



Semiannual Report

January through June 2019

Penta Wood Products Superfund Site

WDNR BRRTS Activity #02-07-000532

Wisconsin Department of
Natural Resources

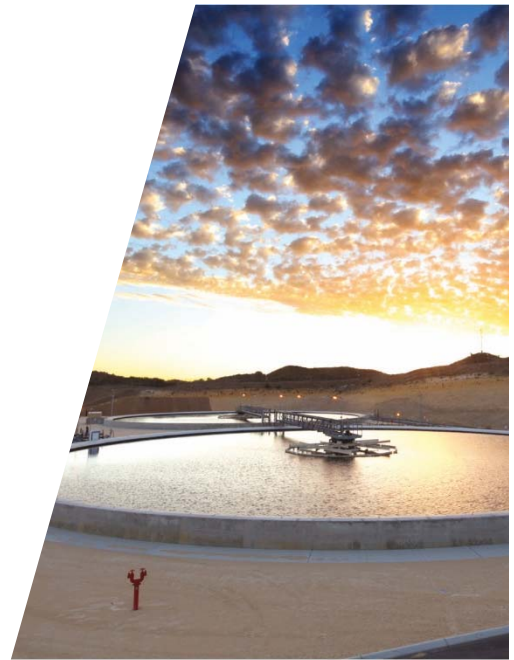




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1. Introduction

GHD Services Inc. (GHD) prepared this Semiannual Report (Report) for the Penta Wood Products Superfund Site (Site) in Siren, Wisconsin on behalf of Wisconsin Department of Natural Resources (WDNR). The Site location is shown on Figure 1.1, and the Site plan is shown on Figure 1.2. This Report presents the results of the activities conducted at the Site during January through June 2019 including:

- Groundwater monitoring and sampling (Section 2)
- Residential well and onsite supply well sampling (Section 3)
- Waste management and disposal (Section 4)
- Continuing obligations and inspections (Section 5)
- Conclusions and recommendations (Section 6)
- Certification (Section 7)

2. Groundwater Monitoring and Sampling

Groundwater monitoring was conducted at the Site in January and April 2019 and sampling was conducted at the Site in April 2019 based on the modified scope of work provided in a GHD letter to EPA dated June 30, 2016. Wells MW4 and MW14 were subsequently added to the sampling scope to assess semi-confined aquifer (lower portion) groundwater quality southeast of the LNAPL source area. Wells MW2 and MW5 were also added to the sampling scope to assess the groundwater quality in the vicinity of well MW30. A new well (MW32) was installed in May 2019 and added to the sampling scope to assess groundwater quality along the eastern property boundary. The groundwater monitoring and sampling plan is summarized in Table 2.1. Sampling was completed in general accordance with the Field Sampling Plan (FSP) (CH2M HILL, November 1999 and November 2010) and Quality Assurance Project Plan (QAPP) (CH2M HILL, February 2005) with subsequent addendums (most recent is Addendum No. 6 dated July 2014). The objectives of the groundwater monitoring at the Site included:

- To monitor flow direction and hydraulic gradient through the measurement and assessment of groundwater levels
- To monitor the natural attenuation of the plume through collection and chemical analysis of groundwater samples from monitoring wells
- To monitor long term improvement in groundwater quality through the collection and chemical analysis of groundwater samples from monitoring wells
- To monitor compliance with groundwater cleanup standards for the Site (State of Wisconsin ch. NR 140 Enforcement Standards)
- To monitor potential impact to residential wells through collection and chemical analysis of water samples from targeted residential wells



2.1 Groundwater and LNAPL Level Monitoring

Groundwater and Light Non-Aqueous Phase Liquid (LNAPL) levels were measured in thirty-three (33) monitoring wells and twenty-two (22) extraction well casings at the Site on January 2, 2019 and April 17, 2019. The newly installed well MW32 was measured on May 17, 2019. The groundwater and LNAPL elevation data along with well survey data are summarized in Table 2.2. Historical LNAPL thickness data are included in Appendix A.

Groundwater elevation contours were inferred from the January and April 2019 measurement data. Unconfined aquifer (upper portion) contours are shown on Figures 2.1 and 2.4. Semiconfined aquifer (lower portion) groundwater contours are shown on Figure 2.2 and 2.5. The contours indicate that the groundwater gradient is relatively flat at less than 0.0003 ft/ft (as calculated between wells MW2 and MW26) and represent non-pumping conditions following shutdown of the remediation system and groundwater extraction pumps (November 2015).

During the January 2019 and April 2019 events, LNAPL was present in monitoring wells MW18, MW19, MW20, and MW29 at measurable thicknesses, and LNAPL was not present in well MW10S. LNAPL was present in six extraction wells (EW05S, EW06S, EW07S, EW10S, EW12S, and EW14S) with casings screened in the unconfined (upper) aquifer during the January 2019 and April 2019 monitoring events, which is generally consistent with recent monitoring. During January 2019, LNAPL was present in extraction well EW03S (unconfined upper aquifer), similar to the October 2018 monitoring event. However, well EW03S did not have a measurable thickness of LNAPL in April 2019. LNAPL was not observed in any monitoring wells with casings screened in the semiconfined (lower) aquifer during January or April 2019. LNAPL thickness measurements are shown on Figures 2.3 and 2.6.

2.1.1 Vertical Gradients

Vertical hydraulic gradients were calculated between the semiconfined and unconfined aquifers to evaluate vertical flow between the two aquifers. The vertical gradient was calculated at monitoring wells MW10/MW10S, MW12/MW16, and MW23/MW9 (see Figures 2.1, 2.2, 2.4 and 2.5). The vertical gradient was determined by taking the difference in groundwater elevations divided by the difference in mid screen elevations of the wells listed above.

Groundwater at the Site flows from the unconfined aquifer downward to the semiconfined aquifer. The vertical gradients at the site range from 0.002 ft/ft (MW10/MW10S) to 0.009 ft/ft (MW23/MW9). These values are consistent with recent monitoring events and represent non-pumping conditions.

2.2 Groundwater Sampling

This semiannual groundwater sampling event was conducted from April 23 through May 17, 2019 and consisted of collecting groundwater samples from twenty-one (21) monitoring wells (MW1, MW2, MW3, MW4, MW5, MW6S, MW10, MW10S, MW12, MW13, MW14, MW16, MW17, MW21, MW22, MW23, MW25, MW28, MW30, MW31, and MW32) and three (3) extraction wells (EW11D, EW11S, and EW13S). Wells MW20 and MW29 were not sampled due to the presence of LNAPL in the wells. Groundwater samples were collected using low flow purge and sample protocol. As part of the well stabilization process, the groundwater was measured in the field for the following parameters: pH, temperature, specific conductance, dissolved oxygen (DO), oxidation-reduction



potential (ORP), iron, and sulfide. The parameters DO, ORP, iron and sulfide are used to help evaluate the groundwater geochemical conditions at the well. The groundwater purging and sampling data are summarized in Table 2.3.

The groundwater samples were collected and analyzed for the following compounds: pentachlorophenol (PCP); naphthalene; benzene, toluene, ethylbenzene, and xylene (BTEX); natural attenuation parameters; and select dissolved metals. The natural attenuation parameters included alkalinity, chloride, hardness, nitrate, sulfate, total organic carbon, and methane. The results of the natural attenuation parameters were evaluated to confirm the groundwater reduction-oxidation conditions at the Site and if the groundwater conditions are favorable for biodegradation. The select dissolved metals included arsenic, copper, iron, manganese, and zinc. The metals samples were filtered in the field through a 0.54 micron filter. The groundwater sample analytical data are summarized in Table 2.4.

All groundwater samples were shipped via commercial courier under standard chain of custody procedures to TestAmerica Laboratories (TestAmerica) in University Park, Illinois for analysis. Copies of laboratory reports are included in Appendix B.

The following sections present a discussion of the groundwater sample analytical data and the Wisconsin Chapter NR140 preventative action limits (PAL) and enforcement standards (ES). Historical data are included in Appendix A.

2.2.1 Naphthalene and BTEX Analytical Data

The April 2019 naphthalene and BTEX analytical data are summarized in Table 2.4. Naphthalene was detected in two (2) wells (MW5, EW13S) at concentrations that exceeded the PAL of 10 micrograms per liter ($\mu\text{g/L}$) (Table 2.4). Naphthalene concentrations did not exceed the ES of 100 $\mu\text{g/L}$.

BTEX was not detected at concentrations that exceeded the ESs or PALs.

2.2.2 PCP Analytical Data

The April 2019 PCP analytical data are summarized in Table 2.4. PCP was detected in sixteen (16) wells (MW1, MW2, MW3, MW5, MW10, MW10S, MW12, MW13, MW14, MW16, MW28, MW30, MW32, EW11D, EW11S, and EW13S) at concentrations exceeding the PAL of 0.1 $\mu\text{g/L}$. Of those sixteen wells, the PCP concentrations in six (6) wells (MW5, MW10, MW10S, MW12, MW30, and EW13S) exceeded the ES of 1.0 $\mu\text{g/L}$. Figure 2.7 shows the PCP concentrations in the unconfined (upper) aquifer wells. Figure 2.8 shows the PCP concentrations in the semiconfined (lower) aquifer wells.

During April 2019, PCP was detected in well MW5 at a concentration of 5,100 $\mu\text{g/L}$, which is greater than the concentration (17 $\mu\text{g/L}$) during the April 2016 pilot study baseline sampling event, but similar to October 2018.

PCP was detected in well MW2 at a concentration of 0.37 $\mu\text{g/L}$ during April 2019. PCP was detected at an estimated concentration of 0.080 $\mu\text{g/L}$ in well MW2 during the April 2016 pilot study baseline sampling event.



Although PCP concentrations were higher in some wells during April 2019 compared to previous sampling events, the elevated PCP concentrations (i.e., greater than 1,000 µg/L) are limited to the immediate vicinity of the LNAPL area in the unconfined and semiconfined aquifers, which is consistent with baseline sampling in April 2016 and recent sampling events.

2.2.3 Dissolved Arsenic Analytical Data

The April 2019 dissolved arsenic analytical data are summarized in Table 2.4. Arsenic was detected in five (5) wells (MW10, MW10S, MW14, EW11D, and EW13S) at concentrations exceeding the PAL (1 µg/L). Arsenic concentrations did not exceed the ES of 10 µg/L. Figure 2.9 shows the arsenic concentrations in the unconfined (upper) aquifer wells. Figure 2.10 shows the arsenic concentrations in the semiconfined (lower) aquifer wells.

2.2.4 Other Dissolved Metals Analytical Data

The April 2019 dissolved metals analytical data are summarized in Table 2.4. Zinc and copper were not detected above the PALs or ESs in any of the twenty-one (21) monitoring wells and three (3) extraction wells.

Iron was detected in nine (9) wells at concentrations exceeding the PAL (150 µg/L) and six (6) wells at concentrations exceeding the ES (300 µg/L). Manganese was detected in eight (8) wells at concentrations exceeding the PAL (25 µg/L) and seven (7) wells at concentrations exceeding the ES (50 µg/L). The ES for iron and manganese are considered secondary health based standards that are based on aesthetics (i.e., odor and taste).

2.2.5 Natural Attenuation Parameters Analytical Data

The natural attenuation results are provided in Table 2.4. The results generally show elevated levels of nitrate and sulfate and low concentrations of TOC and methane. These results in combination with the field stabilization parameters of DO, ORP, iron, and sulfide (Table 2.3) show that the groundwater beneath the Site is aerobic to slightly anaerobic because DO values are greater than 1 mg/L and ORP values are positive at the majority of wells outside the immediate vicinity of the LNAPL area in both the unconfined and semiconfined aquifers.

2.3 Monitoring Well Modifications

Based on the PCP concentrations in wells MW5 and MW30, PCP was not delineated to the east. Hence, a new well MW32 was installed near the east property boundary to further delineate PCP in the unconfined (upper) aquifer. The new well location is shown on Figures 1.2, 2.4, and 2.6 through 2.10. Drilling and well installation work was conducted in May 2019. Groundwater sampling at well MW32 was included in the April (sampled on May 17, 2019) semiannual event and will be included in the October 2019 semiannual event.

2.3.1 Drilling Protocol

Cascade Drilling, licensed by the State of Wisconsin, utilized a sonic drilling rig to advance the borehole for the new monitoring well (MW32). The borehole was approximately 6 inches in diameter and advanced to approximately 10 feet below the groundwater table. The total drilling depth was approximately 45 feet. The drilling equipment was decontaminated prior to use at the borehole



location. Drilling and well installation was conducted in general accordance with State of Wisconsin Administrative Code (WAC) ch. NR 141 requirements.

The subsurface stratigraphy observed during drilling was generally consistent with previously reported conditions at the Site. The stratigraphy is detailed on the log included in Appendix C.

2.3.2 Well Installation

A monitoring well MW32 was installed. The well consists of a 2-inch diameter, Schedule 80, polyvinyl chloride (PVC) casing. The PVC screen interval consists of casing with 0.010-inch slots installed between approximately 973 and 993 feet above mean sea level (ft msl). A solid casing extends from the top of the screened interval to approximately 2 feet above ground surface.

The well construction details are illustrated on the log included in Appendix C.

The annular space around the screened interval was backfilled with a silica sand filter pack. The sand extends from the bottom of the borehole to approximately 2 feet above the top of the screen. A 2-foot thick fine sand filter pack seal was placed above the top of the filter pack. A neat cement grout was installed, via a tremie pipe, in the annular space immediately above the filter pack seal to ground surface. A lockable steel protective casing (6-inch diameter, steel) was installed around the above ground well casing and set in concrete.

Following installation, the well was developed by surging and purging groundwater until the turbidity of the water was reduced.

2.3.3 Soil Cuttings and Water Management and Disposal

Soil cuttings removed from the borehole were placed in a stockpile located on the CAMU at the Site. The stockpile was lined and covered with plastic sheeting. A composite soil sample was collected from cuttings for laboratory analysis of PCP, BTEX, and naphthalene. A copy of laboratory report is included in Appendix C.

All results from the composite stockpile sample were non-detect and below State of Wisconsin standards and the drill cuttings were thinspread on the CAMU at the Site.

Approximately 50 gallons of development/decontamination water were discharged to the ground surface within the CAMU limits at the Site. No LNAPL was recovered during the drilling or well development activities.

2.3.4 Existing Monitoring Well Modifications

Well MW23 was modified with the removal of approximately 3.5 inches of well casing to allow the installation of a dedicated pump for sampling. This modification occurred on May 14, 2019.

2.3.5 Well Surveying

Top of casing elevations at four monitoring wells (MW4, MW4, MW14, and MW23) were surveyed to either verify previous information or document changes due to well modification. The location and top of casing elevation at new well MW32 were also surveyed. This information is provided in Appendix D.



3. Residential Well and Onsite Supply Well Sampling

On April 22 and 23, 2019, water samples were collected from seven residential wells located near the Site and the onsite water supply well (DW01) in general accordance with the FSP and QAPP. The residential wells included:

- 8713 Daniels 70 (RW1)
- 8627 Daniels 70 (RW2)
- 8454 Daniels 70 (RW3)
- 8526 Daniels 70 (RW4)
- 8783 Daniels 70 (RW5)
- 8542 West Doctor Lake Road (RW6 and RW6 Shop)

The onsite water supply well serves the remediation equipment building. The water was previously used for sanitary facilities in the building and maintaining the remediation equipment but is not ingested by workers. During January 2018, the building heater malfunctioned, and the water supply pipes were damaged due to freezing. The water supply piping was subsequently disconnected at the building. The onsite water supply well no longer provides a water supply to the building and is currently only used as a supply for sampling equipment decontamination water.

The residential well and onsite water supply well locations are shown on Figure 3.1. The samples were analyzed for PCP, BTEX, and naphthalene.

3.1 Residential Well and Onsite Supply Well Sample Analytical Data

PCP, BTEX, and naphthalene were not detected at concentrations in the residential wells or onsite water supply well that exceed the respective PALs (Table 3.1). With the exception of well RW5, PCP was not detected in the residential wells. PCP was detected in well RW5 at a concentration above the PAL (0.1 µg/L) and below the ES (1 µg/L). Semiannual sampling will continue at all residential wells to identify and track potential PCP concentration trends. These results are similar with historical data. The residential well and onsite supply well sample analytical data are summarized in Table 3.1. Copies of the laboratory reports are included in Appendix B, and the data validation memorandum is included in Appendix E. Historical residential and onsite water supply well PCP data are included in Appendix A.

4. Waste Management and Disposal

No waste was disposed during January through June 2019. GHD continues to collect and containerize PPE and other waste produced during sampling events onsite. Historical hazardous waste disposal is summarized in Appendix A.



5. Continuing Obligations and Inspections

The WDNR has implemented Institutional Controls (ICs) at the Site in the form of Continuing Obligations (COs). COs are legal requirements designed to protect public health and the environment in regard to contamination that remains on a property, and COs still apply after a property is sold. The Long-Term Response Action Operation and Maintenance Plan (O&M Plan) – Addendum No. 1 (GHD; November 9, 2015) effectively serves as an Institutional Control Implementation and Assurance Plan (ICIAP). This section documents the COs in addition to inspections required by the O&M Plan (GHD; July 22, 2015).

5.1 Continuing Obligations

On July 6, 2015 the WDNR provided a letter approving the Remedial Actions with Continuing Obligations (WDNR BRRTS Activity #02-07-000532, FID #: 807050310). That letter approved the remedies which have been implemented at the Site and specified the condition with which any current or future owner of the property must comply to ensure that the Site does not pose a threat. These conditions or COs meet the intent of the ICs required by the Record of Decision for the Site.

CO maintenance consists of periodic monitoring and reporting to confirm that Site security is in place and providing protection as intended and that use of the land is restricted to maintain the integrity and functional effectiveness of the Site remedy.

Maintenance activities consist of periodic review of the property and COs by WDNR, notifications to new land owners or lessees, and continuing education for land owners and property users through annual updates and information.

To facilitate monitoring of the COs, roles and responsibilities, schedules, corrective actions, and reporting requirements were performed as follows:

1. Periodic monitoring was conducted whenever WDNR or its contractors or other representatives were present at the Site.
2. Prohibition of use of the Site real estate is evaluated and updated on an annual basis (minimum frequency). This evaluation determined:
 - The selected remedy (i.e. remediation system shutdown pilot study and associated monitoring) remains in place and remains effective
 - Site security remains effective and real estate use meets the stated objectives and performance goals and provides protection required by the response
3. Evidence was not observed of the following improper uses:
 - Removal of the existing barrier or cover
 - Replacement with another barrier or cover
 - Excavating or grading of the land surface
 - Filling on covered or paved areas
 - Plowing for agricultural cultivation



- Construction or placement of a building or other structure
- Changing the use or occupancy of the property to a residential exposure setting, which may include certain uses, such as single or multiple family residences, a school, day care, senior center, hospital, or similar residential exposure setting

An inspection of continuing obligations items was completed on April 22 through April 26, 2019 and a copy of the continuing obligations inspection form is included in Appendix F. Site signage that had fallen off the fencing was re-attached during the inspection.

5.2 Inspections

Additional inspections required by the O&M Plan (GHD; July 22, 2015) were conducted during this monitoring period. The results of the inspections are as follows:

- The CAMU area fence is in satisfactory condition and does not require repairs; the CAMU fence gates remain closed and locked when GHD and/or WDNR are not at the Site.
- The CAMU area surface soils/vegetation were in good condition during this monitoring period and did not require repairs; erosion, subsidence, and ponding water were not observed on the CAMU.

A site well inspection was completed on April 22 through April 26, 2019 and a copy of the well inspection form is included in Appendix F. Locks, latches, and discharge hoses were replaced/repared as noted during the April 2019 inspection.

6. Conclusions and Recommendations

Based on the pilot study data obtained since April 2016, the following conclusions are made:

- LNAPL is stable and not migrating
- The dissolved PCP plume is stable and not migrating significantly outside of the LNAPL area; however, PCP concentrations east of the LNAPL area will be further evaluated during future monitoring and sampling events to confirm that the PCP plume remains stable and not migrating
- Dissolved PCP concentrations greater than 1,000 µg/L are limited to the immediate vicinity of the LNAPL area
- Dissolved PCP degrades naturally in the aerobic zone outside of the LNAPL area, which helps stabilize the plume and prevent migration
- Dissolved PCP degrades in the anaerobic zone (LNAPL source area) at a slow rate
- The current monitoring well network is sufficient to monitor plume conditions

The upcoming reporting period (July through December 2019) will conclude the remediation system shutdown pilot study. The following actions are recommended for the Site during the next reporting period:

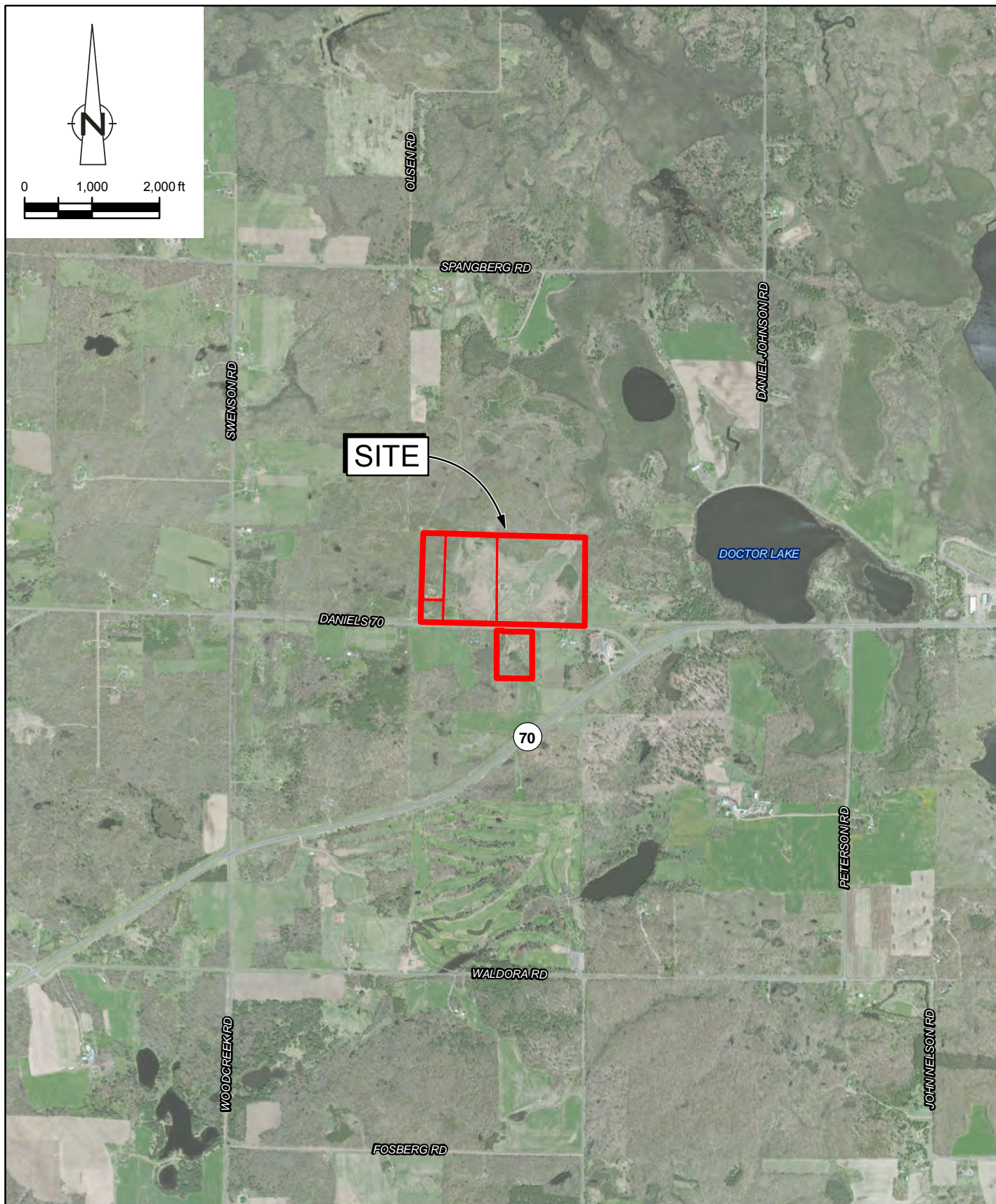
- Keep the remediation system shut down and continue the pilot study monitoring and sampling at the Site based on the USEPA approved scope and schedule



- Conduct quarterly groundwater and LNAPL level monitoring during July and October 2019
- Conduct semiannual groundwater monitoring and sampling during October 2019
- Conduct semiannual residential well sampling during October 2019
- Prepare and submit required monthly and semiannual reports; the next semiannual report will document Site work during July through December 2019 and will be submitted in January 2020
- Assess all remediation system shutdown pilot study data as part of a groundwater statistical evaluation using USEPA and ITRC guidance; the results will be provided in the next semiannual report.

7. Certification

The current actions at the Site remain protective of human health and the environment based on an evaluation of the current data. Implementation of the pilot study contingency plan outlined in the Remediation System Pilot Study Work Plan (GHD; November 13, 2015) is not necessary at this time.



Source: Microsoft Corporation; Burnett County

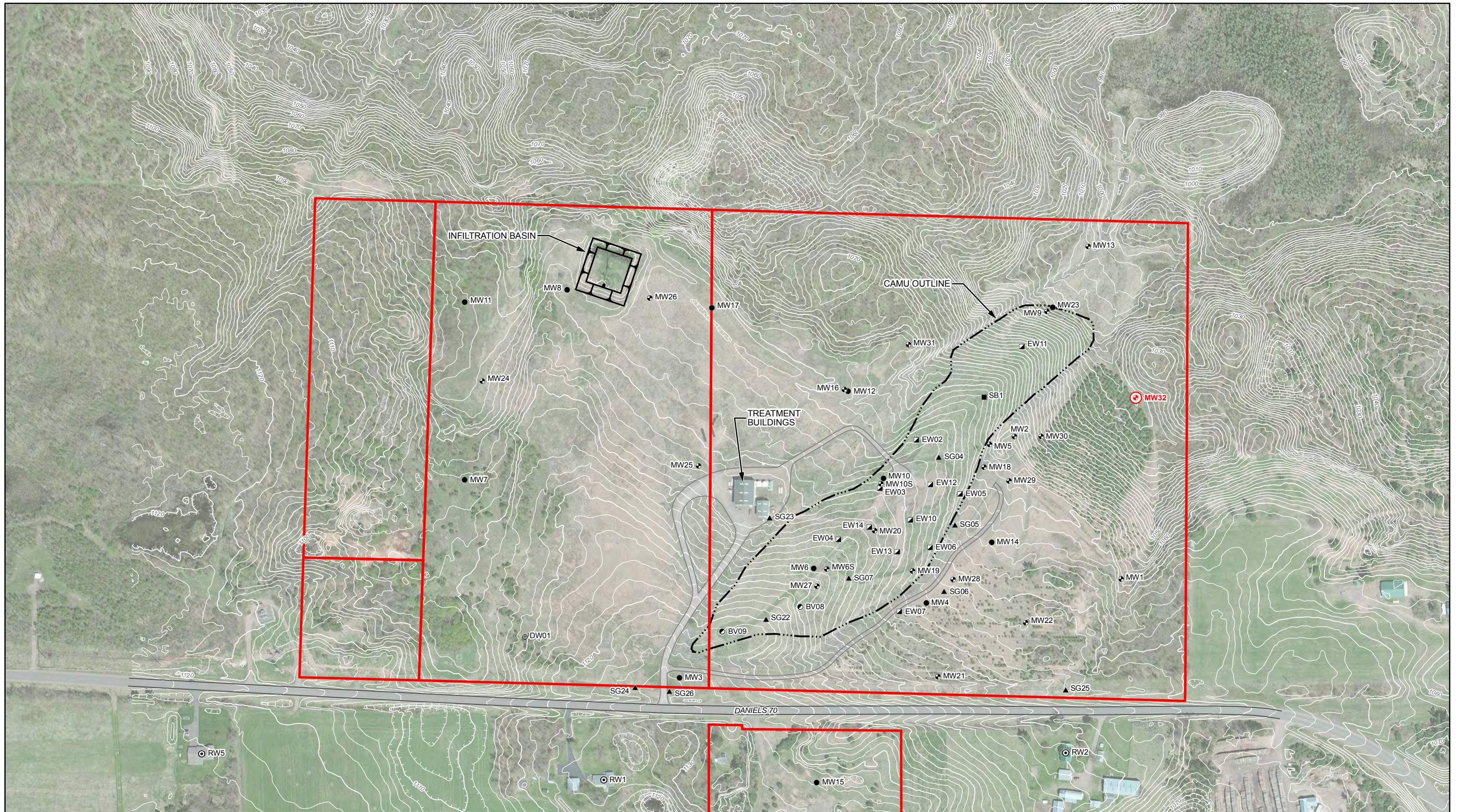


PENTA WOOD PRODUCTS SUPERFUND SITE
 SIREN, WISCONSIN
 SEMI-ANNUAL REPORT

086165-06-11
 Jul 10, 2019

SITE LOCATION

FIGURE 1.1



Source: Microsoft Corporation; Burnett County



LEGEND

- ⊕ NEW UNCONFINED MONITORING WELL
- ⚡ EXTRACTION WELL NEST
- ⚡ UNCONFINED MONITORING WELL
- SEMICONFINED MONITORING WELL
- ⊙ BIOVENTING WELL
- ▲ SOIL GAS WELL NEST
- ⊕ WATER SUPPLY WELL
- ⊙ RESIDENTIAL WELL
- APPROXIMATE CAMU LIMIT
- SITE PARCEL BOUNDARY



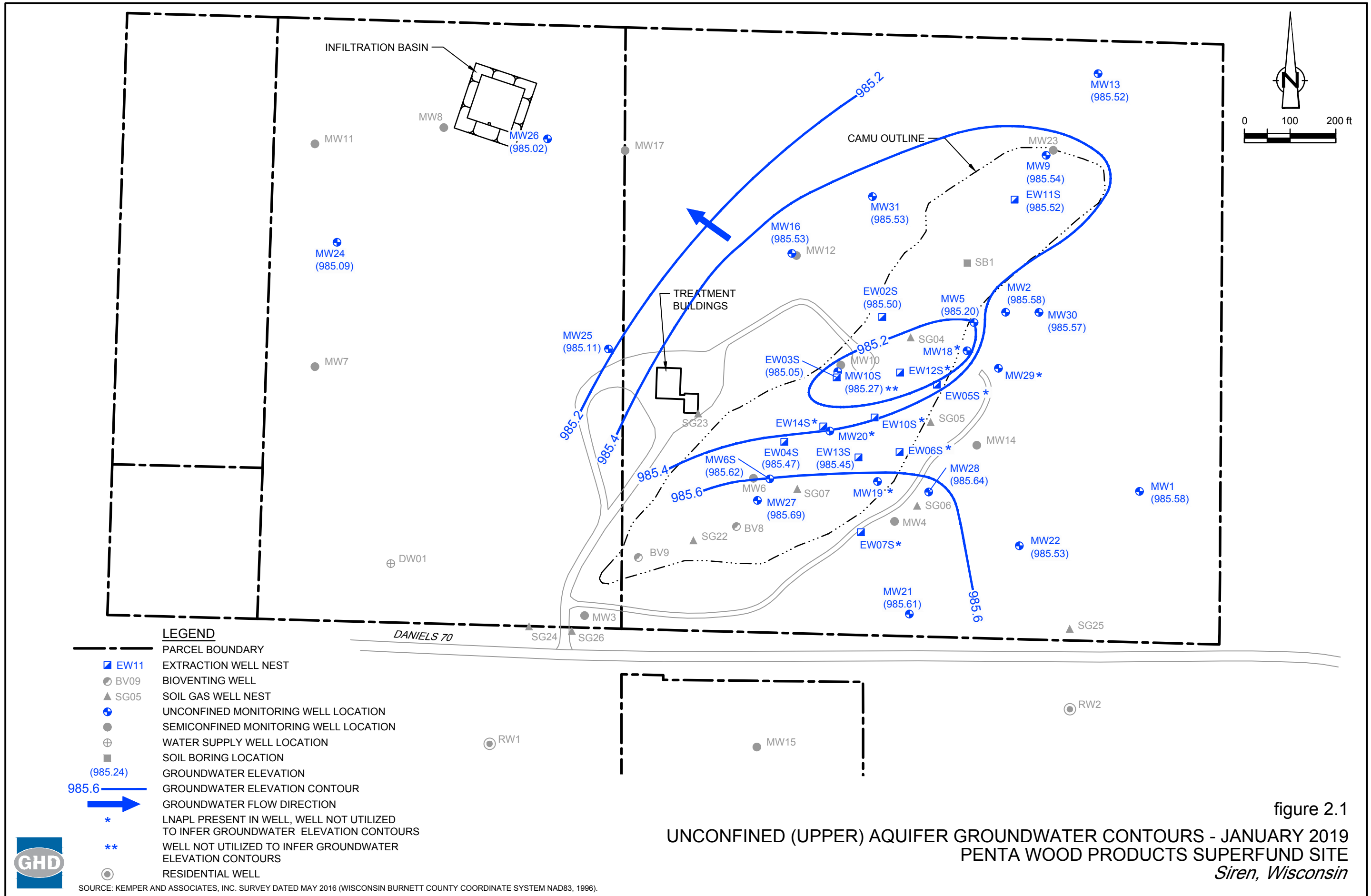
PENTA WOOD PRODUCTS SUPERFUND SITE
SIREN, WISCONSIN
SEMIANNUAL REPORT

SITE PLAN

086165-06-11

Jul 10, 2019

FIGURE 1.2



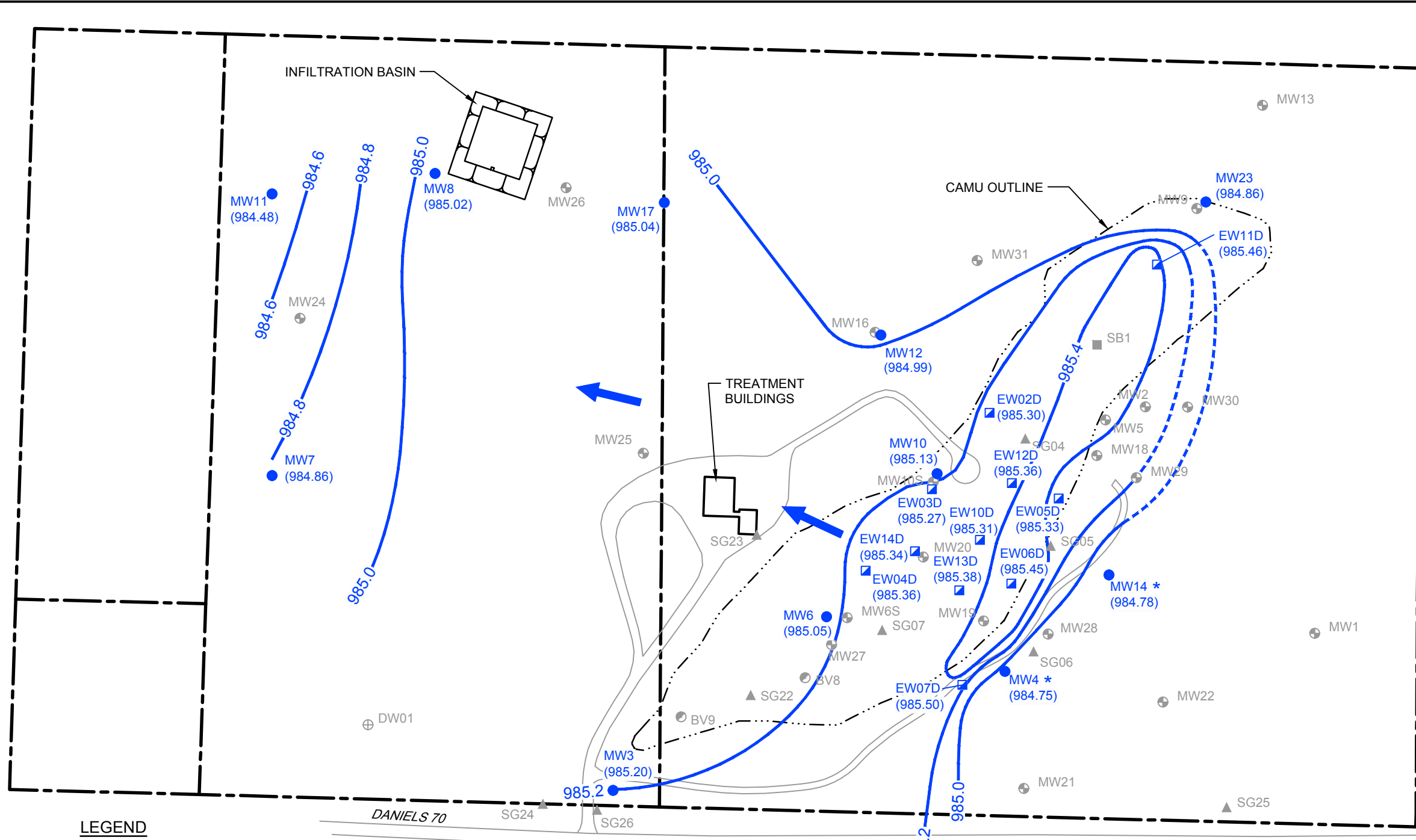
LEGEND

- PARCEL BOUNDARY
- EW11 EXTRACTION WELL NEST
- BV09 BIOVENTING WELL
- ▲ SG05 SOIL GAS WELL NEST
- ⊕ UNCONFINED MONITORING WELL LOCATION
- SEMICONFINED MONITORING WELL LOCATION
- ⊕ WATER SUPPLY WELL LOCATION
- SOIL BORING LOCATION
- (985.24) GROUNDWATER ELEVATION
- 985.6 GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- * LNAPL PRESENT IN WELL, WELL NOT UTILIZED TO INFER GROUNDWATER ELEVATION CONTOURS
- ** WELL NOT UTILIZED TO INFER GROUNDWATER ELEVATION CONTOURS
- RESIDENTIAL WELL

figure 2.1
UNCONFINED (UPPER) AQUIFER GROUNDWATER CONTOURS - JANUARY 2019
PENTA WOOD PRODUCTS SUPERFUND SITE
Siren, Wisconsin



SOURCE: KEMPER AND ASSOCIATES, INC. SURVEY DATED MAY 2016 (WISCONSIN BURNETT COUNTY COORDINATE SYSTEM NAD83, 1996).

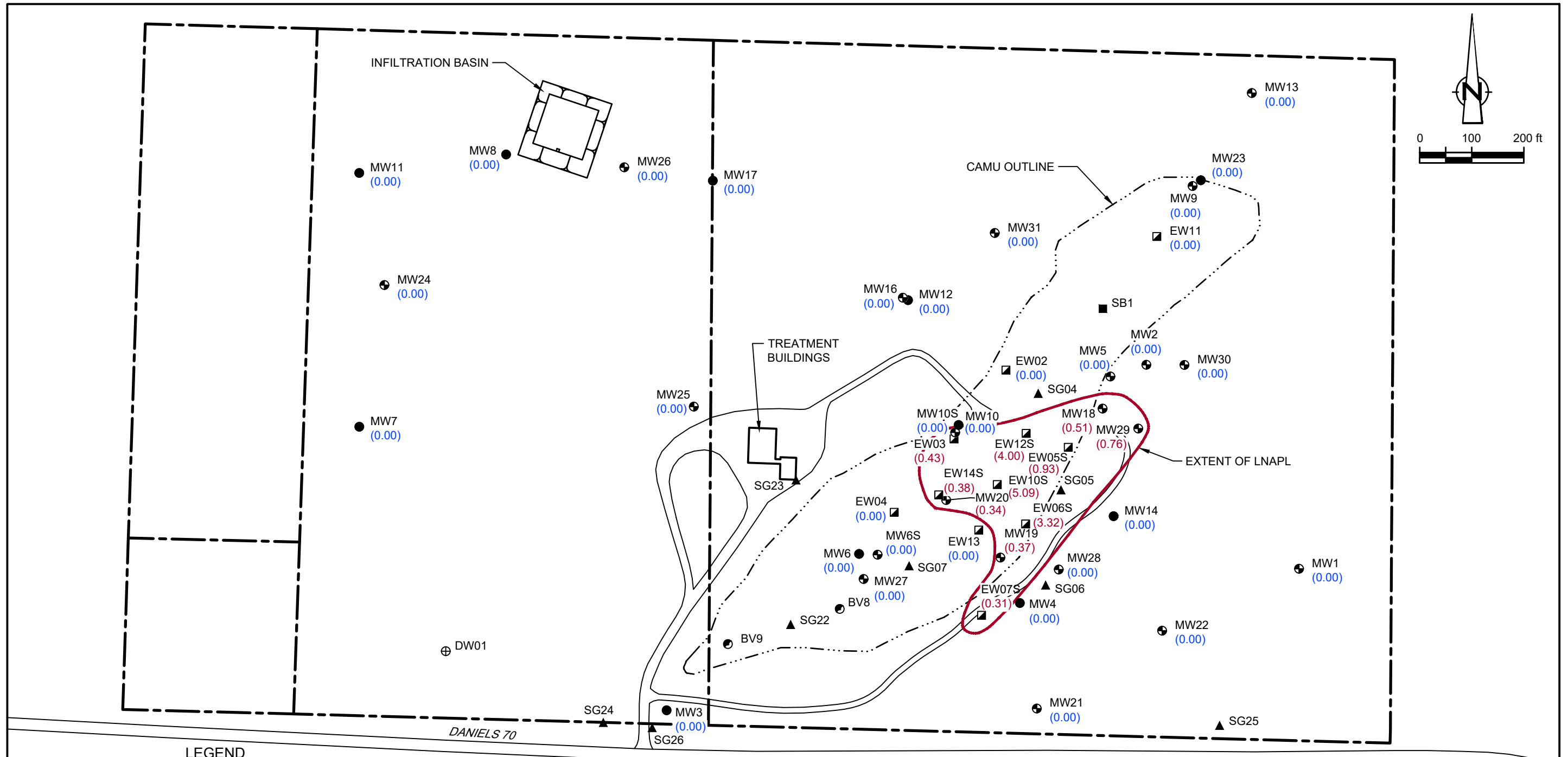


- LEGEND**
- PARCEL BOUNDARY
 - EW11 EXTRACTION WELL NEST
 - BV09 BIOVENTING WELL
 - ▲ SG05 SOIL GAS WELL NEST
 - ⊕ UNCONFINED MONITORING WELL LOCATION
 - SEMICONFINED MONITORING WELL LOCATION
 - ⊕ WATER SUPPLY WELL LOCATION
 - SOIL BORING LOCATION
 - (985.35) GROUNDWATER ELEVATION
 - 986.4 GROUNDWATER ELEVATION CONTOUR
 - GROUNDWATER FLOW DIRECTION
 - RESIDENTIAL WELL
 - * WELL NOT USED TO INFER GROUNDWATER ELEVATION CONTOURS

figure 2.2
SEMICONFINED (LOWER) AQUIFER GROUNDWATER CONTOURS - JANUARY 2019
PENTA WOOD PRODUCTS SUPERFUND SITE
Siren, Wisconsin



SOURCE: KEMPER AND ASSOCIATES, INC. SURVEY DATED MAY 2016 (WISCONSIN BURNETT COUNTY COORDINATE SYSTEM NAD83, 1996).

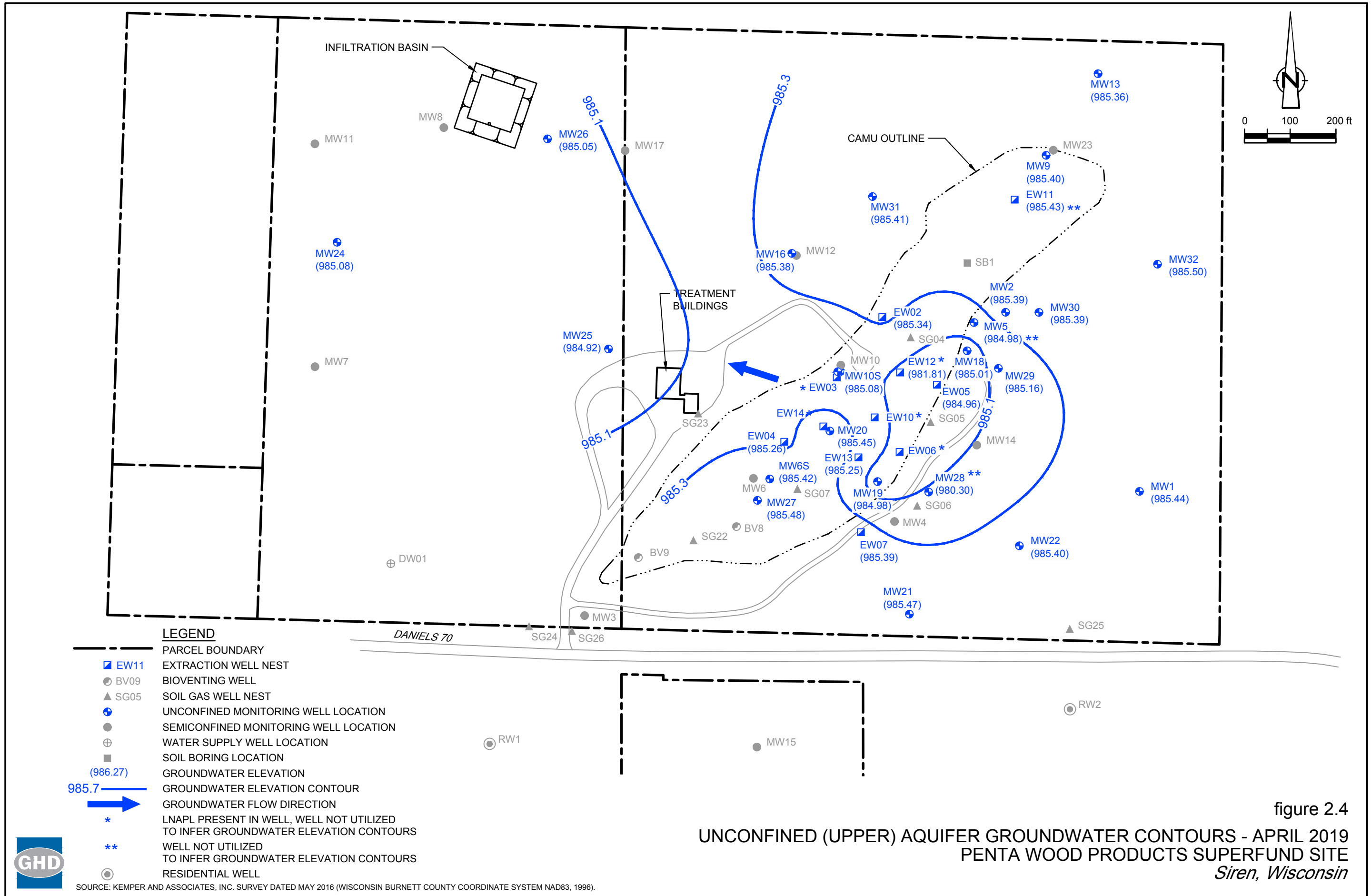


LEGEND

---	PARCEL BOUNDARY
■ EW11	EXTRACTION WELL NEST
● BV09	BIOVENTING WELL
▲ SG05	SOIL GAS WELL NEST
⊕	UNCONFINED MONITORING WELL LOCATION
●	SEMICONFINED MONITORING WELL LOCATION
⊕	WATER SUPPLY WELL LOCATION
■	SOIL BORING LOCATION
(0.00)	LNAPL NOT PRESENT
(0.26)	LNAPL THICKNESS (FEET)
---	EXTENT OF LNAPL
(NM)	LNAPL THICKNESS NOT MEASURED, BUT PRESENCE CONFIRMED
⊙	RESIDENTIAL WELL

SOURCE: KEMPER AND ASSOCIATES, INC. SURVEY DATED MAY 2016 (WISCONSIN BURNETT COUNTY COORDINATE SYSTEM NAD83, 1996).

figure 2.3
 LNAPL THICKNESS - JANUARY 2019
 PENTA WOOD PRODUCTS SUPERFUND SITE
 Siren, Wisconsin



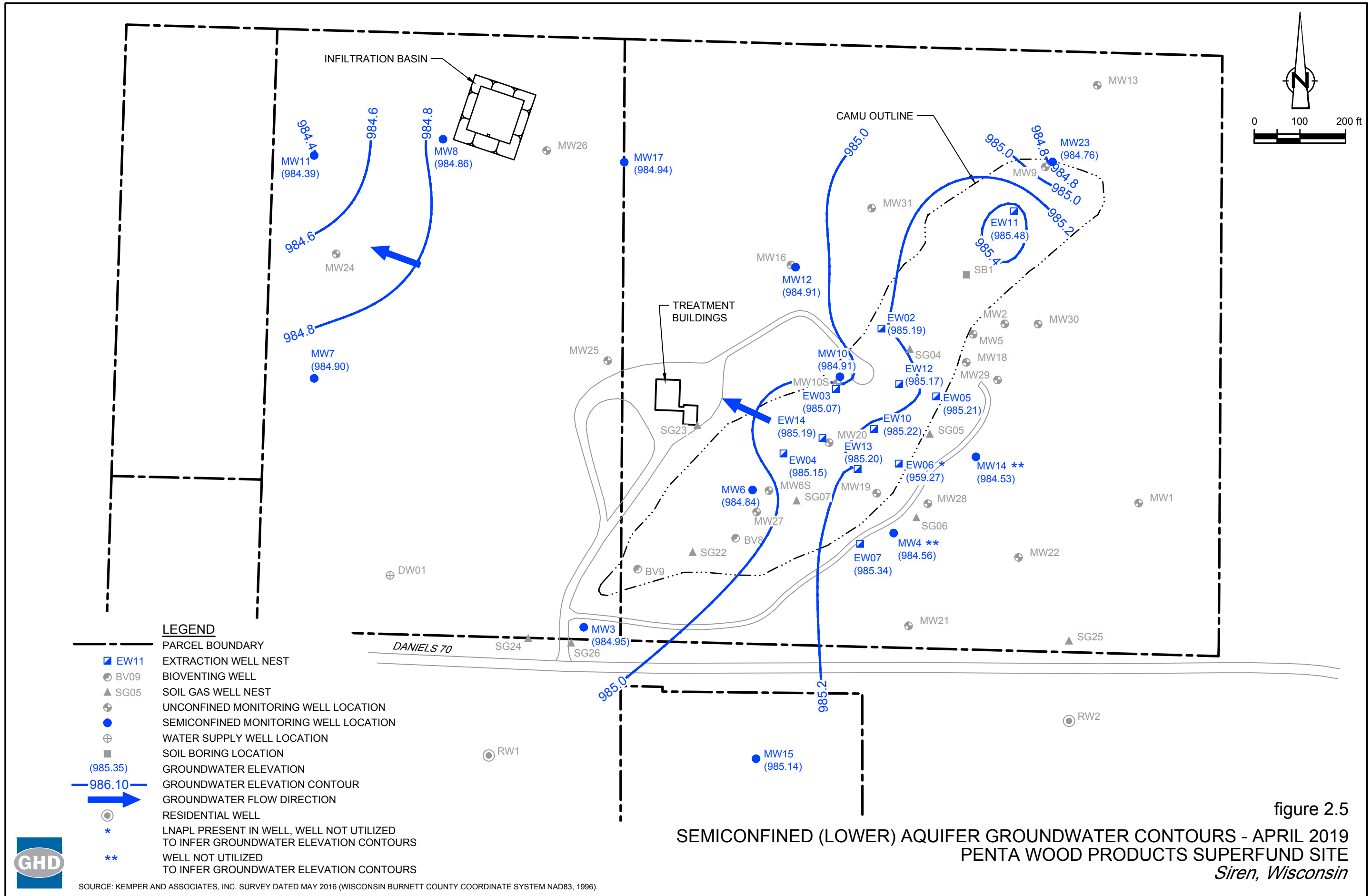
LEGEND

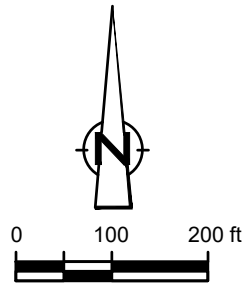
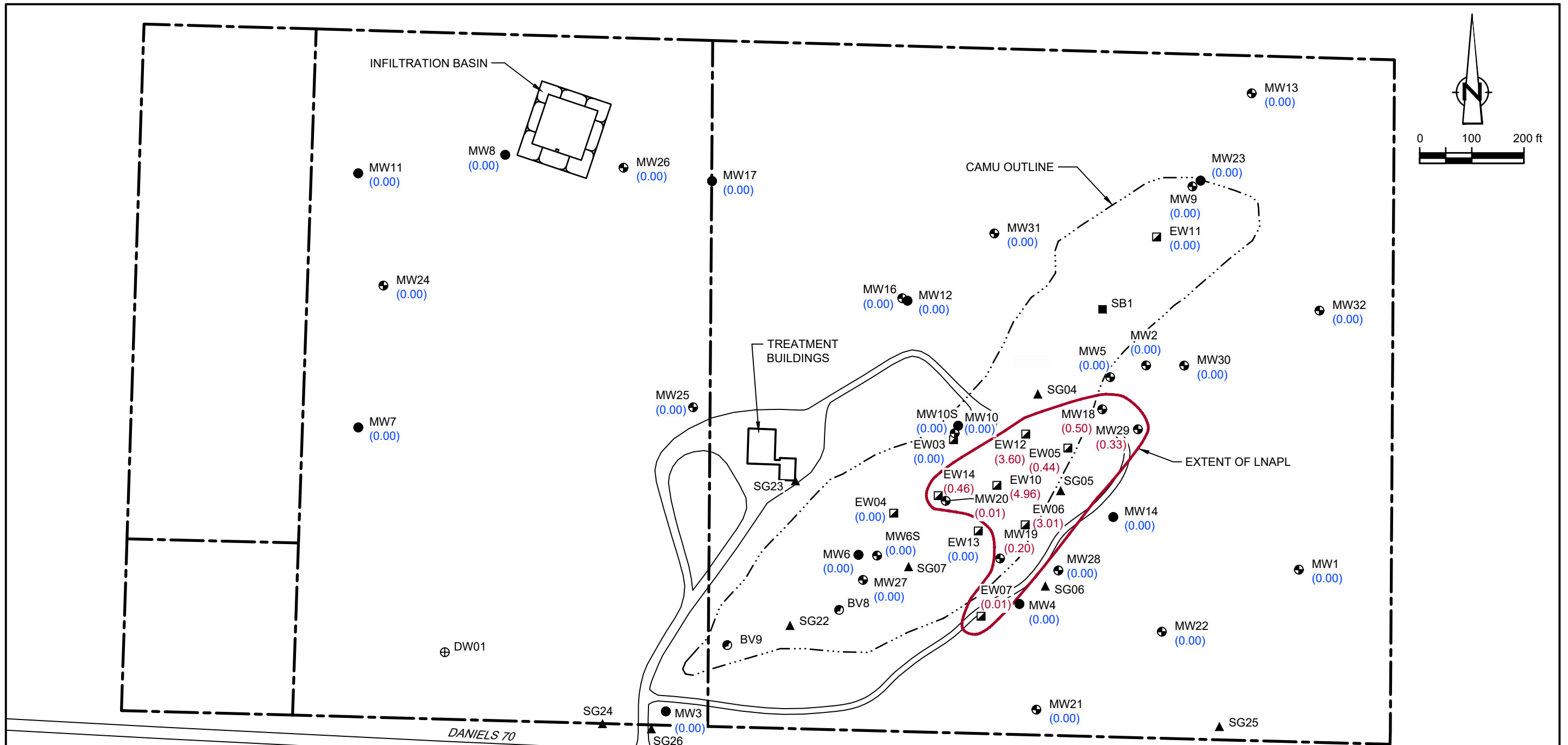
- PARCEL BOUNDARY
- EW11 EXTRACTION WELL NEST
- BV09 BIOVENTING WELL
- ▲ SG05 SOIL GAS WELL NEST
- ⊕ UNCONFINED MONITORING WELL LOCATION
- SEMICONFINED MONITORING WELL LOCATION
- ⊕ WATER SUPPLY WELL LOCATION
- SOIL BORING LOCATION
- (986.27) GROUNDWATER ELEVATION
- 985.7 — GROUNDWATER ELEVATION CONTOUR
- ➔ GROUNDWATER FLOW DIRECTION
- * LNAPL PRESENT IN WELL, WELL NOT UTILIZED TO INFER GROUNDWATER ELEVATION CONTOURS
- ** WELL NOT UTILIZED TO INFER GROUNDWATER ELEVATION CONTOURS
- RESIDENTIAL WELL

SOURCE: KEMPER AND ASSOCIATES, INC. SURVEY DATED MAY 2016 (WISCONSIN BURNETT COUNTY COORDINATE SYSTEM NAD83, 1996).

figure 2.4
UNCONFINED (UPPER) AQUIFER GROUNDWATER CONTOURS - APRIL 2019
PENTA WOOD PRODUCTS SUPERFUND SITE
Siren, Wisconsin







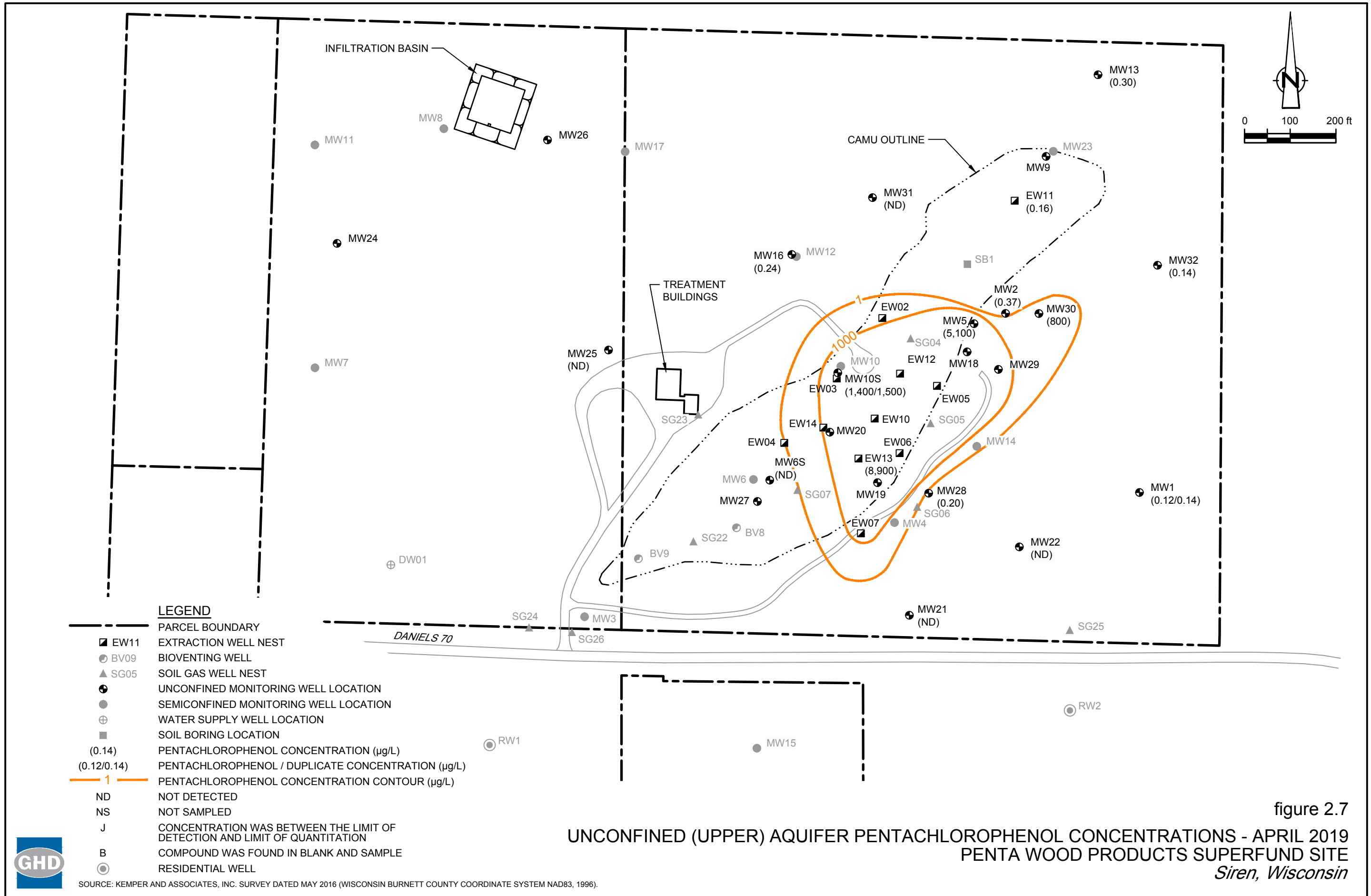
LEGEND

- PARCEL BOUNDARY
- EW11 EXTRACTION WELL NEST
- BV09 BIOVENTING WELL
- ▲ SG05 SOIL GAS WELL NEST
- ⊕ UNCONFINED MONITORING WELL LOCATION
- SEMICONFINED MONITORING WELL LOCATION
- ⊕ WATER SUPPLY WELL LOCATION
- SOIL BORING LOCATION
- (0.00) LNAPL NOT PRESENT
- (0.26) LNAPL THICKNESS (FEET)
- (NM) LNAPL THICKNESS NOT MEASURED, BUT PRESENCE CONFIRMED
- ⊙ RESIDENTIAL WELL

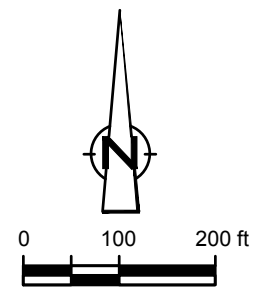
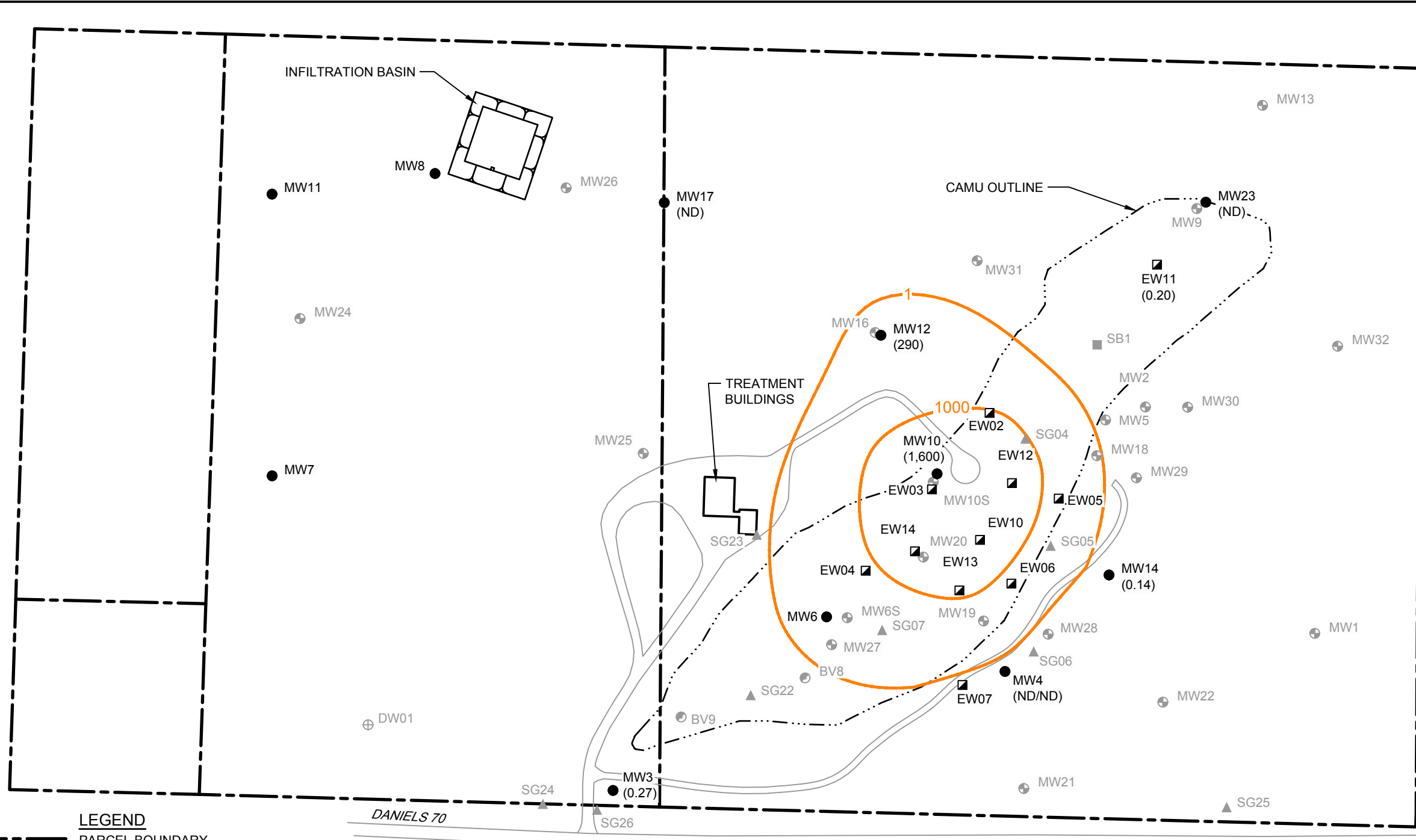


SOURCE: KEMPER AND ASSOCIATES, INC. SURVEY DATED MAY 2016 (WISCONSIN BURNETT COUNTY COORDINATE SYSTEM NAD83, 1996).

figure 2.6
 LNAPL THICKNESS - APRIL 2019
 PENTA WOOD PRODUCTS SUPERFUND SITE
 Siren, Wisconsin



SOURCE: KEMPER AND ASSOCIATES, INC. SURVEY DATED MAY 2016 (WISCONSIN BURNETT COUNTY COORDINATE SYSTEM NAD83, 1996).



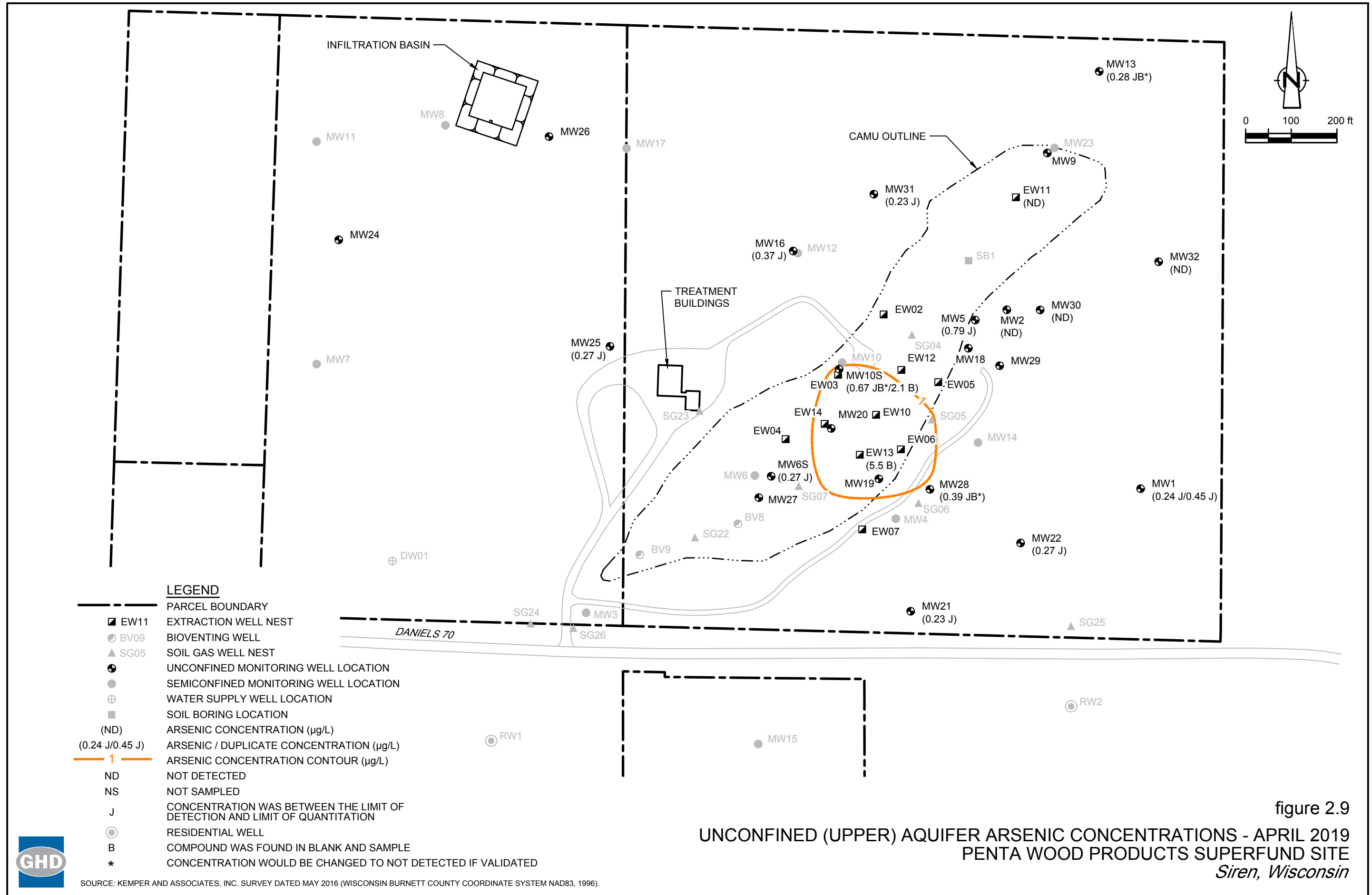
LEGEND

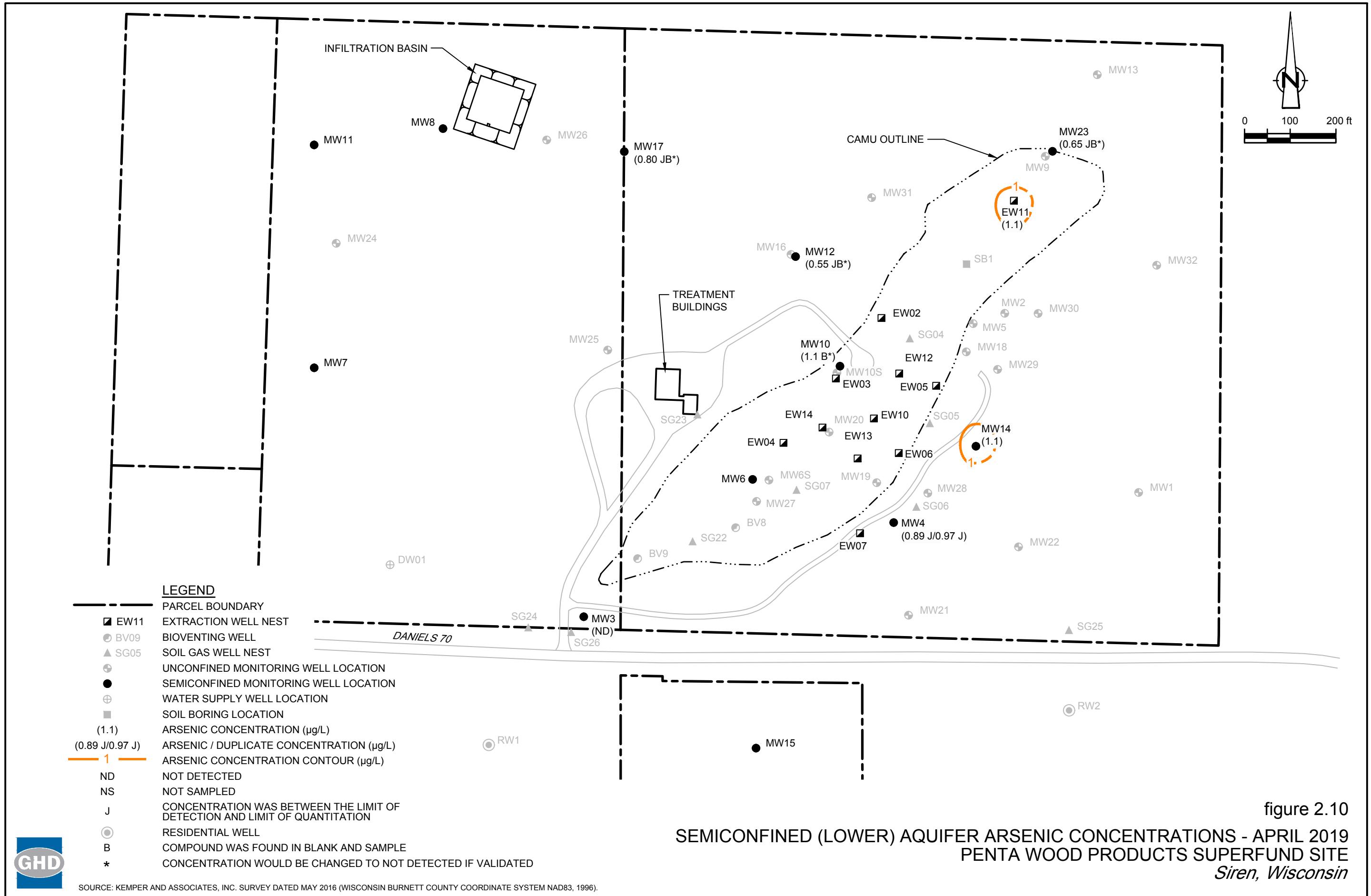
---	PARCEL BOUNDARY
■ EW11	EXTRACTION WELL NEST
● BV09	BIOVENTING WELL
▲ SG05	SOIL GAS WELL NEST
⊕	UNCONFINED MONITORING WELL LOCATION
●	SEMICONFINED MONITORING WELL LOCATION
⊕	WATER SUPPLY WELL LOCATION
■	SOIL BORING LOCATION
(0.27)	PENTACHLOROPHENOL CONCENTRATION (µg/L)
(ND/ND)	PENTACHLOROPHENOL / DUPLICATE CONCENTRATION (µg/L)
1	PENTACHLOROPHENOL CONCENTRATION CONTOUR (µg/L)
ND	NOT DETECTED
NS	NOT SAMPLED
○	RESIDENTIAL WELL

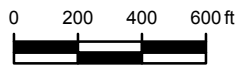
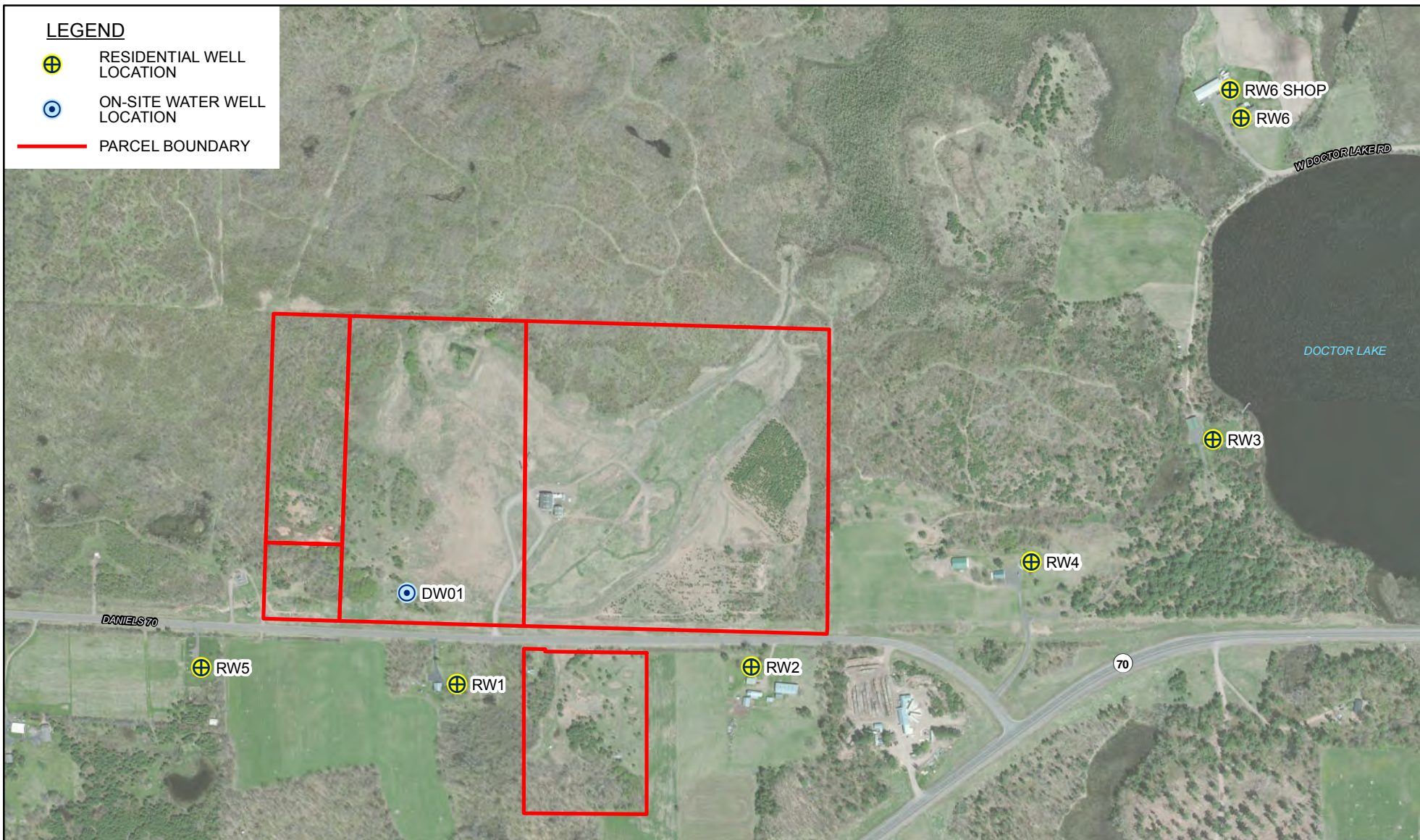
figure 2.8
SEMICONFINED (LOWER) AQUIFER PENTACHLOROPHENOL CONCENTRATIONS - APRIL 2019
PENTA WOOD PRODUCTS SUPERFUND SITE
Siren, Wisconsin



SOURCE: KEMPER AND ASSOCIATES, INC. SURVEY DATED MAY 2016 (WISCONSIN BURNETT COUNTY COORDINATE SYSTEM NAD83, 1996).







PENTA WOOD PRODUCTS SUPERFUND SITE
 SIREN, WISCONSIN
 SEMIANNUAL REPORT

RESIDENTIAL WELL LOCATIONS

086165-06-11
 Jul 10, 2019

FIGURE 3.1

**Groundwater Monitoring and Sampling Plan
Penta Wood Products Superfund Site
Siren, Wisconsin**

Well ID	Quarterly Groundwater/LNAPL Level Monitoring ¹	Semiannual Groundwater Sampling ^{2, 3, 4}
Unconfined (Upper) Aquifer		
MW1	X	X
MW2	X	X
MW5	X	X
MW6S	X	X
MW9	X	
MW10S	X	X
MW13	X	X
MW16	X	X
MW18	X	
MW19	X	
MW20	X	X
MW21	X	X
MW22	X	X
MW24	X	
MW25	X	X
MW26	X	
MW27	X	
MW28	X	X
MW29	X	X
MW30	X	X
MW31	X	X
MW32	X	X
EW02S	X	
EW03S	X	

**Groundwater Monitoring and Sampling Plan
Penta Wood Products Superfund Site
Siren, Wisconsin**

Well ID	Quarterly Groundwater/LNAPL Level Monitoring ¹	Semiannual Groundwater Sampling ^{2, 3, 4}
Unconfined (Upper) Aquifer		
EW04S	X	
EW05S	X	
EW06S	X	
EW07S	X	
EW10S	X	
EW11S	X	X
EW12S	X	
EW13S	X	X
EW14S	X	
Semiconfined (Lower) Aquifer		
MW3	X	X
MW4	X	X
MW6	X	
MW7	X	
MW8	X	
MW10	X	X
MW11	X	
MW12	X	X
MW14	X	X
MW15	X	
MW17	X	X
MW23	X	X
EW02D	X	

**Groundwater Monitoring and Sampling Plan
Penta Wood Products Superfund Site
Siren, Wisconsin**

Well ID	Quarterly Groundwater/LNAPL Level Monitoring ¹	Semiannual Groundwater Sampling ^{2, 3, 4}
Semiconfined (Lower) Aquifer		
EW03D	X	
EW04D	X	
EW05D	X	
EW06D	X	
EW07D	X	
EW10D	X	
EW11D	X	X
EW12D	X	
EW13D	X	
EW14D	X	

Notes:

- 1 Groundwater/LNAPL level monitoring conducted on a quarterly basis in January, April, July, and October
- 2 Groundwater sampling conducted on a semiannual basis in April and October
- 3 Groundwater sample laboratory analyses include the following parameters: Pentachlorophenol (PCP); naphthalene; benzene, toluene, ethylbenzene, and xylenes (BTEX); natural attenuation parameters (alkalinity, chloride, hardness, nitrate, sulfate, total organic carbon, and methane); and select dissolved metals (arsenic, copper, iron, manganese, and zinc). Field parameter measurements include the following parameters: pH, temperature, specific conductance, dissolved oxygen (DO), oxidation-reduction potential (ORP), iron, and sulfide.
- 4 Groundwater samples will not be collected if LNAPL is present in the well casing.

