EPA Region 5 Records Ctr.
342714

Second Five-Year Review Report

for

Penta Wood Products Superfund Site

Town of Daniels
Burnett County, Wisconsin

January 2010

PREPARED BY:

United States Environmental Protection Agency
Region 5
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Approved by:

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Date: 1-28-10

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Five-Year Review Report

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List of Acronyms

ACZA	Ammonia, Copper II Oxide, Zink, and Arsenate
ARAR	Applicable or relevant and appropriate requirement
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CAMU	Corrective Action Management Unit
ICs	Institutional Controls
U.S. EPA	United States Environmental Protection Agency
LNAPL	Light Nonaqueous Phase Liquid
MCL	Maximum Contaminant Level
$\mu g/m^3$	Micrograms Per Cubic Meter
mg/kg	Milligram Per Kilogram
MNA	Monitored Natural Attenuation
NCP	National Contingency Plan
NPDES	National Pollution Discharge Elimination System
NPL	National Priorities List
O&M	Operation and Maintenance
ppb	Parts Per Billion
ppm	Parts Per Million
PRP	Potentially Responsible Party
RD/RA	Remedial Design/Remedial Action
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
SVOC	Semi-Volatile Organic Compound
TCE	Trichloroethylene
TCL	Toxic Compound List
TDS	Total Dissolved Solids
UAO	Unilateral Administrative Order
VOC	Volatile Organic Compound
WDNR	Wisconsin Department of Natural Resources

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Executive Summary

The Penta Wood Products Superfund Site (PWP) (the Site) is an 82 acre former wood treating facility where raw timber was cut and treated. PWP operated from 1953 to 1992. Raw timber was cut into posts and telephone poles and treated with either a five to seven percent pentachlorophenol (PCP) solution in a No. 2 fuel oil carrier, or with a water born salt treatment called Chemonite consisting of ammonia, copper II oxide, zinc and arsenate (ACZA). PWP also conducted toll blending of pentachlorophenol and fuel oil on a contract basis for industrial users just prior to closing in 1992. 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 also discharged onto a wood chip pile in the northwestern portion of the property. On December 28, 2000, construction completion at the Site was achieved with the startup of the initial treatment system. The triggering action for this statutory review is the date of the first five year review signature as shown in U.S. EPA's WasteLAN database: March 4, 2005. This is the second five-year review for the Site.

The selected remedy for the Site includes:

- Building demolition.
- Segregation, select solidification, and placement of all arsenic contaminated soils in an onsite Corrective Action Management Unit (CAMU).
- Consolidation of Pentachlorophenol (PCP)/fuel oil soils and wood chips in the CAMU under a soil cover.
- Bioventing PCP/fuel oil contaminated material.
- Biopad removal and disposal onsite in the CAMU.
- Erosion control measures.
- Revegetation.
- Light non-aqueous phase liquid (LNAPL) removal.
- Containment, collection, treatment and discharge of grossly contaminated groundwater (exceeding 1,000ug/L PCP).
- Monitored Natural Attenuation (MNA) of groundwater contamination.
- Institutional controls.
- Environmental monitoring/maintenance.

All components are currently operational, and are operated by a fund lead U.S. EPA contractor, CH_2M Hill.

The remedy at the Site is protective in the short-term, and in the interim, exposure pathways that could result in unacceptable risks are being controlled. Based upon the review of annual groundwater monitoring data, other data reviews, and the October 28, 2009 Site inspection conducted for this five-year review, there are no current exposures to human health and the environment. However, the required institutional controls have not yet been implemented. Long-term protectiveness will be achieved upon attainment of Wisconsin Preventive Action Limits (PALs) and implementation of the required institutional controls. Protectiveness will be ensured by implementing, maintaining, monitoring and by enforcing ICs as well as maintaining the site remedy components.

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Five-Year Review Summary Form

Site name *(from WasteLAN)*: **SITE NAME** Penta Wood Products		
EPA ID *(from WasteLAN)*: WID006176945		
Region: 5	**State:** WI	**City/County:** Burnett
SITE STATUS		
NPL status: ☒ Final ☐ Deleted ☐ Other (specify)		
Remediation status (choose all that apply): ☐ Under Construction ☒ Operating ☐ Complete		
Multiple OUs?* YES ☒ NO	**Construction completion date:** 09/28/2000	
Has site been put into reuse? ☐ YES ☒ NO		
REVIEW STATUS		
Lead agency: ☒ EPA ☐ State ☐ Tribe ☐ Other Federal Agency _____		
Author name: Thomas G. Williams		
Author title: Remedial Project Manager	**Author affiliation: U.S. EPA**	
Review period: September 1, 2009 to November 5, 2009		
Date(s) of site inspection: October 28, 2009		
Type of review: ☒ Post-SARA ☐ Pre-SARA ☐ NPL-Removal only ☐ Non-NPL Remedial Action Site ☐ NPL State/Tribe-lead ☐ Regional Discretion		
Review number: ☐ 1 (first) ☒ 2 (second) ☐ 3 (third) ☐ Other (specify) _____		
Triggering action: ☐ Actual RA Onsite Construction ☐ Actual RA Start ☐ Construction Completion ☒ Previous Five-Year Review Report ☐ Other (specify) Record of Decision Signature		
Triggering action date *(from WasteLAN)*: 03/04/2005		
Due date *(five years after triggering action date)*: 03/04/2010		

Five-Year Review Summary Form, cont'd.

Issues:

Institutional controls are not in place.

A plan for long-term stewardship for maintaining and monitoring effective institutional controls has not been prepared.

U.S. EPA will work with WDNR to complete and implement a Remedial Action Optimization Evaluation of the groundwater treatment plant.

Recommendations and Follow-up Actions

Develop an Institutional Control Plan for the Site.

Develop a Long-Term Stewardship Plan or update the O&M Plan to oversee and monitor institutional controls after they are implemented to ensure long-term stewardship. This may

include developing and implementing a communication strategy with appropriate state/local governmental agencies.

Complete Remedial Action Optimization Evaluation and implement recommendations.

Protectiveness Statement

The remedy at the Site is protective in the short-term, and in the interim, exposure pathways that could result in unacceptable risks are being controlled. Based upon the review of annual groundwater monitoring data, other data reviews, and the October 28, 2009 Site inspection conducted for this five-year review, there are no current exposures to human health and the environment. However, the required institutional controls have not yet been implemented. Long-term protectiveness will be achieved upon attainment of Wisconsin Preventive Action Limits (PALs) and implementation of the required institutional controls. Protectiveness will be ensured by implementing, maintaining, monitoring and enforcing ICs as well as by maintaining the site remedy components.

Date of last Regional Review of Human Exposure Indicator: 7/02/2009
Human Exposure Survey Status: Current Human Exposure Controlled
Date of last Regional review of Groundwater Migration Indicator: 7/02/2009
Groundwater Migration Survey Status: Contaminated Groundwater Migration Under Control
Ready for Reuse Determination Status: This site is not ready for a Site Wide Ready for Anticipated Reuse

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Five-Year Review Report

I. Introduction

The purpose of a five-year review is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five-Year Review reports. In addition, Five-Year Review reports identify issues found during the review, if any, and recommendations to address them.

The Agency is preparing this five-year review pursuant to CERCLA §121 and the National Contingency Plan (NCP). CERCLA §121 states:

> *If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

The agency interpreted this requirement further in the National Contingency Plan (NCP); 40 C.F.R. § 300.430(f)(4)(ii) states:

> *If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.*

The United States Environmental Protection Agency (U.S. EPA) Region 5 has conducted a five-year review of the remedial actions implemented at the Site, located in Burnett County, Wisconsin. This statutory review was conducted by the Remedial Project Manager (RPM) from September 1, 2009 to November 5, 2009. This report documents the results of the review.

This is the second five-year review for the Site. The triggering action for this statutory review is the date of the first five year review: March 4, 2005. This review is required because hazardous substances, pollutants, or contaminants are or will be left on site above levels that allow for unlimited use and unrestricted exposure.

II. Site Chronology

Table 1: Chronology of Site Events	
Event	**Date**
Penta Wood Products operated as a wood treating facility	1953-1992
Wisconsin Department of Natural Resources requests PWP to do an Environmental Site Investigation	1987
PWP voluntarily closed	May 1992
Site placed in the Superfund Accelerated Cleanup Model (SACM) pilot program	1993
Site placed on NPL	June 17, 1996
USEPA conducts a removal action	April 1994-May 1998
Ecological Risk Assessment Completed	June 30, 1998
USEPA conducts a RI/FS	March 1, 1994-September 29,1998
ROD signed	September 29, 1998
Remedial action start	December 23, 1999
Remedial Action Completion	December 28, 2000
LTRA start	August 18, 2004
First Five-Year Review	March 4, 2005

III. Background

Physical Characteristics

The PWP site is an inactive wood treating facility located along Daniels 70 (former State Route 70) in Burnett County, Wisconsin. It is approximately 78 miles northeast of Minneapolis, Minnesota, and 60 miles south of Duluth, Minnesota. The Village of Siren, Wisconsin, is approximately 2 miles east of the site. See Figure 6.

Currently the PWP property consists of approximately 82 acres that were actively used for cutting and treating raw wood timber products. The PWP site is situated on a plateau with a 110-foot drop in elevation from the southern boundary to the northern boundary. The site stratigraphy consists of three layers: an upper sand, a glacial till that is not continuous throughout the site, and a lower sand. The depth to groundwater is over 100 feet on the plateau. The regional groundwater flow direction is to the north. Since the closing of the former facility production well, groundwater flow at the site has been radial, with a strong downward vertical gradient. See Figure 7.

Land and Resource Use

The property is located in a rural agricultural and residential setting and is bordered to the east, west, and north by forested areas; some of these areas are classified by the Wisconsin Department of Natural Resources (WDNR) as wetlands. A wetland is located within 130 feet of the northern property boundary. A number of surface water bodies are present north and east of the site. Doctor Lake and an unnamed lake are located 2,000 feet east and northeast of the site, respectively. The Amsterdam Slough Public Hunting area covers 7,233 acres and is located 1 mile north of the site.

Four private residences are within 1000 feet of the site and have potable wells. Thirty-eight private wells were located within a 1-mile radius of the landfill according to the May 1998 Feasibility Study (FS).

History of Contamination

PWP operated from 1953 to 1992. Raw timber was cut into posts and telephone poles and treated with either a 5 to 7 percent PCP solution in a No. 2 fuel oil carrier, or with a water born salt treatment called Chemonite consisting of ammonia, copper II oxide, zinc and arsenate (ACZA). PWP also conducted toll blending of pentachlorophenol and fuel oil on a contract basis for industrial users just prior to closing in 1992. 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 also discharged onto a wood chip pile in the northwestern portion of the property. Ash from a boiler was used as a berm for a cooling pond. Beginning in the 1970s, WDNR investigators noted several large spills, stained soils, fires and poor operating practices. Figure 8 is a map of the Penta Wood Products Site when it was operating as a wood treating facility.

