Lower Fox River/Green Bay Site
Technical Memorandum
Current Plan and Proposed Plan
November 2006

Purpose of this Memorandum

This technical memorandum explains the Proposed Plan (a.k.a., "Optimized Remedy") and the agency's rationale for recommended modifications to the remedy described in Records of Decision (ROD) for the Lower Fox River and Green Bay site (a.k.a., "Current Plan"). As discussed below, the Agencies believe that the proposed plan will result in more effective and efficient remedial action to reach the risk reduction goal of the ROD based on the same remedial action level of 1.0 part per million (PPM) PCBs and the same remediation goal of attaining a surface weighted average of approximately 0.25 PPM PCBs for the site. The ROD for OUs 1 and 2 was issued in December 2002 and ROD for OUs 3 through 5 was issued in June 2003. The proposed plan modification addresses design changes for a small segment of OU 2 which was presented as a part of the ROD issued in December 2002 and all of OUs 3 through 5. For the purpose of the remainder of this document, the term "ROD" is meant to include the relevant portions of both of the previously issued RODs. A more complete description and explanation of the Optimized Remedy is contained in the Basis of Design Report, May 2006.

Following the issuance of the OU 3 through 5 ROD, two Potentially Responsible Parties, Georgia Pacific and NCR entered into an Administrative Order on Consent (AOC) with the governments to develop the Remedial Design for Operable Units 2-5 of the Lower Fox River/Green Bay Site. This is the section of the site from the City of Appleton downstream and out into the bay of Green Bay. Under this AOC, the companies agreed to conduct pre-design sampling and data collection, develop the Basis of Design Report, and prepare the required engineering design documents for the selected remedy.

During the fall of 2004 and spring of 2005, consultants working for the companies collected more than 1,400 sediment cores which were divided to produce more than 10,000 sediment samples to characterize the PCB-contaminated sediment. The ROD established the remedial action level for this site as 1.0 PPM PCBs and prescribed that all sediment with PCB levels greater than the RAL be dredged, piped to settling basins to dewater, then moved to a licensed landfill location for disposal. A contingent remedy of installing an engineered cap on certain areas of the site to meet the RAL could be allowed if specific conditions were met. In order to be accepted, capping would have to be shown to be less expensive, and as effective in risk reduction as dredging, and specific areas within the site could not be capped to avoid the creation of navigational problems. The pre-design sampling was done to locate all of the areas that were to be dredged and to

collect sediment characteristics relating to the design of the remedial action. The additional data has improved the detailed understanding of the sediment characteristics and the PCB concentrations and distribution throughout the site. For example, the new data shows that PCBs are not uniformly spread throughout the site, but are concentrated in smaller definable areas; that several areas of the site have a relatively thin layer (six inches or less) of sediment that is equal to or less than 2 PPM PCBs; and that some contaminated sediment is deeply buried in portions of OU 4 under six to thirteen feet of relatively cleaner sediment.

In addition, the PRP consultants, in cooperation with EPA, DNR, and the agencies' oversight consultant, the Boldt Company, evaluated the engineering design concepts for the remedial design for the ROD remedy as well as the contingent remedy. The new data has provided information which the agencies believe enables the best engineering design decisions to be made relative to risk reduction for this site.

The Proposed Plan has many common elements with the Current Plan. There are also several changes. Some of the changes are minor and would not normally result in a proposed plan because they are not fundamental changes or even significant changes to the remedy identified in the ROD. When the changes are viewed in total however, the Agencies believe that the mechanism of a proposal to modify the remedy is appropriate.

The Proposed Plan is consistent with the U.S. EPA, Contaminated Sediment Remediation Guidance for Hazardous Waste Sites, December 2005.

Comparison of the Proposed and Current Plans

The Basis of Design Report completed in May 2006 presents a comprehensive analysis of the new information that has been gathered since the issuance of the original RODs and is the basis for this proposed plan.

