EXHIBIT 6

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF WISCONSIN
GREEN BAY DIVISION

UNITED STATES OF AMERICA and THE STATE OF WISCONSIN,	)	
Plaintiffs,	)	Civil Action No. 10-C-910
v.	)	Hon. William C. Griesbach
NCR CORPORATION, *et al.*	)	
Defendants.	)	

DECLARATION OF GEORGE A. BERKEN IN SUPPORT OF MOTION FOR PRELIMINARY INJUNCTION TO COMPEL PERFORMANCE OF FULL SCALE REMEDIATION WORK IN 2012

I, George A. Berken, declare as follows:

1. My pertinent academic and professional experience:

United State Air Force: 10/68 to 8/72

Bachelor of Science Degree Electrical Engineering, Milwaukee School of Engineering: 8/72 to 11/75

Abbott Laboratories Inc. - North Chicago, Illinois
Electrical and Instrumentation Engineer: 12/75 to 7/80

Zimpro Inc. - Rothschild, Wisconsin
Electrical and Controls Manager: 7/80 to 7/86

Wausau Paper Mills Inc. - Brokaw, Wisconsin
Director of Engineering and Maintenance: 7/86 to 6/89

Harris Group Inc. - Appleton, Wisconsin
Engineering Manager and Senior Project Manager: 6/89 to 2/01

The Boldt Company - Appleton, Wisconsin
Engineering Project Manager: 2/01 to Present

Registered Professional Engineer (active and inactive states): Kentucky, Michigan, Minnesota, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee and Wisconsin (Original state of registration Wisconsin)

Affiliations: President of the Midwest Chapter of the Western Environmental Dredging Association ("WEDA")

2. I am employed as an Engineering Project Manager with The Boldt Company ("Boldt"). Boldt personnel have served as members of the Federal and State Governments' Agencies/Oversight Team ("A/OT") since 2004 for the Lower Fox River and Green Bay Site ("Site"), under a contract between Boldt and the Wisconsin Department of Natural Resources ("WDNR"). I have been personally involved in overseeing remedial design and remedial action work targeting polychlorinated biphenyls ("PCBs") contamination at the Site as an A/OT member since 2006.

3. As a Boldt employee, I typically devote more than 1900 hours per year to A/OT activities for the Site. I spend most of that time coordinating the A/OT's technical review of remedial design plans and remedial action work plans, and to a minor extent, overseeing the adequacy of the work being implemented in Operable Units 2-5 ("OUs 2-5") by Tetra Tech EC, Inc. ("Tetra Tech") and other contractors and subcontractors working on behalf of the Lower Fox River Remediation LLC (the "LLC") and its primary members, NCR Corporation ("NCR") and Appleton Papers Inc. ("API"). Three other Boldt employees also spend the majority of their working time overseeing cleanup planning and implementation work in OUs 2-5. In addition to the four Boldt employees, the remainder of the A/OT includes twelve team members that, to varying extents, spend a portion of their working time overseeing cleanup planning and implementation work in OUs 2-5. Our oversight activities routinely include the following:

a. During the active construction season (early April through mid-November), the A/OT meets weekly with the LLC's design and construction teams. During these meetings, safety, document submittal schedules, remedial action work planning, riparian, and public contact and other pertinent issues are

reviewed along with construction productivity and effectiveness. Frequently, after the regularly scheduled weekly meeting, impromptu collaborative discussions and meetings are held addressing issues identified during the regular scheduled meeting. Telephone conversations between the A/OT and LLC's teams addressing schedules, and construction and design issues are frequent occurrences in a typical week. The A/OT also attends the daily morning construction coordination meeting when on-going remedial actions are discussed as part of the daily production effort.

b. In the off-season (mid-November through March), the A/OT meets biweekly with the LLC's design and construction teams to review designs, work plans, miscellaneous technical issues and schedule progress. This includes process equipment maintenance and modifications.

c. Daily and weekly production reports are reviewed by the A/OT on a weekly basis. Monthly project design and action reports submitted by the LLC are also reviewed by the A/OT.

d. Major document submittals, e.g., 100% Design Report, annual Remedial Action Work Plans, etc., are reviewed as expeditiously as practical and comments returned to the LLC.

e. The A/OT will introduce project risk reduction, efficiency improvement and cost saving ideas at collaborative work group meetings or during the weekly construction review meetings.

Background

4. According to the daily reports prepared by the LLC's dredging subcontractor (J.F. Brennan Co., Inc.), in 2009, a total of 544,535 in-situ cubic yards ("cy") were: removed from OU2 (3,009 cy), OU3 (126,351 cy) and OU4 (415,175 cy); dewatered; transported; and landfilled. This remedial work was performed from 4/28/2009 through 11/14/2009 for 140 active days of remediation.

5. According to the daily reports prepared by the LLC's dredging subcontractor (J.F. Brennan Co., Inc.), in 2010, a total of 743,111 in-situ cy were removed from OU3 (34,702 cy) and OU4 (708,409 cy); dewatered; transported; and landfilled. This remedial work was performed from 4/5/2010 through 11/13/2010 for 156 active days of remediation.

6. According to the Draft 2011 Remedial Action Summary Report Lower Fox River Operable Units 2-5 dated March 2012 prepared by Tetra Tech EC, Inc.; J.F. Brennan Co., Inc.; and Stuyvesant Projects Realization Inc., in 2011, a total of 235,409 in-situ cy were removed from OU3 (63,931 cy) and OU4 (171,478 cy); dewatered; transported; and landfilled starting on April 18, 2011, and completing August 30, 2011, for 97 active days of dredging remediation. Additionally, 26.44 acres of engineered caps; 24.86 acres of primary remedy sand covers; and 41.86 acres of residual sand covers were installed from June 6, 2011, through October 31, 2011, for 101 active days of capping and covering remediation. Notably, the LLC did not perform full scale dredging throughout the entire construction season in 2011.

7. All or nearly all anticipated dredging and capping, in OU 2 and OU 3 required by the Records of Decision ("RODs"), has been completed.

8. In 2009 through 2011, the LLC's contractor team used three dredges, normally operating in parallel, to perform required dredging work, i.e., two 8-inch cutterhead dredges and one 12-inch cutterhead dredge. These dredges have been used for at least two different purposes.

First, the dredges can be used for "Production Dredging," which removes sediment at a relatively higher rate of 25-40 cy per gross operating hour ("GOH") for each 8-inch dredge and 110-190 cy per GOH for the 12-inch dredge. Second, dredges can be used for "Final Dredging" or "Neat Line Dredging," which removes sediment at a lower rate of 20-25 cy per GOH for each 8-inch dredge. Note: Final Dredging performs the more precise work needed to complete all dredging in a remedial action dredge area and to date the 12-inch dredge has not been utilized for Final Dredging.

9. In 2009 (28.0 weeks of remediation) and 2010 (31.2 weeks of remediation), the dredging subcontractor dredged an average of 18,100 and 23,300 cy/week respectively. In 2011 (19.4 weeks of remediation), the dredging subcontractor dredged an average of 12,134 cy/week. The sediment that is being dredged from OUs 2-5 is pumped in slurry form through in-water pipelines that are routed to a large Sediment Processing Facility located on the west bank of the Fox River just north of Georgia-Pacific's Green Bay West Mill. At the Sediment Processing Facility, sand is removed using cyclones and an up-flow desanding process. The remaining sediment is dewatered with large plate and frame presses. The dewatered filter cake is then trucked to a landfill disposal site. The water portion of the sediment slurry is treated in a multi-step process and returned to the River.

10. At certain times, it may be important to perform Production Dredging and Final Dredging simultaneously in order to maximize the use and efficiency of the Sediment Processing Facility.

11. The LLC's contractor team disposes most of the dewatered sediment at the Hickory Meadows Landfill in Calumet County, which is operated by Veolia Environmental Services.

12. Under the RODs and EPA regulations, issued under the Toxic Substances Control Act ("TSCA"), sediment with in-situ PCB concentrations equal to or greater than 50 parts per million must be disposed of in a specially-approved TSCA landfill. The LLC's contractor team has disposed of such TSCA-regulated sediment at the Wayne Disposal Landfill in Wayne County, Michigan. Waste Management has an application pending with EPA to allow the disposal of TSCA-regulated sediment at their facility in Whitelaw, Wisconsin. At this time, EPA has not approved the disposal of TSCA-regulated sediment at this facility.

13. Due to weather conditions and other factors, the "construction season" for in-water remediation activity at the Site typically begins in early April and continues through mid-November. Much of the remediation planning work for an upcoming construction season therefore occurs during the winter.

14. Based on that seasonal pattern, and based on the A/OT's experience in overseeing the remediation in OU 1 at the Site since 2004, EPA has required submission of a draft annual Remedial Action Work Plan ("RAWP") for OUs 2-5.

2012 Remedial Action Work Plan Development

15. The draft annual RAWP for 2012 was due to be submitted by the LLC on November 30, 2011.

16. NCR, a member of the LLC but not on-behalf of the LLC, had Tetra Tech prepare and submit a partial draft 2012 remedial action work plan ("NCR RAWP") on November 30, 2011. The remaining portion of the draft NCR RAWP was submitted on February 17, 2012, and a revised NCR RAWP was submitted on March 7, 2012. Since the LLC did not approve the NCR RAWP, it was unclear whether Tetra Tech would be released to actually execute the work and schedule described in the revised NCR RAWP.

17. The A/OT reviewed the November 30, 2011 draft NCR RAWP and released comments on January 23, 2012, and revised comment number 100 on February 9, 2012. These comments identified several significant deficiencies with the proposed draft NCR RAWP. For example:

a. The draft NCR RAWP did not outline a plan to perform full-scale dredging in OU4 from early April through mid-November 2012 consistent with the production rates performed previously in construction seasons 2009 and 2010.

b. Because of the reduced amount of material proposed (500,000 cy) to be dredged in the draft NCR RAWP, the overall goal of completing all remedial action in OU2-5 by the end of construction season 2017 is in jeopardy.

18. The A/OT estimated that the draft NCR RAWP requiring dredging of only 500,000 cy would result in a delay to complete all required dredging for the overall project. The A/OT explained that at least 2,100,000 cy of RAL volume remained to be dredged in OU4 and needed to be remediated at a higher rate per construction year.[1] The A/OT forecasted a schedule based upon full-scale dredging during the entire construction season while taking into account physical and operational constraints that enabled the entire project to be completed by the end of construction season 2017. The A/OT's forecast called for removal of approximately 680,000 cy of sediment in 2012 to meet this 2017 deadline. That includes dredging 520,000 cy of RAL volume along with approximately 160,000 cy of overcut plus residual dredge volume.

[1] RAL volume is in-situ material that is contaminated with PCB concentrations greater than the 1.0 ppm Remedial Action Level. RAL volume does not include overcut volumes or residual dredge volumes. The 2,100,000 cy of RAL volume includes only the LLC's proposed RAL volume remaining to be dredged in OU4. It does not include the additional RAL volume for LLC proposed caps that do not satisfy the Amended ROD's criteria regarding when an engineered cap is allowed to be installed over deeply buried PCB sediment covered by several feet of relatively clean sediment.

19. After submission of the draft NCR RAWP, extensive discussions were held between the A/OT and the NCR/LLC's design and construction teams. In particular, a large portion of these discussions focused on the total volume to be dredged, when certain TSCA dredge material would be dredged, and whether certain dredging areas would be capped instead of dredged. NCR wanted to avoid dredging any TSCA-sediment until after EPA and WDNR had approved an in-state facility that could receive PCB TSCA material.

20. NCR representatives, LLC representatives, and the A/OT also engaged in extensive discussion regarding whether certain areas were eligible for capping instead of dredging because the sediment was "deeply buried" and covered by "relatively clean" sediment. EPA has not made a final determination on what criteria to apply to areas that may be capped because the contaminated areas are "deeply buried" and covered by "relatively clean" sediment.

21. In response to the A/OT's January 23, 2012 and February 9, 2012 comments as well as the discussions outlined above, NCR submitted a revised NCR RAWP on March 7, 2012. This revised NCR RAWP did not adequately address the A/OT's comments. On March 19, 2012, EPA released Modified 2012 RAWP ("EPA RAWP"), along with a March 19, 2012 letter giving notice that EPA was approving the Final 2012 RAWP with the required modifications described in the EPA RAWP.

22. Among other things, the EPA RAWP requires performance of the following remediation work in 2012:

a. Work must start no later than April 2, 2012, and continue through at least November 9, 2012.

b. At least 660,000 cy of Production Dredging and/or Final Dredging must occur from a list of Eligible Dredging Areas, which includes approximately 1,415,063 cy of eligible dredging areas.

c. Full scale dredging must occur 24 hours per day, five days per week with certain exceptions for holidays.

d. There is no requirement to dredge any TSCA sediment during 2012, although the LLC may elect to dredge TSCA material.

e. There is no requirement to dredge any area that is currently proposed to be capped by the LLC.

23. The requirements of the EPA RAWP promote several overall project objectives.

a. The EPA RAWP would ensure that the project continues with timely cleanup, resulting in an overall 2017 completion date. It also would continue the general plan for upstream to downstream remediation at the Site.

b. The EPA RAWP would require full-scale dredging efforts throughout the entire 2012 construction season, consistent with the production rates achieved in 2009 and 2010.

c. The EPA RAWP would require the full and efficient utilization of the available equipment, including three or more dredges and the Sediment Processing Facility.

d. The EPA RAWP is within the functional capabilities of the existing project system per prior written submittals of the LLC and/or NCR and productivity rates accomplished in 2010.

1. Dewatering Facility:

a. Prior submittals indicate that the dewatering facility can process an average of 764,300 cy per season, with a minimum of 682,500 cy and a maximum of 880,000 cy. This average is based on stated efficiencies ranging from 65% to 80% (average

79%) and stated processing days ranging from 130 to 160 days (average 148 days).

b. In 2010, the dewatering facility processed approximately 743,100 cy. This was at an efficiency of 92% for 156 processing days.

c. The EPA RAWP requires 660,000 cy for the season for 157 processing days.

2. Dredging Capabilities:

a. Prior submittals indicate that dredging can remove an average of 628,100 cy per season, with a minimum of 512,000 cy and a maximum of 1,621,000 cy. This average is based on stated efficiencies ranging from 65% to 80% (average 79%) and stated processing days ranging from 130 to 160 days (average 148 days).

b. The dredging in 2010 was approximately 743,100 cy. This was executed at an efficiency of 80% for 156 processing days.

c. A chart summarizing projected dewatering and dredging capabilities from various submittals is attached as Exhibit 6 to my prior Declaration (Dkt. No. 123-6).

24. The EPA RAWP identifies the following Eligible Dredging Areas. As indicated in the third column, the revised NCR RAWP included a majority of the areas designated for dredging. The EPA RAWP merely adds additional areas such that sufficient eligible dredging areas are identified to meet the established goal of 660,000 cy and the 2017 project deadline.

The additional areas are in close proximity to the dredge areas proposed by the revised NCR RAWP:

Per the EPA RAWP Eligible Dredging Areas	Estimated Total Volume	Proposed by Revised NCR RAWP
D114-TBD	4,173 cy	Yes
D118A-TBD	1,828 cy	Yes
D118B-TBD	2,890 cy	Yes
D23	205,861 cy	Yes
D23B	715 cy	Yes
D23C	84 cy	Yes
D24	68,013 cy	Yes
D25C	194 cy	
D26A	1,467 cy	Yes
D26B/D61	6,901 cy	Yes
D26C	1,644 cy	Yes
D27A	71,772 cy	Yes
D28	109 cy	Yes
D29	1,215 cy	Yes
DPhase1	uncertain cy	
D27B	31,040 cy	Yes
D27D	4,022 cy	Yes
D27E	468 cy	Yes
D27F	3,638 cy	Yes
D30A North	7,806 cy	
D30A South	5,362 cy	Yes
D91	1,169 cy	Yes
D119A-TBD	11,649 cy	
D119B-TBD	3,162 cy	
D119C-TBD	3,126 cy	
D27C-TBD	3,457 cy	
D30B South	136,889 cy	Yes
D30C-TBD	7,630 cy	
D30D	1,518 cy	
D30E	2,316 cy	
D31 South	55,487 cy	Yes
D32 South	153,977 cy	Yes
D32A	228 cy	
D32B	167 cy	
D141C	161 cy	
D30B North	72,210 cy	
D30B North	21,549 cy	
D31 North	14,772 cy	

Per the EPA RAWP Eligible Dredging	Estimated Total Volume	Proposed by Revised NCR
D31 North	8,947 cy	
D32 North	81,288 cy	
D32 North	27,167 cy	
D34	5,310 cy	
D35A	310,631 cy	
D35Q	55,206 cy	
D37	17,845 cy	
Total	**1,415,063 cy**	

25. At a Quality Control meeting on March 28, 2012, the A/OT requested that Tetra Tech and their primary subcontractors (J.F. Brennan and SPRI) report on their readiness to start in-river remedial action on April 2, 2012. They responded that they were ready to start processing river sediment on April 2, 2012. Subsequent to this meeting on April 3, 2012, the A/OT discovered that Tetra Tech and its subcontractors were demobilizing from the site effective April 6, 2012. After several telephone inquiries, NCR confirmed that this demobilization was currently underway. The A/OT requested that the LLC formally notify the Agencies that the demobilization was underway and the A/OT also requested a meeting on April 4, 2012 to discuss the demobilization and the long term security of the facility and process equipment.

Project Completion Schedule

26. The EPA RAWP requires a minimum of 660,000 cy be dredged in 2012. This volume includes RAL, overcut, and residual dredge volumes. The A/OT determined that this quantity was appropriate based upon full-scale dredging during the entire construction season while taking into account physical and operational constraints that enabled the entire project be completed by 2017. With a production dredge rate accomplished in 2010 (23,300 cy/week), full-

scale dredging should begin no later than April 23, 2012, in order to dredge 660,000 cy by November 9, 2012.

27. API and NCR originally stated that all dredging would be completed by the end of construction season 2015 with all remaining capping and covering being completed by the end of construction season 2017. Now, in a number of documents filed with the court (regarding this motion), API and NCR claim that not performing remedial action in construction season 2012 will not prevent the completion of all required remedial action beyond the end of construction season 2017. This simply is not possible with the current plan as submitted in API and NCR's latest version of the 100% Design Report ("100% DR").

a. The 100% DR states there will be one 12-inch dredge and two 8-inch dredges working in parallel until the 12-inch dredge no longer has an efficient depth of contamination ("DoC") to dredge.

   Note: For the 12-inch dredge, the 100% DR calls for the target sediment's DoC to be 1 foot or more. API and NCR have generally allowed the 12-inch dredge to only perform Production Dredging and have assumed as such in the 100% DR. For the 12-inch dredge, Production Dredging requires the dredge's cut line be at least one foot or more above the Remedial Action Level ("RAL") line. The RAL line is an elevation where a model predicts (with a 50% confidence level) that the PCB concentration at this elevation is 1.0 ppm. For remedial action areas that are to be dredged, the Final Dredging elevation must be below this RAL line/elevation. Typically the Final Dredging elevation ranges from 4.5 to 6.0 inches below the RAL line/elevation.

b. Once the 12-inch dredge is no longer dredging, then a third 8-inch dredge may be added to work in parallel with the other two 8-inch dredges to complete all remaining dredging.

c. Per the quantities released to the A/OT in a spreadsheet (filename OU4 RA Polygon Ver-02 2012-03-02.xlsx) attached to the March 6, 2012 email sent from Jason Thaxton (Tetra Tech employee) to me, the LLC proposes to dredge 2.54 million cy in order to complete all remaining dredging.

d. The 100% DR specifies an average dredge rate of 500,000 cy per construction season. With the 12-inch dredge performing Production Dredging on all remaining target sediment with a DoC of 2 feet or more, there remains 1.32 million cy of available sediment to dredge for the 12-inch dredge. At a dredge rate of 110 cy/GOH, it would take the 12-inch dredge 3.6 years (assuming 28 weeks per construction season with 120 GOH per week) to dredge the 1.32 million cy.

e. With two 8-inch dredges working in parallel during this 3.6 years and operating at a dredge rate of 20 cy/GOH for each 8-inch dredge, the 8-inch dredges will dredge 0.48 million cy during this period. This results in a combined dredge rate for the 12-inch and two 8-inch dredges of 0.50 million cy per year for a total of 1.80 million cy dredged during this 3.6 year period.

f. Once the 12-inch dredge can no longer efficiently dredge, a third 8-inch dredge could be added to dredge the remaining dredge volume of 0.74 million cy. At a dredge rate of 20 cy/GOH for each dredge, the three 8-inch dredges will require an additional 3.7 years to complete all remaining dredge volumes. For the three dredges combined, their dredge rate will be 0.20 million cy per year.

g. Adding the 3.6 years (12-inch dredge with two 8-inch dredges) with the 3.7 years (three 8-inch dredges) results in 7.3 years to remove API and NCR's proposed dredge volume.

h. If API and NCR do not dredge in construction season 2012 and with NCR and API's restrictions as stated in the 100% DR, dredging will not be completed until the middle of

construction season 2020. Adding two years unto the 2020 construction season in order to complete capping and covering (utilizing only one cap/cover spreader system), then the remedial action that was to be completed at the end of the 2017 construction season will not be completed until the middle of construction season 2022. This is a four and a-half year delay. Note: Capping and covering will follow behind dredging to the extent practical but will finish two years after all dredging has been completed.

i. If API and NCR would use the full capabilities of equipment stated in the 100% DR, such as the 12-inch dredge being allowed to perform not only Production Dredging but also Final Dredging and utilizing two spreader systems for capping/covering; then the following could be accomplished:

    i. With the 12-inch dredge performing production and Final Dredging on all remaining target sediment with a DoC of 1 feet or more there remains 1.76 million cy of available sediment to dredge for the 12-inch dredge. The 12-inch dredge (160 cy/GOH) will complete this volume in 3.3 years. During this 3.3 years, two 8-inch dredges would complete dredging 0.44 million cy. This is an average of 0.67 million cy dredge per year for a total of 2.20 million cy dredged during this 3.3 year period.
    ii. Three 8-inch dredges could complete dredging the remaining 0.34 million cy in 1.7 years. This is an average of 0.20 million cy per year.
    iii. Using two spreader systems for capping and covering, would require 1.0 year.
    iv. Adding these durations together, results in 6.0 construction seasons. If full scale remediation would start in 2012 then all required remedial action would be completed by the end of construction season 2017.

v. Delaying the start of work under this scenario by one year (2013), would delay the overall project completion by at least one year (2018).

vi. If dredging work is not done in 2012, the project could only be completed in 2017 with extraordinary effort in 2013-2017, such as reconfiguring the number and type of dredges along with modifications to the dewatering and water treatment facilities at not an insignificant cost.

j. As indicated by Subparagraph h above, the remedial action cannot be completed until 2022 if dredging is completed with the imposed limits as outlined in the 100% DR. As indicated above in Subparagraph i, the remedial action can be completed in 2017 if the LLC performs full-scale dredging by maximizing the use of the dredging equipment as outlined in the 100% DR *and* if significant dredging occurs in 2012. If full-scale dredging maximizes the use of its dredging equipment as outlined in the 100% DR (as outlined in Subparagraph i) but *does not* dredge in 2012, the remedial action will not be completed until 2018.

28. Paragraph 13 of Dr. Hayes' declaration. Dr. Hayes (Dkt. No. 335) stated:

> *Suspending or reducing the amount of dredging for 2012 will not impact the overall remedy or cause a significant delay. The NCR 2012 RAWP contemplates that dredging activities will continue through 2017. Even if no dredging occurs in 2012, the project can still be completed within the current schedule, although the dredging quantities in the last couple of years may be larger than currently anticipated. This adjustment does not cause irreparable harm.*

Paragraph 29 of Jeffrey Lawson's Declaration (Dkt. No. 330) states:

> *Based upon my discussions with Tetra Tech regarding the time required to complete the remaining work based upon the work done to date, all necessary remediation work, including dredging, capping and covering, can be completed by the end of the 2017 construction season even if no remedial work is performed in 2012.*

As I explained above, if significant dredging does not occur in 2012, the project will not be completed on schedule unless means and methods are changed significantly beyond the latest 100% DR plan submitted by NCR and API to the Agencies. For example, if dredging work is not done in 2012, the project could only be completed in 2017 with extraordinary effort in 2013-2017, such as reconfiguring the number and type of dredges along with modifications to the dewatering and water treatment facilities at not an insignificant cost.

Response to Miscellaneous Comments

29. Georgia-Pacific ("GP") has entered into a Consent Decree admitting that it is liable for dredging in certain Eligible Dredging Areas in Lower OU4. However, there is not sufficient volume in these dredging areas to meet the 660,000 cy required by the EPA RAWP as shown in this Table:

2012 Eligible Dredging Areas in Lower OU4	Estimated Total Volume (cy)
D141C	161
D30B North	72,210
D30B North	21,549
D31 North	14,772
D31 North	8,947
D32 North	81,288
D32 North	27,167
D34	5,310
D35A	310,631
D35Q	55,206
D37	17,845
Subtotal	**615,086**

30. Limiting dredging to Lower OU4 would not be an efficient use of the currently available dredges. The 12-inch cutterhead dredge can achieve the highest rate of dredging and is best utilized in areas of thicker depths of contamination (greater than or equal to 1 foot). Meanwhile, the two smaller 8-inch dredges have a lower rate of dredging and therefore are most

efficiently utilized in areas of thinner depths of contamination (less than 1 foot) where Final Dredging or Neat Line Dredging must occur.

