Memorandum

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April 20, 2021

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FR: Tara Van Hoof - Foth Infrastructure & Environment, LLC
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RE: Lower Fox River OU4/5 *COMMP* Cap Integrity Assessment - Year 0 (Caps Completed 2018-2020)

Background

Georgia-Pacific Corporation (GP) retained Foth Infrastructure & Environment, LLC (Foth) to document the methodology employed for and the results of the Year 0 hydrographic surveys for caps completed in 2018-2020 in compliance with requirements of the *Cap Operations, Maintenance, and Monitoring Plan – Revision 2 (COMMP)* for the Lower Fox River Operable Units 2-5 (Anchor QEA, LLC et al 2019). The *COMMP* describes post-placement cap monitoring activities that will be performed to provide a high level of assurance that the engineered caps retain their physical integrity and protectiveness over time. The *COMMP* also outlines contingency response actions that will be implemented if the engineered caps do not meet performance standards. The *COMMP* requires that routine monitoring of all cap areas be conducted by geophysical methods (including sub-bottom profiling and/or hydrographic survey) and states that the first routine monitoring (Year 0) of completed engineered caps shall be completed at the end of the year when cap construction is completed to establish baseline conditions as a point of comparison for future *COMMP* events.

For the Lower Fox River Operable Unit (OU) 4, the Agencies Oversight Team (A/OT) grouped the caps completed between 2018 and 2020 into a single Year 0 event to streamline the *COMMP* cap integrity assessment (CIA) process i.e., instead of generating and submitting three individual Year 0 reports, generate and submit one Year 0 report that covers the three Year 0 surveys. Methodology modifications identified during the Year 0 re-evaluation of caps placed 2015-2017 in OU4 are addressed herein, as detailed in the 2020 memorandum, "Lower

Fox River OU4 COMMP Year 0 Cap Integrity Assessment – Caps Completed 2015-2017" (Foth, 2020a).

This memorandum evaluates several special remediation area (SRA) caps for the first time. These have been constructed in areas requiring site-specific designs including over utility crossings intended to provide chemical isolation and armoring where it would be unsafe to dredge closer to the utility. Due to location-specific constraints, such as resistance to vessel propeller wash forces, SRA caps cannot achieve all cap design or performance criteria and are appropriately categorized as exceptional areas as identified in the *Record of Decision* (USEPA, 2003) and *Record of Decision Amendment* (USEPA, 2007). SRA caps are described further in the *COMMP*. SRA cap integrity is evaluated similarly to aggregate caps in that routine monitoring will be based on initial post-construction bathymetric surveys compared to subsequent bathymetric surveys. If bathymetric surveys show evidence of erosion of the top of the cap in excess of specified amounts for a contiguous area greater than 5 percent of the individual SRA cap footprint, the need for additional assessment will be evaluated in collaboration with the Response Agencies. The trigger for discussions on additional evaluations is based on the thresholds presented in the *COMMP*.

Finally, this memorandum provides the results of an evaluation of the 20-year and 100-year recurrence-interval flow rates for OU4. The *COMMP* requires: "*In addition to the scheduled monitoring of all capped areas in OU3-5, supplemental bathymetric surveys will be performed only in "sentinel" capping areas following major river-flow events…that may have a significant impact on river hydrodynamics…Sentinel cap area monitoring will be performed within 1 year following a river flow (combined flood and seiche discharge) event with a recurrence interval of 20 years or more…Hourly average flows exceeding the 20-year return-interval flow rate will be used to trigger the supplemental bathymetric surveys.*" Furthermore, the *COMMP* requires: "*If cap integrity and performance are verified under a 20-year flow event, follow-on event-based cap monitoring will occur following a 100-year flow event.*" Sentinel capping areas are described further in the *COMMP*, as well as in the subsequently submitted and A/OT-approved "*Lower Fox River OU4 – Sentinel Cap Areas Selection' memorandum (Foth, 2020b).*"

The *COMMP* states that the recurrence-interval flow rates may be updated as new information becomes available. On July 23, 2019, Foth submitted to the A/OT a memorandum, "*OU3 River Flow Determination and Revised Recurrence Intervals for OU1, OU3, and OU4*" (OU3 Flow Memo) (Foth, 2019), which presented updated recurrence-interval flow rates provided in the August 2017 U.S. Geological Society (USGS) Scientific Investigations Report, *Flood-Frequency Characteristics of Wisconsin Streams* (Walker, et al., 2017). The updated recurrence interval flow rates provided in the 2017 USGS report are based on a more recent time period than the values given in the *COMMP*. These new values are presented in Table 1, along with the values identified in the *COMMP*.

In addition to the high flow-event based monitoring, the *COMMP* requires: "*Supplemental bathymetric surveys will also be performed in sentinel cap areas following major river construction events (e.g., new bridge construction) in or nearby caps or if monthly average water levels drop more than 1 foot below the low-water elevations used to develop the cap designs, as summarized in Table 3-4 (of the COMMP, Section 3.5).... Lake Michigan water levels, which correspond to water levels in OU4, are currently measured at the National Oceanic and Atmospheric Administration (NOAA) gaging station near the mouth of Green Bay (Station No. 9087079). Annual low-water elevations (defined as the lowest monthly average within a given*

water year) from the NOAA gaging stations will be assessed each April after typical annual low water periods between November and March. If the gage records indicate that the monthly average for any month during the previous water year (April to March) was more than 1 foot below the RD baseline water elevation (576.6 feet North American Vertical Datum of 1988 [NAVD88] in OU4), supplemental bathymetric surveying will be triggered for the following fall after the spring flood season and summer recreational boating season. Follow-on maintenance activities will be scheduled and documented as appropriate."

Water levels near the mouth of the Fox River are measured approximately every 6 minutes at Green Bay station No. 9087079, and can be viewed at intervals of 6 minutes, hourly, daily, or monthly on NOAA's website (https://tidesandcurrents.noaa.gov/waterlevels.html?id=9087079). Foth has verified that, since April 2018, water levels in OU4 have not met the low level thresholds described above and therefore are not further discussed in this memorandum (refer to the graphs provided in Attachment 1).

Year 0 Hydrographic Survey Methods

In order to evaluate the change in top of cap elevation over time, a baseline or reference point needs to be established. Baseline cap elevations were initially established by conducting a survey in the year each cap was constructed/completed for the OU4/5 caps completed in 2018-2020 (Figures 1 and 2). The surveys documenting the baseline conditions are termed the "Year 0" surveys.

Single beam hydrographic surveys (surveys using single beam echo sounder [SBESs]) (200 kilohertz [kHZ]) or multi-beam hydrographic surveys (surveys using multi-beam echo sounders [MBESs]) (400 kHZ) were completed over the approximately 15.3 acres of engineered caps completed 2018-2020 in OU4/5. The MBES surveys provide a high degree of accuracy and coverage in these areas. Cap areas with water depths less than 3 feet could not be surveyed using MBES methods, and, therefore, were completed using SBES. Additionally, for cap areas near the shoreline where hydrographic survey was not feasible, hand-held topographic survey was completed (specifically in SRA-06-02 along the east shoreline). Table 2 provides the dates and type of survey used for each cap area.

The survey work was conducted by J.F. Brennan Company (Brennan) in compliance with the project specifications, as provided in Appendix C of the 2012 *100 Percent Design Report for 2010 and Beyond Remedial Actions* (TtEC et al, 2012), and standard operating procedures, as provided in the LFR *Quality Assurance Project Plan* (TtEC, et al., 2016) and the *Construction Quality Assurance Project Plan* (*CQAPP*) (TtEC et al, 2012), which is Appendix F of the 2012 *100 Percent Design Report*. Foth obtained raw survey files and gridded survey files (1 foot x 1 foot) from Brennan, to be processed and plotted for visual review of the bathymetric surface, to identify any irregularities indicating potential failing or damaged cap areas. Where irregularities were seen or it was difficult to make an evaluation (e.g., shoreline cap areas surveyed using single beam methods), the Year 0 surveys were compared to the most recent post-dredge or pre-cap placement bathymetry to further evaluate the areas in question. Note that SBES results are collected on 15-foot transects with crosslines collected at 5 percent of the number of transects, whereas the MBESs provide complete coverage.

Year 0 CIA Results

Upon completion of the Year 0 surveys, the data were processed and bathymetric contours were created. For each cap, Foth produced a figure set to show these bathymetric elevations (Figures 3A and 3B through Figures 15A and 15B). Each figure set includes an "A" figure, which depicts the bathymetric elevations in two dimensional plan view, and a "B" figure, which depicts the bathymetric elevations in a three-dimensional isometric view, which better depicts surface irregularities as compared to the two dimensional views. For some cap areas, "C" series figures were added to offer cross sections to better depict conditions.

To supplement the survey information provided in this Year 0 CIA reporting memorandum, cap thickness verification data, prepared by TtEC, is provided as Attachment 2. These data establish that when applying A/OT approved statistical procedures (i.e., summary statistics), the minimum cap aggregate thicknesses were achieved in all cases.

It is important to note that this Year 0 CIA focuses on the visual or surficial cap contours to identify irregularities such as gullies in, or slumping of, the cap surface, or areas of differential settlement. The subsequent *COMMP* years' CIAs will use current year hydrographic survey information and may use poling and probing of sediment thickness above the caps to statistically assess changes in cap elevations over time.

In viewing the capped areas placed in OU4/5 2018-2020, there are several areas of interest as described below:

- SRA-06-01 is an SRA cap. To assess the irregularity of the top of cap surface elevations (specifically, a depression within area of higher elevations) (Figure 4B), a cross-section (A-A') was cut through the area and the top of cap elevations were compared to the 2018 post-dredge and pre-cap placement bathymetry (Figure 4C). The depressed area of interest and the two surveys followed a similar profile indicating a reflection of the river bottom topography rather than the cap having been eroded or undergone significant differential settlement.

- CBD157-3 is a cap area. Due to the steep slope and apparent irregularity shown in the top of cap elevations (Figure 9B1), a cross-section (B-B') was cut through the area and the top of cap elevations were compared to the 2020 pre-cap placement bathymetry (Figure 9C) to further assess the area. The two surveys followed a similar profile indicating a reflection of the river bottom topography rather than the cap having been eroded or undergone significant differential settlement.

- CBD35NOP-DCA45-7 is a cap area. Though irregularity in the top of cap elevations was anticipated in this area due to the bridge foundations (Figure 9B2), a cross-section (C-C') was cut through the area and the top of cap elevations were compared to the 2020 pre-cap placement bathymetry (Figure 9C) for confirmation. The two surveys followed a similar profile indicating a reflection of the river bottom topography rather than the cap having been eroded or undergone significant differential settlement.

- CA94-1 is a cap area. To assess a depressed area near the border of CA94-2 (Figure 13B), a cross-section (D-D') was cut through CA94-1 and CA94-2 and the top of cap elevations were compared to the 2020 pre-cap placement bathymetry (Figure 13C). The

two surveys followed a similar profile indicating a reflection of the river bottom topography rather than the cap having been eroded or undergone significant differential settlement.

No areas of interest were noted in CB58, SRA-06-2, CB20-B3, CC22, CB60-1, CB60-2, CB60-3, SRA-03-1, SRA-03-2, SRA-03-3, SRA-04-1, SRA-05-07-1, SRA-05-07-2, CA94-2, CB61, SRA-08-1, SRA-08-2, SRA-08-3, and SRA-08-4. An accounting of evaluations and recommendations made during the post-cap monitoring event for each cap area (a living history) is provided in Table 3.

20- and 100-Year Flow Rate Evaluation

Foth performed an evaluation of the 20-year recurrence-interval flow rate for the period of the Year 0 surveys. Flows near the mouth of the Fox River (including the combined effects of upstream floods and seiches) are measured approximately every 5 minutes at the U.S. Oil Tank Depot (USGS Station 040851385) (http://waterdata.usgs.gov/nwis/), which is the gauging station used for comparison of flow data to the appropriate recurrence intervals for OU4. The figures in Attachment 3 present the 2018-2020 hourly moving averages as compared to the OU4 20-year and 100-year recurrence intervals. The table in Attachment 3 summarizes the recurrence interval exceedance information, and as shown, using the hourly data for comparison (as required by the *COMMP*), the 20-year and the 100-year recurrence intervals were exceeded for OU4 during several time frames. Of note, the one sentinel cap identified for the area encompassing caps completed in 2018-2020 (CB60-1), first exceeded the 20-year recurrence interval on August 10, 2020.

Based on the requirements described above for sentinel cap monitoring, event-based monitoring will be scheduled for CB60-1 for late summer/early fall 2021. Note that all caps will be monitored and evaluated for integrity during the 2022 routine monitoring event.

Conclusions

The bathymetric elevations for caps completed in 2018-2020 in OU4/5 were evaluated to establish a baseline for future *COMMP* CIAs. Any potentially failing or damaged cap areas, based on a review of bathymetric contours generated with hydrographic survey information, were further evaluated. Bathymetric elevations indicating depressions and irregular surfaces were further evaluated by comparing the 2018-2020 post-cap placement bathymetry to the most recent post-dredge or pre-cap placement bathymetry. Results showed that depression areas and irregular surfaces were a reflection of the river bottom topography rather than the cap having been eroded or having experienced significant differential settlement.

The hydrographic survey data collected for this Year 0 CIA substantiates that the cap material in place meets the performance standards set forth in the *Lower Fox River Remedial Design 100 Percent Design Reports,* Volumes 1 and 2 (TtEC et al., 2009a and 2012) and the *COMMP*. The post-construction surveys as identified in Table 1 will serve as the baseline for future surveys (Year 0) to assess long-term performance of engineered caps completed in 2018-2020 in OU4/5.

The next OU4/5 post-cap monitoring event for caps placed in 2018-2020 will be completed fall of 2022 (*COMMP* Year 2 event). At that time, another hydrographic survey will be completed over the engineered caps completed in 2018-2020 in OU4/5 following the same protocols

summarized in the methods section of this memorandum and as described in more detail in the *COMMP*. Results from the next hydrographic survey will be compared to the baseline survey to assess integrity of the caps. For future planned routine monitoring events, refer to the Draft LFR USEPA Cap Monitoring Schedule, dated April 14, 2020.

References

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U.S. Environmental Protection Agency, 2003. *Record of Decision for Operable Units 3, 4, and 5, Lower Fox River and Green Bay, Wisconsin.* June 2003.

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U.S. Geological Survey, 2019-2020. USGS Surface-Water Historical Instantaneous Data for the Nation. Retrieved 2019-2020, from http://waterdata.usgs.gov/nwis/

Walker, J.F., M.C. Peppler, M.E. Danz, and L.E. Hubbard, 2017. *Flood-Frequency Characteristics of Wisconsin Streams*, Scientific Investigations Report 2016–5140, Version 2.0, U.S. Department of the Interior and U.S. Geological Survey, Reston, Virginia. August 2017.

Tables

Table 1
Summary of Updated Lower Fox River Flow Rates(1)

Recurrence Interval (Years)	OU4	
	Flows at Oil Tank Depot (cfs) (USGS Station No. 040851385)	
	1992[(2)]	2017
2	13,400	14,300
5	17,900	18,800
10	20,200	21,900
20	22,100	23,700
25	22,800	25,900
50	24,200	29,000
100	25,500	32,100

Notes:

(1) Flow rates rounded to the nearest one-hundred.

(2) Data from Krug, et al., 1992 was used to determine recurrence interval flow values identified in the COMMP. Krug, W.R., D.H. Conger, and W.A. Gebert, 1992. Flood-Frequency Characteristics of Wisconsin Streams, Water-Resources Investigations Report 91-4128, U.S. Department of the Interior and U.S. Geological Survey, Madison, Wisconsin.

Table 2
Year 0 Survey Information
OU4 Cap Areas Completed 2018-2020

Location	Area (Acres)	Year Cap Completed (All Layers Placed)	Year 0 Survey Date	Survey Type
CB58	0.09	2018	11/8/2018	MBES
SRA-06-1	1.43	2018	11/15/2018	MBES and SBES (SBES along west shore)
SRA-06-2	1.44	2018	11/15/2018	MBES and SBES (SBES along west shore, topographic along east shore)
CB20-B3	0.65	2019	7/9/2019	SBES
SRA-03-1 (in Utility Corridor 023)	0.27	2019	8/29/2019	MBES
SRA-03-2 (in Utility Corridor 023)	0.94	2019	8/29/2019	MBES
SRA-03-3 (in Utility Corridor 023)	0.12	2019	8/29/2019	MBES
CC22-1	0.23	2019	9/20/2019	MBES
SRA-05-07-1 (in Utility Corridor 029/030)	1.7	2019	10/13/2019	MBES
SRA-05-07-2 (in Utility Corridor 029/030)	0.13	2019	10/13/2019	MBES
SRA-04-1 (existing North Bulkhead and Intake Area at the Georgia-Pacific Day Street Mill)	0.16	2019	10/16/2019	MBES and SBES (SBES along west shore)
CB60-1	3.03	2019	9/25, 10/24, & 10/25/2019	MBES and SBES
CBD157-3	0.19	2020	5/26/2020	MBES
CBD35NOP-DCA45-7	0.15	2020	5/26/2020	MBES
CB60-2	0.36	2020	6/23/2020	SBES
CB61	0.12	2020	7/17/2020	MBES
SRA-08-3 (in Utility Corridor 049)	0.10	2020	7/28/2020	SBES
CA94-1	2.52	2020	8/11/2020	MBES
CA94-2	0.41	2020	8/11/2020	MBES
SRA-08-1 (in Utility Corridor 049)	0.9	2020	8/11/2020	MBES
SRA-08-2 (in Utility Corridor 049)	0.93	2020	8/11/2020	MBES
CB60-3	0.92	2019	10/23/2020	MBES

MBES = multi-beam hydrographic survey
SBES = single beam hydrographic survey

Prepared by: JRB2
Checked by: TMK1

Table 3
OU4 (Caps Completed 2018-2020) COMMP Cap Integrity Assessment History

Location	Area (Acres)	Year Cap Completed	Routine Monitoring Event	Evaluation	Recommendation	Follow-up Action
CB58	0.09	2018	Year 0 (2020)	No irregularities noted.	Cap maintenance not required.	N/A
SRA-06-1	1.43	2018	Year 0 (2020)	To assess the irregularity of the top of cap surface elevations (depressed area within area of higher elevations), a cross-section was cut through the area and the top of cap elevations were compared to 2018 post-dredge and pre-cap placement bathymetry. The depressed area of interest is a dredge area and the two surveys followed a similar profile indicating a reflection of the river bottom topography rather than the cap having been eroded or undergone significant differential settlement.	Cap maintenance not required.	N/A
SRA-06-2	1.44	2018	Year 0 (2020)	No irregularities noted.	Cap maintenance not required.	N/A
CB20-B3	0.65	2019	Year 0 (2020)	No irregularities noted.	Cap maintenance not required.	N/A
CC22	0.23	2019	Year 0 (2020)	No irregularities noted.	Cap maintenance not required.	N/A
CB60-1	3.03	2019	Year 0 (2020)	No irregularities noted.	Cap maintenance not required.	N/A
CB60-3	0.92	2019	Year 0 (2020)	No irregularities noted.	Cap maintenance not required.	N/A
SRA-03-1	0.27	2019	Year 0 (2020)	No irregularities noted.	Cap maintenance not required.	N/A
SRA-03-2	0.94	2019	Year 0 (2020)	No irregularities noted.	Cap maintenance not required.	N/A
SRA-03-3	0.12	2019	Year 0 (2020)	No irregularities noted.	Cap maintenance not required.	N/A
SRA-04-1	0.16	2019	Year 0 (2020)	No irregularities noted.	Cap maintenance not required.	N/A
SRA-05-07-1	1.70	2019	Year 0 (2020)	No irregularities noted.	Cap maintenance not required.	N/A
SRA-05-07-2	0.13	2019	Year 0 (2020)	No irregularities noted.	Cap maintenance not required.	N/A
CA94-1	2.52	2020	Year 0 (2020)	To assess a depressed area of CA94-1 near the border of CA94-2, a cross-section was cut through the area and the top of cap elevations were compared to the 2020 pre-cap placement bathymetry. The two surveys followed a similar profile indicating a reflection of the river bottom topography rather than the cap having been eroded or undergone significant differential settlement.	Cap maintenance not required.	N/A
CA94-2	0.41	2020	Year 0 (2020)	No irregularities noted.	Cap maintenance not required.	N/A
CB60-2	0.36	2020	Year 0 (2020)	No irregularities noted.	Cap maintenance not required.	N/A
CBD35NOP-DCA45-7	0.15	2020	Year 0 (2020)	To assess the steep slope and irregularity of the top of cap surface elevations, a cross-section was cut through the area and the top of cap elevations were compared to the 2020 pre-cap placement bathymetry. The two surveys followed a similar profile indicating a reflection of the river bottom topography rather than the cap having been eroded or undergone significant differential settlement.	Cap maintenance not required.	N/A

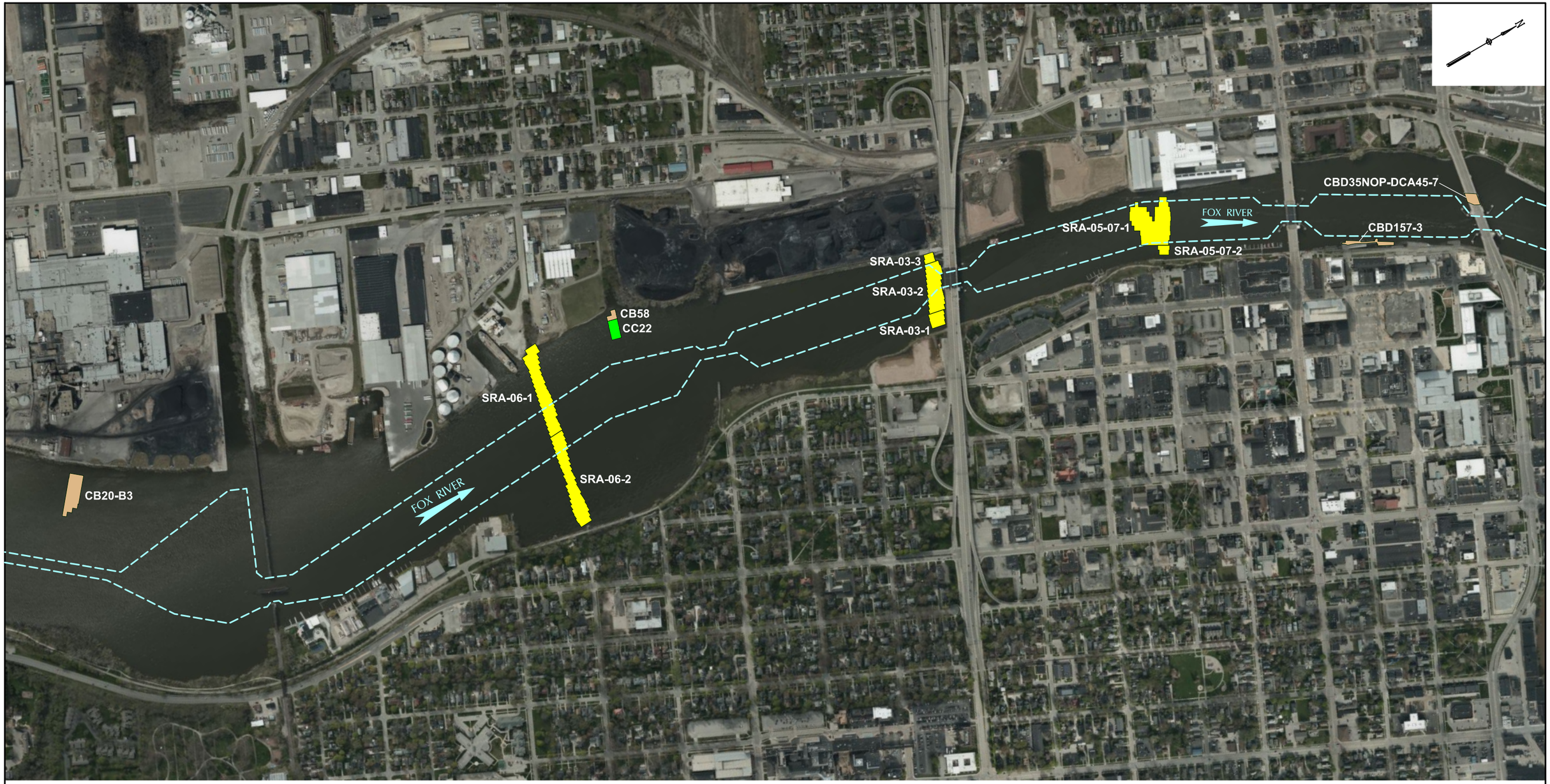
Table 3
OU4 (Caps Completed 2018-2020) COMMP Cap Integrity Assessment History

Location	Area (Acres)	Year Cap Completed	Routine Monitoring Event	Evaluation	Recommendation	Follow-up Action
CB61	0.12	2020	Year 0 (2020)	No irregularities noted.	Cap maintenance not required.	N/A
CBD157-3	0.19	2020	Year 0 (2020)	To assess the irregularity of the top of cap surface elevations, a cross-section was cut through the area and the top of cap elevations were compared to the 2020 pre-cap placement bathymetry. The two surveys followed a similar profile indicating a reflection of the river bottom topography rather than the cap having been eroded or undergone significant differential settlement.	Cap maintenance not required.	N/A
SRA-08-1	0.90	2020	Year 0 (2020)	No irregularities noted.	Cap maintenance not required.	N/A
SRA-08-2	0.93	2020	Year 0 (2020)	No irregularities noted.	Cap maintenance not required.	N/A
SRA-08-3	0.10	2020	Year 0 (2020)	No irregularities noted.	Cap maintenance not required.	N/A
SRA-08-4	0.01	2020	Year 0 (2020)	No irregularities noted.	Cap maintenance not required.	N/A
OU4 (2018-2020) Total	**16.8**					

N/A - Not Applicable

Prepared by: TMK1
Checked by: KMC2

Figures



LEGEND

- **CB58** — "B" CAP DESIGN PLACEMENT LOCATION AND IDENTIFICATION
- **CC22** — "C" CAP DESIGN PLACEMENT LOCATION AND IDENTIFICATION
- **SRA-03-2** — SRA CAP DESIGN PLACEMENT LOCATION AND IDENTIFICATION
- FEDERAL NAVIGATION CHANNEL

NOTES:

1. THE HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE). THE VERTICAL CONTROL IS REFERENCED TO NAVD 88.
2. COLOR ORTHO PHOTO OBTAINED FROM MOST RECENT BING MAPS IMAGERY.
3. CAP DESIGN PLACEMENT LIMITS DERIVED FROM DESIGN FILES PROVIDED BY TETRA TECH EC, INC.

Foth

0' 350' 700'

BAR SCALE

GEORGIA-PACIFIC CORP. / P.H. GLATFELTER COMPANY

FIGURE 1

YEAR ZERO - OU4 CAP LOCATIONS
(FORT HOWARD TURNING BASIN TO MAIN STREET)
LOWER FOX RIVER

Date: JANUARY 2021	Revision Date:	
Drawn By: JRB2	Checked By: TMK1	Project: LFR LTM & COMMP

pw://PW-APS1.foth.com:PW_IE/Documents/Clients/LFR LTM and COMMP/LTM and CAP Maintenance/CAD/Figures/Year Zero/Fig 1- Cap Locations.dgn
3/19/2021 11:37:28 AM jrb2

LEGEND

- **CA30A** — "A" CAP DESIGN PLACEMENT LOCATION AND IDENTIFICATION
- **CB60-1** — "B" CAP DESIGN PLACEMENT LOCATION AND IDENTIFICATION
- **SRA-08-2** — SRA CAP DESIGN PLACEMENT LOCATION AND IDENTIFICATION
- FEDERAL NAVIGATION CHANNEL

NOTES:

1. THE HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE). THE VERTICAL CONTROL IS REFERENCED TO NAVD 88.
2. COLOR ORTHO PHOTO OBTAINED FROM MOST RECENT BING MAPS IMAGERY.
3. CAP DESIGN PLACEMENT LIMITS DERIVED FROM DESIGN FILES PROVIDED BY TETRA TECH EC, INC.

Foth

0' 300' 600'

BAR SCALE

GEORGIA-PACIFIC CORP. / P.H. GLATFELTER COMPANY

FIGURE 2

YEAR ZERO - CAP LOCATIONS
(MAIN STREET TO BAY OF GREEN BAY)
LOWER FOX RIVER

Date: JANUARY 2021	Revision Date:	
Drawn By: JRB2	Checked By: TMK1	Project: LFR LTM & COMMP

pw://PW-APS1.foth.com:PW_IE/Documents/Clients/LFR LTM and COMMP/LTM and CAP Maintenance/CAD/Figures/Year Zero/Fig 2 - Cap Locations.dgn
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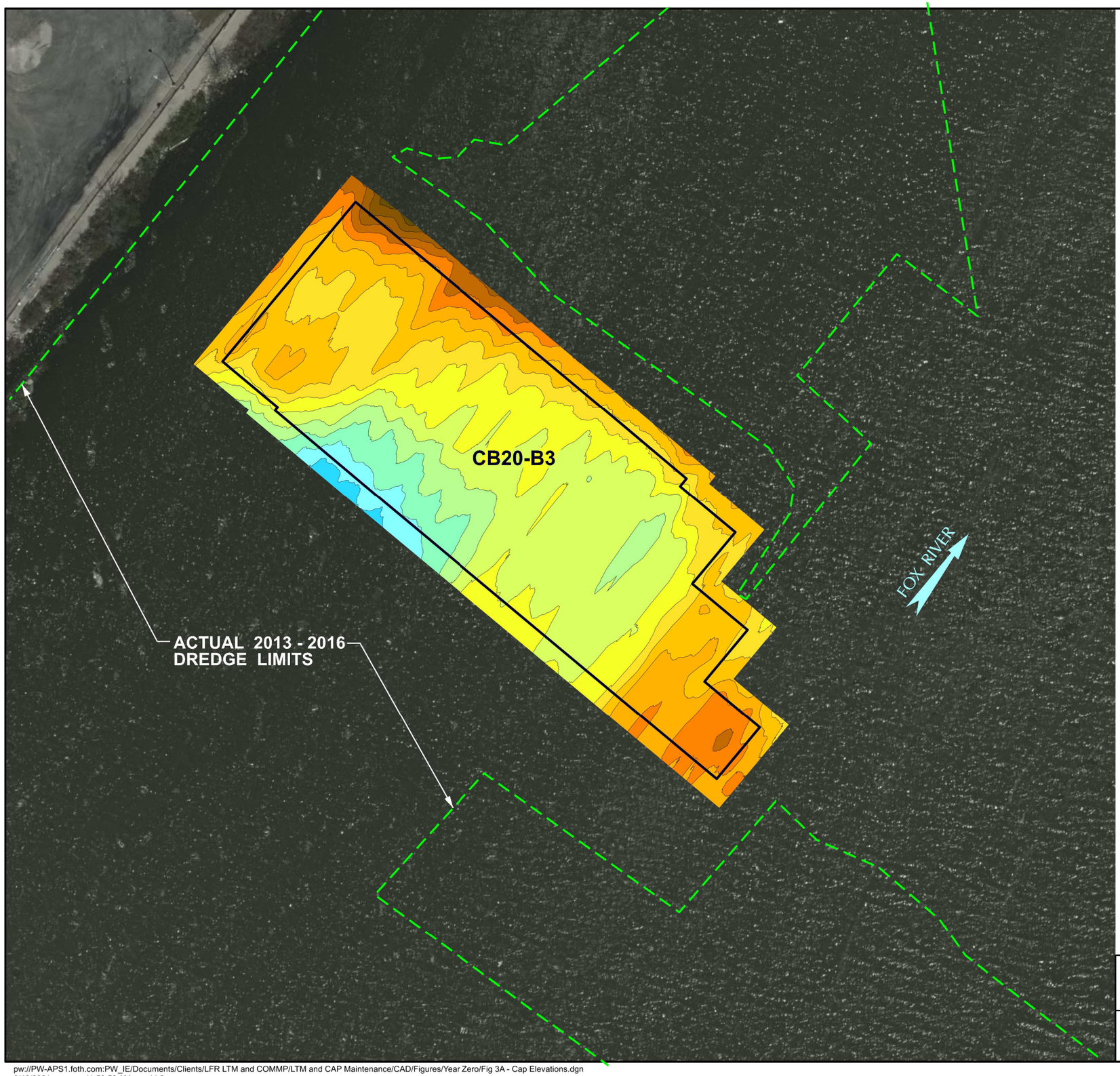


N

LEGEND

DESIGN CAP PLACEMENT LIMITS

PRE-CAP ACTUAL DREDGE LIMITS

COLOR ELEVATION CHART

COLOR CONTOURS SHOWN REPRESENTS THE JULY 9, 2019 TOP OF ENGINEERED CAP ELEVATIONS

SHALLOWER

WATER DEPTH

DEEPER

- ELEVATION 569 - 570
- ELEVATION 568 - 569
- ELEVATION 567 - 568
- ELEVATION 566 - 567
- ELEVATION 565 - 566
- ELEVATION 564 - 565
- ELEVATION 563 - 564
- ELEVATION 562 - 563
- ELEVATION 561 - 562
- ELEVATION 560 - 561
- ELEVATION 559 - 560
- ELEVATION 558 - 559
- ELEVATION 557 - 558
- ELEVATION 556 - 557

NOTES:

1. 200 KILOHERTZ (kHz) SINGLE BEAM HYDROGRAPHIC POST-CAP SURVEY PERFORMED BY J.F. BRENNAN, CO. DATE OF SURVEY: JULY 9, 2019.
2. THE HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE). THE VERTICAL CONTROL IS REFERENCED TO NAVD 88.
3. COLOR ORTHO PHOTO OBTAINED FROM MOST RECENT BING MAPS IMAGERY.
4. DESIGN CAP PLACEMENT LIMITS DERIVED FROM DESIGN FILES PROVIDED BY TETRA TECH EC, INC.

GEORGIA-PACIFIC CORP. / P.H. GLATFELTER COMPANY

FIGURE 3A

LOWER FOX RIVER - OU4
CB20-B3 CAP ELEVATIONS
PLAN VIEW

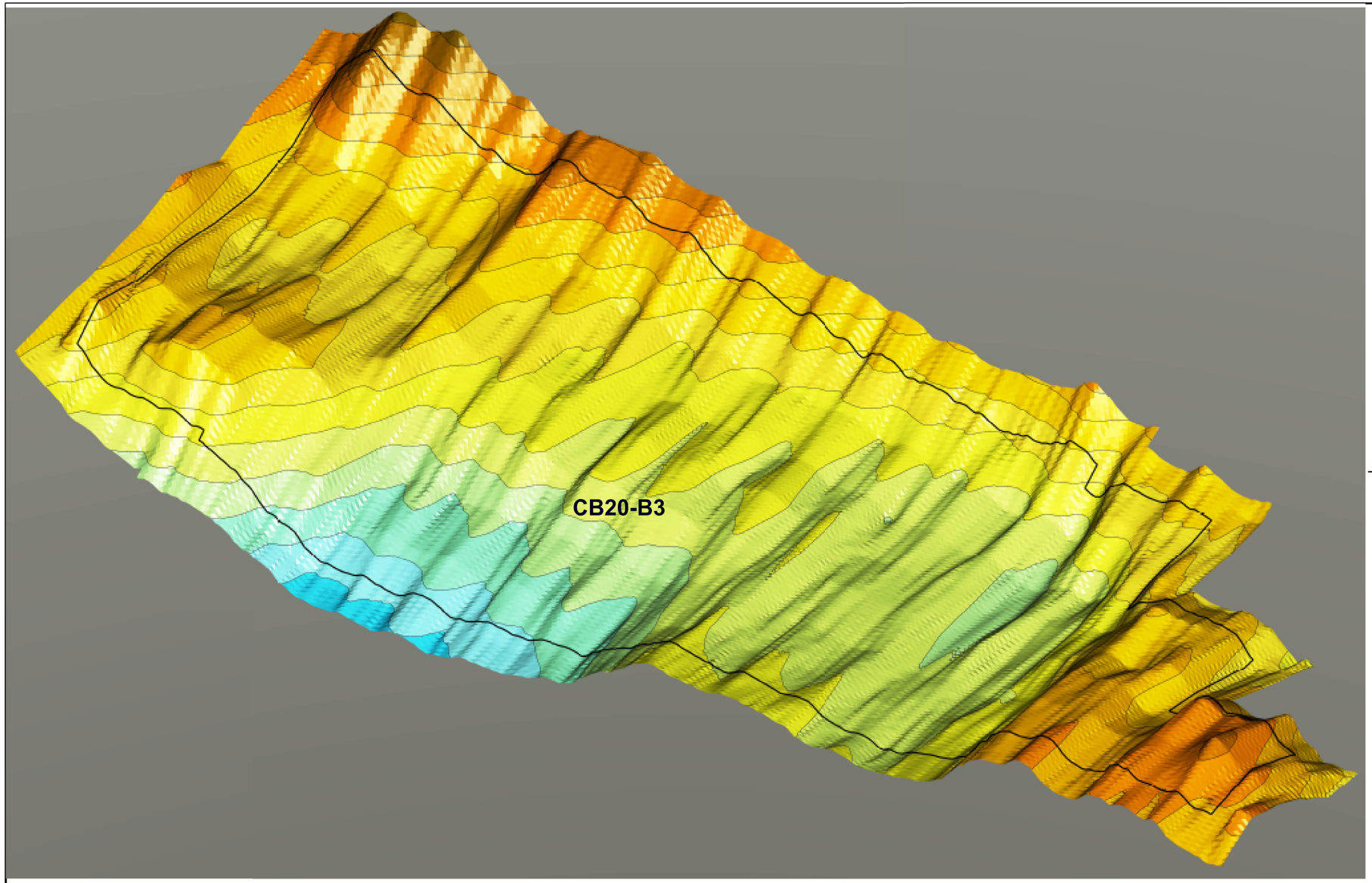
Foth

0' 25' 50'
BAR SCALE

Date: JANUARY 2021 | Revision Date:

Drawn By: JRB2 | Checked By: TMK1 | Project: LFR LTM & COMMP

pw://PW-APS1.foth.com:PW_IE/Documents/Clients/LFR LTM and COMMP/LTM and CAP Maintenance/CAD/Figures/Year Zero/Fig 3A - Cap Elevations.dgn
3/19/2021 11:50:50 AM jrb2



N

LEGEND

DESIGN CAP PLACEMENT LIMITS

COLOR ELEVATION CHART

COLOR CONTOURS SHOWN REPRESENTS THE JULY 9, 2019 TOP OF ENGINEERED CAP ELEVATIONS

SHALLOWER

WATER DEPTH

DEEPER

- ELEVATION 569 - 570
- ELEVATION 568 - 569
- ELEVATION 567 - 568
- ELEVATION 566 - 567
- ELEVATION 565 - 566
- ELEVATION 564 - 565
- ELEVATION 563 - 564
- ELEVATION 562 - 563
- ELEVATION 561 - 562
- ELEVATION 560 - 561
- ELEVATION 559 - 560
- ELEVATION 558 - 559
- ELEVATION 557 - 558
- ELEVATION 556 - 557

NOTES:

1. 200 KILOHERTZ (kHz) SINGLE BEAM HYDROGRAPHIC POST-CAP SURVEY PERFORMED BY J.F. BRENNAN, CO. DATE OF SURVEY: JULY 9, 2019.
2. THE HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE). THE VERTICAL CONTROL IS REFERENCED TO NAVD 88.
3. COLOR ORTHO PHOTO OBTAINED FROM MOST RECENT BING MAPS IMAGERY.
4. DESIGN CAP PLACEMENT LIMITS DERIVED FROM DESIGN FILES PROVIDED BY TETRA TECH EC, INC.

Foth

0' 25' 50'

BAR SCALE

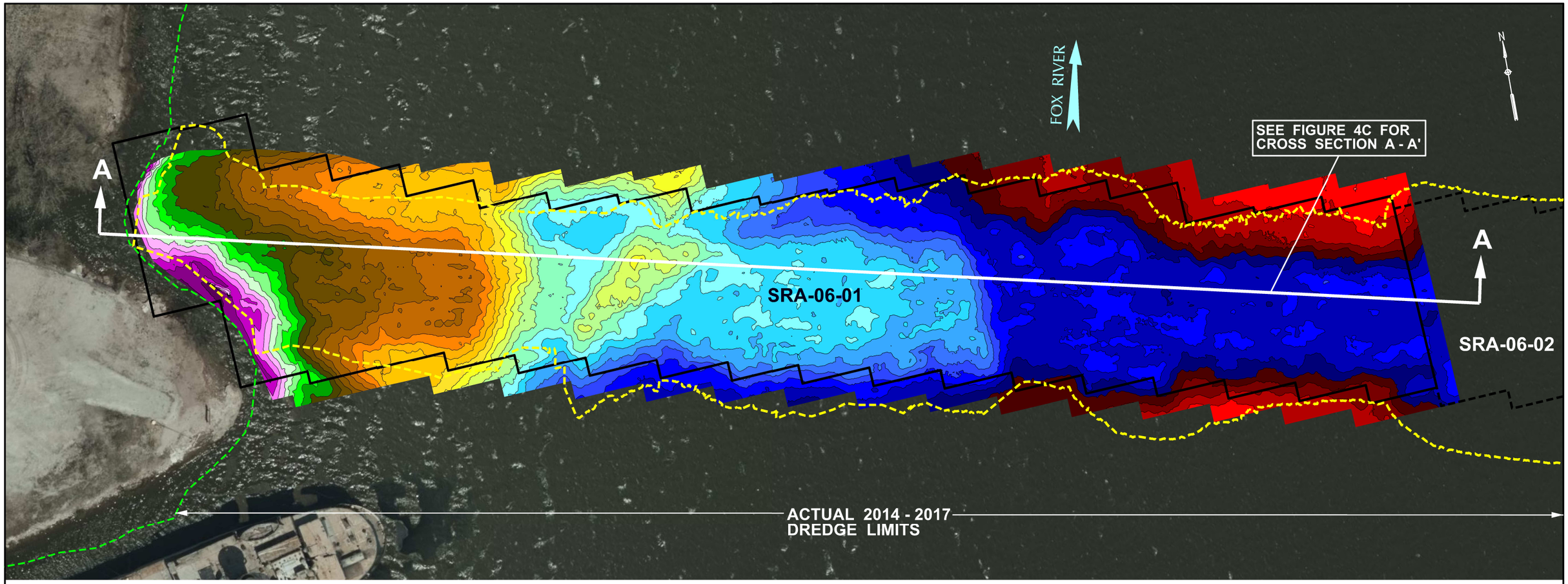
GEORGIA-PACIFIC CORP. / P.H. GLATFELTER COMPANY

FIGURE 3B

LOWER FOX RIVER - OU4
CB20-B3 CAP ELEVATIONS
ISOMETRIC VIEW

Date: JANUARY 2021	Revision Date:	
Drawn By: JRB2	Checked By: TMK1	Project: LFR LTM & COMMP

pw://PW-APS1.foth.com:PW_IE/Documents/Clients/LFR LTM and COMMP/LTM and CAP Maintenance/CAD/Figures/Year Zero/Fig 3B - Cap Isometric View.dgn
3/19/2021 12:06:31 PM jrb2



COLOR ELEVATION CHART

COLOR CONTOURS SHOWN REPRESENTS THE NOVEMBER 15, 2018 TOP OF ENGINEERED CAP ELEVATIONS

SHALLOWER ↓ WATER DEPTH

ELEVATION 579 - 580	ELEVATION 561 - 562
ELEVATION 578 - 579	ELEVATION 560 - 561
ELEVATION 577 - 578	ELEVATION 559 - 560
ELEVATION 576 - 577	ELEVATION 558 - 559
ELEVATION 575 - 576	ELEVATION 557 - 558
ELEVATION 574 - 575	ELEVATION 556 - 557
ELEVATION 573 - 574	ELEVATION 555 - 556
ELEVATION 572 - 573	ELEVATION 554 - 555
ELEVATION 571 - 572	ELEVATION 553 - 554
ELEVATION 570 - 571	ELEVATION 552 - 553
ELEVATION 569 - 570	ELEVATION 551 - 552
ELEVATION 568 - 569	ELEVATION 550 - 551
ELEVATION 567 - 568	ELEVATION 549 - 550
ELEVATION 566 - 567	ELEVATION 548 - 549
ELEVATION 565 - 566	ELEVATION 547 - 548
ELEVATION 564 - 565	ELEVATION 546 - 547
ELEVATION 563 - 564	ELEVATION 545 - 546
ELEVATION 562 - 563	

WATER DEPTH ↓ DEEPER

LEGEND

- PRE-CAP ACTUAL DREDGE LIMITS
- CAP / SAND COVER MANAGEMENT UNIT (CMU / SCMU)
- SRA CAP MANGEMENT UNIT

NOTES:

1. 200 KILOHERTZ (kHz) SINGLE BEAM HYDROGRAPHIC POST-CAP SURVEY PERFORMED BY J.F. BRENNAN, CO. ALONG WEST SHORE. DATE OF SURVEY: NOVEMBER 15, 2018.

   400 KILOHERTZ (kHz) MULTI-BEAM HYDROGRAPHIC POST-CAP SURVEY PERFORMED BY J.F. BRENNAN, CO. DATE OF SURVEY: NOVEMBER 15, 2018.
2. THE HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE). THE VERTICAL CONTROL IS REFERENCED TO NAVD 88.
3. COLOR ORTHO PHOTO OBTAINED FROM MOST RECENT BING MAPS IMAGERY.
4. DESIGN CAP PLACEMENT LIMITS DERIVED FROM DESIGN FILES PROVIDED BY TETRA TECH EC, INC.

Foth

0' 25' 50'

BAR SCALE

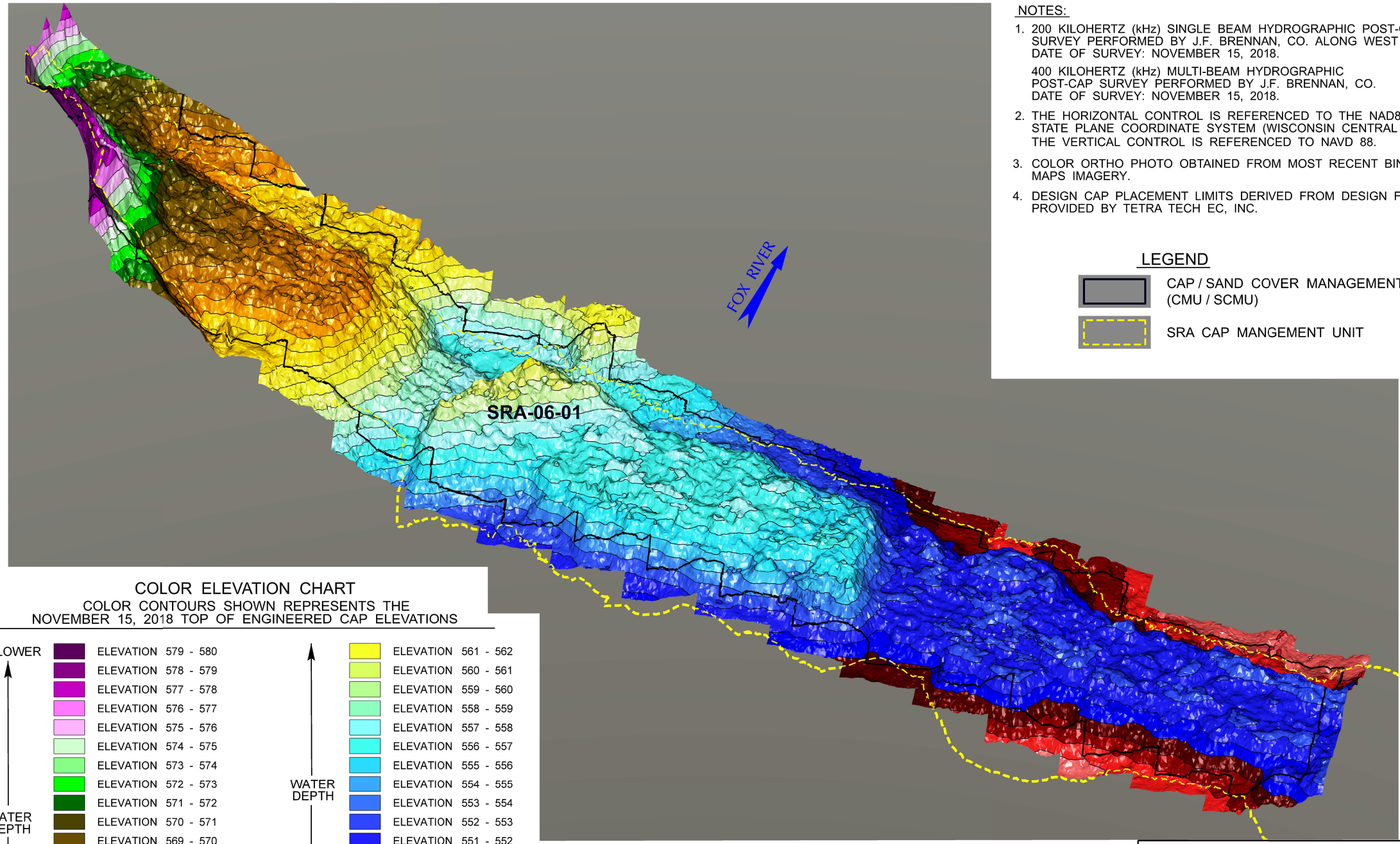
GEORGIA-PACIFIC CORP. / P.H. GLATFELTER COMPANY

FIGURE 4A

LOWER FOX RIVER - OU4
SRA-06-01 CAP ELEVATIONS
PLAN VIEW

Date: JANUARY 2021	Revision Date:	
Drawn By: JRB2	Checked By: TMK1	Project: LFR LTM & COMMP

pw://PW-APS1.foth.com:PW_IE/Documents/Clients/LFR LTM and COMMP/LTM and CAP Maintenance/CAD/Figures/Year Zero/Fig 4A - Cap Elevations.dgn
3/19/2021 12:21:08 PM jrb2



NOTES:

1. 200 KILOHERTZ (kHz) SINGLE BEAM HYDROGRAPHIC POST-CAP SURVEY PERFORMED BY J.F. BRENNAN, CO. ALONG WEST SHORE. DATE OF SURVEY: NOVEMBER 15, 2018.

   400 KILOHERTZ (kHz) MULTI-BEAM HYDROGRAPHIC POST-CAP SURVEY PERFORMED BY J.F. BRENNAN, CO. DATE OF SURVEY: NOVEMBER 15, 2018.
2. THE HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE). THE VERTICAL CONTROL IS REFERENCED TO NAVD 88.
3. COLOR ORTHO PHOTO OBTAINED FROM MOST RECENT BING MAPS IMAGERY.
4. DESIGN CAP PLACEMENT LIMITS DERIVED FROM DESIGN FILES PROVIDED BY TETRA TECH EC, INC.

LEGEND

- CAP / SAND COVER MANAGEMENT UNIT (CMU / SCMU)
- SRA CAP MANGEMENT UNIT

COLOR ELEVATION CHART

COLOR CONTOURS SHOWN REPRESENTS THE NOVEMBER 15, 2018 TOP OF ENGINEERED CAP ELEVATIONS

SHALLOWER ↑ WATER DEPTH ↓ DEEPER

ELEVATION 579 - 580	ELEVATION 561 - 562
ELEVATION 578 - 579	ELEVATION 560 - 561
ELEVATION 577 - 578	ELEVATION 559 - 560
ELEVATION 576 - 577	ELEVATION 558 - 559
ELEVATION 575 - 576	ELEVATION 557 - 558
ELEVATION 574 - 575	ELEVATION 556 - 557
ELEVATION 573 - 574	ELEVATION 555 - 556
ELEVATION 572 - 573	ELEVATION 554 - 555
ELEVATION 571 - 572	ELEVATION 553 - 554
ELEVATION 570 - 571	ELEVATION 552 - 553
ELEVATION 569 - 570	ELEVATION 551 - 552
ELEVATION 568 - 569	ELEVATION 550 - 551
ELEVATION 567 - 568	ELEVATION 549 - 550
ELEVATION 566 - 567	ELEVATION 548 - 549
ELEVATION 565 - 566	ELEVATION 547 - 548
ELEVATION 564 - 565	ELEVATION 546 - 547
ELEVATION 563 - 564	ELEVATION 545 - 546
ELEVATION 562 - 563	

Foth

VERTICAL SCALE EXAGGERATED 5x FOR ILLUSTRATION PURPOSES ONLY. NOT TO SCALE

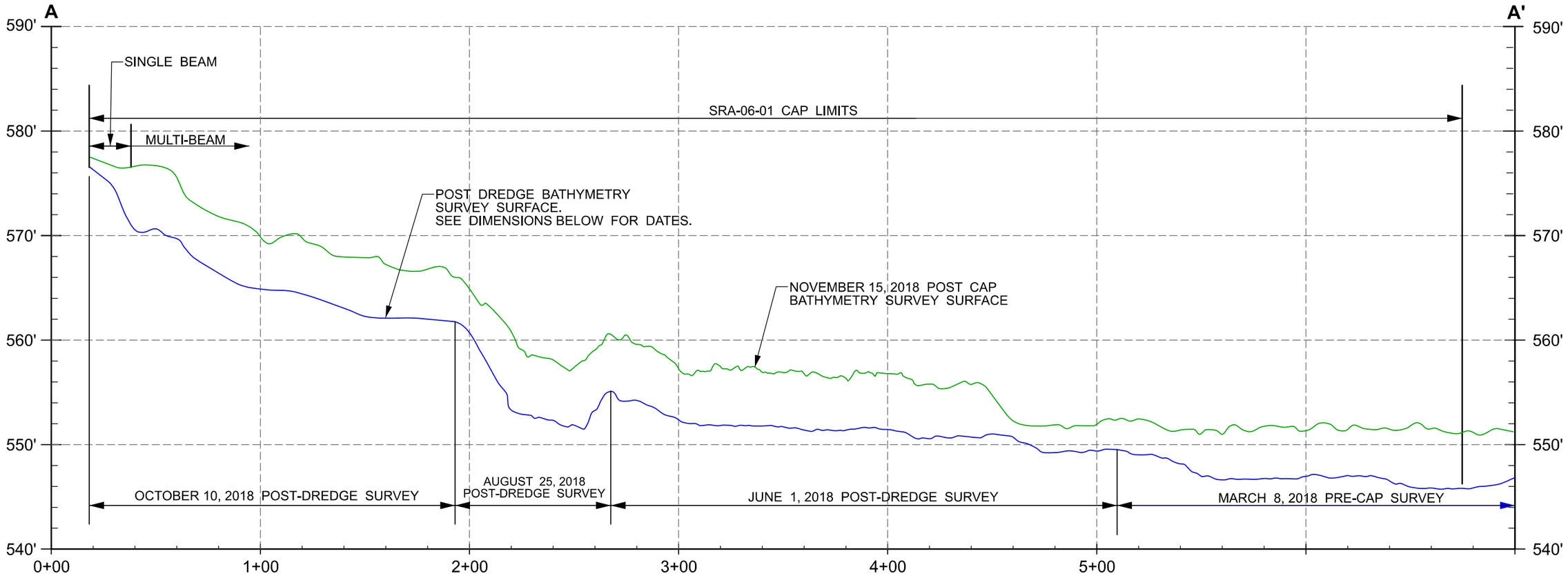
GEORGIA-PACIFIC CORP. / P.H. GLATFELTER COMPANY

FIGURE 4B

LOWER FOX RIVER - OU4
SRA-06-01 CAP ELEVATIONS
ISOMETRIC VIEW

Date: JANUARY 2021	Revision Date:	
Drawn By: JRB2	Checked By: TMK1	Project: LFR LTM & COMMP

pw://PW-APS1.foth.com:PW_IE/Documents/Clients/LFR LTM and COMMP/LTM and CAP Maintenance/CAD/Figures/Year Zero/Fig 4B - Cap Isometric View.dgn
3/19/2021 12:35:54 PM jrb2



SECTION A - A'

NOTES:

1. 200 KILOHERTZ (kHz) SINGLE BEAM HYDROGRAPHIC POST-CAP SURVEY PERFORMED BY J.F. BRENNAN, CO. ALONG WEST SHORE. DATE OF SURVEY: NOVEMBER 15, 2018. ALL POST-DREDGE AND PRE-CAP SURVEYS WERE PERFORMED USING SINGLE BEAM.

   400 KILOHERTZ (kHz) MULTI-BEAM HYDROGRAPHIC POST-CAP SURVEY PERFORMED BY J.F. BRENNAN, CO. DATE OF SURVEY: NOVEMBER 15, 2018.
2. THE HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE). THE VERTICAL CONTROL IS REFERENCED TO NAVD 88.
3. DESIGN CAP PLACEMENT LIMITS DERIVED FROM DESIGN FILES PROVIDED BY TETRA TECH EC, INC.
4. SEE FIGURE 4A FOR CROSS SECTION LOCATION.

Foth

0' 25' 50'

BAR SCALE

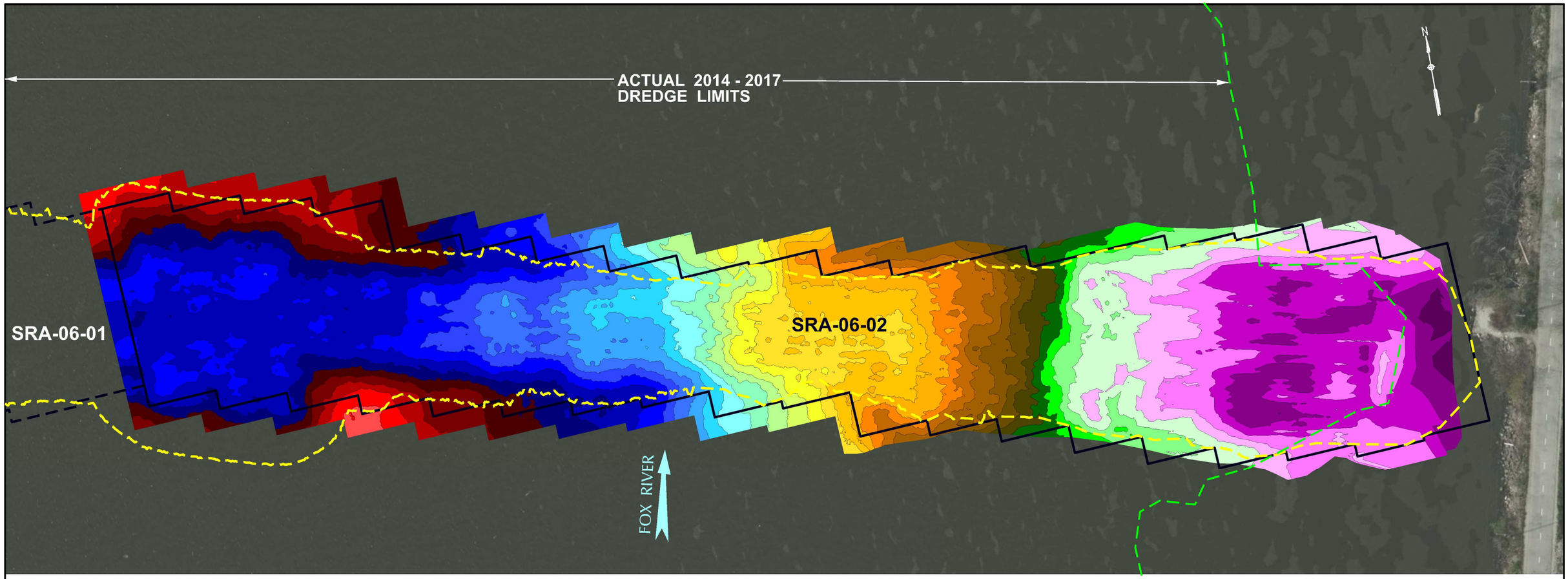
GEORGIA-PACIFIC CORP. / P.H. GLATFELTER COMPANY

FIGURE 4C

LOWER FOX RIVER - OU4
SRA-06-01 CAP
CROSS SECTION A - A'

Date: JANUARY 2021	Revision Date:	
Drawn By: JRB2	Checked By: TMK1	Project: LFR LTM & COMMP

pw://PW-APS1.foth.com:PW_IE/Documents/Clients/LFR LTM and COMMP/LTM and CAP Maintenance/CAD/Figures/Year Zero/Fig 4C - Cap Cross Section.dgn
3/19/2021 12:37:48 PM jrb2



COLOR ELEVATION CHART

COLOR CONTOURS SHOWN REPRESENTS THE
NOVEMBER 15, 2018 TOP OF ENGINEERED CAP ELEVATIONS

SHALLOWER ↑ WATER DEPTH ↓ DEEPER

ELEVATION 579 - 580	ELEVATION 561 - 562
ELEVATION 578 - 579	ELEVATION 560 - 561
ELEVATION 577 - 578	ELEVATION 559 - 560
ELEVATION 576 - 577	ELEVATION 558 - 559
ELEVATION 575 - 576	ELEVATION 557 - 558
ELEVATION 574 - 575	ELEVATION 556 - 557
ELEVATION 573 - 574	ELEVATION 555 - 556
ELEVATION 572 - 573	ELEVATION 554 - 555
ELEVATION 571 - 572	ELEVATION 553 - 554
ELEVATION 570 - 571	ELEVATION 552 - 553
ELEVATION 569 - 570	ELEVATION 551 - 552
ELEVATION 568 - 569	ELEVATION 550 - 551
ELEVATION 567 - 568	ELEVATION 549 - 550
ELEVATION 566 - 567	ELEVATION 548 - 549
ELEVATION 565 - 566	ELEVATION 547 - 548
ELEVATION 564 - 565	ELEVATION 546 - 547
ELEVATION 563 - 564	ELEVATION 545 - 546
ELEVATION 562 - 563	

LEGEND

- PRE-CAP ACTUAL DREDGE LIMITS
- CAP / SAND COVER MANAGEMENT UNIT (CMU / SCMU)
- SRA CAP MANGEMENT UNIT

NOTES:

1. 200 KILOHERTZ (kHz) SINGLE BEAM HYDROGRAPHIC POST-CAP SURVEY PERFORMED BY J.F. BRENNAN, CO.
   DATE OF SURVEY: NOVEMBER 15, 2018.
   400 KILOHERTZ (kHz) MULTI-BEAM HYDROGRAPHIC POST-CAP SURVEY PERFORMED BY J.F. BRENNAN, CO.
   DATE OF SURVEY: NOVEMBER 15, 2018.
   DUE TO LOW WATER DEPTHS BRENNAN TOOK HAND HELD SURVEY TOPOGRAPHY SHOTS ON OCTOBER 15th NEAR EAST SHORLINE.
2. THE HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE). THE VERTICAL CONTROL IS REFERENCED TO NAVD 88.
3. COLOR ORTHO PHOTO OBTAINED FROM MOST RECENT BING MAPS IMAGERY.
4. DESIGN CAP PLACEMENT LIMITS DERIVED FROM DESIGN FILES PROVIDED BY TETRA TECH EC, INC.

Foth

0' 25' 50'
BAR SCALE

GEORGIA-PACIFIC CORP. / P.H. GLATFELTER COMPANY

FIGURE 5A

LOWER FOX RIVER - OU4
SRA-06-02 CAP ELEVATIONS
PLAN VIEW

Date: JANUARY 2021	Revision Date:		
Drawn By: JRB2	Checked By: TMK1	Project: LFR LTM & COMMP	

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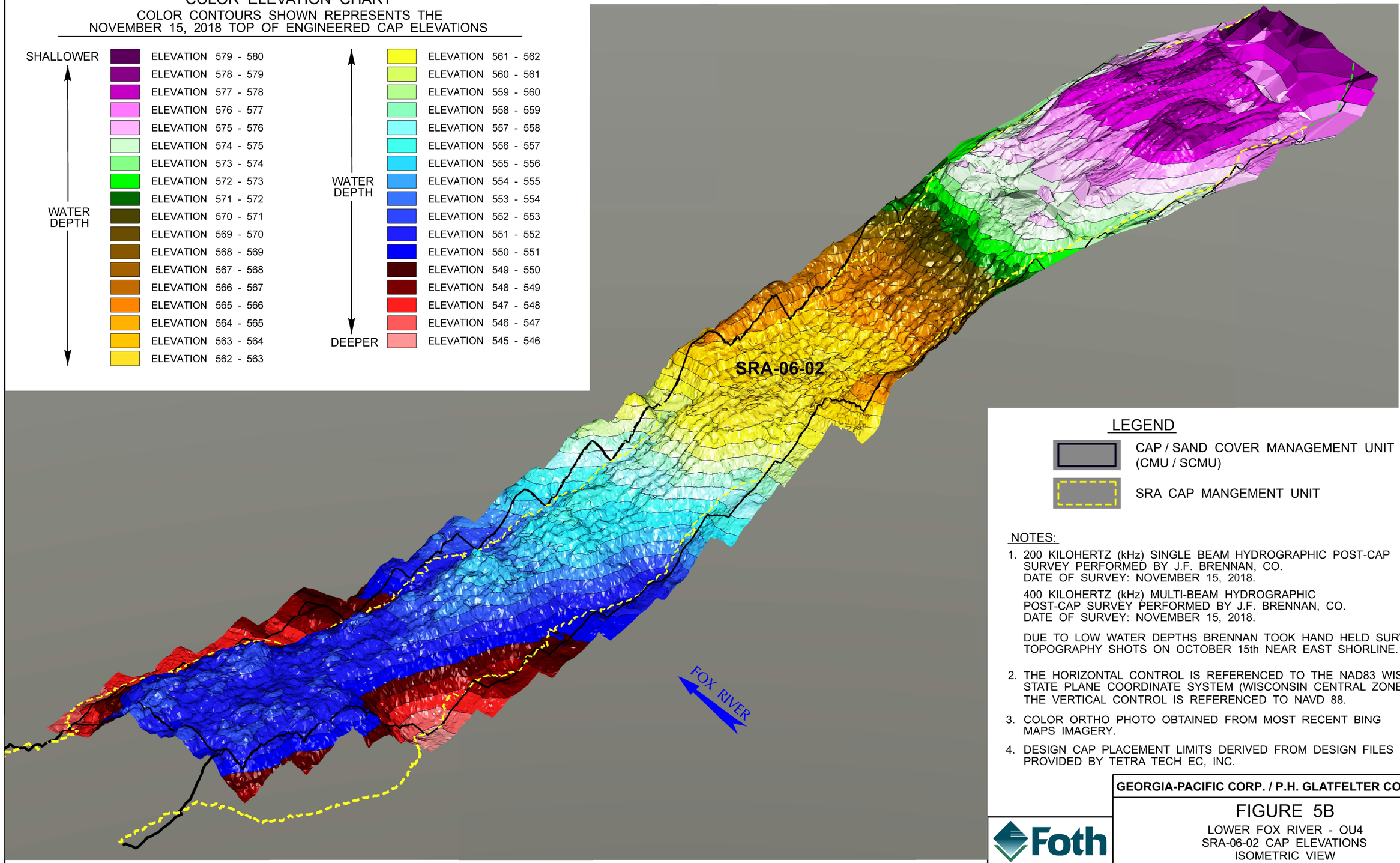
COLOR ELEVATION CHART

COLOR CONTOURS SHOWN REPRESENTS THE
NOVEMBER 15, 2018 TOP OF ENGINEERED CAP ELEVATIONS

SHALLOWER ↑ WATER DEPTH ↓ DEEPER

ELEVATION 579 - 580	ELEVATION 561 - 562
ELEVATION 578 - 579	ELEVATION 560 - 561
ELEVATION 577 - 578	ELEVATION 559 - 560
ELEVATION 576 - 577	ELEVATION 558 - 559
ELEVATION 575 - 576	ELEVATION 557 - 558
ELEVATION 574 - 575	ELEVATION 556 - 557
ELEVATION 573 - 574	ELEVATION 555 - 556
ELEVATION 572 - 573	ELEVATION 554 - 555
ELEVATION 571 - 572	ELEVATION 553 - 554
ELEVATION 570 - 571	ELEVATION 552 - 553
ELEVATION 569 - 570	ELEVATION 551 - 552
ELEVATION 568 - 569	ELEVATION 550 - 551
ELEVATION 567 - 568	ELEVATION 549 - 550
ELEVATION 566 - 567	ELEVATION 548 - 549
ELEVATION 565 - 566	ELEVATION 547 - 548
ELEVATION 564 - 565	ELEVATION 546 - 547
ELEVATION 563 - 564	ELEVATION 545 - 546
ELEVATION 562 - 563	



LEGEND

CAP / SAND COVER MANAGEMENT UNIT (CMU / SCMU)

SRA CAP MANGEMENT UNIT

NOTES:

1. 200 KILOHERTZ (kHz) SINGLE BEAM HYDROGRAPHIC POST-CAP SURVEY PERFORMED BY J.F. BRENNAN, CO.
   DATE OF SURVEY: NOVEMBER 15, 2018.

   400 KILOHERTZ (kHz) MULTI-BEAM HYDROGRAPHIC POST-CAP SURVEY PERFORMED BY J.F. BRENNAN, CO.
   DATE OF SURVEY: NOVEMBER 15, 2018.

   DUE TO LOW WATER DEPTHS BRENNAN TOOK HAND HELD SURVEY TOPOGRAPHY SHOTS ON OCTOBER 15th NEAR EAST SHORLINE.
2. THE HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE). THE VERTICAL CONTROL IS REFERENCED TO NAVD 88.
3. COLOR ORTHO PHOTO OBTAINED FROM MOST RECENT BING MAPS IMAGERY.
4. DESIGN CAP PLACEMENT LIMITS DERIVED FROM DESIGN FILES PROVIDED BY TETRA TECH EC, INC.