There are several components of the plans which remain the same. These are:

- The remedial action level (RAL) for both plans is 1.0 PPM PCB.
- The goal of the remedial action is to reach a surface weighted average of 0.25 PPM PCB.
- A large volume of sediment would be dredged. The Proposed Plan would dredge less, but would still remove large volumes, i.e., 3.6 million cubic yards which would remove approximately 74% of the PCB mass that would be removed under the Current Plan (see Table 2 below).
- A sand cover may be used to manage sediment residuals are over 1.0 PPM PCB that are left after dredging when additional dredging would be relatively ineffective.
- Reliance on natural recovery after sediments meet the cleanup goals (i.e., 0.25/0.28 ppm SWAC) to achieve further reductions in PCB

concentrations in sediments that are not achievable through the remedial action.

- Institutional controls and long-term monitoring of biota and surface water will be used to monitor progress toward desired risk reduction until contaminants are at levels protective of human health and the environment.

The modifications to the ROD remedies are summarized in Table 1. Following the table is a discussion of the changes.

TABLE 1. Comparison of Current and Proposed Plan.

Remedy Element		**Current Plan**	**Proposed Plan**
Remedial Action Level		1.0 ppm	1.0 ppm
Sediment Cleanup Goal for PCBs (SWAC) for OU 3 and 4		0.25 ppm	0.25 ppm
Dredging Volume removed		7.6 million cubic yards	3.5 million cubic yards
PCB Mass removed (kilograms)		18,400	13,700
Engineered Cap*		Allowed under contingent remedy	Allowed
Sand cover over sediments with PCB concentrations 1-2 ppm and 6-inches thickness or less that exceed Action Level		Not allowed	Allowed
Post-dredging sand cover in dredged areas if contaminants have PCB concentrations greater than 1 ppm		Required (as necessary to meet the SWAC)	Required (as necessary to meet the SWAC)
Estimated PCB concentration after remediation (see Table 3)	OU 3	0.31 – 0.57 ppm	0.28 - 0.49 ppm
	OU 4	0.32 – 3.7 ppm	0.25 – 2.9 ppm
Transportation of dredge slurry from dredge to land facility		In-water pipeline	In-water pipeline
Separation of water from sediments		Settling Basins	Mechanical presses
Transportation of contaminated sediment from a river-side dewatering facility to landfill for final disposal		Overland pipeline	Trucks
Disposal of dredged sediments		Contaminated sediments will go to a landfill that complies with all applicable federal and state laws and regulations	Contaminated sediments will go to a landfill that complies with all applicable federal and state laws and regulations
Institutional Controls until all goals are met		Required	Required
Long-term monitoring of biota and water until all goals are met		Required	Required
Dredging in Green Bay near mouth of river		Required	Required
Monitored Natural Recovery until contaminants are at acceptable levels		Required	Required
Long-term monitoring and maintenance of cap		Required for contingent remedy	Required

Fundamental change
Minor change

The proposed plan calls for the following modifications or clarifications to the current plan:

- **Dredging Method for TSCA-Level Sediment**. The Current Plan states that sediments subject to Toxic Substance Control Act ("TSCA") disposal requirements would be dredged using a mechanical dredge. The Proposed Plan would allow the use of either hydraulic or mechanical dredging, as determined during the Remedial Design (RD), because the Proposed Plan uses active mechanical dewatering that can accommodate both TSCA-level and non-TSCA sediments delivered by either type of dredge. (See Section 5.2.3 of the BODR; Shaw/Anchor 2006a)

- **Sediment Desanding**. The Current Plan describes a dredging remedy in which sediment would be removed from the river using a hydraulic dredge, dewatered, and disposed of in an upland disposal facility. The Proposed Plan is consistent with this basic approach; however, it also provides for a design decision regarding the separation of sand from the dredged sediment ("sediment desanding"). (See Section 4.3.1 of the BODR.) The separated sand may be beneficially used to the extent allowed by existing law and regulation for upland applications.