Table 2.2

**Groundwater and LNAPL Level Monitoring Data
Penta Wood Products Superfund Site
Siren, Wisconsin**

Well ID	Date	Top of Casing Elevation (feet)	Depth to Groundwater (feet btoc)	Depth to LNAPL (feet btoc)	Groundwater Elevation (feet AMSL)	LNAPL Elevation (feet AMSL)	LNAPL Thickness (feet)
Semiconfined Aquifer (Lower)							
MW3	1/2/2019	1129.44	144.24	ND	985.20	NA	0.00
MW3	4/17/2019	1129.44	144.49	ND	984.95	NA	0.00
MW4	1/2/2019	1087.74	102.99	ND	984.75	NA	0.00
MW4	4/17/2019	1087.74	103.18	ND	984.56	NA	0.00
MW6	1/2/2019	1109.11	124.06	ND	985.05	NA	0.00
MW6	4/17/2019	1109.11	124.27	ND	984.84	NA	0.00
MW7	1/2/2019	1096.25	111.39	ND	984.86	NA	0.00
MW7	4/17/2019	1096.25	111.35	ND	984.90	NA	0.00
MW8	1/2/2019	1091.13	106.11	ND	985.02	NA	0.00
MW8	4/17/2019	1091.13	106.27	ND	984.86	NA	0.00
MW10	1/2/2019	1089.01	103.88	ND	985.13	NA	0.00
MW10	4/17/2019	1089.01	104.10	ND	984.91	NA	0.00
MW11	1/2/2019	1085.48	101.00	ND	984.48	NA	0.00
MW11	4/17/2019	1085.48	101.09	ND	984.39	NA	0.00
MW12	1/2/2019	1080.91	95.92	ND	984.99	NA	0.00
MW12	4/17/2019	1080.91	96.00	ND	984.91	NA	0.00
MW14	1/2/2019	1078.28	93.50	ND	984.78	NA	0.00
MW14	4/17/2019	1078.28	93.75	ND	984.53	NA	0.00
MW15	1/2/2019	1127.09	141.74	ND	985.35	NA	0.00
MW15	4/17/2019	1127.09	141.95	ND	985.14	NA	0.00
MW17	1/2/2019	1084.43	99.39	ND	985.04	NA	0.00
MW17	4/17/2019	1084.43	99.49	ND	984.94	NA	0.00
MW23	1/2/2019	1017.45	32.59	ND	984.86	NA	0.00
MW23	4/17/2019	1017.45	32.69	ND	984.76	NA	0.00
EW02D	1/2/2019	1083.00	97.70	ND	985.30	NA	0.00
EW02D	4/17/2019	1083.00	97.81	ND	985.19	NA	0.00
EW03D	1/2/2019	1089.48	104.21	ND	985.27	NA	0.00
EW03D	4/17/2019	1089.48	104.41	ND	985.07	NA	0.00
EW04D	1/2/2019	1101.09	115.73	ND	985.36	NA	0.00
EW04D	4/17/2019	1101.09	115.94	ND	985.15	NA	0.00
EW05D	1/2/2019	1076.99	91.66	ND	985.33	NA	0.00
EW05D	4/17/2019	1076.99	91.78	ND	985.21	NA	0.00
EW06D	1/2/2019	1083.39	97.94	ND	985.45	NA	0.00
EW06D	4/17/2019	1083.39	124.12	ND	959.27	NA	0.00
EW07D	1/2/2019	1087.52	102.02	ND	985.50	NA	0.00
EW07D	4/17/2019	1087.52	102.18	ND	985.34	NA	0.00
EW10D	1/2/2019	1088.55	103.24	ND	985.31	NA	0.00
EW10D	4/17/2019	1088.55	62.90	ND	1025.65	NA	0.00
EW11D	1/2/2019	1048.19	62.73	ND	985.46	NA	0.00
EW11D	4/17/2019	1048.19	62.71	ND	985.48	NA	0.00
EW12D	1/2/2019	1086.41	101.05	ND	985.36	NA	0.00
EW12D	4/17/2019	1086.41	101.24	ND	985.17	NA	0.00
EW13D	1/2/2019	1092.88	107.50	ND	985.38	NA	0.00
EW13D	4/17/2019	1092.88	107.68	ND	985.20	NA	0.00
EW14D	1/2/2019	1098.28	112.94	ND	985.34	NA	0.00
EW14D	4/17/2019	1098.28	113.09	ND	985.19	NA	0.00

Table 2.2

**Groundwater and LNAPL Level Monitoring Data
Penta Wood Products Superfund Site
Siren, Wisconsin**

Well ID	Date	Top of Casing Elevation (feet)	Depth to Groundwater (feet btoc)	Depth to LNAPL (feet btoc)	Groundwater Elevation (feet AMSL)	LNAPL Elevation (feet AMSL)	LNAPL Thickness (feet)
Unconfined Aquifer (Upper)							
MW1	1/2/2019	1072.27	86.69	ND	985.58	NA	0.00
MW1	4/17/2019	1072.27	86.83	ND	985.44	NA	0.00
MW2	1/2/2019	1065.03	79.45	ND	985.58	NA	0.00
MW2	4/17/2019	1065.03	79.64	ND	985.39	NA	0.00
MW5	1/2/2019	1071.39	86.19	ND	985.20	NA	0.00
MW5	4/17/2019	1071.39	86.41	ND	984.98	NA	0.00
MW6S	1/2/2019	1108.35	122.73	ND	985.62	NA	0.00
MW6S	4/17/2019	1108.35	122.93	ND	985.42	NA	0.00
MW9	1/2/2019	1019.58	34.04	ND	985.54	NA	0.00
MW9	4/17/2019	1019.58	34.18	ND	985.40	NA	0.00
MW10S	1/2/2019	1090.12	104.85	ND	985.27	NA	0.00
MW10S	4/17/2019	1090.12	105.04	ND	985.08	NA	0.00
MW13	1/2/2019	1005.81	20.29	ND	985.52	NA	0.00
MW13	4/17/2019	1005.81	20.45	ND	985.36	NA	0.00
MW16	1/2/2019	1081.95	96.42	ND	985.53	NA	0.00
MW16	4/17/2019	1081.95	96.57	ND	985.38	NA	0.00
MW18	1/2/2019	1071.96	86.85	86.34	985.11	985.62	0.51
MW18	4/17/2019	1071.96	86.95	86.45	985.01	985.51	0.50
MW19	1/2/2019	1087.96	103.02	102.65	984.94	985.31	0.37
MW19	4/17/2019	1087.96	102.98	102.78	984.98	985.18	0.20
MW20	1/2/2019	1098.16	112.95	112.61	985.21	985.55	0.34
MW20	4/17/2019	1098.16	112.71	112.70	985.45	985.46	0.01
MW21	1/2/2019	1095.82	110.21	ND	985.61	NA	0.00
MW21	4/17/2019	1095.82	110.35	ND	985.47	NA	0.00
MW22	1/2/2019	1084.65	99.12	ND	985.53	NA	0.00
MW22	4/17/2019	1084.65	99.25	ND	985.40	NA	0.00
MW24	1/2/2019	1084.04	98.95	ND	985.09	NA	0.00
MW24	4/17/2019	1084.04	98.96	ND	985.08	NA	0.00
MW25	1/2/2019	1095.25	110.14	ND	985.11	NA	0.00
MW25	4/17/2019	1095.25	110.33	ND	984.92	NA	0.00
MW26	1/2/2019	1086.87	101.85	ND	985.02	NA	0.00
MW26	4/17/2019	1086.87	101.82	ND	985.05	NA	0.00
MW27	1/2/2019	1110.96	125.27	ND	985.69	NA	0.00
MW27	4/17/2019	1110.96	125.48	ND	985.48	NA	0.00
MW28	1/2/2019	1083.52	97.88	ND	985.64	NA	0.00
MW28	4/17/2019	1083.52	103.22	ND	980.30	NA	0.00
MW29	1/2/2019	1070.24	85.35	84.59	984.89	985.65	0.76
MW29	4/17/2019	1070.24	85.08	84.75	985.16	985.49	0.33
MW30	1/2/2019	1048.98	63.41	ND	985.57	NA	0.00
MW30	4/17/2019	1048.98	63.59	ND	985.39	NA	0.00
MW31	1/2/2019	1076.34	90.81	ND	985.53	NA	0.00
MW31	4/17/2019	1076.34	90.93	ND	985.41	NA	0.00
MW32	5/17/2019	1021.02	35.52	ND	985.50	NA	0.00
EW02S	1/2/2019	1082.25	96.75	ND	985.50	NA	0.00
EW02S	4/17/2019	1082.25	96.91	ND	985.34	NA	0.00

Table 2.2

**Groundwater and LNAPL Level Monitoring Data
Penta Wood Products Superfund Site
Siren, Wisconsin**

Well ID	Date	Top of Casing Elevation (feet)	Depth to Groundwater (feet btoc)	Depth to LNAPL (feet btoc)	Groundwater Elevation (feet AMSL)	LNAPL Elevation (feet AMSL)	LNAPL Thickness (feet)
Unconfined Aquifer (Upper) continued							
EW03S	1/2/2019	1088.66	103.61	103.18	985.05	985.48	0.43
EW03S	5/13/2019	1088.66	103.20	ND	985.46	NA	0.00
EW04S	1/2/2019	1101.01	115.54	ND	985.47	NA	0.00
EW04S	4/17/2019	1101.01	115.75	ND	985.26	NA	0.00
EW05S	1/2/2019	1077.04	92.40	91.47	984.64	985.57	0.93
EW05S	4/17/2019	1077.04	92.08	91.64	984.96	985.40	0.44
EW06S	1/2/2019	1083.61	101.40	98.08	982.21	985.53	3.32
EW06S	4/17/2019	1083.61	101.20	98.19	982.41	985.42	3.01
EW07S	1/2/2019	1087.49	102.29	101.98	985.20	985.51	0.31
EW07S	4/17/2019	1087.49	102.10	102.09	985.39	985.40	0.01
EW10S	1/2/2019	1088.72	108.24	103.15	980.48	985.57	5.09
EW10S	4/17/2019	1088.72	108.21	103.25	980.51	985.47	4.96
EW11S	1/2/2019	1047.23	61.71	ND	985.52	NA	0.00
EW11S	4/17/2019	1047.23	61.80	ND	985.43	NA	0.00
EW12S	1/2/2019	1086.31	104.78	100.78	981.53	985.53	4.00
EW12S	4/17/2019	1086.31	104.50	100.90	981.81	985.41	3.60
EW13S	1/2/2019	1092.88	107.43	ND	985.45	NA	0.00
EW13S	4/17/2019	1092.88	107.63	ND	985.25	NA	0.00
EW14S	1/2/2019	1098.32	113.34	112.96	984.98	985.36	0.38
EW14S	4/17/2019	1098.32	113.50	113.04	984.82	985.28	0.46

Notes:

- btoc - Feet below top of casing
- feet AMSL - Feet above mean sea level
- NA - Not applicable
- ND - LNAPL was not detected in a measurable quantity

Table 2.3

**Groundwater Purging and Sampling Data
Penta Wood Products Superfund Site
Siren, Wisconsin**

Location	Date	Sample Identification	Time	Purge Volume (gallons)	Temperature (°C)	Specific Conductance (µS)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	pH	ORP (mV)	Total Iron (mg/L)	Total Sulfide (mg/L)
RW1	4/22/2019	W-190422-RA-101 Sample time: 11:30	11:30	8	8.5	644	-	-	7.74	-		
RW2	4/22/2019	W-190422-RA-102 Sample time: 11:48	11:48	8	8.8	304	-	-	8.41	-		
RW2 (Duplicate)	4/22/2019	W-190422-RA-103 Sample time: 11:48	-	-	-	-	-	-	-	-		
RW3	4/22/2019	W-190422-RA-104 Sample time: 12:40	12:40	8	9.4	121	-	-	8.16	-		
RW4	4/22/2019	W-190422-RA-105 Sample time: 13:05	13:05	8	9.3	448	-	-	7.76	-		
RW5	4/22/2019	W-190422-RA-100 Sample time: 11:20	11:20	8	9.1	337	-	-	7.89	-		
RW6 (residence)	4/22/2019	W-190422-RA-106 Sample time: 13:34	13:34	8	9.7	184	-	-	8.43	-		
RW6 (shop)	4/22/2019	W-190422-RA-107 Sample time: 13:34	13:34	8	11	250	-	-	7.3	-		
DW01	4/22/2019	W-190422-RA-109 Sample time: 13:50	-	8	-	-	-	-	-	-		
EW13S	4/23/2019	W-190423-RA-05 Sample time: 10:03	10:03	8	14.68	683	565	1.51	6.91	-131	4.8	ND

Table 2.3

**Groundwater Purging and Sampling Data
Penta Wood Products Superfund Site
Siren, Wisconsin**

Location	Date	Sample Identification	Time	Purge Volume (gallons)	Temperature (°C)	Specific Conductance (µS)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	pH	ORP (mV)	Total Iron (mg/L)	Total Sulfide (mg/L)
MW10S	4/23/2019	W-190423-RA-03 Sample time: 9:34	9:09	0.0	14.21	954	30.2	0	6.05	-17	1	ND
			9:12	0.1	14.43	953	26.3	0	6.06	-12		
			9:15	0.3	14.5	949	23.7	0	6.08	-7		
			9:22	0.4	14.57	939	14.7	0	6.13	-10		
			9:19	0.5	14.59	944	21.5	0	6.1	-9		
			9:25	0.7	14.62	936	10.8	0	6.16	-12		
			9:29	0.8	14.66	934	7	0	6.22	-15		
			9:32	0.9	14.66	930	3.6	0	6.25	-16		
MW10S (Duplicate)	4/23/2019	W-190423-RA-04 Sample time: 9:34	-	-	-	-	-	-	-			
RW5	4/22/2019	W-190422-RA-100 Sample time: 11:20	11:20	8	9.1	337	-	-	7.89	-		
MW17	4/22/2019	W-190422-RA-01 Sample time: 11:26	10:48	0.0	9.37	642	0	3.18	7.42	156	ND	ND
			10:53	0.1	9.59	641	0	4.34	7.26	128		
			10:58	0.3	10.44	640	0	4.66	7.12	118		
			11:03	0.4	13	650	3	5.92	7.04	118		
			11:08	0.5	14.31	661	8	6.26	7.04	110		
			11:13	0.7	14.6	666	9.7	6.55	7.06	103		
			11:18	0.8	14.65	672	5	6.61	7.08	99		
			11:23	0.9	14.68	675	0	6.94	7.09	96		
MW10	4/22/2019	W-100422-RA-02 Sample time: 13:50	12:36	-	10.34	433	30.5	1.94	7.02	-115	1.6	ND
MW23	4/23/2019	W-190423-RA-08 Sample time: 12:30	12:15	0.0	8.96	549	20	5.42	7.8	82	ND	ND
			12:19	0.1	8.99	548	7.7	5.72	7.7	71		
			12:22	0.3	9.01	550	3.5	6.71	7.65	63		
			12:25	0.4	9.42	548	0	6.61	7.57	61		
			12:28	0.5	9.86	548	0	6.47	7.49	65		

Table 2.3

**Groundwater Purging and Sampling Data
Penta Wood Products Superfund Site
Siren, Wisconsin**

Location	Date	Sample Identification	Time	Purge Volume (gallons)	Temperature (°C)	Specific Conductance (µS)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	pH	ORP (mV)	Total Iron (mg/L)	Total Sulfide (mg/L)
MW13	4/23/2019	W-190423-RA-09 Sample time: 13:05	12:45	0.0	10.07	104	120	7.63	6.94	144	1.2	ND
			12:48	0.1	10.2	112	72.4	6.94	6.04	164		
			12:51	0.3	10.54	115	41.2	6.67	5.85	173		
			12:54	0.4	10.6	117	20.6	6.59	5.81	178		
			12:57	0.5	10.65	118	12.3	6.48	5.81	181		
			13:00	0.7	10.7	118	7.3	6.41	5.81	182		
			13:03	0.8	10.7	118	4.6	6.42	5.83	182		
MW12	4/23/2019	W-190423-RA-06 Sample time: 11:14	10:54	0.0	12.05	409	0	6.25	7.67	4	0.4	ND
			10:59	0.1	13.31	433	0	4.05	7.57	14		
			11:04	0.3	14.64	449	0	2.84	7.54	5		
			11:09	0.4	14.64	451	0	2.71	7.54	4		
			11:14	0.5	14.64	451	0	2.7	7.54	4		
MW28	4/23/2019	W-199423-RA-10 Sample time: 13:40	13:20	0.0	10.68	309	40	12.29	7.67	100	1	ND
			13:25	0.1	10.86	308	17.4	11.94	7.83	64		
			13:30	0.3	10.9	308	17.1	11.91	7.85	60		
			13:35	0.4	10.95	308	16.7	11.86	7.86	56		
MW1	4/24/2019	W-190424-RA-11 Sample time: 9:38	9:21	0.0	9.96	318	57.1	10.27	6.42	118	ND	ND
			9:25	0.1	10.22	271	18	11.89	6.79	163		
			9:28	0.3	10.28	260	10.6	12.05	6.93	182		
			9:31	0.4	10.25	258	7.2	12.06	7.09	186		
			9:34	0.5	10.27	258	6.4	12.02	7.18	190		
			9:37	0.7	10.29	257	3.2	12	7.29	192		
MW1 (Duplicate)	4/24/2019	W-190424-RA-12 Sample time: 9:38	-	-	-	-	-	-	-	-	-	-
MW21	4/24/2019	W-190224-RA-14 Sample time: 10:50	10:20	0.0	10.38	385	199	11.17	7.21	223	1.8	ND
			10:23	0.1	10.23	386	169	11.29	7.13	228		
			10:27	0.3	10.48	387	165	11.4	7.07	225		
			10:30	0.4	10.74	386	148	11.48	7.03	211		
			10:33	0.5	11.02	384	30.7	11.3	7.04	191		
			10:36	0.7	11.01	382	18.8	11.25	7.04	177		

Table 2.3

**Groundwater Purging and Sampling Data
Penta Wood Products Superfund Site
Siren, Wisconsin**

Location	Date	Sample Identification	Time	Purge Volume (gallons)	Temperature (°C)	Specific Conductance (µS)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	pH	ORP (mV)	Total Iron (mg/L)	Total Sulfide (mg/L)
			10:39	0.8	10.87	381	15.3	11.5	7.03	162		
MW31	4/24/2019	W-190424-RA-15	11:46	0.0	10.38	372	2.7	9.14	6.93	108	ND	ND
		Sample time: 12:04	11:49	0.1	10.54	371	1.2	9.01	6.96	92		
			11:52	0.3	10.81	372	0.9	8.84	6.95	92		
			11:57	0.4	10.97	374	1.5	8.9	6.91	109		
			12:00	0.5	11.27	373	0.5	8.87	6.96	114		
			12:03	0.7	11.16	372	0.4	8.89	6.98	117		
MW16	4/24/2019	W-190424-RA-16	12:18	-	10.78	102	88.1	6.56	7.64	178	0.2	ND
		Sample time: 12:20										
EW11S	4/24/2019	W-190424-RA-17	12:47	0.0	10.22	233	15.3	7	6.33	197	1.6	ND
		Sample time: 12:58	12:51	0.1	10.48	233	14.5	6.92	6.31	194		
			12:54	0.3	10.93	233	13.4	6.91	6.32	192		
			12:57	0.4	11.15	233	14.1	6.84	6.36	189		
EW11D	4/24/2019	W-190424-RA-18	13:14	0.0	8.8	216	230	7.17	5.75	68	6.2	ND
		Sample time: 13:38	13:18	0.1	8.32	217	240	7.16	5.77	63		
			13:21	0.3	8.34	217	197	7.1	5.7	67		
			13:24	0.4	8.41	218	173	7.04	5.7	66		
			13:27	0.5	8.43	219	164	7.02	5.69	67		
			13:30	0.7	8.39	222	132	6.98	5.72	66		
			13:34	0.8	8.44	224	129	6.9	5.73	65		
			13:37	0.9	8.44	228	120	6.85	5.82	60		
MW22	4/24/2019	W-190424-RA-13	9:58	-	10.04	155	129	10.06	7.43	211	0.2	ND
		Sample time: 9:59										
MW25	4/24/2019	W-190424-RA-19	14:00	0.0	11.1	323	50.3	10.85	6.94	71	0.2	ND
		Sample time: 14:20	14:05	0.1	11.17	323	20.8	10.82	7.06	79		
			14:10	0.3	11.31	323	6.2	10.71	7.1	88		
			14:15	0.4	11.32	322	4.9	10.76	7.08	92		
			14:29	0.5	11.33	322	4.9	10.77	7.09	92		

Table 2.3

**Groundwater Purging and Sampling Data
Penta Wood Products Superfund Site
Siren, Wisconsin**

Location	Date	Sample Identification	Time	Purge Volume (gallons)	Temperature (°C)	Specific Conductance (µS)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	pH	ORP (mV)	Total Iron (mg/L)	Total Sulfide (mg/L)
MW4	4/24/2019	W-190424-RA-21 Sample time: 14:55	14:40	0.0	13.24	324	15	0.04	8.71	-250	0.6	ND
			14:45	0.1	12.55	354	13.3	0	8.87	-252		
			14:50	0.3	12.48	359	14.2	0	8.85	-254		
			14:55	0.4	12.53	360	13.8	0	8.84	-254		
MW5	4/25/2019	W-190425-RA-23 Sample time: 9:25	9:10	0.0	11.03	703	41	0	6.56	-103	10	ND
			9:15	0.1	11.25	703	39.6	0	6.67	-102		
			9:20	0.3	11.26	702	39.3	0	6.68	-101		
MW2	4/25/2019	W-190425-RA-24 Sample time: 10:00	9:52	0	11.64	168	281	7.32	7.3	-23	1.2	ND
MW14	4/25/2019	W-190425-RA-25 Sample time: 10:35	10:20	0.0	10.37	292	32.2	2.96	8.07	-61	ND	ND
			10:25	0.1	10.71	309	18	3.83	8.12	-43		
			10:30	0.3	10.8	313	17.7	3.88	8.13	-40		
			10:35	0.4	11.04	321	16.9	3.97	8.14	-34		
MW6S	4/25/2019	W-190426RA-26 Sample time: 12:10	12:09	0	14.04	410	321	3.47	7.4	78	2.2	ND
MW3	4/25/2019	W-190425-RA-27 Sample time: 12:58	12:27	0.0	11.1	497	65.6	0.06	7.58	-204	3.8	ND
			12:32	0.1	10.88	521	113	0.09	7.41	-150		
			12:37	0.3	12.7	531	96.2	1.1	7.28	-123		
			12:42	0.4	12.92	535	69.1	2.51	7.25	-113		
			12:47	0.5	12.97	540	50	3.76	7.44	-112		
			12:50	0.7	13.13	541	41.9	4.22	7.45	-111		
			12:53	0.8	13.3	542	38.9	4.58	7.47	-111		
			12:56	0.9	13.24	543	352	4.83	7.67	-120		
MW30	4/25/2019	W-190425-RA-29 Sample time: 13:50	13:35	0.0	10.73	166	51.5	0.04	6.58	39	0.2	ND
			13:40	0.1	10.92	163	41.5	0	6.55	43		
			13:45	0.3	10.9	163	42	0	6.55	43		
			13:50	0.4	10.88	163	41.9	0	-	43		

Table 2.3

**Groundwater Purging and Sampling Data
Penta Wood Products Superfund Site
Siren, Wisconsin**

Location	Date	Sample Identification	Time	Purge Volume (gallons)	Temperature (°C)	Specific Conductance (µS)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	pH	ORP (mV)	Total Iron (mg/L)	Total Sulfide (mg/L)
MW32	5/17/2019	W-190517-RA-30 Sample time: 10:23	10:04	0.0	9.4	1438	0	7.94	6.84	110	1.8	ND
			10:09	0.1	9.5	1463	0	7.92	6.83	108		
			10:14	0.3	9.5	1490	0	7.93	6.83	108		
			10:19	0.4	9.4	1495	0	7.93	6.83	108		
			10:23	0.5	9.42	1496	0	7.9	6.83	108		

Notes:

- °C - Degrees Celcius
 - µS - Micro-Siemens
 - mg/L - Milligrams per liter
 - MS/MSD - Matrix Spike Sample & Matrix Spike Duplicate Sample
 - mV - Millivolts
 - ND - Not Detected
 - NM - Not Measured
 - NTU - National Turbidity Units
 - ORP - Oxidation Reduction Potential (ORP) reported in millivolts (mV)
- Wells MW20 and MW29 were not sampled due to the presence of LNAPL

Table 2.4

Groundwater Analytical Data - Monitoring and Extraction Wells
Penta Wood Products Superfund Site
Siren, Wisconsin

Sample Location	Sample Identification	Sample Date	ES ¹ PAL ²	Hardness, carbonate mg/L	Chloride ³ mg/L	Nitrate (as N) mg/L	Sulfate ³ mg/L	TOC averages mg/L	Alkalinity, total (as CaCO3) mg/L	Methane (dissolved) ug/L	Arsenic (dissolved) ug/L	Copper (dissolved) ug/L	Iron (dissolved) ug/L	Manganese (dissolved) ug/L	Zinc (dissolved) ug/L	Pentachlorophenol ug/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L
Semiconfined Aquifer (Lower)																					
EW11D	W-190424-RA-18	4/24/2019		95.1	0.94	5.7	19.5 B	5.5	48.2	0.17 U	1.1	7.0	23400	217	282	0.20	0.24 U	0.15 U	0.18 U	0.15 U	0.22 U
MW3	W-190425-RA-27	4/25/2019		215	35.4	1.5	7.8 B	1.0	200	200	0.23 U	2.0	372	21.7	9.7 J	0.27	0.24 U	0.24 J	0.18 U	0.15 U	0.22 U
MW4	W-190424-RA-21	4/24/2019		144	52.1	0.070 J	13.0 B	0.65 J	74.7	45	0.89 J	1.3 J	118	33.6	6.9 U	0.085 U	0.24 U	0.15 U	0.18 U	0.16 J	0.22 U
MW4 (Duplicate)	W-190424-RA-22	4/24/2019		142	49.7	0.086 J	12.5 B	0.84 J	75.1	50	0.97 J	0.50 U	82.6 J	35.7	6.9 U	0.089 U	0.24 U	0.15 U	0.18 U	0.16 J	0.22 U
MW10	W-190422-RA-02	4/22/2019		173	24.8	0.068 U	12.9	23.3	130	550	1.1 B	2.2 B	769	740 B	6.9 U	1600 H	9.3	0.15 U	0.80	0.90	6.0
MW12	W-190423-RA-06	4/23/2019		218	9.1	0.53	45.5	2.4	165	0.17 U	0.55 JB	1.5 JB	46.7 U	55.0 B	6.9 U	290	0.24 U	0.15 U	0.18 U	0.15 J	0.22 U
MW14	W-190425-RA-25	4/25/2019		140	15.0	1.5	6.0 B	0.64 J	122	0.17 U	1.1	0.95 J	46.7 U	6.3	6.9 U	0.14	0.24 U	0.15 U	0.18 U	0.15 U	0.22 U
MW17	W-190422-RA-01	4/22/2019		335	12.4	2.2	140	1.2	187	0.17 U	0.80 JB	1.3 JB	46.7 U	1.2 JB	6.9 U	0.087 U	0.24 U	0.15 U	0.18 U	0.15 U	0.22 U
MW23	W-190423-RA-08	4/23/2019		255	44.6	2.1	9.0	0.86 J	187	0.17 U	0.65 JB	0.99 JB	46.7 U	0.79 U	6.9 U	0.087 U	0.24 U	0.15 U	0.18 U	0.15 U	0.22 U
Unconfined Aquifer (Upper)																					
EW11S	W-190424-RA-17	4/24/2019		96.5	2.7	6.0	23.7 B	2.5	53.0	0.17 U	0.23 U	2.2	94.7 J	10.7	8.2 J	0.16	0.24 U	0.15 U	0.18 U	0.15 U	0.22 U
EW13S	W-190423-RA-05	4/23/2019		340	32.2	0.068 U	19.9	31.5	243	8.4	5.5 B	1.8 JB	18700	3040 B	6.9 U	8900	17	0.15 U	0.83	0.84	15
MW1	W-190424-RA-11	4/24/2019		116	11.3	3.4	5.9 B	0.47 U	85.1	0.17 U	0.24 J	1.2 JB	53.2 J	3.5	8.2 J	0.12	0.25 U	0.15 U	0.18 U	0.15 U	0.22 U
MW1 (Duplicate)	W-190424-RA-12	4/24/2019		116	10.7	3.4	6.0 B	0.89 J	84.0	0.17 U	0.45 J	1.5 JB	69.1 J	3.7	7.3 J	0.14	0.25 U	0.15 U	0.18 U	0.15 U	0.22 U
MW2	W-190425-RA-24	4/25/2019		80.5	0.48	0.30	1.7 B	1.3	61.5	0.17 U	0.23 U	1.8 J	230	7.5	9.7 J	0.37	0.24 U	0.15 U	0.18 U	0.15 U	0.22 U
MW5	W-190425-RA-23	4/25/2019		305	27.0	0.068 U	27.7 B	33.3 F1	262	96	0.79 J	0.97 J	10200	6250	6.9 U	5100	24	0.15 U	0.47 J	0.52	5.8
MW6S	W-190425-RA-26	4/25/2019		336	12.1	10	13.2 B	2.0	275	0.17 U	0.27 J	2.6	121	4.8	10.3 J	0.095 U	0.23 U	0.15 U	0.18 U	0.15 U	0.22 U
MW10S	W-190423-RA-03	4/23/2019		471	64.8	0.074 J	43.1	60.9	312	0.17 U	0.67 JB	8.8 B	861	3450 B	6.9 U	1400 ^	10	0.15 U	0.38 J	0.30 J	6.1
MW10S (Duplicate)	W-190423-RA-04	4/23/2019		464	63.6	0.073 J	42.5	56.3	313	0.17 U	2.1 B	6.0 B	886	3470 B	6.9 U	1500	10	0.15 U	0.36 J	0.28 J	5.9
MW13	W-190423-RA-09	4/23/2019		49.8	0.89	0.41	3.0	2.3	54.2	0.17 U	0.28 JB	2.3 B	46.7 U	1.6 JB	11.2 J	0.30 ^	0.23 U	0.15 U	0.18 U	0.15 U	0.22 U
MW16	W-190424-RA-16	4/24/2019		39.4	4.7	0.63	4.7 B	0.74 J	34.1	0.17 U	0.37 J	1.9 J	169	15.7	9.0 J	0.24	0.23 U	0.15 U	0.18 U	0.15 U	0.22 U
MW21	W-190424-RA-14	4/24/2019		72.8	78.4	1.6	6.4 B	0.94 J	32.6	0.17 U	0.23 J	1.5 J	46.7 U	0.79 U	6.9 U	0.086 U	0.23 U	0.15 U	0.18 U	0.15 U	0.22 U
MW22	W-190424-RA-13	4/24/2019		102	4.1	0.75	4.1 B	0.84 J	60.3	0.17 U	0.27 J	1.8 J	166	9.6	9.6 J	0.085 U	0.28 U	0.15 U	0.18 U	0.15 U	0.22 U
MW25	W-190424-RA-19	4/24/2019		117	27.2	2.6	5.5 B	1.7	92.3	5.0	0.27 J	1.3 J	46.7 U	0.79 U	6.9 U	0.091 U	0.23 U	0.15 U	0.18 U	0.15 U	0.22 U
MW28	W-190423-RA-10	4/23/2019		128	19.3 F1	2.1	5.4	0.67 J	106	0.17 U	0.39 JB	2.0 B	62.7 J	2.1 JB	6.9 U	0.20 ^	0.25 U	0.15 U	0.18 U	0.15 U	0.22 U

Table 2.4

Groundwater Analytical Data - Monitoring and Extraction Wells
Penta Wood Products Superfund Site
Siren, Wisconsin

Sample Location	Sample Identification	Sample Date	Hardness, carbonate mg/L	Chloride ³ mg/L	Nitrate (as N) mg/L	Sulfate ³ mg/L	TOC averages mg/L	Alkalinity, total (as CaCO3) mg/L	Methane (dissolved) ug/L	Arsenic (dissolved) ug/L	Copper (dissolved) ug/L	Iron (dissolved) ug/L	Manganese (dissolved) ug/L	Zinc (dissolved) ug/L	Pentachlorophenol ug/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L
		ES ¹	-	250	10	250	-	-	-	10	1300	300	50	5000	1	100	5	700	800	2000
		PAL ²	-	125	2	125	-	-	-	1	130	150	25	2500	0.1	10	0.5	140	160	400
Unconfined Aquifer (Upper)																				
MW30	W-190425-RA-29	4/25/2019	69.9	1.4	0.55	3.8 B	5.3	66.9	0.17 U	0.23 U	1.1 J	46.7 U	25.1	6.9 U	800	0.24 U	0.15 U	0.18 U	0.15 U	0.22 U
MW31	W-190424-RA-15	4/24/2019	191	0.61	0.63	1.6 B	0.67 J	178	3.0	0.23 J	1.1 J	46.7 U	1.9 J	6.9 U	0.086 U	0.23 U	0.15 U	0.18 U	0.15 U	0.22 U
MW32	W-190517-RA-30	5/17/2019	40.3	1.7	1.3 H	11.3	1.1	35.9	0.17 U	0.23 U	1.6 J	46.8 J	135	17.0 J	0.14	0.23 U	0.15 U	0.18 U	0.15 U	0.22 U

Notes:

- 1 - Enforcement Standard (ES) criteria adapted from Table 1 referred to and incorporated by NR 140.10 with except of Iron, Manganese, Zinc, Chloride, and Sulfate (see note 3 below)
- 2 - Preventive Action Limit (PAL) criteria adapted from Table 1 referred to and incorporated by NR 140.10 with except of Iron, Manganese, Zinc, Chloride, and Sulfate (see note 3 below)
- 3 - Enforcement Standard (ES) and Preventive Action Limit (PAL) criteria adapted from Table 2 referred to and incorporated by NR 140.12
- mg/L - Concentrations listed with units of milligrams per liter
- ug/L - Concentrations listed with units of micrograms per liter
- J - Concentration was between the limit of detection and the limit of quantitation
- U - Compound was not detected above the limit of detection
- B - Compound was found in the blank and sample
- F1 - MS and/or MSD recovery is outside acceptance limits
- ^ - Instrument related quality control (QC) is outside of acceptance limits
- NA - Not analyzed

☐ - Concentration exceeds the ES

▒ - Concentration exceeds the PAL

Wells MW20 and MW29 were not sampled due to the presence of LNAPL

Table 3.1

**Groundwater Analytical Data - Residential Wells and Onsite Supply Well
Penta Wood Products Superfund Site
Siren, Wisconsin**

Sample Location	Sample Identification	ES ¹ PAL ² Date	Pentachlorophenol	Naphthalene	Benzene	Ethylbenzene	Toluene	Xylenes (total)
			1 0.1 ug/L	100 10 ug/L	5 0.5 ug/L	700 140 ug/L	800 160 ug/L	2000 400 ug/L
RW1	W-190422-RA-101	4/22/2019	0.087 U	0.23 U	0.15 U	0.18 U	0.15 U	0.22 U
RW2	W-190422-RA-102	4/22/2019	0.085 U	0.23 U	0.15 U	0.18 U	0.15 U	0.22 U
RW2 (Dup)	W-190422-RA-103	4/22/2019	0.085 U	0.23 U	0.15 U	0.18 U	0.15 U	0.22 U
RW3	W-190422-RA-104	4/22/2019	0.085 U	0.24 U	0.15 U	0.18 U	0.15 U	0.22 U
RW4	W-190422-RA-105	4/22/2019	0.11 U	0.25 U	0.15 U	0.18 U	0.15 U	0.22 U
RW5	W-190422-RA-100	4/22/2019	0.085 U	0.25 U	0.15 U	0.18 U	0.15 U	0.22 U
RW6	W-190422-RA-106	4/22/2019	0.086 U	0.24 U	0.15 U	0.18 U	0.15 U	0.22 U
RW6 (shop)	W-190422-RA-107	4/22/2019	0.095 U	0.23 U	0.15 U	0.18 U	0.50 U	0.22 U
DW01	W-190422-RA-109	4/22/2019	0.099 U	0.26 U	0.15 U	0.18 U	0.15 U	0.22 U

Notes:

- ¹ - Enforcement Standard (ES) criteria adapted from Table 1 referred to and incorporated by NR 140.10
- ² - Preventive Action Limit (PAL) criteria adapted from Table 1 referred to and incorporated by NR 140.10
- ug/L - Concentrations listed with units of micrograms per liter
- J - Concentration was between the limit of detection and the limit of quantitation
- U - Compound was not detected above the limit of detection
- Dup - Duplicate sample
- Concentration exceeds the ES
- Concentration exceeds the PAL

Appendix A

Historical Site Data

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L
DW01	9/24/03	N	0.5 U	0.05 J	1 U	2	50 UJ		5 UJ	30		1 U	0.25 U	2.5 U	2.5 U	2.5 U	250	66.9	110.8	1.48		2 U	1.5
DW01	9/24/03	N2	0.5 U		1 U	1 U	50 UJ		5 U	40													
DW01	5/4/04	N	10.0 U	0.102 UB	0.243 J	61.5 R	194 R	27300	108 R	2710 R		5.00 U	0.109 J	5.00 U	0.153 J	5.00 U	292	49 =	309	1.8 J		7.9 R	1.54 J
DW01	5/4/04	N2			0.280 J	49.5 R	29.2 R		58.0 R	2590 R													
DW01	9/22/04	N										5.00 U	0.500 U	5.00 U	5.00 U	5.00 U							
DW01	9/28/04	N		1.08 =																			
DW01	11/1/04	N		0.0962 U																			
DW01	5/11/05	N	2.0 U	0.033 J								0.93 U	0.50 U	5.0 U	5.0 U	5.0 U			260 J				
DW01	9/27/05	N		0.040 J								0.93 UJ	0.50 U	5.0 U	5.0 U	5.0 U							
DW01	5/31/06	N	2.0 U	0.039 J	1.0 UJ	140 J	50 UJ		4.0 UJ	1900 J		0.95 U	0.50 U	5.0 U	5.0 U	5.0 U	270 J	29 J	260 J	1.5 J		6.5	1.1 J
DW01	9/26/06	N	2.0 UJ	0.11 U	1.0 UJ	100	50 UJ		15 J	1500 J		0.93 U	0.50 U	5.0 U	5.0 U	5.0 U	230 J	21 J	230 J	0.67 J		13 J	2.1
DW01	5/10/07	N	2.0 UJ	0.074 J	1.0 UJ	100	100 UJ		10 UB	620 J		0.95 R	1.0 UJ	1.0 UJ	1.0 UJ	2.0 UJ	400 =	29	320	1.8		17 J	1.0 UB
DW01	9/19/07	N	2.0 UJ	0.093 UJ	0.63 J	89	100 UJ		2.4 J	1100		0.93 R	1.0 U	1.0 U	1.0 U	2.0 U	250 J	27	330 J	1.5 J		14 J	0.92 J
DW01	5/20/08	N		0.094 UJ								0.94 U	1.0 UJ	1.0 U	1.0 U	2.0 UJ							
DW01	10/23/08	N	2.0 UJ	0.1 U	2 UJ	205 J	642 J	33000 J	4.6 J	81.2 J		1 U	0.5 U	2.0 U	2.0 U	5.0 U	297 J	29.6	423 J	1.79 J		9.07	44.4
DW01	6/3/09	N		0.1 U								1.0 UJ	0.5 U	2.0 U	2.0 U	5.0 U							
DW01	10/8/09	N		0.1 UJ								0.994 UJ	0.1 UJ	0.4 UJ	0.4 UJ	1 UJ							
DW01	5/19/10	N		0.1 U								1.0 U	0.4 U	5 U	5 U	5 U							
DW01	10/7/10	N		0.1 UJ								0.995 UJ	0.1 U	0.4 U	0.4 U	1 U							
DW01	6/30/11	N		0.1 U								0.999 U	0.1 U	0.4 U	0.4 U	1 U							
DW01	10/18/11	N		0.032 J								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
DW01	5/23/12	N		0.028 J								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
DW01	10/18/12	N		0.032 J								0.19 U H	0.50 U	1.0 U	1.0 U	2.0 U							
DW01	5/21/13	N		0.029 J								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
DW01	10/8/13	N		0.027 J								0.20 U	0.50 U	1.0 U	1.0 U	2.0 U							
DW01	5/13/14	N		0.057 J																			
DW01	9/25/14	N		0.54 J								0.19 UJ											
DW01	4/21/15	N		0.023 J								0.19 U											
DW01	10/15/15	FD		0.096 U								0.19 U											
DW01	10/15/15	N		0.095 U								0.19 U											

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L
DW01	4/5/16	FD		0.097 U								0.20 U	0.50 U	1.0 U	1.0 U	2.0 U							
DW01	4/5/16	N		0.095 U								0.14 J	0.50 U	1.0 U	1.0 U	2.0 U							
DW01	10/10/16	FD		0.024 J								0.20 U	0.50 U	1.0 U	1.0 U	2.0 U							
DW01	10/10/16	N		0.025 J								0.20 U	0.50 U	1.0 U	1.0 U	2.0 U							
DW01	4/18/17	FD		0.022 J								0.20 U	0.50 U	1.0 U	1.0 U	2.0 U							
DW01	4/18/17	N		0.020 J								0.20 U	0.50 U	1.0 U	1.0 U	2.0 U							
DW01	10/20/17	FD		0.10 U								0.88 U	0.50 U	0.50 U	0.50 U	1.0 U							
DW01	10/20/17	N		0.10 U								0.83 U	0.50 U	0.50 U	0.50 U	1.0 U							
DW01	6/5/18	N		0.095 U								0.77 U	0.50 U	0.50 U	0.50 U	1.0 U							
DW01	10/16/18	N		0.095 U								0.82 U	0.50 U	0.50 U	0.50 U	1.0 U							
DW01	4/22/19	N		0.099 U								0.26 U	0.15 U	0.18 U	0.15 U	0.22 U							
EW02D	8/22/14	N		52							0.28											2.1 J	
EW02D	4/23/15	N		17																			
EW02D	4/14/16	N	0.15 J	370	0.49 J	3.8	299		384	46.7		1.7	0.50 U	1.0 U	1.0 U	2.0 U	55.0	12.1	70.6	0.70		8.7	4.8
EW02S	4/14/16	N	0.094 J	690	5.0 U	1.4 J	50.2 J		39.3	20.0 U		2.5	0.50 U	1.0 U	1.0 U	2.0 U	30.0	10.5	41.2	1.0		7.0	2.7
EW03D	8/22/14	N		260							0.87											1.6 J	
EW03D	4/18/16	N	1.3	3500	2.7 J	9.8	12500		1780	398		2.4	0.50 U	0.33 J	1.0 U	3.6	184	13.4	169	0.10 U		25.6	10
EW03S	4/18/16	N	0.15 J	14000	0.53 J	10.8	1050		3530	20.0 U		12	1.0 U	2.0 U	2.0 U	5.2	88.0	73.8	220	0.29		39.1	59.1
EW04D	8/22/14	N		150							0.65											4.8 U	
EW04D	2/3/15	N		200							0.71											4.9 U	
EW04D	4/23/15	N		430																			
EW04D	4/18/16	N	0.33 J	24	5.0 U	2.2	3060		316	172		0.16 J	0.50 U	1.0 U	1.0 U	2.0 U	129	16.5	131	1.9		6.0	5.3
EW04S	4/18/16	N	0.12 J	210	5.0 U	2.4	567		385	20.0 U		0.25	0.50 U	1.0 U	1.0 U	2.0 U	81.0	9.9	98.0	0.92		8.1	7.2
EW05D	8/22/14	N		4400							6.8											6.3	
EW05D	2/3/15	N		3100							11											2.0 J	
EW05D	4/20/16	N	0.44 J	7500	2.7 J	8.6	8430		1980	372		19	0.50 U	0.79 J	0.95 J	6.7	145	14.4	171	0.10 U		17.0	36.7
EW06D	8/22/14	N		910							1.8											1.9 J	
EW06D	2/3/15	N		4900							12											1.6 J	
EW06D	1/24/17	N	0.25 J	840	0.35	0.70 J	398		163	15.4 J		1.7	0.28	0.26	0.23	1.2 J	124	12.3	144	1.0		5.9	6.4
EW07D	8/22/14	N		280							0.68											1.3 J	

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EW07D	2/3/15	N		170							0.28										4.9 U		
EW07D	4/23/15	N		2400																			
EW07D	4/12/16	N	0.59	0.31	5.0 U	1.1 J	122		210	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	127	23.7	174	6.6		8.4	1.2
EW10D	8/22/14	N		7000							11											11	
EW10D	2/3/15	N		2800							7.7										4.9 U		
EW10D	4/20/16	FD	1.3	4800	7.6	12.1	3720		2170	114		19	0.50 U	1.3	1.9	12	136	23.9	184	0.060 J		20.3	41.0
EW10D	4/20/16	N	1.1	5000	6.5	10.3	3350		2200	81.0		19	0.50 U	1.4	1.8	12	135	25.7	180	0.057 J		21.8	41.8
EW11D	4/14/16	FD	0.080 J	2.5	5.0 U	2.0 U	825		27.4	55.9		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	190	12.8	276	2.0		198	1.2
EW11D	4/14/16	N	0.50 U	3.4	5.0 U	1.1 J	657		22.6	46.4		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	187	12.7	282	2.0		155	1.0
EW11D	7/19/16	N	1.1	7.4	5.0 U	2.7	292		54.5	50.0		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	151	9.1	242	2.2		112	1.9
EW11D	10/10/16	N	3.2	8.4	5.0 U	0.67 J	793		23.6	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	190	13.6	272	2.7		159	1.0
EW11D	1/19/17	N	8.9	0.15	0.35	0.51 J	897		40.4	10.8 J		0.060	0.28	0.26	0.23	0.24	168	12.2	70.0	3.3		129	1.9
EW11D	4/19/17	N	35	0.13	5.0 U	0.58 J	2930		129	19.0 J		0.22 U	0.50 U	1.0 U	1.0 U	2.0 U	152	11.4	238	5.2		97.3	3.2
EW11D	10/4/17	N	14	0.18	0.31 J	1.4 J	1290		66.9	11.9 J		0.81 U	0.50 U	0.50 U	0.50 U	1.0 U	159	11.5	220	7.7		79.4	2.5
EW11D	5/31/18	FD	2.4	0.12	0.35 J	1.2 J	2690		126	10.2 J		0.78 U	0.50 U	0.50 U	0.50 U	1.0 U	137	8.9	204	13.4		51.7	3.4
EW11D	5/31/18	N	2.5	0.10 U	0.36 J	0.87 J	2600		124	10.2 J		0.82 U	0.50 U	0.50 U	0.50 U	1.0 U	137	9.0	202	13.0		49.5	3.4
EW11D	10/19/18	N	1.0 U	0.096 U	1.0 U	13.1	144		34.5	20.0 U		0.76 U	0.50 U	0.50 U	0.50 U	0.44 J	131	7.2	121	9.9		40.3	4.3
EW11D	4/24/19	N	0.17 U	0.20	1.1	7.0	23400		217	282		0.24 U	0.15 U	0.18 U	0.15 U	0.22 U	48.2	0.94	95.1	5.7		19.5 B	5.5
EW11S	4/14/16	N	0.50 U	0.37	5.0 U	3.4	451		63.5	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	48.6	7.0	100	8.9		45.1	5.2
EW11S	7/19/16	N	0.50 U	1.2	5.0 U	2.3	84.2 J		37.3	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	65.7	7.9	106	6.0		36.5	2.7
EW11S	10/10/16	N	0.50 U	0.70	0.40 J	3.0	114		97.9	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	64.7	7.9	118	7.9		39.1	4.7
EW11S	1/19/17	N	0.20 J	0.96	0.40 J	2.2	211		157	6.2		0.060	0.28	0.26	0.23	0.24	50.5	9.8	108	7.7		36.3	4.3
EW11S	4/19/17	N	0.26 J	0.20	5.0 U	1.8 J	445		185	20.0 U		0.23 U	0.50 U	1.0 U	1.0 U	2.0 U	45.9	9.2	122	8.6		36.8	3.5
EW11S	10/4/17	N	0.22 J	0.25	0.31 J	2.9	164		65.0	7.9 J		0.80 U	0.50 U	0.50 U	0.50 U	1.0 U	65.2	9.4	129	8.0		39.1	3.9
EW11S	6/1/18	N	1.0 U	0.25	0.24 J	2.7	242		74.7	20.0 U		0.76 U	0.50 U	0.50 U	0.50 U	1.0 U	53.5	10.6	127	13.2		36.3	3.3
EW11S	10/19/18	N	1.0 U	0.099 U	1.0 U	9.6	213		63.5	12.8 J		0.81 U	0.50 U	0.50 U	0.50 U	0.23 J	56.4	7.4	182	11.9		29.2	2.7
EW11S	4/24/19	N	0.17 U	0.16	0.23 U	2.2	94.7 J		10.7	8.2 J		0.24 U	0.15 U	0.18 U	0.15 U	0.22 U	53.0	2.7	96.5	6.0		23.7 B	2.5
EW12D	8/22/14	N		4600							5.7											5.1	
EW12D	2/3/15	N		880							4.1											4.9 U	
EW12D	4/20/16	N	4.0	2500	2.2 J	1.3 J	3820		1620	20.0 U		12	0.50 U	0.58 J	0.50 J	7.2	90.0	5.4	80.4	0.10 U		6.4	15.7

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EW13D	8/22/14	N		780							1.2										1.5 J		
EW13D	2/3/15	N		660							1.6										4.7 U		
EW13D	4/23/15	N		18000																			
EW13D	4/19/16	N	1100	2100	1.6 J	2.0 U	7660		956	11.7 J		13	0.50 U	0.27 J	0.32 J	4.8	180	15.1	167	0.093 J		2.0	20.7
EW13S	4/19/16	N	4.9	770	23.2	37.7	14100		2340	13.8 J		2.0	0.50 U	0.26 J	1.0 U	4.2	370	20.7	229	0.10 U		9.6	36.6
EW13S	7/26/16	N	20	1900	58.9	133	45600		2580	52.2		4.0	0.50 U	0.31 J	0.35 J	4.4	312	21.2	292	0.10 U		7.8	32.6
EW13S	10/14/16	N	40	4200	18.5	30.6	15600		2360	8.4 J		6.8	0.50 U	0.53 J	0.54 J	7.1	296	25.1	236	0.10 U		11.8	34.7
EW13S	1/24/17	N	48	6400	11.4	3.2	8700		2220	6.2		11	0.28	0.70 J	0.62 J	9.3	297	28.0	304	4.8		12.1	35.8
EW13S	4/20/17	N	32	5100	13.7	2.2	10600		2260	20.0 U		20	0.50 U	0.96 J	0.90 J	13	240	29.1	294	0.10 U		16.1	37.2
EW13S	10/5/17	N	52	8700	12.4	0.93 J	10400		2010	20.0 U		16	0.50 U	1.0	1.0	14	276	34.5	276	0.075 J		13.6	34.9
EW13S	6/1/18	N	24	6000	14.9	3.6	13400		2540	20.0 U		19	0.50 U	0.93	1.0	13	271	34.2	253	0.085 J		13.6	33.8
EW13S	10/19/18	FD	17	9800	16.3	17.3	16300		2610	20.0 U		33	0.50 U	1.3	1.3	19	241	32.6	255	0.20 U		17.0	34.7
EW13S	10/19/18	N	16	10000	16.0	12.5	16400		2620	11.5 J		34	0.23 J	1.2	1.2	21	242	33.4	251	0.20 U		17.4	35.3
EW13S	4/23/19	N	8.4	8900	5.5 B	1.8 JB	18700		3040 B	6.9 U		17	0.15 U	0.83	0.84	15	243	32.2	340	0.068 U		19.9	31.5
EW14D	8/22/14	N		290							0.99										1.4 J		
EW14D	2/3/15	N		660							1.5										4.9 U		
EW14D	4/23/15	N		2100																			
EW14D	4/19/16	FD	3.5	2700	5.0 U	2.0 U	292		77.8	17.2 J		3.1	0.50 U	1.0 U	1.0 U	2.4	136	11.9	145	0.48		7.1	6.3
EW14D	4/19/16	N	4.2	2800	5.0 U	3.4	301		77.4	17.5 J		3.5	0.50 U	1.0 U	1.0 U	2.4	137	12.0	139	0.48		7.2	6.5
MW1	10/9/97	FD	10 U	1	2.3	3.5 U	20 J		1180	3.8			0.1 U	1 U	1 U	1 U	190	16		4.5		5.8	43.5
MW1	10/9/97	FD2			2 U	70.9				36													
MW1	10/9/97	N	10 U	2	2 U	61.6	20 U		1070	32.8			0.1 U	1 U	1 U	1 U	190	18		6.5		6.3	20
MW1	10/9/97	N2		2	2 U	2 U				3			0.1 U	1 U	1 U	1 U							
MW1	4/24/01	N	0.11 U	0.1 U	2.4	33	9830		642	16		5.6 U	0.1 U	1 U	1 U	1 U	140	24	218	6.5 =		13	3.89
MW1	4/24/01	N2	0.11 U		1 U	25 U	25 U		15 U	25 U										6.5			
MW1	9/11/01	N	10 U	0.5	0.7 J	4 J	35 U		0.79 J	3.7 U		0.24 U	0.44 U	0.5 U	0.4 U	1.2 U	130	10	170	2.6		8.2 U	3.9
MW1	9/11/01	N2			1.3	25 U	4000		450	20													
MW1	5/14/02	N			1.4 U	1.6 J	11.2 U		0.48 J	5.4 J													
MW1	8/6/02	N	0.01 U	0.067	1.4 U	7.6 J	1700		180	5.8 J		5 U	1 U	5 U	5 U	5 U	170	7.4	190	0.15 U		7.9	2.6
MW1	8/6/02	N2	0.01 U	0.063	1.7 J	0.3 U	11 U		0.95 J	3.9 J		5 U	1 U	5 U	5 U	5 U	160	7.3	190	0.15 U		7.7	3.7

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Penta Wood Products Superfund Site
Siren, Wisconsin**

Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L
MW1	8/6/02	N3			1.8 J	9.5 J	2200		230	6.5 J													
MW1	8/6/02	N4			1.4 U	0.3 U	11 U		2.2 J	2.9 J													
MW1	4/29/03	N	0.5 U	0.1 U	1 U	14	3160		217	10 U		7.4 U	0.5 U	5 U	5 U	5 U	174	4.3	187	2.6		10	3.2
MW1	4/29/03	N2	0.5 U		1 U	1 U	25 U		5 U	10 U													
MW1	9/24/03	N	0.5 U	0.13	1 J	21	7000 J		416	20 J		1 U	0.25 U	2.5 U	2.5 U	2.5 U	157	3.3	68.25	2.61		2 U	8.4
MW1	9/24/03	N2	0.5 U		1 U	1 J	100 J		36	10 U													
MW1	5/4/04	N	0.863 J	1.06 J	0.346 J	5.73 R	790 R	13900	135 R	7.43 R		5.00 U	0.500 U	5.00 U	5.00 U	5.00 U	147	4.3 R	158	2.1 J		2.0 R	6.37 J
MW1	5/4/04	N2			0.190 J	0.785 R	29.9 R		15.0 R	2.74 R													
MW1	9/21/04	FD	10.0 U	0.442	0.470 J	13.6 J	1210		158	13.4 J		5.00 U	0.500 U	5.00 U	5.00 U	5.00 U	140	2.7 =	1960	1.8 J		4.5 J	7.98
MW1	9/21/04	FD2			0.227 J	0.707 J	21.0 J		3.07 J	3.31 J													
MW1	9/21/04	N	10.0 U	0.348	0.353 J	8.41 J	838		103	17.1 J		1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	130	2.7 =	776	1.8 J		5.2 J	6.75
MW1	9/21/04	N2			0.218 J	0.605 J	18.0 J		2.60 J	4.06 J													
MW1	5/10/05	N	2.0 U	0.12	1.0 U	18	3800		360	11 J		0.92 U	0.50 U	5.0 U	5.0 U	5.0 U	110 J	3.6 J	140 J	1.7 J		14 R	3.7 R
MW1	5/10/05	N2			1.0 U	10 U	50 U		10 U	20 U													
MW1	9/29/05	N	2.0 U	0.12	1.0 J	23 J	4800 J		400 J	14 J		1.0 U	0.50 U	5.0 U	5.0 U	5.0 U	110 J	6.2 J	160 J	1.9 J		16 R	2.4 J
MW1	9/29/05	N2			1.0 UJ	10 UJ	50 UJ		3.8 J	20 UJ													
MW1	5/31/06	N	2.0 U	0.049 J	1.0 UJ	10 UJ	50 UJ		10 UJ	20 UJ		1.0 U	0.50 U	5.0 U	5.0 U	5.0 U	110 J	2.3 J	100 J	1.6 J		17	1.7 J
MW1	5/8/07	N	2.0 UJ	0.11 J	1.0 UJ	10 UJ	100 UJ		6.3 J	20 UJ		1.0 R	1.0 U	1.0 U	1.0 U	2.0 U	190 =	2.2 J	130	1.9		15 J	1.9
MW1	9/18/07	N	2.0 UJ	0.093 UJ	1.0 UJ	10 UJ	100 UJ		10 UJ	20 UJ		0.93 R	1.0 U	1.0 U	1.0 U	2.0 U	110 J	9.4	170 J	3.0 J		12 J	1.1 J
MW1	10/21/08	N	2.0 UJ	0.42 UJ	2 U	10 UJ	388	21200	10 U	8.60 J		1.00 U	0.50 U	2.0 U	2.0 U	5.0 U	109	3.91	223 J	1.62 J		6.19	3.38 J
MW1	4/12/16	N	0.50 U	0.15	5.0 U	2.0 U	19.9 J		1.4 J	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	79.9	5.1	102	0.53		5.2	0.73 J
MW1	7/20/16	N	0.50 U	1.1	5.0 U	2.0 U	100 U		5.0 U	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	82.4	5.6	30.0	0.53		5.2	0.83 J
MW1	10/12/16	N	0.16 J	0.12	0.46 J	0.67 J	100 U		0.96 J	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	86.2	7.5	92.0	0.45		5.2	0.59 J
MW1	1/19/17	FD	0.080	0.30	0.51 J	0.73 J	5.7 J		0.25	6.2		0.061	0.28	0.26	0.23	0.24	71.9	6.8	88.0	0.54		4.8	0.73 J
MW1	1/19/17	N	0.080	0.19	0.77 J	0.76 J	8.1 J		0.25	6.2		0.063	0.28	0.26	0.23	0.24	71.9	6.7	88.0	0.54		4.7	0.65 J
MW1	4/18/17	N	0.50 U	0.12	0.37 J	2.0 U	100 U		5.0 U	20.0 U		0.22 U	0.50 U	1.0 U	1.0 U	2.0 U	64.4	3.9	84.0	0.39		5.5	0.91 J
MW1	10/4/17	N	0.15 J	0.17	1.0 U	1.1 J	100 U		2.5 U	20.0 U		0.77 U	0.50 U	0.50 U	0.50 U	1.0 U	78.5	8.1	81.3	1.1		5.5	0.63 J
MW1	10/18/18	N	1.0 U	0.096 U	0.34 J	1.3 J	100 U		2.5 U	8.8 J		0.81 U	0.50 U	0.50 U	0.50 U	1.0 U	85.5	13.1	109	2.9		5.9	1.0
MW1	4/24/19	FD	0.17 U	0.14	0.45 J	1.5 JB	69.1 J		3.7	7.3 J		0.25 U	0.15 U	0.18 U	0.15 U	0.22 U	84.0	10.7	116	3.4		6.0 B	0.89 J
MW1	4/24/19	N	0.17 U	0.12	0.24 J	1.2 JB	53.2 J		3.5	8.2 J		0.25 U	0.15 U	0.18 U	0.15 U	0.22 U	85.1	11.3	116	3.4		5.9 B	0.47 U

Appendix A.1

**Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin**

Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L
MW2	10/9/97	N	10 U	1 U	2 U	10.2 J	20 J		50.6	10			0.1 U	1 U	1 U	1 U	300	3.5		1.1		17	2.6
MW2	10/9/97	N2		1 U	2 U	11.4 J				10.7			0.1 U	1 U	1 U	1 U							
MW2	4/5/00	N		0.5 U								10 U											
MW2	6/18/01	N	0.14	0.1 U	0.37 J	25 U	24 U		8.3	25 U		5 U	0.1 U	1 U	1 U	1 U	36	5.73	66	38 =		105	5.57
MW2	6/18/01	N2	0.14		6.7	109	39900		1230	64										38			
MW2	9/12/01	N	10 U	0.51	3.9	110	29000		1200	69		0.24 U	0.44 U	0.5 U	0.4 U	1.2 U	49	6.2	140	2.3		10	4.2
MW2	9/12/01	N2			0.29 U	2.2 U	35 U		57	5.2 J													
MW2	8/6/02	N	0.01 U	0.12	6.4	30	10000		420	26 J		5 U	1 U	5 U	5 U	5 U	66	3	98	0.15 U		10	3.2
MW2	8/6/02	N2			1.4 U	0.3 U	48		18	9.1 J													
MW2	9/24/03	N	0.5 U	0.28	8	100	41300 J		1180	80		0.99 U	0.25 U	2.5 U	2.5 U	2.5 U	80	1 J	106.2	2.02		3 J	2.3
MW2	9/24/03	N2	0.5 U		1 U	16	3030 J		443	20 J													
MW2	9/21/04	N	10.0 UJ	1.26	4.03 J	87.2 J	25800 J		972 J	64.2 J		5.00 U	0.500 U	5.00 U	5.00 U	5.00 U	110 J	12 J	921 J	1.4 J		4.0 R	5.23 R
MW2	9/21/04	N2			0.237 J	3.10 J	662		22.2 J	7.73 J													
MW2	9/28/05	N	2.0 U	2.2 =	6.7	140 J	40000 J		1300 J	82 J		0.98 U	0.50 U	5.0 U	5.0 U	5.0 U	150 J	5.6 J	270 J	0.10 UJ		27 R	2.5 J
MW2	9/28/05	N2			1.0 UJ	2.5 J	65 J		9.3 J	20 UJ													
MW2	9/26/06	N	2.0 UJ	2.3	1.0 U	10 UJ	50 U		2.6 UB	20 UJ		1.7 U	0.50 U	5.0 U	5.0 U	5.0 U	160 J	1.6 J	220	0.12 J		20 J	3.1
MW2	9/19/07	N	2.0 UJ	3.7 J	0.62 J	10 UJ	100 UJ		6.5 J	20 UJ		0.97 R	1.0 U	1.0 U	1.0 U	2.0 U	160 J	3.6	200 J	0.22 J		16 J	2.1 J
MW2	10/21/08	N	2.0 UJ	1.60 J	2 U	10 UJ	424 J	27900	5.20 J	20 U		1.00 U	0.5 U	2.0 U	2.0 U	5.0 U	138	3.17	276 J	1.10 J		12.90	2.59 J
MW2	10/6/09	N	0.83 UJ	2.21 J	2 UJ	10 UJ	129 J	19000 J	10 UJ	20 UJ		0.996 UJ	0.1 UJ	0.4 UJ	0.4 UJ	1 UJ	122 J	1.97 J	190.6 J	0.81 J		11.6 J	5.33 J
MW2	10/6/10	N	1.3 U	0.1 U	2 U	8 U	43 J	4680	9.4 J	20 U		1.0 U	0.1 U	0.4 U	0.4 U	1 U	62	0.6 J	52.5	1.01 J		4.2 J	24
MW2	10/19/11	N	0.50 U	0.097 U	2.0 U	2.2 J+	47 J	9400 B	3.7 J	10 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	63	7.7	93.60	0.50 J		33	1.0 U
MW2	10/16/12	N	0.50 U	0.33	0.82 J	6.2 J	810	8800 =	25	20 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	54	4.1	91.2	0.90 J		32 J	6.7
MW2	10/9/13	N	0.50 U	0.94 J	2.0 UJ	10.0 UJ	50 UJ	6900 J	10 UJ	20 UJ		0.21 U	0.50 U	1.0 U	1.0 U	2.0 U *	39 J	2.8		2.9 J		28	4.5 J
MW2	10/9/13	N2																		2.9 J			
MW2	9/24/14	N	0.50 U	0.32	5.0 U	2.0 U	100 U		1.4 J	20 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	62	0.69 J	68	0.73		2.4	1.0 U
MW2	10/14/15	N	0.50 U	0.13	5.0 U	0.75 J	56.7 J		2.9 J	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	50.7	0.55 J	60.3	0.63		2.1	1.3
MW2	4/14/16	N	0.50 U	0.080 J	1.3 J	20.1	6580		171	19.7 J		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	34.4	0.51 J	49.0	0.38		1.8	3.6
MW2	10/29/18	N	1.0 U	0.21	1.0 U	2.8	100 U		1.8 J	10.9 J		0.86 U	0.50 U	0.50 U	0.50 U	1.0 U	66.6	0.42	87.2	0.51		1.6	2.1
MW2	4/25/19	N	0.17 U	0.37	0.23 U	1.8 J	230		7.5	9.7 J		0.24 U	0.15 U	0.18 U	0.15 U	0.22 U	61.5	0.48	80.5	0.30		1.7 B	1.3
MW3	10/8/97	N	10 U	1 U	2 U	2 U	257		10.9	2 U			0.1 U	1 U	1 U	1 U	370	42 J		4.4 J		16	1.2

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**Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin**

Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L
MW3	10/8/97	N2		1 U									0.1 U	1 U	1 U	1 U							
MW3	4/4/00	N		0.6 U								12 U											
MW3	4/25/01	N		0.11 U	1 U	25 U	147		7.3	25 U		6.1 U	0.1 U	1 U	0.46	1 U	442	47	544	4.42		11	1 U
MW3	4/25/01	N2			1 U	25 U	142		7.9	25 U		6.1 U								4.42 =			
MW3	9/13/01	N	10 U	0.092 J	0.29 U	2.2 U	930		31	3.7 U		0.26 U	0.44 U	0.5 U	0.4 U	1.2 U	440	58	480	4		14	1.1
MW3	9/13/01	N2			0.35 J	2.2 U	2400		31	3.7 U													
MW3	8/7/02	N	0.01 U	0.11	1.7 J	2.3 J	480		15 J	1.4 J		5 U	1 U	5 U	5 U	5 U	420	69	540	0.15 U		16	1.4
MW3	8/7/02	N2			1.9 J	0.58 J	160		12 J	4.8 J													
MW3	9/23/03	N	2.5	0.31	1 U	1 J	150		5 U	10 U		1.1 U	0.25 U	2.5 U	2.5 U	2.5 U	357	52.4	160	4.43		2 U	1.6
MW3	9/23/03	N2	2.5																				
MW3	9/24/03	N			1 U	1 U	1 U		8 J	10 U													
MW3	9/21/04	N	5.71 J	0.367	0.189 J	356 J	278 J		6.45 J	273 J		5.00 U	0.500 U	5.00 U	5.00 U	5.00 U	430 J	62 J	3250 J	3.5 J		8.9 R	2.16 R
MW3	9/21/04	N2			0.119 J	1.91 J	137 J		4.99 J	4.61 J													
MW3	9/28/05	FD											0.50 U	5.0 U	5.0 U	5.0 U							
MW3	9/28/05	N	2.0 U	0.20 J	1.0 U	4.9 J	23000 J		93 J	20 UJ		0.93 U	0.50 U	5.0 U	5.0 U	5.0 U	370 J	62 J	490 J	3.3 J		24 R	1.4 J
MW3	9/28/05	N2			1.0 U	3.0 J	120 J		6.7 J	20 UJ													
MW3	10/21/08	N	4.90 J	0.10 UJ	2.00 U	10 UJ	2140	58700	15.20 J	20 U		3.13 U	0.50 U	2.0 U	2.0 U	5.0 U	513	60.50	836	2.73 J		15.20	18 J
MW3	10/7/09	N	21 J	0.1 UJ	2 UJ	10 UJ	722 J	46000 J	12.4 J	20 UJ		0.997 UJ	0.1 UJ	0.4 UJ	0.4 UJ	1 UJ	482 J	53.8 J	581.46 J	2.55 J		11 J	3.42 J
MW3	10/5/10	N	1.6	0.1 U	2 U	10 U	805	69100	12 J	20 U		1.0 U	0.1 U	0.4 U	0.4 U	1 U	510	67.2	906	3.62		19.8 J	2.2 J
MW3	10/18/11	N	140	0.58	0.76 J	2 U	510	44000 B	41	10 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	510	64	531.00	3.3		16	2.9
MW3	10/16/12	N	13	0.46	0.59 J	10 U	260	41000 =	8.3 J	20 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	460	69	493	3.6 J		17 =	2.4
MW3	10/8/13	N	4.3	0.38	0.088 J	10.0 U	50 U	42000 B	8.3 J	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	390	70		3.5 J		16	1.6
MW3	9/25/14	N	15	0.35	5.0 U	2.0 U	160		7.6	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	290	72	360	2.1		12	0.91 J
MW3	10/15/15	FD	5.7	0.23	5.0 U	1.2 J	56.6 J		7.9	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	258	52.3	312	1.7		11.2	1.2
MW3	10/15/15	N	5.1	0.15	5.0 U	0.93 J	58.2 J		7.4	20.0 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	258	52.5	322	1.7		11.1	1.1
MW3	4/5/16	FD	4.2	0.40	5.0 U	0.99 J	514		18.6	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	221	48.6	283	1.4		10.0	0.94 J
MW3	4/5/16	N	4.4	0.46	5.0 U	1.4 J	716		20.4	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	224	48.2	299	1.4		10.1	0.98 J
MW3	7/21/16	N	2.5	0.35	5.0 U	2.0 U	317		16.2	20.0 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	215	45.5	248	1.4		9.2	1.0
MW3	10/11/16	N	1.5	0.45	5.0 U	1.7 J	171		14.8	20.0 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	233	46.8	268	1.8		12.7	1.1
MW3	1/20/17	N	1.9	0.93	0.35	2.0	812		16.4	6.2		0.060	0.28	0.26	0.23	0.24	230	47.3	284	1.9		14.5	1.6

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Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L
MW3	4/20/17	N	1.3	0.47	5.0 U	1.7 J	83.6 J		23.0	20.0 U		0.22 U	0.50 U	1.0 U	1.0 U	2.0 U	232	45.5	358	1.8		15.0	1.4
MW3	10/13/17	N	2.1	0.55	1.0 U	2.0	59.7 J		12.5	20.0 U		0.79 U	0.50 U	0.50 U	0.50 U	1.0 U	272	50.1	298	2.0		13.9	1.4
MW3	6/1/18	N	1.0 U	0.25	0.29 J	1.7 J	50.6 J		9.4	20.0 U		0.78 U	0.50 U	0.50 U	0.50 U	1.0 U	698	31.5	246	1.9		10.8	1.2
MW3	10/18/18	N	1.0 U	0.50	1.0 U	1.7 J	77.2 J		9.2	20.0 U		0.79 U	0.50 U	0.50 U	0.50 U	1.0 U	227	23.9	231	1.7		10.2	1.3
MW3	4/25/19	N	200	0.27	0.23 U	2.0	372		21.7	9.7 J		0.24 U	0.24 J	0.18 U	0.15 U	0.22 U	200	35.4	215	1.5		7.8 B	1.0
MW4	10/9/97	N	139	1 U	2 J	2 U	35.9 J		55.9	2 U			2	3	1	3	94	7.3		0.1 U		6.3	12.3
MW4	10/9/97	N2		1 U	2 U	2.4 U				4.5			2	3	1	3							
MW4	4/4/00	N		0.5 U								10 U											
MW4	1/20/17	N	0.92	3.0	1.5 J	0.36	124		37.9	6.2		0.063	0.28	0.26	0.23	0.24	87.9	22.7	132	0.23		11.6	0.53 J
MW4	4/21/17	N	10	0.11	1.2 J	2.0 U	85.4 J		39.0	20.0 U		0.22 U	0.50 U	1.0 U	1.0 U	2.0 U	82.8	32.9	170	0.15		13.2	0.60 J
MW4	10/3/17	N	7.2	0.097 U	1.2	1.2 J	501		41.8	20.0 U		0.82 U	0.50 U	0.50 U	0.50 U	1.0 U	93.7	37.0	134	0.26		30.0	1.0 U
MW4	5/31/18	N	300	0.11 U	1.1	2.0 U	149		38.6	20.0 U		0.78 U	0.50 U	0.50 U	0.50 U	1.0 U	76.8	47.9	145	0.096 J		14.1	0.85 J
MW4	10/17/18	FD	6.7	0.10 U	1.2	2.0 U	100 U		36.0	6.9 J		0.82 U	0.50 U	0.50 U	0.50 U	1.0 U	87.1	40.3	138	0.22		13.1	0.68 J
MW4	10/17/18	N	5.9	0.097 U	1.2	2.0 U	100 U		33.8	20.0 U		0.55 U	0.50 U	0.50 U	0.50 U	1.0 U	86.5	40.9	138	0.20		13.0	0.72 J
MW4	4/24/19	FD	50	0.089 U	0.97 J	0.50 U	82.6 J		35.7	6.9 U		0.24 U	0.15 U	0.18 U	0.16 J	0.22 U	75.1	49.7	142	0.086 J		12.5 B	0.84 J
MW4	4/24/19	N	45	0.085 U	0.89 J	1.3 J	118		33.6	6.9 U		0.24 U	0.15 U	0.18 U	0.16 J	0.22 U	74.7	52.1	144	0.070 J		13.0 B	0.65 J
MW5	10/10/97	FD	10 U	31000 J	4.3	26.2 J	5070		15500	2			0.1 U	2	4	18	370	50		0.1 U		16	160
MW5	10/10/97	FD2			4.6	4835 J				2.7													
MW5	10/10/97	N	10 U	28000 J	3.8	48.5 J	4860		12900	3.7			0.1 U	3	5	21	370	50		0.1 U		15	115
MW5	10/10/97	N2		28000 E	3.2	24 J				2 J			0.1 U	3	5	21							
MW5	4/7/00	N		20600 =								76 U											
MW5	4/26/01	N	0.4	20600	5.6	74	20400		11200	25 U		38	0.22	0.84	1.8	8.1	352	42	349	0.13 U		28	43
MW5	4/26/01	N2	0.4		3.9	25 U	7630		11300	25 U													
MW5	9/13/01	N	10 U	6300	3.7	5.1 J	4100		8500	6.2 J		23	0.44 U	0.54 J	0.78 J	4.3	270	29	240	0.17 J		22	27
MW5	9/13/01	N2			8.2	100	26000		8500	4.2 J													
MW5	8/7/02	N		510 J	4.1	28	34500		8130	104		3.2 J	1 U	5 U	5 U	5 U	220	26	4 U	0.15 U		21	25
MW5	8/7/02	N2			2 J	1.5 J	7900		7840	26.9 J													
MW5	9/25/03	N	0.47 J	1100	4	50	35100		9450	10 U		2.5	0.25 U	2.5 U	2.5 U	2.5 U	228	22.1	78.48	0.05 U		20	6.2
MW5	9/25/03	N2	0.47 J		3	7	13400		8320	10 U													
MW5	9/22/04	N	10.0 UJ	194	0.488 J	17.3 J	30500		7150	13.7 J		5.00 U	0.500 U	5.00 U	5.00 U	5.00 U	250 J	29 J	1490 J	0.01 R		24 R	18.8 R

Appendix A.1

**Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin**

Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L
MW5	9/22/04	N2		214 E	0.612 J	1.44 J	7480 J		5650 J	5.91 J													
MW5	9/28/05	N	2.3	1100 =	1.0 UJ	6.0 J	18000 J		7600 J	20 UJ		1.8	0.50 U	5.0 U	5.0 U	5.0 U	260 J	18 J	480 J	0.10 UJ		35 R	7.4 J
MW5	9/28/05	N2			1.0 UJ	10 UJ	19000 J		7600 J	20 UJ													
MW5	9/26/06	N	8.7 J	460 =	1.0 UJ	10 UJ	23000 J		8000 J	20 UJ		1.4 U	0.50 U	5.0 U	5.0 U	5.0 U	290 J	16 J	370	0.10 J		27 J	6.6
MW5	9/20/07	N	9.8	31 J	1.0 UJ	10 UJ	25000		7600	20 UJ		0.74 R	1.0 U	1.0 U	1.0 U	2.0 U	230 J	13	270 J	0.10 U		39 J	4.1 J
MW5	10/22/08	N	11 J	206	2 UJ	10 UJ	10500 J	31400 J	9700 J	20 UJ		1 U	0.5 U	2.0 U	2.0 U	5.0 U	267 J	8.68	357 J	0.05 U		24.8	30.5
MW5	10/7/09	N	17 J	33.3 J	2 UJ	10 UJ	6000 J	33600 J	11800 J	20 UJ		0.998 UJ	0.1 UJ	0.4 UJ	0.4 UJ	0.14 J	256 J	8.59 J	344.62 J	0.05 UJ		55.1 J	3.5 J
MW5	10/6/10	N	4.1	39.8 J	3.36 J	8 U	3030	43600	12600	20 U		1.0 U	0.1 U	0.4 U	0.4 U	1 U	274	11.4 J	437	0.10 UJ		79.4	4.2
MW5	10/19/11	N	38 J	0.97	1.0 J	2 U	2600	40000 B	11000	20 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	260	15	397.00	0.10 U		150	2.6
MW5	10/17/12	N	17	0.59 J	0.57 J	10 U	2700	29000 =	7000	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	180	11	302	0.10 U H		130 =	1.8
MW5	10/10/13	N	19	0.60	0.39 J	10.0 UJ	2200 J	20000 J	4700 J	20 UJ		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	150 B	9.2 J		0.10 UJ		140 J	1.8
MW5	9/24/14	FD	10	12	0.42 J	2.0 U	1200		2200	20 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	97	4.3	150	0.12		48	1.0 U
MW5	9/24/14	N	12	12	0.41 J	2.0 U	1200		2200	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	100	4.3	150	0.14		48	2.3
MW5	10/14/15	N	1.8	64	5.0 U	2.0 U	954		2230	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	98.7	12.7	159	0.053 J		48.9	3.3
MW5	4/7/16	FD	4.9	16	5.0 U	2.0 U	940		2070	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	71.3	12.5	113	0.96		37.6	4.5
MW5	4/7/16	N	4.3	17	5.0 U	2.0 U	931		1990	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	72.0	12.7	113	0.97		38.0	4.6
MW5	10/29/18	N	15	5600	0.71 J	1.5 J	7920		6730	20.0 U		23	0.50 U	0.57	0.53	6.5	249	28.5	292	0.084 J		28.5	39.6
MW5	4/25/19	N	96	5100	0.79 J	0.97 J	10200		6250	6.9 U		24	0.15 U	0.47 J	0.52	5.8	262	27.0	305	0.068 U		27.7 B	33.3 F1
MW6	4/19/16	FD		0.050 J	5.0 U	2.0 U	100 U		3.2 J	20.0 U		0.21 U	0.50 U	1.0 U	1.0 U	2.0 U							
MW6	4/19/16	N	0.78	170	5.0 U	5.2	282		5.6	9.0 J		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	183	35.0	245	10.2		26.3	6.2
MW6S	10/9/97	N	10 U	1 U	5.1	473	20 U		4720	258			0.1 U	1 U	1 U	1 U	62	72 J		4.5		0.9	1.6
MW6S	10/9/97	N2		1 U	2 U	2 U				2.2			0.1 U	1 U	1 U	1 U							
MW6S	4/26/01	N	0.12 U	2.5	15	202	82800		1950	131		5.4 U	0.1 U	1 U	1 U	1 U	148	14	285	0.87		12	5.29
MW6S	4/26/01	N2	0.12 U		0.26	25 U	25 U		347	25 U													
MW6S	9/12/01	N	10 U	1.1	7.4	190	42000		1900	110		0.24 U	0.44 U	0.5 U	0.4 U	1.2 U	160	12	290	1.1		16	6.3
MW6S	9/12/01	N2			0.58 J	3.1 J	35 U		800	5 J													
MW6S	8/7/02	N	0.27	88 J	5.5	69.1	7570		2210	18.3 J		5 U	1 U	5 U	5 U	5 U	270	17	4 U	0.15 U		18	5.8
MW6S	8/7/02	N2			2.7	9.9 J	3330		1790	9.7 J													
MW6S	9/25/03	N	130	0.33	1 J	22	5900		1190	10 J		1 U	0.25 U	2.5 U	2.5 U	2.5 U	282	23.9	104	1.01		17	8.2
MW6S	9/25/03	N2	130		1 J	9	1100		961	10 U													

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L
MW6S	9/27/06	N	3.5 J	0.21	1.0 U	2.6 J	50 U		590	20 U		1.1 U	0.50 U	5.0 U	5.0 U	5.0 U	320 J	18	350	3.9 =		18	4.1
MW6S	9/20/07	FD	2.7	0.14 J	1.0 UJ	10 UJ	390		190	7.0 J		0.93 R	1.0 U	1.0 U	1.0 U	2.0 U	230 J	29	330 J	4.7		36 J	5.2 J
MW6S	9/20/07	N	3.0	0.099 J	1.0 UJ	10 UJ	510		200	7.0 J		0.93 R	1.0 U	1.0 U	1.0 U	2.0 U	230 J	30	320 J	4.7		34 J	4.7 J
MW6S	10/23/08	N	2.0 UJ	2.65	2 UJ	4.4 J	438 J	6260 J	65.3 J	20 UJ		1 U	0.5 U	2.0 U	2.0 U	5.0 U	4.98 J	28.3	90 J	7.11 J		11	8.3
MW6S	10/7/10	N	1.3 U	0.1 UJ	2 U	5 J	531	4780	19.7 J	20 U		1.0 UJ	0.5 UJ	2 U	2 U	5 U	11 UB	21.3	56.9	6.94 J		11 J	6.8
MW6S	10/19/11	N	0.50 U	0.10 U	2.0 U	3.7 J	50 U	4400 B	14	10 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	15	17	45.60	5.3		9.8	1.0 U
MW6S	10/17/12	N	0.50 U	0.10 U	0.54 J	10 U	50 U	4600 =	3.9 J	20 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	18	16	51.4	5.5 H		11 J	3.2
MW6S	10/9/13	N	0.50 U	0.52 J	2.0 UJ	10.0 UJ	1500 J	6000 J	32 J	20 UJ		0.21 U	0.50 U	1.0 U	1.0 U	2.0 U *	5.0 UJ	29		9.0 J		9.5	8.0 J
MW6S	10/9/13	N2																		8.9 J			
MW6S	9/24/14	N	0.082 J	0.27	1.3 J	27	6000		110	41		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	22	9.3	100	3.6		7.3	1.0 U
MW6S	10/14/15	N	0.50 U	0.17	5.0 U	2.5	16.8 J		1.4 J	20.0 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	12.5	10.8	76.4	3.6		6.7	3.4
MW6S	4/19/16	N	0.50 U	0.20	0.51 J	4.7	831		15.4	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	42.0	7.4	70.6	4.8		6.3	18.2
MW6S	7/25/16	N	0.50 U	0.19	5.0 U	3.4	118		6.1	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	49.4	13.8	86.0	7.0		8.0	3.7
MW6S	10/13/16	N	0.50 U	0.20	0.71 J	19.7	2290		52.7	11.7 J		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	126	14.5	152	6.9		8.1	4.2
MW6S	1/23/17	N	0.080	0.059 J	0.35	2.8	5.3		6.0	6.2		0.063	0.28	0.26	0.23	0.24	188	6.6	212	3.1		6.0	3.8
MW6S	4/24/17	N	0.089 J	0.13	5.0 U	3.3	8.3 J		7.4	20.0 U		0.23 U	0.50 U	1.0 U	1.0 U	2.0 U	198	6.5	268	3.8		8.1	2.3
MW6S	10/5/17	N	0.50 U	0.32	1.0 U	5.5	100 U		4.0	7.2 J		0.86 U	0.50 U	0.50 U	0.50 U	1.0 U	225	18.2	283	6.6		8.0	1.8
MW6S	6/1/18	N	1.0 U	0.11 U	0.37 J	3.1	58.6 J		4.7	20.0 U		0.80 U	0.50 U	0.50 U	0.50 U	1.0 U	250	14.1	320	11.6		11.9	2.3
MW6S	10/19/18	N	1.0 U	0.097 U	0.28 J	15.7	100 U		5.2	12.4 J		0.76 U	0.50 U	0.50 U	0.50 U	0.24 J	249	13.1	306	5.1		8.0	3.2
MW6S	4/25/19	N	0.17 U	0.095 U	0.27 J	2.6	121		4.8	10.3 J		0.23 U	0.15 U	0.18 U	0.15 U	0.22 U	275	12.1	336	10		13.2 B	2.0
MW7	10/14/97	N	10 U	1 U	2 U	6.2	622		13.4	11.4			0.1 U	1 U	1 U	1 U	350	7.6		4.9		6	1.6
MW7	10/14/97	N2		1 U	2 U	2 U				3.5			0.1 U	1 U	1 U	1 U							
MW7	4/4/00	FD		0.5 U								10 U											
MW7	4/4/00	N		0.5 U								10 U											
MW7	4/25/01	N	4.65	0.1 U	1 U	25 U	352		5.4	25 U		5.2 U	0.1 U	1 U	1 U	1 U	352	8.36	388	3.63		6.54	2.8
MW7	4/25/01	N2	4.65		1 U	25 U	154		6.6	25 U		5.2 U								3.63 =			
MW7	9/11/01	N	12	0.083 J	0.4 J	2.2 U	560		6.4	3.7 U		0.24 U	0.44 U	0.5 U	0.4 U	1.2 U	340	23	410	3		10	2
MW7	9/11/01	N2	10 U	0.13 J	0.29 U	2.2 U	230		4.4	5.2 J		0.24 U	0.44 U	0.5 U	0.4 U	1.2 U	350	24	400	3		10	1.8
MW7	9/11/01	N3			0.47 J	2.2 U	560		5.7	4.8 J													
MW7	9/11/01	N4			0.29 U	2.2 U	230		4.6	3.9 J													

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Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L
MW7	8/7/02	N	0.01 U	0.03 J	1.5 J	0.3 U	730		6.5 J	2.8 J		5 U	1 U	5 U	5 U	5 U	390	21	450	0.15 U		10	1.5
MW7	8/7/02	N2			1.4 U	0.3 U	300		4 J	0.98 U													
MW7	9/24/03	N	4.9	0.044 J	1 U	1 U	280 J		6 J	10 UJ		0.96 U	0.25 U	2.5 U	2.5 U	2.5 U	346	12.2	133.3	2.97		2 U	1.2
MW7	9/24/03	N2	4.9		1 U	1 U	90 J		5 U	10 UJ													
MW7	9/22/04	N	10.0 UJ	9.18 E	1.00 UJ	1.09 J	1640 J		9.86 J	4.06 J		5.00 U	0.500 U	5.00 U	5.00 U	5.00 U	300 J	7.2 J	1560 J	3.4 J		6.8 R	1.98 R
MW7	9/22/04	N2		5.75	0.108 J	0.847 J	25.0 UJ		9.75 J	2.96 J													
MW7	9/27/05	N	2.0 UJ	0.12 U	1.0 U	10 U	1300		18	20 U		0.91 UJ	0.50 U	5.0 U	5.0 U	5.0 U	260 J	18 J	450	1.8 J		130 J	0.96 J
MW7	9/27/05	N2			1.0 U	10 U	880		16 J	20 U													
MW7	9/26/06	N	4.3 J	0.087 J	1.0 U	10 U	50 U		68 J	20 U		0.92 U	0.50 U	5.0 U	5.0 U	5.0 U	280 J	15	390	1.8 =		110 =	2.4
MW7	9/20/07	N	3.7	0.093 U	1.0 UJ	10 UJ	260		22	5.9 J		0.93 R	1.0 U	1.0 U	1.0 U	2.0 U	270 J	16	370 J	1.5		170 J	1.1 J
MW7	10/22/08	N	110 J	0.1 U	2 UJ	4 J	926 J	37700 J	41.6 J	20 UJ		1 U	0.5 U	2.0 U	2.0 U	5 U	277 J	14.1	535 J	1.54 J		98.9	4.16
MW7	10/22/08	N2																					4.41
MW7	10/7/09	N	2.4 J	0.403 J	2 UJ	10 UJ	687 J	32600 J	109 J	20 UJ		0.999 UJ	0.1 UJ	0.4 UJ	0.4 UJ	0.14 J	245 J	12.2 J	396.43 J	1.91 J		152 J	14.5 J
MW7	10/6/10	N	28	0.1 U	2 U	8 U	989	38900	63.2	20 U		1.0 U	0.1 U	0.4 U	0.4 U	1 U	226	13.8 J	482	2.24 J		168	10.4
MW7	10/19/11	N	15	0.098 U	0.48 J	2 U	81	21000 B	21	10 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	230	12	249.00	1.9 J		92	1.5 J
MW7	10/17/12	N	2.2	0.096 U	2.0 U	10 U	230	21000 =	22	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	210	11	254	1.5 H		120 =	0.97 J
MW7	10/9/13	N	2.2 B	0.094 U	0.34 J	10.0 UJ	10000 J	21000 J	74 J	20 UJ		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U *	200 J	12		1.8 J		120	0.75 J
MW7	10/9/13	N2																		1.8 J			
MW7	9/23/14	N	15	0.034 J	0.28 J	2.0 U	260		33	30		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	200	9.0	240	1.9		110	0.96 J
MW7	10/12/15	N	6.5	0.094 U	0.88 J	1.6 J	100 U		423	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	228	8.3	229	1.5		46.2	0.85 J
MW7	4/6/16	N	13	0.098 U	5.0 U	1.9 J	5270		117	36.2		0.21 U	0.50 U	1.0 U	1.0 U	2.0 U	212	10.3	237	1.7		25.7	0.58 J
MW8	10/14/97	N	36.5	1 U	2 U	2 U	148		17.8	7.4			0.1 U	1 U	1 U	1 U	170	4.2		1.4		4.5	2.3
MW8	10/14/97	N2		1 U	2 J	2 U				4.6			0.1 U	1 U	1 U	1 U							
MW8	4/5/00	N		0.5 U								10 U											
MW8	4/25/01	N	11.6	0.2	0.99	25 U	829		32	25 U		5 U	0.1 U	1 U	1 U	1 U	154	3.25	181	1.52		7.47	1.46
MW8	4/25/01	N2	11.6		0.75	25 U	25 U		27	25 U													
MW8	4/25/01	N3			0.57	25 U	25 U		22	25 U													
MW8	9/11/01	N	10 U	0.062 J	1	2.2 U	70 J		18	4.3 J		0.24 U	0.44 U	0.5 U	0.4 U	1.2 U	150	3.8	170	1.5		7.6 U	1 J
MW8	9/11/01	N2			1.2	2.2 U	350		19	3.7 U													
MW8	8/8/02	N	0.01 U	0.04 U	1.4 U	0.3 U	98		6.4 J	12 J		5 U	1 U	5 U	5 U	5 U	180	4.2	310	0.15 U		6	1.1

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L
MW8	8/8/02	N2			1.8 J	0.27 U	11 J		5.3 J	2.3 J													
MW8	9/25/03	N	8.9	0.047 J	1 U	1 U	140		8 J	10 U		0.95 U	0.25 U	2.5 U	2.5 U	2.5 U	182	11	69.57	2.61		2 U	1.7
MW8	9/25/03	N2	9.2	0.11 U	1 U	1 U	50 U		8 J	10 U		1 U	0.25 U	2.5 U	2.5 U	2.5 U	184	11	69.44	2.6		2 U	2.3
MW8	9/25/03	N3	9.2		1 U	1 U	240		8 J	10 U													
MW8	9/25/03	N4			1 U	1 U	50 U		6 J	10 U													
MW8	9/23/04	N	3.75 J	1.94 =	0.127 J	0.465 J	256		15.1	2.25 J		5.00 U	0.500 U	5.00 U	5.00 U	5.00 U	200	15	1160	2.4 J		5.8 J	1.40
MW8	9/23/04	N2			0.539 J	0.660 J	11.0 J		12.0 J	2.09 J													
MW8	9/28/05	FD	2.0 U	0.12 U	1.0 UJ	2.3 J	4500 J		56 J	20 UJ		0.93 U	0.50 U	5.0 U	5.0 U	5.0 U	160 J	19 J	200 J	2.0 J		19 R	1.0 J
MW8	9/28/05	FD2			1.0 UJ	10 UJ	120 J		13 J	20 UJ													
MW8	9/28/05	N	2.6	0.031 J	1.0 UJ	3.8 J	4700 J		63 J	20 UJ		0.93 U	0.50 U	5.0 U	5.0 U	5.0 U	160 J	20 J	240 J	2.0 J		19 R	1.2 J
MW8	9/28/05	N2			1.0 UJ	10 UJ	130 J		16 J	20 UJ													
MW8	9/20/07	N	2.0 UJ	0.093 U	0.61 J	10 UJ	210		13 J	20 UJ		0.93 U	1.0 U	1.0 U	1.0 U	2.0 U	180	21	260 J	1.5		76 J	1.1 J
MW8	10/22/08	N	0.78 J	0.1 U	2 UJ	10 UJ	707 J	40400 J	13.1 J	20 UJ		1 U	0.5 U	2.0 U	2.0 U	5 U	178 J	24.3	496 J	1.92 J		73.1	16.1
MW8	4/11/16	N	1.5	0.016 J	0.60 J	2.0 U	197		10.9	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	174	18.0	421	1.3		201	0.26 J
MW9	10/8/97	N	10 U	1 U	2 U	4.2 U	20 U		19.7	5.6			0.1 U	1 U	1 U	1 U	60	45		4.2		3.4	6.5
MW9	10/8/97	N2		1 U									0.1 U	1 U	1 U	1 U							
MW9	4/5/00	N		0.6 =								10 U											
MW9	4/23/01	N	0.12 U	0.12	0.38	25 U	470		46	25 U		5.3 U	0.1 U	1 U	1 U	1 U	60	3.22	59	2.46 =		27	9.94
MW9	4/23/01	N2	0.12 U																	2.46			
MW9	4/24/01	N			0.28	25 U	25 U		34	25 U													
MW9	9/12/01	N	10 U	0.76	0.43 J	6.1 J	300		27	11 J		0.24 U	0.44 U	0.5 U	0.4 U	1.2 U	62	6.5	64	3.3		6.8 U	5.1
MW9	9/12/01	N2			0.34 J	2.2 U	110		16	6.6 J													
MW9	8/6/02	N	0.01 U	0.54	1.4 U	1.6 J	200		14 J	6.4 J		5 U	1 U	5 U	5 U	5 U	64	11	95	0.15 U		22	8.4
MW9	8/6/02	N2			1.4 U	0.3 U	11 U		6.3 J	9.6 J													
MW9	9/25/03	N	0.5 U	2.3	1 J	20	7400		229	20 J		1 U	0.25 U	2.5 U	2.5 U	2.5 U	59	4.4	32.83	2.36		24	6.5
MW9	9/25/03	N2	0.5 U		1 U	1 U	240		16	10 U													
MW9	9/22/04	N	10.0 UJ	2.92	0.134 J	2.07 J	231 J		16.5 J	4.60 J		5.00 U	0.500 U	5.00 U	5.00 U	5.00 U	58 J	3.2 J	776 J	1.8 J		26 R	6.48 R
MW9	9/22/04	N2			0.265 J	2.88 J	125 U		8.51 J	14.9 J													
MW9	9/27/05	N	2.0 UJ		1.0 UJ	10 U	50 U		6.3 J	20 U		0.93 U	0.50 U	5.0 U	5.0 U	5.0 U	55 J	2.6 J	70	1.9 J		20 J	2.0
MW9	9/27/05	N2			1.0 UJ	10 U	50 U		5.4 J	20 U													

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L
MW9	10/18/05	N		0.57																			
MW9	9/21/07	N	2.0 U	0.37 J	1.0 UJ	5.9 J	100 UJ		4.1 J	20 UJ		0.97 R	1.0 U	1.0 U	1.0 U	2.0 U	58 J	2.6	86 J	3.8		15 J	3.3 J
MW9	10/22/08	N	2.0 UJ	0.1 U	2 UJ	6 J	166 J	11600 J	10 UJ	20 UJ		1 U	0.5 U	2.0 U	2.0 U	5 U	55 J	3.44	113 J	2.48 J		14.9	11.2
MW9	5/18/10	N	1.3 U	0.073 J	2 UJ	10 UJ	120. UJ	6230. J	7.1 J	20 UJ		1.0 U	0.5 U	5 U	5 U	5 U	63 UB	2.63	67.9	2.42 J		11	25.7 UB
MW9	10/6/10	N	1.3 U	0.1 U	2 U	8 U	109 J	8540	16.7 U	20 U		1.0 U	0.1 U	0.4 U	0.4 U	1 U	27	3.3 J	88.1	3.35		14 J	7.6
MW9	10/19/11	N	0.50 U	0.098 U	2.0 U	3.5 J+	50 U	8400 B	2.9 J	10 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	69	1.0 U	82.00	3.1		8.9	1.0 U
MW9	10/16/12	N	0.50 U	0.39	0.91 J	10 U	50 U	8400 =	10 U	20 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	63	2.8 J	82	5.9 J		10 J	3.8
MW9	10/9/13	N	0.50 U	0.41 J	2.0 UJ	10.0 UJ	50 UJ	6200 J	10 UJ	20 UJ		0.21 U	0.50 U	1.0 U	1.0 U	2.0 U *	47 J	1.2		3.8 J		12	1.6 J
MW9	10/9/13	N2																		3.8 J			
MW9	9/24/14	N	0.50 U	1.6	5.0 U	2.0 U	100 U		5.0 U	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	14	1.1	41	2.4		10	2.5
MW9	10/13/15	N	0.50 U	0.17	5.0 U	1.3 J	21.1 J		5.0 U	20.0 U		0.21 U	0.50 U	1.0 U	1.0 U	2.0 U	31.0	0.70 J	40.2	1.5		7.4	4.4
MW9	4/13/16	N	0.50 U	0.28	5.0 U	1.4 J	33.6 J		1.5 J	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	26.6	0.99 J	37.2	1.4		7.3	30.2
MW10	10/15/97	N	13.5	8200 J	1.4	9.1	2190		2510 J	4.4			0.2	2	3	17	340	35		4.9		13	20
MW10	10/15/97	N2		8200 E	2 J	2.8 U				9.2			0.2	2	3	17							
MW10	4/6/00	N		9530 J								60 =											
MW10	4/6/00	N2		12900 =								5410 U											
MW10	4/26/01	N	2.9	22800	3.1	98	25200		2560	44		5.2 U	0.4	3.3	5.3	27	472	48	505	0.18		22	26
MW10	4/26/01	N2	2.9		2.4	5.9	5650		2380	25 U													
MW10	9/12/01	N	10 U	21000	3.9	3.9 J	2400		3200	9.5 J		130	0.44 U	6.3	10	55	540 J	61	630	0.13 J		23	64
MW10	9/12/01	N2			4.5	40	20000		3300	13													
MW10	8/7/02	N	0.011	22000 J	9.5	48.2	24400		2730	2.8 J		120	1 U	7	11	54	400	56	480	0.15 U		20	110
MW10	8/7/02	N2			7.3	10.1 J	10700		2540	6.1 J													
MW10	10/1/03	N	0.62	9000	2 J	30	5470		1960	10 J		18	0.25 U	2.5 U	2.5 U	13.5	287	22	93.58	0.05 U		3 J	25.3
MW10	10/1/03	N2	0.62		2 J	8	2590		1850	10 U													
MW10	9/23/04	N	10.0 U	38000 =	2.66	28.3	3550		2550	5.58 J		173 E	0.296 J	5.58 J	8.09 J	47.1	390	38	1640	0.0018 J		18 =	54.1
MW10	9/23/04	N2			3.01	12.4 J	24.1 J		1810	4.23 J		160											
MW10	9/27/06	N	2.0 UJ	23000 J	1.0 U	4.3 J	120		2600	20 U		50	0.50 U	2.0 J	1.7 J	16	450 J	14	440	0.10 U		24 =	21
MW10	9/21/07	N	2.4 J	1700 J	0.88 J	2.3 J	550		2700	20 UJ		12 J	1.0 U	1.3	1.0 U	7.2	380 J	20	420 J	0.68		25 J	12 J
MW10	10/23/08	FD	7 J	1720	2 UJ	10 UJ	1080	48600 J	2190 J	20 UJ		0.82 J	0.5 U	2.0 U	2.0 U	5.0 U	310 J	12.4	500 J	0.05 J		29.5	13.1
MW10	10/23/08	N	6 J	1630	2 UJ	10 UJ	1110 J	40000 J	2210 J	20 UJ		0.92 J	0.5 U	2.0 U	2.0 U	5.0 U	305 J	12.4	432 J	0.05 U		28.1	39.2

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L
MW10	10/7/09	FD	23 J	214 J	2 UJ	10 UJ	704 J	36900 J	2310 J	20 UJ		0.996 UJ	0.1 UJ	0.094 J	0.083 J	0.49 J	282 J	9.84 J	347.47 J	0.05 UJ		59 J	2.13 J
MW10	10/7/09	N	17 J	220 J	2 UJ	8.2 J	1210 J	38800 J	2230 J	20 UJ		0.998 UJ	0.1 UJ	0.072 J	0.073 J	0.41 J	280 J	9.82 J	369.28 J	0.05 UJ		58.7 J	4.68 J
MW10	10/7/10	FD	2.3	77.1 J	2 U	8 U	396	37200	1820	20 U		1.0 UJ	0.1 U	0.4 U	0.074 J	1 U	272	7.3 J	346	0.10 UJ		47.7 J	1.8
MW10	10/7/10	N	1.8	92.4 J	2 U	8 U	488	41600	1780	20 U		1.0 UJ	0.1 U	0.4 U	0.051 J	1 U	308	7.2 J	390	0.10 UJ		48.2 J	2.2
MW10	10/20/11	FD	11 J	21	0.60 J	2 U	180	33000 B	1700	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	260	8.7	303.00	0.22		54	2.1
MW10	10/20/11	N	8.8 J	21	2.0 U	2 U	180	33000 B	1700	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	260	8.4	303.00	0.21		53	2.1
MW10	10/17/12	FD	12	14	0.50 J	10 U	180	31000 =	1600	20 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	230	8.0	292	0.067 J		69 J	1.7
MW10	10/17/12	N	12	8.7	0.55 J	10 U	190	32000 =	1600	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	240	7.8	304	0.075 J		68 J	1.7
MW10	10/10/13	FD	140 J	16	0.19 J	10.0 UJ	230 J	31000 J	1600 J	20 UJ		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	230 B	7.9		0.39 J		94	1.7
MW10	10/10/13	N	27 J	17	0.19 J	10.0 UJ	260 J	32000 J	1700 J	20 UJ		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	220 B	7.8		0.41 J		93	1.4
MW10	9/25/14	N	8.1	37	0.21 J	2.0 U	250		1300	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	180	6.1	270	0.10		77	1.0 U
MW10	10/15/15	N	8.2	150	5.0 U	1.0 J	188		861	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	178	6.5	244	0.10 U		71.8	1.8
MW10	4/7/16	N	290	1900	5.0 U	2.0 U	1350		719	20.0 U		4.8	0.50 U	0.46 J	0.53 J	2.9	162	9.8	189	0.10 U		46.1	8.6
MW10	7/25/16	N	8.6	1700	5.0 U	3.7	826		744	20.0 U		5.2	0.50 U	0.66 J	0.64 J	5.2	160	12.3	188	0.10 U		31.7	11.6
MW10	10/13/16	N	5.5	7300	0.46 J	1.7 J	434		777	20.0 U		6.2	0.50 U	0.79 J	0.79 J	5.7	156	14.6	186	0.10 U		24.3	11.1
MW10	1/24/17	N	8.5	6200	0.46 J	1.9 J	539		831	6.2		10	0.28	0.96 J	0.91 J	8.1	158	17.4	220	0.035		24.0	19.4
MW10	4/24/17	N	3.7	7600	0.76 J	5.9	756		897	20.0 U		20	0.50 U	1.6	1.8	14	142	19.1	234	0.10 U		25.0	27.9
MW10	10/5/17	FD	15	5000	0.53 J	3.7	609		898	20.0 U		19	0.50 U	1.3	1.5	9.5	157	25.9	182	0.081 J		20.1	32.0
MW10	10/5/17	N	13	4800	0.53 J	3.0	626		903	20.0 U		20	0.50 U	1.2	1.5	9.4	157	26.2	184	0.083 J		20.2	30.8
MW10	6/1/18	N	23	2500	1.0	3.6	796		951	20.0 U		24	0.50 U	1.4	1.5	10	470	27.6	197	0.084 J		19.9	2.1
MW10	10/19/18	N	40	2500	1.1	13.6	1310		907	20.0 U		21	0.50 U	1.2	1.1	8.6	146	19.9	182	0.20 U		15.3	26.2
MW10	4/22/19	N	550	1600 H	1.1 B	2.2 B	769		740 B	6.9 U		9.3	0.15 U	0.80	0.90	6.0	130	24.8	173	0.068 U		12.9	23.3
MW10S	10/15/97	N	10 U	30000 E	2 U	28.5 J	45.4 J		10700 J	11.6			0.4	0.9 J	1	8	260	38		0.1 U		23	49.7
MW10S	10/15/97	N2		30000 J	2 J	10.9 J				8.4			0.4	0.9 J	1	8							
MW10S	4/7/00	N		56100 J								512 =											
MW10S	4/7/00	N2		34800 =								393 F											
MW10S	12/5/00	N	0.57	3810 B	0.74 J	13 J	610		6900	25 U		152	0.1 U	5.9	2.9	70	31	15	570	1		11	300
MW10S	12/5/00	N2	0.57	3810 J	9.36	160	11000		7100	35		152							570				
MW10S	4/25/01	N	0.55	49000	18	409	131000		7990	216		306	1 U	3.5	10 U	44	142	11	425	1.49 =		8.64	503
MW10S	4/25/01	N2	0.55		2.3	46	11300		6030	45			10 U	100 U	100 U	100 U				1.49			

