EPA Region 5 Records Ctr.
355370

Explanation of Significant Differences

Operable Unit 2, Operable Unit 3, Operable Unit 4, and Operable Unit 5 (River Mouth)

Lower Fox River and Green Bay Superfund Site

February 2010

List of Acronyms and Abbreviations

2002 ROD	Record of Decision, Operable Units 1 and 2, Lower Fox River and Green Bay Site, December 20, 2002
2003 ROD	Record of Decision, Operable Units 3, 4, and 5, Lower Fox River and Green Bay Site, June 30, 2003
2007 ROD Amendment	Record of Decision Amendment, Lower Fox River and Green Bay Site, Operable Units 2 (Deposit DD), 3, 4, and 5, June 26, 2007
2007 Amended Remedy	Remedy selected in Record of Decision Amendment, Lower Fox River and Green Bay Site, Operable Units 2 (Deposit DD), 3, 4, and 5, June 26, 2007
2008 ROD Amendment	Record of Decision Amendment, Operable Unit 1, Lower Fox River and Green Bay Superfund Site, June 12, 2008
ARARs	Applicable or Relevant and Appropriate Requirements
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cy	cubic yards
ESD	Explanation of Significant Differences
FS	Feasibility Study
MNR	Monitored Natural Recovery
NCP	National Contingency Plan
OU	Operable Unit
OU 1	Little Lake Butte des Morts reach
OU 2	Appleton to Little Rapids reach
OU 3	Little Rapids to De Pere reach
OU 4	De Pere to Green Bay reach
OU 5	Green Bay
PCBs	polychlorinated biphenyls
ppm	parts per million
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
Response Agencies	Wisconsin Department of Natural Resources and United States Environmental Protection Agency
ROD	Record of Decision
Site	Fox River NRDA PCB Releases Site, also known as the Lower Fox River and Green Bay Superfund Site
SMU 56/57	Sediment Management Unit 56/57
U.S. EPA	United States Environmental Protection Agency
WDNR	Wisconsin Department of Natural Resources

Explanation of Significant Differences

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I. Introduction

Pursuant to Section 117(c) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 ("CERCLA"), 42 U.S.C. § 9617(c), 40 C.F.R. §§ 300.435(c)(2)(i) and 300.825(a)(2), the United States Environmental Protection Agency ("U.S. EPA") and the Wisconsin Department of Natural Resources ("WDNR") (collectively referred to as the "Response Agencies") publish this Explanation of Significant Differences ("ESD") to explain certain differences that significantly change, but do not fundamentally alter, the remedial action that the Response Agencies have selected for the Lower Fox River and Green Bay Superfund Site (the "Site"). This ESD is being issued to describe and explain the following significant modifications to the 2002 Record of Decision ("ROD") and the 2007 ROD Amendment:

- Cost increase for remedial actions in Operable Unit 2 – 5 (OU 2 - 5)
- Reduction of capping thicknesses for OU 2 - 5
- Reduction of monitoring in OU 2

These three separate modifications are not directly related to each other.

The Site includes 39 miles of the Lower Fox River and approximately 2,700 square miles of Green Bay. The major contaminants at the Site are polychlorinated biphenyls ("PCBs") located in the sediments of the Lower Fox River and Green Bay. PCBs are probable human carcinogens and have other toxic effects (e.g., neurobehavorial and developmental problems). The Site poses risks to humans (via consumption of PCB-contaminated fish) and ecological receptors. Fish consumption advisories have been in effect since 1976.