Initial Response

PWP began an environmental investigation in 1987. In 1988, the on-site production well was closed for potable use when it was found to contain 2,700 parts per billion (ppb) of PCP. The State of Wisconsin Department of Justice filed a preliminary injunction against PWP in 1991, citing WPDES violations and violations of other State statutes regarding storage of raw materials, and waste handling practices. The facility voluntarily closed in May 1992 with the promulgation of the Resource Conservation and Recovery Act (RCRA) drip track regulations.

The site was put into the Superfund Accelerated Cleanup Model (SACM) pilot program in 1993. The site was listed on the National Priorities List (NPL) on June 17, 1996. A removal action was conducted from 1994 to 1996. The ACZA treatment building and half of the oil/water separator building were demolished and remaining chemicals and sludges were disposed off-site. Grossly PCP-and metals-contaminated soils were excavated and disposed off-site, and metals-contaminated soils were excavated and mixed with cement on-site to form a 3-acre concrete biopad.

A Remedial Investigation/Feasibility Study (RI/FS) was conducted by USEPA in 1997 – 1998, culminating with the issuance of a Record of Decision (ROD) in September 1998.

Basis for Taking Action

As a result of spills and past waste handling practices at the site, subsurface soils to a depth of over 100 feet are contaminated with a PCP/oil mixture beneath the gully where wastewater was discharged from an oil/water separator to a lagoon. Areas near the dip tanks, oil/water separator, drying racks, boiler and ACZA treatment building exhibited gross contamination for arsenic and or PCP. Severe erosion of surface soils and overland transport of contaminated soils and wood debris has resulted in the contamination of surface water and sediment in an offsite wetland to the northeast.

Over the years PWP had filled erosion gullies with wood debris and ash from the boiler where PCP sludges were burned. This wood debris layer is semi-saturated with the PCP/oil mixture. The PCP/oil mixture, which has traveled to the groundwater and spread horizontally as a light non-aqueous phase liquid (LNAPL) layer is floating on the water table over an estimated 4-acre area. A dissolved phase PCP plume exists in the groundwater. Groundwater contamination appears to be stable, and there is no evidence of contaminated groundwater discharging to the wetland or migrating below the wetland to surface water bodies.

Hazardous substances that have been released and/or detected at the site in each media include:

Contaminant	Media
Arsenic	Groundwater, Sediment, Soil, Surface Water
Benzene	Groundwater, Soil
Chloride	Groundwater, Surface Water
Copper	Groundwater, Sediment, Soil, Surface Water

Ethylbenzene	Groundwater, Soil
Fluorene	Soil
Iron	Groundwater, Surface Water
Isophorone	Soil
Manganese	Groundwater, Surface Water
Methylnaphthalene	Soil
Naphthalene	Groundwater, Soil
Pentachlorophenol	Groundwater, Sediment, Soil, Surface Water
Phenanthrene	Soil
Toluene	Groundwater, Soil
Xylene	Groundwater, Soil
Zinc	Groundwater, Sediment, Soil, Surface Water

A baseline Risk Assessment was conducted to evaluate potential risks from contaminant exposure at the PWP site, and determine the need for and extent of remediation. A Focused Human Health Risk Assessment Report (Ecology & Environment 1997) and a Screening Level Ecological Risk Assessment Report (CH_2M Hill 1998a) were prepared. The risk assessments were conducted in accordance with U.S. EPA's guidance. Based on the results of the Focused Human Health Risk Assessment and Screening Level Ecological Risk Assessment, exposure to contaminated soil or groundwater are associated with significant human health and ecological risks, due to exceedance of U.S. EPA's risk management criteria for either the average or the reasonable maximum exposure scenario. Risks from exposure to soil were significant primarily due to the presence of arsenic and PCP.

IV. Remedial Actions

Remedy Selection

The major components of the remedy selection included the following:

- Building demolition
- Segregation, select solidification, and placement of all arsenic contaminated soils in an onsite Corrective Action Management Unit (CAMU)
- Consolidation of Pentachlorophenol (PCP)/fuel oil soils and wood chips in the CAMU under a soil cover
- Bioventing PCP/fuel oil contaminated material
- Biopad removal and disposal onsite in the CAMU
- Erosion control measures
- Revegetation
- Light non-aqueous phase liquid (LNAPL) removal.
- Containment, collection, treatment and discharge of grossly contaminated groundwater (exceeding 1,000ug/L PCP)
- Monitored Natural Attenuation (MNA) of groundwater contamination
- Institutional controls

- Environmental monitoring/maintenance

Remedy Implementation

The site cleanup was a fund-financed remedial action to accomplish the objectives of the ROD. The remedial action (RA) includes a construction phase and a Long-Term Remedial Action (LTRA) phase.

Remedial construction activities in support of the RA began in December 1999 with actual construction starting on March 6, 2000. These activities included the following:

- Demolition of 17 buildings and foundations, and the offsite disposal of demolition material, debris piles, and laboratory chemicals.

- Excavation and consolidation of contaminated soils into a 7-acre Corrective Action Management Unit (CAMU), as shown in Figure 10. PCP-contaminated soils were deposited on the CAMU's southern portion and arsenic-contaminated soils were placed on the northern portion. A wall of concrete rubble and stabilized arsenic-contaminated soil divides the two portions.

- Constructing an infiltration basin for discharging treated groundwater.

- Placing a soil cover over the CAMU with 6 inches of sand followed by 6 inches of topsoil, and then seeding and mulching the cover. Installing a gated 6-foot high fence encircling the perimeter of the CAMU restricted access.

- Erosion control structures including gabion basket downchutes, velocity control check dams and rip-rapped drainage ditches were constructed to protect the integrity of the CAMU.

- Seeding and mulching all barren areas and establishing a vegetative cover over all exposed areas of the site, including mulching and planting prairie grasses, native trees and shrubs.

- Drilling operations included abandonment of existing wells and the installation of the multi-purpose biovent and groundwater extraction wells, soil gas wells, a monitoring well, and the groundwater and LNAPL recovery pumps.

- Constructing a treatment building housing the biovent blower system, LNAPL recovery tanks and a groundwater treatment system. The treatment system consisting of an oil bag filter, activated clay treatment, granular activated carbon treatment, controls, and discharge piping.

The original remedial construction was completed in September 2000 but the groundwater treatment system was unable to achieve the required discharge limits for the treated groundwater. The groundwater treatment system could not be operated without almost immediately clogging the oil bag filter, activated clay treatment and granular activated carbon units with emulsified oil. An additional remedial action was required to construct a wastewater treatment plant addition to treat contaminated groundwater and LNAPL to meet discharge limits set by the WDNR. U.S. EPA and the WDNR signed a revised Superfund State Contract (SSC) in February and March 2003

respectively. The total cost of the remedial action (including long-term remedial action) increased from $7.7 million (original SSC in late 1999) to $12.7 million. The additional remedial action included the following:

- Construct a building to house the treatment plant addition.
- Install treatment equipment including a Dissolved Air Floatation (DAF) unit, a sludge dewatering system and sludge handling equipment.
- Install a well to obtain potable water.
- Continue to implement the long-term remedial action (LTRA) for a ten-year period, which starts three months after U.S. EPA certifies that the treatment plant is operational and functional.

A final inspection of the additional remedial action was conducted on May 5, 2004, and the U.S. EPA certified the treatment plant operational and functional on August 12, 2004. This began the 10-year LTRA period.

System Operation/Operation and Maintenance

Remedial Action Objectives were developed as a result of data collected during the Remedial Investigation to aid in the development and screening of remedial alternatives to be considered for the ROD. Pentachlorophenol and arsenic are the primary risk drivers at the site. Pentachlorophenol present in soils extending down to groundwater, is a major component of the LNAPL, and is present in the groundwater plume. Arsenic was present primarily in surface soils and wetland sediments.

Pentachlorophenol: The remedial objective is to reduce the PCP content in soils and groundwater to achieve compliance with ch. NR 720, Wisconsin Administrative Code, and in groundwater to achieve compliance with PALs, as established in ch. NR 140, Wisconsin Administrative Code, within a reasonable period of time. This reduction will be accomplished by removing the free phase LNAPL (by extraction and on-site treatment), and associated highly contaminated groundwater, remediating the PCP in the soils, and monitoring the intrinsic remediation of PCP in the groundwater. Capture of the contaminant plume and LNAPL is ongoing. See Figures 7 and 11. Institutional controls will be used to prevent groundwater use or direct contact exposure prior to achieving compliance.

Arsenic: Highly contaminated arsenic soils were immobilized and consolidated with other arsenic contaminated soils (above background), and secured in a Corrective Action Management Unit (CAMU) to achieve compliance with NR 720. Soil contaminated with arsenic and other metals were managed to essentially eliminate the direct contact exposure route and to protect groundwater. Performance of the metals consolidation area is monitored.

Erosion Controls: An Erosion Control Plan was implemented and maintained to prevent physical transport of contamination off-site and to protect the CAMU and consolidated areas from damage. The erosion control measures will be periodically inspected and maintained/repaired as necessary.

Table 2: Annual System Operations/O&M Costs

Dates		Total Cost rounded to nearest $1,000
From	To	
January 2004	December 2004	1,00[illegible],000
January 2005	December 2005	826,000
January 2006	December 2006	1,082,000
January 2007	December 2007	1,113,000
January 2008	December 2008	1,036,000

Institutional Controls

Institutional Controls (ICs) are non-engineered instruments, such as administrative and/or legal controls, that help minimize the potential for exposure to contamination and protect the integrity of the remedy. Compliance with institutional controls is required to assure long-term protectiveness for any areas which do not allow for unlimited use or unrestricted exposure (UU/UE).

In order to limit the potential for human exposure to contaminated media, the 1998 ROD required institutional controls (ICs) (deed restrictions) at the site. Although a fence is in place around the title property which includes the treatment plant and CAMU, the ICs described in the ROD have not been placed and recorded in the property records for the site.

