## Richard, Philip E - DNR

**From:** LindaB Martin [Martin.LindaB@epamail.epa.gov]
**Sent:** Wednesday, March 14, 2012 12:30 PM
**To:** Richard, Philip E - DNR
**Subject:** Copy of the Penta wood CH2Mhill work plan
**Attachments:** WA 132 Penta Wood Work Plan Text.pdf

Hi Phil, Here is work plan currently in place that outlines the work CH2Mhill is doing. Let me know if you have any questions. Thanks LM

*(See attached file: WA 132 Penta Wood Work Plan Text.pdf)*

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# WORK PLAN

## PENTA WOOD PRODUCTS SITE
Town of Daniels, Wisconsin

Long-Term Remedial Action

WA No. 132-LRLR-05WE / Contract No. EP-S5-06-01

April 28, 2011

# Contents



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# Acronyms and Abbreviations

| | |
|---|---|
| LOE | level of effort |
| LNAPL | light nonaqueous phase liquid |
| LTRA | Long-Term Remedial Action |
| O&M | operation and maintenance |
| PCP | pentachlorophenol |
| PWP | Penta Wood Products |
| QAPP | quality assurance project plan |
| QC | quality control |
| ROD | Record of Decision |
| SOW | Statement of Work |
| WA | Work Assignment |

SECTION 1

# Introduction

This Work Plan presents the scope of work and the estimated level of effort (LOE) hours and cost to implement the Long-Term Remedial Action (LTRA) activities at the Penta Wood Products (PWP) Site in Siren, Wisconsin. It is being submitted pursuant to the Statement of Work (SOW) for Long-Term Response Action dated March 15, 2011. The work is being conducted in accordance with Work Assignment (WA) No. 132-LRLR-05WE under Contract No. EP-S5-06-01.

CH2M HILL has been responsible for the control of government property under WA No. 004-LRLR-05WE for the Base Period of the RAC2 Contract. Upon approval of this Work Plan by USEPA, the current property will be transferred to the new WA number under the Option Period of the RAC2 Contract.

## Project Background

PWP is located on Daniels 70 (formerly State Route 70) in the Town of Daniels, Wisconsin. The 82-acre site is located in a rural agricultural and residential setting, and is bordered to the east, west, and north by forested areas, some of which are classified by the State of Wisconsin as wetlands. With the exception of an 8-acre parcel, Daniels 70 forms the southern property boundary.

PWP operated from 1953 to 1992. Raw timber was cut into posts and telephone poles and treated with either 5 or 7 percent pentachlorophenol (PCP) solution in a No. 2 fuel oil carrier, or with a waterborne salt treatment called Chemonite consisting of ammonia, copper oxide II, arsenate, and zinc. During its 39 years of operation, PWP discharged wastewater from an oil/water separator down a gully into a lagoon on the northeast corner of the property. Process wastes were discharged onto a wood chip pile in the northwestern portion of the property.

The following items of the selected remedy were completed in 2000:

- Segregation, select solidification, and placement of arsenic-contaminated soils in an onsite Corrective Action Management Unit.
- Consolidation of PCP fuel oil soils and wood chips in the Corrective Action Management Unit under a soil cover.

The following items of the selected remedy are ongoing:

- Bioventing PCP/fuel-oil-contaminated material.
- Removal of light nonaqueous phase liquid (LNAPL).

- Containment, collection, treatment, and discharge of grossly contaminated groundwater (exceeding 1,000 micrograms per liter PCP) in accordance with the February 2005 Quality Assurance Project Plan (QAPP).
- Monitored natural attenuation of groundwater contamination.

# Approach

The LTRA activities will be conducted in accordance with the final operation and maintenance (O&M) plan dated November 2005 and consistent with the Record of Decision (ROD) issued in September 1998 and other guidance used by USEPA in conducting an LTRA. Specifically, the LTRA includes the following components:

- Operation and maintenance of the groundwater and LNAPL extraction and treatment system and bioventing system.
- Sampling and analysis of the influent to and effluent from the groundwater treatment facility to monitor process performance, and demonstrate that the facility meets the water quality discharge standards described in the *Substantive Requirements of a WPDES Permit (WPDES Permit No. WI-0061531-01-0)* document issued by the Wisconsin Department of Natural Resources.
- Measurement of the groundwater elevations in the groundwater monitoring wells to assess if the groundwater extraction system is creating adequate drawdown of the groundwater surface to meet the goals of the ROD (for example, capture groundwater contaminant plume, expose the LNAPL smear zone).
- Sampling and analysis of groundwater monitoring wells to track the extent of contamination and monitor cleanup.
- Sampling and analysis of soil gas and soil to monitor oxygen uptake and contaminant reductions in soils resulting from bioventing system operation.
- Sampling and analysis of residential wells to monitor water quality at these locations.

The systems will be operated to achieve the following performance goals for this site:

- Remove LNAPL, to the extent practicable, to reduce a source of PCP to the groundwater.
- Lower the water table, to the extent practicable, to allow bioventing to promote natural degradation of the residual diesel fuel petroleum hydrocarbons and PCP in the LNAPL smear zone.
- Contain, collect, and treat the most concentrated portions (exceeding 1,000 micrograms per liter PCP) of the PCP groundwater plume and reduce the concentration to a level that allows natural attenuation to achieve the NR 140 standards in a reasonable period of time.
- Comply with discharge standards.

The treatment system operations will continue full-time operations through the third quarter of 2012 to maximize LNAPL recovery from three new extraction wells that were

integrated into the system in March 2011. In fourth quarter 2012, the treatment system operations will be systematically shut down and the plant will be winterized. The system will be restarted in the spring of 2013 following completion of the semiannual groundwater sampling event. A second winter shutdown will occur in the fourth quarter of 2013 and the system restarted following the 2014 semiannual groundwater sampling event.

Following a 10-year LTRA period, the State of Wisconsin will take over O&M of the site. USEPA certified the treatment plant operational and functional on August 12, 2004; therefore, the State of Wisconsin will take over O&M of the site in August 2014. The goal is to transition the site activities over the State of Wisconsin and complete all technical activities and closeout activities for this WA by March 2015.

SECTION 2

# Scope of Work and Task Descriptions

The following is the work breakdown structure through the 49-month period of performance—March 15, 2011, through March 2015.

## Task 1—Project Planning and Support (PP)

The project planning task includes activities for initiating, managing, and controlling the overall project. Efforts for the planning activities were initiated under the interim authorization.

### Subtask 1.1—Work Plan (PP.01)

The total estimated LOE for Subtask 1.1 is 120 hours, as described below.

#### Participate in a Kickoff Conference Call

Per discussion with the work assignment manager, a kickoff conference call was not necessary for the preparation of the work plan; therefore, no LOE was included in the work plan for this task.

#### Review of Background Documents

The key members of the project team are familiar with the site reports, ROD, and design documents, and no LOE hours are needed for the review of background documents.

#### Conduct Site Visit

A site visit is not included in the budget to develop the work plan. The visit is not necessary because the same core CH2M HILL project team proposed for this WA has worked on previous WAs for the site.

#### Work Plan

This work plan describes and defines CH2M HILL's technical approach and estimated cost to accomplish the LTRA in accordance with the SOW. The work plan includes project tasks, procedures to accomplish them, deliverables, a project schedule, and key personnel supporting the WA. The LOE expended for project setup, identifying the team members, conducting an initial project team meeting, developing the delivery strategy and schedule, and preparing the work plan was 90 hours.

#### Attend Fact-Finding/Negotiation Meeting

As directed, CH2M HILL staff members (project manager, site manager, and assistant site manager) will participate in a 1-hour work plan fact-finding/negotiation teleconference meeting with USEPA. The meeting will be held to discuss and agree upon the final technical approach and costs required to accomplish the tasks outlined in the SOW. A total of 6 LOE hours have been estimated for this activity: 3 LOE hours to review comments and submit responses to comments before the call, and 3 LOE hours for the conference call.

### Prepare and Submit Revised Work Plan

CH2M HILL will prepare and submit a revised work plan, incorporating the agreements made in the fact-finding/negotiation meeting. A total LOE of 24 hours is estimated to prepare the revised work plan.

### Provide a Conflict of Interest Disclosure

There have been no changes in stakeholders for the site since the previous WA; therefore, an updated conflict of interest disclosure will not be necessary.

## Subtask 1.2—Site-Specific Plans (PP.02)

The site-specific plans will be reviewed to determine if revisions to the plans are necessary. The plans to be reviewed include:

- Site Management Plan
- Sampling and Analysis Plan that includes:
  - Field Sampling Plan
  - QAPP
- Site-Specific Health and Safety Plan

It is assumed these four site-specific plans will require updating. Revisions to the QAPP will not include reformatting of the document in accordance with the Uniform Federal Policy format. The estimated LOE to review and revise each document is 20 hours. The total LOE for Subtask 1.2 is 80 hours.

## Subtask 1.3—Pollution Liability Insurance (PP.LI)

The portion of the Consultant's Environmental Liability Insurance or Pollution Liability Insurance premium applied to this WA is estimated based on the current year rate. The actual premium cost will be allocated to the WA annually.