GEORGIA-PACIFIC CORP. / P.H. GLATFELTER COMPANY

FIGURE 5B

LOWER FOX RIVER - OU4
SRA-06-02 CAP ELEVATIONS
ISOMETRIC VIEW

Foth

VERTICAL SCALE EXAGGERATED 5x FOR ILLUSTRATION PURPOSES ONLY. NOT TO SCALE

Date: JANUARY 2021	Revision Date:	
Drawn By: JRB2	Checked By: TMK1	Project: LFR LTM & COMMP

pw://PW-APS1.foth.com:PW_IE/Documents/Clients/LFR LTM and COMMP/LTM and CAP Maintenance/CAD/Figures/Year Zero/Fig 5B - Cap Isometric View.dgn
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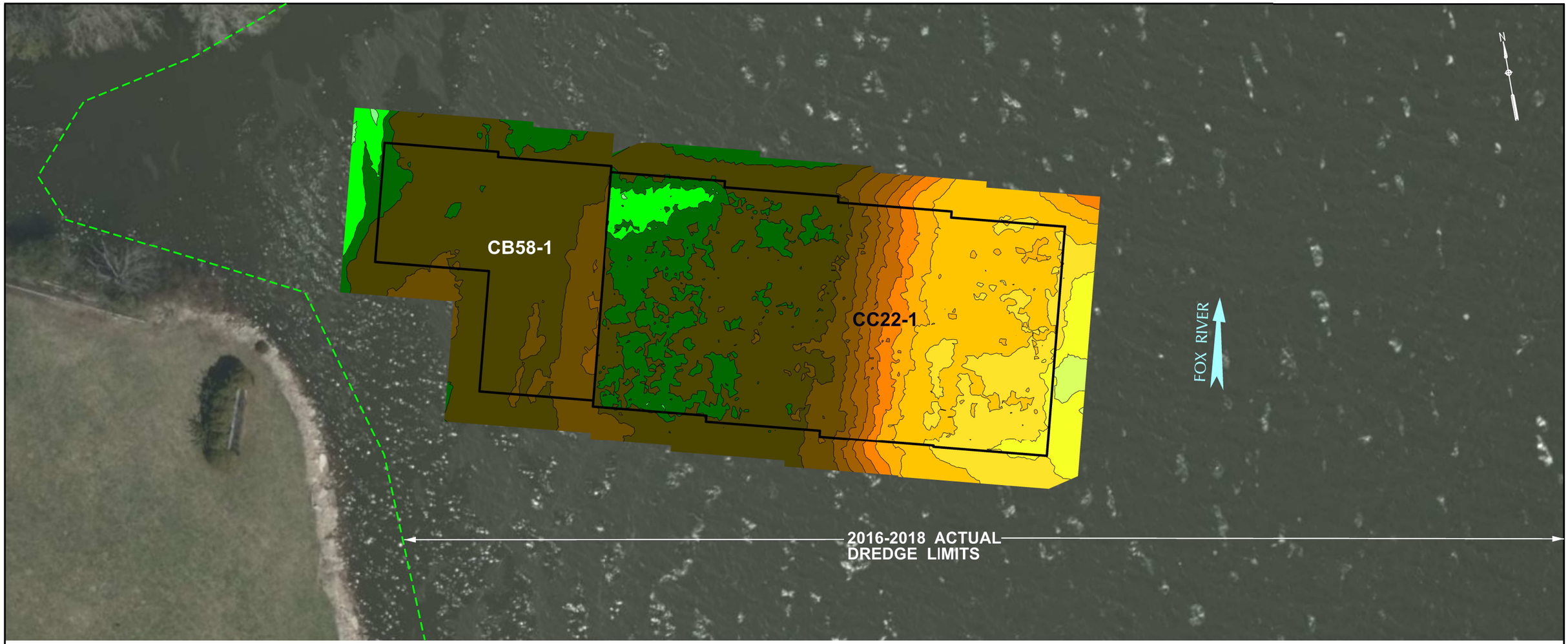


COLOR ELEVATION CHART

COLOR CONTOURS SHOWN REPRESENTS THE NOVEMBER 8, 2018 OR SEPTEMBER 20, 2019 TOP OF ENGINEERED CAP ELEVATIONS

SHALLOWER		ELEVATION 573 - 574
		ELEVATION 572 - 573
		ELEVATION 571 - 572
		ELEVATION 570 - 571
		ELEVATION 569 - 570
		ELEVATION 568 - 569
WATER DEPTH		ELEVATION 567 - 568
		ELEVATION 566 - 567
		ELEVATION 565 - 566
		ELEVATION 564 - 565
		ELEVATION 563 - 564
		ELEVATION 562 - 563
		ELEVATION 561 - 562
DEEPER		ELEVATION 560 - 561

LEGEND

- DESIGN CAP PLACEMENT LIMITS
- PRE-CAP ACTUAL DREDGE LIMITS

NOTES:

1. 400 KILOHERTZ (kHz) MULTI-BEAM HYDROGRAPHIC POST-CAP SURVEYS PERFORMED BY J.F. BRENNAN, CO.
   DATES OF SURVEYS:
   CB58: NOVEMBER 8, 2018.
   CC22-1: SEPTEMBER 20, 2019.
2. THE HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE). THE VERTICAL CONTROL IS REFERENCED TO NAVD 88.
3. COLOR ORTHO PHOTO OBTAINED FROM MOST RECENT BING MAPS IMAGERY.
4. DESIGN CAP PLACEMENT LIMITS DERIVED FROM DESIGN FILES PROVIDED BY TETRA TECH EC, INC.

Foth

0' 25' 50'

BAR SCALE

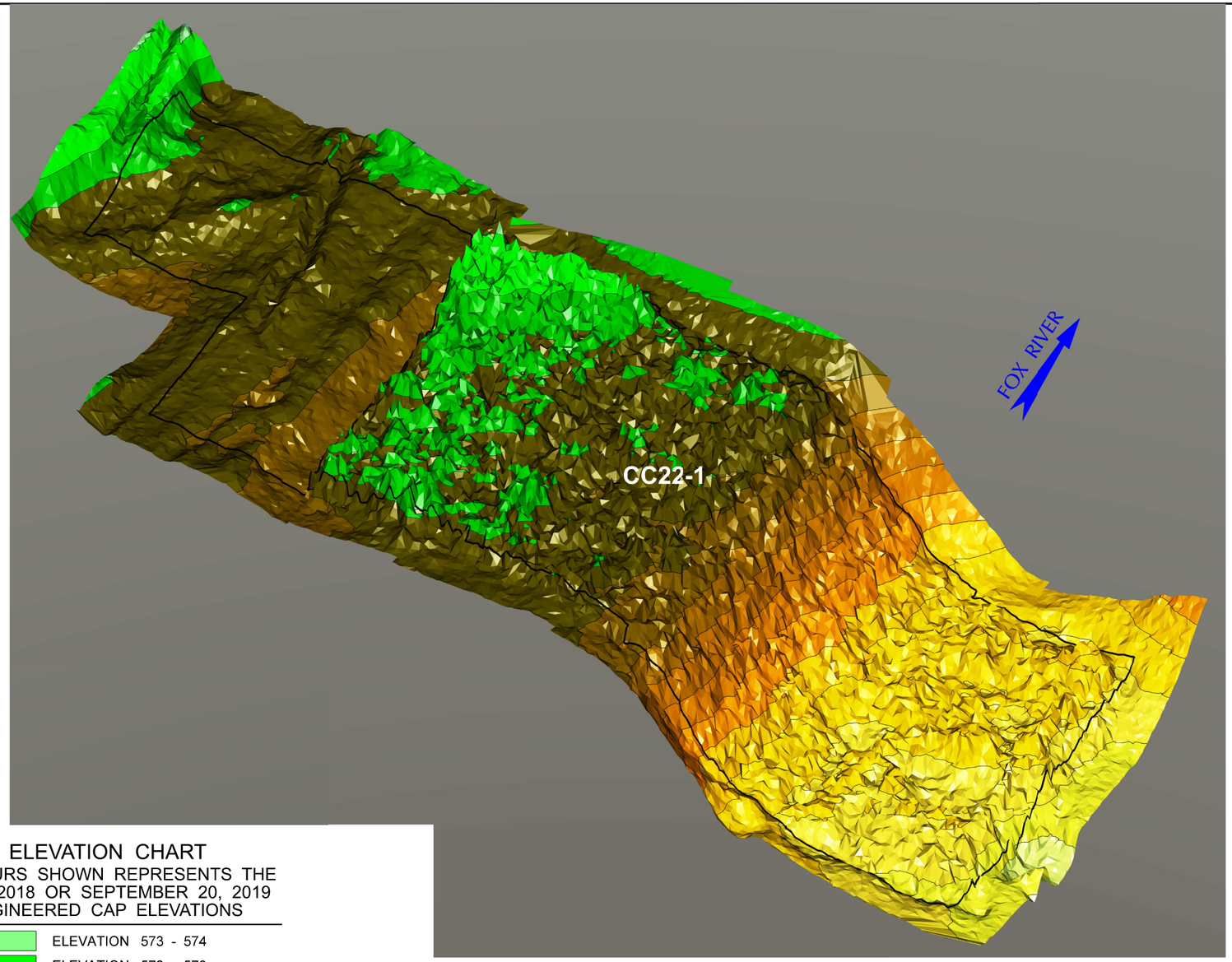
GEORGIA-PACIFIC CORP. / P.H. GLATFELTER COMPANY

FIGURE 6A

LOWER FOX RIVER - OU4
CB58-1 / CC22-1 CAP ELEVATIONS
PLAN VIEW

Date: JANUARY 2021	Revision Date:	
Drawn By: JRB2	Checked By: TMK1	Project: LFR LTM & COMMP

pw://PW-APS1.foth.com:PW_IE/Documents/Clients/LFR LTM and COMMP/LTM and CAP Maintenance/CAD/Figures/Year Zero/Fig 6A - Cap Elevations.dgn
3/22/2021 4:01:10 PM jrb2



COLOR ELEVATION CHART

COLOR CONTOURS SHOWN REPRESENTS THE NOVEMBER 8, 2018 OR SEPTEMBER 20, 2019 TOP OF ENGINEERED CAP ELEVATIONS

SHALLOWER

WATER DEPTH

DEEPER

- ELEVATION 573 - 574
- ELEVATION 572 - 573
- ELEVATION 571 - 572
- ELEVATION 570 - 571
- ELEVATION 569 - 570
- ELEVATION 568 - 569
- ELEVATION 567 - 568
- ELEVATION 566 - 567
- ELEVATION 565 - 566
- ELEVATION 564 - 565
- ELEVATION 563 - 564
- ELEVATION 562 - 563
- ELEVATION 561 - 562
- ELEVATION 560 - 561

NOTES:

1. 400 KILOHERTZ (kHz) MULTI-BEAM HYDROGRAPHIC POST-CAP SURVEYS PERFORMED BY J.F. BRENNAN, CO. DATES OF SURVEYS:
   CB58: NOVEMBER 8, 2018.
   CC22-1: SEPTEMBER 20, 2019.
2. THE HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE). THE VERTICAL CONTROL IS REFERENCED TO NAVD 88.
3. COLOR ORTHO PHOTO OBTAINED FROM MOST RECENT BING MAPS IMAGERY.
4. DESIGN CAP PLACEMENT LIMITS DERIVED FROM DESIGN FILES PROVIDED BY TETRA TECH EC, INC.

LEGEND

DESIGN CAP PLACEMENT LIMITS

Foth

VERTICAL SCALE EXAGGERATED 5x FOR ILLUSTRATION PURPOSES ONLY. NOT TO SCALE

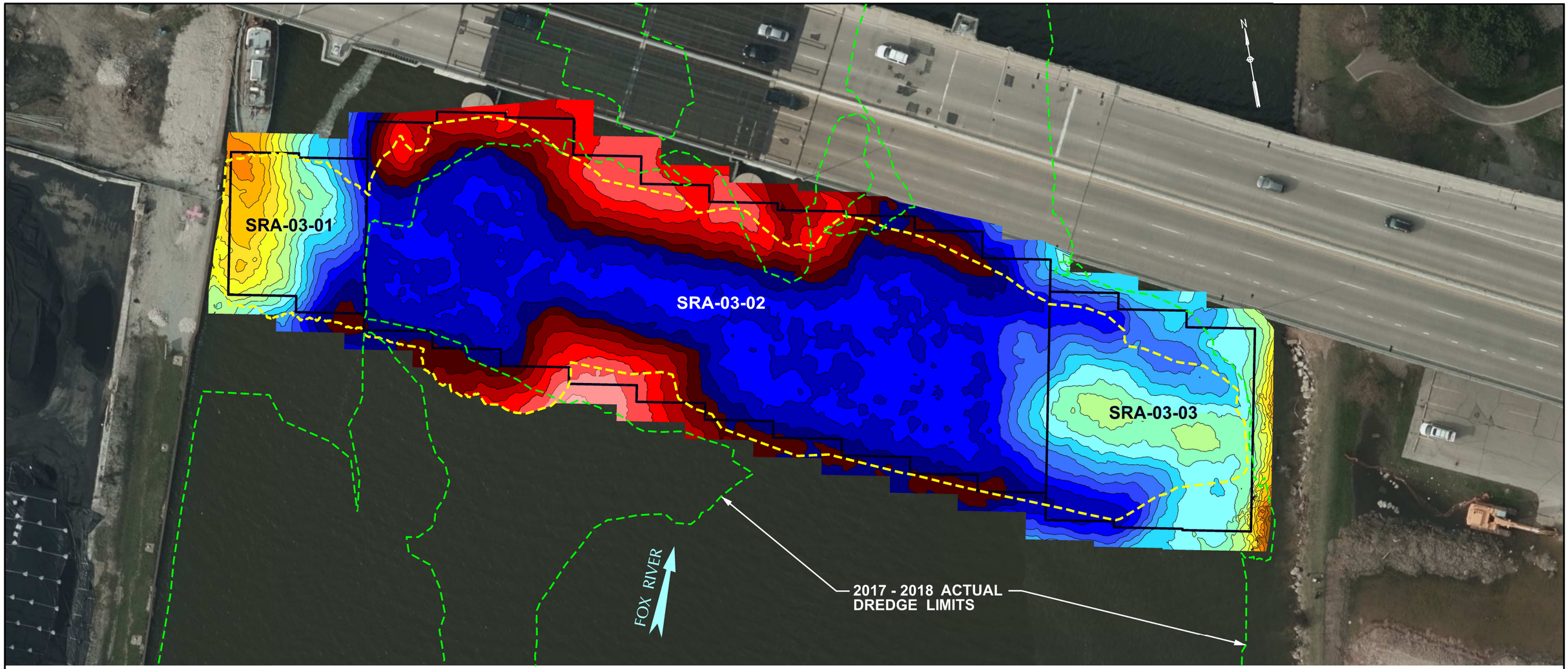
GEORGIA-PACIFIC CORP. / P.H. GLATFELTER COMPANY

FIGURE 6B

LOWER FOX RIVER - OU4
CB58-1 / CC22-1 CAP ELEVATIONS
ISOMETRIC VIEW

Date: JANUARY 2021	Revision Date:	
Drawn By: JRB2	Checked By: TMK1	Project: LFR LTM & COMMP

pw://PW-APS1.foth.com:PW_IE/Documents/Clients/LFR LTM and COMMP/LTM and CAP Maintenance/CAD/Figures/Year Zero/Fig 6B - Cap Isometric View.dgn
3/22/2021 4:51:42 PM jrb2



COLOR ELEVATION CHART

COLOR CONTOURS SHOWN REPRESENTS THE
AUGUST 29, 2019 TOP OF ENGINEERED CAP ELEVATIONS

SHALLOWER ↑ WATER DEPTH ↓ DEEPER

ELEVATION 568 - 569		ELEVATION 555 - 556	
ELEVATION 567 - 568		ELEVATION 554 - 555	
ELEVATION 566 - 567		ELEVATION 553 - 554	
ELEVATION 565 - 566		ELEVATION 552 - 553	
ELEVATION 564 - 565		ELEVATION 551 - 552	
ELEVATION 563 - 564		ELEVATION 550 - 551	
ELEVATION 562 - 563		ELEVATION 549 - 550	
ELEVATION 561 - 562		ELEVATION 548 - 549	
ELEVATION 560 - 561		ELEVATION 547 - 548	
ELEVATION 559 - 560		ELEVATION 546 - 547	
ELEVATION 558 - 559		ELEVATION 545 - 546	
ELEVATION 557 - 558		ELEVATION 544 - 545	
ELEVATION 556 - 557		ELEVATION 543 - 544	

LEGEND

- PRE-CAP ACTUAL DREDGE LIMITS
- CAP / SAND COVER MANAGEMENT UNIT (CMU / SCMU)
- SRA CAP MANGEMENT UNIT

NOTES:

1. 400 KILOHERTZ (kHz) MULTI-BEAM HYDROGRAPHIC POST-CAP SURVEY PERFORMED BY J.F. BRENNAN, CO. DATE OF SURVEY: AUGUST 29, 2019.
2. THE HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE). THE VERTICAL CONTROL IS REFERENCED TO NAVD 88.
3. COLOR ORTHO PHOTO OBTAINED FROM MOST RECENT BING MAPS IMAGERY.
4. DESIGN CAP PLACEMENT LIMITS DERIVED FROM DESIGN FILES PROVIDED BY TETRA TECH EC, INC.

Foth

0' 25' 50'
BAR SCALE

GEORGIA-PACIFIC CORP. / P.H. GLATFELTER COMPANY

FIGURE 7A

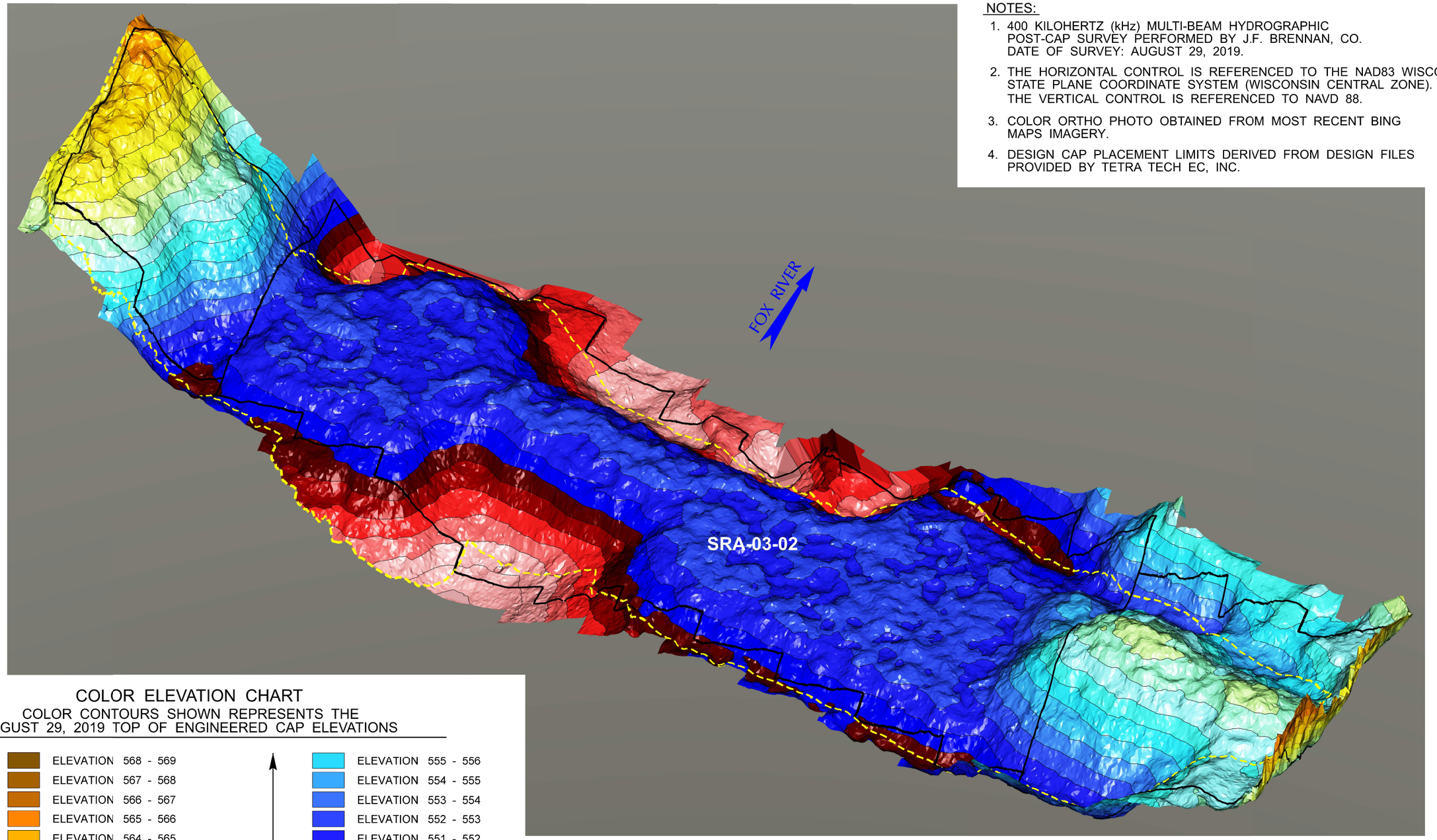
LOWER FOX RIVER - OU4
SRA-03-01, SRA-03-02 & SRA-03-03 CAP ELEVATIONS
PLAN VIEW

Date: JANUARY 2021	Revision Date:	
Drawn By: JRB2	Checked By: TMK1	Project: LFR LTM & COMMP

pw://PW-APS1.foth.com:PW_IE/Documents/Clients/LFR LTM and COMMP/LTM and CAP Maintenance/CAD/Figures/Year Zero/Fig 7A - Cap Elevations.dgn
3/22/2021 4:20:15 PM jrb2

NOTES:

1. 400 KILOHERTZ (kHz) MULTI-BEAM HYDROGRAPHIC POST-CAP SURVEY PERFORMED BY J.F. BRENNAN, CO. DATE OF SURVEY: AUGUST 29, 2019.
2. THE HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE). THE VERTICAL CONTROL IS REFERENCED TO NAVD 88.
3. COLOR ORTHO PHOTO OBTAINED FROM MOST RECENT BING MAPS IMAGERY.
4. DESIGN CAP PLACEMENT LIMITS DERIVED FROM DESIGN FILES PROVIDED BY TETRA TECH EC, INC.



COLOR ELEVATION CHART

COLOR CONTOURS SHOWN REPRESENTS THE AUGUST 29, 2019 TOP OF ENGINEERED CAP ELEVATIONS

SHALLOWER ↑ WATER DEPTH ↓ DEEPER

ELEVATION 568 - 569	ELEVATION 555 - 556
ELEVATION 567 - 568	ELEVATION 554 - 555
ELEVATION 566 - 567	ELEVATION 553 - 554
ELEVATION 565 - 566	ELEVATION 552 - 553
ELEVATION 564 - 565	ELEVATION 551 - 552
ELEVATION 563 - 564	ELEVATION 550 - 551
ELEVATION 562 - 563	ELEVATION 549 - 550
ELEVATION 561 - 562	ELEVATION 548 - 549
ELEVATION 560 - 561	ELEVATION 547 - 548
ELEVATION 559 - 560	ELEVATION 546 - 547
ELEVATION 558 - 559	ELEVATION 545 - 546
ELEVATION 557 - 558	ELEVATION 544 - 545
ELEVATION 556 - 557	ELEVATION 543 - 544

LEGEND

- CAP / SAND COVER MANAGEMENT UNIT (CMU / SCMU)
- SRA CAP MANGEMENT UNIT

Foth

VERTICAL SCALE EXAGGERATED 5x FOR ILLUSTRATION PURPOSES ONLY. NOT TO SCALE

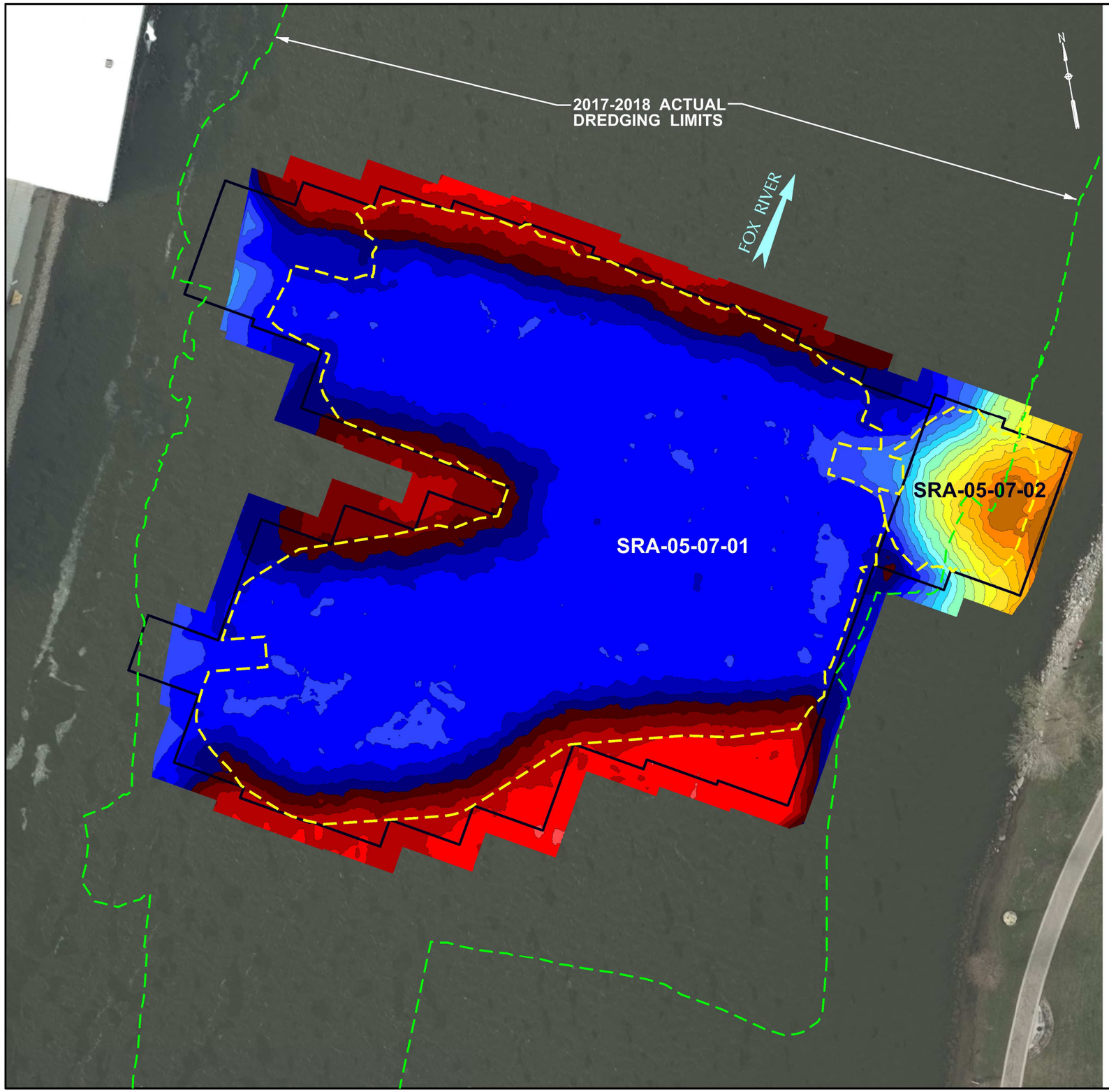
GEORGIA-PACIFIC CORP. / P.H. GLATFELTER COMPANY

FIGURE 7B

LOWER FOX RIVER - OU4
SRA-03-01, SRA-03-02 & SRA-03-03 CAP ELEVATIONS
ISOMETRIC VIEW

Date: JANUARY 2021	Revision Date:	
Drawn By: JRB2	Checked By: TMK1	Project: LFR LTM & COMMP

pw://PW-APS1.foth.com:PW_IE/Documents/Clients/LFR LTM and COMMP/LTM and CAP Maintenance/CAD/Figures/Year Zero/Fig 7B - Cap Isometric View.dgn
3/22/2021 4:49:32 PM jrb2



LEGEND

- PRE-CAP ACTUAL DREDGE LIMITS
- CAP / SAND COVER MANAGEMENT UNIT (CMU / SCMU)
- SRA CAP MANGEMENT UNIT

COLOR ELEVATION CHART

COLOR CONTOURS SHOWN REPRESENTS THE OCTOBER 13, 2019 TOP OF ENGINEERED CAP ELEVATIONS

SHALLOWER ↑ WATER DEPTH ↓ DEEPER

ELEVATION 568 - 569	ELEVATION 555 - 556
ELEVATION 567 - 568	ELEVATION 554 - 555
ELEVATION 566 - 567	ELEVATION 553 - 554
ELEVATION 565 - 566	ELEVATION 552 - 553
ELEVATION 564 - 565	ELEVATION 551 - 552
ELEVATION 563 - 564	ELEVATION 550 - 551
ELEVATION 562 - 563	ELEVATION 549 - 550
ELEVATION 561 - 562	ELEVATION 548 - 549
ELEVATION 560 - 561	ELEVATION 547 - 548
ELEVATION 559 - 560	ELEVATION 546 - 547
ELEVATION 558 - 559	ELEVATION 545 - 546
ELEVATION 557 - 558	ELEVATION 544 - 545
ELEVATION 556 - 557	ELEVATION 543 - 544

NOTES:

1. 400 KILOHERTZ (kHz) MULTI-BEAM HYDROGRAPHIC POST-CAP SURVEY PERFORMED BY J.F. BRENNAN, CO. DATE OF SURVEY: OCTOBER 13, 2019.
2. THE HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE). THE VERTICAL CONTROL IS REFERENCED TO NAVD 88.
3. COLOR ORTHO PHOTO OBTAINED FROM MOST RECENT BING MAPS IMAGERY.
4. DESIGN CAP PLACEMENT LIMITS DERIVED FROM DESIGN FILES PROVIDED BY TETRA TECH EC, INC.

GEORGIA-PACIFIC CORP. / P.H. GLATFELTER COMPANY

FIGURE 8A

LOWER FOX RIVER - OU4
SRA-05-07-01 & SRA-05-07-02 CAP ELEVATIONS
PLAN VIEW

Foth

0' 25' 50'
BAR SCALE

Date: JANUARY 2021	Revision Date:	
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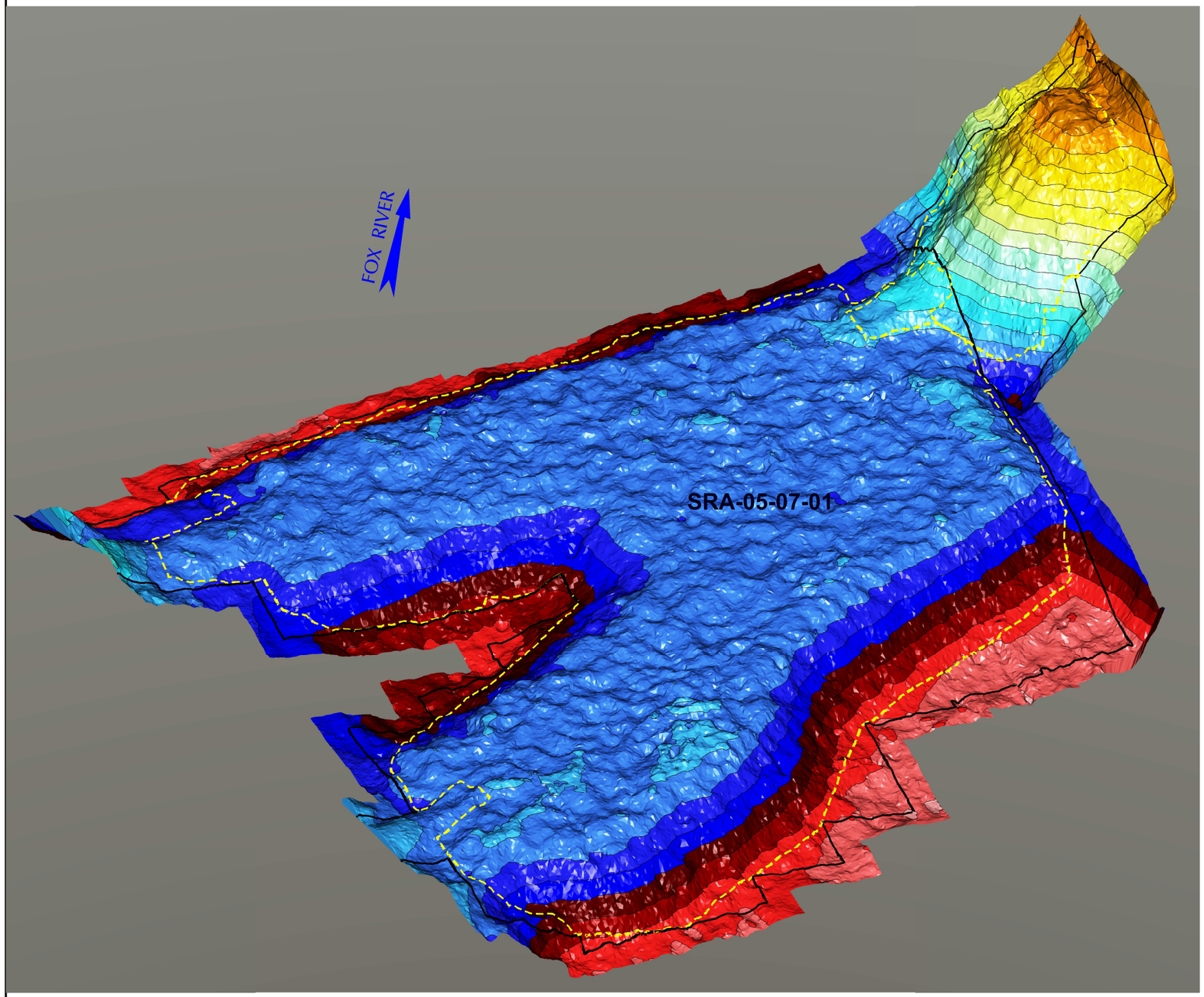

LEGEND

CAP / SAND COVER MANAGEMENT UNIT (CMU / SCMU)

SRA CAP MANGEMENT UNIT

COLOR ELEVATION CHART

COLOR CONTOURS SHOWN REPRESENTS THE OCTOBER 13, 2019 TOP OF ENGINEERED CAP ELEVATIONS

SHALLOWER ↑ WATER DEPTH ↓ DEEPER

- ELEVATION 568 - 569
- ELEVATION 567 - 568
- ELEVATION 566 - 567
- ELEVATION 565 - 566
- ELEVATION 564 - 565
- ELEVATION 563 - 564
- ELEVATION 562 - 563
- ELEVATION 561 - 562
- ELEVATION 560 - 561
- ELEVATION 559 - 560
- ELEVATION 558 - 559
- ELEVATION 557 - 558
- ELEVATION 556 - 557
- ELEVATION 555 - 556
- ELEVATION 554 - 555
- ELEVATION 553 - 554
- ELEVATION 552 - 553
- ELEVATION 551 - 552
- ELEVATION 550 - 551
- ELEVATION 549 - 550
- ELEVATION 548 - 549
- ELEVATION 547 - 548
- ELEVATION 546 - 547
- ELEVATION 545 - 546
- ELEVATION 544 - 545

NOTES:

1. 400 KILOHERTZ (kHz) MULTI-BEAM HYDROGRAPHIC POST-CAP SURVEY PERFORMED BY J.F. BRENNAN, CO. DATE OF SURVEY: OCTOBER 13, 2019.
2. THE HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE). THE VERTICAL CONTROL IS REFERENCED TO NAVD 88.
3. COLOR ORTHO PHOTO OBTAINED FROM MOST RECENT BING MAPS IMAGERY.
4. DESIGN CAP PLACEMENT LIMITS DERIVED FROM DESIGN FILES PROVIDED BY TETRA TECH EC, INC.

Foth

VERTICAL SCALE EXAGGERATED 5x FOR ILLUSTRATION PURPOSES ONLY. NOT TO SCALE

GEORGIA-PACIFIC CORP. / P.H. GLATFELTER COMPANY

FIGURE 8B

LOWER FOX RIVER - OU4
SRA-06-02 CAP ELEVATIONS
ISOMETRIC VIEW

Date: JANUARY 2021	Revision Date:	
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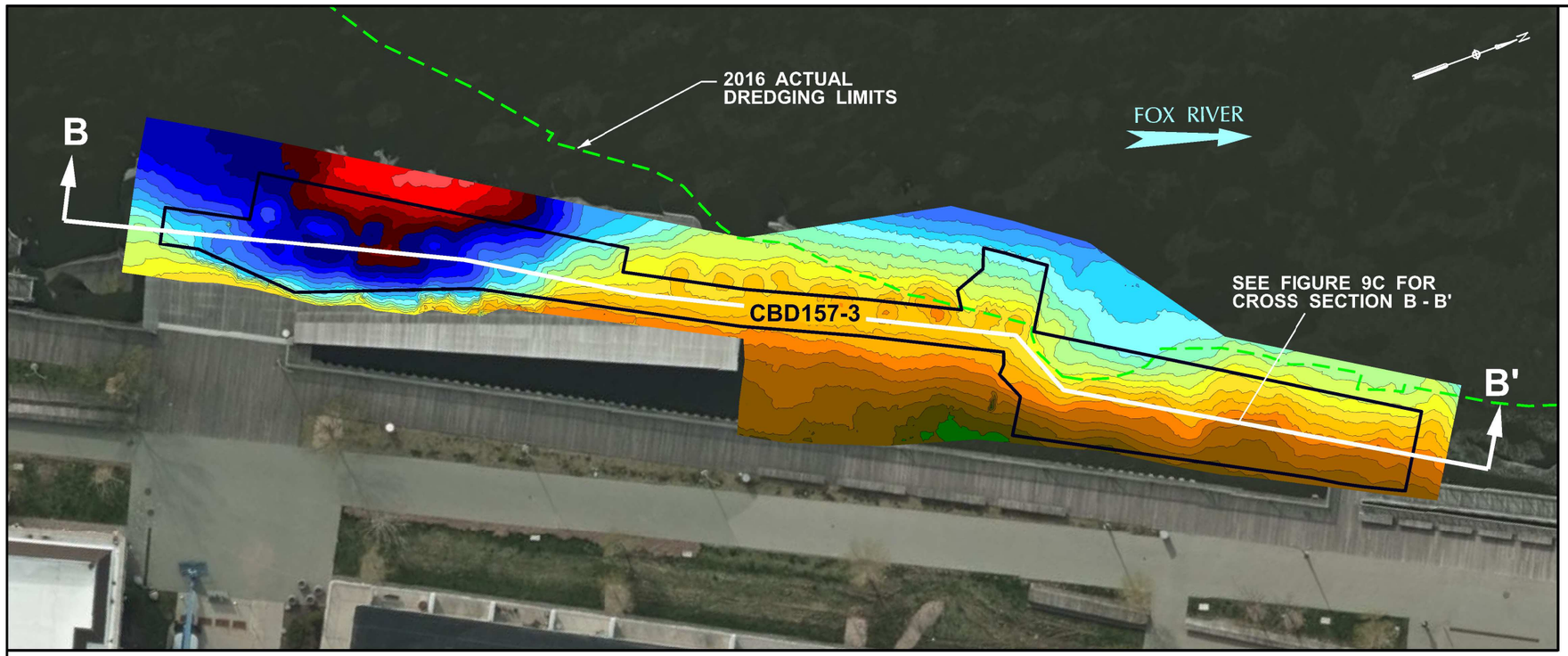
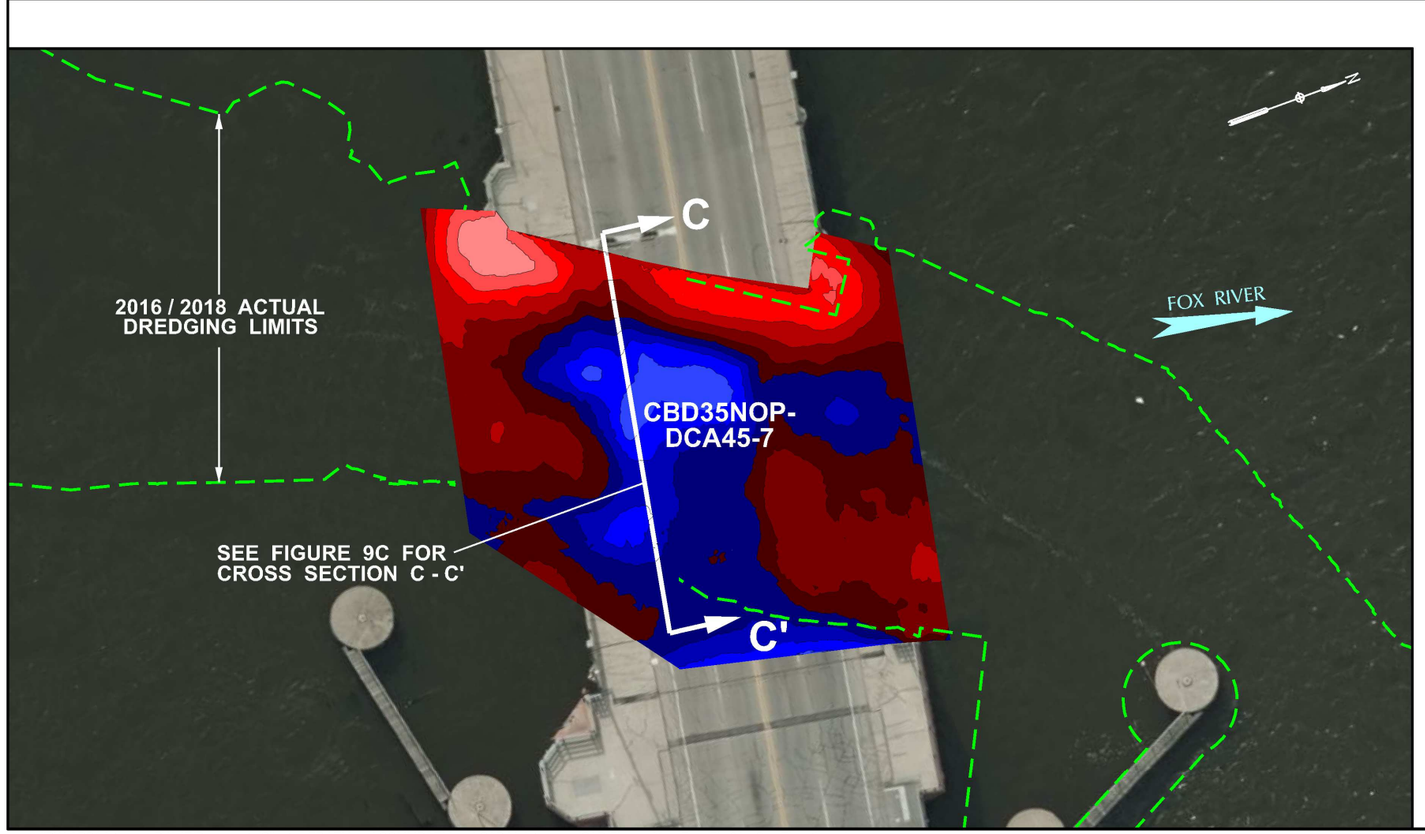
3/22/2021 4:57:19 PM jrb2





LEGEND

CAP MANGEMENT UNIT LIMITS

PRE-CAP ACTUAL DREDGE LIMITS

COLOR ELEVATION CHART

COLOR CONTOURS SHOWN REPRESENTS THE MAY 26, 2020 TOP OF ENGINEERED CAP ELEVATIONS

SHALLOWER

WATER DEPTH

DEEPER

- ELEVATION 571 - 572
- ELEVATION 570 - 571
- ELEVATION 569 - 570
- ELEVATION 568 - 569
- ELEVATION 567 - 568
- ELEVATION 566 - 567
- ELEVATION 565 - 566
- ELEVATION 564 - 565
- ELEVATION 563 - 564
- ELEVATION 562 - 563
- ELEVATION 561 - 562
- ELEVATION 560 - 561
- ELEVATION 559 - 560
- ELEVATION 558 - 559
- ELEVATION 557 - 558
- ELEVATION 556 - 557
- ELEVATION 555 - 556
- ELEVATION 554 - 555
- ELEVATION 553 - 554
- ELEVATION 552 - 553
- ELEVATION 551 - 552
- ELEVATION 550 - 551
- ELEVATION 549 - 550
- ELEVATION 548 - 549
- ELEVATION 547 - 548
- ELEVATION 546 - 547
- ELEVATION 545 - 546
- ELEVATION 544 - 545

NOTES:

1. 400 KILOHERTZ (kHz) MULTI-BEAM HYDROGRAPHIC POST-CAP SURVEY PERFORMED BY J.F. BRENNAN, CO. DATE OF SURVEY: MAY 26, 2020.
2. THE HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE). THE VERTICAL CONTROL IS REFERENCED TO NAVD 88.
3. COLOR ORTHO PHOTO OBTAINED FROM MOST RECENT BING MAPS IMAGERY.
4. DESIGN CAP PLACEMENT LIMITS DERIVED FROM DESIGN FILES PROVIDED BY TETRA TECH EC, INC.

GEORGIA-PACIFIC CORP. / P.H. GLATFELTER COMPANY

FIGURE 9A

LOWER FOX RIVER - OU4
CBD157-3 & CBD35NOP-DCA45-7 CAP ELEVATIONS
PLAN VIEW

Foth

0' 20' 40'
BAR SCALE

Date: JANUARY 2021 | Revision Date:

Drawn By: JRB2 | Checked By: TMK1 | Project: LFR LTM & COMMP

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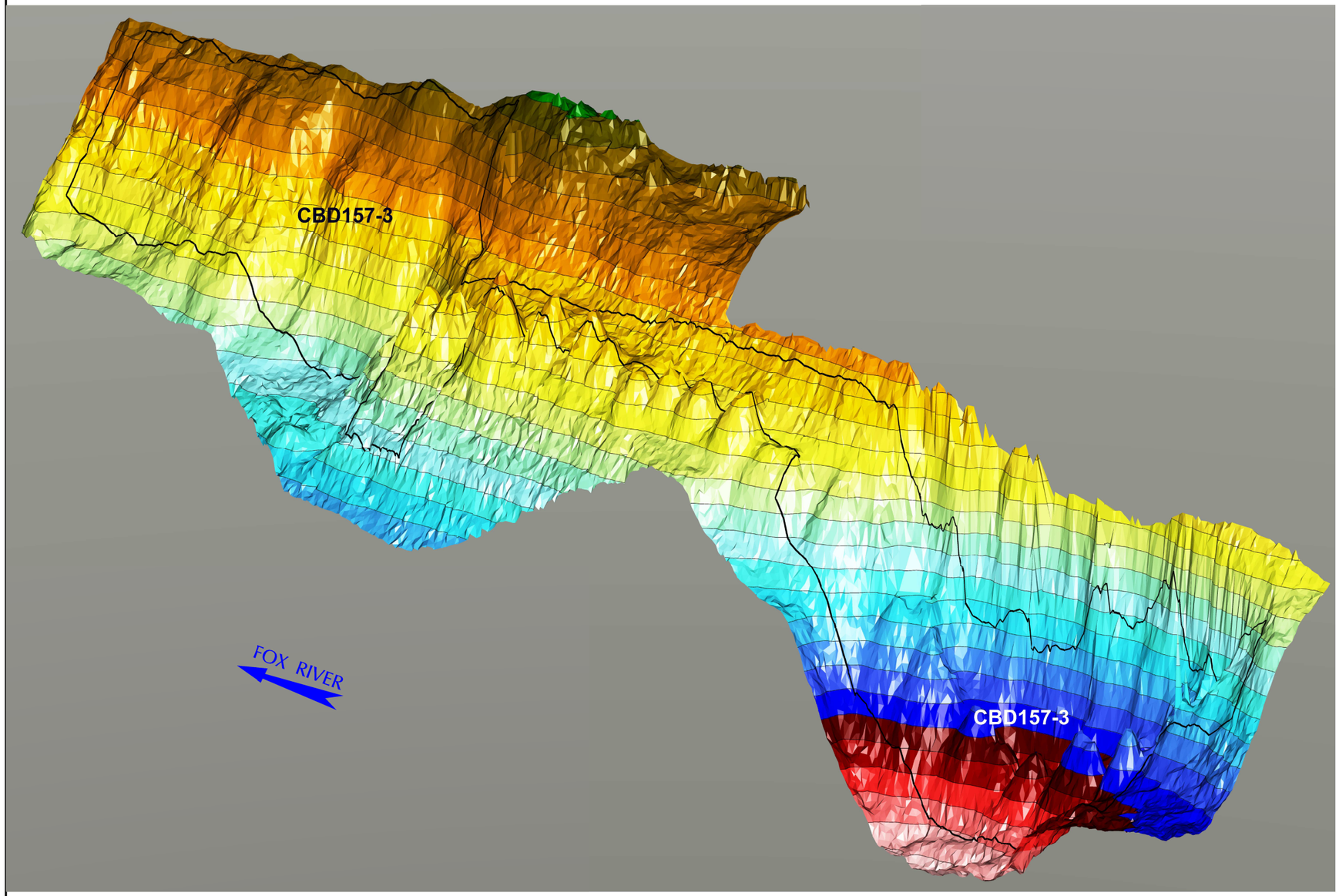
3/23/2021 11:23:26 AM jrb2



LEGEND

CAP MANGEMENT UNIT LIMITS

COLOR ELEVATION CHART

COLOR CONTOURS SHOWN REPRESENTS THE MAY 26, 2020 TOP OF ENGINEERED CAP ELEVATIONS

SHALLOWER

WATER DEPTH

DEEPER

- ELEVATION 571 - 572
- ELEVATION 570 - 571
- ELEVATION 569 - 570
- ELEVATION 568 - 569
- ELEVATION 567 - 568
- ELEVATION 566 - 567
- ELEVATION 565 - 566
- ELEVATION 564 - 565
- ELEVATION 563 - 564
- ELEVATION 562 - 563
- ELEVATION 561 - 562
- ELEVATION 560 - 561
- ELEVATION 559 - 560
- ELEVATION 558 - 559
- ELEVATION 557 - 558
- ELEVATION 556 - 557
- ELEVATION 555 - 556
- ELEVATION 554 - 555
- ELEVATION 553 - 554
- ELEVATION 552 - 553
- ELEVATION 551 - 552
- ELEVATION 550 - 551
- ELEVATION 549 - 550
- ELEVATION 548 - 549
- ELEVATION 547 - 548
- ELEVATION 546 - 547
- ELEVATION 545 - 546
- ELEVATION 544 - 545

NOTES:

1. 400 KILOHERTZ (kHz) MULTI-BEAM HYDROGRAPHIC POST-CAP SURVEY PERFORMED BY J.F. BRENNAN, CO. DATE OF SURVEY: MAY 26, 2020.
2. THE HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE). THE VERTICAL CONTROL IS REFERENCED TO NAVD 88.
3. COLOR ORTHO PHOTO OBTAINED FROM MOST RECENT BING MAPS IMAGERY.
4. DESIGN CAP PLACEMENT LIMITS DERIVED FROM DESIGN FILES PROVIDED BY TETRA TECH EC, INC.

Foth

VERTICAL SCALE EXAGGERATED 5x FOR ILLUSTRATION PURPOSES ONLY. NOT TO SCALE

GEORGIA-PACIFIC CORP. / P.H. GLATFELTER COMPANY

FIGURE 9B-1

LOWER FOX RIVER - OU4
CBD157-3 CAP ELEVATIONS
ISOMETRIC VIEW

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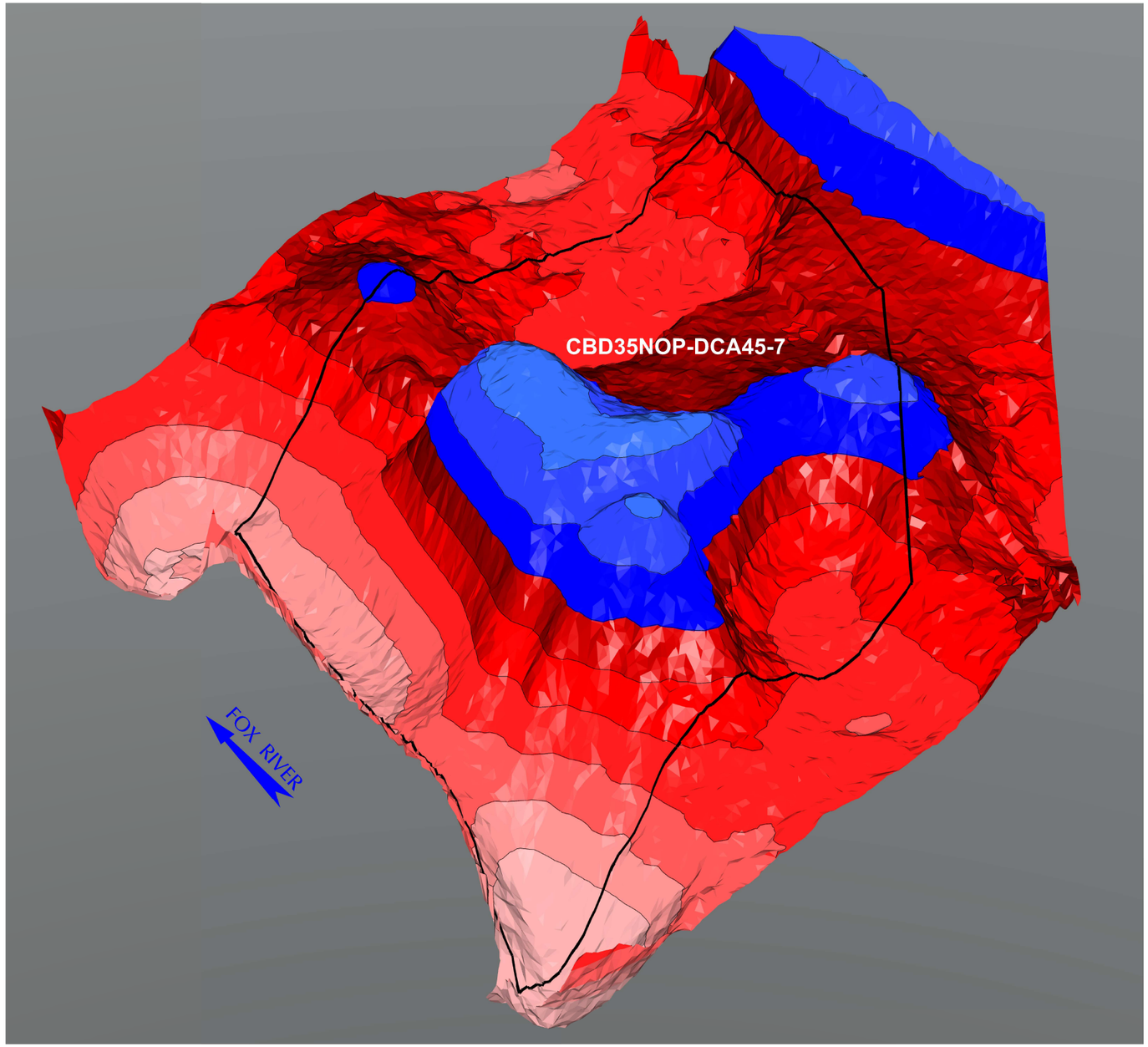

LEGEND

CAP MANGEMENT UNIT LIMITS

COLOR ELEVATION CHART

COLOR CONTOURS SHOWN REPRESENTS THE MAY 26, 2020 TOP OF ENGINEERED CAP ELEVATIONS

SHALLOWER

WATER DEPTH

DEEPER

- ELEVATION 552 - 553
- ELEVATION 551 - 552
- ELEVATION 550 - 551
- ELEVATION 549 - 550
- ELEVATION 548 - 549
- ELEVATION 547 - 548
- ELEVATION 546 - 547
- ELEVATION 545 - 546
- ELEVATION 544 - 545

NOTES:

1. 400 KILOHERTZ (kHz) MULTI-BEAM HYDROGRAPHIC POST-CAP SURVEY PERFORMED BY J.F. BRENNAN, CO. DATE OF SURVEY: MAY 26, 2020.
2. THE HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE). THE VERTICAL CONTROL IS REFERENCED TO NAVD 88.
3. COLOR ORTHO PHOTO OBTAINED FROM MOST RECENT BING MAPS IMAGERY.
4. DESIGN CAP PLACEMENT LIMITS DERIVED FROM DESIGN FILES PROVIDED BY TETRA TECH EC, INC.

Foth

VERTICAL SCALE EXAGGERATED 5x FOR ILLUSTRATION PURPOSES ONLY. NOT TO SCALE

GEORGIA-PACIFIC CORP. / P.H. GLATFELTER COMPANY

FIGURE 9B-2

LOWER FOX RIVER - OU4
CBD35NOP-DCA45-7 CAP ELEVATIONS
ISOMETRIC VIEW

Date: JANUARY 2021	Revision Date:	
Drawn By: JRB2	Checked By: TMK1	Project: LFR LTM & COMMP

pw://PW-APS1.foth.com:PW_IE/Documents/Clients/LFR LTM and COMMP/LTM and CAP Maintenance/CAD/Figures/Year Zero/Fig 9B2 - Cap Isometric View.dgn
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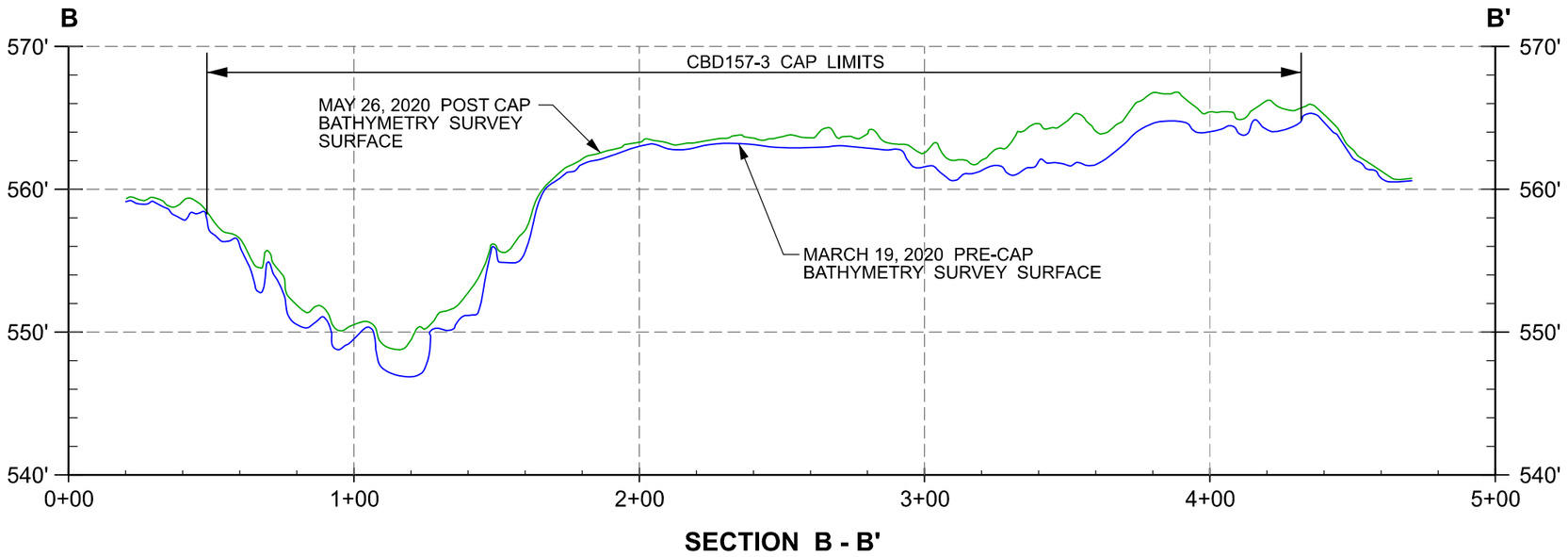
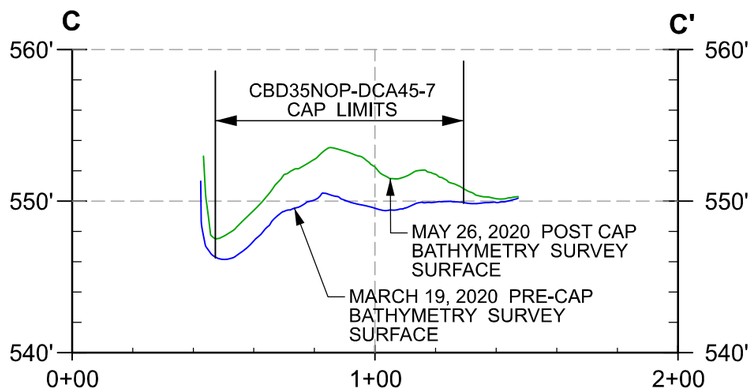


SECTION B - B'



SECTION C - C'

NOTES:

1. 400 KILOHERTZ (kHz) MULTI-BEAM HYDROGRAPHIC POST-CAP SURVEY PERFORMED BY J.F. BRENNAN, CO. DATE OF SURVEY: MAY 26, 2020.
2. THE HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE). THE VERTICAL CONTROL IS REFERENCED TO NAVD 88.
3. DESIGN CAP PLACEMENT LIMITS DERIVED FROM DESIGN FILES PROVIDED BY TETRA TECH EC, INC.
4. SEE FIGURE 9A FOR CROSS SECTION LOCATIONS.

Foth

0' 25' 50'

BAR SCALE

GEORGIA-PACIFIC CORP. / P.H. GLATFELTER COMPANY

FIGURE 9C

LOWER FOX RIVER - OU4
CBD157-3 & CBD35NOP-DCA45-7 CAP
CROSS - SECTIONS B - B' & C - C'

Date: JANUARY 2021	Revision Date:	
Drawn By: JRB2	Checked By: TMK1	Project: LFR LTM & COMMP

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3/23/2021 11:29:00 AM jrb2

LEGEND

CAP MANAGEMENT UNIT LIMITS

PRE-CAP ACTUAL DREDGE LIMITS

COLOR ELEVATION CHART

COLOR CONTOURS SHOWN REPRESENTS THE OCTOBER 16, 2019 TOP OF ENGINEERED CAP ELEVATIONS

SHALLOWER

WATER DEPTH

DEEPER

- ELEVATION 579 - 581
- ELEVATION 578 - 579
- ELEVATION 577 - 578
- ELEVATION 576 - 577
- ELEVATION 575 - 576
- ELEVATION 574 - 575
- ELEVATION 573 - 574
- ELEVATION 572 - 573
- ELEVATION 571 - 572
- ELEVATION 570 - 571
- ELEVATION 569 - 570
- ELEVATION 568 - 569
- ELEVATION 567 - 568
- ELEVATION 566 - 567
- ELEVATION 565 - 566
- ELEVATION 564 - 565
- ELEVATION 563 - 564
- ELEVATION 562 - 563
- ELEVATION 561 - 562
- ELEVATION 560 - 561
- ELEVATION 559 - 560
- ELEVATION 558 - 559
- ELEVATION 557 - 558

NOTES:

1. 200 KILOHERTZ (kHz) SINGLE BEAM HYDROGRAPHIC POST-CAP SURVEY PERFORMED BY J.F. BRENNAN, CO. ALONG WEST SHORE. DATE OF SURVEY: OCTOBER 16, 2019.

   400 KILOHERTZ (kHz) MULTI-BEAM HYDROGRAPHIC POST-CAP SURVEY PERFORMED BY J.F. BRENNAN, CO. DATE OF SURVEY: OCTOBER 16, 2019.
2. THE HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE). THE VERTICAL CONTROL IS REFERENCED TO NAVD 88.
3. COLOR ORTHO PHOTO OBTAINED FROM MOST RECENT BING MAPS IMAGERY.
4. DESIGN CAP PLACEMENT LIMITS DERIVED FROM DESIGN FILES PROVIDED BY TETRA TECH EC, INC.

GEORGIA-PACIFIC CORP. / P.H. GLATFELTER COMPANY

FIGURE 10A

LOWER FOX RIVER - OU4
SRA-04-01 CAP ELEVATIONS
PLAN VIEW

Foth

0' 15' 30'
BAR SCALE

Date: JANUARY 2021	Revision Date:	
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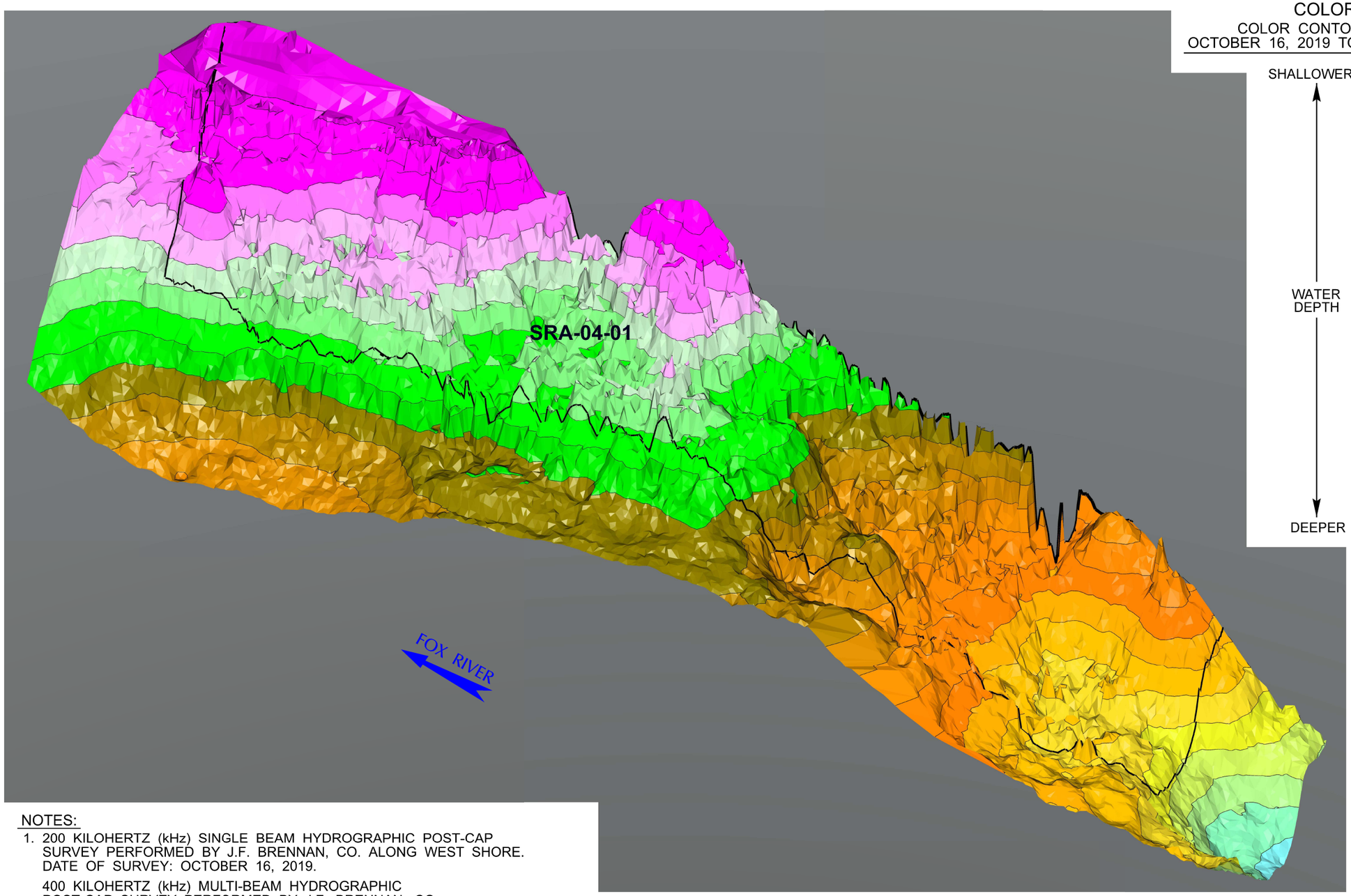

COLOR ELEVATION CHART

COLOR CONTOURS SHOWN REPRESENTS THE OCTOBER 16, 2019 TOP OF ENGINEERED CAP ELEVATIONS

SHALLOWER

WATER DEPTH

DEEPER

- ELEVATION 579 - 580
- ELEVATION 578 - 579
- ELEVATION 577 - 578
- ELEVATION 576 - 577
- ELEVATION 575 - 576
- ELEVATION 574 - 575
- ELEVATION 573 - 574
- ELEVATION 572 - 573
- ELEVATION 571 - 572
- ELEVATION 570 - 571
- ELEVATION 569 - 570
- ELEVATION 568 - 569
- ELEVATION 567 - 568
- ELEVATION 566 - 567
- ELEVATION 565 - 566
- ELEVATION 564 - 565
- ELEVATION 563 - 564
- ELEVATION 562 - 563
- ELEVATION 561 - 562
- ELEVATION 560 - 561
- ELEVATION 559 - 560
- ELEVATION 558 - 559
- ELEVATION 557 - 558

NOTES:

1. 200 KILOHERTZ (kHz) SINGLE BEAM HYDROGRAPHIC POST-CAP SURVEY PERFORMED BY J.F. BRENNAN, CO. ALONG WEST SHORE. DATE OF SURVEY: OCTOBER 16, 2019.

   400 KILOHERTZ (kHz) MULTI-BEAM HYDROGRAPHIC POST-CAP SURVEY PERFORMED BY J.F. BRENNAN, CO. DATE OF SURVEY: OCTOBER 16, 2019.
2. THE HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE). THE VERTICAL CONTROL IS REFERENCED TO NAVD 88.
3. COLOR ORTHO PHOTO OBTAINED FROM MOST RECENT BING MAPS IMAGERY.
4. DESIGN CAP PLACEMENT LIMITS DERIVED FROM DESIGN FILES PROVIDED BY TETRA TECH EC, INC.

LEGEND

CAP MANAGEMENT UNIT LIMITS

Foth

VERTICAL SCALE EXAGGERATED 5x FOR ILLUSTRATION PURPOSES ONLY. NOT TO SCALE

GEORGIA-PACIFIC CORP. / P.H. GLATFELTER COMPANY

FIGURE 10B

LOWER FOX RIVER - OU4
SRA-04-01 CAP ELEVATIONS
ISOMETRIC VIEW

Date: JANUARY 2021	Revision Date:	
Drawn By: JRB2	Checked By: TMK1	Project: LFR LTM & COMMP

pw://PW-APS1.foth.com:PW_IE/Documents/Clients/LFR LTM and COMMP/LTM and CAP Maintenance/CAD/Figures/Year Zero/Fig 10B - Cap Isometric View.dgn
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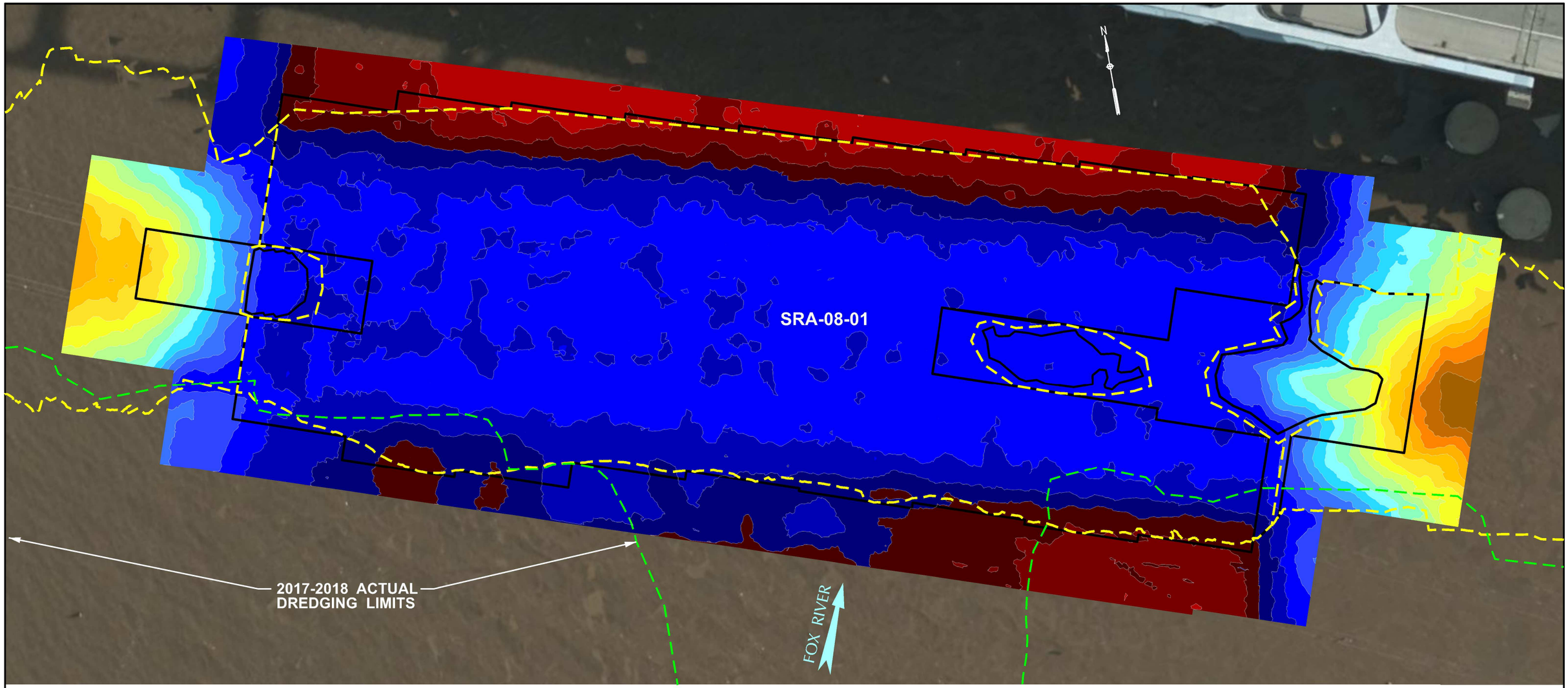


COLOR ELEVATION CHART

COLOR CONTOURS SHOWN REPRESENTS THE
AUGUST 11, 2020 TOP OF ENGINEERED CAP ELEVATIONS

SHALLOWER ↑ WATER DEPTH ↓ DEEPER

ELEVATION 567 - 568	ELEVATION 556 - 557
ELEVATION 566 - 567	ELEVATION 555 - 556
ELEVATION 565 - 566	ELEVATION 554 - 555
ELEVATION 564 - 565	ELEVATION 553 - 554
ELEVATION 563 - 564	ELEVATION 552 - 553
ELEVATION 562 - 563	ELEVATION 551 - 552
ELEVATION 561 - 562	ELEVATION 550 - 551
ELEVATION 560 - 561	ELEVATION 549 - 550
ELEVATION 559 - 560	ELEVATION 548 - 549
ELEVATION 558 - 559	ELEVATION 547 - 548
ELEVATION 557 - 558	

LEGEND

- PRE-CAP ACTUAL DREDGE LIMITS
- CAP / SAND COVER MANAGEMENT UNIT (CMU / SCMU)
- SRA CAP MANGEMENT UNIT

NOTES:

1. 400 KILOHERTZ (kHz) MULTI-BEAM HYDROGRAPHIC POST-CAP SURVEY PERFORMED BY J.F. BRENNAN, CO. DATE OF SURVEY: AUGUST 11, 2020.
2. THE HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE). THE VERTICAL CONTROL IS REFERENCED TO NAVD 88.
3. COLOR ORTHO PHOTO OBTAINED FROM MOST RECENT BING MAPS IMAGERY.
4. DESIGN CAP PLACEMENT LIMITS DERIVED FROM DESIGN FILES PROVIDED BY TETRA TECH EC, INC.