Table 3 identifies those areas that do not support unlimited use and unrestricted exposure

Table 3. Summary of Institutional Controls

Media, Engineered Controls, and Areas that do not Support UU/UE Based on Current Conditions	IC Objective and Restrictions	Title of IC Instrument Implemented	Required as part of the remedy?
Ground water at the Site above PALs	Prohibit well installation except as approved by the agencies and prohibit groundwater consumption.	Restrictive covenant or other similar proprietary IC (planned)	Yes
Property area and CAMU (approximately 82 acres)	Prohibit residential development; prohibit	Restrictive covenant or similar IC or ordinance (planned)	Yes

	interference with CAMU and consolidation areas; prohibit exposure		
Other Remedy Components	Prohibit interferences with remedy component	Restrictive covenant or similar IC (planned)	Yes

Current Compliance

U.S. EPA's contractor is currently operating the plant and maintaining the Site. There are no uses of the Site, including groundwater uses, which are inconsistent with the objectives which will be served by the institutional controls. No one is being exposed to Site-related contaminants. There are no drinking water supply wells installed within the impacted groundwater area. In the interim, access to the Site is limited by the permanent fence. As of the date of this five-year review, no unauthorized development or use of Site groundwater has occurred.

Long-Term Stewardship Plan

Since compliance with the institutional controls is necessary to assure the protectiveness of the remedy, planning for long-term stewardship is required. Long-term stewardship involves assuring effective procedures are in place to properly maintain and monitor the site. Long-term stewardship will ensure effective institutional controls (ICs) are maintained and monitored and that the remedy continues to function as intended with regard to the institutional controls. A Long-Term Stewardship Plan shall be developed, or the O&M plan updated, that includes procedures to ensure long-term institutional controls are in place and effective.

CAMU O&M

Operation and maintenance of the CAMU includes inspection of the CAMU surface, vegetation conditions, and surface water drainage features. Inspections of the CAMU are performed regurlary by the U.S. EPA contractor. Semiannual sampling is performed in the spring (May) and fall (September/October).

V. Progress Since the Last Review

Table 4: Actions Taken Since the Last Five-Year Review

Issues from Previous Review	Recommendations/ Follow-up Actions	Party Responsible	Milestone Date	Action Taken and Outcome	Date of Action
None.	Continue LNAPL removal and implement bioventing as necessary. Prepare an annual report evaluating the effectiveness of the treatment system in meeting the cleanup goals and other site activities. Promote revegetation and maintain erosion control measures on site.	EPA	Ongoing	The treatment system continues to remove LNAPL and is continuously evaluated to increase performance. Annual reports have been prepared every year since 2004. 1000 red and white pine were planted in an 18 acre area where grass had not grown in the spring of 2009.	Ongoing

Protectiveness Statement from Last Review

The last five-year review completed in 2004 found that the remedy was expected to be protective of human health and the environment when groundwater standards were achieved, the cover on the CAMU was maintained, and the appropriate property deed restrictions were implemented. In the interim, exposure pathways that could result in unacceptable risks were being controlled.

Long-term protectiveness of the remedial action, the last review stated that it would was to be verified by obtaining additional groundwater samples to fully evaluate the effectiveness of LNAPL removal, groundwater pumping and bioventing. Significant amounts of LNAPL were being collected. Additional sampling and analysis were to be conducted on a regular basis. Exposure pathways that could result in unacceptable risks were being controlled. The remedy was expected to be protective of human health and the environment when groundwater standards were achieved, the cover on the CAMU was maintained, and the appropriate property deed restrictions were implemented. Groundwater monitoring data indicated that the remedy was functioning as required to achieve the Applicable or Relevant and Appropriate Requirements (ARARs) at the site. The time to determine this is difficult to estimate due to the complexity of the contaminate plume.

Status of Recommendations and Follow-Up Actions from Last Review

The Recommendations and Follow-Up Actions from the last five-year review have been implemented. Operating the treatment system to continue to remove LNAPL and continuously evaluating the system to optimize performance have both been done. No ICs have been implemented

As recommended by the last review, annual Reports have been prepared every year since 2004.

To address the recommendation for promoting revegetation and maintaining erosion control measures on site, 1,000 red and white pine trees were planted in an 18 acre area where grass had not grown in the spring of 2009. Seventy-five percent of the saplings were thriving as of October 2009. Grass never took hold because the soil is largely comprised of sand.

Results of Implemented Actions, Including Whether They Achieved the Intended Effect

The treatment system continues to remove LNAPL and is continuously evaluated to increase performance. A Remedial Action Optimization Plan is currently under evaluation by U.S. EPA in consultation with WDNR.. This evaluation should be completed by March 31, 2010. Options range from shutting the treatment plant down for six months to evaluate plume behavior to adding three additional LNAPL extraction wells. Annual reports have been prepared every year since 2004. Erosion has been controlled. One thousand red and white pine trees were planted in an 18 acre area where grass had not grown in the spring of 2009. See Appendix D, Site Photos.

VI. Five-Year Review Process

Administrative Components

WDNR was notified of the initiation of the five-year review on September 1, 2009. The Penta Wood Products five-year review was led by Tom Williams of the U.S. EPA, Remedial Project Manager. Sue Pastor of the U.S. EPA, Community Involvement Coordinator (CIC) and Bill Schultz, of the WDNR, assisted in the review.

The review, which began on September 1, 2009, consisted of the following components:

- Community Involvement;
- Document Review;
- Data Review;
- Site Inspection; and
- Five-Year Review Report Development and Review.

Community Involvement

Activities to involve the community in the five-year review were initiated with a meeting in late 2008 between the RPM and CIC for the Site. A notice was published in the local newspapers, the Inter-County Leader and the Burnett County Sentinel, on October 14, 2009, stating that there was a five-year review and inviting the public to submit any comments to U.S. EPA. The results of the review and the report will be made available at the Site information repository located at the Burnett Community Library and the Grantsburg Public Library.

Document Review

This five-year review consisted of a review of relevant documents including O&M records and monitoring data (Appendix A). Applicable soil and groundwater cleanup standards, as listed in the 1998 ROD, were also reviewed.

Data Review

Groundwater

The eighth year of post-remedial action (RA) groundwater monitoring at the Penta Wood Products site included two groundwater sampling events. The semiannual groundwater sampling event was conducted at the Penta Wood Products site in May 2008 and consisted of sampling at five monitoring wells, five residential wells, and one onsite potable well, along with static water level measurements collected at all monitoring wells, and product level measurements in monitoring wells with light nonaqueous phase liquid (LNAPL). The annual groundwater sampling event was conducted in October 2008 and consisted of sampling 14 monitoring wells, 5 residential wells, and one onsite potable well; measuring static water levels in all monitoring wells; and measuring product levels in monitoring wells with LNAPL. This review presents the results of the two groundwater sampling events and includes tables and figures presenting historical groundwater data.

The treatment system operated for approximately one year prior to September 2001, when it was shut down to allow for pilot testing and plant modifications intended to help meet effluent criteria. Since it was restarted on February 27, 2004, the treatment system has been running continuously with the exception of occasional downtime for routine maintenance and repairs. The October 2008 monitoring well results reflect approximately 4.5 years of system operation since the groundwater treatment system was restarted. Future groundwater monitoring events will also evaluate impacts from the bioventing system which began operation in September 2007.

Parameters that are analyzed include pentachlorophenol (PCP); naphthalene; benzene, toluene, ethylbenzene, and xylene (BTEX); dissolved metals; and natural attenuation parameters (such as oxidation-reduction potential, chloride, nitrate, methane, and sulfate). Water level and LNAPL measurements are made to determine the remaining LNAPL thickness and the groundwater flow direction(s) in the unconfined and semiconfined aquifers.

To observe PCP trends over time, PCP concentration contours that exceed 1,000 µg/L are presented in Figure 10. PCP concentration contours that exceed the PAL of 1 µg/L are presented in Figure 11. The 1997 contour represents baseline conditions prior to the operation of the groundwater extraction and treatment system.

To observe PCP trends over time, PCP concentration contours that exceed 1,000 micrograms per liter (µg/L) are presented in Figure 10. PCP concentration contours that exceed the PAL of 1 µg/L are presented in Figure 11. The 1997 contour represents baseline conditions prior to the operation of the groundwater extraction and treatment system.

A comparison of the 1,000 µg/L PCP contour lines in Figure 10 for 1997, 2007, and 2008 shows that the high concentration plume has shrunk from the 1997 baseline and the extent of the 2008 plume remains similar to the 2007 contour. Larger reductions in plume size are not anticipated until a more significant amount of LNAPL is removed, given the large mass of PCP that can solubilize from the LNAPL residual.

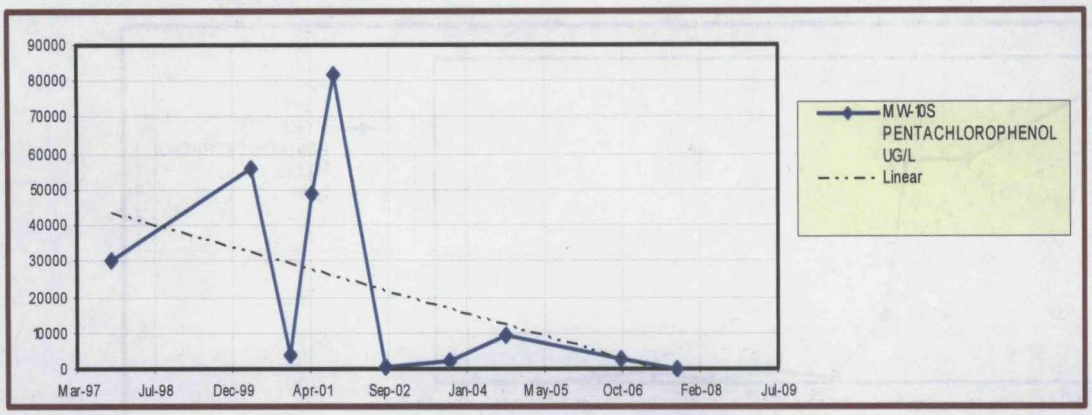
PCP trends are discussed below for individual monitoring wells within the PCP plume.

Five residential wells are sampled semi-annually as part of the regular groundwater monitoring program. During the eight years of O&M sampling, no contaminants at levels of concern/above PALs have been detected in any of the residential wells.

MW-10S

Monitoring well MW-10S has shown wide fluctuations in PCP during groundwater collection periods, as shown in Figure 5. Since 2002, the presence of LNAPL (sheen or measurable product) has been inconsistent at MW-10S. The intermittent presence of LNAPL and change in sampling methods results in a wide range of PCP concentrations with concentrations significantly decreased since the use of a dedicated sampling pump. LNAPL was measured in MW-10S in May 2008 at a thickness of 0.40 feet and a thickness of 0.14 feet in October 2008. The presence of free product is likely the result of extraction well EW-03 pulling product towards it while actively pumping. Overall, PCP has declined from 56,100 µg/L prior to the start of groundwater extraction in 2004, to less than the detection limit in 2005 (less than 0.11 µg/L). In September 2007, it was detected at 24 µg/L in MW-10S. The well went dry during sampling in October 2008 and was unable to be sampled for PCP.