## Subtask 1.4—Project Management and Reporting (PP.04)

Activities performed under this subtask involve general WA management and coordination tasks that include managing and tracking of costs, preparing monthly progress reports, attending project meetings, and preparing and submitting invoices. Project management has been budgeted for a performance period of 49 months from March 15, 2011, through March 2015.

### Monthly Project Management and Reporting

CH2M HILL will provide general WA management and coordination to implement the WA SOW. CH2M HILL will prepare monthly progress reports in accordance with the requirements under the contract. An estimated 24 LOE hours per month is allocated for project management and is further broken down as follows for the duration of the WA: 12 LOE hours for the site manager, 1 LOE hour for the assistant site manager, 1 LOE hour for the review team leader or project manager, 1 LOE hour for editing, 3 LOE hours for property control reporting, 3 LOE hours for project accounting, and 3 LOE hours for the project controls technician. The total estimated LOE for this activity is 1,176 hours.

### Progress Meetings

CH2M HILL will participate in progress meetings during the course of the WA. In accordance with the SOW, two CH2M HILL staff members will participate in progress meetings by teleconference. It is assumed that progress meetings will occur quarterly throughout the performance period. The estimated LOE for each of the meetings is 2 hours per person (1 hour for preparation, 1 hour for the meeting). Based on 16 meetings, the total estimated LOE for this activity is 64 hours.

The total estimated LOE for Subtask 1.4 is 1,240 hours.

### External Audits or USEPA-Held Training

No LOE is budgeted for these activities at this time.

## Subtask 1.98—Program Support Allocation (PP.PS)

CH2M HILL will be allocating ongoing program support costs monthly to the individual site-specific WAs based upon the cost expended during that month. In the Executive Summary, CH2M HILL will report the ongoing program support costs and how they were allocated. This is in accordance with the Forward Pricing Rate Agreement for USEPA Project Management Office allocation.

# Task 3—Procurement of Subcontracts (PB)

CH2M HILL will solicit, evaluate, select, and award the subcontracts to implement the LTRA. It is anticipated that a total of 20 subcontracts will be managed during the 4 years of the LTRA. CH2M HILL has assumed 10 competitive bid subcontracts and 6 sole-source subcontracts as listed below. For budgeting purposes, an additional 4 competitive bid subcontracts will be procured and managed during the 4-year period. The anticipated subcontracts will be for the following services:

**Competitive Bid Subcontracts:**

- Carbon Changeout Service
- Hazardous Waste Disposal Services
- Analytical Services
- Solid Waste Disposal
- Propane Supply
- Chemical Supply
- Emergency Maintenance and Electrical Support
- Landscaping Service
- Site Civil Service (Erosion Repair)
- Soil Sampling

**Sole Source Subcontracts:**

- Diatomaceous Earth Supply
- Polymer Supply
- Monitoring Well Pumps Supply
- Rotary Drum Vacuum Filter (RDVF) Maintenance Service
- Annual Air Compressor and Air Dryer Service
- Groundwater Extraction Pump Replacement

Additional 60 LOE hours were expended to transfer eight subcontracts from the Base Period WA to the Option Period WA. Six subcontracts (laboratory, waste disposal, solid waste disposal, DE supply, chemical supply, and propane supply) were extended until the procurement activities for these subcontracts could be completed. The remaining two subcontracts (tree planting and surveying/site restoration) were procured during the Base Period; however, the work will be implemented during the Option Period. These two subcontracts, therefore, also required a transfer to the Option Period.

### Prebid (Presolicitation) Activities

The total estimated LOE to complete the prebid activities is 752 hours and involves the following activities:

- **Prepare, duplicate, and distribute contract documents**—CH2M HILL estimates 20 hours will be required to prepare and distribute subcontract packages and to develop and screen a list of qualified subcontractors for each of the 14 competitive bid subcontracts and 10 hours to prepare and distribute subcontract packages for each of the 6 sole-source bid subcontracts, for a total LOE of 340 hours.
- **Solicit bids**—CH2M HILL estimates 6 LOE hours will be required for soliciting each subcontract, for a total of 120 LOE hours.
- **Resolve inquiries/issue addenda**—CH2M HILL estimates that 10 hours will be required to resolve bidder inquiries, document contact with potential bidders, and issue amendments to contract documents for each subcontract, for a total LOE of 200 hours.
- **Attend prebid (presolicitation) meetings**—CH2M HILL will arrange and attend a prebid meeting to provide clarification on plans, scope of work, and contract documents to potential bidders for four subcontracts (Carbon Changeout Service, Hazardous Waste Disposal, Emergency Maintenance and Electrical Support, and Soil Sampling). For budgeting purposes, CH2M HILL assumes that two CH2M HILL staff members will participate in each of the prebid meetings with travel from Milwaukee to the site. The estimate assumes that multiple meetings will be conducted on the same day for the bidders. It is assumed that one 2-day prebid meeting and one 1-day prebid meeting will be held onsite. The estimated LOE associated with the 2-day prebid meeting is 28 hours, including travel for each staff member for a total estimated LOE of 56 hours. The estimated LOE associated with the 1-day prebid meeting is 18 hours, including travel for each staff member for a total estimated LOE of 36 hours. The total estimated LOE for prebid meetings is 92 hours.

### Pre-award Activities

The estimated LOE to complete the pre-award activities is 380 hours and includes the following activities:

- **Receive and review bids (offers).** CH2M HILL estimates 12 hours for each subcontract will be required to review, compile, and evaluate the bids, for a total LOE of 240 hours.

- **Request and review follow-up items from responsible bidders (offerors).** CH2M HILL estimates 2 hours for each subcontract will be required to identify and request follow-up items from the responsible bidders, for a total LOE of 40 hours.
- **Perform review of equal employment opportunities, minority business enterprise requirements, and small disadvantaged business subcontracting plans.** CH2M HILL estimates that 2 hours for each subcontract will be required to review the bidder's plans for completeness, for a total LOE of 40 hours.
- **Advance notification submittal to or request consent from USEPA.** CH2M HILL estimates that 1 hour for each subcontract will be required to submit to USEPA advance notification of the intent to award subcontracts in accordance with Federal Acquisition Regulation 52.244-2, for a total LOE of 20 hours.
- **Award subcontract and issue notice of award.** CH2M HILL will award the subcontract and notify the bidders of the award. CH2M HILL assumes that 2 hours for each subcontract will be required to perform this activity, for a total LOE of 40 hours.

### Post-award Activities

The estimated LOE to complete the post-award activities is 396 hours and includes the following activities:

- **Attend post-award meetings/preconstruction conference.** CH2M HILL will arrange and conduct the necessary post-award meeting with the successful bidders to be held at CH2M HILL's office in Milwaukee, Wisconsin. The purpose of the meeting is to develop common goals, lines of communication, and site-specific procedures. CH2M HILL will prepare a meeting agenda, invite key personnel, and prepare minutes of the meeting. For budgeting purposes, CH2M HILL assumes that the post-award meeting will be required for four subcontractors. The meeting will be attended by 4 CH2M HILL staff members and will require 2 hours for meeting preparation and 4 hours for the meeting. The total estimated LOE for the post-award meeting, including preparation, is 96 hours.
- **Review and approve subcontractor submittals:**
  - Permits, insurance, and bonds as appropriate
  - Project schedule
  - Schedule of values
  - Technical submittals
  - Health and safety submittals
  - Revisions/addendum of subcontractor's submittals

CH2M HILL assumes that 15 LOE hours are required to review and approve the subcontractor submittals for each subcontract, for a total of 300 LOE hours.

The total LOE estimated to complete Task 3 is 1,588 hours.

## Task 4—Management Support (MS)

CH2M HILL will manage and monitor the subcontracts required to implement the LTRA. The management support activities include the following:

**Financial Management and Subcontractor Compliance**—The CH2M HILL contracts administrator and the site manager will conduct the financial and subcontractor management including review and approval of invoices, subcontract modifications, WA amendments, cost monitoring, subcontract closeout, and monitoring of subcontractor compliance with Davis-Bacon Act. The estimated effort per month is 2 hour per subcontract (20 total subcontracts and 1 team subcontract for 49 months) for a total of 2,058 hours.

**Engineering Support**—An estimated 15 hours per subcontract (20 total subcontracts) will be required to perform engineering support activities for review of ongoing field submittals (for example, updated health and safety records) and change requests for a total of 300 LOE hours.

**Team Subcontractor Management**—CH2M HILL is planning to use our team subcontractor, Critigen, to provide laboratory data management and geographic information system support to generate figures and maps for the project deliverables. The estimated LOE is 2 hours per month for 49 months for Critigen staff (1 hour for the Critigen project manager and 1 hour for Critigen project controls staff) for a total of 98 LOE hours.

The total LOE estimated to complete Task 4 activities is 2,456 hours.

# Task 6—Analytical Support and Data Validation (AN)

This task provides for the analytical support and data validation when required for the samples collected under Task 7.

## Analytical Support

CH2M HILL will coordinate the analysis and validation of soil and groundwater samples collected during Task 7. The validation task begins with preparing documentation before the sampling. Task 6 ends with the generation of a quality evaluation report for the data collected during the sampling event.