The Site has been divided into 5 operable units as follows (see Figure 1 below):

1. OU 1 – Lake Winnebago to Appleton (also known as Little Lake Butte des Morts)
2. OU 2 – Appleton to Little Rapids
3. OU 3 – Little Rapids to De Pere
4. OU 4 – De Pere to Green Bay
5. OU 5 – Green Bay

The Response Agencies' selected remedial action for the Site includes a combination of dredging/disposal, armored caps, sand covers, and monitored natural recovery ("MNR"), as described in detail in the following documents:

(1) *Record of Decision, Operable Unit 1 and Operable Unit 2, Lower Fox River and Green Bay Site, Wisconsin,* December 2002 ("2002 ROD");

(2) *Record of Decision, Operable Units 3, 4, and 5, Lower Fox River and Green Bay Site, Wisconsin*, June 2003 ("2003 ROD");

(3) *Record of Decision Amendment, Operable Unit 2 (Deposit DD), Operable Unit 3, Operable Unit 4, and Operable Unit 5 (River Mouth), Lower Fox River and Green Bay Superfund Site*, June 2007 ("2007 ROD Amendment"); and

(4) *Record of Decision Amendment, Operable Unit 1, Lower Fox River and Green Bay Superfund Site,* June 2008 ("2008 ROD Amendment").