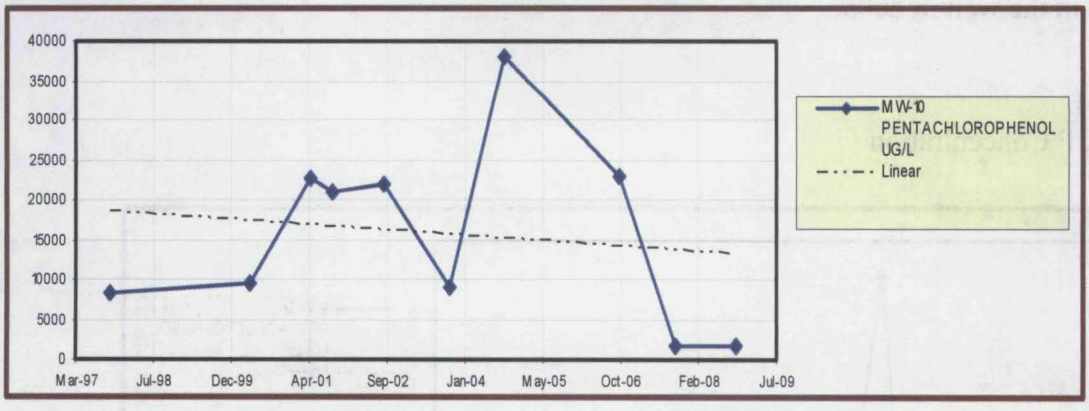
FIGURE 1
MW-10S PCP Concentration



MW-10

PCP in monitoring well MW-10 increased from 9,530 µg/L shortly before the startup of the treatment system, to 22,000 µg/L in August 2002 (see Figure 2). Concentrations in the well did not drop immediately, but by September 2003, concentrations had fallen to 9,000 µg/L. In September 2004, PCP concentrations at MW-10 increased to 38,000 µg/L. This is likely a result of the extraction system restart in February 2004. MW-10 is located very close to extraction well EW-03, which pulls product toward it while actively pumping. In September 2006, a concentration of 23,000 µg/L was reported, but by October 2008, PCP concentrations at MW-10 decreased to 1,630 µg/L and were consistent with concentrations observed in 2007.

FIGURE 2
MW-10 PCP Concentration

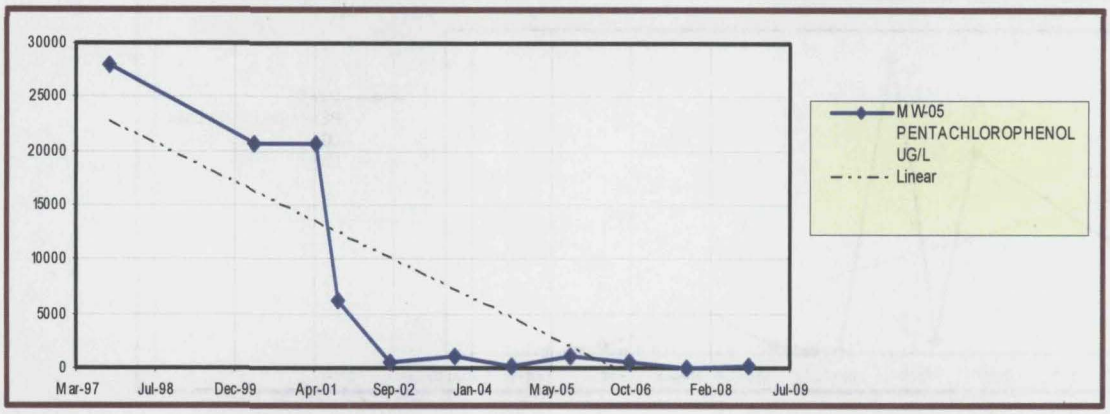


MW-05

PCP in monitoring well MW-05 has dropped sharply from 20,600 µg/L, prior to the start of operation of the groundwater treatment system, to 206 µg/L in the most recent sample in October 2008 (see Figure 3). PCP concentrations remain low in this area because nearby uncontaminated

groundwater is being drawn radially toward EW-02 and EW-05 since their activation in February 2004, thereby purging the aquifer of PCP. Free product has never been observed in this well.

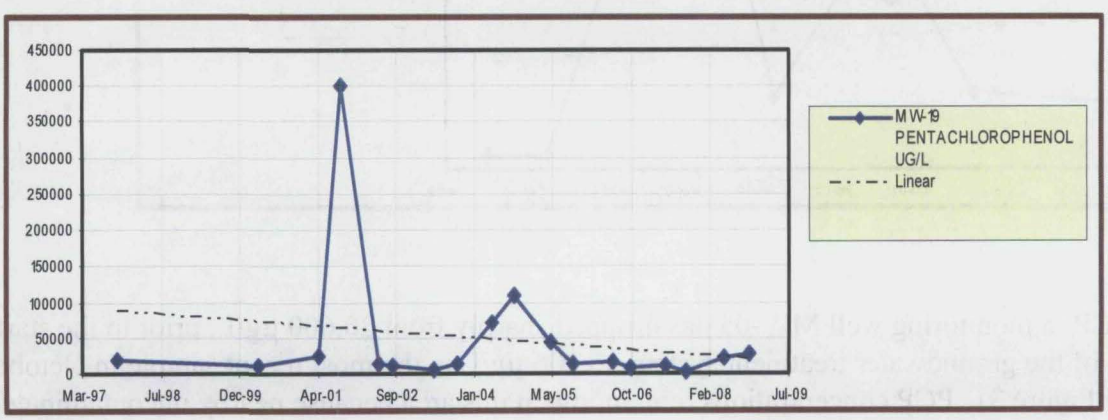
FIGURE 3
MW-05 PCP Concentration



MW-19

LNAPL has been present in MW-19 since monitoring began, and any entrainment of LNAPL droplets in the sample will have notable effects on PCP concentrations, impacting the evaluation of PCP trends. The LNAPL has resulted in large variations in PCP concentrations (see Figure 4) that are not believed to be indicative of the dissolved phase groundwater concentrations. LNAPL continues to be observed in MW-19 (0.90 feet in May 2008 and product detected but thickness not measured due to an obstruction in the well in October 2008). The PCP concentrations were measured at 23,000 µg/L in May 2008 and 27,900 µg/L in October 2008, which is slightly higher than the PCP concentration reported in 2006 and 2007. Although variability of PCP concentrations in samples collected from wells with LNAPL is expected, the variability of PCP concentrations in this well appears to have decreased since the installation of dedicated sampling equipment in the well in 2005.

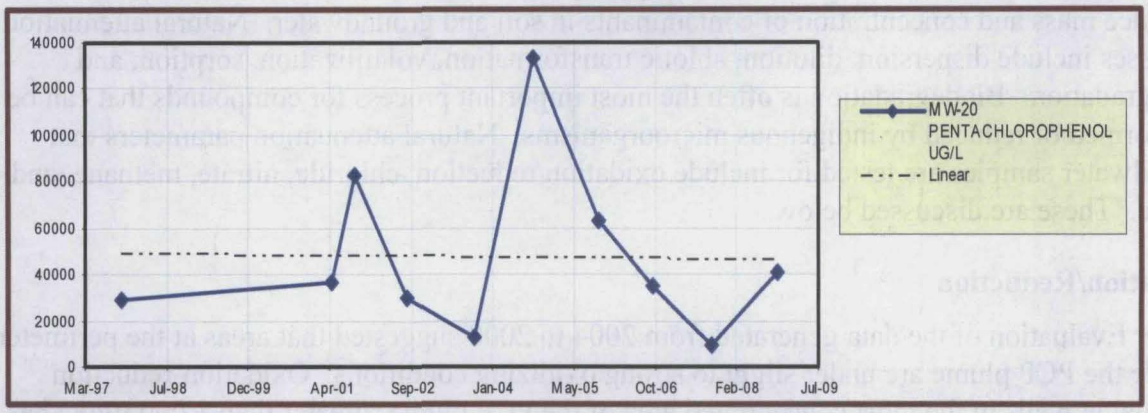
FIGURE 4
MW-19 PCP Concentration



MW-20

LNAPL has also been present in MW-20 since monitoring began, with the exception of May 2006, when the well was dry. As with MW-19, the LNAPL has resulted in large variations in PCP (see Figure 5) that are not believed to be indicative of dissolved phase groundwater concentrations. After eliminating bailer sampling methods with the use of dedicated Grundfos Redi-Flo 2 MP1 pumps starting in 2005, the entrapment of LNAPL in groundwater samples from this well should be minimized. LNAPL was detected in MW-20 in May 2008 at a thickness of 1.71 feet. The LNAPL thickness was not calculated in October 2008 due to an obstruction in the well. PCP concentrations have declined since the installation and use of the dedicated sampling pumps, and in October 2008, PCP at MW-20 was detected at 41,000 µg/L.

FIGURE 5
MW-20 PCP Concentration



Naphthalene

Naphthalene has historically been detected in five monitoring wells at levels above the reporting limits: MW-10, MW-10S, MW-12, MW-19, and MW-20. Naphthalene was detected in four monitoring wells at levels above the reporting limits in 2008: MW-10, MW-10S, MW-19, and MW-20, with concentrations ranging from 0.82 µg/L in MW-10 to 1,150 µg/L in MW-20. All wells where naphthalene was detected are within the area of concentrated PCP (greater than 1,000 µg/L). The concentration in MW-10 has decreased from 5,410 µg/L to 0.82 µg/L since 2000. Naphthalene has decreased from 512 µg/L to 3.4 µg/L since 2000 in MW-10S. The concentration has decreased from 5,260 µg/L to 120 µg/L in MW-19 since 2000. The concentration increased in MW-20 from 71 µg/L to 1,150 µg/L from 2007 to 2008. The increase in naphthalene detected in MW-20 is believed to be the result of entrapment of LNAPL as discussed above for PCP.

BTEX

BTEX compounds were detected above the reporting limits at two monitoring wells in 2008. The two monitoring wells (MW-19 and MW-20) where these compounds were detected are located within the area of concentrated PCP (greater than 1,000 µg/L). Benzene was not detected in any well. The BTEX concentrations in MW-19 have remained relatively constant over time. Since 2002, the ethylbenzene has ranged from 2 µg/L to 5.11 µg/L, toluene has ranged from 1 µg/L to 5.08 µg/L, and xylene has ranged from 29 µg/L to 54 µg/L. Since 2002, a decrease in BTEX concentrations in MW-20 has been observed: ethylbenzene decreased from12 µg/L to 3.0

µg/L, toluene decreased from 9 µg/L to 5.1 µg/L, and xylene decreased from 120 µg/L to 38.7 µg/L.