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Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L
MW10S	9/12/01	N	10 U	82000	5.1	170	35000		8600	100		75	0.44 U	0.94 J	0.41 J	15	270 J	10	260	4.7		13	19
MW10S	9/12/01	N2			0.29 U	3.2 J	48 J		7600	3.7 U													
MW10S	8/7/02	N	0.01 U	390 J	3.9	53.3	9490		7560	22.4 J		5 U	1 U	1 J	5 U	10	170	10	4 U	0.11 J		14	10
MW10S	8/7/02	N2			3.1	2.3 J	67.3		7070	0.98 U													
MW10S	9/25/03	N	0.5 U	2200	1 U	7	1760		5910	10 U		1 U	0.25 U	2.5 U	2.5 U	3.4 J	135	6.7	52.05	3.41		2 J	6.6
MW10S	9/25/03	N2	0.5 U		1 U	1 J	50 U		5900	10 U													
MW10S	9/22/04	N	10.0 UJ	9490	1.49 J	73.1 J	14500 J		5460 J	49.7 J		51.9	5.00 U	50.0 U	50.0 U	5.42 J	120 J	24 J	1220 J	3.6 J		15 R	7.54 R
MW10S	9/22/04	N2			0.190 J	1.79 J	22.7 J		3740 J	6.07 J													
MW10S	9/29/05	N	2.0 U	0.11 U	1.0 UJ	14 J	3600 J		4000 J	8.0 J		5.6	0.50 U	5.0 U	5.0 U	0.99 J	130 J	16 J	300 J	2.0 J		120 R	3.0 J
MW10S	9/29/05	N2			1.0 UJ	10 UJ	50 UJ		3900 J	20 UJ													
MW10S	9/26/06	N	2.0 UJ	2700 J	1.0 U	2.2 J	50 U		2500	20 U		1.2	0.50 U	5.0 U	5.0 U	2.6 J	180 J	8.6	310	1.2		79 =	6.5
MW10S	9/21/07	N	2.0 U	24 J	1.0 UJ	10 UJ	100 UJ		1300	20 UJ		2.4 R	1.0 U	1.0 U	1.0 U	2.0 U	170 J	8.7	240 J	1.3		69 J	2.9 J
MW10S	10/24/08	N	2.0 UJ									3.36	0.5 U	2.0 U	2.0 U	5.0 U							
MW10S	4/18/16	N	0.50 U	3500	0.59 J	2.6	190		388	20.0 U		4.7	0.50 U	1.0 U	1.0 U	2.7	102	7.8	92.1	0.10 U		9.1	9.5
MW10S	7/25/16	N	0.50 U	5200	0.68 J	9.2	183		315	20.0 U		13	0.50 U	0.39 J	1.0 U	5.6	107	7.7	124	0.10 U		11.8	15.6
MW10S	10/13/16	N	0.12 J	6600	0.44 J	4.6	124		399	20.0 U		9.6	0.50 U	0.30 J	1.0 U	4.6	83.7	6.1	100	0.10 U		11.9	12.3
MW10S	1/24/17	N	0.12 J	9800	0.80 J	2.5	254		624	6.2		10	0.28	0.40 J	0.23	5.7	164	12.3	220	0.035		17.3	23.4
MW10S	4/24/17	FD	0.36 J	3300	0.65 J	3.3	406		1380	20.0 U		10	0.50 U	0.40 J	1.0 U	5.8	195	25.7	350	0.082 J		23.1	32.1
MW10S	4/24/17	N	0.35 J	4300	0.74 J	3.3	394		1340	20.0 U		11	0.50 U	0.40 J	1.0 U	5.9	195	25.6	332	0.10 U		23.1	33.0
MW10S	10/5/17	N	0.29 J	4400	0.50 J	2.9	770		1260	8.1 J		9.9	0.50 U	0.46 J	0.50 U	6.0	314	41.1	378	0.13 J		26.7	29.8
MW10S	6/1/18	N	1.0 U	1500	0.91 J	5.2	1010		2880	20.0 U		11	0.50 U	0.42 J	0.22 J	5.2	322	69.8	456	0.083 J		39.7	5.5
MW10S	10/19/18	N	1.0 U	1900	0.51 J	8.2	716		2030	20.0 U		5.9 J	0.50 U	0.84	0.34 J	10	311	32.9	388	0.76		23.5	26.1
MW10S	4/23/19	FD	0.17 U	1500	2.1 B	6.0 B	886		3470 B	6.9 U		10	0.15 U	0.36 J	0.28 J	5.9	313	63.6	464	0.073 J		42.5	56.3
MW10S	4/23/19	N	0.17 U	1400 ^	0.67 JB	8.8 B	861		3450 B	6.9 U		10	0.15 U	0.38 J	0.30 J	6.1	312	64.8	471	0.074 J		43.1	60.9
MW11	10/15/97	N	10 U	1 U	2 U	2 U	10 U		2 U	5.3			0.3	1 JB	0.2 J	0.5 J	190	7.5		5		12	1.3
MW11	10/15/97	N2		1 U	2 J	4.2 U				10.3			0.3	1 J	0.2 J	0.5 J							
MW11	4/4/00	N		0.6 U								11 U											
MW11	4/24/01	N	0.1 U	0.1 U	1.4	25 U	58		15 U	25		5.3 U	0.1 U	1 U	1 U	1 U	185	6.16	231	3.59 =		4.57	7.9
MW11	4/24/01	N2	0.11 U	0.11 U	1.2	25 U	25 U		15 U	20		5.3 U	0.1 U	1 U	1 U	1 U	225	6.25	231	3.59		3.48	4.67
MW11	4/24/01	N3	0.11 U		1.4	25 U	151		15 U	126		5.4 U								3.74 =			

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L
MW11	4/24/01	N4			1.3	25 U	25 U		15 U	25 U		5.4 U								3.74			
MW11	9/10/01	N	10 U	0.091 J	1.4	2.9 J	66 J		1.9	9.1 J		0.24 U	0.44 U	0.5 U	0.4 U	1.2 U	190	8	220	3.1		7.4 U	4.2
MW11	9/10/01	N2			1.1	2.2 U	35 U		0.45 J	3.7 U													
MW11	8/6/02	N	0.01 U	0.04 U	4.7	0.83 J	46		2.3 J	6.4 J		5 U	1 U	5 U	5 U	5 U	210	7.8	230	0.15 U		7.6	18
MW11	8/6/02	N2	0.01 U		1.5 J	0.3 U	11.2 U		1.2 J	8.5 J													
MW11	9/23/03	N	0.5 U	0.11 U	1 U	2	160		5 U	10 U		0.98 U	0.25 U	2.5 U	2.5 U	2.5 U	187	6.7	72.14	2.94		2 U	2.3
MW11	9/23/03	N2	0.5 U		1 U	1 U	50 U		5 U	10 U													
MW11	9/21/04	N	10.0 U	0.0656 J	0.885 J	0.620 J	15.6 J		2.81 J	6.36 J		1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	210	9.0 =	1020	3.0 J		6.2 J	14.1
MW11	9/21/04	N2			0.948 J	0.366 J	6.05 J		1.40 J	4.05 J													
MW11	9/29/05	N	2.0 U	740 =	1.0 UJ	10 UJ	50 UJ		1.6 J	20 UJ		0.95 U	0.50 U	5.0 U	5.0 U	5.0 U	200 J	14 J	280 J	2.4 J		9.7 R	1.2 J
MW11	9/29/05	N2			1.0 UJ	10 UJ	50 UJ		3.0 J	20 UJ													
MW11	9/27/06	N	2.0 UJ	0.11 U	1.0 UJ	10 UJ	50 UJ		10 UJ	20 UJ		0.93 U	0.50 U	5.0 U	5.0 U	5.0 U	220 J	16 J	240	0.53 J		8.8 J	2.3
MW11	9/20/07	N	2.0 UJ	0.093 U	1.2 J	10 UJ	100 UJ		10 UJ	20 UJ		0.93 U	1.0 U	1.0 U	1.0 U	2.0 U	220	20	260 J	2.4		19 J	1.2 J
MW11	10/22/08	N	2.0 UJ	0.27	2 UJ	10 UJ	533	33600 J	10 UJ	20 UJ		1 U	0.5 U	2.0 U	2.0 U	5 U	234 J	19.9	433 J	2.26 J		17.8	20.2
MW11	4/11/16	N	0.50 U	0.10 U	0.75 J	2.0 U	32.1 J		1.9 J	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	229	18.0	470	1.6		200	0.32 J
MW12	10/15/97	N	10 U	13000 E	2 U	5	267		1660	10.6			1	2	3	14	490	50		0.1 U		15	21.7
MW12	10/15/97	N2		13000 J	2 U	6.1 U				16.3			1	2	3	14							
MW12	4/6/00	FD		10600 J								45 =											
MW12	4/6/00	FD2		14100 =								5150 U											
MW12	4/6/00	N		15000 =								5210 U											
MW12	4/6/00	N2		10300 J								47 =											
MW12	4/26/01	N	0.99	1500	1	25 U	151		1540	25 U		44	0.34	2.5	4.1	22	564	48	556	0.43		16	23
MW12	4/26/01	N2	0.99		0.91	25 U	131		1570	25 U													
MW12	9/13/01	N	10 U	18000	1.1	5 J	770		1300	9.3 J		40	0.44 U	2.3 U	3.2 U	20	490	47	470	0.53 U		16	25
MW12	9/13/01	N2			0.95 U	6.8 J	740		1400	12													
MW12	5/14/02	FD		4000																			
MW12	5/14/02	N	10 U	4000	1.4 U	5.3 J	44.5		1670	7.4 J		33	1 U	2 J	2 J	14	490	39	520	0.68 H		16	31
MW12	5/14/02	N2		4300	1.5 J	5 J	11.2 U		1670	9.3 J									520				
MW12	5/14/02	N3			1.4 U	4.9 J	11.2 U		1680	12 J													
MW12	8/8/02	N	0.01 U	6400 J	2.8	5.6 J	123		1620	7.7 J		28	1 U	2 J	2 J	15	460	37	4 U	0.46		15	28

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L
MW12	8/8/02	N2			1.4 U	2.9 J	105		1600	3.3 J													
MW12	4/29/03	N	0.5 U	3000	1 J	5	230		1640	10 U		17	0.5 U	1.3 J	1.3 J	11	470	31	442	0.8		20	19
MW12	4/29/03	N2	0.5 U		1 U	4	25 U		1560	10 U													
MW12	9/23/03	N	0.49 J	10000	1 U	4	70 J		1420	10 U		14	0.25 U	2.5 U	2.5 U	8.6	443	30.8	151.4	1.17		2 U	15.5
MW12	9/23/03	N2	0.49 J		1 U	3	50 U		1530	10 U			0.25 U	2.5 U	2.5 U	9.4	433	29.8	153.3	1.23		2 U	16
MW12	9/23/03	N3	0.64		1 U	4	80 J		1490	10 U													
MW12	9/23/03	N4			1 U	3	50 U		1490	10 U													
MW12	5/4/04	N	1.34 J	11200 J	0.564 J	5.50 R	52.7 R	45900	1730 R	10.8 R		22.9	0.124 J	1.39 J	1.03 J	11.2	446	29 =	443	1.1 J		14 R	20.2 J
MW12	5/4/04	N2			0.600 J	3.95 R	33.6 R		1480 R	8.80 R													
MW12	9/22/04	N	10.0 UJ	9060 J	1.00 UJ	5.09 J	53.9 J		1540 J	9.53 J		28.2 J	0.113 J	1.22 J	0.866 J	9.83	440 J	26 J	1660 J	1.1 J		12 R	18.2 R
MW12	9/22/04	N2		3730 E	0.672 J	3.91 J	22.7 J		1230 J	8.10 J													
MW12	5/10/05	N	2.0 U	8300 J	1.0 U	4.2 J	50 U		1500	8.9 J		6.1	0.50 U	0.93 J	5.0 U	5.6	390 J	23 J	360 J	1.3 J		16 R	9.9 R
MW12	5/10/05	N2			1.0 U	4.8 J	50 U		1400	20 U													
MW12	9/27/05	N	2.0 UJ	8500 J	1.0 UJ	10 U	50 U		1200	7.8 J		3.3	0.50 U	0.85 J	5.0 U	4.9 J	370 J	20 J	410	1.1 J		26 J	9.2
MW12	9/27/05	N2			1.0 UJ	3.9 J	50 U		1300	20 U													
MW12	6/7/06	N	2.0 U	6100 J	1.0 UJ	2.3 J	50 R		1100 J	20 UJ		0.94 U	0.50 U	0.67 J	5.0 U	3.4 J	400 J	21 J	400 J	2.1 J		32 =	7.2 J
MW12	9/26/06	FD	2.0 UJ	2000 =	1.0 UJ	2.5 UJ	46 J		1200 J	20 UJ		1.4	0.50 U	5.0 U	5.0 U	1.7 J	390 J	15 J	370	2.0 J		15 J	10
MW12	9/26/06	N	2.0 UJ	3100 =	1.0 UJ	3.2 J	50 UJ		1200 J	16 J		1.5	0.50 U	5.0 U	5.0 U	2.9 J	390 J	14 J	380	1.9 J		15 J	10
MW12	5/9/07	N	2.0 UJ	3000 J	1.0 UJ	2.1 J	100 UJ		1100	5.2 J		0.99 J	1.0 UJ	1.0 UJ	1.0 UJ	1.9 J	340 =	13	370	2.4		37 J	7.0 UB
MW12	9/19/07	FD	2.0 UJ	1000 J	1.1 J	1.7 J	100 R		790	20 UJ		0.74 J	1.0 U	1.0 U	1.0 U	2.0 U	340	14	350 J	2.2		2.7 J	5.7 J
MW12	9/19/07	N	2.0 UJ	1100 J	0.97 J	10 UJ	100 R		820	20 UJ		0.71 J	1.0 U	1.0 U	1.0 U	2.0 U	340	14	330 J	2.8		29 J	5.6 J
MW12	5/20/08	FD	2.0 UJ	2200 J	0.61 J	3.8	100 UJ		1000	4.2 J		0.95 U	1.0 UJ	1.0 U	1.0 U	1.6 J	360 =	12	380	2.1		25	4.5 J
MW12	5/20/08	N	2.0 UJ	2100 J	0.59 J	3.7	100 UJ		1000	4.6 J		0.96 U	1.0 UJ	1.0 U	1.0 U	1.5 J	360 =	12	350	2.0		25	4.7 J
MW12	10/21/08	FD	2.0 UJ	1300.00 J	2.00 U	3.70 J	936	45000	1120	20 U		1.00 U	0.5 U	2.0 U	2.0 U	5.0 U	322	14.50	465 J	2.95 J		31.70	11.80 J
MW12	10/21/08	N	2.0 UJ	1670.00 J	2 U	4 J	927	50200	1140	11 J		1.00 U	0.5 U	2.0 U	2.0 U	5.0 U	323	13.10	519 J	2.96 J		31.80	11.70 J
MW12	6/2/09	FD	0.8 UJ	489 J	2 U	10 UJ	292 =	40600 =	1020 =	20 U		1.0 UJ	0.5 U	0.31 J	2.0 U	0.96 J	302 J	12.4	429.3758	2.64 J		62.2	1.7 J
MW12	6/2/09	N	0.8 UJ	521 J	2 U	10 UJ	310 =	34400 =	1040 =	20 U		1.0 UJ	0.5 U	0.28 J	2.0 U	0.88 J	294 J	12.3	363.3928	2.65 J		59.9	3.6 J
MW12	10/6/09	FD	0.83 UJ	289 J	2 UJ	4 J	294 J	47600 J	982 J	20 UJ		0.997 UJ	0.1 UJ	0.069 J	0.4 UJ	0.28 J	294 J	13.7 J	468.19 J	1.83 J		84.7 J	3.25 J
MW12	10/6/09	N	0.83 UJ	295 J	2 UJ	4 J	307 J	51600 J	987 J	20 UJ		0.995 UJ	0.1 UJ	0.073 J	0.4 UJ	0.28 J	297 J	13.7 J	509.63 J	1.84 J		85.4 J	3.83 J
MW12	5/19/10	FD	1.3 U	81.9	2 UJ	3.8 J	225. J	41800. J	633. J	8.2 J		1.0 U	0.5 U	5 U	5 U	5 U	308	14.7	432	1.91 J		117	36.1 UB

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L	
MW12	5/19/10	N	1.3 U	70.3	1.9 J	3.5 J	228. J	47700. J	913. J	11. J		1.0 U	0.5 U	5 U	5 U	5 U	308	14.7	496	1.87 J		116	41.8 UB	
MW12	10/5/10	FD	1.3 U	42.9	2 U	8 U	332	47500 R	859	20 U		1.0 U	0.1 U	0.4 U	0.4 U	1 U	316	14.4 J	483	1.72		119	22.9 J	
MW12	10/5/10	N	1.3 U	43.7	2 U	8 U	358	41500 R	834	20 U		1.0 U	0.1 U	0.4 U	0.044	1 U	320	14.4 J	548	1.73		119	53.9 J	
MW12	6/29/11	FD	0.9 U	35.1	2 UJ	10 U	291	56900	765	20 U		0.998 U	0.1 U	0.4 U	0.4 U	1 U	276	13.3 J	524.00	2.11 J		103 J	1.53 J+	
MW12	6/29/11	N	0.9 U	37	1.8 J	10 U	314	62600	744	20 U		0.998 U	0.1 U	0.4 U	0.4 U	1 U	295	14.1 J	555.00	2.28		111	1.28 J+	
MW12	10/18/11	FD	0.50 U	30	1.0 J	2.3 J+	50 U	42000 B	640	10 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	300	14	398.00	2.1		100	2.0	
MW12	10/18/11	N	0.50 U	37	1.1 J	2.3 J+	50 U	42000 B	660	10 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	300	14	398.00	2.1		98	2.0	
MW12	5/22/12	FD	0.50 U	16 J	2.0 U	4.3 J	50 U	43000 =	630	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	310	14 =	419.00	1.8		120	1.6	
MW12	5/22/12	N	0.50 U	21 J	2.0 U	10 U	50 U	44000 =	670	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	300	14 =	431.00	1.8		120	1.5	
MW12	10/16/12	FD	0.50 U	23	1.2 J	10 U	50 U	43000 =	420	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	290	13	424	2.0 J		130 =	1.3	
MW12	10/16/12	N	0.50 U	26	0.98 J	10 U	50 U	42000 =	410	20 U		0.21 U	0.50 U	1.0 U	1.0 U	2.0 U	280	14	413	2.0 J		120 =	1.4	
MW12	5/22/13	FD	0.50 U	24	2.0 U	10 U	50 UJ	39000 B	530 B	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	290	12		2.1 J		150	1.6	
MW12	5/22/13	N	0.50 U	22	2.0 U	10 U	50 U	36000 B	460 B	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	280	12		2.0 J		150	1.6	
MW12	10/8/13	FD	0.50 U	22	0.37 J	10.0 U	50 U	42000 B	710 B	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	260	12		2.1 J		120	1.3	
MW12	10/8/13	N	0.50 U	28	0.37 J	10.0 U	50 U	41000 B	680 B	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	270	12		2.1 J		120	1.4	
MW12	5/14/14	N		19																				
MW12	9/23/14	N	0.076 J	24	0.66 J	2.0 U	100 U		450	20 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	240	11	360	1.7		130	1.0 U	
MW12	4/20/15	N	0.50 U	16	1.1 J	1.4 J	100 U		530	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	220	11	410	1.7		140	0.95 J	
MW12	10/13/15	N	0.080 J	25	5.0 U	2.0 U	362		27.4	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	279	11.7	74.4	1.6		159	1.2	
MW12	4/6/16	N	0.12 J	5.2	0.77 J	1.4 J	60.1 J		148	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	236	10.6	358	1.6		135	0.67 J	
MW12	7/19/16	N	0.50 U	14	0.61 J	1.6 J	100 U		388	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	238	10.1	358	1.4		134	0.96 J	
MW12	10/12/16	N	0.092 J	14	0.50 J	1.6 J	10 J		439	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	239	10.8	340	1.2		124	0.71 J	
MW12	1/18/17	N	0.13 J	18	0.87 J	1.4 J	8.5 J		427	6.2		0.060	0.28	0.26	0.23	0.24	203	10.7	326	1.1		122	0.89 J	
MW12	4/19/17	N	0.13 J	14	0.46 J	1.2 J	10.8 J		362	20.0 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	201	10.1	346	1.0		112	1.0	
MW12	10/2/17	N	0.48 J	32	0.49 J	1.9 J	100 U		328	20.0 U		0.82 U	0.50 U	0.50 U	0.50 U	1.0 U	199	11.7	282	0.90		105	1.1	
MW12	10/16/18	N	1.0 U	110	0.53 J	1.3 J	100 U		72.2	20.0 U		0.78 U	0.50 U	0.50 U	0.50 U	1.0 U	173	8.1	231	0.61		59.9	2.1	
MW12	4/23/19	N	0.17 U	290	0.55 JB	1.5 JB	46.7 U		55.0 B	6.9 U		0.24 U	0.15 U	0.18 U	0.15 J	0.22 U	165	9.1	218	0.53		45.5	2.4	
MW13	10/8/97	N	10 U	0.7 J	2 U	3.32 U	6.7 J		27.3	2.7			0.1 U	1 U	1 U	1 U	70	2.7		1.4		1.4	17.9	
MW13	10/8/97	N2		0.7 J									0.1 U	1 U	1 U	1 U								
MW13	4/5/00	N		0.8 =								10 U												

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L
MW13	12/5/00	N	0.58 U	114 J	1 U	25 U	230		66	25 U		5.5 U	0.1 U	1 U	1 U	1 U	72	4.2	140	0.45		8.2	7.9
MW13	12/5/00	N2	0.58 U			92	26000		870	52		5.5 U	0.1 U	1 U	1 U	1 U			140				
MW13	4/23/01	N	0.12 U	0.18	14	140	56300		1300	89		5.3 U	0.1 U	1 U	1 U	1 U	70	3.52	146	1.77		35	18
MW13	4/23/01	N2	0.12 U		0.24	25 U	25 U		110	25 U													
MW13	6/19/01	N	0.12 U	0.11 U	1.1	68	32800		848	45		5.3 U	0.12	1 U	1 U	1 U	68	5.73	112	2.87 =		11	13
MW13	6/19/01	N2	0.12 U		9.1	6.1 J	141		26	25 U										2.87			
MW13	9/10/01	N	10 U	0.69	3.9	49	14000		510	37		0.24 U	0.44 U	0.5 U	0.4 U	1.2 U	75	5.4	100	2.5		7.5 U	9.5
MW13	9/10/01	N2			0.54 J	2.8 J	52 J		27	4.7 J													
MW13	8/5/02	N	0.01 U	0.64	9.1	55.3	19000		580	39.5		5 U	1 U	5 U	5 U	5 U	86	6.8	110	0.15 U		8.4	6.3
MW13	8/5/02	N2			2.2 J	2.5 J	1300		45	9.1 J													
MW13	9/23/03	N	0.5 U	2.9	3	55	24600		687	50		1 U	0.25 U	2.5 U	2.5 U	2.5 U	78	5.1	35.04	1.86		7	6
MW13	9/23/03	N2	0.5 U		1 U	8	960		182	10 U													
MW13	9/21/04	N	10.0 UJ	4.67	1.52	32.4	8770		357	24.3 J		5.00 U	0.500 U	5.00 U	5.00 U	5.00 U	68 J	6.5 J	667 J	2.4 J		6.4 R	6.30 R
MW13	9/21/04	N2			0.259 J	1.96 J	125 UJ		3.67 J	5.28 J													
MW13	9/27/05	N	2.0 UJ	0.85	1.0 J	18	6200		200	18 J		0.97 U	0.50 U	5.0 U	5.0 U	5.0 U	67 J	3.1 J	68	0.60 J		19 J	4.3
MW13	9/27/05	N2			1.0 UJ	2.5 J	50 U		7.1 J	20 U													
MW13	9/18/07	N	2.0 UJ	0.53 J	1.0 UJ	10 UJ	100 UJ		6.3 J	5.2 J		0.93 R	1.0 U	1.0 U	1.0 U	2.0 U	71 J	2.9	100 J	0.31 J		29 J	4.1 J
MW13	10/21/08	N	2.0 UJ	0.31 UJ	2 U	10 UJ	207	10500 J	10 U	20 U		1.00 U	0.50 U	2.0 U	2.0 U	5.0 U	55	1.90	110 J	0.45 J		10.10	3.44 J
MW13	10/7/09	N	0.83 UJ	0.16 J	2 UJ	3.2 J	50 UJ	4430 J	10 UJ	20 UJ		0.996 UJ	0.1 UJ	0.4 UJ	0.4 UJ	1 UJ	30 J	2.12 J	45.46 J	0.77 J		9.71 J	13.9 J
MW13	4/13/16	N	0.50 U	0.34	5.0 U	3.2	449		13.4	20.0 U		0.21 U	0.50 U	1.0 U	1.0 U	2.0 U	51.0	1.4	54.9	0.70		3.4	4.2
MW13	7/20/16	N	0.50 U	1.1	5.0 U	1.5 J	19.4 J		5.0 U	20.0 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	39.5	0.91 J	86.0	1.0		2.2	2.1
MW13	10/10/16	N	0.50 U	0.37	0.87 J	2.3	23.2 J		0.94 J	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	49.3	0.98 J	56.0	0.58		3.1	1.9
MW13	1/19/17	N	0.080	0.33	0.35 J	3.1	17.1 J		1.1 J	6.2		0.064	0.28	0.26	0.23	0.24	50.8	0.71 J	52.0	0.49		3.6	2.2
MW13	4/19/17	N	0.50 U	0.24	5.0 U	1.1 J	100 U		0.28 J	20.0 U		0.21 U	0.50 U	1.0 U	1.0 U	2.0 U	53.7	0.76 J	60.0	0.50		4.4	2.2
MW13	9/29/17	N	0.25 J	0.27 J	1.0 U	1.6 J	53.5 J		1.4 J	20.0 U		0.79 U	0.50 U	0.50 U	0.50 U	1.0 U	59.0	1.4	47.6	0.56		3.3	2.0
MW13	10/16/18	N	1.0 U	0.35	1.0 U	1.8 J	100 U		3.2	20.0 U		0.79 U	0.50 U	0.50 U	0.15 J	1.0 U	54.9	0.83	47.7	0.41		2.8	2.4
MW13	4/23/19	N	0.17 U	0.30 ^	0.28 JB	2.3 B	46.7 U		1.6 JB	11.2 J		0.23 U	0.15 U	0.18 U	0.15 U	0.22 U	54.2	0.89	49.8	0.41		3.0	2.3
MW14	10/9/97	N	10 U	1 U	2 U	2 U	20 U		4 J	4			0.1 U	1 U	1 U	1 U	120	8		1.6		2.4	1 U
MW14	10/9/97	N2		1 U	2 U	2 U				2 U			0.1 U	1 U	1 U	1 U							
MW14	4/6/00	N		0.5 U								11 U											

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L
MW14	6/19/01	N	0.11 U	0.96	1.4	5.4 J	1070		57	25 U		239	0.1 U	1 U	1 U	1 U	104	12	124	2.06		3.48 J	6.41
MW14	6/19/01	N2	0.11 U		2	25 U	25 U		4.4	25 U										2.06 =			
MW14	1/23/17	N	0.080	0.12	1.1 J	0.62 J	5.3		1.6 J	6.2		0.061	0.28	0.26	0.23	0.24	129	15.8	146	1.7		6.6	0.51 J
MW14	10/3/17	FD	0.11 J	0.099 U	1.0	0.74 J	100 U		0.93 J	20.0 U		0.80 U	0.50 U	0.50 U	0.50 U	1.0 U	128	17.1	148	1.9		6.7	1.0 U
MW14	10/3/17	N	0.087 J	0.098 U	0.95 J	0.72 J	100 U		1.1 J	20.0 U		0.76 U	0.50 U	0.50 U	0.50 U	1.0 U	129	16.1	166	1.9		6.9	0.47 J
MW14	5/31/18	N	1.0 U	0.10 U	1.2	0.79 J	100 U		3.1	20.0 U		0.82 U	0.50 U	0.50 U	0.50 U	1.0 U	585	16.4	143	1.7		6.3	0.71 J
MW14	10/17/18	N	1.0 U	0.097 U	1.1	2.0 U	100 U		1.3 J	20.0 U		0.78 U	0.50 U	0.50 U	0.50 U	1.0 U	122	15.6	142	1.8		6.4	0.68 J
MW14	4/25/19	N	0.17 U	0.14	1.1	0.95 J	46.7 U		6.3	6.9 U		0.24 U	0.15 U	0.18 U	0.15 U	0.22 U	122	15.0	140	1.5		6.0 B	0.64 J
MW15	10/16/97	N	10 U	1 U	2 U	2 U	8.2 J		62.2	2 U			0.1 U	1 U	1 U	1 U	190	6.5		4.1		6.3	1.2
MW15	10/16/97	N2		1 U	2 U	3.5 U				13.9			0.1 U	1 U	1 U	1 U							
MW15	4/4/00	N		0.5 U								11 U											
MW15	4/25/01	N	0.1 U	0.11 U	0.5	25 U	58		4.8	50		5.3 U	0.1 U	1 U	1 U	1 U	240	15	276	3.97		2.61	5.24
MW15	4/25/01	N2	0.1 U	0.11 U	0.31	25 U	25 U		15 U	15		5.6 U	0.1 U	1 U	1 U	1 U	246	16	276	3.97 =		4.05	3.7
MW15	4/25/01	N3	0.12 U		0.56	25 U	174		4.1	25 U		5.6 U								3.92			
MW15	4/25/01	N4			0.42	25 U	25 U		15 U	16										3.92 =			
MW15	9/12/01	N	10 U	0.077 J	0.95 U	2.9 J	35 U		0.31 J	35		0.24 U	0.44 U	0.5 U	0.4 U	1.2 U	240	17	270	3.7		4.5 U	4.5
MW15	9/12/01	N2			0.95 U	5.7 J	63 J		2.7	36													
MW15	8/6/02	N	0.01 U	0.04 U	3.7	1.6 J	130		2.8 J	17 J		5 U	1 U	5 U	5 U	5 U	230	16	250	0.15 U		4.7	53
MW15	8/6/02	N2			2.6	0.3 U	11 U		0.42 U	11 J													
MW15	9/23/03	N	0.5 U	0.1 U	1 U	1 J	280		9 J	10 J		0.99 U	0.25 U	2.5 U	2.5 U	2.5 U	213	17.4	88.57	3.8		2 U	1.8
MW15	9/23/03	N2	0.5 U		1 U	1 U	50 U		5 U	10 U													
MW15	9/21/04	N	10.0 U	0.279	0.468 J	1.74 J	36.7		3.15 J	20.8 J		1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	230	16 =	1020	3.2 J		3.9 J	12.7
MW15	9/21/04	N2			0.482 J	0.648 J	5.57 J		0.976 J	8.97 J													
MW15	9/29/05	N	2.0 U	0.11 U	1.0 UJ	2.4 J	420 J		15 J	20 UJ		0.93 U	0.50 U	5.0 U	5.0 U	5.0 U	220 J	17 J	300 J	4.2 J		5.8 R	0.84 J
MW15	9/29/05	N2			1.0 UJ	10 UJ	50 UJ		1.6 J	20 UJ													
MW15	9/27/06	N	2.0 UJ	0.11 U	1.0 UJ	3.5 J	50 UJ		2.0 UB	13 J		0.91 U	0.50 U	5.0 U	5.0 U	5.0 U	260 J	14 J	250	4.7 J		5.9 J	2.1
MW15	9/19/07	N	2.0 UJ	0.10 U	0.68 J	10 UJ	100 UJ		10 UJ	20 UJ		1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	250	15	250 J	5.7		13 J	1.3 J
MW15	5/20/08	N	2.0 UJ	0.18 J	0.40 J	1.0 J	100 UJ		0.52 J	20 U		0.93 U	1.0 UJ	1.0 U	1.0 U	2.0 UJ	260 =	14	290	4.7		6.6	0.85 J
MW15	10/21/08	N	2.0 UJ	0.10 UJ	2 U	10 UJ	854	45400	10 U	20 U		1.00 U	0.5 U	2.0 U	2.0 U	5.00 U	265	14.60	567 J	6.05 J		6.99	13.60 J
MW15	6/2/09	N	0.8 UJ	0.1 UJ	2 U	10 UJ	301 =	30600 =	10 U	20 U		1.0 UJ	0.5 U	0.21 J	2.0 U	5.0 U	279 J	13.5	375.2114	5.33 J		6.42	1.7 UJ

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L
MW15	10/7/09	N	0.83 UJ	0.1 UJ	2 UJ	3 J	293 J	25500 J	10 UJ	5.4 J		0.999 UJ	0.1 UJ	0.4 UJ	0.4 UJ	1 UJ	260 J	12.9 J	294.28 J	4.74 J		6.52 J	1.49 J
MW15	5/18/10	N	1.3 U	0.1 U	2 UJ	10 UJ	194. J	24400. J	10 UJ	20 UJ		1.0 U	0.5 U	5 U	5 U	5 U	300	10.7	342	4.57 J		6.3	26.7 UB
MW15	10/7/10	N	1.3 U	2.32 J	2 U	8 U	311	38400	16.7 U	20 U		1.0 UJ	0.5 UJ	2 UJ	2 UJ	5 UJ	252	13.2 J	430	5.49 J		6.9 J	1.0 U
MW15	6/28/11	N	0.9 U	0.1 U	2 UJ	10 U	205	23100	10 U	20 U		0.998 U	0.1 U	0.4 U	0.4 U	1 U	239	12.1 J	307.00	5.2 J		6.91	0.77 J
MW15	10/18/11	N	0.50 U	0.10 U	0.70 J	2.7 J+	50 U	24000 B	1.7 J	10 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	240	12	261.00	4.8 J		5.3	1.0 J
MW15	5/22/12	N	0.50 U	0.024 J	2.0 U	10 U	50 U	24000 =	10 U	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	260	11	266.00	4.6 J		5.1 J	1.2
MW15	10/16/12	N	0.50 U	0.094 U	0.97 J	10 U	50 U	24000 =	10 U	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	250	12	271	5.3 J		5.0 U	0.69 J
MW15	5/21/13	N	0.50 U	0.025 J	2.0 U	10 U	50 U	26000 B	10 U	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	280	9.8		4.7 J		5.9	0.82 J
MW15	10/8/13	N	0.50 U	0.095 U	0.36 J	10.0 U	50 U	23000 B	10 U	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	220	11		5.2 J		6.5	0.50 J
MW15	5/13/14	N		0.095 U																			
MW15	9/23/14	N	0.50 U	0.054 J	1.1 J	2.0 U	28 J		1.9 J	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	210	11	250	5.3		5.6	0.85 J
MW15	4/20/15	N	0.50 U	0.094 U	0.78 J	2.0 U	100 U		1.1 J	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	190	11	270	5.6		5.7	0.44 J
MW15	10/12/15	N	0.50 U	0.094 U	0.54 J	1.0 J	100 U		5.0 U	20.0 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	224	12.0	302	6.7		5.8	0.55 J
MW15	4/5/16	N	0.50 U	0.078 J	0.70 J	1.7 J	100 U		5.0 U	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	207	12.5	312	0.45		6.3	0.49 J
MW16	10/14/97	N	10 U	1 U	17.1	438	15.3 J		10300 J	210			0.1 U	1 U	1 U	1 U	170	6.1		2.6		8.1	3
MW16	10/14/97	N2		1 U	2 U	2.7 U				1.9 J			0.1 U	1 U	1 U	1 U							
MW16	4/6/00	N		0.5 U									10 U										
MW16	4/23/01	N	0.12 U	0.11 U	6.5	62	22300		1460	136		5.6 U	0.1 U	1 U	1 U	1 U	90	3.57	164	8.69 =		29	4.4
MW16	4/23/01	N2	0.12 U		1 U	25 U	26		9.4	23										8.69			
MW16	9/10/01	N	10 U	0.17	1.8	23 U	5500		520	19		0.24 U	0.44 U	0.5 U	0.4 U	1.2 U	79	1.8	120	5.8		11	0.34 U
MW16	9/10/01	N2			0.29 U	2.2 U	35 U		0.82 J	4.5 J													
MW16	8/6/02	N	0.01 U	0.035 J	3.5	25 J	6800		14	760 J		5 U	1 U	5 U	5 U	5 U	130	2	120	0.15 U		13	1.3
MW16	8/6/02	N2			1.4 U	0.3 U	78		9.1 J	13 J													
MW16	9/23/03	N	0.5 U	0.089 J	2 J	18	7470		532	10 J		1.1 U	0.25 U	2.5 U	2.5 U	2.5 U	82	6.2	37.96	3.49		3 J	2.3
MW16	9/23/03	N2	0.5 U		1 U	1 U	50 U		5 U	10 U													
MW16	9/21/04	N	10.0 U	0.0962 J	0.277 J	4.07 J	570		74.7	8.71 J		1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	82	3.7 =	1220	2.1 J		5.5 J	4.28
MW16	9/21/04	N2			0.135 J	0.509 J	25.0 U		0.617 J	2.79 J													
MW16	9/29/05	N	2.0 U	0.11 U	1.0 UJ	7.6 J	1000 J		130 J	8.1 J		1.0 U	0.50 U	5.0 U	5.0 U	5.0 U	82 J	11 J	190 J	1.5 J		71 R	0.83 J
MW16	9/29/05	N2			1.0 UJ	2.9 J	50 UJ		2.1 J	20 UJ													
MW16	9/27/06	N	2.0 UJ	0.046 J	1.0 UJ	10 UJ	50 UJ		0.59 UB	20 UJ		0.92 U	0.50 U	5.0 U	5.0 U	5.0 U	83 J	4.1 J	100	1.2 J		32 J	1.3

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L
MW16	9/18/07	N	2.0 UJ	0.20 J	1.0 UJ	10 UJ	100 UJ		10 UJ	20 UJ		0.99 R	1.0 U	1.0 U	1.0 U	2.0 U	81 J	4.5	120 J	1.2 J		23 J	1.3 J
MW16	10/22/08	N	2.0 UJ	0.08 J	2 UJ	10 UJ	318 J	19400 J	20 J	20 UJ		1 U	0.5 U	2.0 U	2.0 U	5 U	51 J	7.51	175 J	0.99 J		43.2	92.3
MW16	10/6/09	N	0.83 UJ	0.1 UJ	2 UJ	6.6 J	458 J	8360 J	48.6 J	20 UJ		0.998 UJ	0.1 UJ	0.4 UJ	0.4 UJ	1 UJ	40 J	6.35 J	81.869 J	1.03 J		36.7 J	1 UJ
MW16	10/5/10	N	1.3 U	0.1 U	2 U	8 U	50 U	2910 R	16.7 U	20 U		1.0 U	0.1 U	0.4 U	0.4 U	1 U	39	5.7 J	29.3	0.63 J		6.3 J	15.7
MW16	10/19/11	N	0.50 U	0.095 U	0.44 J	2.2 J+	130	3200 B	14	10 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	32	4.2	30.70	0.63 J		12	1.0 U
MW16	10/16/12	N	0.50 U	0.099 U	0.66 J	10 U	180	3600 =	17	20 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	37	4.6	39.8	0.52 J		17 J	1.3
MW16	10/8/13	N	0.50 U	0.029 J	0.61 J	10.0 U	1500 B	3300 B	100 B	59 J		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	34	6.2		0.57 J		6.3	1.1
MW16	9/23/14	N	0.50 U	0.036 J	0.41 J	2.0 U	100 U		5.0 U	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	31	5.4	60	0.54		2.8	1.1
MW16	10/13/15	N	0.50 U	0.098 U	5.0 U	1.0 J	45.2 J		2.1 J	20.0 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	48.4	4.3	84.4	0.61		5.9	0.70 J
MW16	4/6/16	N	0.50 U	0.096 U	5.0 U	1.9 J	168		14.6	20.0 U		0.11 J	0.50 U	1.0 U	1.0 U	2.0 U	32.6	2.2	31.8	0.41		2.6	2.3
MW16	7/19/16	N	0.50 U	0.094 U	5.0 U	2.2	114		11.5	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	32.4	2.2	34.0	0.42		2.6	5.8
MW16	10/12/16	N	0.50 U	0.18	0.40 J	1.7 J	61.7 J		5.3	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	33.1	2.4	24.0	0.30		2.2	0.58 J
MW16	1/18/17	N	0.080	0.015	0.47 J	1.3 J	11.5 J		1.2 J	6.2		0.060	0.28	0.26	0.23	0.24	31.3	3.2	46.0	0.46		3.6	1.1
MW16	4/19/17	N	0.50 U	0.10 U	5.0 U	1.6 J	7.7 J		0.80 J	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	39.0	3.3	60.0	0.57		4.5	2.0
MW16	10/2/17	N	0.11 J	0.096 U	1.0 U	2.5	100 U		2.0 J	8.8 J		0.90 U	0.50 U	0.50 U	0.50 U	1.0 U	43.7	4.0	45.7	0.73		6.6	0.82 J
MW16	10/16/18	N	1.0 U	0.10 U	0.26 J	3.2	100 U		2.5 U	13.0 J		0.80 U	0.50 U	0.50 U	0.50 U	1.0 U	32.0	4.5	28.6	0.74		3.5	1.8
MW16	4/24/19	N	0.17 U	0.24	0.37 J	1.9 J	169		15.7	9.0 J		0.23 U	0.15 U	0.18 U	0.15 U	0.22 U	34.1	4.7	39.4	0.63		4.7 B	0.74 J
MW17	10/15/97	N	10 U	1 U	2 U	2	10 U		2 U	17.6			0.1 U	1 JB	1 U	0.6 J	180	4.8		4.1		10	0.7 J
MW17	10/15/97	N2		1 U	2 U	2.3 U				2.5			0.1 U	1 J	1 U	0.6 J							
MW17	10/28/97	N		5																			
MW17	4/6/00	N		0.5 U								11 U											
MW17	4/26/01	N	0.12 U	0.72	0.6	25 U	33		15 U	12		54	0.1 U	1 U	1 U	1 U	202	4.12	228	4.98		6.82	1.57
MW17	4/26/01	N2	0.12 U		0.69	25 U	25 U		15 U	25 U										4.98 =			
MW17	9/11/01	N	10 U	0.059 U	0.94	2.2 U	330		0.27 U	3.7 U		0.29 U	0.44 U	0.5 U	0.4 U	1.2 U	180	4.8	210	4.4		9.3 U	1 J
MW17	9/11/01	N2			1	2.2 U	310		0.27 U	3.7 U													
MW17	8/8/02	N	0.01 U	0.032 J	3	0.47 J	11 U		0.42 U	0.98 U		5 U	1 U	5 U	5 U	5 U	200	4.6	210	0.15 U		7.4	0.73
MW17	8/8/02	N2			1.9 J	0.3 U	11 U		0.42 U	15 J													
MW17	9/25/03	N	0.5 U	0.46	1 U	1 U	50 U		18	10 U		0.96 U	0.25 U	2.5 U	2.5 U	2.5 U	184	4.4	71.56	5.1		2 U	2.1
MW17	9/25/03	N2	0.5 U		1 U	1 U	50 U		5 U	10 U													
MW17	9/22/04	N	10.0 UJ	2.82	0.0787 J	0.774 J	11.5 UB		0.371 J	2.46 J		5.00 U	0.500 U	5.00 U	5.00 U	5.00 U	190 J	4.1 J	1100 J	4.8 J		8.6 R	1.67 R

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L
MW17	9/22/04	N2			0.782 J	0.847 J	13.9 J		45.0 J	2.09 J													
MW17	9/27/05	N	2.0 UJ	0.054 J	1.0 UJ	10 U	50 U		0.44 J	20 U		0.92 U	0.50 U	5.0 U	5.0 U	5.0 U	160 J	3.9 J	180	5.1 J		7.8 J	0.91 J
MW17	9/27/05	N2			1.0 UJ	10 U	50 U		10 U	20 U													
MW17	9/26/06	N	2.0 UJ	0.11 U	1.0 UJ	10 UJ	50 UJ		10 UJ	7.5 J		0.91 U	0.50 U	5.0 U	5.0 U	5.0 U	170 J	2.9 J	170	5.5 J		6.5 J	1.1
MW17	9/19/07	N	2.0 UJ	0.099 U	1.0 J	10 UJ	100 UJ		10 UJ	20 UJ		0.94 U	1.0 U	1.0 U	1.0 U	2.0 U	160	4.7	160 J	5.6		14 J	1.2 J
MW17	10/22/08	N	2.0 UJ	0.1	2 UJ	10 UJ	374 J	29200 J	10 UJ	20 UJ		1 U	0.5 U	2.0 U	2.0 U	5 U	155 J	7.78	295 J	5.75 J		7.75	20.2
MW17	10/6/09	N	0.83 UJ	0.1 UJ	2 UJ	10 UJ	160 J	26700 J	10 UJ	20 UJ		0.995 UJ	0.1 UJ	0.4 UJ	0.4 UJ	1 UJ	60 J	6.54 J	295.228 J	1.65 J		6.86 J	1 UJ
MW17	10/5/10	N	1.3 U	0.1 U	2 U	10 U	163	20500	10 U	20 U		1.0 U	0.1 U	0.4 U	0.4 U	1 U	160	11.6 J	225	5.18		9.7 J	1.6
MW17	10/18/11	N	0.50 U	0.095 U	1.1 J	2 U	50 U	17000 B	10 U	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	140	16	180.00	3.9		24	0.89 J
MW17	10/16/12	N	0.50 U	0.095 U	1.2 J	10 U	50 U	17000 =	10 U	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	150	16	187	4.7		23 J	0.59 J
MW17	10/8/13	N	0.50 U	0.095 U	0.72 J	10.0 U	50 U	18000 B	10 U	20 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	140	16		4.5 J		36	0.40 J
MW17	9/24/14	N	0.50 U	0.097 U	0.83 J	2.0 U	100 U		1.3 J	20 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	150	15	250	4.8		40	0.72 J
MW17	10/13/15	N	0.50 U	0.095 U	1.1 J	2.0 U	100 U		5.0 U	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	184	14.8	265	4.2		45.3	0.59 J
MW17	4/5/16	N	0.50 U	0.095 U	0.81 J	1.8 J	100 U		5.0 U	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	173	13.6	289	3.5		85.4	0.46 J
MW17	7/19/16	N	0.50 U	0.095 U	0.84 J	1.4 J	100 U		5.0 U	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	195	14.7	336	2.8		142	0.52 J
MW17	10/11/16	N	0.50 U	0.094 U	0.80 J	0.76 J	100 U		0.28 J	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	208	17.0	348	2.7		136	0.36 J
MW17	1/23/17	FD	0.080	0.015	0.76 J	0.66 J	5.3		0.25	6.2		0.060	0.28	0.26	0.23	0.24	213	17.4	380	2.1		167	0.50 J
MW17	1/23/17	N	0.13 J	0.099	0.73 J	1.4 J	5.3		0.25	6.2		0.060	0.28	0.26	0.23	0.24	202	17.4	390	2.1		167	0.81 J
MW17	4/20/17	FD	0.50 U	0.10 U	0.68 J	0.65 J	100 U		0.58 J	20.0 U		0.24 U	0.50 U	1.0 U	1.0 U	2.0 U	223	16.1	470	2.2		165	0.43 J
MW17	4/20/17	N	0.50 U	0.10 U	0.71 J	0.77 J	100 U		0.45 J	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	201	16.1	460	2.2		164	0.48 J
MW17	10/3/17	N	0.096 J	0.099 U	0.74 J	1.8 J	100 U		2.5 U	20.0 U		0.85 U	0.50 U	0.50 U	0.50 U	1.0 U	212	17.2	390	3.5		125	1.0 U
MW17	5/31/18	N	1.0 U	0.096 U	0.79 J	1.7 J	100 U		2.5 U	20.0 U		0.77 U	0.50 U	0.50 U	0.50 U	1.0 U	194	14.9	311	3.3		98.2	0.77 J
MW17	10/17/18	N	1.0 U	0.11 U	0.63 J	1.1 J	100 U		2.5 U	20.0 U		0.81 U	0.50 U	0.50 U	0.15 J	1.0 U	185	13.6	317	2.9		106	0.61 J
MW17	4/22/19	N	0.17 U	0.087 U	0.80 JB	1.3 JB	46.7 U		1.2 JB	6.9 U		0.24 U	0.15 U	0.18 U	0.15 U	0.22 U	187	12.4	335	2.2		140	1.2
MW18	10/10/97	N	10 U	27000 J	8.2	43.5 J	32000 J		10600	2.6		0.1 U	2	16	19	260	49		0.1 U			11	154
MW18	10/10/97	N2		27000 E	8.9	62.5				5.3		0.1 U	2	16	19								
MW18	6/19/01	N	0.13 U	27400	4.9	21 J	13700		6650	25 U		5 U	1.1	14	10 U	20	168	19	182	0.13 U		33 J	6.63
MW18	6/19/01	N2	0.13 U		5	43	15200		6540	25 U													
MW19	10/16/97	N	10 U	19000 J	2 U	38 J	10 U		2690 J	46		0.2	1 U	1 U	0.2 J	180	47		3.8			19	32.8
MW19	10/16/97	N2		19000 E	2 U	3.4 U				2 U		0.2	1 U	1 U	0.2 J								

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Penta Wood Products Superfund Site
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Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L
MW19	4/7/00	N		11800 =								5260 U											
MW19	4/7/00	N2		11000 J								22 =											
MW19	4/26/01	N	0.5	25600	2.2	38	10000		1840	27		325 =	1 U	10 U	10 U	10	236	39	323	3.37 =		47	33
MW19	4/26/01	N2	0.5		1 U	25 U	25 U		1790	25 U		325	10 U	100 U	100 U	100 U				3.37			
MW19	9/12/01	N	16	400000	0.29 U	6.4 J	71 J		1800	5.8 J		240	0.44 U	1.9 U	1.7 U	28	320 J	19	270	1.3		9.7 U	34
MW19	9/12/01	N2			1.7 J	44	5600		2100	53 J													
MW19	5/13/02	N		14000	1.4 U	5.1 J	11.2 U		2070	9.4 J		190											
MW19	8/8/02	N	0.01 U	11000 J	7	30.2	719		3100	290		210	1 U	2 J	1 J	29	130	22	4 U	0.16		16	65
MW19	8/8/02	N2			1.4 U	7.1 J	218		3110	5.7 J													
MW19	4/29/03	N	2.4	4900	2 J	24	2030		3670	10 U		1200	500 U	5000 U	5000 U	5000 U	118	19.6	162	3		27	53
MW19	4/29/03	N2	2.4		1 U	5	25 U		3590	10 U													
MW19	9/25/03	N	5.7	15000	1 U	27	950		2210	10 U		3200	1 U	10 U	10 U	46.6	160	17.5 J	71.57	2 J		90 J	129 J
MW19	9/25/03	N2	5.7		1 U	9	50 J		4470	10 U										2 J			
MW19	5/4/04	N	1.13 J	70000 J	0.284 J	22.2 R	892 R	17600	4040 R	11.6 R		201	2.50 U	2.13 J	1.98 J	30.0	144	25 =	176	0.71 J		16 R	43.7 J
MW19	5/4/04	N2			0.169 J	5.77 R	31.4		3360 R	6.93 R													
MW19	9/22/04	N	10.0 UJ	111000	1.00 UJ	13.5 J	402 J		3160 J	16.7 J		260	0.500 U	3.45 J	2.25 J	50.3	110 J	15 J	1120 J	1.5 J		23 R	31.3 R
MW19	9/22/04	N2			0.159 J	6.26 J	125 U		2650	16.0 J													
MW19	5/10/05	N	2.0 U	45000 J	1.0 U	6.3 J	50 U		2300	9.8 J		2300 =	100 UJ	1000 UJ	1000 UJ	1000 UJ	97 J	18 J	140 J	0.76 J		29 R	35 R
MW19	5/10/05	N2			1.0 U	15	630		2100	8.4 J													
MW19	9/29/05	N	2.0 U	13000 =	1.0 UJ	11 J	97 J		2600 J	20 UJ		78	0.50 U	1.2 J	1.1 J	18	140 J	19 J	5 UJ	0.75 J		40 R	32 J
MW19	9/29/05	N2			1.0 UJ	5.0 J	50 UJ		2700 J	20 UJ													
MW19	6/7/06	N	2.0 U	17000 J	1.0 UJ	4.4 J	50 UJ		2700 J	20 UJ		59	0.50 U	1.5 J	1.3 J	22	120 J	18 J	360 J	0.76 J		36 =	20 J
MW19	9/27/06	N	2.0 UJ	8200 J	1.0 U	6.4 J	50 U		3100	20 U		69	0.50 U	1.4 J	1.2 J	19	160 J	14	190	0.66 J		30 =	35
MW19	5/9/07	N	2.0 UJ	11000 J	1.0 UJ	3.7 J	100 UJ		2600	20 UJ		54 J	1.0 U	1.4	1.5	17	230 =	15	160	0.29		59 J	33 UB
MW19	9/21/07	N		3500 J	1.0 UJ	4.0 J	100 UJ		3100	20 UJ		47 R	1.0 U	1.8	2.0	21	190 J	17	240 J	0.28		42 J	38 J
MW19	5/20/08	N	2.0 U	23000 J	1.0 U	3.4	100 UJ		2900	2.3 J		140	1.0 UJ	5.0	4.8	54 J	220 =	16	260	0.44		42	18 J
MW19	10/24/08	N	2.1 J	27900	2 UJ	5 J	510 J	28700 J	4850 J	20 UJ		120	0.5 U	5.11	5.08 =	50.3	221 J	15.9	373 J	0.04 J		46.2	29.8
MW19	6/2/09	N	3.9 J	18600 J	2 U	10 UJ	222 =	29900 =	4050 =	20 U		110 J	0.5 U	7.93	6.66	74.6	249 J	12.8	317.6445	0.01 UB		44.7	13
MW19	10/7/09	N	2 J	31800 J	2 UJ	3.8 J	237 J	27400 J	3190 J	7.2 J		137 J	0.1 UJ	7.62 J	5.77 J	60.7 J	228 J	14.3 J	271.39 J	0.05 UJ		42 J	20.4 J
MW19	5/20/10	N	1.4	26000.	2 UJ	3.2 J	92.2 UJ	19900. J	1870. J	20 UJ		123.	0.5 U	7.95	5.65	64.3	136	21.5	199	0.05 UJ		32.4	50.4 UB

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Siren, Wisconsin

Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L
MW19	10/7/10	N	1.3 U	4470 J	2 U	2.9 J	114	7130	942	20 U		102 J	0.5 UJ	3.21 J	1.7 J	44.7 J	84	13.6 J	77.8	0.10 UJ		18.7 J	17.4
MW19	6/29/11	N	0.9 U	8880	2 UJ	14.8 J	131	9550	1300	20 U		42.1	0.1 U	1.12	1.09	22.7	43	16.6 J	90.00	0.26		20.1	85.4
MW19	10/20/11	N	0.33 J	13000	2.0 U	12 B	52 J+	8600 B	1700	14 J+		2.8	0.84 U	1.1 J	1.0 J	23	57	19	85.40	0.30		17	92
MW19	5/22/12	N	0.71	5300	2.0 U	7.6 J	50 U	7600 =	1300	20 U		50	2.0 U	0.88 J	0.76 J	16	51	15	76.20	1.1		12	38
MW19	10/17/12	N	0.50 U	8100	2.0 U	6.9 J	50 U	5800 =	900	20 U		8.4	2.0 U	4.0 U	0.67 J	9.7	36	12	66.3	1.4		11 J	27
MW19	5/22/13	N	0.84 J	5800	2.0 U	7.3 J	50 U	8700 B	1100 B	20 U		29 J	0.50 U	0.99 J	1.5	19	54	14		1.1 J		11	45
MW19	10/10/13	N	0.50 U	7900	0.26 J	10.0 UJ	50 UJ	5800 J	990 J	20 UJ		3.0	2.5 U	5.0 U	1.1 J	15	36 B	12		1.1 J		11	31
MW19	5/14/14	N		18000																			
MW20	10/15/97	N	10 U	29000 J									0.1 U	1 U	1 U	0.1 U							
MW20	4/26/01	N	2.73	36600	8.2	196	33200		3120	126		9970 =	1 U	10 U	10 U	29	198	24	301	0.13 U		67	478
MW20	4/26/01	N2	2.73		1.1	14	841		2250	23		9970	10 U	100 U	100 U	71							
MW20	9/12/01	N	10 U	83000	3.6	81	7900		3200	36		890	0.44 U	3.4 U	4.1 U	37	260 J	16	250	0.15 J		24	65
MW20	9/12/01	N2			1.5	15 U	35 U		2800	12 U													
MW20	8/7/02	N	0.01 U	30000 J	8.9	87.4	4910		3520	16.6 J		1400	1 U	12	9	120	220	22	4 U	0.15 U		25	71
MW20	8/7/02	N2			2.6	5.8 J	206		3280	15.4 J													
MW20	9/25/03	N	5.4	13000	2 J	58	7220		3310	20 J		830	1 U	10 U	10 U	60.9	233	19.4 J	86.67	1.25 U		80 J	150 J
MW20	9/25/03	N2	5.4		1 U	11	350		3250	10 J										1.25 U			
MW20	9/22/04	N	10.0 UJ	133000	1.00 UJ	30.4 J	1320 J		2770 J	18.7 J		282	2.50 U	3.01 J	3.21 J	40.3	190 J	24 J	1320 J	0.29 J		23 R	46.3 R
MW20	9/22/04	N2			0.498 J	35.2 J	2070		2320	47.0 J													
MW20	10/25/05	N	2.0 UJ	63000 =	1.0 U	16 J	780 J		2300 J	20 UJ			0.50 U	5.5	5.4	62	170 J	13 J	190 J	2.1 J		39 R	21 R
MW20	10/25/05	N2			1.0 UJ	2.7 UJ	140 J		2400 J	20 UJ													
MW20	9/27/06	FD	2.0 UJ	44000 J	1.0 UJ	4.8 J	94 J		4200	20 U		180 =	0.50 U	5.1	4.1 J	53	230 J	16	380	0.19		65 =	22
MW20	9/27/06	N	2.0 UJ	35000 J	1.0 U	3.8 J	48 J		4200	20 U		160 =	0.50 U	4.8 J	4.1 J	51	220 J	16	240	0.22		71 =	23
MW20	9/21/07	N	2.0 U	9500 J	1.0 UJ	10 UJ	100 UJ		4800	20 UJ		71 R	1.0 U	6.4	4.4	62	230 J	18	300 J	0.10 U		98 J	13 J
MW20	10/23/08	N	2.0 UJ	41000	2 UJ	17.3 J	462	31700 J	3400 J	20 UJ		1150	0.5 U	2.99 =	2.94 =	38.7	127 J	15.7	332 J	0.13 J		28.9	121
MW20	4/20/17	FD	0.50 U	0.10 U	0.99 J	2.0 U	100 U		0.64 J	20.0 U		0.22 U	0.50 U	1.0 U	1.0 U	2.0 U	133	14.7	188	1.7		7.0	0.49 J
MW20	4/20/17	N	0.50 U	0.10 U	1.0 J	0.37 J	100 U		0.33 J	20.0 U		0.21 U	0.50 U	1.0 U	1.0 U	2.0 U	131	14.8	186	3.5		7.0	0.47 J
MW21	2/9/98	FD	10	1	3.1	83.9	7.3 U		1380	98.9			0.1 U	1 U	1 U	1 U	196	67.3				8.9	0.47 U
MW21	2/9/98	FD2			2 U	9.5 U				33.8													
MW21	2/9/98	N	11	1 U	3	70.1	5.5 U		1210	113			0.1 U	1 U	1 U	1 U	176	70.6				9.1	0.47 U

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L
MW21	2/9/98	N2		1 U	2 U	9.5 U				32.6 U			0.1 U	1 U	1 U	1 U							
MW21	5/14/02	N			1.9 J	1.3 J	130		9.7 J	11 J													
MW21	8/6/02	N		0.035 J	4.4	50	10000		930	29		5 U	1 U	5 U	5 U	5 U	120	49	150	0.15 U		9.6	8.3
MW21	8/6/02	N2			1.6 J	0.3 U	11 U		0.63 J	6.8 J													
MW21	4/29/03	N	0.5 U	0.15	1 U	12	3440		227	10 U		7.4 U	0.5 U	5 U	5 U	5 U	144	41	169	2.5		12	1.5
MW21	4/29/03	N2	0.5 U		1 U	1 U	25 U		5 U	10 U													
MW21	9/24/03	N	0.5 U	0.063 J	1 U	260	68400		3750	150		1 U	0.25 U	2.5 U	2.5 U	2.5 U	165	48	81.46	2.62		2 U	3.6
MW21	9/24/03	N2	0.5 U		1 U	1 U	50 UJ		5 U	10 U													
MW21	5/4/04	N	10.0 U	0.135 UB	2.31 J	72.5 R	14000 R	19300	1970 R	46.5 R		5.00 U	0.500 U	5.00 U	5.00 U	5.00 U	165	67 =	188	2.3 J		3.6 R	3.12 J
MW21	5/4/04	N2			0.122 J	1.28 R	28.6 R		0.718 R	4.48 R													
MW21	9/21/04	N	10.0 UJ	0.474	1.80 J	48.2 J	10300 J		983 J	32.6 J		5.00 U	0.500 U	5.00 U	5.00 U	5.00 U	150 J	63 J	1030 J	2.4 J		4.8 R	2.76 R
MW21	9/21/04	N2			0.130 J	0.955 J	25.0 UJ		0.484 J	3.30 J													
MW21	5/10/05	N	2.0 U	0.33	1.0 U	10 U	50 U		0.47 J	20 U		0.98 U	0.50 U	5.0 U	5.0 U	5.0 U	130 J	49 J	170 J	2.8 J		12 R	2.2 R
MW21	5/10/05	N2			1.0 U	25	6200		480	16 J													
MW21	9/27/05	N	2.0 UJ	0.046 J	7.1	230	56000		3400	110		0.91 U	0.50 U	5.0 U	5.0 U	5.0 U	130 J	47 J	370	2.4 J		17 J	1.2
MW21	9/27/05	N2			1.0 UJ	2.6 J	36 J		9.8 J	20 U													
MW21	6/1/06	N	2.0 U	0.023 J	1.0 UJ	10 UJ	47 J		17 J	20 UJ		0.99 U	0.50 U	5.0 U	5.0 U	5.0 U	140 J	65 J	140	2.7 J		20	1.5 J
MW21	5/8/07	N	2.0 UJ	0.098 UJ	1.0 UJ	10 UJ	100 UJ		10 UJ	4.2 J		1.0 R	1.0 U	1.0 U	1.0 U	2.0 U	210 =	33 J	120	4.2		9.3 J	1.7
MW21	9/18/07	N	2.0 UJ	0.13 J	1.0 UJ	10 UJ	100 UJ		10 UJ	20 UJ		0.98 R	1.0 U	1.0 U	1.0 U	2.0 U	110 J	29	120 J	3.7 J		12 J	1.2 J
MW21	10/21/08	N	2.0 UJ	0.10 UJ	2 U	10 UJ	294 J	14900 J	10 U	20 U		1.00 U	0.50 U	2.00 U	2.0 U	5.00 U	66	68.80	149 J	2.69 J		7.27 U	2.38 J
MW21	4/6/16	N	0.092 J	0.016 J	0.70 J	1.0 J	22.8 J		1.7 J	20.0 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	25.9	101	83.6	1.8		6.8	0.63 J
MW21	7/20/16	FD	0.50 U	5.5	5.0 U	0.86 J	23.5 J		5.0 U	20.0 U		0.24 U	0.50 U	1.0 U	1.0 U	2.0 U	29.9	84.9	78.0	1.7		6.6	0.90 J
MW21	7/20/16	N	0.11 J	8.5	5.0 U	1.3 J	29.4 J		5.0 U	20.0 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	29.4	84.5	84.0	1.7		6.8	0.93 J
MW21	10/11/16	N	0.50 U	5.7	0.38 J	1.8 J	6.2 J		0.44 J	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	30.5	74.4	82.0	1.8		6.6	0.61 J
MW21	1/18/17	N	0.080	2.9	0.39 J	2.2	6.8 J		0.25	6.2		0.060	0.28	0.26	0.23	0.24	25.4	86.8	88.0	1.8		7.4	0.75 J
MW21	4/18/17	N	0.50 U	0.017 J	5.0 U	0.44 J	100 U		5.0 U	20.0 U		0.22 U	0.50 U	1.0 U	1.0 U	2.0 U	26.7	78.6	92.0	1.8		7.5	0.77 J
MW21	10/3/17	N	0.082 J	0.096 U	0.28 J	1.2 J	100 U		2.5 U	20.0 U		0.76 U	0.50 U	0.50 U	0.50 U	1.0 U	35.2	72.6	70.5	1.8		7.1	0.76 J
MW21	10/17/18	N	1.0 U	0.099 U	1.0 U	1.2 J	100 U		2.5 U	20.0 U		0.80 U	0.50 U	0.50 U	0.50 U	1.0 U	35.4	66.6	65.6	1.9		6.0	1.1
MW21	4/24/19	N	0.17 U	0.086 U	0.23 J	1.5 J	46.7 U		0.79 U	6.9 U		0.23 U	0.15 U	0.18 U	0.15 U	0.22 U	32.6	78.4	72.8	1.6		6.4 B	0.94 J
MW22	2/9/98	N	13	1 U	4	255	5.5 U		3700	121			0.1 U	1 U	1 U	1 U	186	56.3				17.9	0.47 U

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L
MW22	2/9/98	N2		1 U	2 U	9.5 U				12.6			0.1 U	1 U	1 U	1 U							
MW22	5/14/02	N			1.4 U	0.3 U	22.9 J		3.5 J	2.7 J													
MW22	8/6/02	N	0.01 U	0.078	2.2 J	9.8 J	2500		170	7.3 J		5 U	1 U	5 U	5 U	5 U	150	7.2	170	0.15 U		12	1.3
MW22	8/6/02	N2			1.4 U	0.3 U	25 J		0.42 U	4.9 J													
MW22	9/24/03	N	0.5 U	0.34	7	140	56900		2570	120 J		1 U	0.25 U	2.5 U	2.5 U	2.5 U	132	4.9	101.8	2.15		3 J	1.7
MW22	9/24/03	N2	0.5 U		1 U	20	2770		542	20 J													
MW22	9/21/04	N	10.0 UJ	0.220	2.76 J	71.6 J	13600 J		963 J	48.4 J		5.00 U	0.500 U	5.00 U	5.00 U	5.00 U	130 J	11 J	885 J	2.2 J		6.7 R	3.86 R
MW22	9/21/04	N2			0.164 J	0.473 J	25.0 UJ		15.0 UJ	2.31 J													
MW22	9/28/05	N	2.0 U	0.16 J	1.0 UJ	9.8 J	2100 J		130 J	8.0 J		1.0 U	0.50 U	5.0 U	5.0 U	5.0 U	91 J	9.6 J	130 J	1.7 J		18 R	0.94 J
MW22	9/28/05	N2			1.0 UJ	10 UJ	50 UJ		1.3 J	20 UJ													
MW22	9/18/07	N	2.0 UJ	0.13 J	1.0 UJ	10 UJ	100 UJ		10 UJ	20 UJ		0.99 R	1.0 U	1.0 U	1.0 U	2.0 U	110 J	8.2	160 J	2.5 J		10 J	1.0 J
MW22	5/20/08	N	2.0 UJ	0.77 J	1.0 U	0.98 J	100 UJ		3.6	5.4 J		0.95 U	1.0 UJ	1.0 U	1.0 U	2.0 UJ	110 =	8.4	200	2.3		12	3.0 J
MW22	10/21/08	N	2.0 UJ	0.09 UJ	2.60 J	10 UJ	303 J	11100 J	0.01 U	20 U		1.00 U	0.5 U	2.0 U	2.0 U	5.0 U	90	4.69	111 J	1.48 J		6.95	21.10 J
MW22	6/2/09	N	0.8 UJ	0.1 UJ	2 U	10 UJ	83.1 =	10000 J	10 U	20 U		1.0 UJ	0.5 U	0.22 J	2.0 U	5.0 U	70 J	6.92	99.6098	1.97 J		6.73	1.7 UJ
MW22	10/6/09	N	0.83 UJ	0.1 UJ	2 UJ	13.1 J	1560 J	11500 J	168 J	6.7 J		0.994 UJ	0.1 UJ	0.4 UJ	0.4 UJ	1 UJ	147 J	7 J	106.54 J	5.31 J		7.53 J	8.62 J
MW22	5/18/10	N	1.3 U	0.1 U									0.5 U	5 U	5 U	5 U	66 UB	9.21		1.9 J		6.9	58.8 UB
MW22	10/6/10	N	1.3 U	0.13 UB	2 U	4.1 J	74.2 J	3680	16.7 U	20 U		1.0 U	0.1 U	0.4 U	0.4 U	1 U	62	1.8 J	40.9	0.90 J		5.6 J	24.6
MW22	6/29/11	N	0.9 U	0.1 U	2 UJ	4.5 J	499	3700	27.6	20 U		0.999 U	0.1 U	0.4 U	0.4 U	1 U	32.	0.78 J+	34.10	0.46 J		3.9 J	11
MW22	10/18/11	N	0.50 U	0.098 U	0.45 J	2.1 J+	50 U	3600 B	2.7 J	10 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	43	1.0 U	37.30	0.50 J		3.5 J	1.0 U
MW22	5/22/12	N	0.50 U	0.084 J	2.0 U	2.3 J	160	5000 =	13	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	49	3.4	50.60	0.76 J		3.9 J	10
MW22	10/16/12	N	0.50 U	0.096 U	0.59 J	10 U	50 U	5000 =	5.7 J	20 U		0.19 U	2.5 UJ	5.0 UJ	5.0 UJ	10 UJ	48	4.1	53.1	0.48 J		5.0 U	36
MW22	5/22/13	N	0.50 U	0.11	2.0 U	10 U	50 U	4000 B	10 U	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	41	3.7		1.0 J		3.9	15
MW22	10/8/13	N	0.50 U	0.14	0.24 J	10.0 U	50 U	5200 B	2.8 J	20 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	45	7.2		1.4 J		4.7	10
MW22	5/14/14	N		0.093 J																			
MW22	9/24/14	N	0.50 U	0.27	0.22 J	2.0 U	25 J		19	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	51	1.7	60	0.69		3.6	0.71 J
MW22	4/21/15	N	0.50 U	0.072 J	0.60 J	2.8	390		23	20 U		0.21 U	0.50 U	1.0 U	1.0 U	2.0 U	42	1.9	57	0.69		3.7	0.57 J
MW22	10/13/15	N	0.50 U	0.041 J	5.0 U	1.2 J	100 U		5.0 U	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	46.3	1.7	52.3	0.65		2.8	0.74 J
MW22	4/6/16	N	0.50 U	0.025 J	5.0 U	0.92 J	17.5 J		2.2 J	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	50.8	1.3	57.7	0.61		2.9	5.3
MW22	7/20/16	N	0.50 U	0.030 J	5.0 U	3.4	235		10	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	58.6	1.2	64.0	0.60		3.1	1.7
MW22	10/12/16	N	0.50 U	0.043 J	0.41 J	1.7 J	85.4 J		5.4	20.0 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	67.2	1.7	70.0	0.53		3.5	0.96 J

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Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L
MW22	1/18/17	N	0.080 J	0.058 J	0.44 J	3.4	186		10.6	6.2		0.060	0.28	0.26	0.23	0.24	58.4	2.1	94.0	0.65		3.8	1.1
MW22	4/21/17	N	0.50 U	0.090 J	5.0 U	2.6	100 U		0.31 J	20.0 U		0.23 U	0.50 U	1.0 U	1.0 U	2.0 U	62.9	2.8	110	0.77		4.4	0.93 J
MW22	10/4/17	N	0.39 J	0.049 J	1.0 U	2.6	198		11.9	8.5 J		0.89 U	0.50 U	0.50 U	0.50 U	1.0 U	74.1	2.7	77.9	0.71		3.7	0.90 J
MW22	10/17/18	N	1.0 U	0.10 U	1.0 U	3.2	100 U		2.5 U	16.3 J		0.81 U	0.50 U	0.50 U	0.50 U	1.0 U	61.7	2.5	70.2	0.71		3.8	0.78 J
MW22	4/24/19	N	0.17 U	0.085 U	0.27 J	1.8 J	166		9.6	9.6 J		0.28 U	0.15 U	0.18 U	0.15 U	0.22 U	60.3	4.1	102	0.75		4.1 B	0.84 J
MW23	2/26/98	N	57	1 U	2 U	17.6 U	5.5 U		128	43.6			2	1 U	77	2	120	8.7				7.6	0.47 U
MW23	2/26/98	N2		1 U	2 U	14.2 U				6.6			2 =	1 U	77 =	2 =							
MW23	9/11/01	N	10 U	0.49	1.2	6.3 J	630		140	37		0.24 U	0.44 U	0.5 U	0.4 U	1.2 U	110	10	140	0.13 U		8.2 U	5.6
MW23	9/11/01	N2			0.62 J	2.2 U	35 U		29	4.7 J													
MW23	4/13/16	N	0.50 U	0.095 U	0.58 J	2.0 U	35.1 J		5.0 U	20.0 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	197	29.5	255	1.8		7.1	0.62 J
MW23	7/20/16	N	0.50 U	0.31	0.70 J	2.0 U	100 U		5.0 U	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	195	30.6	230	1.8		7.2	0.66 J
MW23	10/11/16	N	0.50 U	0.094 U	0.71 J	0.90 J	100 U		0.38 J	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	194	32.3	230	1.9		8.1	0.54 J
MW23	1/19/17	N	0.080	0.015	0.75 J	0.64 J	5.3		0.25	6.2		0.061	0.28	0.26	0.23	0.24	177	35.1	238	1.8		8.2	0.81 J
MW23	4/19/17	N	0.50 U	0.095 U	0.59 J	2.0 U	100 U		5.0 U	20.0 U		0.22 U	0.50 U	1.0 U	1.0 U	2.0 U	179	34.7	304	1.9		9.1	0.76 J
MW23	10/2/17	N	0.50 U	0.098 U	0.66 J	1.5 J	100 U		2.5 U	20.0 U		0.81 U	0.50 U	0.50 U	0.50 U	1.0 U	197	40.3	240	2.0		9.1	0.68 J
MW23	6/1/18	N	1.0 U	0.10 U	0.74 J	0.90 J	100 U		2.5 U	20.0 U		0.77 U	0.50 U	0.50 U	0.50 U	1.0 U	194	42.3	256	2.0		8.8	0.81 J
MW23	10/17/18	N	1.0 U	0.099 U	0.58 J	0.82 J	100 U		2.5 U	20.0 U		0.79 U	0.50 U	0.50 U	0.18 J	1.0 U	191	39.7	239	2.1		8.7	0.90 J
MW23	4/23/19	N	0.17 U	0.087 U	0.65 JB	0.99 JB	46.7 U		0.79 U	6.9 U		0.24 U	0.15 U	0.18 U	0.15 U	0.22 U	187	44.6	255	2.1		9.0	0.86 J
MW24	2/8/98	N	10 U	4 U	4.3	53	5.5 U		1030	50.7			3 U	2 U	3 U	5 U	253	18.7				5.2	1.8
MW24	2/8/98	N2		4 U	2 U	9.5 U				23			3 U	2 U	3 U	5 U							
MW24	12/6/00	N	0.53 U	123 J	1.6	27	6500		530	11		5.9 U	0.1 U	1 U	0.29	1 U	180	21	310	2.3		7.1	5.5
MW24	12/6/00	N2	0.53 U		0.29	25 U	25 U		15 U	25 U		5.9 U	0.1 U	1 U	0.29	1 U							
MW24	4/24/01	N	0.1 U	0.11	2.4	30	7310		508	23		5.3 U	0.1 U	1 U	1 U	1 U	256	36	348	3.64 =		12	3.36
MW24	4/24/01	N2	0.1 U		0.29	5.2	25 U		2.4	11		5.3 U								3.64			
MW24	4/7/16	N	0.11 J	0.044 J	5.0 U	3.0	420		28.4	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	168	9.1	135	1.9		17.4	0.79 J
MW25	2/9/98	N	17	1	6.6	462	30.2 U		4480	321			0.1 U	1 U	1 U	1 U	455	15.6				9.9	0.47 U
MW25	2/9/98	N2		1 =	2 U	9.5 U				16.4			0.1 U	1 U	1 U	1 U							
MW25	4/11/16	N	0.50 U	0.024 J	1.1 J	17.6	6090		148	12.4 J		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	33.7	37.8	137	2.4		3.8	1.5
MW25	7/26/16	N	0.50 U	0.30	5.0 U	1.3 J	28.8 J		1.0 J	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	40.3	49.1	108	3.2		5.0	0.70 J
MW25	10/10/16	FD	0.50 U	0.17	5.0 U	0.71 J	100 U		0.27 J	20.0 U		0.21 U	0.50 U	1.0 U	1.0 U	2.0 U	31.1	16.9	54.0	1.6		2.7	0.44 J

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L
MW25	10/10/16	N	0.50 U	0.23	5.0 U	0.62 J	5.4 J		0.46 J	20.0 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	31.1	17.5	52.0	1.6		2.8	0.44 J
MW25	1/18/17	N	0.080	4.9	0.35	1.2 J	28.2 J		0.70 J	6.2		0.063	0.28	0.26	0.23	0.24	46.0	45.2	112	2.8		4.9	0.78 J
MW25	4/18/17	N	0.50 U	0.094 U	5.0 U	1.4 J	100 U		5.0 U	20.0 U		0.21 U	0.50 U	1.0 U	1.0 U	2.0 U	81.3	29.0	108	2.9		7.3	0.82 J
MW25	10/13/17	N	1.0 U	0.051 J	1.0 U	1.3 J	100 U		2.5 U	20.0 U		0.78 U	0.50 U	0.50 U	0.50 U	1.0 U	79.5	36.1	125	3.2		7.0	0.84 J
MW25	10/13/17	N	1.0 U	0.083 J	1.0 U	1.1 J	100 U		2.5 U	20.0 U		0.80 U	0.50 U	0.50 U	0.50 U	1.0 U	78.7	35.0	122	3.2		7.0	0.81 J
MW25	5/31/18	N	1.0 U	0.096 U	0.28 J	1.3 J	100 U		2.5 U	20.0 U		0.84 U	0.50 U	0.50 U	0.50 U	1.0 U	112	12.5	123	2.4		6.0	1.1
MW25	10/19/18	N	1.0 U	0.095 U	1.0 U	4.7	100 U		1.3 J	20.0 U		0.80 U	0.50 U	0.50 U	0.50 U	0.41 J	98.2	30.1	138	2.8		5.9	0.95 J
MW25	4/24/19	N	5.0	0.091 U	0.27 J	1.3 J	46.7 U		0.79 U	6.9 U		0.23 U	0.15 U	0.18 U	0.15 U	0.22 U	92.3	27.2	117	2.6		5.5 B	1.7
MW26	12/6/00	N	0.65 U	118 J	1.1	21	25 U		94	17		5 U	0.1 U	1 U	1 U	1 U	230	29	350	2.8		540	8
MW26	12/6/00	N2	0.65 U	115 J	2.8	27	16000		300	35		5 U	0.1 U	1 U	1 U	1 U	270	28	330	2.8		770	6.1
MW26	12/6/00	N3	0.7 U		4	25 U	25 U		89	25 U		5 U	0.1 U	1 U	1 U	1 U							
MW26	12/6/00	N4			1.1	25	16000		290	33													
MW26	4/24/01	N	0.1 U	0.1 U	3	13	6980		132	24		5.4 U	0.1 U	1 U	1 U	1 U	240	22	294	5 =		10	2.79
MW26	4/24/01	N2	0.1 U		0.24	25 U	36		15 U	19700										5			
MW26	6/18/01	N	0.1 U	1	1.1	25 U	25 U		15 U	25 U		5 U	0.1 U	1 U	1 U	1 U	230	27	326	30		13	6.67
MW26	6/18/01	N2	0.1 U		3.6	18	9140		232	28										30 =			
MW26	9/10/01	N	10 U	0.16 J	1.5	10 U	2300		94	24		0.24 U	0.44 U	0.5 U	0.4 U	1.2 U	260	30	300	3.2		12	0.34 U
MW26	9/10/01	N2	10 U	0.16 J	0.8 J	4 J	100 J		4 U	3.8 J		0.24 U	0.44 U	0.5 U	0.4 U	1.2 U	260	29	310	3.2		12	2.7
MW26	9/10/01	N3			0.75 J	2.9 J	55 J		1.5 U	3.7 U													
MW26	9/10/01	N4			1.6	13	2500		96	24													
MW26	5/14/02	N		0.1	1.4 J	5 J	1530		57.2	9.7 J		5 U	1 U	5 U	5 U	5 U	260	27	300	3 H		15	5
MW26	5/14/02	N2			1.4 U	1.2 J	11.2 U		0.73 J	9.3 J									300				
MW26	8/5/02	N	0.01 U	0.03 J	3	2.5 J	385		17.2	16.3 J		5 U	1 U	5 U	5 U	5 U	270	18	310	0.15 U		14	4.5
MW26	8/5/02	N2	0.01 U	0.035 J	1.4 U	0.3 U	11.2 U		0.56 J	13.7 J		5 U	1 U	5 U	5 U	5 U	280	19	310	0.15 U		11	24
MW26	8/5/02	N3			2.7	3.9 J	728		26	18.7 J													
MW26	8/5/02	N4			3.2	0.3 U	11.2 U		0.42 U	7.4 J													
MW26	4/29/03	N	0.5 U	0.1 U	1 U	4	1290		46	10 U		7.1 U	0.5 U	5 U	5 U	5 U	248	18	262	3.5		14	7
MW26	4/29/03	N2	0.5 U	0.11 U	1 U	2 J	25 U		5 U	10 U		7.1 U	0.5 U	5 U	5 U	5 U	250	18.7	257	3.6		14	12
MW26	4/29/03	N3	0.5 U		2 J	5	1690		48	20													
MW26	4/29/03	N4			1 U	1 U	25 U		5 U	10 U													

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L	
MW26	9/23/03	N	0.5 U	0.11 U	1 U	1 J	740		29	10 U		1 U	0.25 U	2.5 U	2.5 U	2.5 U	250	11	90.28	3.74		2 U	6.4	
MW26	9/23/03	N2	0.5 U		1 U	1 U	50 U		5 U	10 U														
MW26	5/4/04	FD	10.0 U	0.219 UB	0.295 J	2.37 R	399 R	27400	15.2 R	7.82 R		5.00 U	0.500 U	5.00 U	5.00 U	5.00 U	242	17 =	291	4.0 J		44 R	4.35 J	
MW26	5/4/04	FD2			0.323 J	1.19 R	49.3 R		2.07 R	4.15 R														
MW26	5/4/04	N	10.0 U	0.242 UB	0.264 J	2.62 R	458 R	26700	17.8 R	10.5 R		5.00 U	0.500 U	5.00 U	5.00 U	5.00 U	242	17 =	284	3.9 J		42 R	3.75 J	
MW26	5/4/04	N2			0.289 J	1.24 R	39.0 R		1.23 R	4.36 R														
MW26	9/23/04	FD	10.0 U	5.97 BE	1.00 U	3.10 J	542		22.2	6.95 J		5.00 U	0.500 U	5.00 U	5.00 U	5.00 U	280	28	1770	1.5 J		170 =	1.95	
MW26	9/23/04	FD2		4.11 =	0.354 J	2.01 J	6.48 J		4.00 J	3.80 J														
MW26	9/23/04	N	10.0 U	0.393 =	1.00 U	3.73 J	620		24.8	7.86 J		5.00 U	0.500 U	5.00 U	5.00 U	5.00 U	280	28	1670	1.5 J		120 =	2.40	
MW26	9/23/04	N2			0.314 J	1.57 J	8.81 J		19.3	4.70 J														
MW26	5/10/05	FD	2.0 U	0.11 U	1.0 U	10 U	50 U		0.59 J	20 U		0.93 U	0.50 U	5.0 U	5.0 U	5.0 U	240 J	26 J	370 J	2.2 J		180 R	1.1 R	
MW26	5/10/05	FD2			1.0 U	2.2 J	510		14	17 J														
MW26	5/10/05	N	2.0 U	0.061 J	1.0 U	10 U	50 U		1.8 J	20 U		0.94 U	0.50 U	5.0 U	5.0 U	5.0 U	250 J	26 J	340 J	2.8 J		200 R	2.1 R	
MW26	5/10/05	N2			1.0 U	2.4 J	680		18	7.5 J														
MW26	9/27/05	FD	2.0 UJ	0.024 J	1.0 UJ	10 U	50 U		1.7 J	20 U		0.92 U					250 J	25 J	380	2.0 J		160 J	0.68 J	
MW26	9/27/05	FD2			1.0 UJ	2.6 J	50 UJ		10 U	20 U														
MW26	9/27/05	N	2.0 UJ	0.027 J	1.0 UJ	10 U	50 U		2.3 J	20 U		0.93 U	0.50 U	5.0 U	5.0 U	5.0 U	240 J	25 J	350	1.9 J		170 =	0.72 J	
MW26	9/27/05	N2			1.0 UJ	2.2 J	50 U		10 U	20 U														
MW26	6/7/06	FD	2.0 U	0.091 J	1.0 UJ	10 UJ	50 UJ		1.0 UJ	20 UJ		0.94 U	0.50 U	5.0 U	5.0 U	5.0 U	250 J	29 J	350 J	1.8 J		150 =	0.94 J	
MW26	6/7/06	N	2.0 U	0.11 UJ	1.0 UJ	10 UJ	50 UJ		2.5 UJ	20 UJ		0.95 U	0.50 U	5.0 U	5.0 U	5.0 U	260 J	29 J	320 J	1.8 J		140 =	1.4 J	
MW26	9/26/06	N	2.0 UJ	0.11 U	1.0 UJ	10 UJ	50 UJ		10 UJ	20 UJ		0.91 U	0.50 U	5.0 U	5.0 U	5.0 U	270 J	23 J	350	1.5 J		87 J	2.0	
MW26	5/8/07	FD	2.0 UJ	0.095 UJ	1.0 UJ	10 UJ	100 UJ		10 UJ	20 UJ		0.92 R	1.0 U	1.0 U	1.0 U	2.0 U	270 =	21 J	360	1.6		250 J	0.76 J	
MW26	5/8/07	N	2.0 UJ	0.093 UJ	1.0 UJ	10 UJ	100 UJ		10 UJ	20 UJ		0.92 R	1.0 U	1.0 U	1.0 U	2.0 U	260 =	21 J	360	1.5		210 J	0.68 J	
MW26	9/19/07	N	2.0 UJ	0.095 U	1.0 UJ	10 UJ	100 R		10 UJ	20 UJ		0.93 U	1.0 U	1.0 U	1.0 U	2.0 U	240	25	500 J	1.3		220 J	0.84 J	
MW26	5/20/08	N	2.0 UJ	0.096 UJ	0.34 J	0.47 J	100 UJ		2.5 U	20 U		0.96 U	1.0 UJ	1.0 U	1.0 U	2.0 UJ	240 =	22	430	1.8		230	0.65 J	
MW26	10/22/08	N	2.0 UJ	0.1 U	2 UJ	6.2 J	777 J	35100 J	10 UJ	20 UJ		1 U	0.5 U	2.0 U	2.0 U	5.0 U	256 J	21.7	432 J	2.36 J		235	18.6	
MW26	6/2/09	N	0.8 UJ	0.1 UJ	2 U	10 UJ	341 =	33400 =	10 U	20 U		1.0 UJ	0.5 UB	0.3 J	2.0 UB	5.0 U	229 J	203	414.7082	1.83 J		2360	1.7 UJ	
MW26	10/6/09	N	0.83 UJ	0.1 UJ	2 UJ	3.8 J	325 J	42900 J	10 UJ	20 UJ		0.997 UJ	0.1 UJ	0.4 UJ	0.4 UJ	1 UJ	227 J	20.7 J	491.28 J	1.7 J		212 J	1 UJ	
MW26	5/19/10	N	1.3 U	0.13 J	1.8 J	10 UJ	236. J	39800. J	10 UJ	15. J		1.0 U	0.5 U	5 U	5 U	5 U	230	20.4	486	2.41 J		279	20.1 J	
MW26	10/5/10	N	1.3 U	0.1 UJ	2 U	10 U	376	37900	10 U	20 U		1.0 U	0.1 U	0.4 U	0.4 U	1 U	236	20.0 J	478	1.77		232	0.6 J	

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Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L
MW26	6/29/11	N	0.9 U	0.1 U	2 UJ	10 U	274	41600	10 U	20 U		0.992 U	0.1 U	0.4 U	0.4 U	1 U	202	18.3 J	463.00	1.83 J		230	1 U
MW26	10/19/11	N	0.50 U	0.099 U	0.87 J	2 U	50 U	29000 B	10 U	10 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	230	19	329.00	1.6 J		200	0.88 J
MW26	5/22/12	N	0.50 U	0.10 U	2.0 U	10 U	50 U	28000 =	10 U	20 U		0.19 UJ	0.50 U	1.0 U	1.0 U	2.0 U	200	19	325.00	1.7		210	0.43 J
MW26	10/16/12	N	0.50 U	0.095 U	0.99 J	10 U	50 U	29000 =	10 U	20 U		0.19 U	0.50 U	1.0 U	1.0 UJ	2.0 U	190	19	344	1.8 J		200 =	0.30 J
MW26	5/22/13	N	0.50 U	0.094 U	2.0 U	10 U	50 U	25000 B	10 U	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	170	18		1.9 J		230	0.55 J
MW26	10/8/13	N	0.50 U	0.095 U	0.37 J	10.0 U	50 U	26000 B	10 U	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	160	18		1.5 J		110 J	1.0 U
MW26	5/14/14	N		0.095 U																			
MW26	9/24/14	FD	0.50 U	0.095 U	0.32 J	2.0 U	100 U		5.0 U	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	150	17	280	1.2		160	1.0 U
MW26	9/24/14	N	0.50 U	0.095 U	0.43 J	2.0 U	100 U		5.0 U	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	150	17	290	1.2		160	1.0 U
MW26	4/21/15	FD		0.094 U	0.76 J	2.0 U	100 U		5.0 U	20 U		0.19 U											
MW26	4/21/15	N	0.50 U	0.094 U	0.71 J	2.0 U	100 U		4.4 J	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	160	16	240	2.4		82	1.0 U
MW26	10/13/15	N	0.50 U	0.096 U	0.76 J	2.0 U	100 U		5.0 U	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	198	15.3	229	1.9		74.6	0.32 J
MW26	10/13/15	N	0.50 U	0.096 U	0.50 J	2.0 U	100 U		5.0 U	20.0 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	194	15.5	235	1.9		75.7	0.33 J
MW26	4/5/16	N	0.15 J	0.095 U	0.57 J	1.5 J	21.4 J		58.7	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	154	9.4	183	1.4		36.1	0.26 J
MW27	10/20/11	N	0.10 J	0.17	1.7 J	2.3 J+	50 U	2300 B	10 U	10 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	63	10	28.70	3.1		9.1	1.6
MW27	4/7/16	FD		0.094 U	5.0 U	2.0 U	29.9 J		2.3 J	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
MW27	4/7/16	N	0.092 J	0.15	0.59 J	1.9 J	21.1 J		5.0 U	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	137	20.0	113	6.5		14.2	1.9
MW28	10/20/11	N	0.19 J	690	0.55 J	2 U	50 U	12000 B	6.0 J	10 U		0.19 U	0.50 U	1.0 U	1.0 U	0.38 J	130	5.5	132.00	1.3		5.2	2.7
MW28	10/17/12	N	0.50 U	0.095 U	0.48 J	10 U	50 U	12000 =	10 U	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	120	11	134	1.8		5.0 U	0.81 J
MW28	10/9/13	N	0.50 U	0.049 J	2.0 UJ	10.0 UJ	50 UJ	12000 J	10 UJ	20 UJ		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U *	120 J	21		2.2 J		6.5	0.49 J
MW28	10/9/13	N2																		2.2 J			
MW28	9/25/14	N	0.50 U	0.099	0.31 J	2.0 U	100 U		5.0 U	20 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	120	18	150	1.3		5.1	0.85 J
MW28	10/14/15	N	0.50 U	0.32	5.0 U	2.0 U	100 U		5.0 U	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	126	15.5	155	2.0		5.4	0.69 J
MW28	4/6/16	N	0.20 J	47	5.0 U	0.76 J	29.7 J		2.7 J	20.0 U		0.21 U	0.50 U	1.0 U	1.0 U	2.0 U	122	9.4	125	1.2		4.8	1.6
MW28	7/21/16	N	0.10 J	100	0.49 J	2.0 U	25.9 J		10.8	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	127	11.4	138	1.9		5.4	1.9
MW28	10/13/16	FD	0.36 J	1200	0.38 J	0.61 J	100 U		7.9	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	1.4 J	125	11.4	142	1.7		5.6	12.3
MW28	10/13/16	N	0.28 J	1900	0.39 J	0.76 J	9.8 J		8.5	20.0 U		0.12 J	0.50 U	1.0 U	1.0 U	1.4 J	128	11.4	148	1.7		5.8	12.3
MW28	1/20/17	N	0.20 J	290	0.47 J	1.0 J	5.3		10.3	6.2		0.063	0.28	0.26	0.23	0.24	113	13.4	138	2.0		6.1	4.9
MW28	4/20/17	N	0.50 U	22	0.55 J	1.0 J	11.9 J		4.0 J	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	123	22.5	186	3.3		7.1	1.6
MW28	10/3/17	N	0.18 J	0.16	0.38 J	1.4 J	100 U		2.5 U	20.0 U		0.76 U	0.50 U	0.50 U	0.50 U	1.0 U	116	31.8	171	2.3		6.6	0.83 J