- **Sediment Dewatering and Transport Method**. The Current Plan states that dredged sediment would be transported via land-based pipeline to a passive dewatering facility located adjacent to the ultimate disposal site. The Proposed Plan, consistent with the Optimized Remedy, includes the use of mechanical dewatering at a staging area property in the vicinity of the river, followed by trucking to the EPA and WDNR-approved upland disposal location(s). (See Section 5.8 of the BODR)

- **Use of "Contingent Remedy" Provisions for Capping**. The Current Plan contemplates the use of engineered caps, subject to certain restrictions, as a "contingent remedy" to be allowed under specific conditions. The Proposed Plan, consistent with the Optimized Remedy, includes the use of engineered caps in certain areas, where permanent stability and performance can be assured, consistent with the contingent remedy provisions of the ROD. (See Section 5.3 of the BODR)

- **Use of Dredging/Capping Combinations**. Taking the contingent remedy provisions into consideration, the Current Plan allows certain areas of the river to be dredged or capped, but the Current Plan does not contemplate the possibility that certain areas might be dredged to an elevation above the 1 ppm depth of contamination and then capped. The Proposed Plan provides for the use of combinations of dredging and engineered capping in certain areas, as determined to be appropriate during RD, to make use of the strengths of both dredging and engineered capping. (See Section 5.2 of the BODR)

- **Criteria for Engineered Capping**.
    1. Depth Requirements for Areas to be capped. The Current Plan currently prohibits the placement of engineered caps in areas with a water elevation of less than three feet. Both the Current Plan and the Proposed Plan designs described in the BODR recognize that certain near shore areas of the river cannot be dredged without a risk of undermining the shoreline. (See Section 3.6.1 of the BODR.) In near shore areas that cannot be dredged for this reason, the Proposed Plan includes engineered caps (or, in appropriate areas, sand covers) that are determined during RD to be infeasible or impracticable to dredge.

    2. **Relationship of Capping Areas to Navigational Channel**. The Current Plan prohibits the placement of engineered caps within the navigational channel. The Proposed Plan includes the use of engineered caps within the horizontal boundary of the navigational channel in OU 4 where the top of the cap lies at least two feet below the elevation of the bottom of the authorized channel. The BODR recognizes that projects at other CERCLA sediment cleanup sites have allowed the use of engineered caps within the horizontal boundary of a navigational channel, as long as the engineered caps lie sufficiently below the vertical limits (i.e., authorized depth) of the navigational channel, with an adequate margin, to ensure that the caps are not dredged during future routine navigational dredging. (See Section D.1.1 of the BODR)

    3. **Use of Engineered Capping in Isolated Areas with Concentrations Greater than 50 ppm**. The Current Plan prohibits engineered capping of any sediment with PCB concentrations above 50 ppm. The Optimized Remedy includes a combination of dredging and engineered capping in a few discrete areas of the river where contaminated sediment is deeply buried or where the removal of the contaminated sediment would present side-slope stability concerns as well as in near shore areas if it is determined during Remedial Design that dredging these areas would be infeasible or impracticable. (See Section 5.3 of the BODR.) The Proposed Plan allows for engineered caps designed with a high factor of safety to ensure their long-term protectiveness would be applied to such areas, if they are identified.

    4. **Use of Engineered Capping Near Utilities and Infrastructure**. The Current Plan currently prohibits engineered capping of any sediment that is located near utilities or infrastructure in the river. Similar to the discussion above regarding near shore areas, the Optimized Remedy recognizes that dredging in the vicinity of

utilities and infrastructure can also present a risk to the utilities or infrastructure. (See Section D.1.2 of the BODR.) As a result, the Proposed Plan includes an option to use engineered caps in these areas, with specific actions near utilities and infrastructure to be determined on a case-by-case during Remedial Design.