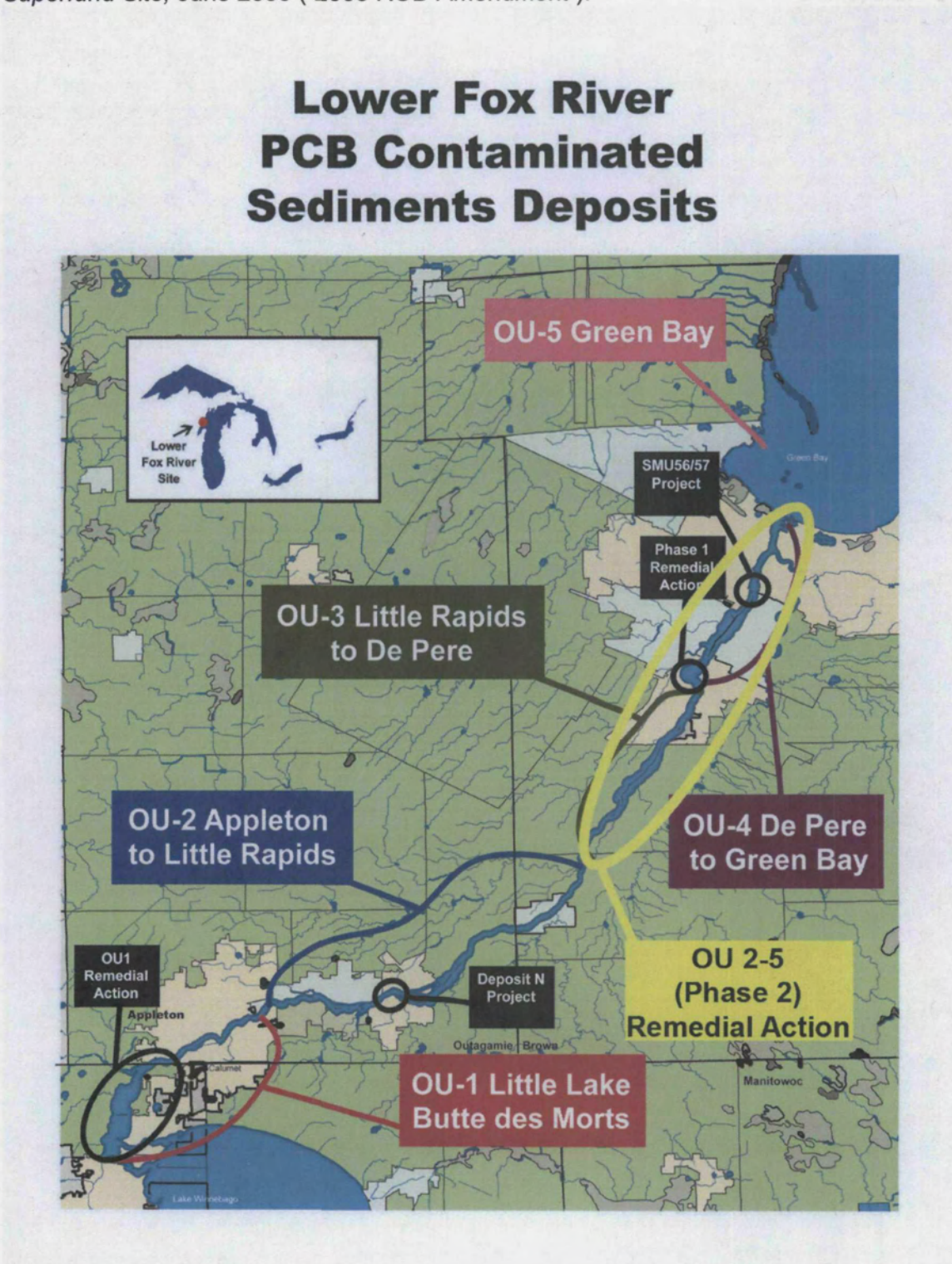

Figure 1. Lower Fox River and Green Bay Superfund Site, Projects To Date

Additional information can be found in the Site's Administrative Record and at http://www.epa.gov/region5/sites/foxriver/index.html.

II. Requirement to Address Significant Change

Section 117(c) of CERCLA allows the lead agency to determine that a significant change to the selected remedy described in a Record of Decision is warranted after the ROD is signed. If changes to the remedial action make it differ significantly from the remedial action described in the ROD, the lead agency is required to publish an explanation of the significant differences.

This ESD documents the Response Agencies' determination that it is appropriate to modify three aspects of the prior remedy selection decisions for the Site, namely: (1) certain aspects of Monitored Natural Recovery required for OU 2 in the 2002 ROD; (2) certain aspects of cap design under the 2007 ROD Amendment; and (3) the cost estimate for the 2007 ROD Amendment.

This ESD and corresponding documents will become part of the Lower Fox River and Green Bay Site Administrative Record file pursuant to 40 C.F.R. § 300.825(a)(2), and are available for public review. The Administrative Record is available at the following locations and times:

Wisconsin Department of Natural Resources, Northeast Region
2984 Shawano Ave.
Green Bay, WI 54313-6727
Hours: Tuesday, Thursday, and Friday, 9 AM – 12:30 PM and 1:30 PM – 4 PM

and

U. S. Environmental Protection Agency
Region 5 Records Center - Seventh floor
77 W. Jackson Blvd.
Chicago, IL 60604
Hours: Monday – Friday, 8 AM – 4 PM

III. Background

A. Site History

For many years, a large number of paper production facilities have been and continue to be concentrated along the Lower Fox River. Some of the facilities manufactured and/or reprocessed PCB-containing carbonless copy paper that was produced from approximately 1954 to 1971. PCBs were released from the paper production facilities to the Fox River directly, or after passing through municipal wastewater treatment plants. Based on purchase, manufacturing, and discharge records, conservative estimates have shown that at least 230,000 kilograms (or more than 500,000 pounds) of PCBs were released to the Fox River environment. Ninety-eight percent of the total PCBs released into the Lower Fox River had been released by the end of 1971. PCBs were then transported within the river system, as PCBs have a tendency to sink and adhere to sediments in the river bottom. PCBs have contaminated areas in the 39-mile length of

the Lower Fox River, as well as Green Bay (Figure 1). U.S. EPA proposed the Site for inclusion on the National Priorities List on July 28, 1998.

The Response Agencies have conducted extensive evaluations, particularly beginning in 1989 with the Green Bay Mass Balance Study, as well as dredging demonstration projects in two discrete areas of the river (known as Deposit N/O and Sediment Management Unit 56/57 ("SMU 56/57")) from 1998 – 2000. Details of these projects are discussed in the 2003 ROD. A total of 90,000 cubic yards ("cy") of PCB-contaminated sediments were removed and disposed off-site during these dredging projects.