31. Upper OU4, unlike Lower OU4, has several Eligible Dredging Areas that are ready for Final Dredging. Due to the differing production rates, the most prudent use of the dredges would have the 12-inch dredge perform Production Dredging while the 8-inch dredges perform Final Dredging in Upper OU4. In addition, the efficient use of the available equipment can be advanced while advancing the goal of completing the Final Dredging in an upstream to downstream pattern if significant work is done in Upper OU4. The EPA RAWP allows the LLC the option to do just that.

32. In the "Memorandum of Certain Defendants" brief (Dkt. No. 328), on the top of page 5, there is the following statement:

> *The recommended method to mitigate the increased harm caused by dredging is "careful operation of the dredge," which essentially means slowing down each component of the dredging operation. See id. That is, the recommendation of the Final Feasibility Study is to dredge slowly and carefully in order to reduce risk, not to dredge quickly to complete the remediation sooner.*

Turbidity equipment, placed upstream and downstream of all dredging activities, continuously monitors the "careful operation of the dredge." Dredging rates, since the start of construction season 2009 and "all-dredge" rates advocated by the Agencies going forward, satisfies the RODs criteria for environmental dredging. This remedial action will not be allowed to "dredge too quickly". As explained above, the dredging rates mainly depend on the size of the dredge (8-inch or 12-inch), the type of work being done (Production Dredging or Final Dredging), and the time the dredges are committed (31.2 weeks on 2010 vs. 19.4 weeks in 2011).

33. Paragraph 12 of Dr. Hayes' declaration. Dr. Hayes (Dkt. No. 335) stated:

> *PCBs that remain in the sediment in OU4 are stable and the majority of the PCB mass is covered by cleaner sediment.*

Much of the sediment in OU4 is not covered by cleaner sediment. The following are several of many examples in the EPA RAWP eligible areas to be dredged:

- D26A: There is a sub-polygon having 2.5 feet of TSCA sediment starting at the mudline.
- D27A: There is a sub-polygon having 2.5 feet of TSCA sediment starting at the mudline.
- D34: There is a sub-polygon having 2.5 feet of TSCA sediment starting at the mudline.
- D35A: There is a sub-polygon having 10.0 feet of TSCA sediment starting at the mudline.
- D35Q: There is a sub-polygon having 5.0 feet of TSCA sediment starting 2.5 feet below the mudline.

It would be particularly beneficial to dredge the Eligible Dredge Areas that have relatively high surface concentrations sooner rather than later in order to reduce risk of exposure and natural migration. The examples above were just TSCA sediment that is close to the mudline in the eligible to dredge areas specified in the EPA RAWP. There are numerous more examples of non-TSCA sediment with high levels of PCBs (>10 ppm but less than TSCA) that are close to or at the mudline. The following list identifies cores with the average PCB concentration for the top 1.0 feet of sediment and are all located within Eligible Dredging Area D.

4038.5-146 (14.8 ppm)	4038-21 (27.5 ppm)
4038.5-157 (22.3 ppm)	4041.5-118 (13.3 ppm)
4038-03 (26.4 ppm)	4042.5-113 (34.8 ppm)
4038-07 (22.9 ppm)	4043-21 (41.5 ppm)
4038-106 (19.5 ppm)	

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Executed on: April 10, 2012

George A. Berken

CERTIFICATE OF SERVICE

The undersigned hereby certifies that, on this day, the foregoing Declaration was filed electronically with the Clerk of the Court using the Court's Electronic Court Filing System, which sent notification of such filing to the following counsel:

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Dated: April 10, 2012

s/ Randall M. Stone

EXHIBIT 7

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

MAR 19 2012

SR-6J

VIA EMAIL AND FIRST CLASS MAIL

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Re: Notice of Final 2012 Remedial Action Work Plan
Administrative Order for Remedial Action, Docket No. V-W-'08-C-885
Lower Fox River and Green Bay Superfund Site, WI

Dear Ms. Blackmar and Messrs. Heath and Lawson:

On March 7, 2012, EPA received NCR's submittal of the Phase 2B Work Plan for 2012 Remedial Action of Operable Units 2-5 ("2012 RAWP"). The 2012 RAWP submitted by NCR did not provide for full-scale remediation at the Site. Enclosed is the Final 2012 RAWP (including Table B-1) that has been approved with modifications by EPA pursuant to Paragraph 49 of the above-referenced order. Please note that due to the number and size of the appendices, all appendices will be forwarded to Respondents separately. Respondents are directed to implement the actions required by the Final 2012 RAWP.

If you have any questions, please contact James Hahnenberg of my staff at 312-353-4213.

Sincerely,

Thomas R. Short, Chief
Remedial Response Branch #2

Enclosure

cc (via electronic mail):
James Hahnenberg, EPA
Richard Murawski, EPA ORC
Randall Stone, DOJ
Cynthia Hirsch, WDOJ
Gary Kincaid, WDNR
Beth Olson, WDNR

PHASE 2B WORK PLAN FOR 2012 REMEDIAL ACTION OF OPERABLE UNITS 2-5

LOWER FOX RIVER AND GREEN BAY SITE

BROWN, OUTAGAMIE, AND WINNEBAGO COUNTIES, WISCONSIN

Prepared by

Tetra Tech EC, Inc.

Anchor QEA, LLC

J. F. Brennan Co, Inc.

Stuyvesant Projects Realization Inc.

Prepared for

NCR Corporation

For Submittal to

Wisconsin Department of Natural Resources

U.S. Environmental Protection Agency

Approved as Modified by the Response Agencies

March 19, 2012

Document Control Number: NCR-12-0019

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AECOM	STS/AECOM
AMVEP	Adaptive Management and Value Engineering Plan
AOC	Administrative Order on Consent
ARAR	applicable or relevant and appropriate requirement
A/OT	Agencies/Oversight Team
BMP	best management practice
BOD	biochemical oxygen demand
CA	Cap Area
CAD	Computer Aided Design
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CQAPP	Construction Quality Assurance Project Plan
CNRR	Canadian National Rail Road
cy	cubic yard
DIPS	ductile iron pipe size
DMU	dredge management unit
DOT	Department of Transportation
DT	Design Team of Tetra Tech EC, Inc., Anchor QEA, and LimnoTech Inc. (LTI)
EM	Engineering Manual
Foth	Foth Infrastructure & Environment, LLC
Fps	feet per second
GAC	granular activated carbon
GOH	Gross Operating Hours
GP	Georgia-Pacific Consumer Products LP
gpm	gallons per minute
GPS	global positioning system
h:v	horizontal to vertical
H_2O_2	Hydrogen peroxide
HASP	Health and Safety Plan
HDPE	high-density polyethylene
HMI	human-machine interface
hp	Horsepower
HVAC	heating, ventilating, and air conditioning
J.F. Brennan	J.F. Brennan Co, Inc.
kHz	Kilohertz
LHE	Low Hazard Waste Exemption
LOS	level of significance

NRHP	National Register of Historic Places
O&M	Operations and Maintenance
OU	Operable Unit
PCB	polychlorinated biphenyl
pcf	pounds per cubic foot
PDA	Production Dredging Area
PLC	programmable logic controller
ppm	part per million
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
RA	remedial action
RAL	Remedial Action Level
RAWP	Remedial Action Work Plan
RB	Risk Based (Waste Exemption Request)
RCM	reactive core mat
RD	remedial design
ROD	Record of Decision
RTK	Real Time Kinematic
SC	Sand Cover
SDDP	sediment desanding and dewatering plant
SDR	Standard Dimension Ratio
SHSP	Site Health and Safety Plan
SOW	Statement of Work
SPRI	Stuyvesant Projects Realization Inc.
SWAC	surface weighted average concentration
SWMECP	Storm Water Management and Erosion Control Plan
SWPPP	Storm Water Pollution Prevention Plan
Tetra Tech	Tetra Tech EC, Inc.
TSCA	Toxic Substances Control Act
TSS	total suspended solids
USACE	United States Army Corps of Engineers
USC	United States Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
WDNR	Wisconsin Department of Natural Resources
WTP	water treatment plant

1 INTRODUCTION

This Phase 2B Work Plan for 2012 Remedial Action (RA) describes implementation actions for the 2012 remediation of polychlorinated biphenyls (PCBs) in Operable Units 2-5 (OU2-5) of the Lower Fox River and Green Bay Site ("Site;" Figure 1-1). The overall remediation program for the Site is set forth in Records of Decision (RODs), the 2007 Record of Decision Amendment (United States Environmental Protection Agency (USEPA) and Wisconsin Department of Natural Resources (WDNR) 2002, 2003, and 2007), and the 2010 Explanation of Significant Differences (ESD; USEPA and WDNR 2010). As set forth in the 2007 Administrative Order for RA (the "Order") and Statement of Work (SOW) for completion of Phase 2A work elements (Phase 2A SOW) (USEPA 2007), certain RA tasks were expedited and completed in 2008 in order to commence full-scale sediment remediation in OU2-5 at the start of the 2009 construction season. During 2009, construction of the Sediment Processing Plant (the "Plant") site was completed, as well as construction of a secondary support site in OU3. Dredging commenced in 2009 slightly ahead of schedule. During the 2009 and 2010 seasons, dredging commenced in April and ended in November each year, with project production goals being exceeded. Sand covering and engineered capping operations also began in 2009, a season earlier than initially scheduled. During the 2011 season, dredging commenced in April and was terminated in August, but sand covering and engineered capping continued through October.

This Phase 2B Work Plan includes descriptions of the RA expected to be performed in 2012[1]. An additional Remedial Action Work Plan (RAWP) will be prepared for each subsequent year of Phase 2B construction in advance of that year's work.

[1] This Phase 2B Work Plan for 2012 RA includes information similar to that contained in the 100 Percent Design Report Volumes 1 and 2 (Tetra Tech et al. 2009a and 2011).

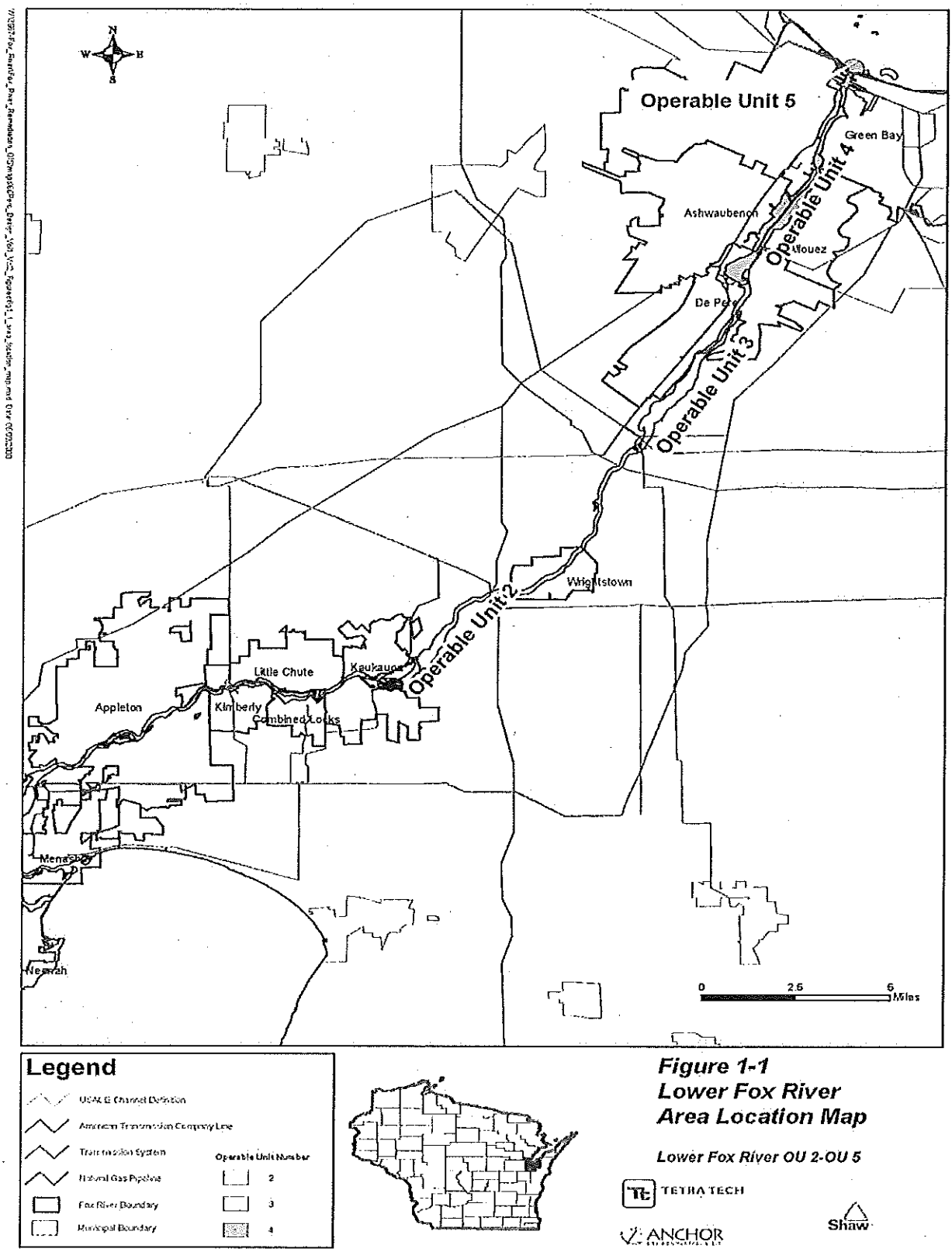

Figure 1-1
Lower Fox River
Area Location Map

Lower Fox River OU 2-OU 5

TETRA TECH
ANCHOR
Shaw

The Lower Fox River Remediation LLC (the "LLC"), an entity formed by Appleton Papers Inc. and NCR Corporation, retained Tetra Tech, EC Inc. (Tetra Tech) as the prime contractor for Phase 2A and 2B. The Tetra Tech Team performing the Phase 2B RA includes J.F. Brennan Co, Inc. (J.F. Brennan) for dredging and capping; Stuyvesant Projects Realization Inc. (SPRI, formerly Stuyvesant Dredging, Inc. [SDI], a subsidiary of Boskalis Dolman Bv) for sediment processing operations; Anchor QEA, L.L.C. (Anchor QEA) for design assistance; and other specialty subcontractors.

The Phase 1 area was the subject of a Consent Decree (CD) (USEPA, 2006) executed by the Response Agencies, NCR, and U.S. Paper Mills Corp (the "Phase 1 Project"). This area is located in OU4 and, due to the proximity of this area with planned remedial activities in OU4, is included in this work plan. Additional sediment sampling will be conducted to determine the remedial needs, if any, (e.g., additional dredging, sand cover or capping) in the Phase 1 area. If the sampling indicates residual dredging is required for all or portions of the Phase 1 area, dredging will be conducted during the 2012 dredging season. Sand cover or capping necessary to meet remedial goals for all or portions of the Phase 1 dredge management units (DMUs), these activities will be conducted in 2013.

The Phase 2A project elements are described in more detail in Section 3 of the 2008 Phase 2A Work Plan (Tetra Tech et al. 2008a) and the Site Surveys Report (Tetra Tech et al. 2008b, 2009b, 2010a). A Site Surveys Report Addendum will also be submitted for investigative work performed in 2011.

1.1 Summary of Phase 2B Remedial Actions

The 2007 Administrative Order for RA and SOW for Phase 2B work elements (Phase 2B SOW, Appendix 3 of the Order) (USEPA 2007), required the 2007 RA Order Respondents to implement other elements of the remedy for OU2-5 commencing in the 2009 construction season, and as necessary to meet the performance standards and specifications set forth in the ROD and 2007 ROD Amendment. The final design of the RA, as discussed herein, will be presented in the Final 100 Percent Design Report for 2010 and Beyond Remedial Actions, Volume 2.

The Phase 2B RA commenced in April 2009 with dredging the area immediately adjacent to the Sediment Processing Plant site (the "Plant", previously referred to as the Former Shell Site),

followed by neat line dredging in OUs 2, 3, and production dredging in other areas in OU4. Neat line dredging consists of dredging to final elevations that are pre-determined based on full indicator kriging (FIK) using a geostatistical model, with a level of significance (LOS) of 0.5. Production dredging generally refers to dredging of thicker cuts to an elevation that is above the final design elevation, if performed in an area where the design has not been refined following infill sampling, but may be performed to the final design elevation in areas where this design refinement has been completed. A summary of the dredging, capping, and sand cover installation completed in 2009, 2010 and 2011 is shown on Table 1-1.

Table 1-1
Combined Dredging, Capping and Covering Quantities for 2009, 2010 and 2011

Remedial Activity	OU2	OU3	OU4	Total
Dredging (in-situ cubic yards)[1]	3,009	235,858	1,272,094	**1,510,961**
Caps (Types A, B or C) (acres)	6.98	26.75	0	**33.73**
Sand Cover as the Primary Remedy (acres)	0.29	61.87	0	**62.16**
Sand Cover over Dredge Residuals (acres)	0	52.15	0	**52.15**
Shoreline Caps (acres)	0	0	0	**0**

Notes: 1. Dredge volume shown is total volume removed, and includes residual dredging and Phase 1 volumes.

Additional detail, regarding RA completed in 2009 and 2010, can be found in the annual RA Summary Reports (Tetra Tech et. al. 2010b, 2011b). The 2011 RA Summary Report will also be submitted to the Response Agencies describing all RA performed in 2011.

Final dredging in 2012 will follow the same general upstream-to-downstream approach used in prior years' RA. Production dredging will vary in location in OU4 and will initially be performed by all dredges until after the walleye spawn has ended. Phase 2B work also includes the installation of sand cover and armored caps, which began in 2009 in OU2-3. However, sand cover and armored caps will not be placed during the 2012 construction season, but will resume in 2013, since final dredging needs to be performed well ahead of this activity.

This Phase 2B 2012 Remedial Action Work Plan (2012 RAWP) includes the following remedial actions this construction season which includes the Phase I area.

The active in-river remedial action will start on April 2, 2012, and end no sooner than November 9, 2012. Remedial action will be fully engaged the entire remedial action season.

A minimum volume of 660,000 cy will be dredged. The reach of the river where this volume will be dredged is between the De Pere Dam and the Canadian National Railroad bridge (CNRR) at approximately transect 4049.

For this reach of the river the Respondents have the option of final dredging or production dredging. If final dredging is selected then the same general upstream-to-downstream approach used in prior years' RA will be followed for selected dredge areas identified in Table B-1 of Appendix B. TSCA dredging will be performed in 2013, or at the request of the Respondents and with Response Agencies approval in 2012.

If final dredging is selected then in an upstream to downstream manner, starting from the De Pere Dam:

- Each DMU's post-dredge bathymetric criteria (90%) will be satisfied;
- Each DMU's post-dredge PCB confirmation criteria will be satisfied; and
- All required residual dredging will be performed until each DMU's post-dredge PCB confirmation criteria is satisfied;

Note: In the 2013 remedial action season and in an upstream to downstream manner, all residual sand covers, remedy sand covers and capping will be completed "as early as allowed" by the Response Agencies for all DMUs that had satisfied final dredging criteria in 2012. "As early as allowed" by the Response Agencies depends upon a number of factors such as fishing pressure (walleye fishermen) and spawning in the reach of the river where final dredging had been completed in the 2012 remedial action season.

1.2 Objectives for 2012 Remedial Actions

It is expected that Phase 2B remedial action in 2012 will include; dredging, desanding and dewatering of sediment, transportation of filter cake, etc. to applicable landfills, and also related design and construction work. The objectives for 2012 RA are as follows:

1. Complete seasonal pre-operational testing and start-up of all sediment desanding and dewatering plant (SDDP) and water treatment plant (WTP) equipment prior to resuming remediation which starts April 2, 2012.
2. Adjust locations of fused pipelines and booster pump stations to support OU4 dredging activities.

3. Complete site development at the Plant site to accommodate staging of sand and armor stone for sand cover and engineered capping activities planned for 2013.
4. In coordination with the schedule for item 10 below, remove, process, and dispose of filter cake derived from in-situ TSCA (if dredged) and non-TSCA Sediment.
5. Beneficially reuse sand generated from dredging of non-TSCA Sediment during the 2012 dredging season for approved off-site construction projects.
6. Obtain EPA approval to designate separated sand from TSCA dredge areas as decontaminated through the sand washing process used during desanding operations.
7. Once approval, for the revised designation regarding TSCA separated sand, is received from EPA, obtain WDNR approval to beneficially reuse decontaminated TSCA sand (if dredged) for beneficial reuse, and identify projects for which this material can be used.
8. Remove, process and dispose of debris as required.
9. Comply with all Applicable, or Relevant and Appropriate Requirements (ARARs) identified for work in OU2-5 of the Lower Fox River as included in Table 1-3.
10. Continue to work with the Response Agencies to obtain approval for alternative disposal of filter cake, sand, scalped materials and debris generated from sediment delineated in-situ as TSCA material at a local landfill permitted under Wisconsin NR500 regulations.
11. All remaining infill sampling will be performed as described in the Approved as Modified 2012 Infill Sampling Plan (Appendix E) to refine the design of all future RA areas. Additionally, once all dredging activity has been completed for the 2012 remedial action season, a bathymetric survey (single or multi-beam) will be performed for the entire OU4/5 reach of the river. This 2012 bathymetric survey will then be used as input to the FIK model. The FIK model will also use all applicable sample results collected and determine the remaining RAL volumes and RAL areas that remain to be remediated.
12. Maintain continued communications with riparian property owners nearby 2012 RA areas.
13. Attend to worker safety in performing remedial action activities.
14. Continue remedial action that utilizes the sediment desanding and dewatering plant and the water treatment plant.
15. Conduct, as a minimum, all remediation in OU4 that is scheduled for the 2012 construction season.
16. Develop, design and present the 2013 RAWP as required per the latest UAO schedule.

17. In 2012, determine what debris can be removed that rests just off the OU4 processing site in OU4 and if approved by the appropriate authorities remove this debris.

18. A detailed plan will be prepared and submitted before June 15, 2012 depicting the needed upland site changes for handling capping and covering materials for subsequent RA seasons.

19. For the reach of the river from approximately transect 4038 to the CNRR, this reach of the river will be remodeled using the FIK geostatistical model and uncorrected DOC data in order to perform production dredging in this reach of the river.

The work to be performed to meet these objectives is described in detail in Section 3 of this Work Plan. Estimated total annual volumes for dredging are shown in Table 1-2. As indicated in this table, approximately 660,000 cy or more of sediment will be dredged as part of the 2012 RA.

Table 1-2
Estimated Annual Dredge Volumes

	Non-TSCA Quantity Including 6 Inch Overdredge (cy)				TSCA (cy)	Total Quantity (cy)
	OU2	OU3	OU4	Non-TSCA Total		
2009[a]	3,009	126,351	407,808	537,168	7,367	544,535
2010[a]	0	45,576	685,441	731,017	0	731,017
2011[a]	0	63,931	171,478	235,409	0	235,409
2012	0	0	660,000	660,000	0	660,000

Notes:
a. Volumes for 2009, 2010, and 2011 reflect total volumes removed, which includes estimated residual dredging and dredging of 67,157 cy from Phase 1 in 2010.

1.3 Applicable or Relevant and Appropriate Requirements

The 100 Percent Design Report for 2010 and Beyond RA Volume 2 lists location-specific applicable or relevant and appropriate requirements (ARARs) for the remedy as identified in the ROD. The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) waives the administrative requirements of federal, state, and local permits, and requires the remedy to comply with only those substantive technical requirements of ARARs. The ARARs identified for the Fox River RA are listed in Table 1-3, and include federal, state, and local requirements identified during the collaborative workgroup process.

The 100 Percent Design Report Volumes 1 and 2 (Tetra Tech et al. 2009a and 2011a) and other project documents submitted to the Response Agencies since 2009 for various site design and

development activities incorporated and specifically addressed the substantive technical requirements of the ARARs by incorporating these requirements into technical specifications, standards, engineering designs, and work plans prepared for the remedial work. Additional details enabling project compliance with the ARARs are included in the annual Work Plans for RA.

