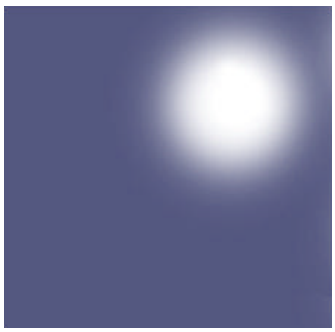
Cost Analysis
Ecosystem-Based Rehabilitation Plan

Lower Fox River Site, Wisconsin

January 17, 2002



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1.0 Introduction

Project Control Companies, Inc., (PCC) has developed a cost estimate, schedule and a cash-flow analysis for remediation of the Lower Fox River Site that are based on the Ecosystem-Based Rehabilitation Plan (Rehabilitation Plan) (December 20, 2001) prepared by a panel of experts with assistance from The Johnson Company, Inc. This report summarizes how PCC performed the cost analysis, and describes the attached spreadsheets and schedule that PCC developed to estimate the costs and to calculate the cash flow for implementing the Rehabilitation Plan.

1.1 Organization of this Report

The following sections of this narrative summarize:

- the methodology for developing the cost estimate and schedule;
- the key factors of the cost estimate and schedule;
- the major assumptions upon which we developed the estimated costs and schedule; and
- the estimated costs and schedule.

Sections 2 through 5 contain full backup that supports the assumptions upon which we developed the estimated costs and schedule for completing the Rehabilitation Plan. These sections lead from the base unit definitions, underlying rates of work, base unit costs through verification of costs and rates with vendors and culminate in the full line-item estimated costs, full-project schedule and annualized cash-flow analysis.

Section 2 provides a narrative of the major assumptions upon which we built the schedule and cost estimate.

Section 3 provides spreadsheets on which we calculated the total costs for the Rehabilitation Plan as well as the annualized cash flows in 2001 dollars and inflated over the duration of the entire project. In addition, we have summarized these costs by reach.

Section 4 contains the estimated schedule for the Rehabilitation Plan. This is in Gantt Chart critical-path format. The schedule also contains the total costs for each appropriate line item.

Section 5 provides backup and communications regarding the applicability and rates for state and county property tax and state sales and use tax.

1.2 Methodolgy for Developing the Cost Estimate and Schedule

The cost estimate and schedule are robust and transparent. We created them as if we were commissioned to implement the work as overall project managers and, as such, to bear the responsibility for the financial success of the project. We developed the cost estimate by following these major steps.

- identify the problem—what is wrong, what needs to be fixed;
- identify and retain critical resources—the Expert Panel, the Peer Reviewers, and the Wisconsin Experts; these are the people with the requisite high level of training and experience needed to refine the understanding of what is wrong and to develop the best means to fix what is wrong;
- build the project conceptually—create, in thorough detail, the means by which we would remediate the problem given the information available including issues such as pre-construction tasks and non-remediation tasks;
- develop the task listing and schedule—list all the tasks and the discrete steps and functions that make up each task in the order in which they must be performed to complete the project, determine critical-path sequence and tasks that can be run in parallel;
- develop units and unit costs—the units, both type and number, fall out of the task listing; and
- validate the unit costs and rate of performance with suppliers—use actual experience to validate the assumptions.

Ultimately, this process produces a completely transparent and flexible baseline cost estimate and schedule. That is, anybody can determine readily how we arrived at each

assumption, see what is the impact of each assumption, and refine the cost estimate and schedule with updated information. In addition, this detailed method produces a cost analysis that is fully suitable to be 'flipped' into a budget for managing the physical and financial implementation of the remediation designed by the experts.

1.3 Key Factors of the Cost Estimate and Schedule

The following are some key factors of how we prepared the estimated costs and cash flow. All base-line-item costs were created in 2001 dollars. The schedule was created by line item. The schedule was applied to the cost to create an annualized cash flow. We used an inflation rate of 2% based on both historical trends and forecasts provided by the Wisconsin Department of Revenue (WDoR), the U.S. Office of Management and Budget (OMB), and the Engineering News Record (ENR). We used this inflation rate to forecast costs in the cash-flow analyses. To estimate current unit costs in instances where we were able to locate only unit costs from years before 2001, we used an inflation rate of 3.25%, which approximates the Consumer Price Index (CPI) for 2000. We have performed only inflated cash-flow analyses—no present value analyses—because we are most concerned with actual payouts over the course of the project.

We have not included in the cost estimate the traditional last line-item additive percentage contingency for several reasons. We have purposely selected rates of work, unit costs and quantities that are conservative. The length of the schedule makes it likely that conditions in the river will continue to improve. It is highly unlikely that the capping areas will expand unless the underlying criteria for capping are changed. We have endeavored diligently to include all likely tasks—that is, we are not trying to cover, with an arbitrary contingency, something we might have inadvertently left out. Therefore, we feel that an arbitrary additive contingency would compound the conservative nature of this estimate unnecessarily. Most importantly, the size and the duration of the project and the sensitivity of the cost and schedule to the assumed basic rates, such as the rate at which capping can be performed, and assumed durations, such as the 40-year post-remediation long-term monitoring, indicate that sensitivity analyses performed based on varying these rates and durations would be far more instructive for determining how costs would change—up or down—rather than arbitrarily increasing the estimated cost by 20 to 30 percent, which are typical additive contingency factors.

1.4 Summary of Major Assumptions

This section summarizes the major assumptions for estimating the cost and schedule that we describe, in detail, in Section 2. This section provides an overall understanding

of the features of the proposed remedy that have the greatest bearing on the overall estimated cost and schedule.