In March 1998, WDNR began a Remedial Investigation ("RI"), Feasibility Study ("FS") and Risk Assessment with funding and technical assistance from U.S. EPA. WDNR released the draft Remedial Investigation/Feasibility Study ("RI/FS") and Risk Assessment for public review and comment in March 1999. The early release in the planning process of the draft RI/FS for public comment allowed the Response Agencies to evaluate public acceptance of cleanup alternatives. Comments were received from governmental agencies, the public, environmental groups, and private-sector entities. These comments were used to revise and refine the scope of work that led to the RI/FS and a Proposed Plan released for public comment in October 2001. Comments received from potentially responsible parties, the public, and independent peer review committees were incorporated into the final RI/FS, as appropriate. In December 2002, U.S. EPA and WDNR signed the ROD for OU 1 and OU 2 which called for active remediation in OU 1 and MNR in most of OU 2. In June 2003, U.S. EPA and WDNR signed a ROD which called for active remediation in OU 2 (Deposit DD), OU 3, OU 4 and in OU 5 near the mouth of the river. The 2003 ROD called for MNR for the remainder of OU 5.

The 2007 ROD Amendment made changes to certain aspects of the 2003 ROD for all or part of the following OUs: OU 2 (Deposit DD), OU 3, OU 4, and OU 5 (near the mouth of the river). The 2008 ROD Amendment made changes to parts of the remedy described in the 2002 ROD for OU 1. These ROD Amendments modified the 2002 and 2003 RODs from all-dredging to a combination of dredging, capping, and sand covering. All public comments on these ROD Amendments were considered in the final decisions.

Remedial action work for OU 1 began in 2004 and continued through 2009. Approximately 371,500 cy of PCB-contaminated sediment were dredged and disposed off-site, and 221 acres were capped or covered.

An interim cleanup action, identified as the Phase 1 remedial action, was initiated in 2007. This phase of the remedial action, located in OU 4 just downstream of the De Pere Dam (see Figure 1), removed approximately 130,000 cy of more highly-contaminated PCB sediments. Currently, Phase 2 of the remedy, focused in OUs 2 - 5 of the Site, is being performed under a Unilateral Administrative Order issued by U.S. EPA. Dredging for the remainder of OUs 2 - 5 started in April 2009 and is planned to be completed in 2015. Capping and sand covering actions started in June 2009, and are scheduled to be completed in 2017.

Table 1 below summarizes the dredging actions discussed above. Table 2 summarizes the remedial actions that have occurred in OU 1, and Table 3 presents a summary of the remedial actions selected in the two RODs and the two ROD Amendments for the Site.

Table 1. Dredging Projects To Date

Project Name and Operable Unit	Years	Volume Removed (cubic yards)	Project Type
Deposit N (OU 2)	1998 – 1999	10,000	Demonstration
SMU 56/57 (OU 4)	1999	30,000	Demonstration
	2000	50,000	Time-critical removal
Phase 1 (OU 4)	2007	131,900	Remedial action
OU 1	2004 – 2009	371,500	Remedial action
Phase 2 (OU 2 – OU 5)	2009 – 2017	540,300	Remedial action (ongoing)
TOTAL To Date	1998 - 2009	1,133,700	--------

Table 2. Summary of OU 1 Remedial Actions

Remedial Actions	Years Completed	Volume Removed (cubic yards)	Areas Addressed (acres)
Dredging	2004 – 2008	371,500	223
Capping	2007 – 2009	--	114
Sand Covering*	2007 - 2008	--	144
All actions (dredging, capping and covering)	2004 - 2009	371,500	481

* Includes areas with sand covers that still had PCB concentrations greater than 1 part per million (ppm) after dredging (i.e., "residual" contaminated sediments).

Table 3. Decisions Summary

Operable Units	RODs		ROD Amendments	
	Remedy	Signature Date	Remedy	Signature Date
1	Dredging/disposal capping contingency	December 20, 2002	Dredging/disposal capping sand covering	June 12, 2008
2	Monitored natural recovery[1]		Monitored natural recovery[1]	
3 4	Dredging/disposal capping contingency	June 30, 2003	Dredging/disposal capping sand covering	June 26, 2007
5	Monitored natural recovery[2]		Monitored natural recovery[2]	