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L	
MW28	10/17/18	N	1.0 U	0.10 U	0.38 J	1.0 J	100 U		2.5 U	7.1 J		0.81 U	0.50 U	0.50 U	0.50 U	1.0 U	106	21.2	126	2.2		5.4	0.97 J	
MW28	4/23/19	N	0.17 U	0.20 ^	0.39 JB	2.0 B	62.7 J		2.1 JB	6.9 U		0.25 U	0.15 U	0.18 U	0.15 U	0.22 U	106	19.3 F1	128	2.1		5.4	0.67 J	
MW29	4/13/16	N	1.4	14000	5.0 U	6.7	1660		2270	20.0 U		34	0.50 U	0.58 J	0.90 J	7.2	87.0	4.5	120	0.10 U		6.4	70.2	
MW29	7/21/16	FD	0.69	9100	5.0 U	2.1	1250		2740	20.0 U		30	0.50 U	0.83 J	1.2	9.3	83.8	9.2	110	0.10 U		10.5	51.6	
MW29	7/21/16	N	0.67	11000	5.0 U	2.1	1290		2800	20.0 U		35	0.50 U	0.74 J	1.3	9.1	84.0	9.2	110	0.10 U		10.4	50.5	
MW29	10/14/16	N	0.32 J	20000	0.35 J	2.6	1970		3220	20.0 U		32	0.50 U	0.98 J	1.6	11	83.0	15.9	124	0.10 U		16.3	56.9	
MW29	1/24/17	FD	0.37 J	67000	0.35	3.3	1380		3170	6.2		41	0.28	0.90 J	1.3	12	112	4.3	122	0.035		6.9	49.9	
MW29	1/24/17	N	0.40 J	56000	0.35	1.9 J	1400		3290	6.2		40	0.28	0.98 J	1.2	12	113	4.3	120	0.035		6.8	51.4	
MW30	4/13/16	N	0.50 U	0.72	5.0 U	0.81 J	46.1 J		147	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	42.0	3.2	82.3	3.4		32.8	1.2	
MW30	7/21/16	N	0.50 U	1.7	5.0 U	2.0 U	100 U		52.9	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	44.5	2.9	82.0	4.0		29.9	1.4	
MW30	10/12/16	N	0.084 J	3.8	5.0 U	1.1 J	13.8 J		67.3	20.0 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	52.2	3.8	86.0	1.6		30.5		
MW30	1/20/17	N	0.080	5.5	0.35	1.0 J	9.4 J		52.8	6.2		0.060	0.28	0.26	0.23	0.24	45.9	2.4	60.0	0.80		9.9	1.4	
MW30	4/21/17	N	0.50 U	3.6	5.0 U	0.95 J	8.1 J		37.7	20.0 U		0.21 U	0.50 U	1.0 U	1.0 U	2.0 U	46.2	0.57 J	250	1.1		5.4	0.93 J	
MW30	10/5/17	N	0.11 J	2.1	1.0 U	1.1 J	49.4 J		31.5	20.0 U		0.80 U	0.50 U	0.50 U	0.50 U	1.0 U	48.4	0.55	52.3	2.0		4.6	1.6	
MW30	5/31/18	N	1.0 U	630	1.0 U	1.1 J	100 U		23.3	20.0 U		1.7	0.50 U	0.50 U	0.50 U	0.39 J	67.3	0.66	69.1	1.6		3.7	1.7	
MW30	10/18/18	N	1.0 U	640	1.0 U	0.94 J	100 U		15.4	7.9 J		1.3	0.50 U	0.50 U	0.50 U	1.0 U	77.5	1.7	82.9	2.2		3.7	2.6	
MW30	4/25/19	N	0.17 U	800	0.23 U	1.1 J	46.7 U		25.1	6.9 U		0.24 U	0.15 U	0.18 U	0.15 U	0.22 U	66.9	1.4	69.9	0.55		3.8 B	5.3	
MW31	4/12/16	N	0.50 U	0.030 J	5.0 U	2.0 U	20.9 J		7.7	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	122	0.99 J	125	0.68		4.0	0.59 J	
MW31	7/20/16	N	0.50 U	4.6	5.0 U	0.86 J	100 U		2.2 J	20.0 U		0.20 U	0.50 U	1.0 U	1.0 U	2.0 U	105	0.76 J	100	0.49		1.9	0.68 J	
MW31	10/13/16	N	0.11 J	3.7	5.0 U	0.76 J	100 U		5.0 U	20.0 U		0.19 U	0.50 U	1.0 U	1.0 U	2.0 U	110	0.63 J	104	0.46		1.5	0.29 J	
MW31	1/17/17	N	0.20 J	0.69	0.59 J	1.4 J	10.5 J		0.52 J	6.2		0.061	0.28	0.26	0.23	0.24	113	0.53 J	118	0.51		1.7	0.74 J	
MW31	4/18/17	N	0.21 J	0.026 J	5.0 U	0.58 J	100 U		0.63 J	20.0 U		0.22 U	0.50 U	1.0 U	1.0 U	2.0 U	111	0.68 J	136	0.73		2.8	0.72 J	
MW31	10/2/17	N	1.9	0.095 U	0.51 J	5.0	1630		34.5	9.7 J		0.82 U	0.50 U	0.50 U	0.50 U	1.0 U	104	1.4	93.9	0.54		1.3	0.50 J	
MW31	10/16/18	N	1.0 U	0.097 U	1.0 U	0.63 J	100 U		1.0 J	20.0 U		0.79 U	0.50 U	0.50 U	0.50 U	0.46 J	187	0.67	181	0.55		1.5	0.70 J	
MW31	4/24/19	N	3.0	0.086 U	0.23 J	1.1 J	46.7 U		1.9 J	6.9 U		0.23 U	0.15 U	0.18 U	0.15 U	0.22 U	178	0.61	191	0.63		1.6 B	0.67 J	
MW32	5/17/19	N	0.17 U	0.14	0.23 U	1.6 J	46.8 J		135	17.0 J		0.23 U	0.15 U	0.18 U	0.15 U	0.22 U	35.9	1.7	40.3	1.3 H		11.3	1.1	
RW01	10/9/97	N		1 U																				
RW01	4/23/01	N		0.1 U								5.3 U	0.5 U	5 U	5 U									
RW01	9/11/01	N		0.071 J								0.26 U	0.44 U	0.5 U	0.4 U	1.2 U								
RW01	9/28/01	N		0.1 U																				

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Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L
RW01	9/28/01	N2		0.05 U																			
RW01	5/14/02	N		0.23								5 U	1 U	5 U	2 J	2 J							
RW01	8/6/02	N		0.04								5 U	1 U	5 U	5 U	5 U							
RW01	4/29/03	N		0.1 J								7.1 U	0.5 U	5 U	5 U	5 U							
RW01	9/23/03	N		0.28								0.97 U	0.25 U	2.5 U	2.5 U	2.5 U							
RW01	11/20/03	N		0.24																			
RW01	5/4/04	FD		0.134 UB								5.00 U	0.500 U	5.00 U	5.00 U	5.00 U							
RW01	5/4/04	N		0.140 UB								5.00 U	0.500 U	5.00 U	5.00 U	5.00 U							
RW01	9/22/04	FD		1.51								5.00 U	0.500 U	5.00 U	5.00 U	5.00 U							
RW01	9/22/04	N		0.201								5.00 U	0.500 U	5.00 U	5.00 U	5.00 U							
RW01	11/1/04	N		0.0952 U																			
RW01	5/10/05	FD		0.053 J								0.93 U	0.50 U	5.0 U	5.0 U	5.0 U							
RW01	5/10/05	N		0.068 J								0.93 U	0.50 U	5.0 U	5.0 U	5.0 U							
RW01	7/7/05	FD		0.035 J								0.96 U	0.50 U	5.0 U	5.0 U	5.0 U							
RW01	7/7/05	N		0.043 J								0.95 U	0.50 U	5.0 U	5.0 U	5.0 U							
RW01	9/27/05	FD		0.049 J								0.93 UJ	0.50 U	5.0 U	5.0 U	5.0 U							
RW01	9/27/05	N		0.050 J								0.92 UJ	0.50 U	5.0 U	5.0 U	5.0 U							
RW01	5/31/06	FD		0.055 J								0.94 U	0.50 U	5.0 U	5.0 U	5.0 U							
RW01	5/31/06	N		0.048 J								0.93 U	0.50 U	5.0 U	5.0 U	5.0 U							
RW01	9/25/06	FD		0.023 J								0.93 U	0.50 U	5.0 U	5.0 U	5.0 U							
RW01	9/25/06	N		0.11 U								0.93 U	0.50 U	5.0 U	5.0 U	5.0 U							
RW01	5/9/07	FD		0.048 J								0.95 R	1.0 U	1.0 U	1.0 U	2.0 U							
RW01	5/9/07	N		0.035 J								0.95 R	1.0 U	1.0 U	1.0 U	2.0 U							
RW01	9/18/07	FD		0.27 R								0.93 R	1.0 U	1.0 U	1.0 U	2.0 U							
RW01	9/18/07	N		0.093 UJ								0.93 R	1.0 U	1.0 U	1.0 U	2.0 U							
RW01	5/20/08	FD		0.066 J								0.95 U	1.0 UJ	1.0 U	1.0 U	2.0 UJ							
RW01	5/20/08	N		0.060 J								0.95 U	1.0 UJ	1.0 U	1.0 U	2.0 UJ							
RW01	10/23/08	FD										1 U											
RW01	10/23/08	N										1 U											
RW01	12/11/08	FD		0.1 U									0.1 U	0.4 U	0.4 U	1.0 U							

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Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L
RW01	12/11/08	N		0.1 UJ									0.1 U	0.4 U	0.4 U	1.0 U							
RW01	6/2/09	FD		0.1 UJ								1.0 UJ	0.5 UB	2.0 UB	2.0 UB	5.0 UB							
RW01	6/2/09	N		0.1 UJ								1.0 UJ	0.5 UB	2.0 UB	2.0 UB	5.0 U							
RW01	7/6/09	FD											0.5 U	2.0 U	2.0 U	5.0 U							
RW01	7/6/09	N											0.5 U	2.0 U	2.0 U	5.0 U							
RW01	10/7/09	FD		0.1 UJ								0.997 UJ	0.1 UJ	0.4 UJ	0.4 UJ	1 UJ							
RW01	10/7/09	N		0.1 UJ								1 UJ	0.1 UJ	0.4 UJ	0.4 UJ	1 UJ							
RW01	5/19/10	FD		0.1 U								1.0 U	0.4 U	5 U	5 U	5 U							
RW01	5/19/10	N		0.1 U								1.0 U	0.4 UJ	5 UJ	5 UJ	5 UJ							
RW01	10/5/10	FD		0.1 U								1.0 U	0.1 U	0.4 U	0.4 U	1 U							
RW01	10/5/10	N		0.1 U								1.0 U	0.1 UJ	0.4 UJ	0.4 UJ	1 UJ							
RW01	11/30/10	N											0.1 U	0.4 U	0.4 U	1 U							
RW01	6/30/11	FD		0.1 U								1 U	0.1 U	0.4 U	0.4 U	1 U							
RW01	6/30/11	N		0.1 U								0.997 U	0.1 U	0.4 U	0.4 U	1 U							
RW01	10/20/11	FD		0.039 J								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW01	10/20/11	N		0.040 J								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW01	12/16/11	FD		0.031 R																			
RW01	12/16/11	N		0.096 UJ																			
RW01	5/23/12	FD		0.017 J								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW01	5/23/12	N		0.019 J								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW01	7/11/12	FD		0.035 J																			
RW01	7/11/12	FD2		0.033 J																			
RW01	7/11/12	N		0.027 J																			
RW01	10/17/12	FD		0.035 J								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW01	10/17/12	N		0.045 J								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW01	12/3/12	FD		0.094 UJ																			
RW01	12/3/12	FD2		0.095 U																			
RW01	12/3/12	N		0.094 UJ																			
RW01	12/3/12	N2		0.095 U																			
RW01	5/21/13	FD		0.029 J								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							

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Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L
RW01	5/21/13	N		0.031 J								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW01	10/8/13	N		0.040 J								0.20 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW01	10/8/13	N2		0.097 U								0.20 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW01	5/13/14	N		0.051 J																			
RW01	9/25/14	N		0.043 J								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW01	4/21/15	N		0.095 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW01	10/15/15	N		0.094 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW01	4/5/16	N		0.095 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW01	10/10/16	N		0.020 J								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW01	4/19/17	N		0.015 J								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW01	10/20/17	N		0.10 U								0.87 U	0.50 U	0.50 U	0.37 J	1.0 U							
RW01	6/5/18	N		0.095 U								0.75 U	0.50 U	0.50 U	0.50 U	1.0 U							
RW01	10/15/18	N		0.10 U								0.79 U	0.50 U	0.50 U	0.50 U	1.0 U							
RW01	4/22/19	N		0.087 U								0.23 U	0.15 U	0.18 U	0.15 U	0.22 U							
RW02	10/9/97	FD		2																			
RW02	10/9/97	N		0.9 J																			
RW02	10/24/97	N		1 U																			
RW02	4/8/98	N		1 U																			
RW02	4/24/01	N		0.1 U								5.4 U	0.1 U	1 U	1 U	1 U							
RW02	9/11/01	N		9.5								0.25 U	0.44 U	0.5 U	0.4 U	1.2 U							
RW02	9/28/01	N		0.1 U																			
RW02	9/28/01	N2		0.1 U																			
RW02	9/28/01	N3		0.05 U																			
RW02	9/28/01	N4		0.05 U																			
RW02	5/14/02	N		0.1								5 U	1 U	5 U	5 U	5 U							
RW02	8/6/02	N		0.04 U								5 U	1 U	5 U	5 U	5 U							
RW02	8/6/02	N2		0.04 U								5 U	1 U	5 U	5 U	5 U							
RW02	4/29/03	N		0.11 U								6.8 U	0.5 U	5 U	5 U	5 U							
RW02	9/24/03	N		0.11 U								0.97 U	0.25 U	2.5 U	2.5 U	2.5 U							
RW02	9/24/03	N2		0.11 U								0.96 U	0.25 U	2.5 U	2.5 U	2.5 U							

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Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L
RW02	5/4/04	N		0.0252 UB								5.00 U	0.500 U	5.00 U	5.00 U	5.00 U							
RW02	9/22/04	N		0.398								5.00 U	0.500 U	5.00 U	5.00 U	5.00 U							
RW02	11/1/04	N		0.0962 U																			
RW02	5/10/05	N		0.11 U								0.93 U	0.50 U	5.0 U	5.0 U	5.0 U							
RW02	9/27/05	N		0.11 U								0.92 UJ	0.50 U	5.0 U	5.0 U	5.0 U							
RW02	5/31/06	N		0.11 UJ								0.93 U	0.50 U	5.0 U	5.0 U	5.0 U							
RW02	9/25/06	N		0.11 U								0.93 U	0.50 U	5.0 U	5.0 U	5.0 U							
RW02	5/9/07	N		0.092 UJ								0.97 R	1.0 U	1.0 U	1.0 U	2.0 U							
RW02	9/18/07	N		0.093 UJ								0.93 R	1.0 U	1.0 U	1.0 U	2.0 U							
RW02	5/20/08	N		0.095 UJ								0.95 U	1.0 UJ	1.0 U	1.0 U	2.0 UJ							
RW02	10/23/08	N										1.33 U											
RW02	12/10/08	N		0.1 U									0.1 U	0.4 U	0.4 U	1.0 U							
RW02	6/2/09	N		0.1 UJ								1.0 UJ	0.5 U	2.0 U	2.0 U	5.0 U							
RW02	10/7/09	N		0.1 UJ								0.997 UJ	0.1 UJ	0.4 UJ	0.4 UJ	1 UJ							
RW02	5/19/10	N		0.1 U								1.0 U	0.4 U	5 U	5 U	5 U							
RW02	10/5/10	N		0.1 U								1.0 U	0.1 U	0.4 U	0.4 U	1 U							
RW02	6/30/11	N		0.1 U								0.999 U	0.1 U	0.4 U	0.4 U	1 U							
RW02	10/20/11	N		0.095 U								0.20 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW02	5/23/12	N		0.097 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW02	10/17/12	N		0.037 J								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW02	10/17/12	N2		0.057 J																			
RW02	10/17/12	N3		0.094 UJ																			
RW02	12/3/12	N		0.095 U																			
RW02	12/3/12	N2		0.094 UJ																			
RW02	5/21/13	N		0.097 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW02	10/8/13	N		0.094 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW02	5/13/14	N		0.095 U																			
RW02	9/25/14	N		0.096 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW02	4/21/15	N		0.095 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW02	10/15/15	N		0.096 U								0.20 U	0.50 U	1.0 U	1.0 U	2.0 U							

Appendix A.1

Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L
RW02	4/5/16	N		0.095 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW02	10/10/16	N		0.097 U								0.20 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW02	4/17/17	N		0.095 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW02	10/20/17	N		0.10 U								0.75 U	0.50 U	0.50 U	0.33 J	1.0 U							
RW02	4/17/18	N		0.024 U								0.79 U	0.50 U	0.50 U	0.50 U	1.0 U							
RW02	10/16/18	FD		0.099 U								0.80 U	0.50 U	0.50 U	0.50 U	1.0 U							
RW02	10/16/18	N		0.097 U								0.77 U	0.50 U	0.50 U	0.50 U	1.0 U							
RW02	4/22/19	FD		0.085 U								0.23 U	0.15 U	0.18 U	0.15 U	0.22 U							
RW02	4/22/19	N		0.085 U								0.23 U	0.15 U	0.18 U	0.15 U	0.22 U							
RW03	10/9/97	N		1 U																			
RW03	9/11/01	N		0.1 J								0.28 U	0.44 U	0.5 U	0.4 U	1.2 U							
RW03	9/28/01	N		0.1 U																			
RW03	9/28/01	N2		0.05 U																			
RW03	5/14/02	N		0.094 J								5 U	1 U	5 U	5 U	5 U							
RW03	8/6/02	N		0.04 U								5 U	1 U	5 U	5 U	5 U							
RW03	4/29/03	N		0.11 U								6.8 U	0.5 U	5 U	5 U	5 U							
RW03	9/23/03	N		0.11 U								0.96 U	0.25 U	2.5 U	2.5 U	2.5 U							
RW03	5/4/04	N		0.0952 U								5.00 U	0.500 U	5.00 U	5.00 U	5.00 U							
RW03	9/22/04	N		2.18								5.00 U	0.500 U	5.00 U	5.00 U	5.00 U							
RW03	11/1/04	N		0.0962 U																			
RW03	5/10/05	N		0.11 U								0.93 U	0.50 U	5.0 U	5.0 U	5.0 U							
RW03	9/27/05	N		0.11 U								0.93 UJ	0.50 U	5.0 U	5.0 U	5.0 U							
RW03	5/31/06	N		0.11 UJ								0.94 U	0.50 U	5.0 U	5.0 U	5.0 U							
RW03	9/25/06	N		0.11 U								0.93 U	0.50 U	5.0 U	5.0 U	5.0 U							
RW03	5/9/07	N		0.092 UJ								0.95 R	1.0 U	1.0 U	1.0 U	2.0 U							
RW03	9/18/07	N		0.093 UJ								0.93 R	1.0 U	1.0 U	1.0 U	2.0 U							
RW03	5/20/08	N		0.097 UJ								0.96 U	1.0 UJ	1.0 U	1.0 U	2.0 UJ							
RW03	10/23/08	N										1 U											
RW03	12/10/08	N		0.1 U									0.1 U	0.4 U	0.4 U	1.0 U							
RW03	6/2/09	N		0.1 UJ								1.0 UJ	0.5 U	2.0 U	2.0 U	5.0 U							

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Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L	
RW03	10/7/09	N		0.1 UJ								0.997 UJ	0.1 UJ	0.4 UJ	0.4 UJ	1 UJ								
RW03	5/19/10	N		0.1 U								1.0 U	0.4 UJ	5 UJ	5 UJ	5 UJ								
RW03	10/5/10	N		0.1 U								1.0 U	0.1 U	0.4 U	0.4 U	1 U								
RW03	6/30/11	N		0.1 U								0.994 U	0.1 U	0.4 U	0.4 U	1 U								
RW03	10/20/11	N		0.095 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U								
RW03	5/23/12	N		0.097 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U								
RW03	10/17/12	N		0.015 J								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U								
RW03	12/3/12	N		0.095 U																				
RW03	12/3/12	N2		0.095 UJ																				
RW03	5/21/13	N		0.053 J								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U								
RW03	10/8/13	N		0.096 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U								
RW03	5/13/14	N		0.095 U																				
RW03	9/25/14	FD		0.095 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U								
RW03	9/25/14	N		0.095 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U								
RW03	4/21/15	N		0.097 U								0.20 U	0.50 U	1.0 U	1.0 U	2.0 U								
RW03	10/15/15	N		0.095 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U								
RW03	4/5/16	N		0.094 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U								
RW03	10/10/16	N		0.095 U								0.20 U	0.50 U	1.0 U	1.0 U	2.0 U								
RW03	4/17/17	N		0.095 U								0.20 U	0.50 U	1.0 U	1.0 U	2.0 U								
RW03	10/20/17	N		0.096 U								0.79 U	0.50 U	0.50 U	0.29 J	1.0 U								
RW03	4/17/18	N		0.025 U								0.84 U	0.50 U	0.50 U	0.50 U	1.0 U								
RW03	10/16/18	N		0.098 U								0.77 U	0.50 U	0.50 U	0.50 U	1.0 U								
RW03	4/22/19	N		0.085 U								0.24 U	0.15 U	0.18 U	0.15 U	0.22 U								
RW04	10/9/97	N		1 U																				
RW04	4/23/01	N		0.1 U								5 U	0.5 U	5 U	5 U									
RW04	9/11/01	N		0.073 J								0.25 U	0.44 U	0.5 U	0.4 U	1.2 U								
RW04	9/28/01	N		0.1 U																				
RW04	9/28/01	N2		0.05 U																				
RW04	5/14/02	N		0.13								5 U	1 U	5 U	5 U	5 U								
RW04	8/6/02	N		0.04 U								5 U	1 U	5 U	5 U	5 U								

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Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L
RW04	4/29/03	N		0.11 U								7.4 U	0.5 U	5 U	5 U	5 U							
RW04	9/23/03	N		0.11 U								0.99 U	0.25 U	2.5 U	2.5 U	2.5 U							
RW04	5/4/04	N		0.100 U								5.00 U	0.500 U	5.00 U	5.00 U	5.00 U							
RW04	9/22/04	N		0.266								5.00 U	0.500 U	5.00 U	5.00 U	5.00 U							
RW04	10/1/04	N		0.0962 R																			
RW04	5/10/05	N		0.11 U								0.94 U	0.50 U	5.0 U	5.0 U	5.0 U							
RW04	9/27/05	N		0.11 U								0.91 UJ	0.50 U	5.0 U	5.0 U	5.0 U							
RW04	5/31/06	N		0.11 UJ								0.97 U	0.50 U	5.0 U	5.0 U	5.0 U							
RW04	9/25/06	N		0.11 U								0.93 U	0.50 U	5.0 U	5.0 U	5.0 U							
RW04	5/9/07	N		0.093 UJ								0.96 R	1.0 U	1.0 U	1.0 U	2.0 U							
RW04	9/18/07	N		0.093 UJ								0.93 R	1.0 U	1.0 U	1.0 U	2.0 U							
RW04	5/20/08	N		0.093 UJ								0.96 U	1.0 UJ	1.0 U	1.0 U	2.0 UJ							
RW04	10/23/08	N										1 U											
RW04	12/10/08	N		0.1 U									0.1 U	0.4 U	0.4 U	1.0 U							
RW04	6/2/09	N		0.1 UJ								1.0 UJ	0.5 U	2.0 U	2.0 U	5.0 U							
RW04	10/7/09	N		0.15 J								0.994 UJ	0.1 UJ	0.4 UJ	0.4 UJ	1 UJ							
RW04	10/20/09	N		0.1 UJ																			
RW04	5/19/10	N		0.1 U								1.0 U	0.4 UJ	5 UJ	5 UJ	5 UJ							
RW04	10/5/10	N		0.1 U								1.0 U	0.1 U	0.4 U	0.4 U	1 U							
RW04	6/30/11	N		0.1 U								0.992 U	0.1 U	0.4 U	0.4 U	1 U							
RW04	10/20/11	N		0.095 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW04	5/23/12	N		0.094 U								0.20 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW04	10/17/12	N		0.071 J								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW04	12/3/12	N		0.095 U																			
RW04	12/3/12	N2		0.094 UJ																			
RW04	5/21/13	N		0.094 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW04	10/8/13	N		0.095 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW04	5/13/14	N		0.023 J																			
RW04	9/25/14	N		0.096 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW04	4/21/15	N		0.094 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							

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Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L
RW04	10/15/15	N		0.094 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW04	4/5/16	N		0.094 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW04	10/10/16	N		0.094 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW04	4/17/17	N		0.094 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW04	10/20/17	N		0.096 U								0.81 U	0.50 U	0.50 U	0.50 U	1.0 U							
RW04	4/17/18	N		0.024 U								0.92 U	0.50 U	0.50 U	0.50 U	1.0 U							
RW04	10/15/18	N		0.11 U								0.90 U	0.50 U	0.50 U	0.50 U	1.0 U							
RW04	4/22/19	N		0.11 U								0.25 U	0.15 U	0.18 U	0.15 U	0.22 U							
RW05	5/4/04	N		0.0935 U								5.00 U	0.500 U	5.00 U	5.00 U	5.00 U							
RW05	9/22/04	N		0.293								5.00 U	0.500 U	5.00 U	5.00 U	5.00 U							
RW05	11/1/04	N		0.0962 U																			
RW05	5/10/05	N		0.11 U								0.93 U	0.50 U	5.0 U	5.0 U	5.0 U							
RW05	9/27/05	N		0.11 U								0.92 UJ	0.50 U	5.0 U	5.0 U	5.0 U							
RW05	5/31/06	N		0.11 UJ								0.94 U	0.50 U	5.0 U	5.0 U	5.0 U							
RW05	9/25/06	N		0.11 U								0.93 U	0.50 U	5.0 U	5.0 U	5.0 U							
RW05	5/9/07	N		0.092 UJ								0.93 R	1.0 U	1.0 U	1.0 U	2.0 U							
RW05	9/18/07	N		0.093 UJ								1.0 R	1.0 U	1.0 U	1.0 U	2.0 U							
RW05	5/20/08	N		0.095 UJ								0.95 U	1.0 UJ	1.0 U	1.0 U	2.0 UJ							
RW05	10/23/08	N										1 U											
RW05	12/10/08	N		0.1 U									0.1 U	0.4 U	0.4 U	1.0 U							
RW05	6/2/09	N		0.1 UJ								1.0 UJ	0.5 U	2.0 U	2.0 U	5.0 U							
RW05	10/7/09	N		0.1 UJ								0.997 UJ	0.1 UJ	0.4 UJ	0.4 UJ	1 UJ							
RW05	5/19/10	N		0.1 U								1.0 U	0.4 U	5 U	5 U	5 U							
RW05	10/5/10	N		0.1 U								1.0 U	0.1 U	0.4 U	0.4 U	1 U							
RW05	6/30/11	N		0.1 U								0.991 U	0.1 U	0.4 U	0.4 U	1 U							
RW05	10/20/11	N		0.095 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW05	5/23/12	N		0.095 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW05	10/17/12	N		0.030 J								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW05	12/4/12	N		0.095 UJ																			
RW05	12/4/12	N2		0.095 U																			

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Historical Groundwater Analytical Data
Penta Wood Products Superfund Site
Siren, Wisconsin

Location	Date ²	Compound ¹ Units Type ³	Methane ug/L	Pentachlorophenol ug/L	Arsenic ug/L	Copper ug/L	Iron ug/L	Magnesium ug/L	Manganese ug/L	Zinc ug/L	Total Petroleum Hydrocarbons (C10-C28) DRO mg/L	Naphthalene ug/L	Benzene ug/L	Ethylbenzene ug/L	Toluene ug/L	Xylenes (total) ug/L	Alkalinity, total (as CaCO3) mg/L	Chloride mg/L	Hardness mg/L	Nitrate (as N) mg/L	Oil and grease (HEM), polar mg/L	Sulfate mg/L	Total organic carbon (TOC) mg/L
RW05	5/21/13	N		0.095 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW05	10/8/13	N		0.098 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW05	5/13/14	N		0.095 U																			
RW05	9/25/14	N		0.096 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW05	4/21/15	N		0.095 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW05	10/15/15	N		0.10 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW05	4/5/16	N		0.095 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW05	10/10/16	N		0.095 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW05	4/17/17	N		0.097 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW05	10/20/17	N		0.095 U								0.81 U	0.50 U	0.50 U	0.50 U	1.0 U							
RW05	4/17/18	FD		0.024 U								0.75 U	0.50 U	0.50 U	0.50 U	1.0 U							
RW05	4/17/18	N		0.024 U								0.75 U	0.50 U	0.50 U	0.50 U	1.0 U							
RW05	10/15/18	N		0.16								0.87 U	0.50 U	0.50 U	0.50 U	1.0 U							
RW05	4/22/19	N		0.085 U								0.25 U	0.15 U	0.18 U	0.15 U	0.22 U							
RW06	9/25/14	N		0.095 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW06	4/21/15	N		0.095 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW06	10/15/15	N		0.018 J								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW06	4/5/16	N		0.095 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW06	10/10/16	N		0.095 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW06	4/18/17	N		0.095 U								0.19 U	0.50 U	1.0 U	1.0 U	2.0 U							
RW06	10/20/17	N		0.095 U								0.75 U	0.50 U	0.50 U	0.50 U	1.0 U							
RW06	4/17/18	N		0.024 U								0.83 U	0.50 U	0.50 U	0.50 U	1.0 U							
RW06	10/16/18	N		0.099 U								0.78 U	0.50 U	0.50 U	0.50 U	1.0 U							
RW06	4/22/19	N		0.086 U								0.24 U	0.15 U	0.18 U	0.15 U	0.22 U							
RW06 SHOP	4/17/18	N		0.024 U								0.79 U	0.50 U	0.50 U	1.5	1.0 U							
RW06 SHOP	10/16/18	N		0.095 U								0.75 U	0.50 U	0.50 U	1.7	1.0 U							
RW06 SHOP	4/22/19	N		0.095 U								0.23 U	0.15 U	0.18 U	0.50 U	0.22 U							

Appendix A.1

**Historical Groundwater Sampling Results
Penta Wood Products Superfund Site
Siren, Wisconsin**

Notes:

- 1 - Only compounds currently sampled are included on this table.
- 2 - Samples collected before September 2014 were not collected by GHD. GHD has no ability to verify data or data qualifiers.
- 3 - Sample type is listed for normal samples (N) and field duplicates (FD), numbers differentiate from multiple samples of similar sample type during the same sampling event.
- mg/L - Concentrations listed with units of milligrams per liter.
- ug/L - Concentrations listed with units of micrograms per liter.
- * - LCS or LCSD exceeds the control limits.
- B - Compound was detected in the method blank.
- F1 - MS and/or MSD Recovery exceeds the control limits
- H - Analysis was performed after holding time.
- J - Concentration was estimated below the reporting limit.
- p - The %RPD between the primary and confirmation column/detector is >40%. The lower value has been reported.
- U - Compound was not detected above the reporting limit.
- UJ - Compound was not detected above the estimated reporting limit.

Appendix A.2

**Historical LNAPL Thickness - Monitoring Wells
Penta Wood Products Superfund Site
Siren, Wisconsin**

**Monitoring Well
LNAPL Thickness (feet)**

Date	MW10S	MW18	MW19	MW20	MW29
Sep-01	0.01	0.27	0.51	0.11	NA
May-02	0.00	0.29	0.23	0.00	NA
Aug-02	0.00	0.33	0.22	0.00	NA
May-03	0.00	0.00	0.00	0.00	NA
Sep-03	0.00	0.32	0.24	0.04	NA
May-04	0.00	0.45	0.36	0.35	NA
Sep-04	0.21	0.54	0.67	0.52	NA
May-05	0.29	0.48	0.63	0.36	NA
Sep-05	0.87	0.06	0.83	1.15	NA
May-06	0.00	0.00	0.29	0.00	NA
Sep-06	0.00	0.05	0.80	0.69	NA
Apr-07	0.58	0.04	0.74	1.22	NA
May-07	0.58	0.03	0.54	1.20	NA
Sep-07	0.04	0.16	1.07	0.00	NA
May-08	0.40	1.19	0.90	1.71	NA
Oct-08	0.14	0.04	0.00	0.00	NA
Jun-09	0.54	1.58	1.60	1.45	NA
Oct-09	0.63	1.92	1.46	1.02	NA
May-10	0.51	2.01	1.10	0.85	NA
Oct-10	0.00	0.57	0.59	0.00	NA
Jun-11	0.00	0.42	0.79	0.00	NA
Oct-11	0.00	0.53	1.07	0.00	NA
May-12	0.69	0.79	0.80	2.17	NA
Aug-12	0.04	0.43	0.89	0.30	NA
Oct-12	0.00	0.45	0.91	0.88	NA
Dec-12	0.02	0.44	1.06	0.95	NA
May-13	0.17	0.53	0.94	1.08	NA
Oct-13	0.00	0.70	1.25	0.81	NA
May-14	0.00	0.79	0.22	0.22	NA
Sep-14	0.00	0.56	0.30	0.00	NA
2/13/15	0.00	0.56	0.24	0.00	NA
2/20/15	0.00	0.53	0.23	0.00	NA
3/24/15	0.00	0.34	0.52	0.00	NA
4/16/15	0.00	0.58	NM	0.00	NA
5/14/15	0.00	0.57	NM	0.00	NA
10/12/15	0.00	0.42	0.07	0.01	NA
4/4/16	0.00	0.66	0.25	0.01	0.00

Appendix A.2

**Historical LNAPL Thickness - Monitoring Wells
Penta Wood Products Superfund Site
Siren, Wisconsin**

**Monitoring Well
LNAPL Thickness (feet)**

Date	MW10S	MW18	MW19	MW20	MW29
7/18/16	0.00	0.52	0.00	0.00	0.00
10/7/16	0.00	0.67	0.01	0.01	0.00
1/11/17	0.00	NM	0.18	0.02	0.00
4/17/17	0.00	0.53	0.27	0.01	0.47
7/13/17	0.00	0.51	0.10	0.01	0.15
9/28/17	0.00	NM	NM	0.01	0.45
1/3/18	0.00	0.45	0.26	0.01	0.70
5/25/18*	0.00	0.53	0.62	0.01	0.88
7/11/18	0.00	0.50	0.19	0.01	0.48
10/15/18	0.00	0.48	0.41	0.01	0.63
1/2/19	0.00	0.51	0.37	0.34	0.76
4/17/19	0.00	0.50	0.20	0.01	0.33

Notes:

NM - Not Measured

NA - Not Applicable

* - MW10S measured on 6/1/18 and MW29 measured on 5/24/18

**Historical Groundwater Extraction Summary
Penta Wood Products Superfund Site
Siren, Wisconsin**

Operation Period	Volume of Groundwater Extracted (gallons)
09/27/00 to 12/18/00	11,712,960
02/02/01 to 02/08/01	691,200
03/16/01 to 06/10/01	9,288,000
06/15/01 to 09/27/01	6,822,720
02/27/04 to 12/31/04	18,548,154
01/01/05 to 12/31/05	21,374,796
01/01/06 to 12/31/06	14,759,392
01/01/07 to 12/31/07	16,551,336
01/01/08 to 12/31/08	18,118,696
01/01/09 to 12/31/09	18,533,648
01/01/10 to 12/31/10	18,561,632
01/01/11 to 12/31/11	17,796,668
01/01/12 to 12/31/12	23,051,892
01/01/13 to 12/31/13	29,793,563
01/01/14 to 12/31/14	18,415,098
01/01/15 to 06/30/15	6,282,127
07/01/15 to 11/23/15	5,125,729
Total Gallons Extracted	255,427,611

Appendix A.4

**Historical Influent Pentachlorophenol Concentrations
Penta Wood Products Superfund Site
Siren, Wisconsin**

Date	Influent PCP Concentration (ug/L)
02/27/2004 to 12/31/2004*	9,227
01/01/2005 to 12/31/2005*	7,300
01/01/2006 to 12/31/2006*	6,425
01/01/2007 to 12/31/2007*	3,557
01/01/2008 to 12/31/2008*	3,255
March 2009	3,560
July 2009	3,140
September 2009	2,800
December 2009	2,030
March 2010	2050 J
June 2010	1,970
September 2010	1,830
December 2010	1,940
March 2011	2,470
June 2011	2,170
August 2011	1,700
October 2011	1,600
February 2012	2,600
May 2012	2,200
July 2012	1,900
October 2012	1,800
February 2013	1,100
May 2013	1,100
July 2013	1,800
October 2013	1,400
February 2014	1,800
May 2014	1,600
August 2014	2,100
September 2014	2,400
October 2014	2,400
November 2014	2,100
December 2014	4,600
January 2015	1,800
February 2015	480
March 2015	390
April 2015*	1,767
May 2015*	355
June 2015	550
July 2015*	1,100
August 2015	370
September 2015	750
October 2015	600
November 2015	1,100

Note:

* Average PCP influent concentration for that time period.

Appendix A.5

**Historical Hazardous Waste Generation Summary
Penta Wood Products Superfund Site
Siren, Wisconsin**

Date	Filter Cake (lb)	Misc. Debris (lb)	Carbon (lb)	LNAPL (lb)	Liquids[‡] (gallons)	Yearly Total (lb)
2000	0	200	6,000	5,009*	0	11,209
2001	0	400	56,100	6,166*	0	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*	0	314,682
2005	178,784	1,290	104,860	23,847*	0	308,924
2006	112,640	1,200	136,520	52,892*	0	303,252
2007	174,020	2,200	245,377	77,615*	0	517,387
2008	211,402	3,176	70,007	28,036	0	312,621
2009	233,840	1,116	49,757	35,659	0	320,372
2010	210,940	0	81,227	34,937	0	327,104
2011	292,903	0	74,247	0	0	367,150
2012	182,280	0	65,420	25,493	0	273,193
2013	156,760	0	46,571	27,252	0	230,582
2014	110,754	13,513	65,995	11,720	0	201,982
2015	0	0	22,248	0	0	22,248
2016	0	15,212 [†]	34,877	14,374	0	49,251
2017	0	0	0	0	2,759	2,759
2018	0	0	0	0	0	0

Note:

- * - 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.
- † - Miscellaneous debris includes sludge, filter cake, and drill cuttings from system decommissioning.
- ‡ - Prior to 2017, all liquids disposed were water. In 2017, liquids disposed were ferric sulfate water treatment chemicals.
- lb - pounds

Appendix A.6

**LNAPL Thickness and Recovery Summary - Extraction Wells
Penta Wood Products Superfund Site
Siren, Wisconsin**

Well ID	Date	Depth to Water (feet) ¹	Depth to LNAPL (feet) ¹	LNAPL Thickness (feet)	Recovered LNAPL Volume (gallons)	Comments
EW02	2/18/2015	97.51	NP	0.00	NA	Groundwater extraction rate increased to 10 gpm
EW02	2/20/2015	97.52	NP	0.00	NA	
EW02	2/24/2015	97.59	NP	0.00	NA	
EW02	3/10/2015	97.67	NP	0.00	NA	
EW02	3/24/2015	97.76	NP	0.00	NA	
EW02	4/10/2015	97.79	NP	0.00	NA	
EW02	4/16/2015	97.76	NP	0.00	NA	
EW02	5/8/2015	97.77	NP	0.00	NA	Groundwater extraction rate increased to 12 gpm on 4/30/2015
EW02	5/21/2015	97.89	NP	0.00	NA	
EW02	6/3/2015	97.92	NP	0.00	NA	
EW02	6/16/2015	97.99	NP	0.00	NA	
EW02	7/8/2015	98.12	NP	0.00	NA	
EW02	7/21/2015	98.11	NP	0.00	NA	
EW02	7/29/2015	98.11	NP	0.00	NA	Groundwater extraction rate increased to 13.5 gpm
EW02	8/5/2015	98.18	NP	0.00	NA	
EW02	8/19/2015	98.11	NP	0.00	NA	
EW02	9/4/2015	97.83	NP	0.00	NA	
EW02	9/21/2015	97.76	NP	0.00	NA	
EW02	10/8/2015	97.72	NP	0.00	NA	
EW02	10/22/2015	97.64	NP	0.00	NA	
EW02	11/2/2015	97.58	NP	0.00	NA	
EW02	11/23/2015	NM	NM	NM	NA	Groundwater extraction pump turned off for pilot study
			Total LNAPL Recovered		0.0	
EW04	11/4/2014	114.30	NP	0.00	NA	
EW04	12/11/2014	115.39	NP	0.00	NA	
EW04	12/23/2014	115.34	NP	0.00	NA	Groundwater extraction system shutdown pending carbon change-out
EW04	12/30/2014	115.26	NP	0.00	NA	
EW04	1/8/2015	115.22	NP	0.00	NA	Groundwater extraction system remained shutdown pending carbon change-out
EW04	1/19/2015	115.23	NP	0.00	NA	Groundwater extraction system remained shutdown pending carbon change-out
EW04	1/22/2015	115.36	NP	0.00	NA	Groundwater extraction system restarted after carbon change-out
EW04	1/30/2015	115.47	NP	0.00	NA	
EW04	2/3/2015	115.48	NP	0.00	NA	
EW04	2/13/2015	115.51	NP	0.00	NA	
EW04	2/17/2015	115.48	NP	0.00	NA	Groundwater extraction rate increased to 10 gpm
EW04	2/18/2015	115.51	NP	0.00	NA	
EW04	2/20/2015	115.43	NP	0.00	NA	
EW04	2/24/2015	115.53	NP	0.00	NA	
EW04	3/10/2015	115.58	NP	0.00	NA	
EW04	3/24/2015	115.67	NP	0.00	NA	

Appendix A.6

**LNAPL Thickness and Recovery Summary - Extraction Wells
Penta Wood Products Superfund Site
Siren, Wisconsin**

Well ID	Date	Depth to Water (feet) ¹	Depth to LNAPL (feet) ¹	LNAPL Thickness (feet)	Recovered LNAPL Volume (gallons)	Comments
EW04	4/10/2015	115.69	NP	0.00	NA	
EW04	4/16/2015	115.69	NP	0.00	NA	
EW04	5/8/2015	115.69	NP	0.00	NA	Groundwater extraction rate increased to 12 gpm on 4/30/2015
EW04	5/21/2015	115.74	NP	0.00	NA	
EW04	6/3/2015	115.75	NP	0.00	NA	
EW04	6/16/2015	115.82	NP	0.00	NA	
EW04	7/8/2015	115.93	NP	0.00	NA	
EW04	7/21/2015	115.92	NP	0.00	NA	
EW04	7/29/2015	115.91	NP	0.00	NA	Groundwater extraction rate increased to 13.5 gpm
EW04	8/5/2015	115.97	NP	0.00	NA	
EW04	8/19/2015	115.95	NP	0.00	NA	
EW04	9/4/2015	115.78	NP	0.00	NA	
EW04	9/21/2015	115.61	NP	0.00	NA	
EW04	10/8/2015	115.58	NP	0.00	NA	
EW04	10/22/2015	115.58	NP	0.00	NA	
EW04	11/2/2015	115.45	NP	0.00	NA	
EW04	11/23/2015	NM	NM	NM	NA	Groundwater extraction pump turned off for pilot study
Total LNAPL Recovered					0.0	
EW05	11/4/2014	83.35	83.25	0.10	NA	
EW05	11/6/2014	NM	NM	NM	<0.1	
EW05	11/7/2014	91.51	91.44	0.07	NA	
EW05	11/11/2014	91.75	91.56	0.19	NA	
EW05	11/12/2014	91.65	91.48	0.17	NA	Temporary system shutdown due to alarm condition
EW05	11/17/2014	91.64	91.51	0.13	NA	
EW05	12/1/2014	91.58	91.46	0.12	NA	
EW05	12/8/2014	91.55	91.51	0.04	NA	
EW05	12/11/2014	91.65	91.52	0.13	NA	
EW05	12/23/2014	91.40	91.39	0.01	NA	Groundwater extraction system shutdown pending carbon change-out
EW05	12/30/2014	91.37	91.36	0.01	NA	Groundwater extraction system remained shutdown pending carbon change-out
EW05	1/8/2015	91.31	NP	0.00	NA	Groundwater extraction system remained shutdown pending carbon change-out
EW05	1/19/2015	91.32	NP	0.00	NA	Groundwater extraction system restarted after carbon change-out
EW05	1/22/2015	91.95	91.45	0.50	NA	
EW05	1/30/2015	92.00	91.49	0.51	0.1	Measurements recorded prior to LNAPL removal
EW05	2/3/2015	92.17	91.54	0.63	NA	
EW05	2/13/2015	92.14	91.54	0.60	NA	Groundwater extraction pump turned off
EW05	2/17/2015	91.72	91.49	0.23	NA	
EW05	2/20/2015	91.96	91.54	0.42	NA	
EW05	2/24/2015	91.91	91.56	0.35	NA	
EW05	2/27/2015	NM	NM	NM	0.3	Measurements recorded prior to LNAPL removal

Appendix A.6

**LNAPL Thickness and Recovery Summary - Extraction Wells
Penta Wood Products Superfund Site
Siren, Wisconsin**

Well ID	Date	Depth to Water (feet) ¹	Depth to LNAPL (feet) ¹	LNAPL Thickness (feet)	Recovered LNAPL Volume (gallons)	Comments
EW05	3/10/2015	92.30	91.58	0.72	0.1	Measurements recorded prior to LNAPL removal
EW05	3/26/2015	92.42	91.62	0.80	NA	
EW05	3/31/2015	NM	NM	NM	0.5	
EW05	4/10/2015	92.50	91.71	0.79	NA	
EW05	4/16/2015	92.51	91.69	0.82	NA	
EW05	4/27/2015	NM	NM	NM	1.0	
EW05	5/8/2015	92.03	91.70	0.33	NA	
EW05	5/21/2015	92.34	91.76	0.58	1.0	
EW05	6/3/2015	92.29	91.79	0.50	0.4	
EW05	6/16/2015	92.40	91.86	0.54	0.3	
EW05	7/8/2015	92.34	91.95	0.39	NA	
EW05	7/10/2015	NM	NM	NM	0.5	
EW05	7/21/2015	92.58	91.93	0.65	NA	
EW05	7/23/2015	NM	NM	NM	0.5	
EW05	7/29/2015	92.69	91.96	0.73	NA	
EW05	8/5/2015	92.60	92.04	0.56	NA	
EW05	8/7/2015	NM	NM	NM	0.3	
EW05	8/19/2015	92.45	91.94	0.51	NA	
EW05	8/21/2015	NM	NM	NM	0.3	
EW05	9/4/2015	92.02	91.82	0.20	NA	
EW05	9/11/2015	NM	NM	NM	<0.1	
EW05	9/21/2015	91.67	91.66	0.01	NA	
EW05	10/8/2015	91.87	91.67	0.20	NA	
EW05	10/22/2015	91.66	91.65	0.01	NA	
EW05	11/2/2015	91.51	91.50	0.01	NA	
Total LNAPL Recovered					5.5	
EW06	11/5/2014	111.22	98.06	13.16	12.0	Temporary system shutdown due to alarm condition
EW06	11/12/2014	107.80	98.30	9.50	NA	
EW06	11/17/2014	110.34	98.52	11.82	NA	
EW06	11/24/2014	111.05	98.45	12.60	10.0	
EW06	11/25/2014	105.63	98.55	7.08	NA	
EW06	12/1/2014	108.60	98.53	10.07	NA	
EW06	12/4/2014	109.35	98.48	10.87	NA	
EW06	12/8/2014	101.90	97.89	4.01	NA	
EW06	12/11/2014	111.91	98.01	13.90	NA	
EW06	12/11/2014	100.35	98.40	1.95	12.0	
EW06	12/15/2014	108.40	98.01	10.39	NA	
EW06	12/23/2014	109.35	98.01	11.34	NA	
						Measurements recorded immediately after LNAPL removal
						Measurements recorded prior to LNAPL removal

Appendix A.6

**LNAPL Thickness and Recovery Summary - Extraction Wells
Penta Wood Products Superfund Site
Siren, Wisconsin**

Well ID	Date	Depth to Water (feet) ¹	Depth to LNAPL (feet) ¹	LNAPL Thickness (feet)	Recovered LNAPL Volume (gallons)	Comments
EW06	12/23/2014	99.50	98.35	1.15	13.0	Measurements recorded immediately after LNAPL removal, groundwater extraction system shutdown pending carbon change-out
EW06	12/30/2014	98.59	97.83	0.76	NA	Groundwater extraction system remained shutdown pending carbon change-out
EW06	1/8/2015	99.00	97.92	1.08	NA	Groundwater extraction system remained shutdown pending carbon change-out
EW06	1/19/2015	99.54	97.80	1.74	NA	Groundwater extraction system restarted after carbon change-out
EW06	1/22/2015	111.10	98.18	12.92	NA	
EW06	1/23/2015	98.90	98.50	0.40	12.0	Measurements recorded immediately after LNAPL removal
EW06	1/30/2015	109.35	98.22	11.13	NA	
EW06	2/3/2015	112.61	98.22	14.39	12.0	Measurements recorded prior to LNAPL removal
EW06	2/13/2015	112.44	98.22	14.22	14.0	Groundwater extraction pump turned off
EW06	2/17/2015	101.95	98.12	3.83	NA	
EW06	2/20/2015	105.20	98.18	7.02	NA	
EW06	2/24/2015	105.37	98.02	7.35	8.0	Measurements recorded prior to LNAPL removal
EW06	3/10/2015	108.36	98.22	10.14	8.0	Measurements recorded prior to LNAPL removal
EW06	3/24/2015	NM	NM	NM	8.0	Not measured due to equipment breakdown
EW06	3/26/2015	105.87	98.21	7.66	NA	
EW06	4/10/2015	105.55	98.39	7.16	10.0	
EW06	4/16/2015	106.02	98.36	7.66	10.0	
EW06	4/30/2015	106.33	98.47	7.86	8.0	Groundwater extraction rate increased to 6 gpm
EW06	5/8/2015	100.72	98.32	2.40	4.0	
EW06	5/21/2015	106.84	98.27	8.57	10.0	
EW06	6/3/2015	106.55	98.41	8.14	NA	
EW06	6/4/2015	NM	NM	NM	10.0	
EW06	6/16/2015	105.85	98.49	7.36	7.0	
EW06	7/8/2015	107.10	98.42	8.68	20.0	
EW06	7/10/2015	107.10	98.60	8.50	17.0	
EW06	7/21/2015	107.90	98.54	9.36	17.0	
EW06	7/29/2015	105.87	98.59	7.28	NA	Groundwater extraction rate decreased to 3 gpm
EW06	8/5/2015	105.98	98.65	7.33	14.0	
EW06	8/7/2015	NM	NM	NM	14.0	
EW06	8/19/2015	103.95	98.51	5.44	10.0	
EW06	9/4/2015	105.31	98.31	7.00	10.0	
EW06	9/21/2015	104.49	98.28	6.21	10.0	
EW06	10/8/2015	100.38	98.25	2.13	5.0	
EW06	10/22/2015	105.54	98.23	7.31	8.0	
EW06	11/2/2015	105.15	98.05	7.10	NA	
EW06	11/5/2015	NM	NM	NM	8.0	
EW06	11/23/2015	NM	NM	NM	NA	Groundwater extraction pump turned off for pilot study
Total LNAPL Recovered					301.0	

Appendix A.6

**LNAPL Thickness and Recovery Summary - Extraction Wells
Penta Wood Products Superfund Site
Siren, Wisconsin**

Well ID	Date	Depth to Water (feet) ¹	Depth to LNAPL (feet) ¹	LNAPL Thickness (feet)	Recovered LNAPL Volume (gallons)	Comments
EW10	11/4/2014	108.20	103.92	4.28	NA	
EW10	11/5/2014	108.77	104.70	4.07	4.0	
EW10	11/18/2014	107.60	104.35	3.25	NA	
EW10	11/24/2014	107.45	103.94	3.51	0.0	LNAPL pump inoperable, unable to recover LNAPL
EW10	11/25/2014	107.50	103.91	3.59	NA	
EW10	12/1/2014	107.30	104.14	3.16	NA	
EW10	12/4/2014	107.33	104.11	3.22	NA	Measurements recorded prior to LNAPL removal
EW10	12/4/2014	105.35	104.05	1.30	2.0	Measurements recorded immediately after LNAPL removal
EW10	12/8/2014	104.29	103.17	1.12	NA	
EW10	12/11/2014	106.95	104.05	2.90	NA	Measurements recorded prior to LNAPL removal
EW10	12/11/2014	105.46	104.12	1.34	2.0	Measurements recorded immediately after LNAPL removal
EW10	12/15/2014	106.68	104.00	2.68	NA	
EW10	12/23/2014	107.25	103.91	3.34	NA	Measurements recorded prior to LNAPL removal
EW10	12/23/2014	104.75	104.06	0.69	4.0	Measurements recorded immediately after LNAPL removal, groundwater extraction system shutdown pending carbon change-out
EW10	12/30/2014	104.59	103.00	1.59	NA	Groundwater extraction system remained shutdown pending carbon change-out
EW10	1/8/2015	104.55	103.10	1.45	NA	Groundwater extraction system remained shutdown pending carbon change-out
EW10	1/19/2015	104.70	103.00	1.70	NA	Groundwater extraction system restarted after carbon change-out
EW10	1/22/2015	106.38	104.31	2.07	NA	
EW10	1/23/2015	104.40	104.38	0.02	2.0	Measurements recorded immediately after LNAPL removal
EW10	1/30/2015	105.76	104.28	1.48	NA	
EW10	2/3/2015	106.00	104.27	1.73	2.0	Measurements recorded prior to LNAPL removal
EW10	2/13/2015	106.82	104.24	2.58	3.0	Groundwater extraction pump turned off
EW10	2/17/2015	105.80	103.65	2.15	NA	
EW10	2/20/2015	106.40	103.81	2.59	NA	
EW10	2/24/2015	106.85	103.79	3.06	2.0	Measurements recorded prior to LNAPL removal
EW10	3/10/2015	107.80	103.81	3.99	2.0	Measurements recorded prior to LNAPL removal
EW10	3/24/2015	108.21	103.84	4.37	2.0	Measurements recorded prior to LNAPL removal
EW10	4/10/2015	108.96	103.86	5.10	3.0	
EW10	4/16/2015	108.18	103.90	4.28	2.0	
EW10	4/30/2015	107.81	103.84	3.97	2.0	
EW10	5/8/2015	106.84	103.46	3.38	2.5	
EW10	5/21/2015	107.46	103.62	3.84	2.5	
EW10	6/3/2015	107.51	103.60	3.91	NA	
EW10	6/4/2015	NM	NM	NM	2.5	
EW10	6/16/2015	108.20	103.85	4.35	2.0	
EW10	7/8/2015	108.53	103.96	4.57	3.0	
EW10	7/10/2015	107.85	103.97	3.88	NA	
EW10	7/21/2015	108.48	103.96	4.52	3.0	
EW10	7/29/2015	108.10	104.00	4.10	NA	

Appendix A.6

**LNAPL Thickness and Recovery Summary - Extraction Wells
Penta Wood Products Superfund Site
Siren, Wisconsin**

Well ID	Date	Depth to Water (feet) ¹	Depth to LNAPL (feet) ¹	LNAPL Thickness (feet)	Recovered LNAPL Volume (gallons)	Comments
EW10	8/5/2015	108.85	104.00	4.85	2.5	
EW10	8/19/2015	108.57	103.74	4.83	3.0	
EW10	9/4/2015	108.91	103.60	5.31	3.0	
EW10	9/21/2015	108.35	103.62	4.73	3.0	
EW10	10/8/2015	107.72	103.33	4.39	2.5	
EW10	10/22/2015	109.10	103.56	5.54	3.0	
EW10	11/2/2015	109.50	103.27	6.23	NA	
EW10	11/5/2015	NM	NM	NM	3.0	
				Total LNAPL Recovered	67.5	
EW12	11/4/2014	105.26	105.04	0.22	NA	
EW12	11/6/2014	NM	NM	NM	<0.1	
EW12	11/7/2014	108.26	108.15	0.11	NA	
EW12	11/11/2014	108.39	108.22	0.17	NA	
EW12	11/12/2014	101.16	101.14	0.02	NA	Temporary system shutdown due to alarm condition
EW12	11/17/2014	108.00	107.98	0.02	NA	
EW12	12/8/2014	100.99	NP	0.00	NA	
EW12	12/11/2014	108.98	108.97	0.01	NA	
EW12	12/23/2014	109.75	NP	0.00	NA	Groundwater extraction system shutdown pending carbon change-out
EW12	12/30/2014	101.10	100.88	0.22	NA	Groundwater extraction system remained shutdown pending carbon change-out
EW12	1/8/2015	101.20	100.84	0.36	NA	Groundwater extraction system remained shutdown pending carbon change-out
EW12	1/19/2015	101.35	100.85	0.50	NA	Groundwater extraction system restarted after carbon change-out
EW12	1/22/2015	108.16	108.15	0.01	NA	
EW12	1/30/2015	108.96	108.96	0.00	NA	
EW12	2/3/2015	109.13	109.13	0.00	NA	
EW12	2/13/2015	109.98	NP	0.00	NA	Groundwater extraction pump turned off
EW12	2/17/2015	101.56	101.08	0.48	NA	
EW12	2/20/2015	101.90	101.32	0.58	NA	
EW12	2/24/2015	102.01	101.31	0.70	NA	
EW12	2/27/2015	NM	NM	NM	0.1	Measurements recorded prior to LNAPL removal
EW12	3/10/2015	102.35	101.35	1.00	0.1	Measurements recorded prior to LNAPL removal
EW12	3/24/2015	102.45	101.33	1.12	NA	
EW12	3/31/2015	NM	NM	NM	1.0	
EW12	4/10/2015	102.22	101.36	0.86	NA	
EW12	4/16/2015	102.32	101.36	0.96	NA	
EW12	4/27/2015	NM	NM	NM	1.0	
EW12	5/8/2015	101.99	101.19	0.80	NA	
EW12	5/21/2015	102.39	101.40	0.99	1.0	
EW12	6/3/2015	102.34	101.45	0.89	0.4	
EW12	6/16/2015	102.27	101.50	0.77	0.3	

Appendix A.6

**LNAPL Thickness and Recovery Summary - Extraction Wells
Penta Wood Products Superfund Site
Siren, Wisconsin**

Well ID	Date	Depth to Water (feet) ¹	Depth to LNAPL (feet) ¹	LNAPL Thickness (feet)	Recovered LNAPL Volume (gallons)	Comments
EW12	7/8/2015	102.26	101.54	0.72	NA	
EW12	7/10/2015	NM	NM	NM	0.5	
EW12	7/21/2015	102.10	101.61	0.49	NA	
EW12	7/23/2015	NM	NM	NM	0.5	
EW12	7/29/2015	102.11	101.65	0.46	NA	
EW12	8/5/2015	102.39	101.69	0.70	NA	
EW12	8/7/2015	NM	NM	NM	0.3	
EW12	8/19/2015	101.27	100.45	0.82	NA	
EW12	8/21/2015	NM	NM	NM	0.1	
EW12	9/4/2015	101.87	101.47	0.40	NA	
EW12	9/11/2015	NM	NM	NM	0.3	
EW12	9/21/2015	101.60	101.29	0.31	NA	
EW12	10/1/2015	NM	NM	NM	0.2	
EW12	10/8/2015	101.39	101.15	0.24	NA	
EW12	10/22/2015	101.52	101.23	0.29	NA	
EW12	11/2/2015	101.51	101.18	0.33	NA	
			Total LNAPL Recovered		5.9	
EW13	11/4/2014	111.48	NP	0.00	NA	
EW13	12/11/2014	114.81	NP	0.00	NA	
EW13	12/23/2014	115.11	NP	0.00	NA	Groundwater extraction system shutdown pending carbon change-out
EW13	12/30/2014	107.34	NP	0.00	NA	Groundwater extraction system remained shutdown pending carbon change-out
EW13	1/8/2015	107.27	NP	0.00	NA	Groundwater extraction system remained shutdown pending carbon change-out
EW13	1/19/2015	107.33	NP	0.00	NA	Groundwater extraction system restarted after carbon change-out
EW13	1/22/2015	115.05	NP	0.00	NA	
EW13	1/30/2015	115.49	NP	0.00	NA	
EW13	2/3/2015	115.28	NP	0.00	NA	
EW13	2/13/2015	115.74	NP	0.00	NA	
EW13	2/17/2015	117.05	NP	0.00	NA	Groundwater extraction rate increased to 10 gpm
EW13	2/18/2015	119.19	NP	0.00	NA	
EW13	2/20/2015	119.37	NP	0.00	NA	
EW13	2/24/2015	119.50	NP	0.00	NA	
EW13	3/10/2015	120.13	NP	0.00	NA	
EW13	3/24/2015	116.72	NP	0.00	NA	
EW13	4/10/2015	118.55	NP	0.00	NA	
EW13	4/16/2015	120.92	NP	0.00	NA	
EW13	5/8/2015	107.18	NP	0.00	NA	Groundwater extraction pump turned off on 4/30/2015
EW13	5/21/2015	104.94	NP	0.00	NA	
EW13	6/3/2015	105.88	NP	0.00	NA	
EW13	6/16/2015	106.44	NP	0.00	NA	

Appendix A.6

**LNAPL Thickness and Recovery Summary - Extraction Wells
Penta Wood Products Superfund Site
Siren, Wisconsin**

Well ID	Date	Depth to Water (feet) ¹	Depth to LNAPL (feet) ¹	LNAPL Thickness (feet)	Recovered LNAPL Volume (gallons)	Comments
EW13	7/8/2015	107.42	NP	0.00	NA	
EW13	7/21/2015	107.70	NP	0.00	NA	
EW13	7/29/2015	107.91	NP	0.00	NA	
EW13	8/5/2015	107.89	NP	0.00	NA	
EW13	8/19/2015	107.80	NP	0.00	NA	
EW13	9/4/2015	107.63	NP	0.00	NA	
EW13	9/21/2015	107.63	NP	0.00	NA	
EW13	10/8/2015	107.49	NP	0.00	NA	
EW13	10/22/2015	107.72	NP	0.00	NA	
EW13	11/2/2015	107.48	NP	0.00	NA	
Total LNAPL Recovered					0.0	
EW14	11/4/2014	112.55	112.45	0.10	NA	
EW14	11/6/2014	NM	NM	NM	<0.1	
EW14	11/7/2014	112.54	112.49	0.05	NA	
EW14	11/11/2014	112.68	112.60	0.08	NA	
EW14	11/12/2014	112.91	112.87	0.04	NA	Temporary system shutdown due to alarm condition
EW14	11/17/2014	111.82	111.55	0.27	NA	
EW14	12/8/2014	112.89	112.85	0.04	NA	
EW14	12/11/2014	113.83	113.75	0.08	NA	
EW14	12/23/2014	113.74	113.65	0.09	NA	Groundwater extraction system shutdown pending carbon change-out
EW14	12/30/2014	112.85	112.76	0.09	NA	Groundwater extraction system remained shutdown pending carbon change-out
EW14	1/8/2015	112.77	112.71	0.06	NA	Groundwater extraction system remained shutdown pending carbon change-out
EW14	1/19/2015	112.92	112.78	0.14	NA	Groundwater extraction system restarted after carbon change-out
EW14	1/22/2015	113.80	113.72	0.08	NA	
EW14	1/30/2015	113.79	113.66	0.13	<0.1	
EW14	2/3/2015	113.74	113.65	0.09	NA	
EW14	2/13/2015	113.90	113.68	0.22	NA	
EW14	2/17/2015	113.85	113.79	0.06	NA	Groundwater extraction rate increased to 10 gpm
EW14	2/18/2015	114.29	114.21	0.08	NA	
EW14	2/20/2015	114.26	114.18	0.08	NA	
EW14	2/24/2015	114.25	114.21	0.04	NA	
EW14	3/10/2015	114.36	114.30	0.06	NA	
EW14	3/24/2015	114.41	114.36	0.05	NA	
EW14	3/31/2015	NM	NM	NM	<0.1	
EW14	4/10/2015	114.43	114.42	0.01	NA	
EW14	4/16/2015	114.47	114.44	0.03	NA	
EW14	5/8/2015	113.30	113.14	0.16	NA	Groundwater extraction pump turned off on 4/30/2015
EW14	5/21/2015	113.71	113.49	0.22	NA	
EW14	6/3/2015	113.72	113.50	0.22	0.2	

Appendix A.6

**LNAPL Thickness and Recovery Summary - Extraction Wells
Penta Wood Products Superfund Site
Siren, Wisconsin**

Well ID	Date	Depth to Water (feet) ¹	Depth to LNAPL (feet) ¹	LNAPL Thickness (feet)	Recovered LNAPL Volume (gallons)	Comments
EW14	6/16/2015	113.71	113.58	0.13	0.1	
EW14	7/8/2015	113.71	113.62	0.09	NA	
EW14	7/21/2015	113.78	113.68	0.10	NA	
EW14	7/29/2015	113.83	113.72	0.11	NA	
EW14	8/5/2015	113.84	113.72	0.12	NA	
EW14	8/7/2015	NM	NM	NM	<0.1	
EW14	8/19/2015	113.80	113.70	0.10	NA	
EW14	9/4/2015	113.68	113.59	0.09	NA	
EW14	9/11/2015	NM	NM	NM	<0.1	
EW14	9/21/2015	113.43	113.38	0.05	NA	
EW14	10/8/2015	113.12	113.06	0.06	NA	
EW14	10/22/2015	113.48	113.39	0.09	NA	
EW14	11/2/2015	113.44	113.32	0.12	NA	
				Total LNAPL Recovered	0.8	
				Total LNAPL Recovered (all wells)	380.7	Since system modification in October 2014; system shutdown and LNAPL recovery terminated in November 2015

Notes:

¹ Depth to water and depth to LNAPL measurements before December 2014 were not consistently recorded from the same benchmark location/elevation. Measurements were consistently recorded from the same benchmark location at the top of the well vault starting in December 2014.

NM - Not measured

NP - LNAPL was not present in a measurable quantity

NA - Not applicable

Appendix B
Groundwater Sample Laboratory Reports –
Monitoring, Extraction, Residential,
and Onsite Supply Wells

ANALYTICAL REPORT

Eurofins TestAmerica, Chicago
2417 Bond Street
University Park, IL 60484
Tel: (708)534-5200

Laboratory Job ID: 500-162039-1
Client Project/Site: Penta Wood 086165

For:
GHD Services Inc.
1801 Old Highway 8 NW
Suite 114
St. Paul, Minnesota 55112

Attn: Mr. Grant Anderson



Authorized for release by:
5/3/2019 9:42:38 AM

Richard Wright, Senior Project Manager
(708)534-5200
richard.wright@testamericainc.com

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Case Narrative

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162039-1

Job ID: 500-162039-1

Laboratory: Eurofins TestAmerica, Chicago

Narrative

Job Narrative 500-162039-1

Receipt

The samples were received on 4/23/2019 10:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 6 coolers at receipt time were -0.5° C, 3.2° C, 3.9° C, 4.1° C, 4.6° C and 5.6° C.

GC/MS VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC/MS Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162039-1

Client Sample ID: W-190422-RA-100

Lab Sample ID: 500-162039-1

No Detections.

Client Sample ID: W-190422-RA-101

Lab Sample ID: 500-162039-2

No Detections.

Client Sample ID: W-190422-RA-102

Lab Sample ID: 500-162039-3

No Detections.

Client Sample ID: W-190422-RA-103

Lab Sample ID: 500-162039-4

No Detections.

Client Sample ID: W-190422-RA-104

Lab Sample ID: 500-162039-5

No Detections.

Client Sample ID: W-190422-RA-105

Lab Sample ID: 500-162039-6

No Detections.

Client Sample ID: W-190422-RA-106

Lab Sample ID: 500-162039-7

No Detections.

Client Sample ID: W-190422-RA-107

Lab Sample ID: 500-162039-8

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.19	J	0.50	0.15	ug/L	1		8260B	Total/NA

Client Sample ID: W-190422-RA-108

Lab Sample ID: 500-162039-9

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.16	J	0.50	0.15	ug/L	1		8260B	Total/NA

Client Sample ID: W-190422-RA-109

Lab Sample ID: 500-162039-10

No Detections.

Client Sample ID: Trip Blank

Lab Sample ID: 500-162039-11

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Chicago

Method Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162039-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CHI
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL CHI
8151A	Herbicides (GC)	SW846	TAL CHI
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL CHI
5030B	Purge and Trap	SW846	TAL CHI
8151A	Extraction (Herbicides)	SW846	TAL CHI

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CHI = Eurofins TestAmerica, Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200



Sample Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162039-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-162039-1	W-190422-RA-100	Water	04/22/19 11:20	04/23/19 10:00
500-162039-2	W-190422-RA-101	Water	04/22/19 11:30	04/23/19 10:00
500-162039-3	W-190422-RA-102	Water	04/22/19 11:48	04/23/19 10:00
500-162039-4	W-190422-RA-103	Water	04/22/19 11:48	04/23/19 10:00
500-162039-5	W-190422-RA-104	Water	04/22/19 12:40	04/23/19 10:00
500-162039-6	W-190422-RA-105	Water	04/22/19 13:05	04/23/19 10:00
500-162039-7	W-190422-RA-106	Water	04/22/19 13:34	04/23/19 10:00
500-162039-8	W-190422-RA-107	Water	04/22/19 13:34	04/23/19 10:00
500-162039-9	W-190422-RA-108	Water	04/22/19 13:45	04/23/19 10:00
500-162039-10	W-190422-RA-109	Water	04/22/19 13:50	04/23/19 10:00
500-162039-11	Trip Blank	Water	04/22/19 00:00	04/23/19 10:00



Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162039-1

Client Sample ID: W-190422-RA-100

Lab Sample ID: 500-162039-1

Date Collected: 04/22/19 11:20

Matrix: Water

Date Received: 04/23/19 10:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/01/19 16:18	1
Toluene	<0.15		0.50	0.15	ug/L			05/01/19 16:18	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/01/19 16:18	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/01/19 16:18	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	109		75 - 126		05/01/19 16:18	1
Toluene-d8 (Surr)	89		75 - 120		05/01/19 16:18	1
4-Bromofluorobenzene (Surr)	118		72 - 124		05/01/19 16:18	1
Dibromofluoromethane	93		75 - 120		05/01/19 16:18	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.25		0.82	0.25	ug/L		04/25/19 13:45	04/26/19 14:43	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	93		36 - 120	04/25/19 13:45	04/26/19 14:43	1
2-Fluorobiphenyl (Surr)	79		34 - 110	04/25/19 13:45	04/26/19 14:43	1
Terphenyl-d14 (Surr)	104		40 - 145	04/25/19 13:45	04/26/19 14:43	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.085		0.095	0.085	ug/L		04/25/19 10:06	04/26/19 04:52	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCAA	85		25 - 130	04/25/19 10:06	04/26/19 04:52	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162039-1

Client Sample ID: W-190422-RA-101

Lab Sample ID: 500-162039-2

Date Collected: 04/22/19 11:30

Matrix: Water

Date Received: 04/23/19 10:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/01/19 16:44	1
Toluene	<0.15		0.50	0.15	ug/L			05/01/19 16:44	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/01/19 16:44	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/01/19 16:44	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	110		75 - 126		05/01/19 16:44	1
Toluene-d8 (Surr)	89		75 - 120		05/01/19 16:44	1
4-Bromofluorobenzene (Surr)	117		72 - 124		05/01/19 16:44	1
Dibromofluoromethane	93		75 - 120		05/01/19 16:44	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.23		0.74	0.23	ug/L		04/25/19 13:45	04/26/19 15:11	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	97		36 - 120	04/25/19 13:45	04/26/19 15:11	1
2-Fluorobiphenyl (Surr)	82		34 - 110	04/25/19 13:45	04/26/19 15:11	1
Terphenyl-d14 (Surr)	105		40 - 145	04/25/19 13:45	04/26/19 15:11	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.087		0.097	0.087	ug/L		04/25/19 10:06	04/26/19 05:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCAA	80		25 - 130	04/25/19 10:06	04/26/19 05:17	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162039-1

Client Sample ID: W-190422-RA-102

Lab Sample ID: 500-162039-3

Date Collected: 04/22/19 11:48

Matrix: Water

Date Received: 04/23/19 10:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/01/19 17:10	1
Toluene	<0.15		0.50	0.15	ug/L			05/01/19 17:10	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/01/19 17:10	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/01/19 17:10	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	107		75 - 126		05/01/19 17:10	1
Toluene-d8 (Surr)	89		75 - 120		05/01/19 17:10	1
4-Bromofluorobenzene (Surr)	120		72 - 124		05/01/19 17:10	1
Dibromofluoromethane	91		75 - 120		05/01/19 17:10	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.23		0.76	0.23	ug/L		04/25/19 13:45	04/26/19 15:38	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	114		36 - 120	04/25/19 13:45	04/26/19 15:38	1
2-Fluorobiphenyl (Surr)	73		34 - 110	04/25/19 13:45	04/26/19 15:38	1
Terphenyl-d14 (Surr)	97		40 - 145	04/25/19 13:45	04/26/19 15:38	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.085		0.095	0.085	ug/L		04/25/19 10:06	04/26/19 06:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCAA	75		25 - 130	04/25/19 10:06	04/26/19 06:30	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162039-1

Client Sample ID: W-190422-RA-103

Lab Sample ID: 500-162039-4

Date Collected: 04/22/19 11:48

Matrix: Water

Date Received: 04/23/19 10:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/01/19 17:36	1
Toluene	<0.15		0.50	0.15	ug/L			05/01/19 17:36	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/01/19 17:36	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/01/19 17:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	109		75 - 126		05/01/19 17:36	1
Toluene-d8 (Surr)	88		75 - 120		05/01/19 17:36	1
4-Bromofluorobenzene (Surr)	118		72 - 124		05/01/19 17:36	1
Dibromofluoromethane	93		75 - 120		05/01/19 17:36	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.23		0.75	0.23	ug/L		04/25/19 13:45	04/26/19 16:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	95		36 - 120	04/25/19 13:45	04/26/19 16:06	1
2-Fluorobiphenyl (Surr)	78		34 - 110	04/25/19 13:45	04/26/19 16:06	1
Terphenyl-d14 (Surr)	107		40 - 145	04/25/19 13:45	04/26/19 16:06	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.085		0.095	0.085	ug/L		04/25/19 10:06	04/26/19 06:55	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCAA	81		25 - 130	04/25/19 10:06	04/26/19 06:55	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162039-1

Client Sample ID: W-190422-RA-104

Lab Sample ID: 500-162039-5

Date Collected: 04/22/19 12:40

Matrix: Water

Date Received: 04/23/19 10:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/01/19 18:02	1
Toluene	<0.15		0.50	0.15	ug/L			05/01/19 18:02	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/01/19 18:02	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/01/19 18:02	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	110		75 - 126		05/01/19 18:02	1
Toluene-d8 (Surr)	88		75 - 120		05/01/19 18:02	1
4-Bromofluorobenzene (Surr)	116		72 - 124		05/01/19 18:02	1
Dibromofluoromethane	92		75 - 120		05/01/19 18:02	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.24		0.79	0.24	ug/L		04/25/19 13:45	04/26/19 16:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	98		36 - 120	04/25/19 13:45	04/26/19 16:33	1
2-Fluorobiphenyl (Surr)	84		34 - 110	04/25/19 13:45	04/26/19 16:33	1
Terphenyl-d14 (Surr)	106		40 - 145	04/25/19 13:45	04/26/19 16:33	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.085		0.095	0.085	ug/L		04/25/19 10:06	04/26/19 07:20	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCAA	89		25 - 130	04/25/19 10:06	04/26/19 07:20	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162039-1

Client Sample ID: W-190422-RA-105

Lab Sample ID: 500-162039-6

Date Collected: 04/22/19 13:05

Matrix: Water

Date Received: 04/23/19 10:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/01/19 18:28	1
Toluene	<0.15		0.50	0.15	ug/L			05/01/19 18:28	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/01/19 18:28	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/01/19 18:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	110		75 - 126		05/01/19 18:28	1
Toluene-d8 (Surr)	89		75 - 120		05/01/19 18:28	1
4-Bromofluorobenzene (Surr)	118		72 - 124		05/01/19 18:28	1
Dibromofluoromethane	94		75 - 120		05/01/19 18:28	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.25		0.80	0.25	ug/L		04/25/19 13:45	04/26/19 17:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	95		36 - 120	04/25/19 13:45	04/26/19 17:01	1
2-Fluorobiphenyl (Surr)	79		34 - 110	04/25/19 13:45	04/26/19 17:01	1
Terphenyl-d14 (Surr)	107		40 - 145	04/25/19 13:45	04/26/19 17:01	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.11		0.12	0.11	ug/L		04/25/19 10:06	04/26/19 07:44	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCAA	83		25 - 130	04/25/19 10:06	04/26/19 07:44	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162039-1

Client Sample ID: W-190422-RA-106

Lab Sample ID: 500-162039-7

Date Collected: 04/22/19 13:34

Matrix: Water

Date Received: 04/23/19 10:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/01/19 18:54	1
Toluene	<0.15		0.50	0.15	ug/L			05/01/19 18:54	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/01/19 18:54	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/01/19 18:54	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	110		75 - 126		05/01/19 18:54	1
Toluene-d8 (Surr)	89		75 - 120		05/01/19 18:54	1
4-Bromofluorobenzene (Surr)	117		72 - 124		05/01/19 18:54	1
Dibromofluoromethane	92		75 - 120		05/01/19 18:54	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.24		0.78	0.24	ug/L		04/25/19 13:45	04/26/19 17:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	67		36 - 120	04/25/19 13:45	04/26/19 17:28	1
2-Fluorobiphenyl (Surr)	54		34 - 110	04/25/19 13:45	04/26/19 17:28	1
Terphenyl-d14 (Surr)	104		40 - 145	04/25/19 13:45	04/26/19 17:28	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.086		0.096	0.086	ug/L		04/25/19 10:06	04/26/19 08:09	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCAA	56		25 - 130	04/25/19 10:06	04/26/19 08:09	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162039-1

Client Sample ID: W-190422-RA-107

Lab Sample ID: 500-162039-8

Date Collected: 04/22/19 13:34

Matrix: Water

Date Received: 04/23/19 10:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/01/19 19:21	1
Toluene	0.19	J	0.50	0.15	ug/L			05/01/19 19:21	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/01/19 19:21	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/01/19 19:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	111		75 - 126		05/01/19 19:21	1
Toluene-d8 (Surr)	88		75 - 120		05/01/19 19:21	1
4-Bromofluorobenzene (Surr)	117		72 - 124		05/01/19 19:21	1
Dibromofluoromethane	92		75 - 120		05/01/19 19:21	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.25		0.82	0.25	ug/L		04/25/19 13:45	04/26/19 17:56	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	96		36 - 120	04/25/19 13:45	04/26/19 17:56	1
2-Fluorobiphenyl (Surr)	80		34 - 110	04/25/19 13:45	04/26/19 17:56	1
Terphenyl-d14 (Surr)	104		40 - 145	04/25/19 13:45	04/26/19 17:56	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.087		0.097	0.087	ug/L		04/25/19 10:06	04/26/19 08:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCAA	77		25 - 130	04/25/19 10:06	04/26/19 08:33	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162039-1

Client Sample ID: W-190422-RA-108

Lab Sample ID: 500-162039-9

Date Collected: 04/22/19 13:45

Matrix: Water

Date Received: 04/23/19 10:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/01/19 19:47	1
Toluene	0.16	J	0.50	0.15	ug/L			05/01/19 19:47	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/01/19 19:47	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/01/19 19:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	111		75 - 126		05/01/19 19:47	1
Toluene-d8 (Surr)	87		75 - 120		05/01/19 19:47	1
4-Bromofluorobenzene (Surr)	117		72 - 124		05/01/19 19:47	1
Dibromofluoromethane	92		75 - 120		05/01/19 19:47	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.23		0.74	0.23	ug/L		04/25/19 13:45	04/26/19 18:23	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	93		36 - 120	04/25/19 13:45	04/26/19 18:23	1
2-Fluorobiphenyl (Surr)	77		34 - 110	04/25/19 13:45	04/26/19 18:23	1
Terphenyl-d14 (Surr)	106		40 - 145	04/25/19 13:45	04/26/19 18:23	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.095		0.11	0.095	ug/L		04/25/19 10:06	04/26/19 08:58	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCAA	82		25 - 130	04/25/19 10:06	04/26/19 08:58	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162039-1

Client Sample ID: W-190422-RA-109

Lab Sample ID: 500-162039-10

Date Collected: 04/22/19 13:50

Matrix: Water

Date Received: 04/23/19 10:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/01/19 20:13	1
Toluene	<0.15		0.50	0.15	ug/L			05/01/19 20:13	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/01/19 20:13	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/01/19 20:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	110		75 - 126		05/01/19 20:13	1
Toluene-d8 (Surr)	88		75 - 120		05/01/19 20:13	1
4-Bromofluorobenzene (Surr)	117		72 - 124		05/01/19 20:13	1
Dibromofluoromethane	92		75 - 120		05/01/19 20:13	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.26		0.83	0.26	ug/L		04/25/19 13:45	04/26/19 18:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	91		36 - 120	04/25/19 13:45	04/26/19 18:51	1
2-Fluorobiphenyl (Surr)	80		34 - 110	04/25/19 13:45	04/26/19 18:51	1
Terphenyl-d14 (Surr)	109		40 - 145	04/25/19 13:45	04/26/19 18:51	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.099		0.11	0.099	ug/L		04/25/19 10:06	04/26/19 09:22	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCAA	83		25 - 130	04/25/19 10:06	04/26/19 09:22	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162039-1

Client Sample ID: Trip Blank

Lab Sample ID: 500-162039-11

Date Collected: 04/22/19 00:00

Matrix: Water

Date Received: 04/23/19 10:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/01/19 14:59	1
Toluene	<0.15		0.50	0.15	ug/L			05/01/19 14:59	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/01/19 14:59	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/01/19 14:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	109		75 - 126		05/01/19 14:59	1
Toluene-d8 (Surr)	90		75 - 120		05/01/19 14:59	1
4-Bromofluorobenzene (Surr)	117		72 - 124		05/01/19 14:59	1
Dibromofluoromethane	90		75 - 120		05/01/19 14:59	1

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162039-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Reported value was between the limit of detection and the limit of quantitation.

GC/MS Semi VOA

Qualifier	Qualifier Description
F2	MS/MSD RPD exceeds control limits
X	Surrogate is outside control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162039-1

GC/MS VOA

Analysis Batch: 483066

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162039-1	W-190422-RA-100	Total/NA	Water	8260B	
500-162039-2	W-190422-RA-101	Total/NA	Water	8260B	
500-162039-3	W-190422-RA-102	Total/NA	Water	8260B	
500-162039-4	W-190422-RA-103	Total/NA	Water	8260B	
500-162039-5	W-190422-RA-104	Total/NA	Water	8260B	
500-162039-6	W-190422-RA-105	Total/NA	Water	8260B	
500-162039-7	W-190422-RA-106	Total/NA	Water	8260B	
500-162039-8	W-190422-RA-107	Total/NA	Water	8260B	
500-162039-9	W-190422-RA-108	Total/NA	Water	8260B	
500-162039-10	W-190422-RA-109	Total/NA	Water	8260B	
500-162039-11	Trip Blank	Total/NA	Water	8260B	
MB 500-483066/6	Method Blank	Total/NA	Water	8260B	
LCS 500-483066/4	Lab Control Sample	Total/NA	Water	8260B	
500-162039-10 MS	W-190422-RA-109	Total/NA	Water	8260B	
500-162039-10 MSD	W-190422-RA-109	Total/NA	Water	8260B	

GC/MS Semi VOA

Prep Batch: 482252

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162039-1	W-190422-RA-100	Total/NA	Water	3510C	
500-162039-2	W-190422-RA-101	Total/NA	Water	3510C	
500-162039-3	W-190422-RA-102	Total/NA	Water	3510C	
500-162039-4	W-190422-RA-103	Total/NA	Water	3510C	
500-162039-5	W-190422-RA-104	Total/NA	Water	3510C	
500-162039-6	W-190422-RA-105	Total/NA	Water	3510C	
500-162039-7	W-190422-RA-106	Total/NA	Water	3510C	
500-162039-8	W-190422-RA-107	Total/NA	Water	3510C	
500-162039-9	W-190422-RA-108	Total/NA	Water	3510C	
500-162039-10	W-190422-RA-109	Total/NA	Water	3510C	
MB 500-482252/1-A	Method Blank	Total/NA	Water	3510C	
LCS 500-482252/2-A	Lab Control Sample	Total/NA	Water	3510C	
500-162039-10 MS	W-190422-RA-109	Total/NA	Water	3510C	
500-162039-10 MSD	W-190422-RA-109	Total/NA	Water	3510C	

Analysis Batch: 482381

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162039-1	W-190422-RA-100	Total/NA	Water	8270D	482252
500-162039-2	W-190422-RA-101	Total/NA	Water	8270D	482252
500-162039-3	W-190422-RA-102	Total/NA	Water	8270D	482252
500-162039-4	W-190422-RA-103	Total/NA	Water	8270D	482252
500-162039-5	W-190422-RA-104	Total/NA	Water	8270D	482252
500-162039-6	W-190422-RA-105	Total/NA	Water	8270D	482252
500-162039-7	W-190422-RA-106	Total/NA	Water	8270D	482252
500-162039-8	W-190422-RA-107	Total/NA	Water	8270D	482252
500-162039-9	W-190422-RA-108	Total/NA	Water	8270D	482252
500-162039-10	W-190422-RA-109	Total/NA	Water	8270D	482252
MB 500-482252/1-A	Method Blank	Total/NA	Water	8270D	482252
LCS 500-482252/2-A	Lab Control Sample	Total/NA	Water	8270D	482252
500-162039-10 MS	W-190422-RA-109	Total/NA	Water	8270D	482252
500-162039-10 MSD	W-190422-RA-109	Total/NA	Water	8270D	482252

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QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162039-1

GC Semi VOA

Prep Batch: 482203

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162039-1	W-190422-RA-100	Total/NA	Water	8151A	
500-162039-2	W-190422-RA-101	Total/NA	Water	8151A	
500-162039-3	W-190422-RA-102	Total/NA	Water	8151A	
500-162039-4	W-190422-RA-103	Total/NA	Water	8151A	
500-162039-5	W-190422-RA-104	Total/NA	Water	8151A	
500-162039-6	W-190422-RA-105	Total/NA	Water	8151A	
500-162039-7	W-190422-RA-106	Total/NA	Water	8151A	
500-162039-8	W-190422-RA-107	Total/NA	Water	8151A	
500-162039-9	W-190422-RA-108	Total/NA	Water	8151A	
500-162039-10	W-190422-RA-109	Total/NA	Water	8151A	
MB 500-482203/1-A	Method Blank	Total/NA	Water	8151A	
LCS 500-482203/2-A	Lab Control Sample	Total/NA	Water	8151A	
500-162039-10 MS	W-190422-RA-109	Total/NA	Water	8151A	
500-162039-10 MSD	W-190422-RA-109	Total/NA	Water	8151A	

Analysis Batch: 482307

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162039-1	W-190422-RA-100	Total/NA	Water	8151A	482203
500-162039-2	W-190422-RA-101	Total/NA	Water	8151A	482203
500-162039-3	W-190422-RA-102	Total/NA	Water	8151A	482203
500-162039-4	W-190422-RA-103	Total/NA	Water	8151A	482203
500-162039-5	W-190422-RA-104	Total/NA	Water	8151A	482203
500-162039-6	W-190422-RA-105	Total/NA	Water	8151A	482203
500-162039-7	W-190422-RA-106	Total/NA	Water	8151A	482203
500-162039-8	W-190422-RA-107	Total/NA	Water	8151A	482203
500-162039-9	W-190422-RA-108	Total/NA	Water	8151A	482203
500-162039-10	W-190422-RA-109	Total/NA	Water	8151A	482203
MB 500-482203/1-A	Method Blank	Total/NA	Water	8151A	482203
LCS 500-482203/2-A	Lab Control Sample	Total/NA	Water	8151A	482203
500-162039-10 MS	W-190422-RA-109	Total/NA	Water	8151A	482203
500-162039-10 MSD	W-190422-RA-109	Total/NA	Water	8151A	482203

Surrogate Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162039-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCA (75-126)	TOL (75-120)	BFB (72-124)	DBFM (75-120)
500-162039-1	W-190422-RA-100	109	89	118	93
500-162039-2	W-190422-RA-101	110	89	117	93
500-162039-3	W-190422-RA-102	107	89	120	91
500-162039-4	W-190422-RA-103	109	88	118	93
500-162039-5	W-190422-RA-104	110	88	116	92
500-162039-6	W-190422-RA-105	110	89	118	94
500-162039-7	W-190422-RA-106	110	89	117	92
500-162039-8	W-190422-RA-107	111	88	117	92
500-162039-9	W-190422-RA-108	111	87	117	92
500-162039-10	W-190422-RA-109	110	88	117	92
500-162039-10 MS	W-190422-RA-109	110	89	118	94
500-162039-10 MSD	W-190422-RA-109	111	88	118	96
500-162039-11	Trip Blank	109	90	117	90
LCS 500-483066/4	Lab Control Sample	109	88	119	94
MB 500-483066/6	Method Blank	107	90	117	92

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

TOL = Toluene-d8 (Surr)

BFB = 4-Bromofluorobenzene (Surr)

DBFM = Dibromofluoromethane

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		NBZ (36-120)	FBP (34-110)	TPHL (40-145)
500-162039-1	W-190422-RA-100	93	79	104
500-162039-2	W-190422-RA-101	97	82	105
500-162039-3	W-190422-RA-102	114	73	97
500-162039-4	W-190422-RA-103	95	78	107
500-162039-5	W-190422-RA-104	98	84	106
500-162039-6	W-190422-RA-105	95	79	107
500-162039-7	W-190422-RA-106	67	54	104
500-162039-8	W-190422-RA-107	96	80	104
500-162039-9	W-190422-RA-108	93	77	106
500-162039-10	W-190422-RA-109	91	80	109
500-162039-10 MS	W-190422-RA-109	93	79	102
500-162039-10 MSD	W-190422-RA-109	96	78	103
LCS 500-482252/2-A	Lab Control Sample	92	79	110
MB 500-482252/1-A	Method Blank	140 X	80	109

Surrogate Legend

NBZ = Nitrobenzene-d5 (Surr)

FBP = 2-Fluorobiphenyl (Surr)

TPHL = Terphenyl-d14 (Surr)

Surrogate Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162039-1

Method: 8151A - Herbicides (GC)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCPAA2 (25-130)
500-162039-1	W-190422-RA-100	85
500-162039-2	W-190422-RA-101	80
500-162039-3	W-190422-RA-102	75
500-162039-4	W-190422-RA-103	81
500-162039-5	W-190422-RA-104	89
500-162039-6	W-190422-RA-105	83
500-162039-7	W-190422-RA-106	56
500-162039-8	W-190422-RA-107	77
500-162039-9	W-190422-RA-108	82
500-162039-10	W-190422-RA-109	83
500-162039-10 MS	W-190422-RA-109	72
500-162039-10 MSD	W-190422-RA-109	74
LCS 500-482203/2-A	Lab Control Sample	95
MB 500-482203/1-A	Method Blank	82

Surrogate Legend

DCPAA = DCAA

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162039-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-483066/6
Matrix: Water
Analysis Batch: 483066

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzene	<0.15		0.50	0.15	ug/L			05/01/19 13:14	1
Toluene	<0.15		0.50	0.15	ug/L			05/01/19 13:14	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/01/19 13:14	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/01/19 13:14	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	107		75 - 126		05/01/19 13:14	1
Toluene-d8 (Surr)	90		75 - 120		05/01/19 13:14	1
4-Bromofluorobenzene (Surr)	117		72 - 124		05/01/19 13:14	1
Dibromofluoromethane	92		75 - 120		05/01/19 13:14	1

Lab Sample ID: LCS 500-483066/4
Matrix: Water
Analysis Batch: 483066

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
Benzene	50.0	46.1		ug/L		92	70 - 120
Toluene	50.0	43.7		ug/L		87	70 - 125
Ethylbenzene	50.0	42.8		ug/L		86	70 - 123
Xylenes, Total	100	81.0		ug/L		81	70 - 125

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	109		75 - 126
Toluene-d8 (Surr)	88		75 - 120
4-Bromofluorobenzene (Surr)	119		72 - 124
Dibromofluoromethane	94		75 - 120

Lab Sample ID: 500-162039-10 MS
Matrix: Water
Analysis Batch: 483066

Client Sample ID: W-190422-RA-109
Prep Type: Total/NA

Analyte	Sample	Sample	Spike Added	MS	MS	Unit	D	%Rec	%Rec. Limits
	Result	Qualifier		Result	Qualifier				
Benzene	<0.15		50.0	53.9		ug/L		108	70 - 120
Toluene	<0.15		50.0	50.8		ug/L		102	70 - 125
Ethylbenzene	<0.18		50.0	49.8		ug/L		100	70 - 123
Xylenes, Total	<0.22		100	94.9		ug/L		95	70 - 125

Surrogate	MS	MS	Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	110		75 - 126
Toluene-d8 (Surr)	89		75 - 120
4-Bromofluorobenzene (Surr)	118		72 - 124
Dibromofluoromethane	94		75 - 120

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162039-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 500-162039-10 MSD
Matrix: Water
Analysis Batch: 483066

Client Sample ID: W-190422-RA-109
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	<0.15		50.0	52.3		ug/L		105	70 - 120	3	20
Toluene	<0.15		50.0	49.1		ug/L		98	70 - 125	3	20
Ethylbenzene	<0.18		50.0	48.3		ug/L		97	70 - 123	3	20
Xylenes, Total	<0.22		100	90.8		ug/L		91	70 - 125	4	20

Surrogate	MSD %Recovery	MSD Qualifier	MSD Limits
1,2-Dichloroethane-d4 (Surr)	111		75 - 126
Toluene-d8 (Surr)	88		75 - 120
4-Bromofluorobenzene (Surr)	118		72 - 124
Dibromofluoromethane	96		75 - 120

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-482252/1-A
Matrix: Water
Analysis Batch: 482381

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 482252

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.25		0.80	0.25	ug/L		04/25/19 13:45	04/26/19 11:57	1

Surrogate	MB %Recovery	MB Qualifier	MB Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	140	X	36 - 120	04/25/19 13:45	04/26/19 11:57	1
2-Fluorobiphenyl (Surr)	80		34 - 110	04/25/19 13:45	04/26/19 11:57	1
Terphenyl-d14 (Surr)	109		40 - 145	04/25/19 13:45	04/26/19 11:57	1

Lab Sample ID: LCS 500-482252/2-A
Matrix: Water
Analysis Batch: 482381

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 482252

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Naphthalene	32.0	24.5		ug/L		77	36 - 110

Surrogate	LCS %Recovery	LCS Qualifier	LCS Limits
Nitrobenzene-d5 (Surr)	92		36 - 120
2-Fluorobiphenyl (Surr)	79		34 - 110
Terphenyl-d14 (Surr)	110		40 - 145

Lab Sample ID: 500-162039-10 MS
Matrix: Water
Analysis Batch: 482381

Client Sample ID: W-190422-RA-109
Prep Type: Total/NA
Prep Batch: 482252

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Naphthalene	<0.26		31.1	21.9		ug/L		70	36 - 110

Surrogate	MS %Recovery	MS Qualifier	MS Limits
Nitrobenzene-d5 (Surr)	93		36 - 120
2-Fluorobiphenyl (Surr)	79		34 - 110

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QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162039-1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 500-162039-10 MS
Matrix: Water
Analysis Batch: 482381

Client Sample ID: W-190422-RA-109
Prep Type: Total/NA
Prep Batch: 482252

Surrogate	MS %Recovery	MS Qualifier	Limits
Terphenyl-d14 (Surr)	102		40 - 145

Lab Sample ID: 500-162039-10 MSD
Matrix: Water
Analysis Batch: 482381

Client Sample ID: W-190422-RA-109
Prep Type: Total/NA
Prep Batch: 482252

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Naphthalene	<0.26		35.6	27.3	F2	ug/L		77	36 - 110	22	20
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
Nitrobenzene-d5 (Surr)	96		36 - 120								
2-Fluorobiphenyl (Surr)	78		34 - 110								
Terphenyl-d14 (Surr)	103		40 - 145								

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 500-482203/1-A
Matrix: Water
Analysis Batch: 482307

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 482203

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.090		0.10	0.090	ug/L		04/25/19 10:06	04/26/19 01:36	1
Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac			
DCAA	82		25 - 130	04/25/19 10:06	04/26/19 01:36	1			

Lab Sample ID: LCS 500-482203/2-A
Matrix: Water
Analysis Batch: 482307

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 482203

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Pentachlorophenol	2.53	1.39		ug/L		55	40 - 122
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
DCAA	95		25 - 130				

Lab Sample ID: 500-162039-10 MS
Matrix: Water
Analysis Batch: 482307

Client Sample ID: W-190422-RA-109
Prep Type: Total/NA
Prep Batch: 482203

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Pentachlorophenol	<0.099		2.62	1.29		ug/L		49	40 - 122
Surrogate	MS %Recovery	MS Qualifier	Limits						
DCAA	72		25 - 130						

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162039-1

Method: 8151A - Herbicides (GC) (Continued)

Lab Sample ID: 500-162039-10 MSD

Matrix: Water

Analysis Batch: 482307

Client Sample ID: W-190422-RA-109

Prep Type: Total/NA

Prep Batch: 482203

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Pentachlorophenol	<0.099		2.85	1.56		ug/L		55	40 - 122	19	20
Surrogate	%Recovery	MSD Qualifier	MSD Limits								
DCAA	74		25 - 130								



Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162039-1

Client Sample ID: W-190422-RA-100

Lab Sample ID: 500-162039-1

Date Collected: 04/22/19 11:20

Matrix: Water

Date Received: 04/23/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483066	05/01/19 16:18	JLC	TAL CHI
Total/NA	Prep	3510C			482252	04/25/19 13:45	JVD	TAL CHI
Total/NA	Analysis	8270D		1	482381	04/26/19 14:43	AJD	TAL CHI
Total/NA	Prep	8151A			482203	04/25/19 10:06	JVD	TAL CHI
Total/NA	Analysis	8151A		1	482307	04/26/19 04:52	JBj	TAL CHI

Client Sample ID: W-190422-RA-101

Lab Sample ID: 500-162039-2

Date Collected: 04/22/19 11:30

Matrix: Water

Date Received: 04/23/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483066	05/01/19 16:44	JLC	TAL CHI
Total/NA	Prep	3510C			482252	04/25/19 13:45	JVD	TAL CHI
Total/NA	Analysis	8270D		1	482381	04/26/19 15:11	AJD	TAL CHI
Total/NA	Prep	8151A			482203	04/25/19 10:06	JVD	TAL CHI
Total/NA	Analysis	8151A		1	482307	04/26/19 05:17	JBj	TAL CHI

Client Sample ID: W-190422-RA-102

Lab Sample ID: 500-162039-3

Date Collected: 04/22/19 11:48

Matrix: Water

Date Received: 04/23/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483066	05/01/19 17:10	JLC	TAL CHI
Total/NA	Prep	3510C			482252	04/25/19 13:45	JVD	TAL CHI
Total/NA	Analysis	8270D		1	482381	04/26/19 15:38	AJD	TAL CHI
Total/NA	Prep	8151A			482203	04/25/19 10:06	JVD	TAL CHI
Total/NA	Analysis	8151A		1	482307	04/26/19 06:30	JBj	TAL CHI

Client Sample ID: W-190422-RA-103

Lab Sample ID: 500-162039-4

Date Collected: 04/22/19 11:48

Matrix: Water

Date Received: 04/23/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483066	05/01/19 17:36	JLC	TAL CHI
Total/NA	Prep	3510C			482252	04/25/19 13:45	JVD	TAL CHI
Total/NA	Analysis	8270D		1	482381	04/26/19 16:06	AJD	TAL CHI
Total/NA	Prep	8151A			482203	04/25/19 10:06	JVD	TAL CHI
Total/NA	Analysis	8151A		1	482307	04/26/19 06:55	JBj	TAL CHI

Client Sample ID: W-190422-RA-104

Lab Sample ID: 500-162039-5

Date Collected: 04/22/19 12:40

Matrix: Water

Date Received: 04/23/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483066	05/01/19 18:02	JLC	TAL CHI

Eurofins TestAmerica, Chicago

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162039-1

Client Sample ID: W-190422-RA-104

Lab Sample ID: 500-162039-5

Date Collected: 04/22/19 12:40

Matrix: Water

Date Received: 04/23/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			482252	04/25/19 13:45	JVD	TAL CHI
Total/NA	Analysis	8270D		1	482381	04/26/19 16:33	AJD	TAL CHI
Total/NA	Prep	8151A			482203	04/25/19 10:06	JVD	TAL CHI
Total/NA	Analysis	8151A		1	482307	04/26/19 07:20	JBj	TAL CHI

Client Sample ID: W-190422-RA-105

Lab Sample ID: 500-162039-6

Date Collected: 04/22/19 13:05

Matrix: Water

Date Received: 04/23/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483066	05/01/19 18:28	JLC	TAL CHI
Total/NA	Prep	3510C			482252	04/25/19 13:45	JVD	TAL CHI
Total/NA	Analysis	8270D		1	482381	04/26/19 17:01	AJD	TAL CHI
Total/NA	Prep	8151A			482203	04/25/19 10:06	JVD	TAL CHI
Total/NA	Analysis	8151A		1	482307	04/26/19 07:44	JBj	TAL CHI

Client Sample ID: W-190422-RA-106

Lab Sample ID: 500-162039-7

Date Collected: 04/22/19 13:34

Matrix: Water

Date Received: 04/23/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483066	05/01/19 18:54	JLC	TAL CHI
Total/NA	Prep	3510C			482252	04/25/19 13:45	JVD	TAL CHI
Total/NA	Analysis	8270D		1	482381	04/26/19 17:28	AJD	TAL CHI
Total/NA	Prep	8151A			482203	04/25/19 10:06	JVD	TAL CHI
Total/NA	Analysis	8151A		1	482307	04/26/19 08:09	JBj	TAL CHI

Client Sample ID: W-190422-RA-107

Lab Sample ID: 500-162039-8

Date Collected: 04/22/19 13:34

Matrix: Water

Date Received: 04/23/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483066	05/01/19 19:21	JLC	TAL CHI
Total/NA	Prep	3510C			482252	04/25/19 13:45	JVD	TAL CHI
Total/NA	Analysis	8270D		1	482381	04/26/19 17:56	AJD	TAL CHI
Total/NA	Prep	8151A			482203	04/25/19 10:06	JVD	TAL CHI
Total/NA	Analysis	8151A		1	482307	04/26/19 08:33	JBj	TAL CHI

Client Sample ID: W-190422-RA-108

Lab Sample ID: 500-162039-9

Date Collected: 04/22/19 13:45

Matrix: Water

Date Received: 04/23/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483066	05/01/19 19:47	JLC	TAL CHI

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162039-1

Client Sample ID: W-190422-RA-108

Lab Sample ID: 500-162039-9

Date Collected: 04/22/19 13:45

Matrix: Water

Date Received: 04/23/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			482252	04/25/19 13:45	JVD	TAL CHI
Total/NA	Analysis	8270D		1	482381	04/26/19 18:23	AJD	TAL CHI
Total/NA	Prep	8151A			482203	04/25/19 10:06	JVD	TAL CHI
Total/NA	Analysis	8151A		1	482307	04/26/19 08:58	JBj	TAL CHI

Client Sample ID: W-190422-RA-109

Lab Sample ID: 500-162039-10

Date Collected: 04/22/19 13:50

Matrix: Water

Date Received: 04/23/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483066	05/01/19 20:13	JLC	TAL CHI
Total/NA	Prep	3510C			482252	04/25/19 13:45	JVD	TAL CHI
Total/NA	Analysis	8270D		1	482381	04/26/19 18:51	AJD	TAL CHI
Total/NA	Prep	8151A			482203	04/25/19 10:06	JVD	TAL CHI
Total/NA	Analysis	8151A		1	482307	04/26/19 09:22	JBj	TAL CHI

Client Sample ID: Trip Blank

Lab Sample ID: 500-162039-11

Date Collected: 04/22/19 00:00

Matrix: Water

Date Received: 04/23/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483066	05/01/19 14:59	JLC	TAL CHI

Laboratory References:

TAL CHI = Eurofins TestAmerica, Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

Accreditation/Certification Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162039-1

Laboratory: Eurofins TestAmerica, Chicago

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Wisconsin	State Program	5	999580010	08-31-19 *

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

* Accreditation/Certification renewal pending - accreditation/certification considered valid.



