline of comparison for long-term monitoring purposes. Four cores were collected from two areas: one Cap B area (CB58-1) and one Cap C area (CC22-1). Analyses of cores from these areas did not reveal PCBs.

One area, CB20-2, has been identified as a sentinel cap and was analyzed for PCBs; PCBs were found at a concentration of 0.256 ppm in a composite sample. The three samples were then submitted to the laboratory for discrete analyses, with results ranging from non-detect to 0.909 ppm.

11.6.3 Armor Stone Thickness

Armor stone thickness was measured using graduated buckets, as described below. Armor stone thickness verification sampling was typically conducted 1 to 2 days after placement, so additional armor stone could be placed promptly, if required.

Armor stone sampling buckets, with unique numbering, were placed on top of the cap sand layer after the sand layer thickness had been verified. The 5-gallon buckets were weighted so they could be submerged and be stable on the surface of the sand cover. The bucket handles were replaced with three coated cables to which a buoy was attached so the submerged buckets could be located via GPS and retrieved using a grappling hook. Following removal from the river, the buckets were perforated to provide drainage. The inside surface of each bucket was graduated in half-inch increments from the bottom to the top so the armor stone thickness could be easily observed and documented. Buckets placed on slopes, identified by bathymetric survey data, were outfitted with 3-foot-square frames to prevent the buckets from overturning during stone placement.

Armor stone thickness measurements were documented for each retrieved bucket. The armor stone surface was not always even within the bucket; therefore, three measurements were obtained, and an average armor stone thickness was documented and input into the data collector. The bucket was placed in front of a white

board and photographed to document armor stone thickness. The armor stone in the buckets was returned to the river following stone thickness documentation.

The LLC and A/OT selected additional bucket locations for each cap area prior to armor stone placement. The additional buckets were collected, and the contents were recorded in the same manner. The results of an additional bucket were only used if an original bucket could not be located or retrieved. The results from all additional buckets that were not used to replace original buckets that were lost were discarded.

Cap armor layers were placed on two primary cap areas. A total of seven buckets were used to verify cap armor layer thickness: three buckets in Cap B areas and four buckets in Cap C areas were collected. In the Cap B areas, the armor stone layer in all three buckets (100 percent) met the 4-inch thickness requirement. The thickness of the Cap B armor stone ranged from 4.5 to 7.5 inches, with an average thickness of 5.67 inches. In the Cap C areas, the armor stone layer in all four buckets (100 percent) met the 3-inch thickness requirement. The thickness of the Cap C armor stone ranged from 4.0 to 5.5 inches, with an average thickness of 5 inches.

11.7 Metering Equipment and Mass Balance Calculation

Metering equipment and mass balance calculations for the engineered cap layers were identical to those for sand layers, as detailed in Section 10.7.1.

11.8 2018 Armor Stone Cover Volume Summary

For 2018 armor stone placement work, the volume of armor stone delivered to the LFRR Processing Facility was compared to the calculated volume placed for each cap area. Using the QA field-verified average armor stone thickness per cap area, armor stone volumes placed in each cap area were calculated by multiplying the design area (square feet) to be covered by the average measured thickness determined by QA armor stone sampling buckets and/or poling (see Table 10-6).

11.8.1 2018 Delivered and Placed Armor Stone Volume Comparison

Throughout 2018, Tetra Tech compiled individual truck weight tickets for calculating the total amount of armor stone delivered to the LFRR Processing Facility. The weight tickets received showed that 21,910 tons (15,394 cy) of D_{50} = 1.5-inch armor stone was delivered to the LFRR Processing Facility. At the beginning of the operations season, J.F. Brennan surveyed the existing D_{50} = 1.5-inch armor stone stockpile. There was 20 cy of D_{50} = 1.5-inch armor stone at the beginning of 2018 operations. At the completion of the 2018 season, there was no remaining armor stone. Based on these numbers, an estimated 15,414 cy of D_{50} = 1.5-inch armor stone was used for the 2018 armor stone placement operations.

The calculated volume obtained from adding the volume based on QA sample thickness results (13,818.21 cy) (Table 10-6) to the D_{50} = 0.5- to 1-inch armor stone used for the D68B-5 buttress (158.9 cy) (Table 10-5) results in a total of 13,977.11 cy. A comparison of the two volumes results in a difference of 1,436.89 cy, with the calculated installed volume being about 9 percent less than the calculated delivered volume. The difference in cubic yardage between the two calculations can be attributed to the precision of the method of measurement used.

11.8.2 2018 Pre-Placement Armor Stone Usage Estimates

Prior to the 2018 operations season, armor stone usage estimates were determined based on previous experience, which indicated that consideration should be given to the following factors: vertical over-placement (spread height), horizontal over-placement, and consolidation of the underlying sediments.

Considering the factors above, it was estimated that an additional 8 percent more armor stone would be required during placement. Based on the 8 percent increase over the calculated installed volume (13,977.11 cy), the combined estimated volume for armor stone needed for the 2018 remediation was 15,095.28 cy.

11.9 Statistical Analysis of Armor Stone Thickness Data

Post-placement measurements of armor stone thickness were taken to demonstrate achievement of the applied armor stone thickness specifications. The thickness verification sampling was performed to provide statistical confidence that specifications were met. The minimum thickness requirement for all Cap A and B armor stone layers was 4 inches, and the minimum requirement for Cap C armor stone layers was 3 inches.

To verify that minimum placement thickness was achieved in cap areas, the following criteria were developed for OU1 and have been applied to OUs 2–5:

- The applied design thickness should be met or exceeded throughout at least 80 percent of the cap area.
- The probability of applied design thickness being met in less than 80 percent of the cap area should be no more than 10 percent (90 percent statistical confidence interval).

To demonstrate the achievement of thickness specifications (i.e., applied thickness), armor stone was collected using armor stone traps (buckets) after placement operations.

Minimum thickness coverage of at least 80 percent of a cap area was demonstrated with non-parametric lower confidence limits on a proportion of the samples. This method involved evaluating the observed proportion of verification samples exceeding the minimum thickness within a cap area and calculating whether a statistical confidence that the true proportion (if measurements were taken at all possible locations) was at least 0.8.

In practice, the necessary number of samples needed to demonstrate coverage specifications can be calculated ahead of time for the given sample size. To demonstrate 80 percent coverage using the above-specified statistical confidence, the following steps are taken:

1. Collect sample thickness measurements within each cap area.
2. Determine x, the number of sediment trap samples exceeding the minimum thickness specification.
3. Find the row corresponding to n in Table 11-4 and compare x to the number found in the second column. If x is equal to or greater than the Table 11-4 value, minimum thickness specifications for that unit will have been met. A minimum number of 11 samples is required per cap area to illustrate 80 percent coverage with 90 percent certainty.

Table 11-4. Number of Samples Needed to Document Attainment of Minimum Thickness Requirement per Cap Area[1]

Number of Samples Collected (n)	Number of Samples Needed to Exceed Minimum Thickness (x)	Number of Samples Collected (n)	Number of Samples Needed to Exceed Minimum Thickness (x)
11	11	21	20
12	12	22	21
13	13	23	22
14	14	24	23

Number of Samples Collected (n)	Number of Samples Needed to Exceed Minimum Thickness (x)	Number of Samples Collected (n)	Number of Samples Needed to Exceed Minimum Thickness (x)
15	15	25	23
16	16	26	24
17	17	27	25
18	17	28	26
19	18	29	27
20	19	30	28

Notes:
[1] Based on nonparametric 90 percent confidence limits.

Because many of the cap areas in OU3 were less than 1 acre in size and the collection of a minimum of 11 samples was not practical in small cap areas, Tetra Tech suggested that they be combined/grouped for purposes of armor stone thickness verification sampling. During a 2010 meeting with the A/OT, it was stated that the sampling should be performed on individual cap areas and that armor stone sampling should not be grouped together as had been done for sand sampling, for the following reasons: 1) the statistical requirements for caps are not as clear when combined with other areas, 2) the caps were typically not contiguous, and 3) the armor stone thickness requirements could vary from one type of cap to another. The A/OT suggested, however, that cap areas could be combined if the armor stone was the same thickness for all the combined areas and the areas were proximal to one another. During the 2018 season, no caps were combined into a single area.

If cap areas were not combined, the A/OT required the following armor stone thickness verification sample densities for individual cap areas, in accordance with size:

- 1.00+ acres – Minimum of 11 samples (all samples must pass acceptance criteria)
- 0.75 to 1.00 acre – 8 samples (all samples must pass acceptance criteria)
- 0.50 to 0.75 acre – 6 samples (all samples must pass acceptance criteria)
- up to 0.50 acre – 4 samples (all samples must pass acceptance criteria)

The Engineered Cap Verification Sampling SOP was revised in 2017 to include the A/OT's proposed sample densities (Tetra Tech 2017b).

During 2018, the post-placement sampling program satisfied the statistical requirements for demonstrating that the minimum requirements for armor stone across each cap were achieved.

11.10 Summary of Quarry Spall Placement for 2018

In 2018, quarry spall was placed in cap CC22, but the capping was not completed. Therefore, quarry spall volumes are not reported for 2018, but will be reported when the capping is completed.

11.10.1 Quarry Spall Placement Overview

No quarry spall areas were completed in 2018.

11.10.2 Quarry Spall Source Information and QA/QC

For 2018 capping operations in CC22, quarry spall, sourced from its Scray Hill quarry in Brown County, Wisconsin, was provided by Daanen & Janssen. In accordance with the CQAPP (Tetra Tech et al. 2015a),

prior to the use of any imported aggregate, a Borrow Source Characterization Report was prepared for each aggregate source to document that each source met the specified physical and chemical properties (Appendix N). The quarry spall delivered by Daanen & Janssen met all project specifications.

In accordance with the 100 Percent Design Report, Volume 2 (Appendix C, Section 35 43 00), the supplier was also required to test particle size (ASTM C136) at a rate of one test per 5,000 cy of quarry spall. Additionally, the supplier was required to provide one analysis for soundness (ASTM C88) and one analysis for abrasion (ASTM C535) per proposed source. The results of this testing met the required specifications, and are included in Appendix N.

Delivered quantities were consistently tracked. After making a quarry spall delivery to the LFRR Processing Facility, the driver left a weight ticket in the drop box at the southeast corner of the building. Tetra Tech personnel scanned and logged the weight tickets collected by the scale house operator and compared the weight tickets with the invoices received from Daanen & Janssen. Appendix N provides the results of contractor-required gradations and quality verification samples.

11.10.3 Quarry Spall Placement Operations

Quarry spall was placed over a portion of cap CC22 on November 12, 2018. The cap for this unit was not completed in 2018.

Table 11-5. 2018 Daily Estimated Quarry Spall Placement Rates

Date	NOH	GOH	Efficiency	cy/GOH	Volume per Day – Barge Survey (cy)	SF	Area
12-Nov	2.75	12	23%	35.7	428	1,681	CC22

Notes:
[1] Data are derived from J.F. Brennan daily reports.

Abbreviations and Acronyms:
cy – cubic yards
GOH – gross operational hours
J.F. Brennan – J.F. Brennan Company, Inc.
NOH – net operational hours
SF – square feet

11.10.4 Quarry Spall Thickness

No quarry spall areas were completed in 2018.

Table 11-6. 2018 QA Quarry Spall Layer Placement Volume Estimates

Area	QA Average Thickness by Poling (ft)	QA Average Thickness by MBES Survey (ft)	Placement Footprint (sf)	Calculated Volume Placed by Poling (cy)	Calculated Volume Placed by MBES Survey (cy)
No quarry spall placement completed in 2018 management areas					
Totals					

Notes:
Data derived from J.F. Brennan Daily Reports and mass balance tables.

Abbreviations and Acronyms:
cy – cubic yards
ft – feet
J.F. Brennan – J.F. Brennan Company, Inc.
MBES – multi-beam echosounder
QA – quality assurance
sf – square feet

11.10.5 Quarry Spall Cover Volume Summary

No quarry spall areas were completed in 2018.

11.11 Summary of Shoreline Cap Operations

11.11.1 Shoreline Cap Overview

No shoreline caps were placed during the 2018 season.

11.11.2 Shoreline Cap Information and QA/QC

No shoreline caps were placed in 2018.

11.11.3 Shoreline Cap Placement

No shoreline caps were placed in 2018.

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Figure 11-1. Quarry Spall Calculations

No quarry spall areas were completed in 2018.

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Table 11-7. 2018 Daily Estimated Shoreline Cap Placement Rates[1]

Date	NOH	GOH	Efficiency	cy/GOH	Volume per Day – Barge Survey (cy)	SF	Area
No shoreline caps were placed in 2018							
TOTALS							

Notes:
[1] Data derived from J.F. Brennan Daily Reports and mass balance tables.

Abbreviations and Acronyms:
cy – cubic yards
GOH – gross operating hour
J.F. Brennan – J.F. Brennan Company, Inc.
NOH – net operating hour
SF – square feet

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2018 REMEDIAL ACTION SUMMARY REPORT
LOWER FOX RIVER OPERABLE UNITS 2-5

DCN: LFRR-19-0001

Armor Stone Placement Drawings

2018 Summary Drawing Figure List

Figure 11-1	OU4 2018 Cap Type “A”, “B”, “C”, and “SRA” Areas
Figure 11-2	OU4-SRA-06-1 Cap Sand Layer Thickness Results OU4-SRA-06-1 Cap Armor Layer Thickness Results OU4-SRA-06-1 Post-Cap As-built Elevations OU4-SRA-06-1 Site Information
Figure 11-3	OU4-SRA-06-2 Cap Sand Layer Thickness Results OU4-SRA-06-2 Cap Armor Layer Thickness Results OU4-SRA-06-2 Post-Cap As-built Elevations OU4-SRA-06-2 Site Information
Figure 11-4	OU4-CC22-1 Cap Sand Layer Thickness Results OU4-CC22-1 Cap Armor Layer Thickness Results
Figure 11-5	OU4-CC22-1 Post-Cap As-built Elevations OU4-CC22-1 Variance of Post-Cap As-built to Allowed Minimum Water Depth OU4-CC22-1 Site Information OU4-CC22-1 Cap and Sediment Data
Figure 11-6	OU4-CB58-1 Cap Sand Layer Thickness Results OU4-CB58-1 Cap Armor Layer Thickness Results
Figure 11-7	OU4-CB58-1 Post-Cap As-built Elevations OU4-CB58-1 Variance of Post-Cap As-built to Allowed Minimum Water Depth OU4-CB58-1 Site Information OU4-CB58-1 Cap and Sediment Data



OU4
2018 CAP TYPE "A", "B", "C", AND "SRA" AREAS
1 OF 1

LEGEND

- 2018 CAP TYPE "A" AREAS
- 2018 CAP TYPE "B" AREAS
- 2018 CAP TYPE "C" AREAS
- 2018 CAP TYPE "SRA" AREAS

SCALE (1" = 150')

150 75 0 150 300

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88.
3. AREAS SHOWN REPRESENT THE AS-BUILT LIMITS OF THE SPREADER LANES AND CAP PLACEMENT.

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TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: 2018 RA Summary Cover Sheet - Cap.dwg
DRAWN BY: SHANE.NELSON
DATE: February 4, 2019
LAST REVISED: February 4, 2019
CHECKED BY: RG

FIGURE 11-001

Fox River
LOWER FOX RIVER REMEDIATION LLC

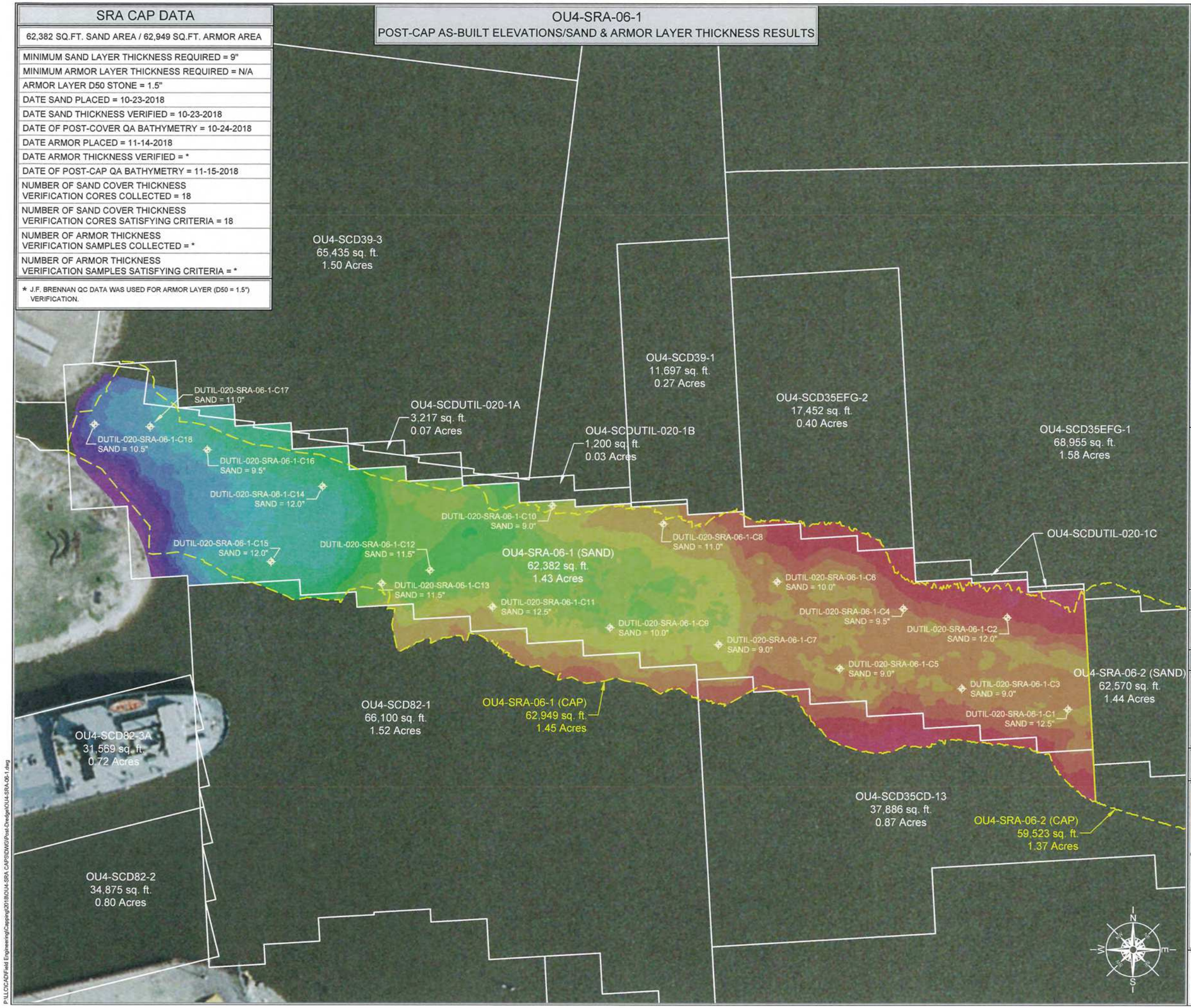
OU4-SRA-06-1
POST-CAP AS-BUILT ELEVATIONS/SAND & ARMOR LAYER THICKNESS RESULTS

SRA CAP DATA

62,382 SQ.FT. SAND AREA / 62,949 SQ.FT. ARMOR AREA

MINIMUM SAND LAYER THICKNESS REQUIRED = 9"
MINIMUM ARMOR LAYER THICKNESS REQUIRED = N/A
ARMOR LAYER D50 STONE = 1.5"
DATE SAND PLACED = 10-23-2018
DATE SAND THICKNESS VERIFIED = 10-23-2018
DATE OF POST-COVER QA BATHYMETRY = 10-24-2018
DATE ARMOR PLACED = 11-14-2018
DATE ARMOR THICKNESS VERIFIED = *
DATE OF POST-CAP QA BATHYMETRY = 11-15-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 18
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 18
NUMBER OF ARMOR THICKNESS VERIFICATION SAMPLES COLLECTED = *
NUMBER OF ARMOR THICKNESS VERIFICATION SAMPLES SATISFYING CRITERIA = *

* J.F. BRENNAN QC DATA WAS USED FOR ARMOR LAYER (D50 = 1.5") VERIFICATION.