Dissolved Metals

In previous years, both total and dissolved metals analyses were performed on samples collected from monitoring wells. Suspended solids often have a significant impact on total metals concentrations; therefore, total metal concentrations may not be indicative of actual groundwater conditions. Beginning in 2006, total metals analyses have been removed from the sampling plan, as they are often biased high as a result of the frequent presence of suspended solids. Analyses for dissolved arsenic, copper, iron, manganese, and zinc were done for samples collected in May and October 2008. Minor exceedances of the WDNR PALs and WDNR Enforcement Standards for dissolved metals have occurred historically and are expected to continue.

Natural Attenuation Parameters

Natural attenuation is a remediation approach that relies on natural processes which work to reduce mass and concentration of contaminants in soil and groundwater. Natural attenuation processes include dispersion, dilution, abiotic transformation, volatilization, sorption, and biodegradation. Biodegradation is often the most important process for compounds that can be transformed or reduced by indigenous microorganisms. Natural attenuation parameters that groundwater samples are tested for include oxidation/reduction, chloride, nitrate, methane, and sulfate. These are discussed below.

Oxidation/Reduction

Evaluation of the data generated from 2004 to 2008 suggested that areas at the perimeter or outside the PCP plume are under slight to strong oxidizing conditions. Oxidation-reduction potential at wells in the most concentrated area of the PCP plume (greater than 1,000 µg/L) has not been measured, due to the possibility of LNAPL affecting the field measurements. It is expected that the wells within the most concentrated area of the PCP plume would exhibit reducing conditions. This is supported by reducing conditions measured in MW-5, located near the fringe of the PCP plume.

Chloride

Elevated chloride concentrations are an indicator of PCP degradation. About 700 µg/L of chloride is produced for each 1,000 µg/L of PCP degraded. Generally, chloride is higher at the plume interior wells than at the perimeter wells. In 2008, the semi-confined wells had chloride levels ranging from 7.78 mg/L to 60.5 mg/L. The unconfined wells ranged from 1.9 mg/L to 68.8 mg/L, with the highest levels reported in MW-21 (near Daniels 70), MW-26 (near the infiltration basin), and MW-06S (in the CAMU). Historically, MW-03 and MW-21 have reported the highest chloride levels, possibly because of their proximity to the highway where influence from seasonal road salting may be causing elevated chloride concentrations.

Since the beginning of groundwater extraction, correlation between PCP degradation and chloride production has been difficult to accurately determine. This is because as chloride is produced, it is removed by the extraction system.

Nitrate

In 2008, nitrate levels remained relatively low, ranging from non-detectable (less than 0.05 mg/L) to 7.11 mg/L, and remaining comparable to concentrations observed in 2007.

Methane

Methane, a product of anaerobic degradation, was detected in eight wells in October 2008 (MW-03, MW-05, MW-07, MW-08, MW-10 and MW-19) at low concentrations ranging from 0.0008 to 0.11 mg/L. The absence of methane at or above the detection limit in most wells suggests that degradation is occurring primarily under nonmethanogenic, anaerobic iron, or sulfate-reducing conditions or potentially under aerobic degradation.

Sulfate

Once oxygen and nitrate are depleted, sulfate can also be used as an electron acceptor. Sulfate continues to fluctuate within the plume and has not shown any clear trends. Sulfate levels in 2008 are similar to previous years.

Site Inspection

The inspection at the Site was conducted on October 28, 2009. In attendance was Tom Williams, U.S. EPA. Bill Schultz, of the WDNR, had performed his inspection on October 6, 2009. The purpose of the inspection was to assess the protectiveness of the remedy, including the presence of fencing to restrict access, the integrity of the CAMU, and general condition of the LNAPL/groundwater collection system.

The Site in general was in very good condition and undisturbed. No new uses of groundwater were observed. The lock and fences were in good condition. The vegetative cover was in very good condition with no bare spots or stressed vegetation observed.

VII. Technical Assessment

Question A: Is the remedy functioning as intended by the decision documents? Yes

- The construction and maintenance of the erosion control measures continues to protect the soil cover of the CAMU and to minimize erosion other soils.

- The construction of the LNAPL recovery system and the groundwater treatment system has been completed. Treated groundwater is meeting the required on-site discharge limits of the Substantive Requirement Document. The treatment system will continue to be operated until conditions are met for restoration of groundwater to NR140 Wisconsin Administrative Code Preventive Action Limits (PALs) by natural attenuation.

- The monitoring well network provides sufficient data to assess groundwater quality at the site and to determine the effectiveness of the remedial action. The Long Term Monitoring Plan is providing adequate sampling and analysis for compliance monitoring as required by the selected remedy. The groundwater contamination has been confined to the site and there is

little movement of the contaminant plume. Monitoring of adjacent residential wells has demonstrated that the plume has been contained on site. The groundwater pump and treatment system is providing effective treatment and containment of the plume.

- The perimeter fencing and fencing around the CAMU appear adequate to limit access to the site.

Institutional controls such as in the form of restrictive covenants are not in place. An IC plan will be prepared, and appropriate restrictions will be drafted. No one currently owns the property.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of remedy selection still valid? Yes

There have been no changes in the physical conditions of the Site that would affect the protectiveness of the remedy. There have been no changes in the toxicity factors for the contaminants of concern that were used in the health assessment, and there have been no changes to the standardized health assessment methodology that could affect the protectiveness of the remedy. The institutional controls in development will restrict the property and groundwater uses at the Site.

Changes in Standards

The active remedial action construction activities are complete at the site. NPDES exceedances for contaminants originating on-site are being addressed by the continued operation of the groundwater treatment system and maintenance of the CAMU. There have been no changes in these ARARs affecting the protectiveness of the remedy.

Changes in Exposure Pathways, Toxicity, and other Contaminant Characteristics

The exposure assumptions used to develop the Human Health Risk Assessment included both current exposures and potential future exposures for recreational users, trespassers, employees, and off-site residents. There have been no changes in the toxicity factors for the contaminants of concern that were used in the baseline risk assessment. These assumptions are considered to be conservative and reasonable in evaluating risk and developing risk-based cleanup levels. No change to these assumptions or the cleanup levels developed from them is warranted. There has been no change in the standardized risk assessment methodology that could affect the protectiveness of the remedy.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy? No

There have been no changes in the physical conditions of the Site that would affect the protectiveness of the remedy.

Technical Assessment Summary

According to the data reviewed, the site inspection, and the interviews, the remedy is functioning as intended by the ROD. There have been no changes in the physical conditions of the site that would affect the protectiveness of the remedy. There has been no change to the standardized risk assessment methodology that could affect the protectiveness of the remedy. There is no other information that calls into question the protectiveness of the remedy.

VIII. Issues

Table 5: Issues

Issues	Affects Current Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
Institutional controls are not in place.	N	Y
A plan for long-term stewardship for maintaining and monitoring effective institutional controls has not been prepared.	N	Y
U.S. EPA will work with WDNR to complete and implement a Remedial Action Optimization Evaluation of the groundwater treatment plant.	N	Y

IX. Recommendations and Follow-up Actions

Table 6: Recommendations and Follow-up Actions

Issue	Recommend-ations and Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness (Y/N)	
					Current / Future	
Institutional controls are not in place.	Develop an Institutional Control Plan for the Site.	U.S. EPA	U.S. EPA	6/30/10	N	Y
A plan for long-term stewardship for maintaining and monitoring effective institutional controls has not been prepared.	Develop a Long-Term Stewardship Plan or update the O&M Plan	U.S. EPA	U.S. EPA	6/30/10	N	Y
U.S. EPA will work with WDNR to complete and implement a Remedial Action Optimization Evaluation of the groundwater treatment plant.	Complete Remedial Action Optimization Evaluation and implement recommenda-tions.	U.S. EPA	U.S. EPA	3/31/10	N	Y

X. Protectiveness Statement

The remedy at the Site is protective in the short-term, and in the interim, exposure pathways that could result in unacceptable risks are being controlled. Based upon the review of annual groundwater monitoring data, review of site documents, and the October 28, 2009 site inspection conducted for this five-year review, there are no current exposures to human health and the environment. However, the required institutional controls have not yet been implemented. Long-term protectiveness will be achieved upon attainment of Wisconsin Preventive Action Limits (PALs) and implementation of the required institutional controls. Protectiveness will be ensured by implementing, maintaining, monitoring and enforcing ICs as well as maintaining the site remedy components.

XI. Next Review

The next five-year review for the Penta Wood Products Site is required within five years from the date of this review.