CONESTOGA-ROVERS & ASSOCIATES

CHAIN OF CUSTODY RECORD

1801 Old Highway 8 Northwest, Suite 114
St. Paul, Minnesota 55112 United States

Phone: (651) 639-0913 Fax: (651) 639-0923

COC NO.: **SP-02900**

PAGE **1** OF **1**

500-162039 (See Reverse Side for Instructions)

Project No/ Phase/Task Code: 086165-06-10			Laboratory Name: Test America - University Park		Lab Location:		SSOW ID:																							
Project Name: Pentawood			Lab Contact:		Lab Quote No:		Cooler No:																							
Project Location: Siren WI			<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th style="width:10%;">SAMPLE TYPE</th> <th colspan="7">CONTAINER QUANTITY & PRESERVATION</th> <th colspan="3">ANALYSIS REQUESTED (See Back of COC for Definitions)</th> </tr> <tr> <td>Matrix Code (see back of COC)</td> <td>Grab (G) or Comp (C)</td> <td>Unpreserved</td> <td>Hydrochloric Acid (HCl)</td> <td>Nitric Acid (HNO3)</td> <td>Sulfuric Acid (H2SO4)</td> <td>Sodium Hydroxide (NaOH)</td> <td>Methanol/Water (Soil VOC)</td> <td>EnCores 3x5-g, 1x25-g</td> <td>Other:</td> <td>Total Containers/Sample</td> <td></td> <td></td> <td></td> </tr> </table>	SAMPLE TYPE	CONTAINER QUANTITY & PRESERVATION							ANALYSIS REQUESTED (See Back of COC for Definitions)			Matrix Code (see back of COC)	Grab (G) or Comp (C)	Unpreserved	Hydrochloric Acid (HCl)	Nitric Acid (HNO3)	Sulfuric Acid (H2SO4)	Sodium Hydroxide (NaOH)	Methanol/Water (Soil VOC)	EnCores 3x5-g, 1x25-g	Other:	Total Containers/Sample				Carrier:	
SAMPLE TYPE	CONTAINER QUANTITY & PRESERVATION							ANALYSIS REQUESTED (See Back of COC for Definitions)																						
Matrix Code (see back of COC)	Grab (G) or Comp (C)	Unpreserved	Hydrochloric Acid (HCl)	Nitric Acid (HNO3)	Sulfuric Acid (H2SO4)	Sodium Hydroxide (NaOH)	Methanol/Water (Soil VOC)	EnCores 3x5-g, 1x25-g	Other:	Total Containers/Sample																				
Chemistry Contact: G. Anderson 500-162039 COC			Sampler(s): Arnot / P. Storie		Airbill No:		Date Shipped:																							
Item	SAMPLE IDENTIFICATION (Containers for each sample may be combined on one line)	DATE (mm/dd/yy)	TIME (hh:mm)	Matrix Code	Grab (G) or Comp (C)	Unpreserved	Hydrochloric Acid (HCl)	Nitric Acid (HNO3)	Sulfuric Acid (H2SO4)	Sodium Hydroxide (NaOH)	Methanol/Water (Soil VOC)	EnCores 3x5-g, 1x25-g	Other:	Total Containers/Sample	MS/MSD Request	COMMENTS/SPECIAL INSTRUCTIONS:														
1	W-190422-PA-100	4/22/19	1120	WC	G	4	3							7																
2	W-190422-PA-101		1130			4	3							7																
3	W-190422-PA-102		1148			4	3							7																
4	W-190422-PA-103		1148			4	3							7																
5	W-190422-PA-104		1240			4	3							7																
6	W-190422-PA-105		1305			4	3							7																
7	W-190422-PA-106		1334			4	3							7																
8	W-190422-PA-107		1334			4	3							7																
9	W-190422-PA-108		1345			4	3							7																
10	W-190422-PA-109		1350			12	9							21		X														
11																														
12	trip blank						1							1																
13																														
14																														
15																														

TAT Required in business days (use separate COCs for different TATs):
 1 Day 2 Days 3 Days 1 Week 2 Week Other: _____

Total Number of Containers: **85** Notes/ Special Requirements: **-05,3,4,1,5,6,3,2,4,6**
 All Samples in Cooler must be on COC

RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY	DATE	TIME
<i>[Signature]</i>	GHD	4/22/19	1530	<i>[Signature]</i>	TA-CRE	4/23/19	1000

THE CHAIN OF CUSTODY IS A LEGAL DOCUMENT - ALL FIELDS MUST BE COMPLETED ACCURATELY

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 500-162039-1

Login Number: 162039

List Source: Eurofins TestAmerica, Chicago

List Number: 1

Creator: Scott, Sherri L

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	-0.5,3.9,4.1,5.6,3.2,4.6
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

ANALYTICAL REPORT

Eurofins TestAmerica, Chicago
2417 Bond Street
University Park, IL 60484
Tel: (708)534-5200

Laboratory Job ID: 500-162092-1
Client Project/Site: Penta Wood 086165

For:
GHD Services Inc.
1801 Old Highway 8 NW
Suite 114
St. Paul, Minnesota 55112

Attn: Mr. Grant Anderson



Authorized for release by:
5/10/2019 8:59:03 AM

Richard Wright, Senior Project Manager
(708)534-5200
richard.wright@testamericainc.com

LINKS

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results through
TotalAccess

Have a Question?



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www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Case Narrative

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Job ID: 500-162092-1

Laboratory: Eurofins TestAmerica, Chicago

Narrative

Job Narrative 500-162092-1

Comments

No additional comments.

Receipt

The samples were received on 4/24/2019 9:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 1.5° C, 2.4° C, 3.7° C, 4.3° C and 5.4° C.

GC/MS VOA

The MS/ MSD (matrix spike/ matrix spike duplicate) in batch 483381 was analyzed 2 minutes and 27 minutes outside the method specified 12 hour tune time. W-190423-RA-09 (500-162092-9) and W-190423-RA-10 (500-162092-10)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC/MS Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC Semi VOA

Method(s) 8151A: The following samples required a dilution due to the nature of the sample matrix: W-190423-RA-03 (500-162092-3). Because of this dilution, the surrogate spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.

Method(s) 8151A: The following samples required a dilution due to the nature of the sample matrix: W-190422-RA-02 (500-162092-2), W-190423-RA-04 (500-162092-4), W-190423-RA-05 (500-162092-5) and W-190423-RA-06 (500-162092-6). Because of this dilution, the surrogate spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.

Method(s) 8151A: The following samples were re-prepared outside of preparation holding time due to LOW SPIKE RECOVERY: W-190422-RA-01 (500-162092-1), W-190423-RA-04 (500-162092-4), W-190423-RA-05 (500-162092-5) and W-190423-RA-07 (500-162092-7).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Client Sample ID: W-190422-RA-01

Lab Sample ID: 500-162092-1

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.80	J B	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	1.3	J B	2.0	0.50	ug/L	1		6020A	Dissolved
Manganese	1.2	J B	2.5	0.79	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	335		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	12.4		2.0	1.7	mg/L	10		300.0	Total/NA
Nitrate as N	2.2		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	140		4.0	1.9	mg/L	20		300.0	Total/NA
Total Organic Carbon - Duplicates	1.2		1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	187		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-190422-RA-02

Lab Sample ID: 500-162092-2

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.90		0.50	0.15	ug/L	1		8260B	Total/NA
Ethylbenzene	0.80		0.50	0.18	ug/L	1		8260B	Total/NA
Xylenes, Total	6.0		1.0	0.22	ug/L	1		8260B	Total/NA
Naphthalene	9.3		0.76	0.24	ug/L	1		8270D	Total/NA
Methane	550		1.0	0.17	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	1600	H	96	86	ug/L	1000		8151A	Total/NA
Arsenic	1.1	B	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	2.2	B	2.0	0.50	ug/L	1		6020A	Dissolved
Iron	769		100	46.7	ug/L	1		6020A	Dissolved
Manganese	740	B	2.5	0.79	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	173		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	24.8		2.0	1.7	mg/L	10		300.0	Total/NA
Sulfate	12.9		2.0	0.95	mg/L	10		300.0	Total/NA
Total Organic Carbon - Duplicates	23.3		1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	130		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-190423-RA-03

Lab Sample ID: 500-162092-3

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.30	J	0.50	0.15	ug/L	1		8260B	Total/NA
Ethylbenzene	0.38	J	0.50	0.18	ug/L	1		8260B	Total/NA
Xylenes, Total	6.1		1.0	0.22	ug/L	1		8260B	Total/NA
Naphthalene	10		7.6	2.3	ug/L	10		8270D	Total/NA
Pentachlorophenol	1400	^c	49	44	ug/L	500		8151A	Total/NA
Arsenic	0.67	J B	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	8.8	B	2.0	0.50	ug/L	1		6020A	Dissolved
Iron	861		100	46.7	ug/L	1		6020A	Dissolved
Manganese	3450	B	2.5	0.79	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	471		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	64.8		2.0	1.7	mg/L	10		300.0	Total/NA
Nitrate as N	0.074	J	0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	43.1		2.0	0.95	mg/L	10		300.0	Total/NA
Total Organic Carbon - Duplicates	60.9		2.0	0.94	mg/L	2		9060A	Total/NA
Alkalinity	312		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-190423-RA-04

Lab Sample ID: 500-162092-4

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.28	J	0.50	0.15	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Chicago

Detection Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Client Sample ID: W-190423-RA-04 (Continued)

Lab Sample ID: 500-162092-4

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Ethylbenzene	0.36	J	0.50	0.18	ug/L	1		8260B	Total/NA
Xylenes, Total	5.9		1.0	0.22	ug/L	1		8260B	Total/NA
Naphthalene	10		7.7	2.4	ug/L	10		8270D	Total/NA
Pentachlorophenol	1500		99	89	ug/L	1000		8151A	Total/NA
Arsenic	2.1	B	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	6.0	B	2.0	0.50	ug/L	1		6020A	Dissolved
Iron	886		100	46.7	ug/L	1		6020A	Dissolved
Manganese	3470	B	2.5	0.79	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	464		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	63.6		2.0	1.7	mg/L	10		300.0	Total/NA
Nitrate as N	0.073	J	0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	42.5		2.0	0.95	mg/L	10		300.0	Total/NA
Total Organic Carbon - Duplicates	56.3		2.0	0.94	mg/L	2		9060A	Total/NA
Alkalinity	313		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-190423-RA-05

Lab Sample ID: 500-162092-5

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.84		0.50	0.15	ug/L	1		8260B	Total/NA
Ethylbenzene	0.83		0.50	0.18	ug/L	1		8260B	Total/NA
Xylenes, Total	15		1.0	0.22	ug/L	1		8260B	Total/NA
Naphthalene	17		0.77	0.24	ug/L	1		8270D	Total/NA
Methane	8.4		1.0	0.17	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	8900		490	440	ug/L	5000		8151A	Total/NA
Arsenic	5.5	B	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	1.8	J B	2.0	0.50	ug/L	1		6020A	Dissolved
Iron	18700		100	46.7	ug/L	1		6020A	Dissolved
Manganese	3040	B	2.5	0.79	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	340		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	32.2		2.0	1.7	mg/L	10		300.0	Total/NA
Sulfate	19.9		2.0	0.95	mg/L	10		300.0	Total/NA
Total Organic Carbon - Duplicates	31.5		1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	243		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-190423-RA-06

Lab Sample ID: 500-162092-6

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.15	J	0.50	0.15	ug/L	1		8260B	Total/NA
Pentachlorophenol	290		19	17	ug/L	200		8151A	Total/NA
Arsenic	0.55	J B	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	1.5	J B	2.0	0.50	ug/L	1		6020A	Dissolved
Manganese	55.0	B	2.5	0.79	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	218		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	9.1		0.40	0.34	mg/L	2		300.0	Total/NA
Nitrate as N	0.53		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	45.5		2.0	0.95	mg/L	10		300.0	Total/NA
Total Organic Carbon - Duplicates	2.4		1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	165		5.0	3.7	mg/L	1		SM 2320B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Chicago

Detection Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Client Sample ID: W-190423-RA-07

Lab Sample ID: 500-162092-7

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.16	J	0.50	0.15	ug/L	1		8260B	Total/NA
Copper	0.69	J B	2.0	0.50	ug/L	1		6020A	Dissolved

Client Sample ID: W-190423-RA-08

Lab Sample ID: 500-162092-8

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.65	J B	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	0.99	J B	2.0	0.50	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	255		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	44.6		2.0	1.7	mg/L	10		300.0	Total/NA
Nitrate as N	2.1		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	9.0		0.20	0.095	mg/L	1		300.0	Total/NA
Total Organic Carbon - Duplicates	0.86	J	1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	187		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-190423-RA-09

Lab Sample ID: 500-162092-9

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Pentachlorophenol	0.30	^c	0.095	0.085	ug/L	1		8151A	Total/NA
Arsenic	0.28	J B	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	2.3	B	2.0	0.50	ug/L	1		6020A	Dissolved
Manganese	1.6	J B	2.5	0.79	ug/L	1		6020A	Dissolved
Zinc	11.2	J	20.0	6.9	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	49.8		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	0.89		0.20	0.17	mg/L	1		300.0	Total/NA
Nitrate as N	0.41		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	3.0		0.20	0.095	mg/L	1		300.0	Total/NA
Total Organic Carbon - Duplicates	2.3		1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	54.2		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-190423-RA-10

Lab Sample ID: 500-162092-10

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Pentachlorophenol	0.20	^c	0.099	0.089	ug/L	1		8151A	Total/NA
Arsenic	0.39	J B	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	2.0	B	2.0	0.50	ug/L	1		6020A	Dissolved
Iron	62.7	J	100	46.7	ug/L	1		6020A	Dissolved
Manganese	2.1	J B	2.5	0.79	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	128		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	19.3	F1	2.0	1.7	mg/L	10		300.0	Total/NA
Nitrate as N	2.1		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	5.4		0.20	0.095	mg/L	1		300.0	Total/NA
Total Organic Carbon - Duplicates	0.67	J	1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	106		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: TRIP BLANK

Lab Sample ID: 500-162092-11

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Chicago

Method Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CHI
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL CHI
RSK-175	Dissolved Gases (GC)	RSK	TAL CAN
8151A	Herbicides (GC)	SW846	TAL CHI
6020A	Metals (ICP/MS)	SW846	TAL CHI
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	TAL CHI
300.0	Anions, Ion Chromatography	MCAWW	TAL CHI
9060A	Organic Carbon, Total (TOC)	SW846	TAL CHI
SM 2320B	Alkalinity	SM	TAL CHI
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CHI
3010A	Preparation, Total Metals	SW846	TAL CHI
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL CHI
5030B	Purge and Trap	SW846	TAL CHI
8151A	Extraction (Herbicides)	SW846	TAL CHI

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

RSK = Sample Prep And Calculations For Dissolved Gas Analysis In Water Samples Using A GC Headspace Equilibration Technique, RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Lab

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL CHI = Eurofins TestAmerica, Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

Sample Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-162092-1	W-190422-RA-01	Water	04/22/19 11:26	04/24/19 09:45
500-162092-2	W-190422-RA-02	Water	04/22/19 13:35	04/24/19 09:45
500-162092-3	W-190423-RA-03	Water	04/23/19 09:34	04/24/19 09:45
500-162092-4	W-190423-RA-04	Water	04/23/19 09:34	04/24/19 09:45
500-162092-5	W-190423-RA-05	Water	04/23/19 10:03	04/24/19 09:45
500-162092-6	W-190423-RA-06	Water	04/23/19 11:14	04/24/19 09:45
500-162092-7	W-190423-RA-07	Water	04/23/19 11:20	04/24/19 09:45
500-162092-8	W-190423-RA-08	Water	04/23/19 12:30	04/24/19 09:45
500-162092-9	W-190423-RA-09	Water	04/23/19 13:05	04/24/19 09:45
500-162092-10	W-190423-RA-10	Water	04/23/19 13:40	04/24/19 09:45
500-162092-11	TRIP BLANK	Water	04/23/19 14:00	04/24/19 09:45



Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Client Sample ID: W-190422-RA-01

Lab Sample ID: 500-162092-1

Date Collected: 04/22/19 11:26

Matrix: Water

Date Received: 04/24/19 09:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/02/19 03:58	1
Toluene	<0.15		0.50	0.15	ug/L			05/02/19 03:58	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/02/19 03:58	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/02/19 03:58	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		75 - 126					05/02/19 03:58	1
Toluene-d8 (Surr)	101		75 - 120					05/02/19 03:58	1
4-Bromofluorobenzene (Surr)	99		72 - 124					05/02/19 03:58	1
Dibromofluoromethane	99		75 - 120					05/02/19 03:58	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.24		0.79	0.24	ug/L		04/26/19 10:55	04/30/19 12:20	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	81		36 - 120				04/26/19 10:55	04/30/19 12:20	1
2-Fluorobiphenyl (Surr)	75		34 - 110				04/26/19 10:55	04/30/19 12:20	1
Terphenyl-d14 (Surr)	104		40 - 145				04/26/19 10:55	04/30/19 12:20	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.17		1.0	0.17	ug/L			05/02/19 18:45	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	83		60 - 140					05/02/19 18:45	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.087	H	0.096	0.087	ug/L		04/30/19 19:06	05/02/19 15:17	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCAA	58		25 - 130				04/30/19 19:06	05/02/19 15:17	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.80	J B	1.0	0.23	ug/L		04/24/19 16:39	04/29/19 21:24	1
Copper	1.3	J B	2.0	0.50	ug/L		04/24/19 16:39	04/29/19 21:24	1
Iron	<46.7		100	46.7	ug/L		05/01/19 07:57	05/01/19 22:00	1
Manganese	1.2	J B	2.5	0.79	ug/L		04/24/19 16:39	04/29/19 21:24	1
Zinc	<6.9		20.0	6.9	ug/L		05/01/19 07:57	05/01/19 22:00	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	335		1.3	0.66	mg/L		04/24/19 16:42	04/26/19 07:47	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	12.4		2.0	1.7	mg/L			04/24/19 10:39	10
Nitrate as N	2.2		0.20	0.068	mg/L			04/24/19 10:27	1
Sulfate	140		4.0	1.9	mg/L			05/04/19 03:23	20
Total Organic Carbon - Duplicates	1.2		1.0	0.47	mg/L			05/01/19 09:52	1

Eurofins TestAmerica, Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Client Sample ID: W-190422-RA-01

Lab Sample ID: 500-162092-1

Date Collected: 04/22/19 11:26

Matrix: Water

Date Received: 04/24/19 09:45

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	187		5.0	3.7	mg/L			04/30/19 15:19	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Client Sample ID: W-190422-RA-02

Lab Sample ID: 500-162092-2

Date Collected: 04/22/19 13:35

Matrix: Water

Date Received: 04/24/19 09:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/02/19 04:24	1
Toluene	0.90		0.50	0.15	ug/L			05/02/19 04:24	1
Ethylbenzene	0.80		0.50	0.18	ug/L			05/02/19 04:24	1
Xylenes, Total	6.0		1.0	0.22	ug/L			05/02/19 04:24	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		75 - 126					05/02/19 04:24	1
Toluene-d8 (Surr)	100		75 - 120					05/02/19 04:24	1
4-Bromofluorobenzene (Surr)	97		72 - 124					05/02/19 04:24	1
Dibromofluoromethane	100		75 - 120					05/02/19 04:24	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	9.3		0.76	0.24	ug/L		04/26/19 10:55	04/30/19 13:47	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	69		36 - 120				04/26/19 10:55	04/30/19 13:47	1
2-Fluorobiphenyl (Surr)	34		34 - 110				04/26/19 10:55	04/30/19 13:47	1
Terphenyl-d14 (Surr)	75		40 - 145				04/26/19 10:55	04/30/19 13:47	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	550		1.0	0.17	ug/L			05/02/19 19:03	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	83		60 - 140					05/02/19 19:03	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	1600	H	96	86	ug/L		04/30/19 19:06	05/04/19 03:51	1000
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCAA	0	D	25 - 130				04/30/19 19:06	05/04/19 03:51	1000

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.1	B	1.0	0.23	ug/L		04/24/19 16:39	04/29/19 21:28	1
Copper	2.2	B	2.0	0.50	ug/L		04/24/19 16:39	04/29/19 21:28	1
Iron	769		100	46.7	ug/L		05/01/19 07:57	05/01/19 22:04	1
Manganese	740	B	2.5	0.79	ug/L		04/24/19 16:39	04/29/19 21:28	1
Zinc	<6.9		20.0	6.9	ug/L		05/01/19 07:57	05/01/19 22:04	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	173		1.3	0.66	mg/L		04/24/19 16:42	04/26/19 07:47	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	24.8		2.0	1.7	mg/L			04/24/19 11:05	10
Nitrate as N	<0.068		0.20	0.068	mg/L			04/24/19 10:52	1
Sulfate	12.9		2.0	0.95	mg/L			04/24/19 11:05	10
Total Organic Carbon - Duplicates	23.3		1.0	0.47	mg/L			05/01/19 10:02	1

Eurofins TestAmerica, Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Client Sample ID: W-190422-RA-02

Lab Sample ID: 500-162092-2

Date Collected: 04/22/19 13:35

Matrix: Water

Date Received: 04/24/19 09:45

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	130		5.0	3.7	mg/L			04/30/19 12:52	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Client Sample ID: W-190423-RA-03

Lab Sample ID: 500-162092-3

Date Collected: 04/23/19 09:34

Matrix: Water

Date Received: 04/24/19 09:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/02/19 04:49	1
Toluene	0.30	J	0.50	0.15	ug/L			05/02/19 04:49	1
Ethylbenzene	0.38	J	0.50	0.18	ug/L			05/02/19 04:49	1
Xylenes, Total	6.1		1.0	0.22	ug/L			05/02/19 04:49	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		75 - 126					05/02/19 04:49	1
Toluene-d8 (Surr)	102		75 - 120					05/02/19 04:49	1
4-Bromofluorobenzene (Surr)	96		72 - 124					05/02/19 04:49	1
Dibromofluoromethane	97		75 - 120					05/02/19 04:49	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	10		7.6	2.3	ug/L		04/26/19 10:55	04/30/19 14:16	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	70		36 - 120				04/26/19 10:55	04/30/19 14:16	10
2-Fluorobiphenyl (Surr)	75		34 - 110				04/26/19 10:55	04/30/19 14:16	10
Terphenyl-d14 (Surr)	83		40 - 145				04/26/19 10:55	04/30/19 14:16	10

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.17		1.0	0.17	ug/L			05/02/19 19:20	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	79		60 - 140					05/02/19 19:20	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	1400	^c	49	44	ug/L		04/30/19 11:50	05/01/19 14:54	500
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCAA	0	D	25 - 130				04/30/19 11:50	05/01/19 14:54	500

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.67	J B	1.0	0.23	ug/L		04/24/19 16:39	04/29/19 21:39	1
Copper	8.8	B	2.0	0.50	ug/L		04/24/19 16:39	04/29/19 21:39	1
Iron	861		100	46.7	ug/L		05/01/19 07:57	05/01/19 22:15	1
Manganese	3450	B	2.5	0.79	ug/L		04/24/19 16:39	04/29/19 21:39	1
Zinc	<6.9		20.0	6.9	ug/L		05/01/19 07:57	05/01/19 22:15	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	471		1.3	0.66	mg/L		04/24/19 16:42	04/26/19 07:47	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	64.8		2.0	1.7	mg/L			04/24/19 11:55	10
Nitrate as N	0.074	J	0.20	0.068	mg/L			04/24/19 11:43	1
Sulfate	43.1		2.0	0.95	mg/L			04/24/19 11:55	10
Total Organic Carbon - Duplicates	60.9		2.0	0.94	mg/L			05/01/19 12:42	2

Eurofins TestAmerica, Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Client Sample ID: W-190423-RA-03

Lab Sample ID: 500-162092-3

Date Collected: 04/23/19 09:34

Matrix: Water

Date Received: 04/24/19 09:45

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	312		5.0	3.7	mg/L			04/30/19 12:42	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Client Sample ID: W-190423-RA-04

Lab Sample ID: 500-162092-4

Date Collected: 04/23/19 09:34

Matrix: Water

Date Received: 04/24/19 09:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/02/19 05:15	1
Toluene	0.28	J	0.50	0.15	ug/L			05/02/19 05:15	1
Ethylbenzene	0.36	J	0.50	0.18	ug/L			05/02/19 05:15	1
Xylenes, Total	5.9		1.0	0.22	ug/L			05/02/19 05:15	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		75 - 126					05/02/19 05:15	1
Toluene-d8 (Surr)	102		75 - 120					05/02/19 05:15	1
4-Bromofluorobenzene (Surr)	100		72 - 124					05/02/19 05:15	1
Dibromofluoromethane	95		75 - 120					05/02/19 05:15	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	10		7.7	2.4	ug/L		04/26/19 10:55	04/30/19 14:45	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	68		36 - 120				04/26/19 10:55	04/30/19 14:45	10
2-Fluorobiphenyl (Surr)	72		34 - 110				04/26/19 10:55	04/30/19 14:45	10
Terphenyl-d14 (Surr)	87		40 - 145				04/26/19 10:55	04/30/19 14:45	10

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.17		1.0	0.17	ug/L			05/02/19 19:37	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	80		60 - 140					05/02/19 19:37	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	1500		99	89	ug/L		04/30/19 11:50	05/02/19 16:06	1000
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCAA	0	D	25 - 130				04/30/19 11:50	05/02/19 16:06	1000

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.1	B	1.0	0.23	ug/L		04/24/19 16:39	04/29/19 21:43	1
Copper	6.0	B	2.0	0.50	ug/L		04/24/19 16:39	04/29/19 21:43	1
Iron	886		100	46.7	ug/L		05/01/19 07:57	05/01/19 22:19	1
Manganese	3470	B	2.5	0.79	ug/L		04/24/19 16:39	04/29/19 21:43	1
Zinc	<6.9		20.0	6.9	ug/L		05/01/19 07:57	05/01/19 22:19	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	464		1.3	0.66	mg/L		04/24/19 16:42	04/26/19 07:47	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	63.6		2.0	1.7	mg/L			04/24/19 12:21	10
Nitrate as N	0.073	J	0.20	0.068	mg/L			04/24/19 12:08	1
Sulfate	42.5		2.0	0.95	mg/L			04/24/19 12:21	10
Total Organic Carbon - Duplicates	56.3		2.0	0.94	mg/L			05/01/19 12:53	2

Eurofins TestAmerica, Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Client Sample ID: W-190423-RA-04

Lab Sample ID: 500-162092-4

Date Collected: 04/23/19 09:34

Matrix: Water

Date Received: 04/24/19 09:45

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	313		5.0	3.7	mg/L			04/30/19 12:28	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Client Sample ID: W-190423-RA-05

Lab Sample ID: 500-162092-5

Date Collected: 04/23/19 10:03

Matrix: Water

Date Received: 04/24/19 09:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/02/19 05:40	1
Toluene	0.84		0.50	0.15	ug/L			05/02/19 05:40	1
Ethylbenzene	0.83		0.50	0.18	ug/L			05/02/19 05:40	1
Xylenes, Total	15		1.0	0.22	ug/L			05/02/19 05:40	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		75 - 126					05/02/19 05:40	1
Toluene-d8 (Surr)	101		75 - 120					05/02/19 05:40	1
4-Bromofluorobenzene (Surr)	100		72 - 124					05/02/19 05:40	1
Dibromofluoromethane	95		75 - 120					05/02/19 05:40	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	17		0.77	0.24	ug/L		04/26/19 10:55	04/30/19 15:14	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	76		36 - 120				04/26/19 10:55	04/30/19 15:14	1
2-Fluorobiphenyl (Surr)	46		34 - 110				04/26/19 10:55	04/30/19 15:14	1
Terphenyl-d14 (Surr)	88		40 - 145				04/26/19 10:55	04/30/19 15:14	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	8.4		1.0	0.17	ug/L			05/02/19 19:55	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	80		60 - 140					05/02/19 19:55	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	8900		490	440	ug/L		04/30/19 11:50	05/02/19 16:30	5000
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCAA	0	D	25 - 130				04/30/19 11:50	05/02/19 16:30	5000

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	5.5	B	1.0	0.23	ug/L		04/24/19 16:39	04/29/19 21:47	1
Copper	1.8	J B	2.0	0.50	ug/L		04/24/19 16:39	04/29/19 21:47	1
Iron	18700		100	46.7	ug/L		05/01/19 07:57	05/01/19 22:23	1
Manganese	3040	B	2.5	0.79	ug/L		04/24/19 16:39	04/29/19 21:47	1
Zinc	<6.9		20.0	6.9	ug/L		05/01/19 07:57	05/01/19 22:23	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	340		1.3	0.66	mg/L		04/24/19 16:42	04/26/19 07:47	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	32.2		2.0	1.7	mg/L			04/24/19 12:46	10
Nitrate as N	<0.068		0.20	0.068	mg/L			04/24/19 12:33	1
Sulfate	19.9		2.0	0.95	mg/L			04/24/19 12:46	10
Total Organic Carbon - Duplicates	31.5		1.0	0.47	mg/L			05/01/19 10:23	1

Eurofins TestAmerica, Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Client Sample ID: W-190423-RA-05

Lab Sample ID: 500-162092-5

Date Collected: 04/23/19 10:03

Matrix: Water

Date Received: 04/24/19 09:45

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	243		5.0	3.7	mg/L			04/30/19 12:35	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Client Sample ID: W-190423-RA-06

Lab Sample ID: 500-162092-6

Date Collected: 04/23/19 11:14

Matrix: Water

Date Received: 04/24/19 09:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/02/19 06:33	1
Toluene	0.15	J	0.50	0.15	ug/L			05/02/19 06:33	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/02/19 06:33	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/02/19 06:33	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		75 - 126					05/02/19 06:33	1
Toluene-d8 (Surr)	101		75 - 120					05/02/19 06:33	1
4-Bromofluorobenzene (Surr)	100		72 - 124					05/02/19 06:33	1
Dibromofluoromethane	98		75 - 120					05/02/19 06:33	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.24		0.76	0.24	ug/L		04/26/19 10:55	04/30/19 15:42	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	73		36 - 120				04/26/19 10:55	04/30/19 15:42	1
2-Fluorobiphenyl (Surr)	70		34 - 110				04/26/19 10:55	04/30/19 15:42	1
Terphenyl-d14 (Surr)	83		40 - 145				04/26/19 10:55	04/30/19 15:42	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.17		1.0	0.17	ug/L			05/02/19 20:12	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	80		60 - 140					05/02/19 20:12	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	290		19	17	ug/L		04/30/19 11:50	05/04/19 04:16	200
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCAA	0	D	25 - 130				04/30/19 11:50	05/04/19 04:16	200

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.55	J B	1.0	0.23	ug/L		04/24/19 16:39	04/29/19 21:51	1
Copper	1.5	J B	2.0	0.50	ug/L		04/24/19 16:39	04/29/19 21:51	1
Iron	<46.7		100	46.7	ug/L		05/01/19 07:57	05/01/19 22:27	1
Manganese	55.0	B	2.5	0.79	ug/L		04/24/19 16:39	04/29/19 21:51	1
Zinc	<6.9		20.0	6.9	ug/L		05/01/19 07:57	05/01/19 22:27	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	218		1.3	0.66	mg/L		04/24/19 16:42	04/26/19 07:47	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	9.1		0.40	0.34	mg/L			05/04/19 03:36	2
Nitrate as N	0.53		0.20	0.068	mg/L			04/24/19 12:59	1
Sulfate	45.5		2.0	0.95	mg/L			04/24/19 13:11	10
Total Organic Carbon - Duplicates	2.4		1.0	0.47	mg/L			05/01/19 10:30	1

Eurofins TestAmerica, Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Client Sample ID: W-190423-RA-06

Lab Sample ID: 500-162092-6

Date Collected: 04/23/19 11:14

Matrix: Water

Date Received: 04/24/19 09:45

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	165		5.0	3.7	mg/L			04/30/19 15:36	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Client Sample ID: W-190423-RA-07

Lab Sample ID: 500-162092-7

Date Collected: 04/23/19 11:20

Matrix: Water

Date Received: 04/24/19 09:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/02/19 06:58	1
Toluene	0.16	J	0.50	0.15	ug/L			05/02/19 06:58	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/02/19 06:58	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/02/19 06:58	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		75 - 126		05/02/19 06:58	1
Toluene-d8 (Surr)	100		75 - 120		05/02/19 06:58	1
4-Bromofluorobenzene (Surr)	100		72 - 124		05/02/19 06:58	1
Dibromofluoromethane	99		75 - 120		05/02/19 06:58	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.23		0.75	0.23	ug/L		04/26/19 10:55	04/30/19 16:11	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	79		36 - 120	04/26/19 10:55	04/30/19 16:11	1
2-Fluorobiphenyl (Surr)	70		34 - 110	04/26/19 10:55	04/30/19 16:11	1
Terphenyl-d14 (Surr)	91		40 - 145	04/26/19 10:55	04/30/19 16:11	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.085		0.095	0.085	ug/L		04/30/19 11:50	05/02/19 17:19	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCAA	69		25 - 130	04/30/19 11:50	05/02/19 17:19	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.23		1.0	0.23	ug/L		04/24/19 16:39	04/29/19 21:54	1
Copper	0.69	J B	2.0	0.50	ug/L		04/24/19 16:39	04/29/19 21:54	1
Iron	<46.7		100	46.7	ug/L		05/01/19 07:57	05/01/19 22:30	1
Manganese	<0.79		2.5	0.79	ug/L		04/24/19 16:39	04/29/19 21:54	1
Zinc	<6.9		20.0	6.9	ug/L		05/01/19 07:57	05/01/19 22:30	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Client Sample ID: W-190423-RA-08

Lab Sample ID: 500-162092-8

Date Collected: 04/23/19 12:30

Matrix: Water

Date Received: 04/24/19 09:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/02/19 07:24	1
Toluene	<0.15		0.50	0.15	ug/L			05/02/19 07:24	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/02/19 07:24	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/02/19 07:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		75 - 126		05/02/19 07:24	1
Toluene-d8 (Surr)	102		75 - 120		05/02/19 07:24	1
4-Bromofluorobenzene (Surr)	99		72 - 124		05/02/19 07:24	1
Dibromofluoromethane	98		75 - 120		05/02/19 07:24	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.24		0.78	0.24	ug/L		04/26/19 10:55	04/30/19 16:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	67		36 - 120	04/26/19 10:55	04/30/19 16:40	1
2-Fluorobiphenyl (Surr)	63		34 - 110	04/26/19 10:55	04/30/19 16:40	1
Terphenyl-d14 (Surr)	89		40 - 145	04/26/19 10:55	04/30/19 16:40	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.17		1.0	0.17	ug/L			05/02/19 20:29	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	79		60 - 140		05/02/19 20:29	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.087	^c	0.097	0.087	ug/L		04/30/19 11:50	05/01/19 16:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCAA	69		25 - 130	04/30/19 11:50	05/01/19 16:57	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.65	J B	1.0	0.23	ug/L		04/24/19 16:39	04/29/19 21:58	1
Copper	0.99	J B	2.0	0.50	ug/L		04/24/19 16:39	04/29/19 21:58	1
Iron	<46.7		100	46.7	ug/L		05/01/19 07:57	05/01/19 22:34	1
Manganese	<0.79		2.5	0.79	ug/L		04/24/19 16:39	04/29/19 21:58	1
Zinc	<6.9		20.0	6.9	ug/L		05/01/19 07:57	05/01/19 22:34	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	255		1.3	0.66	mg/L		04/24/19 16:42	04/26/19 07:47	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	44.6		2.0	1.7	mg/L			04/24/19 13:37	10
Nitrate as N	2.1		0.20	0.068	mg/L			04/24/19 13:24	1
Sulfate	9.0		0.20	0.095	mg/L			04/24/19 13:24	1
Total Organic Carbon - Duplicates	0.86	J	1.0	0.47	mg/L			05/01/19 10:40	1

Eurofins TestAmerica, Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Client Sample ID: W-190423-RA-08

Lab Sample ID: 500-162092-8

Date Collected: 04/23/19 12:30

Matrix: Water

Date Received: 04/24/19 09:45

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	187		5.0	3.7	mg/L			04/30/19 15:43	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Client Sample ID: W-190423-RA-09

Lab Sample ID: 500-162092-9

Date Collected: 04/23/19 13:05

Matrix: Water

Date Received: 04/24/19 09:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/03/19 03:31	1
Toluene	<0.15		0.50	0.15	ug/L			05/03/19 03:31	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/03/19 03:31	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/03/19 03:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		75 - 126		05/03/19 03:31	1
Toluene-d8 (Surr)	92		75 - 120		05/03/19 03:31	1
4-Bromofluorobenzene (Surr)	113		72 - 124		05/03/19 03:31	1
Dibromofluoromethane	95		75 - 120		05/03/19 03:31	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.23		0.76	0.23	ug/L		04/26/19 10:55	04/30/19 17:09	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	74		36 - 120	04/26/19 10:55	04/30/19 17:09	1
2-Fluorobiphenyl (Surr)	68		34 - 110	04/26/19 10:55	04/30/19 17:09	1
Terphenyl-d14 (Surr)	89		40 - 145	04/26/19 10:55	04/30/19 17:09	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.17		1.0	0.17	ug/L			05/02/19 20:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	81		60 - 140		05/02/19 20:47	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.30	^c	0.095	0.085	ug/L		04/30/19 11:50	05/01/19 17:22	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCAA	67		25 - 130	04/30/19 11:50	05/01/19 17:22	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.28	J B	1.0	0.23	ug/L		04/24/19 16:39	04/29/19 22:02	1
Copper	2.3	B	2.0	0.50	ug/L		04/24/19 16:39	04/29/19 22:02	1
Iron	<46.7		100	46.7	ug/L		05/01/19 07:57	05/01/19 22:38	1
Manganese	1.6	J B	2.5	0.79	ug/L		04/24/19 16:39	04/29/19 22:02	1
Zinc	11.2	J	20.0	6.9	ug/L		05/01/19 07:57	05/01/19 22:38	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	49.8		1.3	0.66	mg/L		04/24/19 16:42	04/26/19 07:47	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.89		0.20	0.17	mg/L			04/24/19 14:15	1
Nitrate as N	0.41		0.20	0.068	mg/L			04/24/19 14:15	1
Sulfate	3.0		0.20	0.095	mg/L			04/24/19 14:15	1
Total Organic Carbon - Duplicates	2.3		1.0	0.47	mg/L			05/01/19 11:28	1

Eurofins TestAmerica, Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Client Sample ID: W-190423-RA-09

Lab Sample ID: 500-162092-9

Date Collected: 04/23/19 13:05

Matrix: Water

Date Received: 04/24/19 09:45

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	54.2		5.0	3.7	mg/L			04/30/19 15:49	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Client Sample ID: W-190423-RA-10

Lab Sample ID: 500-162092-10

Date Collected: 04/23/19 13:40

Matrix: Water

Date Received: 04/24/19 09:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/03/19 03:56	1
Toluene	<0.15		0.50	0.15	ug/L			05/03/19 03:56	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/03/19 03:56	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/03/19 03:56	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		75 - 126		05/03/19 03:56	1
Toluene-d8 (Surr)	92		75 - 120		05/03/19 03:56	1
4-Bromofluorobenzene (Surr)	116		72 - 124		05/03/19 03:56	1
Dibromofluoromethane	96		75 - 120		05/03/19 03:56	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.25		0.82	0.25	ug/L		04/26/19 10:55	04/30/19 17:38	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	64		36 - 120	04/26/19 10:55	04/30/19 17:38	1
2-Fluorobiphenyl (Surr)	60		34 - 110	04/26/19 10:55	04/30/19 17:38	1
Terphenyl-d14 (Surr)	94		40 - 145	04/26/19 10:55	04/30/19 17:38	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.17		1.0	0.17	ug/L			05/02/19 21:04	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	80		60 - 140		05/02/19 21:04	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.20	^c	0.099	0.089	ug/L		04/30/19 11:50	05/01/19 17:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCAA	64		25 - 130	04/30/19 11:50	05/01/19 17:46	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.39	J B	1.0	0.23	ug/L		04/24/19 16:39	04/29/19 22:06	1
Copper	2.0	B	2.0	0.50	ug/L		04/24/19 16:39	04/29/19 22:06	1
Iron	62.7	J	100	46.7	ug/L		05/01/19 07:57	05/01/19 22:42	1
Manganese	2.1	J B	2.5	0.79	ug/L		04/24/19 16:39	04/29/19 22:06	1
Zinc	<6.9		20.0	6.9	ug/L		05/01/19 07:57	05/01/19 22:42	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	128		1.3	0.66	mg/L		04/24/19 16:42	04/26/19 07:47	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	19.3	F1	2.0	1.7	mg/L			04/24/19 15:18	10
Nitrate as N	2.1		0.20	0.068	mg/L			04/24/19 14:40	1
Sulfate	5.4		0.20	0.095	mg/L			04/24/19 14:40	1
Total Organic Carbon - Duplicates	0.67	J	1.0	0.47	mg/L			05/02/19 14:52	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Client Sample ID: W-190423-RA-10

Lab Sample ID: 500-162092-10

Date Collected: 04/23/19 13:40

Matrix: Water

Date Received: 04/24/19 09:45

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	106		5.0	3.7	mg/L			04/30/19 15:55	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 500-162092-11

Date Collected: 04/23/19 14:00

Matrix: Water

Date Received: 04/24/19 09:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/01/19 23:45	1
Toluene	<0.15		0.50	0.15	ug/L			05/01/19 23:45	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/01/19 23:45	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/01/19 23:45	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		75 - 126		05/01/19 23:45	1
Toluene-d8 (Surr)	103		75 - 120		05/01/19 23:45	1
4-Bromofluorobenzene (Surr)	97		72 - 124		05/01/19 23:45	1
Dibromofluoromethane	93		75 - 120		05/01/19 23:45	1

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Reported value was between the limit of detection and the limit of quantitation.

GC Semi VOA

Qualifier	Qualifier Description
^C	CCV Recovery is outside acceptance limits.
D	Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution may be flagged with a D.
H	Sample was prepped or analyzed beyond the specified holding time

Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Reported value was between the limit of detection and the limit of quantitation.

General Chemistry

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
E	Result exceeded calibration range.
F1	MS and/or MSD Recovery is outside acceptance limits.
J	Reported value was between the limit of detection and the limit of quantitation.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

GC/MS VOA

Analysis Batch: 483156

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162092-1	W-190422-RA-01	Total/NA	Water	8260B	
500-162092-2	W-190422-RA-02	Total/NA	Water	8260B	
500-162092-3	W-190423-RA-03	Total/NA	Water	8260B	
500-162092-4	W-190423-RA-04	Total/NA	Water	8260B	
500-162092-5	W-190423-RA-05	Total/NA	Water	8260B	
500-162092-6	W-190423-RA-06	Total/NA	Water	8260B	
500-162092-7	W-190423-RA-07	Total/NA	Water	8260B	
500-162092-8	W-190423-RA-08	Total/NA	Water	8260B	
500-162092-11	TRIP BLANK	Total/NA	Water	8260B	
MB 500-483156/6	Method Blank	Total/NA	Water	8260B	
LCS 500-483156/4	Lab Control Sample	Total/NA	Water	8260B	

Analysis Batch: 483381

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162092-9	W-190423-RA-09	Total/NA	Water	8260B	
500-162092-10	W-190423-RA-10	Total/NA	Water	8260B	
MB 500-483381/6	Method Blank	Total/NA	Water	8260B	
LCS 500-483381/7	Lab Control Sample	Total/NA	Water	8260B	
500-162092-10 MS	W-190423-RA-10	Total/NA	Water	8260B	
500-162092-10 MSD	W-190423-RA-10	Total/NA	Water	8260B	

GC/MS Semi VOA

Prep Batch: 482414

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162092-1	W-190422-RA-01	Total/NA	Water	3510C	
500-162092-2	W-190422-RA-02	Total/NA	Water	3510C	
500-162092-3	W-190423-RA-03	Total/NA	Water	3510C	
500-162092-4	W-190423-RA-04	Total/NA	Water	3510C	
500-162092-5	W-190423-RA-05	Total/NA	Water	3510C	
500-162092-6	W-190423-RA-06	Total/NA	Water	3510C	
500-162092-7	W-190423-RA-07	Total/NA	Water	3510C	
500-162092-8	W-190423-RA-08	Total/NA	Water	3510C	
500-162092-9	W-190423-RA-09	Total/NA	Water	3510C	
500-162092-10	W-190423-RA-10	Total/NA	Water	3510C	
MB 500-482414/1-A	Method Blank	Total/NA	Water	3510C	
LCS 500-482414/2-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 500-482414/3-A	Lab Control Sample Dup	Total/NA	Water	3510C	

Analysis Batch: 482612

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 500-482414/1-A	Method Blank	Total/NA	Water	8270D	482414
LCS 500-482414/2-A	Lab Control Sample	Total/NA	Water	8270D	482414
LCSD 500-482414/3-A	Lab Control Sample Dup	Total/NA	Water	8270D	482414

Analysis Batch: 482846

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162092-1	W-190422-RA-01	Total/NA	Water	8270D	482414
500-162092-2	W-190422-RA-02	Total/NA	Water	8270D	482414
500-162092-3	W-190423-RA-03	Total/NA	Water	8270D	482414
500-162092-4	W-190423-RA-04	Total/NA	Water	8270D	482414

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QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

GC/MS Semi VOA (Continued)

Analysis Batch: 482846 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162092-5	W-190423-RA-05	Total/NA	Water	8270D	482414
500-162092-6	W-190423-RA-06	Total/NA	Water	8270D	482414
500-162092-7	W-190423-RA-07	Total/NA	Water	8270D	482414
500-162092-8	W-190423-RA-08	Total/NA	Water	8270D	482414
500-162092-9	W-190423-RA-09	Total/NA	Water	8270D	482414
500-162092-10	W-190423-RA-10	Total/NA	Water	8270D	482414

GC VOA

Analysis Batch: 379285

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162092-1	W-190422-RA-01	Total/NA	Water	RSK-175	
500-162092-2	W-190422-RA-02	Total/NA	Water	RSK-175	
500-162092-3	W-190423-RA-03	Total/NA	Water	RSK-175	
500-162092-4	W-190423-RA-04	Total/NA	Water	RSK-175	
500-162092-5	W-190423-RA-05	Total/NA	Water	RSK-175	
500-162092-6	W-190423-RA-06	Total/NA	Water	RSK-175	
500-162092-8	W-190423-RA-08	Total/NA	Water	RSK-175	
500-162092-9	W-190423-RA-09	Total/NA	Water	RSK-175	
500-162092-10	W-190423-RA-10	Total/NA	Water	RSK-175	
MB 240-379285/4	Method Blank	Total/NA	Water	RSK-175	
LCS 240-379285/5	Lab Control Sample	Total/NA	Water	RSK-175	

GC Semi VOA

Prep Batch: 482873

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162092-3	W-190423-RA-03	Total/NA	Water	8151A	
500-162092-4	W-190423-RA-04	Total/NA	Water	8151A	
500-162092-5	W-190423-RA-05	Total/NA	Water	8151A	
500-162092-6	W-190423-RA-06	Total/NA	Water	8151A	
500-162092-7	W-190423-RA-07	Total/NA	Water	8151A	
500-162092-8	W-190423-RA-08	Total/NA	Water	8151A	
500-162092-9	W-190423-RA-09	Total/NA	Water	8151A	
500-162092-10	W-190423-RA-10	Total/NA	Water	8151A	
MB 500-482873/1-A	Method Blank	Total/NA	Water	8151A	
LCS 500-482873/2-A	Lab Control Sample	Total/NA	Water	8151A	
LCSD 500-482873/3-A	Lab Control Sample Dup	Total/NA	Water	8151A	

Prep Batch: 482956

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162092-1	W-190422-RA-01	Total/NA	Water	8151A	
500-162092-2	W-190422-RA-02	Total/NA	Water	8151A	
MB 500-482956/1-A	Method Blank	Total/NA	Water	8151A	
LCS 500-482956/2-A	Lab Control Sample	Total/NA	Water	8151A	
LCSD 500-482956/3-A	Lab Control Sample Dup	Total/NA	Water	8151A	

Analysis Batch: 482958

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162092-3	W-190423-RA-03	Total/NA	Water	8151A	482873
500-162092-8	W-190423-RA-08	Total/NA	Water	8151A	482873
500-162092-9	W-190423-RA-09	Total/NA	Water	8151A	482873

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QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

GC Semi VOA (Continued)

Analysis Batch: 482958 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162092-10	W-190423-RA-10	Total/NA	Water	8151A	482873
MB 500-482873/1-A	Method Blank	Total/NA	Water	8151A	482873
LCS 500-482873/2-A	Lab Control Sample	Total/NA	Water	8151A	482873
LCSD 500-482873/3-A	Lab Control Sample Dup	Total/NA	Water	8151A	482873

Analysis Batch: 483186

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162092-1	W-190422-RA-01	Total/NA	Water	8151A	482956
500-162092-4	W-190423-RA-04	Total/NA	Water	8151A	482873
500-162092-5	W-190423-RA-05	Total/NA	Water	8151A	482873
500-162092-7	W-190423-RA-07	Total/NA	Water	8151A	482873
MB 500-482956/1-A	Method Blank	Total/NA	Water	8151A	482956
LCS 500-482956/2-A	Lab Control Sample	Total/NA	Water	8151A	482956
LCSD 500-482956/3-A	Lab Control Sample Dup	Total/NA	Water	8151A	482956

Analysis Batch: 483441

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162092-2	W-190422-RA-02	Total/NA	Water	8151A	482956
500-162092-6	W-190423-RA-06	Total/NA	Water	8151A	482873

Metals

Prep Batch: 482058

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162092-1	W-190422-RA-01	Dissolved	Water	3005A	
500-162092-2	W-190422-RA-02	Dissolved	Water	3005A	
500-162092-3	W-190423-RA-03	Dissolved	Water	3005A	
500-162092-4	W-190423-RA-04	Dissolved	Water	3005A	
500-162092-5	W-190423-RA-05	Dissolved	Water	3005A	
500-162092-6	W-190423-RA-06	Dissolved	Water	3005A	
500-162092-7	W-190423-RA-07	Dissolved	Water	3005A	
500-162092-8	W-190423-RA-08	Dissolved	Water	3005A	
500-162092-9	W-190423-RA-09	Dissolved	Water	3005A	
500-162092-10	W-190423-RA-10	Dissolved	Water	3005A	
MB 500-482058/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 500-482058/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Prep Batch: 482064

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162092-1	W-190422-RA-01	Total/NA	Water	3010A	
500-162092-2	W-190422-RA-02	Total/NA	Water	3010A	
500-162092-3	W-190423-RA-03	Total/NA	Water	3010A	
500-162092-4	W-190423-RA-04	Total/NA	Water	3010A	
500-162092-5	W-190423-RA-05	Total/NA	Water	3010A	
500-162092-6	W-190423-RA-06	Total/NA	Water	3010A	
500-162092-8	W-190423-RA-08	Total/NA	Water	3010A	
500-162092-9	W-190423-RA-09	Total/NA	Water	3010A	
500-162092-10	W-190423-RA-10	Total/NA	Water	3010A	

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Metals

Analysis Batch: 482359

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162092-1	W-190422-RA-01	Total/NA	Water	SM 2340B	482064
500-162092-2	W-190422-RA-02	Total/NA	Water	SM 2340B	482064
500-162092-3	W-190423-RA-03	Total/NA	Water	SM 2340B	482064
500-162092-4	W-190423-RA-04	Total/NA	Water	SM 2340B	482064
500-162092-5	W-190423-RA-05	Total/NA	Water	SM 2340B	482064
500-162092-6	W-190423-RA-06	Total/NA	Water	SM 2340B	482064
500-162092-8	W-190423-RA-08	Total/NA	Water	SM 2340B	482064
500-162092-9	W-190423-RA-09	Total/NA	Water	SM 2340B	482064
500-162092-10	W-190423-RA-10	Total/NA	Water	SM 2340B	482064

Analysis Batch: 482835

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162092-1	W-190422-RA-01	Dissolved	Water	6020A	482058
500-162092-2	W-190422-RA-02	Dissolved	Water	6020A	482058
500-162092-3	W-190423-RA-03	Dissolved	Water	6020A	482058
500-162092-4	W-190423-RA-04	Dissolved	Water	6020A	482058
500-162092-5	W-190423-RA-05	Dissolved	Water	6020A	482058
500-162092-6	W-190423-RA-06	Dissolved	Water	6020A	482058
500-162092-7	W-190423-RA-07	Dissolved	Water	6020A	482058
500-162092-8	W-190423-RA-08	Dissolved	Water	6020A	482058
500-162092-9	W-190423-RA-09	Dissolved	Water	6020A	482058
500-162092-10	W-190423-RA-10	Dissolved	Water	6020A	482058
MB 500-482058/1-A	Method Blank	Total Recoverable	Water	6020A	482058
LCS 500-482058/2-A	Lab Control Sample	Total Recoverable	Water	6020A	482058

Prep Batch: 483024

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162092-1	W-190422-RA-01	Dissolved	Water	3005A	
500-162092-2	W-190422-RA-02	Dissolved	Water	3005A	
500-162092-3	W-190423-RA-03	Dissolved	Water	3005A	
500-162092-4	W-190423-RA-04	Dissolved	Water	3005A	
500-162092-5	W-190423-RA-05	Dissolved	Water	3005A	
500-162092-6	W-190423-RA-06	Dissolved	Water	3005A	
500-162092-7	W-190423-RA-07	Dissolved	Water	3005A	
500-162092-8	W-190423-RA-08	Dissolved	Water	3005A	
500-162092-9	W-190423-RA-09	Dissolved	Water	3005A	
500-162092-10	W-190423-RA-10	Dissolved	Water	3005A	
MB 500-483024/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 500-483024/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 483261

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162092-1	W-190422-RA-01	Dissolved	Water	6020A	483024
500-162092-2	W-190422-RA-02	Dissolved	Water	6020A	483024
500-162092-3	W-190423-RA-03	Dissolved	Water	6020A	483024
500-162092-4	W-190423-RA-04	Dissolved	Water	6020A	483024
500-162092-5	W-190423-RA-05	Dissolved	Water	6020A	483024
500-162092-6	W-190423-RA-06	Dissolved	Water	6020A	483024
500-162092-7	W-190423-RA-07	Dissolved	Water	6020A	483024
500-162092-8	W-190423-RA-08	Dissolved	Water	6020A	483024
500-162092-9	W-190423-RA-09	Dissolved	Water	6020A	483024

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QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Metals (Continued)

Analysis Batch: 483261 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162092-10	W-190423-RA-10	Dissolved	Water	6020A	483024
MB 500-483024/1-A	Method Blank	Total Recoverable	Water	6020A	483024
LCS 500-483024/2-A	Lab Control Sample	Total Recoverable	Water	6020A	483024

General Chemistry

Analysis Batch: 481958

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162092-1	W-190422-RA-01	Total/NA	Water	300.0	
500-162092-1	W-190422-RA-01	Total/NA	Water	300.0	
500-162092-2	W-190422-RA-02	Total/NA	Water	300.0	
500-162092-2	W-190422-RA-02	Total/NA	Water	300.0	
500-162092-3	W-190423-RA-03	Total/NA	Water	300.0	
500-162092-3	W-190423-RA-03	Total/NA	Water	300.0	
500-162092-4	W-190423-RA-04	Total/NA	Water	300.0	
500-162092-4	W-190423-RA-04	Total/NA	Water	300.0	
500-162092-5	W-190423-RA-05	Total/NA	Water	300.0	
500-162092-5	W-190423-RA-05	Total/NA	Water	300.0	
500-162092-6	W-190423-RA-06	Total/NA	Water	300.0	
500-162092-6	W-190423-RA-06	Total/NA	Water	300.0	
500-162092-8	W-190423-RA-08	Total/NA	Water	300.0	
500-162092-8	W-190423-RA-08	Total/NA	Water	300.0	
500-162092-9	W-190423-RA-09	Total/NA	Water	300.0	
500-162092-10	W-190423-RA-10	Total/NA	Water	300.0	
500-162092-10	W-190423-RA-10	Total/NA	Water	300.0	
MB 500-481958/3	Method Blank	Total/NA	Water	300.0	
LCS 500-481958/4	Lab Control Sample	Total/NA	Water	300.0	
500-162092-10 MS	W-190423-RA-10	Total/NA	Water	300.0	
500-162092-10 MS	W-190423-RA-10	Total/NA	Water	300.0	
500-162092-10 MSD	W-190423-RA-10	Total/NA	Water	300.0	
500-162092-10 MSD	W-190423-RA-10	Total/NA	Water	300.0	

Analysis Batch: 483035

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162092-1	W-190422-RA-01	Total/NA	Water	SM 2320B	
500-162092-2	W-190422-RA-02	Total/NA	Water	SM 2320B	
500-162092-3	W-190423-RA-03	Total/NA	Water	SM 2320B	
500-162092-4	W-190423-RA-04	Total/NA	Water	SM 2320B	
500-162092-5	W-190423-RA-05	Total/NA	Water	SM 2320B	
500-162092-6	W-190423-RA-06	Total/NA	Water	SM 2320B	
500-162092-8	W-190423-RA-08	Total/NA	Water	SM 2320B	
500-162092-9	W-190423-RA-09	Total/NA	Water	SM 2320B	
500-162092-10	W-190423-RA-10	Total/NA	Water	SM 2320B	
MB 500-483035/28	Method Blank	Total/NA	Water	SM 2320B	
MB 500-483035/3	Method Blank	Total/NA	Water	SM 2320B	
LCS 500-483035/29	Lab Control Sample	Total/NA	Water	SM 2320B	
LCS 500-483035/4	Lab Control Sample	Total/NA	Water	SM 2320B	
500-162092-1 DU	W-190422-RA-01	Total/NA	Water	SM 2320B	

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

General Chemistry

Analysis Batch: 483201

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162092-1	W-190422-RA-01	Total/NA	Water	9060A	
500-162092-2	W-190422-RA-02	Total/NA	Water	9060A	
500-162092-3	W-190423-RA-03	Total/NA	Water	9060A	
500-162092-4	W-190423-RA-04	Total/NA	Water	9060A	
500-162092-5	W-190423-RA-05	Total/NA	Water	9060A	
500-162092-6	W-190423-RA-06	Total/NA	Water	9060A	
500-162092-8	W-190423-RA-08	Total/NA	Water	9060A	
500-162092-9	W-190423-RA-09	Total/NA	Water	9060A	
MB 500-483201/4	Method Blank	Total/NA	Water	9060A	
LCS 500-483201/5	Lab Control Sample	Total/NA	Water	9060A	

Analysis Batch: 483483

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162092-10	W-190423-RA-10	Total/NA	Water	9060A	
MB 500-483483/4	Method Blank	Total/NA	Water	9060A	
HLCS 500-483483/6	Lab Control Sample	Total/NA	Water	9060A	
LCS 500-483483/5	Lab Control Sample	Total/NA	Water	9060A	

Analysis Batch: 483590

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162092-1	W-190422-RA-01	Total/NA	Water	300.0	
500-162092-6	W-190423-RA-06	Total/NA	Water	300.0	
MB 500-483590/3	Method Blank	Total/NA	Water	300.0	
LCS 500-483590/4	Lab Control Sample	Total/NA	Water	300.0	
500-162092-6 MS	W-190423-RA-06	Total/NA	Water	300.0	
500-162092-6 MSD	W-190423-RA-06	Total/NA	Water	300.0	

Surrogate Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCA (75-126)	TOL (75-120)	BFB (72-124)	DBFM (75-120)
500-162092-1	W-190422-RA-01	97	101	99	99
500-162092-2	W-190422-RA-02	98	100	97	100
500-162092-3	W-190423-RA-03	94	102	96	97
500-162092-4	W-190423-RA-04	94	102	100	95
500-162092-5	W-190423-RA-05	93	101	100	95
500-162092-6	W-190423-RA-06	96	101	100	98
500-162092-7	W-190423-RA-07	97	100	100	99
500-162092-8	W-190423-RA-08	96	102	99	98
500-162092-9	W-190423-RA-09	100	92	113	95
500-162092-10	W-190423-RA-10	101	92	116	96
500-162092-10 MS	W-190423-RA-10	100	92	108	97
500-162092-10 MSD	W-190423-RA-10	100	95	110	98
500-162092-11	TRIP BLANK	89	103	97	93
LCS 500-483156/4	Lab Control Sample	88	104	101	94
LCS 500-483381/7	Lab Control Sample	92	94	105	93
MB 500-483156/6	Method Blank	95	101	99	97
MB 500-483381/6	Method Blank	102	91	117	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

TOL = Toluene-d8 (Surr)

BFB = 4-Bromofluorobenzene (Surr)

DBFM = Dibromofluoromethane

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		NBZ (36-120)	FBP (34-110)	TPHL (40-145)
500-162092-1	W-190422-RA-01	81	75	104
500-162092-2	W-190422-RA-02	69	34	75
500-162092-3	W-190423-RA-03	70	75	83
500-162092-4	W-190423-RA-04	68	72	87
500-162092-5	W-190423-RA-05	76	46	88
500-162092-6	W-190423-RA-06	73	70	83
500-162092-7	W-190423-RA-07	79	70	91
500-162092-8	W-190423-RA-08	67	63	89
500-162092-9	W-190423-RA-09	74	68	89
500-162092-10	W-190423-RA-10	64	60	94
LCS 500-482414/2-A	Lab Control Sample	65	67	87
LCSD 500-482414/3-A	Lab Control Sample Dup	54	57	80
MB 500-482414/1-A	Method Blank	61	62	102

Surrogate Legend

NBZ = Nitrobenzene-d5 (Surr)

FBP = 2-Fluorobiphenyl (Surr)

TPHL = Terphenyl-d14 (Surr)

Surrogate Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Method: RSK-175 - Dissolved Gases (GC)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TFE2 (60-140)
500-162092-1	W-190422-RA-01	83
500-162092-2	W-190422-RA-02	83
500-162092-3	W-190423-RA-03	79
500-162092-4	W-190423-RA-04	80
500-162092-5	W-190423-RA-05	80
500-162092-6	W-190423-RA-06	80
500-162092-8	W-190423-RA-08	79
500-162092-9	W-190423-RA-09	81
500-162092-10	W-190423-RA-10	80
LCS 240-379285/5	Lab Control Sample	85
MB 240-379285/4	Method Blank	85

Surrogate Legend

TFE = 1,1,1-Trifluoroethane

Method: 8151A - Herbicides (GC)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCPAA1 (25-130)
500-162092-1	W-190422-RA-01	58
500-162092-2	W-190422-RA-02	0 D
500-162092-3	W-190423-RA-03	0 D
500-162092-4	W-190423-RA-04	0 D
500-162092-5	W-190423-RA-05	0 D
500-162092-6	W-190423-RA-06	0 D
500-162092-7	W-190423-RA-07	69
500-162092-8	W-190423-RA-08	69
500-162092-9	W-190423-RA-09	67
500-162092-10	W-190423-RA-10	64
LCS 500-482873/2-A	Lab Control Sample	68
LCS 500-482956/2-A	Lab Control Sample	72
LCSD 500-482873/3-A	Lab Control Sample Dup	71
LCSD 500-482956/3-A	Lab Control Sample Dup	69
MB 500-482873/1-A	Method Blank	73
MB 500-482956/1-A	Method Blank	71

Surrogate Legend

DCPAA = DCAA

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-483156/6
Matrix: Water
Analysis Batch: 483156

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB MB		LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzene	<0.15		0.50	0.15	ug/L			05/01/19 23:19	1
Toluene	<0.15		0.50	0.15	ug/L			05/01/19 23:19	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/01/19 23:19	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/01/19 23:19	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	95		75 - 126		05/01/19 23:19	1
Toluene-d8 (Surr)	101		75 - 120		05/01/19 23:19	1
4-Bromofluorobenzene (Surr)	99		72 - 124		05/01/19 23:19	1
Dibromofluoromethane	97		75 - 120		05/01/19 23:19	1

Lab Sample ID: LCS 500-483156/4
Matrix: Water
Analysis Batch: 483156

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
Benzene	50.0	47.1		ug/L		94	70 - 120
Toluene	50.0	47.0		ug/L		94	70 - 125
Ethylbenzene	50.0	51.6		ug/L		103	70 - 123
Xylenes, Total	100	100		ug/L		100	70 - 125

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	88		75 - 126
Toluene-d8 (Surr)	104		75 - 120
4-Bromofluorobenzene (Surr)	101		72 - 124
Dibromofluoromethane	94		75 - 120

Lab Sample ID: MB 500-483381/6
Matrix: Water
Analysis Batch: 483381

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB MB		LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzene	<0.15		0.50	0.15	ug/L			05/02/19 22:03	1
Toluene	<0.15		0.50	0.15	ug/L			05/02/19 22:03	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/02/19 22:03	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/02/19 22:03	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	102		75 - 126		05/02/19 22:03	1
Toluene-d8 (Surr)	91		75 - 120		05/02/19 22:03	1
4-Bromofluorobenzene (Surr)	117		72 - 124		05/02/19 22:03	1
Dibromofluoromethane	97		75 - 120		05/02/19 22:03	1

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 500-483381/7
Matrix: Water
Analysis Batch: 483381

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	41.1		ug/L		82	70 - 120
Toluene	50.0	44.0		ug/L		88	70 - 125
Ethylbenzene	50.0	42.4		ug/L		85	70 - 123
Xylenes, Total	100	89.9		ug/L		90	70 - 125

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	92		75 - 126
Toluene-d8 (Surr)	94		75 - 120
4-Bromofluorobenzene (Surr)	105		72 - 124
Dibromofluoromethane	93		75 - 120

Lab Sample ID: 500-162092-10 MS
Matrix: Water
Analysis Batch: 483381

Client Sample ID: W-190423-RA-10
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	<0.15		50.0	47.7		ug/L		95	70 - 120
Toluene	<0.15		50.0	48.7		ug/L		97	70 - 125
Ethylbenzene	<0.18		50.0	46.2		ug/L		92	70 - 123
Xylenes, Total	<0.22		100	98.7		ug/L		99	70 - 125

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	100		75 - 126
Toluene-d8 (Surr)	92		75 - 120
4-Bromofluorobenzene (Surr)	108		72 - 124
Dibromofluoromethane	97		75 - 120

Lab Sample ID: 500-162092-10 MSD
Matrix: Water
Analysis Batch: 483381

Client Sample ID: W-190423-RA-10
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	<0.15		50.0	45.0		ug/L		90	70 - 120	6	20
Toluene	<0.15		50.0	47.0		ug/L		94	70 - 125	4	20
Ethylbenzene	<0.18		50.0	45.0		ug/L		90	70 - 123	3	20
Xylenes, Total	<0.22		100	94.8		ug/L		95	70 - 125	4	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	100		75 - 126
Toluene-d8 (Surr)	95		75 - 120
4-Bromofluorobenzene (Surr)	110		72 - 124
Dibromofluoromethane	98		75 - 120

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-482414/1-A
Matrix: Water
Analysis Batch: 482612

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 482414

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.25		0.80	0.25	ug/L		04/26/19 10:55	04/29/19 17:17	1
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	61		36 - 120				04/26/19 10:55	04/29/19 17:17	1
2-Fluorobiphenyl (Surr)	62		34 - 110				04/26/19 10:55	04/29/19 17:17	1
Terphenyl-d14 (Surr)	102		40 - 145				04/26/19 10:55	04/29/19 17:17	1

Lab Sample ID: LCS 500-482414/2-A
Matrix: Water
Analysis Batch: 482612

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 482414

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits	
Naphthalene	32.0	19.4		ug/L		61	36 - 110	
Surrogate	%Recovery	LCS Qualifier	Limits					
Nitrobenzene-d5 (Surr)	65		36 - 120					
2-Fluorobiphenyl (Surr)	67		34 - 110					
Terphenyl-d14 (Surr)	87		40 - 145					

Lab Sample ID: LCSD 500-482414/3-A
Matrix: Water
Analysis Batch: 482612

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 482414

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Naphthalene	32.0	16.7		ug/L		52	36 - 110	15	20
Surrogate	%Recovery	LCSD Qualifier	Limits						
Nitrobenzene-d5 (Surr)	54		36 - 120						
2-Fluorobiphenyl (Surr)	57		34 - 110						
Terphenyl-d14 (Surr)	80		40 - 145						

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 240-379285/4
Matrix: Water
Analysis Batch: 379285

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.17		1.0	0.17	ug/L			05/02/19 14:08	1
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	85		60 - 140					05/02/19 14:08	1

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Method: RSK-175 - Dissolved Gases (GC) (Continued)

Lab Sample ID: LCS 240-379285/5
Matrix: Water
Analysis Batch: 379285

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	429	406		ug/L		95	80 - 120
Surrogate	%Recovery	LCS Qualifier	Limits				
1,1,1-Trifluoroethane	85		60 - 140				

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 500-482873/1-A
Matrix: Water
Analysis Batch: 482958

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 482873

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.090		0.10	0.090	ug/L		04/30/19 11:50	05/01/19 01:00	1
Surrogate	%Recovery	MB Qualifier	Limits						
DCAA	73		25 - 130						
							Prepared	Analyzed	Dil Fac
							04/30/19 11:50	05/01/19 01:00	1

Lab Sample ID: LCS 500-482873/2-A
Matrix: Water
Analysis Batch: 482958

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 482873

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Pentachlorophenol	2.53	1.96		ug/L		78	40 - 122
Surrogate	%Recovery	LCS Qualifier	Limits				
DCAA	68		25 - 130				

Lab Sample ID: LCSD 500-482873/3-A
Matrix: Water
Analysis Batch: 482958

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 482873

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Pentachlorophenol	2.53	1.79		ug/L		71	40 - 122	9	20
Surrogate	%Recovery	LCSD Qualifier	Limits						
DCAA	71		25 - 130						

Lab Sample ID: MB 500-482956/1-A
Matrix: Water
Analysis Batch: 483186

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 482956

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.090		0.10	0.090	ug/L		04/30/19 19:06	05/02/19 06:17	1
Surrogate	%Recovery	MB Qualifier	Limits						
DCAA	71		25 - 130						
							Prepared	Analyzed	Dil Fac
							04/30/19 19:06	05/02/19 06:17	1

Eurofins TestAmerica, Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Method: 8151A - Herbicides (GC) (Continued)

Lab Sample ID: LCS 500-482956/2-A
Matrix: Water
Analysis Batch: 483186

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 482956

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Pentachlorophenol	2.53	1.73		ug/L		69	40 - 122
Surrogate	%Recovery	LCS Qualifier	Limits				
DCAA	72		25 - 130				

Lab Sample ID: LCSD 500-482956/3-A
Matrix: Water
Analysis Batch: 483186

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 482956

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Pentachlorophenol	2.53	1.72		ug/L		68	40 - 122	1	20
Surrogate	%Recovery	LCSD Qualifier	Limits						
DCAA	69		25 - 130						

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 500-482058/1-A
Matrix: Water
Analysis Batch: 482835

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 482058

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.309	J	1.0	0.23	ug/L		04/24/19 16:39	04/29/19 21:09	1
Copper	0.543	J	2.0	0.50	ug/L		04/24/19 16:39	04/29/19 21:09	1
Manganese	0.894	J	2.5	0.79	ug/L		04/24/19 16:39	04/29/19 21:09	1

Lab Sample ID: LCS 500-482058/2-A
Matrix: Water
Analysis Batch: 482835

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 482058

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Arsenic	100	102.1		ug/L		102	80 - 120
Copper	250	245.0		ug/L		98	80 - 120
Manganese	500	516.7		ug/L		103	80 - 120

Lab Sample ID: MB 500-483024/1-A
Matrix: Water
Analysis Batch: 483261

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 483024

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Iron	<46.7		100	46.7	ug/L		05/01/19 07:57	05/01/19 21:30	1
Zinc	<6.9		20.0	6.9	ug/L		05/01/19 07:57	05/01/19 21:30	1

Lab Sample ID: LCS 500-483024/2-A
Matrix: Water
Analysis Batch: 483261

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 483024

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Iron	1000	1035		ug/L		103	80 - 120

Eurofins TestAmerica, Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 500-483024/2-A
Matrix: Water
Analysis Batch: 483261

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 483024

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	500	504.8		ug/L		101	80 - 120

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 500-481958/3
Matrix: Water
Analysis Batch: 481958

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.17		0.20	0.17	mg/L			04/24/19 09:43	1
Nitrate as N	<0.068		0.20	0.068	mg/L			04/24/19 09:43	1
Sulfate	<0.095		0.20	0.095	mg/L			04/24/19 09:43	1

Lab Sample ID: LCS 500-481958/4
Matrix: Water
Analysis Batch: 481958

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	3.00	3.00		mg/L		100	90 - 110
Nitrate as N	2.00	2.03		mg/L		102	90 - 110
Sulfate	5.00	5.34		mg/L		107	90 - 110

Lab Sample ID: 500-162092-10 MS
Matrix: Water
Analysis Batch: 481958

Client Sample ID: W-190423-RA-10
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	2.1		1.00	3.22		mg/L		109	80 - 120
Sulfate	5.4		2.50	8.08		mg/L		109	80 - 120

Lab Sample ID: 500-162092-10 MS
Matrix: Water
Analysis Batch: 481958

Client Sample ID: W-190423-RA-10
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	19.3	F1	10.0	33.98	F1	mg/L		147	80 - 120

Lab Sample ID: 500-162092-10 MSD
Matrix: Water
Analysis Batch: 481958

Client Sample ID: W-190423-RA-10
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate as N	2.1		1.00	3.16		mg/L		103	80 - 120	2	20
Sulfate	5.4		2.50	8.03		mg/L		107	80 - 120	1	20

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 500-162092-10 MSD
Matrix: Water
Analysis Batch: 481958

Client Sample ID: W-190423-RA-10
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	19.3	F1	10.0	33.91	F1	mg/L		146	80 - 120	0	20

Lab Sample ID: MB 500-483590/3
Matrix: Water
Analysis Batch: 483590

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.17		0.20	0.17	mg/L			05/03/19 19:34	1
Sulfate	<0.095		0.20	0.095	mg/L			05/03/19 19:34	1

Lab Sample ID: LCS 500-483590/4
Matrix: Water
Analysis Batch: 483590

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	3.00	3.01		mg/L		100	90 - 110
Sulfate	5.00	5.26		mg/L		105	90 - 110

Lab Sample ID: 500-162092-6 MS
Matrix: Water
Analysis Batch: 483590

Client Sample ID: W-190423-RA-06
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	9.1		2.00	29.39	E 4	mg/L		1012	80 - 120

Lab Sample ID: 500-162092-6 MSD
Matrix: Water
Analysis Batch: 483590

Client Sample ID: W-190423-RA-06
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	9.1		2.00	32.21	E 4	mg/L		1153	80 - 120	9	20

Method: 9060A - Organic Carbon, Total (TOC)

Lab Sample ID: MB 500-483201/4
Matrix: Water
Analysis Batch: 483201

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	<0.47		1.0	0.47	mg/L			05/01/19 07:46	1

Lab Sample ID: LCS 500-483201/5
Matrix: Water
Analysis Batch: 483201

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon - Duplicates	10.0	9.44		mg/L		94	80 - 120

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Method: 9060A - Organic Carbon, Total (TOC) (Continued)

Lab Sample ID: MB 500-483483/4
Matrix: Water
Analysis Batch: 483483

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	<0.47		1.0	0.47	mg/L			05/02/19 08:25	1

Lab Sample ID: HLCS 500-483483/6
Matrix: Water
Analysis Batch: 483483

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	HLCS Result	HLCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon - Duplicates	30.0	32.10		mg/L		107	80 - 120

Lab Sample ID: LCS 500-483483/5
Matrix: Water
Analysis Batch: 483483

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon - Duplicates	10.0	10.19		mg/L		102	80 - 120

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 500-483035/28
Matrix: Water
Analysis Batch: 483035

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	<3.7		5.0	3.7	mg/L			04/30/19 14:47	1

Lab Sample ID: MB 500-483035/3
Matrix: Water
Analysis Batch: 483035

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	<3.7		5.0	3.7	mg/L			04/30/19 11:09	1

Lab Sample ID: LCS 500-483035/29
Matrix: Water
Analysis Batch: 483035

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	100	100.5		mg/L		100	90 - 110

Lab Sample ID: LCS 500-483035/4
Matrix: Water
Analysis Batch: 483035

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	100	101.5		mg/L		101	90 - 110

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Method: SM 2320B - Alkalinity (Continued)

Lab Sample ID: 500-162092-1 DU
Matrix: Water
Analysis Batch: 483035

Client Sample ID: W-190422-RA-01
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Alkalinity	187		184.1		mg/L		2	20

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Client Sample ID: W-190422-RA-01

Lab Sample ID: 500-162092-1

Date Collected: 04/22/19 11:26

Matrix: Water

Date Received: 04/24/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483156	05/02/19 03:58	PMF	TAL CHI
Total/NA	Prep	3510C			482414	04/26/19 10:55	JVD	TAL CHI
Total/NA	Analysis	8270D		1	482846	04/30/19 12:20	AJD	TAL CHI
Total/NA	Analysis	RSK-175		1	379285	05/02/19 18:45	BPM	TAL CAN
Total/NA	Prep	8151A			482956	04/30/19 19:06	JP1	TAL CHI
Total/NA	Analysis	8151A		1	483186	05/02/19 15:17	JBj	TAL CHI
Dissolved	Prep	3005A			482058	04/24/19 16:39	BDE	TAL CHI
Dissolved	Analysis	6020A		1	482835	04/29/19 21:24	FXG	TAL CHI
Dissolved	Prep	3005A			483024	05/01/19 07:57	SAH	TAL CHI
Dissolved	Analysis	6020A		1	483261	05/01/19 22:00	FXG	TAL CHI
Total/NA	Prep	3010A			482064	04/24/19 16:42	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	482359	04/26/19 07:47	JEF	TAL CHI
Total/NA	Analysis	300.0		1	481958	04/24/19 10:27	EAT	TAL CHI
Total/NA	Analysis	300.0		10	481958	04/24/19 10:39	EAT	TAL CHI
Total/NA	Analysis	300.0		20	483590	05/04/19 03:23	EAT	TAL CHI
Total/NA	Analysis	9060A		1	483201	05/01/19 09:52	MTB	TAL CHI
Total/NA	Analysis	SM 2320B		1	483035	04/30/19 15:19	SMO	TAL CHI

Client Sample ID: W-190422-RA-02

Lab Sample ID: 500-162092-2

Date Collected: 04/22/19 13:35

Matrix: Water

Date Received: 04/24/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483156	05/02/19 04:24	PMF	TAL CHI
Total/NA	Prep	3510C			482414	04/26/19 10:55	JVD	TAL CHI
Total/NA	Analysis	8270D		1	482846	04/30/19 13:47	AJD	TAL CHI
Total/NA	Analysis	RSK-175		1	379285	05/02/19 19:03	BPM	TAL CAN
Total/NA	Prep	8151A			482956	04/30/19 19:06	JP1	TAL CHI
Total/NA	Analysis	8151A		1000	483441	05/04/19 03:51	JBj	TAL CHI
Dissolved	Prep	3005A			482058	04/24/19 16:39	BDE	TAL CHI
Dissolved	Analysis	6020A		1	482835	04/29/19 21:28	FXG	TAL CHI
Dissolved	Prep	3005A			483024	05/01/19 07:57	SAH	TAL CHI
Dissolved	Analysis	6020A		1	483261	05/01/19 22:04	FXG	TAL CHI
Total/NA	Prep	3010A			482064	04/24/19 16:42	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	482359	04/26/19 07:47	JEF	TAL CHI
Total/NA	Analysis	300.0		1	481958	04/24/19 10:52	EAT	TAL CHI
Total/NA	Analysis	300.0		10	481958	04/24/19 11:05	EAT	TAL CHI
Total/NA	Analysis	9060A		1	483201	05/01/19 10:02	MTB	TAL CHI
Total/NA	Analysis	SM 2320B		1	483035	04/30/19 12:52	SMO	TAL CHI

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Client Sample ID: W-190423-RA-03

Lab Sample ID: 500-162092-3

Date Collected: 04/23/19 09:34

Matrix: Water

Date Received: 04/24/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483156	05/02/19 04:49	PMF	TAL CHI
Total/NA	Prep	3510C			482414	04/26/19 10:55	JVD	TAL CHI
Total/NA	Analysis	8270D		10	482846	04/30/19 14:16	AJD	TAL CHI
Total/NA	Analysis	RSK-175		1	379285	05/02/19 19:20	BPM	TAL CAN
Total/NA	Prep	8151A			482873	04/30/19 11:50	JVD	TAL CHI
Total/NA	Analysis	8151A		500	482958	05/01/19 14:54	JBj	TAL CHI
Dissolved	Prep	3005A			482058	04/24/19 16:39	BDE	TAL CHI
Dissolved	Analysis	6020A		1	482835	04/29/19 21:39	FXG	TAL CHI
Dissolved	Prep	3005A			483024	05/01/19 07:57	SAH	TAL CHI
Dissolved	Analysis	6020A		1	483261	05/01/19 22:15	FXG	TAL CHI
Total/NA	Prep	3010A			482064	04/24/19 16:42	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	482359	04/26/19 07:47	JEF	TAL CHI
Total/NA	Analysis	300.0		1	481958	04/24/19 11:43	EAT	TAL CHI
Total/NA	Analysis	300.0		10	481958	04/24/19 11:55	EAT	TAL CHI
Total/NA	Analysis	9060A		2	483201	05/01/19 12:42	MTB	TAL CHI
Total/NA	Analysis	SM 2320B		1	483035	04/30/19 12:42	SMO	TAL CHI

Client Sample ID: W-190423-RA-04

Lab Sample ID: 500-162092-4

Date Collected: 04/23/19 09:34

Matrix: Water

Date Received: 04/24/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483156	05/02/19 05:15	PMF	TAL CHI
Total/NA	Prep	3510C			482414	04/26/19 10:55	JVD	TAL CHI
Total/NA	Analysis	8270D		10	482846	04/30/19 14:45	AJD	TAL CHI
Total/NA	Analysis	RSK-175		1	379285	05/02/19 19:37	BPM	TAL CAN
Total/NA	Prep	8151A			482873	04/30/19 11:50	JVD	TAL CHI
Total/NA	Analysis	8151A		1000	483186	05/02/19 16:06	JBj	TAL CHI
Dissolved	Prep	3005A			482058	04/24/19 16:39	BDE	TAL CHI
Dissolved	Analysis	6020A		1	482835	04/29/19 21:43	FXG	TAL CHI
Dissolved	Prep	3005A			483024	05/01/19 07:57	SAH	TAL CHI
Dissolved	Analysis	6020A		1	483261	05/01/19 22:19	FXG	TAL CHI
Total/NA	Prep	3010A			482064	04/24/19 16:42	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	482359	04/26/19 07:47	JEF	TAL CHI
Total/NA	Analysis	300.0		1	481958	04/24/19 12:08	EAT	TAL CHI
Total/NA	Analysis	300.0		10	481958	04/24/19 12:21	EAT	TAL CHI
Total/NA	Analysis	9060A		2	483201	05/01/19 12:53	MTB	TAL CHI
Total/NA	Analysis	SM 2320B		1	483035	04/30/19 12:28	SMO	TAL CHI

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Client Sample ID: W-190423-RA-05

Lab Sample ID: 500-162092-5

Date Collected: 04/23/19 10:03

Matrix: Water

Date Received: 04/24/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483156	05/02/19 05:40	PMF	TAL CHI
Total/NA	Prep	3510C			482414	04/26/19 10:55	JVD	TAL CHI
Total/NA	Analysis	8270D		1	482846	04/30/19 15:14	AJD	TAL CHI
Total/NA	Analysis	RSK-175		1	379285	05/02/19 19:55	BPM	TAL CAN
Total/NA	Prep	8151A			482873	04/30/19 11:50	JVD	TAL CHI
Total/NA	Analysis	8151A		5000	483186	05/02/19 16:30	JBj	TAL CHI
Dissolved	Prep	3005A			482058	04/24/19 16:39	BDE	TAL CHI
Dissolved	Analysis	6020A		1	482835	04/29/19 21:47	FXG	TAL CHI
Dissolved	Prep	3005A			483024	05/01/19 07:57	SAH	TAL CHI
Dissolved	Analysis	6020A		1	483261	05/01/19 22:23	FXG	TAL CHI
Total/NA	Prep	3010A			482064	04/24/19 16:42	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	482359	04/26/19 07:47	JEF	TAL CHI
Total/NA	Analysis	300.0		1	481958	04/24/19 12:33	EAT	TAL CHI
Total/NA	Analysis	300.0		10	481958	04/24/19 12:46	EAT	TAL CHI
Total/NA	Analysis	9060A		1	483201	05/01/19 10:23	MTB	TAL CHI
Total/NA	Analysis	SM 2320B		1	483035	04/30/19 12:35	SMO	TAL CHI

Client Sample ID: W-190423-RA-06

Lab Sample ID: 500-162092-6

Date Collected: 04/23/19 11:14

Matrix: Water

Date Received: 04/24/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483156	05/02/19 06:33	PMF	TAL CHI
Total/NA	Prep	3510C			482414	04/26/19 10:55	JVD	TAL CHI
Total/NA	Analysis	8270D		1	482846	04/30/19 15:42	AJD	TAL CHI
Total/NA	Analysis	RSK-175		1	379285	05/02/19 20:12	BPM	TAL CAN
Total/NA	Prep	8151A			482873	04/30/19 11:50	JVD	TAL CHI
Total/NA	Analysis	8151A		200	483441	05/04/19 04:16	JBj	TAL CHI
Dissolved	Prep	3005A			482058	04/24/19 16:39	BDE	TAL CHI
Dissolved	Analysis	6020A		1	482835	04/29/19 21:51	FXG	TAL CHI
Dissolved	Prep	3005A			483024	05/01/19 07:57	SAH	TAL CHI
Dissolved	Analysis	6020A		1	483261	05/01/19 22:27	FXG	TAL CHI
Total/NA	Prep	3010A			482064	04/24/19 16:42	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	482359	04/26/19 07:47	JEF	TAL CHI
Total/NA	Analysis	300.0		1	481958	04/24/19 12:59	EAT	TAL CHI
Total/NA	Analysis	300.0		10	481958	04/24/19 13:11	EAT	TAL CHI
Total/NA	Analysis	300.0		2	483590	05/04/19 03:36	EAT	TAL CHI
Total/NA	Analysis	9060A		1	483201	05/01/19 10:30	MTB	TAL CHI
Total/NA	Analysis	SM 2320B		1	483035	04/30/19 15:36	SMO	TAL CHI

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Client Sample ID: W-190423-RA-07

Lab Sample ID: 500-162092-7

Date Collected: 04/23/19 11:20

Matrix: Water

Date Received: 04/24/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483156	05/02/19 06:58	PMF	TAL CHI
Total/NA	Prep	3510C			482414	04/26/19 10:55	JVD	TAL CHI
Total/NA	Analysis	8270D		1	482846	04/30/19 16:11	AJD	TAL CHI
Total/NA	Prep	8151A			482873	04/30/19 11:50	JVD	TAL CHI
Total/NA	Analysis	8151A		1	483186	05/02/19 17:19	JBj	TAL CHI
Dissolved	Prep	3005A			482058	04/24/19 16:39	BDE	TAL CHI
Dissolved	Analysis	6020A		1	482835	04/29/19 21:54	FXG	TAL CHI
Dissolved	Prep	3005A			483024	05/01/19 07:57	SAH	TAL CHI
Dissolved	Analysis	6020A		1	483261	05/01/19 22:30	FXG	TAL CHI

Client Sample ID: W-190423-RA-08

Lab Sample ID: 500-162092-8

Date Collected: 04/23/19 12:30

Matrix: Water

Date Received: 04/24/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483156	05/02/19 07:24	PMF	TAL CHI
Total/NA	Prep	3510C			482414	04/26/19 10:55	JVD	TAL CHI
Total/NA	Analysis	8270D		1	482846	04/30/19 16:40	AJD	TAL CHI
Total/NA	Analysis	RSK-175		1	379285	05/02/19 20:29	BPM	TAL CAN
Total/NA	Prep	8151A			482873	04/30/19 11:50	JVD	TAL CHI
Total/NA	Analysis	8151A		1	482958	05/01/19 16:57	JBj	TAL CHI
Dissolved	Prep	3005A			482058	04/24/19 16:39	BDE	TAL CHI
Dissolved	Analysis	6020A		1	482835	04/29/19 21:58	FXG	TAL CHI
Dissolved	Prep	3005A			483024	05/01/19 07:57	SAH	TAL CHI
Dissolved	Analysis	6020A		1	483261	05/01/19 22:34	FXG	TAL CHI
Total/NA	Prep	3010A			482064	04/24/19 16:42	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	482359	04/26/19 07:47	JEF	TAL CHI
Total/NA	Analysis	300.0		1	481958	04/24/19 13:24	EAT	TAL CHI
Total/NA	Analysis	300.0		10	481958	04/24/19 13:37	EAT	TAL CHI
Total/NA	Analysis	9060A		1	483201	05/01/19 10:40	MTB	TAL CHI
Total/NA	Analysis	SM 2320B		1	483035	04/30/19 15:43	SMO	TAL CHI

Client Sample ID: W-190423-RA-09

Lab Sample ID: 500-162092-9

Date Collected: 04/23/19 13:05

Matrix: Water

Date Received: 04/24/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483381	05/03/19 03:31	PMF	TAL CHI
Total/NA	Prep	3510C			482414	04/26/19 10:55	JVD	TAL CHI
Total/NA	Analysis	8270D		1	482846	04/30/19 17:09	AJD	TAL CHI
Total/NA	Analysis	RSK-175		1	379285	05/02/19 20:47	BPM	TAL CAN
Total/NA	Prep	8151A			482873	04/30/19 11:50	JVD	TAL CHI
Total/NA	Analysis	8151A		1	482958	05/01/19 17:22	JBj	TAL CHI

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Client Sample ID: W-190423-RA-09

Lab Sample ID: 500-162092-9

Date Collected: 04/23/19 13:05

Matrix: Water

Date Received: 04/24/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			482058	04/24/19 16:39	BDE	TAL CHI
Dissolved	Analysis	6020A		1	482835	04/29/19 22:02	FXG	TAL CHI
Dissolved	Prep	3005A			483024	05/01/19 07:57	SAH	TAL CHI
Dissolved	Analysis	6020A		1	483261	05/01/19 22:38	FXG	TAL CHI
Total/NA	Prep	3010A			482064	04/24/19 16:42	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	482359	04/26/19 07:47	JEF	TAL CHI
Total/NA	Analysis	300.0		1	481958	04/24/19 14:15	EAT	TAL CHI
Total/NA	Analysis	9060A		1	483201	05/01/19 11:28	MTB	TAL CHI
Total/NA	Analysis	SM 2320B		1	483035	04/30/19 15:49	SMO	TAL CHI

Client Sample ID: W-190423-RA-10

Lab Sample ID: 500-162092-10

Date Collected: 04/23/19 13:40

Matrix: Water

Date Received: 04/24/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483381	05/03/19 03:56	PMF	TAL CHI
Total/NA	Prep	3510C			482414	04/26/19 10:55	JVD	TAL CHI
Total/NA	Analysis	8270D		1	482846	04/30/19 17:38	AJD	TAL CHI
Total/NA	Analysis	RSK-175		1	379285	05/02/19 21:04	BPM	TAL CAN
Total/NA	Prep	8151A			482873	04/30/19 11:50	JVD	TAL CHI
Total/NA	Analysis	8151A		1	482958	05/01/19 17:46	JBK	TAL CHI
Dissolved	Prep	3005A			482058	04/24/19 16:39	BDE	TAL CHI
Dissolved	Analysis	6020A		1	482835	04/29/19 22:06	FXG	TAL CHI
Dissolved	Prep	3005A			483024	05/01/19 07:57	SAH	TAL CHI
Dissolved	Analysis	6020A		1	483261	05/01/19 22:42	FXG	TAL CHI
Total/NA	Prep	3010A			482064	04/24/19 16:42	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	482359	04/26/19 07:47	JEF	TAL CHI
Total/NA	Analysis	300.0		1	481958	04/24/19 14:40	EAT	TAL CHI
Total/NA	Analysis	300.0		10	481958	04/24/19 15:18	EAT	TAL CHI
Total/NA	Analysis	9060A		1	483483	05/02/19 14:52	JJB	TAL CHI
Total/NA	Analysis	SM 2320B		1	483035	04/30/19 15:55	SMO	TAL CHI

Client Sample ID: TRIP BLANK

Lab Sample ID: 500-162092-11

Date Collected: 04/23/19 14:00

Matrix: Water

Date Received: 04/24/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483156	05/01/19 23:45	PMF	TAL CHI

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL CHI = Eurofins TestAmerica, Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

Accreditation/Certification Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162092-1

Laboratory: Eurofins TestAmerica, Chicago

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Wisconsin	State Program	5	999580010	08-31-19 *

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
SM 2320B		Water	Alkalinity

Laboratory: Eurofins TestAmerica, Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-20
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	04-30-19 *
Kentucky (UST)	State Program	4	58	02-23-20
Kentucky (WW)	State Program	4	98016	12-31-19
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-20
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-20
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-20 *
West Virginia DEP	State Program	3	210	12-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.