LEGEND

MIN. EL.		MAX. EL.
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'
560.00'	-	561.00'
561.00'	-	562.00'
562.00'	-	563.00'
563.00'	-	564.00'
564.00'	-	565.00'
565.00'	-	566.00'
566.00'	-	567.00'
567.00'	-	568.00'
568.00'	-	569.00'
569.00'	-	570.00'
570.00'	-	571.00'
571.00'	-	572.00'
572.00'	-	573.00'
573.00'	-	574.00'
574.00'	-	575.00'
575.00'	-	576.00'
576.00'	-	577.00'
577.00'	-	578.00'
578.00'	-	579.00'
579.00'	-	580.00'

OU# - # - #
OPERABLE UNIT | CAP/COVER AREA | CAP/COVER MANAGEMENT UNIT

- - - - SRA CAP MANAGEMENT UNIT
——— CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-15-2018

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TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-SRA-06-1.dwg
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DATE: February 4, 2019
LAST REVISED: February 5, 2019
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Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 11-002

OU4-SRA-06-1
REMEDY SRA CAP THICKNESS RESULTS, LOCATIONS, BATHYMETRY AND AREAS

P:\LLOC\ACAD\Field Engineering\Capping\2018\OU4-SRA CAP\SDN\GIS\Post-Dredge\OU4-SRA-06-1.dwg

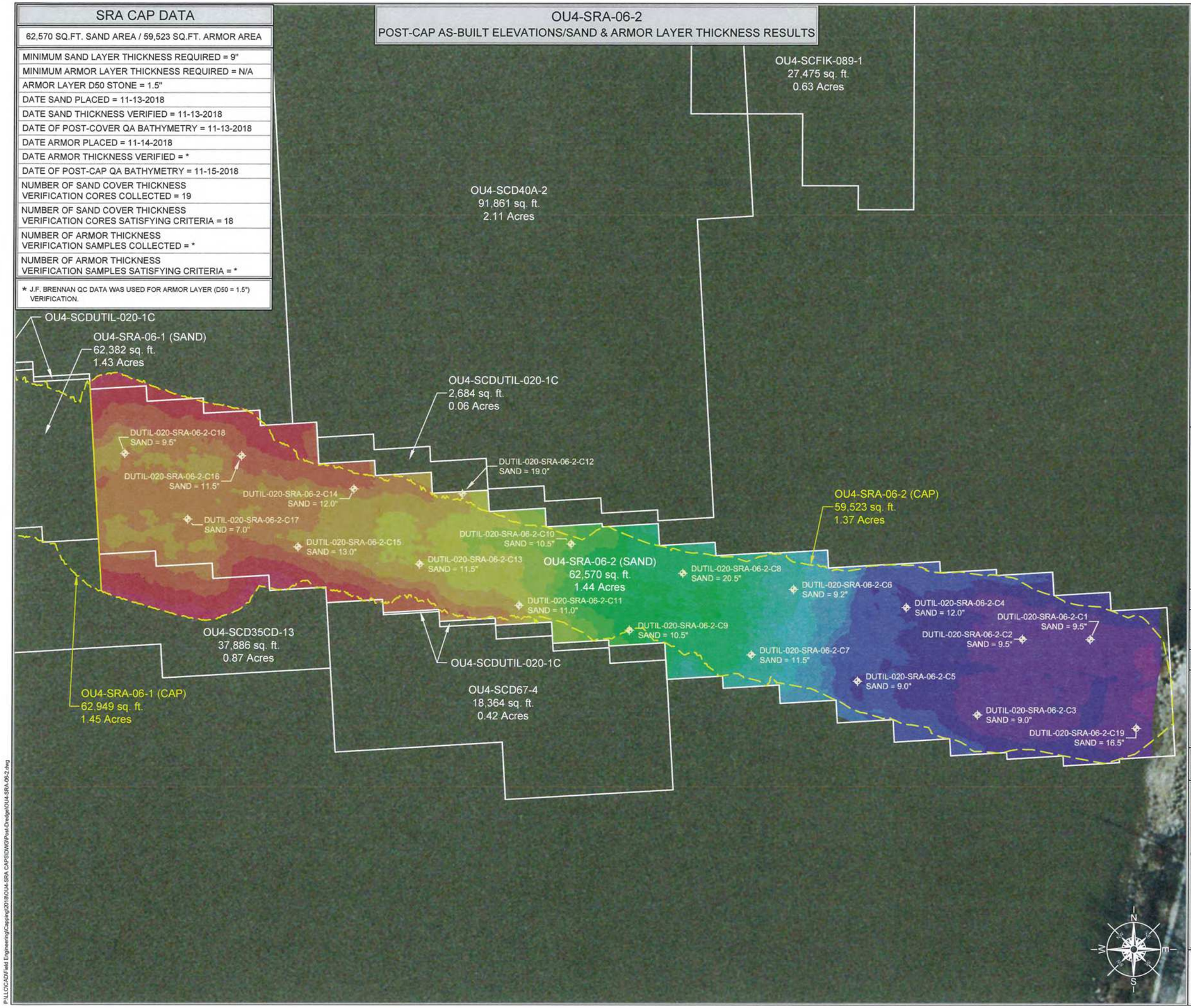
OU4-SRA-06-2
POST-CAP AS-BUILT ELEVATIONS/SAND & ARMOR LAYER THICKNESS RESULTS

SRA CAP DATA

62,570 SQ.FT. SAND AREA / 59,523 SQ.FT. ARMOR AREA

MINIMUM SAND LAYER THICKNESS REQUIRED = 9"
MINIMUM ARMOR LAYER THICKNESS REQUIRED = N/A
ARMOR LAYER D50 STONE = 1.5"
DATE SAND PLACED = 11-13-2018
DATE SAND THICKNESS VERIFIED = 11-13-2018
DATE OF POST-COVER QA BATHYMETRY = 11-13-2018
DATE ARMOR PLACED = 11-14-2018
DATE ARMOR THICKNESS VERIFIED = *
DATE OF POST-CAP QA BATHYMETRY = 11-15-2018
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED = 19
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA = 18
NUMBER OF ARMOR THICKNESS VERIFICATION SAMPLES COLLECTED = *
NUMBER OF ARMOR THICKNESS VERIFICATION SAMPLES SATISFYING CRITERIA = *

* J.F. BRENNAN QC DATA WAS USED FOR ARMOR LAYER (D50 = 1.5") VERIFICATION.



LEGEND

MIN. EL.		MAX. EL.
545.00'	-	546.00'
546.00'	-	547.00'
547.00'	-	548.00'
548.00'	-	549.00'
549.00'	-	550.00'
550.00'	-	551.00'
551.00'	-	552.00'
552.00'	-	553.00'
553.00'	-	554.00'
554.00'	-	555.00'
555.00'	-	556.00'
556.00'	-	557.00'
557.00'	-	558.00'
558.00'	-	559.00'
559.00'	-	560.00'
560.00'	-	561.00'
561.00'	-	562.00'
562.00'	-	563.00'
563.00'	-	564.00'
564.00'	-	565.00'
565.00'	-	566.00'
566.00'	-	567.00'
567.00'	-	568.00'
568.00'	-	569.00'
569.00'	-	570.00'
570.00'	-	571.00'
571.00'	-	572.00'
572.00'	-	573.00'
573.00'	-	574.00'
574.00'	-	575.00'
575.00'	-	576.00'
576.00'	-	577.00'
577.00'	-	578.00'
578.00'	-	579.00'
579.00'	-	580.00'
580.00'	-	581.00'

OU# - # - #
OPERABLE UNIT | CAP/COVER AREA | CAP/COVER MANAGEMENT UNIT

SRA CAP MANAGEMENT UNIT
CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

SCALE (1" = 60')

60 30 0 60 120

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-15-2018

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TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

CAD FILE: OU4-SRA-06-2.dwg
DRAWN BY: SHANE.NELSON
DATE: February 5, 2019
LAST REVISED: February 5, 2019
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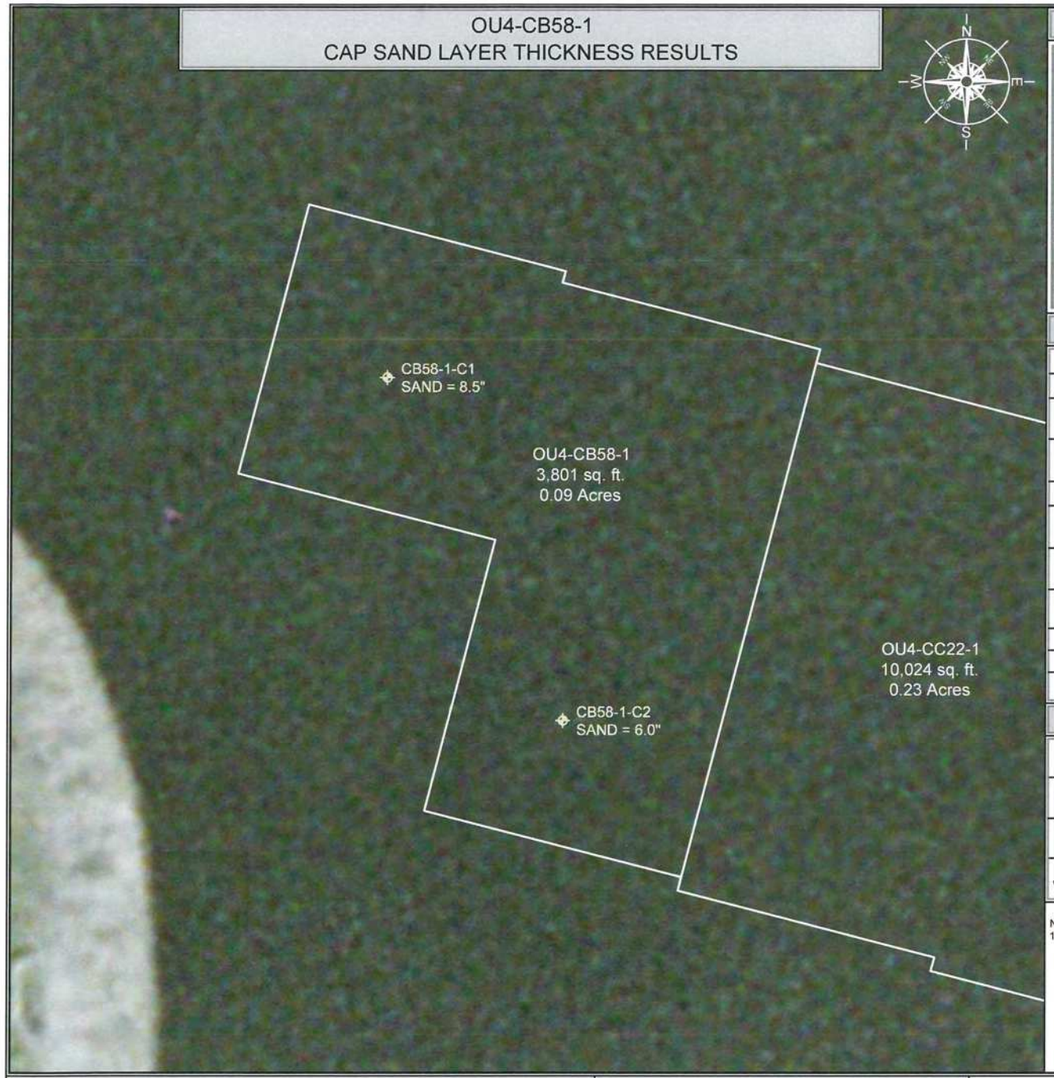
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 11-003

OU4-SRA-06-2
REMEDY SRA CAP THICKNESS RESULTS, LOCATIONS, BATHYMETRY AND AREAS

P:\LLC\CAD\Field Engineering\Capping\2018\OU4-SRA CAP\SDMXI\Post-Dredge\OU4-SRA-06-2.dwg

OU4-CB58-1
CAP SAND LAYER THICKNESS RESULTS



INDEX MAP



CAP B2 REQUIREMENTS

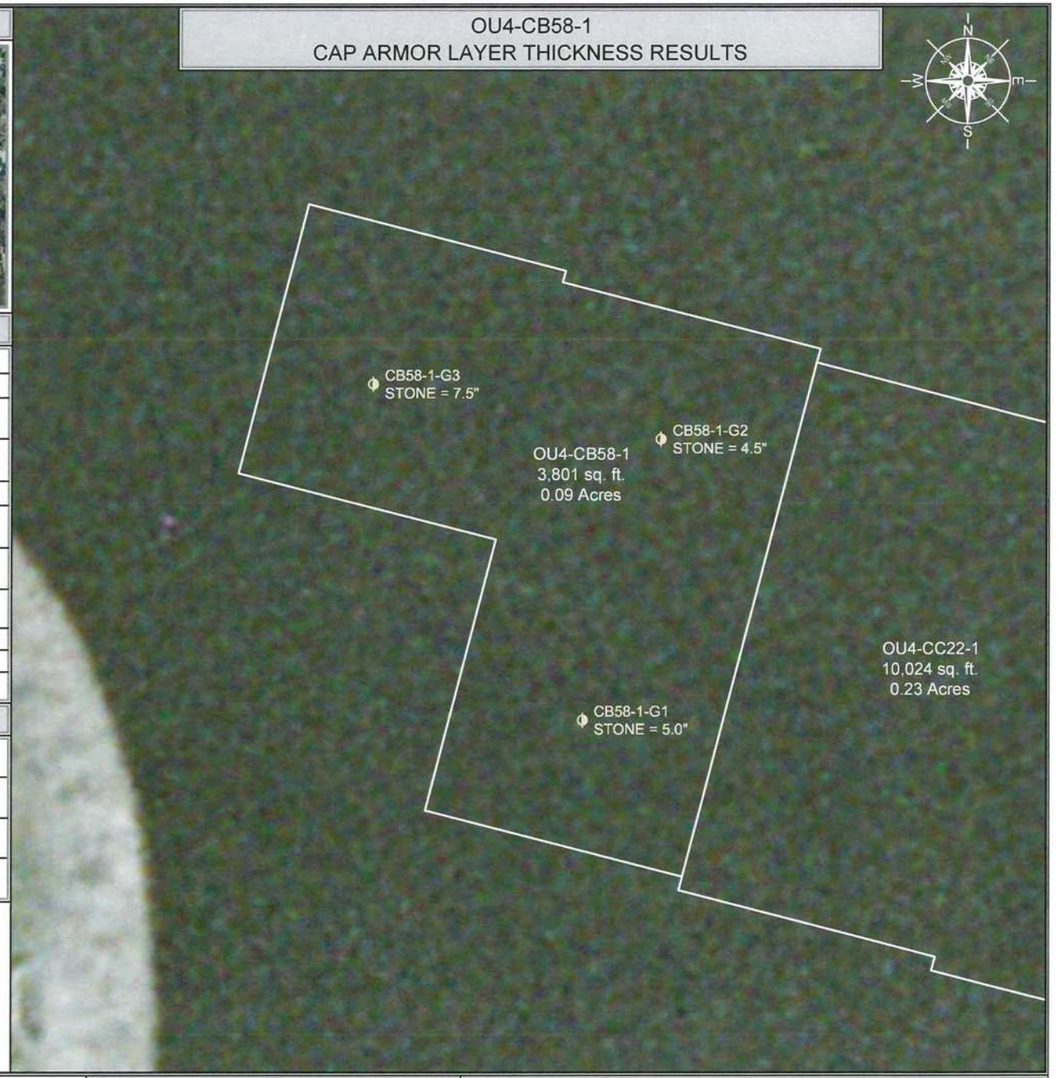
>10 and <50 PPM SURFICIAL	
ASSUMED SAND MIXING LAYER THICKNESS	3.0"
SAND CHEMICAL ISOLATION LAYER THICKNESS	3.0"
ASSUMED SAND OVERPLACEMENT THICKNESS	3.0"
MINIMUM ARMOR LAYER THICKNESS	4.0"
ASSUMED ARMOR OVERPLACEMENT THICKNESS	3.0"
MINIMUM QUARRY SPALL ARMOR THICKNESS	NA
QUARRY SPALL OVERPLACEMENT THICKNESS	NA
MINIMUM CAP THICKNESS	10.0"
ASSUMED AVERAGE CAP THICKNESS	16.0"
D50 STONE = 1.5"	

SAMPLE DATA

NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED	2
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA	2
NUMBER OF ARMOR THICKNESS VERIFICATION SAMPLES COLLECTED	3
NUMBER OF ARMOR THICKNESS VERIFICATION SAMPLES SATISFYING CRITERIA	3

NOTE:
1. THE SAMPLING DENSITY FOR STONE IS PRORATED BASED ON THE CMU AREA. THE PRORATED DENSITY IS PER AGENCY RECOMMENDATIONS FOR AREAS LESS THAN ONE ACRE.

OU4-CB58-1
CAP ARMOR LAYER THICKNESS RESULTS



SCALE (1" = 20')

20 10 0 20 40

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-08-2018

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OU# - # - #

OU# = OPERABLE UNIT
= CAP/COVER AREA
= CAP/COVER MANAGEMENT UNIT

CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

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DRAWN BY: SHANE.NELSON
DATE: January 25, 2019
LAST REVISED: February 5, 2019
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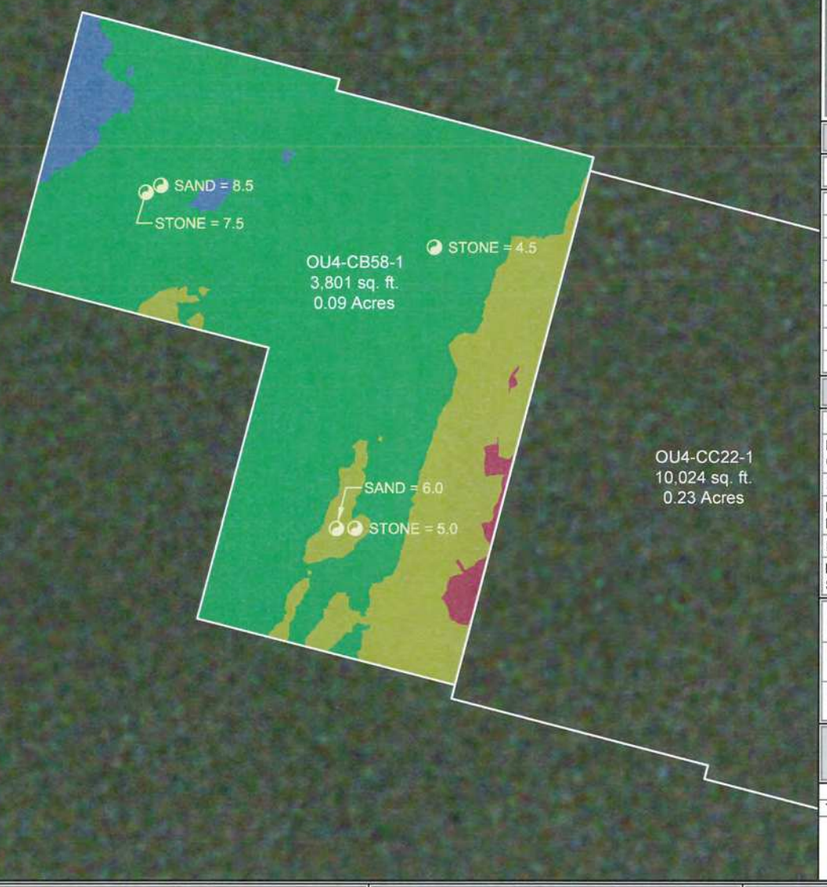
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 11-004

OU4-CB58-1
REMEDY CAP SAND AND ARMOR STONE THICKNESS RESULTS AND LOCATIONS

P:\LC\CAD\Field Engineering\Capping\2018\OU4-CB58\DWG\Post-Dredge\OU4-CB58-1.dwg

OU4-CB58-1
SURFACE: POST-CAP AS-BUILT ELEVATIONS



INDEX MAP



SITE INFORMATION

3,801 AREA (SQ. FT.)
DATE SAND PLACED = 9-24-2018
DATE SAND SAMPLED = 9-25-2018
DATE ARMOR PLACED = 11-07-2018
DATE ARMOR SAMPLED = 11-08-2018
ARMOR TYPE = BANK RUN GLACIAL DEPOSIT
D50 STONE SIZE INSTALLED = 1.5"
DATE OF POST-COVER QA-BATHYMETRY = 11-02-2018
DATE OF POST-CAP QA-BATHYMETRY = 11-08-2018

CAP AND SEDIMENT DATA

ENGINEERED CAP TYPE = B2
MAXIMUM DESIGN SURFICIAL CONCENTRATION = 50 PPM
PROJECT BASELINE ELEVATION = 576.6' (NAVD88)
MINIMUM DESIGN WATER DEPTH FOR CAP TYPE B2 D50 STONE INSTALLED = 4.0'
HIGHEST DESIGN CAP ELEVATION = 572.6'
HIGHEST DESIGN SEDIMENT STARTING ELEVATION = 571.3'
PERCENT OF CAP ABOVE HIGHEST ALLOWED ROD ELEVATION = 0 %
PERCENT OF CAP ABOVE HIGHEST DESIGN CAP ELEVATION = 21.5 %
PERCENT OF CAP BELOW HIGHEST DESIGN CAP ELEVATION = 78.5 %

CHEMICAL ISOLATION LAYER SAMPLE RESULTS

SAMPLE ID	CONCENTRATION
TTFR-18-04-CB58-1-COMP	25 µg/kg (0.025 ppm)

OU4-CB58-1
VARIANCE OF POST-CAP AS-BUILT



SCALE (1" = 20')

20 10 0 20 40

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-08-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
568.00'	-	569.00'
569.00'	-	570.00'
570.00'	-	571.00'
571.00'	-	572.00'
572.00'	-	573.00'

DRAWING NOTES

1. PROJECT BASELINE ELEVATION IS THE NOAA LOW WATER DATUM FOR OU4
2. POST-CAP WATER DEPTH MUST BE NO LESS THAN 3.0' BELOW THE PROJECT BASELINE ELEVATION
3. ROD ELEVATION IS 3.0' BELOW THE PROJECT BASELINE ELEVATION FOR AN OPERABLE UNIT
4. ALL SAND AND STONE MEASUREMENTS ARE IN INCHES (UNLESS OTHERWISE NOTED)
5. NM = NOT MEASURED

