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2014 Semiannual Groundwater Sampling Report Penta Wood Products Superfund Site

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

Prepared for

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

November 2014

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Executive Summary

This 2014 groundwater monitoring report documents the activities associated with the May 2014 groundwater monitoring event. This sampling event was performed in accordance with the groundwater long-term remedial action (LTRA) that occurred at the Penta Wood Products Superfund site in Burnett County, Wisconsin, as performed by CH2M HILL for the U.S. Environmental Protection Agency under Work Assignment No. 132-LRLR-05WE.

The LTRA includes the following:

- Operation and maintenance and performance monitoring of the groundwater extraction and treatment system
- Removing light nonaqueous phase liquid
- Bioventing system operation and monitoring, and groundwater monitoring for long-term monitored natural attenuation
- Hazardous waste generation and disposal, and site inspections and maintenance

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Contents

Appendixes

Tables

Figures

Acronyms and Abbreviations

µg/L	micrograms per liter
BTEX	benzene, toluene, ethylbenzene, and xylene
CAMU	corrective area management unit
EPA	U.S. Environmental Protection Agency
ES	Enforcement Standard
LNAPL	light nonaqueous phase liquid
LTRA	long-term removal action
mg/L	milligram per liter
ORP	oxidation-reduction potential
PAL	preventive action limit
PCP	pentachlorophenol
PWP	Penta Wood Products
site	Penta Wood Products Superfund site in Burnett County, Wisconsin
WAC	Wisconsin Administrative Code
WDNR	Wisconsin Department of Natural Resources

SECTION 1

Introduction

This groundwater monitoring report documents the groundwater monitoring sampling results from the May 2014 event that occurred at the Penta Wood Products (PWP) Superfund site in Burnett County, Wisconsin (site), as performed by CH2M HILL for the U.S. Environmental Protection Agency (EPA) under Work Assignment No. 132-LRLR-05WE.

1.1 Background

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 (Figure 1).

The PWP site property consists of approximately 82 acres that in the past 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 the following three layers: an upper sand layer, a glacial till layer that is not continuous throughout the site, and a lower sand layer. The depth to groundwater is more than 100 feet on the plateau. The regional groundwater flow direction is to the north. Since the closing of the former facility production well, the local groundwater flow direction at the site has been radial.

PWP operated from 1953 to 1992. Raw timber was cut into posts and telephone poles and treated with either a 5 to 7 percent pentachlorophenol (PCP) solution in a No. 2 fuel oil carrier or with a waterborne salt treatment called Chemonite consisting of ammonia, copper II oxide, zinc, and arsenate. PWP also conducted blending of PCP and fuel oil on a contract basis for industrial users just before 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 northeastern corner of the property. Process wastes also were 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 treatment system only consisted of a carbon filtering system and was having trouble meeting effluent criteria. It was shut down in September 2001 to allow for pilot testing and plant modifications intended to help meet effluent criteria (a pretreatment system was added to more effectively treat groundwater and capture light nonaqueous phase liquid [LNAPL]). It was restarted in February 2004 and has been running continuously, with the exception of occasional downtime for routine maintenance and repairs. The Wisconsin Department of Natural Resources (WDNR) accepted the remedy in August 2004.

1.2 Remedial Action Objectives

Remedial action objectives were developed as a result of data collected during the remedial investigation to aid in developing and screening remedial alternatives to be considered for the Record of Decision. PCP and arsenic were identified as the primary risk drivers at the site. PCP present in soil extending down to groundwater is a major component of the source for LNAPL, which is present on the surface of groundwater within the corrective area management unit (CAMU) area. Arsenic was present primarily in surface soil and wetland sediment.

1.2.1 Pentachlorophenol

The long-term removal action (LTRA) objective is to reduce the PCP content within soil to achieve compliance with Wisconsin Administrative Code (WAC) Chapter NR 720 and in groundwater to achieve compliance with preventive action limits (PALs) as established in WAC Chapter NR 140 within a reasonable period. The reduction is being accomplished by removing free-phase LNAPL (by extraction and onsite treatment) and associated highly contaminated groundwater, remediating PCP in soil, and monitoring the

intrinsic attenuation of PCP in groundwater. Capture of the contaminant groundwater and LNAPL is ongoing. Institutional controls are used to prevent groundwater use or direct-contact exposure before achieving compliance.

1.2.2 Arsenic

To achieve compliance with WAC Chapter NR 720, highly contaminated arsenic soil was immobilized and consolidated with other arsenic-contaminated soil (above background) and secured in a CAMU at the site. Soil contaminated with arsenic and other metals were managed to essentially eliminate the direct-contact exposure route and protect groundwater.

1.2.3 Erosion Controls

An erosion control plan was implemented and maintained to prevent physical transport of contamination offsite and protect the CAMU and consolidated areas from damage. The erosion control measures are inspected periodically and maintained/repaired as necessary.

1.3 Aquifer Description

Two aquifer systems are at the PWP site: an unconfined and semiconfined. The unconfined aquifer consists of a thin zone of groundwater within the upper sand unit, which rests upon a consolidated glacial till. The semiconfined aquifer consists of groundwater within the sand unit located beneath the glacial till. Beneath the CAMU, the less permeable till deposits are discontinuous. When the deposits are absent, the aquifer likely acts like a single unconfined aquifer. Monitoring wells are installed in the unconfined and semiconfined aquifers, although the extraction wells penetrate both aquifers in an attempt to remediate contaminated groundwater that is present in both aquifers. Additional information about the aquifers is in the remedial investigation report (CH2M HILL 1998).

1.4 Current Site Operations

1.4.1 Groundwater Monitoring

Semiannual and annual groundwater monitoring events are conducted each year. Water level and LNAPL measurements also are made to determine LNAPL thickness and groundwater flow direction(s). The activities are described in more detail in Section 2.

1.4.2 Treatment System Operation and Maintenance

The treatment system at the PWP site consists of groundwater extraction and treatment, LNAPL recovery, and bioventing. The groundwater extraction system extracts and treats groundwater containing dissolved-phase PCP and depresses the groundwater table to contain groundwater contamination. It also allows LNAPL to collect near the extraction wells. The depressed groundwater also exposes an additional area of LNAPL smear zone. The bioventing system was installed to provide oxygen for the aerobic biodegradation of residual diesel fuel petroleum hydrocarbons and PCP in the vadose zone and LNAPL smear zone. The treatment system is discussed in more detail in the 2013 Annual Report (CH2M HILL 2014a).

1.4.3 Waste Generation and Disposal

The remedial action activities at the site result in the generation of hazardous waste. Three main waste streams are at the site: filter cake, spent carbon, and LNAPL. Waste generation and disposal at the site is described in detail in Section 3 and in the LTRA report (CH2M HILL 2014b).

1.4.4 Site Inspection and Maintenance

Current site conditions as of September 1, 2014, including final site inspection and maintenance, are documented in the final transition memorandum in Appendix A.

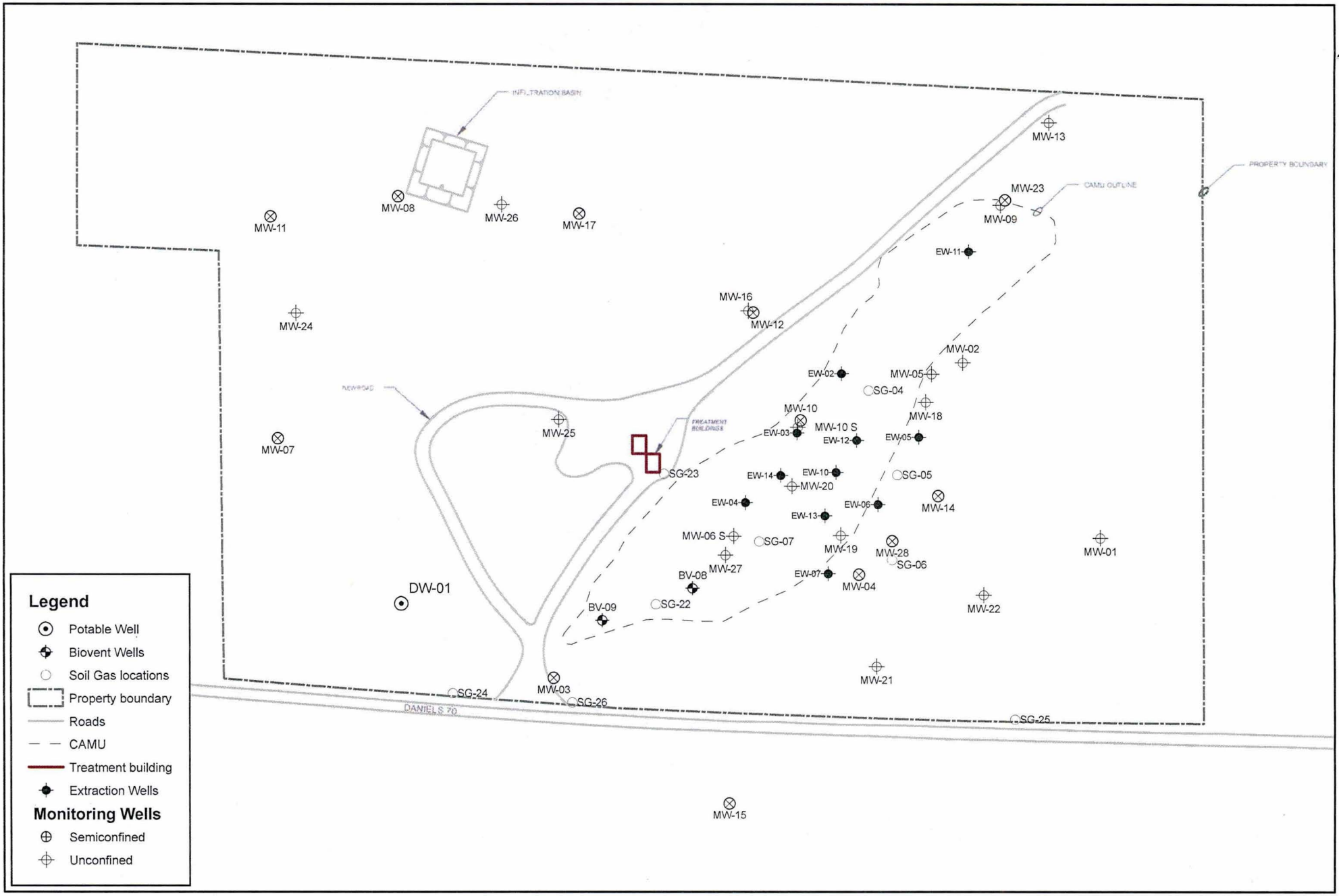

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Figure 1
Well Location Map
2014 Semiannual Report
Penta Wood Products Superfund Site
Siren, Wisconsin