CONESTOGA-ROVERS & ASSOCIATES

CHAIN OF CUSTODY RECORD


1801 Old Highway 8 Northwest, Suite 114
St. Paul, Minnesota 55112 United States
Phone: (651) 639-0913 Fax: (651) 639-0923

COC NO.: **SP-02880**

PAGE 1 OF 1

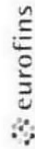
(See Reverse Side for Instructions)

500-162092

Project No/Phase/Task Code: 086165				Laboratory Name: Test America				Lab Location: University Park, IL				SSOW ID:																																																							
Project Name: Penta Wood				Lab Contact: D. Heckler				Lab Quote No:				Cooler No:																																																							
Project Location: Siren, WI				SAMPLE TYPE				CONTAINER QUANTITY & PRESERVATION				ANALYSIS REQUESTED (See Back of COC for Definitions)																																																							
Chemistry Contact: Grant Anderson				Matrix Code (see back of COC)				Grab (G) or Comp (C)				Unpreserved				Hydrochloric Acid (HCl)				Nitric Acid (HNO ₃)				Sulfuric Acid (H ₂ SO ₄)				Sodium Hydroxide (NaOH)				Methanol/Water (Soil VOC)				EnCores 3x5-g, 1x25-g				Other:				Total Containers/Sample				Carrier: Fed ex																			
Sampler(s): R. Aamot, M. Hackenmiller																																																Airbill No:																			
SAMPLE IDENTIFICATION (Containers for each sample may be combined on one line)				DATE (mm/dd/yy)				TIME (hh:mm)				 500-162092 COC				COMMENTS/ SPECIAL INSTRUCTIONS:																																																			
1 W-190422-RA-01				4/22/19				11:26												W				6				5				2				2				15				X				X				X				X				X				X			
2 W-190422-RA-02				4/22/19				13:35																				5				6				2				2				15				X				X				X				X				X			
3 W-190423-RA-03				4/23/19				09:34																				5				6				2				2				15				X				X				X				X							
4 -04								09:34																				5				6				2				2				15				X				X				X				X							
5 -05								10:03																				5				6				2				2				13				X				X				X				X							
6 -06								11:14																				5				6				2				2				15				X				X				X				X							
7 -07								11:20																				4				9				2				2				8				X				X				X				X							
8 -08								12:30																				5				6				2				2				15				X				X				X				X							
9 -09								13:05																				5				6				2				2				15				X				X				X				X							
10 -10								13:40																				5				6				2				2				15				X				X				X				X							
11 trip blank				4/23/19				14:00																				5				6				2				2				1				X				X				X				X							
12																																																																			
13																																																																			
14																																																																			
15																																																																			
TAT Required in business days (use separate COCs for different TATs):				Total Number of Containers: 144				Notes/ Special Requirements:																																																											
<input type="checkbox"/> 1 Day <input type="checkbox"/> 2 Days <input type="checkbox"/> 3 Days <input type="checkbox"/> 1 Week <input type="checkbox"/> 2 Week <input checked="" type="checkbox"/> Other: Standard				All Samples in Cooler must be on COC				metals field filtered																																																											
RELINQUISHED BY		COMPANY		DATE		TIME		RECEIVED BY		COMPANY		DATE		TIME																																																					
1. M. Hehn		6THD		04-23-19		15:30		1. Jeff James		TR		4-24-19		0905																																																					
2.								2.																																																											
3.								3.																																																											

THE CHAIN OF CUSTODY IS A LEGAL DOCUMENT - ALL FIELDS MUST BE COMPLETED ACCURATELY

Chain of Custody Record



3.2/CS.0

Client Information (Sub Contract Lab)		Lab PM: Wright, Richard	Carrier Tracking No(s): 500-120123.1						
Shipping/Receiving		E-Mail: richard.wright@testamericainc.com	Page: Page 1 of 1						
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - Wisconsin							
Address: 4101 Shuffel Street NW		Job #: 500-162092-1							
City: North Canton		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)							
State, Zip: OH, 44720		Other:							
Phone: 330-497-9396(Tel) 330-497-0772(Fax)		Total Number of Containers							
PO #:		Analysis Requested							
WO #:		Field Filled Sample (Yes or No)							
Project #: 50013796		Perform MS/MSD (Yes or No)							
SSOW#:		RSK, 175 (MOD) Methane							
Project Name: Penta Wood 086165		Field Filled Sample (Yes or No)							
Site:		Special Instructions/Note: BSC							
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=wastefoil, BT=Blank, A=Air)	Preservation Code	Field Filled Sample (Yes or No)	Perform MS/MSD (Yes or No)	RSK, 175 (MOD) Methane	Total Number of Containers
W-190422-RA-01 (500-162092-1)	4/22/19	11:26 Central	Water	Water		X	X		3
W-190422-RA-02 (500-162092-2)	4/22/19	13:35 Central	Water	Water		X	X		3
W-190422-RA-03 (500-162092-3)	4/23/19	09:34 Central	Water	Water		X	X		3
W-190422-RA-04 (500-162092-4)	4/23/19	09:34 Central	Water	Water		X	X		3
W-190422-RA-05 (500-162092-5)	4/23/19	10:03 Central	Water	Water		X	X		3
W-190422-RA-06 (500-162092-6)	4/23/19	11:14 Central	Water	Water		X	X		3
W-190422-RA-08 (500-162092-8)	4/23/19	12:30 Central	Water	Water		X	X		3
W-190422-RA-09 (500-162092-9)	4/23/19	13:05 Central	Water	Water		X	X		3
W-190422-RA-10 (500-162092-10)	4/23/19	13:40 Central	Water	Water		X	X		3

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification
 Unconfirmed

Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2

Empty Kit Relinquished by: _____ Date: _____

Relinquished by: _____ Date: 4/24/19 16:00

Relinquished by: _____ Date: _____

Relinquished by: _____ Date: _____

Custody Seals Intact: Yes No

Custody Seal No.: _____

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months

Special Instructions/QC Requirements:

Method of Shipment: _____ Date/TIME: 4/25/19 9:30

Received by: _____ Date/TIME: _____ Company: _____

Received by: _____ Date/TIME: _____ Company: _____

Received by: _____ Date/TIME: _____ Company: _____

Cooler Temperature(s) °C and Other Remarks:



TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # : _____

Client Chs Site Name _____
 Cooler Received on 4/25/16 Opened on 4/25/16
 FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Cooler unpacked by: [Signature]

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # 78 Foam Box Client Cooler Box Other _____
 Packing material used: Bubble Wrap Foam Plastic Bag None Other _____
 COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt See Multiple Cooler Form
 IR GUN# IR-8 (CF -0.2 °C) Observed Cooler Temp. 3.2 °C Corrected Cooler Temp. 3.0 °C
 IR GUN #36 (CF +0.7°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
 -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
 -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
 -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC984738
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? ← Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No
16. Was a LL Hg or Me Hg trip blank present? Yes No

Tests that are not checked for pH by Receiving:
 VOAs
 Oil and Grease
 TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: _____

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
 Sample(s) _____ were received in a broken container.
 Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
 Time preserved: _____ Preservative(s) added/Lot number(s): _____
 VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 500-162092-1

Login Number: 162092

List Source: Eurofins TestAmerica, Chicago

List Number: 1

Creator: James, Jeff A

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.5,5.4,4.3,2.4,3.7
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

ANALYTICAL REPORT

Eurofins TestAmerica, Chicago
2417 Bond Street
University Park, IL 60484
Tel: (708)534-5200

Laboratory Job ID: 500-162180-1
Client Project/Site: Penta Wood 086165
Revision: 1

For:
GHD Services Inc.
1801 Old Highway 8 NW
Suite 114
St. Paul, Minnesota 55112

Attn: Mr. Grant Anderson

Jodie Bracken

Authorized for release by:
6/3/2019 4:18:32 PM
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Designee for
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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Case Narrative

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Job ID: 500-162180-1

Laboratory: Eurofins TestAmerica, Chicago

Narrative

**Job Narrative
500-162180-1**

Receipt

The samples were received on 4/25/2019 9:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 2.1° C, 2.5° C, 5.4° C, 5.9° C and 6.0° C.

Revised Report

The initial results were incorrect due to a mix-up between the total and dissolved bottles for metals analysis. The samples were reanalyzed using the correct total and dissolved bottles.

GC/MS VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC/MS Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC Semi VOA

Method(s) 8151A: The sample size used in the preparation of the matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 500-483087 and analytical batch 500-483441 was outside the 10% difference. As the relative percent difference (RPD) calculation is based upon the MS/MSD concentration as opposed to the MS/MSD percent recovery, elevated %RPD values were obtained.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Field Service / Mobile Lab

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Client Sample ID: W-190424-RA-11

Lab Sample ID: 500-162180-1

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Pentachlorophenol	0.12		0.096	0.086	ug/L	1		8151A	Total/NA
Arsenic	0.24	J	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	1.2	J B	2.0	0.50	ug/L	1		6020A	Dissolved
Iron	53.2	J	100	46.7	ug/L	1		6020A	Dissolved
Manganese	3.5		2.5	0.79	ug/L	1		6020A	Dissolved
Zinc	8.2	J	20.0	6.9	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	116		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	11.3		2.0	1.7	mg/L	10		300.0	Total/NA
Nitrate as N	3.4		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	5.9	B	0.20	0.095	mg/L	1		300.0	Total/NA
Alkalinity	85.1		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-190424-RA-12

Lab Sample ID: 500-162180-2

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Pentachlorophenol	0.14		0.097	0.087	ug/L	1		8151A	Total/NA
Arsenic	0.45	J	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	1.5	J B	2.0	0.50	ug/L	1		6020A	Dissolved
Iron	69.1	J	100	46.7	ug/L	1		6020A	Dissolved
Manganese	3.7		2.5	0.79	ug/L	1		6020A	Dissolved
Zinc	7.3	J	20.0	6.9	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	116		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	10.7		2.0	1.7	mg/L	10		300.0	Total/NA
Nitrate as N	3.4		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	6.0	B	0.20	0.095	mg/L	1		300.0	Total/NA
Total Organic Carbon - Duplicates	0.89	J	1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	84.0		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-190424-RA-13

Lab Sample ID: 500-162180-3

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.27	J	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	1.8	J	2.0	0.50	ug/L	1		6020A	Dissolved
Iron	166		100	46.7	ug/L	1		6020A	Dissolved
Manganese	9.6		2.5	0.79	ug/L	1		6020A	Dissolved
Zinc	9.6	J	20.0	6.9	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	102		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	4.1		0.20	0.17	mg/L	1		300.0	Total/NA
Nitrate as N	0.75		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	4.1	B	0.20	0.095	mg/L	1		300.0	Total/NA
Total Organic Carbon - Duplicates	0.84	J	1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	60.3		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-190424-RA-14

Lab Sample ID: 500-162180-4

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.23	J	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	1.5	J	2.0	0.50	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	72.8		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	78.4		4.0	3.4	mg/L	20		300.0	Total/NA
Nitrate as N	1.6		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	6.4	B	0.20	0.095	mg/L	1		300.0	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Chicago

Detection Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Client Sample ID: W-190424-RA-14 (Continued)

Lab Sample ID: 500-162180-4

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Total Organic Carbon - Duplicates	0.94	J	1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	32.6		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-190424-RA-15

Lab Sample ID: 500-162180-5

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methane	3.0		1.0	0.17	ug/L	1		RSK-175	Total/NA
Copper	1.1	J	2.0	0.50	ug/L	1		6020A	Dissolved
Manganese	1.9	J	2.5	0.79	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	191		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	0.61		0.20	0.17	mg/L	1		300.0	Total/NA
Nitrate as N	0.63		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	1.6	B	0.20	0.095	mg/L	1		300.0	Total/NA
Total Organic Carbon - Duplicates	0.67	J	1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	178		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-190424-RA-16

Lab Sample ID: 500-162180-6

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Pentachlorophenol	0.24		0.11	0.10	ug/L	1		8151A	Total/NA
Arsenic	0.37	J	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	1.9	J	2.0	0.50	ug/L	1		6020A	Dissolved
Iron	169		100	46.7	ug/L	1		6020A	Dissolved
Manganese	15.7		2.5	0.79	ug/L	1		6020A	Dissolved
Zinc	9.0	J	20.0	6.9	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	39.4		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	4.7		0.20	0.17	mg/L	1		300.0	Total/NA
Nitrate as N	0.63		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	4.7	B	0.20	0.095	mg/L	1		300.0	Total/NA
Total Organic Carbon - Duplicates	0.74	J	1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	34.1		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-190424-RA-17

Lab Sample ID: 500-162180-7

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Pentachlorophenol	0.16		0.095	0.085	ug/L	1		8151A	Total/NA
Copper	2.2		2.0	0.50	ug/L	1		6020A	Dissolved
Iron	94.7	J	100	46.7	ug/L	1		6020A	Dissolved
Manganese	10.7		2.5	0.79	ug/L	1		6020A	Dissolved
Zinc	8.2	J	20.0	6.9	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	96.5		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	2.7		0.20	0.17	mg/L	1		300.0	Total/NA
Nitrate as N	6.0		2.0	0.68	mg/L	10		300.0	Total/NA
Sulfate	23.7	B	2.0	0.95	mg/L	10		300.0	Total/NA
Total Organic Carbon - Duplicates	2.5		1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	53.0		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-190424-RA-18

Lab Sample ID: 500-162180-8

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Pentachlorophenol	0.20		0.095	0.086	ug/L	1		8151A	Total/NA
Arsenic	1.1		1.0	0.23	ug/L	1		6020A	Dissolved
Copper	7.0		2.0	0.50	ug/L	1		6020A	Dissolved

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Chicago

Detection Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Client Sample ID: W-190424-RA-18 (Continued)

Lab Sample ID: 500-162180-8

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Iron	23400		100	46.7	ug/L	1		6020A	Dissolved
Manganese	217		2.5	0.79	ug/L	1		6020A	Dissolved
Zinc	282		20.0	6.9	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	95.1		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	0.94		0.20	0.17	mg/L	1		300.0	Total/NA
Nitrate as N	5.7		2.0	0.68	mg/L	10		300.0	Total/NA
Sulfate	19.5	B	2.0	0.95	mg/L	10		300.0	Total/NA
Total Organic Carbon - Duplicates	5.5		1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	48.2		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: Trip Blank

Lab Sample ID: 500-162180-9

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Chicago

Method Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CHI
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL CHI
RSK-175	Dissolved Gases (GC)	RSK	TAL CAN
8151A	Herbicides (GC)	SW846	TAL CHI
6020A	Metals (ICP/MS)	SW846	TAL CHI
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	TAL CHI
300.0	Anions, Ion Chromatography	MCAWW	TAL CHI
9060A	Organic Carbon, Total (TOC)	SW846	TAL CHI
SM 2320B	Alkalinity	SM	TAL CHI
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CHI
3010A	Preparation, Total Metals	SW846	TAL CHI
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL CHI
5030B	Purge and Trap	SW846	TAL CHI
8151A	Extraction (Herbicides)	SW846	TAL CHI

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

RSK = Sample Prep And Calculations For Dissolved Gas Analysis In Water Samples Using A GC Headspace Equilibration Technique, RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Lab

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL CHI = Eurofins TestAmerica, Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

Sample Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
500-162180-1	W-190424-RA-11	Water	04/24/19 09:38	04/25/19 09:20	
500-162180-2	W-190424-RA-12	Water	04/24/19 09:38	04/25/19 09:20	
500-162180-3	W-190424-RA-13	Water	04/24/19 09:59	04/25/19 09:20	
500-162180-4	W-190424-RA-14	Water	04/24/19 10:50	04/25/19 09:20	
500-162180-5	W-190424-RA-15	Water	04/24/19 12:04	04/25/19 09:20	
500-162180-6	W-190424-RA-16	Water	04/24/19 12:20	04/25/19 09:20	
500-162180-7	W-190424-RA-17	Water	04/24/19 12:58	04/25/19 09:20	
500-162180-8	W-190424-RA-18	Water	04/24/19 13:38	04/25/19 09:20	
500-162180-9	Trip Blank	Water	04/24/19 16:00	04/25/19 09:20	

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Client Sample ID: W-190424-RA-11

Lab Sample ID: 500-162180-1

Date Collected: 04/24/19 09:38

Matrix: Water

Date Received: 04/25/19 09:20

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/02/19 00:35	1
Toluene	<0.15		0.50	0.15	ug/L			05/02/19 00:35	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/02/19 00:35	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/02/19 00:35	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		75 - 126					05/02/19 00:35	1
Toluene-d8 (Surr)	103		75 - 120					05/02/19 00:35	1
4-Bromofluorobenzene (Surr)	97		72 - 124					05/02/19 00:35	1
Dibromofluoromethane	95		75 - 120					05/02/19 00:35	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.25		0.80	0.25	ug/L		04/30/19 16:29	05/01/19 23:11	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	84		36 - 120				04/30/19 16:29	05/01/19 23:11	1
2-Fluorobiphenyl (Surr)	78		34 - 110				04/30/19 16:29	05/01/19 23:11	1
Terphenyl-d14 (Surr)	113		40 - 145				04/30/19 16:29	05/01/19 23:11	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.17		1.0	0.17	ug/L			05/02/19 23:56	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	81		60 - 140					05/02/19 23:56	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.12		0.096	0.086	ug/L		05/01/19 11:16	05/03/19 20:06	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCAA	68		25 - 130				05/01/19 11:16	05/03/19 20:06	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.24	J	1.0	0.23	ug/L		05/31/19 07:25	06/03/19 13:00	1
Copper	1.2	J B	2.0	0.50	ug/L		05/31/19 07:25	06/03/19 13:00	1
Iron	53.2	J	100	46.7	ug/L		05/31/19 07:25	06/03/19 13:00	1
Manganese	3.5		2.5	0.79	ug/L		05/31/19 07:25	06/03/19 13:00	1
Zinc	8.2	J	20.0	6.9	ug/L		05/31/19 07:25	06/03/19 13:00	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	116		1.3	0.66	mg/L		04/25/19 14:52	04/26/19 14:37	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	11.3		2.0	1.7	mg/L			04/25/19 15:55	10
Nitrate as N	3.4		0.20	0.068	mg/L			04/25/19 15:43	1
Sulfate	5.9	B	0.20	0.095	mg/L			04/25/19 15:43	1
Total Organic Carbon - Duplicates	<0.47		1.0	0.47	mg/L			05/02/19 09:21	1

Eurofins TestAmerica, Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Client Sample ID: W-190424-RA-11

Lab Sample ID: 500-162180-1

Date Collected: 04/24/19 09:38

Matrix: Water

Date Received: 04/25/19 09:20

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	85.1		5.0	3.7	mg/L			05/02/19 12:54	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Client Sample ID: W-190424-RA-12

Lab Sample ID: 500-162180-2

Date Collected: 04/24/19 09:38

Matrix: Water

Date Received: 04/25/19 09:20

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/02/19 01:01	1
Toluene	<0.15		0.50	0.15	ug/L			05/02/19 01:01	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/02/19 01:01	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/02/19 01:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		75 - 126		05/02/19 01:01	1
Toluene-d8 (Surr)	104		75 - 120		05/02/19 01:01	1
4-Bromofluorobenzene (Surr)	94		72 - 124		05/02/19 01:01	1
Dibromofluoromethane	96		75 - 120		05/02/19 01:01	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.25		0.81	0.25	ug/L		04/30/19 16:29	05/01/19 23:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	82		36 - 120	04/30/19 16:29	05/01/19 23:33	1
2-Fluorobiphenyl (Surr)	76		34 - 110	04/30/19 16:29	05/01/19 23:33	1
Terphenyl-d14 (Surr)	109		40 - 145	04/30/19 16:29	05/01/19 23:33	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.17		1.0	0.17	ug/L			05/03/19 00:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	84		60 - 140		05/03/19 00:14	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.14		0.097	0.087	ug/L		05/01/19 11:16	05/03/19 20:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCAA	61		25 - 130	05/01/19 11:16	05/03/19 20:31	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.45	J	1.0	0.23	ug/L		05/31/19 07:25	06/03/19 13:03	1
Copper	1.5	J B	2.0	0.50	ug/L		05/31/19 07:25	06/03/19 13:03	1
Iron	69.1	J	100	46.7	ug/L		05/31/19 07:25	06/03/19 13:03	1
Manganese	3.7		2.5	0.79	ug/L		05/31/19 07:25	06/03/19 13:03	1
Zinc	7.3	J	20.0	6.9	ug/L		05/31/19 07:25	06/03/19 13:03	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	116		1.3	0.66	mg/L		04/25/19 14:52	04/26/19 14:37	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	10.7		2.0	1.7	mg/L			04/25/19 16:20	10
Nitrate as N	3.4		0.20	0.068	mg/L			04/25/19 16:08	1
Sulfate	6.0	B	0.20	0.095	mg/L			04/25/19 16:08	1
Total Organic Carbon - Duplicates	0.89	J	1.0	0.47	mg/L			05/02/19 09:28	1

Eurofins TestAmerica, Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Client Sample ID: W-190424-RA-12

Lab Sample ID: 500-162180-2

Date Collected: 04/24/19 09:38

Matrix: Water

Date Received: 04/25/19 09:20

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	84.0		5.0	3.7	mg/L			05/02/19 13:00	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Client Sample ID: W-190424-RA-13

Lab Sample ID: 500-162180-3

Date Collected: 04/24/19 09:59

Matrix: Water

Date Received: 04/25/19 09:20

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/02/19 01:26	1
Toluene	<0.15		0.50	0.15	ug/L			05/02/19 01:26	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/02/19 01:26	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/02/19 01:26	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		75 - 126					05/02/19 01:26	1
Toluene-d8 (Surr)	101		75 - 120					05/02/19 01:26	1
4-Bromofluorobenzene (Surr)	99		72 - 124					05/02/19 01:26	1
Dibromofluoromethane	97		75 - 120					05/02/19 01:26	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.28		0.89	0.28	ug/L		04/30/19 16:29	05/01/19 23:56	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	78		36 - 120				04/30/19 16:29	05/01/19 23:56	1
2-Fluorobiphenyl (Surr)	71		34 - 110				04/30/19 16:29	05/01/19 23:56	1
Terphenyl-d14 (Surr)	91		40 - 145				04/30/19 16:29	05/01/19 23:56	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.17		1.0	0.17	ug/L			05/03/19 00:31	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	86		60 - 140					05/03/19 00:31	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.085		0.095	0.085	ug/L		05/01/19 11:16	05/03/19 20:55	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCAA	64		25 - 130				05/01/19 11:16	05/03/19 20:55	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.27	J	1.0	0.23	ug/L		05/30/19 16:49	05/31/19 15:07	1
Copper	1.8	J	2.0	0.50	ug/L		05/30/19 16:49	05/31/19 15:07	1
Iron	166		100	46.7	ug/L		05/30/19 16:49	05/31/19 15:07	1
Manganese	9.6		2.5	0.79	ug/L		05/30/19 16:49	05/31/19 15:07	1
Zinc	9.6	J	20.0	6.9	ug/L		05/30/19 16:49	05/31/19 15:07	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	102		1.3	0.66	mg/L		04/25/19 14:52	04/26/19 14:37	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	4.1		0.20	0.17	mg/L			04/25/19 16:32	1
Nitrate as N	0.75		0.20	0.068	mg/L			04/25/19 16:32	1
Sulfate	4.1	B	0.20	0.095	mg/L			04/25/19 16:32	1
Total Organic Carbon - Duplicates	0.84	J	1.0	0.47	mg/L			05/02/19 09:35	1

Eurofins TestAmerica, Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Client Sample ID: W-190424-RA-13

Lab Sample ID: 500-162180-3

Date Collected: 04/24/19 09:59

Matrix: Water

Date Received: 04/25/19 09:20

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	60.3		5.0	3.7	mg/L			05/02/19 13:10	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Client Sample ID: W-190424-RA-14

Lab Sample ID: 500-162180-4

Date Collected: 04/24/19 10:50

Matrix: Water

Date Received: 04/25/19 09:20

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/02/19 01:51	1
Toluene	<0.15		0.50	0.15	ug/L			05/02/19 01:51	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/02/19 01:51	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/02/19 01:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		75 - 126		05/02/19 01:51	1
Toluene-d8 (Surr)	102		75 - 120		05/02/19 01:51	1
4-Bromofluorobenzene (Surr)	99		72 - 124		05/02/19 01:51	1
Dibromofluoromethane	98		75 - 120		05/02/19 01:51	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.23		0.76	0.23	ug/L		04/30/19 16:29	05/02/19 00:18	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	89		36 - 120	04/30/19 16:29	05/02/19 00:18	1
2-Fluorobiphenyl (Surr)	84		34 - 110	04/30/19 16:29	05/02/19 00:18	1
Terphenyl-d14 (Surr)	118		40 - 145	04/30/19 16:29	05/02/19 00:18	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.17		1.0	0.17	ug/L			05/03/19 00:48	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	82		60 - 140		05/03/19 00:48	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.086		0.096	0.086	ug/L		05/01/19 11:16	05/03/19 21:20	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCAA	64		25 - 130	05/01/19 11:16	05/03/19 21:20	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.23	J	1.0	0.23	ug/L		05/30/19 16:49	05/31/19 15:11	1
Copper	1.5	J	2.0	0.50	ug/L		05/30/19 16:49	05/31/19 15:11	1
Iron	<46.7		100	46.7	ug/L		05/30/19 16:49	05/31/19 15:11	1
Manganese	<0.79		2.5	0.79	ug/L		05/30/19 16:49	05/31/19 15:11	1
Zinc	<6.9		20.0	6.9	ug/L		05/30/19 16:49	05/31/19 15:11	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	72.8		1.3	0.66	mg/L		04/25/19 14:52	04/26/19 14:37	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	78.4		4.0	3.4	mg/L			04/26/19 22:03	20
Nitrate as N	1.6		0.20	0.068	mg/L			04/25/19 16:57	1
Sulfate	6.4	B	0.20	0.095	mg/L			04/25/19 16:57	1
Total Organic Carbon - Duplicates	0.94	J	1.0	0.47	mg/L			05/02/19 09:42	1

Eurofins TestAmerica, Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Client Sample ID: W-190424-RA-14

Lab Sample ID: 500-162180-4

Date Collected: 04/24/19 10:50

Matrix: Water

Date Received: 04/25/19 09:20

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	32.6		5.0	3.7	mg/L			05/02/19 13:16	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Client Sample ID: W-190424-RA-15

Lab Sample ID: 500-162180-5

Date Collected: 04/24/19 12:04

Matrix: Water

Date Received: 04/25/19 09:20

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/02/19 02:17	1
Toluene	<0.15		0.50	0.15	ug/L			05/02/19 02:17	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/02/19 02:17	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/02/19 02:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		75 - 126		05/02/19 02:17	1
Toluene-d8 (Surr)	103		75 - 120		05/02/19 02:17	1
4-Bromofluorobenzene (Surr)	101		72 - 124		05/02/19 02:17	1
Dibromofluoromethane	95		75 - 120		05/02/19 02:17	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.23		0.76	0.23	ug/L		04/30/19 16:29	05/02/19 00:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	87		36 - 120	04/30/19 16:29	05/02/19 00:41	1
2-Fluorobiphenyl (Surr)	81		34 - 110	04/30/19 16:29	05/02/19 00:41	1
Terphenyl-d14 (Surr)	123		40 - 145	04/30/19 16:29	05/02/19 00:41	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	3.0		1.0	0.17	ug/L			05/03/19 01:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	79		60 - 140		05/03/19 01:40	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.086		0.095	0.086	ug/L		05/01/19 11:16	05/03/19 23:22	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCAA	61		25 - 130	05/01/19 11:16	05/03/19 23:22	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.23		1.0	0.23	ug/L		05/30/19 16:49	05/31/19 15:32	1
Copper	1.1	J	2.0	0.50	ug/L		05/30/19 16:49	05/31/19 15:32	1
Iron	<46.7		100	46.7	ug/L		05/30/19 16:49	05/31/19 15:32	1
Manganese	1.9	J	2.5	0.79	ug/L		05/30/19 16:49	05/31/19 15:32	1
Zinc	<6.9		20.0	6.9	ug/L		05/30/19 16:49	05/31/19 15:32	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	191		1.3	0.66	mg/L		04/25/19 14:52	04/26/19 14:37	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.61		0.20	0.17	mg/L			04/25/19 18:36	1
Nitrate as N	0.63		0.20	0.068	mg/L			04/25/19 18:36	1
Sulfate	1.6	B	0.20	0.095	mg/L			04/25/19 18:36	1
Total Organic Carbon - Duplicates	0.67	J	1.0	0.47	mg/L			05/02/19 10:09	1

Eurofins TestAmerica, Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Client Sample ID: W-190424-RA-15

Lab Sample ID: 500-162180-5

Date Collected: 04/24/19 12:04

Matrix: Water

Date Received: 04/25/19 09:20

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	178		5.0	3.7	mg/L			05/02/19 13:28	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Client Sample ID: W-190424-RA-16

Lab Sample ID: 500-162180-6

Date Collected: 04/24/19 12:20

Matrix: Water

Date Received: 04/25/19 09:20

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/02/19 02:42	1
Toluene	<0.15		0.50	0.15	ug/L			05/02/19 02:42	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/02/19 02:42	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/02/19 02:42	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		75 - 126					05/02/19 02:42	1
Toluene-d8 (Surr)	101		75 - 120					05/02/19 02:42	1
4-Bromofluorobenzene (Surr)	98		72 - 124					05/02/19 02:42	1
Dibromofluoromethane	96		75 - 120					05/02/19 02:42	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.23		0.74	0.23	ug/L		04/30/19 16:29	05/02/19 01:04	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	89		36 - 120				04/30/19 16:29	05/02/19 01:04	1
2-Fluorobiphenyl (Surr)	83		34 - 110				04/30/19 16:29	05/02/19 01:04	1
Terphenyl-d14 (Surr)	115		40 - 145				04/30/19 16:29	05/02/19 01:04	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.17		1.0	0.17	ug/L			05/03/19 01:57	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	83		60 - 140					05/03/19 01:57	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.24		0.11	0.10	ug/L		05/01/19 11:16	05/03/19 23:47	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCAA	61		25 - 130				05/01/19 11:16	05/03/19 23:47	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.37	J	1.0	0.23	ug/L		05/30/19 16:49	05/31/19 15:36	1
Copper	1.9	J	2.0	0.50	ug/L		05/30/19 16:49	05/31/19 15:36	1
Iron	169		100	46.7	ug/L		05/30/19 16:49	05/31/19 15:36	1
Manganese	15.7		2.5	0.79	ug/L		05/30/19 16:49	05/31/19 15:36	1
Zinc	9.0	J	20.0	6.9	ug/L		05/30/19 16:49	05/31/19 15:36	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	39.4		1.3	0.66	mg/L		04/25/19 14:52	04/26/19 14:37	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	4.7		0.20	0.17	mg/L			04/25/19 19:01	1
Nitrate as N	0.63		0.20	0.068	mg/L			04/25/19 19:01	1
Sulfate	4.7	B	0.20	0.095	mg/L			04/25/19 19:01	1
Total Organic Carbon - Duplicates	0.74	J	1.0	0.47	mg/L			05/02/19 10:18	1

Eurofins TestAmerica, Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Client Sample ID: W-190424-RA-16

Lab Sample ID: 500-162180-6

Date Collected: 04/24/19 12:20

Matrix: Water

Date Received: 04/25/19 09:20

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	34.1		5.0	3.7	mg/L			05/02/19 13:33	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Client Sample ID: W-190424-RA-17

Lab Sample ID: 500-162180-7

Date Collected: 04/24/19 12:58

Matrix: Water

Date Received: 04/25/19 09:20

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/02/19 03:07	1
Toluene	<0.15		0.50	0.15	ug/L			05/02/19 03:07	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/02/19 03:07	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/02/19 03:07	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		75 - 126					05/02/19 03:07	1
Toluene-d8 (Surr)	101		75 - 120					05/02/19 03:07	1
4-Bromofluorobenzene (Surr)	100		72 - 124					05/02/19 03:07	1
Dibromofluoromethane	99		75 - 120					05/02/19 03:07	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.24		0.77	0.24	ug/L		04/30/19 16:29	05/02/19 01:26	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	81		36 - 120				04/30/19 16:29	05/02/19 01:26	1
2-Fluorobiphenyl (Surr)	77		34 - 110				04/30/19 16:29	05/02/19 01:26	1
Terphenyl-d14 (Surr)	113		40 - 145				04/30/19 16:29	05/02/19 01:26	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.17		1.0	0.17	ug/L			05/03/19 02:14	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	82		60 - 140					05/03/19 02:14	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.16		0.095	0.085	ug/L		05/01/19 11:16	05/04/19 00:11	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCAA	63		25 - 130				05/01/19 11:16	05/04/19 00:11	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.23		1.0	0.23	ug/L		05/30/19 16:49	05/31/19 15:45	1
Copper	2.2		2.0	0.50	ug/L		05/30/19 16:49	05/31/19 15:45	1
Iron	94.7 J		100	46.7	ug/L		05/30/19 16:49	05/31/19 15:45	1
Manganese	10.7		2.5	0.79	ug/L		05/30/19 16:49	05/31/19 15:45	1
Zinc	8.2 J		20.0	6.9	ug/L		05/30/19 16:49	05/31/19 15:45	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	96.5		1.3	0.66	mg/L		04/25/19 14:52	04/26/19 14:37	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	2.7		0.20	0.17	mg/L			04/25/19 19:26	1
Nitrate as N	6.0		2.0	0.68	mg/L			04/25/19 19:38	10
Sulfate	23.7 B		2.0	0.95	mg/L			04/25/19 19:38	10
Total Organic Carbon - Duplicates	2.5		1.0	0.47	mg/L			05/02/19 10:25	1

Eurofins TestAmerica, Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Client Sample ID: W-190424-RA-17

Lab Sample ID: 500-162180-7

Date Collected: 04/24/19 12:58

Matrix: Water

Date Received: 04/25/19 09:20

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	53.0		5.0	3.7	mg/L			05/02/19 13:39	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Client Sample ID: W-190424-RA-18

Lab Sample ID: 500-162180-8

Date Collected: 04/24/19 13:38

Matrix: Water

Date Received: 04/25/19 09:20

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/02/19 03:33	1
Toluene	<0.15		0.50	0.15	ug/L			05/02/19 03:33	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/02/19 03:33	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/02/19 03:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		75 - 126		05/02/19 03:33	1
Toluene-d8 (Surr)	101		75 - 120		05/02/19 03:33	1
4-Bromofluorobenzene (Surr)	101		72 - 124		05/02/19 03:33	1
Dibromofluoromethane	98		75 - 120		05/02/19 03:33	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.24		0.78	0.24	ug/L		04/30/19 16:29	05/02/19 01:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	83		36 - 120	04/30/19 16:29	05/02/19 01:49	1
2-Fluorobiphenyl (Surr)	78		34 - 110	04/30/19 16:29	05/02/19 01:49	1
Terphenyl-d14 (Surr)	112		40 - 145	04/30/19 16:29	05/02/19 01:49	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.17		1.0	0.17	ug/L			05/03/19 02:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	80		60 - 140		05/03/19 02:31	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.20		0.095	0.086	ug/L		05/01/19 11:16	05/04/19 00:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCAA	76		25 - 130	05/01/19 11:16	05/04/19 00:36	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.1		1.0	0.23	ug/L		05/30/19 16:49	05/31/19 15:49	1
Copper	7.0		2.0	0.50	ug/L		05/30/19 16:49	05/31/19 15:49	1
Iron	23400		100	46.7	ug/L		05/30/19 16:49	05/31/19 15:49	1
Manganese	217		2.5	0.79	ug/L		05/30/19 16:49	05/31/19 15:49	1
Zinc	282		20.0	6.9	ug/L		05/30/19 16:49	05/31/19 15:49	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	95.1		1.3	0.66	mg/L		04/25/19 14:52	04/26/19 14:37	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.94		0.20	0.17	mg/L			04/25/19 20:15	1
Nitrate as N	5.7		2.0	0.68	mg/L			04/25/19 20:28	10
Sulfate	19.5	B	2.0	0.95	mg/L			04/25/19 20:28	10
Total Organic Carbon - Duplicates	5.5		1.0	0.47	mg/L			05/02/19 10:35	1

Eurofins TestAmerica, Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Client Sample ID: W-190424-RA-18

Lab Sample ID: 500-162180-8

Date Collected: 04/24/19 13:38

Matrix: Water

Date Received: 04/25/19 09:20

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	48.2		5.0	3.7	mg/L			05/02/19 12:26	1

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Client Sample Results

Client: GHD Services Inc.
 Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Client Sample ID: Trip Blank

Lab Sample ID: 500-162180-9

Date Collected: 04/24/19 16:00

Matrix: Water

Date Received: 04/25/19 09:20

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/02/19 00:10	1
Toluene	<0.15		0.50	0.15	ug/L			05/02/19 00:10	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/02/19 00:10	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/02/19 00:10	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		75 - 126		05/02/19 00:10	1
Toluene-d8 (Surr)	104		75 - 120		05/02/19 00:10	1
4-Bromofluorobenzene (Surr)	98		72 - 124		05/02/19 00:10	1
Dibromofluoromethane	92		75 - 120		05/02/19 00:10	1

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
F2	MS/MSD RPD exceeds control limits

Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
F5	Duplicate RPD exceeds limit, and one or both sample results are less than 5 times RL. The data are considered valid because the absolute difference is less than the RL.
J	Reported value was between the limit of detection and the limit of quantitation.

General Chemistry

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Reported value was between the limit of detection and the limit of quantitation.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

GC/MS VOA

Analysis Batch: 483156

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162180-1	W-190424-RA-11	Total/NA	Water	8260B	
500-162180-2	W-190424-RA-12	Total/NA	Water	8260B	
500-162180-3	W-190424-RA-13	Total/NA	Water	8260B	
500-162180-4	W-190424-RA-14	Total/NA	Water	8260B	
500-162180-5	W-190424-RA-15	Total/NA	Water	8260B	
500-162180-6	W-190424-RA-16	Total/NA	Water	8260B	
500-162180-7	W-190424-RA-17	Total/NA	Water	8260B	
500-162180-8	W-190424-RA-18	Total/NA	Water	8260B	
500-162180-9	Trip Blank	Total/NA	Water	8260B	
MB 500-483156/6	Method Blank	Total/NA	Water	8260B	
LCS 500-483156/4	Lab Control Sample	Total/NA	Water	8260B	

Analysis Batch: 483207

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 500-483207/6	Method Blank	Total/NA	Water	8260B	
LCS 500-483207/4	Lab Control Sample	Total/NA	Water	8260B	
500-162180-4 MS	W-190424-RA-14	Total/NA	Water	8260B	
500-162180-4 MSD	W-190424-RA-14	Total/NA	Water	8260B	

GC/MS Semi VOA

Prep Batch: 482919

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162180-1	W-190424-RA-11	Total/NA	Water	3510C	
500-162180-2	W-190424-RA-12	Total/NA	Water	3510C	
500-162180-3	W-190424-RA-13	Total/NA	Water	3510C	
500-162180-4	W-190424-RA-14	Total/NA	Water	3510C	
500-162180-5	W-190424-RA-15	Total/NA	Water	3510C	
500-162180-6	W-190424-RA-16	Total/NA	Water	3510C	
500-162180-7	W-190424-RA-17	Total/NA	Water	3510C	
500-162180-8	W-190424-RA-18	Total/NA	Water	3510C	
MB 500-482919/1-A	Method Blank	Total/NA	Water	3510C	
LCS 500-482919/2-A	Lab Control Sample	Total/NA	Water	3510C	
500-162180-4 MS	W-190424-RA-14	Total/NA	Water	3510C	
500-162180-4 MSD	W-190424-RA-14	Total/NA	Water	3510C	

Analysis Batch: 483174

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162180-1	W-190424-RA-11	Total/NA	Water	8270D	482919
500-162180-2	W-190424-RA-12	Total/NA	Water	8270D	482919
500-162180-3	W-190424-RA-13	Total/NA	Water	8270D	482919
500-162180-4	W-190424-RA-14	Total/NA	Water	8270D	482919
500-162180-5	W-190424-RA-15	Total/NA	Water	8270D	482919
500-162180-6	W-190424-RA-16	Total/NA	Water	8270D	482919
500-162180-7	W-190424-RA-17	Total/NA	Water	8270D	482919
500-162180-8	W-190424-RA-18	Total/NA	Water	8270D	482919
MB 500-482919/1-A	Method Blank	Total/NA	Water	8270D	482919
LCS 500-482919/2-A	Lab Control Sample	Total/NA	Water	8270D	482919
500-162180-4 MS	W-190424-RA-14	Total/NA	Water	8270D	482919
500-162180-4 MSD	W-190424-RA-14	Total/NA	Water	8270D	482919

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QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

GC VOA

Analysis Batch: 379286

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162180-1	W-190424-RA-11	Total/NA	Water	RSK-175	
500-162180-2	W-190424-RA-12	Total/NA	Water	RSK-175	
500-162180-3	W-190424-RA-13	Total/NA	Water	RSK-175	
500-162180-4	W-190424-RA-14	Total/NA	Water	RSK-175	
500-162180-5	W-190424-RA-15	Total/NA	Water	RSK-175	
500-162180-6	W-190424-RA-16	Total/NA	Water	RSK-175	
500-162180-7	W-190424-RA-17	Total/NA	Water	RSK-175	
500-162180-8	W-190424-RA-18	Total/NA	Water	RSK-175	
MB 240-379286/33	Method Blank	Total/NA	Water	RSK-175	
LCS 240-379286/34	Lab Control Sample	Total/NA	Water	RSK-175	
500-162180-4 MS	W-190424-RA-14	Total/NA	Water	RSK-175	
500-162180-4 MSD	W-190424-RA-14	Total/NA	Water	RSK-175	

GC Semi VOA

Prep Batch: 483087

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162180-1	W-190424-RA-11	Total/NA	Water	8151A	
500-162180-2	W-190424-RA-12	Total/NA	Water	8151A	
500-162180-3	W-190424-RA-13	Total/NA	Water	8151A	
500-162180-4	W-190424-RA-14	Total/NA	Water	8151A	
500-162180-5	W-190424-RA-15	Total/NA	Water	8151A	
500-162180-6	W-190424-RA-16	Total/NA	Water	8151A	
500-162180-7	W-190424-RA-17	Total/NA	Water	8151A	
500-162180-8	W-190424-RA-18	Total/NA	Water	8151A	
MB 500-483087/1-A	Method Blank	Total/NA	Water	8151A	
LCS 500-483087/2-A	Lab Control Sample	Total/NA	Water	8151A	
500-162180-4 MS	W-190424-RA-14	Total/NA	Water	8151A	
500-162180-4 MSD	W-190424-RA-14	Total/NA	Water	8151A	

Analysis Batch: 483441

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162180-1	W-190424-RA-11	Total/NA	Water	8151A	483087
500-162180-2	W-190424-RA-12	Total/NA	Water	8151A	483087
500-162180-3	W-190424-RA-13	Total/NA	Water	8151A	483087
500-162180-4	W-190424-RA-14	Total/NA	Water	8151A	483087
500-162180-5	W-190424-RA-15	Total/NA	Water	8151A	483087
500-162180-6	W-190424-RA-16	Total/NA	Water	8151A	483087
500-162180-7	W-190424-RA-17	Total/NA	Water	8151A	483087
500-162180-8	W-190424-RA-18	Total/NA	Water	8151A	483087
MB 500-483087/1-A	Method Blank	Total/NA	Water	8151A	483087
LCS 500-483087/2-A	Lab Control Sample	Total/NA	Water	8151A	483087
500-162180-4 MS	W-190424-RA-14	Total/NA	Water	8151A	483087
500-162180-4 MSD	W-190424-RA-14	Total/NA	Water	8151A	483087

Metals

Prep Batch: 482262

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162180-1	W-190424-RA-11	Total/NA	Water	3010A	
500-162180-2	W-190424-RA-12	Total/NA	Water	3010A	
500-162180-3	W-190424-RA-13	Total/NA	Water	3010A	

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QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Metals (Continued)

Prep Batch: 482262 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162180-4	W-190424-RA-14	Total/NA	Water	3010A	
500-162180-5	W-190424-RA-15	Total/NA	Water	3010A	
500-162180-6	W-190424-RA-16	Total/NA	Water	3010A	
500-162180-7	W-190424-RA-17	Total/NA	Water	3010A	
500-162180-8	W-190424-RA-18	Total/NA	Water	3010A	

Analysis Batch: 482445

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162180-1	W-190424-RA-11	Total/NA	Water	SM 2340B	482262
500-162180-2	W-190424-RA-12	Total/NA	Water	SM 2340B	482262
500-162180-3	W-190424-RA-13	Total/NA	Water	SM 2340B	482262
500-162180-4	W-190424-RA-14	Total/NA	Water	SM 2340B	482262
500-162180-5	W-190424-RA-15	Total/NA	Water	SM 2340B	482262
500-162180-6	W-190424-RA-16	Total/NA	Water	SM 2340B	482262
500-162180-7	W-190424-RA-17	Total/NA	Water	SM 2340B	482262
500-162180-8	W-190424-RA-18	Total/NA	Water	SM 2340B	482262

Prep Batch: 487972

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162180-3	W-190424-RA-13	Dissolved	Water	3005A	
500-162180-4	W-190424-RA-14	Dissolved	Water	3005A	
500-162180-5	W-190424-RA-15	Dissolved	Water	3005A	
500-162180-6	W-190424-RA-16	Dissolved	Water	3005A	
500-162180-7	W-190424-RA-17	Dissolved	Water	3005A	
500-162180-8	W-190424-RA-18	Dissolved	Water	3005A	
MB 500-487972/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 500-487972/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
500-162180-4 MS	W-190424-RA-14	Dissolved	Water	3005A	
500-162180-4 MSD	W-190424-RA-14	Dissolved	Water	3005A	
500-162180-4 DU	W-190424-RA-14	Dissolved	Water	3005A	

Prep Batch: 488039

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162180-1	W-190424-RA-11	Dissolved	Water	3005A	
500-162180-2	W-190424-RA-12	Dissolved	Water	3005A	
MB 500-488039/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 500-488039/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 488367

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162180-3	W-190424-RA-13	Dissolved	Water	6020A	487972
500-162180-4	W-190424-RA-14	Dissolved	Water	6020A	487972
500-162180-5	W-190424-RA-15	Dissolved	Water	6020A	487972
500-162180-6	W-190424-RA-16	Dissolved	Water	6020A	487972
500-162180-7	W-190424-RA-17	Dissolved	Water	6020A	487972
500-162180-8	W-190424-RA-18	Dissolved	Water	6020A	487972
MB 500-487972/1-A	Method Blank	Total Recoverable	Water	6020A	487972
LCS 500-487972/2-A	Lab Control Sample	Total Recoverable	Water	6020A	487972
500-162180-4 MS	W-190424-RA-14	Dissolved	Water	6020A	487972
500-162180-4 MSD	W-190424-RA-14	Dissolved	Water	6020A	487972
500-162180-4 DU	W-190424-RA-14	Dissolved	Water	6020A	487972

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QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Metals

Analysis Batch: 488416

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162180-1	W-190424-RA-11	Dissolved	Water	6020A	488039
500-162180-2	W-190424-RA-12	Dissolved	Water	6020A	488039
MB 500-488039/1-A	Method Blank	Total Recoverable	Water	6020A	488039
LCS 500-488039/2-A	Lab Control Sample	Total Recoverable	Water	6020A	488039

General Chemistry

Analysis Batch: 482235

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162180-1	W-190424-RA-11	Total/NA	Water	300.0	
500-162180-1	W-190424-RA-11	Total/NA	Water	300.0	
500-162180-2	W-190424-RA-12	Total/NA	Water	300.0	
500-162180-2	W-190424-RA-12	Total/NA	Water	300.0	
500-162180-3	W-190424-RA-13	Total/NA	Water	300.0	
500-162180-4	W-190424-RA-14	Total/NA	Water	300.0	
500-162180-5	W-190424-RA-15	Total/NA	Water	300.0	
500-162180-6	W-190424-RA-16	Total/NA	Water	300.0	
500-162180-7	W-190424-RA-17	Total/NA	Water	300.0	
500-162180-7	W-190424-RA-17	Total/NA	Water	300.0	
500-162180-8	W-190424-RA-18	Total/NA	Water	300.0	
500-162180-8	W-190424-RA-18	Total/NA	Water	300.0	
MB 500-482235/3	Method Blank	Total/NA	Water	300.0	
LCS 500-482235/4	Lab Control Sample	Total/NA	Water	300.0	
500-162180-4 MS	W-190424-RA-14	Total/NA	Water	300.0	
500-162180-4 MSD	W-190424-RA-14	Total/NA	Water	300.0	

Analysis Batch: 482442

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162180-4	W-190424-RA-14	Total/NA	Water	300.0	
MB 500-482442/6	Method Blank	Total/NA	Water	300.0	
LCS 500-482442/7	Lab Control Sample	Total/NA	Water	300.0	
500-162180-4 MS	W-190424-RA-14	Total/NA	Water	300.0	
500-162180-4 MSD	W-190424-RA-14	Total/NA	Water	300.0	

Analysis Batch: 483315

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162180-1	W-190424-RA-11	Total/NA	Water	9060A	
500-162180-2	W-190424-RA-12	Total/NA	Water	9060A	
500-162180-3	W-190424-RA-13	Total/NA	Water	9060A	
500-162180-4	W-190424-RA-14	Total/NA	Water	9060A	
500-162180-5	W-190424-RA-15	Total/NA	Water	9060A	
500-162180-6	W-190424-RA-16	Total/NA	Water	9060A	
500-162180-7	W-190424-RA-17	Total/NA	Water	9060A	
500-162180-8	W-190424-RA-18	Total/NA	Water	9060A	
MB 500-483315/4	Method Blank	Total/NA	Water	9060A	
LCS 500-483315/5	Lab Control Sample	Total/NA	Water	9060A	
500-162180-4 MS	W-190424-RA-14	Total/NA	Water	9060A	
500-162180-4 MSD	W-190424-RA-14	Total/NA	Water	9060A	

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

General Chemistry

Analysis Batch: 483469

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162180-1	W-190424-RA-11	Total/NA	Water	SM 2320B	
500-162180-2	W-190424-RA-12	Total/NA	Water	SM 2320B	
500-162180-3	W-190424-RA-13	Total/NA	Water	SM 2320B	
500-162180-4	W-190424-RA-14	Total/NA	Water	SM 2320B	
500-162180-5	W-190424-RA-15	Total/NA	Water	SM 2320B	
500-162180-6	W-190424-RA-16	Total/NA	Water	SM 2320B	
500-162180-7	W-190424-RA-17	Total/NA	Water	SM 2320B	
500-162180-8	W-190424-RA-18	Total/NA	Water	SM 2320B	
MB 500-483469/3	Method Blank	Total/NA	Water	SM 2320B	
LCS 500-483469/4	Lab Control Sample	Total/NA	Water	SM 2320B	
500-162180-4 DU	W-190424-RA-14	Total/NA	Water	SM 2320B	

Surrogate Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCA (75-126)	TOL (75-120)	BFB (72-124)	DBFM (75-120)
500-162180-1	W-190424-RA-11	91	103	97	95
500-162180-2	W-190424-RA-12	92	104	94	96
500-162180-3	W-190424-RA-13	94	101	99	97
500-162180-4	W-190424-RA-14	96	102	99	98
500-162180-4 MS	W-190424-RA-14	108	95	104	107
500-162180-4 MSD	W-190424-RA-14	105	94	103	106
500-162180-5	W-190424-RA-15	94	103	101	95
500-162180-6	W-190424-RA-16	94	101	98	96
500-162180-7	W-190424-RA-17	97	101	100	99
500-162180-8	W-190424-RA-18	96	101	101	98
500-162180-9	Trip Blank	89	104	98	92
LCS 500-483156/4	Lab Control Sample	88	104	101	94
LCS 500-483207/4	Lab Control Sample	105	98	101	105
MB 500-483156/6	Method Blank	95	101	99	97
MB 500-483207/6	Method Blank	104	96	114	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		NBZ (36-120)	FBP (34-110)	TPHL (40-145)
500-162180-1	W-190424-RA-11	84	78	113
500-162180-2	W-190424-RA-12	82	76	109
500-162180-3	W-190424-RA-13	78	71	91
500-162180-4	W-190424-RA-14	89	84	118
500-162180-4 MS	W-190424-RA-14	83	83	104
500-162180-4 MSD	W-190424-RA-14	80	82	105
500-162180-5	W-190424-RA-15	87	81	123
500-162180-6	W-190424-RA-16	89	83	115
500-162180-7	W-190424-RA-17	81	77	113
500-162180-8	W-190424-RA-18	83	78	112
LCS 500-482919/2-A	Lab Control Sample	75	74	99
MB 500-482919/1-A	Method Blank	79	70	110

Surrogate Legend

NBZ = Nitrobenzene-d5 (Surr)
FBP = 2-Fluorobiphenyl (Surr)
TPHL = Terphenyl-d14 (Surr)

Surrogate Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Method: RSK-175 - Dissolved Gases (GC)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TFE2 (60-140)
500-162180-1	W-190424-RA-11	81
500-162180-2	W-190424-RA-12	84
500-162180-3	W-190424-RA-13	86
500-162180-4	W-190424-RA-14	82
500-162180-4 MS	W-190424-RA-14	78
500-162180-4 MSD	W-190424-RA-14	80
500-162180-5	W-190424-RA-15	79
500-162180-6	W-190424-RA-16	83
500-162180-7	W-190424-RA-17	82
500-162180-8	W-190424-RA-18	80
LCS 240-379286/34	Lab Control Sample	85
MB 240-379286/33	Method Blank	82

Surrogate Legend

TFE = 1,1,1-Trifluoroethane

Method: 8151A - Herbicides (GC)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCPAA1 (25-130)
500-162180-1	W-190424-RA-11	68
500-162180-2	W-190424-RA-12	61
500-162180-3	W-190424-RA-13	64
500-162180-4	W-190424-RA-14	64
500-162180-4 MS	W-190424-RA-14	62
500-162180-4 MSD	W-190424-RA-14	69
500-162180-5	W-190424-RA-15	61
500-162180-6	W-190424-RA-16	61
500-162180-7	W-190424-RA-17	63
500-162180-8	W-190424-RA-18	76
LCS 500-483087/2-A	Lab Control Sample	72
MB 500-483087/1-A	Method Blank	57

Surrogate Legend

DCPAA = DCAA

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-483156/6
Matrix: Water
Analysis Batch: 483156

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB MB		LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzene	<0.15		0.50	0.15	ug/L			05/01/19 23:19	1
Toluene	<0.15		0.50	0.15	ug/L			05/01/19 23:19	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/01/19 23:19	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/01/19 23:19	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	95		75 - 126		05/01/19 23:19	1
Toluene-d8 (Surr)	101		75 - 120		05/01/19 23:19	1
4-Bromofluorobenzene (Surr)	99		72 - 124		05/01/19 23:19	1
Dibromofluoromethane	97		75 - 120		05/01/19 23:19	1

Lab Sample ID: LCS 500-483156/4
Matrix: Water
Analysis Batch: 483156

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
Benzene	50.0	47.1		ug/L		94	70 - 120
Toluene	50.0	47.0		ug/L		94	70 - 125
Ethylbenzene	50.0	51.6		ug/L		103	70 - 123
Xylenes, Total	100	100		ug/L		100	70 - 125

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	88		75 - 126
Toluene-d8 (Surr)	104		75 - 120
4-Bromofluorobenzene (Surr)	101		72 - 124
Dibromofluoromethane	94		75 - 120

Lab Sample ID: MB 500-483207/6
Matrix: Water
Analysis Batch: 483207

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB MB		LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzene	<0.15		0.50	0.15	ug/L			05/02/19 10:46	1
Toluene	<0.15		0.50	0.15	ug/L			05/02/19 10:46	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/02/19 10:46	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/02/19 10:46	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	104		75 - 126		05/02/19 10:46	1
Toluene-d8 (Surr)	96		75 - 120		05/02/19 10:46	1
4-Bromofluorobenzene (Surr)	114		72 - 124		05/02/19 10:46	1
Dibromofluoromethane	102		75 - 120		05/02/19 10:46	1

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 500-483207/4
Matrix: Water
Analysis Batch: 483207

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	50.4		ug/L		101	70 - 120
Toluene	50.0	47.3		ug/L		95	70 - 125
Ethylbenzene	50.0	51.3		ug/L		103	70 - 123
Xylenes, Total	100	105		ug/L		105	70 - 125

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	105		75 - 126
Toluene-d8 (Surr)	98		75 - 120
4-Bromofluorobenzene (Surr)	101		72 - 124
Dibromofluoromethane	105		75 - 120

Lab Sample ID: 500-162180-4 MS
Matrix: Water
Analysis Batch: 483207

Client Sample ID: W-190424-RA-14
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	<0.15		50.0	57.2		ug/L		114	70 - 120
Toluene	<0.15		50.0	52.2		ug/L		104	70 - 125
Ethylbenzene	<0.18		50.0	56.6		ug/L		113	70 - 123
Xylenes, Total	<0.22		100	116		ug/L		116	70 - 125

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	108		75 - 126
Toluene-d8 (Surr)	95		75 - 120
4-Bromofluorobenzene (Surr)	104		72 - 124
Dibromofluoromethane	107		75 - 120

Lab Sample ID: 500-162180-4 MSD
Matrix: Water
Analysis Batch: 483207

Client Sample ID: W-190424-RA-14
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	<0.15		50.0	48.1		ug/L		96	70 - 120	17	20
Toluene	<0.15		50.0	43.4		ug/L		87	70 - 125	18	20
Ethylbenzene	<0.18		50.0	46.7		ug/L		93	70 - 123	19	20
Xylenes, Total	<0.22		100	96.3		ug/L		96	70 - 125	19	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	105		75 - 126
Toluene-d8 (Surr)	94		75 - 120
4-Bromofluorobenzene (Surr)	103		72 - 124
Dibromofluoromethane	106		75 - 120

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-482919/1-A
Matrix: Water
Analysis Batch: 483174

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 482919

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Naphthalene	<0.25		0.80	0.25	ug/L		04/30/19 16:29	05/01/19 22:48	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac	
Nitrobenzene-d5 (Surr)	79		36 - 120			04/30/19 16:29	05/01/19 22:48	1	
2-Fluorobiphenyl (Surr)	70		34 - 110			04/30/19 16:29	05/01/19 22:48	1	
Terphenyl-d14 (Surr)	110		40 - 145			04/30/19 16:29	05/01/19 22:48	1	

Lab Sample ID: LCS 500-482919/2-A
Matrix: Water
Analysis Batch: 483174

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 482919

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
Naphthalene	32.0	20.5		ug/L		64	36 - 110
Surrogate	%Recovery	Qualifier	Limits				
Nitrobenzene-d5 (Surr)	75		36 - 120				
2-Fluorobiphenyl (Surr)	74		34 - 110				
Terphenyl-d14 (Surr)	99		40 - 145				

Lab Sample ID: 500-162180-4 MS
Matrix: Water
Analysis Batch: 483174

Client Sample ID: W-190424-RA-14
Prep Type: Total/NA
Prep Batch: 482919

Analyte	Sample	Sample	Spike Added	MS	MS	Unit	D	%Rec	%Rec. Limits
	Result	Qualifier		Result	Qualifier				
Naphthalene	<0.23		30.8	22.3		ug/L		72	36 - 110
Surrogate	%Recovery	Qualifier	Limits						
Nitrobenzene-d5 (Surr)	83		36 - 120						
2-Fluorobiphenyl (Surr)	83		34 - 110						
Terphenyl-d14 (Surr)	104		40 - 145						

Lab Sample ID: 500-162180-4 MSD
Matrix: Water
Analysis Batch: 483174

Client Sample ID: W-190424-RA-14
Prep Type: Total/NA
Prep Batch: 482919

Analyte	Sample	Sample	Spike Added	MSD	MSD	Unit	D	%Rec	%Rec. Limits	RPD	RPD
	Result	Qualifier		Result	Qualifier					RPD	Limit
Naphthalene	<0.23		30.5	20.8		ug/L		68	36 - 110	7	20
Surrogate	%Recovery	Qualifier	Limits								
Nitrobenzene-d5 (Surr)	80		36 - 120								
2-Fluorobiphenyl (Surr)	82		34 - 110								
Terphenyl-d14 (Surr)	105		40 - 145								

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 240-379286/33
Matrix: Water
Analysis Batch: 379286

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.17		1.0	0.17	ug/L			05/02/19 22:30	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	82		60 - 140					05/02/19 22:30	1

Lab Sample ID: LCS 240-379286/34
Matrix: Water
Analysis Batch: 379286

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	429	407		ug/L		95	80 - 120
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
1,1,1-Trifluoroethane	85		60 - 140				

Lab Sample ID: 500-162180-4 MS
Matrix: Water
Analysis Batch: 379286

Client Sample ID: W-190424-RA-14
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	<0.17		285	256		ug/L		90	50 - 150
Surrogate	MS %Recovery	MS Qualifier	Limits						
1,1,1-Trifluoroethane	78		60 - 140						

Lab Sample ID: 500-162180-4 MSD
Matrix: Water
Analysis Batch: 379286

Client Sample ID: W-190424-RA-14
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methane	<0.17		285	266		ug/L		93	50 - 150	4	30
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
1,1,1-Trifluoroethane	80		60 - 140								

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 500-483087/1-A
Matrix: Water
Analysis Batch: 483441

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 483087

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.090		0.10	0.090	ug/L		05/01/19 11:16	05/03/19 18:04	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCAA	57		25 - 130				05/01/19 11:16	05/03/19 18:04	1

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QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Method: 8151A - Herbicides (GC) (Continued)

Lab Sample ID: LCS 500-483087/2-A
Matrix: Water
Analysis Batch: 483441

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 483087

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Pentachlorophenol	2.53	1.84		ug/L		73	40 - 122
Surrogate	%Recovery	LCS Qualifier	Limits				
DCAA	72		25 - 130				

Lab Sample ID: 500-162180-4 MS
Matrix: Water
Analysis Batch: 483441

Client Sample ID: W-190424-RA-14
Prep Type: Total/NA
Prep Batch: 483087

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Pentachlorophenol	<0.086		2.42	1.26		ug/L		52	40 - 122
Surrogate	%Recovery	MS Qualifier	Limits						
DCAA	62		25 - 130						

Lab Sample ID: 500-162180-4 MSD
Matrix: Water
Analysis Batch: 483441

Client Sample ID: W-190424-RA-14
Prep Type: Total/NA
Prep Batch: 483087

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Pentachlorophenol	<0.086		2.41	1.76	F2	ug/L		73	40 - 122	33	20
Surrogate	%Recovery	MSD Qualifier	Limits								
DCAA	69		25 - 130								

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 500-487972/1-A
Matrix: Water
Analysis Batch: 488367

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 487972

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.23		1.0	0.23	ug/L		05/30/19 16:49	05/31/19 10:46	1
Copper	<0.50		2.0	0.50	ug/L		05/30/19 16:49	05/31/19 10:46	1
Iron	<46.7		100	46.7	ug/L		05/30/19 16:49	05/31/19 10:46	1
Manganese	<0.79		2.5	0.79	ug/L		05/30/19 16:49	05/31/19 10:46	1
Zinc	<6.9		20.0	6.9	ug/L		05/30/19 16:49	05/31/19 10:46	1

Lab Sample ID: LCS 500-487972/2-A
Matrix: Water
Analysis Batch: 488367

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 487972

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Arsenic	100	96.43		ug/L		96	80 - 120
Copper	250	238.9		ug/L		96	80 - 120
Iron	1000	942.7		ug/L		94	80 - 120
Manganese	500	480.1		ug/L		96	80 - 120
Zinc	500	497.1		ug/L		99	80 - 120

Eurofins TestAmerica, Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 500-488039/1-A
Matrix: Water
Analysis Batch: 488416

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 488039

Analyte	MB MB		LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Arsenic	<0.23		1.0	0.23	ug/L		05/31/19 07:25	06/03/19 12:52	1
Copper	0.542	J	2.0	0.50	ug/L		05/31/19 07:25	06/03/19 12:52	1
Iron	<46.7		100	46.7	ug/L		05/31/19 07:25	06/03/19 12:52	1
Manganese	<0.79		2.5	0.79	ug/L		05/31/19 07:25	06/03/19 12:52	1
Zinc	<6.9		20.0	6.9	ug/L		05/31/19 07:25	06/03/19 12:52	1

Lab Sample ID: LCS 500-488039/2-A
Matrix: Water
Analysis Batch: 488416

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 488039

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Copper	250	254.8		ug/L		102	80 - 120
Iron	1000	1091		ug/L		109	80 - 120
Manganese	500	517.0		ug/L		103	80 - 120
Zinc	500	507.3		ug/L		101	80 - 120

Lab Sample ID: 500-162180-4 MS
Matrix: Water
Analysis Batch: 488367

Client Sample ID: W-190424-RA-14
Prep Type: Dissolved
Prep Batch: 487972

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Copper	1.5	J	250	259.2		ug/L		103	75 - 125
Iron	<46.7		1000	964.7		ug/L		96	75 - 125
Manganese	<0.79		500	495.9		ug/L		99	75 - 125
Zinc	<6.9		500	542.1		ug/L		108	75 - 125

Lab Sample ID: 500-162180-4 MSD
Matrix: Water
Analysis Batch: 488367

Client Sample ID: W-190424-RA-14
Prep Type: Dissolved
Prep Batch: 487972

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Copper	1.5	J	250	260.8		ug/L		104	75 - 125	1	20
Iron	<46.7		1000	920.9		ug/L		92	75 - 125	5	20
Manganese	<0.79		500	472.9		ug/L		95	75 - 125	5	20
Zinc	<6.9		500	535.4		ug/L		107	75 - 125	1	20

Lab Sample ID: 500-162180-4 DU
Matrix: Water
Analysis Batch: 488367

Client Sample ID: W-190424-RA-14
Prep Type: Dissolved
Prep Batch: 487972

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Copper	1.5	J	1.14	J F5	ug/L		30	20
Iron	<46.7		<46.7		ug/L		NC	20
Manganese	<0.79		<0.79		ug/L		NC	20
Zinc	<6.9		<6.9		ug/L		NC	20

Eurofins TestAmerica, Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 500-482235/3
Matrix: Water
Analysis Batch: 482235

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB MB		LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Chloride	<0.17		0.20	0.17	mg/L			04/25/19 12:50	1
Nitrate as N	<0.068		0.20	0.068	mg/L			04/25/19 12:50	1
Sulfate	0.105	J	0.20	0.095	mg/L			04/25/19 12:50	1

Lab Sample ID: LCS 500-482235/4
Matrix: Water
Analysis Batch: 482235

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	2.00	2.01		mg/L		101	90 - 110
Sulfate	5.00	5.05		mg/L		101	90 - 110

Lab Sample ID: 500-162180-4 MS
Matrix: Water
Analysis Batch: 482235

Client Sample ID: W-190424-RA-14
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	6.4	B	2.50	8.95		mg/L		101	80 - 120

Lab Sample ID: 500-162180-4 MSD
Matrix: Water
Analysis Batch: 482235

Client Sample ID: W-190424-RA-14
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	6.4	B	2.50	8.96		mg/L		102	80 - 120	0	20

Lab Sample ID: MB 500-482442/6
Matrix: Water
Analysis Batch: 482442

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB MB		LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Chloride	<0.17		0.20	0.17	mg/L			04/26/19 14:00	1

Lab Sample ID: LCS 500-482442/7
Matrix: Water
Analysis Batch: 482442

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits

Lab Sample ID: 500-162180-4 MS
Matrix: Water
Analysis Batch: 482442

Client Sample ID: W-190424-RA-14
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits

Eurofins TestAmerica, Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 500-162180-4 MSD
Matrix: Water
Analysis Batch: 482442

Client Sample ID: W-190424-RA-14
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	78.4		20.0	100.7		mg/L		112	80 - 120	0	20

Method: 9060A - Organic Carbon, Total (TOC)

Lab Sample ID: MB 500-483315/4
Matrix: Water
Analysis Batch: 483315

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	<0.47		1.0	0.47	mg/L			05/02/19 07:13	1

Lab Sample ID: LCS 500-483315/5
Matrix: Water
Analysis Batch: 483315

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon - Duplicates	10.0	9.83		mg/L		98	80 - 120

Lab Sample ID: 500-162180-4 MS
Matrix: Water
Analysis Batch: 483315

Client Sample ID: W-190424-RA-14
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon - Duplicates	0.94	J	10.0	10.16		mg/L		92	75 - 125

Lab Sample ID: 500-162180-4 MSD
Matrix: Water
Analysis Batch: 483315

Client Sample ID: W-190424-RA-14
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Organic Carbon - Duplicates	0.94	J	10.0	10.32		mg/L		94	75 - 125	2	20

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 500-483469/3
Matrix: Water
Analysis Batch: 483469

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	<3.7		5.0	3.7	mg/L			05/02/19 11:57	1

Lab Sample ID: LCS 500-483469/4
Matrix: Water
Analysis Batch: 483469

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	100	99.25		mg/L		99	90 - 110

Eurofins TestAmerica, Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Method: SM 2320B - Alkalinity (Continued)

Lab Sample ID: 500-162180-4 DU
Matrix: Water
Analysis Batch: 483469

Client Sample ID: W-190424-RA-14
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Alkalinity	32.6		32.63		mg/L		0.06	20

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Client Sample ID: W-190424-RA-11

Lab Sample ID: 500-162180-1

Date Collected: 04/24/19 09:38

Matrix: Water

Date Received: 04/25/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483156	05/02/19 00:35	PMF	TAL CHI
Total/NA	Prep	3510C			482919	04/30/19 16:29	ACK	TAL CHI
Total/NA	Analysis	8270D		1	483174	05/01/19 23:11	STW	TAL CHI
Total/NA	Analysis	RSK-175		1	379286	05/02/19 23:56	BPM	TAL CAN
Total/NA	Prep	8151A			483087	05/01/19 11:16	JVD	TAL CHI
Total/NA	Analysis	8151A		1	483441	05/03/19 20:06	JBj	TAL CHI
Dissolved	Prep	3005A			488039	05/31/19 07:25	SAH	TAL CHI
Dissolved	Analysis	6020A		1	488416	06/03/19 13:00	FXG	TAL CHI
Total/NA	Prep	3010A			482262	04/25/19 14:52	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	482445	04/26/19 14:37	JEF	TAL CHI
Total/NA	Analysis	300.0		1	482235	04/25/19 15:43	EAT	TAL CHI
Total/NA	Analysis	300.0		10	482235	04/25/19 15:55	EAT	TAL CHI
Total/NA	Analysis	9060A		1	483315	05/02/19 09:21	MTB	TAL CHI
Total/NA	Analysis	SM 2320B		1	483469	05/02/19 12:54	SMO	TAL CHI

Client Sample ID: W-190424-RA-12

Lab Sample ID: 500-162180-2

Date Collected: 04/24/19 09:38

Matrix: Water

Date Received: 04/25/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483156	05/02/19 01:01	PMF	TAL CHI
Total/NA	Prep	3510C			482919	04/30/19 16:29	ACK	TAL CHI
Total/NA	Analysis	8270D		1	483174	05/01/19 23:33	STW	TAL CHI
Total/NA	Analysis	RSK-175		1	379286	05/03/19 00:14	BPM	TAL CAN
Total/NA	Prep	8151A			483087	05/01/19 11:16	JVD	TAL CHI
Total/NA	Analysis	8151A		1	483441	05/03/19 20:31	JBj	TAL CHI
Dissolved	Prep	3005A			488039	05/31/19 07:25	SAH	TAL CHI
Dissolved	Analysis	6020A		1	488416	06/03/19 13:03	FXG	TAL CHI
Total/NA	Prep	3010A			482262	04/25/19 14:52	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	482445	04/26/19 14:37	JEF	TAL CHI
Total/NA	Analysis	300.0		1	482235	04/25/19 16:08	EAT	TAL CHI
Total/NA	Analysis	300.0		10	482235	04/25/19 16:20	EAT	TAL CHI
Total/NA	Analysis	9060A		1	483315	05/02/19 09:28	MTB	TAL CHI
Total/NA	Analysis	SM 2320B		1	483469	05/02/19 13:00	SMO	TAL CHI

Client Sample ID: W-190424-RA-13

Lab Sample ID: 500-162180-3

Date Collected: 04/24/19 09:59

Matrix: Water

Date Received: 04/25/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483156	05/02/19 01:26	PMF	TAL CHI
Total/NA	Prep	3510C			482919	04/30/19 16:29	ACK	TAL CHI
Total/NA	Analysis	8270D		1	483174	05/01/19 23:56	STW	TAL CHI

Eurofins TestAmerica, Chicago

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Client Sample ID: W-190424-RA-13

Lab Sample ID: 500-162180-3

Date Collected: 04/24/19 09:59

Matrix: Water

Date Received: 04/25/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		1	379286	05/03/19 00:31	BPM	TAL CAN
Total/NA	Prep	8151A			483087	05/01/19 11:16	JVD	TAL CHI
Total/NA	Analysis	8151A		1	483441	05/03/19 20:55	JBj	TAL CHI
Dissolved	Prep	3005A			487972	05/30/19 16:49	BDE	TAL CHI
Dissolved	Analysis	6020A		1	488367	05/31/19 15:07	FXG	TAL CHI
Total/NA	Prep	3010A			482262	04/25/19 14:52	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	482445	04/26/19 14:37	JEF	TAL CHI
Total/NA	Analysis	300.0		1	482235	04/25/19 16:32	EAT	TAL CHI
Total/NA	Analysis	9060A		1	483315	05/02/19 09:35	MTB	TAL CHI
Total/NA	Analysis	SM 2320B		1	483469	05/02/19 13:10	SMO	TAL CHI

Client Sample ID: W-190424-RA-14

Lab Sample ID: 500-162180-4

Date Collected: 04/24/19 10:50

Matrix: Water

Date Received: 04/25/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483156	05/02/19 01:51	PMF	TAL CHI
Total/NA	Prep	3510C			482919	04/30/19 16:29	ACK	TAL CHI
Total/NA	Analysis	8270D		1	483174	05/02/19 00:18	STW	TAL CHI
Total/NA	Analysis	RSK-175		1	379286	05/03/19 00:48	BPM	TAL CAN
Total/NA	Prep	8151A			483087	05/01/19 11:16	JVD	TAL CHI
Total/NA	Analysis	8151A		1	483441	05/03/19 21:20	JBj	TAL CHI
Dissolved	Prep	3005A			487972	05/30/19 16:49	BDE	TAL CHI
Dissolved	Analysis	6020A		1	488367	05/31/19 15:11	FXG	TAL CHI
Total/NA	Prep	3010A			482262	04/25/19 14:52	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	482445	04/26/19 14:37	JEF	TAL CHI
Total/NA	Analysis	300.0		1	482235	04/25/19 16:57	EAT	TAL CHI
Total/NA	Analysis	300.0		20	482442	04/26/19 22:03	EAT	TAL CHI
Total/NA	Analysis	9060A		1	483315	05/02/19 09:42	MTB	TAL CHI
Total/NA	Analysis	SM 2320B		1	483469	05/02/19 13:16	SMO	TAL CHI

Client Sample ID: W-190424-RA-15

Lab Sample ID: 500-162180-5

Date Collected: 04/24/19 12:04

Matrix: Water

Date Received: 04/25/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483156	05/02/19 02:17	PMF	TAL CHI
Total/NA	Prep	3510C			482919	04/30/19 16:29	ACK	TAL CHI
Total/NA	Analysis	8270D		1	483174	05/02/19 00:41	STW	TAL CHI
Total/NA	Analysis	RSK-175		1	379286	05/03/19 01:40	BPM	TAL CAN
Total/NA	Prep	8151A			483087	05/01/19 11:16	JVD	TAL CHI
Total/NA	Analysis	8151A		1	483441	05/03/19 23:22	JBj	TAL CHI
Dissolved	Prep	3005A			487972	05/30/19 16:49	BDE	TAL CHI
Dissolved	Analysis	6020A		1	488367	05/31/19 15:32	FXG	TAL CHI

Eurofins TestAmerica, Chicago

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Client Sample ID: W-190424-RA-15

Lab Sample ID: 500-162180-5

Date Collected: 04/24/19 12:04

Matrix: Water

Date Received: 04/25/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			482262	04/25/19 14:52	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	482445	04/26/19 14:37	JEF	TAL CHI
Total/NA	Analysis	300.0		1	482235	04/25/19 18:36	EAT	TAL CHI
Total/NA	Analysis	9060A		1	483315	05/02/19 10:09	MTB	TAL CHI
Total/NA	Analysis	SM 2320B		1	483469	05/02/19 13:28	SMO	TAL CHI

Client Sample ID: W-190424-RA-16

Lab Sample ID: 500-162180-6

Date Collected: 04/24/19 12:20

Matrix: Water

Date Received: 04/25/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483156	05/02/19 02:42	PMF	TAL CHI
Total/NA	Prep	3510C			482919	04/30/19 16:29	ACK	TAL CHI
Total/NA	Analysis	8270D		1	483174	05/02/19 01:04	STW	TAL CHI
Total/NA	Analysis	RSK-175		1	379286	05/03/19 01:57	BPM	TAL CAN
Total/NA	Prep	8151A			483087	05/01/19 11:16	JVD	TAL CHI
Total/NA	Analysis	8151A		1	483441	05/03/19 23:47	JBj	TAL CHI
Dissolved	Prep	3005A			487972	05/30/19 16:49	BDE	TAL CHI
Dissolved	Analysis	6020A		1	488367	05/31/19 15:36	FXG	TAL CHI
Total/NA	Prep	3010A			482262	04/25/19 14:52	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	482445	04/26/19 14:37	JEF	TAL CHI
Total/NA	Analysis	300.0		1	482235	04/25/19 19:01	EAT	TAL CHI
Total/NA	Analysis	9060A		1	483315	05/02/19 10:18	MTB	TAL CHI
Total/NA	Analysis	SM 2320B		1	483469	05/02/19 13:33	SMO	TAL CHI

Client Sample ID: W-190424-RA-17

Lab Sample ID: 500-162180-7

Date Collected: 04/24/19 12:58

Matrix: Water

Date Received: 04/25/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483156	05/02/19 03:07	PMF	TAL CHI
Total/NA	Prep	3510C			482919	04/30/19 16:29	ACK	TAL CHI
Total/NA	Analysis	8270D		1	483174	05/02/19 01:26	STW	TAL CHI
Total/NA	Analysis	RSK-175		1	379286	05/03/19 02:14	BPM	TAL CAN
Total/NA	Prep	8151A			483087	05/01/19 11:16	JVD	TAL CHI
Total/NA	Analysis	8151A		1	483441	05/04/19 00:11	JBj	TAL CHI
Dissolved	Prep	3005A			487972	05/30/19 16:49	BDE	TAL CHI
Dissolved	Analysis	6020A		1	488367	05/31/19 15:45	FXG	TAL CHI
Total/NA	Prep	3010A			482262	04/25/19 14:52	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	482445	04/26/19 14:37	JEF	TAL CHI
Total/NA	Analysis	300.0		1	482235	04/25/19 19:26	EAT	TAL CHI
Total/NA	Analysis	300.0		10	482235	04/25/19 19:38	EAT	TAL CHI
Total/NA	Analysis	9060A		1	483315	05/02/19 10:25	MTB	TAL CHI

Eurofins TestAmerica, Chicago

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Client Sample ID: W-190424-RA-17

Date Collected: 04/24/19 12:58

Date Received: 04/25/19 09:20

Lab Sample ID: 500-162180-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2320B		1	483469	05/02/19 13:39	SMO	TAL CHI

Client Sample ID: W-190424-RA-18

Date Collected: 04/24/19 13:38

Date Received: 04/25/19 09:20

Lab Sample ID: 500-162180-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483156	05/02/19 03:33	PMF	TAL CHI
Total/NA	Prep	3510C			482919	04/30/19 16:29	ACK	TAL CHI
Total/NA	Analysis	8270D		1	483174	05/02/19 01:49	STW	TAL CHI
Total/NA	Analysis	RSK-175		1	379286	05/03/19 02:31	BPM	TAL CAN
Total/NA	Prep	8151A			483087	05/01/19 11:16	JVD	TAL CHI
Total/NA	Analysis	8151A		1	483441	05/04/19 00:36	JBK	TAL CHI
Dissolved	Prep	3005A			487972	05/30/19 16:49	BDE	TAL CHI
Dissolved	Analysis	6020A		1	488367	05/31/19 15:49	FXG	TAL CHI
Total/NA	Prep	3010A			482262	04/25/19 14:52	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	482445	04/26/19 14:37	JEF	TAL CHI
Total/NA	Analysis	300.0		1	482235	04/25/19 20:15	EAT	TAL CHI
Total/NA	Analysis	300.0		10	482235	04/25/19 20:28	EAT	TAL CHI
Total/NA	Analysis	9060A		1	483315	05/02/19 10:35	MTB	TAL CHI
Total/NA	Analysis	SM 2320B		1	483469	05/02/19 12:26	SMO	TAL CHI

Client Sample ID: Trip Blank

Date Collected: 04/24/19 16:00

Date Received: 04/25/19 09:20

Lab Sample ID: 500-162180-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483156	05/02/19 00:10	PMF	TAL CHI

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL CHI = Eurofins TestAmerica, Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

Accreditation/Certification Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162180-1

Laboratory: Eurofins TestAmerica, Chicago

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Wisconsin	State Program	5	999580010	08-31-19 *

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
SM 2320B		Water	Alkalinity

Laboratory: Eurofins TestAmerica, Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-20
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19 *
Illinois	NELAP	5	200004	07-31-19 *
Iowa	State Program	7	421	06-01-21
Kansas	NELAP	7	E-10336	04-30-20
Kentucky (UST)	State Program	4	58	02-23-20
Kentucky (WW)	State Program	4	98016	12-31-19
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19 *
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19 *
New York	NELAP	2	10975	03-31-20
Ohio VAP	State Program	5	CL0024	09-06-19 *
Oregon	NELAP	10	4062	02-23-20
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-18-10	08-31-19 *
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19 *
Washington	State Program	10	C971	01-12-20 *
West Virginia DEP	State Program	3	210	12-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.



CONESTOGA-ROVERS & ASSOCIATES

CHAIN OF CUSTODY RECORD


1801 Old Highway 8 Northwest, Suite 114
St. Paul, Minnesota 55112 United States

Phone: (651) 639-0913 Fax: (651) 639-0923

COC NO. **SP-02881**

PAGE 1 OF 1

(See Reverse Side for Instructions)

Project No/Phase/Task Code: 086165			Laboratory Name: TestAmerica				Lab Location: University park, IL				SSOW ID: 50762180														
Project Name: Penta Wood			Lab Contact: D. Heckler				Lab Quote No:				Cooler No:														
Project Location: Siren, WI			SAMPLE TYPE				CONTAINER QUANTITY & PRESERVATION				ANALYSIS REQUESTED (See Back of COC for Definitions)														
Chemistry Contact: Grant Anderson			Matrix Code (see back of COC) Grab (G) or Comp (C)				Unpreserved Hydrochloric Acid (HCl) Nitric Acid (HNO ₃) Sulfuric Acid (H ₂ SO ₄) Sodium Hydroxide (NaOH) Methanol/Water (Soil VOC) EnCores 3x5-g, 1x25-g Other:				Total Containers/Sample Methane 175 PCP 8151 BTEX 8260 Naphthalene 8270 Hardness 6020 Alk, Nitrate, Sulfide Metals 2340/6010 TOC 9060				Carrier: FedEx										
Sampler(s): R. Amot, M. Hackenmuller															Airbill No:										
Date Shipped: 4/24/19			COMMENTS/SPECIAL INSTRUCTIONS:		 500-162180 COC																				
Item	SAMPLE IDENTIFICATION (Containers for each sample may be combined on one line)	DATE (mm/dd/yy)	TIME (hh:mm)	Matrix Code			Grab (G) or Comp (C)	Unpreserved	Hydrochloric Acid (HCl)	Nitric Acid (HNO ₃)	Sulfuric Acid (H ₂ SO ₄)	Sodium Hydroxide (NaOH)	Methanol/Water (Soil VOC)	EnCores 3x5-g, 1x25-g	Other:	Total Containers/Sample	Methane 175	PCP 8151	BTEX 8260	Naphthalene 8270	Hardness 6020	Alk, Nitrate, Sulfide	Metals 2340/6010	TOC 9060	MS/MSD Request
1	W-190424-RA-11	04/24/19	09:38	W			G	5	6	2	2					15	X	X	X	X	X	X	X	X	
2	W-190424-RA-12		09:38					5	6	2	2					15	X	X	X	X	X	X	X	X	
3	-13		09:59					5	6	2	2					15	X	X	X	X	X	X	X	X	
4	-14		10:50					5	6	2	2					15	X	X	X	X	X	X	X	X	
5	-15		12:04					5	6	2	2					15	X	X	X	X	X	X	X	X	
6	-16		12:20					5	6	2	2					15	X	X	X	X	X	X	X	X	
7	-17		12:58					5	6	2	2					15	X	X	X	X	X	X	X	X	
8	-18		13:38					5	6	2	2					15	X	X	X	X	X	X	X	X	
9	trip Blank	4/24/19	16:00											2		X									
10																									
11																									
12																									
13																									
14																									
15																									

TAT Required in business days (use separate COCs for different TATs):
 1 Day 2 Days 3 Days 1 Week 2 Week Other: **Standard**
 Total Number of Containers: **121** Notes/ Special Requirements: **Metals field filtered**
 All Samples in Cooler must be on COC

RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY	DATE	TIME
1. M Heckler	GRD	4/24/19	16:00	1. Deirdre Sanchez	THAME	04/25/19	0920
2.				2.			
3.				3.			

THE CHAIN OF CUSTODY IS A LEGAL DOCUMENT - ALL FIELDS MUST BE COMPLETED ACCURATELY

fedex.com 1.800.GoFedEx 1.800.463.3339

1 From

Date 4-24-19

Sender's Name Miss. Harknessville Phone 763 939 1656

Company Call Services Inc

Address 1201 Old Highway 8 NW 96 119 Dept./Floor/Suite/Room

City St Paul State IN ZIP 45112-2307

2 Your Internal Billing Reference

3 To

Recipient's Name Sample Receiving Phone 763 939 5200

Company Test America

Address 1917 Dand St. Dept./Floor/Suite/Room

Address University Park State IL ZIP 60489

Hold Weekday: FedEx location address REQUIRED, NOT available for FedEx First Overnight.

Hold Saturday: FedEx location address REQUIRED. Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

4 Express Package Service *To most locations. **Packages up to 150 lbs.** For packages over 150 lbs., use the FedEx Express Freight US Airbill.

Next Business Day	2 or 3 Business Days
<input type="checkbox"/> FedEx First Overnight Earliest next business morning delivery to select locations. Friday shipments will be delivered on Monday unless Saturday Delivery is selected.	<input type="checkbox"/> FedEx 2Day A.M. Second business morning.* Saturday Delivery NOT available.
<input checked="" type="checkbox"/> FedEx Priority Overnight Next business morning.* Friday shipments will be delivered on Monday unless Saturday Delivery is selected.	<input type="checkbox"/> FedEx 2Day Second business afternoon.* Thursday shipments will be delivered on Monday unless Saturday Delivery is selected.
<input type="checkbox"/> FedEx Standard Overnight Next business afternoon.* Saturday Delivery NOT available.	<input type="checkbox"/> FedEx Express Saver Third business day.* Saturday Delivery NOT available.

5 Packaging *Declared value limit \$500.

FedEx Envelope* FedEx Pak* FedEx Box FedEx Tube Other

6 Special Handling and Delivery Signature Options Fees may apply. See the FedEx Service Guide.

Saturday Delivery
NOT available for FedEx Standard Overnight, FedEx 2Day A.M., or FedEx Express Saver.

No Signature Required
Package may be left without obtaining a signature for delivery.

Direct Signature
Someone at recipient's address may sign for delivery.

Indirect Signature
If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only.

Does this shipment contain dangerous goods?

No Yes As per attached Shipper's Declaration. Yes Shipper's Declaration not required. Dry Ice Dry Ice, 9, UN 1845 _____ x _____ kg

Restrictions apply for dangerous goods — see the current FedEx Service Guide. Cargo Aircraft Only

7 Payment Bill to:

Enter FedEx Acct. No. or Credit Card No. below. Obtain recp. Acct. No.

