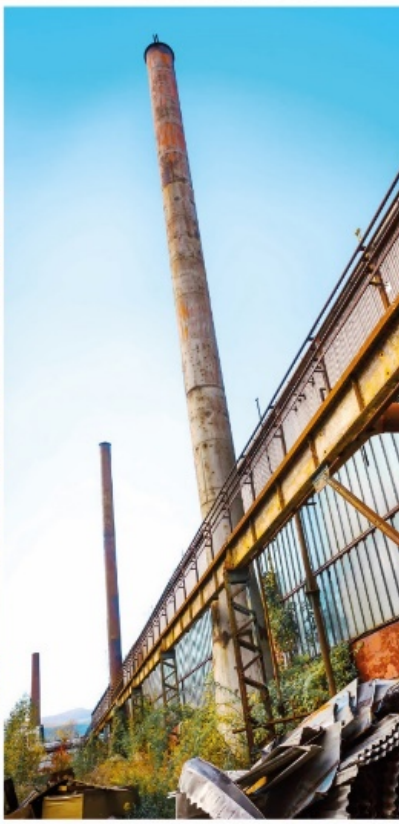
Semiannual Report

January through June 2020
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 2020 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 2020 and sampling was conducted at the Site in April 2020 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 include:

- 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 9, 2020 and April 6, 2020. Wells EW-07D and EW-07S were not monitored in January 2020 since the vault lid for these wells could not be accessed due to ice. 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 2020 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 approximately 0.0006 ft/ft (as calculated between wells MW2 and MW25) and represent non-pumping conditions following shutdown of the remediation system and groundwater extraction pumps (November 2015). The groundwater flow direction in both aquifers is primarily toward the west/northwest.

During the January 2020 event, LNAPL was present in monitoring wells MW18 and MW20 at measurable thicknesses, and LNAPL was not present in wells MW10S, MW19, or MW29. LNAPL was present in extraction wells EW06S, EW10S, EW12S, and EW14S with casings screened in the unconfined (upper) aquifer during the January 2020 monitoring event. During the April 2020 event, 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 extraction wells EW03S, EW05S, EW06S, EW07S, EW10S, EW12S, and EW14S with casings screened in the unconfined (upper) aquifer during the April 2020 monitoring event. The general location of LNAPL is consistent with recent monitoring. LNAPL was not detected at all other wells in the semiconfined (lower) aquifer during the January and April 2020 monitoring events. 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 0.005 ft/ft (MW10/MW10S) to 0.017 ft/ft (MW12/MW16). 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 6 through April 14, 2020 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 0.45 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 Eurofins TestAmerica (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 2020 naphthalene and BTEX analytical data are summarized in Table 2.4. Naphthalene was detected in four (4) wells (MW5, MW10, MW10S, and EW13S) at concentrations that exceeded the PAL of 10 micrograms per liter (µg/L) (Table 2.4). Naphthalene concentrations did not exceed the ES of 100 µg/L.

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

2.2.2 PCP Analytical Data

The April 2020 PCP analytical data are summarized in Table 2.4. PCP was detected in eleven (11) wells (MW4, MW5, MW10, MW10S, MW12, MW16, MW30, MW31, EW11D, EW11S, and EW13S) at concentrations exceeding the PAL of 0.1 µg/L. The PCP concentrations in seven (7) wells (MW5, MW10, MW10S, MW12, MW30, MW31, and EW13S) exceeded the ES of 1.0 µg/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.

Consistent with monitoring data since prior to shutdown of the remediation system in 2015, 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 indicates the plume remained stable

2.2.3 Dissolved Arsenic Analytical Data

The April 2020 dissolved arsenic analytical data are summarized in Table 2.4. Arsenic was detected in five (5) wells (MW2, MW4, MW10, MW13S, and MW14) 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.

Consistent with monitoring data since prior to shutdown of the remediation system in 2015, arsenic concentrations (i.e., greater than 1 µg/L) are limited to isolated areas within the Site property boundaries in the unconfined and semiconfined aquifers, which indicates the plume remained stable.

2.2.4 Other Dissolved Metals Analytical Data

The April 2020 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 the ES (300 µg/L). Manganese was detected in nine (9) wells at concentrations exceeding the PAL (25 µg/L) and eight (8) 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.

3. Residential Well and Onsite Supply Well Sampling

Due to the COVID-19 pandemic, sampling of the residential wells and onsite supply well was not conducted during January through June 2020. The wells include:

- 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)
- (DW01)

The onsite water supply well (DW01) 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.

At the request of the Mr. David Wegner, owner of the property located at 8542 West Doctor Lake Road, wells at this property (RW6 and RW6 Shop) will no longer be sampled. WDNR may evaluate and consider sampling at this property in the future.

The residential well and onsite water supply well locations are shown on Figure 3.1.

4. Waste Management and Disposal

No waste was disposed during January through June 2020. 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 OandM 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 ROD 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 6, 2020 and a copy of the continuing obligations inspection form is included in Appendix C.

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 6, 2020 and a copy of the well inspection form is included in Appendix C.

6. Conclusions and Recommendations

Based on the January through June monitoring and sampling data, the following conclusions are made and represent lines of evidence supporting selection of an alternate remedy:

- LNAPL limits indicate that the LNAPL did not migrate following shutdown of the remediation system in 2015 and indicate overall stability of the LNAPL body
- NSZD is occurring within the LNAPL body at this Site
- PCP concentration contours indicate that the plume did not migrate following shutdown of the remediation system in 2015 and indicate overall plume stability.
- 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 rate that dissolved PCP partitions from the LNAPL is slow enough and the rate of natural degradation is fast enough that migration would not likely occur beyond the property boundaries
- The current monitoring well network is sufficient to monitor plume conditions

The above lines of evidence support selection of Monitored Natural Attenuation (MNA) as an effective groundwater remedy at this Site. As compared to the currently selected remedial alternative of active remediation, natural attenuation will achieve performance goals within a reasonable (i.e., comparable) period of time.

While USEPA reviews the Semiannual Report and Alternate Remedy Recommendation (GHD; March 17, 2020), WDNR recommends continued monitoring and sampling at the Site as summarized in Table 2.1 and as follows:

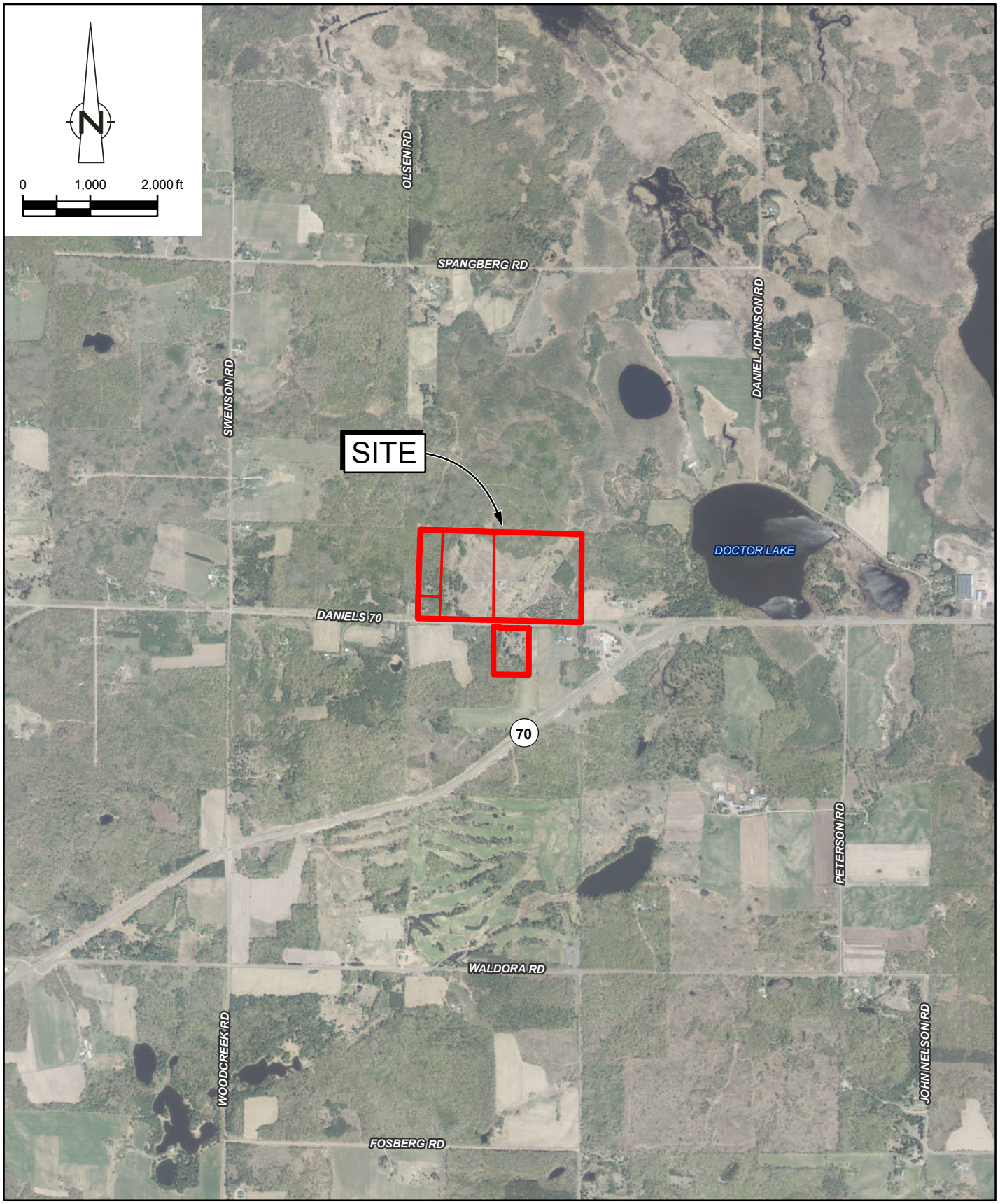
- Quarterly groundwater and LNAPL level monitoring during January, April, July, and October
- Semiannual groundwater sampling during April and October
- Semiannual residential well sampling during April and October
- Semiannual report preparation and submittal in January and July

In the event that the recommended remedy fails to perform as anticipated, the recommended contingency remedy includes keeping the existing remediation system infrastructure in place for potential future groundwater and/or LNAPL extraction and treatment.