GEORGIA-PACIFIC CORP. / P.H. GLATFELTER COMPANY

FIGURE 11A

LOWER FOX RIVER - OU4
SRA-08-01 CAP ELEVATIONS
PLAN VIEW

Foth

0' 15' 30'
BAR SCALE

Date: JANUARY 2021	Revision Date:	
Drawn By: JRB2	Checked By: TMK1	Project: LFR LTM & COMMP

pw://PW-APS1.foth.com:PW_IE/Documents/Clients/LFR LTM and COMMP/LTM and CAP Maintenance/CAD/Figures/Year Zero/Fig 11A - Cap Elevations.dgn
3/23/2021 11:40:40 AM jrb2

COLOR ELEVATION CHART

COLOR CONTOURS SHOWN REPRESENTS THE AUGUST 11, 2020 TOP OF ENGINEERED CAP ELEVATIONS

SHALLOWER

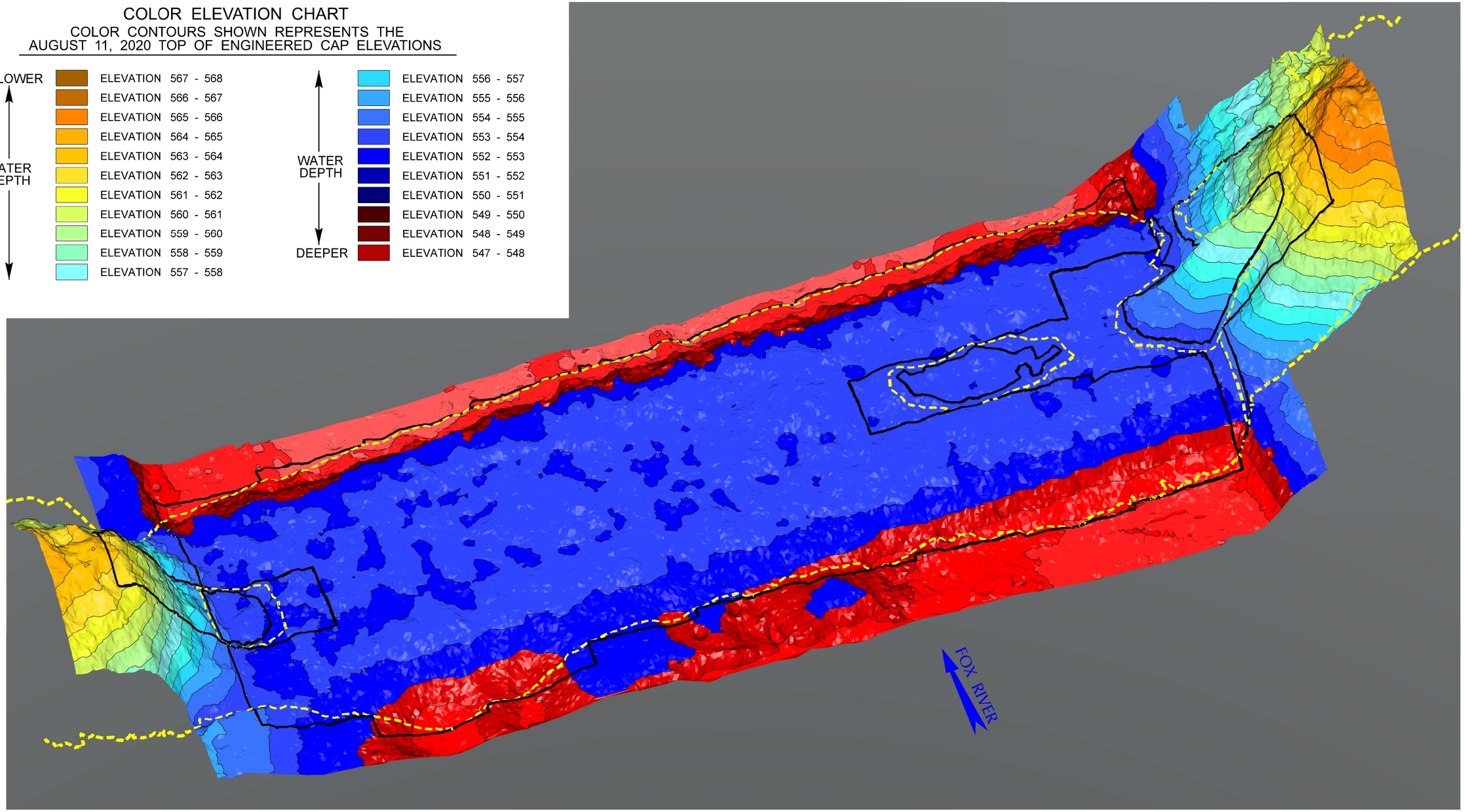
WATER DEPTH

	ELEVATION 567 - 568
	ELEVATION 566 - 567
	ELEVATION 565 - 566
	ELEVATION 564 - 565
	ELEVATION 563 - 564
	ELEVATION 562 - 563
	ELEVATION 561 - 562
	ELEVATION 560 - 561
	ELEVATION 559 - 560
	ELEVATION 558 - 559
	ELEVATION 557 - 558

WATER DEPTH

DEEPER

	ELEVATION 556 - 557
	ELEVATION 555 - 556
	ELEVATION 554 - 555
	ELEVATION 553 - 554
	ELEVATION 552 - 553
	ELEVATION 551 - 552
	ELEVATION 550 - 551
	ELEVATION 549 - 550
	ELEVATION 548 - 549
	ELEVATION 547 - 548



LEGEND

- CAP / SAND COVER MANAGEMENT UNIT (CMU / SCMU)
- SRA CAP MANGEMENT UNIT

NOTES:

1. 400 KILOHERTZ (kHz) MULTI-BEAM HYDROGRAPHIC POST-CAP SURVEY PERFORMED BY J.F. BRENNAN, CO. DATE OF SURVEY: AUGUST 11, 2020.
2. THE HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE). THE VERTICAL CONTROL IS REFERENCED TO NAVD 88.
3. COLOR ORTHO PHOTO OBTAINED FROM MOST RECENT BING MAPS IMAGERY.
4. DESIGN CAP PLACEMENT LIMITS DERIVED FROM DESIGN FILES PROVIDED BY TETRA TECH EC, INC.

Foth

VERTICAL SCALE EXAGGERATED 5x FOR ILLUSTRATION PURPOSES ONLY. NOT TO SCALE

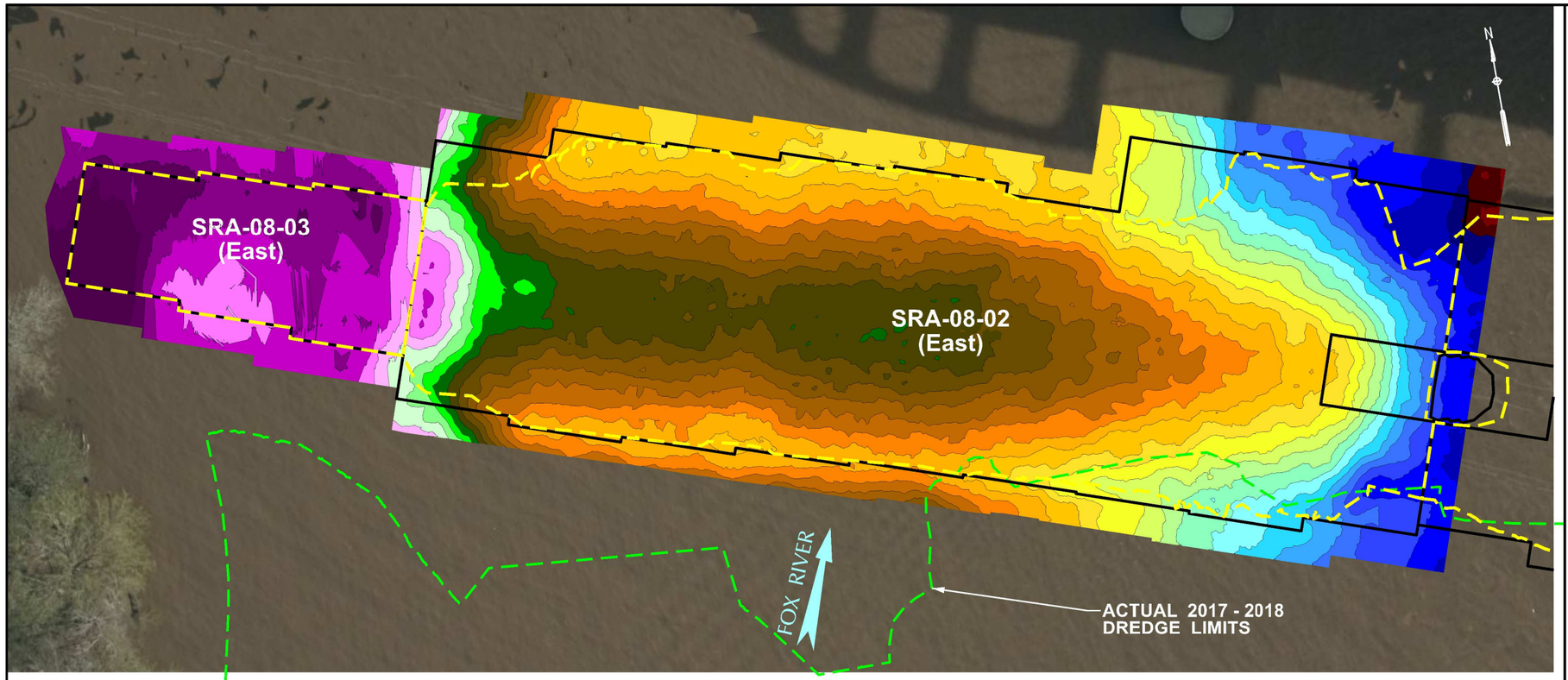
GEORGIA-PACIFIC CORP. / P.H. GLATFELTER COMPANY

FIGURE 11B

LOWER FOX RIVER - OU4
SRA-08-01 CAP ELEVATIONS
ISOMETRIC VIEW

Date: JANUARY 2021	Revision Date:	
Drawn By: JRB2	Checked By: TMK1	Project: LFR LTM & COMMP

pw://PW-APS1.foth.com:PW_IE/Documents/Clients/LFR LTM and COMMP/LTM and CAP Maintenance/CAD/Figures/Year Zero/Fig 11B - Cap Isometric View.dgn
3/22/2021 4:56:07 PM jrb2



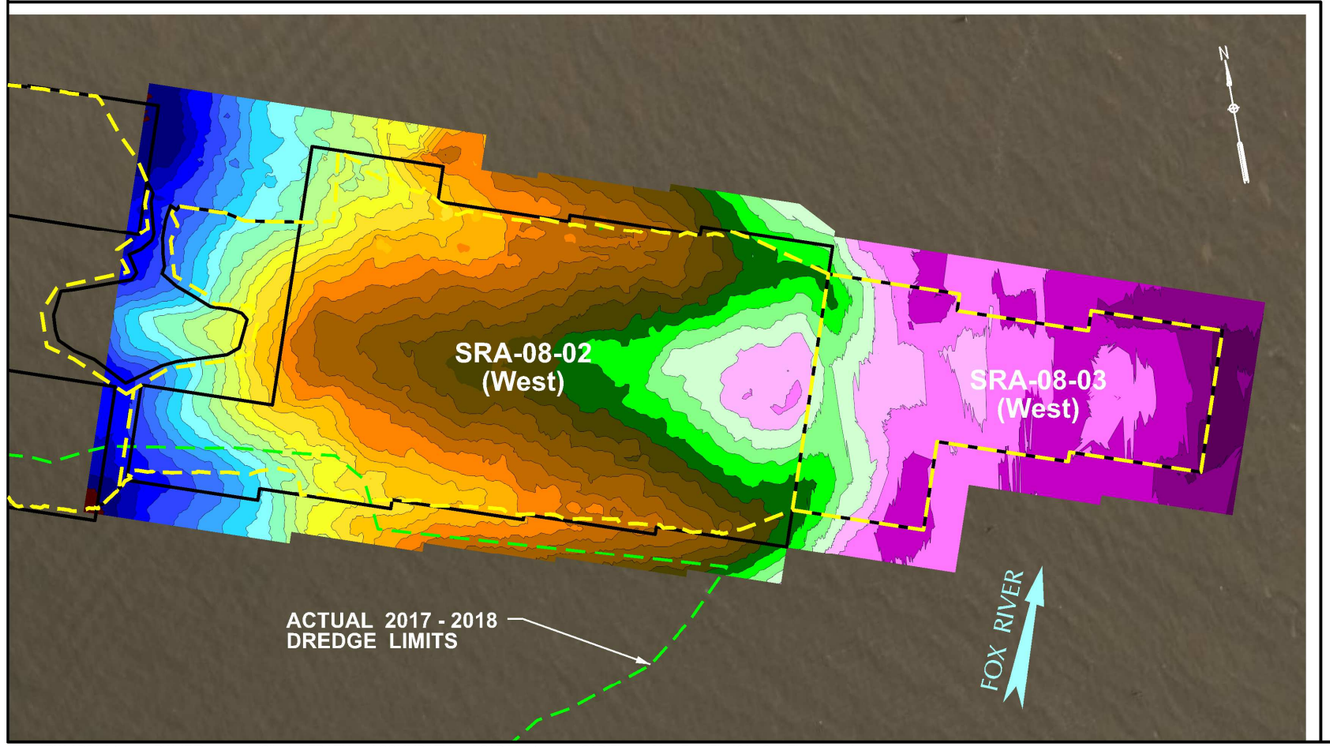
LEGEND

- PRE-CAP ACTUAL DREDGE LIMITS
- CAP / SAND COVER MANAGEMENT UNIT (CMU / SCMU)
- SRA CAP MANGEMENT UNIT

NOTES:

1. 200 KILOHERTZ (kHz) SINGLE BEAM HYDROGRAPHIC POST-CAP SURVEY PERFORMED BY J.F. BRENNAN, CO. DATE OF SURVEY: SRA-08-03 JULY 28, 2020.

   400 KILOHERTZ (kHz) MULTI-BEAM HYDROGRAPHIC POST-CAP SURVEYS PERFORMED BY J.F. BRENNAN, CO. DATE OF SURVEY: SRA-08-02: AUGUST 11, 2020.
2. THE HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE).
   THE VERTICAL CONTROL IS REFERENCED TO NAVD 88.
3. COLOR ORTHO PHOTO OBTAINED FROM MOST RECENT BING MAPS IMAGERY.
4. DESIGN CAP PLACEMENT LIMITS DERIVED FROM DESIGN FILES PROVIDED BY TETRA TECH EC, INC.



COLOR ELEVATION CHART

COLOR CONTOURS SHOWN REPRESENTS THE JULY 28 OR AUGUST 11, 2020 TOP OF ENGINEERED CAP ELEVATIONS

SHALLOWER ↓ WATER DEPTH ↓ DEEPER

ELEVATION 579 - 580	ELEVATION 563 - 564
ELEVATION 578 - 579	ELEVATION 562 - 563
ELEVATION 577 - 578	ELEVATION 561 - 562
ELEVATION 576 - 577	ELEVATION 560 - 561
ELEVATION 575 - 576	ELEVATION 559 - 560
ELEVATION 574 - 575	ELEVATION 558 - 559
ELEVATION 573 - 574	ELEVATION 557 - 558
ELEVATION 572 - 573	ELEVATION 556 - 557
ELEVATION 571 - 572	ELEVATION 555 - 556
ELEVATION 570 - 571	ELEVATION 554 - 555
ELEVATION 569 - 570	ELEVATION 553 - 554
ELEVATION 568 - 569	ELEVATION 552 - 553
ELEVATION 567 - 568	ELEVATION 551 - 552
ELEVATION 566 - 567	ELEVATION 550 - 551
ELEVATION 565 - 566	ELEVATION 549 - 550
ELEVATION 564 - 565	

GEORGIA-PACIFIC CORP. / P.H. GLATFELTER COMPANY

FIGURE 12A

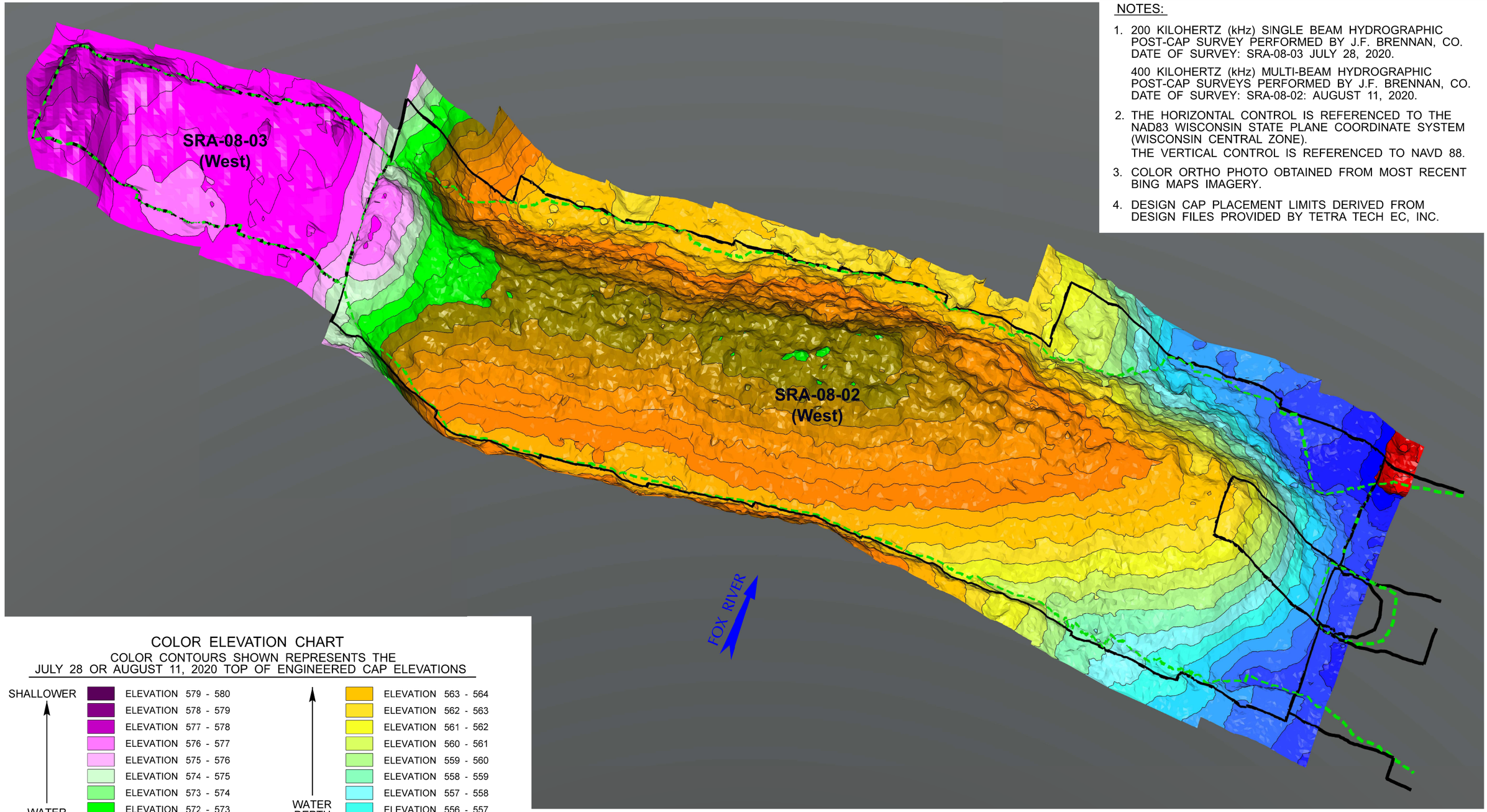
LOWER FOX RIVER - OU4
SRA-08-02 & SRA-08-03 CAP ELEVATIONS
PLAN VIEW

Foth

0' 20' 40'
BAR SCALE

Date: JANUARY 2021	Revision Date:	
Drawn By: JRB2	Checked By: TMK1	Project: LFR LTM & COMMP

pw://PW-APS1.foth.com:PW_IE/Documents/Clients/LFR LTM and COMMP/LTM and CAP Maintenance/CAD/Figures/Year Zero/Fig 12A - Cap Elevations.dgn
3/23/2021 11:47:33 AM jrb2



NOTES:

1. 200 KILOHERTZ (kHz) SINGLE BEAM HYDROGRAPHIC POST-CAP SURVEY PERFORMED BY J.F. BRENNAN, CO. DATE OF SURVEY: SRA-08-03 JULY 28, 2020.

   400 KILOHERTZ (kHz) MULTI-BEAM HYDROGRAPHIC POST-CAP SURVEYS PERFORMED BY J.F. BRENNAN, CO. DATE OF SURVEY: SRA-08-02: AUGUST 11, 2020.
2. THE HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE).
   THE VERTICAL CONTROL IS REFERENCED TO NAVD 88.
3. COLOR ORTHO PHOTO OBTAINED FROM MOST RECENT BING MAPS IMAGERY.
4. DESIGN CAP PLACEMENT LIMITS DERIVED FROM DESIGN FILES PROVIDED BY TETRA TECH EC, INC.

COLOR ELEVATION CHART

COLOR CONTOURS SHOWN REPRESENTS THE JULY 28 OR AUGUST 11, 2020 TOP OF ENGINEERED CAP ELEVATIONS

SHALLOWER ↑ WATER DEPTH ↓ DEEPER

ELEVATION 579 - 580	ELEVATION 563 - 564
ELEVATION 578 - 579	ELEVATION 562 - 563
ELEVATION 577 - 578	ELEVATION 561 - 562
ELEVATION 576 - 577	ELEVATION 560 - 561
ELEVATION 575 - 576	ELEVATION 559 - 560
ELEVATION 574 - 575	ELEVATION 558 - 559
ELEVATION 573 - 574	ELEVATION 557 - 558
ELEVATION 572 - 573	ELEVATION 556 - 557
ELEVATION 571 - 572	ELEVATION 555 - 556
ELEVATION 570 - 571	ELEVATION 554 - 555
ELEVATION 569 - 570	ELEVATION 553 - 554
ELEVATION 568 - 569	ELEVATION 552 - 553
ELEVATION 567 - 568	ELEVATION 551 - 552
ELEVATION 566 - 567	ELEVATION 550 - 551
ELEVATION 565 - 566	ELEVATION 549 - 550
ELEVATION 564 - 565	ELEVATION 549 - 550

LEGEND

- CAP / SAND COVER MANAGEMENT UNIT (CMU / SCMU)
- SRA CAP MANGEMENT UNIT

Foth

VERTICAL SCALE EXAGGERATED 5x FOR ILLUSTRATION PURPOSES ONLY. NOT TO SCALE

GEORGIA-PACIFIC CORP. / P.H. GLATFELTER COMPANY

FIGURE 12B-1

LOWER FOX RIVER - OU4
SRA-08-02 & SRA-08-03 (West) CAP ELEVATIONS
ISOMETRIC VIEW

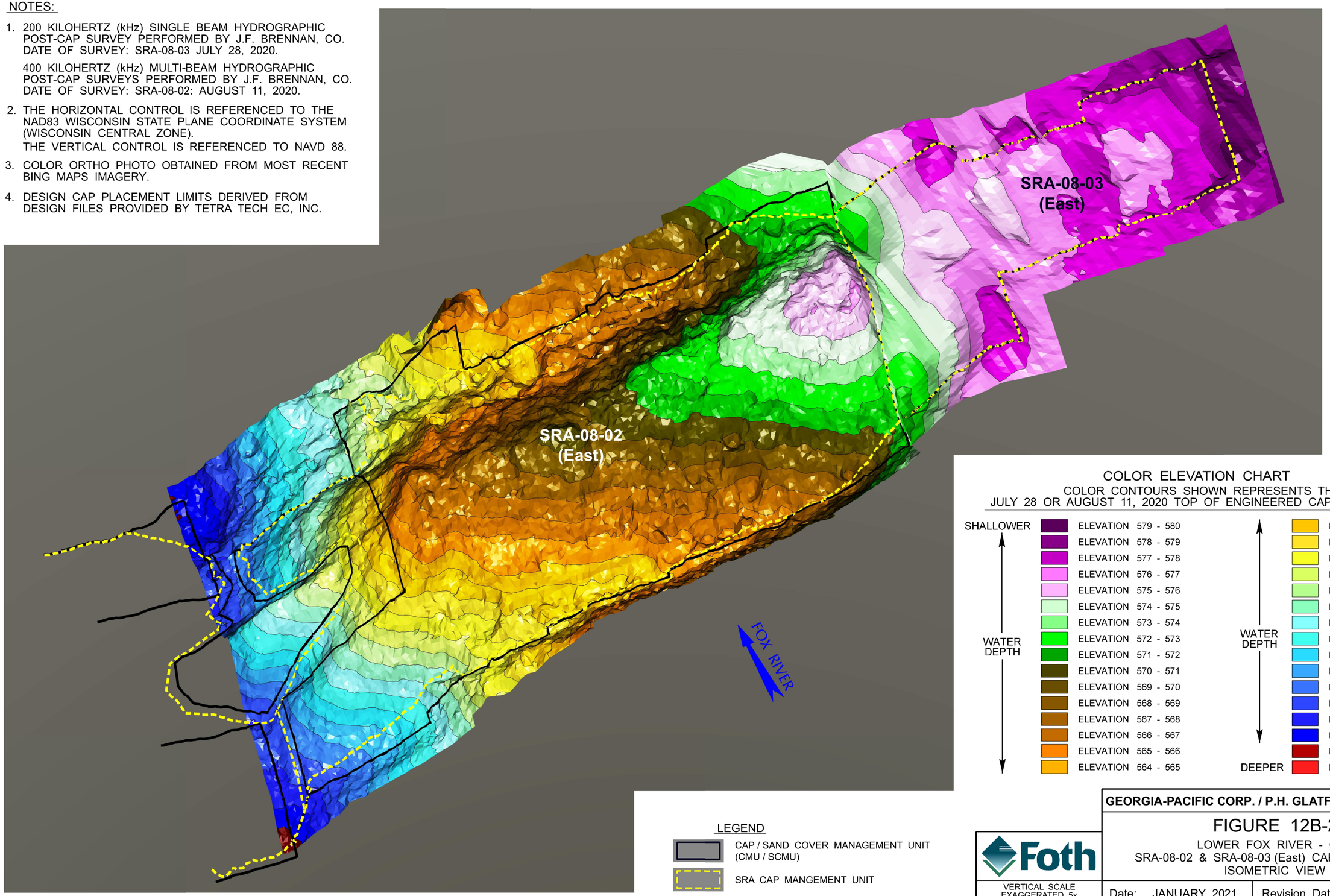
Date: JANUARY 2021	Revision Date:	
Drawn By: JRB2	Checked By: TMK1	Project: LFR LTM & COMMP

pw://PW-APS1.foth.com:PW_IE/Documents/Clients/LFR LTM and COMMP/LTM and CAP Maintenance/CAD/Figures/Year Zero/Fig 12B1 - Cap Isometric View.dgn
3/22/2021 4:59:03 PM jrb2

NOTES:

1. 200 KILOHERTZ (kHz) SINGLE BEAM HYDROGRAPHIC POST-CAP SURVEY PERFORMED BY J.F. BRENNAN, CO. DATE OF SURVEY: SRA-08-03 JULY 28, 2020.

   400 KILOHERTZ (kHz) MULTI-BEAM HYDROGRAPHIC POST-CAP SURVEYS PERFORMED BY J.F. BRENNAN, CO. DATE OF SURVEY: SRA-08-02: AUGUST 11, 2020.
2. THE HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE).
   THE VERTICAL CONTROL IS REFERENCED TO NAVD 88.
3. COLOR ORTHO PHOTO OBTAINED FROM MOST RECENT BING MAPS IMAGERY.
4. DESIGN CAP PLACEMENT LIMITS DERIVED FROM DESIGN FILES PROVIDED BY TETRA TECH EC, INC.



COLOR ELEVATION CHART

COLOR CONTOURS SHOWN REPRESENTS THE JULY 28 OR AUGUST 11, 2020 TOP OF ENGINEERED CAP ELEVATIONS

SHALLOWER	ELEVATION 579 - 580		ELEVATION 563 - 564
	ELEVATION 578 - 579		ELEVATION 562 - 563
	ELEVATION 577 - 578		ELEVATION 561 - 562
	ELEVATION 576 - 577		ELEVATION 560 - 561
	ELEVATION 575 - 576		ELEVATION 559 - 560
	ELEVATION 574 - 575		ELEVATION 558 - 559
	ELEVATION 573 - 574		ELEVATION 557 - 558
WATER DEPTH	ELEVATION 572 - 573	WATER DEPTH	ELEVATION 556 - 557
	ELEVATION 571 - 572		ELEVATION 555 - 556
	ELEVATION 570 - 571		ELEVATION 554 - 555
	ELEVATION 569 - 570		ELEVATION 553 - 554
	ELEVATION 568 - 569		ELEVATION 552 - 553
	ELEVATION 567 - 568		ELEVATION 551 - 552
	ELEVATION 566 - 567		ELEVATION 550 - 551
	ELEVATION 565 - 566		ELEVATION 549 - 550
	ELEVATION 564 - 565	DEEPER	ELEVATION 549 - 550

LEGEND

- CAP / SAND COVER MANAGEMENT UNIT (CMU / SCMU)
- SRA CAP MANGEMENT UNIT

Foth

VERTICAL SCALE EXAGGERATED 5x FOR ILLUSTRATION PURPOSES ONLY. NOT TO SCALE

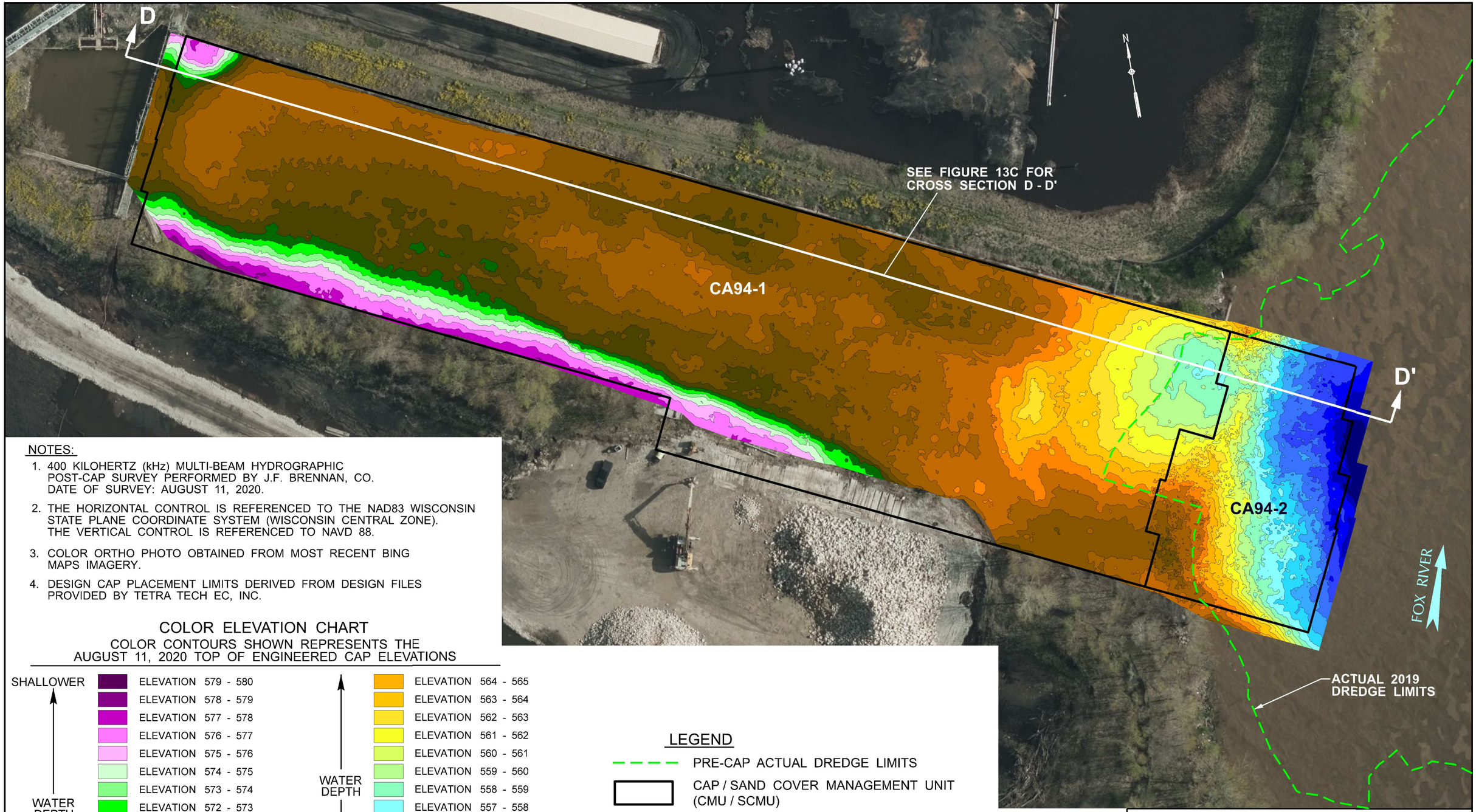
GEORGIA-PACIFIC CORP. / P.H. GLATFELTER COMPANY

FIGURE 12B-2

LOWER FOX RIVER - OU4
SRA-08-02 & SRA-08-03 (East) CAP ELEVATIONS
ISOMETRIC VIEW

Date: JANUARY 2021	Revision Date:	
Drawn By: JRB2	Checked By: TMK1	Project: LFR LTM & COMMP

pw://PW-APS1.foth.com:PW_IE/Documents/Clients/LFR LTM and COMMP/LTM and CAP Maintenance/CAD/Figures/Year Zero/Fig 12B2 - Cap Isometric View.dgn
3/22/2021 5:01:01 PM jrb2



NOTES:

1. 400 KILOHERTZ (kHz) MULTI-BEAM HYDROGRAPHIC POST-CAP SURVEY PERFORMED BY J.F. BRENNAN, CO. DATE OF SURVEY: AUGUST 11, 2020.
2. THE HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE). THE VERTICAL CONTROL IS REFERENCED TO NAVD 88.
3. COLOR ORTHO PHOTO OBTAINED FROM MOST RECENT BING MAPS IMAGERY.
4. DESIGN CAP PLACEMENT LIMITS DERIVED FROM DESIGN FILES PROVIDED BY TETRA TECH EC, INC.

COLOR ELEVATION CHART

COLOR CONTOURS SHOWN REPRESENTS THE AUGUST 11, 2020 TOP OF ENGINEERED CAP ELEVATIONS

SHALLOWER ↓ WATER DEPTH

- ELEVATION 579 - 580
- ELEVATION 578 - 579
- ELEVATION 577 - 578
- ELEVATION 576 - 577
- ELEVATION 575 - 576
- ELEVATION 574 - 575
- ELEVATION 573 - 574
- ELEVATION 572 - 573
- ELEVATION 571 - 572
- ELEVATION 570 - 571
- ELEVATION 569 - 570
- ELEVATION 568 - 569
- ELEVATION 567 - 568
- ELEVATION 566 - 567
- ELEVATION 565 - 566

WATER DEPTH ↓ DEEPER

- ELEVATION 564 - 565
- ELEVATION 563 - 564
- ELEVATION 562 - 563
- ELEVATION 561 - 562
- ELEVATION 560 - 561
- ELEVATION 559 - 560
- ELEVATION 558 - 559
- ELEVATION 557 - 558
- ELEVATION 556 - 557
- ELEVATION 555 - 556
- ELEVATION 554 - 555
- ELEVATION 553 - 554
- ELEVATION 552 - 553
- ELEVATION 551 - 552
- ELEVATION 550 - 551

LEGEND

- PRE-CAP ACTUAL DREDGE LIMITS
- CAP / SAND COVER MANAGEMENT UNIT (CMU / SCMU)

Foth

0' 30' 60'

BAR SCALE

GEORGIA-PACIFIC CORP. / P.H. GLATFELTER COMPANY

FIGURE 13A

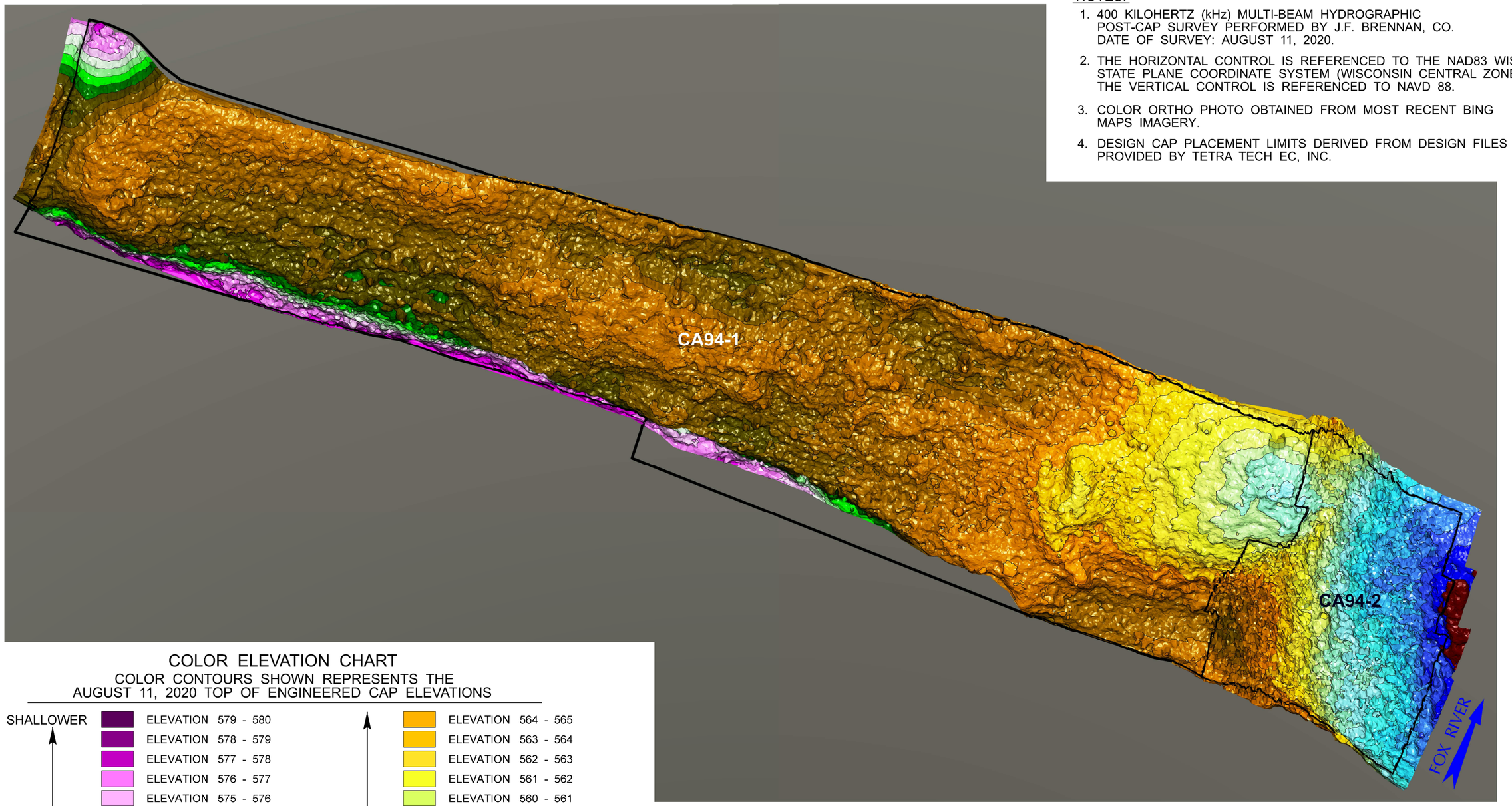
LOWER FOX RIVER - OU4
CA94-1 & CA94-2 CAP ELEVATIONS
PLAN VIEW

Date: JANUARY 2021	Revision Date:	
Drawn By: JRB2	Checked By: TMK1	Project: LFR LTM & COMMP

pw://PW-APS1.foth.com:PW_IE/Documents/Clients/LFR LTM and COMMP/LTM and CAP Maintenance/CAD/Figures/Year Zero/Fig 13A - Cap Elevations.dgn
3/23/2021 1:05:21 PM jrb2

NOTES:

1. 400 KILOHERTZ (kHz) MULTI-BEAM HYDROGRAPHIC POST-CAP SURVEY PERFORMED BY J.F. BRENNAN, CO. DATE OF SURVEY: AUGUST 11, 2020.
2. THE HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE). THE VERTICAL CONTROL IS REFERENCED TO NAVD 88.
3. COLOR ORTHO PHOTO OBTAINED FROM MOST RECENT BING MAPS IMAGERY.
4. DESIGN CAP PLACEMENT LIMITS DERIVED FROM DESIGN FILES PROVIDED BY TETRA TECH EC, INC.



COLOR ELEVATION CHART

COLOR CONTOURS SHOWN REPRESENTS THE AUGUST 11, 2020 TOP OF ENGINEERED CAP ELEVATIONS

SHALLOWER

WATER DEPTH

ELEVATION 579 - 580	ELEVATION 564 - 565
ELEVATION 578 - 579	ELEVATION 563 - 564
ELEVATION 577 - 578	ELEVATION 562 - 563
ELEVATION 576 - 577	ELEVATION 561 - 562
ELEVATION 575 - 576	ELEVATION 560 - 561
ELEVATION 574 - 575	ELEVATION 559 - 560
ELEVATION 573 - 574	ELEVATION 558 - 559
ELEVATION 572 - 573	ELEVATION 557 - 558
ELEVATION 571 - 572	ELEVATION 556 - 557
ELEVATION 570 - 571	ELEVATION 555 - 556
ELEVATION 569 - 570	ELEVATION 554 - 555
ELEVATION 568 - 569	ELEVATION 553 - 554
ELEVATION 567 - 568	ELEVATION 552 - 553
ELEVATION 566 - 567	ELEVATION 551 - 552
ELEVATION 565 - 566	ELEVATION 550 - 551

WATER DEPTH

DEEPER

LEGEND

2020 CAP MANAGEMENT UNIT

Foth

VERTICAL SCALE EXAGGERATED 5x FOR ILLUSTRATION PURPOSES ONLY. NOT TO SCALE

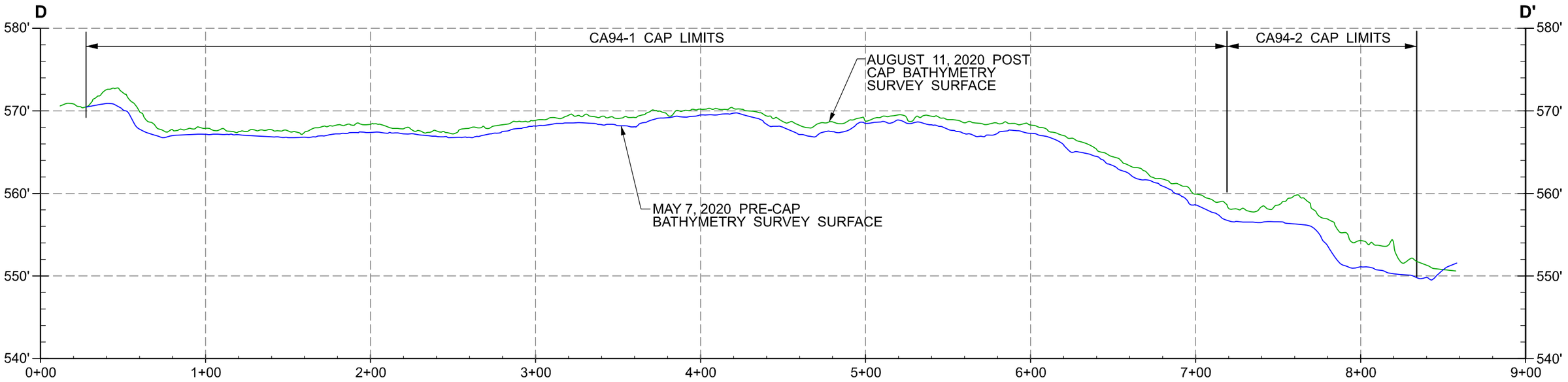
GEORGIA-PACIFIC CORP. / P.H. GLATFELTER COMPANY

FIGURE 13B

LOWER FOX RIVER - OU4
CA94-1 & CA94-2 CAP ELEVATIONS
ISOMETRIC VIEW

Date: JANUARY 2021	Revision Date:	
Drawn By: JRB2	Checked By: TMK1	Project: LFR LTM & COMMP

pw://PW-APS1.foth.com:PW_IE/Documents/Clients/LFR LTM and COMMP/LTM and CAP Maintenance/CAD/Figures/Year Zero/Fig 13B - Cap Isometric View.dgn
3/22/2021 5:05:23 PM jrb2



SECTION D - D'

NOTES:

1. 400 KILOHERTZ (kHz) MULTI-BEAM HYDROGRAPHIC POST-CAP SURVEY PERFORMED BY J.F. BRENNAN, CO. DATE OF SURVEY: AUGUST 11, 2020.
2. THE HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE). THE VERTICAL CONTROL IS REFERENCED TO NAVD 88.
3. DESIGN CAP PLACEMENT LIMITS DERIVED FROM DESIGN FILES PROVIDED BY TETRA TECH EC, INC.
4. SEE FIGURE 13A FOR CROSS SECTION LOCATIONS.

Foth

0' 25' 50'

BAR SCALE

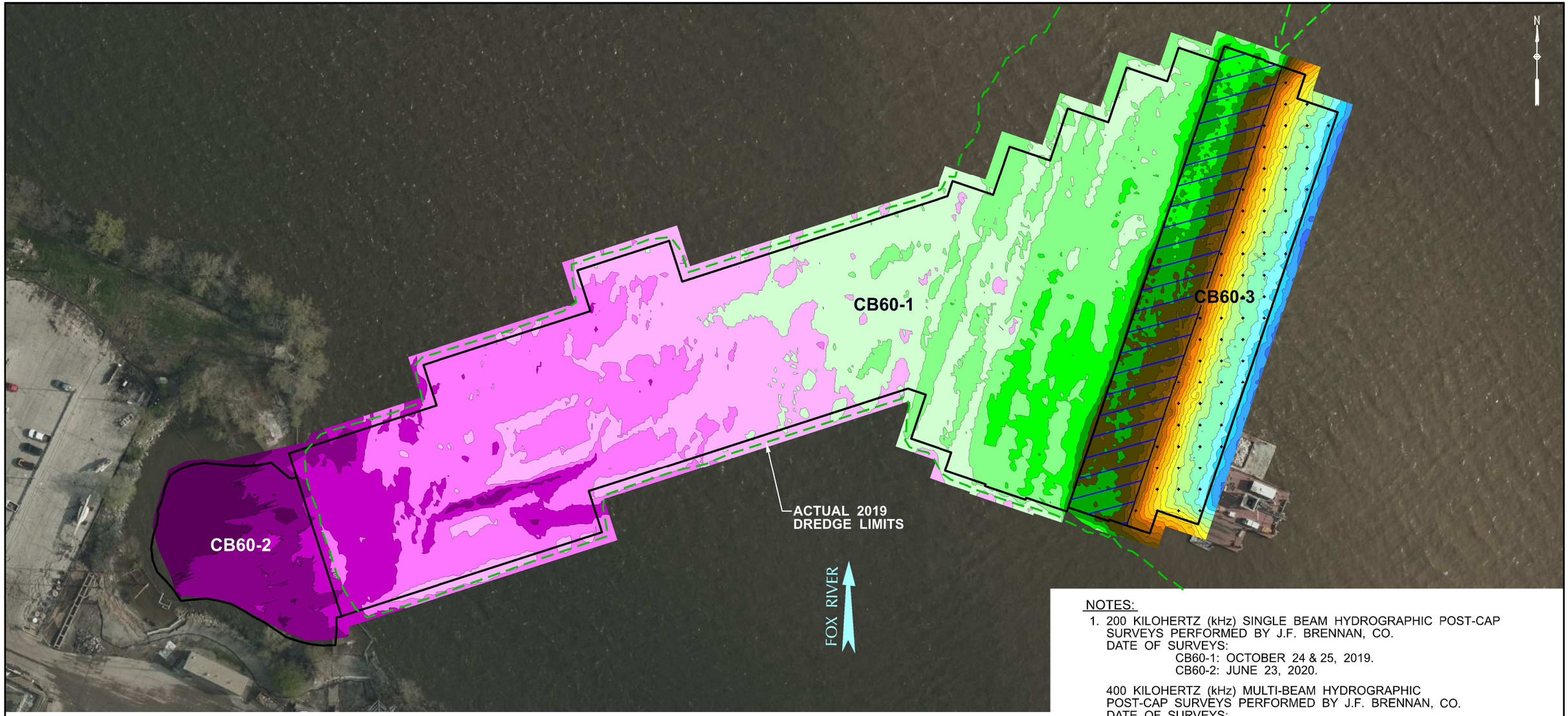
GEORGIA-PACIFIC CORP. / P.H. GLATFELTER COMPANY

FIGURE 13C

LOWER FOX RIVER - OU4
CA94-1 & CA94-2 CAP
CROSS - SECTION D - D'

Date: JANUARY 2021	Revision Date:	
Drawn By: JRB2	Checked By: TMK1	Project: LFR LTM & COMMP

pw://PW-APS1.foth.com:PW_IE/Documents/Clients/LFR LTM and COMMP/LTM and CAP Maintenance/CAD/Figures/Year Zero/Fig 13C - Cap Cross Section.dgn
3/23/2021 1:59:32 PM jrb2



COLOR ELEVATION CHART

COLOR CONTOURS SHOWN 9-25-19, 10-23-19, 10-24-19, 10-25-19 & 6-23-20 TOP OF ENGINEERED CAP ELEVATIONS

SHALLOWER ↑ WATER DEPTH ↓ DEEPER

ELEVATION 579 - 580	ELEVATION 568 - 569
ELEVATION 578 - 579	ELEVATION 567 - 568
ELEVATION 577 - 578	ELEVATION 566 - 567
ELEVATION 576 - 577	ELEVATION 565 - 566
ELEVATION 575 - 576	ELEVATION 564 - 565
ELEVATION 574 - 575	ELEVATION 563 - 564
ELEVATION 573 - 574	ELEVATION 562 - 563
ELEVATION 572 - 573	ELEVATION 561 - 562
ELEVATION 571 - 572	ELEVATION 560 - 561
ELEVATION 570 - 571	ELEVATION 559 - 560
ELEVATION 569 - 570	ELEVATION 558 - 559

LEGEND

- PRE-CAP ACTUAL DREDGE LIMITS
- 2020 CAP TYPE "A" AREA OUTLINE
- CAP B - SRA TRANSITION
- CAP B - SRA

NOTES:

1. 200 KILOHERTZ (kHz) SINGLE BEAM HYDROGRAPHIC POST-CAP SURVEYS PERFORMED BY J.F. BRENNAN, CO.
   DATE OF SURVEYS:
   CB60-1: OCTOBER 24 & 25, 2019.
   CB60-2: JUNE 23, 2020.

   400 KILOHERTZ (kHz) MULTI-BEAM HYDROGRAPHIC POST-CAP SURVEYS PERFORMED BY J.F. BRENNAN, CO.
   DATE OF SURVEYS:
   CB60-1: SEPTEMBER 25, 2019.
   CB60-3: OCTOBER 23, 2019.
2. THE HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE). THE VERTICAL CONTROL IS REFERENCED TO NAVD 88.
3. COLOR ORTHO PHOTO OBTAINED FROM MOST RECENT BING MAPS IMAGERY.
4. DESIGN CAP PLACEMENT LIMITS DERIVED FROM DESIGN FILES PROVIDED BY TETRA TECH EC, INC.

GEORGIA-PACIFIC CORP. / P.H. GLATFELTER COMPANY

FIGURE 14A

LOWER FOX RIVER - OU4
CB60-1, CB60-2 & CB60-3 CAP ELEVATIONS
PLAN VIEW

Foth

0' 40' 80'
BAR SCALE

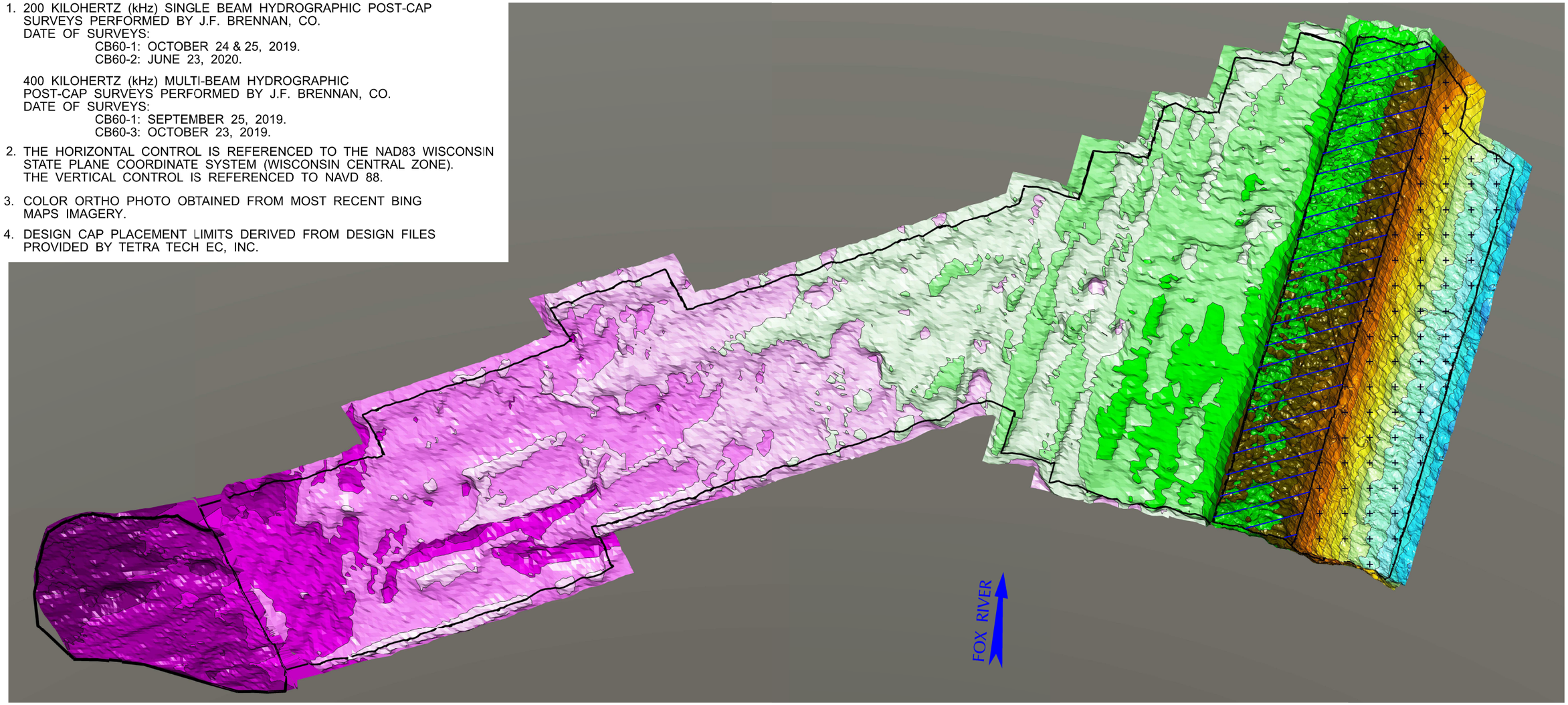
Date: JANUARY 2021	Revision Date:	
Drawn By: JRB2	Checked By: TMK1	Project: LFR LTM & COMMP

pw://PW-APS1.foth.com:PW_IE/Documents/Clients/LFR LTM and COMMP/LTM and CAP Maintenance/CAD/Figures/Year Zero/Fig 14A - Cap Elevations.dgn
3/23/2021 2:06:44 PM jrb2

NOTES:

1. 200 KILOHERTZ (kHz) SINGLE BEAM HYDROGRAPHIC POST-CAP SURVEYS PERFORMED BY J.F. BRENNAN, CO.
   DATE OF SURVEYS:
   CB60-1: OCTOBER 24 & 25, 2019.
   CB60-2: JUNE 23, 2020.

   400 KILOHERTZ (kHz) MULTI-BEAM HYDROGRAPHIC POST-CAP SURVEYS PERFORMED BY J.F. BRENNAN, CO.
   DATE OF SURVEYS:
   CB60-1: SEPTEMBER 25, 2019.
   CB60-3: OCTOBER 23, 2019.
2. THE HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE). THE VERTICAL CONTROL IS REFERENCED TO NAVD 88.
3. COLOR ORTHO PHOTO OBTAINED FROM MOST RECENT BING MAPS IMAGERY.
4. DESIGN CAP PLACEMENT LIMITS DERIVED FROM DESIGN FILES PROVIDED BY TETRA TECH EC, INC.



COLOR ELEVATION CHART

COLOR CONTOURS SHOWN 9-25-19, 10-23-19, 10-24-19, 10-25-19 & 6-23-20 TOP OF ENGINEERED CAP ELEVATIONS

SHALLOWER ↑ WATER DEPTH ↓ DEEPER

ELEVATION 579 - 580	ELEVATION 568 - 569
ELEVATION 578 - 579	ELEVATION 567 - 568
ELEVATION 577 - 578	ELEVATION 566 - 567
ELEVATION 576 - 577	ELEVATION 565 - 566
ELEVATION 575 - 576	ELEVATION 564 - 565
ELEVATION 574 - 575	ELEVATION 563 - 564
ELEVATION 573 - 574	ELEVATION 562 - 563
ELEVATION 572 - 573	ELEVATION 561 - 562
ELEVATION 571 - 572	ELEVATION 560 - 561
ELEVATION 570 - 571	ELEVATION 559 - 560
ELEVATION 569 - 570	ELEVATION 558 - 559

LEGEND

- 2020 CAP TYPE "A" AREA OUTLINE
- CAP B - SRA TRANSITION
- CAP B - SRA

Foth

VERTICAL SCALE EXAGGERATED 5x FOR ILLUSTRATION PURPOSES ONLY. NOT TO SCALE

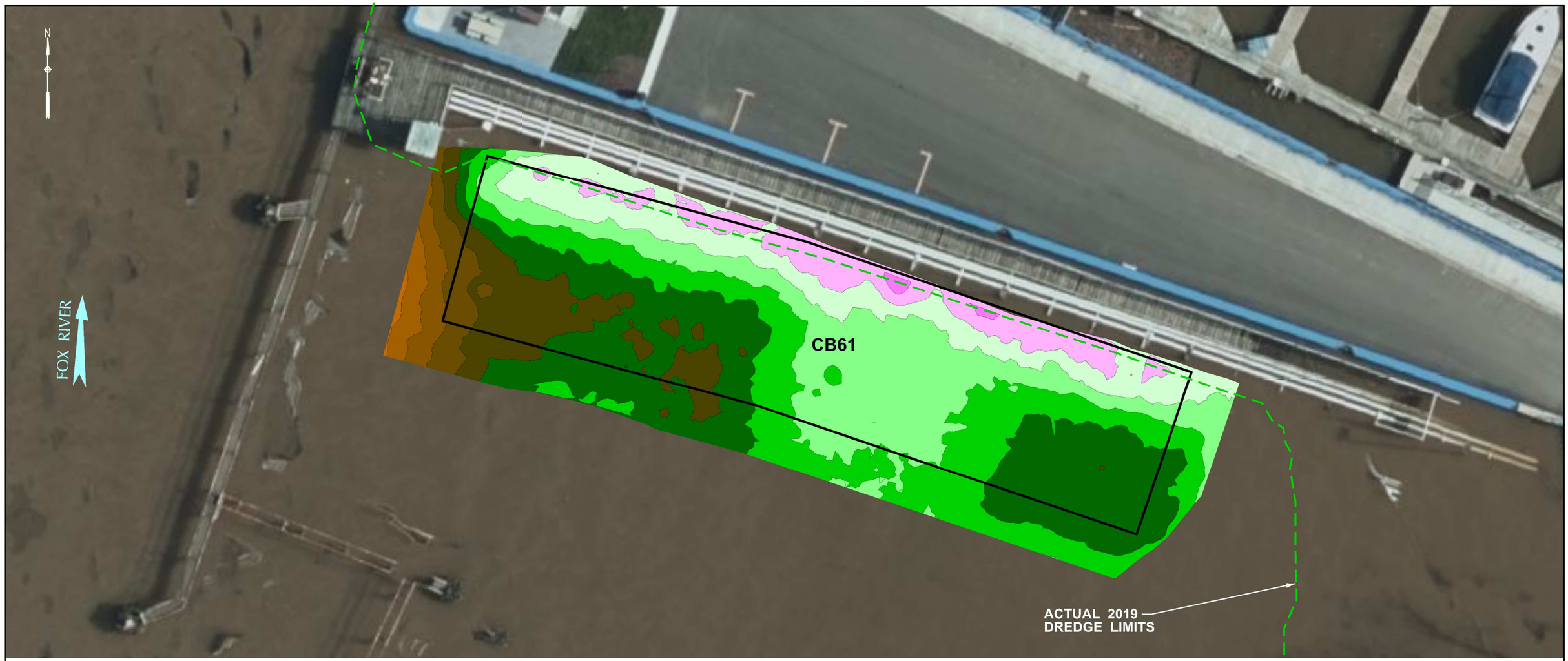
GEORGIA-PACIFIC CORP. / P.H. GLATFELTER COMPANY

FIGURE 14B

LOWER FOX RIVER - OU4
CB60-1, CB60-2 & CB60-3 CAP ELEVATIONS
ISOMETRIC VIEW

Date: JANUARY 2021	Revision Date:	
Drawn By: JRB2	Checked By: TMK1	Project: LFR LTM & COMMP

pw://PW-APS1.foth.com:PW_IE/Documents/Clients/LFR LTM and COMMP/LTM and CAP Maintenance/CAD/Figures/Year Zero/Fig 14B - Cap Isometric View.dgn
3/22/2021 5:06:28 PM jrb2



COLOR ELEVATION CHART

COLOR CONTOURS SHOWN REPRESENTS THE
JULY 17, 2020 TOP OF ENGINEERED CAP ELEVATIONS

SHALLOWER		ELEVATION 576 - 577
↑ WATER DEPTH ↓		ELEVATION 575 - 576
		ELEVATION 574 - 575
		ELEVATION 573 - 574
		ELEVATION 572 - 573
		ELEVATION 571 - 572
		ELEVATION 570 - 571
		ELEVATION 569 - 570
		ELEVATION 568 - 569
		ELEVATION 567 - 568
DEEPER		ELEVATION 566 - 567

LEGEND

- PRE-CAP ACTUAL DREDGE LIMITS
- CAP / SAND COVER MANAGEMENT UNIT (CMU / SCMU)

NOTES:

1. 400 KILOHERTZ (kHz) MULTI-BEAM HYDROGRAPHIC POST-CAP SURVEY PERFORMED BY J.F. BRENNAN, CO. DATE OF SURVEY: JULY 17, 2020.
2. THE HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE). THE VERTICAL CONTROL IS REFERENCED TO NAVD 88.
3. COLOR ORTHO PHOTO OBTAINED FROM MOST RECENT BING MAPS IMAGERY.
4. DESIGN CAP PLACEMENT LIMITS DERIVED FROM DESIGN FILES PROVIDED BY TETRA TECH EC, INC.

Foth

0' 10' 20'
BAR SCALE

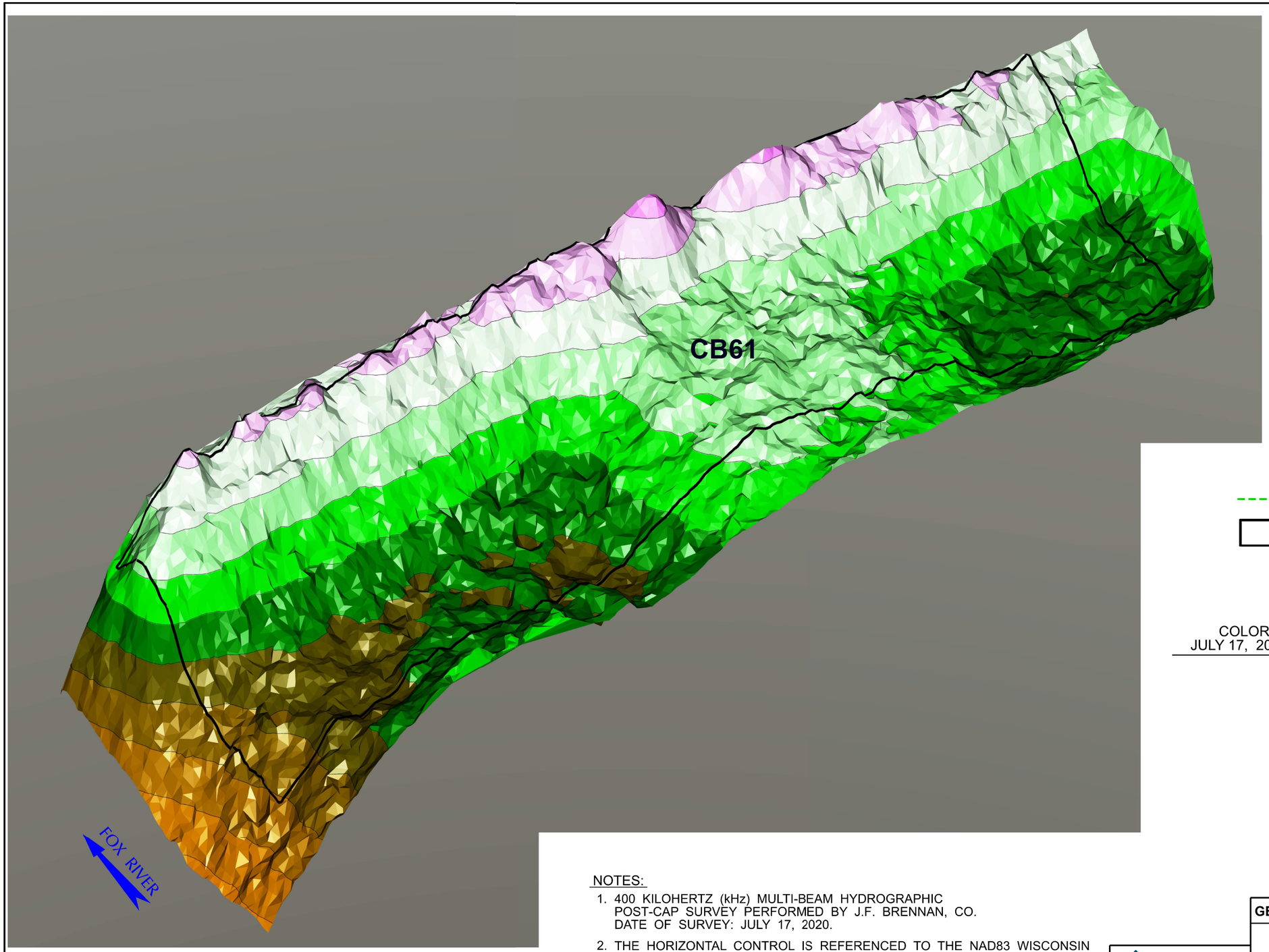
GEORGIA-PACIFIC CORP. / P.H. GLATFELTER COMPANY

FIGURE 15A

LOWER FOX RIVER - OU4
CB61 CAP ELEVATIONS
PLAN VIEW

Date: JANUARY 2021		Revision Date:	
Drawn By: JRB2	Checked By: TMK1	Project: LFR LTM & COMMP	

pw://PW-APS1.foth.com:PW_IE/Documents/Clients/LFR LTM and COMMP/LTM and CAP Maintenance/CAD/Figures/Year Zero/Fig 15A - Cap Elevations.dgn
3/23/2021 2:13:51 PM jrb2



LEGEND

PRE-CAP ACTUAL DREDGE LIMITS

CAP / SAND COVER MANAGEMENT UNIT (CMU / SCMU)

COLOR ELEVATION CHART

COLOR CONTOURS SHOWN REPRESENTS THE JULY 17, 2020 TOP OF ENGINEERED CAP ELEVATIONS

SHALLOWER

WATER DEPTH

DEEPER

- ELEVATION 576 - 577
- ELEVATION 575 - 576
- ELEVATION 574 - 575
- ELEVATION 573 - 574
- ELEVATION 572 - 573
- ELEVATION 571 - 572
- ELEVATION 570 - 571
- ELEVATION 569 - 570
- ELEVATION 568 - 569
- ELEVATION 567 - 568
- ELEVATION 566 - 567

NOTES:

1. 400 KILOHERTZ (kHz) MULTI-BEAM HYDROGRAPHIC POST-CAP SURVEY PERFORMED BY J.F. BRENNAN, CO. DATE OF SURVEY: JULY 17, 2020.
2. THE HORIZONTAL CONTROL IS REFERENCED TO THE NAD83 WISCONSIN STATE PLANE COORDINATE SYSTEM (WISCONSIN CENTRAL ZONE). THE VERTICAL CONTROL IS REFERENCED TO NAVD 88.
3. COLOR ORTHO PHOTO OBTAINED FROM MOST RECENT BING MAPS IMAGERY.
4. DESIGN CAP PLACEMENT LIMITS DERIVED FROM DESIGN FILES PROVIDED BY TETRA TECH EC, INC.