Order of Construction

We based the estimate on an order of construction that would provide for a reasonable time frame, ten years, for completion of the constructed portion of the remedy, capping and habitat improvements, and would moderate the impact of the necessary heavy construction on the river and on the neighboring communities. To accommodate these conflicting objectives, we started the construction in Reaches 1 and 4A at the same time and ran their work in parallel. We estimated that the construction in Reach 1 would take four construction seasons, which we estimated to run from April 1 to October 30. Reach 3 would begin the following season and would take 2 seasons. We estimated that the construction in Reach 4A would take ten seasons. Therefore, construction would proceed in both Reaches 1 and 4A for the first four seasons, followed by two seasons of construction in both Reaches 3 and 4A, and wind up with four seasons in Reach 4A alone.

Capping and Habitat Improvements

These construction tasks require shipping large volumes of sand, crushed stone, and topsoil from their sources to the reaches where they will be placed. We have conservatively assumed that these materials will be trucked to separate staging areas on Reaches 1, 3 and 4A, which will be purchased, improved for the intended purpose, and restored. From these staging areas, the capping and habitat improvement materials would be transported by barge and placed by conveyor on the river bottom.

Sediment and Water Quality Monitoring

The estimate includes costs for: a comprehensive pre-design investigation consisting of sampling and analysis of water, sediment and fish before construction for design purposes; continuing but less intense sampling and analysis during the design phase until the start of construction; sampling and analysis during construction to monitor for changes brought about by construction; and long-term monitoring in each reach for 40 years after the completion of construction. We have conservatively included analyzing the referenced media for the chemicals of potential concern that are listed in the draft Feasibility Study. The long-term monitoring program assumes that the frequency of sampling will decrease from annually in the first five years to three events for years five through ten and ultimately to one event every five years after the completion of all

construction. The monitoring events have been scheduled to coincide with the years on which the five-year reviews of the remedy would be required.

Management and Design

To facilitate the financial analyses, we have drawn on level-of-effort percentages of the cost of the construction work to determine estimated costs for: remedial design; permitting; construction oversight; project management; and technical support. We have taken the assumed percentages from industry recognized sources and EPA guidance. We have adjusted these percentages to reflect the scale, complexity and peculiarities of the site and the project. In addition, we have completed the assumed rates for labor and equipment with percentages typically charged by a prime contractor for overhead and profit based on the same sources.

WDNR and EPA Costs for Oversight

We have included estimated costs for WDNR and EPA oversight of all phases of the work from pre-design tasks through long-term monitoring. These costs were estimated based on the nature of the tasks, the schedule, EPA guidance and published government pay scales.

Navigational Dredging

We have included costs for the tipping fees for spoil derived from the navigational dredging in Reaches 1 and 4, which the U.S. Army Corps of Engineers (COE) routinely performs, and for what we have assumed to be necessary to rehabilitate the various locks in the Lower Fox River based on an Environmental Impact Statement entitled "Disposition of Fox River Project, Wisconsin Navigation Portion" (COE, 1997). We have also included costs for annual leachate collection and analysis at the Bayport disposal facility. We have initiated incurring these costs in 2003, and have carried them through the cost estimate as a separate line item. We have not included the tipping fees in estimating the costs for the above-described level-of-effort tasks. We have included, however, project management costs only on top of these tipping fees to account for their payment.

Costs Not Included

We have not included costs for: the ongoing negotiation with the agencies; any attorneys' or other fees not directly related to the implementation of the Rehabilitation Plan by outside scientific and engineering consultants, laboratories and construction

contractors and their suppliers. In addition, we have not included NRD or past costs. This cost estimate starts with the Remedial Design that would be required under a consent decree. No costs were included for the recently published Draft RI/FS, risk assessments, and Preferred Remedial Action Plan (October, 2001).

Schedule

We generated the critical-path schedule on the software Microsoft Project. The internal calendar in Microsoft Project stops at year 2049. We have included, however, the years beyond 2049 in our cash-flow analyses. In addition, the schedule notes where long term monitoring extends beyond 2049. The costs associated with long term monitoring in the schedule are for the full 40-year period.

1.5 Summary of the Estimated Costs and Schedule

Table 1 lists for each task or Reach the estimated: duration of construction; end of 40 years of post-construction long-term monitoring; and costs in current dollars and inflated over the estimated duration of the project at an assumed annual rate of 2%. The 40-year long-term monitoring period is approximate. To achieve synchronization of the five-year long-term monitoring events and the five-year review cycles among all of the reaches, we compressed some of the initial sampling events to occur in less than five years. We preserved the same number of sampling events but reduced, in some cases, by several years the nominal 40-year post construction period.

Table 1
Summary of Schedule and
Estimated Costs

Task / Reach	Construction Duration	Termination of 40-years LTM	Cost in 2001 Dollars	Cost Inflated at 2% p.a.
Pre-Construction: Approval of RD Final Design; bid and award	2001-2007	N / A	N / A	N / A
Reach 1: staging area prep. to completion of capping and wetland construction	2007-2011 4 seasons	2051	$64,700,000	$81,200,000
Reach 2: all monitoring	N / A	2051	$10,400,000	$16,800,000
Reach 3: staging area prep. to completion of capping	2012-2013 2 seasons	2053	$32,900,000	$45,500,000
Reach 4A: staging area prep. to completion of capping and wetland construction	2007-2017 10 seasons	2057	$107,100,000	$139,600,000
Reach 5: all monitoring	N / A	2057	$22,300,000	$38,100,000
Navigational Dredging	N / A	N / A	$28,300,000	$34,300,000
Totals	N / A	N / A	$265,700,000	$355,500,000