FIGURES

Figure 6 – Site Location

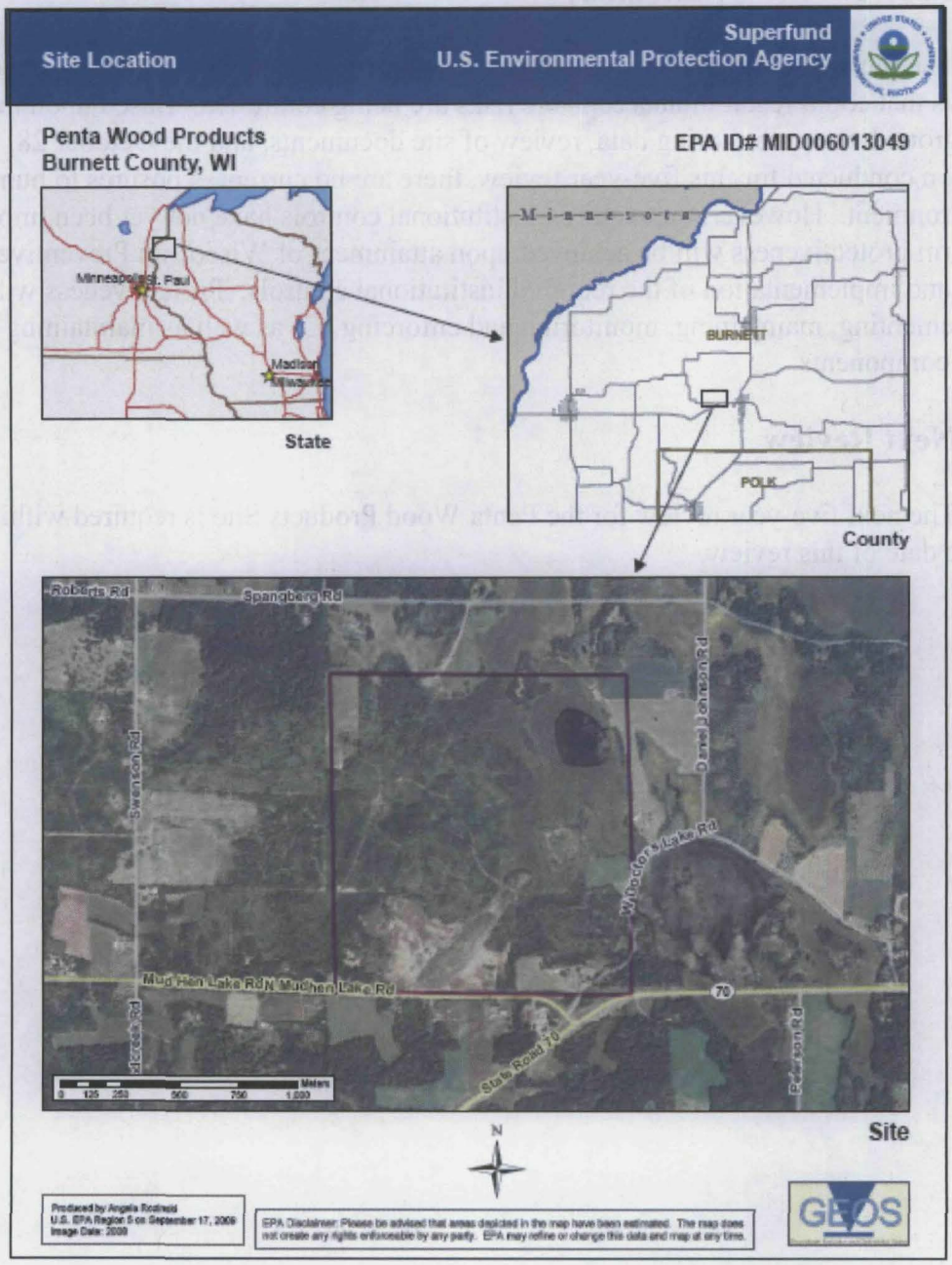


Figure 7 – Site Layout and Groundwater Contours
Unconfined Groundwater Unit

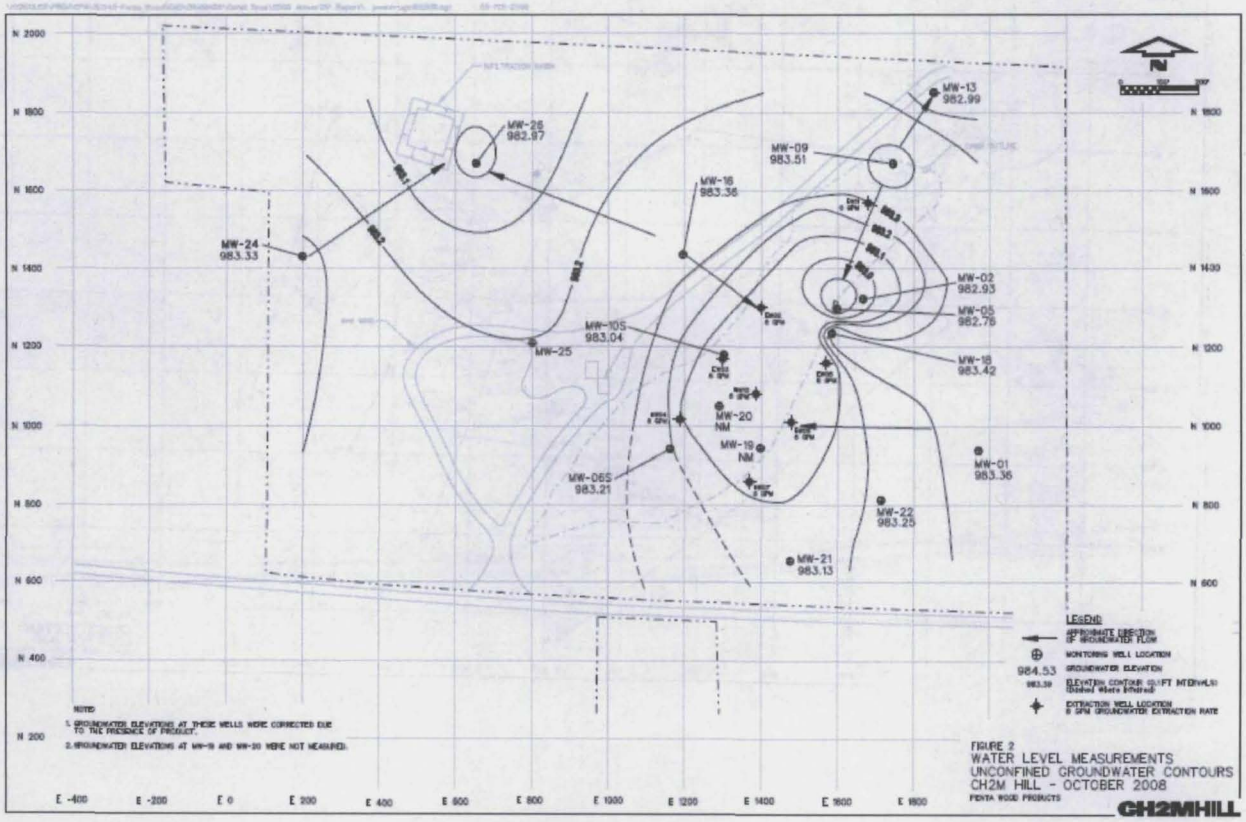
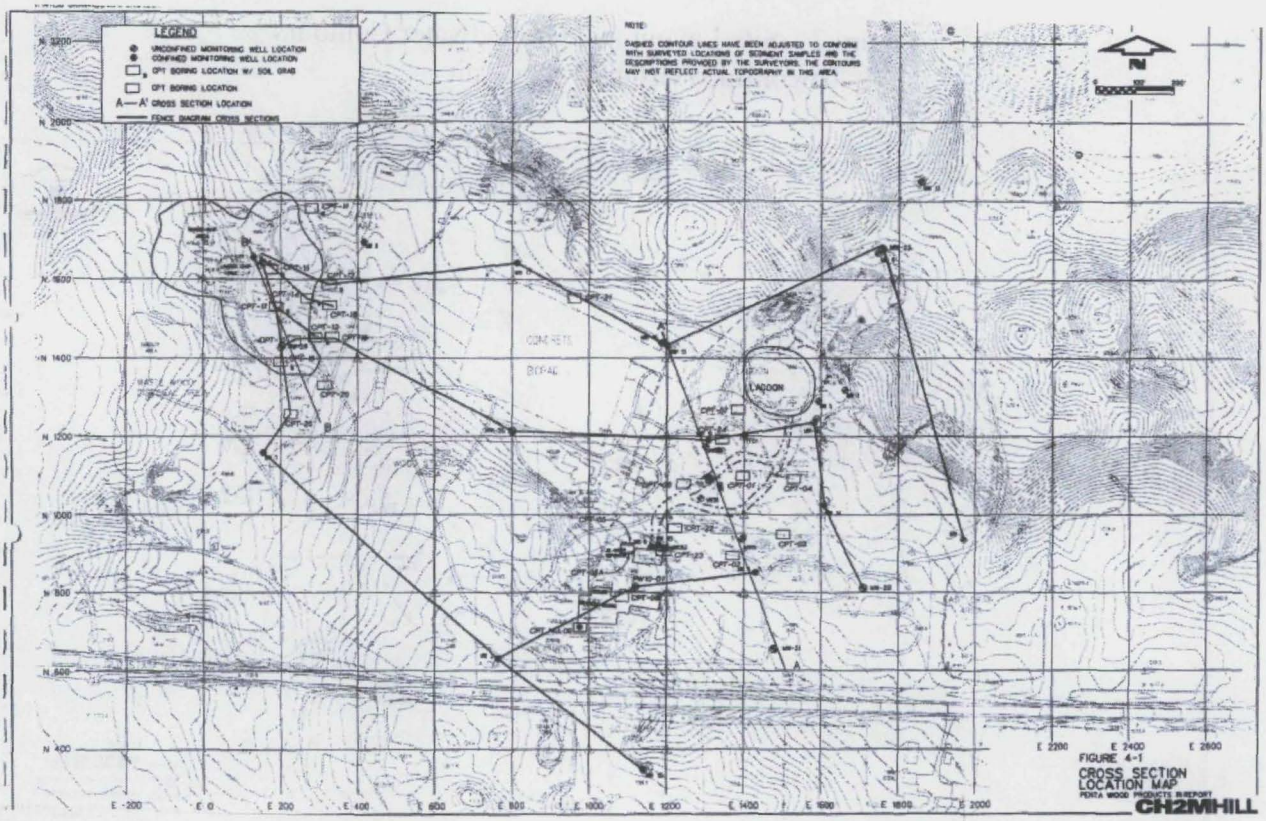