**Collect, Prepare, and Ship Environmental Samples**—This activity includes collecting, preparing, and shipping the soil and groundwater samples in accordance with the field sampling plan and QAPP. In accordance with SOW, the LOE for this activity will be included with the sample collection under Task 7. No LOE is budgeted for this activity under Task 6.

**Coordinate with Appropriate Sample Management Personnel**—The field team will coordinate with USEPA regarding data validation. The estimated LOE to complete this activity is 1 LOE hour per month for a total of 49 hours.

**Provide Sample Management (Chain of Custody, Sample Retention, and Data Storage)**—The sample management coordinator will provide the sampling team with the proper paperwork before fieldwork and will transmit completed paperwork to USEPA. The sample management coordinator will also provide support and oversee the use of USEPA's Forms II Lite sample management program. CH2M HILL will retain a copy of the data packages. Due to the numerous sampling events at this site and USEPA data management requirements, data management is a significant effort. Electronic data management under this subtask consists of the following: sample tracking, data entry of field sample information into the Forms II Lite database, data translation from Forms II Lite database

into USEPA Region 5 electronic data deliverable format and loading into the EQuIS database, receipt and loading of laboratory electronic data deliverables (USEPA Region 5 format) into EQuIS database, data error resolution, manual data entry of validator qualifiers into EQuIS database, 10 percent check of electronic data against hardcopy reports, database completeness checks, semiannual electronic data deliverable format conformance checks, generation of data tables for reporting, and database administration. The estimated LOE for this activity is 882 hours, which is based on 18 hours per month for 49 months.

**Perform Data Validation**—USEPA will perform Level IV data validation on 100 percent of the chemical results from the groundwater sampling events. CH2M HILL staff will review the Level IV data package from the laboratory for completeness prior to sending to USEPA for validation. CH2M HILL staff will also process electronic data, perform data completeness and verification, and perform the data evaluation of the field quality control (QC) results.

A review of the data validation performed by USEPA will be conducted to assess the quality and defensibility of the data and to check the chain-of-custody forms. The CH2M HILL chemist will review the validated analytical results against the data quality objectives to determine whether the data are acceptable. The total estimated LOE to perform the data evaluation for the groundwater sampling events is 40 LOE hours assuming 20 sample delivery groups are processed. The estimate assumes 2 hours per sample delivery group.

CH2M HILL will perform Level III data validation in accordance with the site-specific QAPP on 100 percent of the chemical results from the treatment system influent and effluent. The estimated LOE to perform the data validation on treatment system samples is 4 hours per month, for a total of 196 hours.

**Data Evaluation and Presentation**—A data validation report will be prepared to summarize the quality of the data and identifies problems, if any, related to the data quality, sampling results, or remedy performance. The data validation report will also summarize the data validation findings including field QC samples and include reports provided by the USEPA validator. A report will be prepared following the receipt of all validated data from each of the eight groundwater sampling events and one report will be prepared to summarize treatment system data for each year (total of 4 reports). The estimated LOE to prepare the data validation report is 288 hours (24 LOE hours per report and a total of 12 reports).

CH2M HILL submits discharge monitoring reports to the State of Wisconsin monthly in accordance with the substantive requirements of the discharge permit. The estimated LOE to prepare and submit the reports is 2 LOE hours per month for a total of 98 hours.

**Develop Reduction, Tabulation, and Evaluation**—CH2M HILL will evaluate, interpret, tabulate, and graph groundwater data to be included in the Annual Report required under Task 10. No LOE is budgeted for this activity under Task 6.

The total estimated LOE for Task 6 is 1,553 hours.

## Task 7—Remedial Action Implementation (AI)

Table 1 summarizes the subcontracts that are required to maintain and operate the system and the estimated subcontracted cost per year.

**TABLE 1**

Summary of LTRA Subcontracts

*Penta Wood Products Site*

| Subcontract | 2011 Estimated Yearly Cost[a] | 2012 Estimated Yearly Cost[a,b] | 2013 Estimated Yearly Cost[a,c] | 2014 Estimated Yearly Cost[a,d] | Estimated Total Cost at Completion | Notes |
|---|---|---|---|---|---|---|
| ***Competitive Bid Subcontracts*** | | | | | | |
| Carbon Changeout Service | $72,000 | $75,600 | $52,900 | $27,800 | $228,300 | 18-week changeout @ $24,000 per changeout |
| Hazardous Waste Disposal | $444,200 | $466,400 | $244,850 | $257,100 | $1,412,550 | Filter cake = 6 weeks ($36,600), LNAPL = 1/year ($50,000), Carbon = 18 weeks ($26,650) |
| Analytical Services | Refer to Table 2 for details | | | | | Costs do not include escalation |
| Solid Waste Disposal | $1,100 | $1,200 | $700 | $500 | $3,500 | |
| Propane Supply | $34,170 | $35,900 | $8,622 | $4,526 | $83,218 | Based on $1.70/gallon and average usage of 20,100 gal/year plus tax (2,300 gal/heating month), assumes only electric heat will be used during the winter shutdowns |
| Chemical Supply | $74,500 | $78,200 | $41,050 | $43,100 | $236,850 | 16-week for ferric ($15,120/delivery) and 35 weeks for caustic ($17,400/delivery) |
| Emergency Maintenance and Electrical Support | $12,000 | $12,600 | $6,600 | $6,900 | $38,100 | For mechanical, electrical, and I&C troubleshooting and repair support |
| Landscaping Service[c] | $3,060 | $3,200 | $3,400 | $3,600 | $13,260 | Provides two mowing per month for 6 months at $510/month |
| Site Civil Service (Erosion Repair) | $10,000 | $10,500 | $11,000 | $11,600 | $43,100 | $10,000/event |
| Soil Sampling | – | – | $73,600 | – | $73,600 | |
| Tree Planting[e] | $8,420 | – | – | – | $8,420 | Procurement occurred during base period |
| Surveying and Site Restoration from Well Installation[f] | $10,555 | – | – | – | $10,555 | Procurement occurred during base period |
| ***Sole Source Subcontracts*** | | | | | | |
| DE Supply | $12,600 | $13,200 | $6,950 | $7,300 | $40,050 | 7 weeks @$1,700/delivery |
| Polymer Supply | $6,720 | $7,100 | $3,750 | $3,900 | $21,470 | |

TABLE 1

Summary of LTRA Subcontracts

*Penta Wood Products Site*

| Subcontract | 2011 Estimated Yearly Cost[a] | 2012 Estimated Yearly Cost[a,b] | 2013 Estimated Yearly Cost[a,c] | 2014 Estimated Yearly Cost[a,d] | Estimated Total Cost at Completion | Notes |
|---|---|---|---|---|---|---|
| Monitoring Well Dedicated Pump Replacement | $4,600 | – | $5,100 | – | $9,700 | For two new pumps replaced every 2 years |
| RDVF Maintenance Services | $3,000 | $3,200 | $3,400 | $ 3,600 | $13,200 | Annual visit |
| Annual Air Compressor and Air Dryer Service | $2,000 | $2,100 | $2,200 | $2,300 | $8,600 | Annual visit |
| Groundwater Extraction Pump Replacement | $6,600 | $6,900 | $7,200 | $7,600 | $28,300 | Includes the material and installation cost to replace one pump |
| **Total** | **$705,525** | **$716,100** | **$471,322** | **$379,826** | **$2,272,773** | |

Notes:

[a]Annual Cost is based on 2010 annual cost and 12 months of operation

[b]Total Cost is based on estimated annual cost plus 5% escalation

[c]Total Cost is based on estimated annual cost plus 5% escalation and 6 months of operation

[d]Total Cost is based on estimated annual cost plus 5% escalation and 4 months of operation

[e]Procurement activities occurred during the base period; however, costs will be incurred during option period.

## Sample Analysis

This task includes the analytical subcontract costs associated with the groundwater, treatment system, and soil samples. Based on the sampling schedule, water and soil samples will be submitted to the laboratory for the analyses shown in Table 2.