- **Use of Sand Covers**. The Current Plan contemplated the use of a six-inch sand cover as a technique for managing dredging residuals; however, the Current Plan does not specifically refer to the use of sand covers in areas that will not be dredged. The Optimized Remedy recognizes that certain areas of the river have relatively thin layers of low-concentration sediment, the dredging of which would remove substantial volumes of sediment near or below the 1 ppm RAL and would provide little or no net environmental benefit. (See Section 5.4 of the BODR.) As a result, the Proposed Plan includes the use of sand covers, as an alternative to dredging, in areas where no more than one sediment sampling interval contains PCBs above 1 ppm and where the maximum PCB concentration is less than or equal to 2 ppm.

- **Demobilization and Site Restoration**. The Current Plan requires that all site equipment be removed at the end of construction of the remedy and all staging and work areas be returned, at a minimum, to their original condition. The Optimized Remedy includes certain improvements to the staging area (e.g., wharf construction) that could be left in place with the permission of the property owner. (See Section 5.8.5 of the BODR.) The Proposed Plan provides for a decision following completion of the remedial action that staging area improvements may be left in place with the consent of the property owner.

A comparison of the volumes of sediment dredged, the mass of PCBs remediated using the alternative methods, and the areas included in the alternative remedial methods are summarized in Table 2 below.

Table 2. Comparison of Remedy Volumes, Mass Removal, and Areas

	Contaminated Sediment Volume Addressed (cubic yards; cy)		Mass Removed (kilograms; kg)		Area Remediated (acres)	
OU 2 to 5 Remedial Action	**Current Plan**	**Proposed Plan**	**Current Plan**	**Proposed Plan**	**Current Plan**	**Proposed Plan**
REMEDIAL ACTION AREA TOTAL	7,600,000 [1]	7,200,000 [1]	18,400 (86% of 21,400 [2])	13,700 (64% of 21,400 [2])	1,170	1,170
Dredge/dispose	7,100,000 [3]	3,500,000 [4]	18,400 [5]	10,000 [5]	1,110	510
Engineered cap	500,000 [3]	2,100,000	0	0	67 [6]	335
Dredge and engineered cap	0	1,200,000 [4]	0	3,700 [5]	0	115
Sand cover over PCB concentrations 1-2 ppm	0	400,000	0	0	0	210

NOTES: [1] Both the Current Plan and Proposed Plan address all sediments containing PCB concentrations above 1 ppm. However, dredge and disposal volumes under the Current Plan include an additional 400,000 cy of "over-dredge" sediments containing PCB concentrations less than 1 ppm.

[2] As discussed in the BODR, the total estimated mass of PCBs within the OU 2 to 5 remedial action area (sediments greater than 1 ppm) is approximately 21,400 kg, based on analysis on over 10,000 samples collected in 2004/2005. Based on initial evaluations of the 1,300 samples available at the time of the Current Plan, the PCB mass within the OU 2 to 5 remedial action area was previously estimated to range from approximately 23,500 to 27,100 kg. The lower dry sediment density observed during the detailed 2004/2005 investigation (0.45 g/cm^3 versus 0.52 g/cm^3 assumed in the Current Plan) accounts for much of the apparent "reduction" of estimated PCB mass within the Lower Fox River, as discussed in the BODR. The Current Plan estimated a dredge volume of approximately 6.5 million cy; the current Current Plan estimate is approximately 7.6 million cy.

[3] If all sediments greater than 1 ppm could be dredged without impacting shoreline stability, the total dredge volume under the Current Plan would be approximately 7,600,000 cy. However, because of the thickness of some of the nearshore deposits, slope setbacks will likely be necessary to prevent undermining the shoreline, reducing the actual Current Plan dredge volume. Assuming a typical dredging offset of 75 feet from the shoreline to address this concern, approximately 500,000 cy of nearshore sediment deposits would likely be capped in place. Detailed inventories of shoreline features will be developed as the design progresses, and modifications will be made to the dredge prism to provide slope setbacks as necessary.

[4] The total dredge volume under the Proposed Plan is approximately 3,700,000 cy, including dredge-only and dredge-and-cap actions. Detailed shoreline surveys may result in modifications to slope setbacks and the associated dredge prism.