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 contingency remedy discussed above is not necessary at this time.

Figures



Source: Burnett County

PENTA WOOD PRODUCTS SUPERFUND SITE
SIREN, WISCONSIN
SEMIANNUAL REPORT

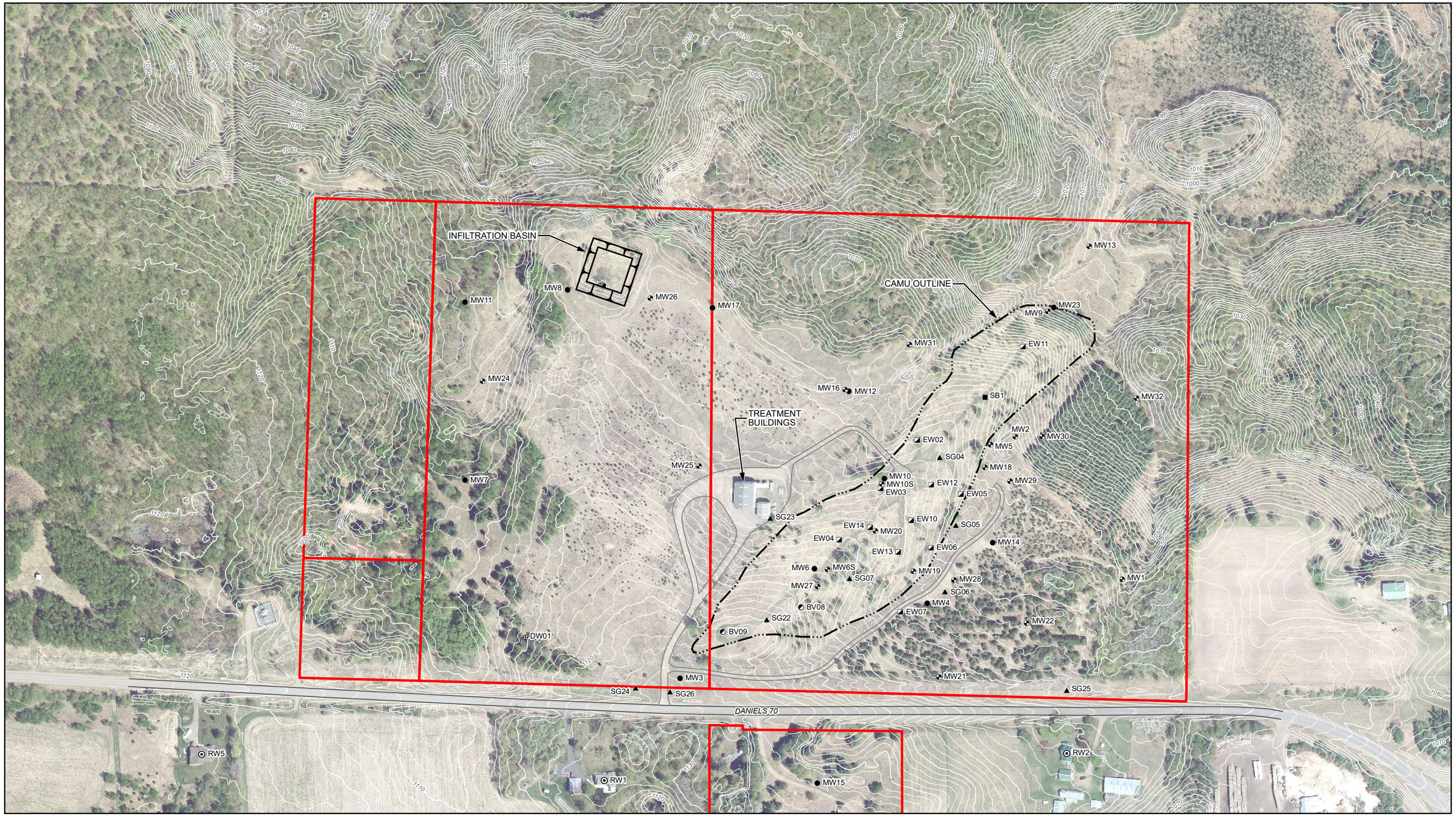
086165-07-08

May 5, 2020

SITE LOCATION

FIGURE 1.1

GIS File: I:\GIS\Projects\6-chars\08----\0861--\086165\086165-REPORTS\086165-07(021)\086165-07(021)GIS-SP001.mxd



Source: Burnett County

0 250 ft

LEGEND

- 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

086165-07-08
May 5, 2020

SITE PLAN

FIGURE 1.2

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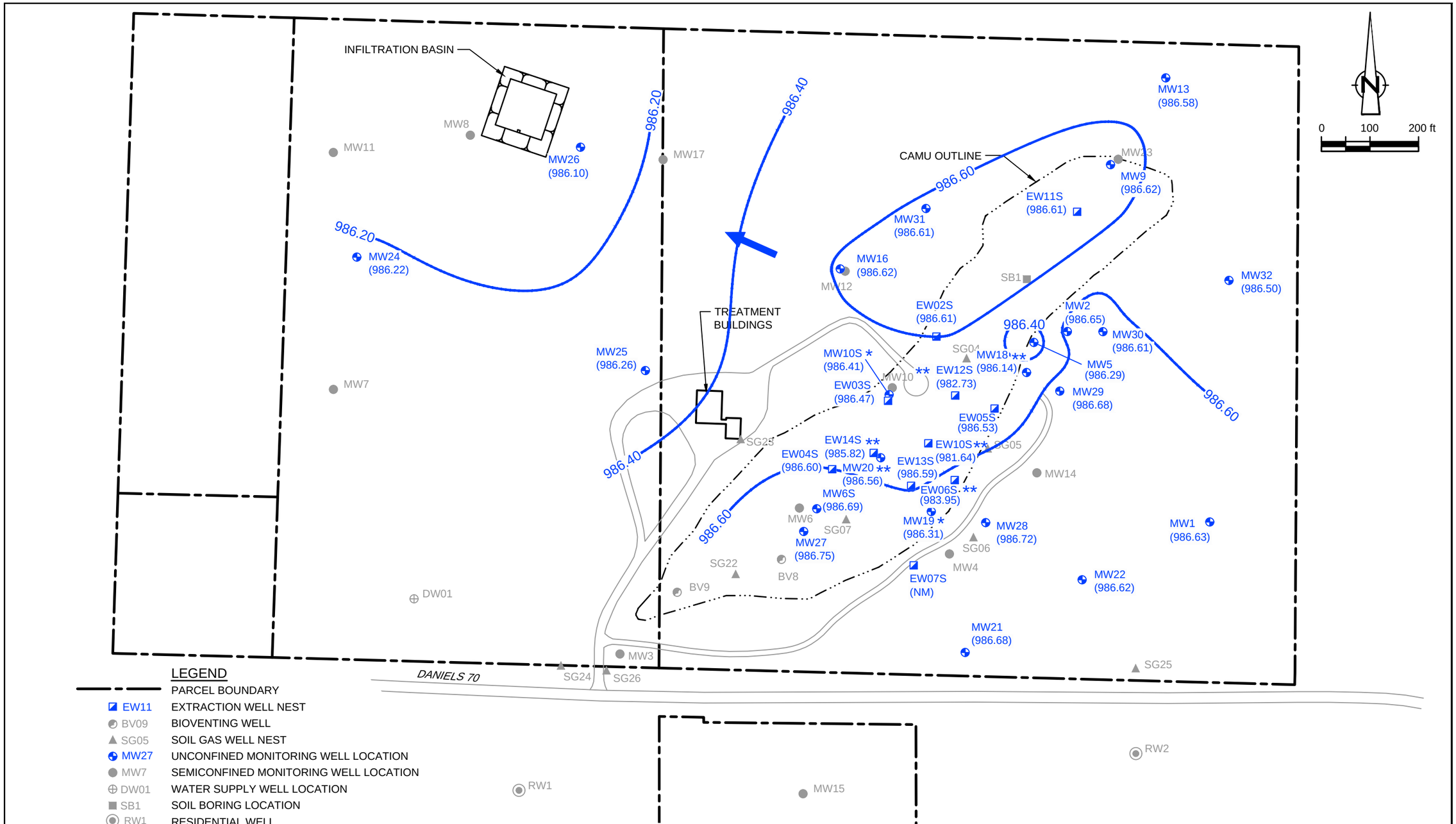