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OU# - # - #

- OU# — OPERABLE UNIT
- # — CAP/COVER AREA
- # — CAP/COVER MANAGEMENT UNIT

CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

VARIANCE COLOR LEGEND

AREA	
0 sq. ft.	ABOVE HIGHEST ALLOWED ROD ELEVATION 573.6' (NAVD88)
818 sq. ft.	ABOVE HIGHEST DESIGN CAP ELEVATION 572.6' (NAVD88)
2,983 sq. ft.	BELOW HIGHEST DESIGN CAP ELEVATION 572.6' (NAVD88)

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
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CAD FILE: OU4-CB58-1.dwg
DRAWN BY: SHANE.NELSON
DATE: January 25, 2019
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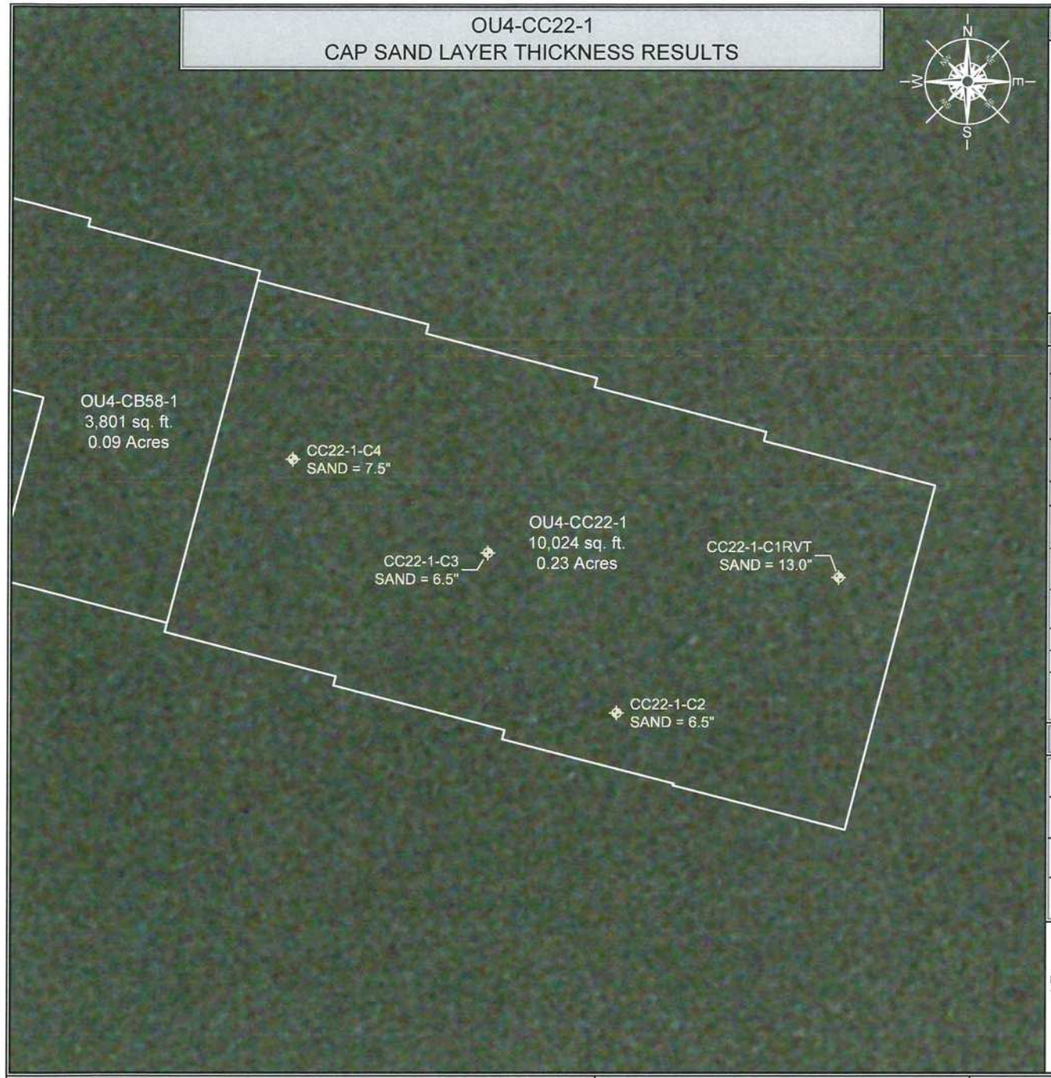
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 11-005

OU4-CB58-1
REMEDY CAP SAND AND ARMOR STONE BATHYMETRY AND AREAS

P:\LLC\CAD\Field Engineering\Capping\2018\OU4-CB58\DWG\Post-Dredge\OU4-CB58-1.dwg

OU4-CC22-1
CAP SAND LAYER THICKNESS RESULTS



INDEX MAP



CAP C(M1) REQUIREMENTS

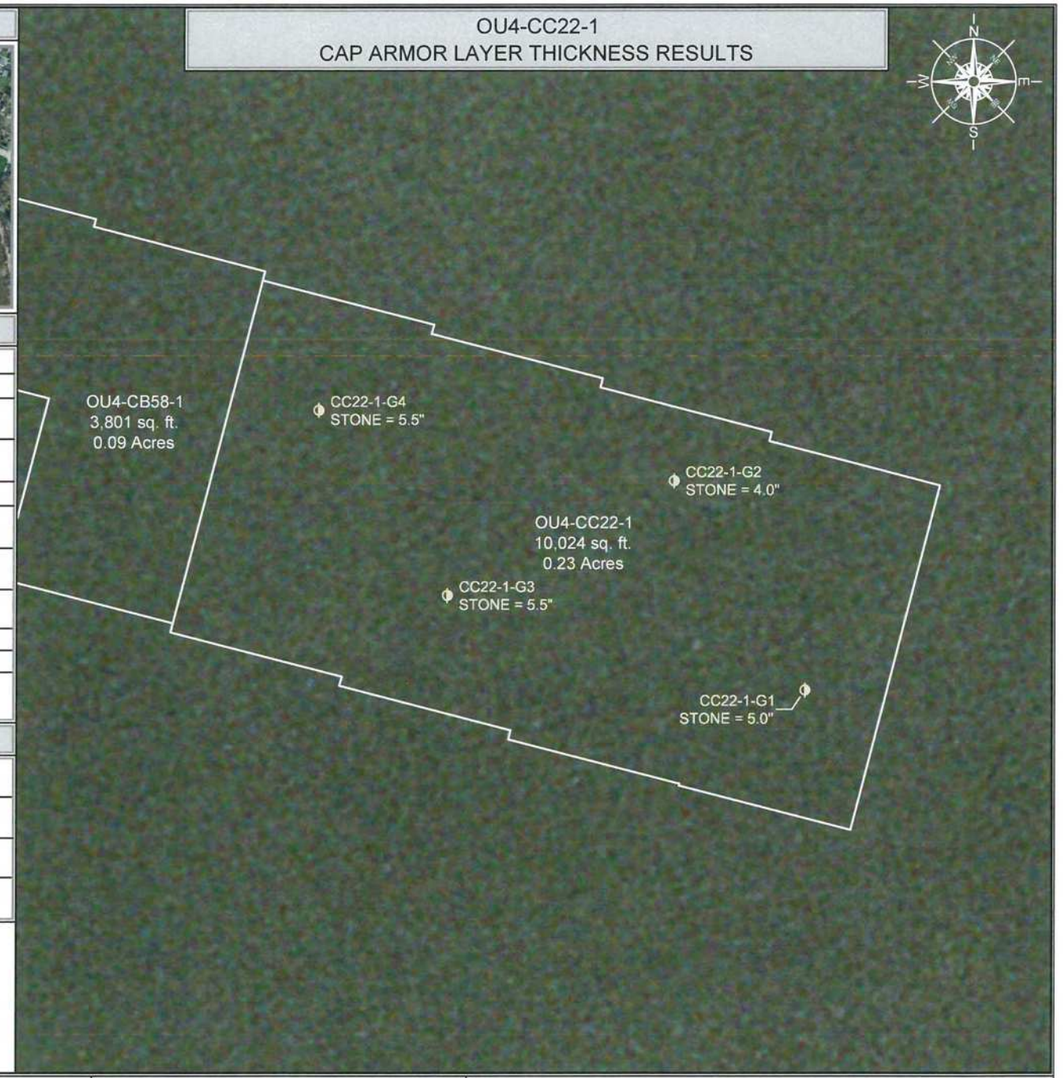
<50 PPM SURFICIAL	
ASSUMED SAND MIXING LAYER THICKNESS	3.0"
SAND CHEMICAL ISOLATION LAYER THICKNESS	3.0"
ASSUMED SAND OVERPLACEMENT THICKNESS	3.0"
MINIMUM ARMOR LAYER THICKNESS	3.0"
ASSUMED ARMOR OVERPLACEMENT THICKNESS	3.0"
MINIMUM QUARRY SPALL ARMOR THICKNESS	16.0"
QUARRY SPALL OVERPLACEMENT THICKNESS	8.0"
MINIMUM CAP THICKNESS	25.0"
ASSUMED AVERAGE CAP THICKNESS	39.0"
FILTER LAYER STONE D50 = 1.50" QUARRY SPALL = 8.0"	

SAMPLE DATA

NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED	4
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA	4
NUMBER OF ARMOR THICKNESS VERIFICATION SAMPLES COLLECTED	4
NUMBER OF ARMOR THICKNESS VERIFICATION SAMPLES SATISFYING CRITERIA	4

NOTE:
1. THE SAMPLING DENSITY FOR STONE IS PRORATED BASED ON THE CMU AREA. THE PRORATED DENSITY IS PER AGENCY RECOMMENDATIONS FOR AREAS LESS THAN ONE ACRE.

OU4-CC22-1
CAP ARMOR LAYER THICKNESS RESULTS



SCALE (1" = 30')

30 15 0 30 60

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-08-2018

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OU# - # - #
- OU#: OPERABLE UNIT
- #: CAP/COVER AREA
- #: CAP/COVER MANAGEMENT UNIT

CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER	CA = TYPE "A" CAP
SHC = SHORELINE CAP	CB = TYPE "B" CAP
SCD = RESIDUAL SAND COVER	CC = TYPE "C" CAP

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1611 STATE STREET
GREEN BAY, WI 54304
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DRAWN BY: SHANE.NELSON
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LAST REVISED: February 4, 2019
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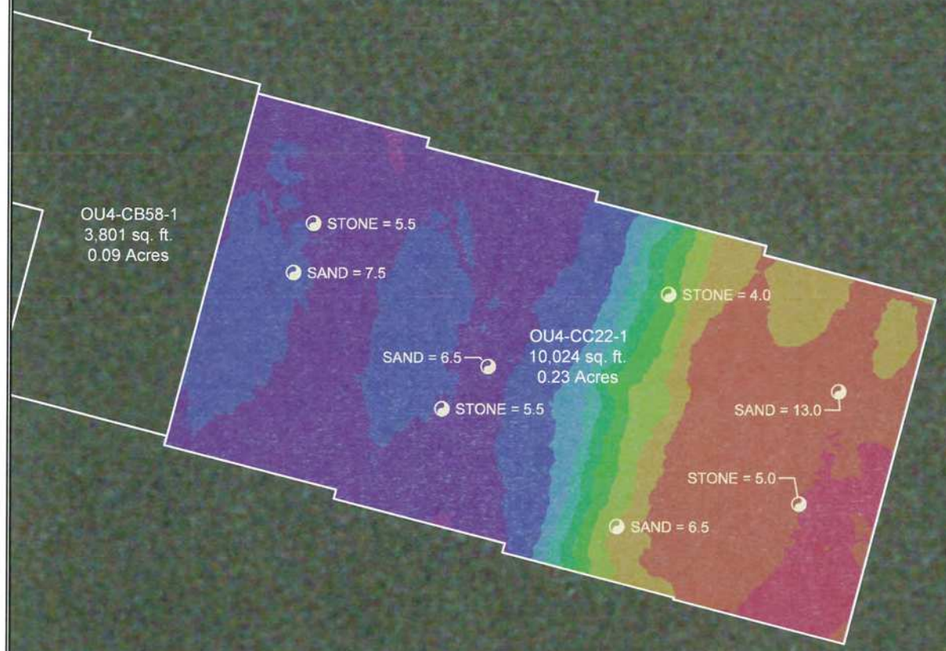
Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 11-006

OU4-CC22-1
REMEDY CAP SAND AND ARMOR STONE THICKNESS RESULTS AND LOCATIONS

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OU4-CC22-1
SURFACE: POST-CAP AS-BUILT ELEVATIONS



INDEX MAP



SITE INFORMATION

10,024 AREA (SQ. FT.)

DATE SAND PLACED = 9-21-2018
DATE SAND SAMPLED = 9-27-2018
DATE ARMOR PLACED = 11-07-2018
DATE ARMOR SAMPLED = 11-08-2018
ARMOR TYPE = BANK RUN GLACIAL DEPOSIT
D50 STONE SIZE INSTALLED = 1.50"
DATE OF POST-COVER QA-BATHYMETRY = 11-02-2018
DATE OF POST-CAP QA-BATHYMETRY = 11-08-2018

CAP AND SEDIMENT DATA

ENGINEERED CAP TYPE = C(M1)
MAXIMUM DESIGN SURFICIAL CONCENTRATION = TSCA Cap
PROJECT BASELINE ELEVATION = 576.6' (NAVD88)
MINIMUM DESIGN WATER DEPTH FOR CAP TYPE C(M1) D50 STONE INSTALLED = 3.0'
HIGHEST DESIGN CAP ELEVATION = 573.6'
HIGHEST DESIGN SEDIMENT STARTING ELEVATION = 570.4'
PERCENT OF CAP ABOVE HIGHEST ALLOWED ROD ELEVATION = 0 %
PERCENT OF CAP ABOVE HIGHEST DESIGN CAP ELEVATION = 0 %
PERCENT OF CAP BELOW HIGHEST DESIGN CAP ELEVATION = 100 %

CHEMICAL ISOLATION LAYER SAMPLE RESULTS

SAMPLE ID	CONCENTRATION
TTFR-18-04-CC22-1-COMP	25 µg/kg (0.025 ppm)

OU4-CC22-1
VARIANCE OF POST-CAP AS-BUILT



SCALE (1" = 30')

30 15 0 30 60

SITE NOTES

1. HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE)
2. VERTICAL DATUM IS REFERENCED TO NAVD 88
3. SURFACE LIMITS DERIVED FROM DESIGN FILE
4. CALCULATIONS BY AUTOCAD CIVIL 3D BASED ON EDITED SURVEY DATA PROVIDED BY J.F. BRENNAN ON 11-08-2018

AS-BUILT COLOR LEGEND

MIN. EL.		MAX. EL.
560.00'	-	561.00'
561.00'	-	562.00'
562.00'	-	563.00'
563.00'	-	564.00'
564.00'	-	565.00'
565.00'	-	566.00'
566.00'	-	567.00'
567.00'	-	568.00'
568.00'	-	569.00'
569.00'	-	570.00'
570.00'	-	571.00'

DRAWING NOTES

1. PROJECT BASELINE ELEVATION IS THE NOAA LOW WATER DATUM FOR OU4
2. POST-CAP WATER DEPTH MUST BE NO LESS THAN 3.0' BELOW THE PROJECT BASELINE ELEVATION
3. ROD ELEVATION IS 3.0' BELOW THE PROJECT BASELINE ELEVATION FOR AN OPERABLE UNIT
4. ALL SAND AND STONE MEASUREMENTS ARE IN INCHES (UNLESS OTHERWISE NOTED)
5. NM = NOT MEASURED

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OU# - # - #

- OU# — OPERABLE UNIT
- # — CAP/COVER AREA
- # — CAP/COVER MANAGEMENT UNIT

CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
SCD = RESIDUAL SAND COVER
CA = TYPE "A" CAP
CB = TYPE "B" CAP
CC = TYPE "C" CAP

VARIANCE COLOR LEGEND

AREA	
0 sq. ft.	ABOVE HIGHEST ALLOWED ROD ELEVATION 573.6' (NAVD88)
0 sq. ft.	ABOVE HIGHEST DESIGN CAP ELEVATION 573.6' (NAVD88)
10,024 sq. ft.	BELOW HIGHEST DESIGN CAP ELEVATION 573.6' (NAVD88)

TETRA TECH EC, INC.
1611 STATE STREET
GREEN BAY, WI 54304
TEL: (920) 445 - 0720 FAX: (920) 445 - 0719

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DRAWN BY: SHANE.NELSON
DATE: February 4, 2019
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Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 11-007

OU4-CC22-1
REMEDY CAP SAND AND ARMOR STONE BATHYMETRY AND AREAS

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12. SAND AND ARMOR STONE PLACEMENT SURFACE WATER QUALITY MONITORING

Surface water quality monitoring information for sand and armor stone placement is summarized in Section 9.6.

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13. DEBRIS REMOVAL AND SCHNEIDER PROPERTY SAND DEPOSIT

No debris removal was conducted in 2018. However, this section also summarizes project activities from 2013 to 2015 at the Schneider property at 2661 South Broadway in Green Bay and the associated sand deposition in the river adjacent to this property.

13.1 Debris Removal

No debris removal was conducted in 2018.

Table 13-1. Summary of 2018 Debris Removal

Dredging Area	Design Area (SF)	Area of Debris Zone (SF)	Debris Type	Roll-Off Containers Filled	Tons Removed	Barges Filled
No debris removal was conducted in 2018						

Abbreviations and Acronyms:
SF – square feet

13.2 Schneider Property Sand Deposit

During the period from June 2013 to November 2015, J.F. Brennan used the Schneider property upland areas near project sand cover areas SCD27A and SCMU 23 to pump cap and cover sand from the shore into a sand spreading barge. During normal operations, small quantities of clean sand spilled from the end of the pipeline. Over the operations period, the sand accumulated, forming a deposit in the river.

On March 7, 2018, the A/OT requested that a bathymetric survey be conducted to characterize bathymetry conditions at the location of the pile and for a radius of at least 200 feet outside the pile. Other information was also requested, including the following:

- Pre-remedial action bathymetry: the bathymetry results performed before any RA occurred.
- Post-remedial dredging bathymetry: the bathymetry results following dredging, capping, or covering, but before the sand pile was generated.
- Post-demobilization bathymetry: the bathymetry of the sand pile shortly after J.F. Brennan stopped using the Schneider property.
- Management unit names and boundaries.
- Confirmation sample locations with identifications.

The requested information was provided to the A/OT on May 14, 2018. Following review of the bathymetric surveys, the A/OT emailed the LLC on June 19, 2018 to state that the Agencies determined that the sand deposit can remain in place as is. The A/OT further requested that the decision be included in this document.

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14. 2018 PROJECT PERFORMANCE VERSUS OBJECTIVES

The following narrative summarizes the project performance versus the 2018 objectives described in the 2017-2018 and Beyond RA Work Plan:

Objective No. 1: Complete seasonal pre-operational testing and startup of all sediment desanding and dewatering plant (SDDP) and water treatment plant (WTP) equipment prior to resuming dredging on approximately March 26, 2018.

This objective was met, as allowed by weather and river conditions. Seasonal pre-operational testing and startup of all SDDP and WTP equipment was completed prior to the planned resumption of remediation on March 26, 2018. Dredging and sediment processing began on March 26, 2018 for the typical 24 hours per day, 5 days per week construction operations for the remainder of the 2018 season, except for the planned days off: Memorial Day, a 1-week shutdown including Fourth of July, and Labor Day.

Objective No. 2: Adjust locations of fused pipelines and booster pump stations to support planned 2018 OU4 and OU5 remedial activities. Prepare dredges and spreader systems for full-scale operation.

This objective was met. The locations of fused pipelines and booster stations were adjusted as necessary during the 2018 construction season to support OU4/OU5 dredging activities. The dredges and spreader system were used to perform full-scale operation during 2018.

Objective No. 3: Obtain the sand, armor stone, and quarry spall required for sand covers and engineered caps, temporary seasonal cover, or buttressing applications for structural restoration, where needed, planned for 2018. These aggregates will be staged at the LFRR Processing Facility site at 1611 State Street, Green Bay, Wisconsin, the RGL Real Estate, Inc. property at 1401 State Street, Green Bay, Wisconsin, and perhaps at an additional location that is yet to be determined.

This objective was met. Sand, armor stone, and quarry spall needed for sand covers, engineered caps, and SRA caps were staged at and utilized from the LFRR Processing Facility site. In addition, a stockpile of D^{50}= 0.5- to 1-inch armor stone was stored at City Slip uplands for most of 2018, until being moved to the LFRR Processing Facility in December 2018. A small amount of quarry spall was placed in cap CC22, but quarry spall placement was not completed.

Objective No. 4: Perform full-scale remediation in OU4 and OU5. This plan includes dredging, dewatering, and disposal of all dredged sediment; placement of Type A, B and C engineered caps; and placement of remedy sand covers.

This objective was met. During 2018, 585,841.07 cy of non-TSCA sediment was dredged, processed, and disposed of from remedy areas in OU4 and OU5. In situ TSCA sediment was not anticipated, encountered, or dredged in 2018. Type B and C, or SRA engineered caps were installed as the primary remedy over 2.90 acres in OU4 during 2018. A total of 2.10 acres of remedy sand covers was installed in OU4 in 2018.