**TABLE 2**
Estimated Costs for Laboratory Analyses
*Penta Wood Products Site*

| Matrix | Analysis | Method(s) | No. of Samples | No. of QC Samples | Total No. of Samples | Cost per Sample[c] | Total Analytical Cost | Total Cost |
|---|---|---|---|---|---|---|---|---|
| **Annual Groundwater Sampling Event (15 monitoring wells, 5 residential wells, 1 potable well)** | | | | | | | | |
| Water | PCP | SW-846 8270SIM | 84 | 18 | 102 | $121 | $12,362 | |
| Water | VOC[b] | SW-846 8260B | 84 | 63 | 147 | $40 | $5,880 | |
| Water | Naphthalene | SW-846 8270C | 84 | 18 | 102 | $76 | $7,711 | |
| Water | Dissolved Metals[d] | SW-846 6010B | 60 | 15 | 75 | $44 | $3,300 | |
| Water | Alkalinity | EPA 310.1 | 60 | 15 | 75 | $18 | $1,373 | |
| Water | Nitrate | EPA 353.2 | 60 | 15 | 75 | $20 | $1,463 | |
| Water | Sulfate | EPA 375.4 | 60 | 15 | 75 | $16 | $1,185 | |
| Water | Sulfide | EPA 376.1 | 60 | 15 | 75 | $19 | $1,433 | |
| Water | Chloride | EPA 325.2 | 60 | 15 | 75 | $16 | $1,185 | |
| Water | TOC | SW-846 9060 | 60 | 15 | 75 | $28 | $2,100 | |
| Water | Methane | RSK 175 | 60 | 15 | 75 | $163 | $12,225 | $50,216 |
| **Semiannual Groundwater Sampling Event (5 monitoring wells, 5 residential wells, 1 potable well)** | | | | | | | | |
| Water | PCP | SW-846 8270SIM | 44 | 20 | 64 | $121 | $7,757 | |
| Water | VOCb | SW-846 8260B | 44 | 60 | 104 | $40 | $4,160 | |
| Water | Naphthalene | SW-846 8270C | 44 | 20 | 64 | $76 | $4,838 | |

**TABLE 2**
Estimated Costs for Laboratory Analyses
*Penta Wood Products Site*

| Matrix | Analysis | Method(s) | No. of Samples | No. of QC Samples | Total No. of Samples | Cost per Sample[c] | Total Analytical Cost | Total Cost |
|---|---|---|---|---|---|---|---|---|
| Water | Dissolved Metalsd | SW-846 6010B | 20 | 16 | 36 | $44 | $1,584 | |
| Water | Alkalinity | EPA 310.1 | 20 | 16 | 36 | $ 18 | $659 | |
| Water | Nitrate | EPA 353.2 | 20 | 16 | 36 | $20 | $702 | |
| Water | Sulfate | EPA 375.4 | 20 | 16 | 36 | $16 | $569 | |
| Water | Sulfide | EPA 376.1 | 20 | 16 | 36 | $19 | $688 | |
| Water | Chloride | EPA 325.2 | 20 | 16 | 36 | $16 | $569 | |
| Water | TOC | SW-846 9060 | 20 | 16 | 36 | $28 | $1,008 | |
| Water | Methane | RSK 175 | 20 | 16 | 36 | $163 | $5,868 | $28,401 |
| **Soil (3 Locations with 5 sample depths)** | | | | | | | | |
| Soil | PCP | SW846-8270 | 15 | 3 | 18 | $121 | $2,182 | |
| Soil | DRO | SW-846 8015 | 15 | 3 | 18 | $43 | $772 | |
| Soil | GRO | SW-846 8015 | 15 | 3 | 18 | $42 | $756 | $3,710 |
| **Treatment System—Weekly** | | | | | | | | |
| Water | PCP—Effluent | SW846-8270SIM | 120 | 18 | 138 | $121 | $16,726 | $16,726 |
| **Treatment System—Monthly** | | | | | | | | |
| Water | DRO | SW-846 8015 | 30 | 12 | 42 | $43 | $1,802 | |
| Water | Naphthalene | SW-846 8270C | 30 | 12 | 42 | $76 | $3,175 | $4,977 |
| **Treatment System—Quarterly** | | | | | | | | |
| Water | PCP—Influent | SW846-8270SIM | 12 | 6 | 18 | $121 | $2,182 | |
| Water | Chloride | EPA 325.2 | 12 | 6 | 18 | $16 | $284 | |

**TABLE 2**
Estimated Costs for Laboratory Analyses
*Penta Wood Products Site*

| Matrix | Analysis | Method(s) | No. of Samples | No. of QC Samples | Total No. of Samples | Cost per Sample[c] | Total Analytical Cost | Total Cost |
|---|---|---|---|---|---|---|---|---|
| Water | Total Metals[a] | SW-846 6010B | 12 | 6 | 18 | $44 | $792 | $3,258 |
| **Treatment System - Annual** | | | | | | | | |
| Water | 2,3,7,8 TCDD | SW-846 8290 | 3 | 3 | 6 | $490 | $2,940 | |
| Water | Phenol | SW-846 8270C | 3 | 3 | 6 | $76 | $454 | |
| Water | VOC[b] | SW-846 8260B | 3 | 3 | 6 | $40 | $240 | $3,634 |
| **LEVEL IV Package** | | | | | **17** | **$160** | **$2,720** | **$2,720** |
| | | | | | | | Total Analytical Cost = | $109,932 |

Notes:

[a] Includes arsenic, copper, zinc, iron, and manganese

[b] Includes benzene, ethylbenzene, toluene, and xylene

[c] Unit costs based on 2010 laboratory rates.

[d] Includes arsenic, copper, zinc, iron, manganese, calcium, and magnesium
VOC = volatile organic compound

# Task 8—Cleanup Validation (CV)

CH2M HILL will perform confirmation sampling of the groundwater, soil, and soil gas to determine whether final cleanup levels or standards, as specified in the ROD, are being achieved, and evaluate system performance. The schedule for the LTRA sampling events is presented in Table 3.

## Groundwater Sampling

Groundwater sampling will include the following:

**Mobilization/demobilization of all equipment, supplies, and personnel:** CH2M HILL will mobilize/demobilize the necessary equipment and supplies to Siren, Wisconsin. Owners of the residential wells will be contacted and access coordinated prior to arriving at the site. The estimated LOE for mobilization and demobilization for the eight groundwater sampling events is 18 hours per event for a total of 144 LOE hours.

**Groundwater sample collection:** Groundwater samples will be collected from monitoring wells and residential wells during each groundwater sampling event. Groundwater elevations will be measured in all site monitoring locations. Monitoring wells will be purged and sampled using dedicated sampling pumps or bailed. The estimated LOE for 8 groundwater sampling events is 1,104 LOE hours as summarized in Table 3.

**Residential well summary:** CH2M HILL will prepare a technical memorandum summarizing the results of the residential well sampling after each sampling event. The estimated LOE for preparation and submittal of the technical memorandum is 12 hours per event for a total of 96 LOE hours.

## Soil Gas Sampling

Soil gas sampling will include the following:

**Mobilization/demobilization all equipment and supplies:** CH2M HILL will mobilize/demobilize the necessary equipment and supplies to Siren, Wisconsin.

**Soil gas readings:** Soil gas readings will be collected from 14 soil gas wells prior to the biovent blower being turned on monthly. The biovent system will be operated 5 days per month. It is assumed that the site operator will collect the soil gas samples; therefore, no additional LOE is budgeted for this activity.

## Soil Sampling

The soil sampling will include the following:

**Mobilization/demobilization of all equipment, supplies, and personnel:** CH2M HILL will mobilize the necessary equipment, supplies, and personnel to Siren, Wisconsin. The estimated LOE for mobilization and demobilization for soil sampling is 18 LOE hours.

**Soil sampling:** Soil sampling of vadose-zone soils will be conducted in 2013, which is 2 years after the installation of the additional extraction wells. The drilling effort is

estimated to require one field staff for up to 3 weeks (180 LOE hours based on a 12-hour field day, including travel).

**TABLE 3**

Sampling Schedule and Level of Effort
*Penta Wood Products Site*

| Year | Sampling Event Type | Samples | Effort | Total LOE (hr) |
|---|---|---|---|---|
| **Groundwater Sampling Events** | | | | |
| 2011 | Spring Semiannual Sampling | 5 mon. wells, 5 res wells plus QC | 2 people × 4 days 12 hr/day | 96 |
| | Fall Annual Sampling | 15 mon. wells, 5 res wells, plus QC | 3 people × 5 days × 12 hr/day | 180 |
| 2012 | Spring Semiannual Sampling | 5 mon. wells, 5 res wells plus QC | 2 people × 4 days x 12 hr/day | 96 |
| | Fall Annual Sampling | 15 mon. wells, 5 res wells, plus QC | 3 people × 5 days × 12 hr/day | 180 |
| 2013 | Spring Semiannual Sampling | 5 mon. wells, 5 res wells plus QC | 2 people × 4 days x 12 hr/day | 96 |
| | Fall Annual Sampling | 15 mon. wells, 5 res wells, plus QC | 3 people × 5 days × 12 hr/day | 180 |
| 2014 | Spring Semiannual Sampling | 5 mon. wells, 5 res wells plus QC | 2 people × 4 days x 12 hr/day | 96 |
| | Fall Annual Sampling | 15 mon. wells, 5 res wells, plus QC | 3 people × 5 days × 12 hr/day | 180 |
| **Soil Sampling Events** | | | | |
| 2013 | Soil Sample Collection | 3 locations, 5 samples/location | 1 person × 15 days x 12 hr/day | 180 |

The total estimated LOE for Task 7 is 1,542 hours.

## Sampling Event Expenses

Estimated expense items including utility costs required to operate the system are summarized in Table 4.