[5] Incorporates a mid-range estimate of 5 percent of the dredged PCB mass retained in the dredge prism area due to generated dredge residuals.

[6] Assumes Current Plan (i.e.,ROD) contingency would not be implemented, but engineered capping would be performed in areas where dredging is impracticable (e.g., nearshore areas; see footnote #3).

Design Considerations for Proposed Plan

The BODR describes specific design and engineering considerations for the components of the Proposed Plan. The changes discussed below were developed in order to be consistent with EPA's *Contaminated Sediment Remediation Guidance for Hazardous Waste Sites,* December 2005.

Engineered Cap

Under the Proposed Plan, capping would be done both in areas that have been dredged and in areas with no dredging. Caps would only be placed where stability and performance can be assured and without affecting flood capacity and recreational or navigational use of the river. Gravel and armor stone are designed to maintain cap stability during high flow events and to resist movement under the forces associated with propeller wash. Design considerations include ensuring that caps would remain stable during large storm events and wind-induced waves, would be sufficiently resistant to propwash, and not be placed in areas with potential for ice scour. The cap thickness and placement (Table 3) are consistent with EPA and U.S. Army Corps of Engineers guidance to ensure permanence and protection of human health and the environment. These design elements meet the standards described in the EPA guidance document for physical isolation, stabilization/erosion protection, and chemical isolation. Other factors discussed in the guidance and also considered in this proposal include sediment characteristics, waterway uses and infrastructure, and habitat alterations.

Sand Cover

A 6-inch sand cover would be placed over certain areas that have low PCB concentrations and thicknesses to ensure protectiveness. Sand covers would be placed over approximately 18% of the total remediation area (see Table 2) and would not be placed in high flow areas. Specifically, this sand cover would be placed where:

- Contaminated sediments are less than 6-inches thick, and
- Concentrations are 1.0 – 2.0 ppm.

The mass of PCBs that would be remediated in this manner would be relatively small and would be used to remediate concentrations only slightly above the Action Level of 1.0 ppm.

Mechanical Dewatering

The Current Plan envisioned dewatering using large settling basin(s) with an approximately 13-mile pipeline that would transfer the dredge slurry to them. As part of the Proposed Plan the Agencies are now accepting the use of mechanical

dewatering (e.g., presses or belt filters) and trucking the sediment to an approved facility. While this is a change to the Current Plan, it is considered to be a relatively minor technical change. At the same time the Agencies recognize that trucking sediments may be of concern to communities. Thus, community outreach activities will inform the community regarding the trucking. However, trucking of dewatered contaminated sediments will replace the need for an approximately 13-mile pipeline and will allow greater flexibility regarding the final disposal location.

Advantages of mechanical dewatering and trucking rather than using a pipeline to settling basins are described in a U.S. EPA Memorandum, March 30, 2006, summarized as follows:

1) Lower disposal volumes (and costs),
2) Ability to separate and beneficially re-use cleaner sands,
3) Allow separation of TSCA and non-TSCA material,
4) Continuous flow in the pipeline not necessary (avoiding maintenance issues due to pipeline blockages),
5) Less intrusive to landowners adjacent to the pipeline,
6) Conventional equipment and existing facilities and less new construction,
7) Phase 1 remediation expedited.

TABLE 3. Summary of Cap and Cover Designs.

Description		Minimum post-cap/cover water depth	PCB concentration in current 0 – 1.5-ft. interval	Area covered by cap or sand cover
Cap	6-inches of sand* and 7-inches of gravel	3 feet	<10 ppm	352 acres
	9-inches of sand[1] and 7-inches of gravel	3 feet	10 – 50 ppm	21 acres
	15-inches of sand[1] and 18-inches of quarry spall[2]	3 feet	10 -100 ppm	8 acres (OU 4B navigation channel only)
Cover: 6-inches of sand		Varies	1.0 - 2.0 ppm	213 acres
		Varies	Dredge residuals	Dredged areas as necessary to meet cleanup goals (maximum of 510 acres)

Notes:
[1] Assumes lowest 3-inches would mix with underlying contaminated sediment, and the upper portion of the sand layer would contain contaminants.
[2] Large angular stone from rock quarries.