SECTION 2

Groundwater Monitoring

This reports presents the results of the groundwater sampling event completed in 2014. This update of the previous year's report revises evaluations based on new data. This is the 13th year of post–remedial action groundwater monitoring at the PWP site. The groundwater monitoring network at the site consists of 28 monitoring wells (Figure 1) and five residential wells (Figure 2), although some of the wells are not sampled because neighboring wells of similar depth are sampled. Previously, two sampling events occurred, which are called the semiannual (in spring) and the annual (in fall). The semiannual event was added in 2008 to assess seasonal variability in groundwater levels and LNAPL thickness. Less wells are sampled during the semiannual event; however, the wells sampled are representative of the larger well set during the annual event in depth and site placement. In 2014, CH2M HILL only conducted the semiannual event because of the site transition occurred in August 2014 between EPA and WDNR.

The semiannual groundwater sampling event was conducted in May 2014 and consisted of sampling five monitoring wells (MW-12, MW-15, MW-19, MW-22, and MW-26), five residential wells (RW-01 through RW-05), and one onsite potable well along with static water level measurements collected at monitoring wells and measuring the LNAPL thickness in monitoring wells where present. MW-19, MW-22, and MW-26 in the unconfined aquifer were sampled. In the semiconfined aquifer, MW-12 and MW-15 were sampled. The annual groundwater sampling event will be completed after the site transition to WDNR and therefore is not included as part of this report.

During the groundwater sampling events, samples were collected to monitor groundwater quality. Parameters that were analyzed include the following compounds of concern: PCP; naphthalene; benzene, toluene, ethylbenzene, and xylene (BTEX); dissolved metals; and natural attenuation parameters. For the 2014 sampling event, Appendix B contains a summary of the analytical results, and Appendix C contains the natural attenuation parameters that were sampled for. The May 2014 monitoring well results reflect approximately 10 years of optimized system operation since the groundwater treatment system was restarted in 2004. The groundwater results also reflect approximately 6.5 years of bioventing system operations.

Water surface elevations and LNAPL thickness measurements were collected to determine the amount of LNAPL remaining in the ground and the groundwater flow direction(s) in the unconfined and semiconfined aquifers. Groundwater elevations, oil/water interface measurement data, historical LNAPL thickness data, and other observations are in Appendix D.

Trends in the concentrations of PCP and other parameters are used with water level measurements to evaluate the effectiveness of the treatment system in capturing affected groundwater, also known as capture zone analysis. The capture zone analysis and parameters help to assess the effectiveness of the groundwater and LNAPL extraction, treatment, and natural attenuation. Distribution of PCP in groundwater was not evaluated because of the limited group of wells sampled during the semiannual event.

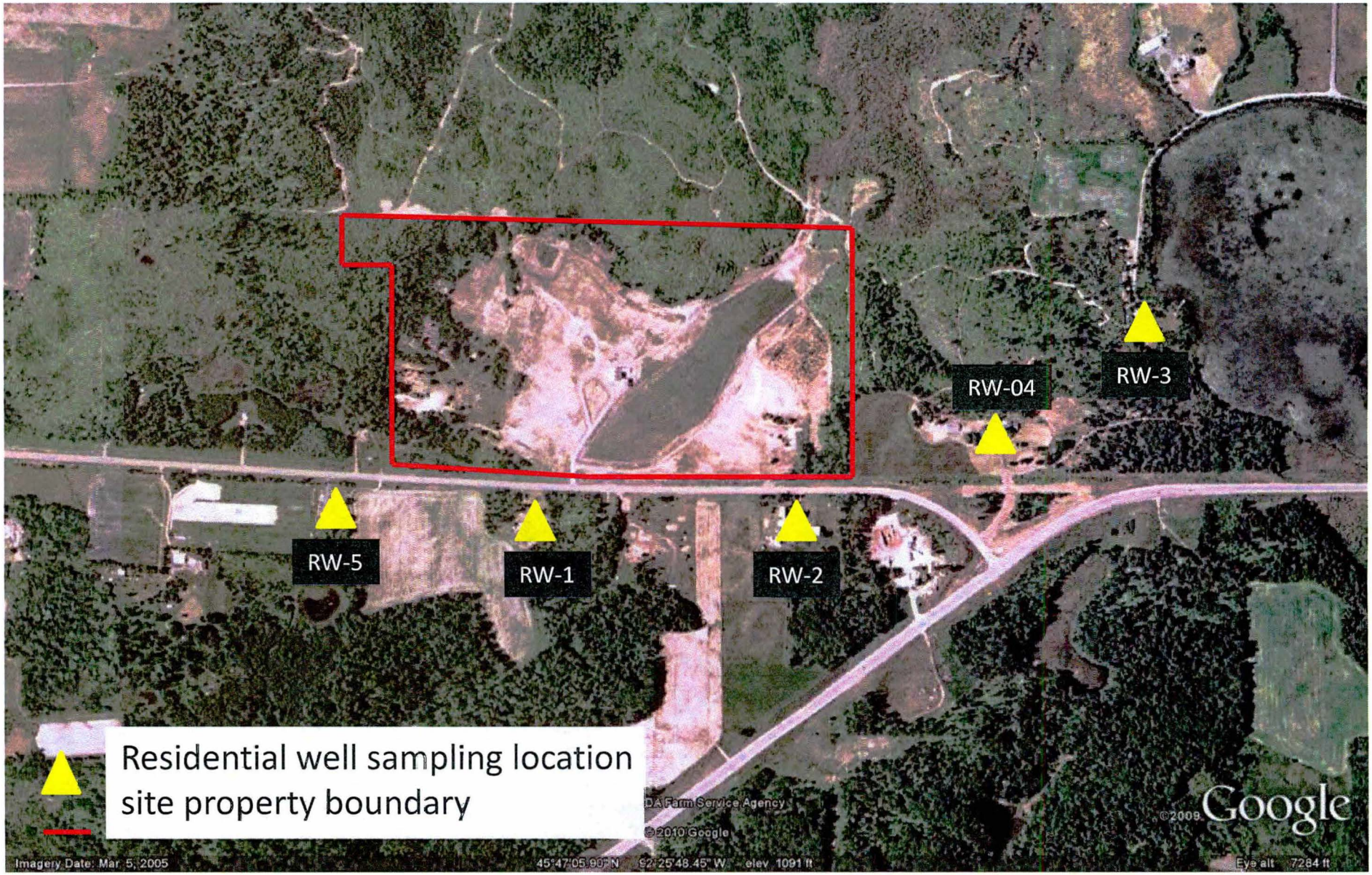

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Figure 2
Residential Well Map
Penta Wood Products Superfund Site
Siren, Wisconsin

2.1 Water Levels and LNAPL Measurements

Water levels in monitoring wells were measured in May 2014. A water level indicator was used to measure the distance from the top of the inner well casing to the water surface. In wells where LNAPL was present, the depth to the LNAPL surface and water surface were measured from the top of the inner well casing using an oil/water interface probe.

Groundwater elevations, oil/water interface measurement data, historical LNAPL thickness data, and other observations are in Appendix D. The following subsection discusses LNAPL thickness and distribution and the effects the groundwater extraction well network has had on the unconfined and semiconfined aquifers.

2.1.1 LNAPL Thickness

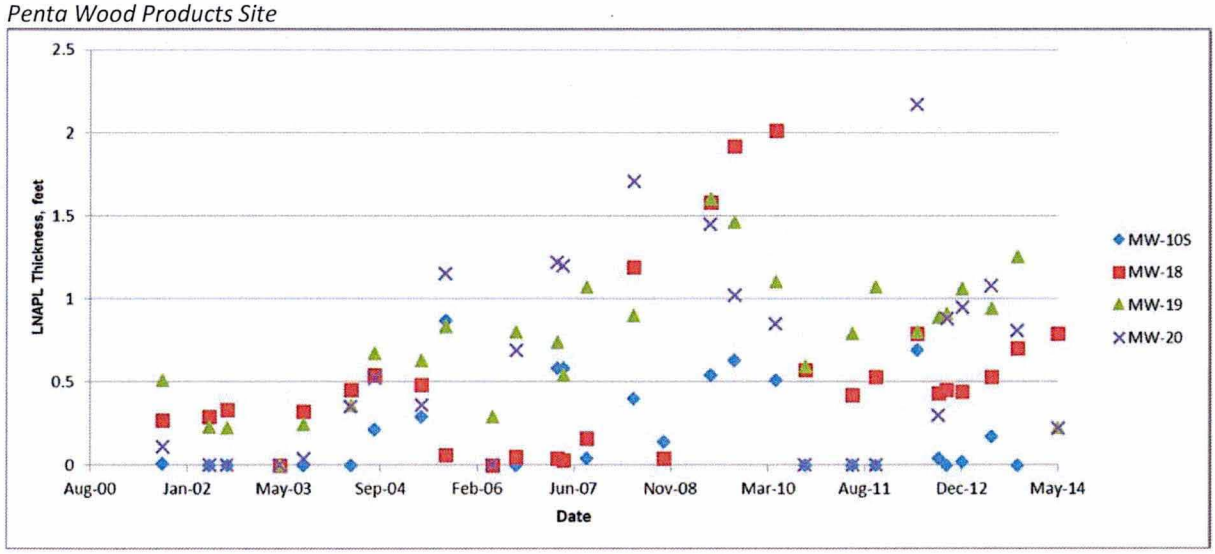
LNAPL was observed in three monitoring wells during the sampling event. The observed LNAPL thicknesses are summarized in Table 1.