	Description	Applicable Standards
a)(5)-761.79 and ıl Approval 1) c)(9)	TSCA disposal regulations including risk-based disposal approval and procedures and testing and decontamination methods for porous and nonporous debris. These are ARARs for the management of filter cake, debris, separated sand, and scalped material generated from sediment areas determined to be equal to or greater than 50 ppm PCBs. Requirements for testing, decontamination, and disposal are addressed in the 100 Percent Design Report Volume 1 and associated documents (CQAPP, Transportation Plan, and Site-Wide O&M Plan). Criteria for onsite storage of bulk remediation PCB waste at a clean-up site.	Waste Disposal Criteria Waste may not be stored longer than 180 days prior to disposal, in a lined area an Notification of PCB Waste Activity as a commercial PCB waste transporter require assigned USEPA ID number. Vehicles must meet specs for hauling PCB wastes National Response Center of spills exceeding 1 pound PCBs by weight. Disposal in TSCA-permitted landfill: ≥ 50 ppm and < 500 ppm PCBs for in-situ se averaging, plus porous debris and sand from TSCA Sediment areas, unless a risk USEPA for disposal in an NR 500 landfill. In addition, the waste must pass the Pa Waste Manifest must accompany waste. Disposal in non-TSCA permitted landfill: < 50 ppm PCB for in-situ sediment based porous debris from non-TSCA Sediment areas. In addition, the waste must pass t Manifest must accompany waste. Non-porous metal surfaces must be decontaminated to ≤ 10 µg/100 cm^2 For unrestricted use as measured by a standard wipe test. For a spill exceeding 10 pounds PCBs by weight, notify the USEPA regional office decontaminate the area immediately.
	Federal regulations establish approval standards for state water quality criteria. The Wisconsin water quality standards are ARARs for the WTP point source discharge and are addressed in the design and the WTP O&M Plan.	Water Treatment Plant Discharge Biochemical Oxygen Demand: 1,300 lbs/day and 10 mg/L Total Suspended Solids: 10 mg/L daily max/ 5 mg/L monthly average Ammonia: 8.41 mg/L multiplied by diffuser dilution ratio at pH of 8.0 Mercury: < LOD, with LOD = 0.2 ng/L pH: 6 – 9 Standard Units PCBs: < LOD, with LOD of 0.1 – 0.5 ug/L
ARARs		
;eq	USEPA will consult with USFWS on habitat impacts from dredging, debris removal, and pipeline installation work. Coordination was started in 2008 and will continue over the course of the project. Fish and wildlife considerations for this work are addressed in the Habitat Replacement Plan and in the 100 Percent Design Report Volume 1.	Whenever waters or channels are controlled or modified, adequate provision shall maintenance, and management of wildlife resources and habitat.
seq	Requirements to identify the presence of endangered species and manage any adverse impacts are ARARs for dredging activities. Endangered species considerations are addressed in the Former Shell Property Site Development Plan and in the 100 Percent Design Report Volume 1.	No endangered species have been identified for this project.
23	Requirements for remedial activities to prevent obstructing or altering federal navigable waterways are ARARs for dredging work. Navigation considerations are addressed in the 100 Percent Design Report Volume 1 and the Phase 2B Work Plans for RA.	Navigation channel limits and required depth were provided by the U.S. Army Cor the design.
seq)	USEPA will consult with the Wisconsin State Historic Preservation Office before affecting any cultural or historic sites. This requirement is an ARAR for upland site development and in-river work. Cultural resource assessments are completed prior to work, results, avoidance and mitigation actions as recommended are documented in the Former Shell Property Site Development Plan, the Underwater Cultural Resources Approach, and the annual Phase 2B Work Plans for RA.	Complete cultural resource assessments and identify any potential impact the wor significance. Applies to both in-river and upland areas. If items are found that ma the NHPA, a mitigation plan or other plan to avoid the areas must be developed.
b) and Executive	Requirements to identify and delineate wetlands, and to manage impacts to wetlands regulated by the U.S. Army Corps of Engineers. These requirements are addressed in the Former Shell Property Site Development Plan, the 100 Percent Design Report, the Wetlands and River Habitat	Conduct wetlands delineation during planning phases for site development and dr present, avoidance or mitigation actions must be addressed.
401 and 404		

	addressed in the .	
;	Requirements for proper use, handling, and storage of small quantities of petroleum products.	Ensure proper storage of mobile diesel storage tank. Inspect waste storage areas promptly, and dispose of materials properly.
3C) and 207 NR	Requirements for point source discharges to the river. The Wisconsin water quality standards are ARARs to the OU4 WTP effluent discharge and are addressed in the WTP design and the WTP O&M Plan.	Water Treatment Plant Discharge Biochemical Oxygen Demand: 1,300 lbs/day and 10 mg/L Total Suspended Solids: 10 mg/L daily max/ 5 mg/L monthly average Ammonia: 8.41 mg/L multiplied by diffuser dilution ratio at pH of 8.0 Mercury: < LOD, with LOD = 0.2 ng/L pH: 6 – 9 Standard Units PCBs: < LOD, with LOD of 0.1 – 0.5 ug/L
	Requirements are ARARs for remedial activities involving discharges to groundwater.	No planned discharge to groundwater.
722	Requirements include a process for establishing site specific soil clean up levels.	No soil remediation is planned as part of the RA.
	Requirements are ARARs for remedial activities involving the storage, transportation, and offsite disposal of PCB waste. Waste management requirements are addressed in the Site-Wide O&M Plan.	Transporters must be registered as a Hazardous Waste/PCB Waste Transporter. government if spillage occurs. Disposal facilities must be approved and permitted by WDNR
	Requirements for monitoring of PCBs in air are addressed in the Community HASP	PCBs < 12 $\mu g/m^3$ Project-specific Action Levels for PCBs based on Distance from the Source: At a distance of 0 ft: PCB $\leq$ 1.0 $\mu g/m^3$, total dust $\leq$ 2.0 mg/m^3 At a distance of 100 ft: PCB $\leq$ 1.2 $\mu g/m^3$, total dust $\leq$ 2.4 mg/m^3 At a distance of 500 ft: PCB $\leq$ 5.8 $\mu g/m^3$, total dust $\leq$ 12 mg/m^3
RARs		
	Requirements are ARARs for site development work involving the installation of structures/activities within the floodplain. Wisconsin Statues Chapter 30 requirements embody NR 116 and expand the requirement to minimize adverse effects to waterways. Chapter 30 requirements are addressed in the Former Shell Property Site Development Plan and Addendum pertaining to Chapter 30 permit requirements (Sept. 2008), and the 100 Percent Design Report.	
s. tructures) g on Bank) ng) s)	Technical guidelines for placement of structures or materials in state waters and below the ordinary high water mark are ARARs for the RA. Substantive requirements include control of erosion and turbidity. Design requirements for site development, dredging, and placement of caps and covers are described in the 100 Percent Design Report (Volumes 1 and 2).	Discharge of fill or dredged material into waters of the United States is prohibited v approval. Turbidity action levels during dredging, capping, and covering activities: Trigger Level - 40 mg/L TSS or 40 NTUs above background for four consecutive r exceeding this level triggers evaluation of BMPs by dredge operator and possible Action Level - 80 mg/L TSS or 80 NTUs above background for four consecutive re exceeding this level triggers suspension of RA activities and notification of the A/O If a clam shell or bucket is used for precision placement of armor stone it will be lo placement location and the material released slowly and evenly over the cell to rec
43	Requirements for remedial activities involving the storage and disposal of solid waste - specifically filter cake, debris, and desanded material characterized as non-TSCA waste. Waste management requirements are addressed in the 2009 Site-Wide O&M Plan. Beneficial reuse of desanded material is addressed in the 100 Percent Design Report, the Phase 2B Work Plan for 2010 RA, and the LHE Request included in the Phase 2B Work Plan for 2009 RA. WDNR approval of the beneficial use of separated sand would be done under Wisconsin Statute 289.43 low hazard exemption. All beneficial reuse of sand would require case-by-case approval.	Waste Disposal Disposal in non-TSCA Solid Waste Landfill: < 50 ppm PCBs for in-situ sediment, Sediment areas Beneficial Reuse for Sand Relatively unrestricted use: PCB < 0.05 ppm Capping or covering, generally not required: PCB < 0.25 ppm

	river installation of sediment transport pipelines, dredging, debris removal, and cap placement. Coordination started in 2008 and will continue over the course of the project. Wildlife considerations for this work are addressed in the Wetlands and River Habitat Replacement Work Plan, and the 100 Percent Design Report.	
pter III /ater Management ards for Site liment Control and ıction Storm Water	Requirements for the management of construction and post construction erosion control and storm water management. Storm water requirements are addressed in construction designs and plans, the Storm Water and Erosion Control Plan, and the Storm water Pollution Prevention Plan.	Post-development discharge rates from 2-, 10-, and 100-year 24-hour storm even rates. However, the City of Green Bay agreed that the post-developed discharge could be exceeded and discharged to the Fox River through the detention pond. I Infiltration of detained storm water is prohibited. Detention pond design guidelines must be met. Inspect pond, swales, ditches, and erosion control features after all storms exceec during prolonged rainfall events. Remove accumulated sediment every 5 years or Maintain erosion control features in good condition, free of erosion gullies and exc

this Table:

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Act

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1.4 Adaptive Management and Value Engineering

As described in the RD Work Plan approved by the Response Agencies in June 2004 (Shaw and Anchor 2004), adaptive management (AM) and value engineering (VE) are integral elements of RD, and define the framework for modification of annual RA Work Plans as appropriate in response to new information and experience during initial RA in OU2-5.

The *Adaptive Management and Value Engineering Plan* (AMVEP - included as part of the 100 Percent Design Report Volume 2) includes a detailed description of value engineering opportunities that have been or will be evaluated and adaptive management that will be utilized to modify methods, practices or procedures related to the RA. This plan was finalized in early 2009 and approved by the Response Agencies on April 23, 2009. The AMVEP requires an evaluation of lessons learned at the conclusion of each RA season, along with corresponding modifications to the RA to incorporate these lessons learned.

As has been stated in previous submittals, adaptive management (AM) is management of a project that "adapts" over time to reflect the lessons learned from actual experience gained during the course of project implementation. The objective is to build on things that work in the early implementation process—and change the things that do not work, or are not fully efficient—with expectations of achieving remedial objectives in the most efficient and cost-effective manner possible. AM involves setting a process to tailor technical approaches based on data and experience gained during the course of the project. The process will focus on determining whether field experience has yielded information that differs significantly from assumptions made when a particular course of action was initially chosen. AM requires flexibility so that a technical approach in general, and the specifics of implementation in particular, can be changed—when warranted—without cumbersome procedural hurdles. To ensure the success of this process, it is critical that the implementing parties and the Response Agencies share data, engineering evaluations, and other information early and throughout the process.

Value engineering (VE) reflects a desire to design or engineer activities in the underlying project in a manner that adds "value" to the project, meaning greater efficiency, reduced time to completion, more effective production and/or less cost. The objective is to implement work in

the best way possible consistent with overall project (ROD) objectives and the contract requirements between the LLC and Tetra Tech.

The 2009 Annual Attachment to the AM/VEP (Tetra Tech 2010c) documents improvements made to the design and RA based on lessons learned and creative ideas discussed through the collaborative work group process during the 2009 RA. Many of these improvements were incorporated during the course of the 2009 RA, and carried forward into the 2010 and beyond RA, including the following:

A) Information received from various project stakeholders that had involvement with prior stages of remediation on the Fox River (e.g., OU1, Phase 1);

B) Input provided by the Response Agencies and other parties at the weekly Quality Control (QC) Meetings;

C) Technical Memoranda prepared, reviewed, approved, and implemented that were related to specific project issues;

D) Various internal project technical, production and operations meetings conducted frequently by the Response Agencies, including members of USEPA, the WDNR and industry experts, the LLC and the Tetra Tech Team;

E) Continuation of the Work Group process involving the designation of appropriate staff from the A/OT, the LLC and the Tetra Tech Team to investigate and discuss specific project issues and make recommendations for use on the project; and

F) Continuous improvement in the implementation of health & safety, quality and regulatory compliance in performing project activities.

The Response Agencies requested that AM/VE activities taking place in 2010 and future years be described in the annual RAWP for the subsequent year. Therefore, AM/VE activities that occurred in 2011 are described in the following subsection of this 2012 RA Work Plan. This means of tracking and reporting on AM/VE in the RA Work Plans for the subsequent year will replace the Annual Attachment format, as represented by this document.

1.4.1 Adaptive Management and Value Engineering for 2011 and 2012 Remedial Action

The following modifications were made during 2011 RA or will be recommended to be implemented in 2012 as a result of lessons learned during 2011 RD and RA:

1. Case-by-case evaluations of appropriate utility or structure setbacks and commercial riparian property owner areas, based on contaminant levels in the area, types of adjacent remedies, reliable information on the location of the utility, input received from the utility or structure owner, the type of utility and risk of damaging the utility or structure, and alternative remedial designs or alternative methods to implement the intended remedial design. Where appropriate, part or all of some areas may qualify as exceptional areas.
2. Agreement with the Response Agencies to allow the use of uncorrected core data (assuming that percent recovery of the core criteria has been satisfied) as input for the FIK model for the purpose of determining the refined 0.5 level-of-significance (LOS) neat line, in lieu of using corrected core data. This should reduce the amount of non-target sediment being removed;
3. On an exception basis and only in OU3, the Response Agencies allowed placement of a residual sand cover (minimum of 6 inches of sand) for DMUs that contained between 1.0 and 10.0 ppm in more than one interval (an interval equals 6 inches). The sum of these intervals also had to be less than 10.0 ppm. These areas were "exceptional areas" since the Amended ROD allows residual sand covers for a DMU where just one interval is between 1.0 and 10.0 ppm and all other intervals are less than 1.0 ppm. In OU4, where a DMU has more than one interval between 1.0 and 10.0 ppm and the sum of these intervals is less than 10.0 ppm, the Response Agencies will decide, on a DMU by DMU basis, if a DMU is eligible for residual sand covering. The Response Agencies' decision will satisfy the ROD and will be based on engineering judgment for the DMU's specific site conditions such as, geomorphology, hydrodynamic conditions etc.
4. The elimination of several potential shoreline caps in OU4 as a result of additional sampling and poling and consideration of the break-even cost for dredging vs. capping for selecting the most cost effective, appropriate remedy in these locations.

These changes in procedures are reflected in the 2012 design and in this RAWP and its attachments.

Initiatives that commenced previously or will be considered in 2012, and are expected to provide project benefits in 2012 and beyond include the following:

1. Design of dredging to a contoured neat line surface instead of a dredge prism approach in dredge-only areas;
2. Modeling the 0.5 LOS surface based on uncorrected DOC core depths, to minimize the removal of sediment that is less than the 1.0 ppm PCB RAL, and to maximize the removal of sediment that exceeds the 1.0 ppm PCB RAL with the first dredge event.
3. The disposal of filter cake and associated dredged materials from TSCA Sediment (if dredged) areas at a local permitted landfill. This is currently being pursued through a risk-based disposal approval request submitted to the USEPA Region 5 TSCA Division by Waste Management in March 2011.
4. Obtain Agency approval to designate sand from TSCA dredge areas as decontaminated through the sand washing process used during desanding operations.
5. Beneficial reuse of decontaminated sand that accumulates during 2012 TSCA Sediment (if dredged) processing, pending EPA and WDNR approval;
6. Use of the dredge-versus-cap cost analysis for evaluation of remedial measures in cases where more than one option is viable. For example, where dredging of sediment below a cap would be more cost effective or more appropriate for the location than placing the cap, the RA will be changed to dredging;
7. Evaluation of cap design and the potential to reduce the thickness of cap layers. If pursued, a Technical Memorandum and/or plan for a pilot study (if applicable) will be submitted to the Response Agencies for the alternative design; and
8. Infill sampling and poling in 2011 and 2012 to refine the design of the RA for 2012 and beyond.

Additional initiatives may be pursued in 2012 as opportunities for potential project improvements are identified, presented to and approved by the LLC.

1.4.2 *Adaptive Management and Value Engineering Organizational Responsibilities*

AM/VE will be led by Richard Feeney and Terri Blackmar. They will work closely with the Project Manager, the LLC and the Design Team to track and report on lessons learned and the resulting adaptive management, as well as all VE opportunities that are pursued. They will also be responsible for incorporation of the AM/VE into future RA Work Plans.

2 PROJECT ORGANIZATION

The organizational structure for the Phase 2B work includes the LLC, their RA Technical Team (including Project Manager, Lead Engineers, Engineers, Scientists, Geologists, Procurement and Cost Control Personnel, Operations Managers, Construction Inspector(s), and other support personnel), Remediation Contractors, and the Response Agencies. The Phase 2B project organization chart is shown on Figure 2-1 at the end of this section. Section 2.1 summarizes the qualifications of key personnel who will be performing the Phase 2B work.

The overall project organization is structured to provide the framework within which the specific roles and responsibilities of all project staff are clearly defined and communicated in relation to the technical requirements of the work. This structure is based upon simple and clear reporting lines among all levels of the project team, including subcontractors. In addition, this structure also establishes clear organizational interaction between the RA Technical Team and the LLC.

2.1 Core Project Management Team

The core project management team consists of the following individuals:

- Lower Fox River Remediation LLC (LLC) Manager: Jeffrey Lawson
- Project Manager: Bill Coleman
- Deputy Project Manager: George Willant
- Construction Managers/Operations Managers: Mike Estess and Richard Olson
- Dredging Project Manager: Greg Smith (J.F. Brennan)
- SDDP Project Manager: Rudy Driessen (SPRI)
- WTP Project Manager: Richard Feeney

The qualifications and responsibilities of the core management team and additional key project personnel are presented below.

2.2 Qualifications and Responsibilities of Key Personnel

Qualifications for the key RA Technical Team staff on the Phase 2B work are as follows:

- LLC Manager (Jeffrey Lawson)): Mr. Lawson has more than 30 years of experience in oversight and management of environmental projects. He will serve as the primary point of communication between the LLC and the core management team.
- **Tetra Tech Project Manager (Bill Coleman):** Mr. Coleman has more than 17 years of experience as a project manager on large projects. He will serve as the primary point of communication with the core management team and stakeholders. Mr. Coleman has overall responsibility for all aspects of the project including staffing, subcontractors, procurement, scheduling, and performance.
- **Tetra Tech Deputy Project Manager (George Willant):** Mr. Willant has more than 20 years of experience in managing large projects. He will serve as the designee for Project Manager, as required, and assists the Project Manager as needed.
- **Tetra Tech Construction Managers/Operations Managers (Mike Estess, Richard Olson):** Mr. Estess and Mr. Olson will serve as Operations Managers for the remedial action phase of the project. Their responsibilities will include reviewing subcontractor daily reports, tracking and scheduling of trucks for hauling of sand and filter cake, site maintenance activities, assisting quality assurance/quality control (QA/QC) and engineering functions, and managing day-to-day operations on the site.
- **The LLC's Representative, Foth (Denis Roznowski):** Foth's general responsibility will be to monitor the performance of the Remediation Contractor (the Tetra Tech Team) for compliance with the contract between the LLC and the Tetra Tech. In addition, Foth will review and confirm cost and schedule matters to ensure accurate and appropriate approval of invoices and change orders, as directed by the LLC. Foth will also perform Third Party QA audits to monitor Tetra Tech's adherence to the procedures described in the approved project plans. At the direction of the LLC, Foth may continue to perform sample collection activities for infill sampling, post dredge confirmation or other purposes. Mr. Roznowski will act as the managing representative for the LLC and is a registered Professional Engineer in Wisconsin with more than 25 years of experience on remedial projects, including sediment remediation. Mr. Troy Gawronski will be the

LLC's on-site representative and will be responsible for day-to-day interaction with the Tetra Tech Team.

- **Phase 2B Project Coordinator (Terri Blackmar):** Ms. Blackmar is a registered Professional Engineer in Wisconsin, with more than 25 years of experience providing project coordination on large sediment remediation and other projects. Ms. Blackmar will serve as a primary point of communication with Tetra Tech's core management team, the LLC, and the Response Agencies. She will also be responsible for preparation and submittal of technical information and reports to the Response Agencies. Ms. Blackmar or her designee, Mr. Richard Feeney, will be based on site full time during the Phase 2B work. (If neither Ms. Blackmar nor Mr. Feeney are available, Mr. Coleman or Mr. Willant can serve as Ms. Blackmar's designee as Project Coordinator.)
- **Certifying Engineers (Ram Mohan [Anchor QEA], Terri Blackmar):** Mr. Mohan and Ms. Blackmar are Wisconsin-registered Civil Engineers with over 25 years of experience in sediment characterization and remediation design. All design drawings produced for the remedial design will be reviewed by Mr. Mohan and/or Ms. Blackmar, and certified by the primary reviewer as the engineer in responsible charge.
- **Lead Engineers (Richard Feeney, Paul LaRosa [Anchor QEA]):** Each lead design engineer has 12 or more years of experience in designing solutions for their respective area of expertise on large construction projects. Mr. Feeney has over 30 years of experience on Superfund and other remediation projects, as well as in general construction and wastewater treatment.
- **Construction QA/QC Manager (Paul White):** Mr. White is a senior quality manager with more than 30 years of experience including construction oversight/inspection on remedial construction projects. Mr. White will be responsible for overall quality for the project. The quality functions performed by Mr. White are required to be performed as part of the project's quality assurance plans.
- **SDDP Project Manager (Rudy Driessen – SPRI):** Mr. Driessen is an engineer/operator with more than 17 years of experience managing major dewatering plant operations. He will be responsible for management of SDDP operations staff and communication with the Project Manager and Lead Engineers. Mr. Driessen will serve as the primary point of communication for SDDP-related information.

- **Dredging Project Manager (Greg Smith – J.F. Brennan):** Mr. Smith is an engineer with more than 12 years of experience managing a major dredging operation. Mr. Smith will serve as the primary line of communication for dredging-related information.
- **WTP Operations Project Manager (Richard Feeney):** Mr. Feeney is a Professional Engineer in Wisconsin with more than 30 years of experience including management of major WTP operations. Mr. Feeney will serve as the primary line of communication for WTP-related operations.

Identification of key personnel and their detailed roles and responsibilities are provided in the CQAPP, presented in Appendix A. The CQAPP also provides additional information regarding QA and QC roles and responsibilities for the project. The Third Party Quality Assurance Provisions Plan (Foth, 2009) provides detail on the roles and responsibilities for implementing the Third Party QA program.

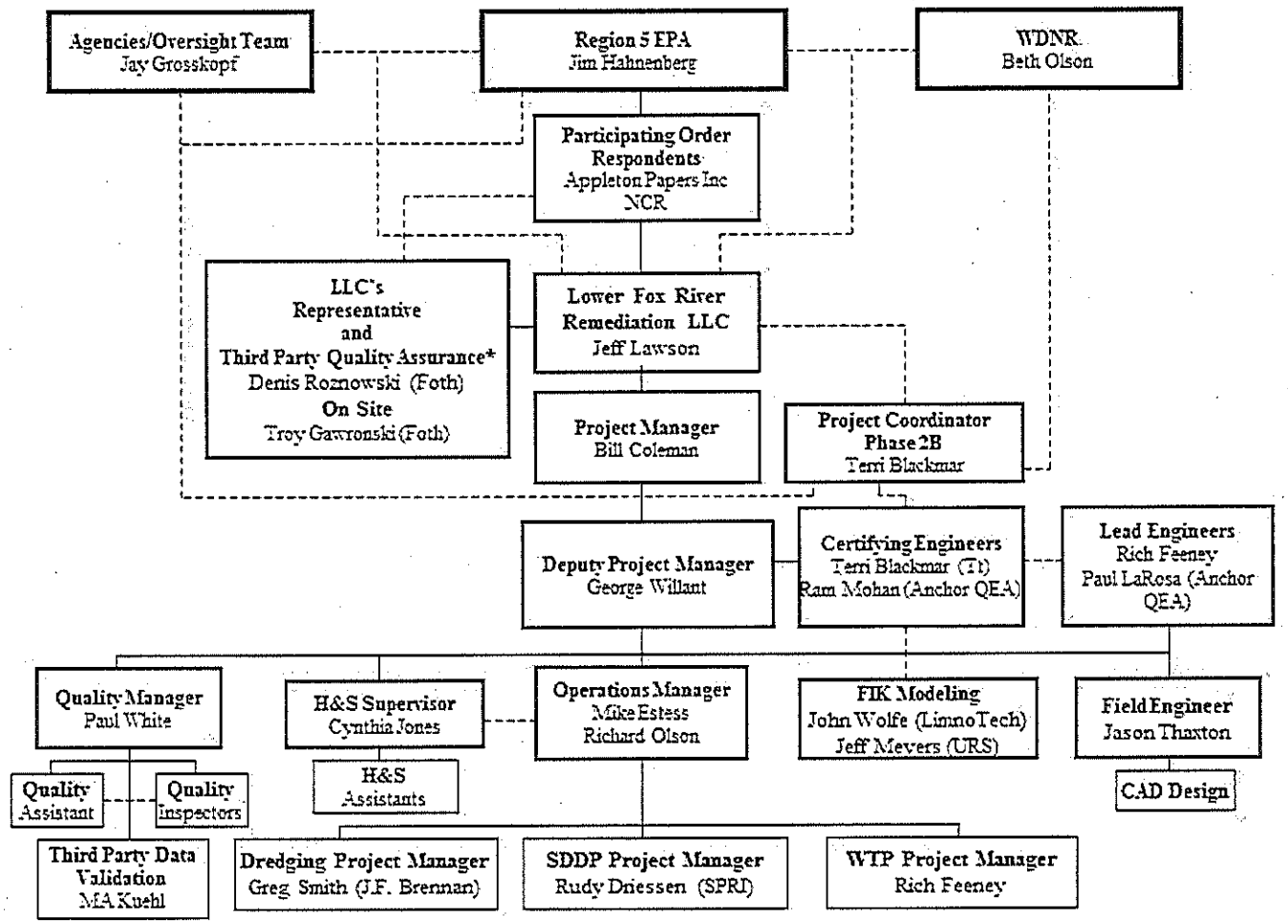
In 2012, geostatistical modeling will be performed by URS, under the direction of Mr. Jeff Meyers. Mr. Meyers will replace Mr. John Wolfe of LimnoTech Inc. (LTI) as the Lead Statistician in charge of full indicator kriging (FIK) modeling. The transition to URS for FIK modeling began in October 2011, with the review of project background information, and is expected to be complete by May 2012. Tetra Tech will coordinate with the Response Agencies' to facilitate acceptance of URS' modeling results as equivalent to results previously obtained by LTI. The LLC will provide a copy to the Response Agencies of all records/documents turned over to URS.