**TABLE 4**

Summary of Sampling Event Expenses
*Penta Wood Products Site*

| Equipment | Qty | Unit Price | Unit | Total Price |
|---|---|---|---|---|
| **Rental Equipment for Spring Semiannual Groundwater Sampling (Assumes 4-day rental)** | | | | |
| Water level indicator (200 feet) | 4 | $10.00 | Day | $40.00 |
| Water level indicator with oil interface probe (200 feet) | 4 | $15.00 | Day | $60.00 |
| YSI Multiprobe meter (2 units) | 8 | $35.00 | Day | $280.00 |

**TABLE 4**

Summary of Sampling Event Expenses
*Penta Wood Products Site*

| Equipment | Qty | Unit Price | Unit | Total Price |
|---|---|---|---|---|
| Turbidity meters (2 units) | 8 | $15.00 | Day | $120.00 |
| Generators | 4 | $39.00 | Day | $156.00 |
| Control box for dedicated Grundfos pumps | 4 | $17.00 | Day | $68.00 |
| ~5 ft teflon discharge tubing for Grundfos pump | 5 | $1.88 | Foot | $9.40 |
| Peristaltic Pump | 4 | $15.00 | Day | $60.00 |
| Photoionization detector (10.2 lamp) | 4 | $20.00 | Day | $80.00 |
| Photoionization detector calibration gas | 1 | $19.75 | Each | $19.75 |
| Explosimeter (L.E.L O2) | 4 | $20.00 | Day | $80.00 |
| Explosimeter (L.E.L O2) calibration gas | 1 | $25.03 | Each | $25.03 |
| Fire extinguishers | 4 | $10.00 | Day | $40.00 |
| Bug-out suits | 3 | $32.01 | Each | $96.03 |
| Walkie Talkies (pair) | 4 | $10.00 | Day | $40.00 |
| Subtotal per event | | | | $1,174.21 |
| Subtotal for 4 events | | | | $4,696.84 |
| **Rental Equipment for Fall Annual Groundwater Sampling (Assumes 5-day rental)** | | | | |
| Water level indicator (200 feet) | 5 | $10.00 | Day | $50.00 |
| Water level indicator with oil interface probe (200 feet) | 5 | $15.00 | Day | $75.00 |
| YSI Multi-probe meter (2 units) | 10 | $35.00 | Day | $350.00 |
| Turbidity meters (2 units) | 10 | $15.00 | Day | $150.00 |
| Generators (2 units) | 10 | $30.00 | Day | $300.00 |
| Control box for dedicated Grundfos pumps (2 units) | 10 | $17.00 | Day | $170.00 |
| ~5 ft teflon discharge tubing for Grundfos pump (2 units) | 10 | $1.88 | Foot | $18.80 |
| Peristaltic Pump | 5 | $15.00 | Day | $75.00 |
| Photoionization detector (10.2 lamp) | 5 | $20.00 | Day | $100.00 |
| Photoionization detector calibration gas | 1 | $19.75 | Each | $19.75 |
| Explosimeter (L.E.L O2) | 5 | $20.00 | Day | $100.00 |
| Explosimeter (L.E.L O2) calibration gas | 1 | $25.03 | Each | $25.03 |
| Fire extinguishers (2 units) | 10 | $10.00 | Day | $100.00 |
| Bug-out suits | 4 | $32.01 | Each | $128.04 |
| Walkie Talkies (pair) | 5 | $10.00 | Day | $50.00 |
| Subtotal per event | | | | $1,711.62 |
| Subtotal for 4 events | | | | $6,846.48 |
| **Consumable Equipment for Groundwater Sampling Events** | | | | |
| Disposable bailers | 7 | $10.00 | Each | $70.00 |
| Bailer rope (spools @ 500 feet / spool) | 3 | $30.00 | Each | $90.00 |
| Masterflex tubing (25 feet per package) | 3 | $47.50 | Pkg | $142.50 |
| Disposable filters (0.54 micron) | 30 | $11.35 | Each | $340.50 |
| T.S.P. or equivalent | 2 | $0.66 | Each/pkt. | $1.32 |

**TABLE 4**

Summary of Sampling Event Expenses
*Penta Wood Products Site*

| Equipment | Qty | Unit Price | Unit | Total Price |
|---|---|---|---|---|
| Spray Bottles (DI, TSP, MeOH) | 6 | $7.49 | Each | $44.94 |
| Methanol | 2 | $17.50 | Pint | $35.00 |
| pH, conductivity, REDOX calibration solutions | 3 | $66.73 | Kit | $200.19 |
| Tyvek® coveralls | 2 | $101.50 | Case | $203.00 |
| Surgical gloves | 10 | $5.77 | Box | $57.70 |
| Cotton work gloves | 6 | $3.95 | Pair | $23.70 |
| Latex booties | 1 | $216.00 | Case | $216.00 |
| First aid kit | 2 | $16.73 | Kit | $33.46 |
| Eye wash kit (travel pack) | 2 | $51.02 | Kit | $102.04 |
| Bloodborne pathogen kit | 2 | $19.56 | Kit | $39.12 |
| Ear plugs, pair | 30 | $0.23 | Pair | $6.90 |
| Safety glasses | 10 | $4.59 | Each | $45.90 |
| Bee/wasp spray | 2 | $9.00 | Can | $18.00 |
| Tick/mosquito repellent | 2 | $6.00 | Can | $12.00 |
| Tick removal kit | 4 | $3.00 | Kit | $12.00 |
| HPCL water (gallons) | 8 | $52.16 | Gallon | $417.28 |
| Distilled water | 4 | $1.00 | Gallon | $4.00 |
| Strapping tape | 7 | $9.35 | Roll | $65.45 |
| Clear tape | 4 | $6.67 | Roll | $26.68 |
| Duct tape | 4 | $6.49 | Roll | $25.96 |
| Zip-seal baggies, gallon size | 500 | $0.18 | Each | $90.00 |
| 5-gallon buckets with lids | 5 | $6.48 | Each | $32.40 |
| Utility knives | 2 | $5.00 | Each | $10.00 |
| Paper towels | 10 | $2.79 | Roll | $27.90 |
| Large trash bags | 1 | $7.99 | Box | $7.99 |
| Paint pens | 2 | $3.10 | Each | $6.20 |
| Ice (20 pound bags) | 30 | $5.28 | Bag | $158.40 |
| Gasoline | 10 | $4.00 | Gallon | $40.00 |
| Subtotal per event | | | | $2,606.53 |
| Subtotal for 8 events | | | | $20,852.24 |
| **Soil Gas Sampling (Assumes 5-day rental)** | | | | |
| LandtecGEM 2000 | 5 | $35.00 | Day | $175.00 |
| Calibration gas for LandtecGEM 2000 | 1 | $29.69 | Each | $29.69 |
| Subtotal per event | | | | $204.69 |
| Subtotal for 25 events | | | | $5,117.25 |
| **Soil Sampling (Assumes 3-week rental)** | | | | |
| Photoionization detector (10.2 lamp) with calibration gas | 21 | $20.00 | Day | $420.00 |
| Photoionization detector calibration gas | 1 | $19.75 | Each | $19.75 |

**TABLE 4**

Summary of Sampling Event Expenses
*Penta Wood Products Site*

| Equipment | Qty | Unit Price | Unit | Total Price |
|---|---|---|---|---|
| Explosimeter (L.E.L O2) | 21 | $20.00 | Day | $420.00 |
| Explosimeter (L.E.L O2) calibration gas | 1 | $25.03 | Each | $25.03 |
| Tyvek® coveralls | 0.5 | $101.50 | Case | $50.75 |
| Surgical gloves | 6 | $5.77 | Box | $34.62 |
| Cotton work gloves | 3 | $3.95 | Pair | $11.85 |
| Latex booties | 0.5 | $216.00 | Case | $108.00 |
| First aid kit | 1 | $16.73 | Kit | $16.73 |
| Eye wash kit (travel pack) | 1 | $51.02 | Kit | $51.02 |
| Bloodborne Pathogen Kit | 1 | $19.56 | Kit | $19.56 |
| Safety glasses | 3 | $4.59 | Each | $13.77 |
| Fire extinguisher | 21 | $10.00 | Day | $210.00 |
| Bug-out suits | 2 | $32.01 | Each | $64.02 |
| Bee/wasp spray | 1 | $9.00 | Can | $9.00 |
| Tick/mosquito repellent | 1 | $6.00 | Can | $6.00 |
| Tick removal kit | 2 | $3.00 | Kit | $6.00 |
| Strapping tape | 2 | $9.35 | Roll | $18.70 |
| Clear tape | 1 | $6.67 | Roll | $6.67 |
| Duct tape | 1 | $6.49 | Roll | $6.49 |
| Zip-seal baggies, gallon size | 50 | $0.18 | Each | $9.00 |
| Ice (20 pound bags) | 2 | $5.28 | Bag | $10.56 |
| Paper towels | 5 | $0.75 | Roll | $3.75 |
| Plastic sheeting (50 feet) | 2 | $41.12 | Each | $82.24 |
| Large trash bags | 1 | $7.99 | Box | $7.99 |
| Subtotal per event | | | | $1,631.50 |
| Subtotal for 1 events | | | | $1,631.50 |
| **Total** | | | | $39,144.31 |

# Task 10—Project Performance (PJ)

This task includes the activities necessary to implement the LTRA through continuous groundwater containment, LNAPL recovery, and biovent operation.

## System Operation

It is assumed the treatment system will be operated full time from March 2011 through October 2012 to maximize LNAPL recovery from three new extraction wells that were integrated into the system in March 2011. The treatment system operations will then be systematically shut down and the plant winterized in the fall of 2012. The system will be restarted in April 2013 following completion of the semiannual groundwater sampling

event. A second winter shutdown would occur in October 2013 and the system restarted in April 2014 following the semiannual groundwater sampling event. The State of Wisconsin will take over O&M of the site in August 2014. This schedule results in 30 months of treatment system operations and 10 months of shutdown time.