Figure 8 – Cross Section, Location Map



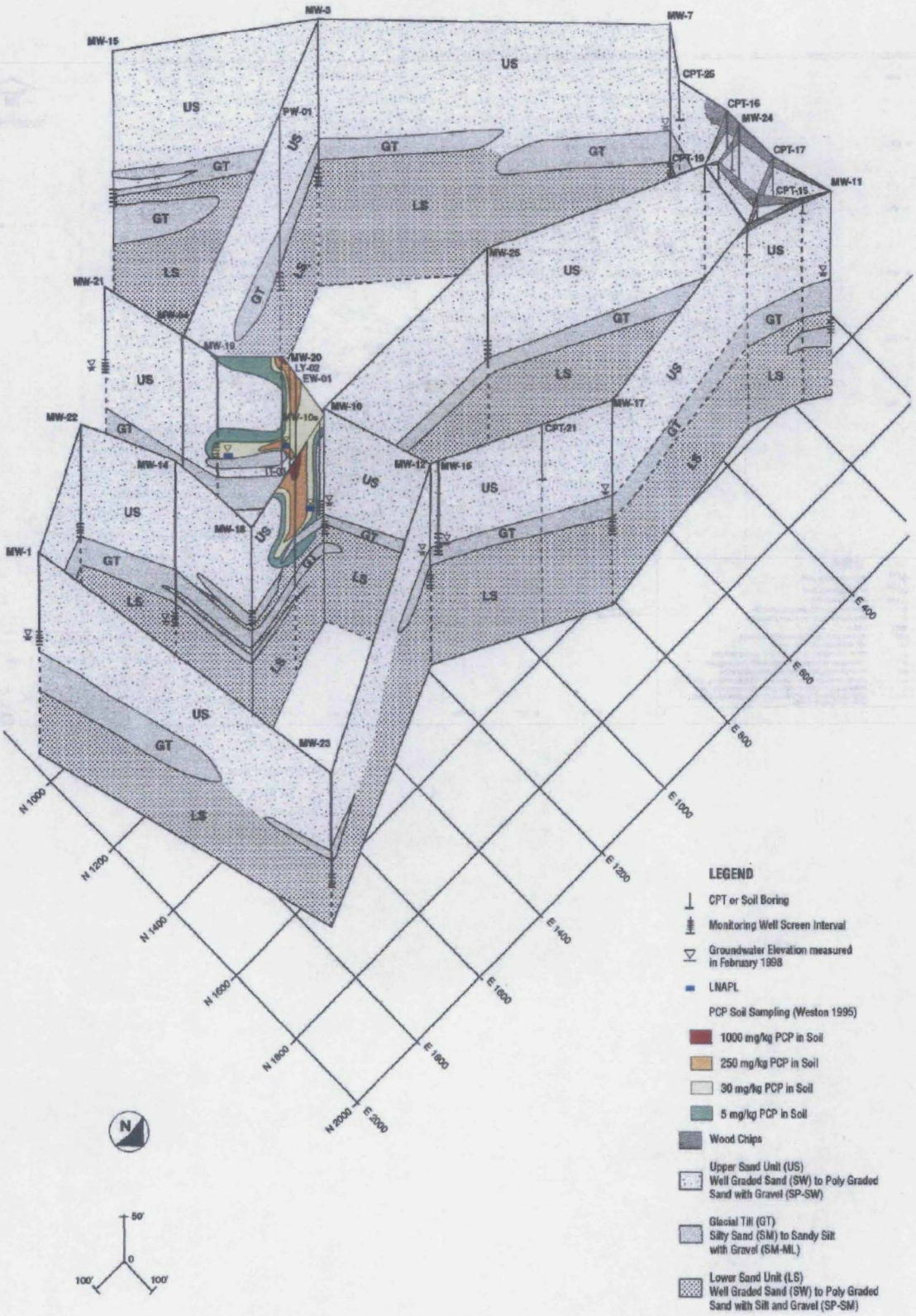
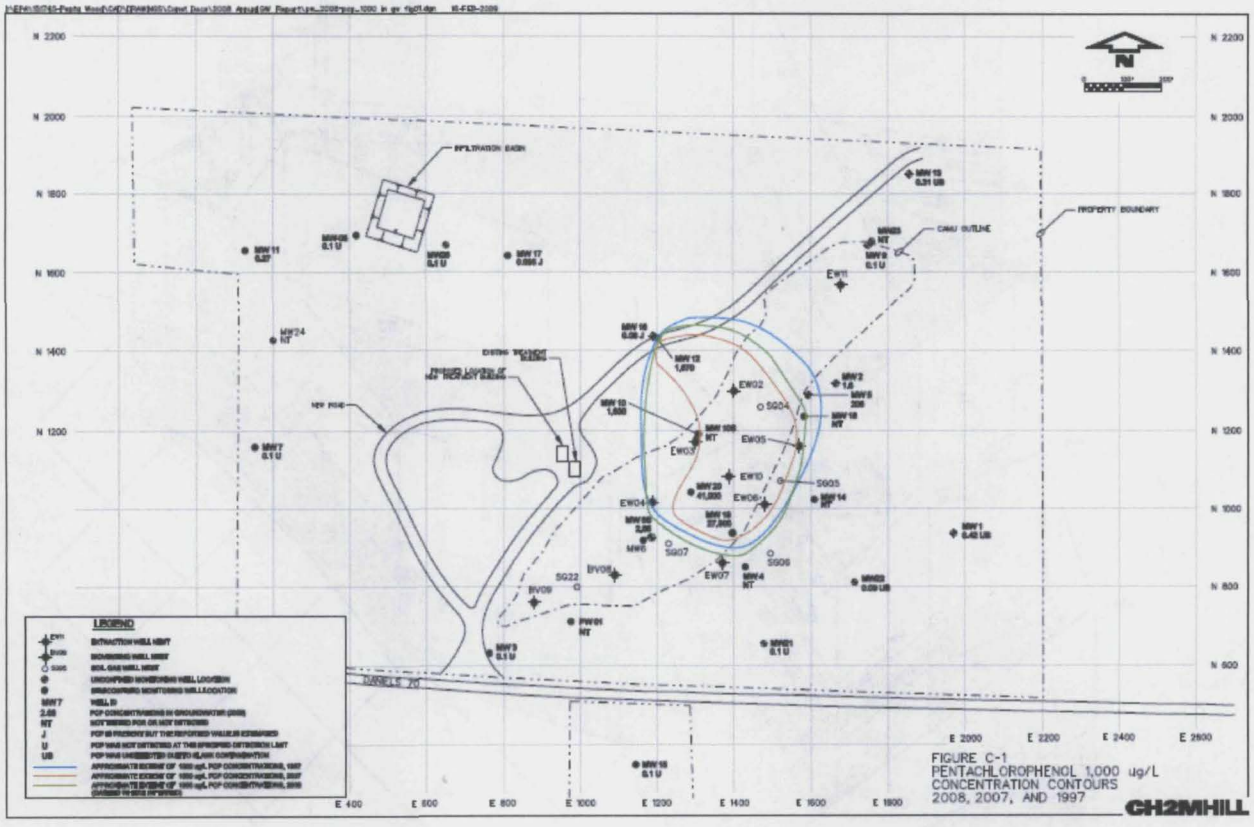


FIGURE 4-2
Fence Diagram
Penta Wood Products RI Report

CH2MHILL

Figure 10 – PCP 1000 µg/L Concentration Contours



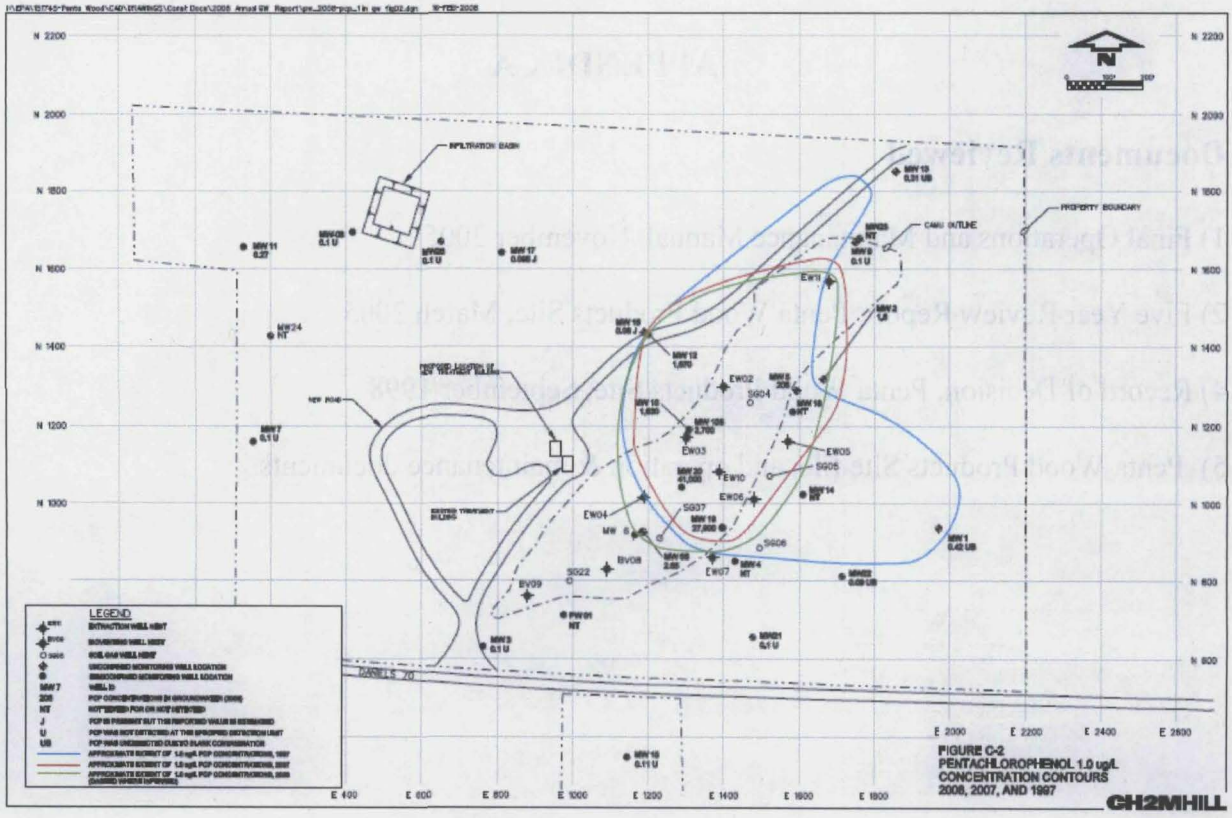


Figure 11 – PCP 1 µg/L Concentration Contours

APPENDIX A

Documents Reviewed

1) Final Operations and Maintenance Manual, November 2005

2) Five Year Review Report, Penta Wood Products Site, March 2005

4) Record of Decision, Penta Wood Products Site, September 1998

5) Penta Wood Products Site file, and operation & maintenance documents

APPENDIX B
FIVE-YEAR REVIEW ADVERTISEMENT

EPA Begins Review of Penta Wood Products Superfund Site

Town of Daniels, Wisconsin

U.S. Environmental Protection Agency is conducting a five-year review of the Penta Wood Products Superfund site on Daniels 70 (formerly State Route 70) about 2 miles west of Siren. The Superfund law requires regular checkups of sites that have been cleaned up with waste managed on site to make sure that the cleanup continues to protect people and the environment. This is the second five-year review of this site.

EPA's cleanup of pentachlorophenol and arsenic contamination at the former wood treatment facility consisted of installing ground-water extraction wells and a water treatment system, excavating and moving pentachlorophenol- and arsenic-contaminated soil to an on-site disposal area, demolishing all buildings and equipment, stabilizing arsenic-contaminated soil and placing it under a 7-acre cover, and erecting a fence around the cover area.

More information is available at the Burnett County Library, 7451 W. Main St., Webster; Grantsburg Public Library, 415 S. Robert St., Grantsburg; and at: www.epa.gov/region5/sites/penta. The review should be completed by the end of March.

The five-year-review report is an opportunity for you to tell EPA about site conditions and any concerns you have. Contact:

Susan Pastor
Community Involvement Coordinator
312-353-1325
pastor.susan@epa.gov

Tom Williams
Remedial Project Manager
312-886-6157
williams.thomas@epa.gov

You may also call Region 5 toll-free at 800-621-8431, 8:30 a.m. to 4:30 p.m., weekdays.