[1] Except for Deposit DD
[2] Except near the mouth of the Fox River

B. 2002 ROD Monitored Natural Recovery Requirements for OU 2

The MNR remedy for OU 2 relies on natural processes to gradually reduce contaminant concentrations and includes a monitoring program for measuring PCB and mercury levels in water, sediment, invertebrates, fish, and birds. The monitoring program includes the following elements:

- Surface water quality sampling and PCB analysis;
- Fish and waterfowl tissue sampling and analysis of PCBs and mercury;
- Birds and zebra mussel tissue sampling and PCB analysis;
- Population studies of bald eagles and double-crested cormorants to assess the residual effects of PCBs and mercury on reproductive viability; and
- Possible surface sediment sampling in MNR areas to assess potential recontamination from upstream sources and the status of natural recovery.

C. 2007 ROD Amendment

The active remediation measures required by the OU 2 - 5 remedy, as amended in the 2007 ROD Amendment, consist of the following elements:

- A PCB Remedial Action Level of 1 ppm;
- Primary remedy: dredging and off-site disposal;
- Alternate remedies:
    - Engineered caps with sand and armor stone (with minimum thicknesses of 33", 16" and 13", depending on contamination concentrations and location in the river – see Section V.B.2.); and
    - Sand covers over areas with relatively low contaminant concentrations and in thin zones (i.e., 6 inches or less);
- Long-term monitoring and maintenance of caps; and
- Estimated cost: $390 million (2005 USD); $432 million (2009 USD).

Remedial Actions in OU 2 - 5 began on April 28, 2009, and the anticipated completion date is fall 2017.

IV. Significant Differences for OU 2 Monitored Natural Recovery

During the development of a program for baseline sampling for the Long-Term Monitoring Plan for OU 2,[1] the Response Agencies were presented with new information that bears on the data required for long-term monitoring. In part, this information confirms that some of the monitoring species previously selected are no longer present or have a limited presence in OU 2.

As a result, the selected long-term monitoring program has been refocused from measuring PCB and mercury levels in water, sediment, invertebrates, fish, and birds to monitoring PCBs in water, sediment, and fish. As a result, the monitoring program will have a greater focus on fish and associated risks to humans and other receptors. With regard to fish monitoring, each operable unit has "Optimum Completeness Goals" as follows:

- *Walleye (human health index species for Lake Winnebago through OU 5):* 15 individual fish
- *Carp (ecological index species for Lake Winnebago through OU 4):* 35 individual fish composited into seven groups of five fish each
- *Drum (ecological index species for OU 4 and OU 5):* 25 individual fish composited into five groups of five fish each, and
- *Gizzard Shad (young forage fish for Lake Winnebago through OU 5):* 175 individual fish composited into 7 groups of 25 fish each.

Reasonable efforts will be made to obtain the optimum numbers described above. However, if this is not feasible, fewer fish may be sufficient if a reasonable level of statistical power can be achieved. Additionally, other species will be collected to

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[1] Long-term Monitoring Plan, Appendix I of Section 7, Item #4, Lower Fox River Remedial Design Report for 2010 and Beyond Remedial Actions, Anchor QEA, LLC, Tetratech EC, Inc., Shaw Environmental & Infrastructure, Inc., and LimnoTech, Inc., December 2009.

substitute for fish not present or that cannot be found in sufficient quantities. This monitoring program will provide comprehensive information for critical components of all major bioaccumulation risk pathways for higher-level organisms, including humans, mammals and birds, as well as the fish themselves.

Conclusions and detailed consideration on these matters are documented in the Baseline Monitoring Plan.[2] Table 4 below provides additional explanation of the specific modifications to the long-term monitoring program.