Sender Acct. No. in Section 1 will be billed. Recipient Third Party Credit Card Cash/Check

Total Packages _____ Total Weight _____ lbs. Credit Card Auth. _____



8131 9057 3138

500-162180 Wayt

FedEx
TRK# 8131 9057 3105
0200

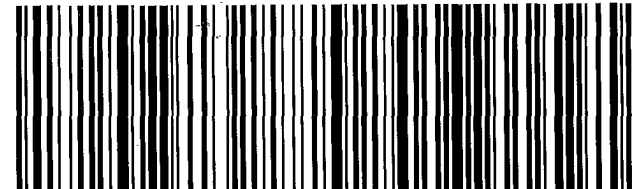
**THU - 25 APR 10:30A
PRIORITY OVERNIGHT**

FedEx
TRK# 8131 9057 3149
0200

**THU - 25 APR 10:30A
PRIORITY OVERNIGHT**

GE JOTA

**60484
IL-US
ORD**



FedEx
TRK# 8131 9057 3116
0200

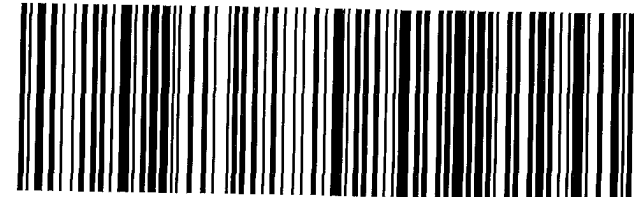
**THU - 25 APR 10:30A
PRIORITY OVERNIGHT**

FedEx
TRK# 8131 9057 3127
0200

**THU - 25 APR 10:30A
PRIORITY OVERNIGHT**

GE JOTA

**60484
IL-US
ORD**



Chain of Custody Record



1.6/CL.4

Client Information (Sub Contract Lab)		Lab PM: Wright, Richard	Carrier Tracking No(s): 500-120202.1
Client Contact: Shipping/Receiving		E-Mail: richard.wright@testamericainc.com	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - Wisconsin	Job #: 500-162180-1
Address: 4101 Shuffel Street NW, North Canton, OH, 44720		Analysis Requested	
Phone: 330-497-9396(Tel) 330-497-0772(Fax)		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other: M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)	
Project Name: Penta Wood 086185		Total Number of Containers: 3	
Site: Penton Wood 086185		Special Instructions/Note:	
Due Date Requested: 5/8/2019		Field Filtered Sample (Yes or No) X	
TAT Requested (days):		Perform MS/MSD (Yes or No) X	
PO #:		RSK 175/ (MOD) Methane	
WO #:		X	
Project #: 50013796		X	
SSOW#:		X	
Sample Date		Sample Time	
Sample Type (C=Comp, G=grab)		Matrix (W=water, S=solid, O=wastoil, BT=BIOSUB, A=Air)	
Sample ID (Lab ID)		Preservation Code:	
W-190424-RA-11 (500-162180-1)	4/24/19	09:38 Central	Water
W-190424-RA-12 (500-162180-2)	4/24/19	09:38 Central	Water
W-190424-RA-13 (500-162180-3)	4/24/19	09:59 Central	Water
W-190424-RA-14 (500-162180-4)	4/24/19	10:50 Central	Water
W-190424-RA-14 (500-162180-4MS)	4/24/19	10:50 Central	Water
W-190424-RA-14 (500-162180-4MSD)	4/24/19	10:50 Central	Water
W-190424-RA-15 (500-162180-5)	4/24/19	12:04 Central	Water
W-190424-RA-16 (500-162180-6)	4/24/19	12:20 Central	Water
W-190424-RA-17 (500-162180-7)	4/24/19	12:58 Central	Water
Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysts/test/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.			
Possible Hazard Identification			
Unconfirmed			
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2			
Empty Kit Relinquished by:			
Relinquished by: <i>Shu-Scott</i> Date: 4/25/19 1610			
Relinquished by: <i>DA-CH</i> Company: <i>DA-CH</i> Company			
Relinquished by: <i>Shu-Scott</i> Date/Time: <i>4/25/19 1015</i> Company: <i>HC</i> Company			
Relinquished by: <i>Shu-Scott</i> Date/Time: <i>4/25/19 1015</i> Company: <i>HC</i> Company			
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No			
Custody Seal No.:			
Cooler Temperature(s) °C and Other Remarks:			



Chain of Custody Record

Client Information (Sub Contract Lab)		Lab PM: Wright, Richard	Carrier Tracking No(s): 500-120202.2
Client Contact: Shipping/Receiving		E-Mail: richard.wright@lestamericainc.com	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		State of Origin: Wisconsin	Job #: 500-162180-1
Address: 4101 Shuffel Street NW,		Preservation Codes: M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)	
City: North Canton		Other: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Anichlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA	
State, Zip: OH, 44720		Analysis Requested	
Phone: 330-497-9396(Tel) 330-497-0772(Fax)		Total Number of Containers	
Email: Penta Wood 086165		3	
Project #: 50013796		Special Instructions/Note:	
SSOW#:		WI	
Sample Identification - Client ID (Lab ID)		Field Filtered Sample (Yes or No)	
W-190424-RA-18 (500-162180-8)		X	
Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=wastewater, BT=BIAB, AA=)
4/24/19	13:38 Central		Water
Due Date Requested: 5/8/2019		Perform MS/MSD (Yes or No)	
TAT Requested (days):		X	
PO #:		RSK_175 (MOD) Methane	
WO #:			
Carrier Tracking No(s):			
State of Origin:			
Accreditations Required (See note):			
State Program - Wisconsin			

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. |

Possible Hazard Identification Unconfirmed		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	
Deliverable Requested: I, II, III, IV, Other (specify)		Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months	
Special Instructions/OC Requirements:		Special Instructions/OC Requirements:	
Empty Kit Relinquished by:		Method of Shipment:	
Relinquished by: <i>Alvin Booth</i>		Date/Time: 4/25/19 1610	
Relinquished by:		Received by: <i>MLL</i>	
Relinquished by:		Date/Time: 4/26/19 1415	
Relinquished by:		Company: <i>TA CHEM</i>	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Company: _____	
Custody Seal No.:		Company: _____	
Cooler Temperature(s) °C and Other Remarks:		Company: _____	



TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # : _____

Client ETA Chicago Site Name _____
 Cooler Received on 4-26-19 Opened on 4-26-19
 FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Cooler unpacked by:
MJD

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____
 Packing material used: Bubble Wrap Foam Plastic Bag None Other _____
 COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt
 IR GUN# IR-8 (CF -0.2 °C) Observed Cooler Temp. 1.6 °C Corrected Cooler Temp. 1.8 °C
 IR GUN #36 (CF +0.7°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
 See Multiple Cooler Form
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 7 Yes No
 -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
 -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
 -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC984738
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No
16. Was a LL Hg or Me Hg trip blank present? Yes No

Tests that are not checked for pH by Receiving:
 VOAs
 Oil and Grease
 TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____
 Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by: _____

18. SAMPLE CONDITION
 Sample(s) _____ were received after the recommended holding time had expired.
 Sample(s) _____ were received in a broken container.
 Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION
 Sample(s) _____ were further preserved in the laboratory.
 Time preserved: _____ Preservative(s) added/Lot number(s): _____
 VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 500-162180-1

Login Number: 162180

List Source: Eurofins TestAmerica, Chicago

List Number: 1

Creator: Fioravanti, Ariel M

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.1, 2.5, 5.4, 5.9, 6.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

ANALYTICAL REPORT

Eurofins TestAmerica, Chicago
2417 Bond Street
University Park, IL 60484
Tel: (708)534-5200

Laboratory Job ID: 500-162279-1
Client Project/Site: Penta Wood 086165

For:
GHD Services Inc.
1801 Old Highway 8 NW
Suite 114
St. Paul, Minnesota 55112

Attn: Mr. Grant Anderson



Authorized for release by:
5/13/2019 2:49:44 PM

Richard Wright, Senior Project Manager
(708)534-5200
richard.wright@testamericainc.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:
www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Job ID: 500-162279-1

Laboratory: Eurofins TestAmerica, Chicago

Narrative

Job Narrative 500-162279-1

Receipt

The samples were received on 4/26/2019 9:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 7 coolers at receipt time were 2.3° C, 3.6° C, 3.9° C, 4.3° C, 4.6° C, 4.6° C and 5.9° C.

GC/MS VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC/MS Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC Semi VOA

Method(s) 8151A: The continuing calibration verification (CCV) associated with batch 500-483362 recovered above the upper control limit for Pentachlorophenol. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: W-190425-RA-26 (500-162279-8), W-190425-RA-28 (500-162279-10) and (CCV 500-483362/43).

Method(s) 8151A: The continuing calibration verification (CCV) associated with batch 500-483362 recovered above the upper control limit for DCAA. The samples associated with this CCV were within limits for the affected analyte; therefore, the data have been reported. The following samples are impacted: W-190425-RA-24 (500-162279-6), W-190425-RA-25 (500-162279-7), W-190425-RA-26 (500-162279-8), W-190425-RA-28 (500-162279-10), (CCV 500-483362/26) and (CCV 500-483362/43).

Method(s) 8151A: Surrogate recovery for the following samples were outside the upper control limit: W-190424-RA-21 (500-162279-3) and W-190424-RA-22 (500-162279-4). This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

Method(s) 8151A: The following samples required a dilution due to the nature of the sample matrix: W-190425-RA-23 (500-162279-5), W-190425-RA-23 (500-162279-5[MS]), W-190425-RA-23 (500-162279-5[MSD]) and W-190425-RA-29 (500-162279-11). Because of this dilution, the surrogate spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.

Method(s) 8151A: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 500-483166 and analytical batch 500-483791 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

Method(s) 9060A: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 500-483553 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Client Sample ID: W-190424-RA-19

Lab Sample ID: 500-162279-1

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methane	5.0		1.0	0.17	ug/L	1		RSK-175	Total/NA
Arsenic	0.27	J	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	1.3	J	2.0	0.50	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	117		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	27.2		2.0	1.7	mg/L	10		300.0	Total/NA
Nitrate as N	2.6		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	5.5	B	0.20	0.095	mg/L	1		300.0	Total/NA
Total Organic Carbon - Duplicates	1.7		1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	92.3		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-190424-RA-20

Lab Sample ID: 500-162279-2

No Detections.

Client Sample ID: W-190424-RA-21

Lab Sample ID: 500-162279-3

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.16	J	0.50	0.15	ug/L	1		8260B	Total/NA
Methane	45		1.0	0.17	ug/L	1		RSK-175	Total/NA
Arsenic	0.89	J	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	1.3	J	2.0	0.50	ug/L	1		6020A	Dissolved
Iron	118		100	46.7	ug/L	1		6020A	Dissolved
Manganese	33.6		2.5	0.79	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	144		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	52.1		2.0	1.7	mg/L	10		300.0	Total/NA
Nitrate as N	0.070	J	0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	13.0	B	2.0	0.95	mg/L	10		300.0	Total/NA
Total Organic Carbon - Duplicates	0.65	J	1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	74.7		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-190424-RA-22

Lab Sample ID: 500-162279-4

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.16	J	0.50	0.15	ug/L	1		8260B	Total/NA
Methane	50		1.0	0.17	ug/L	1		RSK-175	Total/NA
Arsenic	0.97	J	1.0	0.23	ug/L	1		6020A	Dissolved
Iron	82.6	J	100	46.7	ug/L	1		6020A	Dissolved
Manganese	35.7		2.5	0.79	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	142		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	49.7		2.0	1.7	mg/L	10		300.0	Total/NA
Nitrate as N	0.086	J	0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	12.5	B	2.0	0.95	mg/L	10		300.0	Total/NA
Total Organic Carbon - Duplicates	0.84	J	1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	75.1		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-190425-RA-23

Lab Sample ID: 500-162279-5

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.52		0.50	0.15	ug/L	1		8260B	Total/NA
Ethylbenzene	0.47	J	0.50	0.18	ug/L	1		8260B	Total/NA
Xylenes, Total	5.8		1.0	0.22	ug/L	1		8260B	Total/NA
Naphthalene	24		0.79	0.24	ug/L	1		8270D	Total/NA
Methane	96		1.0	0.17	ug/L	1		RSK-175	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Chicago

Detection Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Client Sample ID: W-190425-RA-23 (Continued)

Lab Sample ID: 500-162279-5

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Pentachlorophenol	5100		200	180	ug/L	2000		8151A	Total/NA
Arsenic	0.79	J	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	0.97	J	2.0	0.50	ug/L	1		6020A	Dissolved
Iron	10200		100	46.7	ug/L	1		6020A	Dissolved
Manganese	6250		12.5	4.0	ug/L	5		6020A	Dissolved
Hardness as calcium carbonate	305		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	27.0		2.0	1.7	mg/L	10		300.0	Total/NA
Sulfate	27.7	B	2.0	0.95	mg/L	10		300.0	Total/NA
Total Organic Carbon - Duplicates	33.3	F1	1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	262		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-190425-RA-24

Lab Sample ID: 500-162279-6

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Pentachlorophenol	0.37		0.10	0.090	ug/L	1		8151A	Total/NA
Copper	1.8	J	2.0	0.50	ug/L	1		6020A	Dissolved
Iron	230		100	46.7	ug/L	1		6020A	Dissolved
Manganese	7.5		2.5	0.79	ug/L	1		6020A	Dissolved
Zinc	9.7	J	20.0	6.9	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	80.5		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	0.48		0.20	0.17	mg/L	1		300.0	Total/NA
Nitrate as N	0.30		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	1.7	B	0.20	0.095	mg/L	1		300.0	Total/NA
Total Organic Carbon - Duplicates	1.3		1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	61.5		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-190425-RA-25

Lab Sample ID: 500-162279-7

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Pentachlorophenol	0.14		0.099	0.089	ug/L	1		8151A	Total/NA
Arsenic	1.1		1.0	0.23	ug/L	1		6020A	Dissolved
Copper	0.95	J	2.0	0.50	ug/L	1		6020A	Dissolved
Manganese	6.3		2.5	0.79	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	140		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	15.0		2.0	1.7	mg/L	10		300.0	Total/NA
Nitrate as N	1.5		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	6.0	B	0.20	0.095	mg/L	1		300.0	Total/NA
Total Organic Carbon - Duplicates	0.64	J	1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	122		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-190425-RA-26

Lab Sample ID: 500-162279-8

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.27	J	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	2.6		2.0	0.50	ug/L	1		6020A	Dissolved
Iron	121		100	46.7	ug/L	1		6020A	Dissolved
Manganese	4.8		2.5	0.79	ug/L	1		6020A	Dissolved
Zinc	10.3	J	20.0	6.9	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	336		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	12.1		2.0	1.7	mg/L	10		300.0	Total/NA
Nitrate as N	10		2.0	0.68	mg/L	10		300.0	Total/NA
Sulfate	13.2	B	2.0	0.95	mg/L	10		300.0	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Chicago

Detection Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Client Sample ID: W-190425-RA-26 (Continued)

Lab Sample ID: 500-162279-8

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Total Organic Carbon - Duplicates	2.0		1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	275		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-190425-RA-27

Lab Sample ID: 500-162279-9

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Benzene	0.24	J	0.50	0.15	ug/L	1		8260B	Total/NA
Methane	200		1.0	0.17	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	0.27		0.10	0.093	ug/L	1		8151A	Total/NA
Copper	2.0		2.0	0.50	ug/L	1		6020A	Dissolved
Iron	372		100	46.7	ug/L	1		6020A	Dissolved
Manganese	21.7		2.5	0.79	ug/L	1		6020A	Dissolved
Zinc	9.7	J	20.0	6.9	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	215		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	35.4		2.0	1.7	mg/L	10		300.0	Total/NA
Nitrate as N	1.5		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	7.8	B	0.20	0.095	mg/L	1		300.0	Total/NA
Total Organic Carbon - Duplicates	1.0		1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	200		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-190425-RA-28

Lab Sample ID: 500-162279-10

No Detections.

Client Sample ID: W-190425-RA-29

Lab Sample ID: 500-162279-11

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Pentachlorophenol	800		190	170	ug/L	2000		8151A	Total/NA
Copper	1.1	J	2.0	0.50	ug/L	1		6020A	Dissolved
Manganese	25.1		2.5	0.79	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	69.9		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	1.4		0.20	0.17	mg/L	1		300.0	Total/NA
Nitrate as N	0.55		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	3.8	B	0.20	0.095	mg/L	1		300.0	Total/NA
Total Organic Carbon - Duplicates	5.3		1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	66.9		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: Trip Blank

Lab Sample ID: 500-162279-12

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Chicago

Method Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CHI
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL CHI
RSK-175	Dissolved Gases (GC)	RSK	TAL CAN
8151A	Herbicides (GC)	SW846	TAL CHI
6020A	Metals (ICP/MS)	SW846	TAL CHI
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	TAL CHI
300.0	Anions, Ion Chromatography	MCAWW	TAL CHI
9060A	Organic Carbon, Total (TOC)	SW846	TAL CHI
SM 2320B	Alkalinity	SM	TAL CHI
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CHI
3010A	Preparation, Total Metals	SW846	TAL CHI
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL CHI
5030B	Purge and Trap	SW846	TAL CHI
8151A	Extraction (Herbicides)	SW846	TAL CHI

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

RSK = Sample Prep And Calculations For Dissolved Gas Analysis In Water Samples Using A GC Headspace Equilibration Technique, RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Lab

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL CHI = Eurofins TestAmerica, Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

Sample Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-162279-1	W-190424-RA-19	Water	04/24/19 14:20	04/26/19 09:20
500-162279-2	W-190424-RA-20	Water	04/24/19 14:30	04/26/19 09:20
500-162279-3	W-190424-RA-21	Water	04/24/19 14:55	04/26/19 09:20
500-162279-4	W-190424-RA-22	Water	04/24/19 14:55	04/26/19 09:20
500-162279-5	W-190425-RA-23	Water	04/25/19 09:25	04/26/19 09:20
500-162279-6	W-190425-RA-24	Water	04/25/19 10:00	04/26/19 09:20
500-162279-7	W-190425-RA-25	Water	04/25/19 10:35	04/26/19 09:20
500-162279-8	W-190425-RA-26	Water	04/25/19 12:10	04/26/19 09:20
500-162279-9	W-190425-RA-27	Water	04/25/19 12:58	04/26/19 09:20
500-162279-10	W-190425-RA-28	Water	04/25/19 13:25	04/26/19 09:20
500-162279-11	W-190425-RA-29	Water	04/25/19 13:50	04/26/19 09:20
500-162279-12	Trip Blank	Water	04/25/19 15:00	04/26/19 09:20

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Client Sample ID: W-190424-RA-19

Lab Sample ID: 500-162279-1

Date Collected: 04/24/19 14:20

Matrix: Water

Date Received: 04/26/19 09:20

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/03/19 00:28	1
Toluene	<0.15		0.50	0.15	ug/L			05/03/19 00:28	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/03/19 00:28	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/03/19 00:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		75 - 126		05/03/19 00:28	1
Toluene-d8 (Surr)	102		75 - 120		05/03/19 00:28	1
4-Bromofluorobenzene (Surr)	97		72 - 124		05/03/19 00:28	1
Dibromofluoromethane	92		75 - 120		05/03/19 00:28	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.23		0.75	0.23	ug/L		04/30/19 16:29	05/02/19 02:11	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	86		36 - 120	04/30/19 16:29	05/02/19 02:11	1
2-Fluorobiphenyl (Surr)	78		34 - 110	04/30/19 16:29	05/02/19 02:11	1
Terphenyl-d14 (Surr)	125		40 - 145	04/30/19 16:29	05/02/19 02:11	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	5.0		1.0	0.17	ug/L			05/03/19 15:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	83		60 - 140		05/03/19 15:46	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.091		0.10	0.091	ug/L		05/01/19 11:16	05/04/19 01:00	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCAA	58		25 - 130	05/01/19 11:16	05/04/19 01:00	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.27	J	1.0	0.23	ug/L		04/26/19 15:55	05/02/19 16:17	1
Copper	1.3	J	2.0	0.50	ug/L		04/26/19 15:55	05/02/19 16:17	1
Iron	<46.7		100	46.7	ug/L		04/26/19 15:55	05/02/19 16:17	1
Manganese	<0.79		2.5	0.79	ug/L		04/26/19 15:55	05/02/19 16:17	1
Zinc	<6.9		20.0	6.9	ug/L		04/26/19 15:55	05/02/19 16:17	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	117		1.3	0.66	mg/L		04/30/19 08:12	05/01/19 07:58	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	27.2		2.0	1.7	mg/L			04/26/19 14:25	10
Nitrate as N	2.6		0.20	0.068	mg/L			04/26/19 13:23	1
Sulfate	5.5	B	0.20	0.095	mg/L			04/26/19 13:23	1
Total Organic Carbon - Duplicates	1.7		1.0	0.47	mg/L			05/03/19 08:36	1

Eurofins TestAmerica, Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Client Sample ID: W-190424-RA-19

Lab Sample ID: 500-162279-1

Date Collected: 04/24/19 14:20

Matrix: Water

Date Received: 04/26/19 09:20

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	92.3		5.0	3.7	mg/L			05/07/19 17:49	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Client Sample ID: W-190424-RA-20

Lab Sample ID: 500-162279-2

Date Collected: 04/24/19 14:30

Matrix: Water

Date Received: 04/26/19 09:20

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/03/19 00:53	1
Toluene	<0.15		0.50	0.15	ug/L			05/03/19 00:53	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/03/19 00:53	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/03/19 00:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		75 - 126		05/03/19 00:53	1
Toluene-d8 (Surr)	101		75 - 120		05/03/19 00:53	1
4-Bromofluorobenzene (Surr)	98		72 - 124		05/03/19 00:53	1
Dibromofluoromethane	95		75 - 120		05/03/19 00:53	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.086		0.096	0.086	ug/L		05/01/19 11:16	05/04/19 01:25	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCAA	69		25 - 130	05/01/19 11:16	05/04/19 01:25	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.23		1.0	0.23	ug/L		04/26/19 15:55	05/02/19 16:29	1
Copper	<0.50		2.0	0.50	ug/L		04/26/19 15:55	05/02/19 16:29	1
Iron	<46.7		100	46.7	ug/L		04/26/19 15:55	05/02/19 16:29	1
Manganese	<0.79		2.5	0.79	ug/L		04/26/19 15:55	05/02/19 16:29	1
Zinc	<6.9		20.0	6.9	ug/L		04/26/19 15:55	05/02/19 16:29	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	<0.66		1.3	0.66	mg/L		04/30/19 08:12	05/01/19 07:58	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Client Sample ID: W-190424-RA-21

Lab Sample ID: 500-162279-3

Date Collected: 04/24/19 14:55

Matrix: Water

Date Received: 04/26/19 09:20

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/03/19 01:19	1
Toluene	0.16	J	0.50	0.15	ug/L			05/03/19 01:19	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/03/19 01:19	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/03/19 01:19	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		75 - 126					05/03/19 01:19	1
Toluene-d8 (Surr)	101		75 - 120					05/03/19 01:19	1
4-Bromofluorobenzene (Surr)	99		72 - 124					05/03/19 01:19	1
Dibromofluoromethane	95		75 - 120					05/03/19 01:19	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.24		0.78	0.24	ug/L		04/30/19 16:29	05/02/19 02:34	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	76		36 - 120				04/30/19 16:29	05/02/19 02:34	1
2-Fluorobiphenyl (Surr)	75		34 - 110				04/30/19 16:29	05/02/19 02:34	1
Terphenyl-d14 (Surr)	112		40 - 145				04/30/19 16:29	05/02/19 02:34	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	45		1.0	0.17	ug/L			05/03/19 16:04	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	82		60 - 140					05/03/19 16:04	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.085		0.095	0.085	ug/L		05/01/19 11:16	05/04/19 01:49	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCAA	360	X	25 - 130				05/01/19 11:16	05/04/19 01:49	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.89	J	1.0	0.23	ug/L		04/26/19 15:55	05/02/19 16:32	1
Copper	1.3	J	2.0	0.50	ug/L		04/26/19 15:55	05/02/19 16:32	1
Iron	118		100	46.7	ug/L		04/26/19 15:55	05/02/19 16:32	1
Manganese	33.6		2.5	0.79	ug/L		04/26/19 15:55	05/02/19 16:32	1
Zinc	<6.9		20.0	6.9	ug/L		04/26/19 15:55	05/02/19 16:32	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	144		1.3	0.66	mg/L		04/30/19 08:12	05/01/19 07:58	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	52.1		2.0	1.7	mg/L			04/26/19 14:38	10
Nitrate as N	0.070	J	0.20	0.068	mg/L			04/26/19 13:36	1
Sulfate	13.0	B	2.0	0.95	mg/L			04/26/19 14:38	10
Total Organic Carbon - Duplicates	0.65	J	1.0	0.47	mg/L			05/03/19 09:02	1

Eurofins TestAmerica, Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Client Sample ID: W-190424-RA-21

Lab Sample ID: 500-162279-3

Date Collected: 04/24/19 14:55

Matrix: Water

Date Received: 04/26/19 09:20

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	74.7		5.0	3.7	mg/L			05/08/19 13:58	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Client Sample ID: W-190424-RA-22

Lab Sample ID: 500-162279-4

Date Collected: 04/24/19 14:55

Matrix: Water

Date Received: 04/26/19 09:20

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/03/19 01:44	1
Toluene	0.16	J	0.50	0.15	ug/L			05/03/19 01:44	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/03/19 01:44	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/03/19 01:44	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		75 - 126					05/03/19 01:44	1
Toluene-d8 (Surr)	101		75 - 120					05/03/19 01:44	1
4-Bromofluorobenzene (Surr)	98		72 - 124					05/03/19 01:44	1
Dibromofluoromethane	96		75 - 120					05/03/19 01:44	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.24		0.79	0.24	ug/L		04/30/19 16:29	05/02/19 02:57	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	81		36 - 120				04/30/19 16:29	05/02/19 02:57	1
2-Fluorobiphenyl (Surr)	77		34 - 110				04/30/19 16:29	05/02/19 02:57	1
Terphenyl-d14 (Surr)	113		40 - 145				04/30/19 16:29	05/02/19 02:57	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	50		1.0	0.17	ug/L			05/03/19 16:21	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	79		60 - 140					05/03/19 16:21	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.089		0.10	0.089	ug/L		05/01/19 11:16	05/04/19 02:14	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCAA	338	X	25 - 130				05/01/19 11:16	05/04/19 02:14	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.97	J	1.0	0.23	ug/L		04/26/19 15:55	05/02/19 16:38	1
Copper	<0.50		2.0	0.50	ug/L		04/26/19 15:55	05/02/19 16:38	1
Iron	82.6	J	100	46.7	ug/L		04/26/19 15:55	05/02/19 16:38	1
Manganese	35.7		2.5	0.79	ug/L		04/26/19 15:55	05/02/19 16:38	1
Zinc	<6.9		20.0	6.9	ug/L		04/26/19 15:55	05/02/19 16:38	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	142		1.3	0.66	mg/L		04/30/19 08:12	05/01/19 07:58	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	49.7		2.0	1.7	mg/L			04/26/19 14:50	10
Nitrate as N	0.086	J	0.20	0.068	mg/L			04/26/19 13:48	1
Sulfate	12.5	B	2.0	0.95	mg/L			04/26/19 14:50	10
Total Organic Carbon - Duplicates	0.84	J	1.0	0.47	mg/L			05/03/19 09:09	1

Eurofins TestAmerica, Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Client Sample ID: W-190424-RA-22

Lab Sample ID: 500-162279-4

Date Collected: 04/24/19 14:55

Matrix: Water

Date Received: 04/26/19 09:20

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	75.1		5.0	3.7	mg/L			05/08/19 14:05	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Client Sample ID: W-190425-RA-23

Lab Sample ID: 500-162279-5

Date Collected: 04/25/19 09:25

Matrix: Water

Date Received: 04/26/19 09:20

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/03/19 02:35	1
Toluene	0.52		0.50	0.15	ug/L			05/03/19 02:35	1
Ethylbenzene	0.47	J	0.50	0.18	ug/L			05/03/19 02:35	1
Xylenes, Total	5.8		1.0	0.22	ug/L			05/03/19 02:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		75 - 126		05/03/19 02:35	1
Toluene-d8 (Surr)	101		75 - 120		05/03/19 02:35	1
4-Bromofluorobenzene (Surr)	96		72 - 124		05/03/19 02:35	1
Dibromofluoromethane	96		75 - 120		05/03/19 02:35	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	24		0.79	0.24	ug/L		04/30/19 16:29	05/03/19 18:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	83		36 - 120	04/30/19 16:29	05/03/19 18:42	1
2-Fluorobiphenyl (Surr)	74		34 - 110	04/30/19 16:29	05/03/19 18:42	1
Terphenyl-d14 (Surr)	103		40 - 145	04/30/19 16:29	05/03/19 18:42	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	96		1.0	0.17	ug/L			05/03/19 16:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	80		60 - 140		05/03/19 16:39	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	5100		200	180	ug/L		05/01/19 20:04	05/06/19 16:33	2000

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCAA	0	D	25 - 130	05/01/19 20:04	05/06/19 16:33	2000

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.79	J	1.0	0.23	ug/L		04/26/19 15:55	05/02/19 16:42	1
Copper	0.97	J	2.0	0.50	ug/L		04/26/19 15:55	05/02/19 16:42	1
Iron	10200		100	46.7	ug/L		04/26/19 15:55	05/02/19 16:42	1
Manganese	6250		12.5	4.0	ug/L		04/26/19 15:55	05/03/19 13:59	5
Zinc	<6.9		20.0	6.9	ug/L		04/26/19 15:55	05/02/19 16:42	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	305		1.3	0.66	mg/L		04/30/19 08:12	05/01/19 07:58	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	27.0		2.0	1.7	mg/L			04/26/19 16:04	10
Nitrate as N	<0.068		0.20	0.068	mg/L			04/26/19 15:02	1
Sulfate	27.7	B	2.0	0.95	mg/L			04/26/19 16:04	10
Total Organic Carbon - Duplicates	33.3	F1	1.0	0.47	mg/L			05/03/19 09:19	1

Eurofins TestAmerica, Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Client Sample ID: W-190425-RA-23

Lab Sample ID: 500-162279-5

Date Collected: 04/25/19 09:25

Matrix: Water

Date Received: 04/26/19 09:20

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	262		5.0	3.7	mg/L			05/08/19 12:52	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Client Sample ID: W-190425-RA-24

Lab Sample ID: 500-162279-6

Date Collected: 04/25/19 10:00

Matrix: Water

Date Received: 04/26/19 09:20

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/03/19 03:01	1
Toluene	<0.15		0.50	0.15	ug/L			05/03/19 03:01	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/03/19 03:01	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/03/19 03:01	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		75 - 126					05/03/19 03:01	1
Toluene-d8 (Surr)	101		75 - 120					05/03/19 03:01	1
4-Bromofluorobenzene (Surr)	99		72 - 124					05/03/19 03:01	1
Dibromofluoromethane	97		75 - 120					05/03/19 03:01	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.24		0.78	0.24	ug/L		04/30/19 16:29	05/02/19 03:42	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	90		36 - 120				04/30/19 16:29	05/02/19 03:42	1
2-Fluorobiphenyl (Surr)	90		34 - 110				04/30/19 16:29	05/02/19 03:42	1
Terphenyl-d14 (Surr)	123		40 - 145				04/30/19 16:29	05/02/19 03:42	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.17		1.0	0.17	ug/L			05/03/19 17:30	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	81		60 - 140					05/03/19 17:30	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.37		0.10	0.090	ug/L		05/01/19 20:04	05/03/19 12:21	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCAA	56	^c	25 - 130				05/01/19 20:04	05/03/19 12:21	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.23		1.0	0.23	ug/L		04/26/19 15:55	05/02/19 17:09	1
Copper	1.8	J	2.0	0.50	ug/L		04/26/19 15:55	05/02/19 17:09	1
Iron	230		100	46.7	ug/L		04/26/19 15:55	05/02/19 17:09	1
Manganese	7.5		2.5	0.79	ug/L		04/26/19 15:55	05/02/19 17:09	1
Zinc	9.7	J	20.0	6.9	ug/L		04/26/19 15:55	05/02/19 17:09	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	80.5		1.3	0.66	mg/L		04/30/19 08:12	05/01/19 07:58	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.48		0.20	0.17	mg/L			04/26/19 16:41	1
Nitrate as N	0.30		0.20	0.068	mg/L			04/26/19 16:41	1
Sulfate	1.7	B	0.20	0.095	mg/L			04/26/19 16:41	1
Total Organic Carbon - Duplicates	1.3		1.0	0.47	mg/L			05/03/19 09:46	1

Eurofins TestAmerica, Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Client Sample ID: W-190425-RA-24

Lab Sample ID: 500-162279-6

Date Collected: 04/25/19 10:00

Matrix: Water

Date Received: 04/26/19 09:20

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	61.5		5.0	3.7	mg/L			05/08/19 14:11	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Client Sample ID: W-190425-RA-25

Lab Sample ID: 500-162279-7

Date Collected: 04/25/19 10:35

Matrix: Water

Date Received: 04/26/19 09:20

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/08/19 03:46	1
Toluene	<0.15		0.50	0.15	ug/L			05/08/19 03:46	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/08/19 03:46	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/08/19 03:46	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	113		75 - 126					05/08/19 03:46	1
Toluene-d8 (Surr)	97		75 - 120					05/08/19 03:46	1
4-Bromofluorobenzene (Surr)	94		72 - 124					05/08/19 03:46	1
Dibromofluoromethane	106		75 - 120					05/08/19 03:46	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.24		0.76	0.24	ug/L		04/30/19 16:29	05/02/19 04:05	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	78		36 - 120				04/30/19 16:29	05/02/19 04:05	1
2-Fluorobiphenyl (Surr)	72		34 - 110				04/30/19 16:29	05/02/19 04:05	1
Terphenyl-d14 (Surr)	106		40 - 145				04/30/19 16:29	05/02/19 04:05	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.17		1.0	0.17	ug/L			05/03/19 17:48	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	81		60 - 140					05/03/19 17:48	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.14		0.099	0.089	ug/L		05/01/19 20:04	05/03/19 12:45	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCAA	50	^c	25 - 130				05/01/19 20:04	05/03/19 12:45	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.1		1.0	0.23	ug/L		04/26/19 15:55	05/02/19 17:13	1
Copper	0.95	J	2.0	0.50	ug/L		04/26/19 15:55	05/02/19 17:13	1
Iron	<46.7		100	46.7	ug/L		04/26/19 15:55	05/02/19 17:13	1
Manganese	6.3		2.5	0.79	ug/L		04/26/19 15:55	05/02/19 17:13	1
Zinc	<6.9		20.0	6.9	ug/L		04/26/19 15:55	05/02/19 17:13	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	140		1.3	0.66	mg/L		04/30/19 08:12	05/01/19 07:58	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	15.0		2.0	1.7	mg/L			04/26/19 17:18	10
Nitrate as N	1.5		0.20	0.068	mg/L			04/26/19 17:06	1
Sulfate	6.0	B	0.20	0.095	mg/L			04/26/19 17:06	1
Total Organic Carbon - Duplicates	0.64	J	1.0	0.47	mg/L			05/03/19 09:55	1

Eurofins TestAmerica, Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Client Sample ID: W-190425-RA-25

Lab Sample ID: 500-162279-7

Date Collected: 04/25/19 10:35

Matrix: Water

Date Received: 04/26/19 09:20

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	122		5.0	3.7	mg/L			05/08/19 14:17	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Client Sample ID: W-190425-RA-26

Lab Sample ID: 500-162279-8

Date Collected: 04/25/19 12:10

Matrix: Water

Date Received: 04/26/19 09:20

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/03/19 03:52	1
Toluene	<0.15		0.50	0.15	ug/L			05/03/19 03:52	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/03/19 03:52	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/03/19 03:52	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		75 - 126		05/03/19 03:52	1
Toluene-d8 (Surr)	101		75 - 120		05/03/19 03:52	1
4-Bromofluorobenzene (Surr)	97		72 - 124		05/03/19 03:52	1
Dibromofluoromethane	96		75 - 120		05/03/19 03:52	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.23		0.74	0.23	ug/L		04/30/19 16:29	05/02/19 04:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	81		36 - 120	04/30/19 16:29	05/02/19 04:27	1
2-Fluorobiphenyl (Surr)	78		34 - 110	04/30/19 16:29	05/02/19 04:27	1
Terphenyl-d14 (Surr)	108		40 - 145	04/30/19 16:29	05/02/19 04:27	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.17		1.0	0.17	ug/L			05/03/19 18:22	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	81		60 - 140		05/03/19 18:22	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.095	^c	0.11	0.095	ug/L		05/01/19 20:04	05/03/19 13:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCAA	56	^c	25 - 130	05/01/19 20:04	05/03/19 13:59	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.27	J	1.0	0.23	ug/L		04/26/19 15:55	05/02/19 17:17	1
Copper	2.6		2.0	0.50	ug/L		04/26/19 15:55	05/02/19 17:17	1
Iron	121		100	46.7	ug/L		04/26/19 15:55	05/02/19 17:17	1
Manganese	4.8		2.5	0.79	ug/L		04/26/19 15:55	05/02/19 17:17	1
Zinc	10.3	J	20.0	6.9	ug/L		04/26/19 15:55	05/02/19 17:17	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	336		1.3	0.66	mg/L		04/30/19 08:12	05/01/19 07:58	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	12.1		2.0	1.7	mg/L			04/26/19 17:43	10
Nitrate as N	10		2.0	0.68	mg/L			04/26/19 17:43	10
Sulfate	13.2	B	2.0	0.95	mg/L			04/26/19 17:43	10
Total Organic Carbon - Duplicates	2.0		1.0	0.47	mg/L			05/03/19 10:02	1

Eurofins TestAmerica, Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Client Sample ID: W-190425-RA-26

Lab Sample ID: 500-162279-8

Date Collected: 04/25/19 12:10

Matrix: Water

Date Received: 04/26/19 09:20

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	275		5.0	3.7	mg/L			05/08/19 14:25	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Client Sample ID: W-190425-RA-27

Lab Sample ID: 500-162279-9

Date Collected: 04/25/19 12:58

Matrix: Water

Date Received: 04/26/19 09:20

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	J	0.50	0.15	ug/L	-		05/03/19 04:17	1
Toluene	<0.15		0.50	0.15	ug/L	-		05/03/19 04:17	1
Ethylbenzene	<0.18		0.50	0.18	ug/L	-		05/03/19 04:17	1
Xylenes, Total	<0.22		1.0	0.22	ug/L	-		05/03/19 04:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		75 - 126		05/03/19 04:17	1
Toluene-d8 (Surr)	100		75 - 120		05/03/19 04:17	1
4-Bromofluorobenzene (Surr)	100		72 - 124		05/03/19 04:17	1
Dibromofluoromethane	98		75 - 120		05/03/19 04:17	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.24		0.78	0.24	ug/L	-	04/30/19 16:29	05/02/19 04:50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	78		36 - 120	04/30/19 16:29	05/02/19 04:50	1
2-Fluorobiphenyl (Surr)	75		34 - 110	04/30/19 16:29	05/02/19 04:50	1
Terphenyl-d14 (Surr)	110		40 - 145	04/30/19 16:29	05/02/19 04:50	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	200		1.0	0.17	ug/L	-		05/03/19 18:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	81		60 - 140		05/03/19 18:40	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.27		0.10	0.093	ug/L	-	05/01/19 20:04	05/06/19 18:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCAA	61		25 - 130	05/01/19 20:04	05/06/19 18:36	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.23		1.0	0.23	ug/L	-	04/26/19 15:55	05/02/19 17:21	1
Copper	2.0		2.0	0.50	ug/L	-	04/26/19 15:55	05/02/19 17:21	1
Iron	372		100	46.7	ug/L	-	04/26/19 15:55	05/02/19 17:21	1
Manganese	21.7		2.5	0.79	ug/L	-	04/26/19 15:55	05/02/19 17:21	1
Zinc	9.7 J		20.0	6.9	ug/L	-	04/26/19 15:55	05/02/19 17:21	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	215		1.3	0.66	mg/L	-	04/30/19 08:12	05/01/19 07:58	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	35.4		2.0	1.7	mg/L	-		04/26/19 18:33	10
Nitrate as N	1.5		0.20	0.068	mg/L	-		04/26/19 18:20	1
Sulfate	7.8 B		0.20	0.095	mg/L	-		04/26/19 18:20	1
Total Organic Carbon - Duplicates	1.0		1.0	0.47	mg/L	-		05/03/19 10:10	1

Eurofins TestAmerica, Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Client Sample ID: W-190425-RA-27

Lab Sample ID: 500-162279-9

Date Collected: 04/25/19 12:58

Matrix: Water

Date Received: 04/26/19 09:20

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	200		5.0	3.7	mg/L			05/08/19 14:31	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Client Sample ID: W-190425-RA-28

Lab Sample ID: 500-162279-10

Date Collected: 04/25/19 13:25

Matrix: Water

Date Received: 04/26/19 09:20

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/03/19 04:42	1
Toluene	<0.15		0.50	0.15	ug/L			05/03/19 04:42	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/03/19 04:42	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/03/19 04:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		75 - 126		05/03/19 04:42	1
Toluene-d8 (Surr)	99		75 - 120		05/03/19 04:42	1
4-Bromofluorobenzene (Surr)	98		72 - 124		05/03/19 04:42	1
Dibromofluoromethane	100		75 - 120		05/03/19 04:42	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.087	^c	0.097	0.087	ug/L		05/01/19 20:04	05/03/19 14:48	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCAA	55	^c	25 - 130	05/01/19 20:04	05/03/19 14:48	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.23		1.0	0.23	ug/L		04/26/19 15:55	05/02/19 17:24	1
Copper	<0.50		2.0	0.50	ug/L		04/26/19 15:55	05/02/19 17:24	1
Iron	<46.7		100	46.7	ug/L		04/26/19 15:55	05/02/19 17:24	1
Manganese	<0.79		2.5	0.79	ug/L		04/26/19 15:55	05/02/19 17:24	1
Zinc	<6.9		20.0	6.9	ug/L		04/26/19 15:55	05/02/19 17:24	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	<0.66		1.3	0.66	mg/L		04/30/19 08:12	05/01/19 07:58	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Client Sample ID: W-190425-RA-29

Lab Sample ID: 500-162279-11

Date Collected: 04/25/19 13:50

Matrix: Water

Date Received: 04/26/19 09:20

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/03/19 05:08	1
Toluene	<0.15		0.50	0.15	ug/L			05/03/19 05:08	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/03/19 05:08	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/03/19 05:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		75 - 126		05/03/19 05:08	1
Toluene-d8 (Surr)	98		75 - 120		05/03/19 05:08	1
4-Bromofluorobenzene (Surr)	98		72 - 124		05/03/19 05:08	1
Dibromofluoromethane	102		75 - 120		05/03/19 05:08	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.24		0.77	0.24	ug/L		04/30/19 16:29	05/02/19 05:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	83		36 - 120	04/30/19 16:29	05/02/19 05:12	1
2-Fluorobiphenyl (Surr)	80		34 - 110	04/30/19 16:29	05/02/19 05:12	1
Terphenyl-d14 (Surr)	105		40 - 145	04/30/19 16:29	05/02/19 05:12	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.17		1.0	0.17	ug/L			05/03/19 18:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	81		60 - 140		05/03/19 18:57	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	800		190	170	ug/L		05/01/19 20:04	05/06/19 19:25	2000

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCAA	0	D	25 - 130	05/01/19 20:04	05/06/19 19:25	2000

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.23		1.0	0.23	ug/L		04/26/19 15:55	05/02/19 17:28	1
Copper	1.1	J	2.0	0.50	ug/L		04/26/19 15:55	05/02/19 17:28	1
Iron	<46.7		100	46.7	ug/L		04/26/19 15:55	05/02/19 17:28	1
Manganese	25.1		2.5	0.79	ug/L		04/26/19 15:55	05/02/19 17:28	1
Zinc	<6.9		20.0	6.9	ug/L		04/26/19 15:55	05/02/19 17:28	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	69.9		1.3	0.66	mg/L		04/30/19 08:12	05/01/19 07:58	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1.4		0.20	0.17	mg/L			04/26/19 18:45	1
Nitrate as N	0.55		0.20	0.068	mg/L			04/26/19 18:45	1
Sulfate	3.8	B	0.20	0.095	mg/L			04/26/19 18:45	1
Total Organic Carbon - Duplicates	5.3		1.0	0.47	mg/L			05/03/19 10:19	1

Eurofins TestAmerica, Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Client Sample ID: W-190425-RA-29

Lab Sample ID: 500-162279-11

Date Collected: 04/25/19 13:50

Matrix: Water

Date Received: 04/26/19 09:20

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	66.9		5.0	3.7	mg/L			05/08/19 14:41	1

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Client Sample Results

Client: GHD Services Inc.
 Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Client Sample ID: Trip Blank

Lab Sample ID: 500-162279-12

Date Collected: 04/25/19 15:00

Matrix: Water

Date Received: 04/26/19 09:20

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/03/19 00:02	1
Toluene	<0.15		0.50	0.15	ug/L			05/03/19 00:02	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/03/19 00:02	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/03/19 00:02	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	87		75 - 126		05/03/19 00:02	1
Toluene-d8 (Surr)	103		75 - 120		05/03/19 00:02	1
4-Bromofluorobenzene (Surr)	98		72 - 124		05/03/19 00:02	1
Dibromofluoromethane	90		75 - 120		05/03/19 00:02	1

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Reported value was between the limit of detection and the limit of quantitation.

GC Semi VOA

Qualifier	Qualifier Description
^C	CCV Recovery is outside acceptance limits.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
D	Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution may be flagged with a D.
X	Surrogate is outside control limits

Metals

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
J	Reported value was between the limit of detection and the limit of quantitation.

General Chemistry

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
F1	MS and/or MSD Recovery is outside acceptance limits.
J	Reported value was between the limit of detection and the limit of quantitation.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

GC/MS VOA

Analysis Batch: 483383

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162279-1	W-190424-RA-19	Total/NA	Water	8260B	
500-162279-2	W-190424-RA-20	Total/NA	Water	8260B	
500-162279-3	W-190424-RA-21	Total/NA	Water	8260B	
500-162279-4	W-190424-RA-22	Total/NA	Water	8260B	
500-162279-5	W-190425-RA-23	Total/NA	Water	8260B	
500-162279-6	W-190425-RA-24	Total/NA	Water	8260B	
500-162279-8	W-190425-RA-26	Total/NA	Water	8260B	
500-162279-9	W-190425-RA-27	Total/NA	Water	8260B	
500-162279-10	W-190425-RA-28	Total/NA	Water	8260B	
500-162279-11	W-190425-RA-29	Total/NA	Water	8260B	
500-162279-12	Trip Blank	Total/NA	Water	8260B	
MB 500-483383/6	Method Blank	Total/NA	Water	8260B	
LCS 500-483383/4	Lab Control Sample	Total/NA	Water	8260B	
500-162279-5 MS	W-190425-RA-23	Total/NA	Water	8260B	

Analysis Batch: 484122

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162279-7	W-190425-RA-25	Total/NA	Water	8260B	
MB 500-484122/6	Method Blank	Total/NA	Water	8260B	
LCS 500-484122/4	Lab Control Sample	Total/NA	Water	8260B	
500-162279-5 MSD	W-190425-RA-23	Total/NA	Water	8260B	

GC/MS Semi VOA

Prep Batch: 482919

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162279-1	W-190424-RA-19	Total/NA	Water	3510C	
500-162279-3	W-190424-RA-21	Total/NA	Water	3510C	
500-162279-4	W-190424-RA-22	Total/NA	Water	3510C	
500-162279-5	W-190425-RA-23	Total/NA	Water	3510C	
500-162279-6	W-190425-RA-24	Total/NA	Water	3510C	
500-162279-7	W-190425-RA-25	Total/NA	Water	3510C	
500-162279-8	W-190425-RA-26	Total/NA	Water	3510C	
500-162279-9	W-190425-RA-27	Total/NA	Water	3510C	
500-162279-11	W-190425-RA-29	Total/NA	Water	3510C	
MB 500-482919/1-A	Method Blank	Total/NA	Water	3510C	
LCS 500-482919/2-A	Lab Control Sample	Total/NA	Water	3510C	
500-162279-5 MS	W-190425-RA-23	Total/NA	Water	3510C	
500-162279-5 MSD	W-190425-RA-23	Total/NA	Water	3510C	

Analysis Batch: 483174

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162279-1	W-190424-RA-19	Total/NA	Water	8270D	482919
500-162279-3	W-190424-RA-21	Total/NA	Water	8270D	482919
500-162279-4	W-190424-RA-22	Total/NA	Water	8270D	482919
500-162279-6	W-190425-RA-24	Total/NA	Water	8270D	482919
500-162279-7	W-190425-RA-25	Total/NA	Water	8270D	482919
500-162279-8	W-190425-RA-26	Total/NA	Water	8270D	482919
500-162279-9	W-190425-RA-27	Total/NA	Water	8270D	482919
500-162279-11	W-190425-RA-29	Total/NA	Water	8270D	482919
MB 500-482919/1-A	Method Blank	Total/NA	Water	8270D	482919

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QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

GC/MS Semi VOA (Continued)

Analysis Batch: 483174 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 500-482919/2-A	Lab Control Sample	Total/NA	Water	8270D	482919

Analysis Batch: 483484

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162279-5	W-190425-RA-23	Total/NA	Water	8270D	482919
500-162279-5 MS	W-190425-RA-23	Total/NA	Water	8270D	482919
500-162279-5 MSD	W-190425-RA-23	Total/NA	Water	8270D	482919

GC VOA

Analysis Batch: 379534

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162279-1	W-190424-RA-19	Total/NA	Water	RSK-175	
500-162279-3	W-190424-RA-21	Total/NA	Water	RSK-175	
500-162279-4	W-190424-RA-22	Total/NA	Water	RSK-175	
500-162279-5	W-190425-RA-23	Total/NA	Water	RSK-175	
500-162279-6	W-190425-RA-24	Total/NA	Water	RSK-175	
500-162279-7	W-190425-RA-25	Total/NA	Water	RSK-175	
500-162279-8	W-190425-RA-26	Total/NA	Water	RSK-175	
500-162279-9	W-190425-RA-27	Total/NA	Water	RSK-175	
500-162279-11	W-190425-RA-29	Total/NA	Water	RSK-175	
MB 240-379534/4	Method Blank	Total/NA	Water	RSK-175	
LCS 240-379534/5	Lab Control Sample	Total/NA	Water	RSK-175	
500-162279-5 MS	W-190425-RA-23	Total/NA	Water	RSK-175	
500-162279-5 MSD	W-190425-RA-23	Total/NA	Water	RSK-175	

GC Semi VOA

Prep Batch: 483087

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162279-1	W-190424-RA-19	Total/NA	Water	8151A	
500-162279-2	W-190424-RA-20	Total/NA	Water	8151A	
500-162279-3	W-190424-RA-21	Total/NA	Water	8151A	
500-162279-4	W-190424-RA-22	Total/NA	Water	8151A	
MB 500-483087/1-A	Method Blank	Total/NA	Water	8151A	
LCS 500-483087/2-A	Lab Control Sample	Total/NA	Water	8151A	

Prep Batch: 483166

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162279-5	W-190425-RA-23	Total/NA	Water	8151A	
500-162279-6	W-190425-RA-24	Total/NA	Water	8151A	
500-162279-7	W-190425-RA-25	Total/NA	Water	8151A	
500-162279-8	W-190425-RA-26	Total/NA	Water	8151A	
500-162279-9	W-190425-RA-27	Total/NA	Water	8151A	
500-162279-10	W-190425-RA-28	Total/NA	Water	8151A	
500-162279-11	W-190425-RA-29	Total/NA	Water	8151A	
MB 500-483166/1-A	Method Blank	Total/NA	Water	8151A	
LCS 500-483166/2-A	Lab Control Sample	Total/NA	Water	8151A	
500-162279-5 MS	W-190425-RA-23	Total/NA	Water	8151A	
500-162279-5 MSD	W-190425-RA-23	Total/NA	Water	8151A	

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

GC Semi VOA

Analysis Batch: 483362

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162279-6	W-190425-RA-24	Total/NA	Water	8151A	483166
500-162279-7	W-190425-RA-25	Total/NA	Water	8151A	483166
500-162279-8	W-190425-RA-26	Total/NA	Water	8151A	483166
500-162279-10	W-190425-RA-28	Total/NA	Water	8151A	483166
MB 500-483166/1-A	Method Blank	Total/NA	Water	8151A	483166
LCS 500-483166/2-A	Lab Control Sample	Total/NA	Water	8151A	483166

Analysis Batch: 483441

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162279-1	W-190424-RA-19	Total/NA	Water	8151A	483087
500-162279-2	W-190424-RA-20	Total/NA	Water	8151A	483087
500-162279-3	W-190424-RA-21	Total/NA	Water	8151A	483087
500-162279-4	W-190424-RA-22	Total/NA	Water	8151A	483087
MB 500-483087/1-A	Method Blank	Total/NA	Water	8151A	483087
LCS 500-483087/2-A	Lab Control Sample	Total/NA	Water	8151A	483087

Analysis Batch: 483791

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162279-5	W-190425-RA-23	Total/NA	Water	8151A	483166
500-162279-9	W-190425-RA-27	Total/NA	Water	8151A	483166
500-162279-11	W-190425-RA-29	Total/NA	Water	8151A	483166
500-162279-5 MS	W-190425-RA-23	Total/NA	Water	8151A	483166
500-162279-5 MSD	W-190425-RA-23	Total/NA	Water	8151A	483166

Metals

Prep Batch: 482464

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162279-1	W-190424-RA-19	Dissolved	Water	3005A	
500-162279-2	W-190424-RA-20	Dissolved	Water	3005A	
500-162279-3	W-190424-RA-21	Dissolved	Water	3005A	
500-162279-4	W-190424-RA-22	Dissolved	Water	3005A	
500-162279-5	W-190425-RA-23	Dissolved	Water	3005A	
500-162279-6	W-190425-RA-24	Dissolved	Water	3005A	
500-162279-7	W-190425-RA-25	Dissolved	Water	3005A	
500-162279-8	W-190425-RA-26	Dissolved	Water	3005A	
500-162279-9	W-190425-RA-27	Dissolved	Water	3005A	
500-162279-10	W-190425-RA-28	Dissolved	Water	3005A	
500-162279-11	W-190425-RA-29	Dissolved	Water	3005A	
MB 500-482464/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 500-482464/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
500-162279-5 MS	W-190425-RA-23	Dissolved	Water	3005A	
500-162279-5 MSD	W-190425-RA-23	Dissolved	Water	3005A	
500-162279-5 DU	W-190425-RA-23	Dissolved	Water	3005A	

Prep Batch: 482790

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162279-1	W-190424-RA-19	Total/NA	Water	3010A	
500-162279-2	W-190424-RA-20	Total/NA	Water	3010A	
500-162279-3	W-190424-RA-21	Total/NA	Water	3010A	
500-162279-4	W-190424-RA-22	Total/NA	Water	3010A	

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QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Metals (Continued)

Prep Batch: 482790 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162279-5	W-190425-RA-23	Total/NA	Water	3010A	
500-162279-6	W-190425-RA-24	Total/NA	Water	3010A	
500-162279-7	W-190425-RA-25	Total/NA	Water	3010A	
500-162279-8	W-190425-RA-26	Total/NA	Water	3010A	
500-162279-9	W-190425-RA-27	Total/NA	Water	3010A	
500-162279-10	W-190425-RA-28	Total/NA	Water	3010A	
500-162279-11	W-190425-RA-29	Total/NA	Water	3010A	

Analysis Batch: 483025

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162279-1	W-190424-RA-19	Total/NA	Water	SM 2340B	482790
500-162279-2	W-190424-RA-20	Total/NA	Water	SM 2340B	482790
500-162279-3	W-190424-RA-21	Total/NA	Water	SM 2340B	482790
500-162279-4	W-190424-RA-22	Total/NA	Water	SM 2340B	482790
500-162279-5	W-190425-RA-23	Total/NA	Water	SM 2340B	482790
500-162279-6	W-190425-RA-24	Total/NA	Water	SM 2340B	482790
500-162279-7	W-190425-RA-25	Total/NA	Water	SM 2340B	482790
500-162279-8	W-190425-RA-26	Total/NA	Water	SM 2340B	482790
500-162279-9	W-190425-RA-27	Total/NA	Water	SM 2340B	482790
500-162279-10	W-190425-RA-28	Total/NA	Water	SM 2340B	482790
500-162279-11	W-190425-RA-29	Total/NA	Water	SM 2340B	482790

Analysis Batch: 483476

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162279-1	W-190424-RA-19	Dissolved	Water	6020A	482464
500-162279-2	W-190424-RA-20	Dissolved	Water	6020A	482464
500-162279-3	W-190424-RA-21	Dissolved	Water	6020A	482464
500-162279-4	W-190424-RA-22	Dissolved	Water	6020A	482464
500-162279-5	W-190425-RA-23	Dissolved	Water	6020A	482464
500-162279-6	W-190425-RA-24	Dissolved	Water	6020A	482464
500-162279-7	W-190425-RA-25	Dissolved	Water	6020A	482464
500-162279-8	W-190425-RA-26	Dissolved	Water	6020A	482464
500-162279-9	W-190425-RA-27	Dissolved	Water	6020A	482464
500-162279-10	W-190425-RA-28	Dissolved	Water	6020A	482464
500-162279-11	W-190425-RA-29	Dissolved	Water	6020A	482464
MB 500-482464/1-A	Method Blank	Total Recoverable	Water	6020A	482464
LCS 500-482464/2-A	Lab Control Sample	Total Recoverable	Water	6020A	482464
500-162279-5 MS	W-190425-RA-23	Dissolved	Water	6020A	482464
500-162279-5 MSD	W-190425-RA-23	Dissolved	Water	6020A	482464
500-162279-5 DU	W-190425-RA-23	Dissolved	Water	6020A	482464

Analysis Batch: 483565

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162279-5	W-190425-RA-23	Dissolved	Water	6020A	482464
500-162279-5 MS	W-190425-RA-23	Dissolved	Water	6020A	482464
500-162279-5 MSD	W-190425-RA-23	Dissolved	Water	6020A	482464
500-162279-5 DU	W-190425-RA-23	Dissolved	Water	6020A	482464

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

General Chemistry

Analysis Batch: 482442

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162279-1	W-190424-RA-19	Total/NA	Water	300.0	
500-162279-1	W-190424-RA-19	Total/NA	Water	300.0	
500-162279-3	W-190424-RA-21	Total/NA	Water	300.0	
500-162279-3	W-190424-RA-21	Total/NA	Water	300.0	
500-162279-4	W-190424-RA-22	Total/NA	Water	300.0	
500-162279-4	W-190424-RA-22	Total/NA	Water	300.0	
500-162279-5	W-190425-RA-23	Total/NA	Water	300.0	
500-162279-5	W-190425-RA-23	Total/NA	Water	300.0	
500-162279-6	W-190425-RA-24	Total/NA	Water	300.0	
500-162279-7	W-190425-RA-25	Total/NA	Water	300.0	
500-162279-7	W-190425-RA-25	Total/NA	Water	300.0	
500-162279-8	W-190425-RA-26	Total/NA	Water	300.0	
500-162279-9	W-190425-RA-27	Total/NA	Water	300.0	
500-162279-9	W-190425-RA-27	Total/NA	Water	300.0	
500-162279-11	W-190425-RA-29	Total/NA	Water	300.0	
MB 500-482442/6	Method Blank	Total/NA	Water	300.0	
LCS 500-482442/7	Lab Control Sample	Total/NA	Water	300.0	
500-162279-5 MS	W-190425-RA-23	Total/NA	Water	300.0	
500-162279-5 MS	W-190425-RA-23	Total/NA	Water	300.0	
500-162279-5 MSD	W-190425-RA-23	Total/NA	Water	300.0	
500-162279-5 MSD	W-190425-RA-23	Total/NA	Water	300.0	

Analysis Batch: 483553

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162279-1	W-190424-RA-19	Total/NA	Water	9060A	
500-162279-3	W-190424-RA-21	Total/NA	Water	9060A	
500-162279-4	W-190424-RA-22	Total/NA	Water	9060A	
500-162279-5	W-190425-RA-23	Total/NA	Water	9060A	
500-162279-6	W-190425-RA-24	Total/NA	Water	9060A	
500-162279-7	W-190425-RA-25	Total/NA	Water	9060A	
500-162279-8	W-190425-RA-26	Total/NA	Water	9060A	
500-162279-9	W-190425-RA-27	Total/NA	Water	9060A	
500-162279-11	W-190425-RA-29	Total/NA	Water	9060A	
MB 500-483553/4	Method Blank	Total/NA	Water	9060A	
LCS 500-483553/36	Lab Control Sample	Total/NA	Water	9060A	
500-162279-5 MS	W-190425-RA-23	Total/NA	Water	9060A	
500-162279-5 MSD	W-190425-RA-23	Total/NA	Water	9060A	

Analysis Batch: 484217

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162279-1	W-190424-RA-19	Total/NA	Water	SM 2320B	
MB 500-484217/27	Method Blank	Total/NA	Water	SM 2320B	
LCS 500-484217/28	Lab Control Sample	Total/NA	Water	SM 2320B	
500-162279-1 DU	W-190424-RA-19	Total/NA	Water	SM 2320B	

Analysis Batch: 484473

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162279-3	W-190424-RA-21	Total/NA	Water	SM 2320B	
500-162279-4	W-190424-RA-22	Total/NA	Water	SM 2320B	
500-162279-5	W-190425-RA-23	Total/NA	Water	SM 2320B	
500-162279-6	W-190425-RA-24	Total/NA	Water	SM 2320B	

Eurofins TestAmerica, Chicago

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

General Chemistry (Continued)

Analysis Batch: 484473 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-162279-7	W-190425-RA-25	Total/NA	Water	SM 2320B	
500-162279-8	W-190425-RA-26	Total/NA	Water	SM 2320B	
500-162279-9	W-190425-RA-27	Total/NA	Water	SM 2320B	
500-162279-11	W-190425-RA-29	Total/NA	Water	SM 2320B	
MB 500-484473/3	Method Blank	Total/NA	Water	SM 2320B	
LCS 500-484473/4	Lab Control Sample	Total/NA	Water	SM 2320B	
500-162279-5 DU	W-190425-RA-23	Total/NA	Water	SM 2320B	

Surrogate Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCA (75-126)	TOL (75-120)	BFB (72-124)	DBFM (75-120)
500-162279-1	W-190424-RA-19	89	102	97	92
500-162279-2	W-190424-RA-20	92	101	98	95
500-162279-3	W-190424-RA-21	94	101	99	95
500-162279-4	W-190424-RA-22	93	101	98	96
500-162279-5	W-190425-RA-23	95	101	96	96
500-162279-5 MS	W-190425-RA-23	96	102	100	101
500-162279-5 MSD	W-190425-RA-23	110	97	94	108
500-162279-6	W-190425-RA-24	96	101	99	97
500-162279-7	W-190425-RA-25	113	97	94	106
500-162279-8	W-190425-RA-26	96	101	97	96
500-162279-9	W-190425-RA-27	98	100	100	98
500-162279-10	W-190425-RA-28	99	99	98	100
500-162279-11	W-190425-RA-29	100	98	98	102
500-162279-12	Trip Blank	87	103	98	90
LCS 500-483383/4	Lab Control Sample	94	100	100	97
LCS 500-484122/4	Lab Control Sample	103	98	93	102
MB 500-483383/6	Method Blank	98	100	99	98
MB 500-484122/6	Method Blank	110	95	94	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

TOL = Toluene-d8 (Surr)

BFB = 4-Bromofluorobenzene (Surr)

DBFM = Dibromofluoromethane

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		NBZ (36-120)	FBP (34-110)	TPHL (40-145)
500-162279-1	W-190424-RA-19	86	78	125
500-162279-3	W-190424-RA-21	76	75	112
500-162279-4	W-190424-RA-22	81	77	113
500-162279-5	W-190425-RA-23	83	74	103
500-162279-5 MS	W-190425-RA-23	84	59	103
500-162279-5 MSD	W-190425-RA-23	81	66	105
500-162279-6	W-190425-RA-24	90	90	123
500-162279-7	W-190425-RA-25	78	72	106
500-162279-8	W-190425-RA-26	81	78	108
500-162279-9	W-190425-RA-27	78	75	110
500-162279-11	W-190425-RA-29	83	80	105
LCS 500-482919/2-A	Lab Control Sample	75	74	99
MB 500-482919/1-A	Method Blank	79	70	110

Surrogate Legend

NBZ = Nitrobenzene-d5 (Surr)

FBP = 2-Fluorobiphenyl (Surr)

TPHL = Terphenyl-d14 (Surr)

Surrogate Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Method: RSK-175 - Dissolved Gases (GC)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TFE2 (60-140)
500-162279-1	W-190424-RA-19	83
500-162279-3	W-190424-RA-21	82
500-162279-4	W-190424-RA-22	79
500-162279-5	W-190425-RA-23	80
500-162279-5 MS	W-190425-RA-23	81
500-162279-5 MSD	W-190425-RA-23	81
500-162279-6	W-190425-RA-24	81
500-162279-7	W-190425-RA-25	81
500-162279-8	W-190425-RA-26	81
500-162279-9	W-190425-RA-27	81
500-162279-11	W-190425-RA-29	81
LCS 240-379534/5	Lab Control Sample	86
MB 240-379534/4	Method Blank	85

Surrogate Legend

TFE = 1,1,1-Trifluoroethane

Method: 8151A - Herbicides (GC)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCPAA1 (25-130)
500-162279-1	W-190424-RA-19	58
500-162279-2	W-190424-RA-20	69
500-162279-3	W-190424-RA-21	360 X
500-162279-4	W-190424-RA-22	338 X
500-162279-5	W-190425-RA-23	0 D
500-162279-5 MS	W-190425-RA-23	0 D
500-162279-5 MSD	W-190425-RA-23	0 D
500-162279-6	W-190425-RA-24	56 ^c
500-162279-7	W-190425-RA-25	50 ^c
500-162279-8	W-190425-RA-26	56 ^c
500-162279-9	W-190425-RA-27	61
500-162279-10	W-190425-RA-28	55 ^c
500-162279-11	W-190425-RA-29	0 D
LCS 500-483087/2-A	Lab Control Sample	72
LCS 500-483166/2-A	Lab Control Sample	73
MB 500-483087/1-A	Method Blank	57
MB 500-483166/1-A	Method Blank	80

Surrogate Legend

DCPAA = DCAA

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-483383/6
Matrix: Water
Analysis Batch: 483383

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB MB		LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzene	<0.15		0.50	0.15	ug/L			05/02/19 23:37	1
Toluene	<0.15		0.50	0.15	ug/L			05/02/19 23:37	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/02/19 23:37	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/02/19 23:37	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	98		75 - 126		05/02/19 23:37	1
Toluene-d8 (Surr)	100		75 - 120		05/02/19 23:37	1
4-Bromofluorobenzene (Surr)	99		72 - 124		05/02/19 23:37	1
Dibromofluoromethane	98		75 - 120		05/02/19 23:37	1

Lab Sample ID: LCS 500-483383/4
Matrix: Water
Analysis Batch: 483383

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
Benzene	50.0	43.6		ug/L		87	70 - 120
Toluene	50.0	41.4		ug/L		83	70 - 125
Ethylbenzene	50.0	45.3		ug/L		91	70 - 123
Xylenes, Total	100	88.8		ug/L		89	70 - 125

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	94		75 - 126
Toluene-d8 (Surr)	100		75 - 120
4-Bromofluorobenzene (Surr)	100		72 - 124
Dibromofluoromethane	97		75 - 120

Lab Sample ID: 500-162279-5 MS
Matrix: Water
Analysis Batch: 483383

Client Sample ID: W-190425-RA-23
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS MS		Unit	D	%Rec	%Rec. Limits
				Result	Qualifier				
Benzene	<0.15		50.0	47.0		ug/L		94	70 - 120
Toluene	0.52		50.0	45.0		ug/L		89	70 - 125
Ethylbenzene	0.47	J	50.0	49.5		ug/L		98	70 - 123
Xylenes, Total	5.8		100	103		ug/L		98	70 - 125

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	96		75 - 126
Toluene-d8 (Surr)	102		75 - 120
4-Bromofluorobenzene (Surr)	100		72 - 124
Dibromofluoromethane	101		75 - 120

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 500-484122/6
Matrix: Water
Analysis Batch: 484122

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB MB		LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzene	<0.15		0.50	0.15	ug/L			05/07/19 23:58	1
Toluene	<0.15		0.50	0.15	ug/L			05/07/19 23:58	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/07/19 23:58	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/07/19 23:58	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	110		75 - 126		05/07/19 23:58	1
Toluene-d8 (Surr)	95		75 - 120		05/07/19 23:58	1
4-Bromofluorobenzene (Surr)	94		72 - 124		05/07/19 23:58	1
Dibromofluoromethane	102		75 - 120		05/07/19 23:58	1

Lab Sample ID: LCS 500-484122/4
Matrix: Water
Analysis Batch: 484122

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
Benzene	50.0	44.8		ug/L		90	70 - 120
Toluene	50.0	43.1		ug/L		86	70 - 125
Ethylbenzene	50.0	47.3		ug/L		95	70 - 123
Xylenes, Total	100	92.4		ug/L		92	70 - 125

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	103		75 - 126
Toluene-d8 (Surr)	98		75 - 120
4-Bromofluorobenzene (Surr)	93		72 - 124
Dibromofluoromethane	102		75 - 120

Lab Sample ID: 500-162279-5 MSD
Matrix: Water
Analysis Batch: 484122

Client Sample ID: W-190425-RA-23
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD MSD		Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
				Result	Qualifier						
Benzene	<0.15		50.0	49.7		ug/L		99	70 - 120	5	20
Toluene	0.52		50.0	46.5		ug/L		92	70 - 125	3	20
Ethylbenzene	0.47	J	50.0	51.2		ug/L		101	70 - 123	3	20
Xylenes, Total	5.8		100	109		ug/L		103	70 - 125	5	20

Surrogate	MSD MSD		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	110		75 - 126
Toluene-d8 (Surr)	97		75 - 120
4-Bromofluorobenzene (Surr)	94		72 - 124
Dibromofluoromethane	108		75 - 120

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-482919/1-A
Matrix: Water
Analysis Batch: 483174

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 482919

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Naphthalene	<0.25		0.80	0.25	ug/L		04/30/19 16:29	05/01/19 22:48	1
Surrogate	MB	MB	Limits			Prepared	Analyzed	Dil Fac	
	%Recovery	Qualifier							
Nitrobenzene-d5 (Surr)	79		36 - 120			04/30/19 16:29	05/01/19 22:48	1	
2-Fluorobiphenyl (Surr)	70		34 - 110			04/30/19 16:29	05/01/19 22:48	1	
Terphenyl-d14 (Surr)	110		40 - 145			04/30/19 16:29	05/01/19 22:48	1	

Lab Sample ID: LCS 500-482919/2-A
Matrix: Water
Analysis Batch: 483174

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 482919

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
Naphthalene	32.0	20.5		ug/L		64	36 - 110
Surrogate	LCS	LCS	Limits				
	%Recovery	Qualifier					
Nitrobenzene-d5 (Surr)	75		36 - 120				
2-Fluorobiphenyl (Surr)	74		34 - 110				
Terphenyl-d14 (Surr)	99		40 - 145				

Lab Sample ID: 500-162279-5 MS
Matrix: Water
Analysis Batch: 483484

Client Sample ID: W-190425-RA-23
Prep Type: Total/NA
Prep Batch: 482919

Analyte	Sample	Sample	Spike Added	MS	MS	Unit	D	%Rec	%Rec. Limits
	Result	Qualifier		Result	Qualifier				
Naphthalene	24		31.1	47.8		ug/L		77	36 - 110
Surrogate	MS	MS	Limits						
	%Recovery	Qualifier							
Nitrobenzene-d5 (Surr)	84		36 - 120						
2-Fluorobiphenyl (Surr)	59		34 - 110						
Terphenyl-d14 (Surr)	103		40 - 145						

Lab Sample ID: 500-162279-5 MSD
Matrix: Water
Analysis Batch: 483484

Client Sample ID: W-190425-RA-23
Prep Type: Total/NA
Prep Batch: 482919

Analyte	Sample	Sample	Spike Added	MSD	MSD	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
	Result	Qualifier		Result	Qualifier						
Naphthalene	24		31.2	45.5		ug/L		69	36 - 110	5	20
Surrogate	MSD	MSD	Limits								
	%Recovery	Qualifier									
Nitrobenzene-d5 (Surr)	81		36 - 120								
2-Fluorobiphenyl (Surr)	66		34 - 110								
Terphenyl-d14 (Surr)	105		40 - 145								

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 240-379534/4
Matrix: Water
Analysis Batch: 379534

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.17		1.0	0.17	ug/L			05/03/19 13:46	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	85		60 - 140					05/03/19 13:46	1

Lab Sample ID: LCS 240-379534/5
Matrix: Water
Analysis Batch: 379534

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	429	397		ug/L		92	80 - 120
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
1,1,1-Trifluoroethane	86		60 - 140				

Lab Sample ID: 500-162279-5 MS
Matrix: Water
Analysis Batch: 379534

Client Sample ID: W-190425-RA-23
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	96		285	345		ug/L		87	50 - 150
Surrogate	MS %Recovery	MS Qualifier	Limits						
1,1,1-Trifluoroethane	81		60 - 140						

Lab Sample ID: 500-162279-5 MSD
Matrix: Water
Analysis Batch: 379534

Client Sample ID: W-190425-RA-23
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methane	96		285	345		ug/L		87	50 - 150	0	30
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
1,1,1-Trifluoroethane	81		60 - 140								

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 500-483087/1-A
Matrix: Water
Analysis Batch: 483441

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 483087

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.090		0.10	0.090	ug/L		05/01/19 11:16	05/03/19 18:04	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCAA	57		25 - 130				05/01/19 11:16	05/03/19 18:04	1

Eurofins TestAmerica, Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Method: 8151A - Herbicides (GC) (Continued)

Lab Sample ID: LCS 500-483087/2-A
Matrix: Water
Analysis Batch: 483441

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 483087
%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Pentachlorophenol	2.53	1.84		ug/L		73	40 - 122
Surrogate	%Recovery	LCS Qualifier	Limits				
DCAA	72		25 - 130				

Lab Sample ID: MB 500-483166/1-A
Matrix: Water
Analysis Batch: 483362

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 483166

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.090		0.10	0.090	ug/L		05/01/19 20:04	05/03/19 10:18	1
Surrogate	%Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac			
DCAA	80		25 - 130	05/01/19 20:04	05/03/19 10:18	1			

Lab Sample ID: LCS 500-483166/2-A
Matrix: Water
Analysis Batch: 483362

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 483166
%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Pentachlorophenol	2.53	1.96		ug/L		77	40 - 122
Surrogate	%Recovery	LCS Qualifier	Limits				
DCAA	73		25 - 130				

Lab Sample ID: 500-162279-5 MS
Matrix: Water
Analysis Batch: 483791

Client Sample ID: W-190425-RA-23
Prep Type: Total/NA
Prep Batch: 483166
%Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Pentachlorophenol	5100		2.50	4710	4	ug/L		-1567 9	40 - 122
Surrogate	%Recovery	MS Qualifier	Limits						
DCAA	0	D	25 - 130						

Lab Sample ID: 500-162279-5 MSD
Matrix: Water
Analysis Batch: 483791

Client Sample ID: W-190425-RA-23
Prep Type: Total/NA
Prep Batch: 483166
%Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Pentachlorophenol	5100		2.51	4910	4	ug/L		-7954	40 - 122	4	20
Surrogate	%Recovery	MSD Qualifier	Limits								
DCAA	0	D	25 - 130								

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 500-482464/1-A
Matrix: Water
Analysis Batch: 483476

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 482464

Analyte	MB MB		LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Arsenic	<0.23		1.0	0.23	ug/L		04/26/19 15:55	05/02/19 16:09	1
Copper	<0.50		2.0	0.50	ug/L		04/26/19 15:55	05/02/19 16:09	1
Iron	<46.7		100	46.7	ug/L		04/26/19 15:55	05/02/19 16:09	1
Manganese	<0.79		2.5	0.79	ug/L		04/26/19 15:55	05/02/19 16:09	1
Zinc	<6.9		20.0	6.9	ug/L		04/26/19 15:55	05/02/19 16:09	1

Lab Sample ID: LCS 500-482464/2-A
Matrix: Water
Analysis Batch: 483476

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 482464

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Copper	250	241.2		ug/L		96	80 - 120
Iron	1000	1035		ug/L		104	80 - 120
Manganese	500	498.0		ug/L		100	80 - 120
Zinc	500	476.7		ug/L		95	80 - 120

Lab Sample ID: 500-162279-5 MS
Matrix: Water
Analysis Batch: 483476

Client Sample ID: W-190425-RA-23
Prep Type: Dissolved
Prep Batch: 482464

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Copper	0.97	J	250	248.6		ug/L		99	75 - 125
Iron	10200		1000	11340	4	ug/L		119	75 - 125
Zinc	<6.9		500	483.6		ug/L		97	75 - 125

Lab Sample ID: 500-162279-5 MS
Matrix: Water
Analysis Batch: 483565

Client Sample ID: W-190425-RA-23
Prep Type: Dissolved
Prep Batch: 482464

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits

Lab Sample ID: 500-162279-5 MSD
Matrix: Water
Analysis Batch: 483476

Client Sample ID: W-190425-RA-23
Prep Type: Dissolved
Prep Batch: 482464

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	
										RPD	Limit
Arsenic	0.79	J	100	98.67		ug/L		98	75 - 125	1	20
Copper	0.97	J	250	246.6		ug/L		98	75 - 125	1	20
Iron	10200		1000	11150	4	ug/L		100	75 - 125	2	20
Zinc	<6.9		500	481.1		ug/L		96	75 - 125	1	20

Lab Sample ID: 500-162279-5 MSD
Matrix: Water
Analysis Batch: 483565

Client Sample ID: W-190425-RA-23
Prep Type: Dissolved
Prep Batch: 482464

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	
										RPD	Limit
Manganese	6250		500	7140	4	ug/L		178	75 - 125	1	20

Eurolins TestAmerica, Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: 500-162279-5 DU
Matrix: Water
Analysis Batch: 483476

Client Sample ID: W-190425-RA-23
Prep Type: Dissolved
Prep Batch: 482464

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
Arsenic	0.79	J	0.874	J	ug/L		10	20
Copper	0.97	J	1.12	J	ug/L		14	20
Iron	10200		10560		ug/L		4	20
Zinc	<6.9		<6.9		ug/L		NC	20

Lab Sample ID: 500-162279-5 DU
Matrix: Water
Analysis Batch: 483565

Client Sample ID: W-190425-RA-23
Prep Type: Dissolved
Prep Batch: 482464

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
Manganese	6250		6606		ug/L		6	20

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 500-482442/6
Matrix: Water
Analysis Batch: 482442

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Chloride	<0.17		0.20	0.17	mg/L			04/26/19 14:00	1
Nitrate as N	<0.068		0.20	0.068	mg/L			04/26/19 14:00	1
Sulfate	0.119	J	0.20	0.095	mg/L			04/26/19 14:00	1

Lab Sample ID: LCS 500-482442/7
Matrix: Water
Analysis Batch: 482442

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Nitrate as N	2.00	2.02		mg/L		101	90 - 110
Sulfate	5.00	5.01		mg/L		100	90 - 110

Lab Sample ID: 500-162279-5 MS
Matrix: Water
Analysis Batch: 482442

Client Sample ID: W-190425-RA-23
Prep Type: Total/NA

Analyte	Sample	Sample	Spike Added	MS	MS	Unit	D	%Rec	%Rec Limits
	Result	Qualifier		Result	Qualifier				
Nitrate as N	<0.068		1.00	0.940		mg/L		94	80 - 120

Lab Sample ID: 500-162279-5 MS
Matrix: Water
Analysis Batch: 482442

Client Sample ID: W-190425-RA-23
Prep Type: Total/NA

Analyte	Sample	Sample	Spike Added	MS	MS	Unit	D	%Rec	%Rec Limits
	Result	Qualifier		Result	Qualifier				
Chloride	27.0		10.0	37.73		mg/L		107	80 - 120
Sulfate	27.7	B	25.0	52.76		mg/L		100	80 - 120

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 500-162279-5 MSD
Matrix: Water
Analysis Batch: 482442

Client Sample ID: W-190425-RA-23
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate as N	<0.068		1.00	0.971		mg/L		97	80 - 120	3	20

Lab Sample ID: 500-162279-5 MSD
Matrix: Water
Analysis Batch: 482442

Client Sample ID: W-190425-RA-23
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	27.0		10.0	37.86		mg/L		108	80 - 120	0	20
Sulfate	27.7	B	25.0	52.76		mg/L		100	80 - 120	0	20

Method: 9060A - Organic Carbon, Total (TOC)

Lab Sample ID: MB 500-483553/4
Matrix: Water
Analysis Batch: 483553

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	<0.47		1.0	0.47	mg/L			05/03/19 07:15	1

Lab Sample ID: LCS 500-483553/36
Matrix: Water
Analysis Batch: 483553

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon - Duplicates	10.0	9.52		mg/L		95	80 - 120

Lab Sample ID: 500-162279-5 MS
Matrix: Water
Analysis Batch: 483553

Client Sample ID: W-190425-RA-23
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon - Duplicates	33.3	F1	10.0	45.50		mg/L		122	75 - 125

Lab Sample ID: 500-162279-5 MSD
Matrix: Water
Analysis Batch: 483553

Client Sample ID: W-190425-RA-23
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Organic Carbon - Duplicates	33.3	F1	10.0	47.94	F1	mg/L		146	75 - 125	5	20

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 500-484217/27
Matrix: Water
Analysis Batch: 484217

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	<3.7		5.0	3.7	mg/L			05/07/19 14:58	1

Eurolins TestAmerica, Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Method: SM 2320B - Alkalinity (Continued)

Lab Sample ID: LCS 500-484217/28
Matrix: Water
Analysis Batch: 484217

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	100	103.3		mg/L		103	90 - 110

Lab Sample ID: 500-162279-1 DU
Matrix: Water
Analysis Batch: 484217

Client Sample ID: W-190424-RA-19
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Alkalinity	92.3		92.70		mg/L		0.4	20

Lab Sample ID: MB 500-484473/3
Matrix: Water
Analysis Batch: 484473

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	<3.7		5.0	3.7	mg/L			05/08/19 11:49	1

Lab Sample ID: LCS 500-484473/4
Matrix: Water
Analysis Batch: 484473

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	100	106.3		mg/L		106	90 - 110

Lab Sample ID: 500-162279-5 DU
Matrix: Water
Analysis Batch: 484473

Client Sample ID: W-190425-RA-23
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Alkalinity	262		263.9		mg/L		0.8	20

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Client Sample ID: W-190424-RA-19

Lab Sample ID: 500-162279-1

Date Collected: 04/24/19 14:20

Matrix: Water

Date Received: 04/26/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483383	05/03/19 00:28	JDD	TAL CHI
Total/NA	Prep	3510C			482919	04/30/19 16:29	ACK	TAL CHI
Total/NA	Analysis	8270D		1	483174	05/02/19 02:11	STW	TAL CHI
Total/NA	Analysis	RSK-175		1	379534	05/03/19 15:46	BPM	TAL CAN
Total/NA	Prep	8151A			483087	05/01/19 11:16	JVD	TAL CHI
Total/NA	Analysis	8151A		1	483441	05/04/19 01:00	JBj	TAL CHI
Dissolved	Prep	3005A			482464	04/26/19 15:55	BDE	TAL CHI
Dissolved	Analysis	6020A		1	483476	05/02/19 16:17	FXG	TAL CHI
Total/NA	Prep	3010A			482790	04/30/19 08:12	SAH	TAL CHI
Total/NA	Analysis	SM 2340B		1	483025	05/01/19 07:58	EEN	TAL CHI
Total/NA	Analysis	300.0		1	482442	04/26/19 13:23	EAT	TAL CHI
Total/NA	Analysis	300.0		10	482442	04/26/19 14:25	EAT	TAL CHI
Total/NA	Analysis	9060A		1	483553	05/03/19 08:36	MTB	TAL CHI
Total/NA	Analysis	SM 2320B		1	484217	05/07/19 17:49	SMO	TAL CHI

Client Sample ID: W-190424-RA-20

Lab Sample ID: 500-162279-2

Date Collected: 04/24/19 14:30

Matrix: Water

Date Received: 04/26/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483383	05/03/19 00:53	JDD	TAL CHI
Total/NA	Prep	8151A			483087	05/01/19 11:16	JVD	TAL CHI
Total/NA	Analysis	8151A		1	483441	05/04/19 01:25	JBj	TAL CHI
Dissolved	Prep	3005A			482464	04/26/19 15:55	BDE	TAL CHI
Dissolved	Analysis	6020A		1	483476	05/02/19 16:29	FXG	TAL CHI
Total/NA	Prep	3010A			482790	04/30/19 08:12	SAH	TAL CHI
Total/NA	Analysis	SM 2340B		1	483025	05/01/19 07:58	EEN	TAL CHI

Client Sample ID: W-190424-RA-21

Lab Sample ID: 500-162279-3

Date Collected: 04/24/19 14:55

Matrix: Water

Date Received: 04/26/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483383	05/03/19 01:19	JDD	TAL CHI
Total/NA	Prep	3510C			482919	04/30/19 16:29	ACK	TAL CHI
Total/NA	Analysis	8270D		1	483174	05/02/19 02:34	STW	TAL CHI
Total/NA	Analysis	RSK-175		1	379534	05/03/19 16:04	BPM	TAL CAN
Total/NA	Prep	8151A			483087	05/01/19 11:16	JVD	TAL CHI
Total/NA	Analysis	8151A		1	483441	05/04/19 01:49	JBj	TAL CHI
Dissolved	Prep	3005A			482464	04/26/19 15:55	BDE	TAL CHI
Dissolved	Analysis	6020A		1	483476	05/02/19 16:32	FXG	TAL CHI
Total/NA	Prep	3010A			482790	04/30/19 08:12	SAH	TAL CHI
Total/NA	Analysis	SM 2340B		1	483025	05/01/19 07:58	EEN	TAL CHI
Total/NA	Analysis	300.0		1	482442	04/26/19 13:36	EAT	TAL CHI

Eurofins TestAmerica, Chicago

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Client Sample ID: W-190424-RA-21

Lab Sample ID: 500-162279-3

Date Collected: 04/24/19 14:55

Matrix: Water

Date Received: 04/26/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		10	482442	04/26/19 14:38	EAT	TAL CHI
Total/NA	Analysis	9060A		1	483553	05/03/19 09:02	MTB	TAL CHI
Total/NA	Analysis	SM 2320B		1	484473	05/08/19 13:58	SMO	TAL CHI

Client Sample ID: W-190424-RA-22

Lab Sample ID: 500-162279-4

Date Collected: 04/24/19 14:55

Matrix: Water

Date Received: 04/26/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483383	05/03/19 01:44	JDD	TAL CHI
Total/NA	Prep	3510C			482919	04/30/19 16:29	ACK	TAL CHI
Total/NA	Analysis	8270D		1	483174	05/02/19 02:57	STW	TAL CHI
Total/NA	Analysis	RSK-175		1	379534	05/03/19 16:21	BPM	TAL CAN
Total/NA	Prep	8151A			483087	05/01/19 11:16	JVD	TAL CHI
Total/NA	Analysis	8151A		1	483441	05/04/19 02:14	JB	TAL CHI
Dissolved	Prep	3005A			482464	04/26/19 15:55	BDE	TAL CHI
Dissolved	Analysis	6020A		1	483476	05/02/19 16:38	FXG	TAL CHI
Total/NA	Prep	3010A			482790	04/30/19 08:12	SAH	TAL CHI
Total/NA	Analysis	SM 2340B		1	483025	05/01/19 07:58	EEN	TAL CHI
Total/NA	Analysis	300.0		1	482442	04/26/19 13:48	EAT	TAL CHI
Total/NA	Analysis	300.0		10	482442	04/26/19 14:50	EAT	TAL CHI
Total/NA	Analysis	9060A		1	483553	05/03/19 09:09	MTB	TAL CHI
Total/NA	Analysis	SM 2320B		1	484473	05/08/19 14:05	SMO	TAL CHI

Client Sample ID: W-190425-RA-23

Lab Sample ID: 500-162279-5

Date Collected: 04/25/19 09:25

Matrix: Water

Date Received: 04/26/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483383	05/03/19 02:35	JDD	TAL CHI
Total/NA	Prep	3510C			482919	04/30/19 16:29	ACK	TAL CHI
Total/NA	Analysis	8270D		1	483484	05/03/19 18:42	STW	TAL CHI
Total/NA	Analysis	RSK-175		1	379534	05/03/19 16:39	BPM	TAL CAN
Total/NA	Prep	8151A			483166	05/01/19 20:04	JP1	TAL CHI
Total/NA	Analysis	8151A		2000	483791	05/06/19 16:33	JB	TAL CHI
Dissolved	Prep	3005A			482464	04/26/19 15:55	BDE	TAL CHI
Dissolved	Analysis	6020A		1	483476	05/02/19 16:42	FXG	TAL CHI
Dissolved	Prep	3005A			482464	04/26/19 15:55	BDE	TAL CHI
Dissolved	Analysis	6020A		5	483565	05/03/19 13:59	FXG	TAL CHI
Total/NA	Prep	3010A			482790	04/30/19 08:12	SAH	TAL CHI
Total/NA	Analysis	SM 2340B		1	483025	05/01/19 07:58	EEN	TAL CHI
Total/NA	Analysis	300.0		1	482442	04/26/19 15:02	EAT	TAL CHI
Total/NA	Analysis	300.0		10	482442	04/26/19 16:04	EAT	TAL CHI

Eurofins TestAmerica, Chicago

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Client Sample ID: W-190425-RA-23

Lab Sample ID: 500-162279-5

Date Collected: 04/25/19 09:25

Matrix: Water

Date Received: 04/26/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060A		1	483553	05/03/19 09:19	MTB	TAL CHI
Total/NA	Analysis	SM 2320B		1	484473	05/08/19 12:52	SMO	TAL CHI

Client Sample ID: W-190425-RA-24

Lab Sample ID: 500-162279-6

Date Collected: 04/25/19 10:00

Matrix: Water

Date Received: 04/26/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483383	05/03/19 03:01	JDD	TAL CHI
Total/NA	Prep	3510C			482919	04/30/19 16:29	ACK	TAL CHI
Total/NA	Analysis	8270D		1	483174	05/02/19 03:42	STW	TAL CHI
Total/NA	Analysis	RSK-175		1	379534	05/03/19 17:30	BPM	TAL CAN
Total/NA	Prep	8151A			483166	05/01/19 20:04	JP1	TAL CHI
Total/NA	Analysis	8151A		1	483362	05/03/19 12:21	JBj	TAL CHI
Dissolved	Prep	3005A			482464	04/26/19 15:55	BDE	TAL CHI
Dissolved	Analysis	6020A		1	483476	05/02/19 17:09	FXG	TAL CHI
Total/NA	Prep	3010A			482790	04/30/19 08:12	SAH	TAL CHI
Total/NA	Analysis	SM 2340B		1	483025	05/01/19 07:58	EEN	TAL CHI
Total/NA	Analysis	300.0		1	482442	04/26/19 16:41	EAT	TAL CHI
Total/NA	Analysis	9060A		1	483553	05/03/19 09:46	MTB	TAL CHI
Total/NA	Analysis	SM 2320B		1	484473	05/08/19 14:11	SMO	TAL CHI

Client Sample ID: W-190425-RA-25

Lab Sample ID: 500-162279-7

Date Collected: 04/25/19 10:35

Matrix: Water

Date Received: 04/26/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	484122	05/08/19 03:46	PMF	TAL CHI
Total/NA	Prep	3510C			482919	04/30/19 16:29	ACK	TAL CHI
Total/NA	Analysis	8270D		1	483174	05/02/19 04:05	STW	TAL CHI
Total/NA	Analysis	RSK-175		1	379534	05/03/19 17:48	BPM	TAL CAN
Total/NA	Prep	8151A			483166	05/01/19 20:04	JP1	TAL CHI
Total/NA	Analysis	8151A		1	483362	05/03/19 12:45	JBj	TAL CHI
Dissolved	Prep	3005A			482464	04/26/19 15:55	BDE	TAL CHI
Dissolved	Analysis	6020A		1	483476	05/02/19 17:13	FXG	TAL CHI
Total/NA	Prep	3010A			482790	04/30/19 08:12	SAH	TAL CHI
Total/NA	Analysis	SM 2340B		1	483025	05/01/19 07:58	EEN	TAL CHI
Total/NA	Analysis	300.0		1	482442	04/26/19 17:06	EAT	TAL CHI
Total/NA	Analysis	300.0		10	482442	04/26/19 17:18	EAT	TAL CHI
Total/NA	Analysis	9060A		1	483553	05/03/19 09:55	MTB	TAL CHI
Total/NA	Analysis	SM 2320B		1	484473	05/08/19 14:17	SMO	TAL CHI

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Client Sample ID: W-190425-RA-26

Lab Sample ID: 500-162279-8

Date Collected: 04/25/19 12:10

Matrix: Water

Date Received: 04/26/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483383	05/03/19 03:52	JDD	TAL CHI
Total/NA	Prep	3510C			482919	04/30/19 16:29	ACK	TAL CHI
Total/NA	Analysis	8270D		1	483174	05/02/19 04:27	STW	TAL CHI
Total/NA	Analysis	RSK-175		1	379534	05/03/19 18:22	BPM	TAL CAN
Total/NA	Prep	8151A			483166	05/01/19 20:04	JP1	TAL CHI
Total/NA	Analysis	8151A		1	483362	05/03/19 13:59	JBj	TAL CHI
Dissolved	Prep	3005A			482464	04/26/19 15:55	BDE	TAL CHI
Dissolved	Analysis	6020A		1	483476	05/02/19 17:17	FXG	TAL CHI
Total/NA	Prep	3010A			482790	04/30/19 08:12	SAH	TAL CHI
Total/NA	Analysis	SM 2340B		1	483025	05/01/19 07:58	EEN	TAL CHI
Total/NA	Analysis	300.0		10	482442	04/26/19 17:43	EAT	TAL CHI
Total/NA	Analysis	9060A		1	483553	05/03/19 10:02	MTB	TAL CHI
Total/NA	Analysis	SM 2320B		1	484473	05/08/19 14:25	SMO	TAL CHI

Client Sample ID: W-190425-RA-27

Lab Sample ID: 500-162279-9

Date Collected: 04/25/19 12:58

Matrix: Water

Date Received: 04/26/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483383	05/03/19 04:17	JDD	TAL CHI
Total/NA	Prep	3510C			482919	04/30/19 16:29	ACK	TAL CHI
Total/NA	Analysis	8270D		1	483174	05/02/19 04:50	STW	TAL CHI
Total/NA	Analysis	RSK-175		1	379534	05/03/19 18:40	BPM	TAL CAN
Total/NA	Prep	8151A			483166	05/01/19 20:04	JP1	TAL CHI
Total/NA	Analysis	8151A		1	483791	05/06/19 18:36	JBj	TAL CHI
Dissolved	Prep	3005A			482464	04/26/19 15:55	BDE	TAL CHI
Dissolved	Analysis	6020A		1	483476	05/02/19 17:21	FXG	TAL CHI
Total/NA	Prep	3010A			482790	04/30/19 08:12	SAH	TAL CHI
Total/NA	Analysis	SM 2340B		1	483025	05/01/19 07:58	EEN	TAL CHI
Total/NA	Analysis	300.0		1	482442	04/26/19 18:20	EAT	TAL CHI
Total/NA	Analysis	300.0		10	482442	04/26/19 18:33	EAT	TAL CHI
Total/NA	Analysis	9060A		1	483553	05/03/19 10:10	MTB	TAL CHI
Total/NA	Analysis	SM 2320B		1	484473	05/08/19 14:31	SMO	TAL CHI

Client Sample ID: W-190425-RA-28

Lab Sample ID: 500-162279-10

Date Collected: 04/25/19 13:25

Matrix: Water

Date Received: 04/26/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483383	05/03/19 04:42	JDD	TAL CHI
Total/NA	Prep	8151A			483166	05/01/19 20:04	JP1	TAL CHI
Total/NA	Analysis	8151A		1	483362	05/03/19 14:48	JBj	TAL CHI
Dissolved	Prep	3005A			482464	04/26/19 15:55	BDE	TAL CHI
Dissolved	Analysis	6020A		1	483476	05/02/19 17:24	FXG	TAL CHI

Eurofins TestAmerica, Chicago

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Client Sample ID: W-190425-RA-28

Lab Sample ID: 500-162279-10

Date Collected: 04/25/19 13:25

Matrix: Water

Date Received: 04/26/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			482790	04/30/19 08:12	SAH	TAL CHI
Total/NA	Analysis	SM 2340B		1	483025	05/01/19 07:58	EEN	TAL CHI

Client Sample ID: W-190425-RA-29

Lab Sample ID: 500-162279-11

Date Collected: 04/25/19 13:50

Matrix: Water

Date Received: 04/26/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483383	05/03/19 05:08	JDD	TAL CHI
Total/NA	Prep	3510C			482919	04/30/19 16:29	ACK	TAL CHI
Total/NA	Analysis	8270D		1	483174	05/02/19 05:12	STW	TAL CHI
Total/NA	Analysis	RSK-175		1	379534	05/03/19 18:57	BPM	TAL CAN
Total/NA	Prep	8151A			483166	05/01/19 20:04	JP1	TAL CHI
Total/NA	Analysis	8151A		2000	483791	05/06/19 19:25	JBj	TAL CHI
Dissolved	Prep	3005A			482464	04/26/19 15:55	BDE	TAL CHI
Dissolved	Analysis	6020A		1	483476	05/02/19 17:28	FXG	TAL CHI
Total/NA	Prep	3010A			482790	04/30/19 08:12	SAH	TAL CHI
Total/NA	Analysis	SM 2340B		1	483025	05/01/19 07:58	EEN	TAL CHI
Total/NA	Analysis	300.0		1	482442	04/26/19 18:45	EAT	TAL CHI
Total/NA	Analysis	9060A		1	483553	05/03/19 10:19	MTB	TAL CHI
Total/NA	Analysis	SM 2320B		1	484473	05/08/19 14:41	SMO	TAL CHI

Client Sample ID: Trip Blank

Lab Sample ID: 500-162279-12

Date Collected: 04/25/19 15:00

Matrix: Water

Date Received: 04/26/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	483383	05/03/19 00:02	JDD	TAL CHI

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL CHI = Eurofins TestAmerica, Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

Accreditation/Certification Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-162279-1

Laboratory: Eurofins TestAmerica, Chicago

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Wisconsin	State Program	5	999580010	08-31-19 *

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
SM 2320B		Water	Alkalinity

Laboratory: Eurofins TestAmerica, Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-20
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	04-30-19 *
Kentucky (UST)	State Program	4	58	02-23-20
Kentucky (WW)	State Program	4	98016	12-31-19
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-20
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-20
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-20 *
West Virginia DEP	State Program	3	210	12-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.