Objective No. 5: Perform PCB-residuals management, as required per the ROD Amendment, for dredge-only areas based on the results of confirmation sampling. This plan includes placement of residual sand covers and residual dredging. Alternative remedial action, such as engineered caps, may also be placed for residuals management purposes as approved by the Agencies.

This objective was met. During 2018, residual sand covers were placed over 41.88 acres in OU4. During 2018, no engineered caps were installed because of residual concentrations following dredging.

Objective No. 6: Dispose of filter cake, scalpings, separated sand that does not qualify as BRM, and debris derived from dredging *in situ* non-TSCA sediment at appropriately permitted landfills.

This objective was met. A total of 318,541.65 tons of filter cake and other wastes generated from non-TSCA dredging, desanding, and dewatering operations this year were removed from the project site and transported to the ADS Hickory Meadows Landfill during 2018. Additionally, in association with PCB remediation in the MGP SFA, 35,746.65 tons of waste was hauled to the ADS Hickory Meadows Landfill and an additional 6,516.20 tons of waste was disposed of at the Waste Management Ridgeview Landfill. No in-river debris was encountered or disposed of in 2018. No in situ TSCA wastes were encountered or disposed of in 2018.

Objective No. 7: Beneficially reuse sand generated from dredging of non-TSCA PCB-containing sediment, as applicable, at approved off-site construction projects or licensed landfills with leachate collections systems, as allowed by the approved LHE.

This objective was met. During 2018, 114,767 tons of sand separated from dredging non-TSCA sediment was beneficially reused. The sand was beneficially reused for construction at the ADS Hickory Meadows Landfill in Hilbert, Wisconsin and construction at the G-P Green Bay West Landfill site in Green Bay, Wisconsin. An additional 18,000 tons of BRM was stored at the LFR treatment facility at the end of the 2018 season. An additional 1,847.86 tons of separated sand with apparent high organic content was disposed of, along with the filter cake, at the ADS Hickory Meadows landfill. In addition, 11,322.85 tons of sand processed in the SDDP from the MGP area was not designated as BRM due to its potential to contain MGP-related chemicals. No separated sand with high organic content remained on site at the end of the 2018 operations season.

Objective No. 8: Remove, size, and dispose of in-river debris, as required.

This objective was met. No in-river debris was encountered or disposed of in 2018.

Objective No. 9: Comply with all Applicable, or Relevant and Appropriate Requirements (ARARs) identified for work in OUs 2-5 of the Lower Fox River, as listed in Table 1-3 (of the 2017/2018 and Beyond RA Work Plan)**.**

This objective was met. During the 2018 season, the LLC complied with all ARARs included in Table 1-3 of the 2017/2018 and Beyond RA Work Plan.

Objective No. 10: Maintain continued communications with riparian property owners near RA areas. The LLC will communicate with the Brown County Port Authority and municipalities regarding remedial action planned near their properties in 2018, as with other riparian property owners. In addition, the LLC will continue to engage in dialogue with any other interested parties, including the Brown County Port Authority and municipalities, about general progress of the remediation.

This objective was met. Regular communication with private and commercial riparian property owners was maintained prior to and throughout the 2018 construction season. In addition to maintaining communications with riparian property owners, the LLC, Leonard & Finco (the LLC's public relations contractor), and the Tetra Tech team participated in numerous meetings regarding the project, including meetings with representatives of the Port of Green Bay and the Green Bay Harbor Commission, to provide status updates on the progress of the project. In addition, the Tetra Tech team conducted tours of the processing facility for many civic groups.

Objective No. 11: Attend to worker safety in performing remedial action activities.

This objective was met. The LLC and its contractor attended to worker safety in performing RA activities in 2018. No lost-time incidents occurred during 2018. From the start of the project through the end of 2018,

the team achieved significant milestones of 3,897 days and 2,633,733 hours worked without a lost-time incident.

Objective No. 12: Prepare and submit the Draft 2017 Remedial Action Summary Report, summarizing the work completed during the 2017 season, and submit the report to the Agencies. Initiate preparation of the 2018 Remedial Action Summary Report at the end of the 2018 season. A Draft 2019 Remedial Action Summary Report, summarizing the work completed in 2019, will be completed in late 2019 or early 2020.

This objective was met. The final 2017 RA Summary Report was submitted to the Agencies and interested users on September 13, 2018. Work began on the 2018 RA Summary Report as soon as the field season concluded in November 2018.

Objective No. 13: Complete design refinements, as needed, for the remediation remaining after the 2018 construction season. Any 2018 and 2019 design refinements (post-2017 construction season) will be considered an addendum to the 100-Percent Design Report Volume 2 of 2 (Tetra Tech et al. 2012a); however, they will be submitted as a revision to the 2019 Update to Phase 2B Remedial Action Work Plan for OUs 2–5.

This objective was substantially met. Design refinement cores were obtained from throughout the remaining reach of river through 2018, from the Fort Howard Turning Basin to the mouth of the river in Green Bay, and refined designs were completed for much of this area. These refined designs were presented or will be presented as part of the 2017/2018 and Beyond Remedial Action Work Plan (RAWP) and/or will be included in the 2019 Update to Phase 2B RAWP. Collection of additional design refinement cores and local remodeling efforts will continue during the 2019 season in select areas. Dredge design refinements for the areas up to the mouth of the river that delineates the end of RA construction in OU5 are expected to be completed where required, prior to or during the 2019 dredge season. Additional cores will be obtained in this reach of river to refine the designs if necessary. These cores will be obtained as early as possible in 2019.

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15. REFERENCES

J.F. Brennan (J.F. Brennan Company, Inc.). 2015. Operational Work Plan for Installing Quarry Spall Marking Layer. November.

Tetra Tech (Tetra Tech EC, Inc.). 2015a. Construction Quality Assurance Project Plan for Remedial Action of Operable Units 4 and 5 in 2014 and Beyond. February.

Tetra Tech. 2018a. Standard Operating Procedure Turbidity Monitoring and Sonde Calibration. August 13.

Tetra Tech. 2018b. LFRR-18-0045A-R1. Technical Memorandum – Remedy Design for Special Remediation Area (SRA)-6 Cap in Utility 020 Corridor. August 15.

Tetra Tech, Anchor Environmental, L.L.C., J.F. Brennan Co, Inc., and Boskalis Dolman. 2009a. Lower Fox River Remedial Design, 100 Percent Design Report, Volume 1. Prepared for Appleton Papers Inc., Georgia-Pacific Consumer Products LP, and NCR Corporation. April.

Tetra Tech, Anchor Environmental, L.L.C., J.F. Brennan Co., Inc., and Boskalis Dolman. 2009b. Phase 2B Work Plan for 2009 Remedial Action of Operable Units 2, 3, 4, and 5. Prepared for Appleton Papers Inc., Georgia-Pacific Consumer Products LP, and NCR Corporation. April.

Tetra Tech, Anchor QEA, J.F. Brennan, SPRI, and AECOM. 2011a. LFRR-11-0196. Site-Wide Operations and Maintenance Plan, Former Shell Property Staging and Material Processing Facility. Operable Units 2 to 5 Remedial Action; Lower Fox River and Green Bay Site, Green Bay, Wisconsin. Prepared for Appleton Papers Inc., Georgia-Pacific Consumer Products, LP, and NCR Corporation. March.

Tetra Tech, J.F. Brennan, and SPRI. 2011b. LFRR-11-0185. 2009 Remedial Action Summary Report, Lower Fox River Operable Units 2–5. Prepared for Lower Fox River Remediation LLC. March.

Tetra Tech, Anchor QEA, J.F. Brennan, and Boskalis Dolman. 2012a. Lower Fox River Remedial Design Report, 100 Percent Design Report for 2010 and Beyond, Volume 2. December 6.

Tetra Tech, J.F. Brennan, and SPRI. 2012b. LFRR-12-0236. 2010 Remedial Action Summary Report; Lower Fox River Operable Units 2–5. Prepared for Lower Fox River Remediation LLC. October.

Tetra Tech and Anchor QEA. 2012c. Technical Memorandum, PCB mass removal for 2012 between the A/OT and the design team. April 23.

Tetra Tech. 2013a. LFRR-13-0104. Phase 2B Air Monitoring Sampling and Analysis Plan, Operable Units 2–5; Lower Fox River and Green Bay Site, Revision 1. Prepared for the Lower Fox River Remediation LLC. January.

Tetra Tech, Anchor QEA, J.F. Brennan, and SPRI. 2016. LFRR-15-0344. Quality Assurance Project Plan for Remedial Action of Operable Units, 2, 3, 4, and 5, Lower Fox River and Green Bay Site, Brown, Outagamie, and Winnebago Counties, Wisconsin. Revision 2. Prepared for Lower Fox River Remediation LLC. July.

Tetra Tech, Anchor QEA, J.F. Brennan, and SPRI. 2017a. Lower Fox River Remedial Action, Phase 2B Work Plan for 2017 and 2018 Remedial Action.

Tetra Tech. 2017b. Standard Operating for Engineered Cap Verification Sampling. February.

Tetra Tech, Anchor QEA, J.F. Brennan, and SPRI. 2018. Updated Phase 2B Remedial Action Work Plan for 2017/2018 and Beyond Lower Fox River Remedial Action. March.

Tetra Tech, Anchor QEA, J.F. Brennan, and SPRI. 2019. 2019 Update to Phase 2B Remedial Action Work Plan. February 28.

USACE (U.S. Army Corps of Engineers). 2004. Engineering and Design Hydrographic Surveying Manual No. 1110-2-1003.

USEPA (U.S. Environmental Protection Agency). 2007. Administrative Order for Remedial Action and associated Statements of Work for Phase 2A and Phase 2B, respectively, In the Matter of Lower Fox River and Green Bay Superfund Site; Green Bay, WI; Operable Units 2-5.

USEPA and WDNR (Wisconsin Department of Natural Resources). 2003. Record of Decision, Operable Units 3, 4, and 5. Lower Fox River and Green Bay, Wisconsin. June.

USEPA and WDNR. 2007. Record of Decision Amendment: Operable Unit 2 (Deposit DD), Operable Unit 3, Operable Unit 4, ND Operable Unit 5 (River Mouth). Lower Fox River and Green Bay Superfund Site. June.

WDNR. 2008. Conditional Plan of Operations Approval Modification – Special Waste Acceptance Plan for Dredged Material Disposal at the Veolia Environmental Services Hickory Meadows Landfill. August 29.

WDNR. 2010. Wisconsin Administrative Code. Chapter NR 105, Surface Water Quality Criteria and Secondary Values for Toxic Substances. Downloaded 12/18/2017.

APPENDIX A

2018 PHOTOGRAPH LOG

APPENDIX A – Photo Log

Photograph 1 – The 10-inch dredge, *Mark Anthony*, on the Fox River

Photograph 2 – Moving J.F. Brennan's dredge *Ashtabula*

Photograph 3 – J.F. Brennan's 8-inch dredge *Ottawa River*

Photograph 4 – Booster pump

Photograph 5 – Mechanical placement of 1.5-inch armor stone

Photograph 6 – J.F. Brennan's operation of the sand spreader *Green Bay*

Photograph 7 – Loading of sand for the *Green Bay* spreader

Photograph 8 – Mechanical placement of sand

Photograph 9 – Placement of quarry spall

Photograph 10 – Fuel barge

Photograph 11 – Checking surface water level

Photograph 12 – Measuring water depth

Photograph 13 – Sampling crew push a core on the Fox River

Photograph 14 – Sampling crew advances core with hammer

Photograph 15 – Logging sediment cores

Photograph 16 – Sediment core sampling

Photograph 17 – Stockpiled sand on the sand pad

Photograph 18– BRM sand stockpile sampling

Photograph 19 – BRM rinsate test

Photograph 20 – Stockpile sand in sand storage area

Photograph 21 – Sand storage area

Photograph 22 – Hauling of sand for beneficial reuse from the sand storage area

Photograph 23 – Filter cake storage in Building B

Photograph 24 – Tetra Tech personnel performing filter cake strength testing

Photograph 25 – Performing the RaPID Assay field screening test for PCB

Photograph 26 – Loading filter cake into truck for hauling

Photograph 27 – Removing excess filter cake after loading

Photograph 28 – Filter cake hauling to ADS Hickory Meadows Landfill

Photograph 29 – Filter cake management at the ADS Hickory Meadows Landfill

Photograph 30 – Cleaning of trucks

Photograph 31 – Ultra-low-level mercury sampling

Photograph 32 – China clay monitoring

Photograph 33 – Bag filter cleaning

Photograph 34 – Chemical PPE

Photograph 35 – Turbidity monitoring raft

Photograph 36 – Tetra Tech cover sand delivery

Photograph 37 – SPRI cleaning under conveyor belt

Photograph 38 – Scalping screening

Photograph 39 – Screening the scalpings

Photograph 40 – Turbidity raft sonde calibration

Photograph 41 – PM_{-10} particulate air monitoring

Photograph 42 – SPRI inspecting filter cloths

Photograph 43 – Cleaning the effluent tank



Photograph 1
The 10-inch dredge, Mark Anthony, on the Fox River



Photograph 2
Moving J.F. Brennan's dredge *Ashtabula*



Photograph 3
J.F. Brennan's 8-inch dredge *Ottawa River*



Photograph 4
Booster pump



Photograph 5
Mechanical placement of 1.5-inch armor stone



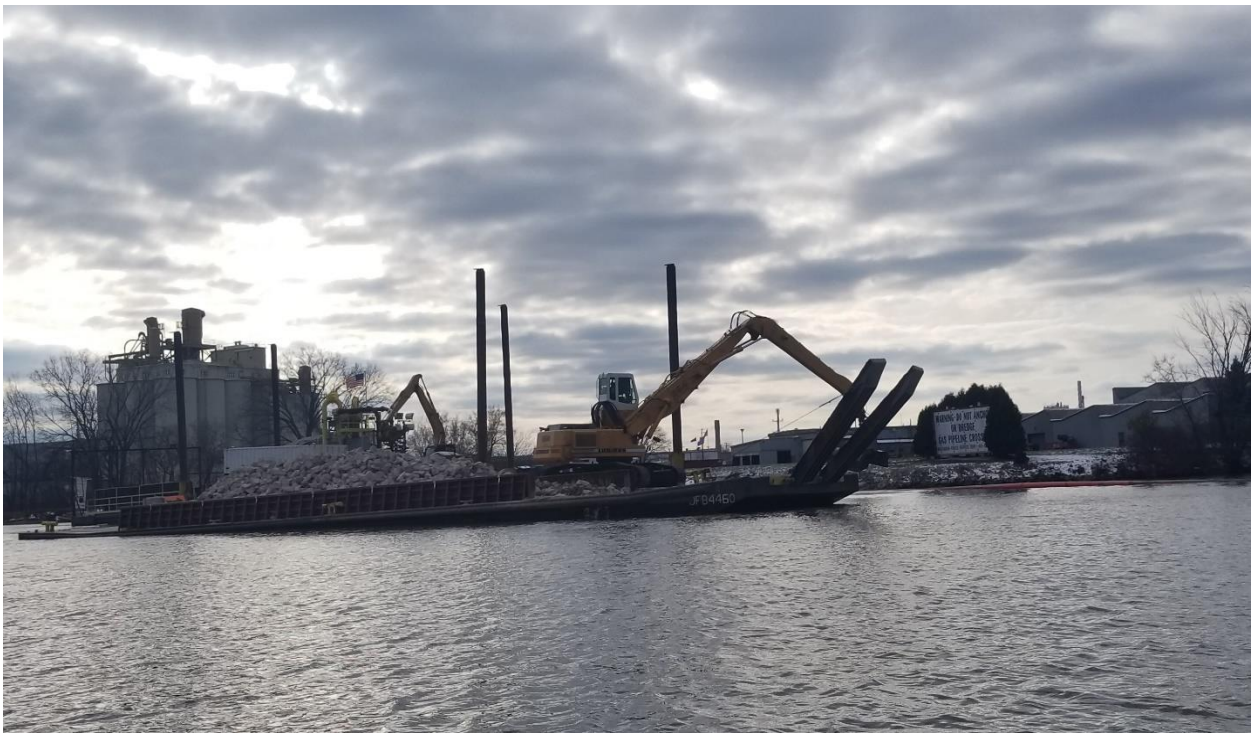
Photograph 6
J.F. Brennan's operation of the sand spreader *Green Bay*



Photograph 7
Loading of sand for the *Green Bay* spreader



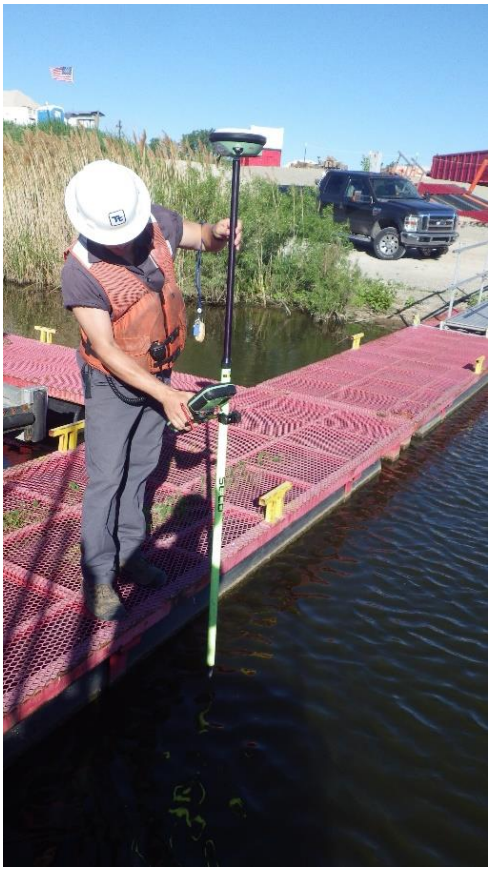
Photograph 8
Mechanical placement of sand