Table 4. Description of Significant Differences for OU 2 MNR

2002 ROD (OU 2 portions relevant to this ESD)	Remedy Modifications	Explanation
Waterfowl tissue sampling and analysis of PCBs and mercury	No analysis for PCBs or mercury for waterfowl	Insufficient and transient waterfowl population present in OU 2 for adequate evaluation. Enhanced fish monitoring will provide a better determination of contaminant uptake.
Fish tissue sampling and analysis for PCBs and mercury	No analysis for mercury	Analysis is primarily focused on PCBs as PCBs are the major risk driver. Additionally, relatively low risks associated with mercury will be mitigated by remedial actions for PCBs as mercury contaminated sediments are commonly co-located with PCBs.
Fish, bird, and zebra mussel tissue sampling and analysis of PCBs	No monitoring of zebra mussels for PCBs	Enhanced fish monitoring will provide a better determination of PCB uptake since fish integrate PCBs in a more comprehensive manner than zebra mussels.
Population studies of bald eagles and double-crested cormorants to assess the residual effects of PCBs and mercury on reproductive viability	No population studies	Insufficient bald eagle and double-crested cormorant populations residing entirely in OU 2 to allow a statistically sound population evaluation. Also, confounding factors would make interpretation ambiguous (e.g., weather, diseases, species interactions, foraging locations, and possible changes in prey selection). Enhanced fish monitoring will provide a better determination of contaminant uptake.

[2] Lower Fox River Baseline Monitoring Plan, Shaw Environmental & Infrastructure, Inc., and Anchor Environmental LLC, June 23, 2006.

V. Significant Differences from the 2007 ROD Amendment

There are two significant differences to the remedy set forth in the 2007 ROD Amendment. First, there is a significant increase in the estimated cost of the remedy. Second, cap design modifications allow a decrease in the minimum thickness of the engineered caps; however, target range thicknesses remain the same or increase.

A. Basis for Changes to the Remedy

1. Cost Increase

After modifications to the selected remedy for OUs 2 - 5 were formalized by the 2007 ROD Amendment, additional detailed design activities and the first season of dredging completed during 2009 provided a better basis for cost estimation. Overall, costs increased approximately $270 million (2009 USD) as compared to the estimate in the 2007 ROD Amendment. The reasons for some of the more significant cost increases are set forth below, with the greatest increases shown in the shaded portions of Table 5.

a. Design and Infrastructure: The original design of the dewatering facility did not provide for a building complex of the current size, nor did the original estimate anticipate additional work needed for construction of the bulkhead build-out at the dewatering facility. Additionally, insurance costs increased and the size and complexity of the sand removal system were greater than originally estimated.
This contributes $71 million (2009 USD) to the increase.

b. Engineered Caps: A large portion of this increase is due to the placement of quarry spall in the navigation channel, as the currently-estimated time and materials costs are more than originally estimated, and due to an increased need for capping materials. Additionally, while cap thickness has been reduced (discussed in Section V.B.2 below), it should be noted that the initial design did not consider "overplacement" needs (i.e., extra sand or gravel is typically factored into a cost analysis to ensure minimum thickness requirements are met). This, plus greater materials costs, have caused a significant cost increase compared to the original estimate.
This contributes $83 million (2009 USD) to the increase.

c. Mobilization and Demobilization: These costs were generally underestimated.
This contributes $29 million (2009 USD) to the increase.

d. Non-TSCA Dredging, Dewatering, Transportation & Disposal: These costs increased primarily due to increases in estimated tonnage of filter cake (i.e., dewatered sediment).
This contributes $38 million (2009 USD) to the increase.

Table 5. Cost Increases for Remedial Actions for OU 2 - 5

Category	Basis of Design Report	Basis of Design Report	Current Estimate	Variance (Current-BODR)
	2005 U.S. Dollars	2009 U.S. Dollars	2009 U.S. Dollars	2009 U.S. Dollars
Mobilization/ Demobilization	14,290,287	15,553,857	44,851,333	29,297,476
Debris Removal	2,541,272	2,765,975	3,849,510	1,083,535
Non-TSCA Dredging, Dewatering, Transport & Disposal	206,905,521	225,200,435	263,512,488	38,312,053
TSCA Dredging, Dewatering, Transport & Disposal	30,730,038	33,447,237	25,150,864	-8,296,373
Design and Infrastructure	40,186,973	43,740,369	115,129,407	71,389,038
Engineered Caps	29,070,746	31,641,227	114,544,814	82,903,586
Shoreline Caps	3,257,776	3,545,834	8,469,626	4,923,793
Residual Cover	10,794,985	11,749,495	0	-11,749,495
Residual Dredging	0	0	23,920,774	23,920,774
Regulatory Compliance	37,685,119	41,017,297	25,308,290	-15,709,007
Site Support	9,124,360	9,931,150	52,472,143	42,540,993
VE / Reuse	0	0	685,512	685,512
Long-term Monitoring	11,934,554	12,989,826	18,422,216	5,432,390
Total Project Cost	**$396,521,631**	**$431,582,701**	**$700,529,456**	**$268,946,755**