TABLE 1
2014 Monitoring Well LNAPL Measurement, Semiannual Event May 2014
Penta Wood Products Site

Monitoring Well	LNAPL Measurement (feet)
MW-10S	0.00
MW-18	0.79
MW-19	0.22
MW-20	0.22

In May 2014, the LNAPL measured in MW-18 was slightly thicker than in May 2013. In MW-19 and MW-20, the LNAPL thickness was reduced. No measureable LNAPL was observed in MW-10S. The historical observed LNAPL thicknesses are shown on Figure 3. The observed LNAPL thicknesses have varied since the extraction began controlling the LNAPL extent once the system was turned on for continuous operation in February 2004.

FIGURE 3
Historical LNAPL Thickness
Penta Wood Products Site



2.1.2 Capture Zone Analysis

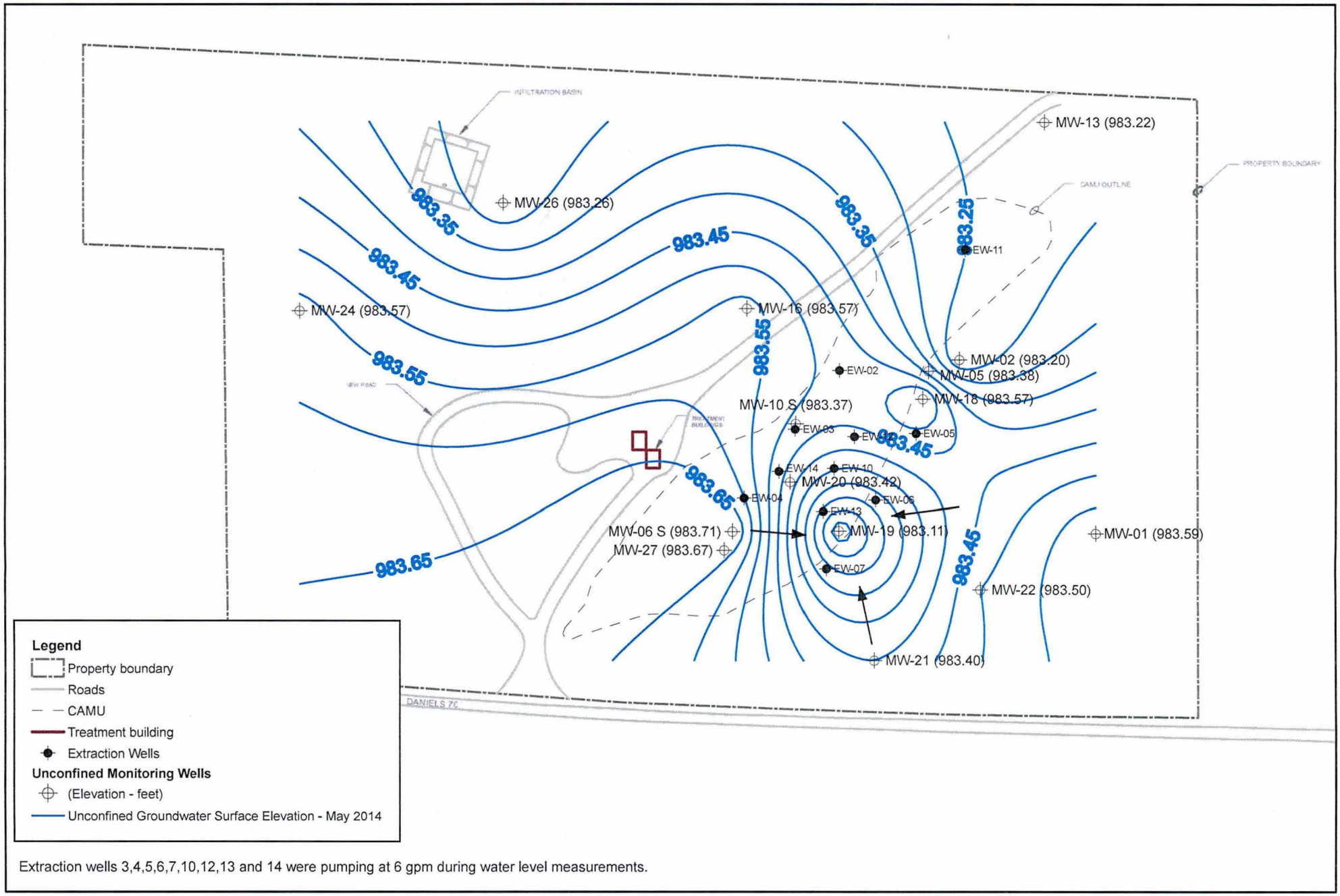
The groundwater extraction system was designed to create a depression in the water table to promote the migration of LNAPL and groundwater containing dissolved-phase PCP toward the extraction wells to enhance LNAPL recovery at the site. The capture effectiveness primarily was evaluated based on site-specific field data, including potentiometric surface maps and the calculated horizontal gradients as described in the following subsections. The capture zone analysis loosely follows EPA's guidance using a six-step process. The conceptual site model was developed previously, and the site-specific target capture zone was established as the area of groundwater with PCP levels exceeding 1,000 micrograms per liter (µg/L). Horizontal and vertical gradients, potentiometric surface maps, and concentration trends are included in the capture zone analysis. No additional modeling or calculations have been completed to confirm the capture because the presented evidence makes a clear case that capture is occurring.

Unconfined Aquifer

Potentiometric Surface. The water level elevations recorded in May 2014 continued to show a depression in the potentiometric surface caused by the groundwater extraction system. The May 2014 groundwater elevation contours indicate a cone of depression in the groundwater surface that drops approximately 0.5 foot between MW-22 and MW-19 (Figure 4). The capture zone is bounded by MW-02 on the north, MW-16 on the west, and MW-22 on the east, as indicated by the lower water level elevations observed in the monitoring wells within or adjacent to the CAMU. The unconfined aquifer is considered a potentiometric surface because of the presence of LNAPL and the potential for the groundwater surface to be depressed.

The discharge of treated groundwater into the infiltration basin has caused water levels to be elevated locally but has not negatively impacted the capture zone on the CAMU. In the unconfined aquifer, some variability in the groundwater elevation was observed from 2013 to 2014, especially near MW-05, MW-18, and MW-02, although the capture zone appeared to be largely intact. The variability of the water table surface is likely a function of the influence of the treatment system pumping wells and varying surface infiltration rates across the site.

Water levels in the unconfined aquifer were steadily declining from 2003 through 2009, likely because of reduced precipitation in the region. In 2011, a wet year was the likely reason for water table rebound, but once again, reduced rainfall in 2012 through 2014 caused the water table to decline. The water table elevation trends have exhibited an inverse relationship to the thickness of LNAPL (as groundwater elevations decrease, LNAPL thickness increases). Figure 5 shows the trends in the groundwater elevation in unconfined monitoring wells since 2002.



Extraction wells 3,4,5,6,7,10,12,13 and 14 were pumping at 6 gpm during water level measurements.

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0 80 160 320 480 640 Feet

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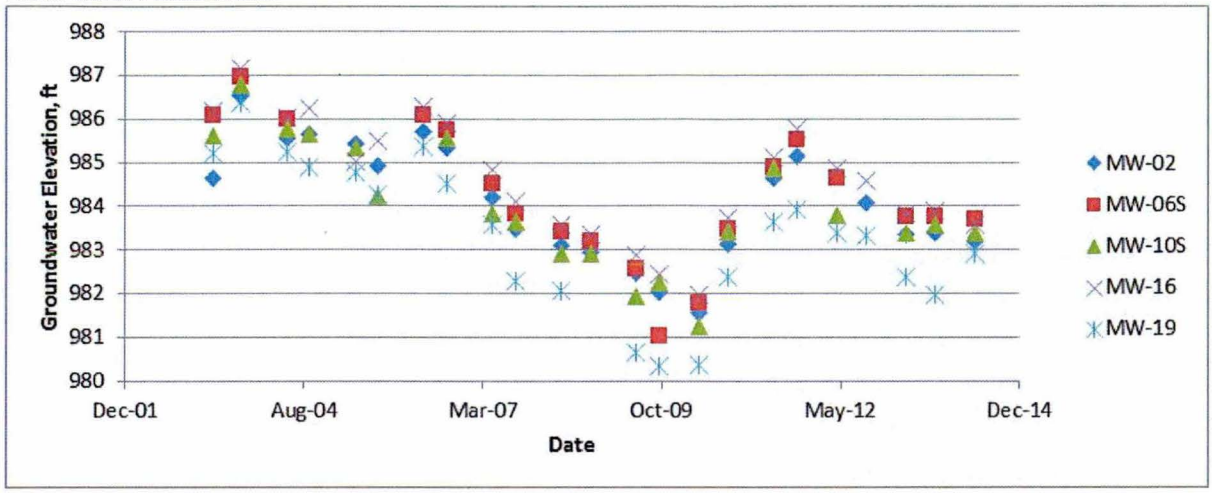
Figure 4
Unconfined Groundwater Elevation - May 2014
2014 Semiannual Report
Penta Wood Products Superfund Site
Siren, Wisconsin

FIGURE 5
Water Elevations in Unconfined Wells
Penta Wood Products Site



Hydraulic Gradients. Horizontal hydraulic gradients were calculated using groundwater elevations from monitoring wells screened in the unconfined aquifer located inside and outside the capture zone created by the extraction wells. The gradients calculated for 2004 (which represents the treatment system operation shortly after startup), 2012, 2013, and 2014 are summarized in Table 2. A positive gradient indicates groundwater flow toward the capture zone and the extraction wells.