Foth

VERTICAL SCALE EXAGGERATED 5x FOR ILLUSTRATION PURPOSES ONLY. NOT TO SCALE

GEORGIA-PACIFIC CORP. / P.H. GLATFELTER COMPANY

FIGURE 15B

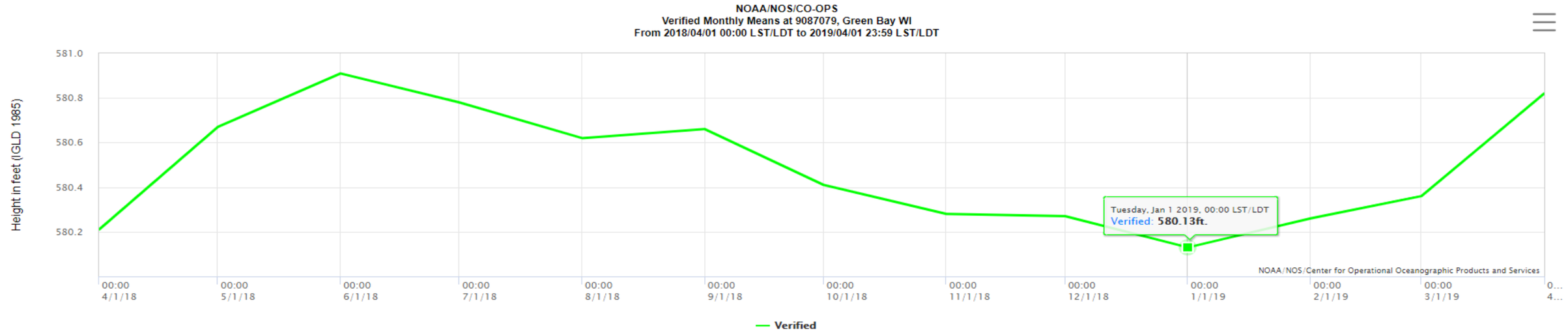
LOWER FOX RIVER - OU4
CB61 ELEVATIONS
ISOMETRIC VIEW

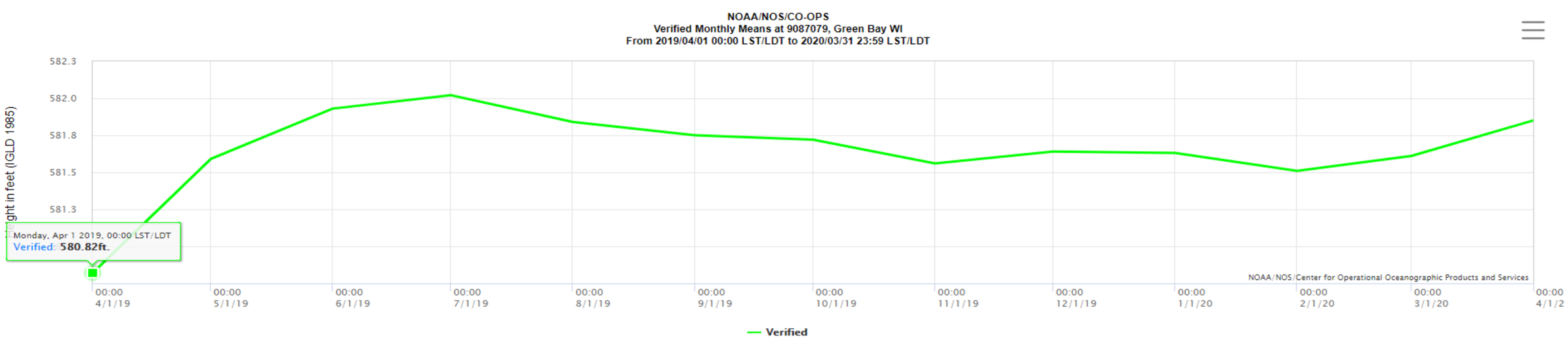
Date: JANUARY 2021	Revision Date:	
Drawn By: JRB2	Checked By: TMK1	Project: LFR LTM & COMMP

pw://PW-APS1.foth.com:PW_IE/Documents/Clients/LFR LTM and COMMP/LTM and CAP Maintenance/CAD/Figures/Year Zero/Fig 15B - Cap Isometric View.dgn
3/22/2021 5:07:28 PM jrb2

Attachment 1

NOAA Monthly Water Elevation Data for Green Bay Station No. 9087079


NOAA/NOS/CO-OPS
Verified Monthly Means at 9087079, Green Bay WI
From 2018/04/01 00:00 LST/LDT to 2019/04/01 23:59 LST/LDT
Height in feet (IGLD 1985)
581.0
580.8
580.6
580.4
580.2
Tuesday, Jan 1 2019, 00:00 LST/LDT
Verified: 580.13ft.
NOAA/NOS/Center for Operational Oceanographic Products and Services
00:00 4/1/18
00:00 5/1/18
00:00 6/1/18
00:00 7/1/18
00:00 8/1/18
00:00 9/1/18
00:00 10/1/18
00:00 11/1/18
00:00 12/1/18
00:00 1/1/19
00:00 2/1/19
00:00 3/1/19
Verified


NOAA/NOS/CO-OPS
Verified Monthly Means at 9087079, Green Bay WI
From 2019/04/01 00:00 LST/LDT to 2020/03/31 23:59 LST/LDT
582.3
582.0
581.8
581.5
581.3
Monday, Apr 1 2019, 00:00 LST/LDT
Verified: 580.82ft.
NOAA/NOS/Center for Operational Oceanographic Products and Services
00:00 4/1/19
00:00 5/1/19
00:00 6/1/19
00:00 7/1/19
00:00 8/1/19
00:00 9/1/19
00:00 10/1/19
00:00 11/1/19
00:00 12/1/19
00:00 1/1/20
00:00 2/1/20
00:00 3/1/20
00:00 4/1/2
Verified

Attachment 2

TtEC Cap Thickness Verification Data

OU4-CA94-1
CAP SAND LAYER THICKNESS RESULTS

INDEX MAP

CAP A1 REQUIREMENTS

<10 PPM SURFICIAL	
MINIMUM SAND LAYER THICKNESS	3.0"
ASSUMED SAND OVERPLACEMENT THICKNESS	3.0"
MINIMUM ARMOR LAYER THICKNESS	6.0"
ASSUMED ARMOR OVERPLACEMENT THICKNESS	6.0"
MINIMUM CAP THICKNESS	9.0"
ASSUMED AVERAGE CAP THICKNESS	18.0"
D50 STONE = 3.0"	

SAMPLE DATA

NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED	27
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA	27
NUMBER OF ARMOR THICKNESS VERIFICATION SAMPLES COLLECTED	25
NUMBER OF ARMOR THICKNESS VERIFICATION SAMPLES SATISFYING CRITERIA	21

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-CA94-1
CAP ARMOR LAYER THICKNESS RESULTS

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

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

CAD FILE: OU4-CA94-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: August 17, 2020
LAST REVISED: August 17, 2020
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 11-013

OU4-CA94-1
REMEDY CAP SAND AND ARMOR STONE THICKNESS RESULTS AND LOCATIONS

P:\LLC\CAD\Field Engineering\Capping\2020\OU4-CA94\DWG\Post-Dredge\OU4-CA94-1.dwg

OU4-CA94-1										
ID	Date Sampled	Sand Result (Inches)	Sand/Sediment Mix (Inches)	Total Thickness Sand and Sediment Mix (Inches)	Required Thickness (Inches)	Mudline Elevation	Proposed Coordinates		Survey Coordinates		Comments
							Northing	Easting	Northing	Easting	
CA94-1-C1	6/19/2020	4.0	0.0	4.0	3.0	568.01	263095.03	2487883.31	263088.08	2487878.69	
CA94-1-C2	6/19/2020	8.0	0.0	8.0	3.0	565.32	263116.18	2487912.55	263117.36	2487915.52	
CA94-1-C3	6/19/2020	5.0	0.0	5.0	3.0	567.05	263158.94	2487822.53	263161.36	2487825.22	
CA94-1-C4	6/19/2020	4.5	0.0	4.5	3.0	570.12	263215.95	2487705.77	263209.52	2487712.18	
CA94-1-C5	5/21/2020	11.0	0.0	11.0	3.0	570.48	263271.18	2487591.68	263270.97	2487592.39	
CA94-1-C6	5/21/2020	3.0	0.0	3.0	3.0	572.79	263329.97	2487470.46	263331.64	2487470.55	
CA94-1-C7	5/21/2020	4.5	0.0	4.5	3.0	571.69	263387.88	2487364.40	263393.25	2487362.20	
CA94-1-C8	6/19/2020	4.0	0.0	4.0	3.0	561.50	263142.01	2487943.74	263139.03	2487946.53	
CA94-1-C9	6/19/2020	6.0	0.0	6.0	3.0	561.33	263175.86	2487866.20	263175.23	2487873.49	
CA94-1-C10	6/19/2020	7.0	0.0	7.0	3.0	568.20	263258.71	2487689.72	263258.97	2487684.78	
CA94-1-C11	5/21/2020	8.5	0.0	8.5	3.0	568.09	263305.92	2487596.14	263299.54	2487594.93	
CA94-1-C12	5/21/2020	7.5	0.0	7.5	3.0	570.30	263367.39	2487470.46	263364.99	2487466.34	
CA94-1-C13	5/21/2020	7.5	0.0	7.5	3.0	568.49	263422.62	2487359.05	263418.58	2487358.66	
CA94-1-C14	6/19/2020	5.5	0.0	5.5	3.0	561.63	263188.33	2487926.81	263193.17	2487928.63	No Sediment Plug
CA94-1-C15	6/19/2020	7.0	0.0	7.0	3.0	567.07	263232.88	2487827.87	263230.16	2487833.82	
CA94-1-C16	6/19/2020	8.0	0.0	8.0	3.0	567.28	263278.31	2487740.53	263278.62	2487734.28	
CA94-1-C17	5/21/2020	6.5	0.0	6.5	3.0	566.21	263312.16	2487660.31	263315.15	2487658.84	
CA94-1-C18	5/21/2020	7.5	0.0	7.5	3.0	569.34	263364.72	2487541.77	263366.57	2487544.53	
CA94-1-C19	5/21/2020	7.5	0.0	7.5	3.0	567.95	263430.64	2487419.66	263434.99	2487417.42	No Sediment Plug
CA94-1-C20	5/21/2020	4.0	0.0	4.0	3.0	561.01	263207.04	2487968.70	263214.80	2487965.76	
CA94-1-C21	5/21/2020	10.5	0.0	10.5	3.0	567.99	263246.24	2487882.24	263248.53	2487873.65	
CA94-1-C22	5/21/2020	7.0	0.0	7.0	3.0	568.23	263290.78	2487796.68	263293.79	2487797.48	
CA94-1-C23	5/21/2020	7.0	0.0	7.0	3.0	569.39	263329.08	2487714.68	263331.77	2487709.45	
CA94-1-C24	5/21/2020	8.5	0.0	8.5	3.0	568.66	263369.17	2487625.55	263370.74	2487622.43	
CA94-1-C25	5/21/2020	8.5	0.0	8.5	3.0	567.08	263435.98	2487489.18	263435.84	2487493.09	
CA94-1-C26	5/21/2020	7.5	0.0	7.5	3.0	572.81	263488.64	2487384.24	263486.91	2487383.57	
CA94-1-C27	5/21/2020	4.5	0.0	4.5	3.0	568.55	263463.35	2487361.11	263460.05	2487359.04	No Sediment Plug

Average	6.67	0.00	6.67
Median	7.00	0.00	7.00
Standard Deviation	2.00	0.00	2.00

Recommended Path Forward:

Verification samples were collected at 27 locations within OU4-CA94-1. 27 of 27 samples meet or exceed the minimum thickness requirement of 3-inches, therefore, no further action is required.

Prepared by: HNK Date: 6/22/2020 Reviewed by: BSW Date: 6/24/2020

A/OT Acceptance: _____ Date: _____

OU4-CA94-2
CAP SAND LAYER THICKNESS RESULTS

INDEX MAP

CAP A1 REQUIREMENTS

<10 PPM SURFICIAL	
MINIMUM SAND LAYER THICKNESS	3.0"
ASSUMED SAND OVERPLACEMENT THICKNESS	3.0"
MINIMUM ARMOR LAYER THICKNESS	6.0"
ASSUMED ARMOR OVERPLACEMENT THICKNESS	6.0"
MINIMUM QUARRY SPALL ARMOR THICKNESS	28.0"
QUARRY SPALL OVERPLACEMENT THICKNESS	24.0"
MINIMUM CAP THICKNESS	37.0"
ASSUMED AVERAGE CAP THICKNESS	70.0"
FILTER LAYER D50 STONE = 3.0" QUARRY SPALL = 14.0"	

SAMPLE DATA

NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED	6
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA	6
NUMBER OF ARMOR THICKNESS VERIFICATION SAMPLES COLLECTED	4
NUMBER OF ARMOR THICKNESS VERIFICATION SAMPLES SATISFYING CRITERIA	4
NUMBER OF QUARRY SPALL THICKNESS VERIFICATION SAMPLES COLLECTED	4
NUMBER OF QUARRY SPALL THICKNESS VERIFICATION SAMPLES SATISFYING CRITERIA	2

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-CA94-2
CAP ARMOR & QUARRY SPALL LAYER THICKNESS RESULTS

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

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

CAD FILE: OU4-CA94-2.dwg
DRAWN BY: DAVID.FRISQUE
DATE: August 17, 2020
LAST REVISED: August 19, 2020
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 11-015

OU4-CA94-2
REMEDY CAP SAND AND ARMOR STONE THICKNESS RESULTS AND LOCATIONS

P:\LLC\CAD\Field Engineering\Capping\2020\OU4-CA94\DWG\Post Dredge\OU4-CA94-2.dwg

OU4-CA94-2											
ID	Date Sampled	Sand Result (Inches)	Sand/Sediment Mix (Inches)	Total Thickness Sand and Sediment Mix (Inches)	Required Thickness (Inches)	Mudline Elevation	Proposed Coordinates		Survey Coordinates		Comments
							Northing	Easting	Northing	Easting	
CA94-2-C1	6/19/2020	3.5	0.0	3.5	3.0	562.27	263045.08	2487978.56	263038.87	2487983.51	
CA94-2-C2	6/19/2020	6.0	0.0	6.0	3.0	552.48	263060.14	2488034.39	263061.31	2488033.59	
CA94-2-C3	6/19/2020	4.5	0.0	4.5	3.0	559.71	263119.76	2488000.85	263116.54	2487999.36	
CA94-2-C4	6/19/2020	8.0	0.0	8.0	3.0	551.63	263132.68	2488042.20	263136.66	2488043.72	
CA94-2-C5	5/21/2020	5.5	0.5	6.0	3.0	554.14	263176.20	2488035.50	263175.25	2488037.05	
CA94-2-C6	5/21/2020	7.0	0.0	7.0	3.0	550.76	263153.40	2488080.20	263149.92	2488081.88	

Average	5.75	0.50	5.83
Median	5.75	0.00	6.00
Standard Deviation	1.64	0.00	1.63

Recommended Path Forward:

Verification samples were collected at 6 locations within OU4-CA94-2. 6 of 6 samples meet or exceed the minimum thickness requirement of 3-inches, therefore, no further action is required.

Prepared by: HNK Date: 6/22/2020 Reviewed by: BSW Date: 6/24/2020

A/OT Acceptance: _____ Date: _____

Quarry Spall/Heavy Rip Rap Placement Thickness Verification and Approval Form

OU4-CA94-2 (D50=14") Bathymetric & Volumetric Survey								
Survey Date	**Area (square feet)**	**Area Complete**	**Required Thickness (inches)**	**Bathymetric Survey Thickness (inches)**	**Required Volume (cubic yards)**	**Placed Volume Hydrographic Survey (cubic yards)**	**Placed Volume Barge Survey (cubic yards)**	**Barge Survey Thickness (inches)**
7/21/2020	13,453.0	43%	20.0	18.6	830.4	772.0	1,164.8	28.1

OU4-CA94-2 (D50=14")									
ID	**Date Sampled**	**Average Thickness (Inches)**	**Required Thickness (Inches)**	**Mudline**	**Pre-Placement Coordinates**		**Survey Coordinates**		**Comments**
					Northing	**Easting**	**Northing**	**Easting**	
CA94-2-R1	7/22/2020	**2.7**	20.0	567.6	263056.95	2487956.33	263059.33	2487956.75	
CA94-2-R2	7/22/2020	**18.8**	20.0	557.7	263074.63	2488026.62	263073.91	2488026.29	
CA94-2-R3	7/22/2020	25.2	20.0	554.4	263121.80	2488050.87	263119.30	2488052.29	
CA94-2-R4	7/22/2020	23.2	20.0	557.0	263177.15	2488041.91	263175.29	2488040.43	

Average	17.50
Median	21.02
Standard Deviation	10.21

Recommended Path Forward:

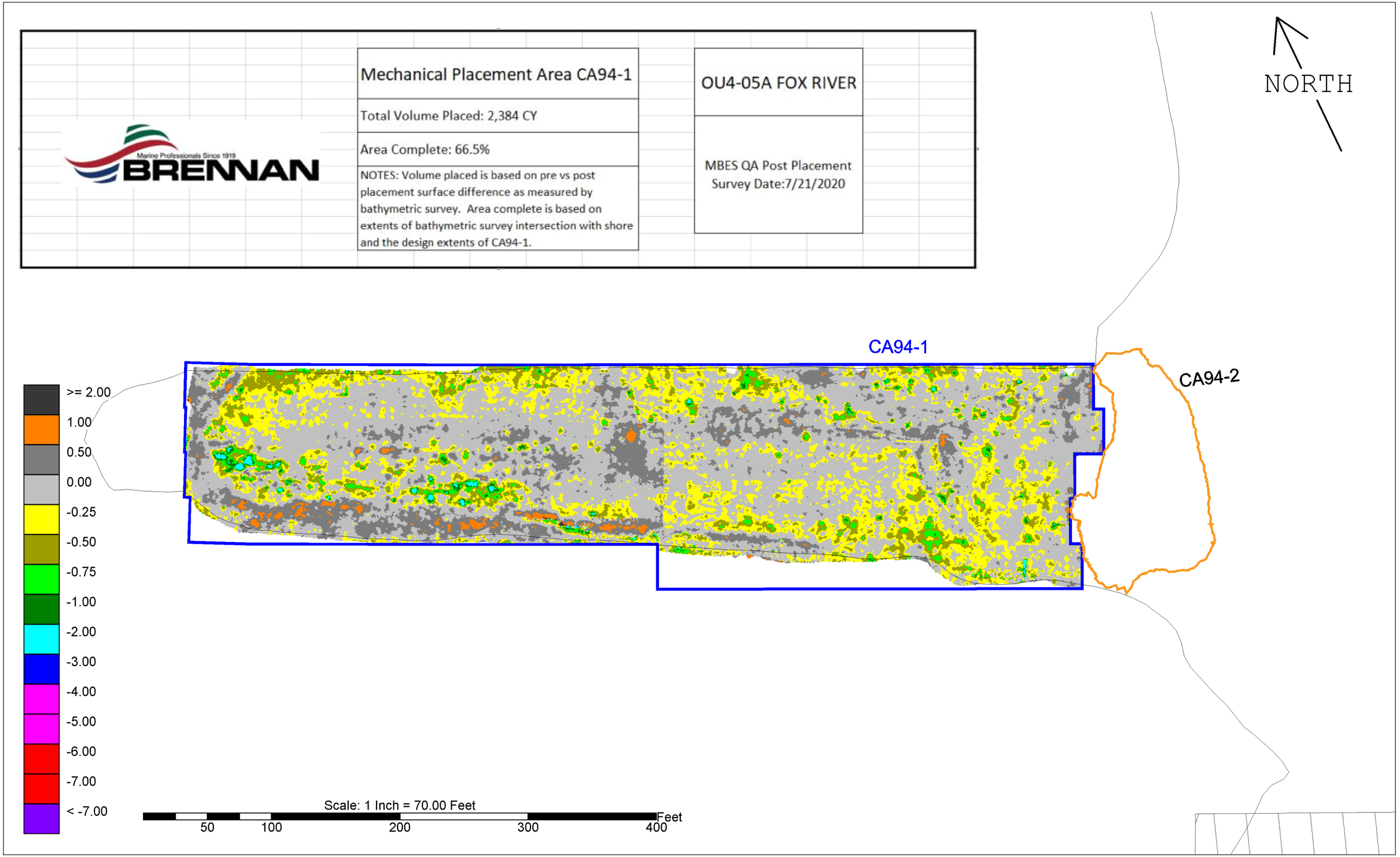
Quarry Spall/Heavy Rip Rap D50=14" was placed and surveyed within OU4-CA94-2. The quarry spall/heavy rip rap thicknesses based on barge survey meet or exceed the minimum thickness requirement of 20-inches. Furthermore, thickness verification poling was conducted at 4 locations. 2 of 4 samples meet or exceed the minimum thickness requirement of 20-inches. Tetra Tech recommends accepting this area on an exception basis.

Prepared by: HNK Date: 7/22/2020

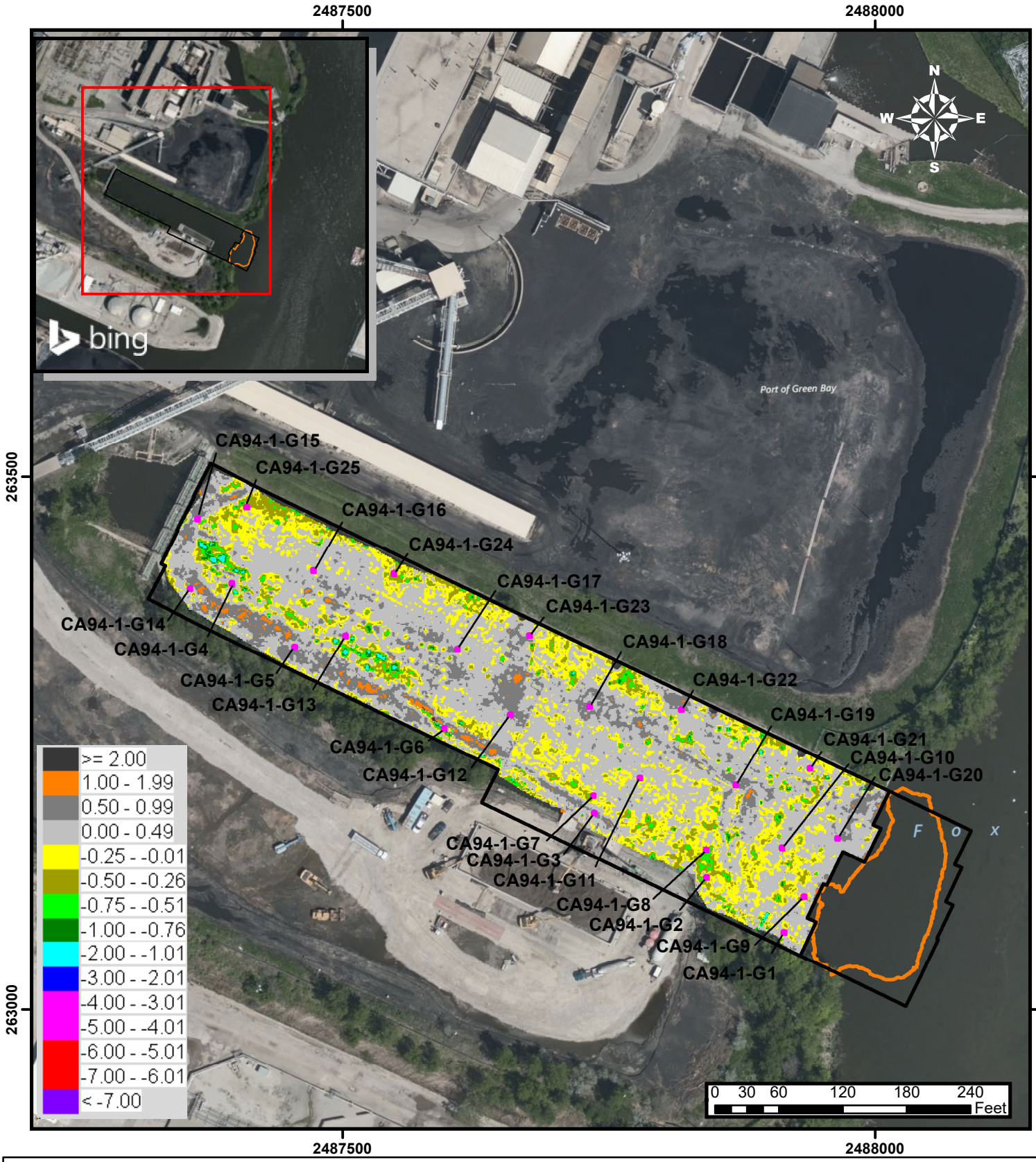
Reviewed by: BSW Date: 7/24/2020

A/OT Acceptance: _____ Date: _____

Mechanical Placement Area CA94-1	OU4-05A FOX RIVER
Total Volume Placed: 2,384 CY	
Area Complete: 66.5%	MBES QA Post Placement Survey Date:7/21/2020
NOTES: Volume placed is based on pre vs post placement surface difference as measured by bathymetric survey. Area complete is based on extents of bathymetric survey intersection with shore and the design extents of CA94-1.	



CA94-1 3" Stone								
Survey Date	Area (square feet)	Area Complete	Required Thickness (inches)	Bathymetric Survey Thickness (inches)	Required Volume (cubic yards)	Placed Volume Hydrographic Survey (cubic yards)	Placed Volume Barge Survey (cubic yards)	Barge Survey Thickness (inches)
7/21/2020	109,692.0	67%	6.0	7.0	2,031.3	2,384.0	3,921.3	11.6



CA94-1 Post Placement QA Survey

Areas: CA94-1

Material: 3" Stone

Notes: Matrix represents difference between 7/21/2020 QA post placement survey and the 6" thick armor stone design.

J.F. Brennan Co. Inc.

Armor Stone Placement Thickness Verification and Approval Form

OU4-CA94-1 (D50=3") Bathymetric & Volumetric Survey								
Survey Date	Area (square feet)	Area Complete	Required Thickness (inches)	Bathymetric Survey Thickness (inches)	Required Volume (cubic yards)	Placed Volume Hydrographic Survey (cubic yards)	Placed Volume Barge Survey (cubic yards)	Barge Survey Thickness (inches)
7/21/2020	109,692.0	67%	6.0	7.0	2031.3	2384.0	3,921.3	11.6

OU4-CA94-1 (D50=3")									
ID	Date Sampled	Average Thickness (Inches)	Required Thickness (Inches)	Mudline	Pre-Placement Coordinates		Survey Coordinates		Comments
					Northing	Easting	Northing	Easting	
CA94-1-G1	7/22/2020	6.3	6.0	568.4	263074.15	2487915.99	263072.71	2487914.52	
CA94-1-G2	7/22/2020	**2.4**	6.0	566.2	263124.26	2487840.35	263124.01	2487841.67	
CA94-1-G3	7/13/2020	15.0	6.0	571.3	263186.43	2487734.60	263184.41	2487736.38	
CA94-1-G4	7/9/2020	12.4	6.0	573.4	263393.56	2487357.34	263394.88	2487357.25	
CA94-1-G5	7/13/2020	18.4	6.0	574.6	263340.84	2487456.05	263340.29	2487455.30	
CA94-1-G6	7/13/2020	41.6	6.0	574.7	263265.81	2487595.32	263263.99	2487595.56	
CA94-1-G7	7/13/2020	7.4	6.0	569.8	263201.71	2487735.33	263200.60	2487735.49	
CA94-1-G8	7/22/2020	**3.3**	6.0	566.8	263149.60	2487842.34	263149.88	2487841.46	
CA94-1-G9	7/22/2020	**0.9**	6.0	566.8	263105.86	2487932.38	263106.13	2487933.21	
CA94-1-G10	7/22/2020	11.5	6.0	563.8	263151.43	2487914.86	263151.67	2487912.67	
CA94-1-G11	7/13/2020	8.9	6.0	568.1	263218.17	2487780.85	263217.46	2487779.40	
CA94-1-G12	7/13/2020	17.9	6.0	568.7	263278.78	2487658.82	263276.73	2487657.45	
CA94-1-G13	7/13/2020	16.0	6.0	571.6	263349.02	2487504.93	263350.46	2487502.97	
CA94-1-G14	7/9/2020	7.9	6.0	569.1	263402.12	2487396.40	263399.89	2487396.41	
CA94-1-G15	7/9/2020	19.7	6.0	569.2	263458.96	2487366.38	263460.45	2487364.28	
CA94-1-G16	7/9/2020	11.0	6.0	569.2	263409.06	2487472.06	263411.66	2487473.07	
CA94-1-G17	7/13/2020	12.2	6.0	568.1	263339.54	2487608.09	263338.28	2487607.92	
CA94-1-G18	7/13/2020	11.5	6.0	568.4	263285.52	2487731.58	263284.44	2487732.36	
CA94-1-G19	7/22/2020	8.9	6.0	566.4	263212.14	2487869.53	263210.87	2487869.17	
CA94-1-G20	7/22/2020	18.5	6.0	559.8	263163.58	2487964.14	263160.71	2487964.58	
CA94-1-G21	7/22/2020	10.1	6.0	563.6	263227.42	2487940.53	263226.33	2487938.98	
CA94-1-G22	7/13/2020	8.9	6.0	569.3	263280.07	2487815.99	263281.58	2487818.19	
CA94-1-G23	7/13/2020	10.6	6.0	569.3	263351.17	2487677.94	263350.95	2487675.71	
CA94-1-G24	7/13/2020	**4.5**	6.0	567.3	263407.15	2487546.74	263408.77	2487548.53	
CA94-1-G25	7/9/2020	6.9	6.0	568.1	263472.16	2487408.47	263471.60	2487410.36	

Average	11.71
Median	10.59
Standard Deviation	8.06

Recommended Path Forward:

Armor Stone D50=3" was placed and surveyed within OU4-CA94-1. The armor stone thicknesses based on bathymetric survey meet or exceed the minimum thickness requirement of 6-inches. Furthermore, thickness verification poling was conducted at 25 locations. 21 of 25 samples meet or exceed the minimum thickness requirement of 6-inches. Tetra Tech recommends accepting this area on an exception basis.

Prepared by: HNK Date: 7/22/2020

Reviewed by: BSW Date: 7/24/2020

A/OT Acceptance: _____ Date: _____

Armor Stone Placement Thickness Verification and Approval Form

OU4-CA94-2 (D50=2-5/3-6") Bathymetric & Volumetric Survey								
Survey Date	Area (square feet)	Area Complete	Required Thickness (inches)	Bathymetric Survey Thickness (inches)	Required Volume (cubic yards)	Placed Volume Hydrographic Survey (cubic yards)	Placed Volume Barge Survey (cubic yards)	Barge Survey Thickness (inches)
7/10/2020	17,991.0	94%	6.0	14.1	333.2	782.0	1,085.1	19.5
7/15/2020	17,991.0	90%	6.0	14.6	333.2	812.0	1,254.3	22.6

OU4-CA94-2 (D50=2-5/3-6")									
ID	Date Sampled	Quarry Thickness (Inches)	Average Thickness (Inches)	Required Thickness (Inches)	Mudline	Pre-Placement Coordinates		Survey Coordinates		Comments
						Northing	Easting	Northing	Easting	
CA94-2-G1	7/16/2020		21.6	6.0	555.1	263041.58	2488021.11	263042.31	2488014.95	
CA94-2-G2	7/16/2020		12.7	6.0	565.0	263078.95	2487969.55	263077.86	2487971.88	
CA94-2-G3	7/16/2020		11.6	6.0	559.4	263105.68	2487998.69	263106.19	2488001.92	
CA94-2-G4	7/16/2020		19.2	6.0	557.4	263158.84	2488024.73	263156.04	2488022.86	

Average	16.28
Median	15.96
Standard Deviation	4.89

Recommended Path Forward:

Armor Stone D50=2-5/3-6" was placed and surveyed within OU4-CA94-2. The armor stone thicknesses based on bathymetric survey meet or exceed the minimum thickness requirement of 6-inches. Furthermore, thickness verification poling was conducted at 4 locations. 4 of 4 samples meet or exceed the minimum thickness requirement of 6-inches; therefore, no further action is required.

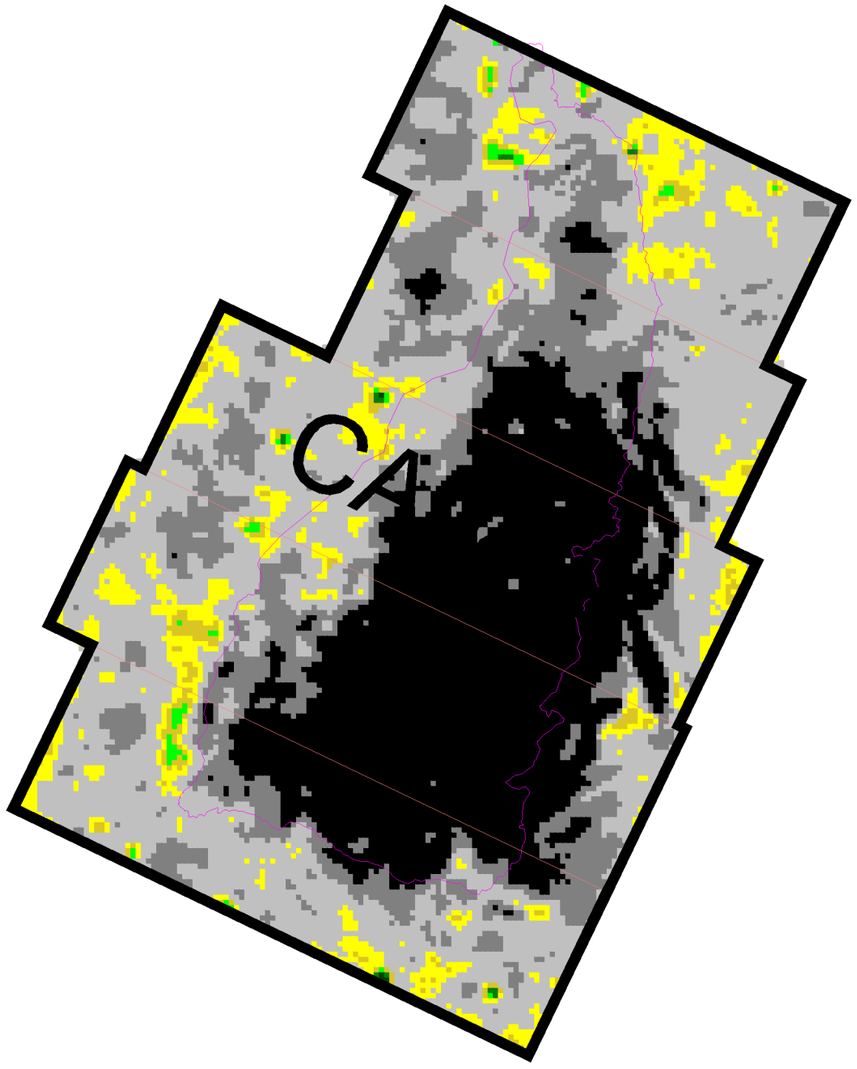
Prepared by: HNK Date: 7/16/2020

Reviewed by: MT Date: 7/16/2020

A/OT Acceptance: _____ Date: _____

200716 SeaArk MBES CA94 Butress QA vs Post sand plus 6 inch
Area Complete: 90%

N



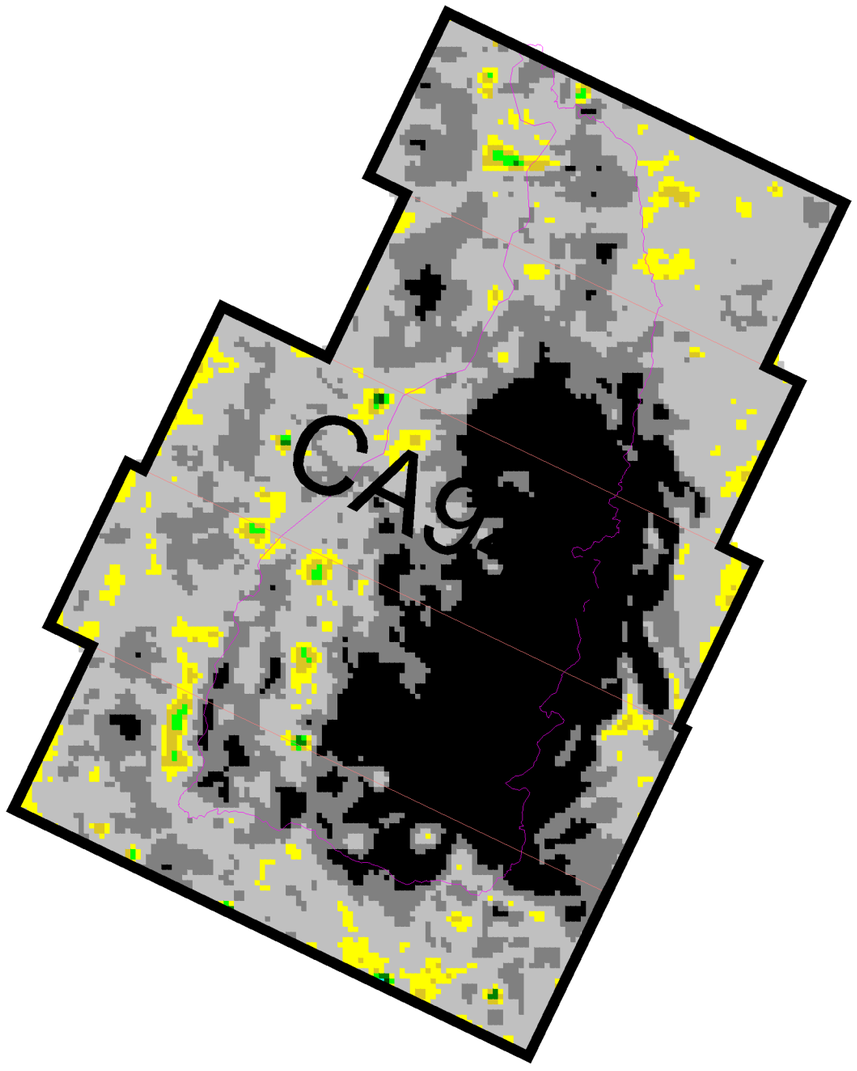
>= 3.00
2.00
1.50
1.00
0.75
0.50
0.25
0.00
-0.50
-1.00
< -1.00

Scale: 1 Inch = 30.00 Feet

25 50 100 150 200 Feet

200710 SeaArk MBES CA94-2 QA vs Post sand plus 6 inch
Area Complete: 94%

N



>= 3.00
2.00
1.50
1.00
0.75
0.50
0.25
0.00
-0.50
-1.00
< -1.00

Scale: 1 Inch = 30.00 Feet

25 50 100 150 200 Feet

OU4-CB20-B3										
ID	Date Sampled	Stone Result (Inches)	Cap Type	Required Thickness (Inches)	Mudline	Proposed Coordinates		Survey Coordinates		Comments
						Northing	Easting	Northing	Easting	
CB20-B3-G1	7/1/2019	9.0	B3	4.0	564.9	246080.34	2482853.23	246084.30	2482855.66	
CB20-B3-G2	7/1/2019	5.5	B3	4.0	563.3	246113.57	2482842.74	246113.79	2482848.23	
CB20-B3-G3	7/1/2019	4.0	B3	4.0	560.5	246115.22	2482805.65	246113.39	2482804.40	
CB20-B3-G4	7/1/2019	4.5	B3	4.0	560.2	246183.47	2482821.80	246185.08	2482821.39	
CB20-B3-G5	7/1/2019	4.5	B3	4.0	560.2	246182.82	2482765.07	246180.48	2482769.54	
CB20-B3-G6	7/1/2019	5.5	B3	4.0	561.0	246242.82	2482770.76	246243.06	2482771.32	
CB20-B3-G7	7/1/2019	5.5	B3	4.0	560.9	246223.54	2482721.52	246224.64	2482719.86	
CB20-B3-G8	7/9/2019	5.5	B3	4.0	563.1	246271.28	2482706.68	246269.09	2482703.52	
CB20-B3-G9	7/9/2019	4.5	B3	4.0	563.8	246266.64	2482655.66	246264.74	2482652.75	

Average 5.39
Median 5.50
Standard Deviation 1.47

Recommended Path Forward:

Verification samples were collected at 9 locations within OU4-CB20-B3. 9 of 9 samples meet or exceed the minimum thickness requirement of 4-inches, therefore, no further action is required.

Prepared by: LPV Date: 7/10/2019

Reviewed by: HNK Date: 7/10/2019

A/OT Acceptance: Date: 7/10/19

OU4-CB20-B3										
ID	Date Sampled	Sand Result (Inches)	Sand/Sediment Mix (Inches)	Total Thickness Sand and Sediment Mix (Inches)	Required Thickness (Inches)	Mudline Elevation	Proposed Coordinates		Survey Coordinates		Comments
							Northing	Easting	Northing	Easting	
CB20-B3-C1	6/27/2019	12.0	0.0	12.0	6.0	564.45	246069.10	2482857.54	246078.41	2482866.60	Verified using poling method due to tipped bucket
CB20-B3-C2	6/27/2019	6.0	0.0	6.0	6.0	564.02	246091.93	2482841.64	246088.83	2482843.18	
CB20-B3-C3	6/27/2019	8.0	0.0	8.0	6.0	560.41	246147.54	2482831.90	246146.15	2482836.21	
CB20-B3-C4	6/27/2019	8.5	0.0	8.5	6.0	560.16	246153.82	2482779.98	246155.96	2482780.73	
CB20-B3-C5	6/28/2019	8.0	0.0	8.0	6.0	559.91	246203.62	2482785.52	246212.63	2482794.76	Verified using poling method due to tipped bucket
CB20-B3-C6	6/28/2019	11.0	0.0	11.0	6.0	559.86	246201.30	2482738.68	246204.15	2482740.42	
CB20-B3-C7	6/28/2019	9.5	0.0	9.5	6.0	562.14	246256.91	2482741.00	246256.23	2482754.61	Verified using poling method due to tipped bucket
CB20-B3-C8	6/28/2019	10.5	0.0	10.5	6.0	561.46	246229.97	2482669.87	246239.47	2482678.12	Verified using poling method due to tipped bucket
CB20-B3-C9	6/28/2019	12.0	0.0	12.0	6.0	562.12	246288.89	2482674.68	246290.12	2482684.82	Verified using poling method. Unable to retrieve bucket
Average		9.50	0.00	9.50							
Median		9.50	0.00	9.50							
Standard Deviation		2.05	0.00	2.05							

Recommended Path Forward:

Verification samples were collected at 9 locations within OU4-CB20-B3. 9 of 9 samples meet or exceed the minimum thickness requirement of 6-inches, therefore, no further is action required.

Prepared by: LPV Date: 6/28/2019 Reviewed by: HNK Date: 6/28/2019

A/OT Acceptance: Date: 7/10/19

OU4-CB58-1										
ID	Date Sampled	Stone Result (Inches)	Cap Type	Required Thickness (Inches)	Mudline	Proposed Coordinates		Survey Coordinates		Comments
						Northing	Easting	Northing	Easting	
CB58-1-G1	11/8/2018	5.0	B2	4.0	569.91	250199.73	2483605.97	250200.38	2483605.30	
CB58-1-G2	11/8/2018	4.5	B2	4.0	570.11	250235.39	2483615.38	250237.48	2483615.59	
CB58-1-G3	11/8/2018	7.5	B2	4.0	570.77	250246.95	2483578.51	250244.75	2483577.63	

Average 5.67
Median 5.00
Standard Deviation 1.61

Recommended Path Forward:

Verification samples were collected at 3 locations within OU4-CB58-1. 3 of 3 samples meet or exceed the minimum thickness requirement of 4-inches, therefore, no further action is required.

Prepared by: HNK Date: 11/8/2018 Reviewed by: BSW Date: 11/8/2018

A/OT Acceptance: Date: 11/12/18

OU4-CB58-1										
ID	Date Sampled	Sand Result (inches)	Sand/Sediment Mix (inches)	Total Thickness Sand and Sediment Mix (inches)	Required Thickness (inches)	Mudline Elevation	Proposed Coordinates		Survey Coordinates		Comments
							Northing	Easting	Northing	Easting	
CB58-1-C1	9/25/2018	8.5	0.0	8.5	6.0	570.32	250245.78	2483581.24	250245.64	2483579.57	
CB58-1-C2	9/25/2018	6.0	0.0	6.0	6.0	569.61	250206.72	2483607.81	250200.36	2483602.84	
Average		7.25	0.00	7.25							
Median		7.25	0.00	7.25							
Standard Deviation		1.77	0.00	1.77							

Recommended Path Forward:

Verification samples were collected at 2 locations within OU4-CB58-1. 2 of 2 samples meet or exceed the minimum thickness requirement of 6-inches, therefore, no further action is required.

Prepared by: LPV Date: 9/26/2018 Reviewed by: BSW Date: 9/26/2018

A/OT Acceptance: Date: 9/27/18

CB60 190925 191024 post rock vs 190918 190920 post sand

Area complete to 4inch offset: 78%
Average thickness: 6.3"

(CAP B-SRA TRAN

N

CB60-3

(CAP B-S

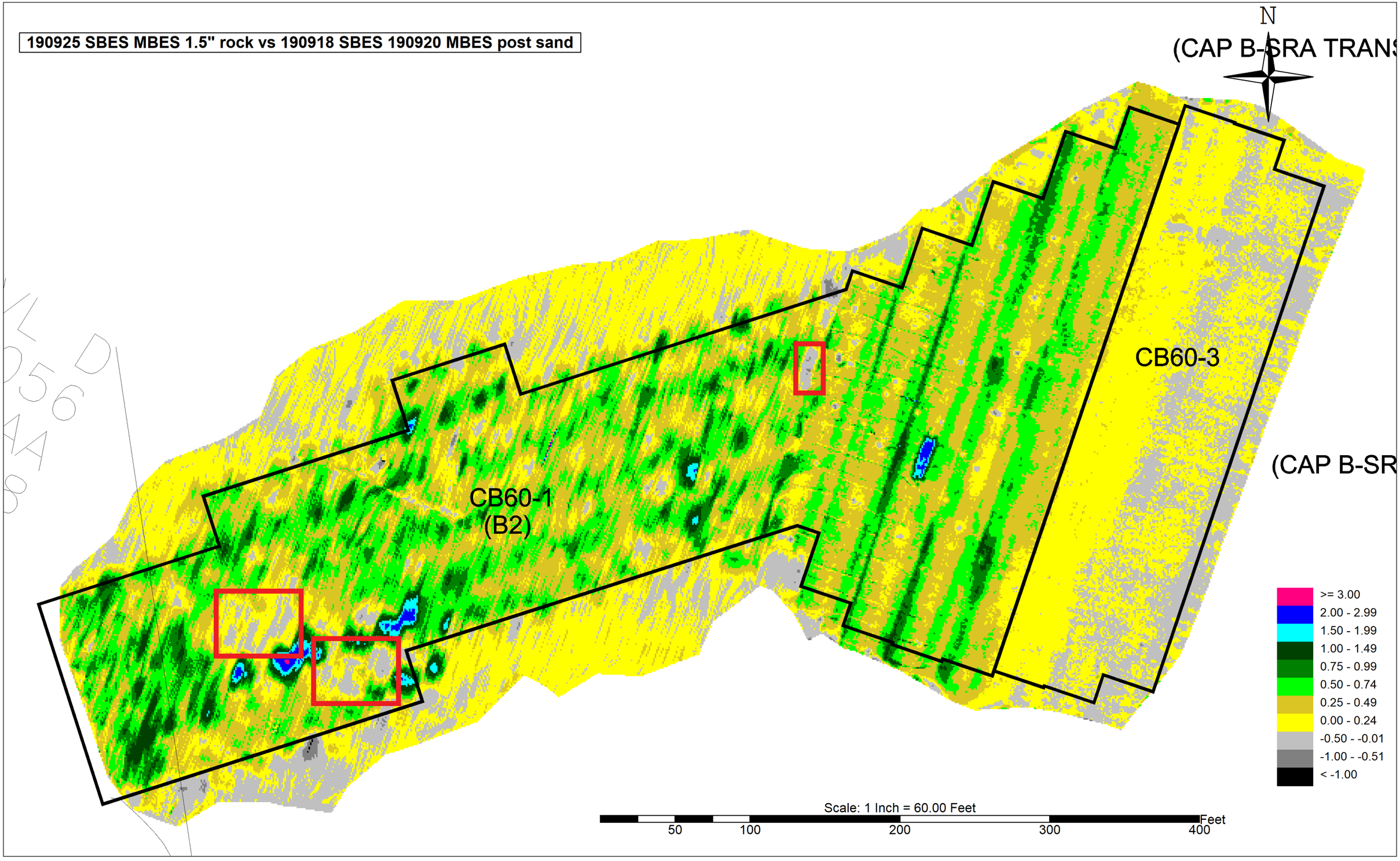
CB60-1
(B2)

>= 3.00
1.50
0.75
0.25
-0.50
< -1.00

Scale: 1 Inch = 60.00 Feet

50 100 200 300 400 Feet

190925 SBES MBES 1.5" rock vs 190918 SBES 190920 MBES post sand



OU4-CB60-1										
ID	Date Sampled	Stone Result (Inches)	Cap Type	Required Thickness (Inches)	Mudline	Proposed Coordinates		Survey Coordinates		Comments
						Northing	Easting	Northing	Easting	
CB60-1-G1	9/24/2019	4.0	B2	4.0	572.8	264742.43	2488483.09	264744.64	2488487.22	
CB60-1-G2	9/24/2019	4.5	B2	4.0	573.7	264890.05	2488530.71	264889.70	2488533.67	
CB60-1-G3	9/24/2019	6.5	B2	4.0	574.1	264977.84	2488532.05	264981.40	2488533.75	
CB60-1-G4	N/A	N/A	B2	4.0	N/A	264830.26	2488475.29	N/A	N/A	Bucket could not be located during retrieval
CB60-1-G5	9/24/2019	3.5	B2	4.0	573.2	264683.53	2488424.23	264687.33	2488427.45	
CB60-1-G6	9/27/2019	5.0	B2	4.0	572.8	264760.30	2488413.54	264756.85	2488409.92	
CB60-1-G7	N/A	N/A	B2	4.0	N/A	264917.36	2488456.33	N/A	N/A	Bucket could not be located during retrieval
CB60-1-G8	9/24/2019	4.0	B2	4.0	573.7	264842.05	2488403.33	264843.08	2488402.99	
CB60-1-G9	9/24/2019	4.0	B2	4.0	574.2	264716.70	2488362.00	264718.74	2488359.60	
CB60-1-G10	9/24/2019	4.0	B2	4.0	574.0	264805.61	2488356.65	264806.82	2488355.96	
CB60-1-G11	9/24/2019	6.5	B2	4.0	574.5	264880.38	2488366.13	264882.83	2488366.10	
CB60-1-G12	9/27/2019	3.5	B2	4.0	574.8	264744.76	2488285.11	264744.89	2488287.05	
CB60-1-G13	9/27/2019	6.0	B2	4.0	575.9	264704.92	2488153.82	264704.93	2488152.05	
CB60-1-G14	9/24/2019	5.5	B2	4.0	577.5	264650.58	2487967.19	264646.84	2487969.91	
CB60-1-G15	9/24/2019	4.5	B2	4.0	576.5	264619.28	2488002.04	264617.32	2488002.69	
CB60-1-G16	9/24/2019	10.0	B2	4.0	577.1	264592.56	2487883.88	264594.87	2487882.64	
CB60-1-G17	9/24/2019	2.0	B2	4.0	577.2	264646.97	2487869.30	264644.39	2487867.82	
CB60-1-G18	9/24/2019	4.5	B2	4.0	576.1	264702.14	2488032.88	264699.76	2488029.77	
CB60-1-G19	9/24/2019	7.5	B2	4.0	575.6	264767.47	2488205.28	264767.54	2488205.66	
CB60-1-G20	9/24/2019	4.0	B2	4.0	575.0	264827.14	2488274.31	264825.51	2488277.28	
CB60-1-G21	9/24/2019	2.5	B2	4.0	576.4	264753.78	2488082.15	264756.72	2488081.73	
CB60-1-G22	9/24/2019	5.5	B2	4.0	576.6	264695.70	2487894.59	264699.44	2487894.28	
CB60-1-G23	N/A	N/A	B2	4.0	N/A	264754.49	2487963.15	N/A	N/A	Bucket could not be located during retrieval
CB60-1-G24	9/24/2019	3.5	B2	4.0	575.9	264835.14	2488092.49	264836.12	2488094.96	
CB60-1-G25	9/24/2019	3.0	B2	4.0	575.4	264821.36	2488180.74	264823.91	2488180.68	
CB60-1-E1	9/24/2019	3.5	B2	4.0	576.2	264672.15	2487934.86	264671.98	2487935.79	Bucket G23 could not be located therefore the E1 bucket measurement is used in its place.
CB60-1-E2	9/24/2019	4.0	B2	4.0	574.6	264802.92	2488232.65	264802.36	2488232.91	Bucket G7 could not be located therefore the E2 bucket measurement is used in its place.
CB60-1-E3	9/24/2019	5.5	B2	4.0	573.1	264760.83	2488454.33	264759.83	2488455.22	Bucket G4 could not be located therefore the E3 bucket measurement is used in its place.

Average	4.68
Median	4.00
Standard Deviation	1.71

Recommended Path Forward:

Verification samples were collected at 25 locations within OU4-CB60-1. 18 of 25 samples meet or exceed the minimum thickness requirement of 4-inches. Tetra Tech recommends use of the J.F. Brennan QC data to accept this area on an exception basis.

Prepared by: LPV Date: 9/30/2019 Reviewed by: HNK Date: 10/3/2019

A/OT Acceptance: Date: 10/29/19 on an exception basis

OU4-CB60-1										
ID	Date Sampled	Sand Result (Inches)	Sand/Sediment Mix (Inches)	Total Thickness Sand and Sediment Mix (Inches)	Required Thickness (Inches)	Mudline Elevation	Proposed Coordinates		Survey Coordinates		Comments
							Northing	Easting	Northing	Easting	
CB60-1-C1	9/19/2019	9.5	0.0	9.5	6.0	573.04	264685.78	2488464.20	264687.24	2488464.36	
CB60-1-C2	9/19/2019	7.5	0.0	7.5	6.0	572.51	264824.29	2488507.08	264824.60	2488507.31	
CB60-1-C3	9/19/2019	9.0	0.0	9.0	6.0	573.38	264969.65	2488559.77	264971.90	2488560.03	
CB60-1-C4	9/19/2019	9.5	0.0	9.5	6.0	573.29	264927.27	2488507.30	264925.04	2488506.34	
CB60-1-C5	9/19/2019	8.0	0.0	8.0	6.0	571.81	264764.07	2488450.66	264764.87	2488451.11	
CB60-1-C6	9/19/2019	6.0	0.0	6.0	6.0	572.77	264708.90	2488396.76	264704.24	2488399.04	
CB60-1-C7	9/19/2019	9.5	0.0	9.5	6.0	573.14	264852.22	2488443.45	264850.46	2488447.79	
CB60-1-C8	9/19/2019	13.0	0.0	13.0	6.0	574.07	264909.22	2488430.94	264909.32	2488433.70	
CB60-1-C9	9/19/2019	8.0	0.0	8.0	6.0	573.25	264808.47	2488402.89	264810.49	2488406.63	
CB60-1-C10	9/19/2019	10.0	0.0	10.0	6.0	573.83	264774.02	2488342.49	264775.07	2488340.14	
CB60-1-C11	9/19/2019	9.5	0.0	9.5	6.0	574.43	264877.40	2488363.82	264875.38	2488367.39	
CB60-1-C12	9/16/2019	15.0	0.0	15.0	6.0	576.50	264628.63	2488029.25	264631.81	2488028.59	
CB60-1-C13	9/18/2019	8.0	0.0	8.0	6.0	576.13	264589.88	2487920.80	264588.80	2487917.94	
CB60-1-C14	9/16/2019	10.0	0.0	10.0	6.0	575.17	264720.99	2488215.88	264723.76	2488218.75	
CB60-1-C15	9/16/2019	10.5	0.0	10.5	6.0	575.90	264680.23	2488078.46	264676.42	2488076.50	
CB60-1-C16	9/18/2019	11.0	0.0	11.0	6.0	576.13	264637.21	2487946.77	264635.94	2487943.93	
CB60-1-C17	9/18/2019	9.0	0.0	9.0	6.0	576.58	264648.99	2487886.62	264653.54	2487886.76	
CB60-1-C18	9/18/2019	11.0	0.0	11.0	6.0	575.69	264704.16	2488033.86	264702.27	2488034.28	
CB60-1-C19	9/18/2019	10.0	0.0	10.0	6.0	575.07	264767.87	2488261.94	264768.51	2488262.21	
CB60-1-C20	9/18/2019	14.5	0.0	14.5	6.0	573.98	264828.96	2488310.58	264830.31	2488313.32	
CB60-1-C21	9/18/2019	11.0	0.0	11.0	6.0	575.73	264768.59	2488121.51	264768.14	2488125.73	
CB60-1-C22	9/18/2019	13.0	0.0	13.0	6.0	576.01	264706.79	2487942.49	264708.70	2487938.83	
CB60-1-C23	9/18/2019	13.0	0.0	13.0	6.0	576.18	264761.96	2487990.47	264765.48	2487990.52	
CB60-1-C24	9/18/2019	12.5	0.0	12.5	6.0	575.19	264836.18	2488218.56	264837.56	2488214.21	
CB60-1-C25	9/18/2019	10.0	0.0	10.0	6.0	575.50	264830.32	2488110.65	264831.18	2488107.49	

Average	10.32	0.00	10.32
Median	10.00	0.00	10.00
Standard Deviation	2.20	0.00	2.20

Recommended Path Forward:

Verification samples were collected at 25 locations within OU4-CB60-1. 25 of 25 samples meet or exceed the minimum thickness requirement of 6-inches, therefore, no further action is required.

Prepared by: [illegible] Date: 9/20/2019 Reviewed by: HNK Date: 9/20/2019

A/OT Acceptance: [illegible] Date: 9/23/19


CB60-2
Overhead Power Lines

Step Detail Report

Step Start Date	Step Start Time	Area	SMU/CMU	Lane	Step Number	Duration (min)	Northing	Easting	Density (#/cu.ft.)	Length (ft)	Width (ft)	Height (in)	Weight (tons)	Cubic Yards	Inches/Step	Remarks
6/17/2020	15:10:05		CB60-2			3.45	264637.75	2487853.52	105.00	6.00	35.00	5.00	8.50	6.03	9.30	
6/17/2020	15:18:42		CB60-2			2.28	264635.36	2487846.18	105.00	6.00	35.00	5.00	5.70	4.04	6.24	
6/17/2020	15:21:14		CB60-2			3.33	264633.13	2487839.29	105.00	6.00	35.00	5.00	10.20	7.23	11.16	
6/17/2020	15:25:05		CB60-2			3.10	264629.47	2487828.03	105.00	6.00	35.00	5.00	9.20	6.52	10.07	
6/17/2020	15:28:41		CB60-2			3.45	264625.87	2487817.05	105.00	6.00	35.00	5.00	7.10	5.04	7.77	
6/17/2020	15:32:23		CB60-2			5.88	264623.98	2487810.93	105.00	6.00	35.00	5.00	9.40	6.67	10.29	
6/17/2020	15:39:02		CB60-2			8.27	264620.04	2487799.99	105.00	6.00	35.00	5.00	9.10	6.45	9.96	
6/17/2020	15:48:33		CB60-2			2.08	264615.64	2487789.52	105.00	6.00	35.00	5.00	6.50	4.61	7.11	
6/17/2020	15:51:54		CB60-2			13.35	264625.93	2487816.91	105.00	6.00	35.00	5.00	5.70	4.04	6.24	
6/17/2020	16:06:00		CB60-2			3.88	264618.64	2487793.83	105.00	6.00	35.00	5.00	9.20	6.52	10.07	
6/17/2020	16:10:23		CB60-2			3.82	264614.86	2487782.49	105.00	6.00	35.00	5.00	5.00	3.55	5.47	
6/17/2020	16:14:13		CB60-2			10.13	264613.18	2487776.68	105.00	6.00	35.00	5.00	9.90	7.02	10.83	
6/17/2020	16:24:37		CB60-2			2.75	264610.30	2487771.17	105.00	6.00	35.00	5.00	1.50	1.06	1.64	
6/17/2020	16:28:22		CB60-2			10.13	264617.53	2487794.53	105.00	6.00	35.00	5.00	0.50	0.35	0.55	
6/17/2020	16:45:32		CB60-2			2.45	264608.50	2487765.18	105.00	6.00	35.00	5.00	0.50	0.35	0.55	
6/17/2020	16:53:55		CB60-2			14.68	264608.52	2487765.21	105.00	6.00	35.00	5.00	2.60	1.84	2.84	
6/17/2020	17:08:43		CB60-2			4.75	264585.85	2487799.51	105.00	6.00	35.00	5.00	7.80	5.53	8.53	
6/17/2020	17:13:29		CB60-2			7.53	264587.99	2487801.79	105.00	6.00	35.00	5.00	1.70	1.21	1.86	
6/17/2020	17:36:08		CB60-2			2.80	264589.98	2487804.24	105.00	6.00	35.00	5.00	5.30	3.76	5.80	
6/17/2020	17:38:57		CB60-2			5.18	264593.97	2487808.85	105.00	6.00	35.00	5.00	4.30	3.05	4.71	
6/17/2020	17:44:09		CB60-2			3.53	264581.54	2487826.30	105.00	6.00	35.00	5.00	5.20	3.69	5.69	
6/17/2020	17:47:42		CB60-2			3.72	264584.92	2487829.20	105.00	6.00	35.00	5.00	7.40	5.25	8.10	
6/17/2020	17:51:27		CB60-2			2.23	264590.91	2487834.25	105.00	6.00	35.00	5.00	5.20	3.69	5.69	
6/17/2020	17:53:42		CB60-2			3.87	264592.85	2487835.74	105.00	6.00	35.00	5.00	4.80	3.40	5.25	
6/17/2020	17:57:35		CB60-2			5.25	264599.97	2487842.48	105.00	6.00	35.00	5.00	5.60	3.97	6.13	
6/17/2020	18:02:51		CB60-2			0.03	264604.33	2487846.38	105.00	6.00	35.00	5.00	0.10	0.07	0.11	
6/17/2020	18:03:26		CB60-2			137.18	264604.39	2487846.34	105.00	6.00	35.00	5.00	5.40	3.83	5.91	
6/17/2020	20:20:40		CB60-2			0.10	264604.35	2487846.11	105.00	6.00	35.00	5.00	0.00	0.00	0.00	
6/17/2020	20:20:58		CB60-2			3.03	264609.02	2487850.49	105.00	6.00	35.00	5.00	5.60	3.97	6.13	
6/17/2020	20:24:03		CB60-2			2.70	264613.86	2487854.74	105.00	6.00	35.00	5.00	4.80	3.40	5.25	
6/17/2020	20:26:46		CB60-2			2.92	264615.79	2487856.33	105.00	6.00	35.00	5.00	4.70	3.33	5.14	
6/17/2020	20:29:45		CB60-2			53.78	264619.23	2487859.35	105.00	6.00	35.00	5.00	0.20	0.14	0.22	
6/17/2020	21:24:33		CB60-2			1.63	264564.07	2487844.27	105.00	6.00	35.00	5.00	4.70	3.33	5.14	
6/17/2020	21:26:13		CB60-2			1.63	264563.82	2487845.92	105.00	6.00	35.00	5.00	4.60	3.26	5.03	
6/17/2020	21:31:18		CB60-2			4.40	264567.32	2487848.17	105.00	6.00	35.00	5.00	6.90	4.89	7.55	
6/17/2020	21:35:44		CB60-2			1.72	264573.07	2487849.61	105.00	6.00	35.00	5.00	4.90	3.48	5.36	
6/17/2020	21:37:31		CB60-2			1.92	264574.40	2487849.65	105.00	6.00	35.00	5.00	6.90	4.89	7.55	
6/18/2020	01:19:30		CB60-2			10.60	264582.25	2487853.74	105.00	6.00	35.00	5.00	6.70	4.75	7.33	
6/18/2020	01:30:07		CB60-2			7.32	264587.82	2487856.22	105.00	6.00	35.00	5.00	6.60	4.68	7.22	
6/18/2020	01:37:28		CB60-2			2.75	264593.42	2487858.59	105.00	6.00	35.00	5.00	7.20	5.11	7.88	
6/18/2020	01:40:14		CB60-2			2.08	264598.49	2487861.15	105.00	6.00	35.00	5.00	5.70	4.04	6.24	
6/18/2020	01:42:19		CB60-2			2.15	264604.21	2487863.55	105.00	6.00	35.00	5.00	7.50	5.32	8.21	
6/18/2020	02:22:30		CB60-2			1.48	264665.90	2487764.76	105.00	6.00	35.00	5.00	4.70	3.33	5.14	
6/18/2020	02:24:00		CB60-2			2.37	264665.94	2487764.92	105.00	6.00	35.00	5.00	4.70	3.33	5.14	
6/18/2020	02:26:40		CB60-2			1.75	264667.97	2487769.64	105.00	6.00	35.00	5.00	5.50	3.90	6.02	
6/18/2020	02:28:57		CB60-2			1.78	264663.15	2487776.42	105.00	6.00	35.00	5.00	5.60	3.97	6.13	
6/18/2020	02:30:51		CB60-2			1.53	264661.75	2487782.31	105.00	6.00	35.00	5.00	5.30	3.76	5.80	
6/18/2020	02:32:28		CB60-2			3.00	264661.85	2487784.53	105.00	6.00	35.00	5.00	8.00	5.67	8.75	
6/18/2020	02:35:57		CB60-2			1.55	264658.60	2487795.41	105.00	6.00	35.00	5.00	5.40	3.83	5.91	
6/18/2020	02:37:42		CB60-2			1.88	264656.69	2487801.32	105.00	6.00	35.00	5.00	7.00	4.96	7.66	
6/18/2020	02:39:36		CB60-2			1.47	264656.23	2487806.32	105.00	6.00	35.00	5.00	4.90	3.48	5.36	
6/18/2020	02:41:23		CB60-2			1.47	264655.26	2487810.44	105.00	6.00	35.00	5.00	5.50	3.90	6.02	
6/18/2020	02:43:03		CB60-2			1.55	264654.72	2487815.41	105.00	6.00	35.00	5.00	4.90	3.48	5.36	
6/18/2020	02:44:58		CB60-2			1.62	264652.48	2487822.94	105.00	6.00	35.00	5.00	5.00	3.55	5.47	
6/18/2020	02:47:23		CB60-2			1.27	264651.08	2487827.98	105.00	6.00	35.00	5.00	4.50	3.19	4.92	
6/18/2020	02:48:40		CB60-2			1.67	264650.15	2487828.90	105.00	6.00	35.00	5.00	5.50	3.90	6.02	
6/18/2020	02:50:38		CB60-2			1.80	264645.29	2487835.65	105.00	6.00	35.00	5.00	6.70	4.75	7.33	
6/18/2020	02:52:27		CB60-2			4.85	264647.86	2487835.39	105.00	6.00	35.00	5.00	4.30	3.05	4.71	
6/18/2020	02:57:19		CB60-2			1.42	264647.47	2487835.41	105.00	6.00	35.00	5.00	4.90	3.48	5.36	
6/18/2020	02:58:45		CB60-2			1.30	264647.30	2487835.47	105.00	6.00	35.00	5.00	4.50	3.19	4.92	
6/18/2020	03:00:04		CB60-2			1.03	264647.24	2487835.48	105.00	6.00	35.00	5.00	3.30	2.34	3.61	
6/18/2020	03:29:54		CB60-2			2.00	264646.36	2487841.28	105.00	6.00	35.00	5.00	4.60	3.26	5.03	
6/18/2020	03:31:57		CB60-2			2.45	264646.14	2487841.56	105.00	6.00	35.00	5.00	4.70	3.33	5.14	
6/18/2020	03:34:35		CB60-2			2.03	264647.28	2487843.81	105.00	6.00	35.00	5.00	4.80	3.40	5.25	
6/18/2020	03:36:38		CB60-2			4.00	264646.40	2487846.71	105.00	6.00	35.00	5.00	4.60	3.26	5.03	
6/18/2020	03:40:41		CB60-2			2.37	264646.15	2487847.99	105.00	6.00	35.00	5.00	7.90	5.60	8.64	
6/18/2020	03:43:05		CB60-2			1.43	264640.07	2487848.49	105.00	6.00	35.00	5.00	4.60	3.26	5.03	
6/18/2020	03:44:32		CB60-2			5.22	264643.41	2487852.88	105.00	6.00	35.00	5.00	4.70	3.33	5.14	
6/18/2020	03:49:47		CB60-2			1.47	264644.03	2487852.78	105.00	6.00	35.00	5.00	4.60	3.26	5.03	
6/18/2020	03:52:48		CB60-2			1.73	264643.04	2487858.67	105.00	6.00	35.00	5.00	4.70	3.33	5.14	
6/18/2020	03:54:34		CB60-2			1.58	264642.98	2487858.68	105.00	6.00	35.00	5.00	4.70	3.33	5.14	
6/18/2020	03:56:11		CB60-2			1.73	264643.57	2487859.17	105.00	6.00	35.00	5.00	3.60	2.55	3.94	
6/18/2020	04:53:39		CB60-2			2.53	264637.15	2487742.00	105.00	6.00	35.00	5.00	4.80	3.40	5.25	
6/18/2020	04:56:13		CB60-2			2.07	264636.25	2487742.36	105.00	6.00	35.00	5.00	7.70	5.46	8.43	
6/18/2020	04:58:19		CB60-2			6.52	264636.49	2487742.66	105.00	6.00	35.00	5.00	9.00	6.38	9.85	
6/18/2020	05:10:44		CB60-2			1.97	264634.28	2487754.97	105.00	6.00	35.00	5.00	4.60	3.26	5.03	
6/18/2020	05:12:43		CB60-2			2.98	264634.60	2487754.86	105.00	6.00	35.00	5.00	9.70	6.88	10.61	
6/18/2020	05:15:44		CB60-2			1.40	264633.93	2487761.18	105.00	6.00	35.00	5.00	4.70	3.33	5.14	
6/18/2020	05:17:09		CB60-2			8.90	264633.21	2487761.19	105.00	6.00	35.00	5.00	4.60	3.26	5.03	
6/18/2020	05:27:02		CB60-2			1.78	264632.84	2487773.85	105.00	6.00	35.00	5.00	4.90	3.48	5.36	
6/18/2020	05:28:50		CB60-2			1.52	264633.01	2487774.04	105.00	6.00	35.00	5.00	4.70	3.33	5.14	
6/18/2020	05:30:23		CB60-2			2.02	264632.21	2487778.99	105.00	6.00	35.00	5.00	4.90	3.48	5.36	
6/18/2020	05:32:25		CB60-2			1.65	264632.30	2487779.05	105.00	6.00	35.00	5.00	4.70	3.33	5.14	
6/18/2020	05:34:06		CB60-2			9.00	264631.20	2487785.27	105.00	6.00	35.00	5.00	5.40	3.83	5.91	
6/18/2020	05:43:07		CB60-2			1.72	264631.71	2487783.48	105.00	6.00	35.00	5.00	5.30	3.76	5.80	
6/18/2020	05:44:53		CB60-2			1.47	264631.42	2487783.93	105.00	6.00	35.00	5.00	4.80	3.40	5.25	
6/18/2020	05:46:22		CB60-2			6.97	264631.24	2487790.07	105.00	6.00	35.00	5.00	6.00	4.26	6.57	
6/18/2020	05:53:21		CB60-2			21.27	264631.63	2487791.58	105.00	6.00	35.00	5.00	11.90	8.44	13.02	
Averages						**5.71**				**6.00**	**35.00**	**5.00**	**5.48**	**3.88**		
Totals						**502.40**							**481.80**	**341.70**		

CB60-2 1.5in. Stone

Theoretical Volume Required	
Design Footprint (ft^2)	15,892
Target Thickness (ft)	0.33
Required Volume (yd^3)	196.20

Calculated Thickness from Spreader Scale	
Tons From Spreader Scale	481.80
Unit Weight Conversion	1.41
Volume Spread (yd^3)	341.70
Calculated Thickness (ft)	0.58

Calculated Thickness from Barge Survey	
Barge Survey Volume (yd^3)	323.70
Calculated Thickness (ft)	0.55

200617 Barge Survey #1 1.5" rock

Scale
1in=8ft

Total Volume: 99.6 cy

Drawing Prepared By:
Kevin Wiskow

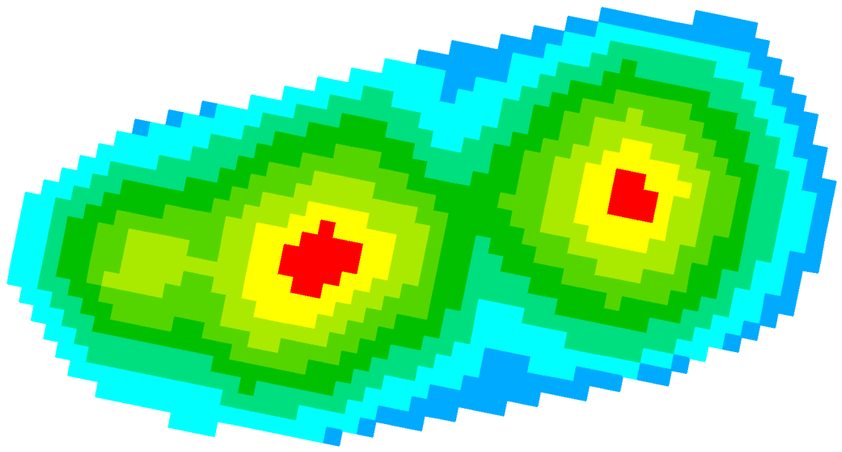
Drawing Reviewed By:

Operational Unit 4

Time: 10:30 am

Date: 06/17/20

N



>= 592.00
591.00
590.00
589.00
588.00
587.00
586.00
585.00
584.00
< 584.00

Scale: 1 Inch = 10.00 Feet

10 20 40 60 80 Feet

Marine Professionals Since 1919
BRENNAN

200617 Barge Survey #2 1.5" Stone

Scale
1in=8ft

Total Volume: 132.5 cy

Drawing Prepared By:
Kevin Wiskow

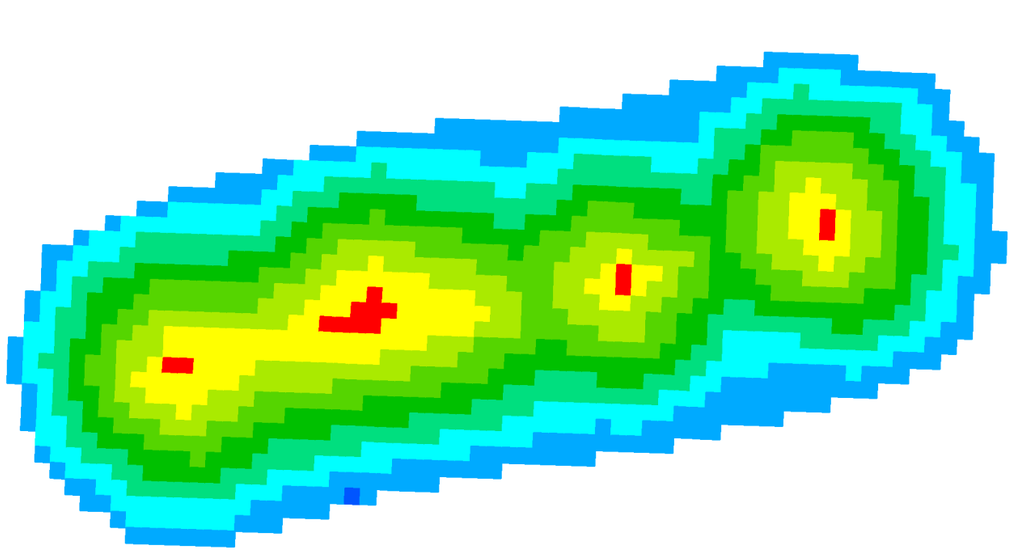
Drawing Reviewed By:

Operational Unit 4

Time: 5:00 pm

Date: 06/17/20

N



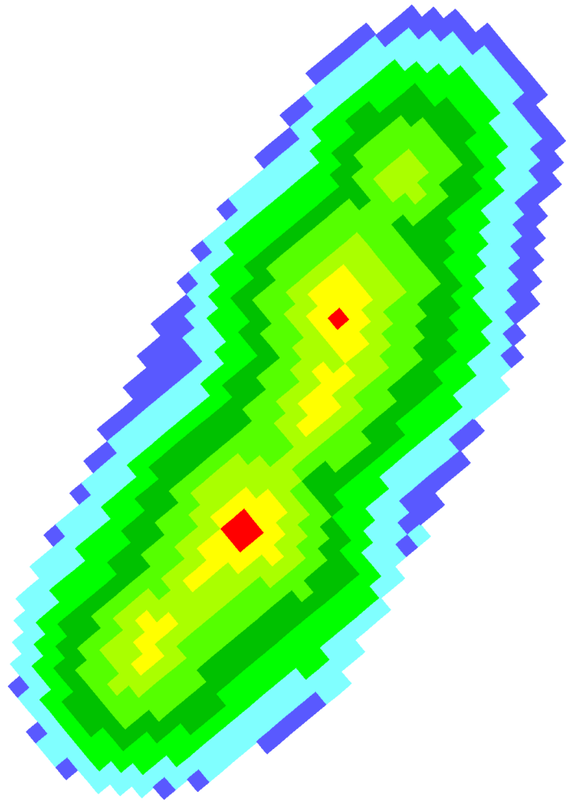
>= 592.00
591.00
590.00
589.00
588.00
587.00
586.00
585.00
584.00
< 584.00

Scale: 1 Inch = 10.00 Feet

10 20 40 60 80 Feet

BRENNAN	200617 Barge Survey #3 1.5" Stone	Scale: 1" = 10'	Operational Unit 4
Total Volume: 91.6 CY	Barge Type: Material Barge	Time: 11:20 P.M.	Prepared By: D.Sailer Reviewed By:
			QA Survey Date: 06/17/2019

N



< 584.00
584.00 - 584.99
585.00 - 585.99
586.00 - 586.99
587.00 - 587.99
588.00 - 588.99
589.00 - 589.99
590.00 - 590.99
591.00 - 591.99
>= 592.00

Scale: 1 Inch = 10.00 Feet

10 20 40 60 80 Feet

Armor Stone Thickness Verification and Approval Form

OU4-CB60-2 (B2 Cap Type)							
Area (acres)	**Required Thickness (inches)**	**Bathymetric Survey Thickness (inches)**	**Required Volume (cubic yards)**	**Placed Volume Hydrographic Survey (cubic yards)**	**Placed Volume Barge Survey (cubic yards)**	**Calculated Thickness Based off Reported Spreader Tonnage (inches)**	**Calculated Thickness Based of Barge Survey (inches)**
0.36	4.00	N/A	196.20	N/A	323.70	6.96	6.60

Recommended Path Forward:

Tetra Tech recommends use of J.F. Brennan's volumetric data to accept this area.