LEGEND

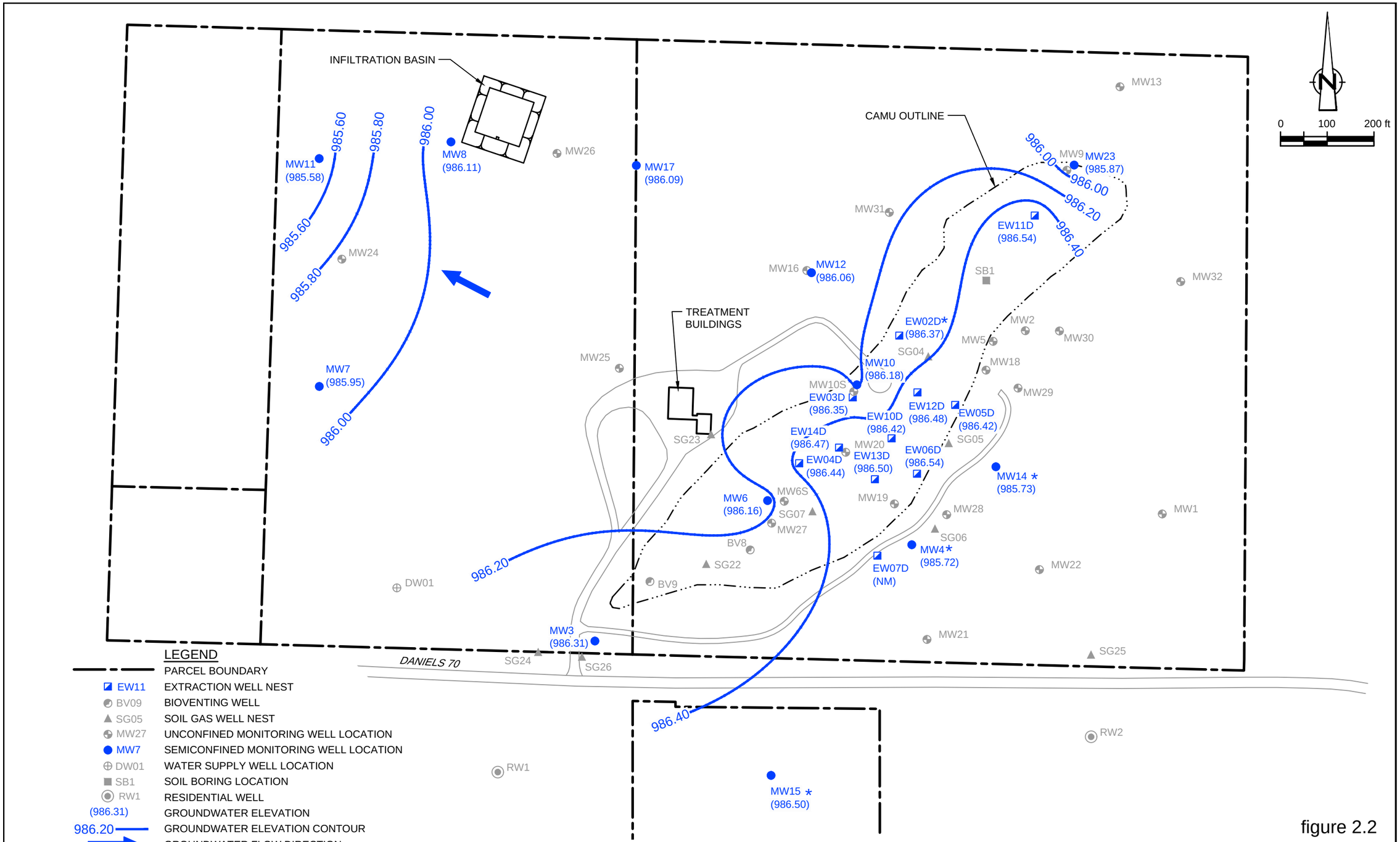
	PARCEL BOUNDARY
EW11	EXTRACTION WELL NEST
BV09	BIOVENTING WELL
SG05	SOIL GAS WELL NEST
MW27	UNCONFINED MONITORING WELL LOCATION
MW7	SEMICONFINED MONITORING WELL LOCATION
DW01	WATER SUPPLY WELL LOCATION
SB1	SOIL BORING LOCATION
RW1	RESIDENTIAL WELL
(986.26)	GROUNDWATER ELEVATION
986.60	GROUNDWATER ELEVATION CONTOUR
	GROUNDWATER FLOW DIRECTION
*	WELL NOT UTILIZED TO INFER GROUNDWATER ELEVATION CONTOURS
**	LNAPL PRESENT IN WELL, WELL NOT UTILIZED TO INFER GROUNDWATER ELEVATION CONTOURS

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

figure 2.1

UNCONFINED (UPPER) AQUIFER GROUNDWATER CONTOURS - JANUARY 2020
PENTA WOOD PRODUCTS SUPERFUND SITE
Siren, Wisconsin

N:\CA\Waterloo\Legacy\CAD\drawings\86000s\86165\86165-REPORTS\86165-07(021)\86165-07(021)GN\86165-07(021)GN-WA001.DWG Plot Date: MAY 25, 2020



LEGEND

	PARCEL BOUNDARY
EW11	EXTRACTION WELL NEST
BV09	BIOVENTING WELL
SG05	SOIL GAS WELL NEST
MW27	UNCONFINED MONITORING WELL LOCATION
MW7	SEMICONFINED MONITORING WELL LOCATION
DW01	WATER SUPPLY WELL LOCATION
SB1	SOIL BORING LOCATION
RW1	RESIDENTIAL WELL
(986.31)	GROUNDWATER ELEVATION
986.20	GROUNDWATER ELEVATION CONTOUR
	GROUNDWATER FLOW DIRECTION
*	WELL NOT UTILIZED TO INFER GROUNDWATER ELEVATION CONTOURS

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

figure 2.2

SEMICONFINED (LOWER) AQUIFER GROUNDWATER CONTOURS - JANUARY 2020
PENTA WOOD PRODUCTS SUPERFUND SITE
Siren, Wisconsin

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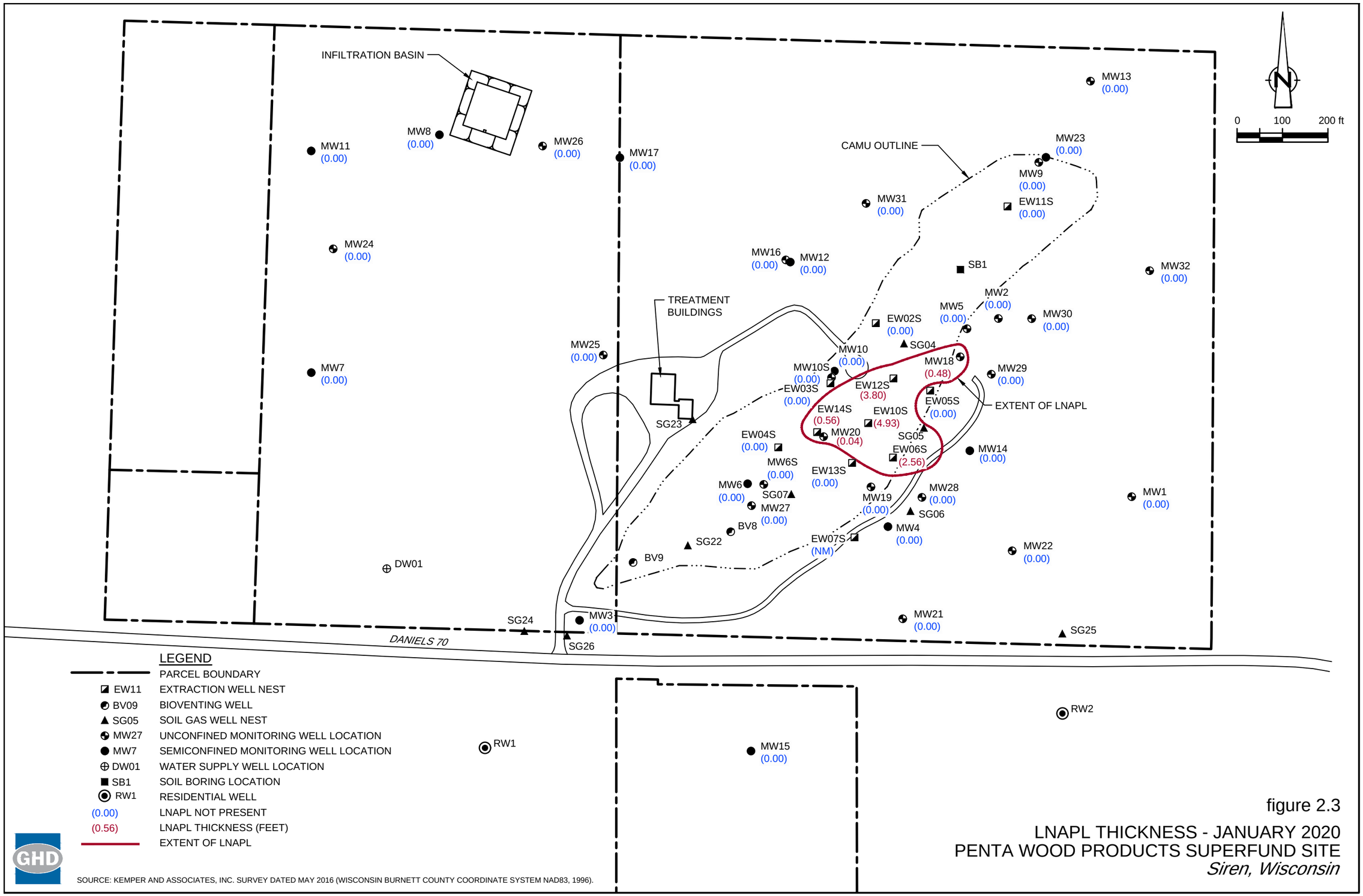