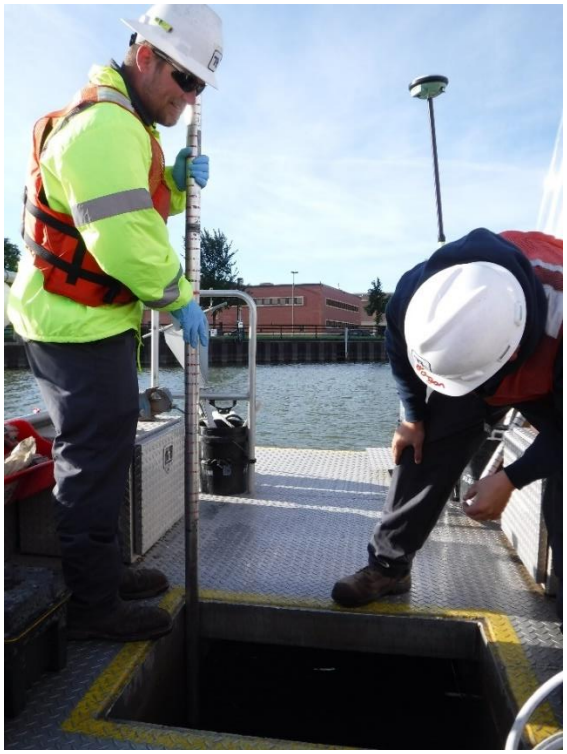
Photograph 9
Placement of quarry spall



Photograph 10
Fuel barge



Photograph 11
Checking surface water level



Photograph 12
Measuring water depth



Photograph 13
Sampling crew push a core on the Fox River



Photograph 14
Sampling crew advances core with hammer



Photograph 15
Logging sediment cores



Photograph 16
Sediment core sampling



Photograph 17
Stockpiled sand on the sand pad



Photograph 18
BRM sand stockpile sampling



Photograph 19
BRM rinsate test



Photograph 20
Stockpiling sand in sand storage area



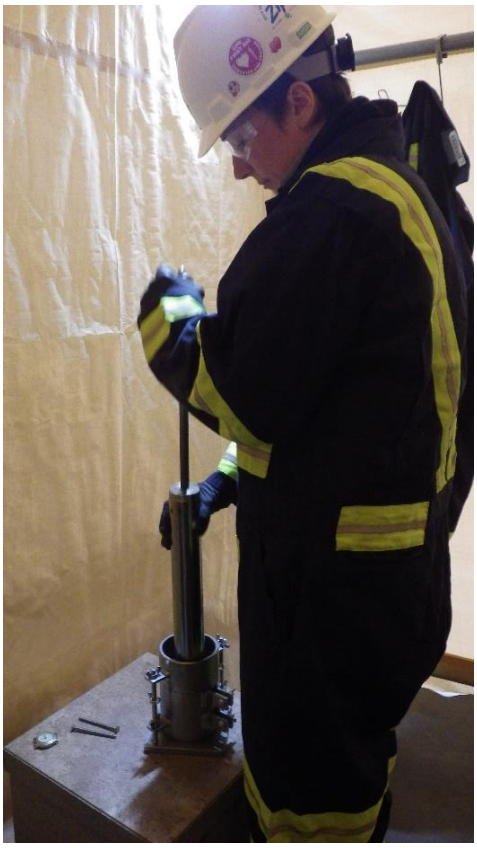
Photograph 21
Sand storage area



Photograph 22
Hauling of sand for beneficial reuse from the sand storage area



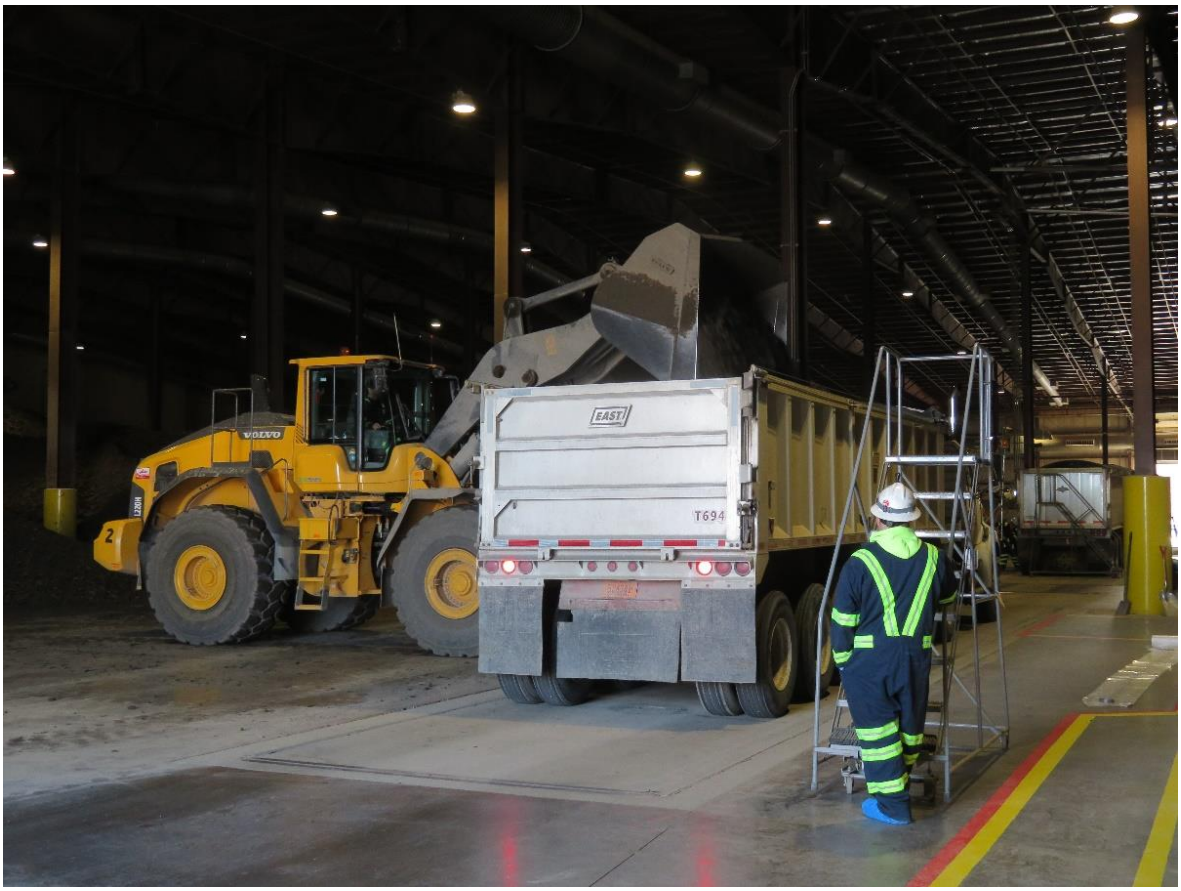
Photograph 23
Filter cake storage in Building B



Photograph 24
Tetra Tech personnel performing filter cake strength testing



Photograph 25
Performing the RaPID Assay field screening test for PCB



Photograph 26
Loading filter cake into truck for hauling



Photograph 27
Removing excess filter cake after loading



Photograph 28
Filter cake hauling to ADS Hickory Meadows Landfill



Photograph 29
Filter cake management at the ADS Hickory Meadows Landfill



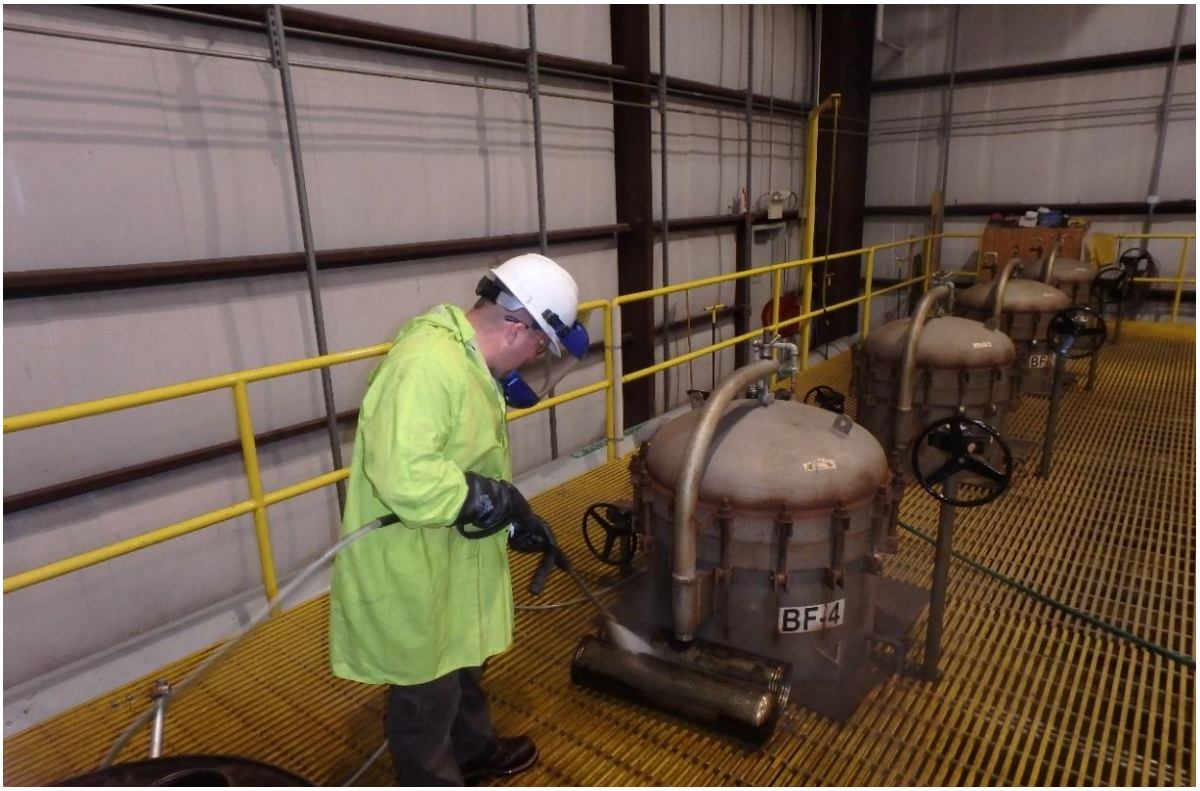
Photograph 30
Cleaning of truck



Photograph 31
Ultra-low-level mercury sampling



Photograph 32
China clay monitoring



Photograph 33
Bag filter cleaning



Photograph 34
Chemical PPE



Photograph 35
Turbidity monitoring raft



Photograph 36
Tetra Tech cover sand delivery



Photograph 37
SPRI cleaning under conveyor belt



Photograph 38
Scalping screening



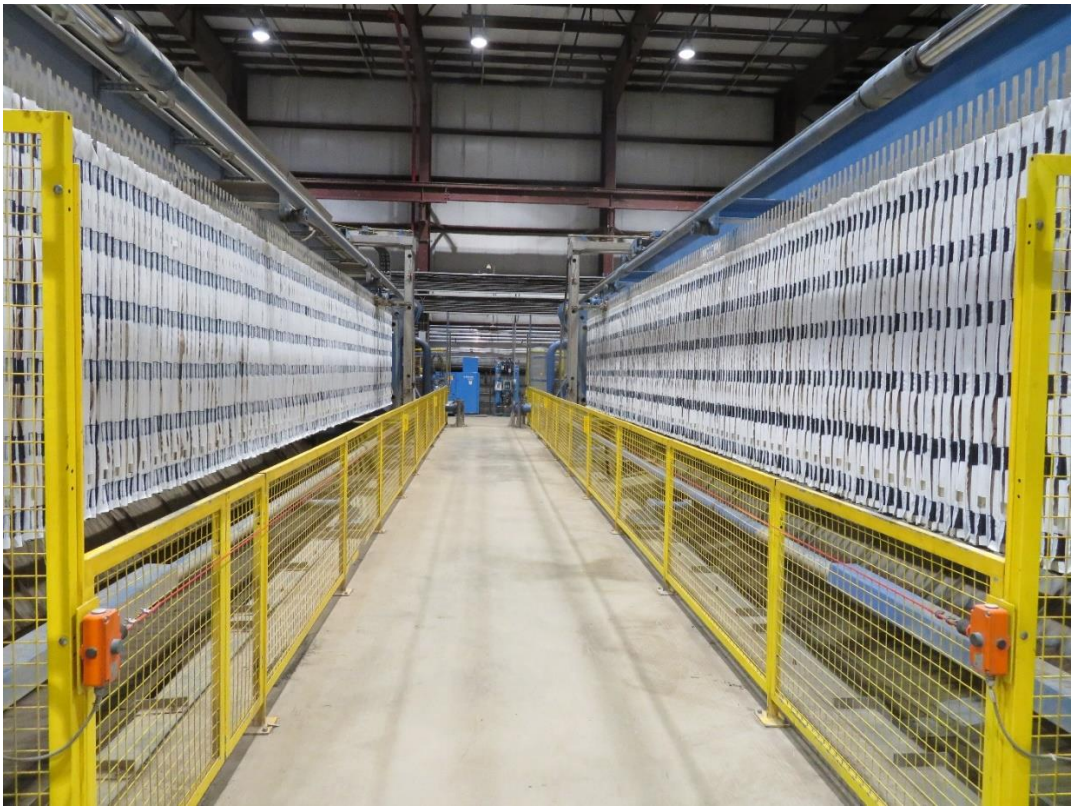
Photograph 39
Screening through scalpings



Photograph 40
Turbidity raft sonde calibration



Photograph 41
PM_{10} particulate air monitoring



Photograph 42
SPRI inspecting filter cloths



Photograph 43
Cleaning the effluent tank

APPENDIX D

2018 DREDGE, CAP, AND COVER

SUMMARY TABLES

Operating Unit	Dredge Management Area	DMU	Pre RA Survey Date	Post RA Survey Date	Design Data								Dredge Data							Area Data			Average Depth of Overdredge (Dredged Area)	Average Depth of Overdredge *(Total Area)*	Percent Complete
					Area	Acres	Planned RAL Removal Volume	Planned Allowable Overcut Volume	Pay Volume	Remaining Planned RAL Removal Volume	Remaining Planned Allowable Overcut Volume	Remaining Pay Volume	Total Volume Dredged	RAL Volume Dredged	Confirmed High Subgrade Volume	RAL Volume Remaining	Actual Overdredge Volume Dredged	Actual Overdredge Volume Remaining	Volume Dredged Below Actual Overcut Elevation	Remaining Soft Sediment	At or Below Design	High Subgrade			
OU4	**D82**		**6/11/2018**		**14,068.26**	**0.32**	**724.96**	**248.59**	**973.55**	**724.96**	**248.59**	**973.55**	**788.32**	**588.28**	**0.00**	**13.90**	**166.18**								
		RDMU 1		8/31/2018	14,068.26	0.32	724.96	248.59	973.55	724.96	248.59	973.55	788.32	588.28	0.00	13.90	166.18	82.38	33.86	1,111.89	12,956.37	0.00	5.00	4.61	92%
OU4	**DFIK-088**		**6/11/2018**		**1,356.05**	**0.03**	**43.32**	**22.99**	**66.31**	**43.32**	**22.99**	**66.31**	**59.00**	**38.65**	**0.00**	**0.67**	**16.63**								
		1		8/31/2018	1,356.05	0.03	43.32	22.99	66.31	43.32	22.99	66.31	59.00	38.65	0.00	0.67	16.63	8.26	3.72	124.25	1,231.80	0.00	5.35	4.86	91%
OU4	**DUTIL-020**		**3/22/2018**		**99,840.67**	**2.29**	**12,570.45**	**1,603.32**	**14,173.77**	**12,570.45**	**1,603.32**	**14,173.77**	**13,929.09**	**12,262.77**	**98.68**	**60.87**	**1,139.58**								
		RDMU 1A		6/1/2018	7,686.31	0.18	305.44	133.52	438.96	305.44	133.52	438.96	485.00	373.37	0.00	2.57	97.46	41.32	14.17	400.14	7,286.17	0.00	4.96	4.71	95%
		RDMU 1AR	6/11/2018	8/25/2018	13,001.29	0.30	2,546.63	239.46	2,786.09	2,546.63	239.46	2,786.09	2,646.07	2,402.78	0.00	3.58	183.78	57.19	59.51	706.52	12,294.77	0.00	6.41	6.06	95%
		RDMU 1AR2	8/25/2018	10/10/2018	19,566.51	0.45	3,535.62	361.18	3,896.80	3,535.62	361.18	3,896.80	3,578.44	3,294.32	28.62	24.60	214.56	149.96	69.56	2,659.81	16,294.05	612.65	5.65	4.70	86%
		RDMU 1B		6/1/2018	27,885.09	0.64	2,191.57	332.23	2,523.80	2,191.57	332.23	2,523.80	2,659.77	2,182.35	0.00	18.78	269.16	94.71	208.26	2,426.85	25,458.24	0.00	6.08	5.55	91%
		RDMU 1D		6/11/2018	5,598.65	0.13	547.82	96.10	643.92	547.82	96.10	643.92	601.56	484.46	7.05	0.85	78.88	20.21	38.22	120.07	5,186.96	291.62	7.31	6.78	98%
		RDMU 1E		6/11/2018	26,102.82	0.60	3,443.37	440.83	3,884.20	3,443.37	440.83	3,884.20	3,958.25	3,525.49	63.01	10.49	295.74	159.85	137.02	1,095.90	22,176.97	2,829.95	6.32	5.37	96%
OU4	**D40A**		**3/8/2018**		**171,029.87**	**3.93**	**7,886.62**	**3,061.77**	**10,948.39**	**7,886.62**	**3,061.77**	**10,948.39**	**13,062.13**	**10,178.89**			**2,248.75**								
		RDMU 2		4/20/2018	87,297.88	2.00	5,067.53	1,548.47	6,616.00	5,067.53	1,548.47	6,616.00	7,421.29	5,927.11	0.00	47.92	1,152.14	400.49	342.04	6,186.96	81,110.92	0.00	5.97"	5.55"	93%
		RDMU 3		4/18/2018	44,449.08	1.02	1,746.16	812.09	2,558.25	1,746.16	812.09	2,558.25	3,361.36	2,614.81	0.00	21.13	592.23	223.03	154.32	3,304.32	41,144.76	0.00	5.88"	5.44"	93%
		RDMU 4		4/18/2018	39,282.91	0.90	1,072.93	701.21	1,774.14	1,072.93	701.21	1,774.14	2,279.48	1,636.97	0.00	11.83	504.38	208.70	138.13	2,351.52	36,931.39	0.00	5.64"	5.30"	94%
OU4	**DFIK-092**		**3/8/2018**		**20,015.53**	**0.46**	**1,574.29**	**345.18**	**1,919.47**	**1,574.29**	**345.18**	**1,919.47**	**1,689.91**	**1,428.29**	**0.00**	**8.61**	**213.88**								
		1		4/10/2018	20,015.53	0.46	1,574.29	345.18	1,919.47	1,574.29	345.18	1,919.47	1,689.91	1,428.29	0.00	8.61	213.88	126.97	47.74	1,682.03	18,333.50	0.00	4.62"	4.23"	92%
OU4	**D39**		**3/8/2018**		**84,281.89**	**1.93**	**5,384.99**	**1,481.08**	**6,866.07**	**5,384.99**	**1,481.08**	**6,866.07**	**6,653.81**	**5,235.52**	**0.00**	**45.41**	**1,066.58**								
		RDMU 2R		6/13/2018	30,894.34	0.71	1,876.32	544.08	2,420.40	1,876.32	544.08	2,420.40	2,686.10	2,082.19	0.00	17.95	419.87	145.27	184.04	2,492.70	28,401.64	0.00	6.89	6.33	92%
		RDMU 6R		6/13/2018	53,387.55	1.23	3,508.67	937.00	4,445.67	3,508.67	937.00	4,445.67	3,967.71	3,153.33	0.00	27.46	646.71	317.43	167.67	4,730.04	48,657.51	0.00	5.42	4.94	91%
OU4	**D79**		**3/8/2018**		**15,216.35**	**0.35**	**358.60**	**247.57**	**606.17**	**358.60**	**247.57**	**606.17**	**398.44**	**223.56**	**11.28**	**2.49**	**123.42**								
		RDMU 1R		4/26/2018	15,216.35	0.35	358.60	247.57	606.17	358.60	247.57	606.17	398.44	223.56	11.28	2.49	123.42	91.10	51.46	397.34	13,370.49	1,448.52	4.24"	3.72"	97%
OU4	**D35H**		**3/5/2018**		**77,634.05**	**1.78**	**2,626.06**	**1,356.16**	**3,982.22**	**2,626.06**	**1,356.16**	**3,982.22**	**5,396.37**	**4,362.80**	**0.00**	**27.20**	**879.12**								
		RDMU 5R		4/4/2018	77,634.05	1.78	2,626.06	1,356.16	3,982.22	2,626.06	1,356.16	3,982.22	5,396.37	4,362.80	0.00	27.20	879.12	552.51	154.45	6,652.35	70,981.70	0.00	4.72"	4.31"	91%
OU4	**D68B**		**4/27/2018**		**26,902.24**	**0.62**	**2,545.57**	**423.35**	**2,968.92**	**2,545.57**	**423.35**	**2,968.92**	**2,172.84**	**2,025.53**	**167.96**	**8.07**	**113.46**								
		RDMU 5R		7/28/2018	26,902.24	0.62	2,545.57	423.35	2,968.92	2,545.57	423.35	2,968.92	2,172.84	2,025.53	167.96	8.07	113.46	162.82	33.85	1,963.34	20,842.02	4,096.88	2.29"	1.77"	93%
OU4	**D41**		**3/8/2018**		**39,260.06**	**0.90**	**1,071.75**	**582.51**	**1,654.26**	**1,071.75**	**582.51**	**1,654.26**	**2,097.88**	**1,515.46**	**0.00**	**13.66**	**484.47**								
		RDMU 2R		6/22/2018	39,260.06	0.90	1,071.75	582.51	1,654.26	1,071.75	582.51	1,654.26	2,097.88	1,515.46	0.00	13.66	484.47	233.11	97.95	3,185.66	36,074.40	0.00	5.23	4.81	92%
OU4	**DUTIL-023-DCA40**		**3/23/2018**		**20,077.77**	**0.46**	**1,853.46**	**359.85**	**2,213.31**	**1,853.46**	**359.85**	**2,213.31**	**2,850.24**	**2,250.04**	**0.00**	**11.07**	**316.24**								
		RDMU 1		8/9/2018	20,077.77	0.46	1,853.46	359.85	2,213.31	1,853.46	359.85	2,213.31	2,850.24	2,250.04	0.00	11.07	316.24	48.58	283.96	859.79	19,217.98	0.00	10.12	9.69	96%
OU4	**DNA-057**		**3/23/2018**		**3,282.67**	**0.08**	**263.91**	**59.38**	**323.29**	**263.91**	**59.38**	**323.29**	**303.17**	**245.03**	**27.90**	**2.51**	**31.84**								
		1		8/9/2018	3,282.67	0.08	263.91	59.38	323.29	263.91	59.38	323.29	303.17	245.03	27.90	2.51	31.84	22.01	26.30	241.94	2,377.92	662.81	7.92	5.74	93%
OU4	**DNA-D70**		**3/13/2018**		**3,464.45**	**0.08**	**125.51**	**61.00**	**186.51**	**125.51**	**61.00**	**186.51**	**230.09**	**123.13**	**0.00**	**2.02**	**50.40**								
		1		5/4/2018	3,464.45	0.08	125.51	61.00	186.51	125.51	61.00	186.51	230.09	123.13	0.00	2.02	50.40	6.40	56.56	140.59	3,323.86	0.00	10.43"	10.00"	96%
OU4	**D35J**		**3/13/2018**		**178,103.61**	**4.09**	**2,227.37**	**2,402.55**	**4,629.92**	**2,227.37**	**2,402.55**	**4,629.92**	**6,221.22**	**3,373.06**	**0.00**	**42.04**	**2,052.06**								
		RDMU 1		5/9/2018	89,428.55	2.05	1,104.16	1,119.36	2,223.52	1,104.16	1,119.36	2,223.52	2,946.40	1,554.87	0.00	13.66	1,008.07	220.93	383.46	2,189.83	87,238.72	0.00	5.17"	5.04"	98%
		RDMU 2		8/15/2018	88,675.06	2.04	1,123.21	1,283.19	2,406.40	1,123.21	1,283.19	2,406.40	3,274.82	1,818.19	0.00	28.38	1,043.99	406.36	412.64	4,591.39	84,083.67	0.00	5.61"	5.32"	95%
OU4	**DMC1**		**3/13/2018**		**23,652.07**	**0.54**	**1,901.40**	**422.14**	**2,323.54**	**1,901.40**	**422.14**	**2,323.54**	**1,962.35**	**1,655.98**	**205.15**	**1.06**	**215.39**								
		1		6/23/2018	23,652.07	0.54	1,901.40	422.14	2,323.54	1,901.40	422.14	2,323.54	1,962.35	1,655.98	205.15	1.06	215.39	213.52	90.98	366.47	17,225.94	6,059.66	5.76"	4.20"	98%
OU4	**DMC2**		**3/13/2018**		**108,577.34**	**2.49**	**4,143.15**	**1,764.88**	**5,908.03**	**4,143.15**	**1,764.88**	**5,908.03**	**3,679.58**	**2,506.19**	**44.03**	**16.11**	**916.92**								
		3	3/13/2018	6/15/2018	18,244.83	0.42	637.83	308.50	946.33	637.83	308.50	946.33	952.68	606.46	26.33	2.37	250.64	89.84	95.58	520.92	16,394.88	1,329.03	6.84	6.15	97%
		4B	3/13/2018	6/14/2018	20,663.62	0.47	384.01	369.42	753.43	384.01	369.42	753.43	638.17	375.93	0.00	5.26	237.96	134.69	24.28	970.94	19,692.68	0.00	4.31	4.11	95%
		5B	3/10/2018	9/13/2018	29,775.75	0.68	1,052.10	389.80	1,441.90	1,052.10	389.80	1,441.90	1,464.06	1,046.03	0.00	6.07	314.83	85.65	103.20	977.22	28,798.53	0.00	4.70	4.55	97%
		12	4/12/2018	7/26/2018	1,386.07	0.03	119.02	25.04	144.06	119.02	25.04	144.06	139.97	110.22	0.00	0.23	19.76	5.20	9.99	53.22	1,332.85	0.00	7.23	6.95	96%
		13	3/23/2018	7/10/2018	2,335.09	0.05	26.41	32.50	58.91	26.41	32.50	58.91	52.99	24.89	0.00	0.66	22.76	10.85	5.34	161.75	2,173.34	0.00	4.19	3.90	93%
		20	3/23/2018	10/26/2018	7,797.57	0.18	360.03	139.97	500.00	360.03	139.97	500.00	431.71	342.66	17.70	1.52	70.97	72.61	18.08	275.00	5,840.76	1,681.81	4.94	3.70	96%
OU4	**DNA-071**		**3/10/2018**		**16,390.78**	**0.38**	**1,023.97**	**279.71**	**1,303.68**	**681.16**	**216.44**	**897.60**	**793.01**	**614.33**	**104.68**	**7.77**	**140.43**								
		1		9/12/2018	3,914.80	0.09	475.70	72.06	547.76	271.22	71.61	342.83	226.00	187.04	104.68	0.07	29.82	42.53	9.14	31.40	1,985.91	1,897.49	6.36	3.22	99%
		2		9/12/2018	12,475.98	0.29	548.27	207.65	755.92	409.94	144.83	554.77	567.01	427.29	0.00	7.70	110.61	77.21	29.11	1,216.72	11,259.26	0.00	4.02	3.63	90%
OU4	**DUTIL-026-030**		**3/10/2018**		**58,433.48**	**1.34**	**2,447.14**	**688.33**	**3,135.47**	**1,917.30**	**648.52**	**2,565.82**	**2,872.54**	**1,964.59**	**0.00**	**17.15**	**557.13**								
		1		9/13/2018	5,586.03	0.13	590.28	103.16	693.44	481.35	101.91	583.26	613.40	501.11	0.00	1.31	82.96	20.28	29.33	241.27	5,344.76	0.00	6.81	6.51	96%
		2		9/13/2018	17,746.02	0.41	992.25	257.95	1,250.20	666.31	232.38	898.69	1,000.28	703.61	0.00	1.53	207.01	44.07	89.66	269.21	17,476.81	0.00	5.50	5.42	98%
		3		9/13/2018	18,417.65	0.42	550.04	186.05	736.09	540.38	186.04	726.42	770.51	543.05	0.00	2.63	150.82	47.75	76.64	481.80	17,935.85	0.00	4.11	4.00	97%
		4		9/13/2018	16,683.78	0.38	314.57	141.17	455.74	229.26	128.19	357.45	488.35	216.82	0.00	11.68	116.34	38.28	155.19	1,014.44	15,669.34	0.00	5.61	5.27	94%
OU4	**DCA44**		**3/10/2018**		**4,300.64**	**0.10**	**239.94**	**65.39**	**305.33**	**192.57**	**64.12**	**256.69**	**2,385.24**	**1,810.18**	**0.77**	**8.41**	**429.28**								
		1		9/13/2018	1,965.01	0.05	139.81	33.35	173.16	110.48	32.47	142.95	156.80	126.63	0.77	0.47	21.30	12.30	8.87	107.35	1,738.87	118.79	5.62	4.97	95%
		2		9/13/2018	2,335.63	0.05	100.13	32.04	132.17	82.09	31.65	113.74	117.19	83.44	0.00	0.81	27.61	9.57	6.14	169.25	2,166.38	0.00	5.05	4.68	93%
		10	3/10/2018	6/29/2018	28,374.41	0.65	1,563.75	499.65	2,063.40	1,563.75	499.65	2,063.40	2,111.25	1,600.11	0.00	7.13	380.37	124.03	130.77	1,296.23	27,078.18	0.00	6.12	5.84	95%
OU4	**D35M**		**4/12/2018**		**251,896.47**	**5.78**	**10,026.76**	**4,100.04**	**14,126.80**	**10,027.26**	**4,099.54**	**14,126.80**	**15,976.35**	**11,679.84**	**76.62**	**52.29**	**3,252.26**								
		RDMU 1		8/15/2018	91,658.54	2.10	3,653.83	1,521.20	5,175.03	3,653.83	1,521.20	5,175.03	5,857.40	4,151.92	76.62	17.15	1,243.56	374.55	461.92	3,005.98	86,963.94	1,688.62	6.35	6.03	97%
		RDMU 2		8/9/2018	77,141.49	1.77	1,749.44	1,092.11	2,841.55	1,749.44	1,092.11	2,841.55	3,245.71	2,177.43	0.00	14.75	863.56	442.36	204.72	3,634.98	73,506.51	0.00	4.71	4.49	95%
		RDMU 3		7/28/2018	83,096.44	1.91	4,623.49	1,486.73	6,110.22	4,623.99	1,486.23	6,110.22	6,873.24	5,350.49	0.00	20.39	1,145.14	366.55	377.61	4,303.44	78,793.00	0.00	6.26	5.94	95%
OU4	**D35X**				**21,562.38**	**0.50**	**1,071.62**	**389.51**	**1,461.13**	**1,071.62**	**389.51**	**1,461.13**	**1,823.56**	**1,375.75**	**0.00**	**2.38**	**320.71**								
		RDMU 1	3/23/2018	11/8/2018	21,562.38	0.50	1,071.62	389.51	1,461.13	1,071.62	389.51	1,461.13	1,823.56	1,375.75	0.00	2.38	320.71	77.42	127.10	671.37	20,891.01	0.00	6.95	6.73	97%
OU4	**35NOP-DCA45 RDM**				**73,080.11**	**1.68**	**3,085.21**	**1,326.17**	**4,411.38**	**3,085.21**	**1,326.17**	**4,411.38**	**4,719.63**	**3,511.04**	**0.00**	**21.23**	**993.55**								
		RDMU 3	3/23/2018	10/26/2018	47,498.65	1.09	1,315.08	857.61	2,172.69	1,315.08	857.61	2,172.69	2,448.56	1,647.74	0.00	6.93	655.87	220.95	144.95	1,479.35	46,019.30	0.00	5.64	5.46	97%
		RDMU 4	3/23/2018	10/26/2018	10,585.59	0.24	1,209.09	194.11	1,403.20	1,209.09	194.11	1,403.20	1,433.59	1,252.76	0.00	7.94	144.37	51.37	36.46	880.35	9,705.24	0.00	6.04	5.53	92%
		RDMU 5	3/23/2018	10/26/2018	14,995.87	0.34	561.04	274.45	835.49	561.04	274.45	835.49	837.48	610.54	0.00	6.36	193.31	83.43	33.63	870.07	14,125.80	0.00	5.21	4.90	94%
OU4	**D35NOP-DCA45**		**3/23/2018**		**35,246.47**	**0.81**	**1,199.99**	**588.48**	**1,788.47**	**274.00**	**410.58**	**684.58**	**716.77**	**98.84**	**0.00**	**167.60**	**359.81**								
		7		11/12/2018	35,246.47	0.81	1,199.99	588.48	1,788.47	274.00	410.58	684.58	716.77	98.84	0.00	167.60	359.81	134.63	258.12	4,570.52	30,675.95	0.00	6.53	5.68	87%
OU4	**DMC8**		**3/23/2018**		**4,555.53**	**0.10**	**133.45**	**79.90**	**213.35**	**133.45**	**79.90**	**213.35**	**208.66**	**114.93**	**0.00**	**0.60**	**68.77**								
		1		10/25/2018	4,555.53	0.10	133.45	79.90	213.35	133.45	79.90	213.35	208.66	114.93	0.00	0.60	68.77	9.91	24.96	119.31	4,436.22	0.00	6.85	6.67	97%
OU4	**DMC7**		**3/23/2018**		**8,335.86**	**0.19**	**943.54**	**152.48**	**1,096.02**	**943.54**	**152.48**	**1,096.02**	**1,018.35**	**872.64**	**67.41**	**3.09**	**104.01**								
		1		10/26/2018	8,335.86	0.19	943.54	152.48	1,096.02	943.54	152.48	1,096.02	1,018.35	872.64	67.41	3.09	104.01	56.18	41.70	358.88	6,657.74	1,319.24	7.09	5.66	96%
OU4	**D43A**		**4/25/2018**		**64,246.43**	**1.47**	**4,761.53**	**1,156.98**	**5,918.51**	**1,995.32**	**991.43**	**2,986.75**	**1,160.73**	**915.94**	**1,307.53**	**534.48**	**228.35**								
		7		10/16/2018	64,246.43	1.47	4,761.53	1,156.98	5,918.51	1,995.32	991.43	2,986.75	1,160.73	915.94	1,307.53	534.48	228.35	1,000.81	16.44	10,018.95	18,757.03	35,470.45	4.23	1.23	84%
OU4	**D44**		**4/25/2018**		**109,514.03**	**2.51**	**8,918.01**	**1,815.19**	**10,733.20**	**6,698.34**	**1,448.21**	**8,146.55**	**6,309.73**	**4,935.11**	**1,645.13**	**180.11**	**1,040.96**								
		3		9/29/2018	69,960.28	1.61	4,500.78	1,068.42	5,569.20	2,281.11	701.44	2,982.55	2,167.27	1,528.64	676.48	176.74	688.10	518.10	-49.47	3,668.69	56,362.26	9,929.33	3.67	2.96	95%