2.3 Schedules and Staffing for 2012 Site Operations

Beginning in April 2012, the project will be scheduled to run on rotating labor shifts staffed as follows:

- 7:00 am to 5:00 pm shift
  - General management: Project Manager, project engineers, support staff
- 6:00 am to 6:00 pm shift
  - SDDP: Plant Manager
- 8:00 am to 6:00 pm, 6:00 pm to 4:00 am and 4:00 am to 2:00 pm
  - Tetra Tech Operations
- 7:00 am to 7:00 pm shift

  - Dredges: Foreman plus two operators on each dredge
  - WTP: Plant Operator
- 7:00 pm to 7:00 am shift
  - Dredges: Foreman plus two operators on each dredge
  - WTP: Plant Operator
- 6:00 am to 2:00 pm, 2:00 pm to 10:00 pm and 10:00 pm to 6:00 am shifts
  - Filter Cake Loading/Storage Area and Truck Scales: 2 operators (extended hours through 5:00 pm) and scale attendant
  - Sand Storage area: One operator
- 7:00 am to 3:00 pm, 3:00 pm to 11:00 pm and 11:00 pm to 7:00 am shifts
  - SDDP plant operators and maintenance technicians (five each shift)
  - SDDP electrical technician (early shift only)



* AOT, on behalf of the Agencies, will provide Quality Assurance for infill sediment sampling

--- Line of Communication — Line of Authority

Figure 2-1
Project Organization Chart
Lower Fox River Phase 2B Remedial Action

TETRA TECH

3 PREPARATION FOR PHASE 2B REMEDIAL ACTION

As required by the 2007 Administrative Order for RA and Phase 2B SOW elements, full scale sediment remediation of OU2-5 commenced in 2009. Work that was planned pursuant to the Phase 2B Work Plans for RA in prior years but not completed before December 31, 2011 is included as work to be performed under this Phase 2B Work Plan for 2012 RA. In addition, site restoration work will be performed at the Peeters' site, which was used as a material staging site for OU3 RA from 2009 through 2011.

All final or production dredging in 2012 will be conducted from the De Pere Dam to CNRR. Currently TSCA dredging is not scheduled for 2012 but is optional if requested by the Respondents and approved by the Response Agencies in 2012. See Appendix B Table B-1 for a detailed list of available dredge areas for 2012. No engineered cap or sand cover placement is currently planned for 2012. However, through adaptive management, sand covering or some other temporary remedial action may be necessary if field conditions require it in order to prevent the spread of contaminated material over the next year or more. Remedial activities will include the following work in OU4: Final and or production dredging of non-TSCA Sediment in OU4 from the De Pere Dam to CNRR.

Regardless of approval for in-state disposal, the dredging of TSCA-designated sediment in OU4 south of the CNRR will occur in the 2013 dredge season or at the request of the Respondents and approved by the Response Agencies in 2012. The dredge season is planned to be from April 2, 2012 (weather and river conditions permitting) to November 9, 2012, and is further described in Section 8 of this RAWP.

3.1 Remaining Site Preparation Work

A sheet pile bulkhead wall was originally planned to provide marine staging of capping and cover materials at the Plant site. However, this plan was later abandoned and an alternative plan developed for this purpose. This alternative plan is shown on Figure 3-1, *Sediment Processing Plant Staging Area Plan*, and includes the following site preparation activities to be performed in 2012:

- Site grading
- Installation of drainage features such as ditches and erosion control measures
- Access road construction
- Development of a marine staging area for capping and sand cover placement activities
- Development of material stockpile areas
- Landscaping, as needed.

These site development activities will be performed during the latter part of the RA season, when the most favorable weather conditions are likely to exist for construction. On July 29, 2011 the City of Green Bay conditionally approved the more-detailed site plans as described in the Storm Water Management and Erosion Control Plan (SWMECP). These detailed plans and the SWMECP will be modified, as needed to reflect the layout in Figure 3-1, and submitted to the Response Agencies by June 15, 2012. All related site work will be completed during the latter part of the 2012 RA season.

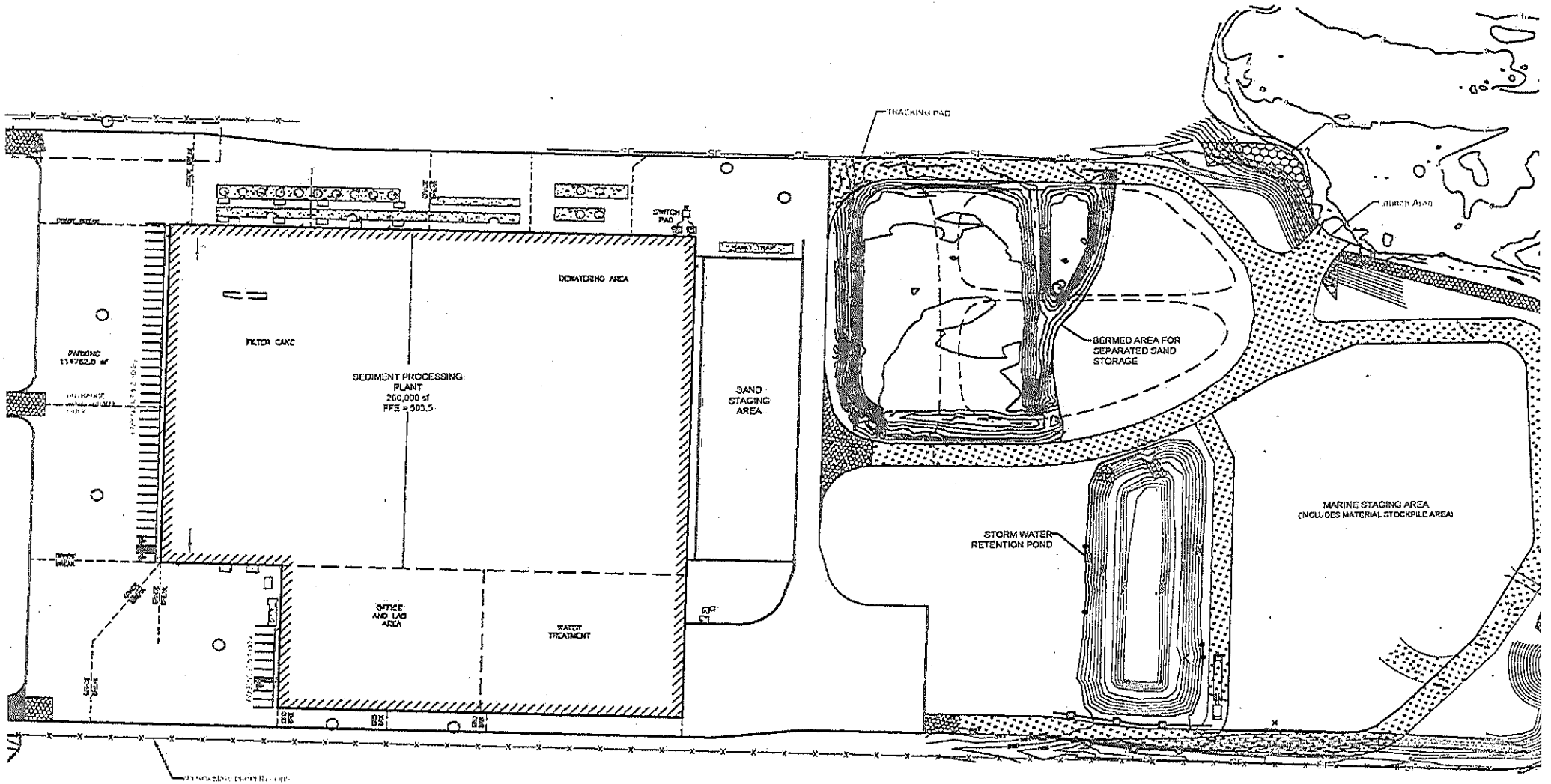
3.1.1 Sediment Processing Plant

SDDP and WTP equipment will be started up at the beginning of the 2012 dredge season in accordance with the procedures presented in the approved Operation & Maintenance (O&M) Plans (Tetra Tech et. al. 2011c, 2011d, 2011e) for these facilities. Site H&S control zones were established prior to startup in 2009 and subsequently modified several times since then as part of the H&S protocol for the project. These zones are identified on Figure 3-2, and will continue to be observed during 2012.

3.2 Low Hazard Waste Exemption

Sand segregated from non-TSCA Sediment during dredging operations in prior years was stockpiled at the Plant site after chemical analyses indicated the material met the requirements for beneficial re-use opportunities. A Conditional Grant of Low Hazard Exemption for the Beneficial Reuse of Separated Sand from the Fox River Remediation Project as Fill Material (the "LHE") was issued by the WDNR on October 18, 2010 for this purpose. Estimated maximum PCB and other constituent concentrations for offsite beneficial reuse opportunities of the sand are described in that document.

Additional information regarding these opportunities for sand generated during the 2012 dredge season will be provided to the Response Agencies and the WDNR Waste and Materials Management Program Supervisor, Northeast Region, as required by the Conditional Grant, prior to transporting any sand off-site for beneficial reuse. An amendment to the LHE will be submitted for any future beneficial reuse opportunities, if applicable. No off-site transportation of sand for beneficial re-use for future projects will occur until approval has been obtained from the WDNR.



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1611 STATE STRI
GREEN BAY, WI
TEL: (920) 445 - 0720

CAD FILE: Sediment Processing
DRAWN BY: RICKY.GIFFORD
DATE: November 18, 2011
LAST REVISED: November 18, 2
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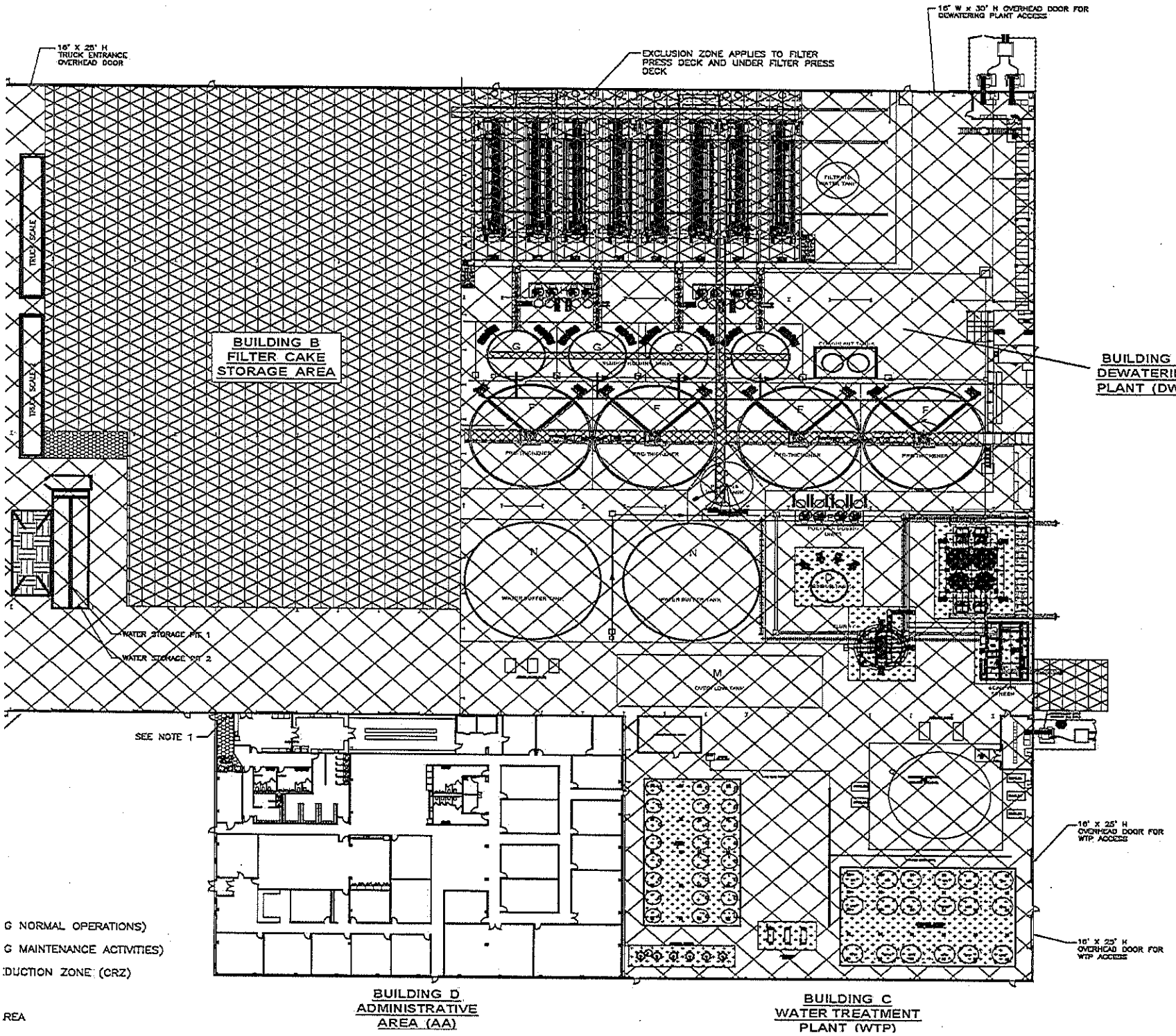


G NORMAL OPERATIONS)

G MAINTENANCE ACTIVITIES)

DUCTION ZONE (CRZ)

REA

NOTES:

1. ALL OPERATIONS AND MAINTENA RETURNING FROM BUILDINGS A, ENTERING BUILDING D, MUST EN AT THE MAN DOOR LEADING INT NORTH OF THE LOCKER ROOI HALLWAY WILL BE AN ESTABLISHI AND DONNING AREA.
2. ALL NON OSHA TRAINED VIS ACCOMPANIED BY OSHA TRAIN FAMILIAR WITH PROJECT HEALT REQUIREMENTS AND DAILY ACTIVI
3. ALL PROJECT PERSONNEL E AREAS OTHER THAN THEIR A AREA, EXCEPT FOR PASSING NOTIFY THE OPERATIONS SUPE UNASSIGNED AREA FOR PERMISSI
4. TEMPORARY EXCLUSION ZONES I SDDP WILL BE ESTABLI MAINTENANCE ACTIVITIES WHEN EQUIPMENT IS OPENED. CONTAMINATION REDUCTION ZC ESTABLISHED WHEN THE TEMPO ZONE IS ESTABLISHED.
5. PRIOR TO ENTERING A DESIGN ZONE DURING THE PROCESSING WASTE, NON-OSHA TRAINED OBTAIN A WORK PERMIT FROM DEPARTMENT. IF TSCA WA PROCESSED EVERY INDIVIDUAL EXCLUSION ZONE MUST HAVE (OSHA HAZWOPER TRAINING.
6. THREE GATES ALONG THE W PROVIDE CONTROLLED ENTRA EGRESS FROM THE PROPERTY. AND SOUTH GATES ARE UTILIZ TRAFFIC. THE CENTER GATE I PERSONAL VEHICLES AND SMALL

3.3 OU3 Secondary Staging Area

A privately-owned parcel, the "Peeters property", located on the east side of the Fox River in De Pere, Wisconsin (in OU3) was utilized for fusing dredge pipeline and as a capping and sand cover support facility for OU2-3 in 2009 and 2011. This site was also used in 2010 as a general support site for crew change-out and other support activities. In a letter dated February 13, 2012, EPA has stated that it has no objection to the LLC's request to demobilize from this site and restore the area. Equipment will be removed in 2012 and site restoration performed in accordance with the OU3 Staging Area Plan. This site is due to be returned to the property owner by the spring of 2013.

3.4 Submerged Cultural Resources

Assessments have been performed throughout OU4 RA areas to identify relevant magnetic and side scan sonar anomalies and determine if these anomalies suggest submerged cultural resources. These assessments were performed in accordance with the Underwater Cultural Resources Approach presented in Appendix F. Reports on these assessments were submitted to the Response Agencies and approved in advance of performing RA in specific areas. SHPO approval was received on April 6, 2011 and on May 12, 2011 for assessments covering all of OU4 and additional assessments will only be performed and submitted if additional cultural resources are unexpectedly encountered in 2012 and subsequent years. The findings and recommendations for 2012 RA areas were submitted as part of the 2010 *Site Surveys Report Addendum* (Tetra Tech et. al. 2011b) following the conclusion of the 2010 RA season. The LLC's DT will investigate and seek approval from Wisconsin Site Historic Preservation Office (SHPO) regarding removal of the historical artifacts and structures just off the processing plant site. Pending SHPO's response, final approval and disposition regarding historical artifacts and structures will then be evaluated by the Response Agencies.

3.5 Communication with Riparian Landowners

An initial notification letter will be sent to riparian landowners located near areas where remedial action (i.e., dredging or debris removal) is expected to commence in 2012, as described in the Technical Memorandum – Notification to Riparian Landowners near 2012 Dredge Areas (Riparian Tech Memo) in Appendix D. The initial notification will inform riparian landowners that remedial activities are expected to recommence in 2012 and they will be contacted again if remedial action is to take place within 300 feet of their shoreline.

Those landowners with docks or other structures located in planned remedial action areas will also receive a riparian agreement. These riparian landowners will be informed of the planned dredging activity scheduled to take place in the vicinity of their docks, as well as potential impacts to the depth of the river in the immediate vicinity of their docks. The Riparian Tech Memo presented in Appendix D identifies the residential docks located within 2012 remedial action areas and describes the process used for evaluation of effects from dredging on the depth of the river in the immediate vicinity of their docks, as well as the notification process.

These remedial activities will be performed according to the approved design, or as close as practicable to the structures as determined by J.F. Brennan based on field conditions at the time of the remedial activities.

The notification and agreement (if applicable) that will be presented to the riparian landowners are presented in the Riparian Tech Memo in Appendix D, and are very similar to the documents used for riparian landowner communication performed during prior years of RA.

3.6 Design of Sediment Dredge Areas

In 2010, uncorrected core depths of contamination (DOCs) were used in the FIK geostatistical model to obtain the 0.5 LOS neat line (referred to herein as the "uncorrected neat line") for final dredging in Phase 1. The OU4 area between the De Pere Dam and the State Highway 172 Bridge, where some production dredging was performed in 2010, was also remodeled (December 2010) using the FIK geostatistical model and uncorrected DOC data. The uncorrected core DOC data included historic (2004 to 2008) core data and data from infill sampling and poling performed in 2009 and 2010. The modeling produced a refined uncorrected neat line that was used to develop the 2011 design for remedial action areas, consistent with the delineation methods detailed in the 100 Percent Design Reports. The design for RA in this stretch of the river was further revised for 2012 RA, to include RA in utility

setback and certain areas previously identified as "to be determined" (TBD) on the 100 Percent Design plans. However, the design for these areas is still subject to change based on discussions with utility owners and/or commercial riparian landowners regarding the design, and based on new information that may be obtained through further investigation of utility locations. These efforts are ongoing but will be complete before RA is performed in these areas.

Additional dredging was performed in the area between the De Pere Dam and State Highway 172 Bridge in 2011, but no areas have yet been closed out as final in OU4. Therefore, some final dredging, at the option of the Respondents, will be performed in OU4 dredge areas located south of CNRR to remove sediments to the planned dredge elevation with allowable overdredge based on the uncorrected neat line, such that this area can be sampled and prepared for closeout. A summary of the RAL areas available to be dredged in 2012, including the estimated RAL, overcut and residual volumes for each area, along with a breakdown of TSCA versus non-TSCA Sediment volume, is presented in Appendix B Table B-1. As indicated in Appendix B Table B-1, approximately 660,000 *in-situ* cubic yards (cy) of sediment or more is targeted for removal in 2012. For 2012, TSCA Sediment and final dredging is optional.

The planned elevation for dredging in 2012 with the 12-inch and 8-inch dredges is the neat line elevation with up to a 6 inch planned overcut below the neat line elevation since the areas to be dredged have refined final designs, incorporating 2011 infill sampling results. Dredging areas for the 12-inch dredge in 2012 will be selected based on dredge cut thickness and location of sediment subject to management in accordance with TSCA requirements, to the extent practicable, and are discussed further in Section 4.4.

3.6.1 RA Design Overrides and Potential Field Refinement

The horizontal and vertical extent of dredging in dredge-only areas was determined based on FIK geostatistical modeling to the 0.5 LOS surface, using uncorrected core data, as described in the 100 Percent Design Report Volume 2 (Tetra Tech et al., 2011a). The remedial area footprint has changed in some areas from that presented in the 2010 draft of this 100 Percent Design Report. Infill sample results were incorporated into the design in 2011, which refined the LOS surface, and production dredging was also performed in some areas prior to infill sampling. However, the previous (e.g. 2010) dredge area footprint that lies outside the current dredge area footprint will be sampled in accordance with the CQAPP to verify completion. The Technical

Memorandum on Post-Production Dredge Verification Sampling, which includes drawings identifying these areas, is presented in Appendix H.

In some dredge-only areas, engineering judgment was utilized in the 100 Percent Design Report Volume 2 to override the neat line dredge surface created using the FIK model so other factors can be considered in the dredge plan through adaptive management that could not be incorporated into the model. For areas included in the 2012 remedial design, these areas are summarized in Table 3-1 below, along with the reason for each override.

Table 3-1
Remedial Areas with Design Override of Neat Line Surface

Remedial Area	Override Description	Reason for Override
OU4 – D23	Manual 'lifting' of LOS 0.5 surface in the CC1 / TSCA dredging area	To avoid artificial lowering of surrounding cores due to deep DOCs at cores within the CC1/TSCA area
OU4 – Marina adjacent to D32	Dredge area design inside the marina was adjusted to include all core locations with a DOC of 0.5 feet or more, rather than limiting dredging to the area included in the LOS surface.	LOS surface excluded small areas of known contamination.

With the collaboration and approval of the Response Agencies, engineering judgment will also be used when conditions observed in the field warrant a modification to the dredge plans. Examples of situations where engineering judgment may be used to modify the dredge plan in the field include, but are not limited to, the following:

- Soft sediment thickness is less than predicted by the geostatistical model due to the presence of rock, clay, or other natural material above the targeted dredge elevation that was previously unknown (i.e., high subgrade). Procedures for delineating these "high-subgrade" areas are provided in the Standard Operating Procedures (SOP) for Estimating Soft Sediment Thickness, presented in Attachment B-7 of the 2012 OU4 Infill Sampling Plan (Appendix E).
- Slope geometry or dredge area must be modified to accommodate the presence of cultural resources, pipelines, or other structures in the river that were previously unidentified and/or require additional information before dredging can continue as planned in the area.
- Further investigation of a structure, utility, or pipeline indicates that dredging over or close to the utility or closer to the structure than originally planned can be performed safely.

- Post-dredge sampling indicates sediment has been removed to the design elevation and the 1.0 ppm RAL has been achieved. In this event, if a post-dredge cap was designed for this area, it will not be installed.
- Post-dredge confirmation sampling with at least two or more intervals below the post-dredge mudline (i.e., the mudline measured immediately after completion of production dredging) shows that the 1.0 ppm RAL has been met with only production dredging, and further dredging to reach the design elevation is not required.
- Adaptive management and/or value engineering evaluations indicate modification of the remedy should be considered.

Modifications will only be made to dredge plans in the field with the collaboration and approval of the Response Agencies.

4 SEDIMENT DREDGING AND PROCESSING

Remedial action for 2012 includes removal of at least 660,000 in-situ cy. Reference Appendix B Table B-1 regarding available dredge areas in the reach of the river between the De Pere Dam and CNRR. For 2012, TSCA Sediment and final dredging is optional.

Sediment dredging will be performed as shown on the Engineered Plan Drawings presented in Appendix B and as modified by Table B-1. The sequence of dredging in OU4 is described in detail in Section 4.5.1. For 2012, TSCA Sediment and final dredging is optional.