CONESTOGA-ROVERS & ASSOCIATES

CHAIN OF CUSTODY RECORD

1801 Old Highway 8 Northwest, Suite 114
St. Paul, Minnesota 55112 United States

Phone: (651) 639-0913 Fax: (651) 639-0923

500-162279

COC NO.: **SP-02882**

PAGE 1 OF 1

(See Reverse Side for Instructions)

Project No/ Phase/Task Code: 086165			Laboratory Name: <u>TestAmerica</u>										Lab Location: <u>University Park, IL</u>			SSOW ID:																																																																		
Project Name: <u>Penta Wood</u>			Lab Contact: <u>D. Heckler</u>										Lab Quote No:			Cooler No:																																																																		
Project Location: <u>Siren, WI</u> 500-162279 COC			SAMPLE TYPE										CONTAINER QUANTITY & PRESERVATION			ANALYSIS REQUESTED (See Back of COC for Definitions)			Carrier: <u>FedEx</u>																																																															
Chemistry Contact: <u>Grant Anderson</u>			Matrix Code (see back of COC)										Grab (G) or Comp (C)			Unpreserved			Hydrochloric Acid (HCl)			Nitric Acid (HNO ₃)			Sulfuric Acid (H ₂ SO ₄)			Sodium Hydroxide (NaOH)			Methanol/Water (Soil VOC)			EnCores 3x5-g, 1x25-g			Other:			Total Containers/Sample			Methane 175			PCP 0151			BTEX 0260			Naphthalene 0270			Hardie's 1020			ALK, Nitrates 0410			Metals 2340			0010			0060			701 702			MS/MSD Request			Airbill No:		Date Shipped: <u>4-25-19</u>				
Sampler(s): <u>R. Amst, M. Hackenmuller</u>			SAMPLE IDENTIFICATION (Containers for each sample may be combined on one line)			DATE (mm/dd/yy)			TIME (hh:mm)			Grab (G) or Comp (C)			Unpreserved			Hydrochloric Acid (HCl)			Nitric Acid (HNO ₃)			Sulfuric Acid (H ₂ SO ₄)			Sodium Hydroxide (NaOH)			Methanol/Water (Soil VOC)			EnCores 3x5-g, 1x25-g			Other:			Total Containers/Sample			Methane 175			PCP 0151			BTEX 0260			Naphthalene 0270			Hardie's 1020			ALK, Nitrates 0410			Metals 2340			0010			0060			701 702			MS/MSD Request			Carrier: <u>FedEx</u>		Airbill No:		Date Shipped: <u>4-25-19</u>		COMMENTS/ SPECIAL INSTRUCTIONS:	
TAT Required in business days (use separate COCs for different TATs): <input type="checkbox"/> 1 Day <input type="checkbox"/> 2 Days <input type="checkbox"/> 3 Days <input type="checkbox"/> 1 Week <input type="checkbox"/> 2 Week <input checked="" type="checkbox"/> Other: <u>Standard</u>			Total Number of Containers: <u>104</u>			Notes/ Special Requirements: <u>Metals field filtered</u>			All Samples in Cooler must be on COC			46, 16 → 26 03-22, 3, 4, 6 59, 38, 43																																																																						
RELINQUISHED BY			COMPANY			DATE			TIME			RECEIVED BY			COMPANY			DATE			TIME																																																													
1. <u>M. Hal</u>			6TTD			4-25-19			15:30			1. <u>Shirley Scott</u>			TA-CHI			4/26/19			0920																																																													
2.												2.																																																																						
3.												3.																																																																						

THE CHAIN OF CUSTODY IS A LEGAL DOCUMENT - ALL FIELDS MUST BE COMPLETED ACCURATELY



500-162279 Waybill

FedEx
Express *Package US Airbill*

FedEx Tracking Number **8131 9057 3517**

Form ID No. **0200**

1 From
Date **4-25-19**

Sender's Name **Melissa Hackenmuller** Phone **763 232 1656**

Company **611D services Inc**

Address **1301 old highway 8 INN STE 119**

City **St. Paul** State **MIN** ZIP **55112-2307**

2 Your Internal Billing Reference **086665**

3 To
Recipient's Name **Sample Receiving** Phone **768 531 5200**

Company **Test America**

Address **2417 Bond St.**

Use this line for the HOLD location address or for continuation of your shipping address.

City **University Park** State **IL** ZIP **60989**



8131 9057 3517

4 Express Package Service *To most locations. **Packages up to 150 lbs.**
For packages over 150 lbs., use the FedEx Express Freight US Airbill.

Next Business Day

- FedEx First Overnight**
Earliest next business morning delivery to select locations. Friday shipments will be delivered on Monday unless Saturday Delivery is selected.
- FedEx Priority Overnight**
Next business morning.* Friday shipments will be delivered on Monday unless Saturday Delivery is selected.
- FedEx Standard Overnight**
Next business afternoon.* Saturday Delivery NOT available.

2 or 3 Business Days

- FedEx 2Day A.M.**
Second business morning.* Saturday Delivery NOT available.
- FedEx 2Day**
Second business afternoon.* Thursday shipments will be delivered on Monday unless Saturday Delivery is selected.
- FedEx Express Saver**
Third business day.* Saturday Delivery NOT available.

5 Packaging *Declared value limit \$500.
 FedEx Envelope* FedEx Pak* FedEx Box FedEx Tube Other

6 Special Handling and Delivery Signature Options Fees may apply. See the FedEx Service Guide.
 Saturday Delivery
NOT available for FedEx Standard Overnight, FedEx 2Day A.M., or FedEx Express Saver.

- No Signature Required**
Package may be left without obtaining a signature for delivery.
- Direct Signature**
Someone at recipient's address may sign for delivery.
- Indirect Signature**
If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only.

Does this shipment contain dangerous goods?
One box must be checked.
 No Yes As per attached Shipper's Declaration. Yes Shipper's Declaration not required. Dry Ice Dry Ice, UN 1845 _____ x _____ kg
Restrictions apply for dangerous goods — see the current FedEx Service Guide. Cargo Aircraft Only

7 Payment Bill to: Enter FedEx Acct. No. or Credit Card No. below. Obtain recip. Acct. No.
 Sender Acct. No. in Section 1 will be billed. Recipient Third Party Credit Card Cash/Check

Total Packages **1** Total Weight **46** lbs. Credit Card Auth. **644**

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FedEx Express **Package US Airbill**

FedEx Tracking Number **8131 9057 3561**

Form ID No. **0200**

1 From
 Date 4-25-19
 Sender's Name Melissa Hackenmuller Phone 763 232 1650
 Company GHID services Inc
 Address 1801 old highway 8 NW STE 114
 City St. Paul State MIN ZIP 55112-2307

2 Your Internal Billing Reference 0866165

3 To
 Recipient's Name Sample Receiving Phone 708 539 5200
 Company Test America
 Address 2917 Bond St.
 City University Park State IL ZIP 61489



8131 9057 3561

4 Express Package Service *To most locations. Packages up to 150 lbs. For packages over 150 lbs, use the FedEx Express Freight US Airbill.

- Next Business Day**
- FedEx First Overnight
 - FedEx Priority Overnight
 - FedEx Standard Overnight
- 2 or 3 Business Days**
- FedEx 2Day A.M.
 - FedEx 2Day
 - FedEx Express Saver

- 5 Packaging** *Declared value limit \$500.
- FedEx Envelope*
 - FedEx Pak*
 - FedEx Box
 - FedEx Tube
 - Other

6 Special Handling and Delivery Signature Options Fees may apply. See the FedEx Service Guide.

- Saturday Delivery
- No Signature Required
- Direct Signature
- Indirect Signature
- Does this shipment contain dangerous goods?
- No
- Yes
- Yes
- Dry Ice
- Cargo Aircraft Only

7 Payment Bill to:

- Sender
 - Recipient
 - Third Party
 - Credit Card
 - Cash/Check
- Total Packages 1 Total Weight 45 lbs.

644

fedex.com 1.800.GoFedEx 1.800.463.3339

FedEx
Express **Package**
US Airbill

FedEx Tracking Number: **8131 9057 3539**

Form ID No. **0200**

1 From
Date **4-25-19**
Sender's Name **Melissa Hackenmiller** Phone **763 232 1656**
Company **GLID Services Inc**
Address **1801 Old Highway 8 NW ST 119**
City **St. Paul** State **MIN** ZIP **55112-2307**

2 Your Internal Billing Reference **086165**

3 To
Recipient's Name **Sample Receiving** Phone **708 531 0200**
Company **Test America**
Address **2917 Bond St.**
City **University Park** State **IL** ZIP **60484**



8131 9057 3539

4 Express Package Service *To most locations. Packages up to 150 lbs. For packages over 150 lbs., use the FedEx Express Freight US Airbill.

Next Business Day
 FedEx First Overnight
 FedEx Priority Overnight
 FedEx Standard Overnight

2 or 3 Business Days
 FedEx 2Day A.M.
 FedEx 2Day
 FedEx Express Saver

5 Packaging *Declared value limit \$500.
 FedEx Envelope* FedEx Pak* FedEx Box FedEx Tube Other

6 Special Handling and Delivery Signature Options Fees may apply. See the FedEx Service Guide.

Saturday Delivery
 No Signature Required
 Direct Signature
 Indirect Signature
Does this shipment contain dangerous goods?
 No Yes Yes Dry Ice Cargo Aircraft Only

7 Payment Bill to: Enter FedEx Acct. No. or Credit Card No. below. Obtain recip. Acct. No.
 Sender Recipient Third Party Credit Card Cash/Check

Total Packages **1** Total Weight **45** lbs. Credit Card Auth. **644**

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FedEx
Express

Package
US Airbill

FedEx
Tracking
Number

8131 9057 3550

Form
ID No. 0200

1 From
Date 4-25-19
Sender's Name Melissa Hockemeyer/LC Phone 763 232 1656
Company GTID Services Inc
Address 1801 old highway 8 NW STE 114
City St. Paul State MN ZIP 55112-2307

2 Your Internal Billing Reference 086665

3 To
Recipient's Name Sample Receiving Phone 708 534 5200
Company TestAmerica
Address 2417 Bond St.
City University Park State IL ZIP 60484



8131 9057 3550

4 Express Package Service * To most locations. Packages up to 150 lbs. For packages over 150 lbs., use the FedEx Express Freight US Airbill.

Next Business Day	2 or 3 Business Days
<input type="checkbox"/> FedEx First Overnight Earliest next business morning delivery to select locations. Friday shipments will be delivered on Monday unless Saturday Delivery is selected.	<input type="checkbox"/> FedEx 2Day A.M. Second business morning.* Saturday Delivery NOT available.
<input checked="" type="checkbox"/> FedEx Priority Overnight Next business morning.* Friday shipments will be delivered on Monday unless Saturday Delivery is selected.	<input type="checkbox"/> FedEx 2Day Second business afternoon.* Thursday shipments will be delivered on Monday unless Saturday Delivery is selected.
<input type="checkbox"/> FedEx Standard Overnight Next business afternoon.* Saturday Delivery NOT available.	<input type="checkbox"/> FedEx Express Saver Third business day.* Saturday Delivery NOT available.

5 Packaging * Declared value limit \$500.

FedEx Envelope* FedEx Pak* FedEx Box FedEx Tube Other

6 Special Handling and Delivery Signature Options Fees may apply. See the FedEx Service Guide.

Saturday Delivery
NOT available for FedEx Standard Overnight, FedEx 2Day A.M., or FedEx Express Saver.

No Signature Required
Package may be left without obtaining a signature for delivery.

Direct Signature
Someone at recipient's address may sign for delivery.

Indirect Signature
If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only.

Does this shipment contain dangerous goods?

One box must be checked.

No Yes As per attached Shipper's Declaration. Yes Shipper's Declaration not required. Dry Ice Dry Ice, UN 1845 _____ x _____ kg

Restrictions apply for dangerous goods—see the current FedEx Service Guide. Cargo Aircraft Only

7 Payment Bill to:

Enter FedEx Acct. No. or Credit Card No. below. Obtain recip. Acct. No.

Sender Acct. No. in Section 1 will be billed. Recipient Third Party Credit Card Cash/Check

Total Packages 2 Total Weight 45 lbs. Credit Card Auth. 644

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FedEx
Express

Package
US Airbill

FedEx
Tracking
Number

8131 9057 3572

Form
ID No. **0200**

1 From

Date 4-25-19

Sender's Name Melissa Hackenmuller Phone 763 232 1656

Company 6TID Services Inc

Address 1201 Old Highway 8 NW STE 114

City St. Paul State MN ZIP 55112-2307

2 Your Internal Billing Reference

086665

3 To

Recipient's Name Sample Receiving Phone 708 534 5200

Company Test America

Address 2417 Bond St.

City University Park State IL ZIP 60484



8131 9057 3572

4 Express Package Service

*To most locations.

Packages up to 150 lbs.
For packages over 150 lbs., use the
FedEx Express Freight US Airbill.

Next Business Day

FedEx First Overnight
Earliest next business morning delivery to select
locations. Friday shipments will be delivered on
Monday unless Saturday Delivery is selected.

FedEx Priority Overnight
Next business morning.* Friday shipments will be
delivered on Monday unless Saturday Delivery
is selected.

FedEx Standard Overnight
Next business afternoon.
Saturday Delivery NOT available.

2 or 3 Business Days

FedEx 2Day A.M.
Second business morning.*
Saturday Delivery NOT available.

FedEx 2Day
Second business afternoon.* Thursday shipments
will be delivered on Monday unless Saturday
Delivery is selected.

FedEx Express Saver
Third business day.*
Saturday Delivery NOT available.

5 Packaging

*Declared value limit \$500.

FedEx Envelope* FedEx Pak* FedEx Box FedEx Tube Other

6 Special Handling and Delivery Signature Options

Fees may apply. See the FedEx Service Guide.

Saturday Delivery
NOT available for FedEx Standard Overnight, FedEx 2Day A.M., or FedEx Express Saver.

No Signature Required
Package may be left without
obtaining a signature for delivery.

Direct Signature
Someone at recipient's address
may sign for delivery.

Indirect Signature
If no one is available at recipient's
address, someone at a neighboring
address may sign for delivery. For
residential deliveries only.

Does this shipment contain dangerous goods?

One box must be checked.
 No Yes As per attached Shipper's Declaration. Yes Shipper's Declaration not required. Dry Ice Dry Ice, 3, UN 1845 x _____ kg
Restrictions apply for dangerous goods—see the current FedEx Service Guide. Cargo Aircraft Only

7 Payment Bill to:

Enter FedEx Acct. No. or Credit Card No. below. Obtain recip. Acct. No.
 Sender Acct. No. in Section I will be billed. Recipient Third Party Credit Card Cash/Check

Total Packages 1 Total Weight 45 lbs. Credit Card Auth.

*Our liability is limited to US\$100 unless you declare a higher value. See the current FedEx Service Guide for details.

644

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FedEx Express Package **US Airbill**

FedEx Tracking Number **8131 9057 3583**

Form ID No. **0200**

1 From
 Date 4-25-19
 Sender's Name Melissa Hackenmiller Phone 763 237 1656
 Company GHG services Inc
 Address 1801 old highway 8 NW STE 114
 City St Paul State MIN ZIP 55117-2207

2 Your Internal Billing Reference 006165

3 To
 Recipient's Name Sample Receiving Phone 708 534 5700
 Company Test America
 Address 2417 Beard St
 City University Park State IL ZIP 60484

Hold Weekday
 FedEx location address REQUIRED. NOT available for FedEx First Overnight.
 Hold Saturday
 FedEx location address REQUIRED. Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.



8131 9057 3583

4 Express Package Service * To most locations. Packages up to 150 lbs. For packages over 150 lbs, use the FedEx Express Freight US Airbill.

Next Business Day	2 or 3 Business Days
<input type="checkbox"/> FedEx First Overnight Earliest next business morning delivery to select locations. Friday shipments will be delivered on Monday unless Saturday Delivery is selected.	<input type="checkbox"/> FedEx 2Day A.M. Second business morning.* Saturday Delivery NOT available.
<input checked="" type="checkbox"/> FedEx Priority Overnight Next business morning.* Friday shipments will be delivered on Monday unless Saturday Delivery is selected.	<input type="checkbox"/> FedEx 2Day Second business afternoon.* Thursday shipments will be delivered on Monday unless Saturday Delivery is selected.
<input type="checkbox"/> FedEx Standard Overnight Saturday Delivery NOT available.	<input type="checkbox"/> FedEx Express Saver Third business day.* Saturday Delivery NOT available.

5 Packaging * Declared value limit \$500.

FedEx Envelope* FedEx Pak* FedEx Box FedEx Tube Other

6 Special Handling and Delivery Signature Options Fees may apply. See the FedEx Service Guide.

Saturday Delivery
 NOT available for FedEx Standard Overnight, FedEx 2Day A.M., or FedEx Express Saver.

No Signature Required
 Packages may be left without obtaining a signature for delivery.

Direct Signature
 Someone at recipient's address may sign for delivery.

Indirect Signature
 If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only.

Does this shipment contain dangerous goods?
 One box must be checked.
 No Yes As per attached Shipper's Declaration. Yes Shipper's Declaration not required. Dry Ice Dry Ice, 5, UN 1845 _____ x _____ kg
 Restrictions apply for dangerous goods — see the current FedEx Service Guide. Cargo Aircraft Only

7 Payment Bill to: Enter FedEx Acct. No. or Credit Card No. below. Obtain recip. Acct. No.

Sender Acct. No. in Section 1 will be billed. Recipient Third Party Credit Card Cash/Check

Total Packages 1 Total Weight 45 lbs. Credit Card Auth. **644**

*Our liability is limited to US\$100 unless you declare a higher value. See the current FedEx Service Guide for details.
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FedEx
Express **Package**
US Airbill

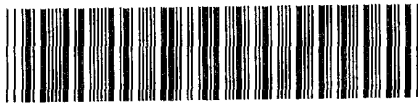
FedEx Tracking Number **8131 9057 3540**

Form ID No. **0200**

1 From
Date 4-25-19
Sender's Name Melissa Hackenmiller Phone 763 232 1656
Company CHD Services Inc
Address 1801 Id highway 8 NW STE 119
City St Paul State MIN ZIP 55112-2317

2 Your Internal Billing Reference 036165

3 To
Recipient's Name Sample Receiving Phone 708 539 5200
Company Test America
Address 2417 Bond St
City Winnetka Park State IL ZIP 60089



8131 9057 3540

4 Express Package Service *To most locations. **Packages up to 150 lbs.**
For packages over 150 lbs., use the FedEx Express Freight US Airbill.

Next Business Day
 FedEx First Overnight
Earliest next business morning delivery to select locations. Friday shipments will be delivered on Monday unless Saturday Delivery is selected.
 FedEx Priority Overnight
Next business morning. Friday shipments will be delivered on Monday unless Saturday Delivery is selected.
 FedEx Standard Overnight
Saturday Delivery NOT available.

2 or 3 Business Days
 FedEx 2Day A.M.
Second business morning. Saturday Delivery NOT available.
 FedEx 2Day
Second business afternoon. Thursday shipments will be delivered on Monday unless Saturday Delivery is selected.
 FedEx Express Saver
Third business day. Saturday Delivery NOT available.

5 Packaging *Declared value limit \$500.
 FedEx Envelope* FedEx Pak* FedEx Box FedEx Tube Other

6 Special Handling and Delivery Signature Options Fees may apply. See the FedEx Service Guide.
 Saturday Delivery
NOT available for FedEx Standard Overnight, FedEx 2Day A.M., or FedEx Express Saver.

No Signature Required
Package may be left without obtaining a signature for delivery.
 Direct Signature
Someone at recipient's address may sign for delivery.
 Indirect Signature
If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only.

Does this shipment contain dangerous goods?
One box must be checked.
 No Yes As per attached Shipper's Declaration. Yes Shipper's Declaration not required. Dry Ice Dry Ice, 3, UN 1845 _____ x _____ kg
Restrictions apply for dangerous goods — see the current FedEx Service Guide. Cargo Aircraft Only

7 Payment Bill to: Enter FedEx Acct. No. or Credit Card No. below. Obtain recip. Acct. No.
 Sender Acct. No. in Section 1 will be billed. Recipient Third Party Credit Card Cash/Check

Total Packages 1 Total Weight 45 lbs. Credit Card Auth. **644**

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TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # : _____

Client ETA Site Name _____ Cooler unpacked by: Ryan Cribley
 Cooler Received on 4-27-19 Opened on 4-27-19 1000
 FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ **Storage Location** _____

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____
 Packing material used: Bubble Wrap Foam Plastic Bag None Other _____
 COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt See Multiple Cooler Form
 IR GUN# IR-8 (CF -0.2 °C) Observed Cooler Temp. 4.0 °C Corrected Cooler Temp. 3.8 °C
 IR GUN #36 (CF +0.7°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
 -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
 -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No NA
 -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
 If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC984738
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? Yes No NA  Larger than this.
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No
16. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:

 VOAs
 Oil and Grease
 TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____
 Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by: _____

18. SAMPLE CONDITION
 Sample(s) _____ were received after the recommended holding time had expired.
 Sample(s) _____ were received in a broken container.
 Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION
 Sample(s) _____ were further preserved in the laboratory.
 Time preserved: _____ Preservative(s) added/Lot number(s): _____
 VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 500-162279-1

Login Number: 162279

List Source: Eurofins TestAmerica, Chicago

List Number: 1

Creator: Scott, Sherri L

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	4.6,3.6,2.3,4.6,5.9,3.9,4.3
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



ANALYTICAL REPORT

Eurofins TestAmerica, Chicago
2417 Bond Street
University Park, IL 60484
Tel: (708)534-5200

Laboratory Job ID: 500-163656-1
Client Project/Site: Penta Wood 086165

For:
GHD Services Inc.
1801 Old Highway 8 NW
Suite 114
St. Paul, Minnesota 55112

Attn: Mr. Grant Anderson

Jodie Bracken

Authorized for release by:
6/4/2019 10:30:07 AM
Jodie Bracken, Project Management Assistant II
jodie.bracken@testamericainc.com
Designee for
Richard Wright, Senior Project Manager
(708)534-5200
richard.wright@testamericainc.com

LINKS

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results through
TotalAccess

Have a Question?



Visit us at:
www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-163656-1

Job ID: 500-163656-1

Laboratory: Eurofins TestAmerica, Chicago

Narrative

Job Narrative 500-163656-1

Receipt

The samples were received on 5/20/2019 10:10 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.7° C.

Receipt Exceptions

The following sample(s) was received outside of holding time for nitrate by IC.

GC/MS VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC/MS Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC VOA

Method(s) RSK-175: The surrogate in the continuing calibration verification (CCV) failed criteria low at 20.7%. The analytes in the CCV passed criteria and all the samples passed surrogate. After careful evaluation the data is reported. (CCV 240-383685/56)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

Method(s) 300.0: The following IC 8 sample was received outside of holding time for Nitrate as N: W-190517-RA-30 (500-163656-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-163656-1

Client Sample ID: W-190517-RA-30

Lab Sample ID: 500-163656-1

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Pentachlorophenol	0.14		0.095	0.086	ug/L	1		8151A	Total/NA
Copper	1.6	J	2.0	0.50	ug/L	1		6020A	Dissolved
Iron	46.8	J	100	46.7	ug/L	1		6020A	Dissolved
Manganese	135		2.5	0.79	ug/L	1		6020A	Dissolved
Zinc	17.0	J	20.0	6.9	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	40.3		1.3	0.66	mg/L	1		SM 2340B	Total/NA
Chloride	1.7		0.20	0.17	mg/L	1		300.0	Total/NA
Nitrate as N	1.3	H	0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	11.3		0.40	0.19	mg/L	2		300.0	Total/NA
Total Organic Carbon - Duplicates	1.1		1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	35.9		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: Trip Blank

Lab Sample ID: 500-163656-2

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Chicago

Method Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-163656-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CHI
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL CHI
RSK-175	Dissolved Gases (GC)	RSK	TAL CAN
8151A	Herbicides (GC)	SW846	TAL CHI
6020A	Metals (ICP/MS)	SW846	TAL CHI
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	TAL CHI
300.0	Anions, Ion Chromatography	MCAWW	TAL CHI
9060A	Organic Carbon, Total (TOC)	SW846	TAL CHI
SM 2320B	Alkalinity	SM	TAL CHI
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CHI
3010A	Preparation, Total Metals	SW846	TAL CHI
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL CHI
5030B	Purge and Trap	SW846	TAL CHI
8151A	Extraction (Herbicides)	SW846	TAL CHI

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

RSK = Sample Prep And Calculations For Dissolved Gas Analysis In Water Samples Using A GC Headspace Equilibration Technique, RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Lab

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL CHI = Eurofins TestAmerica, Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

Sample Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-163656-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
500-163656-1	W-190517-RA-30	Water	05/17/19 10:23	05/20/19 10:10	
500-163656-2	Trip Blank	Water	05/17/19 00:00	05/20/19 10:10	

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Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-163656-1

Client Sample ID: W-190517-RA-30

Lab Sample ID: 500-163656-1

Date Collected: 05/17/19 10:23

Matrix: Water

Date Received: 05/20/19 10:10

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/31/19 15:56	1
Toluene	<0.15		0.50	0.15	ug/L			05/31/19 15:56	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/31/19 15:56	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/31/19 15:56	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		75 - 126		05/31/19 15:56	1
Toluene-d8 (Surr)	92		75 - 120		05/31/19 15:56	1
4-Bromofluorobenzene (Surr)	89		72 - 124		05/31/19 15:56	1
Dibromofluoromethane	106		75 - 120		05/31/19 15:56	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.23		0.75	0.23	ug/L		05/22/19 07:47	05/22/19 16:15	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	52		36 - 120	05/22/19 07:47	05/22/19 16:15	1
2-Fluorobiphenyl (Surr)	46		34 - 110	05/22/19 07:47	05/22/19 16:15	1
Terphenyl-d14 (Surr)	71		40 - 145	05/22/19 07:47	05/22/19 16:15	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.17		1.0	0.17	ug/L			05/31/19 02:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	80	^c	60 - 140		05/31/19 02:27	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.14		0.095	0.086	ug/L		05/21/19 10:19	05/25/19 02:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCAA	78		25 - 130	05/21/19 10:19	05/25/19 02:34	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.23		1.0	0.23	ug/L		05/23/19 16:03	05/24/19 12:53	1
Copper	1.6	J	2.0	0.50	ug/L		05/23/19 16:03	05/28/19 18:54	1
Iron	46.8	J	100	46.7	ug/L		05/23/19 16:03	05/24/19 12:53	1
Manganese	135		2.5	0.79	ug/L		05/23/19 16:03	05/24/19 12:53	1
Zinc	17.0	J	20.0	6.9	ug/L		05/23/19 16:03	05/24/19 12:53	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	40.3		1.3	0.66	mg/L		05/21/19 16:21	05/23/19 06:38	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1.7		0.20	0.17	mg/L			05/20/19 17:54	1
Nitrate as N	1.3	H	0.20	0.068	mg/L			05/20/19 17:54	1
Sulfate	11.3		0.40	0.19	mg/L			06/01/19 17:33	2
Total Organic Carbon - Duplicates	1.1		1.0	0.47	mg/L			05/31/19 10:00	1

Eurofins TestAmerica, Chicago

Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-163656-1

Client Sample ID: W-190517-RA-30

Lab Sample ID: 500-163656-1

Date Collected: 05/17/19 10:23

Matrix: Water

Date Received: 05/20/19 10:10

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	35.9		5.0	3.7	mg/L			05/31/19 12:40	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-163656-1

Client Sample ID: Trip Blank

Lab Sample ID: 500-163656-2

Date Collected: 05/17/19 00:00

Matrix: Water

Date Received: 05/20/19 10:10

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			05/30/19 12:13	1
Toluene	<0.15		0.50	0.15	ug/L			05/30/19 12:13	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/30/19 12:13	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/30/19 12:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		75 - 126		05/30/19 12:13	1
Toluene-d8 (Surr)	107		75 - 120		05/30/19 12:13	1
4-Bromofluorobenzene (Surr)	89		72 - 124		05/30/19 12:13	1
Dibromofluoromethane	90		75 - 120		05/30/19 12:13	1

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-163656-1

Qualifiers

GC VOA

Qualifier	Qualifier Description
^c	CCV Recovery is outside acceptance limits.

Metals

Qualifier	Qualifier Description
F5	Duplicate RPD exceeds limit, and one or both sample results are less than 5 times RL. The data are considered valid because the absolute difference is less than the RL.
J	Reported value was between the limit of detection and the limit of quantitation.

General Chemistry

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-163656-1

GC/MS VOA

Analysis Batch: 487803

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163656-2	Trip Blank	Total/NA	Water	8260B	
MB 500-487803/7	Method Blank	Total/NA	Water	8260B	
LCS 500-487803/5	Lab Control Sample	Total/NA	Water	8260B	

Analysis Batch: 488118

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163656-1	W-190517-RA-30	Total/NA	Water	8260B	
MB 500-488118/6	Method Blank	Total/NA	Water	8260B	
LCS 500-488118/4	Lab Control Sample	Total/NA	Water	8260B	

GC/MS Semi VOA

Prep Batch: 486466

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163656-1	W-190517-RA-30	Total/NA	Water	3510C	
MB 500-486466/1-A	Method Blank	Total/NA	Water	3510C	
LCS 500-486466/2-A	Lab Control Sample	Total/NA	Water	3510C	

Analysis Batch: 486534

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163656-1	W-190517-RA-30	Total/NA	Water	8270D	486466
MB 500-486466/1-A	Method Blank	Total/NA	Water	8270D	486466
LCS 500-486466/2-A	Lab Control Sample	Total/NA	Water	8270D	486466

GC VOA

Analysis Batch: 383685

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163656-1	W-190517-RA-30	Total/NA	Water	RSK-175	
MB 240-383685/33	Method Blank	Total/NA	Water	RSK-175	
LCS 240-383685/34	Lab Control Sample	Total/NA	Water	RSK-175	
LCS 240-383685/36	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 240-383685/35	Lab Control Sample Dup	Total/NA	Water	RSK-175	
LCSD 240-383685/37	Lab Control Sample Dup	Total/NA	Water	RSK-175	

GC Semi VOA

Prep Batch: 486324

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163656-1	W-190517-RA-30	Total/NA	Water	8151A	
MB 500-486324/1-A	Method Blank	Total/NA	Water	8151A	
LCS 500-486324/2-A	Lab Control Sample	Total/NA	Water	8151A	
LCSD 500-486324/3-A	Lab Control Sample Dup	Total/NA	Water	8151A	

Analysis Batch: 487108

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163656-1	W-190517-RA-30	Total/NA	Water	8151A	486324
MB 500-486324/1-A	Method Blank	Total/NA	Water	8151A	486324
LCS 500-486324/2-A	Lab Control Sample	Total/NA	Water	8151A	486324
LCSD 500-486324/3-A	Lab Control Sample Dup	Total/NA	Water	8151A	486324

Eurofins TestAmerica, Chicago

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-163656-1

Metals

Prep Batch: 486409

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163656-1	W-190517-RA-30	Total/NA	Water	3010A	

Analysis Batch: 486682

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163656-1	W-190517-RA-30	Total/NA	Water	SM 2340B	486409

Prep Batch: 486864

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163656-1	W-190517-RA-30	Dissolved	Water	3005A	
MB 500-486864/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 500-486864/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
500-163656-1 MS	W-190517-RA-30	Dissolved	Water	3005A	
500-163656-1 MSD	W-190517-RA-30	Dissolved	Water	3005A	
500-163656-1 DU	W-190517-RA-30	Dissolved	Water	3005A	

Analysis Batch: 487377

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163656-1	W-190517-RA-30	Dissolved	Water	6020A	486864
MB 500-486864/1-A	Method Blank	Total Recoverable	Water	6020A	486864
LCS 500-486864/2-A	Lab Control Sample	Total Recoverable	Water	6020A	486864
500-163656-1 MS	W-190517-RA-30	Dissolved	Water	6020A	486864
500-163656-1 MSD	W-190517-RA-30	Dissolved	Water	6020A	486864
500-163656-1 DU	W-190517-RA-30	Dissolved	Water	6020A	486864

Analysis Batch: 487621

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163656-1	W-190517-RA-30	Dissolved	Water	6020A	486864
MB 500-486864/1-A	Method Blank	Total Recoverable	Water	6020A	486864
LCS 500-486864/2-A	Lab Control Sample	Total Recoverable	Water	6020A	486864
500-163656-1 MS	W-190517-RA-30	Dissolved	Water	6020A	486864
500-163656-1 MSD	W-190517-RA-30	Dissolved	Water	6020A	486864
500-163656-1 DU	W-190517-RA-30	Dissolved	Water	6020A	486864

General Chemistry

Analysis Batch: 486212

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163656-1	W-190517-RA-30	Total/NA	Water	300.0	
MB 500-486212/9	Method Blank	Total/NA	Water	300.0	
LCS 500-486212/10	Lab Control Sample	Total/NA	Water	300.0	

Analysis Batch: 488142

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163656-1	W-190517-RA-30	Total/NA	Water	9060A	
MB 500-488142/4	Method Blank	Total/NA	Water	9060A	
LCS 500-488142/5	Lab Control Sample	Total/NA	Water	9060A	
500-163656-1 MS	W-190517-RA-30	Total/NA	Water	9060A	
500-163656-1 MSD	W-190517-RA-30	Total/NA	Water	9060A	

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-163656-1

General Chemistry

Analysis Batch: 488151

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163656-1	W-190517-RA-30	Total/NA	Water	SM 2320B	
MB 500-488151/3	Method Blank	Total/NA	Water	SM 2320B	
LCS 500-488151/4	Lab Control Sample	Total/NA	Water	SM 2320B	
500-163656-1 DU	W-190517-RA-30	Total/NA	Water	SM 2320B	

Analysis Batch: 488237

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163656-1	W-190517-RA-30	Total/NA	Water	300.0	
MB 500-488237/20	Method Blank	Total/NA	Water	300.0	
LCS 500-488237/21	Lab Control Sample	Total/NA	Water	300.0	

Surrogate Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-163656-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA (75-126)	TOL (75-120)	BFB (72-124)	DBFM (75-120)
500-163656-1	W-190517-RA-30	98	92	89	106
500-163656-2	Trip Blank	80	107	89	90
LCS 500-487803/5	Lab Control Sample	86	104	92	97
LCS 500-488118/4	Lab Control Sample	99	95	93	108
MB 500-487803/7	Method Blank	90	101	89	96
MB 500-488118/6	Method Blank	99	93	90	106

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

TOL = Toluene-d8 (Surr)

BFB = 4-Bromofluorobenzene (Surr)

DBFM = Dibromofluoromethane

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	NBZ (36-120)	FBP (34-110)	TPHL (40-145)
500-163656-1	W-190517-RA-30	52	46	71
LCS 500-486466/2-A	Lab Control Sample	66	55	73
MB 500-486466/1-A	Method Blank	54	53	74

Surrogate Legend

NBZ = Nitrobenzene-d5 (Surr)

FBP = 2-Fluorobiphenyl (Surr)

TPHL = Terphenyl-d14 (Surr)

Method: RSK-175 - Dissolved Gases (GC)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TFE2 (60-140)
500-163656-1	W-190517-RA-30	80 ^c
LCS 240-383685/34	Lab Control Sample	84
LCS 240-383685/36	Lab Control Sample	83
LCSD 240-383685/35	Lab Control Sample Dup	85
LCSD 240-383685/37	Lab Control Sample Dup	84
MB 240-383685/33	Method Blank	86

Surrogate Legend

TFE = 1,1,1-Trifluoroethane

Method: 8151A - Herbicides (GC)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCPAA1 (25-130)
500-163656-1	W-190517-RA-30	78
LCS 500-486324/2-A	Lab Control Sample	80

Eurofins TestAmerica, Chicago

Surrogate Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-163656-1

Method: 8151A - Herbicides (GC) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCPAA1 (25-130)
LCSD 500-486324/3-A	Lab Control Sample Dup	82
MB 500-486324/1-A	Method Blank	80

Surrogate Legend

DCPAA = DCAA

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- 2
- 3
- 4
- 5
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- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-163656-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-487803/7
Matrix: Water
Analysis Batch: 487803

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB MB		LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzene	<0.15		0.50	0.15	ug/L			05/30/19 11:20	1
Toluene	<0.15		0.50	0.15	ug/L			05/30/19 11:20	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/30/19 11:20	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/30/19 11:20	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	90		75 - 126		05/30/19 11:20	1
Toluene-d8 (Surr)	101		75 - 120		05/30/19 11:20	1
4-Bromofluorobenzene (Surr)	89		72 - 124		05/30/19 11:20	1
Dibromofluoromethane	96		75 - 120		05/30/19 11:20	1

Lab Sample ID: LCS 500-487803/5
Matrix: Water
Analysis Batch: 487803

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
Benzene	50.0	48.9		ug/L		98	70 - 120
Toluene	50.0	47.6		ug/L		95	70 - 125
Ethylbenzene	50.0	51.5		ug/L		103	70 - 123
Xylenes, Total	100	99.7		ug/L		100	70 - 125

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	86		75 - 126
Toluene-d8 (Surr)	104		75 - 120
4-Bromofluorobenzene (Surr)	92		72 - 124
Dibromofluoromethane	97		75 - 120

Lab Sample ID: MB 500-488118/6
Matrix: Water
Analysis Batch: 488118

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB MB		LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzene	<0.15		0.50	0.15	ug/L			05/31/19 13:20	1
Toluene	<0.15		0.50	0.15	ug/L			05/31/19 13:20	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			05/31/19 13:20	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			05/31/19 13:20	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	99		75 - 126		05/31/19 13:20	1
Toluene-d8 (Surr)	93		75 - 120		05/31/19 13:20	1
4-Bromofluorobenzene (Surr)	90		72 - 124		05/31/19 13:20	1
Dibromofluoromethane	106		75 - 120		05/31/19 13:20	1

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-163656-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 500-488118/4
Matrix: Water
Analysis Batch: 488118

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	50.7		ug/L		101	70 - 120
Toluene	50.0	49.2		ug/L		98	70 - 125
Ethylbenzene	50.0	52.4		ug/L		105	70 - 123
Xylenes, Total	100	103		ug/L		103	70 - 125

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	99		75 - 126
Toluene-d8 (Surr)	95		75 - 120
4-Bromofluorobenzene (Surr)	93		72 - 124
Dibromofluoromethane	108		75 - 120

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-486466/1-A
Matrix: Water
Analysis Batch: 486534

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 486466

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.25		0.80	0.25	ug/L		05/22/19 07:47	05/22/19 15:45	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	54		36 - 120	05/22/19 07:47	05/22/19 15:45	1
2-Fluorobiphenyl (Surr)	53		34 - 110	05/22/19 07:47	05/22/19 15:45	1
Terphenyl-d14 (Surr)	74		40 - 145	05/22/19 07:47	05/22/19 15:45	1

Lab Sample ID: LCS 500-486466/2-A
Matrix: Water
Analysis Batch: 486534

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 486466

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Naphthalene	32.0	16.3		ug/L		51	36 - 110

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Nitrobenzene-d5 (Surr)	66		36 - 120
2-Fluorobiphenyl (Surr)	55		34 - 110
Terphenyl-d14 (Surr)	73		40 - 145

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 240-383685/33
Matrix: Water
Analysis Batch: 383685

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<0.17		1.0	0.17	ug/L			05/30/19 20:10	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	86		60 - 140		05/30/19 20:10	1

Eurofins TestAmerica, Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-163656-1

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: LCS 240-383685/34
Matrix: Water
Analysis Batch: 383685

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	480	393		ug/L		82	80 - 120
Surrogate	%Recovery	LCS Qualifier	Limits				
1,1,1-Trifluoroethane	84		60 - 140				

Lab Sample ID: LCS 240-383685/36
Matrix: Water
Analysis Batch: 383685

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Surrogate	%Recovery	LCS Qualifier	Limits
1,1,1-Trifluoroethane	83		60 - 140

Lab Sample ID: LCSD 240-383685/35
Matrix: Water
Analysis Batch: 383685

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methane	480	399		ug/L		83	80 - 120	1	35
Surrogate	%Recovery	LCSD Qualifier	Limits						
1,1,1-Trifluoroethane	85		60 - 140						

Lab Sample ID: LCSD 240-383685/37
Matrix: Water
Analysis Batch: 383685

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Surrogate	%Recovery	LCSD Qualifier	Limits
1,1,1-Trifluoroethane	84		60 - 140

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 500-486324/1-A
Matrix: Water
Analysis Batch: 487108

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 486324

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.36		0.40	0.36	ug/L		05/21/19 10:19	05/25/19 01:20	1
Surrogate	%Recovery	MB Qualifier	Limits						
DCAA	80		25 - 130						
							Prepared	Analyzed	Dil Fac
							05/21/19 10:19	05/25/19 01:20	1

Lab Sample ID: LCS 500-486324/2-A
Matrix: Water
Analysis Batch: 487108

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 486324

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Pentachlorophenol	10.1	7.23		ug/L		72	40 - 122

Eurofins TestAmerica, Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-163656-1

Method: 8151A - Herbicides (GC) (Continued)

Lab Sample ID: LCS 500-486324/2-A
Matrix: Water
Analysis Batch: 487108

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 486324

Surrogate	LCS %Recovery	LCS Qualifier	Limits
DCAA	80		25 - 130

Lab Sample ID: LCSD 500-486324/3-A
Matrix: Water
Analysis Batch: 487108

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 486324

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Pentachlorophenol	10.1	7.86		ug/L		78	40 - 122	8	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
DCAA	82		25 - 130

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 500-486864/1-A
Matrix: Water
Analysis Batch: 487377

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 486864

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.23		1.0	0.23	ug/L		05/23/19 16:03	05/24/19 10:49	1
Iron	<46.7		100	46.7	ug/L		05/23/19 16:03	05/24/19 10:49	1
Manganese	<0.79		2.5	0.79	ug/L		05/23/19 16:03	05/24/19 10:49	1
Zinc	<6.9		20.0	6.9	ug/L		05/23/19 16:03	05/24/19 10:49	1

Lab Sample ID: MB 500-486864/1-A
Matrix: Water
Analysis Batch: 487621

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 486864

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<0.50		2.0	0.50	ug/L		05/23/19 16:03	05/28/19 18:46	1

Lab Sample ID: LCS 500-486864/2-A
Matrix: Water
Analysis Batch: 487377

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 486864

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Arsenic	100	97.45		ug/L		97	80 - 120
Iron	1000	1043		ug/L		104	80 - 120
Manganese	500	516.6		ug/L		103	80 - 120
Zinc	500	507.8		ug/L		102	80 - 120

Lab Sample ID: LCS 500-486864/2-A
Matrix: Water
Analysis Batch: 487621

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 486864

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Copper	250	252.6		ug/L		101	80 - 120

Eurolins TestAmerica, Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-163656-1

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: 500-163656-1 MS
Matrix: Water
Analysis Batch: 487377

Client Sample ID: W-190517-RA-30
Prep Type: Dissolved
Prep Batch: 486864

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	
	Result	Qualifier		Result	Qualifier				Limits	Limit
Arsenic	<0.23		100	98.73		ug/L		99	75 - 125	
Iron	46.8	J	1000	1069		ug/L		102	75 - 125	
Manganese	135		500	634.1		ug/L		100	75 - 125	
Zinc	17.0	J	500	516.8		ug/L		100	75 - 125	

Lab Sample ID: 500-163656-1 MS
Matrix: Water
Analysis Batch: 487621

Client Sample ID: W-190517-RA-30
Prep Type: Dissolved
Prep Batch: 486864

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	
	Result	Qualifier		Result	Qualifier				Limits	Limit
Copper	1.6	J	250	247.5		ug/L		98	75 - 125	

Lab Sample ID: 500-163656-1 MSD
Matrix: Water
Analysis Batch: 487377

Client Sample ID: W-190517-RA-30
Prep Type: Dissolved
Prep Batch: 486864

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.		RPD	
	Result	Qualifier		Result	Qualifier				Limits	RPD	Limit	
Arsenic	<0.23		100	99.43		ug/L		99	75 - 125	1	20	
Iron	46.8	J	1000	1055		ug/L		101	75 - 125	1	20	
Manganese	135		500	720.4		ug/L		117	75 - 125	13	20	
Zinc	17.0	J	500	519.7		ug/L		101	75 - 125	1	20	

Lab Sample ID: 500-163656-1 MSD
Matrix: Water
Analysis Batch: 487621

Client Sample ID: W-190517-RA-30
Prep Type: Dissolved
Prep Batch: 486864

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.		RPD	
	Result	Qualifier		Result	Qualifier				Limits	RPD	Limit	
Copper	1.6	J	250	251.7		ug/L		100	75 - 125	2	20	

Lab Sample ID: 500-163656-1 DU
Matrix: Water
Analysis Batch: 487377

Client Sample ID: W-190517-RA-30
Prep Type: Dissolved
Prep Batch: 486864

Analyte	Sample	Sample	Spike	DU	DU	Unit	D	%Rec	%Rec.		RPD	
	Result	Qualifier		Result	Qualifier				Limits	RPD	Limit	
Arsenic	<0.23			<0.23		ug/L				NC	20	
Iron	46.8	J		<46.7		ug/L				NC	20	
Manganese	135			120.3		ug/L				12	20	
Zinc	17.0	J		9.54	J F5	ug/L				56	20	

Lab Sample ID: 500-163656-1 DU
Matrix: Water
Analysis Batch: 487621

Client Sample ID: W-190517-RA-30
Prep Type: Dissolved
Prep Batch: 486864

Analyte	Sample	Sample	Spike	DU	DU	Unit	D	%Rec	%Rec.		RPD	
	Result	Qualifier		Result	Qualifier				Limits	RPD	Limit	
Copper	1.6	J		1.41	J	ug/L				10	20	

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-163656-1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 500-486212/9
Matrix: Water
Analysis Batch: 486212

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB MB		LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Chloride	<0.17		0.20	0.17	mg/L			05/20/19 17:28	1
Nitrate as N	<0.068		0.20	0.068	mg/L			05/20/19 17:28	1
Sulfate	<0.095		0.20	0.095	mg/L			05/20/19 17:28	1

Lab Sample ID: LCS 500-486212/10
Matrix: Water
Analysis Batch: 486212

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	2.00	2.02		mg/L		101	90 - 110
Sulfate	5.00	4.92		mg/L		98	90 - 110

Lab Sample ID: MB 500-488237/20
Matrix: Water
Analysis Batch: 488237

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB MB		LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Sulfate	<0.095		0.20	0.095	mg/L			06/01/19 17:08	1

Lab Sample ID: LCS 500-488237/21
Matrix: Water
Analysis Batch: 488237

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits

Method: 9060A - Organic Carbon, Total (TOC)

Lab Sample ID: MB 500-488142/4
Matrix: Water
Analysis Batch: 488142

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB MB		LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Total Organic Carbon - Duplicates	<0.47		1.0	0.47	mg/L			05/31/19 07:21	1

Lab Sample ID: LCS 500-488142/5
Matrix: Water
Analysis Batch: 488142

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits

Lab Sample ID: 500-163656-1 MS
Matrix: Water
Analysis Batch: 488142

Client Sample ID: W-190517-RA-30
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits

Eurofins TestAmerica, Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-163656-1

Method: 9060A - Organic Carbon, Total (TOC)

Lab Sample ID: 500-163656-1 MSD
Matrix: Water
Analysis Batch: 488142

Client Sample ID: W-190517-RA-30
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Organic Carbon - Duplicates	1.1		10.0	11.30		mg/L		102	75 - 125	1	20

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 500-488151/3
Matrix: Water
Analysis Batch: 488151

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	<3.7		5.0	3.7	mg/L			05/31/19 11:42	1

Lab Sample ID: LCS 500-488151/4
Matrix: Water
Analysis Batch: 488151

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	100	104.2		mg/L		104	90 - 110

Lab Sample ID: 500-163656-1 DU
Matrix: Water
Analysis Batch: 488151

Client Sample ID: W-190517-RA-30
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Alkalinity	35.9		36.89		mg/L		3	20

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-163656-1

Client Sample ID: W-190517-RA-30

Lab Sample ID: 500-163656-1

Date Collected: 05/17/19 10:23

Matrix: Water

Date Received: 05/20/19 10:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	488118	05/31/19 15:56	JDD	TAL CHI
Total/NA	Prep	3510C			486466	05/22/19 07:47	JVD	TAL CHI
Total/NA	Analysis	8270D		1	486534	05/22/19 16:15	STW	TAL CHI
Total/NA	Analysis	RSK-175		1	383685	05/31/19 02:27	LKG	TAL CAN
Total/NA	Prep	8151A			486324	05/21/19 10:19	JVD	TAL CHI
Total/NA	Analysis	8151A		1	487108	05/25/19 02:34	JBj	TAL CHI
Dissolved	Prep	3005A			486864	05/23/19 16:03	BDE	TAL CHI
Dissolved	Analysis	6020A		1	487377	05/24/19 12:53	FXG	TAL CHI
Dissolved	Prep	3005A			486864	05/23/19 16:03	BDE	TAL CHI
Dissolved	Analysis	6020A		1	487621	05/28/19 18:54	FXG	TAL CHI
Total/NA	Prep	3010A			486409	05/21/19 16:21	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	486682	05/23/19 06:38	EEN	TAL CHI
Total/NA	Analysis	300.0		1	486212	05/20/19 17:54	EAT	TAL CHI
Total/NA	Analysis	300.0		2	488237	06/01/19 17:33	EAT	TAL CHI
Total/NA	Analysis	9060A		1	488142	05/31/19 10:00	MTB	TAL CHI
Total/NA	Analysis	SM 2320B		1	488151	05/31/19 12:40	SMO	TAL CHI

Client Sample ID: Trip Blank

Lab Sample ID: 500-163656-2

Date Collected: 05/17/19 00:00

Matrix: Water

Date Received: 05/20/19 10:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	487803	05/30/19 12:13	EMA	TAL CHI

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL CHI = Eurofins TestAmerica, Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

Accreditation/Certification Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-163656-1

Laboratory: Eurofins TestAmerica, Chicago

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Wisconsin	State Program	5	999580010	08-31-19 *

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
SM 2320B		Water	Alkalinity

Laboratory: Eurofins TestAmerica, Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-20
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19 *
Illinois	NELAP	5	200004	07-31-19 *
Iowa	State Program	7	421	06-01-21
Kansas	NELAP	7	E-10336	04-30-20
Kentucky (UST)	State Program	4	58	02-23-20
Kentucky (WW)	State Program	4	98016	12-31-19
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19 *
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19 *
New York	NELAP	2	10975	03-31-20
Ohio VAP	State Program	5	CL0024	09-06-19 *
Oregon	NELAP	10	4062	02-23-20
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-18-10	08-31-19 *
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19 *
Washington	State Program	10	C971	01-12-20 *
West Virginia DEP	State Program	3	210	12-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.



CONESTOGA-ROVERS & ASSOCIATES

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COC NO. **SP-02873**

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500-163656 (See Reverse Side for Instructions)

Project No/Phase/Task Code: 086165-06-09			Laboratory Name: Test America				Lab Location:			SSOW ID:																																																																								
Project Name: Penta Wood			Lab Contact:				Lab Quote No:			Cooler No:																																																																								
Project Location: Siren WI			<table border="1"> <thead> <tr> <th rowspan="2">SAMPLE TYPE</th> <th colspan="7">CONTAINER QUANTITY & PRESERVATION</th> <th colspan="4">ANALYSIS REQUESTED (See Back of COC for Definitions)</th> </tr> <tr> <th>Matrix Code (see back of COC)</th> <th>Grab (G) or Comp (C)</th> <th>Unpreserved</th> <th>Hydrochloric Acid (HCl)</th> <th>Nitric Acid (HNO₃)</th> <th>Sulfuric Acid (H₂SO₄)</th> <th>Sodium Hydroxide (NaOH)</th> <th>Methanol/Water (Soil VOC)</th> <th>EnCores 3x5-g, 1x25-g</th> <th>Other:</th> <th>Total Containers/Sample</th> <th>BTEX</th> <th>Naphthalene</th> <th>PCP</th> <th>Metals *</th> <th>Hardness</th> <th>Al, Cl, SO₄, Mn, Ni</th> <th>TOC</th> <th>Methane</th> <th>MS/MSD Request</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>15</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>				SAMPLE TYPE	CONTAINER QUANTITY & PRESERVATION							ANALYSIS REQUESTED (See Back of COC for Definitions)				Matrix Code (see back of COC)	Grab (G) or Comp (C)	Unpreserved	Hydrochloric Acid (HCl)	Nitric Acid (HNO ₃)	Sulfuric Acid (H ₂ SO ₄)	Sodium Hydroxide (NaOH)	Methanol/Water (Soil VOC)	EnCores 3x5-g, 1x25-g	Other:	Total Containers/Sample	BTEX	Naphthalene	PCP	Metals *	Hardness	Al, Cl, SO ₄ , Mn, Ni	TOC	Methane	MS/MSD Request												15	X	X	X	X	X	X	X	X													1										Carrier:	
SAMPLE TYPE	CONTAINER QUANTITY & PRESERVATION							ANALYSIS REQUESTED (See Back of COC for Definitions)																																																																										
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											15	X	X	X	X	X	X	X	X																																																															
											1																																																																							
Chemistry Contact: G. Anderson			Sampler(s): R. Amund				500-163656 COC			Airbill No:																																																																								
Date Shipped:			COMMENTS/ SPECIAL INSTRUCTIONS:																																																																															
1	SAMPLE IDENTIFICATION (Containers for each sample may be combined on one line)		DATE (mm/dd/yy)	TIME (hh:mm)							Metals - Field filled																																																																							
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TAT Required in business days (use separate COCs for different TATs): <input type="checkbox"/> 1 Day <input type="checkbox"/> 2 Days <input type="checkbox"/> 3 Days <input type="checkbox"/> 1 Week <input type="checkbox"/> 2 Week <input type="checkbox"/> Other:					Total Number of Containers: 16		Notes/ Special Requirements: 2.7																																																																											
All Samples in Cooler must be on COC																																																																																		
RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY	DATE	TIME																																																																											
	GIXD	5/17/19	1500		TA-CPL	5/20/19	1010																																																																											

THE CHAIN OF CUSTODY IS A LEGAL DOCUMENT - ALL FIELDS MUST BE COMPLETED ACCURATELY

FedEx Express *Package US Airbill*

FedEx Tracking Number

8131 9057 3528

Form ID No. **0200**



500-163656 Waybill

fedex.com 1.800.GoFedEx 1.800.463.3339

1 From

Date 5/17/19

Sender's Name RAAMOT Phone 651 639-0913

Company GHD

Address 1801 Old Highway 8 NW 114
Dept./Floor/Suite/Room

City St. Paul State MN ZIP 55112

2 Your Internal Billing Reference 086165-06-09

3 To

Recipient's Name Sample Receiving Phone _____

Company TAT America

Address 2417 Bond St
We cannot deliver to P.O. boxes or P.O. ZIP codes. Dept./Floor/Suite/Room

Address _____
Use this line for the HLDL location address or for continuation of your shipping address.

City University Park State IL ZIP 60484

Hold Weekday
FedEx location address REQUIRED. NOT available for FedEx First Overnight.

Hold Saturday
FedEx location address REQUIRED. Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.



8131 9057 3528

48 qt.

4 Express Package Service *To most locations. Packages up to 150 lbs. For packages over 150 lbs., use the FedEx Express Freight US Airbill.

Next Business Day

FedEx First Overnight
Earliest next business morning delivery to select locations. Friday shipments will be delivered on Monday unless Saturday Delivery is selected.

FedEx Priority Overnight
Next business morning.* Friday shipments will be delivered on Monday unless Saturday Delivery is selected.

FedEx Standard Overnight
Next business afternoon.* Saturday Delivery NOT available.

2 or 3 Business Days

FedEx 2Day A.M.
Second business morning.* Saturday Delivery NOT available.

FedEx 2Day
Second business afternoon.* Thursday shipments will be delivered on Monday unless Saturday Delivery is selected.

FedEx Express Saver
Third business day.* Saturday Delivery NOT available.

5 Packaging *Declared value limit \$500.

FedEx Envelope* FedEx Pak* FedEx Box FedEx Tube Other

6 Special Handling and Delivery Signature Options Fees may apply. See the FedEx Service Guide.

Saturday Delivery
NOT available for FedEx Standard Overnight, FedEx 2Day A.M., or FedEx Express Saver.

No Signature Required
Package may be left without obtaining a signature for delivery.

Direct Signature
Someone at recipient's address may sign for delivery.

Indirect Signature
If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only.

Does this shipment contain dangerous goods?
One box must be checked.

No **Yes** As per attached Shipper's Declaration. **Yes** Shipper's Declaration not required.

Dry Ice
Dry Ice, 8, UN 1845 _____ x _____ kg

Restrictions apply for dangerous goods — see the current FedEx Service Guide. **Cargo Aircraft Only**

7 Payment Bill to:

Enter FedEx Acct. No. or Credit Card No. below. Obtain recip. Acct. No.

Sender Acct. No. in Section 1 will be billed. **Recipient** **Third Party** **Credit Card** **Cash/Check**

Total Packages 1 Total Weight 40 lbs. Credit Card Auth. _____

*Our liability is limited to US\$100 unless you declare a higher value. See the current FedEx Service Guide for details.

Rev. Date 3/15 • Part #187001 • ©2012-2015 FedEx • PRINTED IN U.S.A. SRM

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TestAmerica Canton Sample Receipt Form/Narrative

Login # : _____

Canton Facility

Client Chicago Site Name _____
Cooler Received on 5-21-19 Opened on 5-21-19
FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Cooler unpacked by: _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # _____ Foam Box Client Cooler Box _____ Other _____
Packing material used: Bubble Wrap Foam Plastic Bag None Other _____
COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt See Multiple Cooler Form
IR GUN# IR-8 (CF -0.2 °C) Observed Cooler Temp. 2.4 °C Corrected Cooler Temp. 2.2 °C
IR GUN #36 (CF +0.7°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
-Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes ~~No~~
-Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes ~~No~~
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No ~~NA~~ pH Strip Lot# HC984738
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No
16. Was a LL Hg or Me Hg trip blank present? Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: _____

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 500-163656-1

Login Number: 163656

List Source: Eurofins TestAmerica, Chicago

List Number: 1

Creator: Scott, Sherri L

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.7
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	False	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Appendix C
Stratigraphic and Instrumentation Logs and
WDNR Documentation and Soil Sample
Laboratory Report – New Well Soil Cuttings



STRATIGRAPHIC AND INSTRUMENTATION LOG

PROJECT NAME: Penta Wood
 PROJECT NUMBER: 086165
 CLIENT: WDNR
 LOCATION: Siren, Wisconsin
 CONTRACTOR: Cascade Drilling

HOLE DESIGNATION: MW-32
 DATE COMPLETED: 13 May 2019
 DRILLING METHOD: 6" Mini Sonic
 FIELD PERSONNEL: R. Aamot
 WI UNIQUE WELL ID:: VR371

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	Monitoring Well	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	'N' VALUE	PID
	TOP OF CASING GROUND SURFACE	1021.02 1018.00						
5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95	SW-SAND, trace silt, fine to medium grained, brown to dark brown, moist - 1' layer of silty sand at 5.0ft BGS - 3" layer of silty sand at 13.0ft BGS - no silt, trace gravel at 25.0ft BGS - 3" diameter clay nodules at 28.0ft BGS - 18" of medium grained SP at 32.0ft BGS - gravelly at 39.0ft BGS - increasing silt with depth at 41.0ft BGS	968.00	<p>WELL DETAILS</p> <p>Screened interval: 993.00 to 973.00ft 25.00 to 45.00ft BGS Length: 20ft Diameter: 2in Slot Size: #10 Material: PVC Seal: 997.00 to 995.00ft 21.00 to 23.00ft BGS Material: Fine Filter Sand Sand Pack: 995.00 to 973.00ft 23.00 to 45.00ft BGS Material: Red Flint (coarse)</p> <p>Seal: 1018.00 to 997.00ft 0.00 to 21.00ft BGS Material: Cement Grout</p>	1 2 3 4 5 6 7 8 9 10	3.0 3.0 3.0 3.0 3.0 3.0 5.0 5.0 4.0 4.0	3.0 3.0 3.0 3.0 3.0 3.0 5.0 5.0 4.0 4.0	1.1 0.5 0.1 0.2 2.6 1.8 0.0 0.0 0.0 0.0	
	END OF BOREHOLE @ 50.0ft BGS							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
 WATER FOUND ▼

OVERBURDEN LOG 086165.GPJ CRA_CORP.GDT 25/7/19

ANALYTICAL REPORT

Eurofins TestAmerica, Chicago
2417 Bond Street
University Park, IL 60484
Tel: (708)534-5200

Laboratory Job ID: 500-163660-1
Client Project/Site: Penta Wood 086165

For:
GHD Services Inc.
1801 Old Highway 8 NW
Suite 114
St. Paul, Minnesota 55112

Attn: Mr. Grant Anderson

Jodie Bracken

Authorized for release by:
6/3/2019 5:34:35 PM

Jodie Bracken, Project Management Assistant II
jodie.bracken@testamericainc.com

Designee for

Richard Wright, Senior Project Manager
(708)534-5200
richard.wright@testamericainc.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:
www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Case Narrative

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-163660-1

Job ID: 500-163660-1

Laboratory: Eurofins TestAmerica, Chicago

Narrative

Job Narrative 500-163660-1

Receipt

The sample was received on 5/20/2019 10:10 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.7° C.

GC/MS VOA

The extraction LCS associated with preparation batch 486443 had Ethylbenzene recovery above control limits. The instrument LCS associated with analytical batch 486945 had all analytes within control limits; therefore re-analysis was not performed. The data have been reported and qualified.

S-190517-RA-01 (500-163660-1)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC/MS Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC Semi VOA

Method(s) 8151A: The continuing calibration verification (CCV) associated with batch 500-486672 recovered above the upper control limit for the target analytes. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: (CCV 500-486672/14), (CCV 500-486672/25) and (CCV 500-486672/35).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-163660-1

Client Sample ID: S-190517-RA-01

Lab Sample ID: 500-163660-1

No Detections.

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This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Chicago

Method Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-163660-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CHI
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL CHI
8151A	Herbicides (GC)	SW846	TAL CHI
Moisture	Percent Moisture	EPA	TAL CHI
3541	Automated Soxhlet Extraction	SW846	TAL CHI
5035	Closed System Purge and Trap	SW846	TAL CHI
8151A	Extraction (Herbicides)	SW846	TAL CHI

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CHI = Eurofins TestAmerica, Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

Sample Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-163660-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
500-163660-1	S-190517-RA-01	Solid	05/17/19 11:00	05/20/19 10:10	

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Client Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-163660-1

Client Sample ID: S-190517-RA-01

Lab Sample ID: 500-163660-1

Date Collected: 05/17/19 11:00

Matrix: Solid

Date Received: 05/20/19 10:10

Percent Solids: 92.6

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<9.0		15	9.0	ug/Kg	☼	05/17/19 11:00	05/30/19 15:37	50
Ethylbenzene	<11		15	11	ug/Kg	☼	05/17/19 11:00	05/30/19 15:37	50
Toluene	<9.0		15	9.0	ug/Kg	☼	05/17/19 11:00	05/30/19 15:37	50
Xylenes, Total	<14		31	14	ug/Kg	☼	05/17/19 11:00	05/30/19 15:37	50

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	88		75 - 126	05/17/19 11:00	05/30/19 15:37	50
4-Bromofluorobenzene (Surr)	88		72 - 124	05/17/19 11:00	05/30/19 15:37	50
Dibromofluoromethane	91		75 - 120	05/17/19 11:00	05/30/19 15:37	50
Toluene-d8 (Surr)	101		75 - 120	05/17/19 11:00	05/30/19 15:37	50

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<5.5		35	5.5	ug/Kg	☼	05/30/19 07:47	05/31/19 10:43	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	56	^c	37 - 147	05/30/19 07:47	05/31/19 10:43	1
2-Fluorobiphenyl (Surr)	65		43 - 145	05/30/19 07:47	05/31/19 10:43	1
Terphenyl-d14 (Surr)	94		42 - 157	05/30/19 07:47	05/31/19 10:43	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<64	^c	180	64	ug/Kg	☼	05/21/19 15:58	05/23/19 09:46	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCAA	69	^c	25 - 120	05/21/19 15:58	05/23/19 09:46	10

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-163660-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
[^] c	CCV Recovery is outside acceptance limits.

GC Semi VOA

Qualifier	Qualifier Description
[^] c	CCV Recovery is outside acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

QC Association Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-163660-1

GC/MS VOA

Prep Batch: 486443

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163660-1	S-190517-RA-01	Total/NA	Solid	5035	

Analysis Batch: 487804

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163660-1	S-190517-RA-01	Total/NA	Solid	8260B	486443
MB 500-487804/7	Method Blank	Total/NA	Solid	8260B	
LCS 500-487804/5	Lab Control Sample	Total/NA	Solid	8260B	

GC/MS Semi VOA

Prep Batch: 487820

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163660-1	S-190517-RA-01	Total/NA	Solid	3541	
MB 500-487820/1-A	Method Blank	Total/NA	Solid	3541	
LCS 500-487820/2-A	Lab Control Sample	Total/NA	Solid	3541	

Analysis Batch: 488051

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 500-487820/1-A	Method Blank	Total/NA	Solid	8270D	487820
LCS 500-487820/2-A	Lab Control Sample	Total/NA	Solid	8270D	487820

Analysis Batch: 488059

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163660-1	S-190517-RA-01	Total/NA	Solid	8270D	487820

GC Semi VOA

Prep Batch: 486404

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163660-1	S-190517-RA-01	Total/NA	Solid	8151A	
MB 500-486404/1-A	Method Blank	Total/NA	Solid	8151A	
LCS 500-486404/2-A	Lab Control Sample	Total/NA	Solid	8151A	

Analysis Batch: 486672

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163660-1	S-190517-RA-01	Total/NA	Solid	8151A	486404
MB 500-486404/1-A	Method Blank	Total/NA	Solid	8151A	486404
LCS 500-486404/2-A	Lab Control Sample	Total/NA	Solid	8151A	486404

General Chemistry

Analysis Batch: 486541

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-163660-1	S-190517-RA-01	Total/NA	Solid	Moisture	

Surrogate Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-163660-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Solid

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA (75-126)	BFB (72-124)	DBFM (75-120)	TOL (75-120)
500-163660-1	S-190517-RA-01	88	88	91	101
LCS 500-487804/5	Lab Control Sample	86	92	97	104
MB 500-487804/7	Method Blank	90	89	96	101

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

BFB = 4-Bromofluorobenzene (Surr)

DBFM = Dibromofluoromethane

TOL = Toluene-d8 (Surr)

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	NBZ (37-147)	FBP (43-145)	TPHL (42-157)
500-163660-1	S-190517-RA-01	56 ^c	65	94
LCS 500-487820/2-A	Lab Control Sample	72	84	94
MB 500-487820/1-A	Method Blank	63	78	90

Surrogate Legend

NBZ = Nitrobenzene-d5 (Surr)

FBP = 2-Fluorobiphenyl (Surr)

TPHL = Terphenyl-d14 (Surr)

Method: 8151A - Herbicides (GC)

Matrix: Solid

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCPAA1 (25-120)
500-163660-1	S-190517-RA-01	69 ^c
LCS 500-486404/2-A	Lab Control Sample	64
MB 500-486404/1-A	Method Blank	75

Surrogate Legend

DCPAA = DCAA

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-163660-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-487804/7
Matrix: Solid
Analysis Batch: 487804

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.25	0.15	ug/Kg			05/30/19 11:20	1
Ethylbenzene	<0.18		0.25	0.18	ug/Kg			05/30/19 11:20	1
Toluene	<0.15		0.25	0.15	ug/Kg			05/30/19 11:20	1
Xylenes, Total	<0.22		0.50	0.22	ug/Kg			05/30/19 11:20	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		75 - 126		05/30/19 11:20	1
4-Bromofluorobenzene (Surr)	89		72 - 124		05/30/19 11:20	1
Dibromofluoromethane	96		75 - 120		05/30/19 11:20	1
Toluene-d8 (Surr)	101		75 - 120		05/30/19 11:20	1

Lab Sample ID: LCS 500-487804/5
Matrix: Solid
Analysis Batch: 487804

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	48.9		ug/Kg		98	70 - 120
Ethylbenzene	50.0	51.5		ug/Kg		103	70 - 123
Toluene	50.0	47.6		ug/Kg		95	70 - 125
Xylenes, Total	100	99.7		ug/Kg		100	70 - 125

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	86		75 - 126
4-Bromofluorobenzene (Surr)	92		72 - 124
Dibromofluoromethane	97		75 - 120
Toluene-d8 (Surr)	104		75 - 120

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-487820/1-A
Matrix: Solid
Analysis Batch: 488051

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 487820

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<5.1		33	5.1	ug/Kg		05/30/19 07:47	05/31/19 12:10	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	63		37 - 147	05/30/19 07:47	05/31/19 12:10	1
2-Fluorobiphenyl (Surr)	78		43 - 145	05/30/19 07:47	05/31/19 12:10	1
Terphenyl-d14 (Surr)	90		42 - 157	05/30/19 07:47	05/31/19 12:10	1

Lab Sample ID: LCS 500-487820/2-A
Matrix: Solid
Analysis Batch: 488051

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 487820

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Naphthalene	1330	1160		ug/Kg		87	63 - 110

Eurofins TestAmerica, Chicago

QC Sample Results

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-163660-1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 500-487820/2-A
Matrix: Solid
Analysis Batch: 488051

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 487820

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
Nitrobenzene-d5 (Surr)	72		37 - 147
2-Fluorobiphenyl (Surr)	84		43 - 145
Terphenyl-d14 (Surr)	94		42 - 157

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 500-486404/1-A
Matrix: Solid
Analysis Batch: 486672

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 486404

Analyte	MB MB		LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Pentachlorophenol	<61		170	61	ug/Kg		05/21/19 15:58	05/23/19 04:25	10

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
DCAA	75		25 - 120	05/21/19 15:58	05/23/19 04:25	10

Lab Sample ID: LCS 500-486404/2-A
Matrix: Solid
Analysis Batch: 486672

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 486404

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec.	Limits
		Result	Qualifier					
Pentachlorophenol	1340	1030		ug/Kg		77		30 - 110

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
DCAA	64		25 - 120

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-163660-1

Client Sample ID: S-190517-RA-01

Lab Sample ID: 500-163660-1

Date Collected: 05/17/19 11:00

Matrix: Solid

Date Received: 05/20/19 10:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	486541	05/22/19 12:01	LWN	TAL CHI

Client Sample ID: S-190517-RA-01

Lab Sample ID: 500-163660-1

Date Collected: 05/17/19 11:00

Matrix: Solid

Date Received: 05/20/19 10:10

Percent Solids: 92.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			486443	05/17/19 11:00	WRE	TAL CHI
Total/NA	Analysis	8260B		50	487804	05/30/19 15:37	EMA	TAL CHI
Total/NA	Prep	3541			487820	05/30/19 07:47	DX	TAL CHI
Total/NA	Analysis	8270D		1	488059	05/31/19 10:43	AJD	TAL CHI
Total/NA	Prep	8151A			486404	05/21/19 15:58	JP1	TAL CHI
Total/NA	Analysis	8151A		10	486672	05/23/19 09:46	JP1	TAL CHI

Laboratory References:

TAL CHI = Eurofins TestAmerica, Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200



Accreditation/Certification Summary

Client: GHD Services Inc.
Project/Site: Penta Wood 086165

Job ID: 500-163660-1

Laboratory: Eurofins TestAmerica, Chicago

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Wisconsin	State Program	5	999580010	08-31-19 *

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
-----------------	-------------	--------	---------

* Accreditation/Certification renewal pending - accreditation/certification considered valid.



Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 500-163660-1

Login Number: 163660

List Source: Eurofins TestAmerica, Chicago

List Number: 1

Creator: Scott, Sherri L

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.7
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Appendix D

Survey Data

PENTA WOOD PRODUCTS SITE

TOWN OF DANIELS, WISCONSIN

Well Data (May 2019)



Prepared By:
Kemper & Associates, Inc.
721 Old Highway 8 N.W.
New Brighton, MN 55112
651-631-0351
Fax 651-631-8805
kemper@pro-ns.net

I hereby certify that this survey, plan or report was prepared by me or under my direct supervision and that I am a duly licensed professional land surveyor under the laws of the State of Wisconsin.

Mark D. Kemper, PLS S-1944

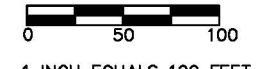
KEMPER & ASSOCIATES INC.
PROFESSIONAL LAND SURVEYORS

721 OLD HIGHWAY 8 N.W.
NEW BRIGHTON, MINNESOTA 55112
651-631-0351
FAX 651-631-8805
email: kemper@pro-ns.net
www.kempersurveys.com

PENTA WOOD PRODUCTS SITE

TOWN OF DANIELS, WISCONSIN

MONITORING WELLS (MAY 2019)



BASIS FOR BEARINGS:
BURNETT COUNTY
COORDINATE SYSTEM
(NAD 83, 1998)

(VIA REAL TIME GPS
MEASUREMENTS UTILIZING
MINNESOTA DEPARTMENT
OF TRANSPORTATION
VRS NETWORK)

BASIS FOR ELEVATION:
WISCONSIN DEPARTMENT
OF TRANSPORTATION
STATION "SIREN"
ELEV=1132.90 (NAVD 88)

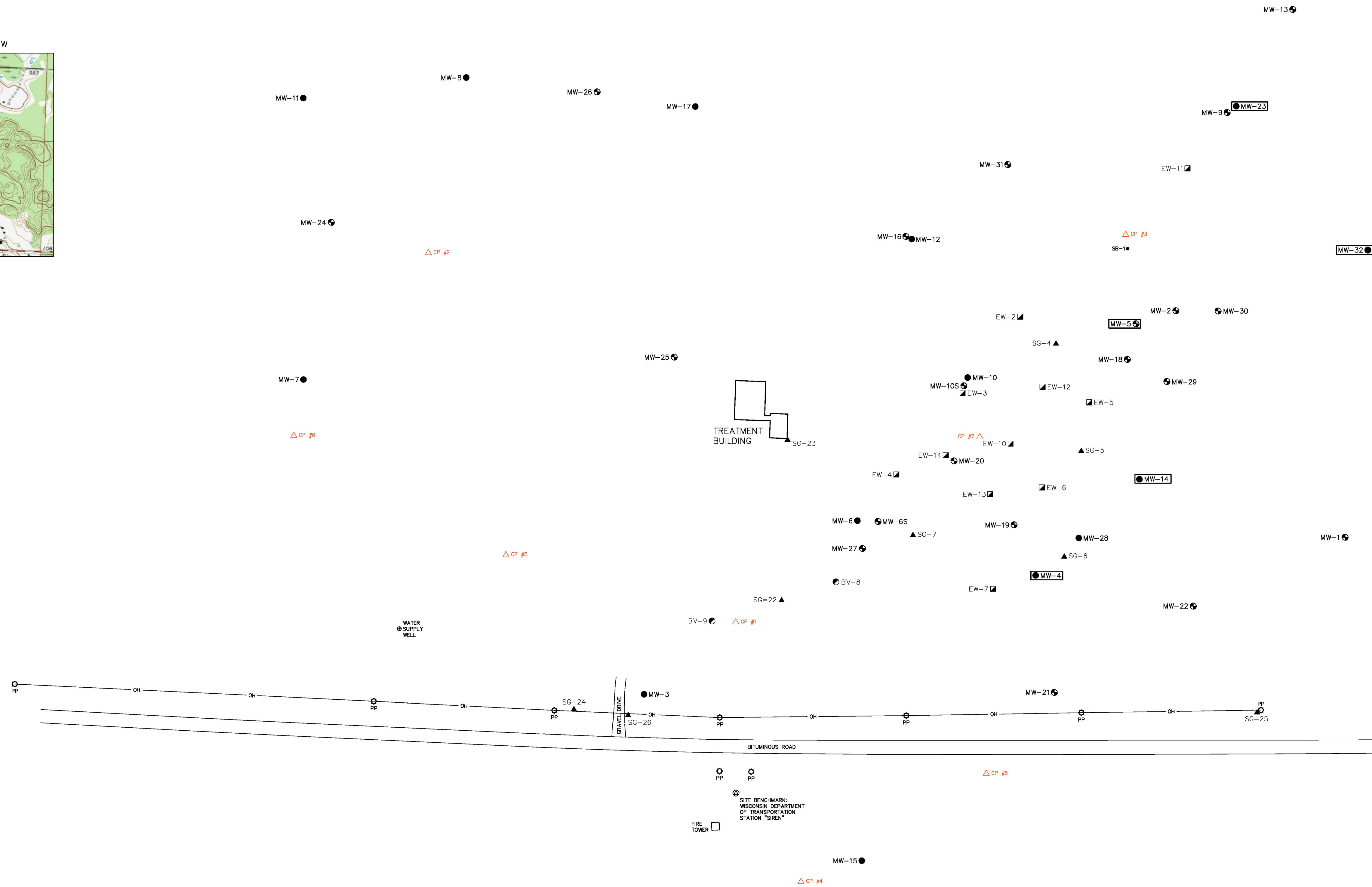
SECTION 11, T38N, R17W



VICINITY MAP
(NO SCALE)



TREATMENT BUILDING AT PENTA WOOD PRODUCTS SITE



LEGEND

- EW ▣ EXTRACTION WELL NEST
- MW ● UNCONFINED MONITORING WELL
- MW ● SEMICONFINED MONITORING WELL
- BV ● BIOVENTING WELL
- SG ▲ SOIL GAS WELL NEST
- PP ○ POWER POLE
- OH — OVERHEAD UTILITY LINES
- CP #1 ▴ SURVEY CONTROL POINT
- MW-32 ● DENOTES WELL MEASURED MAY 2019

NOTE: NOT ALL PHYSICAL FEATURES SUCH AS BITUMINOUS ROADWAYS, GRAVEL TRAILS, ETC. ARE SHOWN ON THIS SURVEY.
SURVEY MEASUREMENTS TAKEN MAY 20, 2019

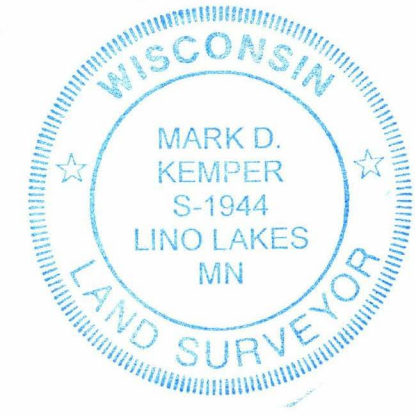


MONITORING WELL #32



SITE BENCHMARK:
WISCONSIN DEPARTMENT OF TRANSPORTATION
STATION "SIREN"

PREPARED FOR:
BRADY HALVORSON, ENVIRONMENTAL ENGINEER
GHD
1801 OLD HIGHWAY 8 N.W., STE. 114
ST. PAUL, MINNESOTA 55112
612-524-6874



CERTIFICATION
I HEREBY CERTIFY THAT THIS SURVEY, PLAN,
OR REPORT WAS PREPARED BY ME OR
UNDER MY DIRECT SUPERVISION AND THAT
I AM A DAILY LICENSED PROFESSIONAL LAND
SURVEYOR UNDER THE LAWS OF THE STATE
OF WISCONSIN.

MARK D. KEMPER, PLS S-1944
DATED THIS ____ DAY OF _____, 2019

MONITORING WELL	BURNETT COUNTY COORDINATES (NAD 83, 1996)		TOP OF OUTER WELL COVER ELEVATION (NAVD 88)	TOP OF INSIDE RISER PIPE ELEV. (NAVD 88)	ADJACENT GROUND ELEVATION (NAVD 88)
	X (Easting)	Y (Northing)			
MW-4	217183.38	153578.14	1087.96	1087.72	1085.14
MW-5	217357.29	154013.28	1071.82	1071.42	1069.63
MW-14	217363.11	153744.44	1078.42	1078.25	1075.42
MW-23	217530.89	154390.25	1017.63	1017.16	1014.87
MW-32 (NEW)	217758.82	154141.06	1021.37	1021.02	1018.00

Site Benchmark:

Wisconsin Department of Transportation

Station "Siren"

X=216664.33

Y=153201.30

Elev.=1132.50 (NAVD 88)

Located south of subject Penta Wood Site next to

Wisconsin DNR fire lookout tower

Appendix E

Residential Well and Onsite Supply Well Water Sample Data Validation



Memorandum

May 15, 2019

To: Tim Ree, GHD

Ref. No.: 086165-06-10

From:  Grant Anderson/sb/9

Tel: 651-639-0913

cc: Tim Braun, GHD

**Subject: Analytical Results and Reduced Validation
Residential Water Sampling Event
Penta Wood Products Superfund Site
Siren, Wisconsin
April 2019**

1. Introduction

This document details a reduced validation of analytical results for residential water samples collected at the Penta Wood Products Superfund Site during April 2019. Samples were submitted to Eurofins TestAmerica (TA) located in University Park, Illinois. A sample collection and analysis summary is presented in Table 1. The validated analytical results are summarized in Table 2. A summary of the analytical methodology is presented in Table 3.

Standard GHD Services, Inc. (GHD) report deliverables were submitted by the laboratory. The final results and supporting quality assurance/quality control (QA/QC) data were assessed. Evaluation of the data was based on information obtained from the chain of custody form, finished report forms, method blank data, recovery data from surrogate spikes, laboratory control samples (LCS), matrix spikes (MS), and field QA/QC samples.

The QA/QC criteria by which these data have been assessed are outlined in the analytical methods referenced in Table 3 and applicable guidance from the documents entitled:

- i) "Quality Assurance Project Plan, Long Term Response Action, Rev. II, February 2005 with addendums
- ii) "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", USEPA 540/R-99/008, October 1999

Item ii) will subsequently be referred to as the "Guidelines" in this Memorandum.

2. Sample Holding Time and Preservation

The sample holding time criteria for the analyses are summarized in Table 3. The sample chain of custody document and analytical report were used to determine sample holding times. All samples were prepared and analyzed within the required holding times.



All samples were properly preserved, delivered on ice, and stored by the laboratory at the required temperature (0-6°C).

3. Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures.

Laboratory method blanks were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

All method blank results were non-detect, indicating that laboratory contamination was not a factor for this investigation.

4. Surrogate Spike Recoveries

In accordance with the methods employed, all samples, blanks, and QC samples analyzed for organics are spiked with surrogate compounds prior to sample extraction and/or analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices.

All samples submitted for benzene, toluene, ethylbenzene, and xylenes (BTEX), naphthalene, and pentachlorophenol analyses were spiked with the appropriate number of surrogate compounds prior to sample extraction or analysis.

Each individual surrogate compound is expected to meet the laboratory control limits with the exception of semi-volatile organic compound (SVOC) analyses (naphthalene and pentachlorophenol). According to the "Guidelines" for SVOC analyses, up to one outlying surrogate in the base/neutral or acid fractions is acceptable as long as the recovery is at least 10 percent.

Surrogate recoveries were assessed against laboratory control limits. All surrogate recoveries met the above criteria.

5. Laboratory Control Sample Analyses

LCS are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects.

LCS were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

The LCS contained all compounds of interest. All LCS recoveries were within the laboratory control limits, demonstrating acceptable analytical accuracy.



6. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analyses

To evaluate the effects of the sample preparation process, measurement procedures, and accuracy of a particular analysis, samples are spiked with a known concentration of the analyte of concern and analyzed as MS/MSD samples. The relative percent difference (RPD) between the MS and MSD is used to assess analytical precision. If the original sample concentration is significantly greater than the spike concentration, the recovery is not assessed.

MS/MSD analyses were performed as specified in Table 1.

The MS/MSD samples were spiked with all compounds of interest. All percent recoveries and RPD values were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision.

7. Field QA/QC Samples

The field QA/QC consisted of one trip blank sample, one field blank sample and one field duplicate sample set.

Trip Blank Sample Analysis

To evaluate contamination from sample collection, transportation, storage, and analytical activities, one trip blank sample was submitted to the laboratory for BTEX analysis. All results were non-detect for the compounds of interest.

Field Blank Sample Analysis

To assess ambient conditions at the site and cleanliness of sample containers, a field blank was submitted for analysis, as identified in Table 1. Toluene was detected in the field blank. Table 4 lists the toluene field blank detection. The associated sample data is qualified as noted in the table.

Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, a field duplicate sample set was collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with the duplicate samples must be less than 50 percent. If the reported concentration in either the investigative sample or its duplicate is less than five times the reporting limit (RL), the evaluation criteria is one times the RL value.

All field duplicate results were within acceptable agreement (all results were non-detect), demonstrating acceptable sampling and analytical precision.

8. Analyte Reporting

The laboratory reported detected results down to the laboratory's method detection limit (MDL) for each analyte. Positive analyte detections less than the RL but greater than the MDL were qualified as estimated (J) in Table 2 unless qualified otherwise in this memorandum (no positive analyte detections less than the RL but greater than the MDL were reported). Non-detect results were presented as non-detect at the RL in Table 2.



9. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are acceptable with the specific qualification noted herein.

Table 1

**Sample Collection and Analysis Summary
Residential Water Sampling Event
Penta Wood Site
Siren, Wisconsin
April 2019**

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Analysis/Parameters			Comments
					BTEX	Naphthalene	Pentachlorophenol	
W-190422-RA-100	RW05	water	04/22/2019	11:20	X	X	X	
W-190422-RA-101	RW01	water	04/22/2019	11:30	X	X	X	
W-190422-RA-102	RW02	water	04/22/2019	11:48	X	X	X	
W-190422-RA-103	RW02	water	04/22/2019	11:48	X	X	X	duplicate (RA-102)
W-190422-RA-104	RW03	water	04/22/2019	12:40	X	X	X	
W-190422-RA-105	RW04	water	04/22/2019	13:05	X	X	X	
W-190422-RA-106	RW06	water	04/22/2019	13:34	X	X	X	
W-190422-RA-107	RW06 SHOP	water	04/22/2019	13:34	X	X	X	
W-190422-RA-108	RW06 SHOP	water	04/22/2019	13:45	X	X	X	field blank
W-190422-RA-109	DW01	water	04/22/2019	13:50	X	X	X	MS/MSD
Trip Blank	Lab	water	04/22/2019	00:00	X	-	-	trip blank

Notes:

MS/MSD - Matrix spike/matrix spike duplicate

BTEX - Benzene, toluene, ethylbenzene, and xylenes (total)

**Validated Analytical Results Summary
Residential Water Sampling Event
Penta Wood Site
Siren, Wisconsin
April 2019**

Location ID: Sample Name: Sample Date:	DW01 W-190422-RA-109 04/22/2019	RW01 W-190422-RA-101 04/22/2019	RW02 W-190422-RA-102 04/22/2019	RW02 W-190422-RA-103 04/22/2019 Duplicate	RW03 W-190422-RA-104 04/22/2019
Parameters					
Unit					
Volatile Organic Compounds, BTEX					
Benzene	μg/L	0.50 U	0.50 U	0.50 U	0.50 U
Ethylbenzene	μg/L	0.50 U	0.50 U	0.50 U	0.50 U
Toluene	μg/L	0.50 U	0.50 U	0.50 U	0.50 U
Xylenes (total)	μg/L	1.0 U	1.0 U	1.0 U	1.0 U
Semivolatile Organic Compounds					
Naphthalene	μg/L	0.83 U	0.74 U	0.76 U	0.79 U
Herbicides					
Pentachlorophenol	μg/L	0.11 U	0.097 U	0.095 U	0.095 U

**Validated Analytical Results Summary
Residential Water Sampling Event
Penta Wood Site
Siren, Wisconsin
April 2019**

Location ID:	RW04	RW05	RW06	RW06 SHOP
Sample Name:	W-190422-RA-105	W-190422-RA-100	W-190422-RA-106	W-190422-RA-107
Sample Date:	04/22/2019	04/22/2019	04/22/2019	04/22/2019

Parameters	Unit				
Volatile Organic Compounds, BTEX					
Benzene	µg/L	0.50 U	0.50 U	0.50 U	0.50 U
Ethylbenzene	µg/L	0.50 U	0.50 U	0.50 U	0.50 U
Toluene	µg/L	0.50 U	0.50 U	0.50 U	0.50 U
Xylenes (total)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Semivolatile Organic Compounds					
Naphthalene	µg/L	0.80 U	0.82 U	0.78 U	0.82 U
Herbicides					
Pentachlorophenol	µg/L	0.12 U	0.095 U	0.096 U	0.097 U

Note:

U - Not detected at the associated reporting limit

Table 3

**Analytical Methods and Holding Time Criteria
Residential Water Sampling Event
Penta Wood Site
Siren, Wisconsin
April 2019**

Parameter	Method	Matrix	Holding Time	
			Collection to Extraction (Days)	Collection or Extraction to Analysis (Days)
BTEX	SW 8260B	Water	-	14
Naphthalene	SW 8270C	Water	7	40
Pentachlorophenol	SW 8151	Water	7	40

Notes:

Method References:

- SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions
 BTEX - Benzene, toluene, ethylbenzene, and xylenes (total)

Table 4

**Qualified Sample Data Due to Analyte Concentrations in the Field Blank
Residential Water Sampling Event
Penta Wood Site
Siren, Wisconsin
April 2019**

Parameter	Field Blank ID	Blank Date (dd/mm/yyyy)	Analyte	Blank Result	Associated Sample ID	Original Result	Qualified Result	Units
VOC	W-190422-RA-108	4/22/2019	Toluene	0.16J	W-190422-RA-107	0.19 J	0.50 U	ug/L

Notes:

- U - Not detected at the associated reporting limit
- J - Estimated concentration

Appendix F

Site Inspection Forms

Verified

Notes

Verify Site Conditions *

- CAMU area fence condition is satisfactory
- CAMU signage is present/visible at all fence gates
- CAMU surface soil condition is satisfactory and does not require erosion/settlement repairs
- Perimeter area fence is satisfactory and does not require repairs
- Perimeter signage is present/visible
- Site access is limited and all perimeter fence locks in working order
- NaOH tank condition is satisfactory with no signs of leaks
- FeSO4 tank condition is satisfactory with no signs of leaks

✓	
fixed ✓	most of signage has fallen off
✓	
✓	
fixed ✓	most of signage has fallen off
✓	
✓	
✓	

Verify situations have not and are not occurring

- Removal of the existing barrier or cover
- Replacement with another barrier or cover
- Excavating or grading of the land surface
- Filling on covered or paved areas
- Plowing for agricultural cultivation
- Construction or placement of a building or other structure
- Change in use or occupancy of the property

✓	
✓	
✓	
✓	
✓	
✓	
✓	

Inspected By: Ryan Agnot

Date: 4/22/19 → 4/26/19

* Small trees growing in or near CAMU fence
 - potential to damage fence in future



about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

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