Table Note: gray boxes highlight categories having larger cost increases

e. Shoreline Caps: Labor and material costs were generally underestimated.
This contributes $5 million (2009 USD) to the increase.

f. Residual Dredging: Residual dredging costs were not considered in earlier cost estimates.
This contributes $24 million (2009 USD) to the increase.

g. Long-Term Monitoring Plan: This increase is due to a clearer understanding of monitoring needs and scope, in large part from additional knowledge gained during baseline monitoring. Although some monitoring for OU 2 has been reduced, the overall scope is greater and costs increase due to enhanced fish and surface water monitoring.
This contributes $5 million (2009 USD) to the increase.

h. Site Support: Costs relating to site construction and operations support were generally underestimated in large part due to the need for a larger dewatering support facility, including staffing and equipment increases, discussed in item 1.a. above.
This contributes $43 million (2009 USD) to the increase.

It is also important to note the difficulties and practical limitations for estimating project costs for the following reasons:

- Contaminated sediments targeted for remediation reside in a dynamic, aquatic environment. This poses significant challenges for contaminant assessment, design, and construction.
- Many aspects of design and construction have never been encountered because of the scope and complexity of this project.
- This remedy employs a variety of technologies including dredging, capping, and sand covering. The 2007 ROD Amendment remedy presents unique challenges with coordinating different remedial actions over a time period of 9 years, along 12 miles of river.
- Aspects of dredging, capping and covering must consider local river use and conditions, such as water depth, water velocity, propeller wash impact, potential for storm impacts, infrastructure, potential for ice scour, substrate, and local river configuration.

2. Cap Thickness

After the 2007 ROD Amendment, the ongoing design activities for the remedy further considered cap thickness and composition. The resulting cap design is discussed below in Section V.B.2. Engineering evaluations of the caps have determined that the placement of a thinner sand layer in some areas, while maintaining original average thickness, in combination with improvements to armor stone design, is at least as protective as caps described in the 2007 ROD Amendment. Specifically, cap stability is improved by using larger armor stone while allowing a decrease of minimum thickness requirements in limited areas. However, the average of "targeted" layers of armor stone is maintained or increased. Not requiring a thicker sand layer in every instance results in caps being more cost-effective while maintaining protectiveness. The details of this evaluation are provided in the final conclusions presented in the *100 Percent Design Report for 2010 and Beyond Remedial Actions.*[3]

B. Changes to the Remedy

1. Cost Increase

Based on cost estimates in the *Basis of Design Report* ("BODR")[4] for the 2003 ROD's all-dredging remedy and an alternative dredging/capping remedy (the "Optimized Remedy"), the 2007 ROD Amendment estimated that the remedial action for OUs 2 - 5 would cost $432 million (in 2009 dollars)[5]. Based on additional evaluations compiled as part of the remedial design process, operational experience gained during 2009 remedial

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[3] 100 Percent Design Report for 2010 and Beyond Remedial Actions, Lower Fox River Remedial Design, Tetratech EC, Inc., Anchor QEA, LLC, J.F. Brennan Co. Inc., and Boskalis Dolman, Prepared for Appleton Papers Inc., Georgia-Pacific Consumer Products LP and NCR Corporation, November 2009.

[4] Final Basis of Design Report, Shaw Environmental, Inc., Prepared for Fort James Operating Company, Inc. and NCR Corporation, June 16, 2006.