figure 2.3

LNAPL THICKNESS - JANUARY 2020
PENTA WOOD PRODUCTS SUPERFUND SITE
Siren, Wisconsin

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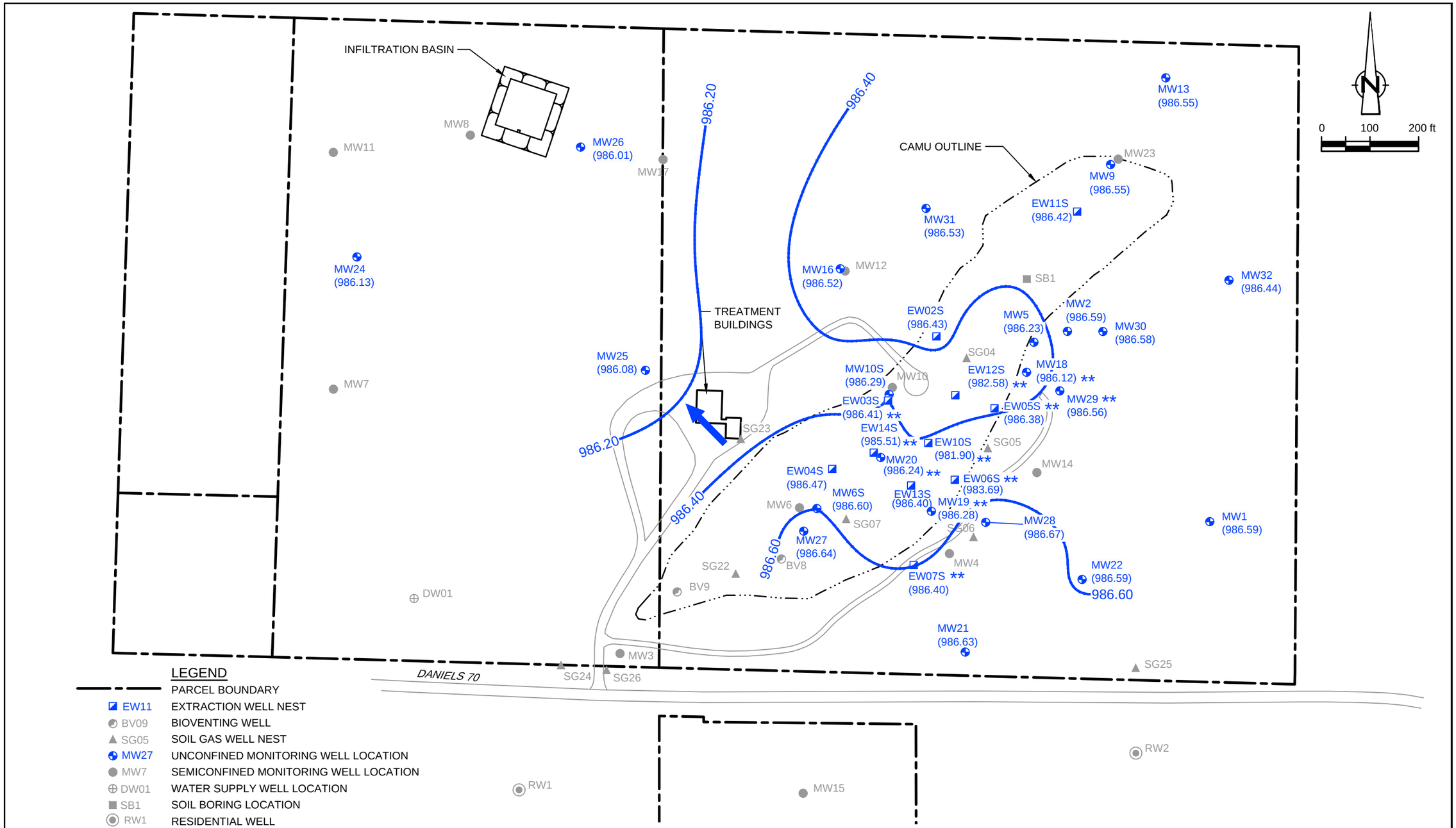


LEGEND

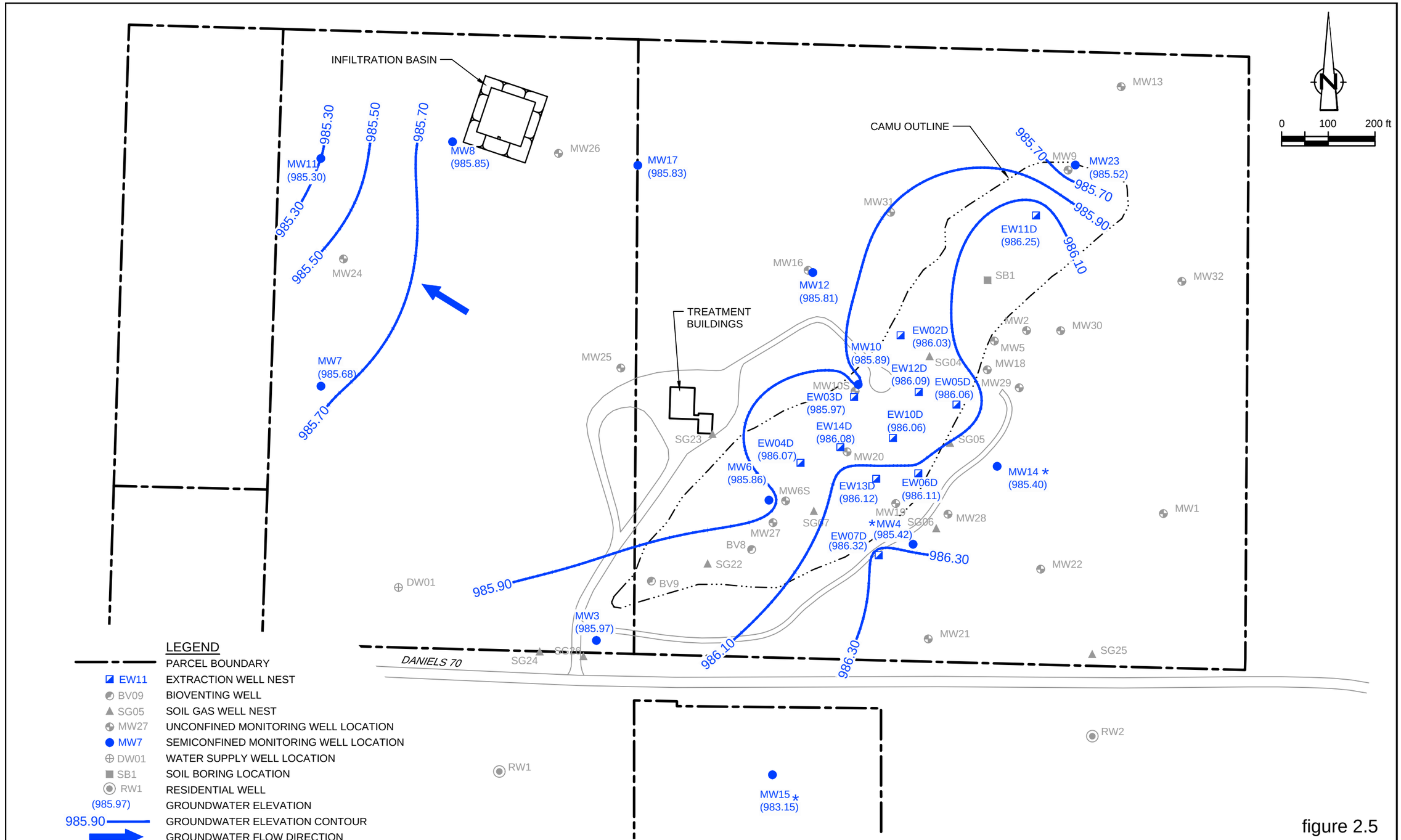
	PARCEL BOUNDARY
EW11	EXTRACTION WELL NEST
BV09	BIOVENTING WELL
SG05	SOIL GAS WELL NEST
MW27	UNCONFINED MONITORING WELL LOCATION
MW7	SEMICONFINED MONITORING WELL LOCATION
DW01	WATER SUPPLY WELL LOCATION
SB1	SOIL BORING LOCATION
RW1	RESIDENTIAL WELL
(986.08)	GROUNDWATER ELEVATION
986.20	GROUNDWATER ELEVATION CONTOUR
	GROUNDWATER FLOW DIRECTION
*	WELL NOT UTILIZED TO INFER GROUNDWATER ELEVATION CONTOURS
**	LNAPL PRESENT IN WELL, WELL NOT UTILIZED TO INFER GROUNDWATER ELEVATION CONTOURS

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 2020
PENTA WOOD PRODUCTS SUPERFUND SITE
Siren, Wisconsin

N:\CA\Waterloo\Legacy\CAD\drawings\86000s\86165\86165-REPORTS\86165-07(021)\86165-07(021)GN\86165-07(021)GN-WA004.DWG Plot Date: MAY 25, 2020



LEGEND

	PARCEL BOUNDARY
EW11	EXTRACTION WELL NEST
BV09	BIOVENTING WELL
SG05	SOIL GAS WELL NEST
MW27	UNCONFINED MONITORING WELL LOCATION
MW7	SEMICONFINED MONITORING WELL LOCATION
DW01	WATER SUPPLY WELL LOCATION
SB1	SOIL BORING LOCATION
RW1	RESIDENTIAL WELL
(985.97)	GROUNDWATER ELEVATION
985.90	GROUNDWATER ELEVATION CONTOUR
	GROUNDWATER FLOW DIRECTION
*	WELL NOT UTILIZED TO INFER GROUNDWATER ELEVATION CONTOURS