APPENDIX C

Completed Site Inspection Checklist

OSWER No 9355.7-03B-P

Please note that "O&M" is referred to throughout this checklist. At sites where Long-Term Response Actions are in progress, O&M activities may be referred to as "system operations" since these sites are not considered to be in the O&M phase while being remediated under the Superfund program.

Five-Year Review Site Inspection Checklist (Template)

(Working document for site inspection. Information may be completed by hand and attached to the Five-Year Review report as supporting documentation of site status. "N/A" refers to "not applicable."

I. SITE INFORMATION	
Site name: VENTA WOOD PRODUCTS	**Date of inspection:** 10/28/09
Location and Region: SIREN, WI	**EPA ID:** WID 006176945
Agency, office, or company leading the five-year review: U.S. EPA	**Weather/temperature:** OVERCAST 50° F

Remedy Includes: (Check all that apply)

- [X] Landfill cover/containment
- [X] Access controls
- [ ] Institutional controls
- [X] Groundwater pump and treatment
- [ ] Surface water collection and treatment
- [ ] Other_____
- [ ] Monitored natural attenuation
- [X] Groundwater containment
- [ ] Vertical barrier walls

Attachments: [ ] Inspection team roster attached [ ] Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager** LISA MAUSER (Name) O+M OPERATER (Title) 10/28/09 (Date)
   Interviewed [ ] at site [X] at office [ ] by phone Phone no. _____
   Problems, suggestions; [ ] Report attached NONE

2. **O&M staff** NONE (Name) _____ (Title) _____ (Date)
   Interviewed [ ] at site [ ] at office [ ] by phone Phone no. _____
   Problems, suggestions; [ ] Report attached _____

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency WISCONSIN DEPARTMENT OF NATURAL RESOURCES
Contact BILL SCHULTZ STATE PM 10/6/09 715-365-89
Name Title Date Phone no.
Problems; suggestions; G Report attached NONE

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; G Report attached _____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; G Report attached _____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; G Report attached _____

4. **Other interviews** (optional) G Report attached.

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1.	**O&M Documents**			
	☒ O&M manual	☒ Readily available	☒ Up to date	☐ N/A
	☒ As-built drawings	☒ Readily available	☒ Up to date	☐ N/A
	☒ Maintenance logs	☒ Readily available	☒ Up to date	☐ N/A
	Remarks			
2.	**Site-Specific Health and Safety Plan**	☒ Readily available	☒ Up to date	☐ N/A
	☐ Contingency plan/emergency response plan	☒ Readily available	☒ Up to date	☐ N/A
	Remarks			
3.	**O&M and OSHA Training Records**	☒ Readily available	☒ Up to date	☐ N/A
	Remarks			
4.	**Permits and Service Agreements**			
	☐ Air discharge permit	☐ Readily available	☐ Up to date	☐ N/A
	☒ Effluent discharge	☒ Readily available	☒ Up to date	☐ N/A
	☒ Waste disposal, POTW	☒ Readily available	☒ Up to date	☐ N/A
	☐ Other permits	☐ Readily available	☐ Up to date	☒ N/A
	Remarks			
5.	**Gas Generation Records**	☐ Readily available	☐ Up to date	☒ N/A
	Remarks			
6.	**Settlement Monument Records**	☐ Readily available	☐ Up to date	☒ N/A
	Remarks			
7.	**Groundwater Monitoring Records**	☒ Readily available	☒ Up to date	☐ N/A
	Remarks			
8.	**Leachate Extraction Records**	☐ Readily available	☐ Up to date	☒ N/A
	Remarks			
9.	**Discharge Compliance Records**			
	☐ Air	☐ Readily available	☐ Up to date	☐ N/A
	☒ Water (effluent)	☒ Readily available	☒ Up to date	☒ N/A
	Remarks			
10.	**Daily Access/Security Logs**	☐ Readily available	☐ Up to date	☒ N/A
	Remarks			

IV. O&M COSTS

1. **O&M Organization**

G State in-house G Contractor for State
G PRP in-house G Contractor for PRP
G Federal Facility in-house G Contractor for Federal Facility
☒ Other FUND LEAD, CONTRACTOR RUN BY CH2M HILL

2. **O&M Cost Records**

☒ Readily available G Up to date
☒ Funding mechanism/agreement in place
Original O&M cost estimate_____ G Breakdown attached SEE FIVE YR REVIEW TEXT

Total annual cost by year for review period if available

From_____ To_____ _____ G Breakdown attached
Date Date Total cost
From_____ To_____ _____ G Breakdown attached
Date Date Total cost
From_____ To_____ _____ G Breakdown attached
Date Date Total cost
From_____ To_____ _____ G Breakdown attached
Date Date Total cost
From_____ To_____ _____ G Breakdown attached
Date Date Total cost

3. **Unanticipated or Unusually High O&M Costs During Review Period**

Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS G Applicable G N/A

A. Fencing

1. **Fencing damaged** ☒ Location shown on site map ☒ Gates secured G N/A
Remarks THE FENCE WAS INTACT

B. Other Access Restrictions

1. **Signs and other security measures** G Location shown on site map ☒ N/A
Remarks_____

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented G Yes G No ☒ N/A
Site conditions imply ICs not being fully enforced G Yes G No ☒ N/A

Type of monitoring (*e.g.*, self-reporting, drive by) _____
Frequency _____
Responsible party/agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.

Reporting is up-to-date G Yes G No ☒ N/A
Reports are verified by the lead agency G Yes G No ☒ N/A

Specific requirements in deed or decision documents have been met G Yes G No ☒ N/A
Violations have been reported G Yes G No ☒ N/A
Other problems or suggestions: G Report attached
NO ICS CURRENTLY EXIST AT THE SITE BECAUSE THE OWNER IS NO WHERE TO BE FOUND & THE TAXES HAVE NOT BEEN PAID FOR YEARS

2. **Adequacy** G ICs are adequate ☒ ICs are inadequate G N/A
Remarks _____

D. General

1. **Vandalism/trespassing** G Location shown on site map ☒ No vandalism evident
Remarks _____

2. **Land use changes on site** G N/A
Remarks NONE

3. **Land use changes off site** G N/A
Remarks NONE

VI. GENERAL SITE CONDITIONS

A. Roads G Applicable G N/A

1. **Roads damaged** G Location shown on site map ☒ Roads adequate G N/A
Remarks _____

IX. GROUNDWATER/SURFACE WATER REMEDIES G Applicable G N/A

A. Groundwater Extraction Wells, Pumps, and Pipelines G Applicable G N/A

1. **Pumps, Wellhead Plumbing, and Electrical**
   ☒ Good condition G All required wells properly operating G Needs Maintenance G N/A
   Remarks SOME PUMPS WILL HAVE TO BE UPGRADED DUE TO THE LOWERING OF THE WATER TABLE

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   ☒ Good condition G Needs Maintenance
   Remarks

3. **Spare Parts and Equipment**
   ☒ Readily available G Good condition G Requires upgrade G Needs to be provided
   Remarks

B. Surface Water Collection Structures, Pumps, and Pipelines G Applicable G N/A

1. **Collection Structures, Pumps, and Electrical**
   G Good condition G Needs Maintenance
   Remarks

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   G Good condition G Needs Maintenance
   Remarks

3. **Spare Parts and Equipment**
   G Readily available G Good condition G Requires upgrade G Needs to be provided
   Remarks

C. Treatment System G Applicable G N/A

1. **Treatment Train** (Check components that apply)
   G Metals removal ☒ Oil/water separation G Bioremediation
   G Air stripping ☒ Carbon adsorbers
   G Filters_____
   G Additive (*e.g.*, chelation agent, flocculent)_____
   G Others_____
   ☒ Good condition G Needs Maintenance
   ☒ Sampling ports properly marked and functional
   ☒ Sampling/maintenance log displayed and up to date
   ☒ Equipment properly identified
   ☒ Quantity of groundwater treated annually_____
   G Quantity of surface water treated annually N/A
   Remarks_____

2. **Electrical Enclosures and Panels** (properly rated and functional)
   G N/A ☒ Good condition G Needs Maintenance
   Remarks_____

3. **Tanks, Vaults, Storage Vessels**
   G N/A ☒ Good condition G Proper secondary containment G Needs Maintenance
   Remarks_____

4. **Discharge Structure and Appurtenances**
   G N/A ☒ Good condition G Needs Maintenance
   Remarks_____

5. **Treatment Building(s)**
   G N/A ☒ Good condition (esp. roof and doorways) G Needs repair
   G Chemicals and equipment properly stored
   Remarks_____

6. **Monitoring Wells** (pump and treatment remedy)
   ☒ Properly secured/locked G Functioning ☒ Routinely sampled ☒ Good condition
   ☒ All required wells located G Needs Maintenance G N/A
   Remarks_____

D. Monitoring Data

1. Monitoring Data
   ☒ Is routinely submitted on time G Is of acceptable quality

2. Monitoring data suggests:
   ☒ Groundwater plume is effectively contained ☒ Contaminant concentrations are declining

D. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)
G Properly secured/lockedG Functioning G Routinely sampled G Good condition
G All required wells located G Needs Maintenance ☒N/A
Remarks

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

THE TREATMENT PLANT IS WELL OPERATED & ORTAINING ITS GOALS OF TREATING GNAPL & CONTAINING THE CONTAMINANT PLUME.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

SEE ABOVE

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

NONE. THE TREATMENT PLANT DOES SIT ON A HIGH ELEVATION RELATIVE TO THE REST OF THE SITE + WAS HIT BY LIGHTNING WHICH CAUSED SIGNIFICANT DAMAGE TO THE ELECTRICAL COMPONENTS OF THE PLANT. THE PLANT WAS SUBSEQUENTLY UPGRADED TO MINIMIZE ANY FUTURE DAMAGE TO THE PLANT

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

THERE ARE SEVERAL REMEDIAL OPERATIONS UNDER REVIEW TO OPTIMIZE THE PLANT RANGING FROM SHUTTING DOWN THE PLANT FOR SIX MONTHS TO EVALUATE ~~BT~~ THE PLUME FOR MNA TO INSTALLING AN ADDITION THREE LNAPL EXTRACTION WELLS. THE EVALUATION IS AN APPENDIX TO THIS PLANT.

APPENDIX D

Penta Wood Treatment Plant Looking NE

LNAPL Extraction Well

Pine Tree Planted Spring 2009

Group of Pine Trees Planted, Spring 2009 With CAMU in the Top Left on the Other Side of the Fence

Compressor and Air Dryer

Activated Carbon Units

From Right, Equalization Tank, Dissolved Air Floatation Unit, Coagulant Reaction Tank, Flocculant Reaction Tank