[5] BODR costs were originally reported in 2005 dollars, and were estimated to be $390 million. The $432 million BODR cost estimate reported herein is in 2009 dollars to provide an equal basis of comparison to the 2009 revised remedy cost estimate (i.e., an "apples to apples" comparison).

action activities at the Site, and the information set forth in Section V.A.1. above, the remedial action for OUs 2 - 5 is now estimated to cost $701 million.

As set forth in the EPA guidance document entitled, "*A Guide to Developing and Documenting Cost Estimates During the Feasibility Study*," EPA 540-R-00-002, OSWER 9355.0-75 (July 2000), the expected accuracy range of a cost estimate for a detailed analysis of remedial action alternatives is -30% to +50%. As the current estimated cost of the OU 2 – 5 remedial action is 62% greater than the original estimate, it is nearly within EPA's expected accuracy range for the cost of a remedial action and represents a "significant" but not "fundamental" change from the 2007 ROD Amendment. The Response Agencies' *Criteria Analysis Memorandum* offers a more detailed re-evaluation of the 2007 ROD Amendment Remedy in light of the projected increase in the estimated cost of that remedy.[6]

2. Cap Design Modifications

The 2007 ROD Amendment required various caps to be at least 33 inches, 16 inches or 13 inches in thickness, depending on the level of PCB contamination and location relative to the navigation channel. However, additional cap design analyses show that the minimum 2007 ROD Amendment cap thicknesses can be used as "targets," with minimum thicknesses of 21 inches, 10 inches, or 7 inches, respectively. This would result in a cap design that is protective, but would also allow for a more feasible cap construction. Table 6 below provides details of these modifications.

Table 6. OU 2 – 5 Cap Modifications

2007 ROD Amendment General Description		**"At least 33 inches in thickness" ("C Caps")**			**"At least 16 inches in thickness" ("B Caps")**		**"At least 13 inches in thickness" ("A Caps")**	
		PCBs > 50 ppm or in navigation channel			PCBs >10 ppm and PCBs < 50 ppm		PCBs < 10 ppm	
		sand	gravel ("filter layer")	D50 of 6-9" stone	sand	gravel*	sand	gravel*
2007 ROD Amendment Minimum		15"	none	18"	9"	7"	6"	7"
Revised Cap Design	Minimum	6"	3"	12"	6"	4"	3"	4"
	"Targeted"	9"	6"+	18"	9"	7" – 12"	6"	7" – 12"

* D50 varies, depending on final cap water depth. For example, a final cap water depth of 6 feet or greater would receive a D50 of 0.75".

[6] Criteria Analysis Memorandum, Operable Unit 2 (Deposit DD), Operable Unit 3, Operable Unit 4, and Operable Unit 5 (River Mouth), Lower Fox River and Green Bay Superfund Site, U.S. EPA and WDNR, February 2010.

VI. Public Participation Activities

Public notice of this ESD will be published in the Green Bay Press-Gazette and the Appleton Post-Crescent.

VII. Affirmation of Statutory Determinations

The Response Agencies have determined that the remedy selected in the 2007 ROD Amendment, with the changes described above, is the preferred remedial alternative under the remedy selection criteria specified by the National Contingency Plan ("NCP"). It will protect human health and the environment, it complies with federal and state requirements that are applicable or relevant and appropriate to this remedial action, it is the optimal alternative under the NCP's primary balancing criteria, and it satisfies the NCP's State and community acceptance criteria. Thus, the 2007 Amended Remedy, as modified by this ESD, complies with CERCLA § 121, 42 U.S.C. § 9621. The 2002 ROD, with the OU 2 monitoring changes made by this ESD, similarly complies with CERCLA § 121, 42 U.S.C. § 9621.

2/25/10
Date

Todd Ambs, Division Administrator
Water Division
Wisconsin Department of Natural Resources

2/26/10
Date

Richard C. Karl, Director
Superfund Division
U.S. EPA, Region 5