It is important to note that the removal of TSCA Sediment (if dredged) will be performed separately from the removal of non-TSCA material, such that the filter cake and associated dredged materials (e.g., scalping material, separated sand) derived from TSCA Sediment (if dredged) can be managed separately from that derived from non-TSCA dredging.

OU4 dredging will include dredging in both dredge-only and dredge-and-cap areas. In dredge-and-cap areas, dredging to remove some sediment exceeding the 1.0 ppm RAL will be performed to a predetermined elevation and an engineered cap will be placed over the exposed dredge surface to manage the remaining sediments with concentrations above the RAL. Post dredge sampling will be performed in these areas and used to confirm that the planned cap type is appropriate.

4.1 Dredging Equipment and Production Rates

Dredging operations in 2012 will utilize up to four hydraulic dredges simultaneously with pipeline transfer of sediment to the desanding and dewatering system at the Plant site. The use of four dredges simultaneously will provide the flexibility to balance flow rates to the desanding and dewatering system at the Plant.

The average production rate for an 8-inch dredges is approximately 20 in-situ cy per gross operating hour (cy/GOH), so two 8-inch dredges can remove approximately 4,800 in-situ cy of sediment per week (cy/week) and three 8-inch dredges can remove approximately 7,200 in-situ cy/week assuming 24-hour, five-days per week operation. The average production rate for the 12-inch dredge is approximately 150 in-situ cy/GOH, when operating in areas with adequate sediment thickness (greater than one foot of cut dimension), so this dredge can remove approximately 18,000 in-situ cy/week when operating 24 hours per day, five days per week. In addition to the dredges, booster pump stations for the 8-inch and 12-inch dredges will be required as implemented in prior dredging seasons. The approximate total production rate for

two 8-inch dredges and one 12-inch dredge operating 24-hours per day, five-days per week is therefore 22,800 in-situ cy/week. There are 31.4 weeks planned for the 2012 RA season (April 2 – November 9, 2012 inclusive). At this conservative rate of 22,800 in-situ cy per gross operating week the total 729,600 in-situ cy exceeds the planned minimum volume of 660,000 in-situ cy.

Specifications, pump curves, and cut-sheets for the dredges and booster pumps are provided in the 100 Percent Design Report Volume 1 (Tetra Tech et al., 2009a). The design and layout of the booster pump system for the 8-inch dredges is presented in the 100 Percent Design Report Volume 1 (Tetra Tech et al., 2009a).

4.2 Removal and Transport of Debris

Debris will be removed from each dredge area prior to dredging, to the extent possible. The areas that will be targeted for debris removal this year are the Riverplace Marina, D35C, D68A, D54, SC60, CB28, D56, SC54C, SC78, SC56C, SC75, D47A, D48, CA54, and any other remedial areas that have debris present, as schedule permits. Planned debris removal will start after the commencement of dredging upstream of these areas and will continue throughout the season.

Potential cultural resources in OU4, identified as described in Section 3.4, have been considered during the cultural resources assessment, and procedures to remove or avoid them during dredging are further described in the J.F. Brennan Operation Plan for Debris Removal (J.F. Brennan, 2008a and 2008b) and in the Underwater Cultural Resources Approach in Appendix F. Additional debris removal may be performed, if necessary, as debris not identified during initial pre-dredge removal activities is encountered by the dredge. Areas of excessive debris not identified during the pre-construction investigations, but encountered during dredging, will be addressed with the Response Agencies.

Debris from five shipwrecks, including the *Bob Teed* and the *Satisfaction*, exists just off the shore of the Plant site. The subject area was designated as Wisconsin Archaeological Site 47-BR-0305 by the Wisconsin SHPO, and the current remedy planned for the area is capping. This site was nominated for registration on the National Register of Historic Places on October 1, 2009. In the *Phase 2 Underwater Archaeological Investigation of Five Submerged and Partially Submerged Cultural Resources, Former Shell Property Project Area, Lower fox River, Brown County, Wisconsin* (Dolan Research, Inc., 2008), it was concluded that the these vessels would be "adversely impacted" by removal. Although this debris is not planned for removal in 2012, the potential exists for removal of all or part of the debris to be required as early as 2013, if the area is revised to be a dredge area. Therefore, the Design Team, in collaboration with the A/OT, will meet with SHPO to discuss remedial options and potential impacts to the historic/archaeological significance of this area and identify the path forward for addressing historic preservation concerns for this area. It is the Response Agencies position that these historic/archaeological cultural resources be removed from the river after SHPO approval.

Transportation of processed debris to off-site disposal facilities is described in detail in the *Final Transportation Plan* (Appendix A, Attachment A-12 of the 100 Percent Design Report Volume 1).

4.3 Dredge Pipeline Installation and Operation

Transport of sediment removed during dredging operations will be performed in pipelines installed by J.F. Brennan. Two 8-inch dredges will begin operations in the reach of the river immediately south of Highway 172 and the 12-inch dredge (the *Mark Anthony*) will begin operations in the reach of the river immediately north of Highway 172, so the pipelines will initially be installed to reach these areas. The design and installation of the dredge pipelines and booster pump stations is described in Section 3.2.8 of the 100 Percent Design Report Volume 1 (Tetra Tech et al. 2009a), and summarized herein.

Both the 8-inch pipeline and 12-inch pipeline run to the Plant, where they are then routed to the sediment processing system. The dredge pipelines for the 8-inch and 12-inch systems are routed onto shore along the northwest side of the Canadian National Railroad Bridge near transect 4049, immediately south of the Plant site. The pipelines currently run up onto the shoreline and lay mainly on the ground surface.

During the initial installation in 2009, each of the dredge pipelines was submerged, weighted every 50 feet, and maintained in a filled (slurry or water) state to ensure the pipeline would not develop buoyancy and rise to the surface. Where the two dredge pipelines cross the inlet to the Georgia-Pacific coal boat slip at the west end of the Fort Howard turning basin, J.F. Brennan dredged to the design elevation and then weighted the pipeline to the bottom of the dredged area next to the coal slip. This provides a safe clearance of approximately 4.5 feet between the bottom of the ships and the top of the pipeline at the inlet.

The pipelines are configured with appropriate monitoring equipment to minimize the potential for plugging of the lines. The dredge levermen will monitor booster pump pressures and line velocities and make the necessary adjustments to maintain flows. In addition, the booster stations are outfitted with equipment that allows them to increase or decrease flow based on preset pressure and velocity parameters. Radio repeaters are installed along the line to ensure uninterrupted communication between the dredges, booster stations, and dewatering system. All dredges and booster stations are also equipped with clean out boxes and backflow valves so any materials that become lodged in the pump can be easily removed. Another feature installed at each dredge is a Gatling Gun head plate. This piece of equipment is located between the suction mouth and intake and its function is to limit the size of the materials that is allowed to pass through the pump.

With the measures described above in place, it is highly unlikely the slurry lines will plug. If a line did plug, it would most likely occur while pumping a large volume of coarse sand. If this occurred, clear water flushing of the line would be performed to dislodge the sand. Alternatively, a section of sand-choked line, identified through buoyancy checks, could be isolated with backflow valves shut, cut from the line, removed with a crane or backhoe, and then placed on a barge with containment. A new section of pipe would then be installed; the plugged section would be capped on both ends and delivered to the Plant to be cleaned out and for the sediment to be processed as appropriate.

Additional information regarding the installation and maintenance of the dredge pipelines is presented in the Technical Memorandum – Pipeline Installation and Maintenance Procedures.

4.3.1 Pipeline Marking System

The dredge pipeline marking system was designed to allow for high visibility of dangerous areas on the river for the benefit of boaters operating at high speeds. The system will consist of a series of different waterway markers, installed as indicated in the Technical Memorandum – Pipeline Installation and Maintenance Procedures (J.F. Brennan 2009c). Figure 4-1 outlines the pipeline marking system described in this Technical Memorandum. This system was used by J.F. Brennan at OU1 and during 2009 in OU2, OU3, and OU4, with additional marking and monitoring of the pipelines added in 2009 after two incidents involving boaters hitting pipelines. The improved system was used in 2010 and 2011, with no navigational incidents. Additional information regarding the installation and maintenance of the dredge pipelines is presented in the referenced Technical Memorandum.

4.4 OU4 Production Dredging

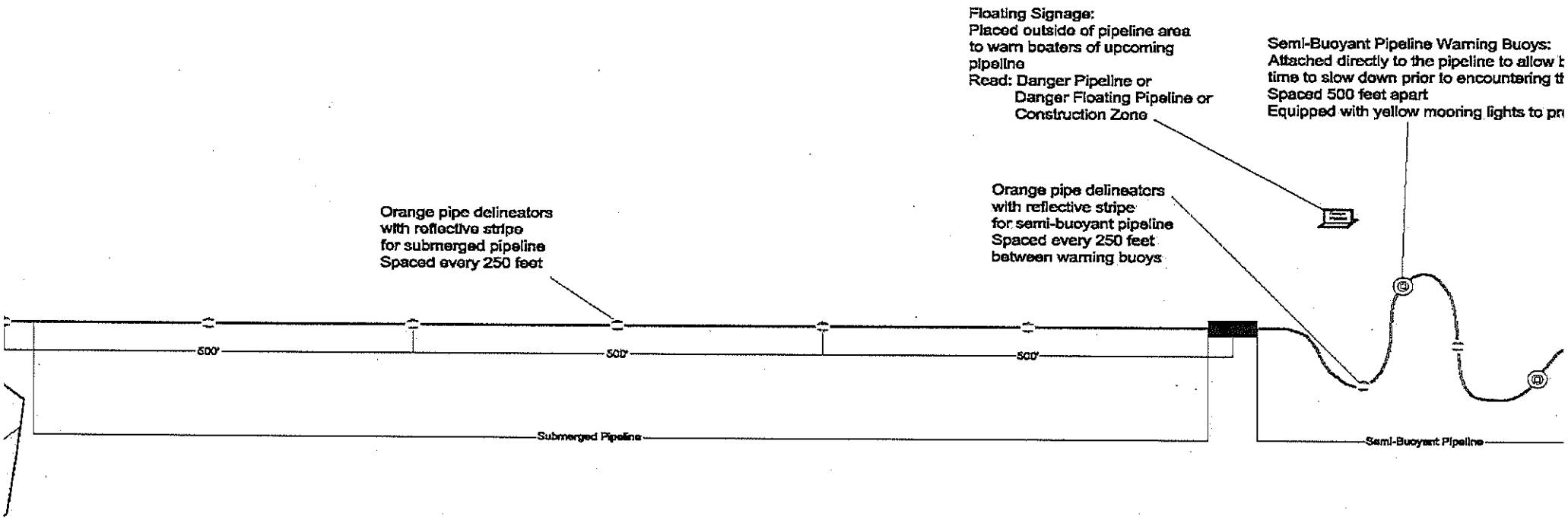
Production dredging will be performed in OU4 to remove targeted sediments with a minimum 1.0-foot thickness. The likely sequence of OU4 production dredging is described in detail in Section 4.5.1. A bathymetric survey (single or multi-beam) will be performed prior to the start of the 2012 operations season and after completion of 2012 production dredging in these areas, and the survey results will be used to determine the volume of sediment removed and whether the planned removal depth was achieved.

4.5 Shallow Water Dredging

In addition to clean-up pass dredging in deeper water, the 8-inch dredges will be used for removal of sediments in areas of OU4 with water depths of less than 3 feet. Depending on fuel load, an 8-inch dredge drafts approximately 2 feet of water, which is suitable for operating in most shallow water environments. Shallow areas that cannot be dredged with the 8-inch dredge will be viewed as exceptional areas and reviewed with the Response Agencies for alternate remedial action.

Notes:

ted are maximum distances, additional buoys may be added as needed
nd/or Flashing Construction Signs may be used to guide boaters through construction zones
en Buoys may be used to provide safe passage for boaters through construction zones and
l-submerged pipeline.
oating Signage or Stick Buoys may be placed in a circle or semi-circle orientation along
to form a protective barrier around construction zones.



Buoy Key	Floating Signage	Warning Buoys	Pipeline Delineators

J.F. BRENNAN CO.
820 BAINBRIDGE ST.
LA CROSSE, WI 54602
PHONE (608) 784-7173
FAX (608) 785-2090

Typical Pipeline Marking Procedure for Floating and Submerged Pipeline

TITLE:	Overview
DRAWN BY: PCO	DATE: 11-
SCALE: NTS	DWG #:

4.5.1 Sequence of Dredging Operations

Equipment startup will commence on the first day of dredging operations and will include startup of the dredges, pipeline and booster pump(s), and operation for an anticipated minimum of 16 hours per day. During this time, the entire system of dredges, dredge material pipeline and booster stations, sediment desanding and dewatering and water treatment processes, and filter cake and scalped material load-out activities will be checked and adjusted as needed. Following confirmation that all systems and processes are functioning as planned, dredging and processing operations will be expanded to a typical schedule of 24 hours per day and 5 days per week for the remainder of the 2012 season except for the weeks of May 28th and September 3rd which have work planned for 4 days per week due to the holidays, and depending upon dredging progress, the week of July 2nd, which includes Independence Day and is planned for shutdown. This weekday schedule will allow for dredging operations to be off the Lower Fox River during the peak times for recreational boaters (i.e., Saturdays, Sundays and holidays).

During the 2012 season, 8-inch hydraulic dredge and booster pump station operations are expected to be conducted as follows:

- Two 8-inch hydraulic dredges will begin dredging in 2012 by removing non-TSCA Sediment in the reach of the river just south of Highway 172 to allow for fishing activities in the area from the De Pere Dam to approximately transect 4017 to diminish (which includes OU4-D23).
- Following the initial dredging in OU4, the 8-inch dredges will move to dredge areas OU4-D23, OU4-D26A and OU4-D27A to assist with dredging of non-TSCA and TSCA Sediment (if dredged) in these dredge areas. The dredging of TSCA Sediment (if dredged) will be performed, after the influx of fisherman associated with the walleye run has diminished. Non-TSCA Sediment will be removed from the upper sediment intervals in dredge area OU4-D23 to the top surface of the TSCA Sediment (if dredged). Once the non-TSCA Sediment is removed by dredging to the bottom surface of the TSCA Sediment (if dredged), TSCA Sediment (if dredged) removal will continue until completed in OU4-D23, OU4-D26A, and OU4-D27A.
- After dredging of TSCA Sediment (if dredged), the entire pipeline conveyance and dewatering system and SDDP will be flushed with river water in accordance with the O&M Plans.

- If the Respondents choose, after completion of the TSCA Sediment dredging (if dredged) in the OU4-D23, D26A and D27A TSCA areas, a third and fourth (as needed) 8-inch dredge will be added and the 8-inch dredges may perform final pass dredging in OU4 between the De Pere Dam and State Highway 172. For this reach of the river, dredging will commence in the southernmost area and will proceed generally in an upstream to downstream direction.
- All dredging in the reach of the river from the De Pere Dam to CNRR may or may not be final dredged to at least 90 percent of the required dredge design elevation, followed by PCB confirmation sampling and if required followed by residual dredging.
- The 8-inch dredges in OU4 will convey material through 8-inch internal diameter high-density polyethylene (HDPE) Standard Dimension Ratio (SDR) 17 ductile iron pipe size (DIPS) orange-colored safety pipelines to the SDDP.

During the 2012 in-water construction season, the 12-inch hydraulic dredge and booster pump operations will be conducted as follows:

- In OU4, the 12-inch dredge will perform dredging of sediment in thicker material deposits (i.e., greater than 12 inches thick).
- The 12-inch dredge will final dredge or production dredge anywhere from the De Pere Dam to CNRR depending upon a number of factors such as sufficient sediment thickness, TSCA dredging, balancing sediment feed rates to the dewatering plant, etc.
- The 12-inch dredge will discharge material through a 12-inch internal diameter HDPE SDR 17 orange-colored safety pipe to the Plant through required booster stations with normal hydraulic flow rates less than 4,000 gpm.
- After dredging of TSCA Sediment (if dredged) is performed, the entire pipeline conveyance and dewatering system and SDDP will be flushed with river water after this dredging is complete, in accordance with the O&M Plans (J.F. Brennan 2011a; Tetra Tech et al. 2011c; Tetra Tech et al. 2011e).

  The processing of sediment in the SDDP is described in Section 4.7.

4.6 Dredged Sediment Handling

Sediment removed during hydraulic dredging operations will be transported in the pipelines using booster pumps as needed to maintain energy in the pipeline. Flow rates will be monitored

to ensure the operating flow rates designed for sediment transport and processing are maintained as follows:

- Maximum flow of 6,000 gpm (combined from all dredges) with removal of up to 250 in-situ cy/GOH.
- Average flow of approximately 4,500 gpm (combined from all dredges) with removal of approximately 150 to190 in-situ cy/GOH. This sediment removal rate will allow the targeted minimum volume of 660,000 in-situ cy to be achieved in 2012, which includes overcut and residual dredging.
- Minimum flow of 3,000 gpm (combined from all dredges) with removal of approximately 97 cy/GOH. This minimum flow rate is the minimum required to maintain velocities in the pipeline that support sediment suspension. It is also the minimum flow rate required for flow through the WTP and diffuser pipeline.

During the previous dredge seasons, the average sediment removal rate achieved was approximately 190 cy/GOH. The assumed dredge season length for 2012 is from approximately April 2, 2012 to November 9, 2012 - a total of approximately 31.4 production weeks. This schedule assumes one week of scheduled down time the week of July 2nd and on holidays, and approximately two days of down time for conversion of the system from TSCA dredging to non-TSCA dredging. At least three dredges will be operating all season. During certain periods of the season, a fourth 8-inch dredge may assist. During the time that three dredges (i.e., two 8-inch dredges and one 12-inch dredge) are operating at full production, the average production rate will be approximately 190 cy/GOH. The production rate may possibly be decreased to approximately 150 cy/GOH during the latter part of the season, when the dredges may be performing clean-up pass and residual dredging. J.F. Brennan will monitor pipeline flow and make adjustments, as needed, to maintain the flow rates and production needed to meet the project requirements.

4.7 Mechanical Dewatering Operations

Details of mechanical dewatering operations, including the dewatering plant, processing of hydraulically dredged sediment, segregation of sand, monitoring, best management practices (BMPs), and a description of physical characteristics of processed material are presented in Section 5.4 of the 100 Percent Design Report Volume 1 (Tetra Tech et al. 2009a). A brief description of the dewatering process and the procedures that are used to monitor its operation are presented herein.

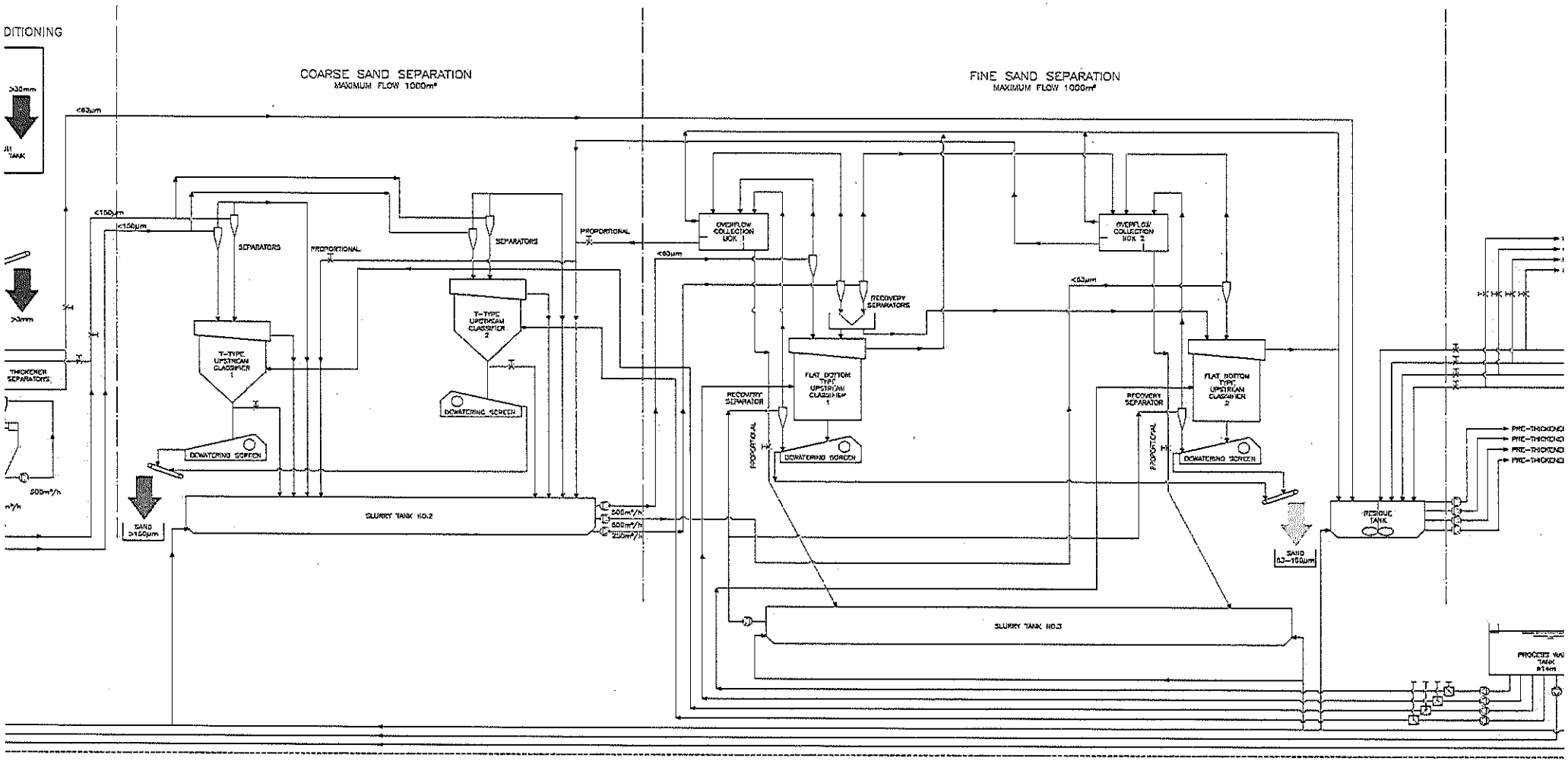
The SDDP is designed to operate at flow rates ranging from 3,000 to 6,000 gpm, the same range of flow designed for dredge production. Process flow diagrams for the SDDP are presented on Figures 4-2 and 4-3. Flow entering the SDDP during dredging operations typically is expected to contain sediment in the range of 5 to 15 percent solids (by weight), averaging approximately 10 percent, based on observations from previous dredge seasons. Following removal of particles larger than 3-6 millimeters by scalping, the slurry will be pumped through an initial thickening process that will increase the sand content to the desanding system. Residue from sand separation, defined as material smaller than 63 microns (U.S. No. 230 sieve), will be collected in slurry tanks and pumped to the residue tank. Sand in the desanding system will be separated into coarse sand (greater than 150 microns to 3-6 mm) and fine sand (63 to 150 microns).

The fine residue in the residue tank will be dosed with coagulant and pumped to pre-thickeners, where it will be thickened to approximately 15 to 25 percent solids (by weight) and water will be decanted off the top and routed to water buffer tanks. Thickened slurry will be pumped to sludge holding tanks, which hold the sludge until it is pumped to the membrane filter presses. The presses will operate on an approximately 75 minute cycle time including filling, membrane inflation, and dropping of filter cake. Water squeezed from the sludge in the presses will also be piped to the water buffer tanks.

During operation of the SDDP, key aspects of the sand separation and dewatering operations will be monitored. The sand will be tested as described in the O&M Plan for the SDDP. The filter cake will also be tested for geotechnical strength properties as described in the O&M Plan for the SDDP (Tetra Tech et al., 2011c) and the QAPP (Tetra Tech et al., 2009d). Each individual component of the dewatering and water treatment processes will be monitored as described in the O&M Plans for the SDDP and the WTP (Tetra Tech et. al. 2011c, 2011e), and as described in the CQAPP in Appendix A.

All equipment monitoring information is linked to the SDDP Programmable Logic Control (PLC) system, which is the instrumentation system that controls flows, pressures, and volumes. This information will be continually monitored by the plant operator through the monitors in the SDDP control room. The operator will also monitor a series of cameras to check the status of operating equipment. Instrumentation and controls will be monitored and adjusted, as needed, to equalize sludge levels in the tanks. Physical properties of the materials, such as grain size distribution, organic matter content, and densities, may also be tested using "wet screening" and other simplified test methods to verify process operations are within the expected range.