Operating Unit	Dredge Management Area	DMU	Pre RA Survey Date	Post RA Survey Date	Design Data								Dredge Data							Area Data			Average Depth of Overdredge (Dredged Area)	Average Depth of Overdredge *(Total Area)*	Percent Complete
					Area	Acres	Planned RAL Removal Volume	Planned Allowable Overcut Volume	Pay Volume	Remaining Planned RAL Removal Volume	Remaining Planned Allowable Overcut Volume	Remaining Pay Volume	Total Volume Dredged	RAL Volume Dredged	Confirmed High Subgrade Volume	RAL Volume Remaining	Actual Overdredge Volume Dredged	Actual Overdredge Volume Remaining	Volume Dredged Below Actual Overcut Elevation	Remaining Soft Sediment	At or Below Design	High Subgrade			
		4		11/8/2018	39,553.75	0.91	4,417.23	746.77	5,164.00	4,417.23	746.77	5,164.00	4,142.46	3,406.47	968.65	3.37	352.86	391.76	383.13	645.14	22,940.20	15,968.41	10.39	6.03	98%
OU4	**D162**		**3/13/2018**		**13,877.61**	**0.32**	**918.35**	**250.35**	**1,168.70**	**918.35**	**250.35**	**1,168.70**	**1,110.48**	**896.04**	**10.69**	**11.67**	**171.43**								
		1		8/8/2018	13,877.61	0.32	918.35	250.35	1,168.70	918.35	250.35	1,168.70	1,110.48	896.04	10.69	11.67	171.43	81.40	43.01	1,427.73	12,204.99	244.89	5.69	5.01	90%
OU4	**D168**		**3/13/2018**		**11,758.92**	**0.27**	**452.00**	**218.56**	**670.56**	**452.00**	**218.56**	**670.56**	**632.33**	**449.08**	**0.00**	**2.91**	**138.64**								
		1		3/29/2018	11,758.92	0.27	452.00	218.56	670.56	452.00	218.56	670.56	632.33	449.08	0.00	2.91	138.64	78.94	44.61	874.78	10,884.14	0.00	5.46"	5.05"	93%
OU4	**D94D**		**3/14/2018**		**16,118.48**	**0.37**	**1,228.43**	**294.47**	**1,522.90**	**344.59**	**158.74**	**503.33**	**167.01**	**41.98**	**339.86**	**8.98**	**116.41**								
		1		3/29/2018	16,118.48	0.37	1,228.43	294.47	1,522.90	344.59	158.74	503.33	167.01	41.98	339.86	8.98	116.41	165.35	8.62	1,131.49	10,275.92	4,711.07	3.94"	2.51"	93%
OU4	**DSC105**		**3/14/2018**		**28,068.37**	**0.64**	**1,345.62**	**526.12**	**1,871.74**	**40.23**	**195.69**	**235.92**	**351.18**	**57.17**	**0.00**	**6.65**	**219.03**								
		1		3/29/2018	20,855.29	0.48	1,072.37	391.75	1,464.12	19.30	129.70	149.00	233.27	27.57	0.00	3.99	150.08	97.33	55.62	738.81	20,116.48	0.00	3.31"	3.20"	96%
		2		3/29/2018	7,213.08	0.17	273.25	134.37	407.62	20.93	65.99	86.92	117.91	29.60	0.00	2.66	68.95	40.57	19.36	518.33	6,694.75	0.00	4.27"	3.97"	93%
OU4	**D46D**		**3/14/2018**		**19,842.85**	**0.46**	**876.55**	**379.07**	**1,255.62**	**876.55**	**379.07**	**1,255.62**	**1,073.29**	**800.66**	**60.95**	**14.94**	**227.81**								
		1		7/31/2018	19,842.85	0.46	876.55	379.07	1,255.62	876.55	379.07	1,255.62	1,073.29	800.66	60.95	14.94	227.81	143.08	44.82	2,023.67	16,475.53	1,343.65	5.36	4.45	90%
OU4	**DUTIL-043-045-2**		**3/14/2018**		**25,184.79**	**0.58**	**852.76**	**463.00**	**1,315.76**	**834.71**	**453.21**	**1,287.92**	**1,118.15**	**784.42**	**0.00**	**7.79**	**297.19**								
		1		9/18/2018	25,184.79	0.58	852.76	463.00	1,315.76	834.71	453.21	1,287.92	1,118.15	784.42	0.00	7.79	297.19	154.91	36.54	1,832.23	23,352.56	0.00	4.63"	4.29"	93%
OU4	**DUTIL-043-045-3**		**3/14/2018**		**7,376.18**	**0.17**	**149.25**	**131.37**	**280.62**	**149.25**	**131.37**	**280.62**	**244.07**	**146.82**	**0.00**	**1.56**	**83.60**								
		1		8/22/2018	7,376.18	0.17	149.25	131.37	280.62	149.25	131.37	280.62	244.07	146.82	0.00	1.56	83.60	45.31	13.65	402.70	6,973.48	0.00	4.52"	4.27"	95%
OU4	**DUTIL-043-045-4**		**3/14/2018**		**10,104.12**	**0.23**	**284.00**	**181.22**	**465.22**	**245.33**	**171.40**	**416.73**	**379.65**	**240.09**	**0.00**	**1.09**	**124.79**								
		1		9/18/2018	10,104.12	0.23	284.00	181.22	465.22	245.33	171.40	416.73	379.65	240.09	0.00	1.09	124.79	45.39	14.77	237.73	9,866.39	0.00	4.58"	4.48"	98%
OU4	**D170**		**3/14/2018**		**26,536.68**	**0.61**	**635.63**	**474.80**	**1,110.43**	**331.71**	**334.10**	**665.81**	**662.09**	**360.70**	**0.00**	**1.13**	**269.77**								
		1		9/18/2018	26,536.68	0.61	635.63	474.80	1,110.43	331.71	334.10	665.81	662.09	360.70	0.00	1.13	269.77	147.70	31.62	425.08	26,111.60	0.00	3.74"	3.68"	98%
OU4	**D46A**		**3/14/2018**		**162,998.48**	**3.74**	**10,633.35**	**3,004.30**	**13,637.65**	**1,684.27**	**1,645.16**	**3,329.43**	**3,745.23**	**1,727.72**	**0.00**	**37.60**	**1,553.49**								
		1		7/28/2018	86,147.69	1.98	7,586.97	1,602.59	9,189.56	290.09	673.84	963.93	1,163.58	273.39	0.00	26.50	648.76	287.49	241.43	2,445.16	83,702.53	0.00	3.45"	3.35"	97%
		2		7/28/2018	9,437.99	0.22	422.47	168.61	591.08	69.30	107.65	176.95	198.08	84.97	0.00	4.55	84.74	48.07	28.37	665.12	8,772.87	0.00	4.18"	3.88"	93%
		3		7/28/2018	67,412.80	1.55	2,623.91	1,233.10	3,857.01	1,324.88	863.67	2,188.55	2,383.57	1,369.36	0.00	6.55	819.99	186.47	194.22	996.63	66,416.17	0.00	4.95"	4.87"	99%
OU4	**D159B**		**3/14/2018**		**71,602.55**	**1.64**	**7,495.13**	**1,323.26**	**8,818.39**	**67.51**	**468.85**	**536.36**	**739.64**	**136.62**	**0.00**	**14.64**	**441.71**								
		1		4/2/2018	71,602.55	1.64	7,495.13	1,323.26	8,818.39	67.51	468.85	536.36	739.64	136.62	0.00	14.64	441.71	353.67	161.31	2,612.93	68,989.62	0.00	2.83"	2.73"	96%
OU4	**D47A**		**3/14/2018**		**28,443.79**	**0.65**	**2,421.53**	**530.07**	**2,951.60**	**93.15**	**279.18**	**372.33**	**504.07**	**179.70**	**0.00**	**10.43**	**289.92**								
		1		7/18/2018	28,443.79	0.65	2,421.53	530.07	2,951.60	93.15	279.18	372.33	504.07	179.70	0.00	10.43	289.92	152.46	34.45	1,631.42	26,812.37	0.00	3.92"	3.69"	94%
OU4	**D160A**		**3/14/2018**		**8,668.18**	**0.20**	**692.11**	**166.49**	**858.60**	**1.62**	**25.94**	**27.56**	**106.20**	**10.57**	**0.00**	**1.66**	**53.74**								
		1		4/2/2018	8,668.18	0.20	692.11	166.49	858.60	1.62	25.94	27.56	106.20	10.57	0.00	1.66	53.74	27.34	41.89	352.34	8,315.84	0.00	3.73"	3.57"	96%
OU4	**DCA86**		**3/14/2018**		**16,156.62**	**0.37**	**2,625.93**	**299.97**	**2,925.90**	**502.35**	**209.85**	**712.20**	**769.97**	**581.88**	**0.00**	**4.61**	**157.93**								
		1		7/18/2018	16,156.62	0.37	2,625.93	299.97	2,925.90	502.35	209.85	712.20	769.97	581.88	0.00	4.61	157.93	84.28	30.16	957.98	15,198.64	0.00	4.01"	3.77"	94%
OU4	**D160B**		**3/14/2018**		**2,747.25**	**0.06**	**302.27**	**53.57**	**355.84**	**302.27**	**53.57**	**355.84**	**342.12**	**296.42**	**0.00**	**2.22**	**36.02**								
		1		7/18/2018	2,747.25	0.06	302.27	53.57	355.84	302.27	53.57	355.84	342.12	296.42	0.00	2.22	36.02	14.98	9.68	247.44	2,499.81	0.00	5.92"	5.39"	91%
OU4	**D47D**		**3/23/2018**		**72,017.74**	**1.65**	**3,096.20**	**1,152.60**	**4,248.80**	**791.00**	**742.23**	**1,533.23**	**1,075.98**	**502.56**	**367.28**	**29.23**	**401.15**								
		3		10/22/2018	72,017.74	1.65	3,096.20	1,152.60	4,248.80	791.00	742.23	1,533.23	1,075.98	502.56	367.28	29.23	401.15	618.49	172.27	4,251.15	50,612.89	17,153.70	3.67	2.58	94%
OU4	**DCA85B**		**3/23/2018**		**57,130.21**	**1.31**	**7,561.22**	**1,035.59**	**8,596.81**	**2,194.90**	**854.38**	**3,049.28**	**3,305.10**	**2,529.49**	**0.00**	**26.05**	**662.49**								
		1		9/29/2018	57,130.21	1.31	7,561.22	1,035.59	8,596.81	2,194.90	854.38	3,049.28	3,305.10	2,529.49	0.00	26.05	662.49	324.20	113.12	3,336.41	53,793.80	0.00	4.67"	4.40"	94%
OU4	**D46G**		**3/14/2018**		**19,443.99**	**0.45**	**1,485.09**	**320.53**	**1,805.62**	**659.40**	**268.97**	**928.37**	**1,048.30**	**756.08**	**0.00**	**18.50**	**184.32**								
		1		10/8/2018	19,443.99	0.45	1,485.09	320.53	1,805.62	659.40	268.97	928.37	1,048.30	756.08	0.00	18.50	184.32	110.42	107.90	1,846.24	17,597.75	0.00	5.38"	4.87"	91%
OU4	**D46E**		**3/14/2018**		**39,315.23**	**0.90**	**2,139.39**	**610.26**	**2,749.65**	**1,458.13**	**606.81**	**2,064.94**	**1,326.15**	**1,017.26**	**575.55**	**15.31**	**219.27**								
		1		10/22/2018	39,315.23	0.90	2,139.39	610.26	2,749.65	1,458.13	606.81	2,064.94	1,326.15	1,017.26	575.55	15.31	219.27	468.53	89.62	986.38	20,574.16	17,754.69	4.86"	2.55"	97%
OU4	**D77C**		**4/25/2018**		**18,748.99**	**0.43**	**668.10**	**309.25**	**977.35**	**668.10**	**309.25**	**977.35**	**498.34**	**374.14**	**314.82**	**2.31**	**120.72**								
		1		10/22/2018	18,748.99	0.43	668.10	309.25	977.35	668.10	309.25	977.35	498.34	374.14	314.82	2.31	120.72	248.00	3.48	484.13	8,134.54	10,130.32	4.95	2.15	97%
OU4	**D47B**		**4/2/2018**		**58,517.56**	**1.34**	**2,518.83**	**1,020.30**	**3,539.13**	**2,274.44**	**977.28**	**3,251.72**	**3,171.79**	**2,308.01**	**0.00**	**24.34**	**659.41**								
		2		5/23/2018	27,617.44	0.63	1,183.73	457.49	1,641.22	1,116.88	448.02	1,564.90	1,649.22	1,158.02	0.00	15.96	346.34	128.68	144.86	2,437.39	25,180.05	0.00	6.32"	5.76"	91%
		3		5/7/2018	30,900.12	0.71	1,335.10	562.81	1,897.91	1,157.56	529.26	1,686.82	1,522.57	1,149.99	0.00	8.38	313.07	212.50	59.51	2,206.06	28,694.06	0.00	4.21"	3.91"	93%
OU4	**D47H**		**4/2/2018**		**13,160.10**	**0.30**	**1,738.12**	**234.94**	**1,973.06**	**199.69**	**142.77**	**342.46**	**259.22**	**111.43**	**85.60**	**0.96**	**94.19**								
		3		4/27/2018	13,160.10	0.30	1,738.12	234.94	1,973.06	199.69	142.77	342.46	259.22	111.43	85.60	0.96	94.19	95.07	53.60	239.53	10,168.01	2,752.56	4.71"	3.64"	98%
OU4	**D138**		**4/12/2018**		**215,938.76**	**4.96**	**13,448.02**	**4,010.87**	**17,458.89**	**13,448.02**	**4,010.87**	**17,458.89**	**15,810.80**	**13,390.85**	**0.00**	**58.99**	**2,196.50**								
		1		7/2/2018	24,673.77	0.57	1,162.44	454.71	1,617.15	1,162.44	454.71	1,617.15	1,411.92	1,154.47	0.00	9.79	231.23	224.04	26.22	2,293.36	22,380.41	0.00	3.73	3.38	91%
		2		7/2/2018	61,536.52	1.41	6,183.41	1,148.15	7,331.56	6,183.41	1,148.15	7,331.56	6,815.45	6,170.90	0.00	12.51	591.80	534.47	52.75	4,407.66	57,128.86	0.00	3.66	3.39	93%
		3		6/24/2018	30,653.65	0.70	1,303.73	566.97	1,870.70	1,303.73	566.97	1,870.70	1,700.86	1,301.02	0.00	2.71	367.36	199.58	32.48	889.48	29,764.17	0.00	4.35	4.23	97%
		4		7/2/2018	26,461.94	0.61	2,005.57	497.04	2,502.61	2,005.57	497.04	2,502.61	2,404.53	2,001.52	0.00	4.05	332.12	146.92	70.89	1,352.48	25,109.46	0.00	5.20	4.93	95%
		5		6/29/2018	30,368.19	0.70	740.41	544.94	1,285.35	740.41	544.94	1,285.35	1,007.74	729.26	0.00	11.15	266.97	285.17	11.51	2,941.08	27,427.11	0.00	3.29	2.97	90%
		6		6/29/2018	42,244.69	0.97	2,052.46	799.06	2,851.52	2,052.46	799.06	2,851.52	2,470.30	2,033.68	0.00	18.78	407.02	372.57	29.60	3,992.19	38,252.50	0.00	3.70	3.35	91%
OU4	**DMC34**		**4/12/2018**		**3,449.00**	**0.08**	**108.53**	**65.63**	**174.16**	**108.53**	**65.63**	**174.16**	**148.10**	**100.97**	**7.23**	**0.54**	**39.53**								
		1		7/2/2018	3,449.00	0.08	108.53	65.63	174.16	108.53	65.63	174.16	148.10	100.97	7.23	0.54	39.53	25.01	7.60	124.64	2,778.99	545.37	5.49	4.43	96%
OU4	**D49**		**4/2/2018**		**67,168.33**	**1.54**	**7,873.69**	**1,254.71**	**9,128.40**	**203.26**	**283.54**	**486.80**	**2,691.43**	**122.76**	**0.00**	**55.67**	**322.38**								
		1		4/10/2018	67,168.33	1.54	7,873.69	1,254.71	9,128.40	203.26	283.54	486.80	2,691.43	122.76	0.00	55.67	322.38	76.13	2,246.29	2,156.63	65,011.70	0.00	12.80"	12.39"	97%
OU4	**D49 MICRO**		**4/11/2018**		**114,695.85**	**2.63**	**4,656.35**	**2,044.39**	**6,700.74**	**4,656.35**	**2,044.39**	**6,700.74**	**5,880.20**	**4,594.40**	**5.81**	**86.23**	**1,107.82**								
		101		4/10/2018	55,804.73	1.28	1,786.66	969.49	2,756.15	1,786.66	969.49	2,756.15	2,313.92	1,742.50	0.00	44.16	512.22	487.55	59.20	6,604.45	49,200.28	0.00	3.76"	3.32"	88%
		102		4/27/2018	58,891.12	1.35	2,869.69	1,074.90	3,944.59	2,869.69	1,074.90	3,944.59	3,566.28	2,851.90	5.81	42.07	595.60	483.53	118.78	5,818.65	52,664.73	407.74	4.39"	3.93"	90%
OU4	**D47EFG**		**3/12/2018**		**406,355.47**	**9.33**	**58,206.89**	**7,331.81**	**65,538.70**	**49,089.02**	**7,090.56**	**56,179.58**	**56,356.55**	**50,282.64**	**0.00**	**59.70**	**5,042.71**								
		1		4/28/2018	58,892.80	1.35	2,180.81	971.40	3,152.21	922.04	739.37	1,661.41	1,624.88	987.73	0.00	15.80	531.16	325.21	105.99	2,831.50	56,061.30	0.00	3.68"	3.51"	95%
		5		11/7/2018	86,580.98	1.99	13,404.34	1,547.16	14,951.50	5,545.24	1,537.94	7,083.18	8,147.60	6,765.89	0.00	13.27	1,111.68	443.34	270.03	3,603.04	82,977.94	0.00	5.40"	5.17"	96%
		6		11/12/2018	86,934.88	2.00	11,628.66	1,592.03	13,220.69	11,628.66	1,592.03	13,220.69	13,389.17	11,626.54	0.00	2.12	1,359.49	238.56	403.14	707.73	86,227.15	0.00	6.62"	6.57"	99%
		7		11/7/2018	86,746.52	1.99	13,751.75	1,606.40	15,358.15	13,751.75	1,606.40	15,358.15	14,802.99	13,699.01	0.00	8.48	1,002.31	601.79	101.67	2,968.20	83,778.32	0.00	4.27	4.12	97%
		8		10/26/2018	87,200.29	2.00	17,241.33	1,614.82	18,856.15	17,241.33	1,614.82	18,856.15	18,391.91	17,203.47	0.00	20.03	1,038.07	576.05	150.37	5,543.80	81,656.49	0.00	4.72"	4.42"	94%
OU4	**D161**		**3/12/2018**		**90,655.15**	**2.08**	**20,516.83**	**1,659.00**	**22,175.83**	**3,072.33**	**1,258.02**	**4,330.35**	**3,814.21**	**803.00**	**0.00**	**2.46**	**495.48**								
		1		8/25/2018	30,137.80	0.69	9,318.79	557.51	9,876.30	353.19	375.65	728.84	3,814.21	803.00	0.00	2.46	495.48	13.23	2,515.73	291.61	29,846.19	0.00	32.69	32.37	99%
OU4	**DCA57 Micro**		**4/26/2018**		**58,431.37**	**1.34**	**2,376.59**	**1,079.58**	**3,456.17**	**2,376.59**	**1,079.58**	**3,456.17**	**4,431.78**	**3,185.99**	**0.00**	**6.35**	**919.82**								
		102		11/12/2018	58,431.37	1.34	2,376.59	1,079.58	3,456.17	2,376.59	1,079.58	3,456.17	4,431.78	3,185.99	0.00	6.35	919.82	161.59	325.97	1,301.76	57,129.61	0.00	7.07	6.91	98%
OU4	**D47C**		**4/2/2018**		**363,797.55**	**8.35**	**59,161.65**	**6,713.73**	**65,875.38**	**14,159.82**	**4,532.80**	**18,692.62**	**19,389.00**	**14,415.75**	**0.00**	**282.23**	**4,064.05**								
		2		5/24/2018	83,614.76	1.92	18,601.42	1,519.81	20,121.23	92.16	424.06	516.22	586.17	17.48	0.00	123.86	440.50	435.75	128.19	5,238.82	78,375.94	0.00	2.35	2.20	94%
		3		5/23/2018	83,617.97	1.92	26,093.89	1,547.47	27,641.36	26.82	526.19	553.01	1,911.35	496.99	0.00	2.56	1,071.06	239.15	343.30	1,063.20	82,554.77	0.00	5.55"	5.48"	99%
		5		4/26/2018	85,720.94	1.97	5,673.91	1,583.64	7,257.55	5,317.52	1,531.54	6,849.06	6,303.12	5,186.10	0.00	151.69	976.15	561.40	140.87	7,609.80	78,111.14	0.00	4.63"	4.22"	91%
		6		4/26/2018	86,921.69	2.00	7,470.96	1,614.45	9,085.41	7,401.85	1,602.65	9,004.50	8,758.47	7,394.45	0.00	3.38	1,182.00	419.66	182.02	1,165.90	85,755.79	0.00	5.15"	5.08"	99%