CH2M HILL will staff the system with an operator to achieve the goal of operating the system 24 hours a day, 7 days a week. The operator will be at the site full time (50 hours per week, which includes 10 percent overtime) during the 30 months (120 weeks) of operation for a total of 6,000 LOE hours.

For budgeting purposes, CH2M HILL also has assumed six 1-week trips to the site during the performance period (12 hours for travel per trip) for a temporary operator to operate the system to cover the primary operator's vacations, illness, etc. The estimated LOE for this activity is 72 LOE hours for the travel to and from the site.

Activities that will be performed to operate groundwater extraction and treatment, LNAPL recovery, and biovent system include:

- Provide support and information to the LTRA operation and maintenance staff including state personnel.
- Update corrective action plans, if necessary.
- Review records and reporting requirements.
- Maintain records of scheduled and unscheduled O&M activities.
- Describe and analyze potential operating problems.
- Advise on conformity to applicable performance and operations requirement.
- Determine cause of failure and developing corrective action.
- Review record development, process system, safety and emergency systems, and warranty files.
- Evaluate equipment system performance, witness performance tests, and gather and test samples.
- Operate and provide appropriate upkeep and maintenance of installed response action construction items including facilities, equipment, and appropriate engineered controls.

During the 10 months of shutdown time, the operator will visit the site to inspect the plant and site for damage resulting from the cold. It is estimated that the operator will visit the site 2 days per month, for a total LOE of 160 LOE hours.

The total LOE for System Operations is 6,232 hours.

## System Operation Support

During system operation, CH2M HILL will monitor the system performance of the equipment and provide troubleshooting support to the operator. For budgeting purposes,

CH2M HILL has estimated 30 hours per month for system operation support, for an estimated total of 900 hours for this effort.

For this effort, it is assumed that a project engineer, and on occasion the program analyst, will travel to the site and conduct regularly scheduled tests or perform troubleshooting, as required. For budgeting purposes, it is assumed that the project engineer will make one trip per year (4 trips), with each trip averaging 32 hours, including travel, for a total of 128 hours. An additional 64 hours is budgeted for a systems analyst to visit the site on 2 of the 4 trips. The estimated total effort is 192 hours.

Experience with operating the system has shown that, in order to perform certain maintenance tasks safely, the support of an additional person is required. It is assumed that an additional person will be required to assist semiannually (a total of 8 times through the period of performance) in an O&M support role and expend 48 hours per trip, including travel time. For budgeting purposes, the estimated effort for O&M support is 384 hours.

It is assumed that annual health and safety audits will be conducted. For budgeting purposes, it is assumed that a CH2M HILL health and safety manager will make a total of 4 trips with each trip averaging 26 hours, including travel and preparation of an audit report, for a total of 104 LOE hours.

CH2M HILL will review and update the O&M manual including the preparation of updated record drawings. It is estimated that 8 drawings will be updated at 15 hours per drawing for a total of 120 LOE hours and an additional 60 LOE hours for revisions to the text. The total estimated LOE for updating the O&M manual is 180 hours.

The total effort for system operation support is 1,760 hours.

## System Operation Expenses

Estimated expense items including utility costs required to operate the system are summarized in Table 5.

**TABLE 5**

Summary of Operating Expenses
*Penta Wood Products Site*

| Operating Expenses | 2011 Estimated Yearly Cost[a] | 2012 Estimated Yearly Cost[a,b] | 2013 Estimated Yearly Cost[a,c] | 2014 Estimated Yearly Cost[a,d] | Estimated Total Cost at Completion | Notes |
|---|---|---|---|---|---|---|
| Utilities | | | | | – | |
| Electric | $51,840 | $54,400 | $28,550 | $30,000 | $164,790 | Northwestern Wisconsin Electric Company |
| Telephone and Internet Service | $2,520 | $2,600 | $1,350 | $1,400 | $7,870 | Siren Telephone Company, Inc. |
| Sanitary Waste Service | $400 | $400 | $200 | $100 | $1,100 | Every 3 months |
| Snow Removal | $100 | $100 | $ 100 | $100 | $400 | |
| Fire Extinguisher Inspection | $200 | $200 | $200 | $200 | $800 | |
| Backwash Preventor Inspection | $225 | $240 | $250 | $260 | $975 | |
| Generator Annual Service | $400 | $400 | $400 | $400 | $1,600 | |
| Bag filters | $5,000 | $5,300 | $2,800 | $2,900 | $16,000 | |
| Spare Parts and General Supplies | $18,000 | $18,900 | $19,800 | $20,800 | $77,500 | |
| Upgrade of Computer System | – | $2,500 | – | – | $2,500 | Allowance to replace site computer, printer, and upgrade software if current system fails. |
| Phone replacement | $200 | – | $200 | – | $400 | Allowance to replace site phone if current phone fails. |
| LNAPL Pump replacement | $5,000 | $5,300 | $5,600 | $5,900 | $21,800 | Assumes one pump replaced per year |
| pH Probe Replacement | $3,700 | $3,900 | $4,100 | $4,300 | $16,000 | Installation is included in Emergency Repair Support |
| **Total** | **$87,585** | **$94,240** | **$63,550** | **$66,360** | **$311,735** | |

Notes:
[a]Annual Cost is based on 2010 annual cost and 12 months of operation.
[b]Total Cost is based on estimated annual cost plus 5 percent escalation.
[c]Total Cost is based on estimated annual cost plus 5 percent escalation and 6 months of operation.
[d]Total Cost is based on estimated annual cost plus 5 percent escalation and 4 months of operation.

### Pilot Shutdown

CH2M HILL will develop a Pilot Shutdown Plan to describe the winterization and shutdown procedures for the system.

- **Prepare Draft Pilot Shutdown Plan**—CH2M HILL will prepare and submit the draft Pilot Shutdown Plan to the work assignment manager/remedial program manager prior to the 2012 winter shutdown. The report will summarize preparation procedures, shutdown procedures, monitoring requirements, and final inspection. The estimated LOE for this effort is 150 hours.
- **Respond to Comments**—When comments are received, CH2M HILL will provide detailed responses in the form of a response letter and receive consensus on these responses before finalizing the Pilot Shutdown Plan. The estimated LOE for this effort is 16 hours.
- **Prepare/Issue draft Final Pilot Shutdown Plan**—After receipt of USEPA comments, CH2M HILL will prepare and submit the draft final Pilot Shutdown Plan. The estimated LOE for this effort is 32 hours.
- **Prepare/Issue Final Pilot Shutdown Plan**—After the 2012 winter shutdown, the final Pilot Shutdown Plan will be reviewed and updated with lessons learned and modified procedures, as necessary. The estimated LOE for this effort is 60 hours.

The estimated effort for the Pilot Shutdown Report is 258 hours.

### Interim Long-Term Remedial Action Annual Reports

CH2M HILL will prepare and submit three interim annual reports, each of which will summarize the performance and O&M procedures of the groundwater containment, LNAPL recovery, and bioventing system. The annual reports will evaluate the performance of each remedial component, present trend analyses for impacts of the remedy on contaminant concentrations in the groundwater, and summarize potential corrective actions based on system performance.

The annual reports will also include an optimization study that will summarize trend analyses of operation data and evaluation of modifications to operating conditions that could improve the system efficiency and reduce operation costs.

The estimated effort per report is 155 hours for a total of 465 hours.

The total estimated LOE for Task 10 during the Option Period is 8,715 hours.

## Task 11—Project Completion and Closeout (PC)

The purpose of project completion and closeout is for the remedial action contractor to conduct the necessary inspections to review completed work, make final payments, close out subcontracts, and prepare a remedial action report.

## Termination of Engineering Support Activities

The termination of engineering support activities will include:

- **Prefinal Inspection**—Three CH2M HILL staff members will conduct the prefinal inspection onsite with USEPA and the State of Wisconsin and develop a punchlist of action items to be completed prior to the treatments system transition to the state. The estimated LOE for the onsite prefinal inspection is 22 hours per person (2 hours for preparation and 20 hours for the onsite meeting and travel time). The estimated LOE for the effort is 66 hours, including travel.

  CH2M HILL will prepare and submit a prefinal inspection report that will include the list of action items, completion dates for outstanding items, and the date for a final inspection. The estimated LOE for the effort is 40 hours.

  LOE for completion of punchlist activities is not included in this work plan. If LOE is required outside of the general operation and maintenance activities described in this work plan, a work plan revision will be necessary.

  The total estimated LOE for this activity is 106 hours.

- **Property Disposition**—It is estimated that 40 LOE hours will be required to manage the property disposition of the system. The 40 hours includes 12 hours to conduct a physical inventory at the project site, 8 hours for the development and finalization of the property disposition records, 8 hours for coordination with the USEPA Property Representative and Contracting Officer, and 12 hours allocated for travel for a CH2M HILL representative from our Denver office.

- **Final Inspection**—Two CH2M HILL staff members will arrange for and conduct the final inspection and determine if terms of the work plan have been satisfied. The estimated LOE for the effort is 22 hours per person, including travel. The estimated LOE for the effort is 44 hours, including travel.