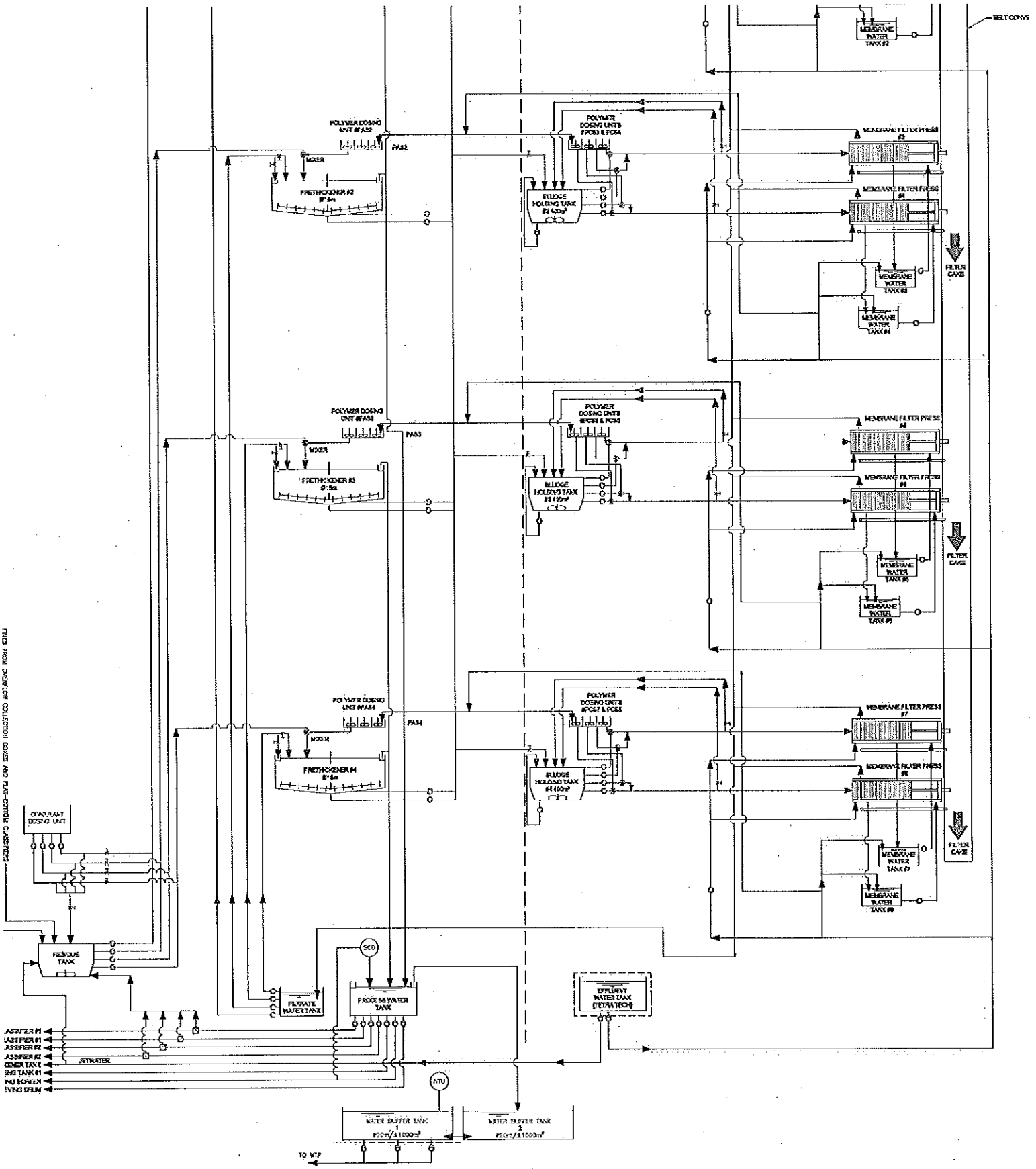
Samples will be collected daily to check and monitor the mass balance over the system and control system efficiencies.



MAJOR EQUIPMENT LISTING		
NOMENCLATURE	SIZE	CAPACITY
SLURRY HOLDING TANK No. 1	5M DIA X 6M HT	
SLURRY THICKENER TANK		100 CU M (26,500 GALLONS)
SLURRY TANK No. 2		
SLURRY TANK No. 3		
OVERFLOW TANK	10M X 30M X 3M HT	
DRUM SLURRY TANK		
T-TYPE UPSTREAM CLASSIFIER (2 each)		
FLAT-BOTTOM TYPE UPSTREAM CLASSIFIER (2 each)		
PROCESS WATER TANK		
RESIDUE TANK	5.5M DIA X 5M HT	120 CU M (26,500 GALLONS)
THICKENER SEPARATOR (2 each)	63 MICRON	
COARSE SAND SEPARATOR (4 each)	150 MICRON	
FINE SAND SEPARATOR (2 each)	63 MICRON	
RECOVERY SEPARATOR (4 each)	63 MICRON	
PUMPS		
SLURRY HOLDING TANK No. 1 TO SLURRY THICKENER TANK (2 each)	100 HP	750 CU M/HR (3300 GPM)
SLURRY THICKENER TANK TO THICKENER SEPARATOR	74 HP	500 CU M/HR (2200 GPM)
SLURRY THICKENER TANK TO COARSE SAND SEPARATOR (2 each)	100 HP	500 CU M/HR (2200 GPM)
SLURRY TANK No. 2 TO FINE SAND SEPARATOR (2 each)	100 HP	500 CU M/HR (2200 GPM)
SLURRY TANK No. 2 TO RECOVERY SEPARATOR		250 CU M/HR (1100 GPM)
SLURRY TANK No. 3 TO RECOVERY SEPARATOR	60 HP	
RESIDUE TANK TO PRE-THICKENER TANKS (4 each)	40 HP	400 CU M/HR (1760 GPM)
PROCESS WATER TANK TO WASH AND SIEVING DRUM	15 HP	
PROCESS WATER TANK TO SCALPING SCREEN	60 HP	
PROCESS WATER TANK TO T-TYPE UPSTREAM CLASSIFIER (2 each)	60 HP	

LEGEND

- SLURRY PUMP
- WATER PUMP
- SEDIMENT SLURRY, SAND
- WATER
- POSSIBLE FUTURE INSTALLATION
- DEBRIS >3mm
- COARSE SAND 150µm–3mm
- FINE SAND 63µm–150µm
- HYDROCYCLONE SEPARATOR
- CONTROL VALVE
- FILTER
- BELT CONVEYOR
- NOTE: FROM CONVEYORS THE SAND IS STOCKPILED OUTSIDE THE PROCESS BUI



MAJOR EQUIPMENT LISTING		
NOMENCLATURE	SIZE	CAPACITY
RESIDUE TANK	8.5M DIA X 6M HT	120 CU M (29,500 G
PROCESS WATER TANK		
FILTRATE WATER TANK		
MEMBRANE WATER TANK (8 each)		
WATER BUFFER TANK 1	22 M DIA	1000 CU M (264000
WATER BUFFER TANK 2	20M DIA	1000 CU M (264000
WTP TANK (EFFLUENT TANK)		
PRE-THICKENER TANK (4 each)	18M DIA	
SLUDGE HOLDING TANK (4 each)		400 CU M (105000
COAGULANT DOSING UNIT		
POLYMER DOSING UNIT 1st STAGE		
POLYMER DOSING UNIT 2nd STAGE		
MEMBRANE FILTER PRESS (8 each)		17.7 CU M
FILTER PRESS BELT CONVEYOR (8 each)		

LEGEND

- SLURRY PUMP
- WATER PUMP
- SEDIMENT SLURRY
- WATER
- MIXER
- BELT CONVEYOR
- FILTER CAKE STOCKPILED IN BUILDING B

The tonnage of sand and filter cake estimated to be produced for the estimated range of production rates for dredging, desanding, and dewatering is presented in Table 4-1, based on gross operating hours for operations. This analysis assumes an average sediment bulk density of 76.5 pounds per cubic foot (pcf), an average percent solids content of 35.6 percent by weight, a sand removal rate of 19 percent by weight of the total dredge slurry, and a range of press uptime from 75 to 100 percent during the first part of the season, when the 12-inch dredge is in full production. This analysis assumes an average sediment bulk density of 76.5 pounds per cubic foot (pcf), an average percent solids content of 35.6 percent by weight, a sand removal rate of 19 percent by weight of the total dredge slurry, and a range of press uptime from 75 to 100 percent during the first part of the season, when the 12-inch dredge is in full production. These estimated properties and the sand removal rate are based on actual production data from previous dredge seasons. The average sediment bulk density was reduced to 70 pcf and percent solids reduced to 30 percent for the last part of the season, which will consist primarily of final pass and residual dredging. For these assumed sediment properties, dredging of at least 660,000 in-situ cy in 2012 is expected to produce approximately 328,313 short tons of filter cake and scalpings and 48,799 wet short tons of sand, as indicated on Table 4-1. The estimated number of trucks needed to transport filter cake for disposal is also shown on the table, as are the ratios of in-situ cy of sediment dredged to tons of filter cake produced and in-situ cy of sediment dredged to tons of sand produced.

This table will be used to compare actual production volumes with estimated volumes and to compare data from monitoring systems with production data, to help optimize the system. This table will be updated and shared with the Response Agencies monthly during production to represent actual observations of sediment density, filter cake and sand production, and press uptime to allow an estimation of ongoing production rates.

edge Seasons

olids Rate /GOH	Sand Removal (% by weight)	Sand Removal Rate (mtds/GOH)	Solids to Residue Tank (mtds/GOH)	Filter Cake (mtons/GOH)	Filter Cake Produced (m3/GOH)	Flow Capacity per Press (m3/GOH)	No. of Presses @ 100% Uptime	No. of Presses @ 75% Uptime	Filter Cake (mtons/day)	Filter Cake (Short Tons/Day)	No. of Truck Loads/Day	Length of Dredge Season (days)	Filter Cake plus Scalpings (Short Tons)	Ratio of Tons of Filter Cake to In-situ CY
63	19	12	51	93	64	10.9	5.9	7.9	2,235.9	2,465	123	332	818,242	0.540
2009 - 2011													818,079	

and sand that was used beneficially.

eason

ilids ate OH)	Sand Removal (% by weight)	Sand Removal Rate (mtds/GOH)	Solids to Residue Tank (mtds/GOH)	Filter Cake (mtons/GOH)	Filter Cake Produced (m3/GOH)	Flow Capacity per Press (m3/GOH)	No. of Presses @ 100% Uptime	No. of Presses @ 75% Uptime	Filter Cake (mtons/day)	Filter Cake (Short Tons/Day)	No. of Truck Loads/Day	Length of Dredge Season (days)	Filter Cake plus Scalpings (Short Tons)	Ratio of Tons of Filter Cake to In-situ CY
63	19	12	51	93	64	10.9	5.9	7.9	2,235.9	2,465	123	106	261,860	0.540
50	19	9	40	73	51	10.9	4.7	6.2	1,765.2	1,946	97	49	94,855	0.540
012												155	356,716	

ity of 76.5 pcf and percent solids of 35.6% were used for sediment in this analysis. These values are estimated based on previous years' production.
iment density was lowered to 70 pcf, with percent solids of 30%, for clean-up pass and residual dredging to be performed during the latter part of 2012.
ly production rate of 190 cy/GOH is assumed for the first 106 days of the remedial action season. During the remaining part of the season (49 days),.
te will drop to 150 cy/GOH primarily because of clean up pass and residual dredging.
press is calculated based on a total capacity of 17.7 m3, divided by a compression factor of 1.3, divided by 1.25 (75 minute/60 minute cycle time).
umed to take place 24 hours/day for 155 days in 2012, with a target removal volume of at least 660,000 in-situ cy.
umes a dry density of 83.8 pcf for the sand, or approximately 1.13 tons/cy.
/ of 1.45 mtons/m3 and percent solids of 55.1% is used in this analysis.
udes tonnage of scalpings in the filter cake tonnage.
oads per day is based on 20 tons per truck.
rating hour

4.8 Water Treatment Plant Operations

The WTP process design includes multimedia sand filtration, bag filtration, cartridge filtration, and granular activated carbon (GAC) adsorption. The multimedia sand filters were back-washed as part of the seasonal shutdown activities at the end of the 2011 season, and therefore replacement of the media is not planned prior to the start of the 2012 season.

Figure 4-4 presents a process flow diagram of the water treatment system, designating interconnections of the individual unit processes. In addition, an O&M Plan for the WTP (Tetra Tech 2011e) was submitted to the Response Agencies and approved in 2009. This O&M Plan has been updated each year since 2009 prior to the upcoming construction season. A description of the treatment process and the procedures that will be used to monitor its operation are presented in the 100 Percent Design Report Volume 1. Several process improvements to the original design of the WTP were made during the previous winter shutdown periods, which are summarized in Section 7.0 of the 2009 and 2010 RA Summary Reports (Tetra Tech, et al. 2010a and 2011b).

4.8.1 WTP Performance

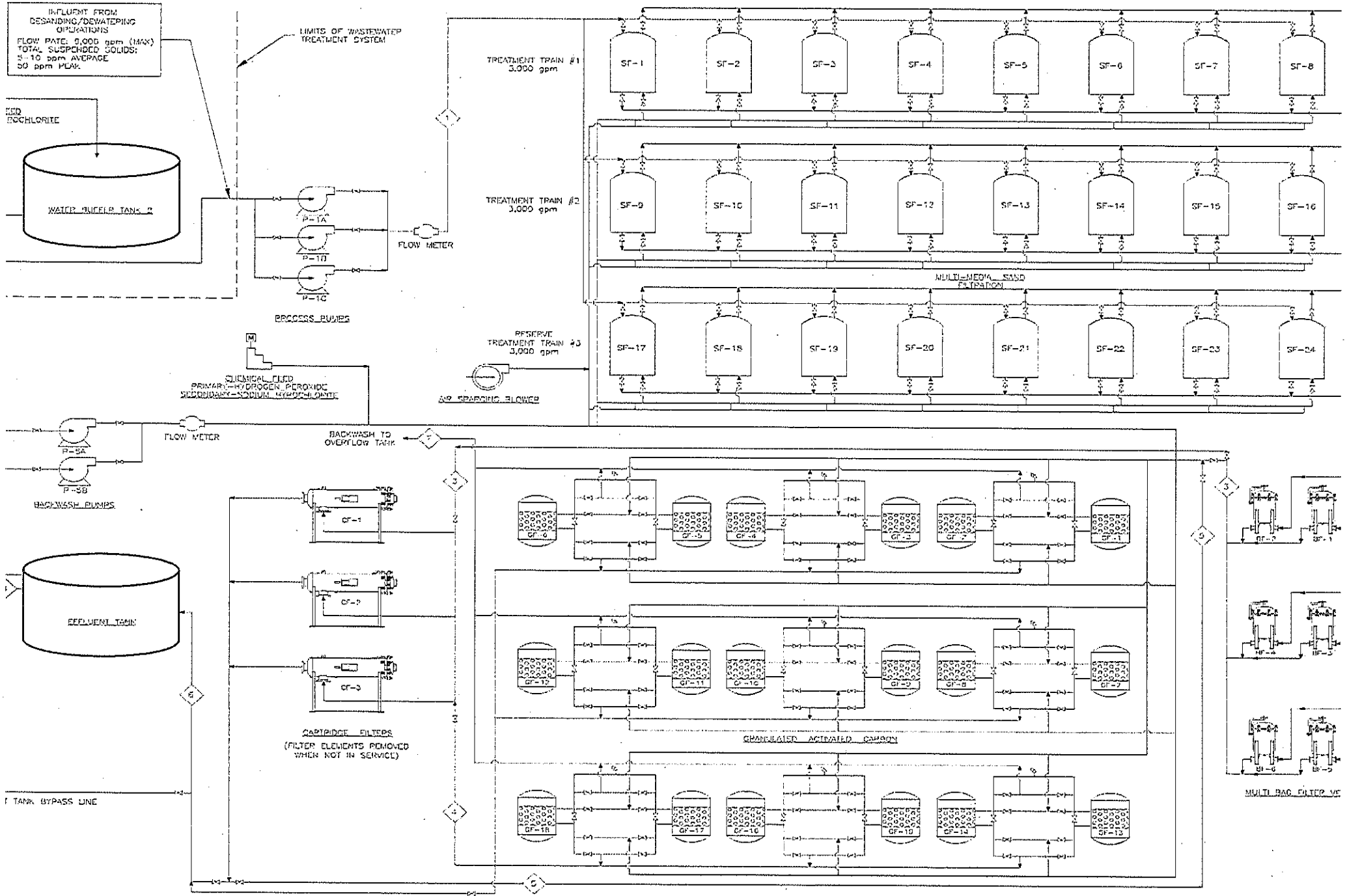
The WTP was designed to reduce the level of suspended solids and dissolved organics, such as PCBs, in the effluent water. WTP discharge performance goals, established by WDNR, are presented in Table 4-2. Operation of the WTP began on April 28, 2009 and will resume at the start of the 2012 dredge season. Effluent discharge performance goals will remain as they were in 2011.

Table 4-2
Water Treatment Plant Effluent Discharge Performance Goals

Parameter	WDNR Performance Goal
TSS (mg/l)	5 (monthly average) 10 (daily maximum)
BOD (mg/l or lb/day)	< 10 mg/L and 1,300 lb/day
PCB (µg/L)	< LOD (with a 0.1-0.5 ug/L LOD)
Minimum Flow (gpm)	3,125 gpm
Ammonia (mg/l)	8.41 mg/L multiplied by diffuser dilution ratio (at a pH of 8.0) or approx. 202 mg/L
pH (S.U.)	6-9 Standard Units
Mercury (ng/L)	<LOD (with a LOD of 0.2 ng/L)

4.9 Transport and Disposal of Dewatered Sediment and Debris

Transport and disposal of dewatered sediment and debris, general traffic controls, truck cleanliness and decontamination, and details of outbound materials from the Plant are described in detail in the Agency-accepted *Final Transportation Plan* (Appendix A, Attachment A-12 of the 100 Percent Design Report Volume 1). The Transportation Plan also includes details regarding anticipated traffic volumes and truck routes to disposal facilities. If any other disposal facility is used, the Transportation Plan will be revised accordingly to reflect the use of such facility.



WTP Mass Balance

2	3	4	5	6	7	8
6000	6000	6000	6000	6000	281	5719
10	2	< 0.5	< 0.5	< 0.5	> 50	< 0.5
≥ 5	≥ 5	5	0	0	0	0
NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA

Performance Goals
10 mg/L (daily maximum) 5mg/L (monthly average)
Less than Detection Limit (with a Detection Limit between 0.1-0.5 ug/L)
6-9 S.U.
8.41 mg/L Dilution Ratio (at Ph 8.0)
1,300 lbs/day
Less than Detection Limit (with a Detection Limit of 0.2 ng/L)

4.9.1 Transport and Disposal of Filter Cake

Non-TSCA filter cake and debris/scalpings from non-TSCA dredge areas will be hauled by a licensed waste hauler to the Veolia Hickory Meadows Landfill near Hilbert, Wisconsin. This landfill is approximately 34 miles away from the Plant. The trucks will follow the hauling routes described in the Transportation Plan.

The estimated rates for filter cake production are shown on Table 4-1 for the planned dredge production rate, sediment properties, and estimated sand removal rate. Based on the "average" sediment properties and the average dredge production rate of 190 cy/GOH during most of the season, approximately 123 truckloads of filter cake and scalpings will be produced each day. Assuming truck load-out will take place from 6:00 am to approximately 3:00 pm to generally match the landfill hours of 6:30 am to 3:30 pm daily (9 hours) approximately 13 to 14 trucks will be loaded each hour. This is equivalent to one truck every 4 to 5 minutes for this average production range. The filter cake storage building can hold approximately 2 to 3 days' worth of average production, which will help to even out increases and decreases in actual production. During the latter part of the season, the production rate will be slightly reduced to 150 cy/GOH and the sediment dredged is estimated to have a lower density and percent solids. Therefore, the tonnage of filter cake and scalpings produced is slightly lower and will require approximately 97 trucks per day for hauling. This is approximately 10 to 11 truckloads per hour.

Transportation of TSCA-designated PCB wastes, including scalpings, filter cake, and debris, will be performed by a licensed hazardous waste hauler. The trucks will follow the hauling routes described in the Transportation Plan. This document has been revised based on the assumption, that the in-state disposal of TSCA filter cake at the Ridgeview Landfill in Whitelaw, Wisconsin, will be approved by the Response Agencies for the 2012 season. If in-state disposal is not approved, the Transportation Plan will be revised to reflect the TSCA disposal facility that has been contracted.

4.9.2 Upland Disposal Facilities

Non-TSCA PCB wastes, including filter cake and river debris removed from non-TSCA Sediment areas, will be disposed at the Veolia Hickory Meadows landfill near Hilbert, Wisconsin, a permitted non-TSCA landfill.

TSCA-designated waste (if dredged) will be disposed at the Ridgeview Landfill in Whitelaw, Wisconsin, assuming the risk-based disposal request described in the following section is approved. If in-state disposal is not approved, TSCA-designated waste will be disposed at a disposal facility that has been approved to receive such waste.

4.9.3 Risk-Based Disposal Approval

A risk-based disposal request was submitted in March 2011 by Waste Management to the USEPA Region 5 Chemicals Management Division, requesting approval to dispose of the filter cake and sand at Ridgeview Landfill, a local non-hazardous landfill permitted under Wisconsin NR 500 regulations. If necessary temporary storage will be provided on site, the TSCA waste may be stored on site until the risk-based disposal is approved. However, the temporary storage cannot exceed 12 months and the storage area must meet the criteria specified in 40 CFR 761.65(b)(1). Upon approval, the filter cake generated from TSCA-designated sediment will be transported to this facility for disposal. This filter cake will be analyzed for PCBs and shall have a concentration of less than 50 ppm for this disposal.

The sand separated from the dredged material having an in-situ TSCA characterization may be used beneficially, if approved by the U.S. EPA TSCA program. The LLC recently requested a determination of the re-use possibilities for this sand. If not approved for re-use, this sand will also be disposed at Ridgeview Landfill upon approval of the risk-based disposal request. If disposal is required, the sand will be loaded directly from the sand slab into haul trucks using a front end loader, for shipment to the Ridgeview Landfill. Alternatively, the sand separated from TSCA Sediment may be re-designated as non-TSCA and disposed of at the Veolia landfill.

4.9.4 Transport and Disposal of Sand from Non-TSCA Dredge Areas

The estimated rates for sand production, based on variable dredge production rates, sediment properties, and sand content are presented on Table 4-1. Based on the sediment properties assumed for this analysis, coarse and fine sand are expected to be separated from the dredge slurry and stockpiled at an average rate of 289 to 366 wet tons per day (assuming 15 percent water content by weight). Following receipt of acceptable test results, the coarse and fine sand will be relocated to and combined in the bermed storage area just east of the haul road adjacent to the sand pad (see Figure 3-1) using a front end loader.

Sand from non-TSCA dredge areas in 2012 will be used beneficially for off-site construction projects, provided the sand meets all WDNR-approved beneficial reuse criteria for the sand. These criteria are shown on the table in Appendix C, along with a summary of the results for this sand from prior years. Based on the analytical results for sand generated in prior years, the Tetra Tech Team is confident all recovered non-TSCA sand will have PCB concentrations averaging less than 0.49 ppm (based on a running average) and will therefore not require landfill disposal. The LHE approved by WDNR for beneficial reuse of non-TSCA sand requires the PCB concentration to be below 0.49 ppm PCB to be considered for off-site beneficial reuse. Testing requirements for the sand separated from the non-TSCA Sediment are included in the O&M Plan for the SDDP (Tetra Tech et al. 2009c). Potential beneficial re-use opportunities for the sand are discussed in detail in the *Adaptive Management and Value Engineering Plan* (included as part of the 100 Percent Design Report Volume 2). Following receipt of acceptable offsite laboratory results, sand approved for beneficial reuse will be moved with the front end loader to a temporary stockpile in the sand storage area.

4.9.5 Sand Separated from TSCA Sediment (if dredged)

Sand will be separated from sediment with an in-situ TSCA designation in the same manner as that used for non-TSCA Sediment. Sand generation will occur at an estimated rate of 10 to 13 truckloads per day for the approximately 5 to 6 days when TSCA material is dredged and processed. PCB testing will be performed on this sand, along with any other testing that may be required by the landfill and testing that is required for potential beneficial reuse of this material.

Given the historically low PCB concentrations in the separated sand, the LLC has requested that the EPA TSCA program consider designating the separated sand from the TSCA dredging areas as non-TSCA material. If the EPA agrees, analytical data collected from this material during 2012 will be used to determine if this material is eligible for beneficial reuse by the WDNR. If

WDNR does not approve the beneficial reuse of the material, it will be disposed of as non-TSCA material at a Wisconsin-approved landfill.

4.10 Sand Stockpile Management

Sand separated from the sediment during desanding operations will be transported via conveyor belt(s) to temporary stockpiles that sit on a sand pad located on the east side of the building (see Figure 3-1). The sand will then be relocated via a front end loader into sample stockpiles on the north end of the sand pad. These stockpiles, while remaining on the sand pad, will be sampled for residual PCB levels.

The project operations staff will utilize a water sprinkler system for dust control for the sand stockpile. A commercially available soil fixating polymer (e.g., Dirt Glue®) will also be applied as conditions warrant, according to the manufacturer's recommendations to assist in dust control. Treated water from the WTP will be used to supply the sprinkler where an in-line port will allow the fixating polymer to be added in as needed. The same water conveyance system will feed a fire hose connection that can be used manually on stockpiles located on the sand pad. Use of the polymer has been shown to be effective in 2010 and 2011 on sand piles that are not disturbed. If the sand piles are disturbed it will be necessary to re-apply the fixating polymer to the working face in order to maintain reliable dust control.