TABLE 2
Horizontal Hydraulic Gradients in the Unconfined Aquifer
Penta Wood Products Site

Monitoring Well Outside Capture Zone	Monitoring Well Inside Capture Zone	Gradients			
		May 2004	May 2012	May 2013	May 2014
MW-13	MW-05	0.0004 (outward)	0.0006	0.0007	-0.000258
MW-6S	MW-19	0.0019	0.0066	0.002	0.00282
MW-16	MW-10S	0.0009	0.0047	0.001	0.00067
MW-22	MW-19	0.0012	0.0040	0.004	0.00035

The horizontal gradients indicate hydraulic capture was maintained in 2014 at levels similar to historical levels. The calculated hydraulic gradients support the definition of the capture zone created by the extraction wells. Shutting down EW-02 in 2013 thus likely caused a slight outward gradient between MW-13 and MW-05. Since the contamination does not currently appear in this area, this not a concern.

Semiconfined Aquifer

Potentiometric Surface. Groundwater in the semiconfined aquifer exhibited similar flow patterns between May 2014 (Figure 6) and May and October 2013. The capture zone is apparent throughout the site, although the edge of the capture zone appears outside the edges of the site, except where additional recharge is added from the infiltration basin.

Groundwater flow at the site is toward the CAMU, and water levels recorded near the extraction wells in May 2014 show a localized groundwater depression. The continued treatment system operation has led to an increased localized depression in the CAMU area. Continued pumping is expected to maintain and enlarge the containment.

Hydraulic Gradients. Horizontal hydraulic gradients were calculated using groundwater elevations from monitoring wells screened in the semiconfined aquifer located inside and outside the capture zone created by the extraction wells. The gradients were calculated for 2004, 2012, 2013, and 2014. The calculated gradients are summarized in Table 3.

Operation of the extraction wells and continued treatment system operation and the addition of new extraction wells in 2010 has resulted in an increased capture zone around the extraction wells in 2011 over previous years, which was maintained in 2014. Overall gradients in May 2014 show an inward flow toward the extraction wells, confirming the capture zone in the semiconfined aquifer.

TABLE 3
Horizontal Hydraulic Gradients in the Semiconfined Aquifer
Penta Wood Products Site

Monitoring Well Outside Capture Zone	Monitoring Well Inside Capture Zone	Gradients			
		May 2004	May 2012	May 2013	May 2014
MW-12	MW-10	-0.0005	0.0013	0.0015	0.0029
MW-14	MW-10	-0.0013	0.001	0.0019	0.0019
MW-23	MW-10	-0.0005	0.0003	0.0012	0.0013

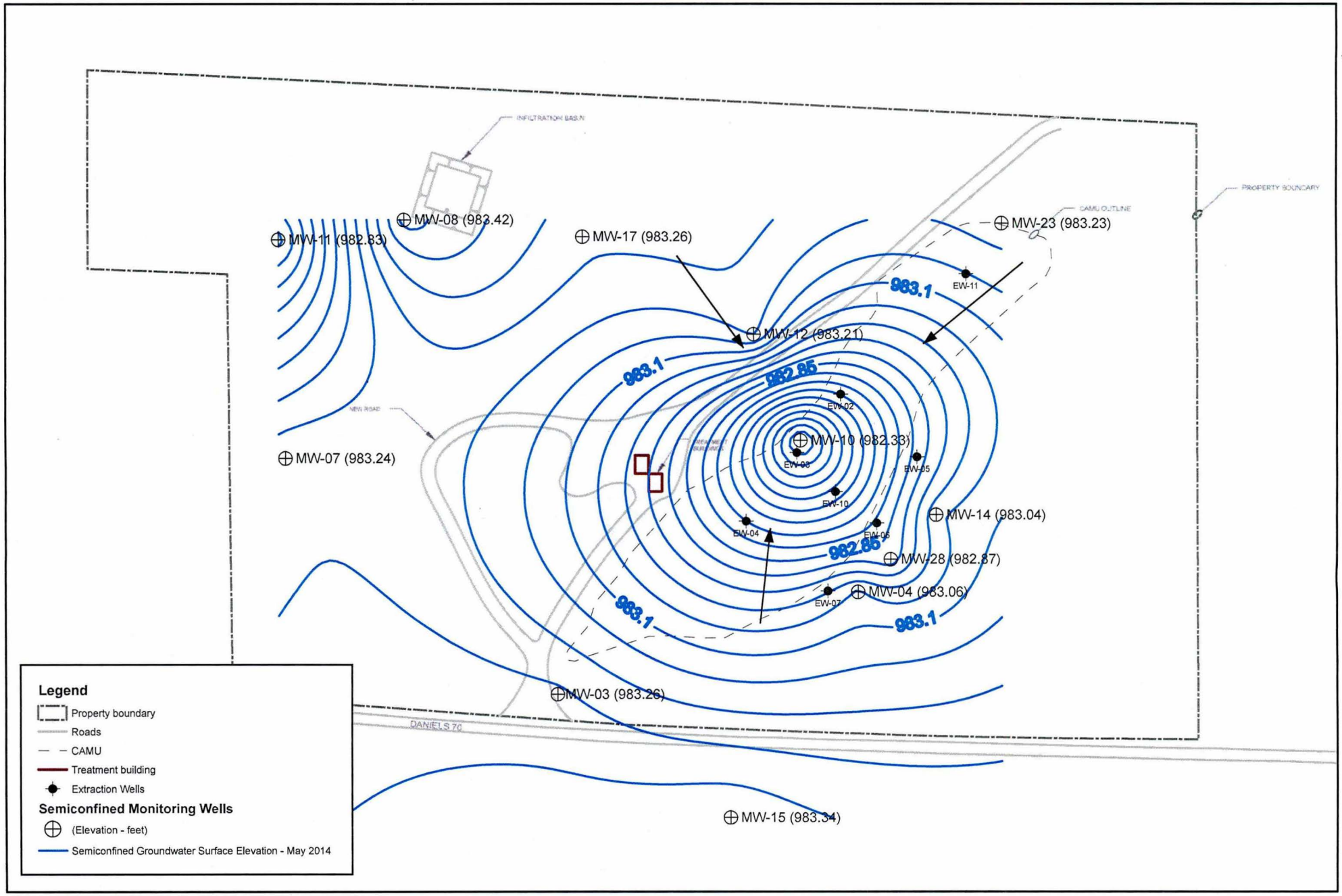
The horizontal gradients indicate hydraulic capture was maintained at similar levels in 2014 to historical levels. The calculated hydraulic gradients support the definition of the capture zone created by the extraction wells.

Vertical Gradients

Vertical gradients were calculated between the semiconfined and unconfined aquifers to determine capture in the vertical direction. The extraction wells are screened through both aquifers to target the areas with contamination. The vertical hydraulic gradient consistently has been from the unconfined toward the semiconfined aquifer in the downward direction. The pumps within each of the extraction wells is placed below the unconfined aquifer so a downward gradient would be expected for capture.

TABLE 4
Vertical Hydraulic Gradients
Penta Wood Products Site

Monitoring Well Unconfined	Monitoring Well Semiconfined	Gradients			
		May 2004	May 2012	May 2013	May 2014
MW-10S	MW-10	0.003	0.006	0.031	0.041
MW-16	MW-12	0.016	0.029	0.030	0.13
MW-09	MW-23	0.01	0.051	0.052	0.047



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0 80 160 320 480 640 Feet

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Figure 6

Semiconfined Groundwater Elevation - May 2014
2014 Semiannual Report
Penta Wood Products Superfund Site
Siren, Wisconsin

2.2 Groundwater Sampling and Analysis

Groundwater analytical data are collected to show groundwater quality and evaluate the remedial action performance at the site. The data are analyzed to determine whether the LTRA is achieving the following objectives:

- Confirming compounds related to the site have not migrated into residential drinking water wells
- Confirming the infiltration basin is not having an undesired effect of on groundwater quality
- Ensuring the groundwater extraction system continues to remove PCP from beneath the site

TestAmerica, Inc. of North Canton, Ohio, analyzed the semiannual (May 2014) samples. Quality control samples consisting of field blanks, duplicate samples, and matrix spike/matrix spike duplicate samples were collected at the frequency specified in the *Sampling and Analysis Plan* (CH2M HILL 2000; revised February 2005). Monitoring well and residential well sample result packages were submitted to the EPA Environmental Services Assistance Team contractor for data validation. The data quality memorandums for the sampling events is in Appendix E.

2.2.1 Residential Well Sampling Procedures and Results

Five residential wells and one onsite potable well were sampled during the semiannual sampling (May 2014). The residential wells were sampled by collecting water from the kitchen sink, bathroom sink, or outside hose at the residence. The potable well is collected from the office bathroom sink. They are purged for 10 minutes before sample collection.

Semiannual sampling (May 2014) results received from TestAmerica, Inc. showed that BTEX and naphthalene were not detected in the onsite potable well or residential wells. PCP was detected in RW-01, RW-04, and the potable well, which had results that were J-flagged with estimated detections below the PAL of 0.1 µg/L. Two residential wells (RW-01 and RW-03) and the onsite potable well have shown detections sporadically in the last 3 years. The detections have been below the PEL and are within the historical range at the wells.