Comparative Analysis of Proposed Plan and Current Plan

Threshold Criteria

Protection of Human Health and the Environment

The Proposed Plan would achieve a lower SWAC than the Current Plan after construction due to having fewer areas with dredging residuals (Table 4). Both remedies would be fully protective 20-60 years after remediation, depending on the receptor. These estimates are based on computer modeling predictions that suggest concentrations in surface water and fish will steadily decline after implementation of the remedies. The Proposed Plan would meet these standards more quickly as it would have a lower SWAC after completion of construction activities. For the Proposed Plan an important part of ensuring protectiveness is long term monitoring and maintenance of the caps. While it is believed the caps should be stable and effective in containing the contaminants, monitoring is the "fail-safe" mechanism to inform the agencies that additional actions may be required.

TABLE 4. Estimated Current Plan and Proposed Plan SWACs

Operable Unit	Existing SWAC	Current Plan SWAC		Proposed Plan SWAC	
		No post-dredging sand cover	Post-dredging sand cover	No post-dredging sand cover	Post-dredging sand cover
3	2.0	0.57	0.31	0.49	0.28
4	3.2	3.7	0.32	2.9	0.25

Compliance with Applicable or Relevant and Appropriate Requirements

Both the Current Plan and the Proposed Plan meet all ARARs. The Proposed Plan has additional ARARs related to capping that will be met, including Section 10 of the Rivers and Harbors Act (22 CFR 403), and Riparian rights (WI Statutes Chapter 30).

Balancing Criteria

Long-term Protectiveness and Permanence

Both the Current Plan Remedy and the Proposed Plan meet the long-term protectiveness and permanence requirements of the NCP. They do however, require Institutional Controls (i.e., Fish Consumption Advisories until remedial objectives are met). The Proposed Plan relies on additional monitoring and

maintenance of cap areas. Sediment treatment is not a major component of either remedy.

Reduction of Toxicity, Mobility, and Volume through Treatment

Both the Current Plan and the Proposed Plan reduce contaminant mobility by either containment or removal and containment. However, neither plan includes treatment.

Short-term Effectiveness

Both the Current Plan and the Proposed Plan are effective in the short-term. The evaluation of the Current Plan in the BODR indicates that it may take 15-24 years to be completed, depending on viability of operating two dredges and time needed to obtain pipeline easements, and to meet landfill disposal requirements. The Proposed Plan may have a shorter project duration, with an estimate of 9 years. If time estimates are accurate, the Proposed Plan would therefore have a shorter period of water quality and other construction-related impacts and would achieve a protective remedy sooner.

Implementability

Services, materials and equipment would be locally available for both the Current Plan and the Proposed Plan. However due to the larger volumes, multiple landfills are required for the Current Plan, whereas there are single landfills with sufficient capacity needed for disposal under the Proposed Plan. Additionally, obtaining necessary pipeline easements (e.g., at road crossings) and operation of two dredges feeding a common pipeline for the Current Plan would also present some uncertainties. The smaller volume needed for disposal of contaminated sediment under the Proposed Plan and not having to have the landfill near the pipeline route would provide for greater flexibility for locating a landfill for disposal of dredged contaminated sediments under the Proposed Plan.

Cost

Table 5 below summarizes costs as presented in the BODR for the Current Plan and the Proposed Plans. The June 2003 ROD cost estimate for the Current Plan was $325 million. The cost estimate made in the BODR based on the new data and more detailed evaluations for the Current Plan is $580 million, thus indicating a cost increase of approximately $255 million.