Prepared by: HNK Date: 6/19/2020

Reviewed by: BSW Date: 6/24/2020

A/OT Acceptance: _____ Date: _____

OU4-CB60-2 & CB60-3												
ID	Date Sampled	Sand Result (inches)	Sand/Sediment Mix (inches)	Total Thickness Sand and Sediment Mix (inches)		Required Thickness (inches)	Mudline Elevation	Proposed Coordinates		Survey Coordinates		Comments
								Northing	Easting	Northing	Easting	
CB60-3-C1	9/20/2019	6.5	0.0	6.5	6.5	6.0	555.34	264733.91	2488588.47	264737.75	2488586.37	
CB60-3-C2	9/20/2019	7.0	0.0	7.0	7.0	6.0	554.01	264883.29	2488640.01	264883.79	2488638.45	
CB60-3-C3	9/20/2019	7.0	0.0	7.0	7.0	6.0	565.13	264943.42	2488626.32	264942.54	2488624.70	
CB60-3-C4	9/20/2019	6.5	0.0	6.5	6.5	6.0	565.64	264813.42	2488578.38	264815.62	2488581.18	
CB60-3-C5	9/20/2019	6.5	0.0	6.5	6.5	6.0	567.17	264659.83	2488525.15	264656.67	2488525.13	
CB60-3-C6	9/20/2019	13.0	0.0	13.0	13.0	6.0	570.37	264739.76	2488517.22	264739.41	2488514.29	
CB60-3-C7	9/20/2019	10.0	0.0	10.0	10.0	6.0	571.60	264880.53	2488565.27	264880.77	2488560.63	
CB60-3-C8	9/20/2019	9.0	0.0	9.0	9.0	6.0	571.62	264995.09	2488602.84	264993.15	2488601.32	
CB60-3-C9	10/11/2019	8.0	0.0	8.0	8.0	6.0	557.55	264984.99	2488672.49	264985.78	2488672.13	
CB60-3-C10	10/11/2019	10.5	0.0	10.5	10.5	6.0	549.23	264933.58	2488692.46	264932.62	2488694.12	
CB60-3-C11	10/11/2019	10.5	0.0	10.5	10.5	6.0	550.76	264802.80	2488649.44	264806.84	2488651.47	
CB60-3-C12	10/11/2019	14.0	0.0	14.0	14.0	6.0	551.28	264661.70	2488600.82	264667.66	2488600.28	
CB60-3-C13	10/11/2019	7.0	0.0	7.0	7.0	6.0	548.70	264694.19	2488650.99	264697.08	2488649.53	
CB60-3-C14	10/11/2019	8.0	0.0	8.0	8.0	6.0	549.21	264839.93	2488698.67	264838.93	2488694.22	
CB60-3-C15	10/11/2019	2.5	0.0		2.5	6.0	548.94	264960.44	2488737.76	264962.49	2488734.86	
CB60-3-C15A	10/11/2019	0.0	0.0		0.0	6.0	549.25			264957.19	2488734.38	Step-Out Core
CB60-3-C15B	10/11/2019	5.5	0.0	3.1	5.5	6.0	549.19			264958.36	2488727.12	Step-Out Core
CB60-3-C15C	10/11/2019	1.5	0.0		1.5	6.0	549.41			264967.94	2488725.46	Step-Out Core
CB60-3-C15D	10/11/2019	6.0	0.0		6.0	6.0	548.81			264967.30	2488733.84	Step-Out Core
Average		7.3	0.0	8.4	7.3							
Median		7.0	0.0	8.0	7.0							
Standard Deviation		3.5	0.0	2.8	3.5							

Recommended Path Forward:

Verification samples were collected at 15 locations within OU4-CB60-2 & CB60-3. 14 of 15 samples meet or exceed the minimum thickness requirement of 6-inches. However, 1 locations did not meet the requirements. Additional step-outs were collected resulting in 14 out of 15 locations passing within the area. Tetra Tech is recommending accepting this area on an exception basis per OTS held 10/11/2019 (LFRR-19-0249 CB60-3 Extension Sand Verification Results OTS).

Prepared by: LDV Date: 10/11/2019 Reviewed by: HNK Date: 10/11/2019

A/OT Acceptance: Date: 10/22/19 on an exception basis

Armor Stone Thickness Verification and Approval Form

OU4-CB60-3 (D50=3")									
Area of Initial Cap (acres)	Area of Buttress (acres)	Required Thickness (inches)	Average Poling Thickness (inches)	Post-Placement Bathymetric Survey Thickness Initial Cap (inches)	Post-Placement Bathymetric Survey Thickness Buttress (inches)	Calculated Average Thickness with Consolidation	Placed Volume Initial Cap (cubic yards)	Placed Volume Buttress (cubic yards)	Average Volume Thickness based off Barge Survey (inches)
0.92	0.66	6.0	24.11	10.17	9.48	N/A	1327.0	786.0	11.35

OU4-CB60-3 (D50=3")										
ID	Pre-Placement Poling Date	Date Sampled (Post Placement)	Stone Result (inches)	Cap Type	Required Thickness (inches)	Mudline	Proposed Coordinates		Survey Coordinates		Comments
							Northing	Easting	Northing	Easting	
CB60-3-G1	9/24/2019	10/22/2019	60.7	B-SRA	6.0	559.3	264668.15	2488566.99	264665.47	2488566.18	
CB60-3-G2	9/24/2019	10/22/2019	41.9	B-SRA	6.0	558.7	264823.69	2488619.13	264823.68	2488619.21	
CB60-3-G3	9/24/2019	10/22/2019	43.9	B-SRA	6.0	558.9	264953.97	2488662.21	264952.77	2488661.70	
CB60-3-G4	9/24/2019	10/22/2019	1.4	B-SRA	6.0	566.0	264891.63	2488606.26	264889.52	2488607.40	
CB60-3-G5	9/24/2019	10/22/2019	13.7	B-SRA	6.0	567.5	264721.73	2488548.32	264719.35	2488545.95	
CB60-3-G6	9/24/2019	10/22/2019	13.9	B-SRA	6.0	571.2	264661.87	2488496.33	264663.12	2488498.12	
CB60-3-G7	9/24/2019	10/22/2019	8.4	B-SRA	6.0	571.4	264833.12	2488550.31	264829.66	2488552.57	
CB60-3-G8	9/24/2019	10/22/2019	8.9	B-SRA	6.0	572.5	264972.27	2488595.37	264972.35	2488596.52	

Average 24.11
Median 13.81
Standard Deviation 21.56

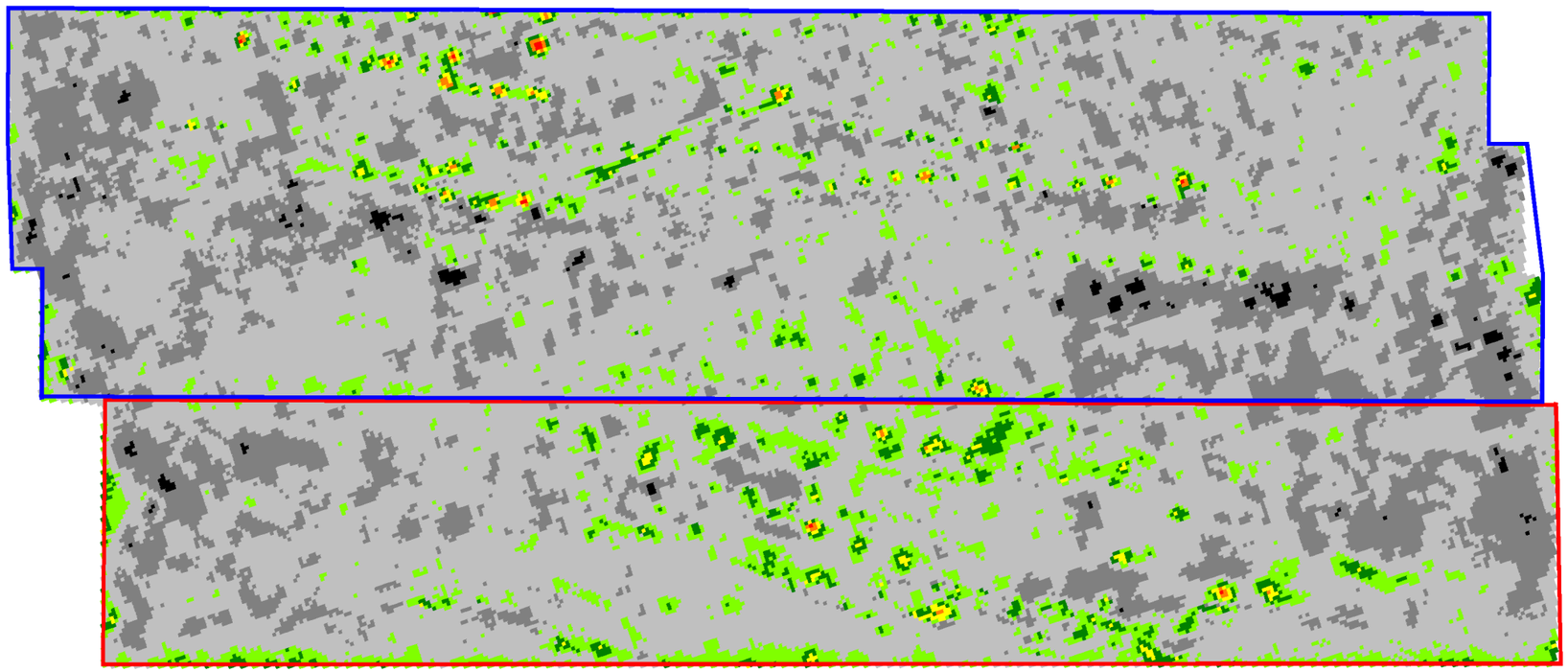
Recommended Path Forward:
Verification samples were collected at 8 locations within OU4-CB60-3. 7 of 8 samples meet or exceed the minimum thickness requirement of 6-inches. Tetra Tech recommends use of the J.F. Brennan survey and volumetric data to accept this area on an exception basis.

Prepared by: HNK Date: 10/24/2019 Reviewed by: BSW Date: 10/24/2019

A/OT Acceptance: Date: 10/30/19 on an exception BASIS

191023 Post 3inch with extension area vs 191015 Post .75inch plus 6 inch offset

CB60 initial: 1,327 cy
CB60 extension: 786 cy
Area Complete: 90.4%



N

>= 1.00
0.50 - 0.99
0.00 - 0.49
-0.25 - -0.01
-0.50 - -0.26
-0.75 - -0.51
-1.00 - -0.76
-1.50 - -1.01
-2.00 - -1.51
-3.00 - -2.01
-4.00 - -3.01
-5.00 - -4.01
< -5.00

Scale: 1 Inch = 40.00 Feet

25 50 100 150 200 Feet

OU4-CB60-3												
ID	Date Sampled	Sand Result (Inches)	Sand/Sediment Mix (Inches)	Total Thickness Sand and Sediment Mix (Inches)		Required Thickness (Inches)	Mudline Elevation	Proposed Coordinates		Survey Coordinates		Comments
								Northing	Easting	Northing	Easting	
CB60-3-C1	9/20/2019	6.5	0.0	6.5	6.5	6.0	555.34	264733.91	2488588.47	264737.75	2488586.37	
CB60-3-C2	9/20/2019	7.0	0.0	7.0	7.0	6.0	554.01	264883.29	2488640.01	264883.79	2488638.45	
CB60-3-C3	9/20/2019	7.0	0.0	7.0	7.0	6.0	565.13	264943.42	2488626.32	264942.54	2488624.70	
CB60-3-C4	9/20/2019	6.5	0.0	6.5	6.5	6.0	565.64	264813.42	2488578.38	264815.62	2488581.18	
CB60-3-C5	9/20/2019	6.5	0.0	6.5	6.5	6.0	567.17	264659.83	2488525.15	264656.67	2488525.13	
CB60-3-C6	9/20/2019	13.0	0.0	13.0	13.0	6.0	570.37	264739.76	2488517.22	264739.41	2488514.29	
CB60-3-C7	9/20/2019	10.0	0.0	10.0	10.0	6.0	571.60	264880.53	2488565.27	264880.77	2488560.63	
CB60-3-C8	9/20/2019	9.0	0.0	9.0	9.0	6.0	571.62	264995.09	2488602.84	264993.15	2488601.32	
CB60-3-C9	10/11/2019	8.0	0.0	8.0	8.0	6.0	557.55	264984.99	2488672.49	264985.78	2488672.13	
CB60-3-C10	10/11/2019	10.5	0.0	10.5	10.5	6.0	549.23	264933.58	2488692.46	264932.62	2488694.12	
CB60-3-C11	10/11/2019	10.5	0.0	10.5	10.5	6.0	550.76	264802.80	2488649.44	264806.84	2488651.47	
CB60-3-C12	10/11/2019	14.0	0.0	14.0	14.0	6.0	551.28	264661.70	2488600.82	264667.66	2488600.28	
CB60-3-C13	10/11/2019	7.0	0.0	7.0	7.0	6.0	548.70	264694.19	2488650.99	264697.08	2488649.53	
CB60-3-C14	10/11/2019	8.0	0.0	8.0	8.0	6.0	549.21	264839.93	2488698.67	264838.93	2488694.22	
CB60-3-C15	10/11/2019	2.5	0.0		**2.5**	6.0	548.94	264960.44	2488737.76	264962.49	2488734.86	
CB60-3-C15A	10/11/2019	0.0	0.0		**0.0**	6.0	549.25			264957.19	2488734.38	Step-Out Core
CB60-3-C15B	10/11/2019	5.5	0.0	**3.1**	**5.5**	6.0	549.19			264958.36	2488727.12	Step-Out Core
CB60-3-C15C	10/11/2019	1.5	0.0		**1.5**	6.0	549.41			264967.94	2488725.46	Step-Out Core
CB60-3-C15D	10/11/2019	6.0	0.0		6.0	6.0	548.81			264967.30	2488733.84	Step-Out Core
Average		7.3	0.0	8.4	7.3							
Median		7.0	0.0	8.0	7.0							
Standard Deviation		3.5	0.0	2.8	3.5							

Recommended Path Forward:

Verification samples were collected at 15 locations within OU4-CB60-3. 14 of 15 samples meet or exceed the minimum thickness requirement of 6-inches. However, 1 location did not meet the requirements. Additional step-outs were collected resulting in 14 out of 15 locations passing within the area. Tetra Tech is recommending accepting this area on an exception basis per OTS held 10/11/2019 (LFRR-19-0249 CB60-3 Extension Sand Verification Results OTS).

Prepared by: HNK Date: 11/18/2019 Reviewed by: BSW Date: 11/18/2019

A/OT Acceptance: _____ Date: _____

OU4-CB61-1											
ID	Date Sampled	Sand Result (Inches)	Sand/Sediment Mix (Inches)	Total Thickness Sand and Sediment Mix (Inches)	Required Thickness (Inches)	Mudline Elevation	Proposed Coordinates		Survey Coordinates		Comments
							Northing	Easting	Northing	Easting	
CB61-1-C1	7/13/2020	8.0	0.0	8.0	6.0	570.72	262505.92	2488688.38	262506.03	2488694.52	
CB61-1-C2	7/13/2020	11.5	0.0	11.5	6.0	573.09	262533.31	2488656.31	262532.51	2488655.57	
CB61-1-C3	7/13/2020	10.5	0.0	10.5	6.0	570.91	262533.97	2488602.82	262535.67	2488599.10	
CB61-1-C4	7/13/2020	26.5	0.0	26.5	6.0	571.88	262554.98	2488571.42	262556.82	2488571.97	

Average	14.13	0.00	14.13
Median	11.00	0.00	11.00
Standard Deviation	8.38	0.00	8.38

Recommended Path Forward:

Verification samples were collected at 4 locations within OU4-CB61-1. 4 of 4 samples meet or exceed the minimum thickness requirement of 6-inches, therefore, no further action is required.

Prepared by: HNK Date: 7/14/2020 Reviewed by: BSW Date: 7/14/2020

A/OT Acceptance: _____ Date: _____

OU4-CB61-1
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	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	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-CB61-1
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

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

CAD FILE: OU4-CB61-1.dwg
DRAWN BY: DAVID.FRISQUE
DATE: August 17, 2020
LAST REVISED: August 17, 2020
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 11-011

OU4-CB61-1
REMEDY CAP SAND AND ARMOR STONE THICKNESS RESULTS AND LOCATIONS

P:\LLC\CAD\Field Engineering\Capping\2020\OU4-CB61\DWG\Post-Dredge\OU4-CB61-1.dwg

Armor Stone Placement Thickness Verification and Approval Form

OU4-CB61-1 (D50=1.5") Bathymetric & Volumetric Survey								
Survey Date	**Area (square feet)**	**Area Complete**	**Required Thickness (inches)**	**Bathymetric Survey Thickness (inches)**	**Required Volume (cubic yards)**	**Placed Volume Hydrographic Survey (cubic yards)**	**Placed Volume Barge Survey (cubic yards)**	**Barge Survey Thickness (inches)**
7/17/2020	5,236.0	94%	4.0	8.3	64.6	133.9	159.4	9.9

OU4-CB61-1 (D50=1.5")									
ID	**Date Sampled**	**Average Thickness (Inches)**	**Required Thickness (Inches)**	**Mudline**	**Pre-Placement Coordinates**		**Survey Coordinates**		**Comments**
					Northing	**Easting**	**Northing**	**Easting**	
CB61-1-G1	7/21/2020	9.3	4.0	573.0	262521.37	2488695.26	262520.15	2488697.68	Bucket not found; Poling method used
CB61-1-G2	7/21/2020	12.2	4.0	573.8	262523.46	2488643.72	262525.69	2488643.42	Bucket not found; Poling method used
CB61-1-G3	7/21/2020	8.8	4.0	573.4	262548.98	2488609.34	262549.26	2488608.28	Bucket not found; Poling method used
CB61-1-G4	7/21/2020	**2.6**	4.0	570.2	262541.42	2488563.63	262539.56	2488562.46	Bucket not found; Poling method used

Average	8.23
Median	9.06
Standard Deviation	4.07

Recommended Path Forward:

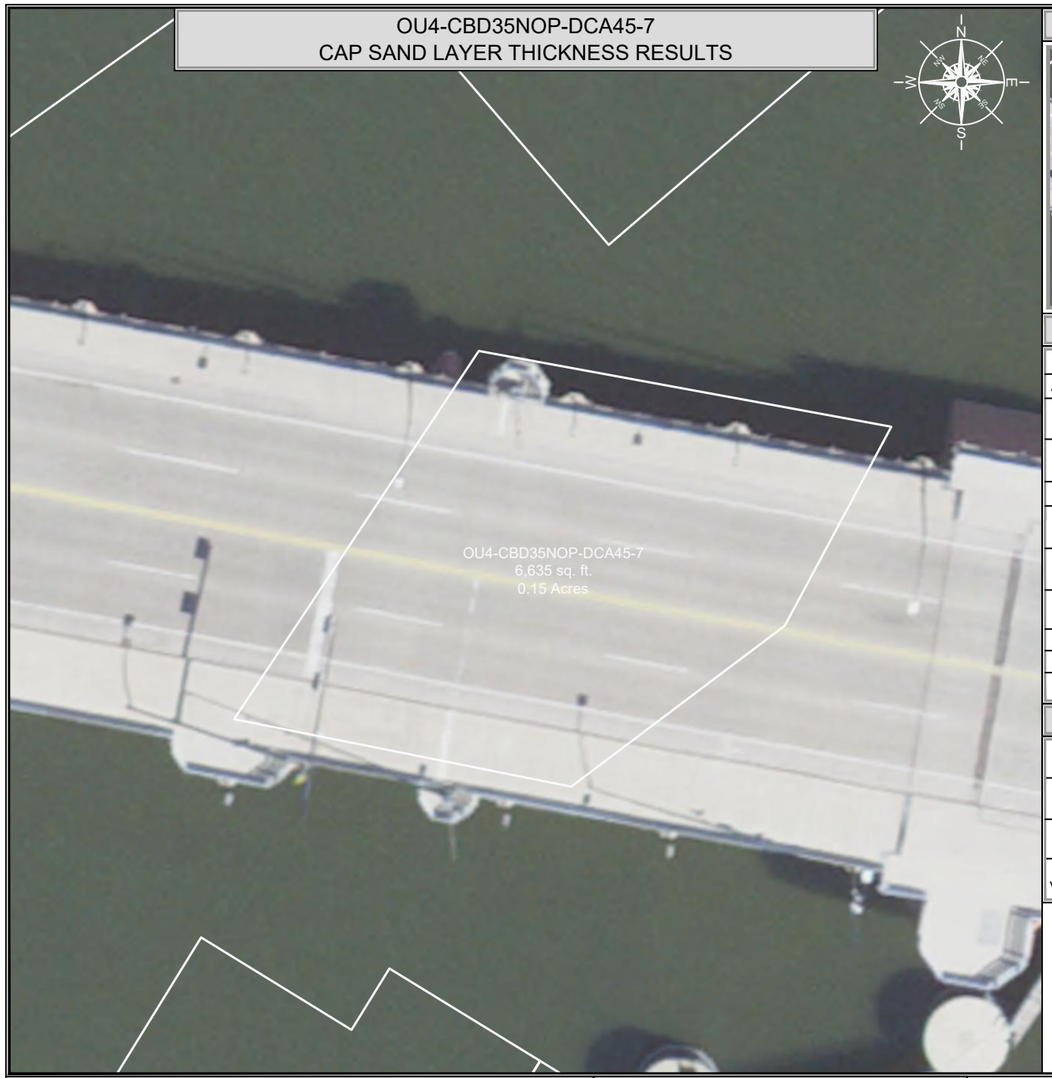
Armor Stone D50=1.5" was placed and surveyed within OU4-CB61-1. The armor stone thicknesses based on bathymetric survey meet or exceed the minimum thickness requirement of 4-inches. Furthermore, thickness verification poling was conducted at 4 locations. 3 of 4 samples meet or exceed the minimum thickness requirement of 4-inches. Tetra Tech recommends accepting this area on an exception basis.

Prepared by: HNK Date: 7/28/2020

Reviewed by: BSW Date: 7/28/2020

A/OT Acceptance: _____ Date: _____

OU4-CBD35NOP-DCA45-7
CAP SAND LAYER THICKNESS RESULTS



INDEX MAP

CAP B3 REQUIREMENTS

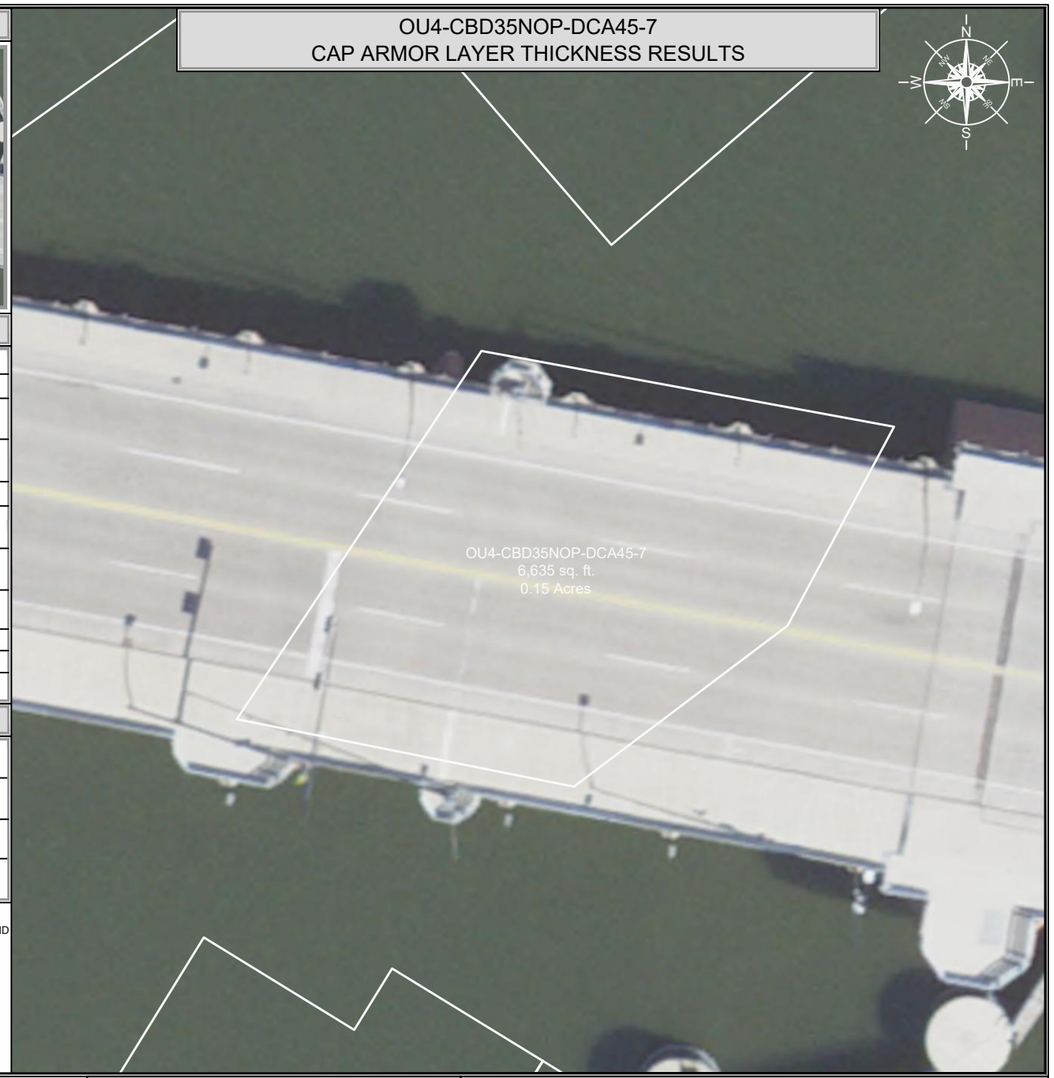
>10 and <50 PPM SURFICIAL	
ASSUMED SAND MIXING LAYER THICKNESS	3.0"
SAND CHEMICAL ISOLATION LAYER THICKNESS	3.0"
ASSUMED SAND OVERPLACEMENT THICKNESS	3.0"
MINIMUM ARMOR LAYER THICKNESS	4.0"
ASSUMED ARMOR OVERPLACEMENT THICKNESS	3.0"
MINIMUM QUARRY SPALL ARMOR THICKNESS	NA
QUARRY SPALL OVERPLACEMENT THICKNESS	NA
MINIMUM CAP THICKNESS	10.0"
ASSUMED AVERAGE CAP THICKNESS	16.0"
D50 STONE = 0.75"	

SAMPLE DATA

NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED	*
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA	*
NUMBER OF ARMOR THICKNESS VERIFICATION SAMPLES COLLECTED	*
NUMBER OF ARMOR THICKNESS VERIFICATION SAMPLES SATISFYING CRITERIA	*

NOTE:
1. J.F. BRENNAN QC DATA WAS USED FOR VOLUMETRIC SAND AND ARMOR STONE VERIFICATION.

OU4-CBD35NOP-DCA45-7
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

OU# - # - #

OU# — OPERABLE UNIT
— CAP/COVER AREA
— CAP/COVER MANAGEMENT UNIT

CAP/SAND COVER MANAGEMENT UNIT (CMU/SCMU)

SC = SAND COVER
SHC = SHORELINE CAP
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CA = TYPE "A" CAP
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CC = TYPE "C" CAP

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

CAD FILE: OU4-CBD35NOP-DCA45-7.dwg
DRAWN BY: DAVID.FRISQUE
DATE: August 14, 2020
LAST REVISED: August 14, 2020
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 11-006

OU4-CBD35NOP-DCA45-7
1st RESIDUAL CAP SAND AND ARMOR STONE THICKNESS RESULTS AND LOCATIONS

P:\LLC\CAD\Field Engineering\Capping\2020\OU4-CBD35NOP-DCA45-7\DWG\Post-Dredge\OU4-CBD35NOP-DCA45-7.dwg

Sand Thickness Verification and Approval Form

OU4-CBD35NOP-DCA45-7							
Area (acres)	**Required Thickness (inches)**	**Bathymetric Survey Thickness (inches)**	**Required Volume (cubic yards)**	**Placed Volume Hydrographic Survey (cubic yards)**	**Placed Volume Barge Survey (cubic yards)**	**Calculated Thickness Based off Reported Spreader Tonnage (inches)**	**Calculated Thickness Based of Barge Survey (inches)**
0.15	6.00	N/A	203.00	N/A	242.40	N/A	11.84

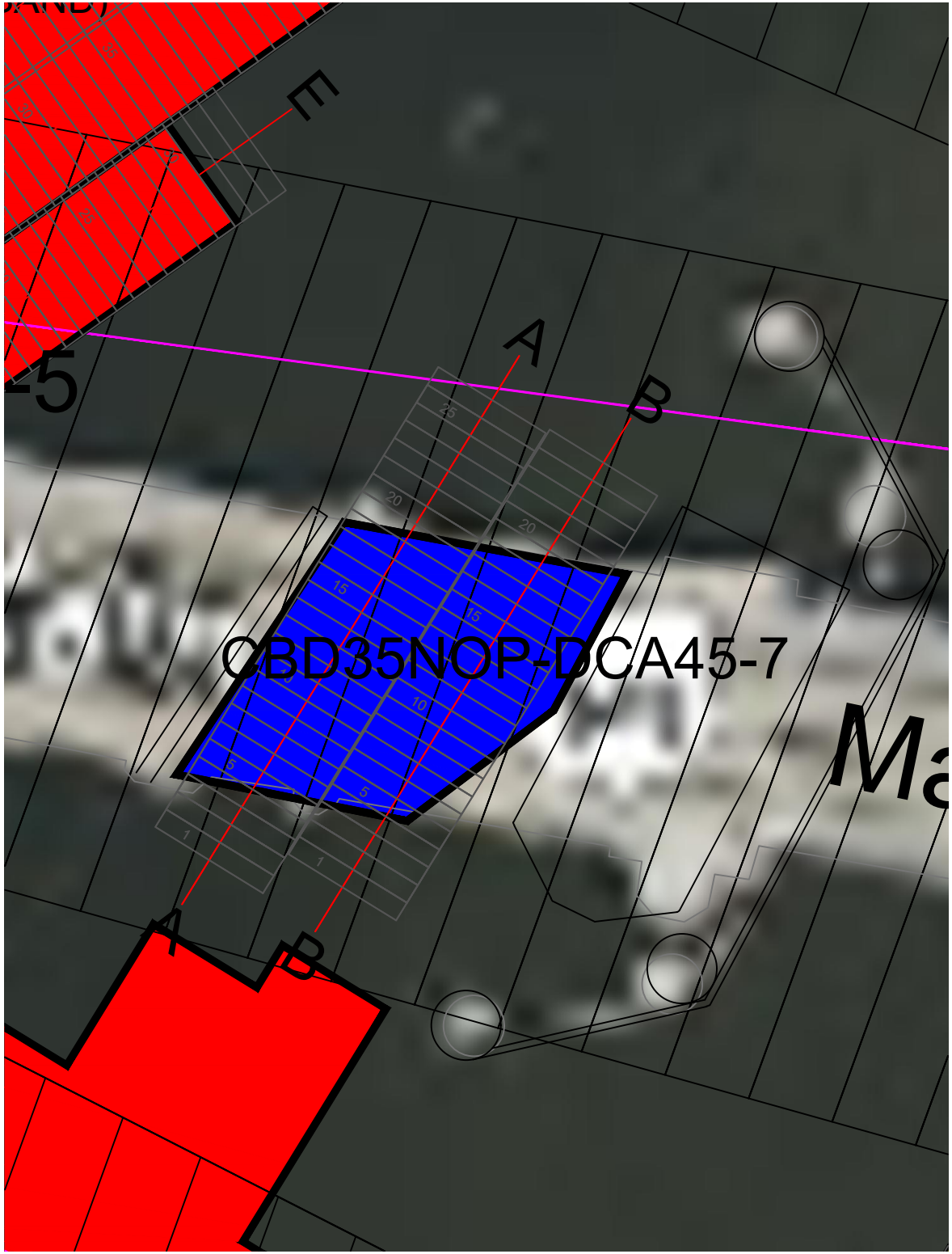
Recommended Path Forward:

Tetra Tech recommends use of J.F. Brennan's volumetric data to accept this area.

Prepared by: HNK Date: 4/24/2020

Reviewed by: BSW Date: 4/24/2020

A/OT Acceptance: _____ Date: _____


E
A
B
CBD35NOP-DCA45-7
A
B

Step Detail Report

Step Start Date	Step Start Time	Area	SMU/CMU	Lane	Step Number	Duration (min)	Northing	Easting	Density (#/cu.ft.)	Length (ft)	Width (ft)	Height (in)	Weight (tons)	Cubic Yards	Inches/Step	Remarks
4/23/2020	09:09:56		CBD35NOP-DCA45-7	B	19	9.05	256087.61	2486030.17	112.00	6.00	38.00	11.50	27.20	17.78	13.11	
4/23/2020	09:35:16		CBD35NOP-DCA45-7	B	20	8.70	256093.79	2485991.28	112.00	6.00	38.00	11.50	27.50	17.97	13.26	
4/23/2020	10:32:04		CBD35NOP-DCA45-7	A	19	4.75	255984.92	2485961.53	112.00	6.00	38.00	11.50	13.70	8.95	6.61	
4/23/2020	10:37:20		CBD35NOP-DCA45-7	A	18	3.77	255989.69	2485964.61	112.00	6.00	38.00	11.50	13.70	8.95	6.61	
4/23/2020	10:41:36		CBD35NOP-DCA45-7	B	3	3.70	255993.84	2485969.77	112.00	6.00	38.00	11.50	13.40	8.76	6.46	
4/23/2020	10:45:48		CBD35NOP-DCA45-7	B	4	6.93	255998.31	2485972.52	112.00	6.00	38.00	11.50	23.70	15.49	11.43	
4/23/2020	10:53:15		CBD35NOP-DCA45-7	B	5	18.67	255998.50	2485972.69	112.00	6.00	38.00	11.50	59.60	38.95	28.74	
4/23/2020	11:17:06		CBD35NOP-DCA45-7	B	6	4.45	255990.89	2485923.04	112.00	6.00	38.00	11.50	13.40	8.76	6.46	
4/23/2020	11:22:18		CBD35NOP-DCA45-7	A	2	3.55	255997.00	2485926.97	112.00	6.00	38.00	11.50	13.20	8.63	6.36	
4/23/2020	11:26:21		CBD35NOP-DCA45-7	A	3	3.85	256001.73	2485930.12	112.00	6.00	38.00	11.50	13.30	8.69	6.41	
4/23/2020	11:30:58		CBD35NOP-DCA45-7	A	4	43.75	256007.33	2485933.31	112.00	6.00	38.00	11.50	116.30	76.01	56.07	
4/23/2020	12:15:44		CBD35NOP-DCA45-7	A	5	11.37	255996.86	2485961.16	112.00	6.00	38.00	11.50	34.30	22.42	16.54	
4/23/2020	12:27:22		CBD35NOP-DCA45-7	A	6	3.43	255994.34	2485958.79	112.00	6.00	38.00	11.50	2.10	1.37	1.01	
Averages						**9.69**				**6.00**	**38.00**	**11.50**	**28.57**	**18.67**		
Totals						**125.97**							**371.40**	**242.75**		

Pre-Placement Volume Calculations to Achieve Desired Thickness

CBD35NOP-DCA45-7 (Sand)		
Area	6,635	ft^2
Thickness	0.825	ft
Volume	5,474	ft^3
Volume	203	CY
Tons	310.19	tons

CBD35NOP-DCA45-7 (0.75" Stone)		
Area	6,635	ft^2
Thickness	0.63	ft
Volume	4,180	ft^3
Volume	155	CY
Tons	236.87	tons

BRENNAN
Marine Professionals Since 1919

200423 Barge Survey #1 Sand

Scale
1in=10ft

Total Volume: 242.4 cy

Drawing Prepared By:
Jack Radenz

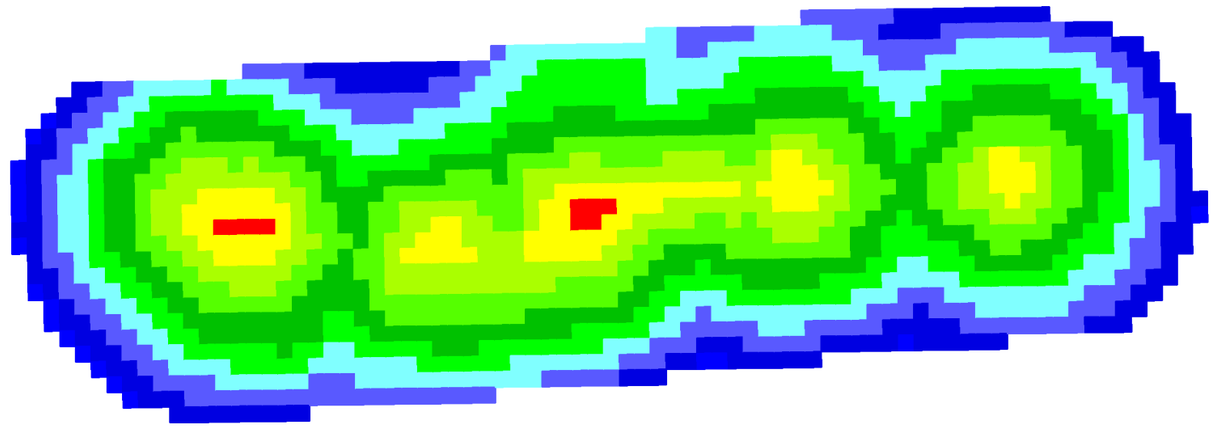
Drawing Reviewed By:

Operational Unit 4

Time: 8:00 am

Date: 04/23/2020

N



Scale: 1 Inch = 10.00 Feet

10 20 40 60 80 Feet

		SCD35NOP-DCA45-7 Area	6,635	ft^2
Barge Survey Volume	242.4 cy	**Calculated Thickness**	**11.84**	**in.**

Armor Stone Thickness Verification and Approval Form

OU4-CBD35NOP-DCA45-7							
Area (acres)	**Required Thickness (inches)**	**Bathymetric Survey Thickness (inches)**	**Required Volume (cubic yards)**	**Placed Volume Hydrographic Survey (cubic yards)**	**Placed Volume Barge Survey (cubic yards)**	**Calculated Thickness Based off Reported Spreader Tonnage (inches)**	**Calculated Thickness Based of Barge Survey (inches)**
0.15	4.00	N/A	82.00	N/A	117.10	N/A	5.72

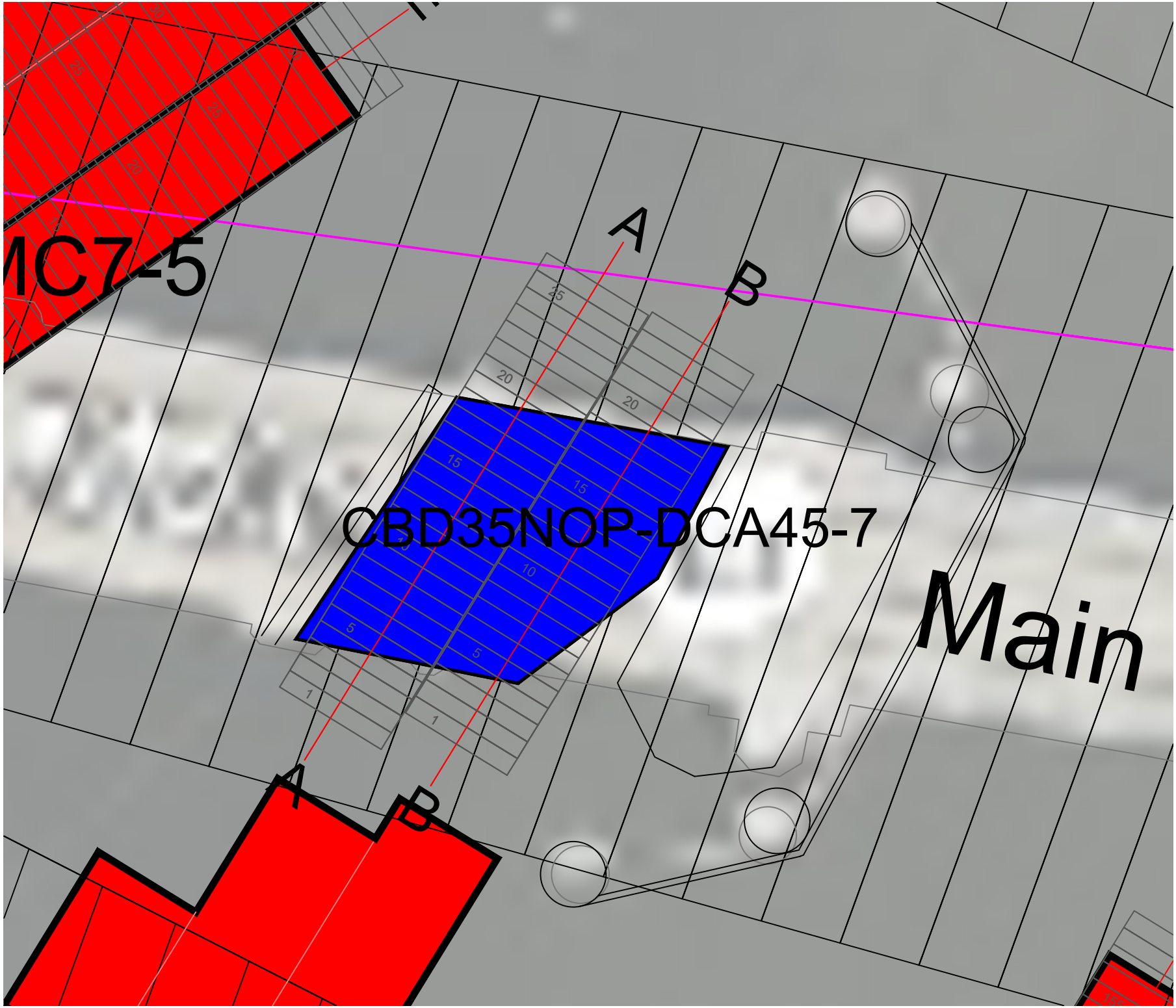
Recommended Path Forward:

Tetra Tech recommends use of J.F. Brennan's volumetric data to accept this area.

Prepared by: HNK Date: 5/8/2020

Reviewed by: BSW Date: 5/8/2020

A/OT Acceptance: _____ Date: _____


MC7-5
A
B
CBD35NOP-DCA45-7
Main
A
B

Step Detail Report

Step Start Date	Step Start Time	SMU/CMU	Lane	Step Number	Duration (min)	Northing	Easting	Density (#/cu.ft.)	Length (ft)	Width (ft)	Height (in)	Weight (tons)	Cubic Yards	Inches/Step	Remarks
5/1/2020	09:51:40	CBD35NOP-DCA45-7	B	19	3.85	256080.51	2486030.83	105.00	6.00	35.00	11.00	11.20	7.72	11.92	
5/1/2020	09:55:38	CBD35NOP-DCA45-7	B	20	4.03	256080.95	2486030.71	105.00	6.00	35.00	11.00	11.00	7.59	5.66	
5/1/2020	09:59:42	CBD35NOP-DCA45-7	B	21	3.82	256086.05	2486033.19	105.00	6.00	35.00	11.00	4.90	3.38	2.52	
5/1/2020	10:22:17	CBD35NOP-DCA45-7	A	19	4.15	256092.60	2485987.97	105.00	6.00	35.00	11.00	11.50	7.93	5.91	
5/1/2020	10:26:34	CBD35NOP-DCA45-7	A	20	4.03	256097.47	2485990.75	105.00	6.00	35.00	11.00	10.90	7.52	5.61	
5/1/2020	10:30:37	CBD35NOP-DCA45-7	A	21	2.13	256098.97	2485991.74	105.00	6.00	35.00	11.00	1.00	0.69	0.51	
5/1/2020	11:11:04	CBD35NOP-DCA45-7	B	4	4.12	256003.89	2485976.30	105.00	6.00	35.00	11.00	10.70	7.38	5.50	
5/1/2020	11:15:13	CBD35NOP-DCA45-7	B	4	3.90	256004.81	2485975.40	105.00	6.00	35.00	11.00	10.80	7.45	5.55	
5/1/2020	11:19:08	CBD35NOP-DCA45-7	B	4	5.72	256004.67	2485975.76	105.00	6.00	35.00	11.00	10.90	7.52	5.61	
5/1/2020	11:25:51	CBD35NOP-DCA45-7	B	3	2.83	255996.17	2485969.59	105.00	6.00	35.00	11.00	10.80	7.45	5.55	
5/1/2020	11:28:43	CBD35NOP-DCA45-7	B	2	3.28	255994.03	2485966.10	105.00	6.00	35.00	11.00	5.80	4.00	2.98	
5/1/2020	11:38:00	CBD35NOP-DCA45-7	B	3	3.85	256006.94	2485957.98	105.00	6.00	35.00	11.00	10.20	7.03	5.25	
5/1/2020	11:41:52	CBD35NOP-DCA45-7	B	3	4.02	256007.11	2485956.93	105.00	6.00	35.00	11.00	11.30	7.79	5.81	
5/1/2020	11:45:54	CBD35NOP-DCA45-7	B	3	3.47	256002.88	2485956.03	105.00	6.00	35.00	11.00	9.80	6.76	5.04	
5/1/2020	11:49:24	CBD35NOP-DCA45-7	B	2	3.60	256001.68	2485954.72	105.00	6.00	35.00	11.00	10.40	7.17	5.35	
5/1/2020	11:53:01	CBD35NOP-DCA45-7	B	2	4.65	256001.77	2485953.93	105.00	6.00	35.00	11.00	8.00	5.52	4.11	
5/1/2020	12:04:28	CBD35NOP-DCA45-7	A	4	3.25	256008.62	2485937.45	105.00	6.00	35.00	11.00	10.00	6.90	5.14	
5/1/2020	12:07:44	CBD35NOP-DCA45-7	A	4	4.08	256008.84	2485937.26	105.00	6.00	35.00	11.00	12.30	8.48	6.33	
5/1/2020	12:11:50	CBD35NOP-DCA45-7	A	3	3.45	256004.28	2485934.54	105.00	6.00	35.00	11.00	10.50	7.24	5.40	
5/1/2020	12:15:20	CBD35NOP-DCA45-7	A	3	4.07	256002.94	2485934.06	105.00	6.00	35.00	11.00	10.30	7.10	5.30	
5/1/2020	12:20:03	CBD35NOP-DCA45-7	A	3	2.22	256003.00	2485934.04	105.00	6.00	35.00	11.00	7.00	4.83	3.60	
5/1/2020	12:22:17	CBD35NOP-DCA45-7	A	2	5.12	255997.14	2485930.44	105.00	6.00	35.00	11.00	10.70	7.38	5.50	
5/1/2020	12:42:56	CBD35NOP-DCA45-7	A	2	0.17	255997.05	2485930.70	105.00	6.00	35.00	11.00	2.50	1.72	1.29	
Averages					**3.64**				**6.00**	**35.00**	**11.00**	**9.24**	**6.37**		
Totals					**83.81**							**212.50**	**146.55**		

Target Placement Volume for CBD35NOP-DCA45-7 0.75" Stone		
Area	6,635	ft^2
Thickness	0.33	ft
Volume	82	CY
Tons	118.77	tons

BRENNAN

200501 Barge Survey #1 0.75" Rock

Scale
1in=15ft

Total Volume: 245.5 cy

Drawing Prepared By:
Gregory Cisar

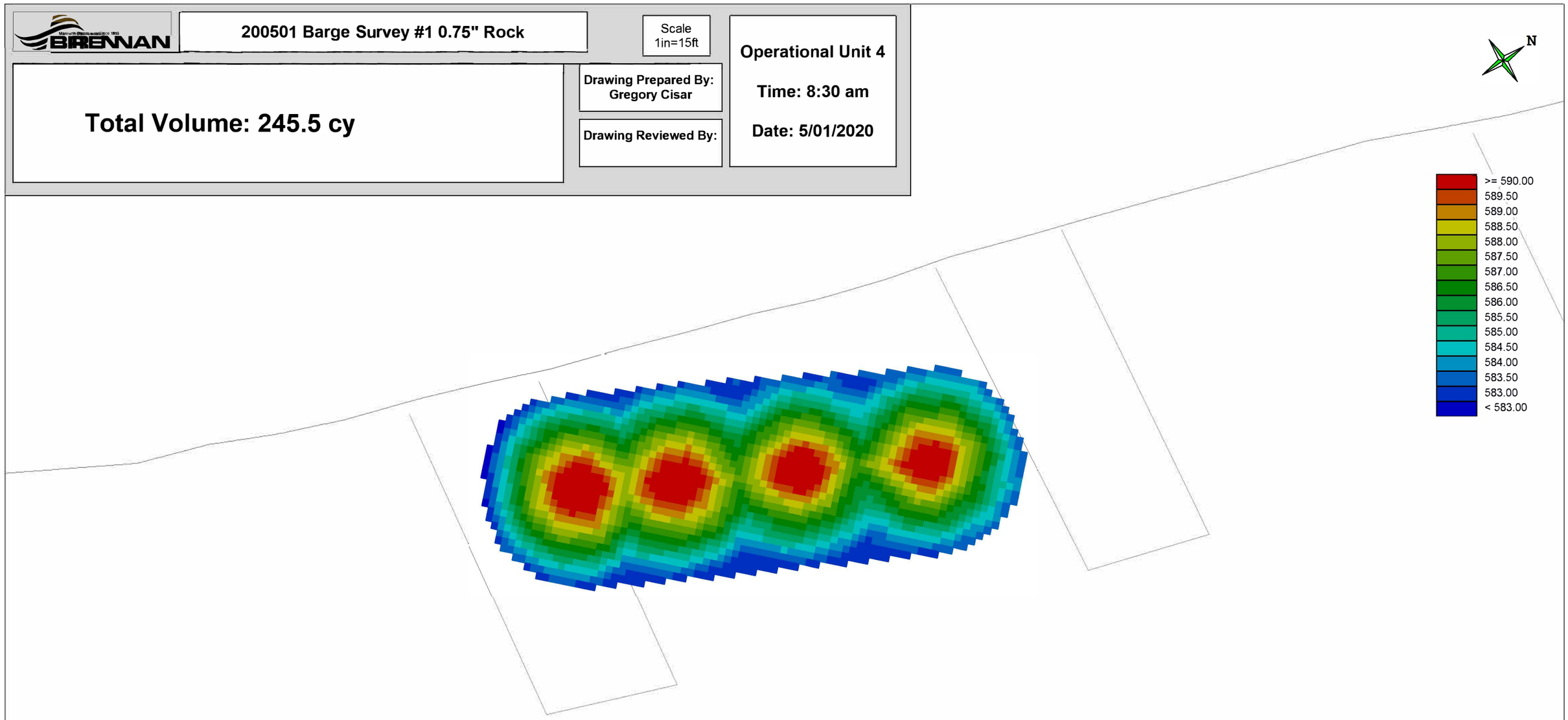
Drawing Reviewed By:

Operational Unit 4

Time: 8:30 am

Date: 5/01/2020

N



Scale: 1 Inch = 15.00 Feet

10 20 40 60 80 Feet

BRENNAN

Marine Professionals Since 1919

200501 Barge Survey #2 0.75" Stone Remainder

Scale
1in=10ft

Total Volume Remaining: 128.4 cy

Drawing Prepared By:
Jack Radenz

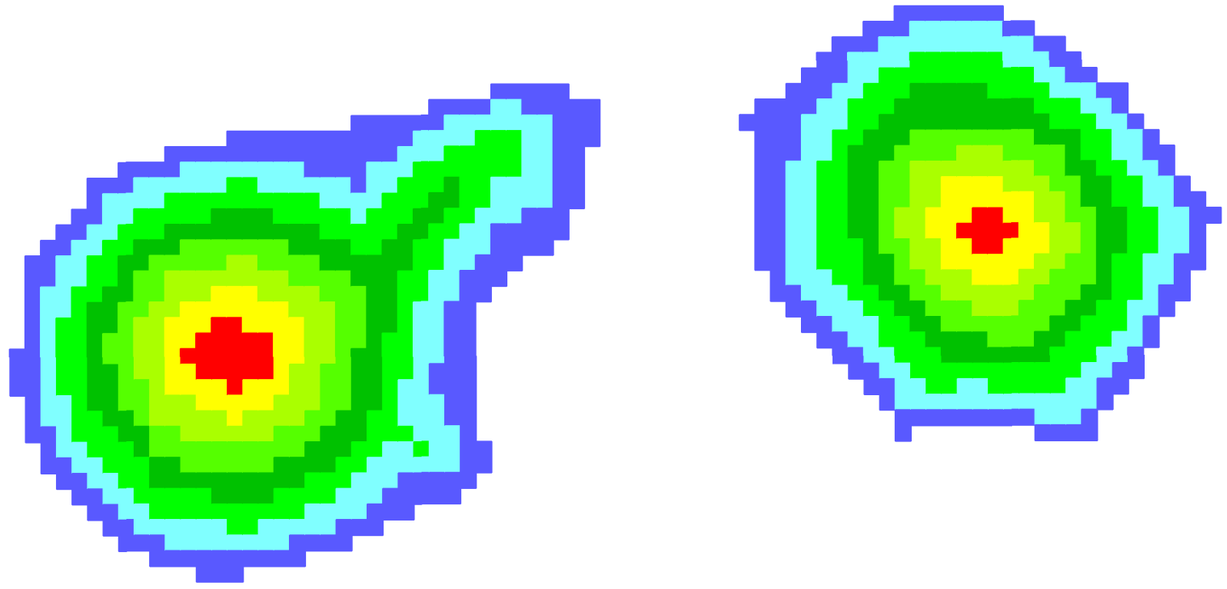
Drawing Reviewed By:

Operational Unit 4

Time: 1:00 pm

Date: 05/01/2020

N



Scale: 1 Inch = 10.00 Feet

10 20 40 60 80 Feet

Barge Surveys - 0.75" Stone	
Barge #1	245.5cy
Barge #1 Remainder	128.4cy
Volume Used in CBD35NOP-DCA45-7	117.1cy

CBD35NOP-DCA45-7 Footprint	6,635sf
Calculated Thickness Placed	5.72in


SCD157-3-BLUE
(6" SAND)
SLIDE SPREAD AREA
CBD157-3
(B3)
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Step Detail Report

Step Start Date	Step Start Time	Area	SMU/CMU	Lane	Step Number	Duration (min)	Northing	Easting	Density (#/cu.ft.)	Weight (tons)	Cubic Yards	Area (ft^2)	Calculated Thickness (in.)	Remarks
4/17/2020	14:55:33		CBD157-3		0	25.63	255060.43	2485775.75	112.00	25.00	16.34			Upstream of area, placed to ensure upstream limit acquired sand
4/17/2020	15:27:22		CBD157-3		1	4.48	255077.13	2485781.25	112.00	4.80	3.14	110.20	9.22	
4/17/2020	15:40:52		CBD157-3		2	4.67	255085.48	2485782.57	112.00	5.20	3.40	119.80	9.19	
4/17/2020	15:47:33		CBD157-3		3	5.92	255094.74	2485782.49	112.00	9.40	6.14	218.80	9.10	
4/17/2020	16:00:47		CBD157-3		4	6.18	255103.70	2485792.82	112.00	13.30	8.69	310.70	9.06	
4/17/2020	16:13:33		CBD157-3		5	6.25	255112.64	2485796.95	112.00	13.70	8.95	319.80	9.07	
4/17/2020	16:24:18		CBD157-3		6	5.77	255120.45	2485801.37	112.00	12.80	8.37	298.30	9.09	
4/17/2020	16:35:46		CBD157-3		6	5.55	255131.36	2485807.20	112.00	11.80	7.71	275.50	9.07	
4/17/2020	16:46:26		CBD157-3		8	5.48	255138.36	2485810.12	112.00	10.80	7.06	252.70	9.05	
4/17/2020	16:57:13		CBD157-3		9	4.50	255149.52	2485817.17	112.00	9.80	6.41	230.00	9.02	
4/17/2020	17:06:03		CBD157-3		10	6.98	255158.34	2485819.75	112.00	15.90	10.39	209.80	16.05	
Averages						**7.40**				**12.05**	**7.87**			
Totals						**81.41**				**132.50**	**86.60**			


SCD157-3-BLUE
(6" SAND)
SLIDE SPREAD AREA
CBD157-3
(B3)
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Step Detail Report

Step Start Date	Step Start Time	Area	SMU/CMU	Lane	Step Number	Duration (min)	Northing	Easting	Density (#/cu.ft.)	Weight (tons)	Cubic Yards	Area (ft^2)	Calculated Thickness (in.)	Remarks
4/20/2020	08:34:20		CBD157-3		11	4.08	255168.68	2485825.82	112.00	8.60	5.62	201.70	9.03	
4/20/2020	08:42:31		CBD157-3		12	3.92	255178.51	2485830.46	112.00	8.40	5.49	195.60	9.09	
4/20/2020	08:50:09		CBD157-3		13	3.73	255186.51	2485834.07	112.00	8.10	5.29	189.40	9.06	
4/20/2020	08:57:26		CBD157-3		14	3.13	255193.48	2485836.22	112.00	6.80	4.44	158.50	9.09	
4/20/2020	09:04:46		CBD157-3		15	3.38	255201.19	2485838.92	112.00	4.70	3.07	110.20	9.03	
4/20/2020	09:11:01		CBD157-3		16	3.72	255209.66	2485843.40	112.00	4.70	3.07	110.20	9.03	
4/20/2020	09:18:16		CBD157-3		16	2.13	255211.22	2485845.01	112.00	4.70	3.07	110.20	9.03	
4/20/2020	09:23:14		CBD157-3		17	3.03	255220.14	2485850.75	112.00	4.70	3.07	110.20	9.03	
4/20/2020	09:28:03		CBD157-3		18	2.68	255226.31	2485853.87	112.00	4.80	3.14	110.60	9.19	
4/20/2020	09:37:52		CBD157-3		19	4.38	255238.16	2485860.56	112.00	9.30	6.08	110.60	17.81	
4/20/2020	09:45:18		CBD157-3		20	2.88	255247.58	2485867.76	112.00	6.20	4.05	110.30	11.90	
4/20/2020	09:52:11		CBD157-3		21	2.75	255255.21	2485873.21	112.00	5.70	3.73	110.00	10.97	
4/20/2020	10:01:45		CBD157-3		22	2.72	255262.21	2485876.01	112.00	5.70	3.73	109.80	10.99	
4/20/2020	10:08:35		CBD157-3		23	3.35	255272.55	2485878.14	112.00	5.80	3.79	110.10	11.16	
4/20/2020	10:16:01		CBD157-3		24	3.57	255280.46	2485883.18	112.00	6.30	4.12	120.60	11.06	
4/20/2020	10:21:41		CBD157-3		25	4.08	255291.14	2485880.85	112.00	5.00	3.27	75.60	14.01	
Averages						**3.35**				**6.22**	**4.06**			
Totals						**53.53**				**99.50**	**65.03**			

SAND Tons Required to Achieve 9.9" Thickness			
Section	Area (ft^2)	Volume (CY)	Tons
1	110.2	3.4	5.2
2	119.8	3.7	5.6
3	218.8	6.7	10.2
4	310.7	9.5	14.5
5	319.8	9.8	15.0
6	298.3	9.1	13.9
7	275.5	8.4	12.9
8	252.7	7.7	11.8
9	230.0	7.0	10.8
10	209.8	6.4	9.8
11	201.7	6.2	9.4
12	195.6	6.0	9.1
13	189.4	5.8	8.9
14	158.5	4.8	7.4
15	110.2	3.4	5.2
16	110.2	3.4	5.2
17	110.2	3.4	5.2
18	110.6	3.4	5.2
19	110.6	3.4	5.2
20	110.3	3.4	5.2
21	110.00	3.4	5.1
22	109.8	3.4	5.1
23	110.1	3.4	5.1
24	120.6	3.7	5.6
25	75.6	2.3	3.5
Total	4,279	130.7	200.0

0.75" Stone Tons Required to Achieve 6.48" Thickness			
Section	Area (ft^2)	Volume (CY)	Tons
1	110.2	2.2	3.2
2	119.8	2.4	3.5
3	218.8	4.4	6.3
4	310.7	6.2	9.0
5	319.8	6.4	9.3
6	298.3	6.0	8.7
7	275.5	5.5	8.0
8	252.7	5.1	7.3
9	230.0	4.6	6.7
10	209.8	4.2	6.1
11	201.7	4.0	5.8
12	195.6	3.9	5.7
13	189.4	3.8	5.5
14	158.5	3.2	4.6
15	110.2	2.2	3.2
16	110.2	2.2	3.2
17	110.2	2.2	3.2
18	110.6	2.2	3.2
19	110.6	2.2	3.2
20	110.3	2.2	3.2
21	110.00	2.2	3.2
22	109.8	2.2	3.2
23	110.1	2.2	3.2
24	120.6	2.4	3.5
25	75.6	1.5	2.2
Total	4,279	85.6	124.1

BRENNAN

Marine Professionals Since 1919

200416 Barge Survey #1 Sand

Scale
1in=10ft

Total Volume: 284.1 cy

Drawing Prepared By:
Jack Radenz

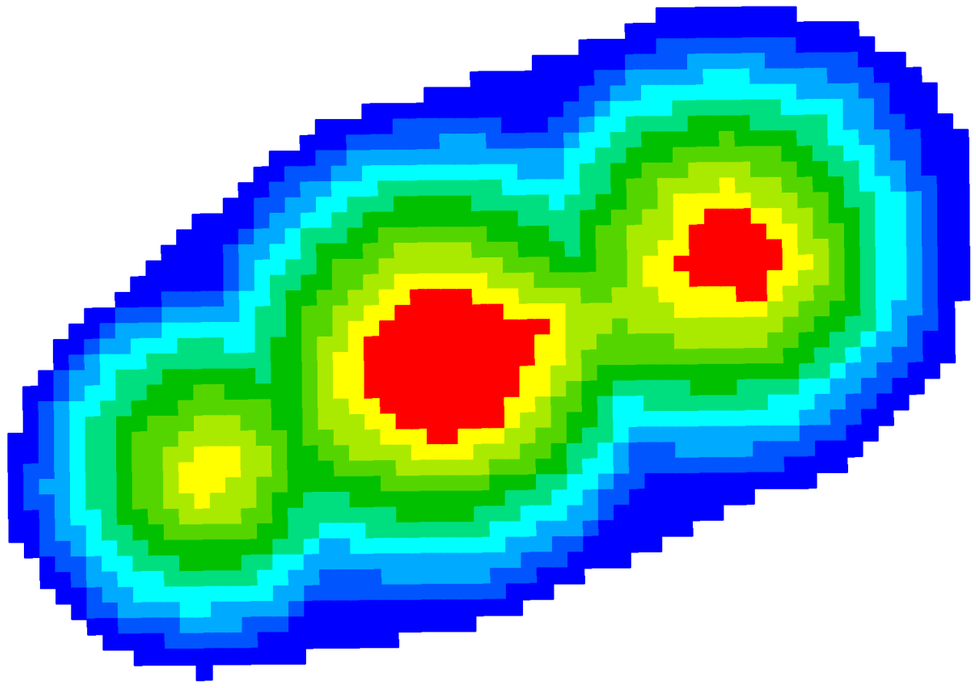
Drawing Reviewed By:

Operational Unit 4

Time: 4:00 pm

Date: 04/16/2020

N



Scale: 1 Inch = 10.00 Feet

10 20 40 60 80 Feet

200420 Barge Survey #1 Sand Remainder

Scale
1in=10ft

Operational Unit 4

Time: 12:30 pm

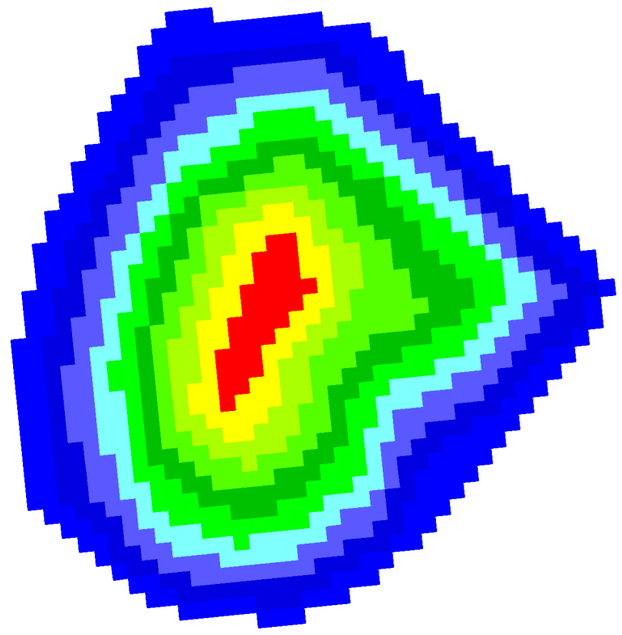
Date: 04/20/2020

Drawing Prepared By:
Jack Radenz

Drawing Reviewed By:

Total Volume Remaining: 139.3 cy

N

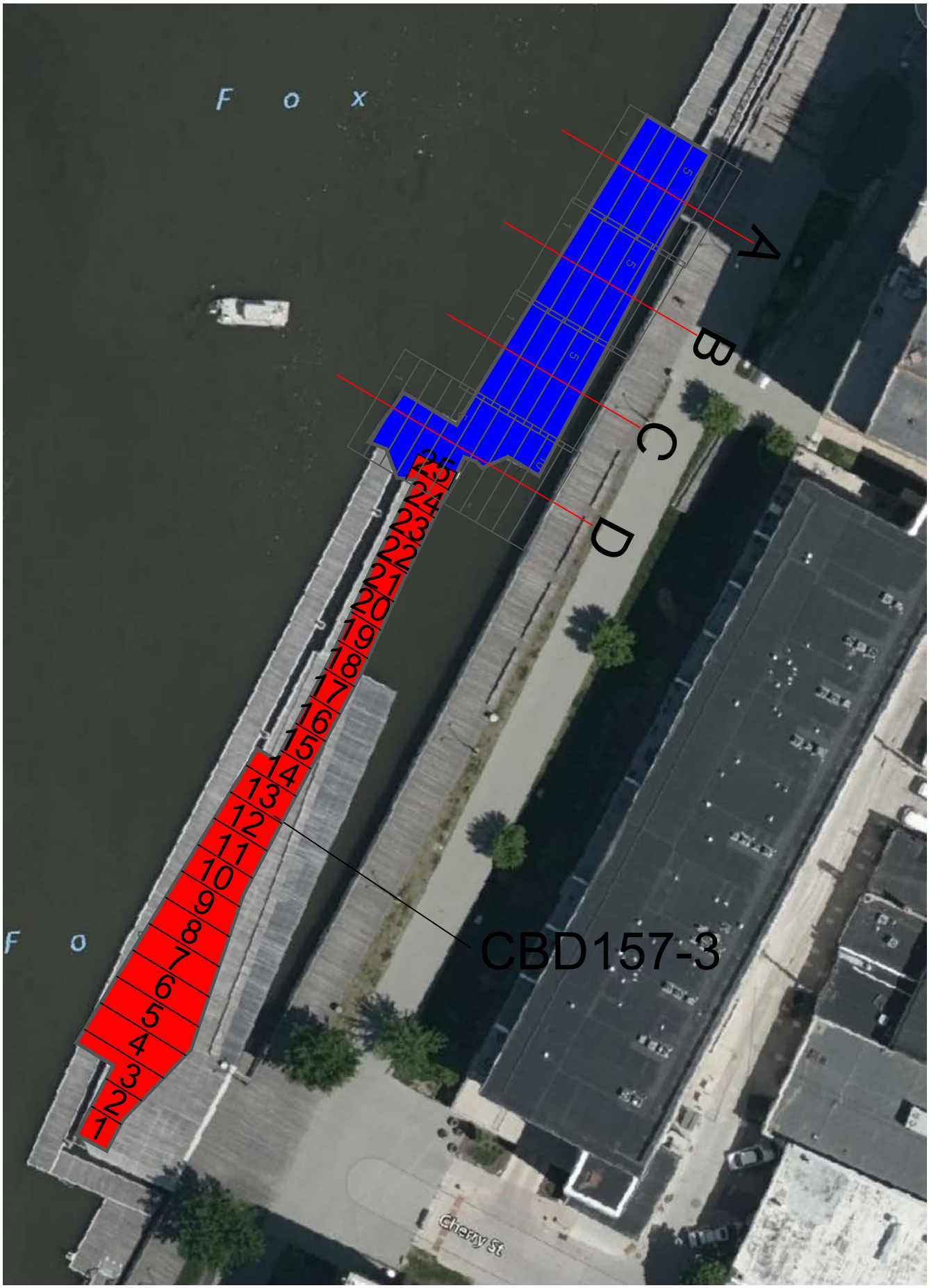


Scale: 1 Inch = 10.00 Feet

10 20 40 60 80 Feet

Barge Survey - Sand	Volume
#1	284.1
#1 Remainder	139.3
#1 Used	**144.8**

Area Placed Under City Deck	4,278	ft^2
Calculated Thickness	**10.97**	**in.**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CBD157-3
Cherry St

Step Detail Report

Step Start Date	Step Start Time	SMU/CMU	Lane	Step Number	Duration (min)	Northing	Easting	Density (#/cu.ft.)	Length (ft)	Width (ft)	Height (in)	Weight (tons)	Cubic Yards	Inches/Step	Remarks
4/21/2020	18:33:49	CBD157-3	D	1	6.93	255306.97	2485880.42	112.00	6.00	35.00	10.00	10.90	7.22	11.14	
4/21/2020	18:40:47	CBD157-3	D	2	2.07	255304.42	2485885.14	112.00	6.00	35.00	10.00	6.10	4.03	6.22	
4/21/2020	18:43:06	CBD157-3	D	2	0.32	255304.43	2485885.90	112.00	6.00	35.00	10.00	1.70	1.12	1.73	
4/21/2020	18:44:26	CBD157-3	D	3	3.35	255301.56	2485891.25	112.00	6.00	35.00	10.00	9.60	6.35	9.80	
4/21/2020	18:48:48	CBD157-3	D	3	3.45	255309.28	2485899.04	112.00	6.00	35.00	10.00	10.80	7.14	11.02	
4/21/2020	18:52:45	CBD157-3	D	4	3.80	255307.23	2485904.49	112.00	6.00	35.00	10.00	11.50	7.61	11.74	
4/21/2020	18:57:03	CBD157-3	D	5	2.58	255305.37	2485910.04	112.00	6.00	35.00	10.00	8.60	5.69	8.78	
4/21/2020	19:00:09	CBD157-3	D	6	0.25	255306.11	2485910.43	112.00	6.00	35.00	10.00	2.20	1.46	2.25	
4/21/2020	19:00:54	CBD157-3	D	7	3.12	255303.17	2485915.93	112.00	6.00	35.00	10.00	10.60	7.01	10.82	
4/21/2020	19:04:32	CBD157-3	D	8	2.63	255301.40	2485921.48	112.00	6.00	35.00	10.00	9.20	6.08	9.38	
4/21/2020	19:07:11	CBD157-3	D	9	3.33	255301.93	2485921.63	112.00	6.00	35.00	10.00	9.60	6.35	9.80	
4/21/2020	19:58:48	CBD157-3	C	1	3.58	255332.75	2485913.12	112.00	6.00	35.00	10.00	10.20	6.75	10.41	
4/21/2020	20:03:01	CBD157-3	C	2	3.43	255327.80	2485918.66	112.00	6.00	35.00	10.00	10.20	6.75	10.41	
4/21/2020	20:06:53	CBD157-3	C	3	3.43	255325.13	2485923.85	112.00	6.00	35.00	10.00	10.20	6.75	10.41	
4/21/2020	20:11:00	CBD157-3	C	4	3.42	255321.61	2485929.11	112.00	6.00	35.00	10.00	10.20	6.75	10.41	
4/21/2020	20:14:52	CBD157-3	C	5	0.42	255318.82	2485934.69	112.00	6.00	35.00	10.00	1.20	0.79	1.22	
4/21/2020	20:15:47	CBD157-3	C	6	3.50	255320.21	2485934.06	112.00	6.00	35.00	10.00	10.00	6.61	10.20	
4/21/2020	20:19:19	CBD157-3	C	7	4.22	255319.68	2485934.26	112.00	6.00	35.00	10.00	10.40	6.88	10.61	
4/21/2020	20:41:31	CBD157-3	B	1	3.92	255362.17	2485929.24	112.00	6.00	35.00	10.00	10.20	6.75	10.41	
4/21/2020	20:45:52	CBD157-3	B	2	3.80	255358.13	2485934.60	112.00	6.00	35.00	10.00	10.20	6.75	10.41	
4/21/2020	20:50:00	CBD157-3	B	3	3.67	255354.37	2485939.79	112.00	6.00	35.00	10.00	10.20	6.75	10.41	
4/21/2020	20:53:55	CBD157-3	B	4	3.85	255350.89	2485944.79	112.00	6.00	35.00	10.00	10.10	6.68	10.31	
4/21/2020	20:58:11	CBD157-3	B	5	3.63	255347.44	2485949.57	112.00	6.00	35.00	10.00	10.10	6.68	10.31	
4/21/2020	21:05:38	CBD157-3	B	6	4.37	255348.45	2485949.14	112.00	6.00	35.00	10.00	3.80	2.51	3.87	
4/21/2020	22:19:33	CBD157-3	A	1	23.95	255389.48	2485946.13	112.00	6.00	35.00	10.00	10.20	6.75	10.41	
4/21/2020	22:46:14	CBD157-3	A	2	2.40	255386.78	2485951.61	112.00	6.00	35.00	10.00	6.80	4.50	6.94	
4/21/2020	22:49:00	CBD157-3	A	3	3.65	255383.44	2485956.98	112.00	6.00	35.00	10.00	10.10	6.68	10.31	
4/21/2020	22:52:57	CBD157-3	A	4	3.62	255378.89	2485962.41	112.00	6.00	35.00	10.00	10.30	6.81	10.51	
4/21/2020	22:56:35	CBD157-3	A	5	3.48	255379.71	2485961.87	112.00	6.00	35.00	10.00	10.00	6.61	10.20	
Averages					**3.94**				**6.00**	**35.00**	**10.00**	**8.80**	**5.82**		
Totals					**114.17**							**255.20**	**168.81**		

CBD157 (City Deck)
Target Volumes for Area not Under the Decks

SAND		
Not Under Docks		
Area	3833	ft^2
Thickness	0.825	ft
Volume	3162	ft^3
Volume	117	CY
Tons	179.19	tons

0.75" STONE		
Not Under Docks		
Area	3833	ft^2
Thickness	0.63	ft
Volume	2415	ft^3
Volume	89	CY
Tons	129.68	tons

200420 Barge Survey #1 Sand Remainder

Scale
1in=10ft

Operational Unit 4

Time: 12:30 pm

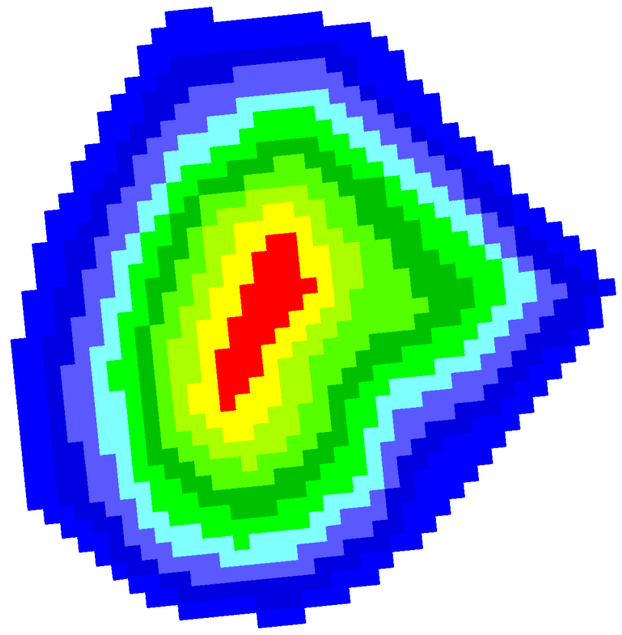
Date: 04/20/2020

Drawing Prepared By:
Jack Radenz

Drawing Reviewed By:

Total Volume Remaining: 139.3 cy

N



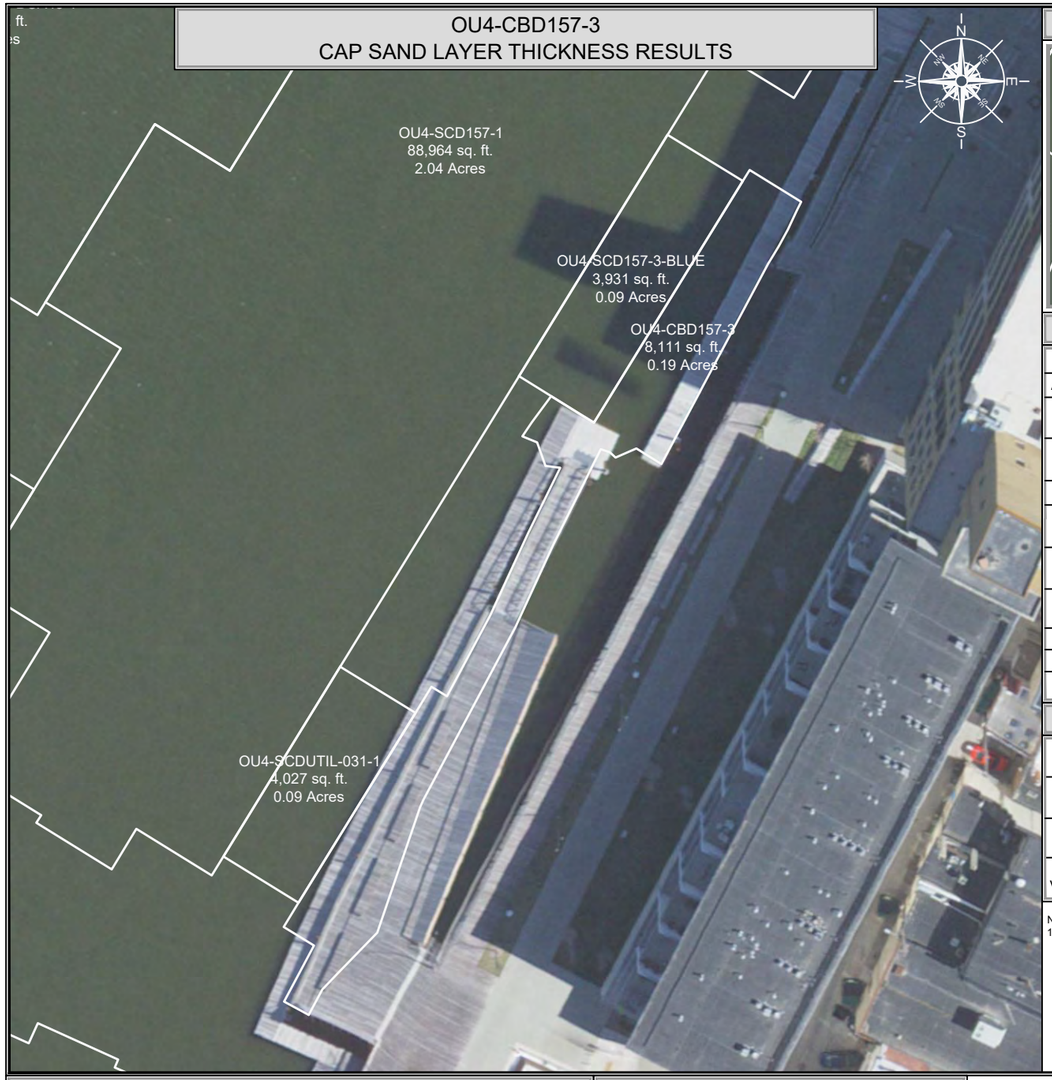
Scale: 1 Inch = 10.00 Feet

10 20 40 60 80 Feet

Barge Survey - Sand	Volume
#1	139.3

Area Spread not Under City Deck	3,833	ft^2
Calculated Thickness	**11.77**	**in.**

OU4-CBD157-3
CAP SAND LAYER THICKNESS RESULTS



INDEX MAP

CAP B3 REQUIREMENTS

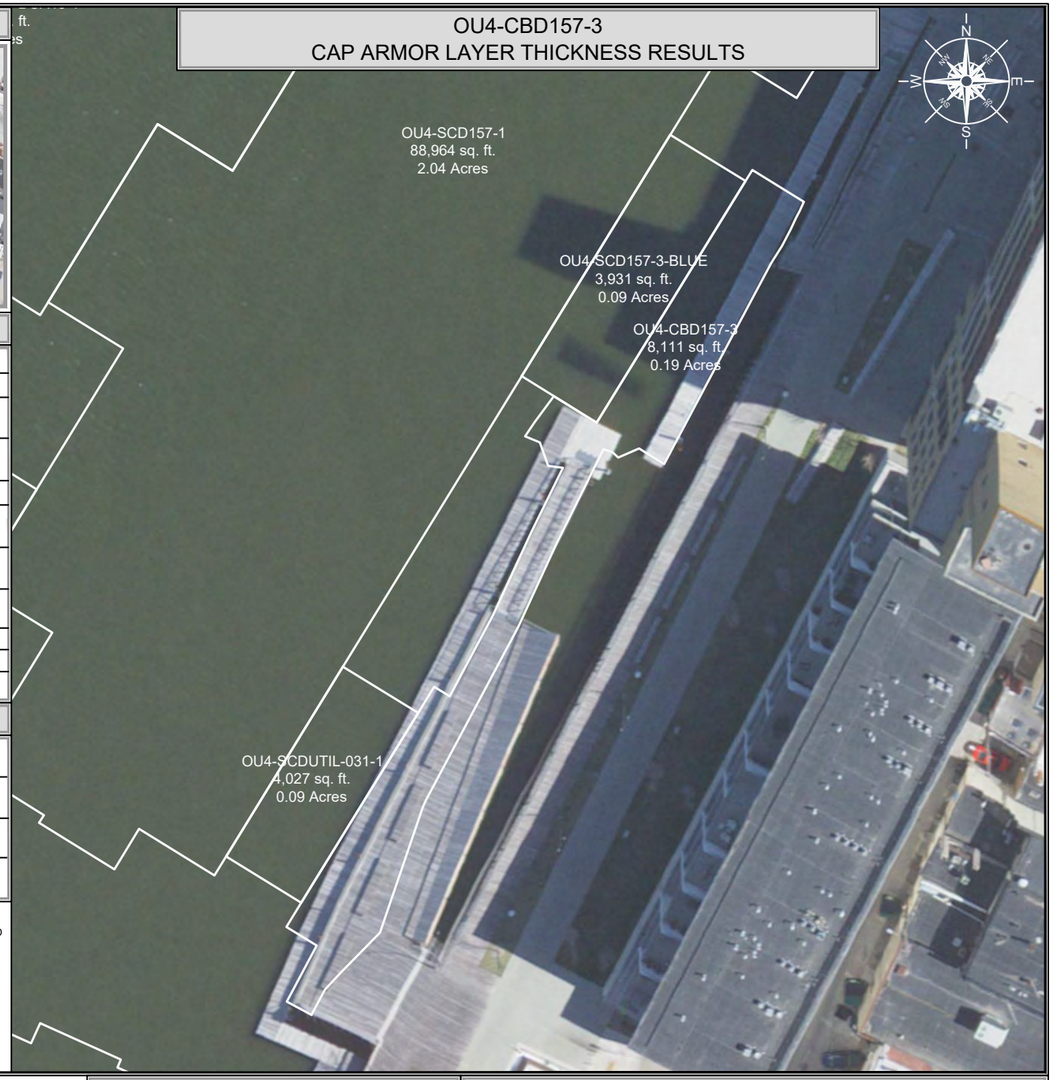
>10 and <50 PPM SURFICIAL	
ASSUMED SAND MIXING LAYER THICKNESS	3.0"
SAND CHEMICAL ISOLATION LAYER THICKNESS	3.0"
ASSUMED SAND OVERPLACEMENT THICKNESS	3.0"
MINIMUM ARMOR LAYER THICKNESS	4.0"
ASSUMED ARMOR OVERPLACEMENT THICKNESS	3.0"
MINIMUM QUARRY SPALL ARMOR THICKNESS	NA
QUARRY SPALL OVERPLACEMENT THICKNESS	NA
MINIMUM CAP THICKNESS	10.0"
ASSUMED AVERAGE CAP THICKNESS	16.0"
D50 STONE = 0.75"	

SAMPLE DATA

NUMBER OF SAND COVER THICKNESS VERIFICATION CORES COLLECTED	*
NUMBER OF SAND COVER THICKNESS VERIFICATION CORES SATISFYING CRITERIA	*
NUMBER OF ARMOR THICKNESS VERIFICATION SAMPLES COLLECTED	*
NUMBER OF ARMOR THICKNESS VERIFICATION SAMPLES SATISFYING CRITERIA	*

NOTE:
1. J.F. BRENNAN QC DATA WAS USED FOR VOLUMETRIC SAND AND ARMOR STONE VERIFICATION.

OU4-CBD157-3
CAP ARMOR LAYER THICKNESS RESULTS



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

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

CAD FILE: OU4-CBD157-3.dwg
DRAWN BY: DAVID.FRISQUE
DATE: August 14, 2020
LAST REVISED: August 14, 2020
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 11-004

OU4-CBD157-3
1st RESIDUAL CAP SAND AND ARMOR STONE THICKNESS RESULTS AND LOCATIONS

P:\LLC\CAD\Fieldt Engineering\Capping\2020\OU4-CBD157\DWG\Post_Dredge\OU4-CBD157-3.dwg

Sand Thickness Verification and Approval Form

OU4-CBD157-3 (Slide Placement)							
Area (acres)	**Required Thickness (inches)**	**Bathymetric Survey Thickness (inches)**	**Required Volume (cubic yards)**	**Placed Volume Hydrographic Survey (cubic yards)**	**Placed Volume Barge Survey (cubic yards)**	**Calculated Thickness Based off Reported Spreader Tonage (inches)**	**Calculated Thickness Based of Barge Survey (inches)**
0.10	6.00	N/A	130.70	N/A	144.80	10.28	10.97

Recommended Path Forward:

Tetra Tech recommends use of J.F. Brennan's volumetric data to accept this area.

Prepared by: HNK Date: 4/20/2020

Reviewed by: BSW Date: 4/20/2020

A/OT Acceptance: _____ Date: _____

Sand Thickness Verification and Approval Form

OU4-CBD157-3 (Slide Placement)							
Area (acres)	**Required Thickness (inches)**	**Bathymetric Survey Thickness (inches)**	**Required Volume (cubic yards)**	**Placed Volume Hydrographic Survey (cubic yards)**	**Placed Volume Barge Survey (cubic yards)**	**Calculated Thickness Based off Reported Spreader Tonnage (inches)**	**Calculated Thickness Based of Barge Survey (inches)**
0.10	6.00	N/A	130.70	N/A	144.80	10.28	10.97

OU4-CBD157-3 (Area not Under Decks)							
Area (acres)	**Required Thickness (inches)**	**Bathymetric Survey Thickness (inches)**	**Required Volume (cubic yards)**	**Placed Volume Hydrographic Survey (cubic yards)**	**Placed Volume Barge Survey (cubic yards)**	**Calculated Thickness Based off Reported Spreader Tonnage (inches)**	**Calculated Thickness Based of Barge Survey (inches)**
0.09	6.00	N/A	117.00	N/A	139.30	N/A	11.77

Recommended Path Forward:

Tetra Tech recommends use of J.F. Brennan's volumetric data to accept this area.

Prepared by: HNK Date: 4/24/2020

Reviewed by: BSW Date: 4/24/2020

A/OT Acceptance: _____ Date: _____

Armor Stone Thickness Verification and Approval Form

OU4-CBD157-3 (Slide Placement)							
Area (acres)	**Required Thickness (inches)**	**Bathymetric Survey Thickness (inches)**	**Required Volume (cubic yards)**	**Placed Volume Hydrographic Survey (cubic yards)**	**Placed Volume Barge Survey (cubic yards)**	**Calculated Thickness Based off Reported Spreader Tonnage (inches)**	**Calculated Thickness Based of Barge Survey (inches)**
0.10	4.00	N/A	99.80	N/A	112.70	8.55	8.54

OU4-CBD157-3 (Area not Under Decks)							
Area (acres)	**Required Thickness (inches)**	**Bathymetric Survey Thickness (inches)**	**Required Volume (cubic yards)**	**Placed Volume Hydrographic Survey (cubic yards)**	**Placed Volume Barge Survey (cubic yards)**	**Calculated Thickness Based off Reported Spreader Tonnage (inches)**	**Calculated Thickness Based of Barge Survey (inches)**
0.09	4.00	N/A	89.00	N/A	128.40	N/A	10.85

Recommended Path Forward:

Tetra Tech recommends use of J.F. Brennan's volumetric data to accept this area.

Prepared by: HNK Date: 5/5/2020

Reviewed by: BSW Date: 5/6/2020

A/OT Acceptance: _____ Date: _____

OU4-CC22-1									
ID	Date Sampled	Stone Result (Inches)	Cap Type	Required Thickness (Inches)	Mudline	Proposed Coordinates		Survey Coordinates		Comments
						Northing	Easting	Northing	Easting	
CC22-1-G1	11/8/2018	5.0	C(M1)	3.0	561.35	250165.49	2483742.24	250166.43	2483743.43	
CC22-1-G2	11/8/2018	4.0	C(M1)	3.0	565.07	250205.14	2483715.78	250207.90	2483717.45	
CC22-1-G3	11/8/2018	5.5	C(M1)	3.0	568.67	250185.51	2483672.89	250185.18	2483672.69	
CC22-1-G4	11/8/2018	5.5	C(M1)	3.0	569.32	250220.36	2483646.43	250221.83	2483647.17	

Average 5.00
Median 5.25
Standard Deviation 0.71

Recommended Path Forward:

Verification samples were collected at 4 locations within OU4-CC22-1. 4 of 4 samples meet or exceed the minimum thickness requirement of 3-inches, therefore, no further action is required.

Prepared by: FNK Date: 11/8/2018

A/OT Acceptance: Date: 11/12/18

Reviewed by: BSW Date: 11/8/2018

OU4-CC22-1											
ID	Date Sampled	Sand Result (Inches)	Sand/Sediment Mix (Inches)	Total Thickness Sand and Sediment Mix (Inches)		Required Thickness (Inches)	Mudline Elevation	Proposed Coordinates		Survey Coordinates		Comments
								Northing	Easting	Northing	Easting	
CC22-1-C1	9/21/2018	0.5	0.0	0.3	0.5	6.0	561.16	250189.04	2483747.65	250190.27	2483751.18	
CC22-1-C1A	9/21/2018	0.0	0.0		0.0	6.0	561.49			250176.87	2483748.91	Step-out Core
CC22-1-C1B	9/21/2018	1.0	0.0		1.0	6.0	561.86			250183.84	2483743.09	Step-out Core
CC22-1-C1C	9/21/2018	0.0	0.0		0.0	6.0	561.27			250191.08	2483753.12	Step-out Core
CC22-1-C1D	9/21/2018	0.0	0.0		0.0	6.0	561.40			250183.53	2483757.85	Step-out Core
CC22-1-C1RVT	9/27/2018	13.0	0.0	13	13.0	6.0	561.56	250190.27	2483751.18	250188.73	2483751.16	
CC22-1-C2	9/21/2018	6.5	0.0	6.5	6.5	6.0	562.36	250162.80	2483703.87	250161.89	2483707.41	
CC22-1-C3	9/21/2018	6.5	0.0	6.5	6.5	6.0	568.76	250200.23	2483678.68	250193.56	2483681.82	
CC22-1-C4	9/25/2018	7.5	0.0	7.5	7.5	6.0	568.31	250212.98	2483644.88	250212.09	2483643.25	

*Note: A lane in CC22-1 was re-spread. Due to the re-spread, location C1 was resampled. The original measurements from location C1 and it's associated step-outs are not used in the statistical calculations.

Average	8.38	0.00	8.38	8.38
Median	7.00	0.00	7.00	7.00
Standard Deviation	3.12	0.00	3.12	3.12

Recommended Path Forward:

Verification samples were collected at 4 locations within OU4-SCD39-4. 4 of 4 samples meet or exceed the minimum thickness requirement of 6-inches, therefore, no further action is required.

Prepared by: ZPV Date: 9/28/2018 Reviewed by: BSW Date: 9/28/2018

A/OT Acceptance: Date: 10/8/18

BRENNAN

Marine Professionals Since 1919

190920 CC22 8" Rock vs 181108 post 1.5" rock

Scale
1in=30ft

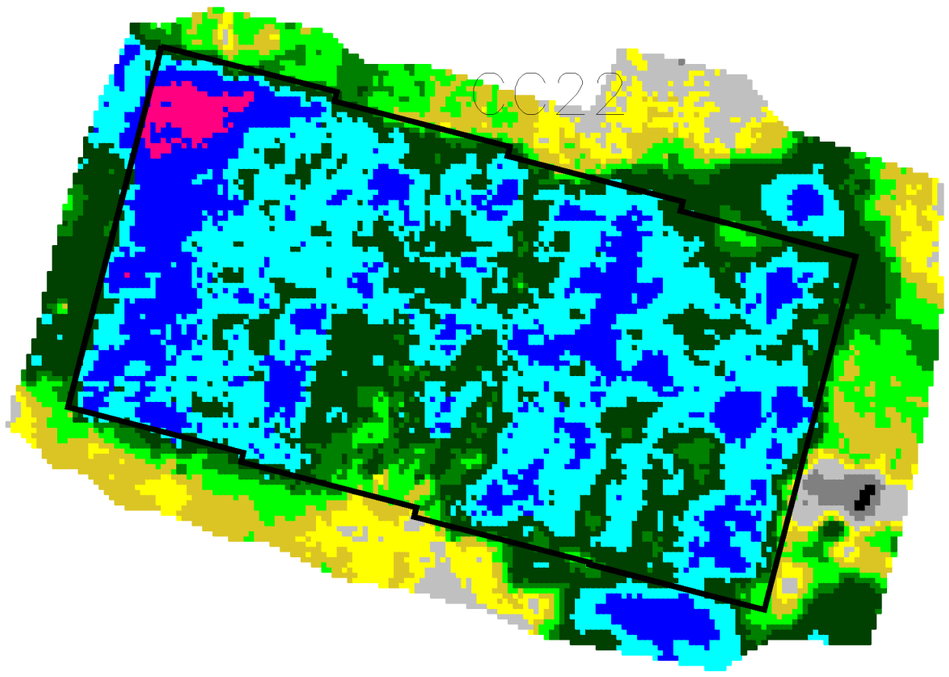
Total Volume Placed: 595 cy
Area Complete: 75%
Average Thickness: 1.6'

Drawing Prepared By:
J. Podjaski

Drawing Reviewed By:

Operational Unit 4

Date: 9/20/2019



N

>= 3.00
2.00
1.50
1.00
0.75
0.50
0.25
0.00
-0.50
-1.00
< -1.00

Scale: 1 Inch = 30.00 Feet

25 50 100 150 200 Feet

Quarry Spall Placement Thickness Verification and Approval Form

OU4-CC22-1 (Bathymetric & Volumetric Survey)					
Area (acres)	Required Thickness (inches)	Bathymetric Survey Thickness (inches)	Required Volume (cubic yards)	Placed Volume Hydrographic Survey (cubic yards)	Placed Volume Barge Survey (cubic yards)
0.23	16.0	19.20	495.0	595.0	883.0

OU4-CC22-1 (D50=8")									
ID	Date Sampled	Quarry Thickness (Inches)	Average Thickness (Inches)	Required Thickness (Inches)	Mudline	Pre-Placement Coordinates		Survey Coordinates		Comments
						Northing	Easting	Northing	Easting	
CC22-1-Q1-1	9/24/2019		24.6	16.0	563.5	250186.67	2483745.13	250188.17	2483746.62	
CC22-1-Q1-2	9/24/2019		31.2	16.0	566.3	250170.99	2483706.44	250170.47	2483704.98	
CC22-1-Q1-3	9/24/2019		29.1	16.0	571.1	250211.70	2483683.89	250213.13	2483683.01	
CC22-1-Q1-4	9/24/2019		27.2	16.0	571.2	250200.28	2483645.75	250198.55	2483646.85	

Average 28.03
Median 28.15
Standard Deviation 2.83

Recommended Path Forward:

Quarry spall (D50=8") was placed and surveyed within OU4-CC22-1. The quarry spall thicknesses based on bathymetric survey meet or exceed the minimum thickness requirement of 16-inches. Furthermore, thickness verification poling was conducted at 4 locations. 4 of 4 samples meet or exceed the minimum thickness requirement of 16-inches, therefore, no further action is required.

Prepared by: HNK Date: 11/8/2019

Reviewed by: BSW Date: 11/8/2019

A/OT Acceptance: Date: 11-12-19

OU4-SRA-03-1 & SRA-03-3 & SCD35H-7 (Respread) & SCD68B-4 (Respread)											
ID	Date Sampled	Sand Result (Inches)	Sand/Sediment Mix (Inches)	Total Thickness Sand and Sediment Mix (Inches)	Required Thickness (Inches)	Mudline Elevation	Proposed Coordinates		Survey Coordinates		Comments
							Northing	Easting	Northing	Easting	
SRA-03-1-C1	7/15/2019	10.0	0.0	10.0	6.0	553.30	252260.52	2484839.14	252259.59	2484839.45	
SRA-03-1-C2	7/15/2019	10.5	0.0	10.5	6.0	551.94	252233.96	2484797.22	252233.40	2484800.17	
SRA-03-1-C3	7/15/2019	10.5	0.0	10.5	6.0	551.37	252278.68	2484770.32	252279.60	2484773.68	
SRA-03-3-C1	7/23/2019	7.5	0.0	7.5	6.0	549.64	252406.52	2484402.57	252409.14	2484398.98	
SRA-03-3-C2	7/15/2019	7.0	0.0	7.0	6.0	559.02	252445.23	2484373.15	252443.99	2484370.24	
SCD35H-7-R1	7/23/2019	7.5	0.0	7.5	6.0	549.68	252353.78	2484428.07	252351.98	2484429.10	
SCD68B-4-R1	7/23/2019	8.5	0.0	8.5	6.0	555.48	252380.94	2484362.38	252380.90	2484361.98	
SCD68B-4-R2	7/23/2019	6.5	0.0	6.5	6.0	547.66	252373.97	2484397.47	252377.54	2484397.70	

Average	8.50	0.00	8.50
Median	8.00	0.00	8.00
Standard Deviation	1.63	0.00	1.63

Recommended Path Forward:

Verification samples were collected at 8 locations within OU4-SRA-03-1, SRA-03-3, SCD35H-7 (Respread), & SCD68B-4 (Respread). 8 of 8 samples meet or exceed the minimum thickness requirement of 6-inches, therefore, no further action is required.

Prepared by: DV Date: 7/23/2019 Reviewed by: HNK Date: 7/24/2019

A/OT Acceptance: Date: 7/29/19

OU4-SRA-03-2 Ex-situ				
ID	Date Sampled	% Organic	GAC %	Comments
TTFR-19-CAPSAND-022G	7/15/2019	0.15	N/A	Sand Pile Sample
TTFR-19-GACSAND-001	7/15/2019	0.45	4.70	Belt Sample

OU4-SRA-03-2 In-situ										
ID	Date Sampled	GAC Sand Result (inches)	GAC %	Required Thickness (inches)	Mudline	Proposed Coordinates		Survey Coordinates		Comments
						Northing	Easting	Northing	Easting	
SRA-03-2-GAC1	7/17/2019	8.5	4.7	6.0	546.9	252256.15	2484698.36	252252.75	2484694.68	TTFR-19-SRA-03-2-GAC1
SRA-03-2-GAC2	7/17/2019	8.5	4.7	6.0	549.6	252336.67	2484658.72	252335.91	2484658.68	TTFR-19-SRA-03-2-GAC2
SRA-03-2-GAC3	7/19/2019	11.0	5.5	6.0	547.7	252287.71	2484629.47	252288.60	2484630.06	TTFR-19-SRA-03-2-GAC3
SRA-03-2-GAC4	7/19/2019	7.5	5.7	6.0	546.2	252337.91	2484558.81	252334.98	2484557.12	TTFR-19-SRA-03-2-GAC4
SRA-03-2-GAC5	7/22/2019	5.5	4.9	6.0	545.9	252353.83	2484465.12	252354.86	2484466.35	TTFR-19-SRA-03-2-GAC5

Average 5.1

OU4-SRA-03-2 Thickness											
ID	Date Sampled	Sand Result (inches)	Sand/Sediment Mix (inches)	Total Thickness Sand and Sediment Mix (inches)	Required Thickness (inches)	Mudline Elevation	Proposed Coordinates		Survey Coordinates		Comments
							Northing	Easting	Northing	Easting	
SRA-03-2-C1	7/16/2019	11.5	0.0	11.5	6.0	548.16	252256.80	2484730.01	252255.69	2484727.37	Carbon Amended Sand
SRA-03-2-C2	7/16/2019	16.0	0.0	16.0	6.0	550.15	252321.72	2484753.04	252319.86	2484751.17	Carbon Amended Sand
SRA-03-2-C3	7/17/2019	7.0	0.0	7.0	6.0	549.62	252321.48	2484706.75	252321.00	2484707.58	Carbon Amended Sand
SRA-03-2-C4	7/17/2019	6.0	0.0	6.0	6.0	547.04	252250.24	2484690.82	252250.42	2484688.40	Carbon Amended Sand
SRA-03-2-C5	7/17/2019	9.5	0.0	9.5	6.0	549.69	252297.22	2484663.26	252297.21	2484663.28	Carbon Amended Sand
SRA-03-2-C6	7/17/2019	7.5	0.0	7.5	6.0	546.31	252367.45	2484666.76	252366.71	2484665.80	Carbon Amended Sand
SRA-03-2-C7	7/19/2019	9.0	0.0	9.0	6.0	546.23	252345.73	2484637.98	252347.44	2484635.09	Carbon Amended Sand
SRA-03-2-C8	7/19/2019	8.0	0.0	8.0	6.0	547.45	252279.17	2484639.48	252276.89	2484643.29	Carbon Amended Sand
SRA-03-2-C9	7/19/2019	9.5	0.0	9.5	6.0	548.13	252318.45	2484600.06	252315.77	2484599.18	Carbon Amended Sand
SRA-03-2-C10	7/19/2019	12.0	0.0	12.0	6.0	546.31	252379.58	2484574.78	252378.14	2484576.19	Carbon Amended Sand
SRA-03-2-C11	7/19/2019	12.0	0.0	12.0	6.0	546.09	252313.34	2484549.84	252311.41	2484552.53	Carbon Amended Sand
SRA-03-2-C12	7/19/2019	8.5	0.0	8.5	6.0	544.82	252354.82	2484534.33	252352.75	2484534.05	Carbon Amended Sand
SRA-03-2-C13	7/19/2019	8.5	0.0	8.5	6.0	543.60	252421.73	2484546.71	252420.78	2484547.06	Carbon Amended Sand
SRA-03-2-C14	7/19/2019	6.5	0.0	6.5	6.0	546.61	252392.51	2484506.48	252390.30	2484509.15	Carbon Amended Sand
SRA-03-2-C15	7/19/2019	7.0	0.0	7.0	6.0	543.83	252340.40	2484506.51	252341.14	2484508.94	Carbon Amended Sand
SRA-03-2-C16	7/23/2019	10.5	0.0	10.5	6.0	550.02	252428.24	2484477.41	252425.71	2484476.71	Carbon Amended Sand
SRA-03-2-C17	7/23/2019	9.5	0.0	9.5	6.0	546.19	252356.30	2484464.32	252351.74	2484465.41	Carbon Amended Sand
SRA-03-2-C18	7/23/2019	13.0	0.0	13.0	6.0	550.06	252413.26	2484438.14	252413.08	2484436.05	Carbon Amended Sand
Average		9.53	0.00	9.53							
Median		9.25	0.00	9.25							
Standard Deviation		2.59	0.00	2.59							

Recommended Path Forward:

Verification samples were collected at 18 locations within OU4-SRA-03-2. 18 of 18 samples meet or exceed the minimum thickness requirement of 6-inches. GAC samples were collected at 5 locations with OU4-SRA-03-2 with an average of 5.1% GAC; therefore, no further action is required.

Prepared by: [illegible] Date: 7/29/2019 Reviewed by: HNK Date: 7/29/2019

A/OT Acceptance: [signature] Date: 7/29/19

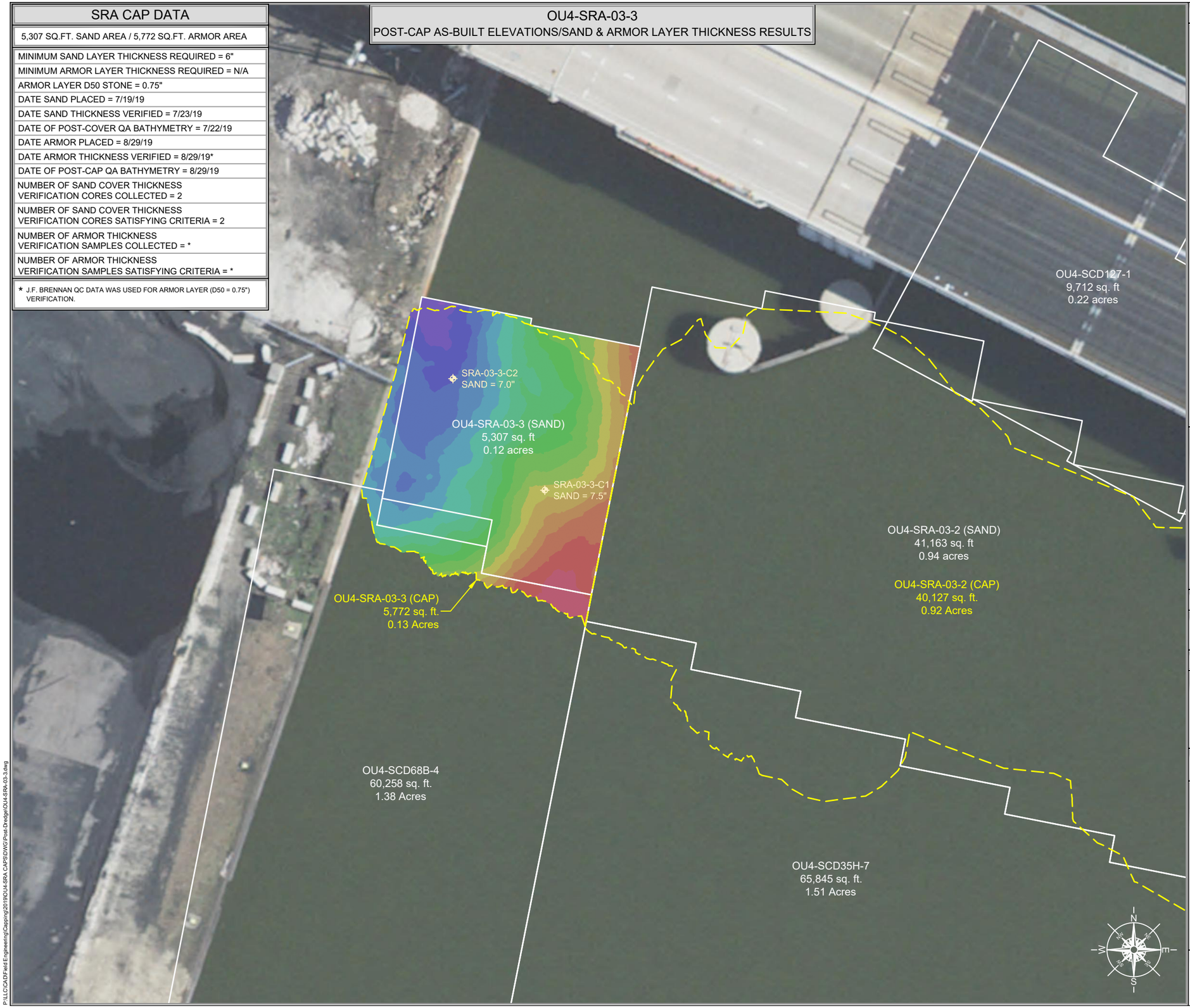
SRA CAP DATA

5,307 SQ.FT. SAND AREA / 5,772 SQ.FT. ARMOR AREA

MINIMUM SAND LAYER THICKNESS REQUIRED = 6"
MINIMUM ARMOR LAYER THICKNESS REQUIRED = N/A
ARMOR LAYER D50 STONE = 0.75"
DATE SAND PLACED = 7/19/19
DATE SAND THICKNESS VERIFIED = 7/23/19
DATE OF POST-COVER QA BATHYMETRY = 7/22/19
DATE ARMOR PLACED = 8/29/19
DATE ARMOR THICKNESS VERIFIED = 8/29/19*
DATE OF POST-CAP QA BATHYMETRY = 8/29/19
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 = *
NUMBER OF ARMOR THICKNESS VERIFICATION SAMPLES SATISFYING CRITERIA = *

* J.F. BRENNAN QC DATA WAS USED FOR ARMOR LAYER (D50 = 0.75") VERIFICATION.

OU4-SRA-03-3
POST-CAP AS-BUILT ELEVATIONS/SAND & ARMOR LAYER THICKNESS RESULTS



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'
566.00'	-	567.00'

OU# - # - #
- 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" = 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

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

CAD FILE: OU4-SRA-03-3.dwg
DRAWN BY: SHANE.NELSON
DATE: January 28, 2020
LAST REVISED: January 28, 2020
CHECKED BY: REG

Fox River
LOWER FOX RIVER REMEDIATION LLC

FIGURE 11-012

OU4-SRA-03-3
REMEDY SRA CAP THICKNESS RESULTS, LOCATIONS, BATHYMETRY AND AREAS

P:\LLC\CAD\Field Engineering\Capping\2019\OU4-SRA CAPS\SDWG\Post-Dredge\OU4-SRA-03-3.dwg

OU4-SRA-04-1 (Bathymetric & Volumetric Survey)				
Area (acres)	Bathymetric Survey Thickness (Inches)	Required Thickness (Inches)	Placed Volume (cubic yards)	Required Volume (cubic yards)
0.16	10.56	6.0	238.8	130.0

OU4-SRA-04-1 (D50 = 1.5")										
ID	Date Sampled	Stone Result (Inches)	Cap Type	Required Thickness (Inches)	Mudline	Proposed Coordinates		Survey Coordinates		Comments
						Northing	Easting	Northing	Easting	
SRA-04-1-G1	9/12/2019	8.5	SRA	6.0	571.7	258046.38	2487670.93	258049.11	2487674.97	Thickness measurement is post placement mudline vs pre placement mudline
SRA-04-1-G2	9/12/2019	10.0	SRA	6.0	571.4	257993.82	2487683.18	257991.16	2487680.92	Thickness measurement is post placement mudline vs pre placement mudline
SRA-04-1-G3	9/12/2019	16.5	SRA	6.0	566.9	257950.27	2487675.97	257953.35	2487677.45	Thickness measurement is post placement mudline vs pre placement mudline
SRA-04-1-G4	9/12/2019	10.0	SRA	6.0	559.5	257897.47	2487680.33	257898.57	2487682.94	Thickness measurement is post placement mudline vs pre placement mudline

Average 11.25
Median 10.00
Standard Deviation 3.57

Recommended Path Forward:

Verification samples were collected at 4 locations within OU4-SRA-04-1. Tetra Tech was unable to relocate and retrieve any of the verification buckets within SRA-04-1. The stone thickness measurements are post placement mudlines vs pre placement mudlines. According to mudline differences, 4 of 4 samples meet or exceed the minimum thickness requirement of 6-inches. Tetra Tech recommends accepting this area on exception basis utilizing these thickness measurements in conjunction with J.F. Brennan's isopach figure and volumetric data.

Prepared by: LPV Date: 9/17/2019

A/OT Acceptance: Date: 9/24/19

Reviewed by: HNK Date: 9/17/2019

On An exception Basis

Heavy Rip Rap Placement Thickness Verification and Approval Form

OU4-SRA-04-1 (Bathymetric Survey)		
Area (acres)	Bathymetric Survey Thickness (inches)	Required Thickness (inches)
0.16	42.00	13.0

OU4-SRA-04-1 (D50=13")										
ID	Date Sampled	Quarry Thickness (Inches)	Average Thickness (Inches)	Required Thickness (Inches)	Mudline	Pre-Placement Coordinates		Survey Coordinates		Comments
						Northing	Easting	Northing	Easting	
SRA-04-1-R1	10/28/2019		55.5	13.0	563.5	258063.07	2487677.73	258061.53	2487677.38	
SRA-04-1-R2	10/28/2019		22.2	13.0	566.3	258019.66	2487674.75	258018.12	2487674.04	
SRA-04-1-R3	10/28/2019		29.0	13.0	571.1	257971.52	2487682.95	257968.95	2487681.62	
SRA-04-1-R4	10/28/2019		36.6	13.0	571.2	257914.22	2487685.51	257913.45	2487688.68	

Average	35.81
Median	32.76
Standard Deviation	14.36

Recommended Path Forward:

Heavy Rip Rap D50= 13.0" was placed and surveyed within OU4-SRA-04-1. The heavy rip rap thicknesses based on bathymetric survey meet or exceed the minimum thickness requirement of 13-inches. Furthermore, thickness verification poling was conducted at 4 locations. 4 of 4 samples meet or exceed the minimum thickness requirement of 13-inches, therefore, no further action is required.

Prepared by: LPV Date: 10/28/2019

Reviewed by: HNK Date: 10/29/2019

A/OT Acceptance: _____ Date: _____

OU4-SRA-04-1										
ID	Date Sampled	Sand Result (Inches)	Sand/Sediment Mix (Inches)	Total Thickness Sand and Sediment Mix (Inches)	Required Thickness (Inches)	Mudline Elevation	Proposed Coordinates		Survey Coordinates		Comments
							Northing	Easting	Northing	Easting	
SRA-04-1-C1	8/30/2019	9.5	0.0	9.5	6.0	571.60	258060.06	2487675.97	258062.09	2487675.89	
SRA-04-1-C2	8/30/2019	6.5	0.0	6.5	6.0	567.92	258006.06	2487674.89	258009.17	2487675.49	
SRA-04-1-C3	8/30/2019	6.0	0.0	6.0	6.0	566.67	257959.26	2487686.42	257958.36	2487686.92	
SRA-04-1-C4	8/30/2019	9.0	0.0	9.0	6.0	558.89	257900.59	2487684.98	257904.38	2487687.91	

Average	7.75	0.00	7.75
Median	7.75	0.00	7.75
Standard Deviation	1.76	0.00	1.76

Recommended Path Forward:

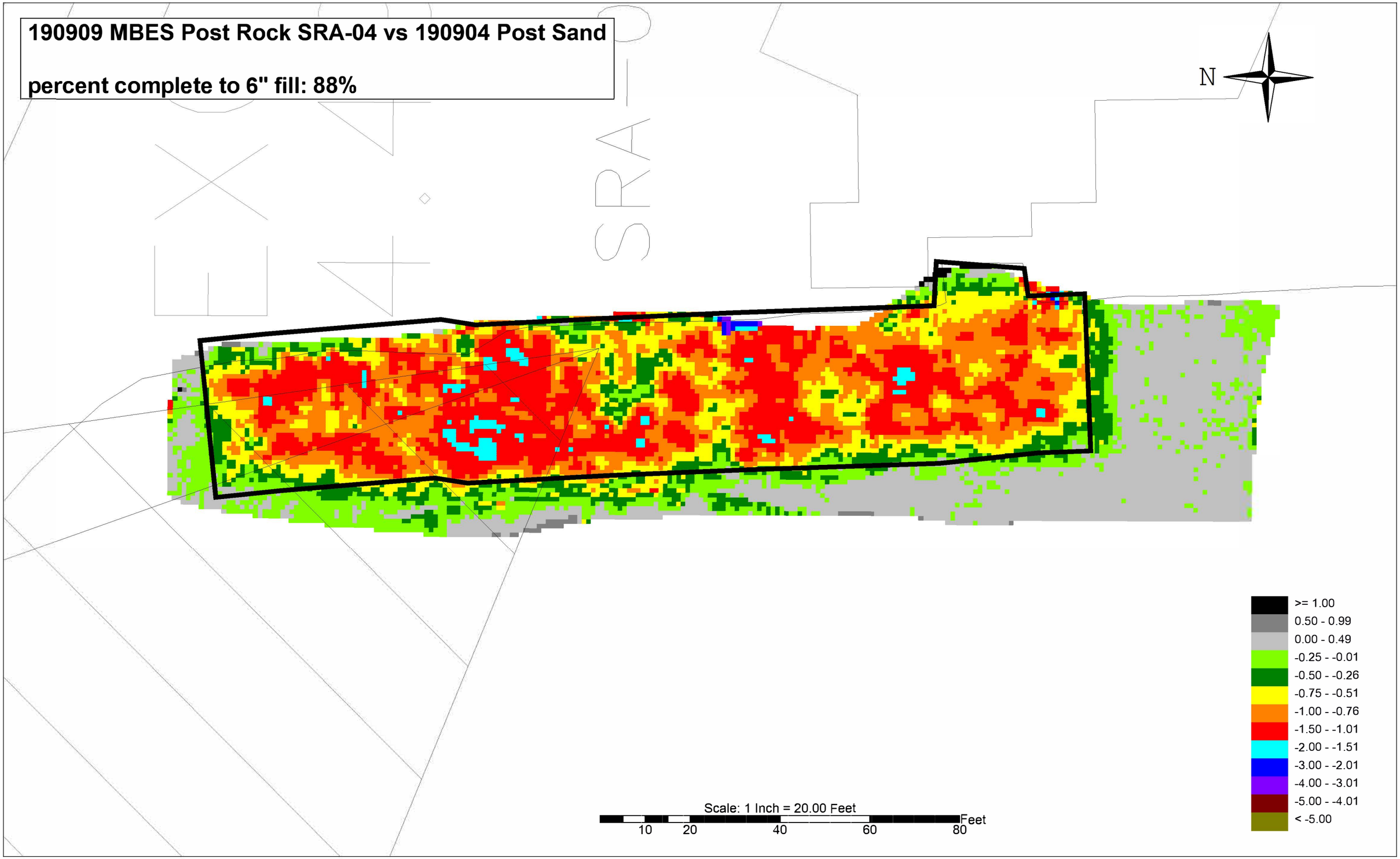
Verification samples were collected at 4 locations within OU4-SRA-04-1. 4 of 4 samples meet or exceed the minimum thickness requirement of 6-inches, therefore, no further action is required.

Prepared by: HNK Date: 9/3/2019 Reviewed by: BSW Date: 9/3/2019

A/OT Acceptance: Date: 9/3/18

190909 MBES Post Rock SRA-04 vs 190904 Post Sand

percent complete to 6" fill: 88%



191016 SRA-04 with buttress

SRA-04 area complete: 92%
SRA-04 buttress complete: 99%

N

>= 1.00
0.50 - 0.99
0.00 - 0.49
-0.25 - -0.01
-0.50 - -0.26
-0.75 - -0.51
-1.00 - -0.76
-1.50 - -1.01
-2.00 - -1.51
-3.00 - -2.01
-4.00 - -3.01
-5.00 - -4.01
< -5.00

Scale: 1 Inch = 20.00 Feet

10 20 40 60 80 Feet

OU4-SRA-05-07-1 Thickness												
ID	Date Sampled	Sand Result (Inches)	Sand/Sediment Mix (Inches)	Total Thickness Sand and Sediment Mix (Inches)		Required Thickness (Inches)	Mudline Elevation	Proposed Coordinates		Survey Coordinates		Comments
								Northing	Easting	Northing	Easting	
SRA-05-07-1-C1	7/23/2019	6.5	0.0	6.5	6.5	6.0	548.09	253863.35	2485089.77	253858.56	2485091.06	
SRA-05-07-1-C2	7/23/2019	16.5	0.0	16.5	16.5	6.0	554.02	253954.54	2485137.29	253956.62	2485140.11	
SRA-05-07-1-C3	7/24/2019	11.5	0.0	11.5	11.5	6.0	548.41	253926.71	2485088.29	253928.69	2485089.65	
SRA-05-07-1-C4	7/23/2019	6.0	0.0	6.0	6.0	6.0	547.13	253843.69	2485038.13	253843.90	2485036.08	
SRA-05-07-1-C5	7/24/2019	10.5	0.0	10.5	10.5	6.0	548.51	253894.31	2485029.27	253895.73	2485028.29	
SRA-05-07-1-C6	7/24/2019	10.5	0.0	10.5	10.5	6.0	547.16	253998.99	2485086.33	254001.59	2485086.66	
SRA-05-07-1-C7	7/25/2019	9.5	0.0	9.5	9.5	6.0	547.31	253964.40	2485027.21	253963.69	2485029.88	
SRA-05-07-1-C8	7/24/2019	6.0	0.0	6.0	6.0	6.0	546.13	253837.30	2484954.03	253840.51	2484957.27	
SRA-05-07-1-C9	7/25/2019	7.5	0.0	7.5	7.5	6.0	547.76	253893.86	2484945.61	253893.34	2484943.45	
SRA-05-07-1-C10RVT	7/29/2019	8.0	0.0	8.0	8.0	6.0	548.24	254027.49	2485020.66	254029.59	2485022.05	
SRA-05-07-1-C10	7/25/2019	1.5	0.0		1.5	6.0	547.54	254027.49	2485020.66	254029.62	2485021.76	
SRA-05-07-1-C10A	7/25/2019	0.0	0.0		0.0	6.0	547.31			254018.39	2485016.28	Step-Out Core
SRA-05-07-1-C10B	7/25/2019	1.0	0.0	1.3	1.0	6.0	547.49			254021.68	2485010.57	Step-Out Core
SRA-05-07-1-C10C	7/25/2019	1.5	0.0		1.5	6.0	547.43			254033.52	2485015.70	Step-Out Core
SRA-05-07-1-C10D	7/25/2019	2.5	0.0		2.5	6.0	547.41			254028.03	2485022.88	Step-Out Core
SRA-05-07-1-C11	7/25/2019	9.5	0.0	9.5	9.5	6.0	548.69	254014.32	2484969.45	254018.48	2484969.32	
SRA-05-07-1-C12	7/26/2019	11.0	0.0	11.0	11.0	6.0	547.20	253852.54	2484882.22	253853.15	2484884.17	
SRA-05-07-1-C13	7/29/2019	8.5	0.0	8.5	8.5	6.0	550.70	253924.68	2484876.59	253925.87	2484878.76	
SRA-05-07-1-C14	7/26/2019	10.0	0.0	10.0	10.0	6.0	549.69	254064.35	2484962.88	254067.58	2484963.48	
SRA-05-07-1-C15	7/29/2019	6.0	0.0	6.0	6.0	6.0	550.02	253888.84	2484829.48	253889.57	2484829.58	
SRA-05-07-1-C16	7/26/2019	6.0	0.0	6.0	6.0	6.0	551.66	254063.55	2484906.82	254064.49	2484906.42	
SRA-05-07-1-C17	7/26/2019	11.0	0.0	11.0	11.0	6.0	552.17	254106.20	2484880.62	254107.36	2484882.86	
SRA-05-07-1-C18	7/26/2019	6.0	0.0	6.0	6.0	6.0	553.84	253921.50	2484797.99	253921.37	2484800.54	

*Note: C10 was revisited due to JF Brennan respread, therefore, C10 and its associated step-outs are not used in the statistical calculations.

Average	8.92	0.00	8.92	8.92
Median	9.00	0.00	9.00	9.00
Standard Deviation	2.78	0.00	2.78	2.78

Recommended Path Forward:

Verification samples were collected at 18 locations within OU4-SRA-05-07-1. 18 of 18 samples meet or exceed the minimum thickness requirement of 6-inches. GAC samples were collected at 5 locations within OU4-SRA-05-1 with an average of 4.9% GAC and at 5 locations within OU4-SRA-07-1 with an average of 6.3% GAC; therefore; no further action is required

Prepared by: LPV Date: 8/8/2019 Reviewed by: HNK Date: 8/8/2019

A/OT Acceptance: Date: 8/8/19

OU4-SRA-05-07-2												
ID	Date Sampled	Sand Result (Inches)	Sand/Sediment Mix (Inches)	Total Thickness Sand and Sediment Mix (Inches)		Required Thickness (Inches)	Mudline Elevation	Proposed Coordinates		Survey Coordinates		Comments
								Northing	Easting	Northing	Easting	
SRA-05-07-2-C1	6/11/2019	7.0	0.0	7.0	7.0	6.0	562.93	253917.31	2485204.17	253918.17	2485200.81	
SRA-05-07-2-C2	6/11/2019	5.0	0.0	5.5	5.0	6.0	555.57	253909.54	2485161.13	253910.42	2485162.37	
SRA-05-07-2-C2A	6/11/2019	3.0	0.0		3.0	6.0	554.12			253904.17	2485158.15	Step-Out Core
SRA-05-07-2-C2B	6/11/2019	3.0	0.0		3.0	6.0	553.94			253908.62	2485151.52	Step-Out Core
SRA-05-07-2-C2C	6/11/2019	6.0	0.0		6.0	6.0	553.85			253919.09	2485158.10	Step-Out Core
SRA-05-07-2-C2D	6/11/2019	10.5	0.0		10.5	6.0	556.56			253914.40	2485165.80	Step-Out Core
SRA-05-07-2-C3	6/11/2019	12.0	0.0	12.0	12.0	6.0	554.96	253954.04	2485183.25	253955.69	2485182.37	
Average		6.6	0.0	8.2	6.6							
Median		6.0	0.0	7.0	6.0							
Standard Deviation		3.5	0.0	3.4	3.5							

Recommended Path Forward:

Verification samples were collected in 3 locations within OU4-SRA-05-07-2. 2 of 3 samples meet or exceed the minimum thickness requirement of 6-inches. However, 1 location did not meet the requirements. Additional step-outs were collected resulting in 2 out of 3 locations passing within the area. Tetra Tech recommends use of the J.F. Brennan QC data to accept this area on an exception basis.

Prepared by: LDW Date: 6/12/2019 Reviewed by: HNK Date: 6/14/2019

A/OT Acceptance: Date: 6/17/19

OU4-SRA-05-1 Ex-situ				
ID	Date Sampled	% Organic	GAC %	Comments
TTFR-19-CAPSAND-025G	7/22/2019	0.27	N/A	Sand Pile
TTFR-19-GACSAND-003	7/25/2019	0.59	9.80	Belt

OU4-SRA-05-1 In-situ									
ID	Date Sampled	GAC Sand Result (Inches)	GAC %	Required Thickness (Inches)	Mudline	Proposed Coordinates		Survey Coordinates		Comments
						Northing	Easting	Northing	Easting	
SRA-05-1-GAC1	7/29/2019	6.5	5.7	6.0	550.0	253869.29	2484807.86	253868.71	2484807.09	
SRA-05-1-GAC2	7/29/2019	9.5	4.8	6.0	550.4	253898.57	2484880.11	253896.51	2484880.73	
SRA-05-1-GAC3	7/25/2019	6.0	5.1	6.0	547.4	253829.04	2484904.06	253831.64	2484901.67	
SRA-05-1-GAC4	7/24/2019	8.5	8.3	6.0	547.6	253870.91	2485009.67	253869.85	2485008.90	
SRA-05-1-GAC5	7/23/2019	2.0	0.7	6.0	546.4	253811.87	2485061.92	253811.78	2485063.66	

Average 4.9

OU4-SRA-07-1 Ex-situ				
ID	Date Sampled	% Organic	GAC %	Comments
TTFR-19-CAPSAND-027G	7/24/2019	0.18	N/A	Sand Pile
TTFR-19-CAPSAND-024G GAC for Spike	7/24/2019	0.25	N/A	Sand Pile
TTFR-19-GACSAND-002	7/24/2019	0.48	9.40	Belt

OU4-SRA-07-1 In-situ										
ID	Date Sampled	GAC Sand Result (Inches)	GAC %	Required Thickness (Inches)	Mudline	Proposed Coordinates		Survey Coordinates		Comments
						Northing	Easting	Northing	Easting	
SRA-07-1-GAC1	7/24/2019	9.5	6.4	6.0	550.7	253965.26	2485090.37	253967.60	2485090.79	
SRA-07-1-GAC2	7/24/2019	8.5	6.9	6.0	548.9	254004.23	2485089.31	254004.89	2485085.18	
SRA-07-1-GAC3	7/25/2019	0.0	N/A	6.0	547.3	254016.70	2485014.02	254016.37	2485010.31	Sample did not have enough to test, therefore, GACS1 used in it place
SRA-07-1-GAC4	7/26/2019	7.0	5.2	6.0	550.9	254045.15	2484936.61	254045.31	2484936.46	
SRA-07-1-GAC5	7/26/2019	7.5	5.9	6.0	552.3	254070.72	2484880.80	254070.55	2484881.05	
SRA-07-1-GACS1	7/26/2019	8.5	7.3	6.0	549.7	254028.98	2484901.40	254029.57	2484899.26	Sample used in place of GAC3

Average 6.3

OU4-SRA-05-07-1 Thickness												
ID	Date Sampled	Sand Result (Inches)	Sand/Sediment Mix (Inches)	Total Thickness Sand and Sediment Mix (Inches)		Required Thickness (Inches)	Mudline Elevation	Proposed Coordinates		Survey Coordinates		Comments
								Northing	Easting	Northing	Easting	
SRA-05-07-1-C1	7/23/2019	6.5	0.0	6.5	6.5	6.0	548.09	253863.35	2485089.77	253858.56	2485091.06	
SRA-05-07-1-C2	7/23/2019	16.5	0.0	16.5	16.5	6.0	554.02	253954.54	2485137.29	253956.62	2485140.11	
SRA-05-07-1-C3	7/24/2019	11.5	0.0	11.5	11.5	6.0	548.41	253926.71	2485088.29	253928.69	2485089.65	
SRA-05-07-1-C4	7/23/2019	6.0	0.0	6.0	6.0	6.0	547.13	253843.69	2485038.13	253843.90	2485036.08	
SRA-05-07-1-C5	7/24/2019	10.5	0.0	10.5	10.5	6.0	548.51	253894.31	2485029.27	253895.73	2485028.29	
SRA-05-07-1-C6	7/24/2019	10.5	0.0	10.5	10.5	6.0	547.16	253998.99	2485086.33	254001.59	2485086.66	
SRA-05-07-1-C7	7/25/2019	9.5	0.0	9.5	9.5	6.0	547.31	253964.40	2485027.21	253963.69	2485029.88	
SRA-05-07-1-C8	7/24/2019	6.0	0.0	6.0	6.0	6.0	546.13	253837.30	2484954.03	253840.51	2484957.27	
SRA-05-07-1-C9	7/25/2019	7.5	0.0	7.5	7.5	6.0	547.76	253893.86	2484945.61	253893.34	2484943.45	
SRA-05-07-1-C10RVT	7/29/2019	8.0	0.0	8.0	8.0	6.0	548.24	254027.49	2485020.66	254029.59	2485022.05	
SRA-05-07-1-C10	7/25/2019	1.5	0.0		1.5	6.0	547.54	254027.49	2485020.66	254029.62	2485021.76	
SRA-05-07-1-C10A	7/25/2019	0.0	0.0		0.0	6.0	547.31			254018.39	2485016.28	Step-Out Core
SRA-05-07-1-C10B	7/25/2019	1.0	0.0	1.3	1.0	6.0	547.49			254021.68	2485010.57	Step-Out Core
SRA-05-07-1-C10C	7/25/2019	1.5	0.0		1.5	6.0	547.43			254033.52	2485015.70	Step-Out Core
SRA-05-07-1-C10D	7/25/2019	2.5	0.0		2.5	6.0	547.41			254028.03	2485022.88	Step-Out Core
SRA-05-07-1-C11	7/25/2019	9.5	0.0	9.5	9.5	6.0	548.69	254014.32	2484969.45	254018.48	2484969.32	
SRA-05-07-1-C12	7/26/2019	11.0	0.0	11.0	11.0	6.0	547.20	253852.54	2484882.22	253853.15	2484884.17	
SRA-05-07-1-C13	7/29/2019	8.5	0.0	8.5	8.5	6.0	550.70	253924.68	2484876.59	253925.87	2484878.76	
SRA-05-07-1-C14	7/26/2019	10.0	0.0	10.0	10.0	6.0	549.69	254064.35	2484962.88	254067.58	2484963.48	
SRA-05-07-1-C15	7/29/2019	6.0	0.0	6.0	6.0	6.0	550.02	253888.84	2484829.48	253889.57	2484829.58	
SRA-05-07-1-C16	7/26/2019	6.0	0.0	6.0	6.0	6.0	551.66	254063.55	2484906.82	254064.49	2484906.42	
SRA-05-07-1-C17	7/26/2019	11.0	0.0	11.0	11.0	6.0	552.17	254106.20	2484880.62	254107.36	2484882.86	
SRA-05-07-1-C18	7/26/2019	6.0	0.0	6.0	6.0	6.0	553.84	253921.50	2484797.99	253921.37	2484800.54	

*Note: C10 was revisited due to JF Brennan respread, therefore, C10 and its associated step-outs are not used in the statistical calculations.

Average	8.92	0.00	8.92	8.92
Median	9.00	0.00	9.00	9.00
Standard Deviation	2.78	0.00	2.78	2.78

Recommended Path Forward:

Verification samples were collected at 18 locations within OU4-SRA-05-07-1. 18 of 18 samples meet or exceed the minimum thickness requirement of 6-inches. GAC samples were collected at 5 locations within OU4-SRA-05-1 with an average of 4.9% GAC and at 5 locations within OU4-SRA-07-1 with an average of 6.3% GAC; therefore; no further action is required

Prepared by: LPV Date: 8/8/2019 Reviewed by: HNK Date: 8/8/2019

A/OT Acceptance: Date: 8/8/19

OU4-DUTIL-020-SRA-06-1											
ID	Date Sampled	Sand Result (Inches)	Sand/Sediment Mix (Inches)	Total Thickness Sand and Sediment Mix (Inches)	Required Thickness (Inches)	Mudline Elevation	Proposed Coordinates		Survey Coordinates		Comments
							Northing	Easting	Northing	Easting	
DUTIL-020-SRA-06-1-C1	9/6/2018	12.5	0.0	12.5	9.0	545.91	249424.71	2484121.55	249428.09	2484124.75	
DUTIL-020-SRA-06-1-C2	9/6/2018	12.0	0.0	12.0	9.0	545.47	249485.75	2484083.67	249485.54	2484086.46	
DUTIL-020-SRA-06-1-C3	9/6/2018	9.0	0.0	9.0	9.0	545.88	249440.27	2484050.91	249441.06	2484058.06	
DUTIL-020-SRA-06-1-C4	9/10/2018	9.5	0.0	9.5	9.0	547.63	249488.65	2484014.93	249491.10	2484021.26	
DUTIL-020-SRA-06-1-C5	9/10/2018	9.0	0.0	9.0	9.0	549.42	249446.36	2483979.86	249453.58	2483981.84	
DUTIL-020-SRA-06-1-C6	9/11/2018	10.0	0.0	10.0	9.0	547.63	249501.40	2483942.71	249507.81	2483942.40	
DUTIL-020-SRA-06-1-C7	9/11/2018	9.0	0.0	9.0	9.0	551.21	249467.69	2483908.97	249468.60	2483905.81	
DUTIL-020-SRA-06-1-C8	9/12/2018	11.0	0.0	11.0	9.0	552.13	249544.40	2483869.76	249544.15	2483870.85	
DUTIL-020-SRA-06-1-C9	9/12/2018	10.0	0.0	10.0	9.0	551.84	249479.79	2483836.60	249479.04	2483837.88	
DUTIL-020-SRA-06-1-C10	10/23/2018	9.0	0.0	9.0	6.0	555.51	249554.19	2483798.20	249555.50	2483801.38	
DUTIL-020-SRA-06-1-C11	10/23/2018	12.5	0.0	12.5	6.0	552.96	249493.34	2483767.99	249492.10	2483763.99	
DUTIL-020-SRA-06-1-C12	10/23/2018	11.5	0.0	11.5	6.0	556.61	249522.93	2483730.06	249515.05	2483724.86	
DUTIL-020-SRA-06-1-C13	10/23/2018	11.5	0.0	11.5	6.0	556.44	249508.01	2483696.32	249506.70	2483694.77	
DUTIL-020-SRA-06-1-C14	10/23/2018	12.0	0.0	12.0	6.0	563.36	249570.61	2483657.13	249567.59	2483657.50	
DUTIL-020-SRA-06-1-C15	10/23/2018	12.0	0.0	12.0	6.0	563.61	249517.28	2483623.88	249520.31	2483625.37	
DUTIL-020-SRA-06-1-C16	10/23/2018	9.5	0.0	9.5	6.0	565.54	249589.41	2483585.98	249590.31	2483585.27	
DUTIL-020-SRA-06-1-C17	10/23/2018	11.0	0.0	11.0	6.0	568.04	249602.28	2483548.08	249604.94	2483549.41	
DUTIL-020-SRA-06-1-C18	10/23/2018	10.5	0.0	10.5	6.0	569.70	249604.70	2483513.39	249606.16	2483514.61	

Average	10.64	0.00	10.64
Median	10.75	0.00	10.75
Standard Deviation	1.29	0.00	1.29

Recommended Path Forward:

Verification samples were collected at 18 locations within OU4-DUTIL-020-SRA-06-1. 18 of 18 samples meet or exceed the minimum thickness requirement of 9-inches, therefore, no further action is required.