The residential well sample information (names, addresses, and telephone numbers) and the analytical results were submitted separately to Linda Martin, EPA Work Assignment Manager, on July 23, 2014 (Appendix F).

2.2.2 Monitoring Well Sampling Procedures

For the semiannual sampling event conducted in May 2014, the following five monitoring wells were sampled:

- MW-12
- MW-15
- MW-19
- MW-22
- MW-26

MW-19 represents the unconfined groundwater in the LNAPL area. MW-15 is used to assess groundwater south of the plume. MW-12 and MW-22 are used to assess the impacts of plant operation to the perimeter of the plume. MW-26 is used to monitor groundwater quality near the treated water infiltration basin. Sampling of the wells was conducted from May 13 to May 14, 2014. Before sampling, monitoring wells were purged of at least three well volumes. MW-22 was purged and sampled using disposable polyvinyl chloride bailers. The remaining monitoring wells were purged and sampled with dedicated Grundfos pumps that are maintained in each monitoring well. Results of the semiannual sampling event is discussed in the following subsections.

2.2.3 Pentachlorophenol Plume

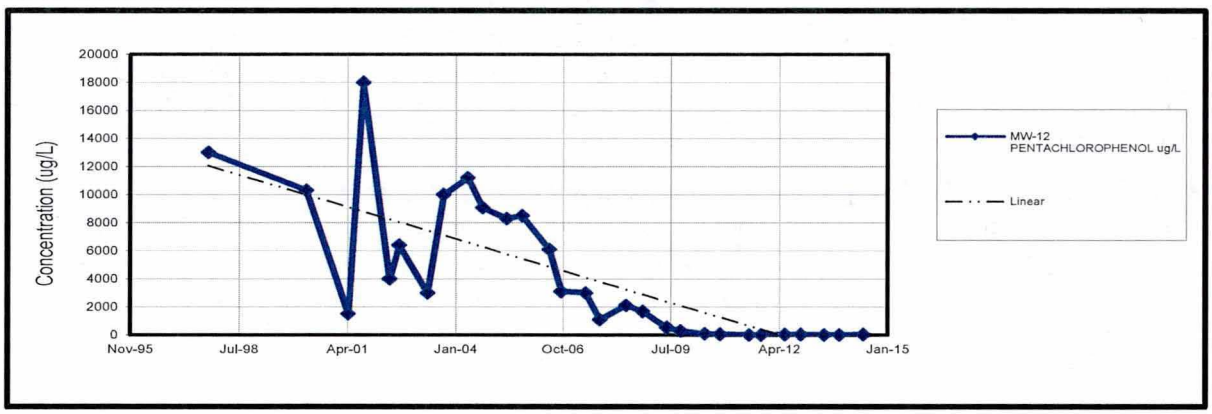
Because of the limited number of wells sampled in May 2014, plume maps of PCP contours were not completed. This criterion was not evaluated for this report. Individual wells were compared to historical levels of PCP in the next section.

2.2.4 Selected Trend Analysis—Unconfined Wells

MW-12

Although MW-12 has shown fluctuations in PCP between groundwater sampling events, there is an overall decreasing trend in the PCP concentration (Figure 7). MW-12 is screened in the semiconfined aquifer at a depth of 122 feet below ground surface. PCP has declined from the maximum concentration of 18,000 µg/L in September 2001 to 17 µg/L in the most recent sample in May 2014. Free product (LNAPL) has not been observed in MW-12.

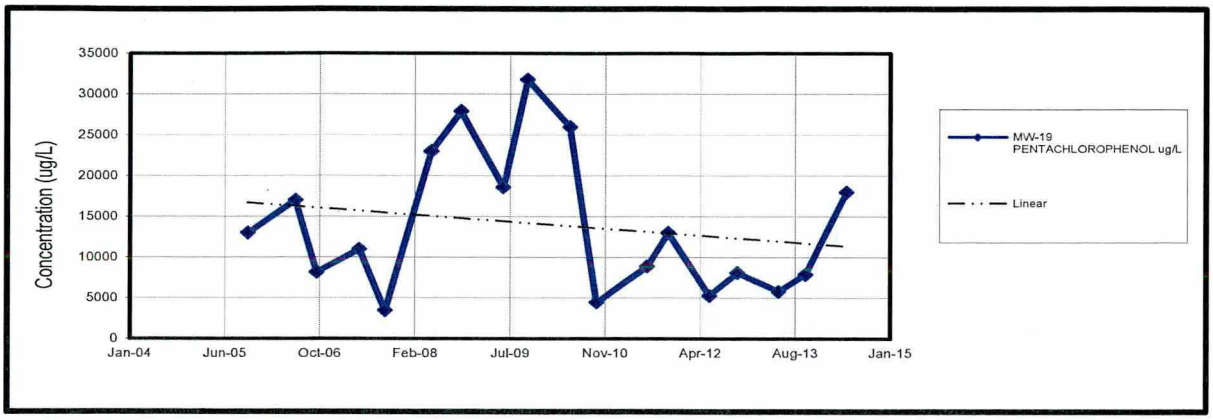
FIGURE 7
MW-12 PCP Concentration
Penta Wood Products Site



MW-19

LNAPL has been present in MW-19 since monitoring began, and entrainment of LNAPL droplets in the sample will have notable effects on PCP concentrations. The PCP concentrations were measured at 5,800 µg/L in May 2013 and 7,900 µg/L in October 2013, which is less than what was observed in 2011. In May 2014, the measured PCP concentration was 18,000 µg/L, which is higher than what was observed in 2011 and more comparative to 2009 levels. Variability of PCP concentrations in samples collected from wells with LNAPL is expected.

FIGURE 8
MW-19 PCP Concentration
Penta Wood Products Site



2.2.5 Selected Trend Analysis—Semiconfined Wells

The wells in the semiconfined aquifer contained PCP levels below 1,000 µg/L, within the goal for monitored natural attenuation at the site.

MW-15

MW-15 is a semiconfined well and is the southernmost well at the site. It is the last well between the site and adjacent residences, so it is considered a sentinel well. PCP was reported at an estimated concentration of 0.025 µg/L in May 2013 and was not detected in the well in October 2013 or May 2014, which is consistent with historical results. Historical results in MW-15 generally have been nondetect with an occasional detection below the PEL.

2.2.6 Naphthalene Analytical Results

In May 2014, naphthalene was detected in MW-19 at a concentration of 4.6 µg/L, which is below the WDNR PAL for naphthalene of 10 µg/L and the WDNR Enforcement Standard (ES) of 100 µg/L. In May 2012, the concentration was 50 µg/L and in October 2012 was 8.4 µg/L. Since 2000, the concentrations have been continually decreasing from 5,260 µg/L.

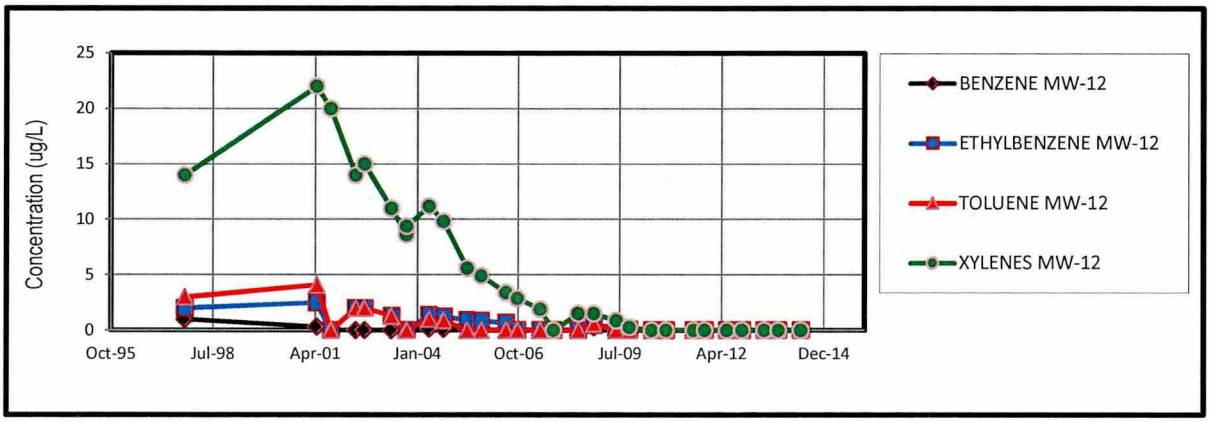
2.2.7 BTEX Analytical Results

BTEX historically has been detected in three wells (MW-10, MW-12, and MW-19), but was only detected in MW-19 during 2013 and 2014. The BTEX detections were below WDNR PALs.

MW-12

In MW-12, BTEX concentrations have shown steady declines, especially over the last 5 years. The ethylbenzene concentration has declined from 1.39 µg/L in 2004 to nondetect (1 µg/L) in 2014. The toluene concentration has declined from 1.03 µg/L in 2004 to nondetect (1 µg/L) in 2014, and the xylene concentration has declined from 11.2 µg/L in 2004 to nondetect (2 µg/L) in 2014.