Table 5. Comparative Costs of the Current and Proposed Plans

Item	Current Plan [a]	Proposed Plan [a]
Mob/Demob - Site Prep	$ 64,104,000	$ 44,496,000
Debris Removal/Dredging	$ 132,570,000	$ 37,520,000
Dewatering [b]	$ 126,308,000	$ 105,177,000
Disposal [c]	$ 125,657,000	$ 91,355,000
Capping/Sand Cover	$ 4,260,000	$ 32,340,000
Residuals Cover [d]	$ 17,875,000	$ 10,795,000
Beneficial Reuse	$ 25,460,000	$ 6,150,000
Construction Monitoring [e]	$ 50,160,000	$ 37,160,000
Design and Support [f]	$ 24,890,000	$ 19,670,000
Capital Costs [g]	*$ 571,284,000*	*$ 384,663,000*
Present Worth of Long-Term Monitoring and Maintenance [h]	$ 8,020,000	$ 5,640,000
Total Project Cost [i]	***$ 579,304,000***	***$ 390,303,000***
Average Annual O&M Costs (Years 1-10) [j]	*$ 467,819*	*$ 602,007*

Notes:

a. All costs in 2005 dollars, except as noted.
b. Includes construction of the NR 213 settling basin under the Current Plan. Does not include the cost of amendments that may be needed to achieve physical strength characteristics required for landfill operations.
c. Includes construction of the NR 500 disposal facility under the Current Plan.
d. Area requiring residuals cover will be determined based on post-construction sampling, but estimated here based on areas expected to have post-dredge surface concentrations exceeding 1 ppm, assuming a mid-range estimate of 5 percent of the dredged PCB mass retained in the dredge prism area due to generated dredge residuals.
e. Includes construction monitoring and surveys, and remediation contractor's construction management.
f. Includes engineering and remedial design costs, construction work plan development, and Respondent's construction management and oversight.
g. Includes all costs except long-term operations, monitoring, and maintenance costs.
h. Includes long-term monitoring of surface sediment, water quality, and fish tissue. Also includes long-term monitoring and maintenance of caps under the Current Plan (shoreline areas only) and Proposed Plan. Also includes maintenance and monitoring of the NR 500 disposal facility constructed under the Current Plan. Long-Term Monitoring and Maintenance costs are based on net present value in accordance with NCP (55 FR 8722) and USEPA 1993, 2000.
i. Includes capital costs in 2005 dollars and present worth of Long-Term Monitoring and Maintenance costs over 100 years.
j. Average annual Long-Term Monitoring and Maintenance cost (in 2005 dollars) over first 10 years following completion of construction, including monitoring of caps, surface sediment, WQ, and fish tissue; cap maintenance; and operation, monitoring, and maintenance of the NR 500 disposal facility (Current Plan only). Actual costs will vary from year to year based on monitoring schedules, maintenance needs, etc.

As indicated in the above table based on new information and more detailed design considerations, the Current Plan cost estimate is $189,001,000 more than the Proposed Plan. Thus, the Proposed Plan which achieves the same remedial action objectives as the Current Plan is more cost effective.

Agency Acceptance

Proposed Plan changes are contingent upon acceptance by WDNR (Wisconsin Department of Natural Resources) and U.S. EPA.

Community Acceptance

This will be evaluated during the public comment period for this Proposed Plan.

Summary of the Comparative Analysis

Although the Current Plan and Proposed Plan have a different mix of technologies, they both are protective of human health and the environment and comply with ARARs identified for this site. The Agencies believe that the Proposed Plan can achieve lower a SWAC and reach the final fully protective levels sooner than the Current Plan. Both remedies provide comparable long-term and short-term effectiveness, permanence and reduction of toxicity, mobility and volume.

The Proposed Plan may be completed in a more timely fashion than the Current Plan, with fewer short term impacts and therefore may achieve acceptable fish tissue concentrations more quickly (in addition to achieving a lower SWAC after construction is completed).

The Proposed Plan is more implementable than the Current Plan as it has fewer uncertainties, particularly relative to transportation of the dredge slurry via a pipeline to settling basins and in getting a landfill for disposal of dredged materials.

Finally, the Proposed Plan is more cost-effective than the Current Plan.