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

figure 2.5

SEMICONFINED (LOWER) AQUIFER GROUNDWATER CONTOURS - APRIL 2020
PENTA WOOD PRODUCTS SUPERFUND SITE
Siren, Wisconsin

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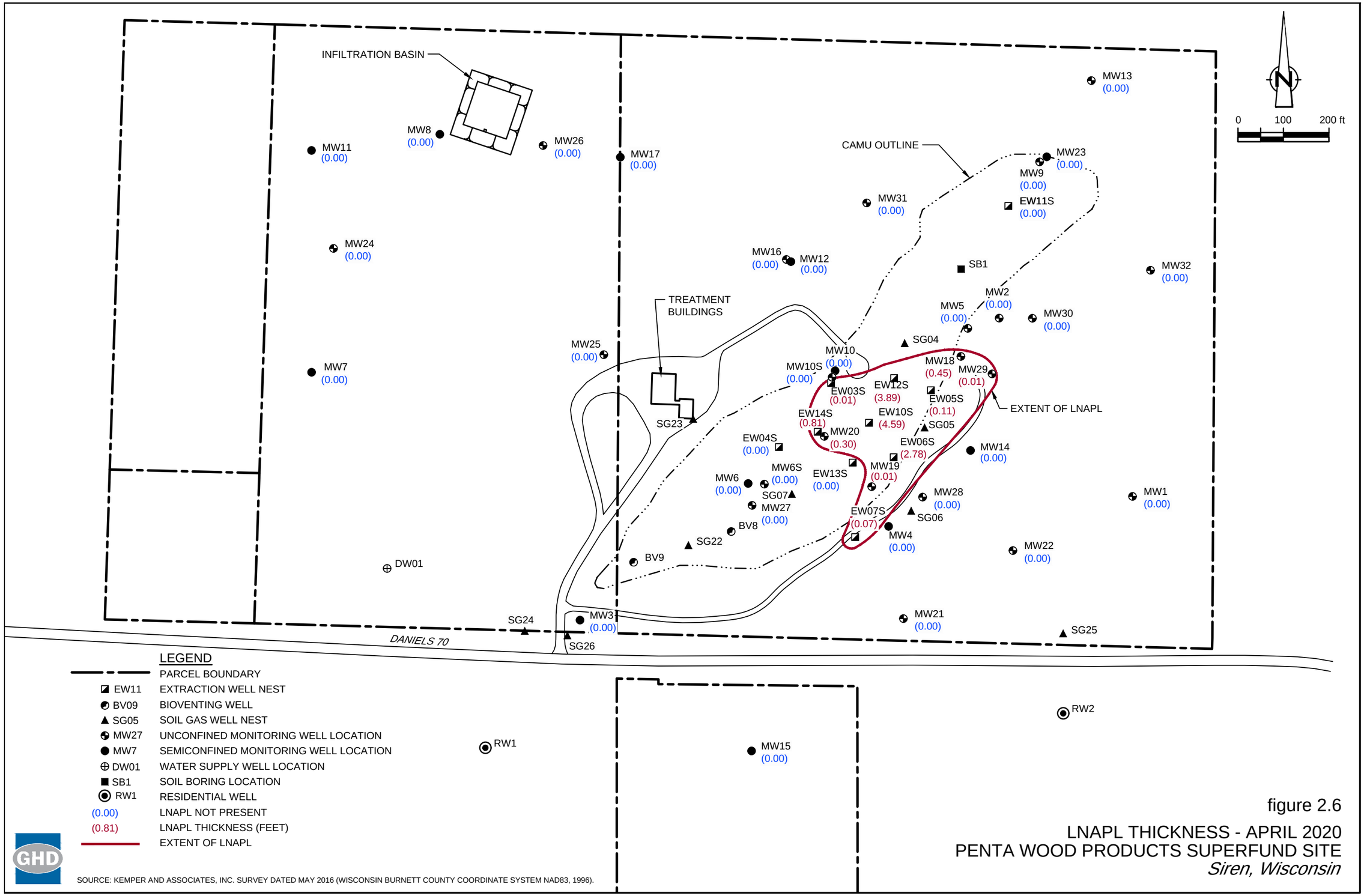

LEGEND

	PARCEL BOUNDARY
EW11	EXTRACTION WELL NEST
BV09	BIOVENTING WELL
SG05	SOIL GAS WELL NEST
MW27	UNCONFINED MONITORING WELL LOCATION
MW7	SEMICONFINED MONITORING WELL LOCATION
DW01	WATER SUPPLY WELL LOCATION
SB1	SOIL BORING LOCATION
RW1	RESIDENTIAL WELL
(0.00)	LNAPL NOT PRESENT
(0.81)	LNAPL THICKNESS (FEET)
	EXTENT OF LNAPL

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

figure 2.6

LNAPL THICKNESS - APRIL 2020
PENTA WOOD PRODUCTS SUPERFUND SITE
Siren, Wisconsin

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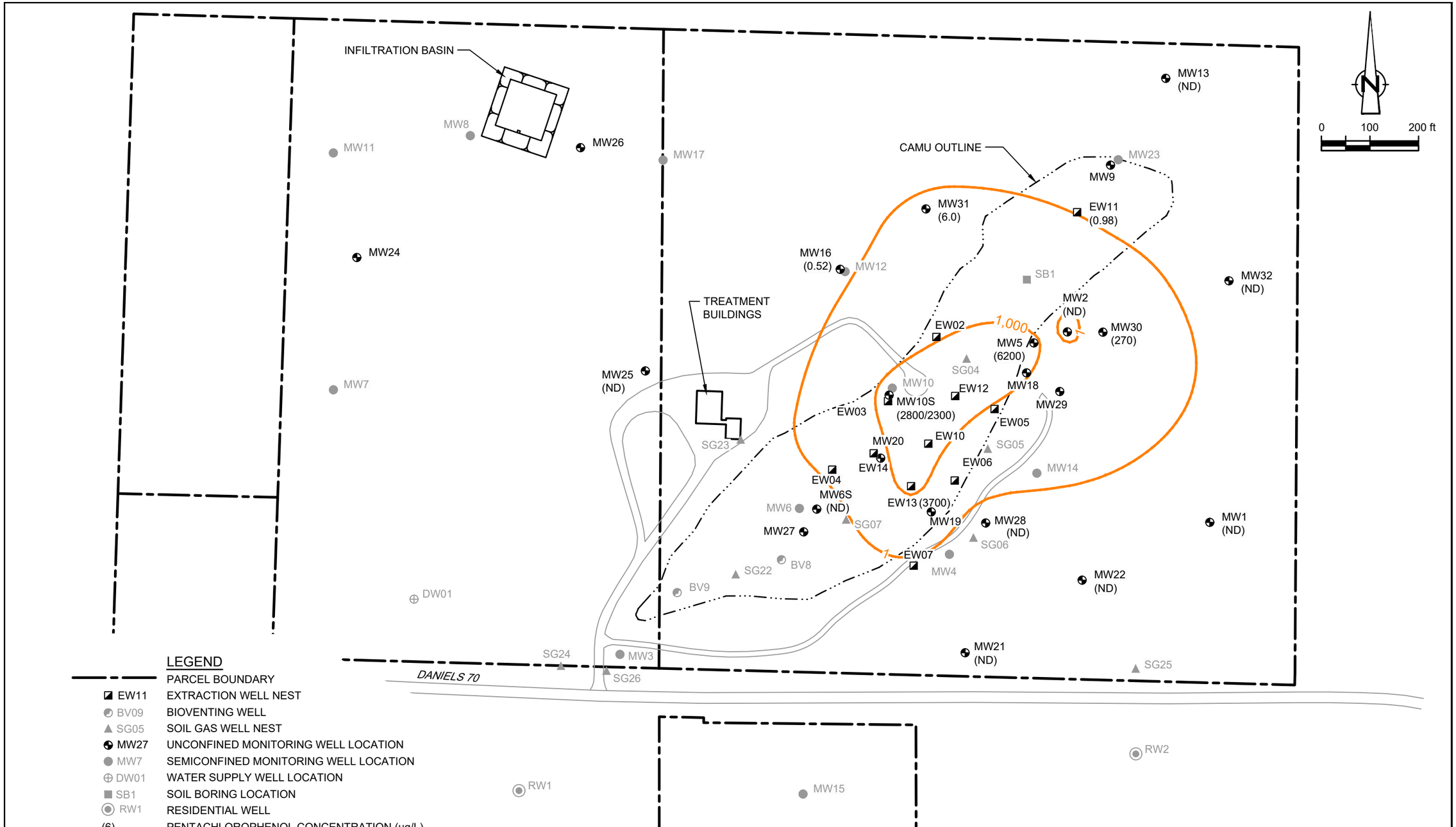