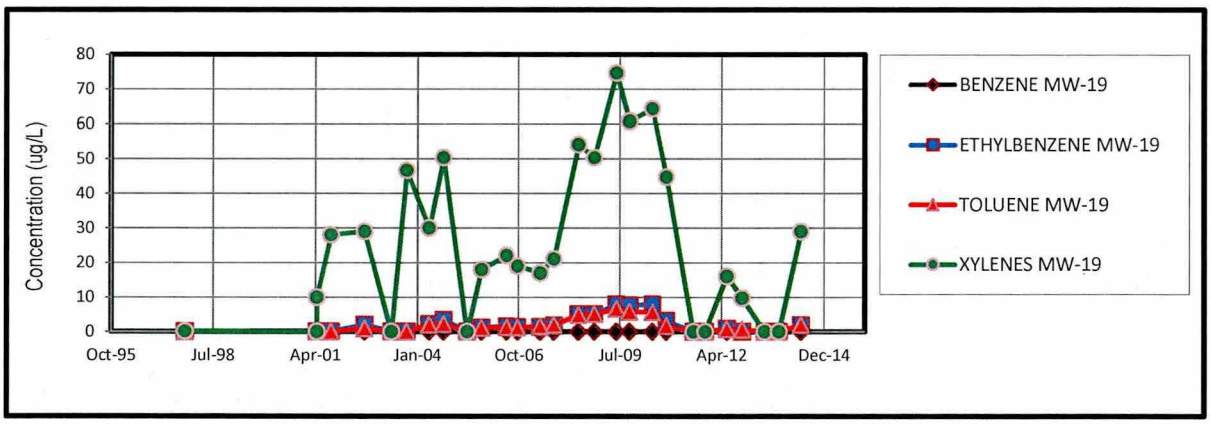
FIGURE 9
MW-12 BTEX Concentrations
Penta Wood Products Site



MW-19

In MW-19, BTEX concentrations have varied over time, likely because of the presence of ongoing nonaqueous phase liquid in the well. Ethylbenzene was detected at an estimated concentration of 1.9 µg/L in May 2014. Detections of ethylbenzene were below the WDNR PAL of 140 µg/L. Toluene was detected at a concentration of 2 µg/L in May 2014, which is below the WDNR PAL of 160 µg/L. Xylenes were detected at a concentration of 29 µg/L in May 2014, which is within the historical range at the site and below the WDNR PAL of 400 µg/L.

FIGURE 10
MW-19 BTEX Concentrations
Penta Wood Products Site



2.2.8 Dissolved Metal Analytical Results

The following dissolved metals were collected from wells sampled in May 2014 at the site: arsenic, copper, iron, manganese, and zinc. The samples were filtered through 0.54-micron filters in the field.

Arsenic

No dissolved arsenic detections occurred in May 2014. In 2013, several detections with estimated concentrations were below the WDNR PAL of 1 µg/L.

Copper

Only two estimated detections of dissolved copper were found in May 2014. Dissolved copper was detected in MW-19 at an estimated concentration of 7.7 µg/L and MW-22 of 7 µg/L. The results were below the WDNR PAL of 130 µg/L, similar to previous years.

Iron

In May 2014, dissolved iron was detected above the WDNR PAL of 0.15 milligram per liter (mg/L) in MW-22 at 1.4 mg/L. In addition, dissolved iron was detected at an estimated concentration in MW-19 at 0.038 mg/L, below the WDNR PAL of 0.15 mg/L and ES of 0.3 mg/L. Elevated iron concentrations are an indicator of natural attenuation.

Manganese

In May 2014, dissolved manganese exceeded the WDNR ES of 0.05 mg/L at two wells (MW-12 at 0.71 mg/L and MW-19 at 1.9 mg/L). Additionally, MW-22 had a detected concentration at 0.072 mg/L, which was below the WDNR ES of 0.05 mg/L. Elevated manganese concentrations are an indicator of natural attenuation. The manganese concentrations reported in 2014 were similar to concentrations reported in 2011, 2012, and 2013.

Zinc

Only two estimated detections of dissolved zinc were found in May 2014. Dissolved zinc was detected in MW-12 at an estimated concentration of 3.1 µg/L and MW-22 at 10 µg/L. The results were below the WDNR PAL of 2.5 mg/L, which is similar to previous years.

2.2.9 Natural Attenuation Parameters

Natural attenuation is a remediation approach that relies on natural processes that 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. Appendix C contains a table presenting the natural attenuation parameters for each well as measured since 1997.

Oxidation/Reduction

Evaluation of the data generated during 2013 suggested areas at the perimeter or outside the PCP plume are under slight to strong oxidizing conditions as shown by elevated oxidation-reduction potential (ORP). Overall, ORP levels in 2014 and 2013 increased slightly from 2012 levels; therefore, reductive dechlorination is likely occurring. ORP measurements at wells in the most concentrated area of the PCP plume (greater than 1,000 µg/L) have not been able to be measured because of 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.

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 2014, the semiconfined wells had chloride levels at 11 mg/L (MW-12 and MW-15). The unconfined wells ranged from 5.8 mg/L (MW-22) to 30 mg/L (MW-19). Historically, either MW-03 or MW-21 have reported the highest chloride levels (during the annual sampling event in October 2013), possibly because of their proximity to the highway where influence from seasonal road salting may have caused elevated chloride concentrations.

Since the beginning of groundwater extraction at the site, correlation between PCP degradation and chloride production has been difficult because, as chloride is produced, it is removed by the extraction system, creating a net effect that is difficult to discern.

Nitrate

In 2014, nitrate levels remained relatively low, ranging from 0.19 mg/L (MW-19) to 5.2 mg/L (MW-15), and remained comparable to concentrations observed in 2013.

Methane

Methane, a product of anaerobic degradation, was nondetect in all but one of the wells (MW-12, MW-15, MW-22, and MW-26) in May 2014. In MW-19, the concentration was 0.0027 mg/L, which is comparable to detections in previous years. The absence of methane at or above the detection limit in most wells suggests degradation is occurring primarily under nonmethanogenic, anaerobic, or sulfate-reducing conditions.

Sulfate

Once oxygen and nitrate are depleted, sulfate also can be used as an electron acceptor. Sulfate continues to fluctuate within the plume and has not shown any clear trends. Sulfate levels in 2014 were similar to those in 2013.

2.2.10 Groundwater Quality near the Infiltration Basin

Large quantities of treated groundwater have been discharged at the site's infiltration basin since the beginning of operation. From 2004 through 2013, approximately 200 million gallons of groundwater have been re-infiltrated. The water would be expected to displace groundwater over a considerable area. The re-infiltration of the treated groundwater helps to maintain a water balance to offset the extracted volume of water.

Unconfined Aquifer

MW-26 is used to determine the effects that the infiltration basin has on the unconfined aquifer in the area. PCP, methane, nitrate, iron, and manganese concentrations in MW-26 have remained similar to background levels, as would be expected for the discharge of treated groundwater. Sulfate concentrations have increased from a background value of less than 10 mg/L to a high of 2,360 mg/L in June 2009, but in the most recent samples collected in May 2014, the sulfate level was 180 mg/L.

Water discharged at the infiltration basin previously had been extracted from an area of high PCP concentrations and treated to remove dissolved PCP. Chloride does not change significantly during the treatment of extracted groundwater. A baseline chloride concentration was not measured in MW-26 before operation of the groundwater treatment system. However, chloride concentrations decreased from 30 mg/L in 2001 to 11 mg/L in 2003 while the treatment system was shut down for renovations. Chloride concentrations increased after the treatment system was restarted in 2004, and have ranged from 17 to 203 mg/L, with the most recent concentration of 18 mg/L in May 2014.

Semiconfined Aquifer

MW-17 is used to determine the effects of the infiltration basin on the semiconfined aquifer. MW-17 is sampled annually for PCP and natural attenuation parameters. PCP, methane, manganese, and iron in MW-17 have remained similar to background levels. Nitrate concentrations dropped in 2009 because the source area groundwater has minimal nitrate; however, the nitrate concentration increased to 5.18 mg/L in 2010, which is similar to the levels experienced from 2005 to 2008. Nitrate dropped again in 2011 to 3.9 mg/L but increased to 4.5 mg/L in 2013. Sulfate concentrations have remained close to the background value of 10 mg/L but increased in 2013 to 36 mg/L. Water discharged at the infiltration basin was extracted from an area of high PCP concentrations and treated to remove dissolved PCP. Chloride does not change significantly during the treatment of extracted groundwater. The background chloride level of 4.8 mg/L measured in 1997 increased to 16 mg/L in October 2013. MW-17 was not sampled during the semiannual May 2014 event. MW-12 also is in the semiconfined aquifer and has exhibited similar PCP and natural attenuation parameters in 2014 as it did in 2013.

Another benefit of re-infiltrating groundwater is that treatment results in aeration and re-oxygenation of groundwater. Elevated groundwater exists at the location of the infiltration basin; therefore, a portion of

the oxygenated water should flow toward the extraction wells and the PCP plume and provide a supply of oxygen for aerobic biodegradation of PCP.

2.3 Summary

The groundwater surface contours continue to indicate the extraction system is effectively capturing groundwater within the CAMU area. Although the full group of wells was not sampled during the semiannual event to determine the area of PCP-contaminated groundwater, it is safe to assume from previous years that the plume continued to be captured.

LNAPL was present in three unconfined aquifer wells (MW-18, MW-19, and MW-20) in May 2014. LNAPL was observed in the same wells that historically have contained LNAPL.

Results from the residential wells and potable well sampling in May 2014 indicate BTEX and naphthalene are not present in the residential wells or the onsite potable well. Estimated detections (below the preventative action limit of 0.1 µg/L) of PCP were found in RW-01, RW-04, and the potable well in May 2014. Since the presence of PCP in the residential wells has been variable, the estimated detections reported in May 2014 are not unrealistic and are within the historical range.

Evaluation of the natural attenuation parameters revealed similar conditions to those in 2013.

2.4 Recommendations

It is recommended that the current sampling program be continued in for the annual event in 2014. If groundwater levels remain similar in the future as they were in 2012 and 2013, MW-6S should continue to be sampled during the annual round, replacing MW-27 as long as there is enough water in MW-6S.