- **Progress Meeting**—Three CH2M HILL staff members will participate in three progress meetings during the project completion and closeout. Three CH2M HILL staff will participate in the closeout progress meetings by teleconference. The estimated LOE for the teleconference progress meeting is 2 hours per person (1 hour for preparation and 1 hour for the meeting). The total estimated LOE for this activity is 18 hours.

The total estimated LOE for Termination of Engineering Support Activities is 102 hours.

## Remedial Action Report

The remedial action report activities will include:

- **Prepare Draft Remedial Action Report**—CH2M HILL will prepare and submit the Remedial Action Report to the work assignment manager/remedial program manager, in accordance with the fact sheet entitled *Remedial Action Report, Documentation for Operable Unit Completion*, Publication 9355.0-39FS, dated June 1992. The report will summarize remedial action events, performance standards and construction quality control, construction activities, final inspection, certification that the remedy is operational and

functional, and remedial action costs. CH2M HILL will use the resident inspector while onsite to assist in completing the report. The estimated LOE for this effort is 120 hours.

- **Respond to Comments**—When comments are received, CH2M HILL will provide detailed responses in the form of a response letter and will receive consensus on the responses before finalizing the Remedial Action Report. The estimated LOE for this effort is 16 hours.
- **Prepare/Issue Final Remedial Action Report**—After receipt of USEPA comments, CH2M HILL will prepare and submit the final Remedial Action report. CH2M HILL will prepare a technical memorandum to summarize the system's performance and required O&M procedures. CH2M HILL will also prepare a cost and performance report in accordance with the guidance document entitled *Guide to Documenting Cost and Performance for Remediation Projects*, Publication EPA-542-b-95-002, March 1995. The estimated LOE for this effort is 32 hours.

The total estimated LOE for this activity is 168 hours.

The total estimated LOE for Task 11 during the Option Period is 376 hours.

# Task 12—Work Assignment Closeout (CO)

CH2M HILL will perform the activities necessary to close out the WA in accordance with contract requirements. The following project closeout activities will be conducted:

- **Package and return documents to the government**—CH2M HILL will consolidate, package, and return documents to USEPA. The total estimated LOE is 2 hours.
- **Duplication/distribution/storage of files**—The total estimated LOE for this activity is 2 hours.
- **Prepare closeout report**—CH2M HILL will prepare a Work Assignment Completion Report at the end of the work assignment. The total estimated LOE for preparing and submitting the Work Assignment Completion Report is 10 hours.

The total estimated LOE for Task 12 under the Option Period is 14 hours.

# Project Management

## Project Organization

CH2M HILL will manage the work assignment from its Milwaukee office. The main project team members are essentially the same as those for the previous PWP Site WA. Additional technical experts have been identified and will be used, as necessary, to implement the LTRA. Table 6 summarizes the key personnel assigned to this project and their representative duties.

**TABLE 6**
Project Staff
*Penta Wood Products Site*

| Staff | Role | Highest Degree | Total Years of Experience | P-Grade |
|---|---|---|---|---|
| Ike Johnson | Program Manger | MS | 30 | P4 |
| Keli McKenna | Site Manager | BS | 13 | P3 |
| Mike Niebauer | Assistant Site Manager | MS | 8 | P2 |
| Phil Smith | Review Team Leader | BS | 34 | P4 |
| Jeff Danko | Senior Technical Consultant | BS | 30 | P4 |
| Mike Jury | Senior Technical Consultant | MS | 35 | P4 |
| Shannon Olson | Project Chemist | MS | 4 | P1 |

## Schedule

Based on the schedule for transition of operations to the State of Wisconsin, CH2M HILL forecasts a total duration of 49 months (March 2011 through March 2015). Figure 1 is the project schedule.

Based on information in the SOW, CH2M HILL assumes that the total duration of the technical assistance WA is 49 months (March 2011 through March 2015). A summary of major submittals and their anticipated due dates are presented in Attachment 1 of the SOW.

The project schedule is also provided graphically in Figure 1. The project schedule includes information regarding timing, initiation, and completion of critical path milestones for each activity and the expected review time for USEPA.

As the project progresses, the site manager will monitor the progress of the project against the task schedules and due dates for deliverables. The site manager will be responsible for maintaining and updating the project schedule and will keep the contracting officer's representative apprised of known or expected slippages or acceleration of project elements. In coordination with the contracting officer's representative, CH2M HILL will seek to shorten the project schedule by using teleconferences and other methods to expedite decisions and communicate progress during the WA.

## Project Budget

The estimated budget is based on the SOW. A summary of LOE hours and expenses for the tasks is presented in the Financial Package.

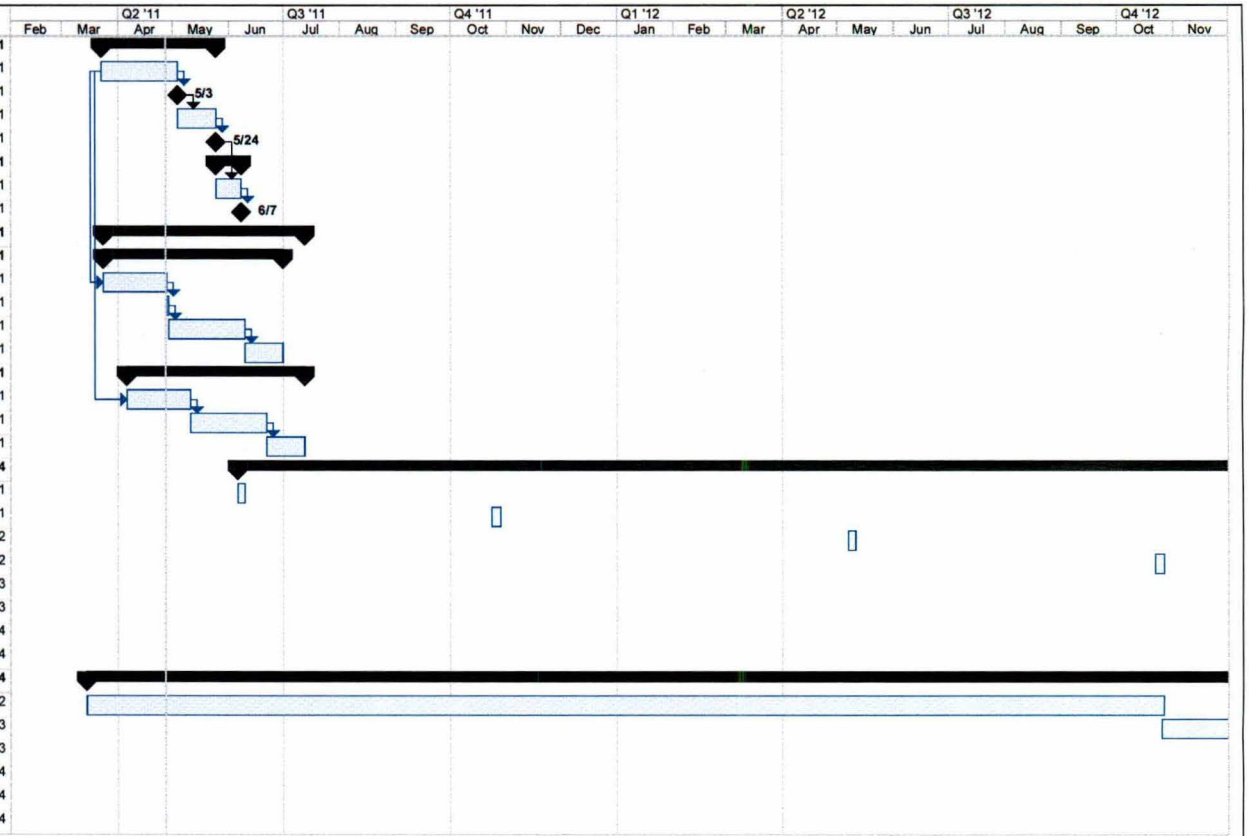
Travel costs are based on the estimated trips and modes of travel (see Table 7).