LEGEND

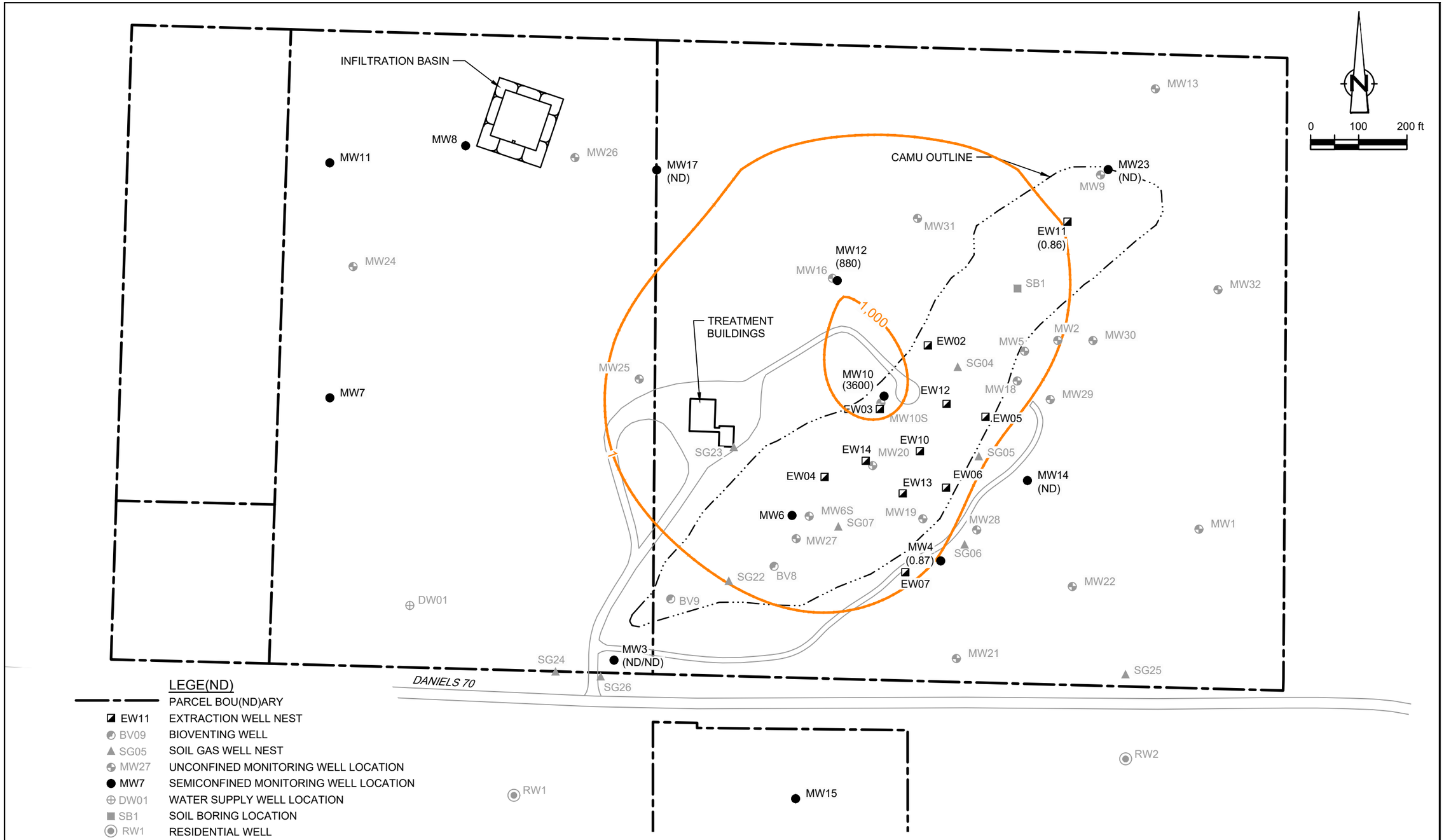
	PARCEL BOUNDARY
EW11	EXTRACTION WELL NEST
BV09	BIOVENTING WELL
SG05	SOIL GAS WELL NEST
MW27	UNCONFINED MONITORING WELL LOCATION
MW7	SEMICONFINED MONITORING WELL LOCATION
DW01	WATER SUPPLY WELL LOCATION
SB1	SOIL BORING LOCATION
RW1	RESIDENTIAL WELL
(6)	PENTACHLOROPHENOL CONCENTRATION (µg/L)
(2800/2300)	PENTACHLOROPHENOL / DUPLICATE CONCENTRATION (µg/L)
1	PENTACHLOROPHENOL CONCENTRATION CONTOUR (µg/L)
(ND)	NOT DETECTED
J	CONCENTRATION WAS BETWEEN THE LIMIT OF DETECTION A(ND) LIMIT OF QUANTITATION

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

figure 2.7

UNCONFINED (UPPER) AQUIFER PENTACHLOROPHENOL CONCENTRATIONS - APRIL 2020
PENTA WOOD PRODUCTS SUPERFUND SITE
Siren, Wisconsin

N:\CA\Waterloo\Legacy\CAD\drawings\86000s\86165\86165-REPORTS\86165-07(021)\86165-07(021)GN\86165-07(021)GN-WA007.DWG Plot Date: MAY 25, 2020



LEGE(ND)

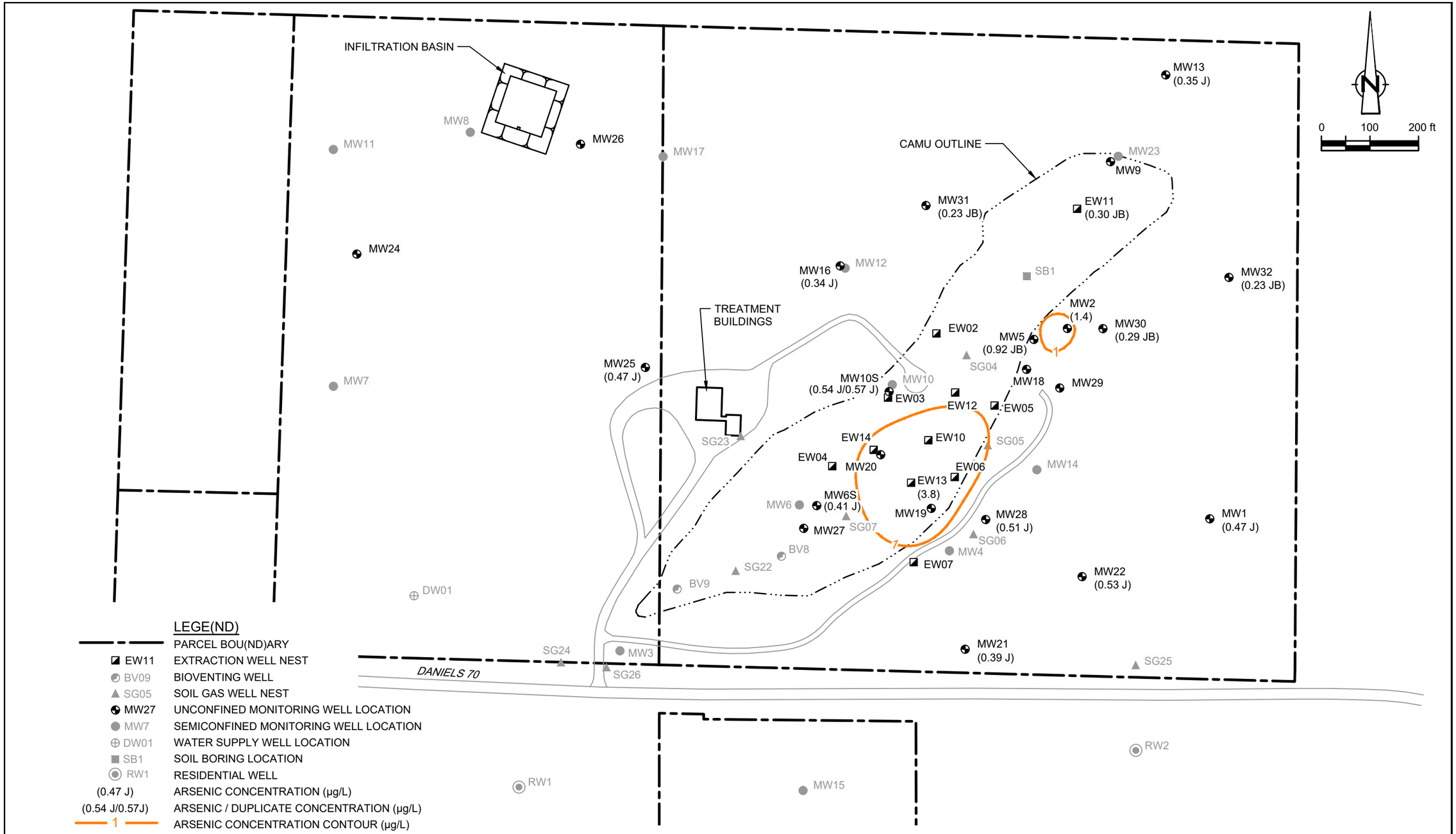
	PARCEL BOU(ND)ARY
EW11	EXTRACTION WELL NEST
BV09	BIOVENTING WELL
SG05	SOIL GAS WELL NEST
MW27	UNCONFINED MONITORING WELL LOCATION
MW7	SEMICONFINED MONITORING WELL LOCATION
DW01	WATER SUPPLY WELL LOCATION
SB1	SOIL BORING LOCATION
RW1	RESIDENTIAL WELL
(0.86)	PENTACHLOROPHENOL CONCENTRATION (µg/L)
(ND/ND)	PENTACHLOROPHENOL / DUPLICATE CONCENTRATION (µg/L)
1	PENTACHLOROPHENOL CONCENTRATION CONTOUR (µg/L)
(ND)	NOT DETECTED

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

figure 2.8

SEMICONFINED (LOWER) AQUIFER PENTACHLOROPHENOL CONCENTRATIONS - APRIL 2020
PENTA WOOD PRODUCTS SUPERFUND SITE
Siren, Wisconsin

N:\CA\Waterloo\Legacy\CAD\drawings\86000s\86165\86165-REPORTS\86165-07(021)\86165-07(021)GN\86165-07(021)GN-WA008.DWG Plot Date: MAY 25, 2020



LEGE(ND)