SECTION 3

Waste Generation and Disposal Summary

The remedial action activities at the site generate hazardous waste. Hazardous waste management procedures for the PWP site (EPA ID No. WID006176945) are outlined in the *Waste Handling Plan* (CH2M HILL 2012). Table 5 summarizes the amount and type of waste generated in 2014.

TABLE 5
2014 Detailed Hazardous Waste Generation Summary
Penta Wood Products Site

Manifest #	Date	Filter Cake (lb)	Misc Debris (lb)	Carbon (lb)	LNAPL (lb)	Yearly Total (lb)
011462778JJK	1/14/2014	20,000				
011462779JJK	1/29/2014	16,840				
011462922JJK	3/7/2014		10,500	24,040		
011462948JJK	4/18/2014	23,240				
001247991JJK	7/8/2014	19,580				
011462997JJK	7/30/2014			36190		
013427488JJK	8/26/2014				9,808	
013427487JJK	8/29/2014	8,000				
2014 Total (lb)		**87,660**	**10,500**	**60,230**	**9,808**	**168,198**

lb - pounds

Table 6 summarizes the amount of waste generated and disposed of offsite from 2000 to 2014.

TABLE 6
Hazardous Waste Generation Summary
Penta Wood Products Site

Date	Filter Cake (lb)	Misc. Debris (lb)	Carbon (lb)	LNAPL (lb)	Water (gallons)	Yearly Total (lb)
2000	0	200	6,000	5,009*		11,209
2001	0	400	56,100	6,166*		62,666
2002	0	1,400	48,000	10,790*	27,756	87,946
2003	0	600	0	3,083*	1,376	5,059
2004	155,960	3,200	102,000	53,522*		314,682
2005	178,784	1,290	104,860	23,847*		308,924
2006	112,640	1,200	136,520	52,892*		303,252
2007	174,020	2,200	245,377	77,615*		517,387
2008	211,402	3,176	70,007	28,036		312,621
2009	233,840	1,116	49,757	35,659		320,372
2010	210,940	0	81,227	34,937		327,104
2011	292,903	0	74,247	0		367,150

TABLE 6
Hazardous Waste Generation Summary
Penta Wood Products Site

Date	Filter Cake (lb)	Misc. Debris (lb)	Carbon (lb)	LNAPL (lb)	Water (gallons)	Yearly Total (lb)
2012	182,280	0	65,420	25,493		273,193
2013	156,760	0	46,571	27,252	0	230,582
2014	87,198	10,500	60,230	9,808	0	168,198

*Volume shows the amount of waste disposed offsite and is estimated to be approximately 50 percent pure LNAPL and 50 percent mixture of water and emulsified LNAPL. Totals for 2014 are only a partial total for January through September 1.
lb - pounds

From 2012 to 2013, although the amount of groundwater treated at the site increased by more than 5 million gallons, there has been a more than 100,000-pound decrease in the production of filter cake. The decrease in filter cake has been achieved by removing more water from the filter cake and through continued operation of the treatment system using more efficient methods (such as shutting off EW-02 and replacing system components like failing pumps and motors before they completely fail). LNAPL recovery has increased since the beginning of 2011, which is also because of continued operation of the treatment system using more efficient methods.

SECTION 4

References

CH2M HILL. 1998. *Feasibility Study Report. Penta Wood Products Superfund Site.*

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CH2M HILL. 2014b. *2013 Annual Report, Penta Wood Products Site, WA No. 132-LRLR-05WE/Contract No. EP-S5-06-01*. May.

CH2M HILL. 2014b. *Final Long-Term Remedial Action Report*. Penta Wood Products Superfund Site.

Appendix A
Final Transition Memorandum

Penta Wood Products Site Transition Plan—UPDATE

Penta Wood Products Superfund Site, Town of Daniels, Wisconsin
Work Assignment No. 132-LRLR-05WE, Contract No. EP-S5-06-01

PREPARED FOR:	U.S. Environmental Protection Agency
COPIES:	Wisconsin Department of Natural Resources
PREPARED BY:	CH2M HILL
DATE:	November 13, 2014

Purpose

The operation of the extraction and treatment systems at the Penta Wood Products Superfund Site will be transferred from the U.S. Environmental Protection Agency (EPA) to the Wisconsin Department of Natural Resources (WDNR) on September 1, 2014. CH2M HILL designed and constructed the facility and then performed the long-term remedial actions under contract to EPA. The treatment system was designated as operational and functional on August 12, 2004, and has been operating for almost 10 years. The Comprehensive Environmental Response, Compensation, and Liability Act prescribes 10 years of long-term remedial action (LTRA) operation by EPA before transfer to the controlling state agency.

Table 1 of this updated transition plan presents the preliminary punch list items and other tasks remaining to be completed before the transfer to state control to facilitate a smooth and efficient transition of the site from EPA to WDNR. This punch list will be used to facilitate the final inspection which is tentatively scheduled for August 6th.

Since the summer of 2013, EPA, WDNR, and CH2M HILL have conducted regularly scheduled coordinating teleconferences to discuss transition activities. A variety of activities were identified for completion before the transition to state control. This memorandum presents the transition activities briefly and notes them in a punch list format in Table 1 for tracking status under the following categories:

- Operational
- Administrative Transfer
- Training
- Reports
- Property Transfer

Remedial Objectives

In September 1998, the Record of Decision was finalized specifying remedies to address environmental issues associated with soil and sediment, surface water, light nonaqueous phase liquid (LNAPL), and groundwater. The following are the specific remedial action objectives for this site:

- Reduce or eliminate the potential risk to human health and ecological receptors associated with exposure to pentachlorophenol (PCP) and fuel oil components in surface water and groundwater, and PCP/fuel oil components and metals in the soil and sediment.
- Reduce or control the source of contaminants.
- Meet the applicable or relevant and appropriate requirements, including reducing contaminant concentrations in the groundwater beneath the site to below WDNR's Preventative Action Limits.

The remedial action for the contaminated soil was completed in 2000 and included the construction and consolidation of material in an onsite Corrective Action Management Unit (CAMU). The material placed in the CAMU is a mixture of soil and wood chips that have concentrations exceeding the remediation goal of 1.2 parts per million for arsenic and 2.1 milligrams per kilogram for PCP.

The remedial action to address LNAPL and contaminated groundwater is ongoing and includes the following:

- Extraction and treatment of the groundwater with discharge to the infiltration basin
- Monitored natural attenuation
- LNAPL recovery
- Bioventing

The current system configuration has been running continuously since 2004, except for downtime during routine maintenance and repairs. The biovent system, first started in September 2007, operates during the summer and is turned off for the winter.

The performance goals for the extraction and treatment system are as follows:

- Remove LNAPL, to the extent practicable, to reduce the 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) of the PCP in the groundwater, and reduce concentrations to a level that allows natural attenuation to achieve the NR 140 standards within a reasonable time period.
- Comply with the WPDES discharge permit.

Transition Activities

The extraction and treatment system will be operated by CH2M HILL under contract with the USEPA through August 31, 2014, and will transfer to WDNR on September 1, 2014. The categories of activity summarized in the following subsections are listed in Table 1 and represent the identified list of items that will be completed for the transition.

Operational Activities

Punch list items that fall under the operational activities category include efforts to inspect, repair, and prepare the operations building for transfer to WDNR. Annual inspections are performed on the pumping, treatment, and building systems to keep them running efficiently. Several of the inspections have already been completed while several more are planned for June, July, and August. Two key activities are planned to start in July with the first being the service of the extraction pumps in the wells (2 will be replaced, and 4 will be serviced). The second being repair of the vessels that contain granular activated carbon (GAC). Service on one of the vessels in February 2014 showed some corrosion through the vessel lining. This work will make repairs to the diffuser in one of the vessels and will repair corrosion in each of the three vessels. The GAC will also be replaced so that the listed material generated by USEPA operations is removed prior to the transition.

A fresh limited supply of materials used in the operation will also be delivered. At a minimum one month's supply of diatomaceous earth, plus caustic soda and ferric sulfate will be available at the site. The items are included in the punch list in Table 1.

Removal of residual material from the plant is also noted as an operational activity. This involves removing material generated by USEPA so it is removed prior to the transition. This will simplify the process of disposal and reporting after WDNR has control of the operation. Proof of completion will come from the manifest.

CH2M HILL will also prepare the plant computer for transfer to WDNR, which will involve transferring data from a CH2M HILL-owned computer to the plant system, as well as removing CH2M HILL-specific information from the plant computer before the transition.

Administrative Transfer

Activities identified for administrative transfer relate to closing the utility accounts and permits currently under CH2M HILL control. CH2M HILL has accounts for electricity, Internet, telephone, and propane. The accounts will be closed before transfer on September 1. Wastewater is currently discharged on behalf of EPA to the infiltration pond under a Wisconsin Pollutant Discharge Elimination System (WPDES) permit. The permit will also be terminated. WDNR (or representative) will be responsible for acquiring new accounts with utilities and suppliers.

CH2M HILL understands that WDNR is also responsible for completing a remedial action plan (RAP) for operating the facility and submitting that document to EPA.

Training

CH2M HILL is tasked to provide training support to the WDNR-selected operations contractor before and after transfer of the site to WDNR control (if CH2M HILL is not selected). CH2M HILL recommended that the WDNR subcontractor be onsite to shadow the current plant operator for 30 days before the transfer date if possible. Onsite training will be provided by having the WDNR staff/subcontractor observe actual site operations prior to the transfer. Due to liability concerns, the WDNR staff and subcontractor will not be allowed to operate the plant equipment. The WDNR staff/WDNR subcontractor will be instructed by the current site operator on the following:

- System equipment and process flow
- Standard operating procedures and process control
- Daily and weekly maintenance and equipment checks
- Onsite chemistry management (pH and turbidity)
- Compliance sampling for the current WPDES discharge permit
- Operations of manual system components, including the following:
  - 2,500-pound GAC vessel backwash
  - Rotary Drum Vacuum Filter (RDVF)
- Power outage procedures
- Shutdown/startup procedures
- Groundwater sampling procedures
- Review of the operating manuals and other plans that have been provided to WDNR.