Prepared by: LPV Date: 10/24/2018 Reviewed by: BSW Date: 10/24/2018

A/OT Acceptance: _____ Date: _____

OU4-DUTIL-020-SRA-06-2												
ID	Date Sampled	Sand Result (Inches)	Sand/Sediment Mix (Inches)	Total Thickness Sand and Sediment Mix (Inches)		Required Thickness (Inches)	Mudline Elevation	Proposed Coordinates		Survey Coordinates		Comments
								Northing	Easting	Northing	Easting	
DUTIL-020-SRA-06-2-C1	9/4/2018	9.5	0.0	9.5	9.5	9.0	574.34	249342.77	2484759.99	249340.46	2484761.22	
DUTIL-020-SRA-06-2-C2	9/4/2018	9.5	0.0	9.5	9.5	9.0	571.18	249338.44	2484722.25	249340.60	2484718.99	
DUTIL-020-SRA-06-2-C3	9/4/2018	9.0	0.0	9.0	9.0	9.0	572.87	249295.88	2484690.52	249293.28	2484691.01	
DUTIL-020-SRA-06-2-C4	9/4/2018	12.0	0.0	12.0	12.0	9.0	567.29	249358.85	2484652.84	249360.36	2484646.21	
DUTIL-020-SRA-06-2-C5	9/4/2018	9.0	0.0	9.0	9.0	9.0	567.42	249318.61	2484617.70	249314.35	2484615.58	
DUTIL-020-SRA-06-2-C6	9/4/2018	7.0	0.0		**7.0**	9.0	562.93	249370.38	2484579.23	249371.79	2484575.42	
DUTIL-020-SRA-06-2-C6A	9/4/2018	13.0	0.0		13.0	9.0	562.37			249365.38	2484565.07	Step-out Core
DUTIL-020-SRA-06-2-C6B	9/4/2018	11.5	0.0	9.2	11.5	9.0	562.65			249373.72	2484565.04	Step-out Core
DUTIL-020-SRA-06-2-C6C	9/4/2018	7.0	0.0		**7.0**	9.0	563.45			249374.99	2484576.98	Step-out Core
DUTIL-020-SRA-06-2-C6D	9/4/2018	7.5	0.0		**7.5**	9.0	563.38			249365.31	2484575.91	Step-out Core
DUTIL-020-SRA-06-2-C7	9/4/2018	11.5	0.0	11.5	11.5	9.0	562.29	249331.43	2484547.17	249330.67	2484548.99	
DUTIL-020-SRA-06-2-C8	9/4/2018	20.5	0.0	20.5	20.5	9.0	560.94	249382.97	2484510.16	249381.85	2484505.91	
DUTIL-020-SRA-06-2-C9	9/4/2018	10.5	0.0	10.5	10.5	9.0	560.53	249349.14	2484474.51	249346.19	2484472.73	
DUTIL-020-SRA-06-2-C10	9/4/2018	10.5	0.0	10.5	10.5	9.0	557.36	249398.10	2484438.32	249400.20	2484436.06	
DUTIL-020-SRA-06-2-C11	9/4/2018	11.0	0.0	11.0	11.0	9.0	552.15	249361.46	2484404.21	249361.69	2484403.74	
DUTIL-020-SRA-06-2-C12	9/4/2018	19.0	0.0	19.0	19.0	9.0	552.93	249423.80	2484367.34	249431.63	2484367.99	
DUTIL-020-SRA-06-2-C13	9/4/2018	11.5	0.0	11.5	11.5	9.0	548.18	249383.20	2484334.75	249387.51	2484341.18	
DUTIL-020-SRA-06-2-C14	9/5/2018	12.0	0.0	12.0	12.0	9.0	549.07	249426.58	2484297.35	249434.60	2484299.98	
DUTIL-020-SRA-06-2-C15	9/5/2018	13.0	0.0	13.0	13.0	9.0	547.38	249397.40	2484263.06	249398.25	2484265.03	
DUTIL-020-SRA-06-2-C16	9/5/2018	11.5	0.0	11.5	11.5	9.0	546.40	249457.14	2484225.51	249455.39	2484229.55	
DUTIL-020-SRA-06-2-C17	9/5/2018	9.5	0.0		9.5	9.0	546.96	249410.83	2484192.14	249415.62	2484196.05	
DUTIL-020-SRA-06-2-C17A	9/5/2018	5.5	0.0		**5.5**	9.0	545.90			249406.44	2484199.31	Step-out Core
DUTIL-020-SRA-06-2-C17B	9/5/2018	7.0	0.0	**7.0**	**7.0**	9.0	546.58			249408.56	2484192.28	Step-out Core
DUTIL-020-SRA-06-2-C17C	9/5/2018	5.5	0.0		**5.5**	9.0	547.35			249421.92	2484195.48	Step-out Core
DUTIL-020-SRA-06-2-C17D	9/5/2018	7.5	0.0		**7.5**	9.0	546.49			249417.94	2484203.71	Step-out Core
DUTIL-020-SRA-06-2-C18	9/5/2018	9.5	0.0	9.5	9.5	9.0	546.78	249455.82	2484156.73	249456.88	2484156.71	
DUTIL-020-SRA-06-2-C19	11/13/2018	16.5	0.0	16.5	16.5	9.0	577.69	249287.86	2484793.39	249284.85	2484790.23	

***Note: The step-outs for C17 were collected per A/OT request as a layer of soft sediment was observed between the two sand layers. The step-outs (C17A, C17B, C17C, and C17D) indicate that target attainment was not achieved at this location even though the primary location contains 9.5 inches of sand. The average of all cores collected at C17 is represented in the table and included in the statistical calculations.**

Average	10.6	0.0	11.7	10.6
Median	10.5	0.0	11.0	10.5
Standard Deviation	3.6	0.0	3.5	3.6

Recommended Path Forward:

Verification samples were collected in 19 locations within OU4-DUTIL-020-SRA-06-2. 18 of 19 samples meet or exceed the minimum thickness requirement of 9-inches. However, 1 location did not meet the requirements. Additional step-outs were collected resulting in 18 out of 19 locations passing within the area. Therefore, no further action is required according to Table 5-2 in the CQAPP.

Prepared by: HNK Date: 11/13/2018 Reviewed by: BSW Date: 11/13/2018

A/OT Acceptance: _____ Date: _____

Marine Professionals Since 1919
BRENNAN

Granulated Activated Carbon Report

Project Name:	Lower Fox River OU2-5
Code:	182055

Date	Operator
6-24-20	Jason Cerda

Target: 5.50% GAC by weight. 1 Bag of GAC per 17 tons of Sand.

Time	Barge JFB Number	TONS of Sand	Bags of GAC (2000lbs Per Bag)	% of Carbon	Bags Per Hour	Wet or Dry	Specific Detail Comments
11:00 A.M.	446	341	17	4.75 %			
2:30 P.M.	Flex	302	17	5.33 %			
6:06 P.M.	446	299.91	17	5.36 %			

Comments:

Marine Professionals Since 1919
BRENNAN

Granulated Activated Carbon Report

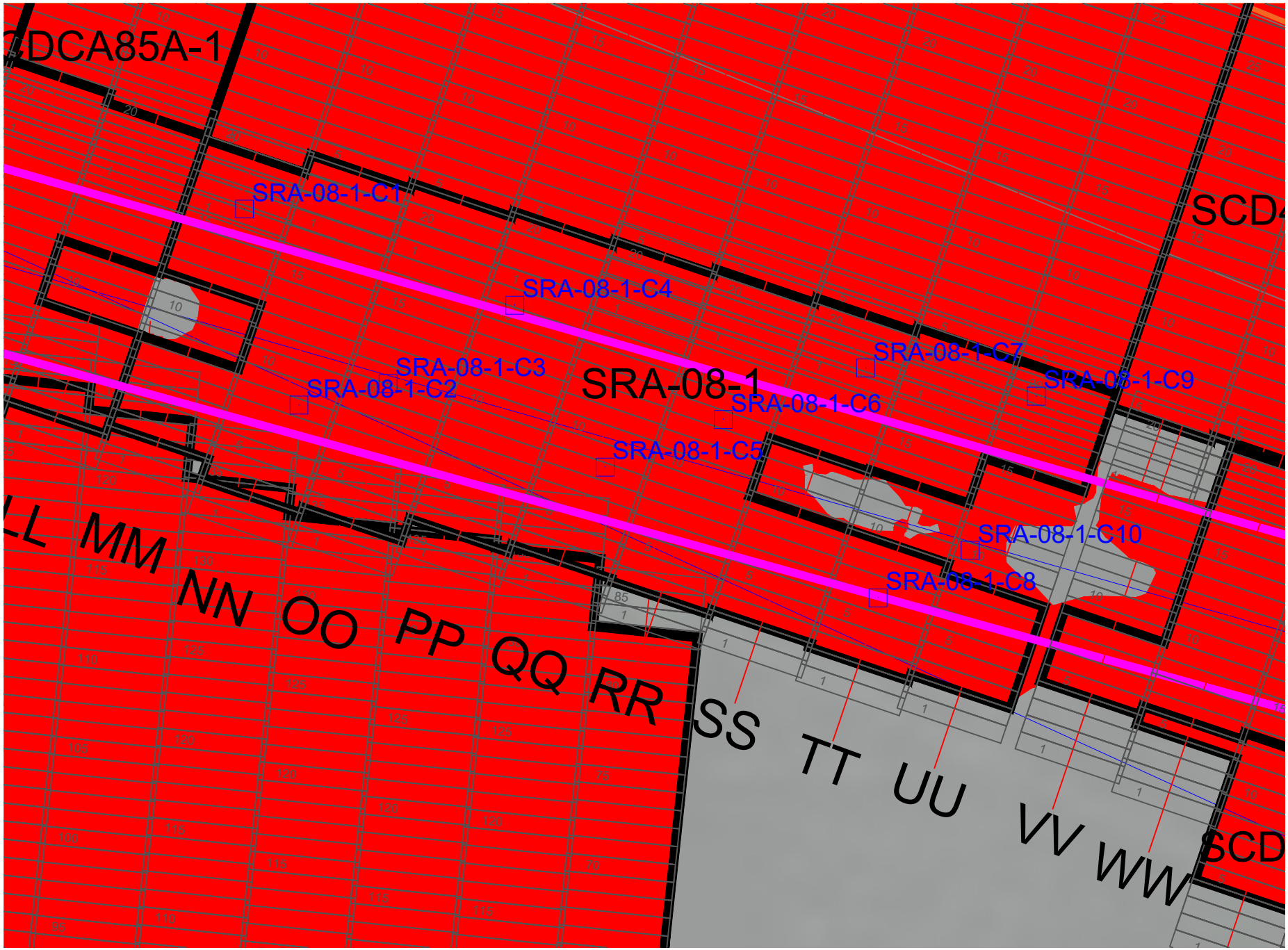
Project Name:	Lower Fox River OU2-5
Code:	182055

Date	Operator
6-25-20	Zach Hermeler

Target: 5.50% GAC by weight. 1 Bag of GAC per 17 tons of Sand.

Time	Barge JFB Number	TONS of Sand	Bags of GAC (2000lbs Per Bag)	% of Carbon	Bags Per Hour	Wet or Dry	Specific Detail Comments
7:14 A.M.	Flex	316	17	5.11 %			
10:11 A.M.	445	311	17	5.18 %			
1:47 P.M.	Flex	260	~~15~~ 15	5.45 %			

Comments:


SRA-08-1-C1
SRA-08-1-C4
SRA-08-1-C3
SRA-08-1-C2
SRA-08-1
SRA-08-1-C7
SRA-08-1-C9
SRA-08-1-C6
SRA-08-1-C5
SRA-08-1-C10
SRA-08-1-C8
SS
TT
UU
VV
WW

Step Detail Report

Step Start Date	Step Start Time	Area	SMU/CMU	Lane	Step Number	Duration (min)	Northing	Easting	Density (#/cu.ft.)	Length (ft)	Width (ft)	Height (in)	Weight (tons)	Cubic Yards	Inches/Step	Remarks
6/24/2020	14:53:32		SRA-08-1	UU	1	3.45	261310.62	2487976.52	112.00	6.00	35.00	10.50	7.70	5.09	7.85	
6/24/2020	14:57:15		SRA-08-1	UU	1	3.27	261311.39	2487976.34	112.00	6.00	35.00	10.50	10.70	7.08	10.92	
6/24/2020	15:01:16		SRA-08-1	UU	2	2.83	261316.85	2487978.91	112.00	6.00	35.00	10.50	10.80	7.14	11.02	
6/24/2020	15:04:51		SRA-08-1	UU	3	2.73	261322.42	2487981.11	112.00	6.00	35.00	10.50	10.80	7.14	11.02	
6/24/2020	15:08:21		SRA-08-1	UU	4	2.50	261328.80	2487982.08	112.00	6.00	35.00	10.50	10.80	7.14	11.02	
6/24/2020	15:11:36		SRA-08-1	UU	5	2.52	261334.37	2487983.41	112.00	6.00	35.00	10.50	10.90	7.21	11.12	
6/24/2020	15:15:08		SRA-08-1	UU	6	4.63	261341.04	2487987.11	112.00	6.00	35.00	10.50	10.80	7.14	11.02	
6/24/2020	15:20:32		SRA-08-1	UU	7	2.48	261345.74	2487987.95	112.00	6.00	35.00	10.50	10.60	7.01	10.82	
6/24/2020	15:23:46		SRA-08-1	UU	8	2.65	261351.65	2487989.77	112.00	6.00	35.00	10.50	10.40	6.88	10.61	
6/24/2020	15:27:25		SRA-08-1	UU	15	3.40	261384.64	2488001.47	112.00	6.00	35.00	10.50	11.00	7.28	11.23	
6/24/2020	15:31:35		SRA-08-1	UU	16	2.42	261389.72	2488002.51	112.00	6.00	35.00	10.50	10.70	7.08	10.92	
6/24/2020	15:34:46		SRA-08-1	UU	17	2.45	261396.50	2488005.76	112.00	6.00	35.00	10.50	10.70	7.08	10.92	
6/24/2020	15:37:58		SRA-08-1	UU	18	3.73	261402.53	2488006.43	112.00	6.00	35.00	10.50	10.60	7.01	10.82	
6/24/2020	15:42:28		SRA-08-1	UU	19	2.65	261407.72	2488008.60	112.00	6.00	35.00	10.50	11.30	7.47	11.53	
6/24/2020	15:45:52		SRA-08-1	UU	20	2.42	261412.84	2488008.55	112.00	6.00	35.00	10.50	10.50	6.94	10.71	
6/24/2020	15:49:03		SRA-08-1	UU	21	2.45	261419.08	2488012.66	112.00	6.00	35.00	10.50	10.40	6.88	10.61	
6/24/2020	15:58:37		SRA-08-1	TT	21	1.60	261429.67	2487975.86	112.00	6.00	35.00	10.50	5.10	3.37	5.20	
6/24/2020	16:00:14		SRA-08-1	TT	20	3.23	261430.00	2487975.92	112.00	6.00	35.00	10.50	10.80	7.14	11.02	
6/24/2020	16:04:29		SRA-08-1	TT	19	2.33	261424.58	2487973.07	112.00	6.00	35.00	10.50	10.70	7.08	10.92	
6/24/2020	16:07:34		SRA-08-1	TT	18	2.97	261418.55	2487972.70	112.00	6.00	35.00	10.50	11.00	7.28	11.23	
6/24/2020	16:11:18		SRA-08-1	TT	17	3.72	261413.15	2487970.40	112.00	6.00	35.00	10.50	10.40	6.88	10.61	
6/24/2020	16:15:47		SRA-08-1	TT	16	2.90	261406.95	2487967.80	112.00	6.00	35.00	10.50	11.90	7.87	12.14	
6/24/2020	16:19:41		SRA-08-1	TT	15	2.27	261401.85	2487965.95	112.00	6.00	35.00	10.50	10.70	7.08	10.92	
6/24/2020	16:22:42		SRA-08-1	TT	14	2.47	261396.35	2487964.71	112.00	6.00	35.00	10.50	10.60	7.01	10.82	
6/24/2020	16:25:56		SRA-08-1	TT	13	2.60	261390.86	2487963.06	112.00	6.00	35.00	10.50	10.60	7.01	10.82	
6/24/2020	16:29:17		SRA-08-1	TT	12	2.50	261384.01	2487961.16	112.00	6.00	35.00	10.50	10.60	7.01	10.82	
6/24/2020	16:32:33		SRA-08-1	TT	9	2.52	261366.18	2487955.06	112.00	6.00	35.00	10.50	10.70	7.08	10.92	
6/24/2020	16:35:19		SRA-08-1	TT	8	3.08	261360.93	2487952.91	112.00	6.00	35.00	10.50	11.00	7.28	11.23	
6/24/2020	16:39:10		SRA-08-1	TT	7	2.67	261355.69	2487951.37	112.00	6.00	35.00	10.50	11.20	7.41	11.43	
6/24/2020	16:42:35		SRA-08-1	TT	6	2.47	261349.81	2487950.36	112.00	6.00	35.00	10.50	10.80	7.14	11.02	
6/24/2020	16:45:49		SRA-08-1	TT	5	2.52	261344.70	2487948.94	112.00	6.00	35.00	10.50	10.70	7.08	10.92	
6/24/2020	16:48:51		SRA-08-1	TT	4	2.80	261337.85	2487946.47	112.00	6.00	35.00	10.50	10.70	7.08	10.92	
6/24/2020	16:52:25		SRA-08-1	TT	3	2.45	261333.60	2487944.56	112.00	6.00	35.00	10.50	10.60	7.01	10.82	
6/24/2020	16:55:37		SRA-08-1	TT	2	2.58	261327.15	2487942.77	112.00	6.00	35.00	10.50	10.70	7.08	10.92	
6/24/2020	16:58:57		SRA-08-1	TT	1	2.37	261321.56	2487941.51	112.00	6.00	35.00	10.50	8.90	5.89	9.09	
6/24/2020	17:08:35		SRA-08-1	SS	1	3.52	261331.20	2487911.07	112.00	6.00	35.00	10.50	10.80	7.14	11.02	
6/24/2020	17:12:36		SRA-08-1	SS	2	17.47	261337.51	2487912.69	112.00	6.00	35.00	10.50	10.40	6.88	10.61	
6/24/2020	17:30:35		SRA-08-1	SS	3	6.15	261343.66	2487915.22	112.00	6.00	35.00	10.50	10.90	7.21	11.12	
6/24/2020	17:37:15		SRA-08-1	SS	4	2.92	261350.39	2487917.20	112.00	6.00	35.00	10.50	10.70	7.08	10.92	
6/24/2020	17:40:40		SRA-08-1	SS	5	2.85	261356.16	2487918.88	112.00	6.00	35.00	10.50	10.80	7.14	11.02	
6/24/2020	17:44:02		SRA-08-1	SS	6	2.83	261361.63	2487921.02	112.00	6.00	35.00	10.50	10.80	7.14	11.02	
6/24/2020	17:47:23		SRA-08-1	SS	7	2.73	261367.45	2487922.68	112.00	6.00	35.00	10.50	10.70	7.08	10.92	
6/24/2020	17:50:52		SRA-08-1	SS	8	2.47	261372.98	2487924.38	112.00	6.00	35.00	10.50	10.70	7.08	10.92	
6/24/2020	17:54:36		SRA-08-1	SS	9	0.32	261378.50	2487926.29	112.00	6.00	35.00	10.50	4.30	2.84	4.38	
6/24/2020	17:55:56		SRA-08-1	SS	11	2.57	261388.90	2487929.35	112.00	6.00	35.00	10.50	10.80	7.14	11.02	
6/24/2020	17:59:15		SRA-08-1	SS	12	2.50	261394.93	2487930.87	112.00	6.00	35.00	10.50	10.60	7.01	10.82	
6/24/2020	18:02:16		SRA-08-1	SS	13	2.70	261400.83	2487933.97	112.00	6.00	35.00	10.50	10.70	7.08	10.92	
6/24/2020	18:05:13		SRA-08-1	SS	14	2.87	261406.26	2487935.04	112.00	6.00	35.00	10.50	10.60	7.01	10.82	
6/24/2020	18:08:36		SRA-08-1	SS	15	2.60	261413.09	2487937.56	112.00	6.00	35.00	10.50	10.70	7.08	10.92	
6/24/2020	18:11:27		SRA-08-1	SS	16	2.83	261418.37	2487938.63	112.00	6.00	35.00	10.50	10.70	7.08	10.92	
6/24/2020	18:15:03		SRA-08-1	SS	17	2.40	261423.56	2487941.27	112.00	6.00	35.00	10.50	10.70	7.08	10.92	
6/24/2020	18:17:57		SRA-08-1	SS	18	2.87	261430.91	2487943.77	112.00	6.00	35.00	10.50	11.30	7.47	11.53	
6/24/2020	18:20:51		SRA-08-1	SS	19	1.17	261435.60	2487944.37	112.00	6.00	35.00	10.50	2.50	1.65	2.55	
6/24/2020	19:01:58		SRA-08-1	SS	20	3.45	261434.77	2487943.60	112.00	6.00	35.00	10.50	9.00	5.95	9.18	
6/24/2020	19:05:55		SRA-08-1	SS	20	2.88	261441.35	2487947.18	112.00	6.00	35.00	10.50	11.70	7.74	11.94	
6/24/2020	19:09:19		SRA-08-1	SS	21	2.57	261448.18	2487949.63	112.00	6.00	35.00	10.50	10.60	7.01	10.82	
6/24/2020	19:20:23		SRA-08-1	RR	21	3.38	261457.16	2487913.44	112.00	6.00	35.00	10.50	11.50	7.61	11.74	
6/24/2020	19:24:17		SRA-08-1	RR	20	2.80	261450.63	2487911.03	112.00	6.00	35.00	10.50	11.20	7.41	11.43	
6/24/2020	19:27:36		SRA-08-1	RR	19	2.85	261445.44	2487908.83	112.00	6.00	35.00	10.50	11.10	7.34	11.32	
6/24/2020	19:31:13		SRA-08-1	RR	18	2.58	261440.05	2487908.45	112.00	6.00	35.00	10.50	10.90	7.21	11.12	
6/24/2020	19:34:33		SRA-08-1	RR	17	2.70	261434.61	2487906.14	112.00	6.00	35.00	10.50	11.10	7.34	11.32	
6/24/2020	19:37:45		SRA-08-1	RR	16	2.78	261428.34	2487903.03	112.00	6.00	35.00	10.50	10.90	7.21	11.12	
6/24/2020	19:41:17		SRA-08-1	RR	15	2.70	261423.42	2487901.96	112.00	6.00	35.00	10.50	11.20	7.41	11.43	
6/24/2020	19:44:45		SRA-08-1	RR	14	2.65	261417.95	2487900.42	112.00	6.00	35.00	10.50	10.90	7.21	11.12	
6/24/2020	19:48:25		SRA-08-1	RR	13	2.43	261411.49	2487897.73	112.00	6.00	35.00	10.50	10.90	7.21	11.12	
6/24/2020	19:51:51		SRA-08-1	RR	12	2.57	261405.66	2487895.68	112.00	6.00	35.00	10.50	11.50	7.61	11.74	
6/24/2020	19:55:26		SRA-08-1	RR	11	2.43	261399.63	2487894.64	112.00	6.00	35.00	10.50	10.90	7.21	11.12	
6/24/2020	19:58:52		SRA-08-1	RR	10	2.48	261394.63	2487892.67	112.00	6.00	35.00	10.50	11.00	7.28	11.23	
6/24/2020	20:02:07		SRA-08-1	RR	9	2.75	261389.10	2487890.50	112.00	6.00	35.00	10.50	11.20	7.41	11.43	
6/24/2020	20:05:22		SRA-08-1	RR	8	3.03	261382.49	2487888.81	112.00	6.00	35.00	10.50	11.30	7.47	11.53	
6/24/2020	20:09:25		SRA-08-1	RR	7	2.17	261377.78	2487886.75	112.00	6.00	35.00	10.50	3.10	2.05	3.16	
6/24/2020	21:01:48		SRA-08-1	RR	7	2.50	261377.24	2487886.98	112.00	6.00	35.00	10.50	7.90	5.22	8.05	
6/24/2020	21:04:49		SRA-08-1	RR	6	2.95	261371.54	2487884.86	112.00	6.00	35.00	10.50	11.20	7.41	11.43	
6/24/2020	21:08:31		SRA-08-1	RR	5	2.75	261366.54	2487882.86	112.00	6.00	35.00	10.50	11.20	7.41	11.43	
6/24/2020	21:12:02		SRA-08-1	RR	4	3.00	261360.67	2487881.43	112.00	6.00	35.00	10.50	12.10	8.00	12.34	
6/24/2020	21:16:03		SRA-08-1	RR	3	2.42	261355.27	2487878.91	112.00	6.00	35.00	10.50	11.00	7.28	11.23	
6/24/2020	21:19:13		SRA-08-1	RR	2	0.30	261350.10	2487878.30	112.00	6.00	35.00	10.50	3.40	2.25	3.47	
6/24/2020	21:20:02		SRA-08-1	RR	2	1.93	261350.07	2487877.51	112.00	6.00	35.00	10.50	8.00	5.29	8.16	
6/24/2020	21:22:28		SRA-08-1	RR	1	2.78	261342.46	2487873.42	112.00	6.00	35.00	10.50	10.40	6.88	10.61	
6/24/2020	21:32:34		SRA-08-1	QQ	1	3.60	261355.16	2487841.32	112.00	6.00	35.00	10.50	11.60	7.67	11.83	
6/24/2020	21:36:56		SRA-08-1	QQ	2	2.60	261361.43	2487842.47	112.00	6.00	35.00	10.50	11.00	7.28	11.23	
6/24/2020	21:40:18		SRA-08-1	QQ	3	2.62	261366.99	2487844.72	112.00	6.00	35.00	10.50	11.20	7.41	11.43	
6/24/2020	21:43:40		SRA-08-1	QQ	4	3.77	261372.74	2487846.52	112.00	6.00	35.00	10.50	11.40	7.54	11.63	
6/24/2020	21:48:11		SRA-08-1	QQ	5	2.75	261378.10	2487848.41	112.00	6.00	35.00	10.50	11.20	7.41	11.43	
6/24/2020	21:51:57		SRA-08-1	QQ	6	2.37	261382.53	2487849.85	112.00	6.00	35.00	10.50	11.30	7.47	11.53	
6/24/2020	21:55:04		SRA-08-1	QQ	7	2.48	261387.74	2487852.07	112.00	6.00	35.00	10.50	11.00	7.28	11.23	
6/24/2020	21:58:19		SRA-08-1	QQ	8	2.62	261394.94	2487854.30	112.00	6.00	35.00	10.50	10.90	7.21	11.12	
6/24/2020	22:01:42		SRA-08-1	QQ	9	2.60	261401.02	2487856.39	112.00	6.00	35.00	10.50	11.00	7.28	11.23	
6/24/2020	22:05:03		SRA-08-1	QQ	10	2.60	261406.89	2487858.11	112.00	6.00	35.00	10.50	11.20	7.41	11.43	
6/24/2020	22:08:25		SRA-08-1	QQ	11	2.55	261412.56	2487859.64	112.00	6.00	35.00	10.50	11.00	7.28	11.23	
6/24/2020	22:12:14		SRA-08-1	QQ	12	2.10	261418.64	2487862.24	112.00	6.00	35.00	10.50	10.90	7.21	11.12	
6/24/2020	22:15:06		SRA-08-1	QQ	13	2.62	261424.01	2487863.95	112.00	6.00	35.00	10.50	11.00	7.28	11.23	
6/24/2020	22:18:13		SRA-08-1	QQ	14	2.77	261429.83	2487865.88	112.00	6.00	35.00	10.50	11.00	7.28	11.23	
6/24/2020	22:21:45		SRA-08-1	QQ	15	2.58	261435.14	2487868.00	112.00	6.00	35.00	10.50	11.10	7.34	11.32	
6/24/2020	22:25:21		SRA-08-1	QQ	16	2.73	261441.05	2487870.06	112.00	6.00	35.00	10.50	12.50	8.27	12.76	
6/24/2020	22:29:06		SRA-08-1	QQ	17	2.25	261447.03	2487871.84	112.00	6.00	35.00	10.50	10.90	7.21	11.12	
6/24/2020	22:32:21		SRA-08-1	QQ	18	2.28	261452.06	2487873.99	112.00	6.00	35.00	10.50	11.20	7.41	11.43	
6/24/2020	22:35:39		SRA-08-1	QQ	19	2.32	261458.39	2487876.23	112.00	6.00	35.00	10.50	11.40	7.54	11.63	
6/24/2020	22:38:58		SRA-08-1	QQ	20	2.22	261463.75	2487878.29	112.00	6.00	35.00	10.50	10.90	7.21	11.12	
6/24/2020	22:41:57		SRA-08-1	QQ	21	2.37	261470.36	2487879.77	112.00	6.00	35.00	10.50	10.40	6.88	10.61	
6/24/2020	22:49:33		SRA-08-1	PP	21	3.38	261477.35	2487844.49	112.00	6.00	35.00	10.50	11.10	7.34	11.32	
6/24/2020	22:53:57		SRA-08-1	PP	20	1.98	261473.16	2487843.36	112.00	6.00	35.00	10.50	9.90	6.55	10.11	
6/24/2020	22:56:56		SRA-08-1	PP	19	0.85	261467.41	2487839.27	112.00	6.00	35.00	10.50	4.40	2.91	4.49	
Averages						**2.81**				**6.00**	**35.00**	**10.50**	**10.39**	**6.87**		
Totals						**289.24**							**1069.80**	**707.63**		

OU4-SRA-08-2												
ID	Date Sampled	Sand Result (Inches)	Sand/Sediment Mix (Inches)	Total Thickness Sand and Sediment Mix (Inches)		Required Thickness (Inches)	Mudline Elevation	Proposed Coordinates		Survey Coordinates		Comments
								Northing	Easting	Northing	Easting	
SRA-08-2-C1	6/24/2020	9.5	0.0	9.5	9.5	6.0	569.68	261537.84	2487422.26	261539.59	2487422.45	
SRA-08-2-C2	6/24/2020	7.5	0.0	7.5	7.5	6.0	562.71	261520.77	2487456.01	261514.14	2487458.96	
SRA-08-2-C3	6/24/2020	6.0	0.0	6.0	6.0	6.0	561.00	261530.12	2487493.10	261532.48	2487489.95	
SRA-08-2-C4	6/24/2020	6.0	0.0	6.0	6.0	6.0	562.65	261511.75	2487528.52	261511.07	2487521.03	
SRA-08-2-C5	6/24/2020	6.0	0.0	6.0	6.0	6.0	564.30	261488.03	2487555.88	261491.30	2487559.63	
SRA-08-2-C6	6/24/2020	6.5	0.0	6.5	6.5	6.0	559.51	261490.33	2487594.55	261492.62	2487600.99	
SRA-08-2-C7	6/24/2020	7.5	0.0	7.5	7.5	6.0	558.89	261501.65	2487638.19	261506.18	2487643.75	
SRA-08-2-C8	6/30/2020	8.0	0.0	8.0	8.0	6.0	554.99	261450.18	2487654.03	261450.19	2487652.72	
SRA-08-2-C9	6/30/2020	12.0	0.0	12.0	12.0	6.0	553.16	261460.08	2487692.65	261459.96	2487693.13	
SRA-08-2-C10	6/25/2020	2.0	0.0	2.2	**2.0**	6.0	553.77	261331.42	2488028.95	261326.32	2488030.13	
SRA-08-2-C10A	6/25/2020	0.0	0.0		**0.0**	6.0	553.08			261323.05	2488026.81	Step-Out Core
SRA-08-2-C10B	6/25/2020	1.0	0.0		**1.0**	6.0	553.51			261333.61	2488028.89	Step-Out Core
SRA-08-2-C10C	6/25/2020	4.0	0.0		**4.0**	6.0	555.63			261329.50	2488037.05	Step-Out Core
SRA-08-2-C10D	6/25/2020	4.0	0.0		**4.0**	6.0	555.34			261321.28	2488035.55	Step-Out Core
SRA-08-2-C11	7/1/2020	11.0	0.0	11.0	11.0	6.0	555.64	261379.53	2488046.14	261377.53	2488048.50	
SRA-08-2-C12	7/1/2020	6.0	0.0	6.0	6.0	6.0	559.52	261351.42	2488071.77	261358.13	2488065.20	
SRA-08-2-C13	7/1/2020	8.5	0.0	8.5	8.5	6.0	562.94	261334.05	2488103.11	261331.97	2488102.64	
SRA-08-2-C14	7/1/2020	11.5	0.0	11.5	11.5	6.0	562.73	261341.48	2488138.29	261341.80	2488143.23	
SRA-08-2-C15	7/1/2020	7.0	0.0	7.0	7.0	6.0	570.02	261317.48	2488167.04	261318.26	2488170.66	

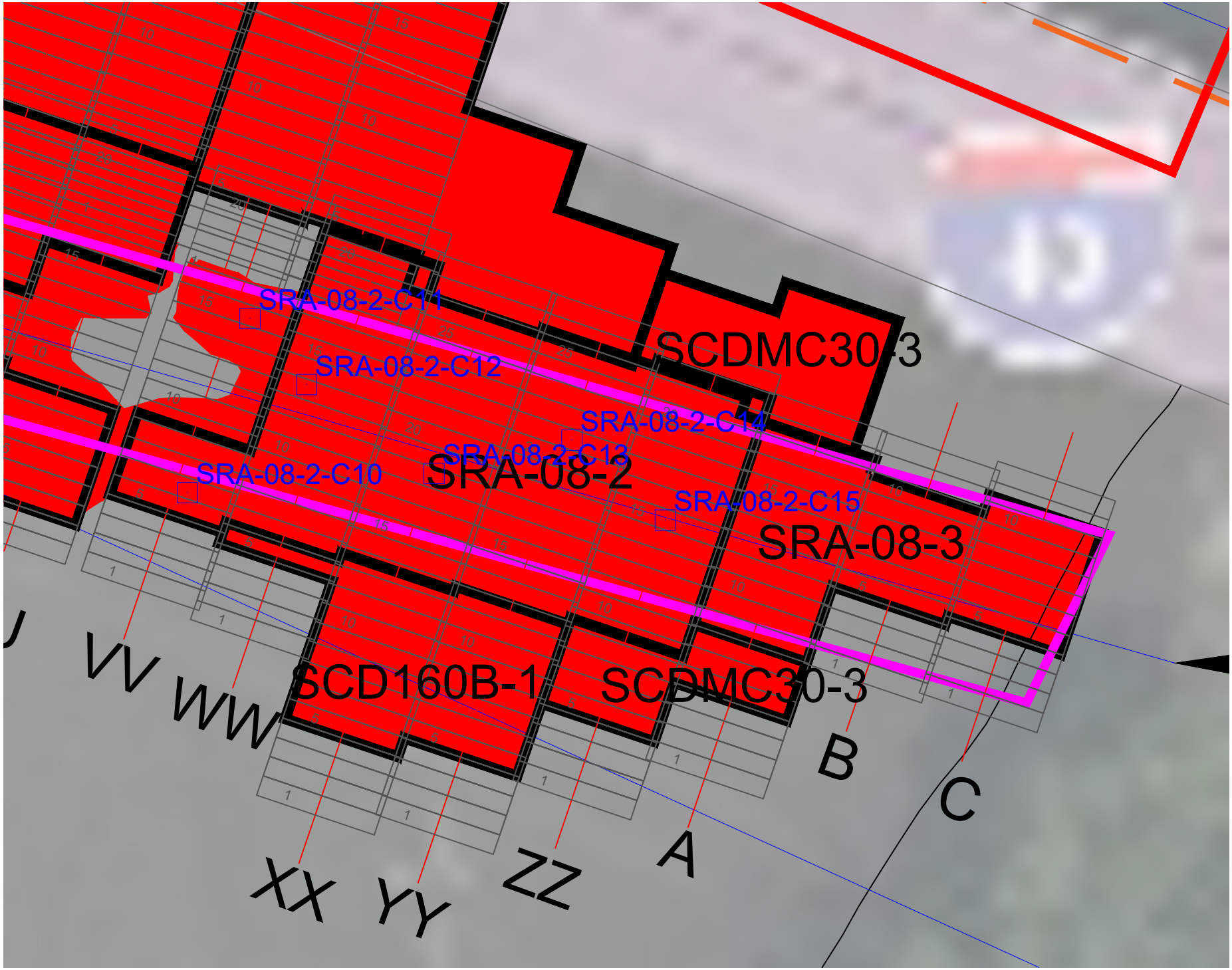
Average	6.5	0.0	7.7	6.5
Median	6.5	0.0	7.5	6.5
Standard Deviation	3.3	0.0	2.6	3.3

Recommended Path Forward:

Verification samples were collected at 15 locations within OU4-SRA-08-2. 14 of 15 samples meet or exceed the minimum thickness requirement of 6-inches. However, 1 location did not meet the requirements. Additional step-outs were collected resulting in 14 out of 15 locations passing within the area. Along with these results and J.F. Brennan's Step Detail, Tetra Tech recommends accepting this area on an exception basis.

Prepared by: HNK Date: 7/8/2020 Reviewed by: BSW Date: 7/9/2020

A/OT Acceptance: _____ Date: _____


SRA-08-2-C11
SRA-08-2-C12
SRA-08-2-C14
SRA-08-2-C13
SRA-08-2-C10
SRA-08-2-C15
SCDMC30-3
SRA-08-2
SRA-08-3
SCD160B-1
SCDMC30-3
J
VV
WW
XX
YY
ZZ
A
B
C

Step Detail Report

Step Start Date	Step Start Time	Area	SMU/CMU	Lane	Step Number	Duration (min)	Northing	Easting	Density (#/cu.ft.)	Length (ft)	Width (ft)	Height (in)	Weight (tons)	Cubic Yards	Inches/Step	Remarks
6/22/2020	10:35:22	SRA08-2	SRA08-2	VV	2	7.67	261302.23	2488017.23	112.00	6.00	35.00	10.50	11.80	7.80	12.03	
6/22/2020	10:43:03	SRA08-2	SRA08-2	VV	3	1.55	261309.29	2488019.87	112.00	6.00	35.00	10.50	4.90	3.24	5.00	
6/22/2020	10:45:07	SRA08-2	SRA08-2	VV	3	1.42	261309.17	2488018.87	112.00	6.00	35.00	10.50	5.80	3.84	5.92	
6/22/2020	10:47:02	SRA08-2	SRA08-2	VV	4	2.77	261315.23	2488021.98	112.00	6.00	35.00	10.50	5.80	3.84	5.92	
6/22/2020	10:50:06	SRA08-2	SRA08-2	VV	4	1.53	261315.03	2488020.78	112.00	6.00	35.00	10.50	0.60	0.40	0.62	
6/22/2020	10:52:27	SRA08-2	SRA08-2	VV	4	4.43	261315.08	2488021.78	112.00	6.00	35.00	10.50	12.70	8.40	12.96	
6/22/2020	10:57:09	SRA08-2	SRA08-2	VV	5	0.85	261320.96	2488023.37	112.00	6.00	35.00	10.50	3.50	2.31	3.56	
6/22/2020	10:58:31	SRA08-2	SRA08-2	VV	6	2.83	261326.19	2488025.44	112.00	6.00	35.00	10.50	10.50	6.94	10.71	
6/22/2020	11:01:52	SRA08-2	SRA08-2	VV	7	2.78	261331.64	2488027.20	112.00	6.00	35.00	10.50	10.40	6.88	10.61	
6/22/2020	11:05:25	SRA08-2	SRA08-2	VV	8	2.63	261337.46	2488028.53	112.00	6.00	35.00	10.50	10.70	7.08	10.92	
6/22/2020	11:08:33	SRA08-2	SRA08-2	VV	9	5.18	261343.54	2488031.41	112.00	6.00	35.00	10.50	1.80	1.19	1.84	
6/22/2020	11:24:44	SRA08-2	SRA08-2	WW	5	0.95	261305.90	2488055.74	112.00	6.00	35.00	10.50	2.90	1.92	2.96	
6/22/2020	11:25:42	SRA08-2	SRA08-2	WW	5	3.38	261305.93	2488055.54	112.00	6.00	35.00	10.50	10.50	6.94	10.71	
6/22/2020	11:29:50	SRA08-2	SRA08-2	WW	6	2.58	261311.75	2488057.06	112.00	6.00	35.00	10.50	10.50	6.94	10.71	
6/22/2020	11:32:56	SRA08-2	SRA08-2	WW	7	2.83	261317.21	2488059.29	112.00	6.00	35.00	10.50	10.50	6.94	10.71	
6/22/2020	11:36:32	SRA08-2	SRA08-2	WW	8	2.62	261323.12	2488060.81	112.00	6.00	35.00	10.50	10.60	7.01	10.82	
6/22/2020	11:39:39	SRA08-2	SRA08-2	WW	9	2.83	261328.81	2488063.15	112.00	6.00	35.00	10.50	10.50	6.94	10.71	
6/22/2020	11:43:00	SRA08-2	SRA08-2	WW	10	2.78	261334.24	2488064.92	112.00	6.00	35.00	10.50	10.30	6.81	10.51	
6/22/2020	11:46:17	SRA08-2	SRA08-2	WW	11	3.53	261339.58	2488066.90	112.00	6.00	35.00	10.50	10.50	6.94	10.71	
6/22/2020	11:50:19	SRA08-2	SRA08-2	WW	12	2.85	261345.07	2488068.74	112.00	6.00	35.00	10.50	10.50	6.94	10.71	
6/22/2020	11:53:41	SRA08-2	SRA08-2	WW	13	2.95	261350.72	2488070.48	112.00	6.00	35.00	10.50	10.80	7.14	11.02	
6/22/2020	11:56:39	SRA08-2	SRA08-2	WW	14	0.07	261351.20	2488070.24	112.00	6.00	35.00	10.50	0.20	0.13	0.20	
6/22/2020	11:57:13	SRA08-2	SRA08-2	WW	14	2.85	261356.34	2488072.40	112.00	6.00	35.00	10.50	10.50	6.94	10.71	
6/22/2020	12:00:35	SRA08-2	SRA08-2	WW	15	2.82	261362.39	2488074.33	112.00	6.00	35.00	10.50	10.40	6.88	10.61	
6/22/2020	12:03:54	SRA08-2	SRA08-2	WW	16	2.85	261368.49	2488076.29	112.00	6.00	35.00	10.50	10.50	6.94	10.71	
6/22/2020	12:07:15	SRA08-2	SRA08-2	WW	17	2.83	261373.87	2488078.23	112.00	6.00	35.00	10.50	10.50	6.94	10.71	
6/22/2020	12:10:36	SRA08-2	SRA08-2	WW	18	2.80	261380.08	2488080.40	112.00	6.00	35.00	10.50	10.50	6.94	10.71	
6/22/2020	12:13:54	SRA08-2	SRA08-2	WW	19	10.92	261385.07	2488082.18	112.00	6.00	35.00	10.50	20.60	13.62	21.01	
6/22/2020	12:29:22	SRA08-2	SRA08-2	XX	25	16.33	261374.14	2488113.97	112.00	6.00	35.00	10.50	12.70	8.40	12.96	
6/22/2020	12:46:12	SRA08-2	SRA08-2	XX	24	2.90	261368.73	2488112.18	112.00	6.00	35.00	10.50	4.60	3.04	4.69	
6/22/2020	16:34:18	SRA08-2	SRA08-2	XX	13	3.58	261300.45	2488089.41	112.00	6.00	35.00	10.50	10.60	7.01	10.82	
6/22/2020	16:38:24	SRA08-2	SRA08-2	XX	14	2.98	261307.52	2488091.83	112.00	6.00	35.00	10.50	10.80	7.14	11.02	
6/22/2020	16:41:54	SRA08-2	SRA08-2	XX	15	2.88	261312.80	2488093.39	112.00	6.00	35.00	10.50	10.60	7.01	10.82	
6/22/2020	16:45:18	SRA08-2	SRA08-2	XX	16	2.98	261317.54	2488095.37	112.00	6.00	35.00	10.50	10.80	7.14	11.02	
6/22/2020	16:48:47	SRA08-2	SRA08-2	XX	17	2.97	261323.53	2488097.14	112.00	6.00	35.00	10.50	10.70	7.08	10.92	
6/22/2020	16:52:15	SRA08-2	SRA08-2	XX	18	2.90	261328.75	2488099.17	112.00	6.00	35.00	10.50	10.70	7.08	10.92	
6/22/2020	16:55:40	SRA08-2	SRA08-2	XX	19	2.95	261334.78	2488100.89	112.00	6.00	35.00	10.50	10.70	7.08	10.92	
6/22/2020	16:59:07	SRA08-2	SRA08-2	XX	20	3.05	261340.68	2488102.92	112.00	6.00	35.00	10.50	11.10	7.34	11.32	
6/22/2020	17:02:41	SRA08-2	SRA08-2	XX	21	2.92	261346.07	2488104.78	112.00	6.00	35.00	10.50	10.60	7.01	10.82	
6/22/2020	17:06:06	SRA08-2	SRA08-2	XX	22	3.03	261351.78	2488106.71	112.00	6.00	35.00	10.50	11.00	7.28	11.23	
6/22/2020	17:09:54	SRA08-2	SRA08-2	XX	23	2.68	261357.69	2488108.81	112.00	6.00	35.00	10.50	10.50	6.94	10.71	
6/22/2020	17:13:05	SRA08-2	SRA08-2	XX	24	3.05	261363.73	2488111.39	112.00	6.00	35.00	10.50	10.70	7.08	10.92	
6/22/2020	17:16:39	SRA08-2	SRA08-2	XX	25	1.58	261369.15	2488113.01	112.00	6.00	35.00	10.50	6.00	3.97	6.13	
6/22/2020	17:23:55	SRA08-2	SRA08-2	YY	25	3.58	261361.94	2488150.32	112.00	6.00	35.00	10.50	10.80	7.14	11.02	
6/22/2020	17:28:01	SRA08-2	SRA08-2	YY	24	2.93	261356.52	2488148.30	112.00	6.00	35.00	10.50	10.50	6.94	10.71	
6/22/2020	17:31:27	SRA08-2	SRA08-2	YY	23	2.88	261350.53	2488146.13	112.00	6.00	35.00	10.50	10.80	7.14	11.02	
6/22/2020	17:34:50	SRA08-2	SRA08-2	YY	22	2.60	261344.71	2488143.96	112.00	6.00	35.00	10.50	10.80	7.14	11.02	
6/22/2020	17:37:57	SRA08-2	SRA08-2	YY	21	2.62	261339.15	2488141.88	112.00	6.00	35.00	10.50	10.60	7.01	10.82	
6/22/2020	17:41:04	SRA08-2	SRA08-2	YY	20	2.73	261333.55	2488140.13	112.00	6.00	35.00	10.50	10.70	7.08	10.92	
6/22/2020	17:44:19	SRA08-2	SRA08-2	YY	19	2.75	261328.07	2488138.32	112.00	6.00	35.00	10.50	10.90	7.21	11.12	
6/22/2020	17:47:34	SRA08-2	SRA08-2	YY	18	6.07	261322.14	2488136.57	112.00	6.00	35.00	10.50	10.60	7.01	10.82	
6/22/2020	17:54:09	SRA08-2	SRA08-2	YY	17	2.75	261316.72	2488134.33	112.00	6.00	35.00	10.50	10.80	7.14	11.02	
6/22/2020	17:57:24	SRA08-2	SRA08-2	YY	16	2.70	261310.78	2488132.11	112.00	6.00	35.00	10.50	10.60	7.01	10.82	
6/22/2020	18:00:36	SRA08-2	SRA08-2	YY	15	2.72	261305.30	2488130.29	112.00	6.00	35.00	10.50	10.60	7.01	10.82	
6/22/2020	18:03:49	SRA08-2	SRA08-2	YY	14	1.22	261299.45	2488128.70	112.00	6.00	35.00	10.50	5.70	3.77	5.82	
6/22/2020	18:05:34	SRA08-2	SRA08-2	YY	14	1.03	261299.60	2488128.38	112.00	6.00	35.00	10.50	5.10	3.37	5.20	
6/22/2020	18:07:06	SRA08-2	SRA08-2	YY	13	2.90	261294.22	2488126.54	112.00	6.00	35.00	10.50	10.50	6.94	10.71	
6/22/2020	18:16:21	SRA08-2	SRA08-2	ZZ	9	3.32	261282.07	2488158.36	112.00	6.00	35.00	10.50	10.70	7.08	10.92	
6/22/2020	18:20:11	SRA08-2	SRA08-2	ZZ	10	5.42	261287.70	2488160.32	112.00	6.00	35.00	10.50	10.70	7.08	10.92	
6/22/2020	18:26:06	SRA08-2	SRA08-2	ZZ	11	2.65	261293.55	2488162.15	112.00	6.00	35.00	10.50	10.60	7.01	10.82	
6/22/2020	18:29:15	SRA08-2	SRA08-2	ZZ	12	2.68	261298.34	2488163.66	112.00	6.00	35.00	10.50	10.70	7.08	10.92	
6/22/2020	18:32:27	SRA08-2	SRA08-2	ZZ	13	35.40	261304.51	2488166.25	112.00	6.00	35.00	10.50	11.40	7.54	11.63	
6/22/2020	19:08:21	SRA08-2	SRA08-2	ZZ	14	3.05	261309.61	2488168.01	112.00	6.00	35.00	10.50	11.20	7.41	11.43	
6/22/2020	19:11:55	SRA08-2	SRA08-2	ZZ	15	3.03	261315.43	2488169.67	112.00	6.00	35.00	10.50	11.10	7.34	11.32	
6/22/2020	19:15:28	SRA08-2	SRA08-2	ZZ	16	3.28	261320.63	2488171.59	112.00	6.00	35.00	10.50	11.70	7.74	11.94	
6/22/2020	19:19:15	SRA08-2	SRA08-2	ZZ	17	27.75	261326.62	2488173.79	112.00	6.00	35.00	10.50	11.00	7.28	11.23	
6/22/2020	19:47:30	SRA08-2	SRA08-2	ZZ	18	2.98	261332.05	2488175.79	112.00	6.00	35.00	10.50	11.10	7.34	11.32	
6/22/2020	19:50:59	SRA08-2	SRA08-2	ZZ	19	3.02	261338.03	2488177.60	112.00	6.00	35.00	10.50	11.20	7.41	11.43	
6/22/2020	19:54:31	SRA08-2	SRA08-2	ZZ	20	2.87	261343.85	2488179.72	112.00	6.00	35.00	10.50	11.00	7.28	11.23	
6/22/2020	19:57:54	SRA08-2	SRA08-2	ZZ	21	2.92	261349.02	2488181.66	112.00	6.00	35.00	10.50	11.30	7.47	11.53	
6/22/2020	20:01:19	SRA08-2	SRA08-2	ZZ	22	2.92	261354.89	2488183.69	112.00	6.00	35.00	10.50	11.40	7.54	11.63	
6/22/2020	20:04:44	SRA08-2	SRA08-2	ZZ	23	2.85	261360.93	2488185.85	112.00	6.00	35.00	10.50	10.40	6.88	10.61	
Averages						**3.98**				**6.00**	**35.00**	**10.50**	**9.80**	**6.48**		
Totals						**286.48**							**705.90**	**466.82**		

OU4-SRA-08-3											
ID	Date Sampled	Sand Result (Inches)	Sand/Sediment Mix (Inches)	Total Thickness Sand and Sediment Mix (Inches)	Required Thickness (Inches)	Mudline Elevation	Proposed Coordinates		Survey Coordinates		Comments
							Northing	Easting	Northing	Easting	
SRA-08-3-C1	6/24/2020	9.0	0.0	9.0	6.0	577.83	261574.92	2487332.21	261574.78	2487335.36	No Sediment Plug
SRA-08-3-C2	6/24/2020	11.0	0.0	11.0	6.0	576.93	261559.53	2487359.23	261564.80	2487353.71	
SRA-08-3-C3	6/24/2020	7.0	0.0	7.0	6.0	576.12	261545.76	2487393.27	261541.70	2487398.26	
SRA-08-3-C4	7/1/2020	9.0	0.0	9.0	6.0	574.29	261312.30	2488205.26	261308.94	2488197.81	
SRA-08-3-C5	7/1/2020	8.0	0.0	8.0	6.0	576.19	261309.85	2488241.25	261305.76	2488245.31	
SRA-08-3-C6	7/1/2020	9.5	0.0	9.5	6.0	576.25	261304.13	2488276.96	261302.64	2488280.36	

Average	8.92	0.00	8.92
Median	9.00	0.00	9.00
Standard Deviation	1.36	0.00	1.36

Recommended Path Forward:

Verification samples were collected at 6 locations within OU4-SRA-08-3. 6 of 6 samples meet or exceed the minimum thickness requirement of 6-inches, therefore, no further action is required.

Prepared by: HNK Date: 7/6/2020 Reviewed by: BSW Date: 7/6/2020

A/OT Acceptance: _____ Date: _____

Armor Stone Placement Thickness Verification and Approval Form

OU4-SRA-08-3 (D50=1.5") Bathymetric & Volumetric Survey								
Survey Date	Area (square feet)	Area Complete	Required Thickness (inches)	Bathymetric Survey Thickness (inches)	Required Volume (cubic yards)	Placed Volume Hydrographic Survey (cubic yards)	Placed Volume Barge Survey (cubic yards)	Barge Survey Thickness (inches)
7/28/2020	9,232.0	85%	4.0	10.0	114.0	285.0	379.6	13.3

OU4-SRA-08-3 (D50=1.5")									
ID	Date Sampled	Stone Result (Inches)	Required Thickness (Inches)	Mudline	Pre-Placement Coordinates		Survey Coordinates		Comments
					Northing	Easting	Northing	Easting	
SRA-08-3-G1	7/22/2020	4.0	4.0	578.3	261552.93	2487368.88	261551.14	2487369.57	
SRA-08-3-G2	7/27/2020	26.0	4.0	578.7	261564.77	2487339.46	261565.49	2487337.64	Poling method used after additional stone placement
SRA-08-3-G3	7/22/2020	7.5	4.0	577.1	261305.72	2488254.91	261304.62	2488252.54	
SRA-08-3-G4	7/27/2020	16.0	4.0	579.6	261294.99	2488294.01	261295.39	2488296.57	Poling method used after additional stone placement

Average	13.38
Median	11.77
Standard Deviation	9.81

Recommended Path Forward:

Armor Stone D50=1.5" was placed and surveyed within OU4-SRA-08-3. The armor stone thicknesses based on bathymetric survey meet or exceed the minimum thickness requirement of 4-inches. Furthermore, thickness verification poling was conducted at 4 locations. 4 of 4 samples meet or exceed the minimum thickness requirement of 4-inches, therefore, no further action is required.

Prepared by: HNK Date: 7/28/2020 Reviewed by: BSW Date: 7/30/2020

A/OT Acceptance: _____ Date: _____

Attachment 3

USGS Flow Data for Station No. 040851385 – Fox River Oil Tank Depot at Green Bay, WI

OU4 Flow Evaluation Tables and Figures

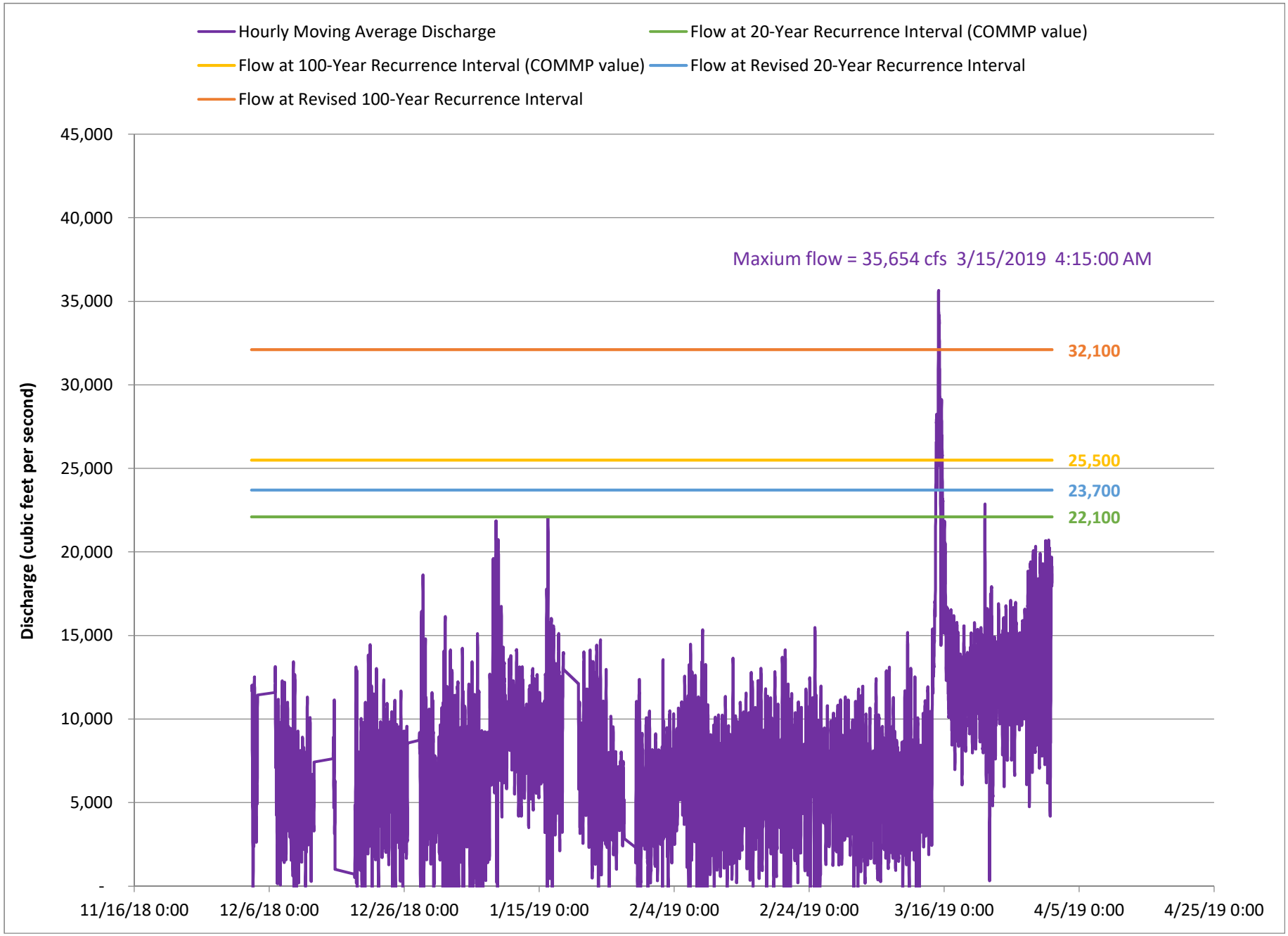
Recurrence Interval Flow Exceedance Evaluation
OU4 Cap Areas Completed 2018-2020

Location	Area (Acres)	Year Cap Completed (All Layers Placed)	AOT Acceptance Date (Provided by TtEC)	Affected by 3/15/19 100-yr flow event	Affected by 4/18-4/19/19 20-yr flow event	Affected by 5/19/19 100-yr flow event	Affected by 7/24/19 100-yr flow event	Affected by 8/7/19 20-yr flow event	Affected by 10/16/19 20-yr flow event	Affected by 3/20-3/29/20 20-yr flow event	Affected by 4/7-4/19/20 20-yr flow event	Affected by 6/3-6/23/20 20-yr flow event	Affected by 7/10/20 20-yr flow event	Affected by 8/10/20 20-yr flow event	Affected by 10/24/20 20-yr flow event	Affected by 11/11 and 11/17/20 20-yr flow event
CB58	0.09	2018	11/12/2018	X	X	X	X	X	X	X	X	X	X	X	X	X
SRA-06-1	1.43	2018	11/28/2018	X	X	X	X	X	X	X	X	X	X	X	X	X
SRA-06-2	1.44	2018	11/28/2018	X	X	X	X	X	X	X	X	X	X	X	X	X
CB20-B3	0.65	2019	7/10/2019				X	X	X	X	X	X	X	X	X	X
SRA-03-2 (in Utility Corridor 023)	0.94	2019	8/29/2019						X	X	X	X	X	X	X	X
SRA-03-3 (in Utility Corridor 023)	0.12	2019	8/29/2019						X	X	X	X	X	X	X	X
SRA-03-1 (in Utility Corridor 023)	0.27	2019	8/29/2019						X	X	X	X	X	X	X	X
SRA-04-1 (existing North Bulkhead and Intake Area at the Georgia-Pacific Day Street Mill)	0.16	2019	9/24/2019						X	X	X	X	X	X	X	X
SRA-05-07-1 (in Utility Corridor 029/030)	1.7	2019	10/13/2019						X	X	X	X	X	X	X	X
SRA-05-07-2 (in Utility Corridor 029/030)	0.13	2019	10/13/2019						X	X	X	X	X	X	X	X
CB60-1	3.03	2019	10/29/2019							X	X	X	X	X	X	X
CB60-3	0.92	2019	10/30/2019							X	X	X	X	X	X	X
CC22	0.23	2019	11/12/2019							X	X	X	X	X	X	X
CBD35NOP-DCA45-7	0.15	2020	5/26/2020									X	X	X	X	X
CBD157-3	0.19	2020	5/26/2020									X	X	X	X	X
CB60-2	0.36	2020	6/26/2020										X	X	X	X
CA94-2	0.41	2020	7/16/2020											X	X	X
CA94-1	2.52	2020	7/28/2020											X	X	X
CB61	0.12	2020	7/29/2020											X	X	X
SRA-08-3 (in Utility Corridor 049)	0.10	2020	8/4/2020											X	X	X
SRA-08-1 (in Utility Corridor 049)	0.9	2020	8/11/2020												X	X
SRA-08-2 (in Utility Corridor 049)	0.93	2020	8/11/2020												X	X

Sentinel Cap

Prepared by: TMK1
Checked by: KMC2

OU4 USGS 040851385 Fox River Oil Tank Depot at Green Bay, WI



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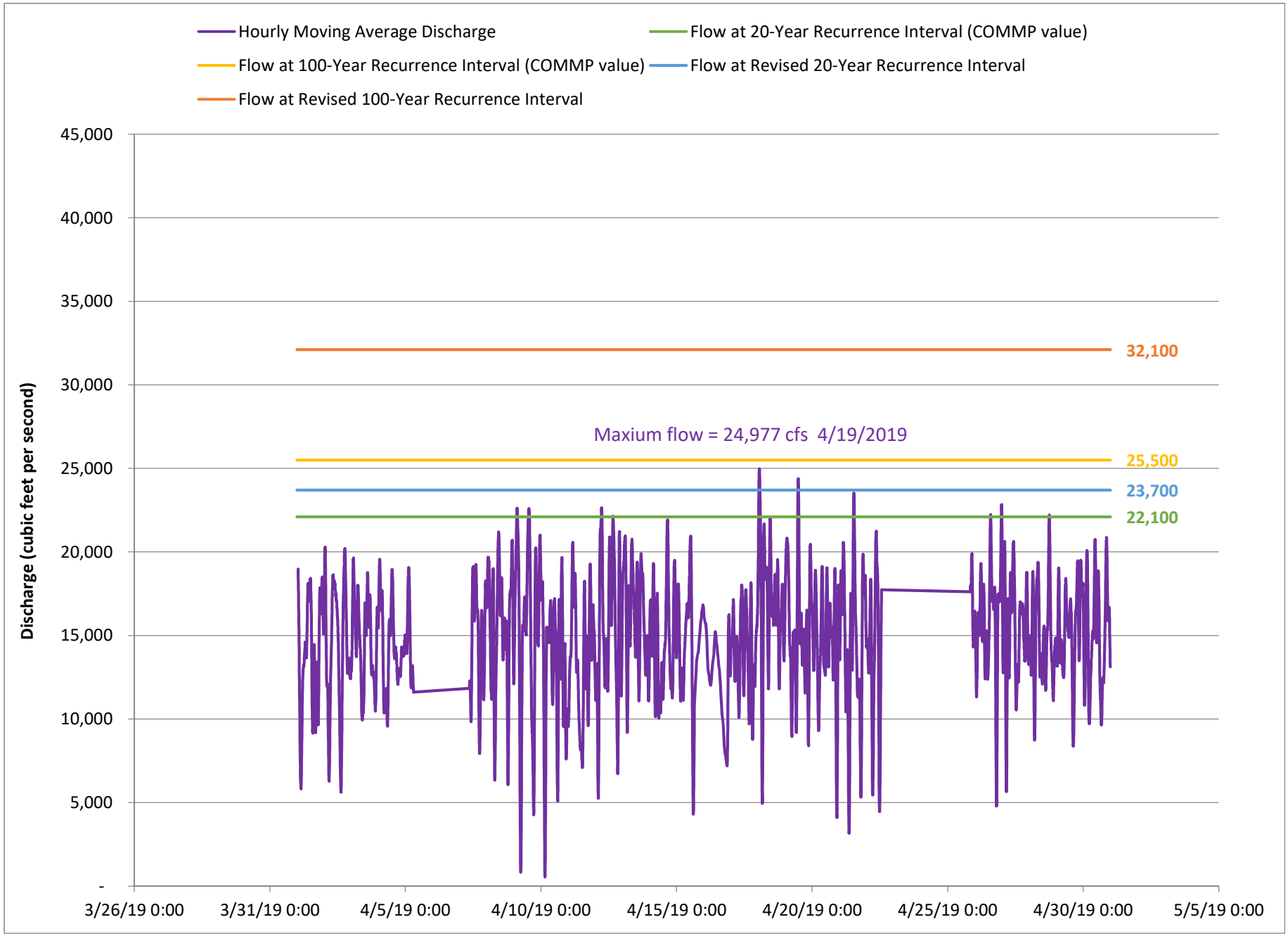

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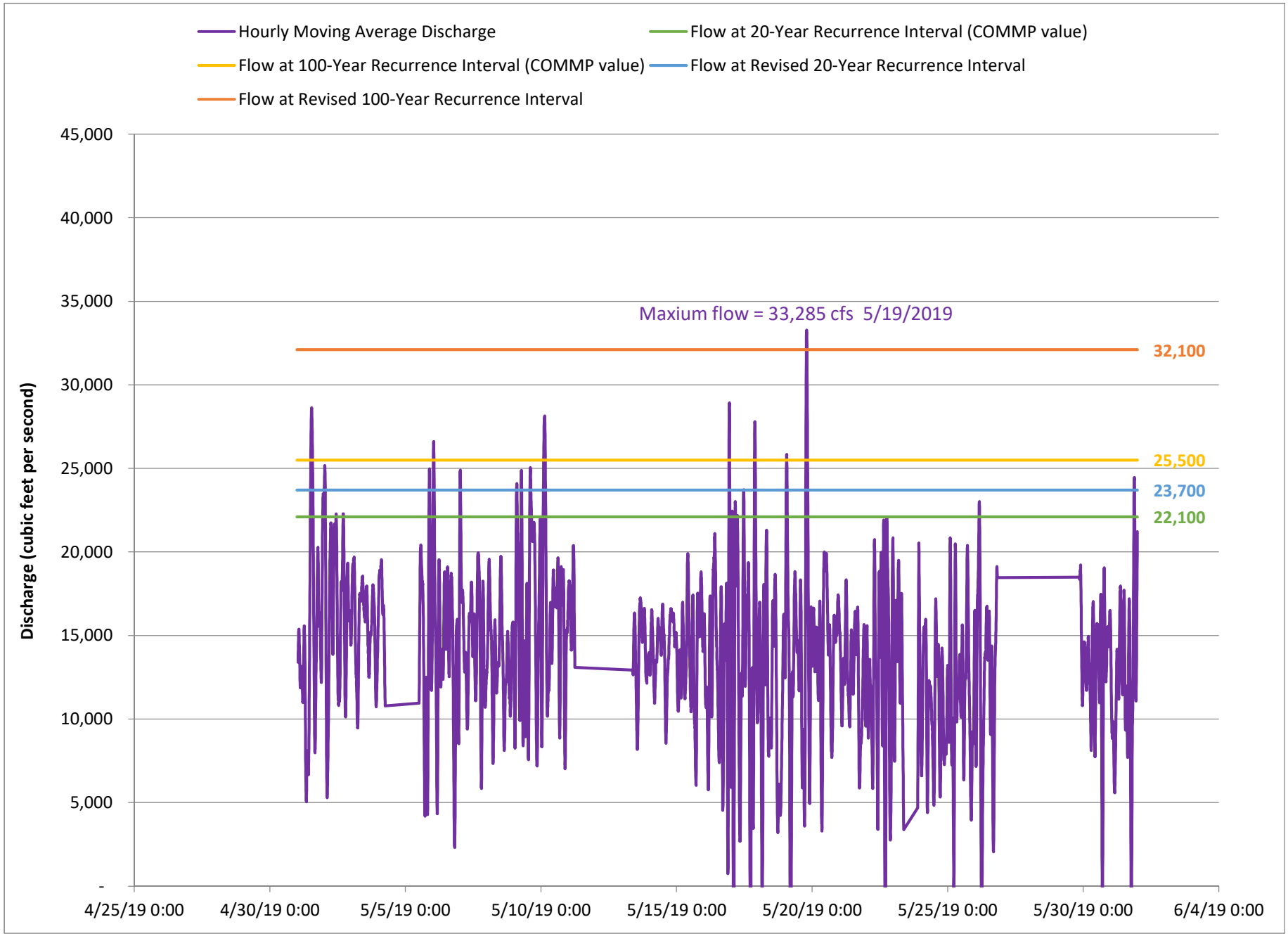