Storm water run-off from this storage pile will be contained within the bermed area, sampled, and tested for PCBs. If the results meet the discharge goals approved by the WDNR, the storm water will be allowed to drain to the storm water retention pond onsite (see Figure 3-1), from where it flows into the river. If the storm water does not meet the discharge goals, it will be pumped to the water treatment system by the sand trap pump and be discharged after treatment.

5 MONITORING AND VERIFICATION ACTIVITIES DURING RA

Several activities will take place during RA to verify that RA is being achieved as planned and that environmental controls are adequate. These activities include best management practices (BMPs) during dredging, bathymetric surveying, sampling and analysis of filter cake and sand produced during RA, and quality assurance/quality control (QA/QC activities) that are specified in the CQAPP (Appendix A) and in the QAPP (Tetra Tech et. al. 2009d). These activities are described below.

5.1 Best Management Practices

J.F. Brennan will utilize several BMPs to minimize turbidity and other dredging-related impacts. It has been J.F. Brennan's experience with OU1 (2004 to 2008), and during the 2009 through 2011 seasons' dredging in OU2, OU3, and OU4 of the Lower Fox River, that employing BMPs has been effective in achieving turbidity control requirements without the need for engineered systems (e.g., silt curtains). The elimination of silt curtains during dredging operations also allows for greater use of the Lower Fox River by recreational and commercial vessels. However, silt curtains will be available as a contingency measure to control turbidity while dredging in localized areas, if necessary. The following BMPs will be utilized during dredging operations:

- Debris will be removed prior to dredging (where debris is identifiable and can be removed in a manner that does not excessively suspend material) in accordance with the Debris Removal Work Plans (J.B. Brennan 2008a, 2008b).
- Biodegradable oil will be used to operate dredge hydraulics, as opposed to hydraulic oil.
- During startup, the dredge pump will be started prior to starting the cutterhead on the dredge.
- The cutterhead will be run in reverse in known areas of clay in an effort to minimize agitation energy, thereby limiting turbidity.
- The cutterhead speed will be maintained at the minimum level necessary to agitate the material in order to minimize the resuspension of sediments in previously dredged areas.
- Dredge movements (i.e., ladder swings) will be maintained at the minimum speed necessary to achieve target production but minimize turbidity.

- Dredging operations will be sequenced in an upstream to downstream fashion, to the extent practicable, with the exception of planned concurrent production dredging with the 12-inch dredge to maximize efficiency and reduce overall project schedule, or as otherwise approved by the Response Agencies.
- Dredge cuts will be overlapped to avoid leaving ridges or windrows of sediment between adjacent cuts.
- Where possible, large vessel tracking over completed dredge areas will be minimized.
- DREDGEPACK® software will be used to identify required dredge depths.
- During a period of temporary dredge shutdown, the dredge pump will be stopped after the cutterhead is turned off.
- Dredged areas will be surveyed on a daily basis (as the dredge pipeline location permits) to determine the effectiveness and demonstrate completion of the dredging operations.
- Hospital-grade mufflers will be used to limit engine noise.
- Dredge line blow back during non-operating periods will be prevented through the installation of a pneumatically-operated knife gate valve inserted behind the dredge. Manual verification of the knife valve position (i.e., open or closed) will be performed regularly.
- The dredge pipeline will be inspected daily for leaks and other problems, in accordance with the Technical Memorandum – Pipeline Installation and Maintenance Procedures. Observations will be logged on daily reports.
- Clear direction regarding chain-of-command during emergencies will be provided to all employees.

5.2 Survey Methods and Equipment

Survey methods for multi-beam and single-beam acoustical systems will generally follow the guidelines set forth by the United States Army Corps of Engineers (USACE) guidance (Engineering Manual (EM) 1110-2-1003, Engineering and Design - Hydrographic Surveying, dated January 2002). These are the same guidelines used for hydrographic surveys performed during prior dredge seasons. Specifications for hydrographic surveys are provided in Project Plan (Appendix C, Attachment C-0 of the 100 Percent Design Report Volume 2). The equipment used for project surveying includes state-of-the-art hydrographic survey tools currently in use on the inland waterways.

5.2.1 Dredge and Survey Software

All equipment used for dredging and survey purposes on the Lower Fox River will employ HYPACK® software. HYPACK® is a hydrographic surveying, engineering, and equipment positioning software, which will be used in three forms:

- **HYPACK®** – HYPACK® is the original software form and is used to position survey vessels, record soundings, engineer dredge excavation cuts, and process single-beam survey and dredge data. HYPACK® software is the primary tool used for data analysis and recording.
- **HYSWEEP®** – HYSWEEP® is HYPACK®'s module for the recording and processing of multibeam survey data and will be utilized by the Tetra Tech Team throughout OU2-5 RA.
- **DREDGEPACK®** – DREDGEPACK® is a HYPACK® module employed only on the dredge computers and equipment and is a module for dredge guidance and dredge data recording. Furthermore, DREDGEPACK® will also be utilized for mechanical dredging equipment.

In addition to the software listed above, Wonderware software will also be employed on the dredges. Wonderware software receives signals from dredge sensor components and will supply ladder, pitch, and roll positional data to DREDGEPACK®. DREDGEPACK® will then combine Wonderware data with global positioning system (GPS) data to present a geographically referenced position for the dredge cutterhead.

Each dredge will be positioned through the use of Real Time Kinematic (RTK) GPS and a series of inclinometers and swing sensors. In a real-time environment, the position of the cutterhead will be tracked and recorded in relation to the dredge. DREDGEPACK® software employed on the dredge computer will use the input from the GPS and sensors to show the dredge operator the position of the cutterhead relative to the design removal line.

Additional details of the survey and position control equipment have been provided in the Project Plan in Appendix C of the 100 Percent Design Report Volume 2.

5.2.2 Dredging Data Management

Processing of data will commence immediately after the single-beam or multi-beam survey vessel returns to its docking location. Data processing will include an analysis of all raw data and a compilation of edited recordings, which will exclude any erroneously recorded points. The edited data will be assembled so it forms a surface that can be interpreted as a depth chart. Project engineers will then examine the processed data depth charts and calculate dredge productivity and accuracy. If project engineers find areas remain above the dredge plan elevations, data can be inserted in the dredge computer to guide the dredge to specific locations requiring further excavation.

Each day, a second set of data will be recorded from the on-board dredge computers. The second set of data, recorded on a specified time interval, will detail the position of the dredge cutterhead. At the conclusion of a 24-hour period, dredge computer recordings will be downloaded and returned to the project office for analysis by project engineers. Furthermore, engineers will use the data as a comparison to project survey data and adjust removal strategies accordingly.

On a daily basis, depth charts and dredge square foot coverage will be available for viewing in the project-specific office or submitted with daily reports. Furthermore, after the data have been processed, all raw and edited x,y,z data will be cataloged by date and stored at the project site (at 1611 State Street in Green Bay) and at the LLC's Representative's site to allow any necessary future analysis. This raw and processed data used for development of the depth charts will be included in the reports submitted to the LLC and will be maintained at their respective offices.

Survey data used for determining attainment of target elevation in at least 90 percent completion of a DMU will be based on a single-beam survey. The data will be processed and interpreted in accordance with the Technical Memorandum - Standard Operating Procedure (SOP) for Final Dredge Surface Comparisons, dated July 27, 2009.

5.3 Third Party Auditing Activities

A representative of the LLC will be on-site daily to monitor construction activities and will assess, on behalf of the LLC, the following field and data management activities during dredging and dewatering:

- Monitoring of pre- and post-dredge QA surveys
- Evaluation of surveys and post-dredge PCB residual concentration results for compliance with the approved plans and review of surface weighted average concentration (SWAC) calculations that may be provided by Tetra Tech
- Debris removal
- Post-dredge verification sampling
- High subgrade sampling
- Surface water turbidity monitoring
- WTP effluent sampling
- Sand sampling, analysis, and handling
- Filter cake sampling, analysis, and handling

The LLC's Representative will provide written documentation to the LLC and Response Agencies regarding the ongoing status and results of these activities. The Third Party Quality Assurance Provisions Plan (Foth, 2009) provides detail on the roles and responsibilities for implementing the Third Party QA program.

5.4 Construction Quality Control/Quality Assurance

Construction QC/QA procedures are presented in the CQAPP in Appendix A. This updated CQAPP includes the provisions associated with dredge, engineered capping, and sand covering in a single combined CQAPP.

5.4.1 Data Management

Management of data generated during remedial activities will be in accordance with the CQAPP presented in Appendix A.

5.5 Operation, Maintenance, and Monitoring

Four separate O&M Plans were prepared and implemented in 2009: the Site-Wide O&M Plan; the O&M Plan for Dredging, Sand Covering and Capping Activities; the SDDP O&M; and the WTP O&M Plan. These Plans were submitted to the Response Agencies and approved in 2009, and have been updated as necessary since based on experience gained during past operating seasons. The updated O&M Plans were submitted to the Response Agencies for review in April 2011.

The Site-Wide O&M Plan addresses maintenance and monitoring requirements for infrastructure and materials staging areas. This Plan also includes BMPs for managing stormwater pollution prevention and requirements for the management of wastes generated during operations.

The SDDP and WTP O&M Plans include detailed information regarding:

- Commissioning of equipment
- Equipment manufacturer's information
- System startup testing
- Operation and troubleshooting
- System monitoring during operation
- Routine preventative maintenance
- Recommended spare parts lists
- System optimization
- Winterization

Sampling and analyses of filter cake and sand produced from sediment desanding and dewatering will be performed in accordance with the CQAPP.

6 PREPARATORY WORK FOR 2013 REMEDIAL ACTION

During the 2012 dredge season, additional activities will be performed as needed in preparation for the 2013 dredge season similar to those performed during 2011 in anticipation of the 2012 season. These activities include, but may not be limited to, the following:

- Infill sampling all remaining 100% Design Areas for the entire river to support design refinement/finalization.
- Review of data for utility/structure setback areas and for commercial riparian areas subject to RA in 2013.

This work is described in the subsections below.

6.1 Infill Sampling to Support 2013 RA Design Refinement

The *2012 OU4 Infill Sampling Plan* is presented in Appendix E and includes the proposed locations for sediment sampling that will be conducted to refine the FIK geostatistical model used to develop the neat line dredge, cap, and sand cover plans. As stated in this plan, infill sampling in 2012 will be performed from transect 4049 to the mouth of the river in Green Bay. Infill sediment sampling will be performed in accordance with the QAPP (Tetra Tech et al., 2009d).

6.2 Review of Data for Utility/Structure Setback Areas

Tetra Tech will continue discussions with utility owners and with those responsible for structures that cross the Fox River regarding the RA planned in utility/structure setback areas. A field survey of the AT&T fiber optic line just north of the CN RR Bridge at transect 4049 (utility #018) may be performed in 2012 if we are unable to confirm the reliability of information shown on as-built drawings previously obtained for this utility. Discussions will also continue with commercial riparian landowners regarding RA planned near their shoreline. This information will be used to finalize the design for these areas for 2013 RA as well as to finalize the design presented in the 100 Percent Design Volume 2 for these areas.

7 REPORTING AND DOCUMENTATION

Laboratory data will be sent simultaneously to the Design Team and the A/OT. Tetra Tech will provide other data from 2012 field investigations, sampling activities, and surveys to the Response Agencies within five business days of receipt. This information will be posted on the SharePoint Site managed by Tetra Tech.

7.1 Phase 2B Health and Safety Plan

The site-specific Health and Safety Plan (SHSP) submitted to the Response Agencies and approved in June 2009 has been updated for 2012 and beyond activities. .

7.2 Community Outreach Support

If the USEPA implements any community relations program for this project, and requests LLC cooperation, the LLC will participate in the preparation of appropriate information and public meetings to explain activities at or concerning the remediation.

The public relations firm of Leonard and Finco was retained by the LLC to assist with public awareness and involvement during previous work performed from 2009 through 2011. Leonard and Finco will continue to assist the LLC and the Tetra Tech Team with community outreach during the Phase 2B work in 2012. These efforts will include the same activities performed during previous RA seasons.

7.3 Progress Reports

The LLC will submit monthly progress reports to the Response Agencies, which will include the information required by the 106 Order. This information includes the following:

- A description of the actions that have been taken to comply with the 106 Order during the past month and work planned for the coming month.
- All results of sampling and tests, including raw data and validated data, and all other investigation results, will be simultaneously released to the LLC and Response Agencies. Analytical results obtained from the laboratories are sent directly to the Response Agencies from the laboratory. These results will also be posted on the project data sites in the format prescribed by the Response Agencies, including summaries of the following:
    - Pre- and post-dredge QA surveys

  - In-situ volume of sediment dredged
  - Evaluation of PCB analytical results for post-dredge samples
  - Post-dredge verification sampling
  - High subgrade sampling
  - Turbidity monitoring
  - WTP effluent sampling
  - Sand sampling and analysis
  - Filter cake sampling and analysis
  - Volume/tonnage of sand separated and stockpiled or beneficially re-used
  - Tonnage of TSCA and non-TSCA Sediments landfilled
  - Air monitoring
- Target and actual completion dates of each element of the RD, including project completion, with schedules relating such work to the overall project schedule for RD completion and an explanation of any deviation or anticipated deviation from the schedule approved by the Response Agencies, and proposed method of mitigating such deviation.
- A description of all Phase 2B work planned for the next 90 days, with schedules relating such work to the overall schedule for the RD/RA completion.
- A description of any problems encountered and any anticipated problems during the reporting period, actual or anticipated delays, and solutions developed and implemented to address any actual or anticipated problems or delays.

The monthly progress reports will be submitted, as both electronic and hard copy files, to the Response Agencies by the tenth day of every month or subsequent business day if the 10th falls on the weekend or holiday.

7.4 Annual RA Summary Report

The LLC will submit Annual RA Summary Reports to the Response Agencies summarizing the Phase 2B work. The Annual RA Summary Reports will include the following information:

- A description of the actions that have been taken to comply with the 106 Order during the past year
- Target and actual completion dates for each major element of the RA, including project completion, with schedules relating such work to the overall project schedule for RA completion and an explanation of any deviation or anticipated deviation from the schedule approved by the Response Agencies, and proposed method of mitigating such deviation
- A description of all problems encountered, delays experienced, and solutions developed and implemented to address these problems or delays
- Changes in key personnel that occurred during the year
- A description of AMVEP-associated accomplishments, lessons learned, and recommendations for adaptive management and/or value engineering-related refinements to design or RA activities going forward. This information will include an assessment of the following AM/VE strategies:
    - Dredge residual management within DMUs and potential methods for optimizing it; and
    - Dredging and/or cap design refinements based on dredge-versus-cap cost analyses and evaluation of alternative cover technologies.

The Annual RA Summary Reports will be submitted, as both electronic and hard copy files, to the Response Agencies by the date requested by the Response Agencies.

8 2012 PHASE 2B REMEDIAL ACTION PROJECT SCHEDULE

The construction activities and anticipated sequence of dredging operations planned for 2012 are described in detail in Section 4, and will be shown on a revised Phase 2B RA Schedule, Figure 8-1. As will be shown on this figure, dredging is scheduled to begin on approximately April 2, 2012 and continue until approximately November 9, 2012. There will be no dredging and processing during the week of July 2 which includes the Independence Day holiday on Memorial Day, May 28, or on Labor Day, September 3. There is no dredging planned while river water is pumped through the SDDP during the transition from TSCA Sediment (if dredged) processing to non-TSCA Sediment processing.

To complete dredging of proposed dredge areas in 2012, an average dredge production rate of approximately 190 cy/GOH will be maintained for the four dredges combined during most of the season. A lower production rate of approximately150 cy/GOH is estimated for the latter part of the season, since the work at that time may be primarily final pass and residual dredging by the 8-inch dredges. Based on the individual dredge production target rates presented on Table 8-1 below, the four dredges are estimated to have the following production rates for most of the 2012 season.

Table 8-1
Estimated Average Production Rates During the First Portion of the 2012 Season

Dredge	Average Hourly Rate (in-situ cy/GOH)	Average Daily Rate (in-situ cy/day)	Average Weekly Rate (in-situ cy/week)
8-inch	20	480	2,400
8-inch	20	480	2,400
12-inch	150	3,600	18,000
Total	**190**	**4,560**	**22,800**

Notes:
1. These rates represent target average rates for each dredge during most of the season. Rates will vary depending on the type of dredging being performed and other factors.
2. The average hourly production rate of 190 cy/GOH is a rounded number.

During the latter part of the 2012 season, a fourth 8-inch dredge may be utilized. At this time, production may be reduced to approximately 150 cy/GOH due to the large area of final pass and residual dredging that is anticipated.

The rates on Table 8-1 were used to calculate dredging duration for each dredge area presented on the Project Schedule (Figure 8-1). However, additional days are factored into the schedule for each area to allow time, if needed, for post-dredging residuals management.

8.1 Schedule Assumptions

Pre-season bathymetric surveys are expected to begin in early to mid-March (depending on weather and river conditions) and will require approximately 3 to 4 weeks to complete for all areas to be dredged in 2012, except for several near shore areas that may require additional time due to ice conditions. The pre-season bathymetric survey work will be prioritized to begin as soon as practical in early spring. Performing bathymetric surveys can overlap with dredging activities provided the completion of bathymetric surveys for individual areas and approval to commence dredging are obtained prior to the indicated dredge start date.

Early season work on the river will be coordinated with fishing activities that typically occur during March, April and the first part of May, generally between the De Pere Dam and transect 4017. As a result, dredging will be initiated north of this area in 2012 starting in the river reaches near Highway 172.

Additional assumptions used for development of the schedule shown on Figure 8-1 are as follows:

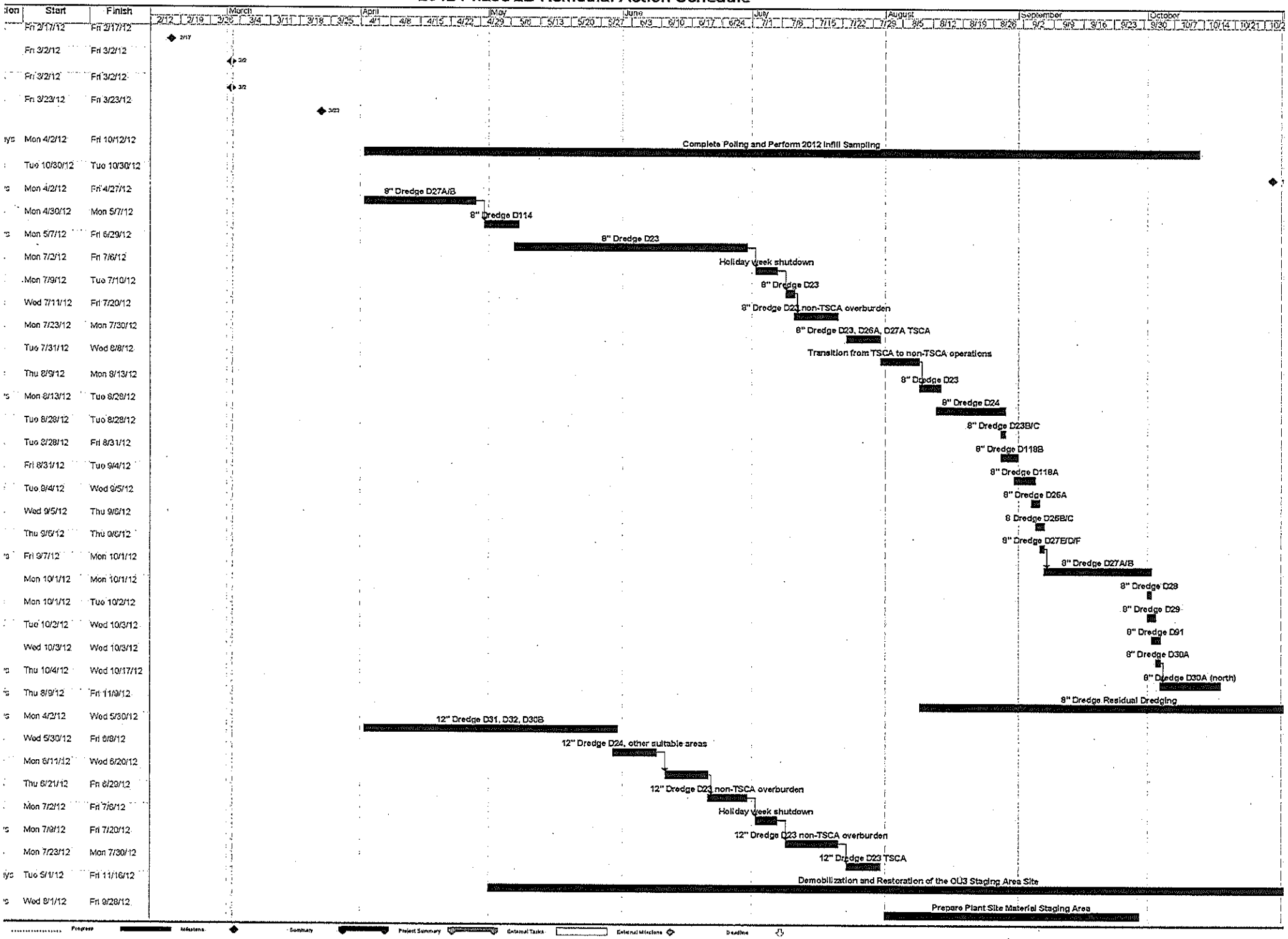
1. All areas will be dredged such that a minimum of 90 percent of the area is at or below the design dredge elevation, but all areas may not be closed out completely if the residual dredge volume is greater than anticipated.
2. Dredging begins on the April 2nd startup date, as planned.
3. The TSCA Sediment (if dredged), in southern OU4, will be removed subject to Response Agencies' approval.
4. Design xyz files will be prepared as soon as the design is approved as modified by the Response Agencies.

The planned April 2, 2012 date for the start of the season also assumes weather and river conditions (e.g., the presence and location of ice) will allow work to begin at the dredge areas and according to the sequence indicated in Figure 8-1. Anticipated number of days from the planned startup date of approximately April 2, 2012 for other activities is also shown on the project schedule, including year-end system flushing and seasonal shut-down activities. Actual dates for these activities may also vary.

Note: The following Figure 8-1 is no longer accurate and at the option of the Respondents the sequence of dredging will be revised per the available dredge areas identified in Appendix B Table B-1. For 2012, TSCA Sediment and final dredging is optional.

Figure 8-1

2012 Phase 2B Remedial Action Schedule



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APPENDIX A
CONSTRUCTION QUALITY ASSURANCE PROJECT PLAN

APPENDIX B

TABLE B-1

AND

ENGINEERED PLAN DRAWINGS

NOTE: THE ENGINEERED PLAN DRAWINGS WILL BE UPDATED TO INCLUDE ALL AVAILABLE DREDGE AREAS IDENTIFIED IN TABLE B-1. FOR 2012, TSCA SEDIMENT AND FINAL DREDGING IS OPTIONAL.