The following documents have been provided or will be provided to WDNR:

- O&M manual, including manufacturer's literature for equipment and standard operating procedures
- Current waste handling plan
- Quality assurance project plan and addendums for sampling
- Field sampling plan
- WPDES discharge permit and current sampling schedule
- Daily operating logs
- List of current subcontractor and contact information
- O&M Tracking Tool Database
- Logic and backup copy of programming

Ch2M HILL is also tasked by USEPA to provide support for questions and to help resolve issues after the site is transitioned to WDNR control. CH2M HILL's support is limited to telephone consultations and site visits for instruction/guidance only. CH2M HILL is not authorized to perform hands-on work in the plant after August 31, 2014.

A total of 220 hours has been approved for post-transition support, distributed as follows:

- September: 160 hours
- October: 30 hours
- November: 30 hours

CH2M HILL will work with EPA and WDNR to determine protocol for scheduling support activities as the date for transition nears.

Reports

As of the date of this update, two more reports will be prepared and submitted to EPA by CH2M HILL before the work assignment is completed. One report will describe the mobility and recoverability of the NAPL located beneath the site. The other report will be the LTRA report, which will describe the work performed over the past 10 years. Draft versions of the reports will be submitted to EPA for review on the date presented in Table 1. CH2M HILL anticipates that EPA will complete a review and provide consolidated comments within 30 calendar days of the submittal date.

Property Transfer

Once the operation of the plant is successfully transitioned to WDNR, the treatment plant property will need to be transferred off of CH2M HILL's contract and to the WDNR. CH2M HILL's property coordinator will work closely with EPA's property coordinator during this transition period.

Final Punch List

Table 1 presents the final punch list items that will be completed in advance of the transition to State Control.

TABLE 1
Penta Wood Products: Final Tasks Punch List And Status
Transition Plan
Penta Wood Products

Task Category	Item	Activity	Responsible Entity	When is activity scheduled for completion?	Actual Completion Date	Status
Operational	1	Inspect backflow preventer and complete cross-connection performance test.	CH2M HILL	December 1, 2013	December 2013	Completed
	2	Inspect dissolved air flotation system. To be completed by the system manufacturer, with maintenance performed as necessary.	CH2M HILL	February 1, 2014	February 2014	Completed
	3	Inspect polymer system. To be completed by the system manufacturer, and maintenance will be performed as necessary.	CH2M HILL	February 1, 2014	February 2014	Completed
	4	Inspect and repair heating, ventilation, and air-conditioning system.	CH2M HILL	June 14, 2014	June 2014	Completed

TABLE 1
Penta Wood Products: Final Tasks Punch List And Status
Transition Plan
Penta Wood Products

Task Category	Item	Activity	Responsible Entity	When is activity scheduled for completion?	Actual Completion Date	Status
	5	Inspect RDVF system. To be completed by the system manufacturer, and maintenance will be performed as necessary.	CH2M HILL	August 26, 2014		Completed
	6	Replace two and service four groundwater extraction pumps.	CH2M HILL	July 21, 2014		Completed
	7	Empty GAC vessels, inspect laterals, and replace the diffuser plates in the second carbon vessel. The first was completed in February 2014.	CH2M HILL	July 28, 2014		Completed
	8	Complete spot repairs of surface coatings in the carbon vessels. The coatings will require a curing time of approximately 10 days before fresh GAC can be added and operations resumed.	CH2M HILL	July 28, 2014		Completed
	9	Drain underground storage container, and remove/dispose of sludge.	CH2M HILL	August 4, 2014		Completed
	10	Site visit for final punch list inspection (EPA/WDNR/CH2M HILL participating)	All	August 21, 2014		Completed
	11	Replace GAC in the three GAC vessels.	CH2M HILL	August 19, 2014		Completed
	12	Fill chemical storage tanks (caustic soda and ferric sulfate).	CH2M HILL	August 25, 2014		Completed
	13	Provide supply of diatomaceous earth material and polymer sufficient to last to October 1.	CH2M HILL	August 25, 2014		Completed
	14	Purge CH2M HILL company-specific information and the Netscreen (connection to CH2M HILL internal servers) from site computer.	CH2M HILL	August 25, 2014		Completed
	15	Copy O&M tracking database onto the site computer.	CH2M HILL	August 25, 2014		Completed

TABLE 1
Penta Wood Products: Final Tasks Punch List And Status
Transition Plan
Penta Wood Products

Task Category	Item	Activity	Responsible Entity	When is activity scheduled for completion?	Actual Completion Date	Status
	16	Dispose of hazardous waste generated by the site activities.	CH2M HILL	August 25, 2014		Completed
Administrative Transfer	17	Work with utilities, including electric, Internet, telephone, and propane so that accounts can be closed at end of the day August 31.	CH2M HILL	August 15		Completed
		Tell utilities our close date.	CH2M HILL	August 15		Completed
		Provide description and information to WDNR so they can set up new accounts.	CH2M HILL	August 15		Completed
		Set up new WDNR accounts.	WDNR	September 1		Completed
	18	Work with WDNR to assist transfer of the WPDES permit and others (if any). (Generator number, discharge, extraction volume? Dept. of health?)				
		Contact permit agency and learn process to cancel/transfer responsibility.	CH2M HILL	July 15		Completed
		Provide description and information to WDNR so it can set up new accounts.	CH2M HILL	July 15th		Completed
		WDNR sets up new permits.	WDNR	September 1st		Pending
		WDNR acquires approval of Hazardous Waste Disposal Profile.	WDNR	September 1st		Pending
		Transfer generator number.	WDNR	September 1st		Pending

TABLE 1
Penta Wood Products: Final Tasks Punch List And Status
Transition Plan
Penta Wood Products

Task Category	Item	Activity	Responsible Entity	When is activity scheduled for completion?	Actual Completion Date	Status
	19	WDNR prepares RAP for EPA	WDNR			
Training	20	Host new contractor representative onsite to observe operations prior to transition (if not CH2M HILL).				
		Receive and check to see that they have a health and safety plan of their own.	WDNR	July 15		Completed
		Provide CH2M HILL's health and safety plan for their review.	CH2M HILL	July 15		Completed
		Demonstrate operations activities through August.	CH2M HILL	August 31		Completed
		Provide and discuss updated O&M manuals.	CH2M HILL	August 31		Completed
		Provide and discuss shut down instructions and operation optimization memorandum.	CH2M HILL	August 31		Completed
	21	Provide post-transition instruction to support plant operations.				
		Document agreement on how post-transition support from CH2M HILL will be managed.	WDNR/EPA	August 1		Completed
		CH2M HILL operator to be onsite up to 160 hours in September.	WDNR/EPA	August 1		Completed
		CH2M HILL operator to be onsite up to 30 hours in October.	WDNR/EPA	Sept 1		Completed
		CH2M HILL operator to be onsite up to 30 hours in November.	WDNR/EPA	Oct 15		Ongoing
Reports	22	NAPL mobility memorandum				
		Deliver draft	CH2M HILL	August 19		Completed
		30-day agency review	EPA	September 19		Completed

TABLE 1
Penta Wood Products: Final Tasks Punch List And Status
Transition Plan
Penta Wood Products

Task Category	Item	Activity	Responsible Entity	When is activity scheduled for completion?	Actual Completion Date	Status
		Final	CH2M HILL	September		Completed
	23	LTRA report				
		Deliver draft	CH2M HILL	August 19		Completed
		30-day agency review	EPA	September 19		Completed
		Final	CH2M HILL	November 10		Completed
Property Transfer	24	EPA transfers property from CH2M HILL to WDNR.	EPA			
		Agency and CH2M HILL define process we need to follow.	CH2M HILL	July 1		Completed
		Complete equipment audit to identify equipment that will be transferred for items with EPA Property Number.	CH2M HILL	August 1		Completed
		Submit request to remove property from our contract; need CO approval.	CH2M HILL	August 15		Completed
		EPA completes the transfer process.	EPA	September 1		Completed

Schedule

The following table documents the key activities and milestones required to meet the transition date of September 1, 2014.

TABLE 2
Transition Tasks and Status
Transition Plan
Penta Wood Products

Date	Description of Activity	Status
June 2013	EPA, WDNR, and CH2M HILL begin monthly transition calls.	Completed
Fall 2013	CH2M HILL submits initial transition plan, adjusts to track progress, and incorporate comments.	Completed
Fall 2013	WDNR requests memorandum describing LNAPL recoverability and mobility.	Completed
Fall 2013	WDNR requests delisting of the spent GAC.	EPA agreed.

TABLE 2
Transition Tasks and Status
Transition Plan
Penta Wood Products

Date	Description of Activity	Status
Winter 2013/2014	WDNR requests a document presenting cost evaluation for various operation models.	EPA agreed.
Winter 2013/2014	EPA directs CH2M HILL to prepare a Work Plan Revision Request (WPRR) to add scope and budget for transition-related activities and post-transition support requested by WDNR.	WPRR approved by EPA January 2014.
Winter 2014	Samples of spent GAC were collected and analyzed. Elevated concentrations of dioxin were found.	Work to delist GAC terminated.
March 2014	Final optimization plan was submitted to EPA and WDNR in March 2014.	Completed
June 2014	WDNR approves punch list in updated transition plan,	Completed
August 2014	Team completes punch list activities.	Completed
August 2014	Final site walk August 21, 2014.	Completed
September 2014	Final site transition September 1, 2014.	Completed
Fall 2014	Post-transition support.	Completed