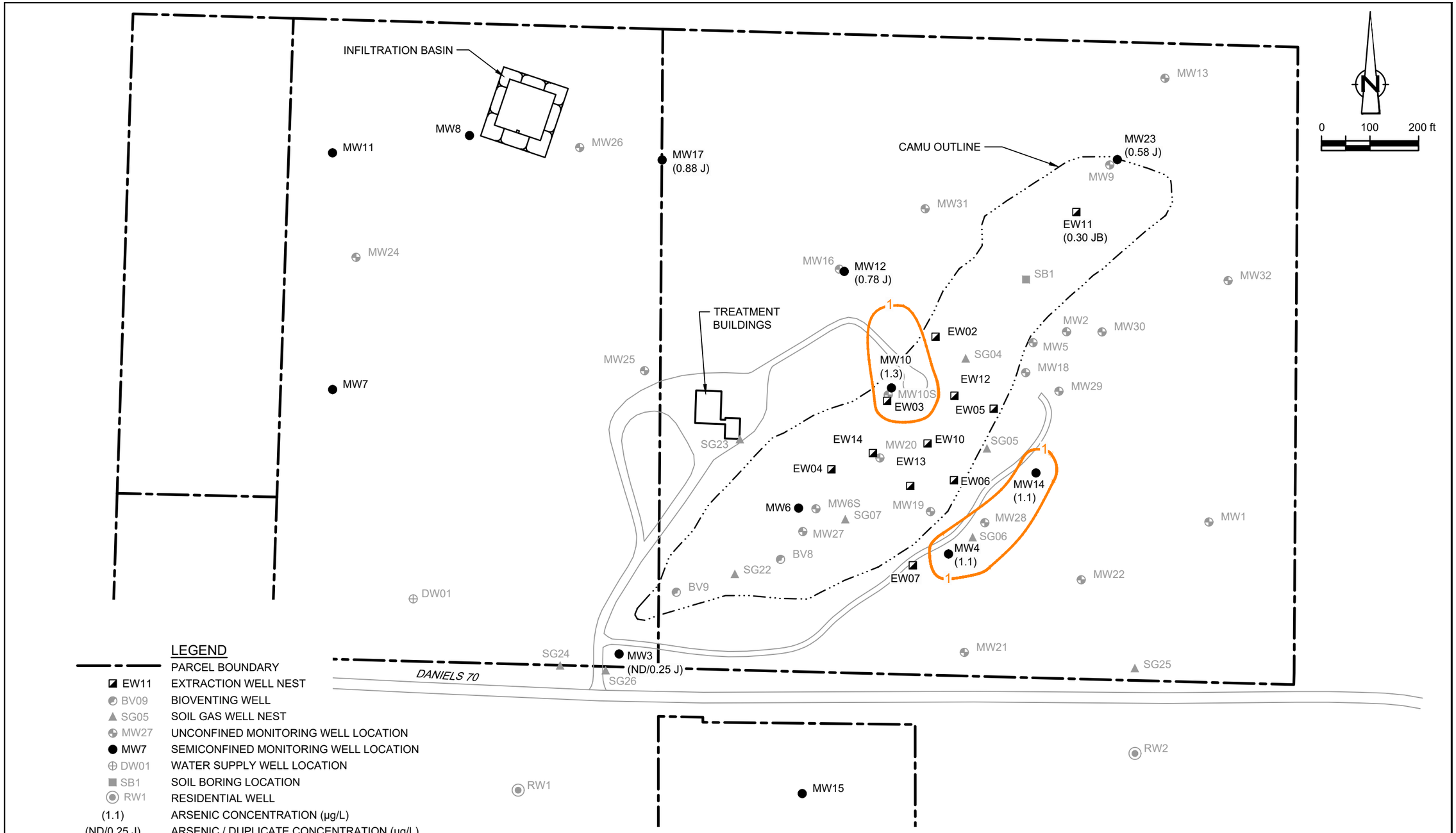
	PARCEL BOU(ND)ARY
EW11	EXTRACTION WELL NEST
BV09	BIOVENTING WELL
SG05	SOIL GAS WELL NEST
MW27	UNCONFINED MONITORING WELL LOCATION
MW7	SEMICONFINED MONITORING WELL LOCATION
DW01	WATER SUPPLY WELL LOCATION
SB1	SOIL BORING LOCATION
RW1	RESIDENTIAL WELL
(0.47 J)	ARSENIC CONCENTRATION (µg/L)
(0.54 J/0.57J)	ARSENIC / DUPLICATE CONCENTRATION (µg/L)
1	ARSENIC CONCENTRATION CONTOUR (µg/L)
(ND)	NOT DETECTED
J	CONCENTRATION WAS BETWEEN THE LIMIT OF DETECTION A(ND) LIMIT OF QUANTITATION
B	COMPOUND WAS FOUND IN THE BLANK AND SAMPLE

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

figure 2.9

UNCONFINED (UPPER) AQUIFER ARSENIC CONCENTRATIONS - APRIL 2020
PENTA WOOD PRODUCTS SUPERFUND SITE
Siren, Wisconsin

N:\CA\Waterloo\Legacy\CAD\drawings\86000s\86165\86165-REPORTS\86165-07(021)\86165-07(021)GN\86165-07(021)GN-WA009.DWG Plot Date: JUL 28, 2020



LEGEND

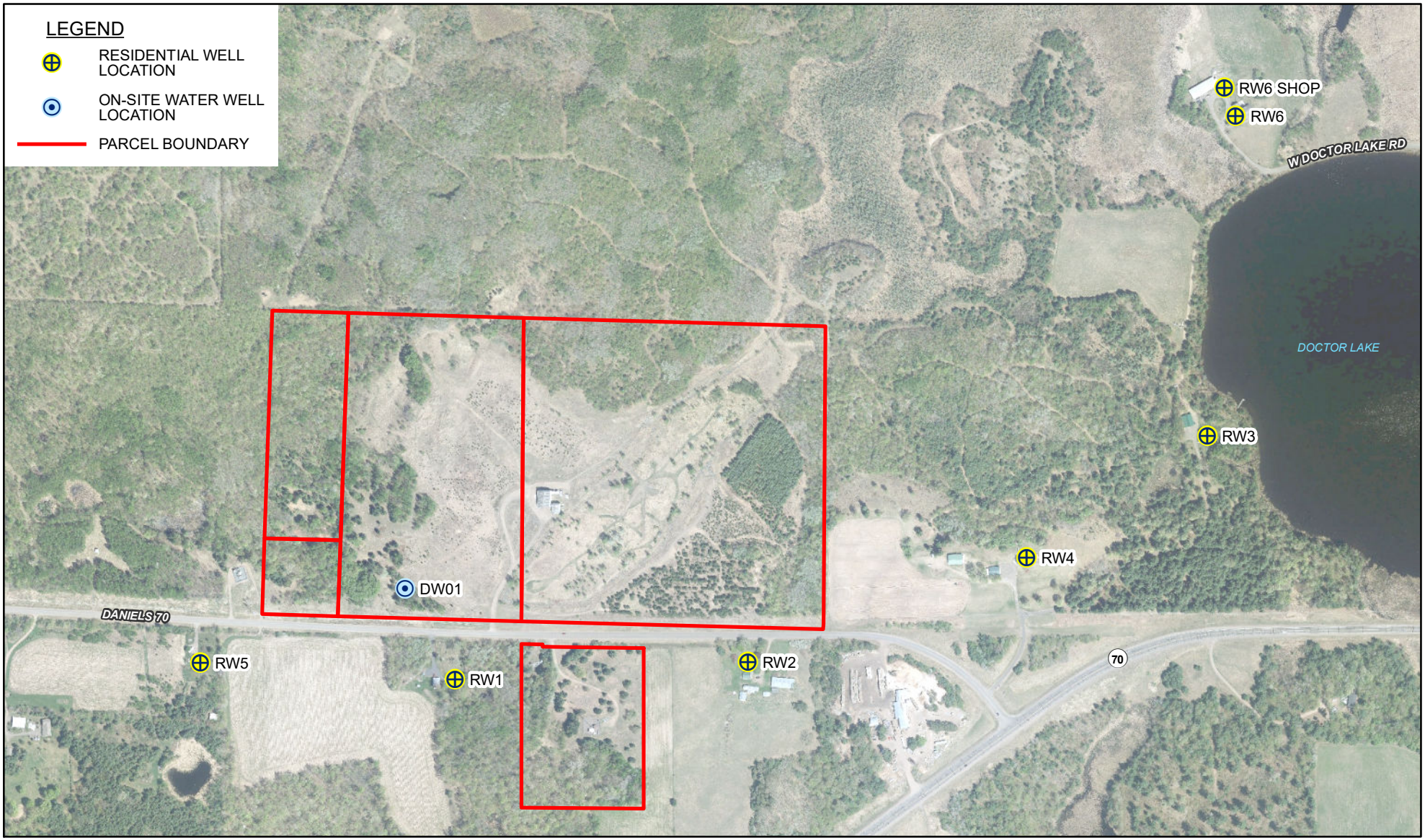
	PARCEL BOUNDARY
EW11	EXTRACTION WELL NEST
BV09	BIOVENTING WELL
SG05	SOIL GAS WELL NEST
MW27	UNCONFINED MONITORING WELL LOCATION
MW7	SEMICONFINED MONITORING WELL LOCATION
DW01	WATER SUPPLY WELL LOCATION
SB1	SOIL BORING LOCATION
RW1	RESIDENTIAL WELL
(1.1)	ARSENIC CONCENTRATION (µg/L)
(ND/0.25 J)	ARSENIC / DUPLICATE CONCENTRATION (µg/L)
1	ARSENIC CONCENTRATION CONTOUR (µg/L)
ND	NOT DETECTED
J	CONCENTRATION WAS BETWEEN THE LIMIT OF DETECTION AND LIMIT OF QUANTITATION
B	COMPOUND WAS FOUND IN THE BLANK AND SAMPLE

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

figure 2.10

SEMICONFINED (LOWER) AQUIFER ARSENIC CONCENTRATIONS - APRIL 2020
PENTA WOOD PRODUCTS SUPERFUND SITE
Siren, Wisconsin

N:\CA\Waterloo\Legacy\CAD\drawings\86000s\86165\86165-REPORTS\86165-07(021)\86165-07(021)GN\86165-07(021)GN-WA010.DWG Plot Date: JUL 28, 2020