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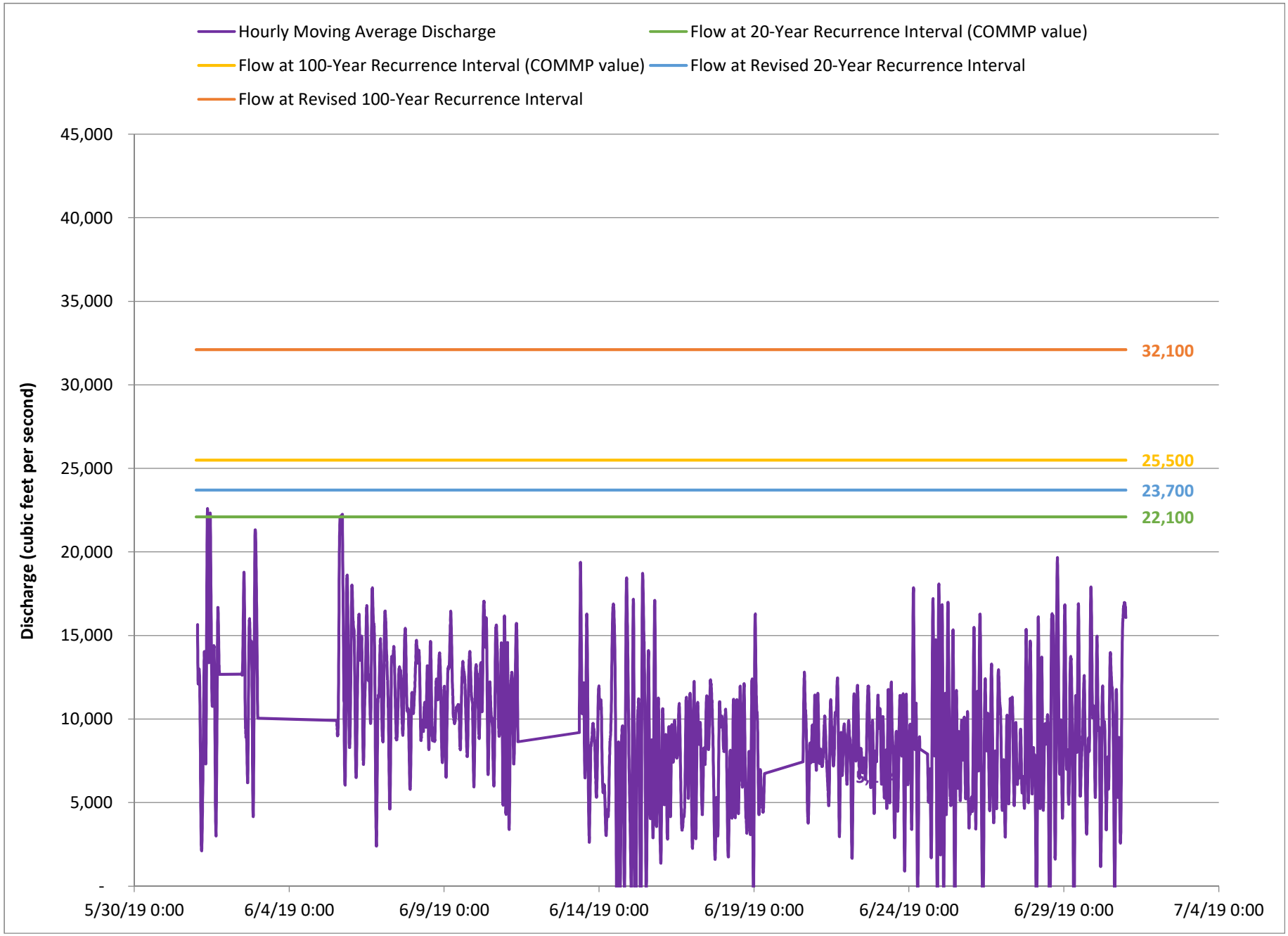

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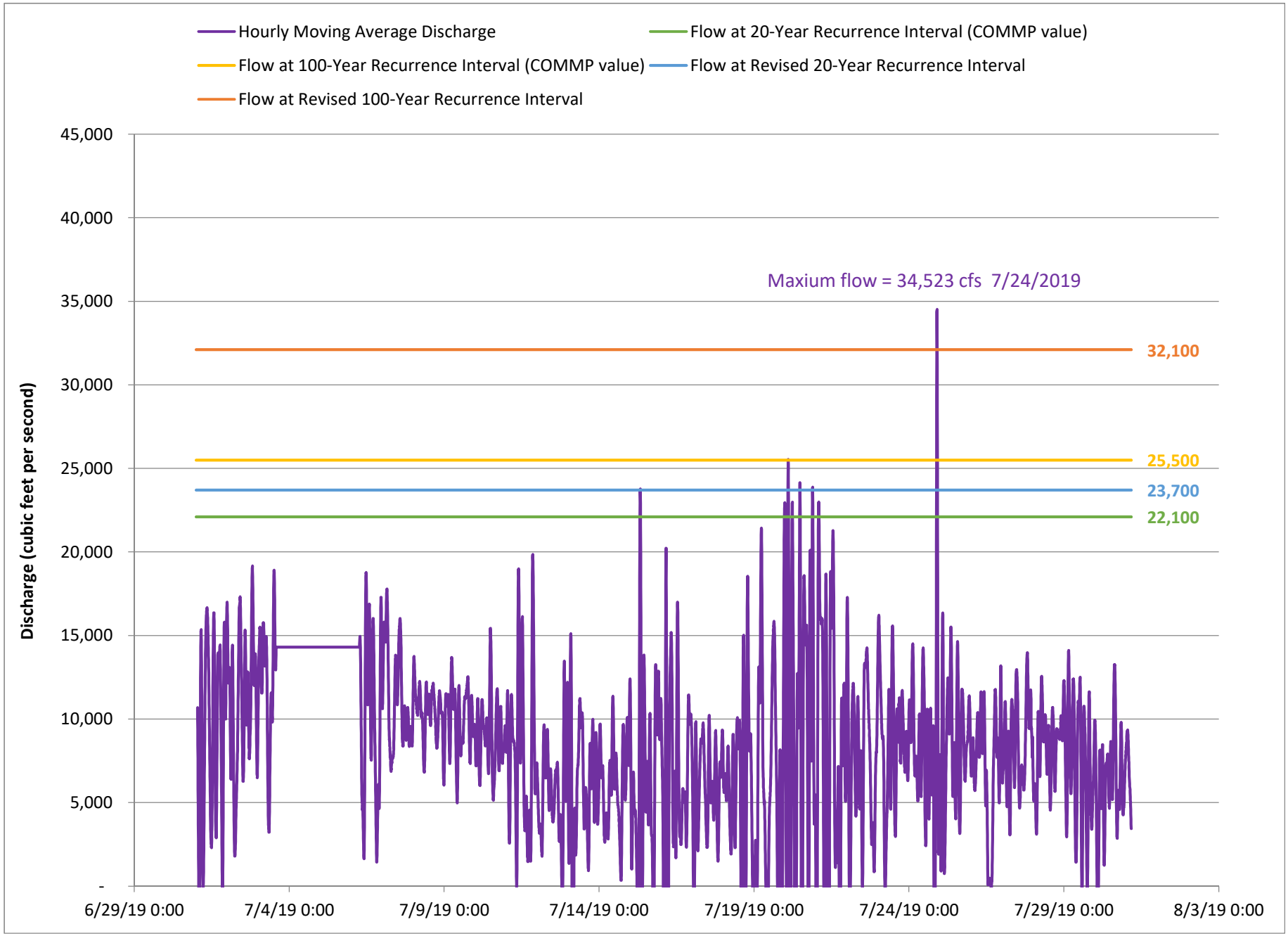

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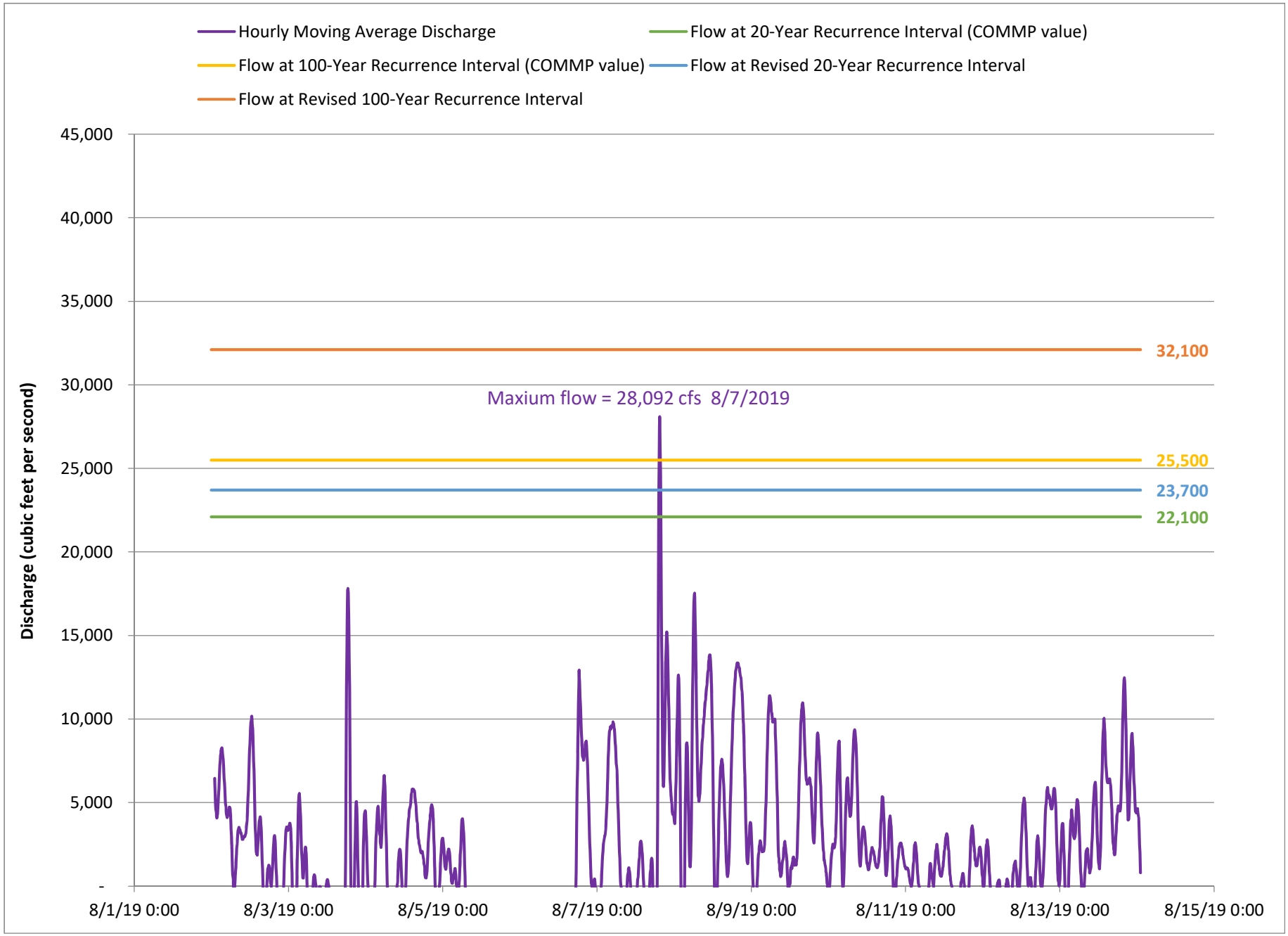

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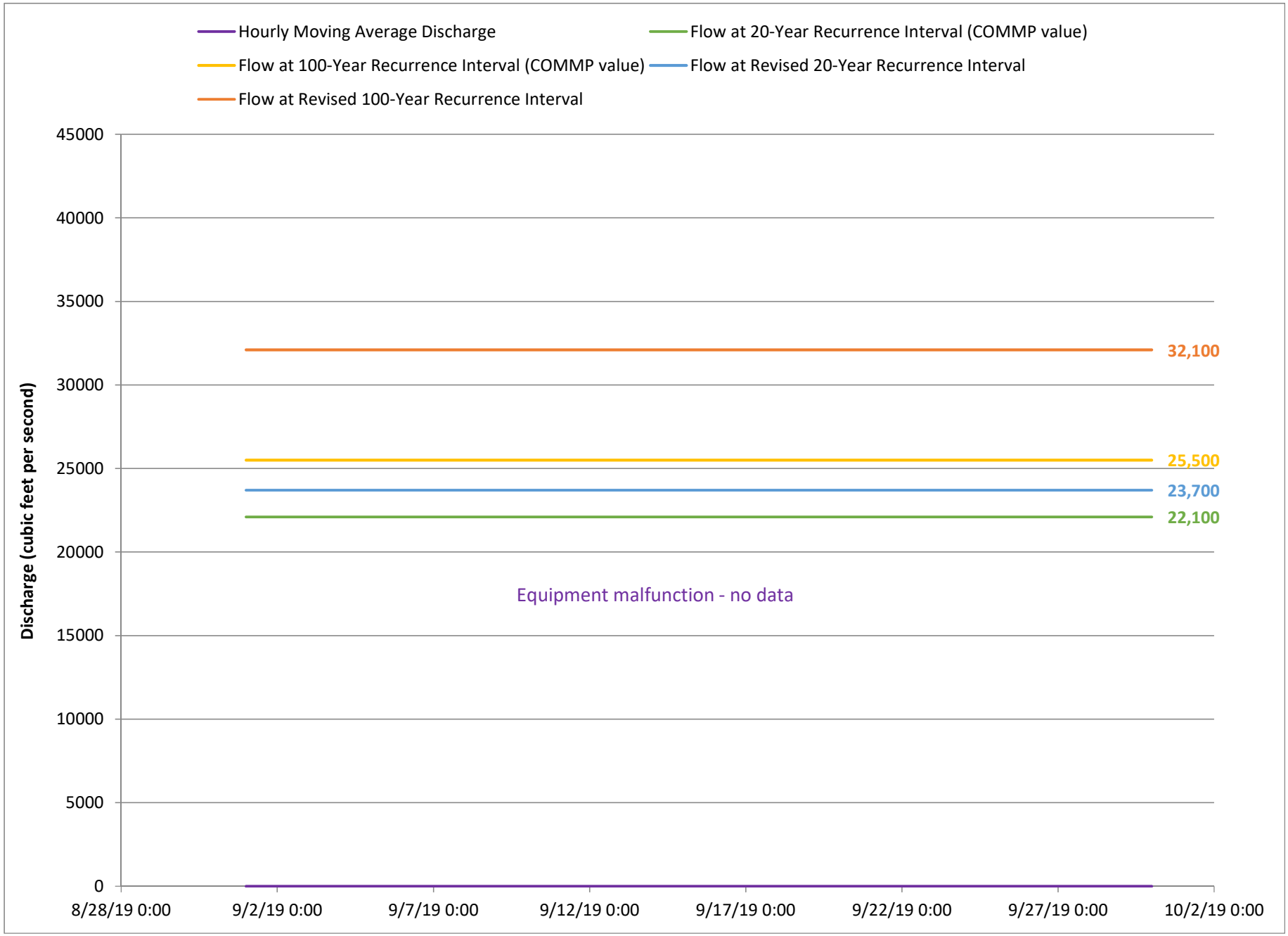

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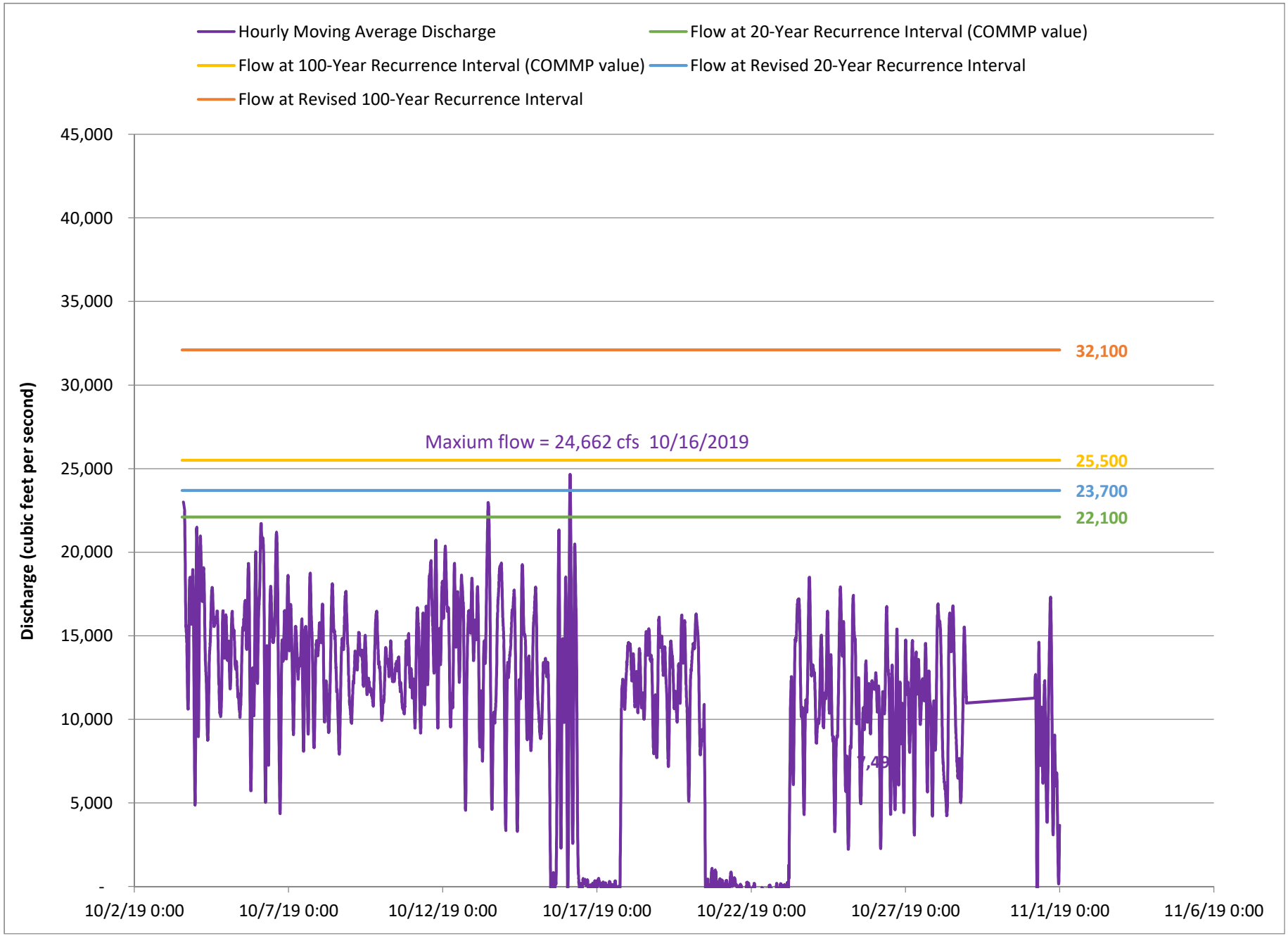

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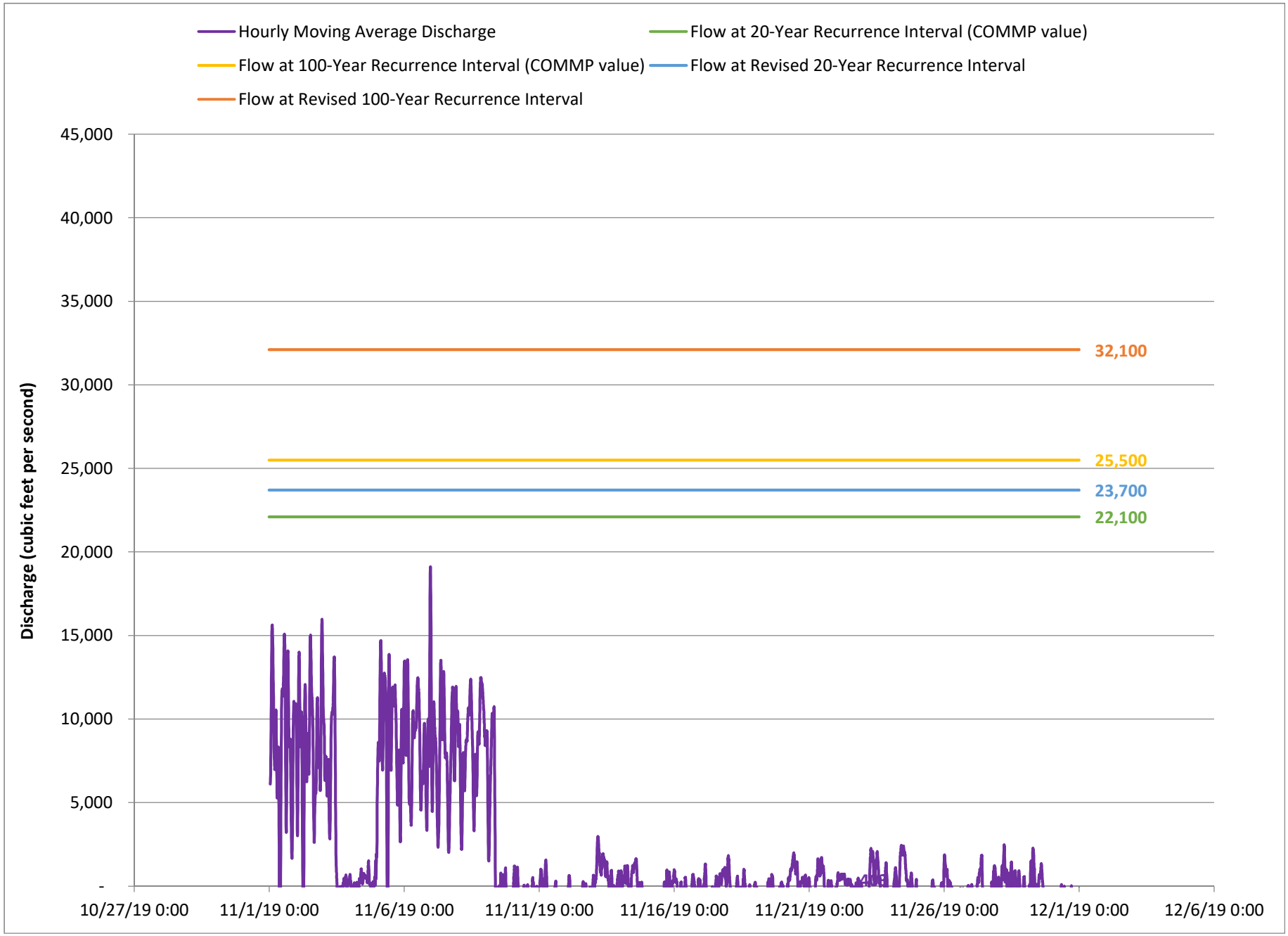

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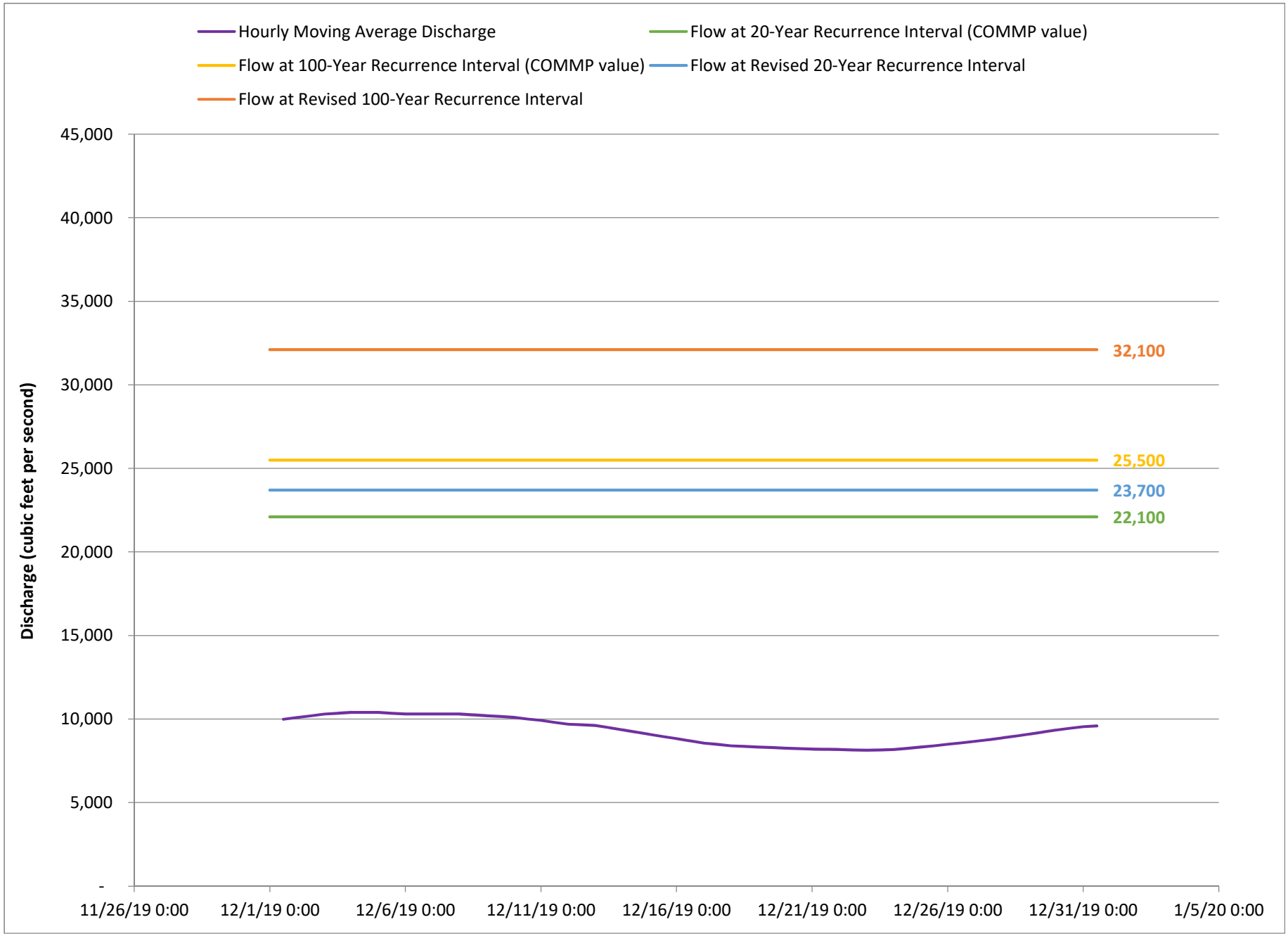

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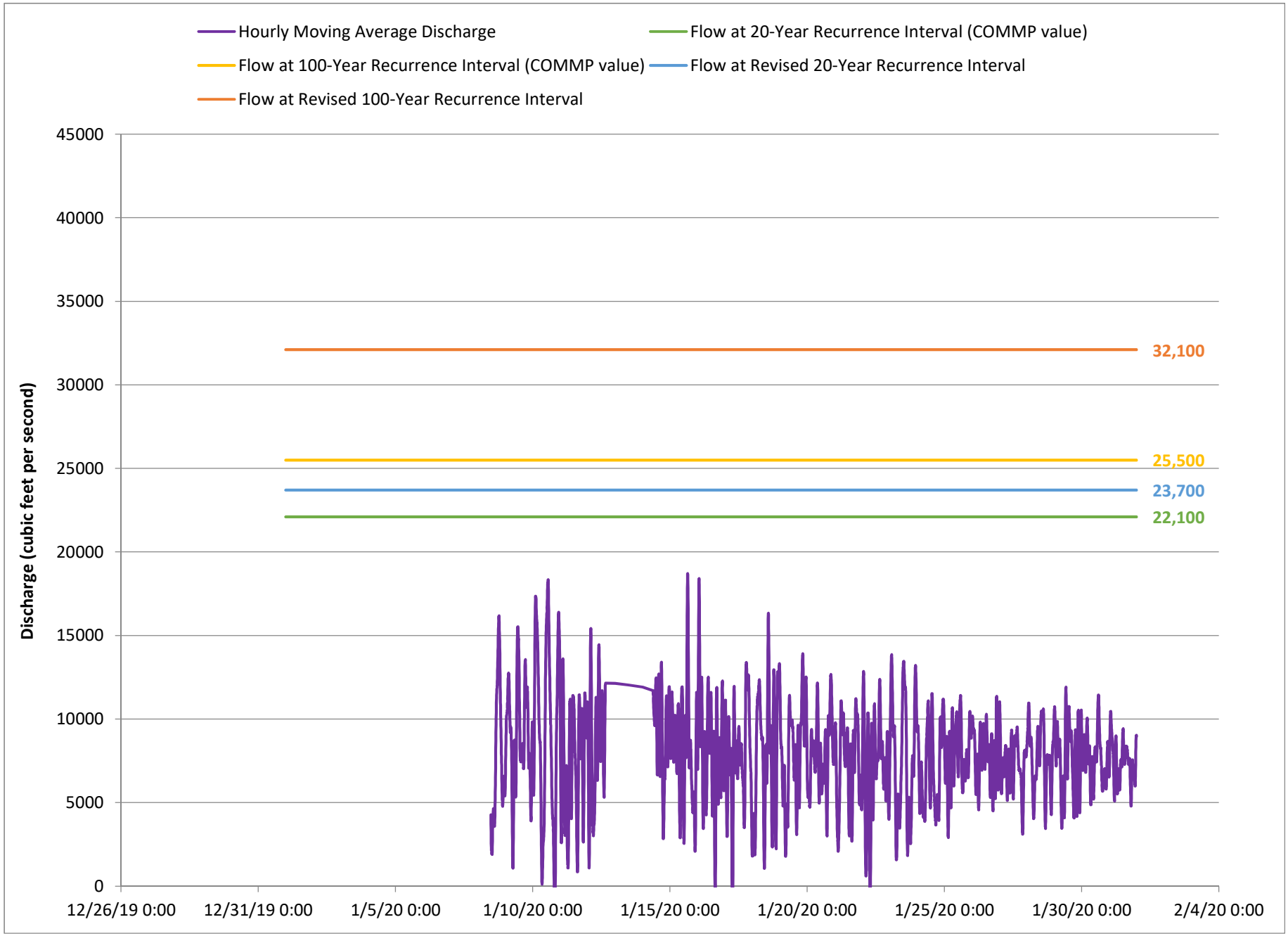

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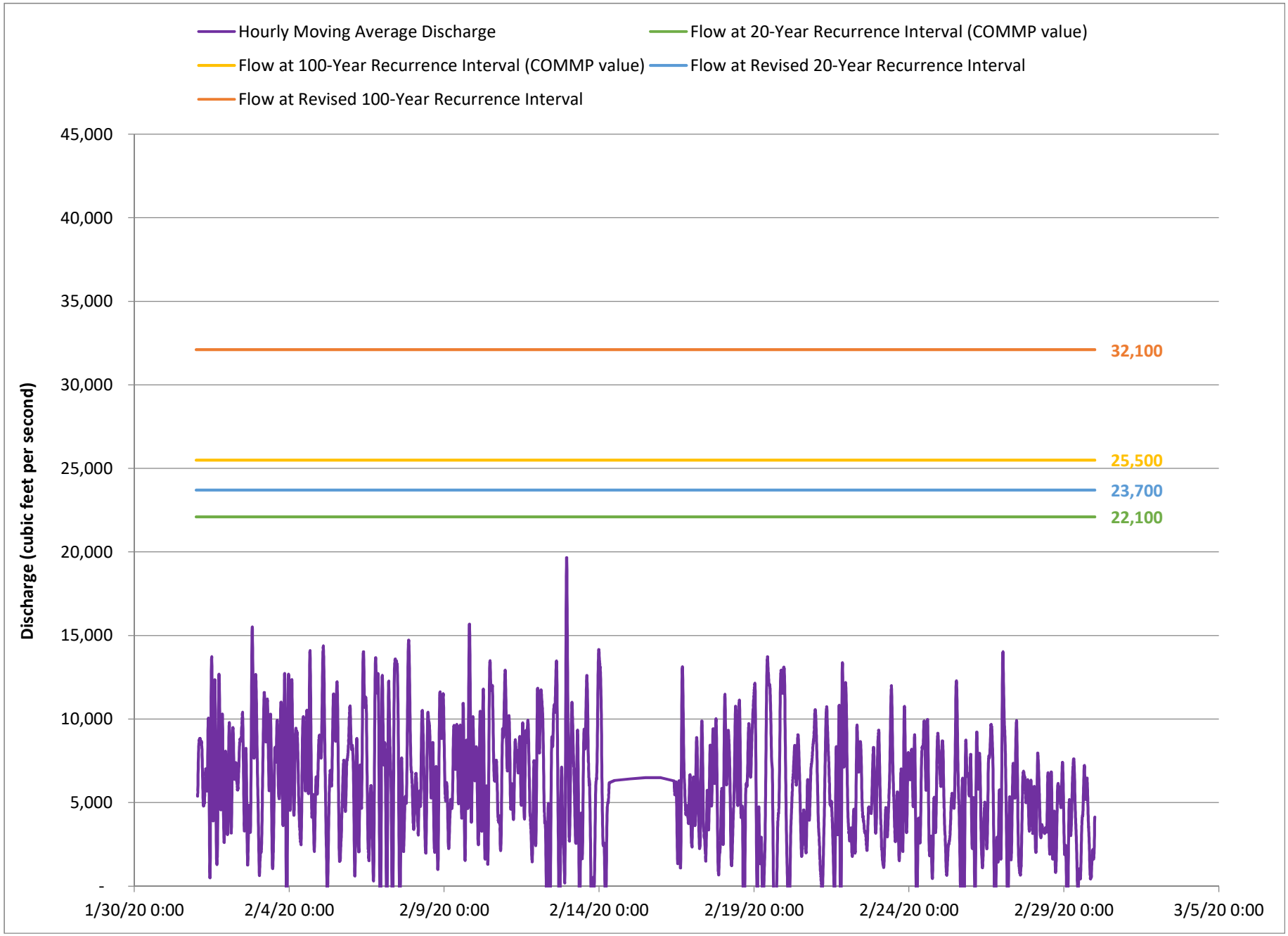

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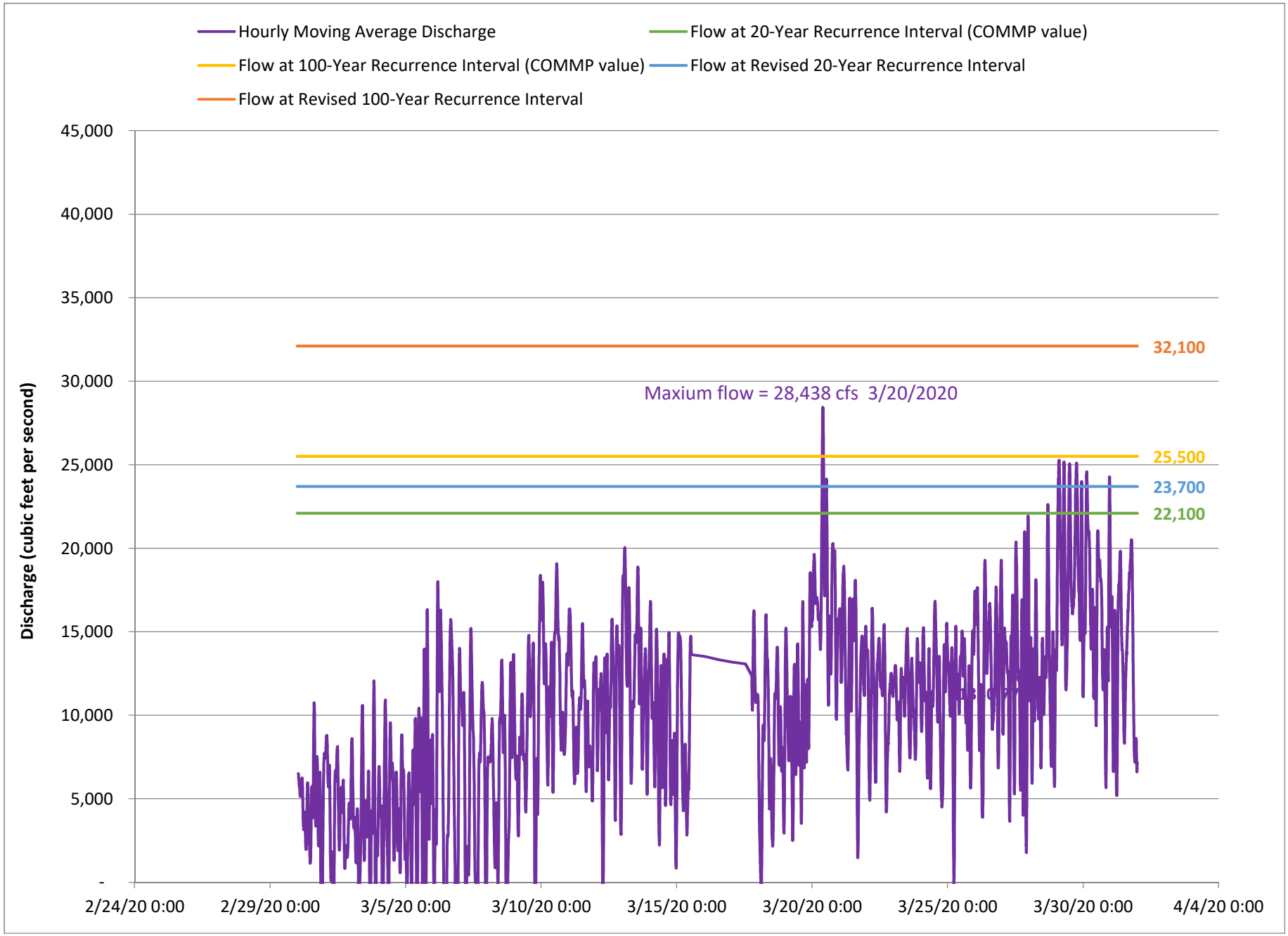

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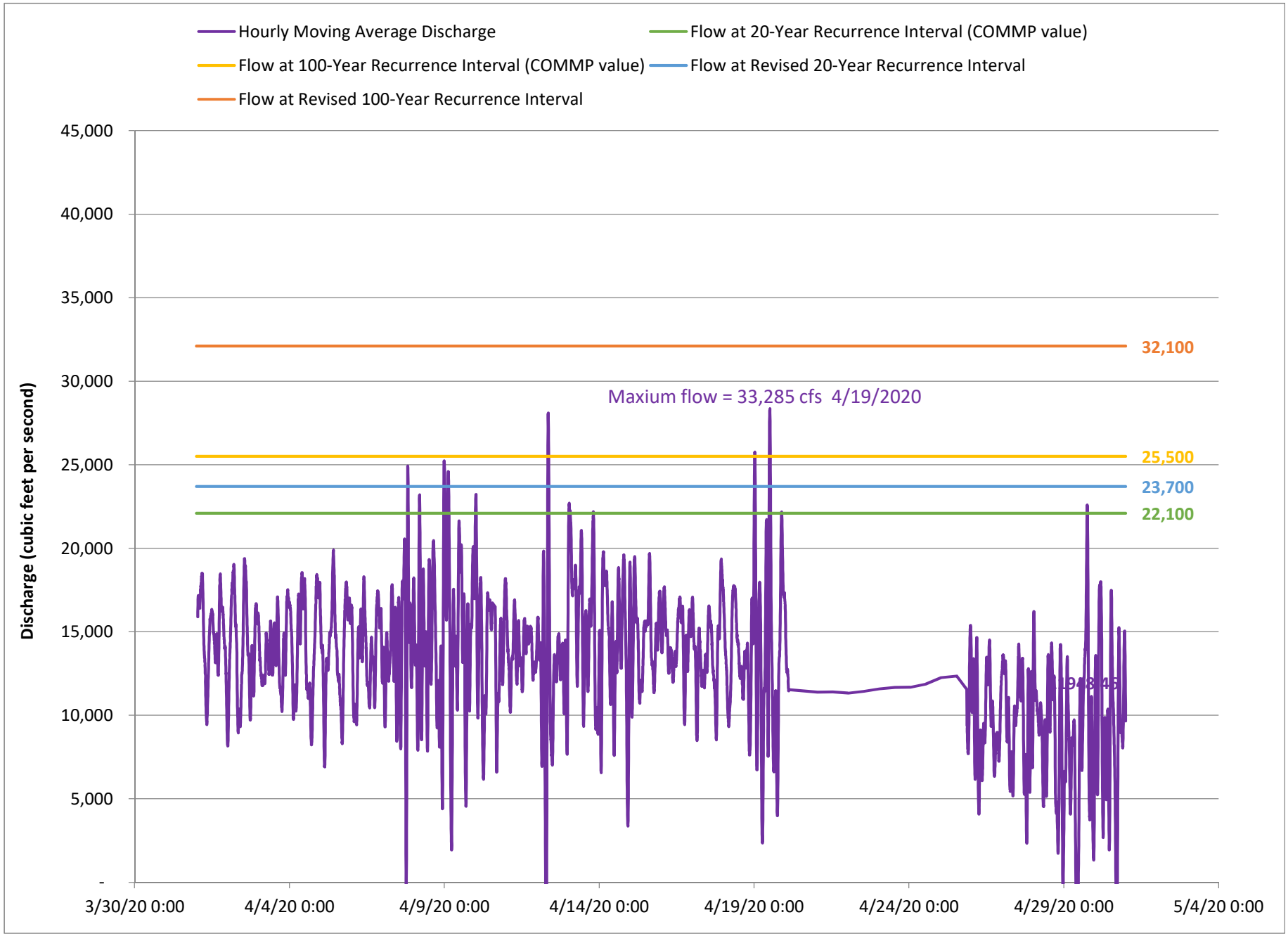

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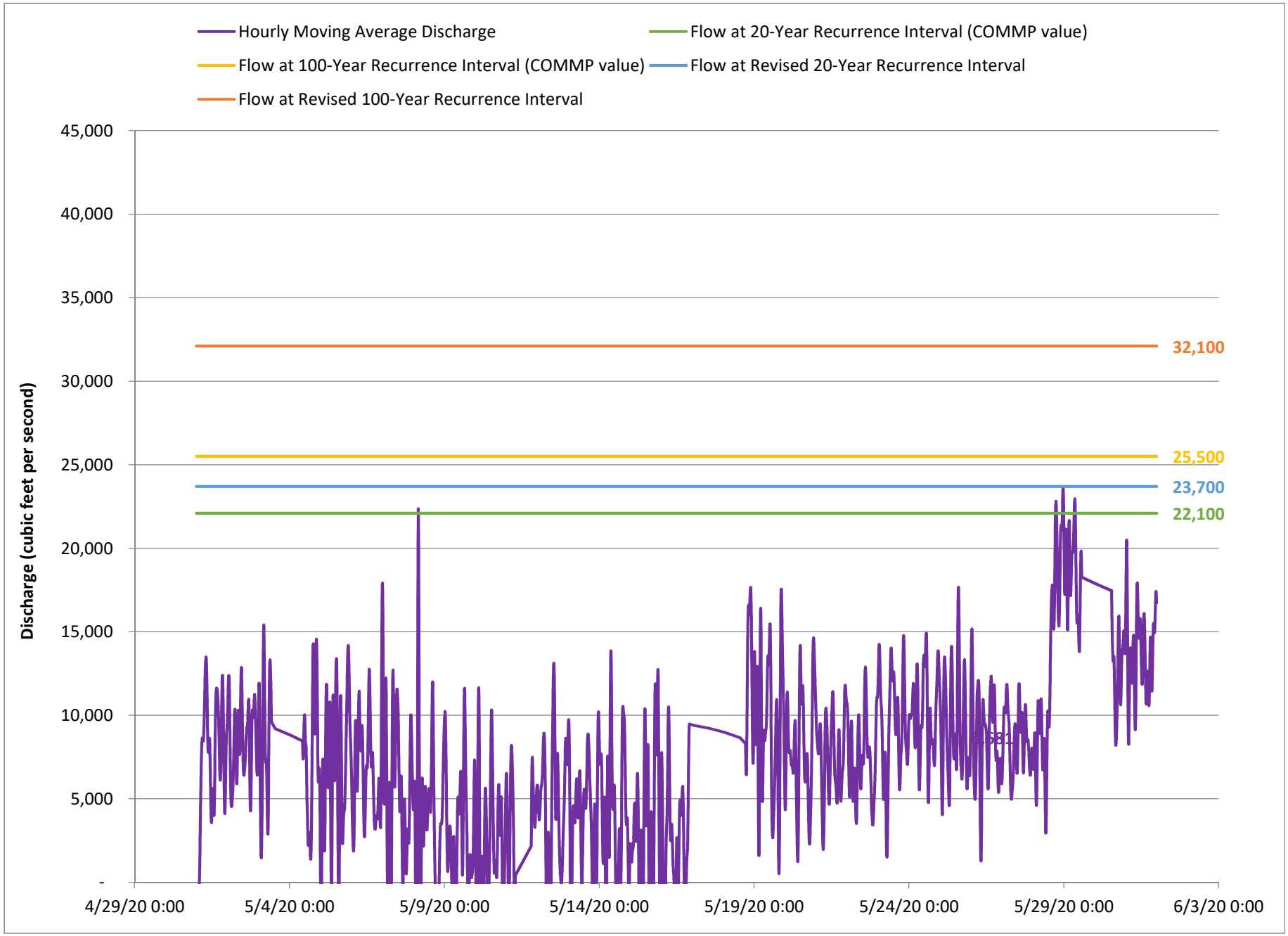

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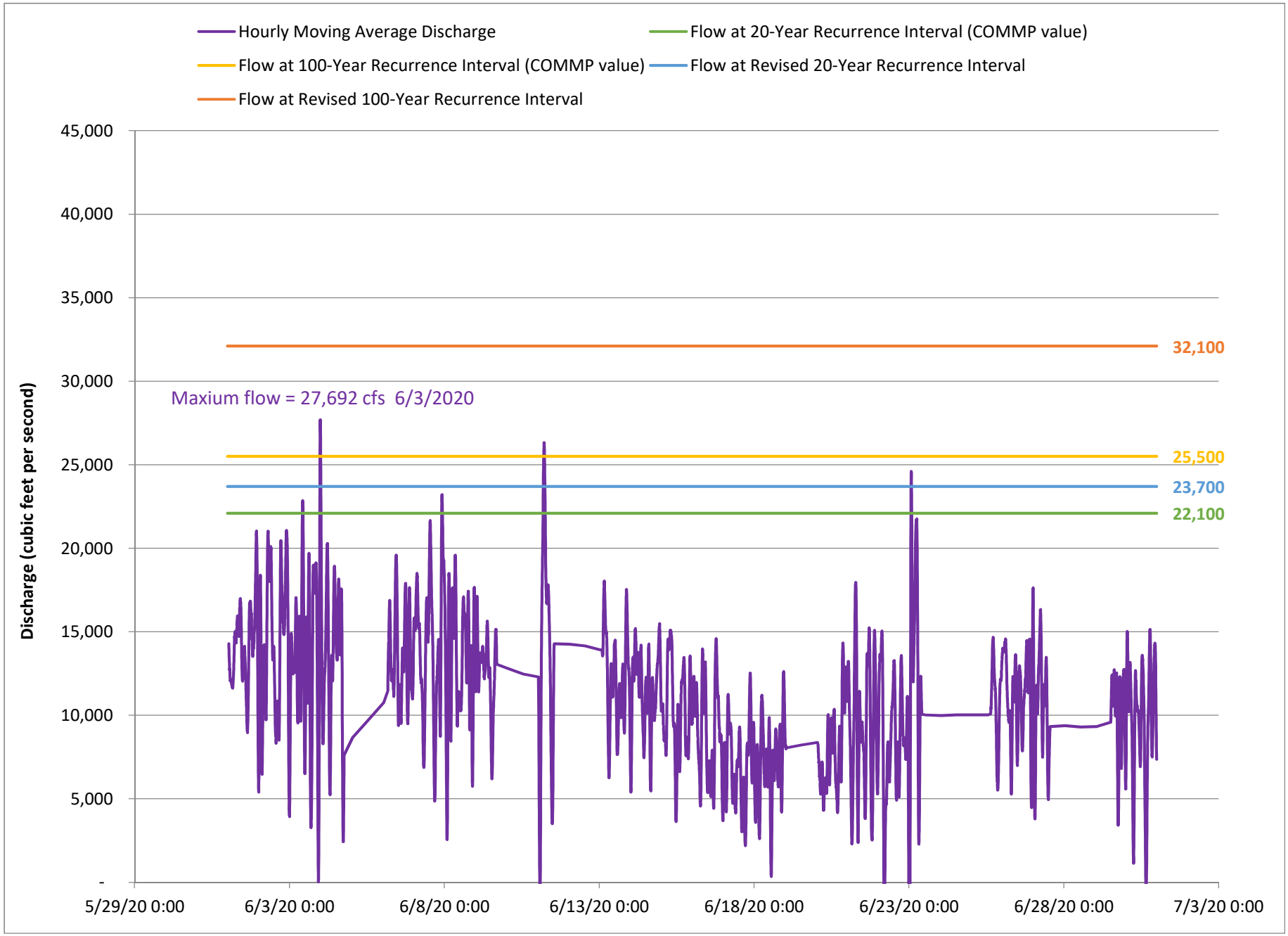

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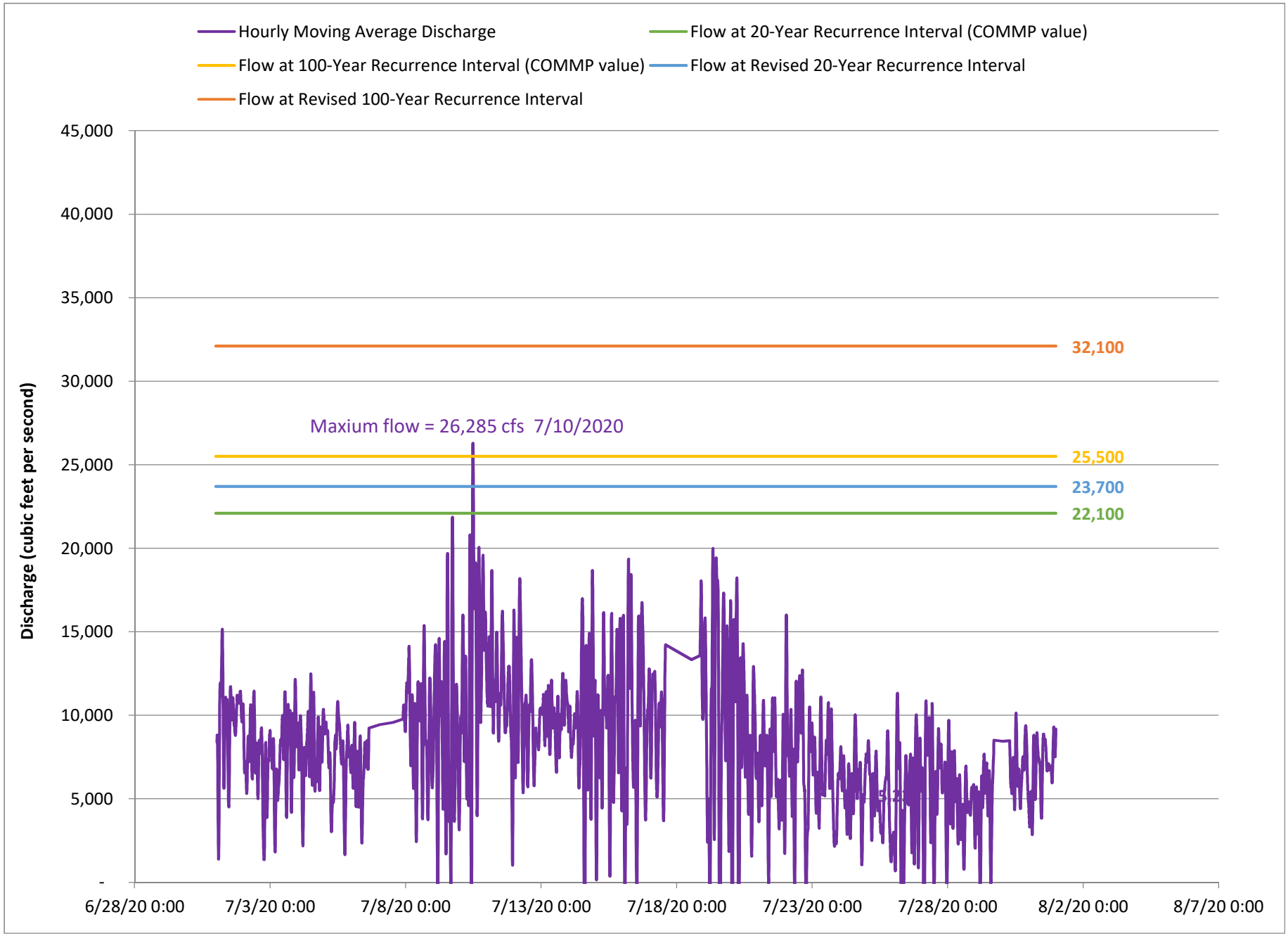

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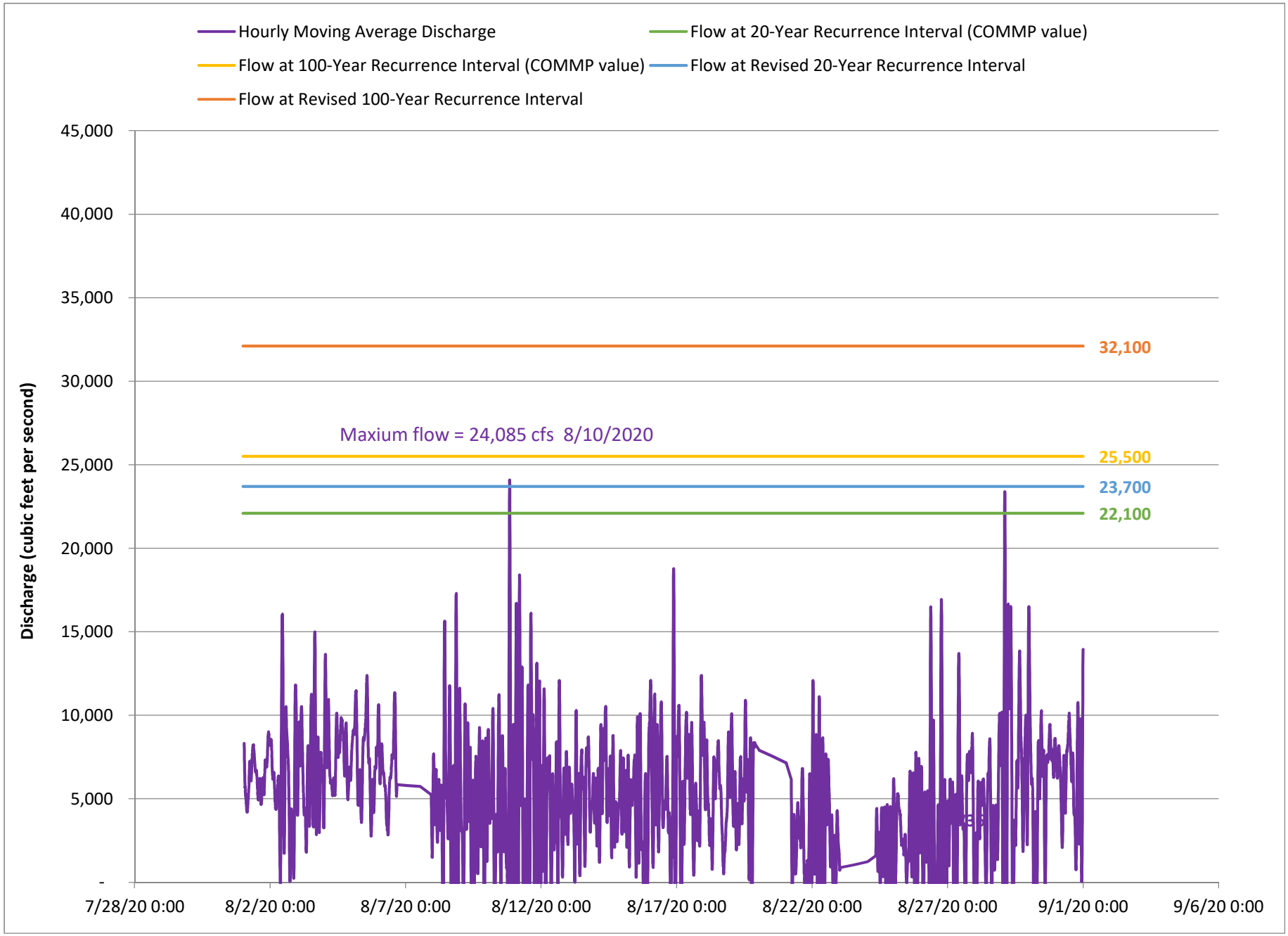

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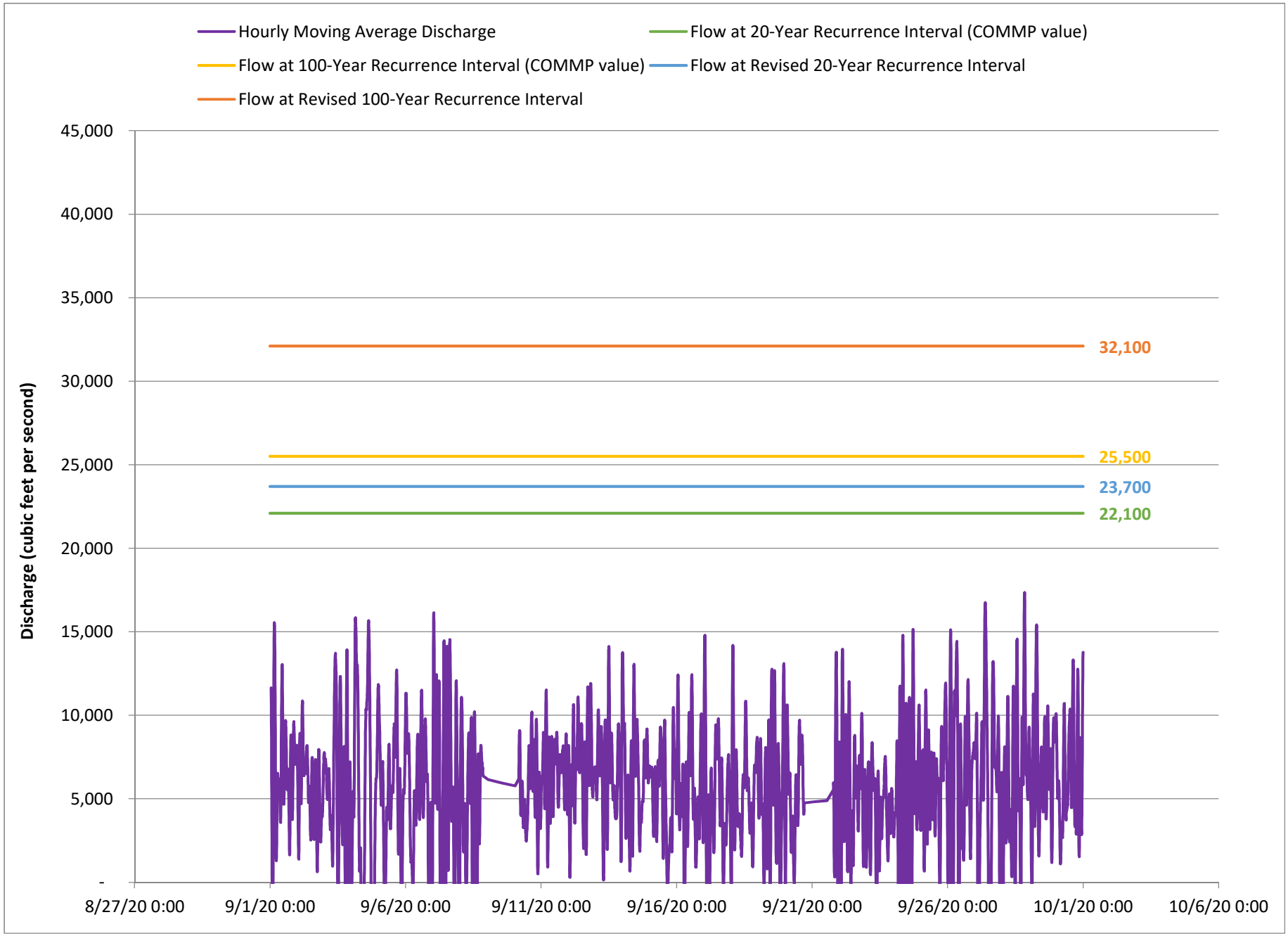

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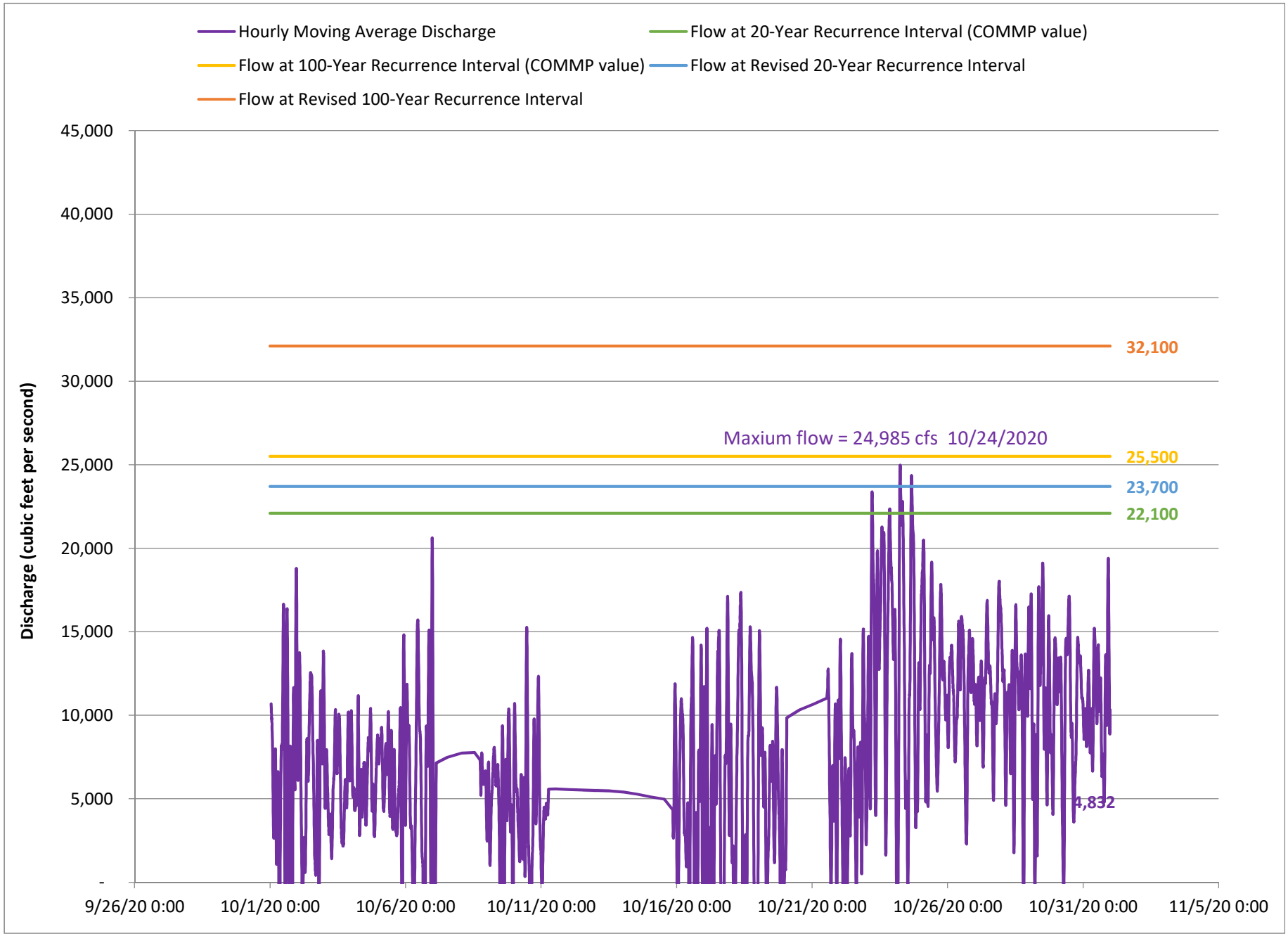

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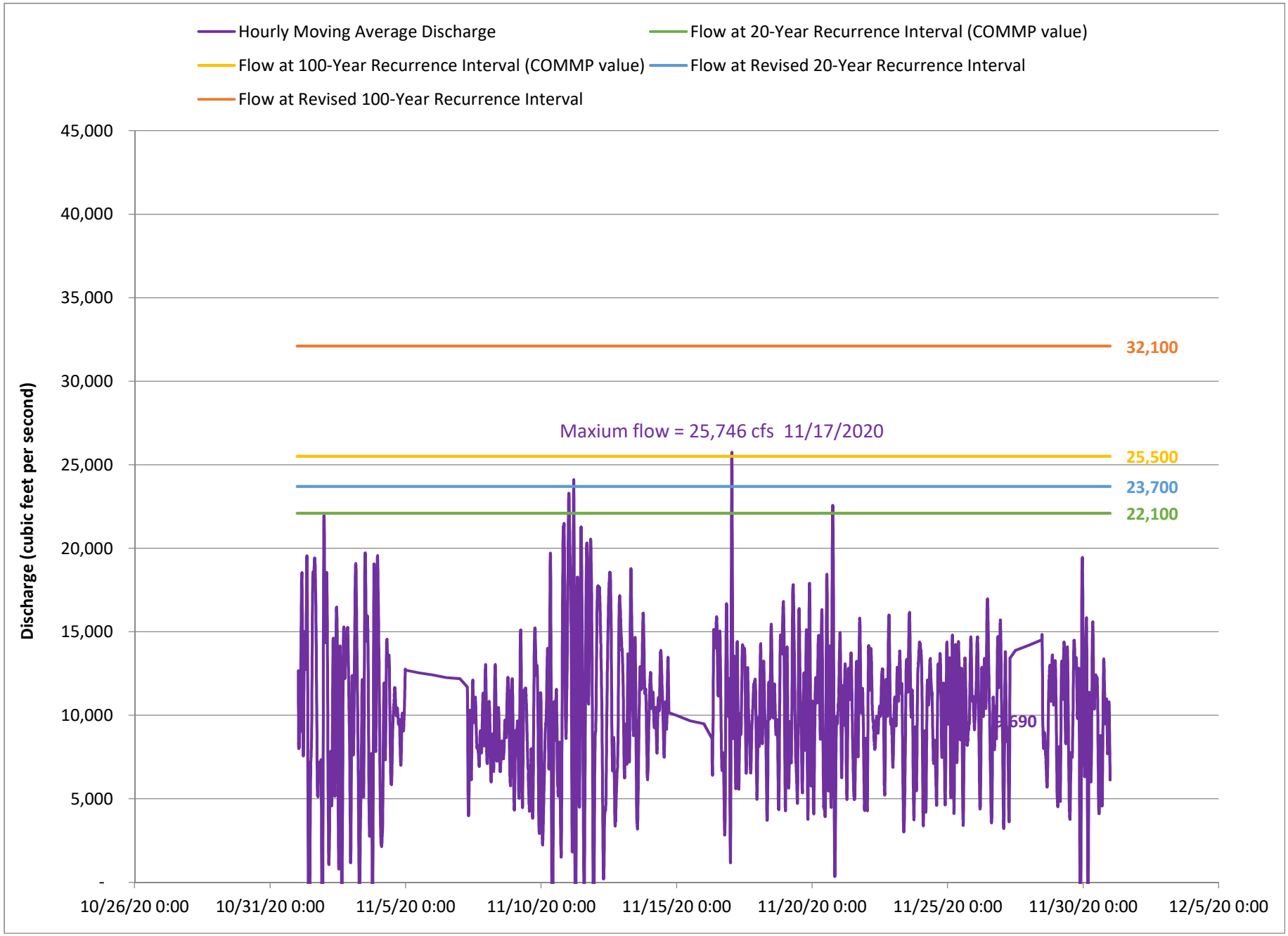

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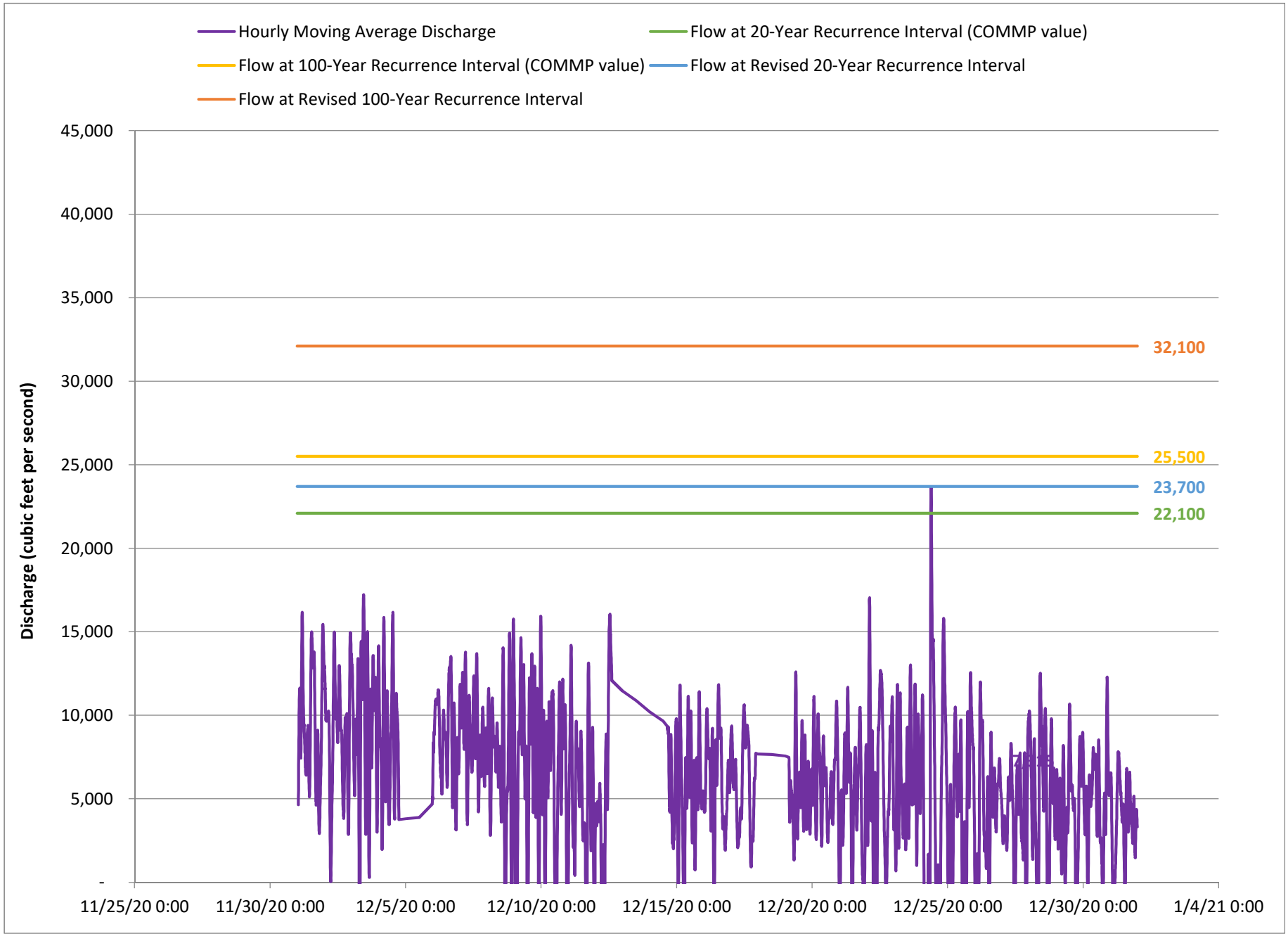

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