Operating Unit	Dredge Management Area	DMU	Pre RA Survey Date	Post RA Survey Date	Design Data								Dredge Data							Area Data			Average Depth of Overdredge (Dredged Area)	Average Depth of Overdredge *(Total Area)*	Percent Complete
					Area	Acres	Planned RAL Removal Volume	Planned Allowable Overcut Volume	Pay Volume	Remaining Planned RAL Removal Volume	Remaining Planned Allowable Overcut Volume	Remaining Pay Volume	Total Volume Dredged	RAL Volume Dredged	Confirmed High Subgrade Volume	RAL Volume Remaining	Actual Overdredge Volume Dredged	Actual Overdredge Volume Remaining	Volume Dredged Below Actual Overcut Elevation	Remaining Soft Sediment	At or Below Design	High Subgrade			
		7		4/26/2018	23,922.19	0.55	1,321.47	448.36	1,769.83	1,321.47	448.36	1,769.83	1,829.89	1,320.73	0.00	0.74	394.34	48.76	114.82	206.26	23,715.93	0.00	6.96	6.90	99%
OU4	**D47C Micro**		**4/26/2018**		**165,690.46**	**3.80**	**7,007.43**	**2,798.53**	**9,805.96**	**7,007.43**	**2,798.53**	**9,805.96**	**10,037.93**	**7,307.16**	**0.00**	**15.90**	**2,225.13**								
		103		11/12/2018	83,782.60	1.92	5,273.53	1,542.17	6,815.70	5,273.53	1,542.17	6,815.70	6,619.30	5,139.05	0.00	7.51	1,212.01	325.55	268.24	1,958.07	81,824.53	0.00	5.86	5.72	98%
		104		11/12/2018	81,907.86	1.88	1,733.90	1,256.36	2,990.26	1,733.90	1,256.36	2,990.26	3,418.63	2,168.11	0.00	8.39	1,013.12	337.09	237.40	2,066.68	79,841.18	0.00	5.07	4.95	97%
OU5	**D54**		**3/9/2018**		**213,596.89**	**4.90**	**46,957.27**	**3,960.35**	**50,917.62**	**46,957.27**	**3,960.35**	**50,917.62**	**50,720.40**	**46,894.21**	**0.00**	**63.02**	**2,889.23**								
		9		8/14/2018	59,036.75	1.36	25,219.82	1,093.95	26,313.77	25,219.82	1,093.95	26,313.77	26,428.02	25,208.81	0.00	11.01	896.77	196.19	322.44	2,262.40	56,774.35	0.00	6.96"	6.69"	96%
		10		8/14/2018	48,347.45	1.11	13,407.29	895.67	14,302.96	13,407.29	895.67	14,302.96	14,233.34	13,396.00	0.00	11.29	638.21	256.74	199.13	2,584.41	45,763.04	0.00	5.93	5.61	95%
		11		8/14/2018	67,429.38	1.55	2,737.67	1,267.07	4,004.74	2,737.67	1,267.07	4,004.74	3,552.70	2,712.28	0.00	25.35	752.92	495.42	87.50	5,100.47	62,328.91	0.00	4.37	4.04	92%
		12		7/13/2018	38,783.31	0.89	5,592.49	703.66	6,296.15	5,592.49	703.66	6,296.15	6,506.34	5,577.12	0.00	15.37	601.33	133.80	327.89	2,227.46	36,555.85	0.00	8.24	7.76	94%
OU5	**D54 Micro**		**8/14/2018**		**41,815.69**	**0.96**	**11,483.71**	**860.33**	**12,344.04**	**11,483.71**	**860.33**	**12,344.04**	**12,296.36**	**11,377.07**	**0.00**	**6.16**	**630.72**								
		101		9/29/2018	41,815.69	0.96	11,483.71	860.33	12,344.04	11,483.71	860.33	12,344.04	12,296.36	11,377.07	0.00	6.16	630.72	136.13	288.57	1,300.52	40,515.17	0.00	7.35	7.12	97%
OU4	**DCA60**		**3/8/2018**		**246,871.46**	**5.67**	**51,185.32**	**4,574.19**	**55,759.51**	**51,185.77**	**4,573.74**	**55,759.51**	**55,382.02**	**51,128.41**	**0.00**	**43.24**	**3,489.04**								
		1		4/26/2018	21,617.16	0.50	2,889.52	400.31	3,289.83	2,889.52	400.31	3,289.83	3,236.18	2,888.90	0.00	0.62	290.58	109.73	56.70	297.33	21,319.83	0.00	5.28"	5.21"	99%
		2		5/16/2018	23,584.80	0.54	6,900.37	436.75	7,337.12	6,900.37	436.75	7,337.12	7,258.66	6,897.18	0.00	3.19	307.97	128.78	53.51	620.97	22,963.83	0.00	5.10"	4.97"	97%
OU5	DCA60	3		4/26/2018	41,527.73	0.95	6,021.31	768.22	6,789.53	6,021.31	768.22	6,789.53	6,694.23	6,016.07	0.00	5.25	579.22	187.42	98.94	1,234.54	40,293.19	0.00	5.45"	5.29"	97%
		4		4/26/2018	40,863.37	0.94	8,904.82	756.73	9,661.55	8,904.82	756.73	9,661.55	9,527.28	8,898.35	0.00	6.47	556.62	200.11	72.31	1,411.86	39,451.51	0.00	5.17"	4.99"	97%
		5		5/24/2018	38,715.46	0.89	10,586.27	716.95	11,303.22	10,586.72	716.50	11,303.22	11,375.28	10,575.92	0.00	10.35	602.07	114.88	197.29	1,441.22	37,274.24	0.00	6.95"	6.69"	96%
		6		5/4/2018	41,843.67	0.96	5,513.12	777.88	6,291.00	5,513.12	777.88	6,291.00	6,205.41	5,495.95	0.00	3.49	607.03	166.21	102.43	757.21	41,086.46	0.00	5.59"	5.49"	98%
		8		7/12/2018	38,719.27	0.89	10,369.91	717.35	11,087.26	10,369.91	717.35	11,087.26	11,084.98	10,356.04	0.00	13.87	545.55	171.49	183.39	2,013.56	36,705.71	0.00	6.43"	6.10"	95%
													359,068.15	293,818.42	5,524.93	2,256.75	47,475.62	22,755.62	17,774.11	215,693.25	3,833,949.88	140,449.25	5.66	5.13	

Created by: Ricky E. Gifford
Checked by: Doug Frisque
Last Revised: 3/14/2019

2018 Dredge Production Summary (Total Volume Removed)

	April	May	June	July	August	September	October	November	Totals
DCA60	542.50	7,664.95	6,624.36	1,758.38	0.00	0.00	0.00	0.00	16,590.19
D47EFG	2,092.91	25,141.15	35,010.21	6,157.01	3,179.80	0.00	2,861.33	2,593.97	77,036.38
D54	0.00	0.00	0.00	4,925.95	22,376.69	45,860.23	5,337.99	0.00	78,500.86
DUTIL-043-045-1	0.00	0.00	0.00	100.26	605.95	0.00	0.00	0.00	706.21
DCC12	0.00	0.00	0.00	0.00	1,021.76	0.00	0.00	0.00	1,021.76
D46F	0.00	0.00	0.00	0.00	614.23	0.00	0.00	0.00	614.23
DCC6	0.00	0.00	0.00	0.00	7,066.66	0.00	0.00	0.00	7,066.66
DCC6 Micro	0.00	0.00	0.00	0.00	11,346.33	0.00	0.00	0.00	11,346.33
D161	0.00	0.00	0.00	0.00	947.60	0.00	2,940.75	0.00	3,888.35
D47H	0.00	0.00	0.00	0.00	95.94	0.00	0.00	0.00	95.94
D47B	0.00	0.00	0.00	0.00	234.11	0.00	0.00	0.00	234.11
D46C	0.00	0.00	0.00	0.00	0.00	331.26	0.00	0.00	331.26
DMC58	0.00	0.00	0.00	0.00	0.00	6,225.49	0.00	0.00	6,225.49
D74	0.00	0.00	0.00	0.00	0.00	4,017.09	0.00	0.00	4,017.09
D47C Micro	0.00	0.00	0.00	0.00	0.00	0.00	127.78	7,947.22	8,075.00
DCA57 Micro	0.00	0.00	0.00	0.00	0.00	0.00	247.16	0.00	247.16
D161 Micro	0.00	0.00	0.00	0.00	0.00	0.00	1,986.12	0.00	1,986.12
D43A	0.00	0.00	0.00	0.00	0.00	0.00	918.18	6,534.00	7,452.18
D47D	0.00	0.00	0.00	0.00	0.00	0.00	563.66	99.79	663.45
D138B	0.00	0.00	0.00	0.00	0.00	0.00	0.00	674.15	674.15
	2,635.41	32,806.10	41,634.57	12,941.60	47,489.07	56,434.07	14,982.97	17,849.13	226,772.92

2018 Dredge Production Summary (RAL + Overcut Volume Removed)

	April	May	June	July	August	September	October	November	Totals
DCA60	540.90	7,634.90	6,402.65	1,632.47	0.00	0.00	0.00	0.00	16,210.92
D47EFG	2,089.58	24,837.04	34,552.51	6,124.03	1,542.40	0.00	2,859.30	2,405.27	74,410.13
D54	0.00	0.00	0.00	4,916.01	22,139.33	45,092.26	5,036.27	0.00	77,183.87
DUTIL-043-045-1	0.00	0.00	0.00	100.20	599.37	0.00	0.00	0.00	699.57
DCC12	0.00	0.00	0.00	0.00	1,021.76	0.00	0.00	0.00	1,021.76
D46F	0.00	0.00	0.00	0.00	112.04	0.00	0.00	0.00	112.04
DCC6	0.00	0.00	0.00	0.00	869.32	0.00	0.00	0.00	869.32
DCC6 Micro	0.00	0.00	0.00	0.00	11,129.78	0.00	0.00	0.00	11,129.78
D161	0.00	0.00	0.00	0.00	420.69	0.00	971.16	0.00	1,391.85
D47H	0.00	0.00	0.00	0.00	95.94	0.00	0.00	0.00	95.94
D47B	0.00	0.00	0.00	0.00	231.08	0.00	0.00	0.00	231.08
D46C	0.00	0.00	0.00	0.00	0.00	325.44	0.00	0.00	325.44
DMC58	0.00	0.00	0.00	0.00	0.00	6,102.29	0.00	0.00	6,102.29
D74	0.00	0.00	0.00	0.00	0.00	3,999.28	0.00	0.00	3,999.28
D47C Micro	0.00	0.00	0.00	0.00	0.00	0.00	125.73	7,639.31	7,765.04
DCA57 Micro	0.00	0.00	0.00	0.00	0.00	0.00	244.44	0.00	244.44
D161 Micro	0.00	0.00	0.00	0.00	0.00	0.00	1,835.13	0.00	1,835.13
D43A	0.00	0.00	0.00	0.00	0.00	0.00	897.61	6,534.00	7,431.61
D47D	0.00	0.00	0.00	0.00	0.00	0.00	524.32	70.69	595.01
D138B	0.00	0.00	0.00	0.00	0.00	0.00	0.00	661.44	661.44
	2,630.48	32,471.94	40,955.16	12,772.71	38,161.71	55,519.27	12,493.96	17,310.71	212,315.94