APPENDIX C

SUMMARY OF ANALYTICAL RESULTS FOR SAND SEPARATED FROM SEDIMENT IN 2009, 2010 AND 2011

APPENDIX D

TECHNICAL MEMORANDUM – NOTIFICATION TO RIPARIAN LANDOWNERS NEAR 2012 DREDGE AREAS

APPENDIX E

2012 OU4 INFILL SAMPLING PLAN

APPENDIX F

UNDERWATER CULTURAL RESOURCES APPROACH

APPENDIX H

TECHNICAL MEMORANDUM – POST-DREDGE SAMPLING OF PRODUCTION DREDGE AREAS

D114-TBD	4.0 ft	3,553 cy	443 cy	177 cy	4,173 cy	0.55 acres	0.33 acres					
D118A-TBD	1.9 ft	1,338 cy	350 cy	140 cy	1,828 cy	0.43 acres	0.26 acres					
D118B-TBD	2.9 ft	2,333 cy	398 cy	159 cy	2,890 cy	0.49 acres	0.30 acres					
D23	0.9 ft	108,291 cy	69,693 cy	27,877 cy	205,861 cy	86.40 acres	51.84 acres	2,622 cy	14,145 cy	2,622 cy	19,389 cy	141,5
D23B	0.1 ft	120 cy	425 cy	170 cy	715 cy	0.53 acres	0.32 acres					
D23C	0.0 ft	0 cy	60 cy	24 cy	84 cy	0.07 acres	0.04 acres					
D24	0.5 ft	26,833 cy	29,414 cy	11,766 cy	68,013 cy	36.46 acres	21.88 acres					
D25C	0.3 ft	63 cy	94 cy	38 cy	194 cy	0.12 acres	0.07 acres					
D26A	1.5 ft	947 cy	372 cy	149 cy	1,467 cy	0.46 acres	0.28 acres	23 cy	114 cy	23 cy	160 cy	1,2
D26B/D61	1.5 ft	4,746 cy	1,540 cy	616 cy	6,901 cy	1.91 acres	1.15 acres					
D26C	0.8 ft	856 cy	563 cy	225 cy	1,644 cy	0.70 acres	0.42 acres					
D27A	0.5 ft	28,035 cy	31,241 cy	12,496 cy	71,772 cy	38.73 acres	23.24 acres	50 cy	248 cy	50 cy	347 cy	2,6
D28	0.1 ft	9 cy	71 cy	29 cy	109 cy	0.09 acres	0.05 acres					
D29	0.2 ft	217 cy	712 cy	285 cy	1,215 cy	0.88 acres	0.53 acres					
DPhase1	0.0 ft		0 cy	0 cy	0 cy	0.00 acres	0.00 acres					
D27B	0.1 ft	4,354 cy	19,062 cy	7,625 cy	31,040 cy	23.63 acres	14.18 acres					
D27D	0.1 ft	294 cy	2,663 cy	1,065 cy	4,022 cy	3.30 acres	1.98 acres					
D27E	0.2 ft	115 cy	252 cy	101 cy	468 cy	0.31 acres	0.19 acres					
D27F	0.1 ft	546 cy	2,209 cy	884 cy	3,638 cy	2.74 acres	1.64 acres					
D30A North	0.8 ft	4,081 cy	2,660 cy	1,064 cy	7,806 cy	3.30 acres	1.98 acres					
D30A South	0.0 ft	218 cy	3,674 cy	1,470 cy	5,362 cy	4.56 acres	2.73 acres					
D91	0.4 ft	404 cy	547 cy	219 cy	1,169 cy	0.68 acres	0.41 acres					
D119A-TBD	7.7 ft	10,673 cy	697 cy	279 cy	11,649 cy	0.86 acres	0.52 acres					
D119B-TBD	1.7 ft	2,225 cy	669 cy	268 cy	3,162 cy	0.83 acres	0.50 acres					
D119C-TBD	0.4 ft	1,197 cy	1,377 cy	551 cy	3,126 cy	1.71 acres	1.02 acres					
D27C-TBD	1.6 ft	2,413 cy	746 cy	298 cy	3,457 cy	0.92 acres	0.55 acres					
D30B South	0.7 ft	66,060 cy	50,592 cy	20,237 cy	136,889 cy	62.72 acres	37.63 acres					
D30C-TBD	1.0 ft	4,466 cy	2,260 cy	904 cy	7,630 cy	2.80 acres	1.68 acres					
D30D	0.4 ft	532 cy	704 cy	282 cy	1,518 cy	0.87 acres	0.52 acres					
D30E	0.3 ft	755 cy	1,116 cy	446 cy	2,316 cy	1.38 acres	0.83 acres					
D31 South	2.9 ft	44,594 cy	7,781 cy	3,112 cy	55,487 cy	9.65 acres	5.79 acres					
D32 South	1.4 ft	101,763 cy	37,296 cy	14,918 cy	153,977 cy	46.23 acres	27.74 acres					
D32A	0.2 ft	41 cy	133 cy	53 cy	228 cy	0.17 acres	0.10 acres					
D32B	0.2 ft	43 cy	88 cy	35 cy	167 cy	0.11 acres	0.07 acres					
D141C	3.9 ft	136 cy	18 cy	7 cy	161 cy	0.02 acres	0.01 acres					
D30B North	0.8 ft	38,514 cy	24,069 cy	9,627 cy	72,210 cy	29.84 acres	17.90 acres					
D30B North	0.6 ft	9,959 cy	8,278 cy	3,311 cy	21,549 cy	10.26 acres	6.16 acres					
D31 North	1.8 ft	10,607 cy	2,975 cy	1,190 cy	14,772 cy	3.69 acres	2.21 acres					
D31 North	1.1 ft	5,531 cy	2,441 cy	976 cy	8,947 cy	3.03 acres	1.82 acres					
D32 North	1.5 ft	54,877 cy	18,865 cy	7,546 cy	81,288 cy	23.39 acres	14.03 acres					
D32 North	1.4 ft	18,269 cy	6,356 cy	2,542 cy	27,167 cy	7.88 acres	4.73 acres					
D34	1.1 ft	1,802 cy	2,506 cy	1,002 cy	5,310 cy	3.11 acres	1.86 acres	520 cy	2,602 cy	520 cy	3,643 cy	28,1
D35A	3.6 ft	256,241 cy	38,850 cy	15,540 cy	310,631 cy	48.16 acres	28.90 acres	2,067 cy	17,533 cy	2,067 cy	21,667 cy	111,5
D35Q	4.2 ft	45,997 cy	6,578 cy	2,631 cy	55,206 cy	8.15 acres	4.89 acres	772 cy	7,719 cy	772 cy	9,263 cy	41,6
D37	2.1 ft	13,349 cy	3,212 cy	1,285 cy	17,845 cy	3.98 acres	2.39 acres					

		Dredge Non-TSCA						Dredge TSCA	In State TSCA Disposal			
Dam to Utility 17	1.0 ft	170,117 cy	134,185 cy	53,674 cy	357,975 cy	166.34 acres	99.81 acres	2,694 cy	14,507 cy	2,694 cy	19,896 cy	145,4
Dam to Utility 17	2.5 ft	7,224 cy	1,190 cy	476 cy	8,890 cy	1.48 acres	0.89 acres	0 cy	0 cy	0 cy	0 cy	
	1.0 ft	177,341 cy	135,375 cy	54,150 cy	366,865 cy	167.82 acres	100.69 acres	2,694 cy	14,507 cy	2,694 cy	19,896 cy	145,4
tility 17 to Hwy172	1.2 ft	10,012 cy	31,067 cy	12,427 cy	53,505 cy	38.51 acres	23.11 acres	0 cy	0 cy	0 cy	0 cy	
tility 17 to Hwy172		0 cy	0 cy	0 cy	0 cy	0.00 acres	0.00 acres	0 cy	0 cy	0 cy	0 cy	
	1.2 ft	10,012 cy	31,067 cy	12,427 cy	53,505 cy	38.51 acres	23.11 acres	0 cy	0 cy	0 cy	0 cy	
lwy172 to CD Line	2.1 ft	213,787 cy	97,711 cy	39,084 cy	350,582 cy	121.13 acres	72.68 acres	0 cy	0 cy	0 cy	0 cy	
lwy172 to CD Line	1.8 ft	20,974 cy	5,749 cy	2,300 cy	29,023 cy	7.13 acres	4.28 acres	0 cy	0 cy	0 cy	0 cy	
	2.1 ft	234,761 cy	103,460 cy	41,384 cy	379,605 cy	128.26 acres	76.95 acres	0 cy	0 cy	0 cy	0 cy	
CD Line to CNRR	2.5 ft	455,145 cy	114,129 cy	45,652 cy	614,926 cy	141.48 acres	84.89 acres	3,359 cy	27,854 cy	3,359 cy	34,572 cy	181,3
CD Line to CNRR		136 cy	18 cy	7 cy	161 cy	0.02 acres	0.01 acres	0 cy	0 cy	0 cy	0 cy	
	2.6 ft	455,281 cy	114,147 cy	45,659 cy	615,087 cy	141.50 acres	84.90 acres	3,359 cy	27,854 cy	3,359 cy	34,572 cy	181,3

EXHIBIT 8

BEFORE THE ENVIRONMENTAL APPEALS BOARD
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C.

In re:	)	
Appleton Papers Inc., (Lower Fox River and Green Bay Site),	)	Petition No. CERCLA 106(b) 12-04
Petitioner	)	

DECLARATION OF JAMES J. HAHNENBERG

I, James J. Hahnenberg, declare as follows:

1. I am a Remedial Project Manager in the Superfund Division of the U.S. Environmental Protection Agency ("EPA"), Region 5, in Chicago. I have served as the Remedial Project Manager for the Lower Fox River and Green Bay Superfund Site (the "Site") since approximately 1996.

2. In my capacity as Remedial Project Manager for the Site, my duties include the oversight of remedial action activities currently being performed under EPA's Unilateral Administrative Order, Docket No. V-W-08-C-885 (the "UAO").

3. The UAO was issued on November 14, 2007 to the following respondents: NCR Corporation; Appleton Papers Inc.; P.H. Glatfelter Company; Georgia-Pacific Consumer Products, LP; U.S. Paper Mills Corp.; CBC Coating, Inc. and Menasha Corporation. The UAO requires the respondents to implement the remedial action selected for Operable Units ("OU") 2-5 at the Site which consists of a combination of dredging, capping and covering of contaminated sediments, and long-term monitoring and maintenance.

4. At this time, the remedial action for OUs 2-5 is in its fourth construction season. The cleanup work for 2012 is expected to continue through at least November 9, 2012. Three dredges are currently operating at the Site 24 hours/day and removing approximately 27,000 cubic yards of contaminated sediment a week. The construction phase of the entire OU 2-5 remedial action is expected to be completed in 2017.

5. In relevant part, paragraph 54 of the UAO states:

> Within thirty (30) days after the Respondents conclude that all phases of the remedial action have been fully performed, Respondents shall so notify U.S. EPA and shall schedule and conduct a pre-certification inspection to be attended by Respondents and U.S. EPA. The pre-certification inspection shall be followed by a written report submitted within 30 days of the inspection by a registered professional engineer and Respondents' Project Coordinator(s) certifying that the remedial action has been completed in full satisfaction of the requirements of this Order…If U.S. EPA concludes, following the initial or any subsequent certification of completion by Respondents that the remedial action has been fully performed in accordance with this Order, U.S. EPA may notify Respondents that the remedial action has been fully performed.

6. In relevant part, paragraph 94 of the UAO states:

> The provisions of this Order shall be deemed satisfied when U.S. EPA notifies Respondents in writing that Respondents have demonstrated, to U.S. EPA's satisfaction, that all terms of the Order have been completed.

7. A pre-certification inspection has not occurred at the Site; EPA has not received a written report certifying that the remedial action has been completed in full satisfaction of the requirements of the UAO; and EPA has not notified the UAO respondents that the remedial action has been fully performed.

I swear under penalty of perjury that the foregoing is true and correct.

Dated: 7/1/12

James J. Hahnenberg

EXHIBIT 9

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF WISCONSIN
GREEN BAY DIVISION

UNITED STATES OF AMERICA and THE STATE OF WISCONSIN,	)	
Plaintiffs,	)	
	)	Civil Action No. 10-C-910
v.	)	
	)	Hon. William C. Griesbach
NCR CORPORATION, et al.,	)	
Defendants.	)	

DECLARATION OF JEFFREY THOMAS LAWSON IN SUPPORT OF APPLETON PAPERS INC.'S OPPOSITION TO THE UNITED STATES' EXPEDITED MOTION FOR A PRELIMINARY INJUNCTION TO COMPEL PERFORMANCE OF FULL SCALE REMEDIATION WORK IN 2012

I, JEFFREY THOMAS LAWSON, declare as follows:

1. I am employed by Project Control Companies, Inc. ("PCC"), as Senior Principal. I have practiced for over thirty years in engineering and environmental geology and management of environmental investigation and remediation projects. I am a registered geologist in several states and have extensive experience developing and implementing combined administrative, financial and technical management programs for environmental projects predominantly on CERCLA sites. I offer this Declaration in support of Appleton Papers Inc.'s Memorandum in Opposition to the United States' Motion for a Preliminary Injunction to Compel Performance of Full Scale Remediation Work in 2012.

2. PCC is a consulting firm, based in Nashua, New Hampshire, that provides project management and related services. PCC has provided a variety of project management services in

connection with the Lower Fox River ("LFR") for approximately twelve years. I have been involved in performing and managing these services for PCC throughout this period.

3. In November 2007, the United States issued a Unilateral Administrative Order ("UAO" or "Order") mandating that eight named respondents – Appleton Papers Inc. ("API"), NCR Corporation ("NCR"), CBC Coating, Inc., Georgia-Pacific Consumer Products, LP ("GP"), Menasha Corporation, P.H. Glatfelter Company, U.S. Paper Mills Corp., and WTM I Company – commence remediation of Operable Units ("OU") 2 through 5 of the Lower Fox River Site at the beginning of the 2009 construction season (*i.e.*, April 2009).

4. Pivotal to starting the remediation on schedule was finalizing a contract with the general contractor, Tetra Tech EC, Inc. ("Tetra Tech"). The Lower Fox River Remediation LLC ("LLC"), with API, Arjo Wiggins Appleton (Bermuda) Limited ("AWAB"), and NCR as its sole members, was created on April 27, 2009 to be the counter-party with Tetra Tech for the contract's multi-year obligations.

5. Upon its formation, the LLC retained PCC to perform two roles: Resident LLC Manager and LLC Controller. In these two roles, PCC has day-to-day, hands-on knowledge of the technical and financial aspects of the remediation. I was designated (and remain) the Resident LLC Manager. Susan O'Connell, President of PCC, was designated (and remains) the LLC Controller.

6. As Resident LLC Manager, I maintain regular contact with representatives of all LLC members, as well as the Fox River remediation contractors. This includes Tetra Tech and its subcontractors, as well as additional firms that have entered into contracts with the LLC to provide service related to remediation of the Fox River. The contractors relevant to work in 2012 include Veolia ES Hickory Meadows Landfill, LLC; Gene Frederickson Trucking &

Excavating, Inc.; Foth Infrastructure & Environment, LLC; and Leonard & Finco Public Relations, Inc.

7. The overall remediation program for OU2-5 is set forth in the 2003 Record of Decision ("2003 ROD"), the 2007 Record of Decision Amendment ("2007 Amended ROD"), and the 2010 Explanation of Significant Differences ("2010 ESD"). These documents, prepared by the Wisconsin Department of Natural Resources and the United States Environmental Protection Agency ("Response Agencies"), articulate five remedial action objectives that the remedy must accomplish: (1) Achieve, to the extent practicable, surface water quality criteria throughout the Lower Fox River and Green Bay; (2) Protect humans who consume fish from exposure to Contaminants of Concern ("COCs") that exceed protective levels; (3) Protect ecological receptors from exposure to COC's above protective levels; (4) Reduce transport of PCBs from the Lower Fox River into Green Bay or Lake Michigan; and (5) Minimize the downstream movement of PCBs during implementation of the remedy.

8. The Response Agencies, through the issuance of the 2007 Amended ROD, decided to modify the selected remedy in the 2003 ROD from predominantly dredging PCB-contaminated sediments to a remedy that employs a combination of dredging as the primary remedial approach and several alternative remedial approaches: capping after dredging; capping by itself; and sand covers for residuals management and as the sole remedial approach in certain areas. Sediment with PCB concentrations exceeding the 1.0 ppm PCB Remedial Action Level is subject to remediation by dredging unless the eligibility criteria for engineered capping or sand covering in the specific area can be met and is more feasible and more cost effective in that area. An area may be sand covered if a maximum of six inches of sediment contains no greater than 2 ppm PCB and all other intervals contain less than 1 ppm PCB. An area may be eligible for

engineered capping where PCB concentrations and their distribution in the sediment are greater than those that would allow sand covering and where other eligibility criteria are satisfied. The thickness of and the types of aggregates used to construct an engineered cap may be varied among three general types depending on several conditions including: water depth; proximity to the navigation channel and other structures such as bridge piers and abutments, bulkheads, under-river utility crossings; and magnitude of and distribution of PCB concentrations beneath the cap.

9. The ESD, issued in late February 2010, was necessitated because the Government's estimated costs for the remediation, based on the selected remedy in the 2007 Amended ROD, escalated from $432 million to $701 million. This amounted to a 62% increase in the estimated remedial costs from the 2007 Amended ROD.

10. The UAO required expedited completion of certain remedial action tasks in 2008 in order to commence full-scale sediment remediation in OU2-5 at the start of the 2009 construction season. During 2009, construction of the Sediment Processing Plant was completed, along with construction of a secondary support site in OU3. Dredging was performed in the 2009, 2010 and 2011 construction seasons. Sand covering and engineered capping was performed in 2009 and 2011.

11. Remediation of OU1 was completed by others under a different Record of Decision. During the 2009 - 2011 construction seasons, the LLC's contractors completed the remedial action construction required by the UAO for OU2 and OU3. In OU4, the only operating unit left to be remediated, approximately 1.2 million cubic yards of production dredging was completed during the 2009, 2010 and 2011 construction seasons.

12. To date, approximately 1.487 million cubic yards of sediment has been removed from OU2-4, including non-TSCA, TSCA, residual dredging, and Phase 1 dredging. In addition, approximately 141 acres of caps and sand covers have been placed in OU2 and OU3.

13. NCR contracted with PCC to provide assistance in the preparation of a 2012 work plan for OU4. Based on the services PCC provided, I am familiar with the Phase 2B Work Plan for 2012 Remedial Action of Operable Units 2-5 (the "2012 RAWP") that NCR submitted on November 30, 2011, the Response Agencies' comments issued January 23 and February 9, 2012 on the 2012 RAWP, NCR's response to the Response Agencies' comments issued March 7, 2012, and the Final 2012 RAWP issued by the Response Agencies on March 19, 2012.

14. In NCR's draft 2012 RAWP dated November 30, 2011, NCR proposed dredging 500,000 cubic yards of sediment during the 2012 construction season in OU4A (*i.e.*, the area upstream of the line designated in the Consent Decree with Georgia-Pacific Consumer Products LP ("GP consent decree line")).

15. The Response Agencies provided comments on the draft 2012 RAWP on January 23 and February 9, 2012. In their comments, the Response Agencies articulated for the first time a new eligibility criterion for capping, one that had not been applied (or even mentioned) in the three previous construction seasons. Under this new criterion, an engineered cap can be placed only above "deeply buried" contamination. The comments define "deeply buried" contamination as contamination that is located beneath at least six feet of "relatively clean sediment." "Relatively clean" has been defined in the Response Agencies' comments as having an average PCB concentration of 10 ppm or less. The comments require dredging of all material (except in sand cover areas), even material that is many feet deep and in areas where engineered caps would be stable, unless the sediment contains at least six feet of 10 ppm or less material on top of

the remedial action level elevation ("6 foot/10 ppm rule"). The Response Agencies had previously defined "deeply-buried" as sediment that is at least 18 inches below sediment of 50 ppm or less. According to the "6 foot/10 ppm" rule, sediment is only deeply-buried if it is six feet below sediment averaging 10 ppm or less. This 6 foot/10 ppm rule is not part of the remedy for OU2-5 that the Response Agencies selected in the 2007 Amended ROD and reaffirmed in the 2010 ESD. No similar language can be found in previous remedial action documents approved or commented on by the Response Agencies. The Response Agencies' comments now seek to apply this 6 foot/10 ppm rule to all engineered caps of any type and in any location.

16. The 6 foot/10 ppm rule will significantly increase the volume of sediment that would have to be dredged in OU4. PCC estimates that an additional 1.4 million cubic yards will have to be dredged as a result of this rule, along with more than 65,000 additional cubic yards of residual dredging and more than 121 cubic yards of residual sand cover.

17. The 6 foot/10 ppm rule does nothing to further the objectives of the remedy set forth in the 2007 Amended ROD. When they issued the 2007 Amended ROD, the Response Agencies recognized that engineered caps achieve the 2003 ROD's five remedial action objectives (listed in paragraph 7 above) just as effectively as dredging, if not more so, as long as caps are designed to be durable and effective over the long term. This remedial approach was never predicated upon the contaminated sediment being buried below six feet of sediment with PCB concentrations below 10 ppm, as required by the 6 foot/10 ppm rule. The 6 foot/10 ppm rule effectively removes capping as a remedial option and dramatically expands the amount of dredging. This, in turn, will extend the time required to implement the remedy and leave exposed surface concentrations of PCBs after dredging that would be higher than if the same

areas were capped. The 6 foot/10 ppm rule will actually undercut the remedial action objectives that the remedy was designed to accomplish.

18. On March 7, 2012, NCR submitted its revised RAWP with a "Response to Comments" document that included a detailed, multi-page objection to the Government's new 6 foot/10 ppm rule. Response to Comments attached as Exhibit A.

19. On March 19, 2012, the day the motion for preliminary injunction was filed in this action, the Response Agencies issued a Final RAWP. In this Final RAWP, the Response Agencies demanded the dredging of 660,000 cubic yards during the 2012 construction season. The Proposed Terms of Preliminary Injunction lists 45 defined areas within OU4 ("2012 Eligible Dredge Areas"), totaling 1,415,063 cubic yards of non-TSCA material, that may be dredged during the 2012 construction season to satisfy the 660,000 cubic yard requirement. The Eligible Dredging Areas include areas located both upstream and downstream of the GP consent decree line. Eleven of the designated eligible areas, totaling more than 615,000 cubic yards of non-TSCA material, are downstream of the GP consent decree line.

20. The 2012 Eligible Dredge Areas do not include areas currently designated for capping. By omitting these areas, the Response Agencies have carved out of the 2012 work plan the areas that would otherwise be affected by the 6 foot/10 ppm rule during this construction season. Instead, the Response Agencies proposed that "in the 2013 remedial action season and in an upstream to downstream manner, all residual sand covers, remedy sand covers and capping will be completed 'as early as allowed' by the Response Agencies for all DMUs that had satisfied final dredging criteria in 2012." The Response Agencies' action has postponed, but it has not resolved, the full impact of the 6 foot/ 10 ppm rule. Removing the areas potentially affected by the rule from the 2012 RAWP simply shelves the issue for next year's construction

season and beyond. The significant planning and cost ramifications will need to be considered during 2012, as required in Section 6 of the Final 2012 RAWP, as work for next year is contemplated.

21. In my capacity as Resident LLC Manager, I am generally familiar with the LLC's Operating Agreement. Under the terms of the Operating Agreement, entities that wish to participate in the implementation of the UAO can become members of the LLC and thereby assume a share of the LLC's obligations.

22. In March 2012, I became aware that certain members of the LLC were interested in exploring changes in the LLC's contractual relationship with Tetra Tech so that Tetra Tech and its subcontractors could contract with parties other than the LLC to perform the 2012 RAWP.

23. On or about March 15, 2012, I received a copy of a letter (attached as Exhibit B) from representatives of Tetra Tech and its subcontractors (Brennan and Stuyvesant Projects Realization) to Brian Tauscher, a representative of two LLC members (API and AWAB), dated March 15, 2012. In the letter Tetra Tech and its subcontractors stated that they were "willing to contract directly with a third party or parties having in our judgment sufficient financial wherewithal to perform all or part of the 2012 remediation, should that work be removed from the scope of work in the LLC contract."

24. On or about March 20, 2011, I was advised that the LLC had adopted a resolution (designated as an Action By Consent) attached as Exhibit C. Attached as Exhibit D are copies of emails dated March 20, 2012 that I received from members of the LLC.

25. Pursuant to the Action By Consent, I finalized and, on March 26, 2011, signed Change Directive 13, a copy of which is attached as Exhibit E. The reason for issuance of Change Directive 13 is stated in the document's first paragraph:

> Since at least March 2011, the Response Agencies have taken the position in numerous court filings and correspondence that the LLC structure and the LLC's contract with Tetra Tech EC., Inc. (TTECI) for remediation of the Lower Fox River pose impediments to other potentially responsible parties from performing work or contributing in any way to ongoing remediation efforts. The LLC wishes to remove itself as an impediment to remediation being performed in the 2012 remediation season and to free TTECI and its team to contract with 106 Order Respondents and enforcement action defendants to perform this work.

26. I have communicated with the LLC's other 2012 remediation-related contractors to advise them that the LLC is open to releasing them to contract directly with other parties prepared to undertake the 2012 remedial work and will facilitate such a transition. I also advised these contractors that if they do not wish to contract with such other parties, the LLC would continue to honor its contracts with these contractors.

27. Based upon my experience in working with Tetra Tech and the LLC's contractors, 2012 remedial work can be undertaken and performed under an arrangement whereby parties interested in contracting to fund the work can contract directly with the LLC's existing contractors on the same terms and conditions as the existing LLC contracts.

28. While I believe that 2012 remedial work can be performed under such arrangements discussed above, I have been asked to consider whether the performance of no remedial work in 2012 will cause harm. Postponing the initiation of further remedial work for one year will not result in any material harm. Some production dredging has already occurred in OU4, which has not resulted in increasing the concentration of PCBs in the surface sediments compared to pre-dredging conditions. In places where no dredging has yet occurred in OU4, no additional harm will occur if no dredging is performed in 2012.

29. Pursuant to the Design Reports for the Lower Fox River Remedial Design, including the 30% and 60% design reports and volume I of the 100% design report, all of which were reviewed and approved by the Response Agencies, the OU2-5 remediation work is scheduled to be completed by the end of the 2017 construction season. Based upon my discussions with Tetra Tech regarding the time required to complete the remaining work based upon the work done to date, all necessary remediation work, including dredging, capping and covering, can be completed by the end of the 2017 construction season even if no remedial work is performed in 2012.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Dated: April 5, 2012

/s/ Jeffrey Thomas Lawson
Jeffrey Thomas Lawson
Resident LLC Manager