**TABLE 7**
Estimated Travel
*Penta Wood Products Site*

| Task | Origin | Destination | Purpose | No. of Trips | Persons | Auto | Duration (days) | Auto Cost[b] | Air Fare | Per Diem[c] | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | Milwaukee | Siren | Prebid Meeting (2-day) | 1 | 2 | 1 | 2 | $120 | $0 | $492 | $612 |
| 3 | Milwaukee | Siren | Prebid Meeting (1-day) | 1 | 2 | 1 | 1 | $60 | $0 | $246 | $306 |
| 8 | Milwaukee | Siren | Spring Semiannual Groundwater Sampling | 4 | 2 | 1 | 4 | $960 | $0 | $3,936 | $4,896 |
| 8 | Milwaukee | Siren | Fall Annual Groundwater Sampling | 4 | 3 | 2 | 5 | $2,800 | $0 | $7,380 | $10,180 |
| 8 | Milwaukee | Siren | Soil Sample Collection | 1 | 1 | 1 | 15 | $1,050 | $0 | $1,845 | $2,895 |
| 10 | TBD[a] | Siren | Temporary Operator | 8 | 1 | 1 | 5 | $2,800 | $4,000 | $4,920 | $11,720 |
| 10 | Milwaukee | Siren | Operation Support | 6 | 1 | 1 | 2 | $720 | $0 | $1,476 | $2,196 |
| 10 | Milwaukee | Siren | Maintenance Support | 8 | 1 | 1 | 2 | $960 | $0 | $1,968 | $2,928 |
| 10 | Milwaukee | Siren | Health and Safety Audit | 4 | 1 | 1 | 2 | $480 | $0 | $984 | $1,464 |
| 11 | Milwaukee | Siren | Prefinal Inspection | 1 | 3 | 1 | 1 | $60 | $0 | $369 | $429 |
| 11 | Denver | Siren | Property Disposition | 1 | 1 | 1 | 1 | $60 | $500 | $123 | $683 |
| 11 | Milwaukee | Siren | Final Inspection | 1 | 2 | 1 | 1 | $60 | $0 | $246 | $306 |

[a]CH2M HILL will use staff from the Milwaukee or Chicago offices to the extent possible. The temporary operator has not yet been identified. For budgeting purposes, it is assumed that the operator will travel to and from the site with an air travel cost of $500 per trip.
[b]Auto cost assumes weekly rate of $350 or a daily rate of $60.
[c]Per diem includes lodging, meals, and incidentals and is based on the maximum per diem rate for Burnett County of $123 per day.

| ID | Task Name | Duration | Start | Finish |
|---|---|---|---|---|
| 1 | **Task 1.1 - RD Work Plan** | **45 days** | **Wed 3/23/11** | **Tue 5/24/11** |
| 2 | Prepare Work Plan | 30 days | Wed 3/23/11 | Tue 5/3/11 |
| 3 | Submit Work Plan | 0 days | Tue 5/3/11 | Tue 5/3/11 |
| 4 | USEPA Review | 15 days | Wed 5/4/11 | Tue 5/24/11 |
| 5 | Work Plan Approval | 0 days | Tue 5/24/11 | Tue 5/24/11 |
| 6 | **Task 1.2 - Site Specific Plans** | **10 days** | **Wed 5/25/11** | **Tue 6/7/11** |
| 7 | Review and Update Plans | 10 days | Wed 5/25/11 | Tue 6/7/11 |
| 8 | Submit Plans to USEPA | 0 days | Tue 6/7/11 | Tue 6/7/11 |
| 9 | **Task 3 - Procurement of Subcontractors** | **79 days** | **Thu 3/24/11** | **Tue 7/12/11** |
| 10 | **Competitive Bids** | **71 days** | **Thu 3/24/11** | **Thu 6/30/11** |
| 11 | Pre-solicitation Activities | 25 days | Thu 3/24/11 | Wed 4/27/11 |
| 12 | Pre-bid Site Visit | 1 day | Thu 4/28/11 | Thu 4/28/11 |
| 13 | Pre-Award/Award Acitivites | 30 days | Fri 4/29/11 | Thu 6/9/11 |
| 14 | Post-Award Activities | 15 days | Fri 6/10/11 | Thu 6/30/11 |
| 15 | **Sole Sourse Bids** | **70 days** | **Wed 4/6/11** | **Tue 7/12/11** |
| 16 | Pre-solicitation Activities | 25 days | Wed 4/6/11 | Tue 5/10/11 |
| 17 | Pre-Award/Award Acitivites | 30 days | Wed 5/11/11 | Tue 6/21/11 |
| 18 | Post-Award Activities | 15 days | Wed 6/22/11 | Tue 7/12/11 |
| 19 | **Task 8 - Cleanup Validation** | **885 days** | **Mon 6/6/11** | **Fri 10/24/14** |
| 20 | 2011 Spring Semiannual Sampling Event | 4 days | Mon 6/6/11 | Thu 6/9/11 |
| 21 | 2011 Fall Annual Sampling Event | 5 days | Mon 10/24/11 | Fri 10/28/11 |
| 22 | 2012 Spring Semiannual Sampling Event | 4 days | Mon 5/7/12 | Thu 5/10/12 |
| 23 | 2012 Fall Annual Sampling Event | 5 days | Mon 10/22/12 | Fri 10/26/12 |
| 24 | 2013 Spring Semiannual Sampling Event | 4 days | Mon 5/6/13 | Thu 5/9/13 |
| 25 | 2013 Fall Annual Sampling Event | 5 days | Mon 10/21/13 | Fri 10/25/13 |
| 26 | 2014 Spring Semiannual Sampling Event | 4 days | Mon 5/5/14 | Thu 5/8/14 |
| 27 | 2014 Fall Annual Sampling Event | 5 days | Mon 10/20/14 | Fri 10/24/14 |
| 28 | **Task 10 - Project Performance** | **904 days** | **Tue 3/15/11** | **Fri 8/29/14** |
| 29 | Full time operations | 424 days | Tue 3/15/11 | Fri 10/26/12 |
| 30 | 2012 Winter Shutdown | 131 days | Fri 10/26/12 | Sun 4/28/13 |
| 31 | Full time operations | 130 days | Mon 4/29/13 | Fri 10/25/13 |
| 32 | 2013 Winter Shutdown | 126 days | Mon 10/28/13 | Mon 4/21/14 |
| 33 | Full time operations | 95 days | Mon 4/21/14 | Fri 8/29/14 |
| 34 | Transfer operations to the State of Wisconsin | 0 days | Fri 8/29/14 | Fri 8/29/14 |




Project: Penta Wood LTRA WA#132
Date: Wed 4/27/11

Task | Progress | Summary | External Tasks | Deadline
Split | Milestone | Project Summary | External Milestone

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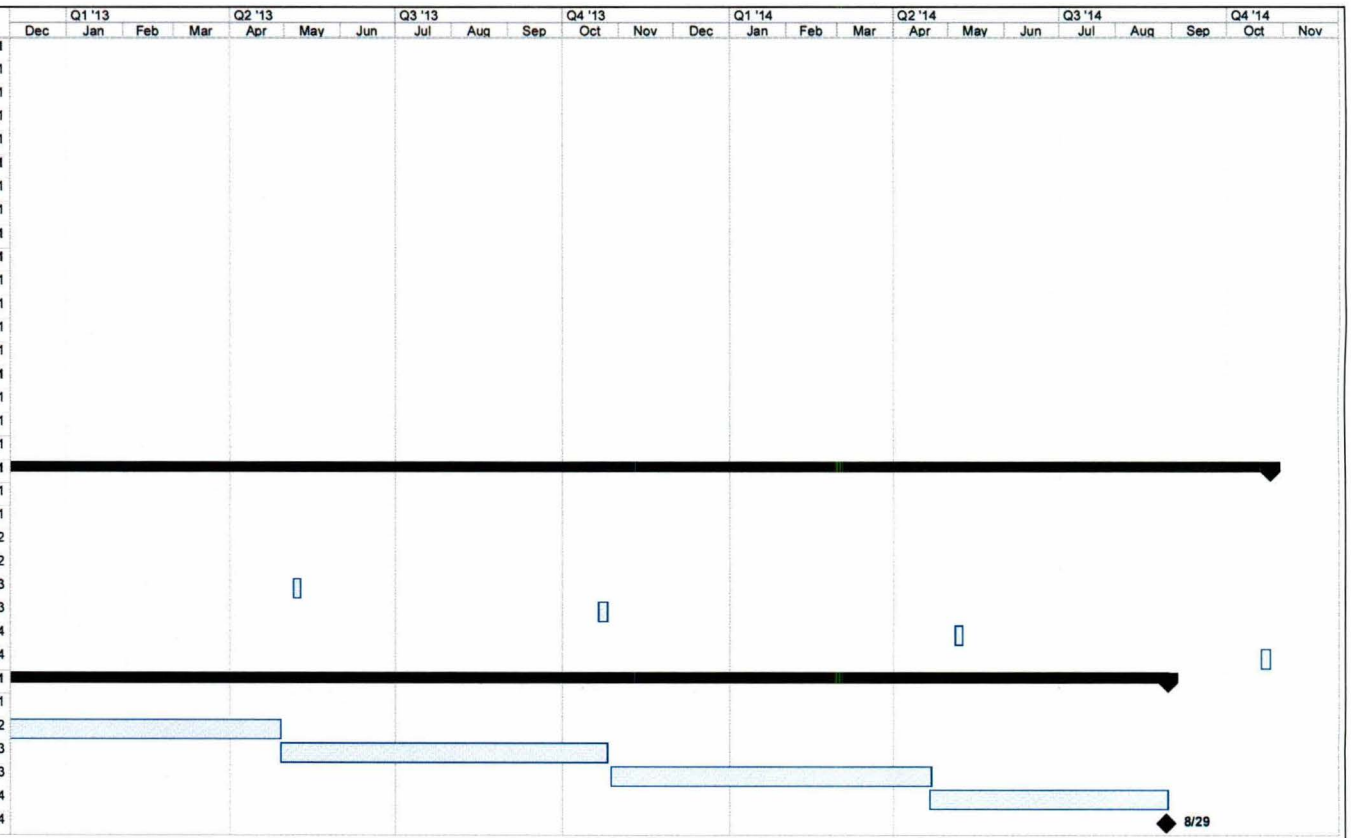


Project: Penta Wood LTRA WA#132
Date: Wed 4/27/11

Task
Split
Progress
Milestone
Summary
Project Summary
External Tasks
External Milestone
Deadline