Created by: Ricky E. Gifford
Checked by: Doug Frisque
Last Revised: 3/14/2019

Fox River
LOWER FOX RIVER REMEDIATION LLC

TETRA TECH

Operating Unit	Management Area	Management Unit	Cap Type	Pre RA Survey Date	Post RA Survey Date	Design Data: Spreader Lane Area (Sq. Ft.)	Spreader Lane Area (Acres)	Spreader Lane Overlap	LOS Area (Sq. Ft.)	LOS Area (Acres)	Theoretical Spreader Lane Volume: Min. Spread (Cu. Ft.)	Min. Spread (Cu. Yd.)	Fluff Factor 10%	Min. Spread w/ Fluff (Cu. Yd.)	Over Spread (Cu. Ft.)	Over Spread (Cu. Yd.)	Fluff Factor 10%	Total Spread w/ Fluff (Cu. Yd.)	Theoretical LOS Volume: Min. Spread (Cu. Ft.)	Min. Spread (Cu. Yd.)	Fluff Factor 10%	Min. Spread w/ Fluff (Cu. Yd.)	Over Spread (Cu. Ft.)	Over Spread (Cu. Yd.)	Fluff Factor 10%	Over Spread w/ Fluff (Cu. Yd.)
Sand																										
OU4	SCFIK-089	1	SC	3/6/2018	8/21/2018	27,475	0.63	0	7,325	0.17	13,737.50	508.80	50.88	559.68	6,868.75	254.40	25.44	839.51	3,662.50	135.65	13.56	149.21	1,831.25	67.82	6.78	223.82
OU4	SC53	1	SC	3/6/2018	8/25/2018	38,675	0.89	0	32,549	0.75	19,337.50	716.20	71.62	787.82	9,668.75	358.10	35.81	1,181.74	16,274.50	602.76	60.28	663.04	8,137.25	301.38	30.14	994.55
OU4	CB58	1	B2	3/6/2018	11/2/2018	3,801	0.09	0	3,809	0.09	1,900.50	70.39	7.04	77.43	950.25	35.19	3.52	116.14	1,904.50	70.54	7.05	77.59	952.25	35.27	3.53	116.39
OU4	CC22	1	C(M1)	3/6/2018	11/2/2018	10,024	0.23	0	10,024	0.23	5,012.00	185.63	18.56	204.19	2,506.00	92.81	9.28	306.29	5,012.00	185.63	18.56	204.19	2,506.00	92.81	9.28	306.29
OU4	SCFIK-097	1	SC	3/8/2018	11/19/2018	1,310	0.03	0	16	0.00	655.00	24.26	2.43	26.69	327.50	12.13	1.21	40.03	8.00	0.30	0.03	0.33	4.00	0.15	0.01	0.49
OU4	SCNA-098	1	SC	3/5/2018	11/1/2018	24,030	0.55	0	6,405	0.15	12,015.00	445.00	44.50	489.50	6,007.50	222.50	22.25	734.25	3,202.50	118.61	11.86	130.47	1,601.25	59.31	5.93	195.71
OU4	**SRA-06**			**10/10/2018**	**11/13/208**	**124,952**	**2.87**	**0**	**105,480**	**2.42**	**93,713.97**	**3,470.89**	**347.09**	**3,817.98**	**31,237.99**	**1,156.96**	**115.70**	**5,090.64**	**79,109.91**	**2,930.00**	**293.00**	**3,223.00**	**26,369.97**	**976.67**	**97.67**	**4,297.33**
		1	EX SC	10/10/2018	10/24/2018	62,382	1.43	0	56,295	1.29	46,786.47	1,732.83	173.28	1,906.12	15,595.49	577.61	57.76	2,541.49	42,221.00	1,563.74	156.37	1,720.11	14,073.67	521.25	52.12	2,293.49
		2	EX SC	6/11/2018	11/13/2018	62,570	1.44	0	49,185	1.13	46,927.50	1,738.06	173.81	1,911.86	15,642.50	579.35	57.94	2,549.15	36,888.91	1,366.26	136.63	1,502.88	12,296.30	455.42	45.54	2,003.84
					Totals	**230,267**	**5.29**	**0.00**	**165,608**	**3.80**	**146,371.47**	**5,421.17**	**542.12**	**5,963.28**	**57,566.74**	**2,132.10**	**213.21**	**8,308.59**	**109,173.91**	**4,043.48**	**404.35**	**4,447.83**	**41,401.97**	**1,533.41**	**153.34**	**6,134.57**
Residual Sand Cover																										
OU4	D38	12	SC	3/8/2018	11/2/2018	23,223	0.53	0	23,223	0.53	11,611.50	430.06	43.01	473.06	5,805.75	215.03	21.50	709.59	11,611.50	430.06	43.01	473.06	5,805.75	215.03	21.50	709.59
OU4	D67	4	SC	3/2/2018	9/14/2018	18,364	0.42	0	18,364	0.42	9,182.00	340.07	34.01	374.08	4,591.00	170.04	17.00	561.12	9,182.00	340.07	34.01	374.08	4,591.00	170.04	17.00	561.12
OU4	D35CD	13	SC	3/2/2018	9/14/2018	37,886	0.87	0	37,886	0.87	18,943.00	701.59	70.16	771.75	9,471.50	350.80	35.08	1,157.63	18,943.00	701.59	70.16	771.75	9,471.50	350.80	35.08	1,157.63
OU4	D82	1	SC	3/8/2018	11/19/2018	66,100	1.52	0	63,331	1.45	33,050.00	1,224.07	122.41	1,346.48	16,525.00	612.04	61.20	2,019.72	31,665.50	1,172.80	117.28	1,290.08	15,832.75	586.40	58.64	1,935.11
OU4	D82	2	SC	3/22/2018	11/19/2018	34,875	0.80	329	31,402	0.72	17,273.00	639.74	63.97	703.71	8,636.50	319.87	31.99	1,055.57	15,701.00	581.52	58.15	639.67	7,850.50	290.76	29.08	959.51
OU4	D82	3A	SC	11/5/2018	11/7/2018	31,569	0.72	191	30,947	0.71	15,689.00	581.07	58.11	639.18	7,844.50	290.54	29.05	958.77	15,473.50	573.09	57.31	630.40	7,736.75	286.55	28.65	945.60
OU4	DUTIL-020	1A	EX SC	10/10/2018	11/19/2018	3,217	0.07	0	3,183	0.07	2,412.75	89.36	8.94	98.30	804.25	29.79	2.98	131.06	2,387.25	88.42	8.84	97.26	795.75	29.47	2.95	129.68
OU4	DUTIL-020	1B	SC	6/1/2018	10/24/2018	1,200	0.03	0	1,200	0.03	599.94	22.22	2.22	24.44	299.97	11.11	1.11	36.66	599.94	22.22	2.22	24.44	299.97	11.11	1.11	36.66
OU4	DUTIL-020	1C	SC	3/2/2018	9/14/2018	2,684	0.06	0	2,684	0.06	1,341.87	49.70	4.97	54.67	670.94	24.85	2.48	82.00	1,341.87	49.70	4.97	54.67	670.94	24.85	2.48	82.00
OU4	D40A	2	SC	4/20/2018	8/21/2018	91,861	2.11	3,344	89,608	2.06	44,258.50	1,639.20	163.92	1,803.12	22,129.25	819.60	81.96	2,704.69	44,804.00	1,659.41	165.94	1,825.35	22,402.00	829.70	82.97	2,738.02
OU4	D40A	3	SC	4/18/2018	8/21/2018	63,596	1.46	4,929	63,060	1.45	29,333.50	1,086.43	108.64	1,195.07	14,666.75	543.21	54.32	1,792.60	31,530.00	1,167.78	116.78	1,284.56	15,765.00	583.89	58.39	1,926.83
OU4	D35EFG	1	SC	3/2/2018	8/21/2018	68,955	1.58	0	68,955	1.58	34,477.50	1,276.94	127.69	1,404.64	17,238.75	638.47	63.85	2,106.96	34,477.50	1,276.94	127.69	1,404.64	17,238.75	638.47	63.85	2,106.96
OU4	D35EFG	2	SC	3/2/2018	8/21/2018	17,452	0.40	0	17,452	0.40	8,726.00	323.19	32.32	355.50	4,363.00	161.59	16.16	533.26	8,726.00	323.19	32.32	355.50	4,363.00	161.59	16.16	533.26
OU4	D35EFG	3	SC	3/6/2018	8/21/2018	79,718	1.83	0	79,718	1.83	39,859.00	1,476.26	147.63	1,623.89	19,929.50	738.13	73.81	2,435.83	39,859.00	1,476.26	147.63	1,623.89	19,929.50	738.13	73.81	2,435.83
OU4	D35EFG	4	SC	3/6/2018	8/25/2018	22,490	0.52	0	22,490	0.52	11,245.00	416.48	41.65	458.13	5,622.50	208.24	20.82	687.19	11,245.00	416.48	41.65	458.13	5,622.50	208.24	20.82	687.19
OU4	D35EFG	5	SC	3/6/2018	8/25/2018	74,602	1.71	0	74,602	1.71	37,301.00	1,381.52	138.15	1,519.67	18,650.50	690.76	69.08	2,279.51	37,301.00	1,381.52	138.15	1,519.67	18,650.50	690.76	69.08	2,279.51
OU4	D35EFG	6	SC	3/8/2018	11/1/2018	84,898	1.95	0	80,959	1.86	42,449.00	1,572.19	157.22	1,729.40	21,224.50	786.09	78.61	2,594.11	40,479.50	1,499.24	149.92	1,649.16	20,239.75	749.62	74.96	2,473.75
OU4	D35EFG	7	SC	3/8/2018	11/1/2018	11,632	0.27	0	11,632	0.27	5,816.00	215.41	21.54	236.95	2,908.00	107.70	10.77	355.42	5,816.00	215.41	21.54	236.95	2,908.00	107.70	10.77	355.42
OU4	D35EFG	8	SC	3/8/2018	11/1/2018	19,063	0.44	0	15,644	0.36	9,531.50	353.02	35.30	388.32	4,765.75	176.51	17.65	582.48	7,822.00	289.70	28.97	318.67	3,911.00	144.85	14.49	478.01
OU4	D35EFG	9	SC	3/8/2018	11/1/2018	72,832	1.67	0	58,793	1.35	36,416.00	1,348.74	134.87	1,483.61	18,208.00	674.37	67.44	2,225.42	29,396.50	1,088.76	108.88	1,197.64	14,698.25	544.38	54.44	1,796.45
OU4	D39	1	SC	3/2/2018	8/21/2018	11,697	0.27	0	11,697	0.27	5,848.50	216.61	21.66	238.27	2,924.25	108.31	10.83	357.41	5,848.50	216.61	21.66	238.27	2,924.25	108.31	10.83	357.41
OU4	D39	3	SC	3/8/2018	11/2/2018	65,435	1.50	1,489	61,396	1.41	31,973.00	1,184.19	118.42	1,302.60	15,986.50	592.09	59.21	1,953.91	30,698.00	1,136.96	113.70	1,250.66	15,349.00	568.48	56.85	1,875.99
OU4	D39	4	SC	3/8/2018	11/19/2018	63,219	1.45	0	62,250	1.43	31,609.50	1,170.72	117.07	1,287.79	15,804.75	585.36	58.54	1,931.69	31,125.00	1,152.78	115.28	1,268.06	15,562.50	576.39	57.64	1,902.08
OU4	D39	5	SC	3/8/2018	11/19/2018	76,855	1.76	0	72,555	1.67	38,427.50	1,423.24	142.32	1,565.56	19,213.75	711.62	71.16	2,348.35	36,277.50	1,343.61	134.36	1,477.97	18,138.75	671.81	67.18	2,216.96
OU4	D39	6	SC	6/13/2018	11/2/2018	42,038	0.97	1,608	29,373	0.67	20,215.00	748.70	74.87	823.57	10,107.50	374.35	37.44	1,235.36	14,686.50	543.94	54.39	598.34	7,343.25	271.97	27.20	897.51
OU4	D39	7	SC	3/8/2018	11/1/2018	92,500	2.12	0	78,653	1.81	46,250.00	1,712.96	171.30	1,884.26	23,125.00	856.48	85.65	2,826.39	39,326.50	1,456.54	145.65	1,602.19	19,663.25	728.27	72.83	2,403.29
OU4	D39	8	SC	3/8/2018	11/1/2018	36,750	0.84	36	34,783	0.80	18,357.00	679.89	67.99	747.88	9,178.50	339.94	33.99	1,121.82	17,391.50	644.13	64.41	708.54	8,695.75	322.06	32.21	1,062.81
OU4	DFIK-091	1	SC	3/8/2018	11/19/2018	3,727	0.09	0	0	0.00	1,863.50	69.02	6.90	75.92	931.75	34.51	3.45	113.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OU4	DFIK-092	1	SC	4/10/2018	8/25/2018	19,905	0.46	0	3,332	0.08	9,952.50	368.61	36.86	405.47	4,976.25	184.31	18.43	608.21	1,666.00	61.70	6.17	67.87	833.00	30.85	3.09	101.81
OU4	DFIK-093	1	SC	3/8/2018	11/2/2018	6,287	0.14	0	0	0.00	3,143.50	116.43	11.64	128.07	1,571.75	58.21	5.82	192.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OU4	D68A	1	SC	3/5/2018	11/1/2018	13,159	0.30	0	10,606	0.24	6,579.50	243.69	24.37	268.05	3,289.75	121.84	12.18	402.08	5,303.00	196.41	19.64	216.05	2,651.50	98.20	9.82	324.07
OU4	D35H	2	EX SC	3/5/2018	10/31/2018	89,379	2.05	0	87,007	2.00	67,034.25	2,482.75	248.28	2,731.03	22,344.75	827.58	82.76	3,641.37	65,255.25	2,416.86	241.69	2,658.55	21,751.75	805.62	80.56	3,544.73
OU4	D35H	3	SC	3/5/2018	10/31/2018	71,099	1.63	0	71,099	1.63	35,549.50	1,316.65	131.66	1,448.31	17,774.75	658.32	65.83	2,172.47	35,549.50	1,316.65	131.66	1,448.31	17,774.75	658.32	65.83	2,172.47
OU4	D35H	4	SC	3/5/2018	10/31/2018	63,089	1.45	0	60,861	1.40	31,544.50	1,168.31	116.83	1,285.15	15,772.25	584.16	58.42	1,927.72	30,430.50	1,127.06	112.71	1,239.76	15,215.25	563.53	56.35	1,859.64
OU4	D35H	6	SC	3/5/2018	10/31/2018	66,496	1.53	0	66,496	1.53	33,248.00	1,231.41	123.14	1,354.55	16,624.00	615.70	61.57	2,031.82	33,248.00	1,231.41	123.14	1,354.55	16,624.00	615.70	61.57	2,031.82
OU4	D35H	7	SC	3/5/2018	10/31/2018	65,845	1.51	0	65,845	1.51	32,922.50	1,219.35	121.94	1,341.29	16,461.25	609.68	60.97	2,011.93	32,922.50	1,219.35	121.94	1,341.29	16,461.25	609.68	60.97	2,011.93
OU4	D68B	2	SC	3/5/2018	10/31/2018	59,886	1.37	0	55,114	1.27	29,943.00	1,109.00	110.90	1,219.90	14,971.50	554.50	55.45	1,829.85	27,557.00	1,020.63	102.06	1,122.69	13,778.50	510.31	51.03	1,684.04
OU4	D68B	3	SC	3/5/2018	10/31/2018	90,602	2.08	0	79,457	1.82	45,301.00	1,677.81	167.78	1,845.60	22,650.50	838.91	83.89	2,768.39	39,728.50	1,471.43	147.14	1,618.57	19,864.25	735.71	73.57	2,427.85
OU4	D68B	4	SC	3/5/2018	10/31/2018	60,258	1.38	0	50,011	1.15	30,129.00	1,115.89	111.59	1,227.48	15,064.50	557.94	55.79	1,841.22	25,005.50	926.13	92.61	1,018.74	12,502.75	463.06	46.31	1,528.11
					Totals	**1,824,443**	**41.88**	**11,926**	**1,695,668**	**38.93**	**929,407.32**	**34,422.49**	**3,442.25**	**37,864.74**	**453,129.16**	**16,782.56**	**1,678.26**	**56,325.56**	**870,381.32**	**32,236.35**	**3,223.63**	**35,459.98**	**423,916.91**	**15,700.63**	**1,570.06**	**52,730.67**
Buttress Sand																										
					Totals	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Buttress Rock																										
OU4	D68B	Buttress	SAND/D50 = 0.75	7/28/2018	10/25/2018	2,080	**0.05**	0	NA	**NA**	**814.10 cy of Sand/Rock**															
OU4	D70	Buttress	D50 = 8.0	3/27/2018	10/23/2018	16,193	**0.37**	0	NA	**NA**	**3,380.13 cy of Rock**															
Armor Stone / Filter Layer																										
Operating Unit	Management Area	Management Unit	Cap Type	Pre RA Survey Date	Post RA Survey Date	Design Data: Spreader Lane Area (Sq. Ft.)	Spreader Lane Area (Acres)	Spreader Lane Overlap	LOS Area (Sq. Ft.)	LOS Area (Acres)	Theoretical Spreader Lane Volume: Min. Spread (Cu. Ft.)	Min. Spread (Cu. Yd.)	Fluff Factor 8%	Min. Spread w/ Fluff (Cu. Yd.)	Over Spread (Cu. Ft.)	Over Spread (Cu. Yd.)	Fluff Factor 8%	Total Spread w/ Fluff (Cu. Yd.)	Theoretical LOS Volume: Min. Spread (Cu. Ft.)	Min. Spread (Cu. Yd.)	Fluff Factor 8%	Min. Spread w/ Fluff (Cu. Yd.)	Over Spread (Cu. Ft.)	Over Spread (Cu. Yd.)	Fluff Factor 8%	Over Spread w/ Fluff (Cu. Yd.)
Gravel																										
OU4	CB58	1	B2	11/2/2018	11/8/2018	3,801	**0.09**	0	3,809	**0.09**	**1,900.50**	**70.39**	**5.63**	**76.02**	**950.25**	**35.19**	**2.82**	**114.03**	**1,269.67**	**47.02**	**3.76**	**50.79**	**952.25**	**35.27**	**2.82**	**88.88**
OU4	CC22	1	C(M1)	11/2/2018	11/8/2018	10,024	**0.23**	0	10,024	**0.23**	**5,012.00**	**185.63**	**14.85**	**200.48**	**2,506.00**	**92.81**	**7.43**	**300.72**	**2,506.00**	**92.81**	**7.43**	**100.24**	**2,506.00**	**92.81**	**7.43**	**200.48**
OU4	SRA-06	1-2	D50 = 1.5	11/13/2018	11/15/2018	122,473	**2.81**	0	106,927	**2.45**	**13,596.70 cy of Rock**															
					Totals	**136,298**	**3.13**	**0**	**120,760**	**2.77**	**6912.50**	**256.02**	**20.48**	**276.50**	**3456.25**	**128.01**	**10.24**	**414.75**	**3775.67**	**139.84**	**11.19**	**151.03**	**3458.25**	**128.08**	**10.25**	**289.36**
Quarry Spall																										
Operating Unit	Management Area	Management Unit	Cap Type	Pre RA Survey Date	Post RA Survey Date	Design Data: Spreader Lane Area (Sq. Ft.)	Spreader Lane Area (Acres)	Spreader Lane Overlap	LOS Area (Sq. Ft.)	LOS Area (Acres)	Theoretical Spreader Lane Volume: Min. Spread (Cu. Ft.)	Min. Spread (Cu. Yd.)	Fluff Factor 15%	Min. Spread w/ Fluff (Cu. Yd.)	Over Spread (Cu. Ft.)	Over Spread (Cu. Yd.)	Fluff Factor 15%	Total Spread w/ Fluff (Cu. Yd.)	Theoretical LOS Volume: Min. Spread (Cu. Ft.)	Min. Spread (Cu. Yd.)	Fluff Factor 15%	Min. Spread w/ Fluff (Cu. Yd.)	Over Spread (Cu. Ft.)	Over Spread (Cu. Yd.)	Fluff Factor 15%	Over Spread w/ Fluff (Cu. Yd.)
Gravel																										
					Totals	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Created by: Ricky E. Gifford
Checked by: Shane Nelson
Last Revised: 1/23/2019

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