Source: Burnett County

0 200 400 600 ft

PENTA WOOD PRODUCTS SUPERFUND SITE
SIREN, WISCONSIN
SEMIANNUAL REPORT

086165-07-08
Jul 10, 2020

RESIDENTIAL WELL LOCATIONS

FIGURE 3.1

GIS File: I:\GIS\Projects\6-chars\08----\0861--\086165\086165-REPORTS\086165-07(021)\086165-07(021)GIS-SP003.mxd

Tables

Table 2.1

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	
Unconfined (Upper) Aquifer		
EW04S	X	
EW05S	X	
EW06S	X	
EW07S	X	

Table 2.1

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]
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	

Table 2.1

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]
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: Pentachlorphenol (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	1/9/2020	1129.44	143.13	ND	986.31	NA	0.00
MW3	4/6/2020	1129.44	143.21	ND	986.23	NA	0.00
MW4	1/9/2020	1087.72	102.00	ND	985.72	NA	0.00
MW4	4/6/2020	1087.72	101.98	ND	985.74	NA	0.00
MW6	1/9/2020	1109.11	122.95	ND	986.16	NA	0.00
MW6	4/6/2020	1109.11	123.07	ND	986.04	NA	0.00
MW7	1/9/2020	1096.25	110.30	ND	985.95	NA	0.00
MW7	4/6/2020	1096.25	110.39	ND	985.86	NA	0.00
MW8	1/9/2020	1091.13	105.02	ND	986.11	NA	0.00
MW8	4/6/2020	1091.13	106.10	ND	985.03	NA	0.00
MW10	1/9/2020	1089.01	102.83	ND	986.18	NA	0.00
MW10	4/6/2020	1089.01	102.89	ND	986.12	NA	0.00
MW11	1/9/2020	1085.48	99.90	ND	985.58	NA	0.00
MW11	4/6/2020	1085.48	99.98	ND	985.50	NA	0.00
MW12	1/9/2020	1080.91	94.85	ND	986.06	NA	0.00
MW12	4/6/2020	1080.91	94.90	ND	986.01	NA	0.00
MW14	1/9/2020	1078.25	92.52	ND	985.73	NA	0.00
MW14	4/6/2020	1078.25	92.52	ND	985.73	NA	0.00
MW15	1/9/2020	1127.09	140.59	ND	986.50	NA	0.00
MW15	4/6/2020	1127.09	140.66	ND	986.43	NA	0.00
MW17	1/9/2020	1084.43	98.34	ND	986.09	NA	0.00
MW17	4/6/2020	1084.43	98.40	ND	986.03	NA	0.00
MW23	1/9/2020	1017.16	31.29	ND	985.87	NA	0.00
MW23	4/6/2020	1017.16	31.34	ND	985.82	NA	0.00
EW02D	1/9/2020	1083.00	96.63	ND	986.37	NA	0.00
EW02D	4/6/2020	1083.00	96.70	ND	986.30	NA	0.00
EW03D	1/9/2020	1089.48	103.13	ND	986.35	NA	0.00
EW03D	4/6/2020	1089.48	103.27	ND	986.21	NA	0.00
EW04D	1/9/2020	1101.09	114.65	ND	986.44	NA	0.00
EW04D	4/6/2020	1101.09	114.74	ND	986.35	NA	0.00
EW05D	1/9/2020	1076.99	90.57	ND	986.42	NA	0.00
EW05D	4/6/2020	1076.99	90.64	ND	986.35	NA	0.00
EW06D	1/9/2020	1083.39	96.85	ND	986.54	NA	0.00
EW06D	4/6/2020	1083.39	96.96	ND	986.43	NA	0.00
EW07D	1/9/2020	1087.52	NM	NM	NM	NM	NA
EW07D	4/6/2020	1087.52	100.98	ND	986.54	NA	0.00
EW10D	1/9/2020	1088.55	102.13	ND	986.42	NA	0.00
EW10D	4/6/2020	1088.55	102.13	ND	986.42	NA	0.00
EW11D	1/9/2020	1048.19	61.65	ND	986.54	NA	0.00
EW11D	4/6/2020	1048.19	61.64	ND	986.55	NA	0.00
EW12D	1/9/2020	1086.41	99.93	ND	986.48	NA	0.00
EW12D	4/6/2020	1086.41	100.00	ND	986.41	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)
Semiconfined Aquifer (Lower) continued							
EW13D	1/9/2020	1092.88	106.38	ND	986.50	NA	0.00
EW13D	4/6/2020	1092.88	106.47	ND	986.41	NA	0.00
EW14D	1/9/2020	1098.28	111.81	ND	986.47	NA	0.00
EW14D	4/6/2020	1098.28	111.89	ND	986.39	NA	0.00
Unconfined Aquifer (Upper)							
MW1	1/9/2020	1072.27	85.64	ND	986.63	NA	0.00
MW1	4/6/2020	1072.27	85.68	ND	986.59	NA	0.00
MW2	1/9/2020	1065.03	78.38	ND	986.65	NA	0.00
MW2	4/6/2020	1065.03	78.44	ND	986.59	NA	0.00
MW5	1/9/2020	1071.42	85.13	ND	986.29	NA	0.00
MW5	4/6/2020	1071.42	85.19	ND	986.23	NA	0.00
MW6S	1/9/2020	1108.35	121.66	ND	986.69	NA	0.00
MW6S	4/6/2020	1108.35	121.75	ND	986.60	NA	0.00
MW9	1/9/2020	1019.58	32.96	ND	986.62	NA	0.00
MW9	4/6/2020	1019.58	33.03	ND	986.55	NA	0.00
MW10S	1/9/2020	1090.12	103.71	ND	986.41	NA	0.00
MW10S	4/6/2020	1090.12	103.83	ND	986.29	NA	0.00
MW13	1/9/2020	1005.81	19.23	ND	986.58	NA	0.00
MW13	4/6/2020	1005.81	19.26	ND	986.55	NA	0.00
MW16	1/9/2020	1081.95	95.33	ND	986.62	NA	0.00
MW16	4/6/2020	1081.95	95.43	ND	986.52	NA	0.00
MW18	1/9/2020	1071.96	85.82	85.34	986.14	986.62	0.48
MW18	4/6/2020	1071.96	85.84	85.39	986.12	986.57	0.45
MW19	1/9/2020	1087.96	101.65	ND	986.31	NA	0.00
MW19	4/6/2020	1087.96	101.68	101.67	986.28	986.29	0.01
MW20	1/9/2020	1098.16	111.60	111.56	986.56	986.60	0.04
MW20	4/6/2020	1098.16	111.92	111.62	986.24	986.54	0.30
MW21	1/9/2020	1095.82	109.14	ND	986.68	NA	0.00
MW21	4/6/2020	1095.82	109.19	ND	986.63	NA	0.00
MW22	1/9/2020	1084.65	98.03	ND	986.62	NA	0.00
MW22	4/6/2020	1084.65	98.06	ND	986.59	NA	0.00
MW24	1/9/2020	1084.04	97.82	ND	986.22	NA	0.00
MW24	4/6/2020	1084.04	97.91	ND	986.13	NA	0.00
MW25	1/9/2020	1095.25	108.99	ND	986.26	NA	0.00
MW25	4/6/2020	1095.25	109.17	ND	986.08	NA	0.00
MW26	1/9/2020	1086.87	100.77	ND	986.10	NA	0.00
MW26	4/6/2020	1086.87	100.86	ND	986.01	NA	0.00
MW27	1/9/2020	1110.96	124.21	ND	986.75	NA	0.00
MW27	4/6/2020	1110.96	124.32	ND	986.64	NA	0.00
MW28	1/9/2020	1083.52	96.80	ND	986.72	NA	0.00
MW28	4/6/2020	1083.52	96.85	ND	986.67	NA	0.00
MW29	1/9/2020	1070.24	83.56	ND	986.68	NA	0.00
MW29	4/6/2020	1070.24	83.68	83.67	986.56	986.57	0.01
MW30	1/9/2020	1048.98	62.37	ND	986.61	NA	0.00
MW30	4/6/2020	1048.98	62.40	ND	986.58	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							
MW31	1/9/2020	1076.34	89.73	ND	986.61	NA	0.00
MW31	4/6/2020	1076.34	89.81	ND	986.53	NA	0.00
MW32	1/9/2020	1021.02	34.52	ND	986.50	NA	0.00
MW32	4/6/2020	1021.02	34.58	ND	986.44	NA	0.00
EW02S	1/9/2020	1082.25	95.64	ND	986.61	NA	0.00
EW02S	4/6/2020	1082.25	95.82	ND	986.43	NA	0.00
EW03S	1/9/2020	1088.66	102.19	ND	986.47	NA	0.00
EW03S	4/6/2020	1088.66	102.25	ND	986.41	NA	0.00
EW04S	1/9/2020	1101.01	114.41	ND	986.60	NA	0.00
EW04S	4/6/2020	1101.01	114.54	ND	986.47	NA	0.00
EW05S	1/9/2020	1077.04	90.51	ND	986.53	NA	0.00
EW05S	4/6/2020	1077.04	90.66	90.55	986.38	986.49	0.11
EW06S	1/9/2020	1083.61	99.66	97.10	983.95	986.51	2.56
EW06S	4/6/2020	1083.61	99.92	97.14	983.69	986.47	2.78
EW07S	1/9/2020	1087.49	NM	NM	NM	NM	NA
EW07S	4/6/2020	1087.49	101.09	101.02	986.40	986.47	0.07
EW10S	1/9/2020	1088.72	107.08	102.15	981.64	986.57	4.93
EW10S	4/6/2020	1088.72	106.82	102.23	981.90	986.49	4.59
EW11S	1/9/2020	1047.23	60.62	ND	986.61	NA	0.00
EW11S	4/6/2020	1047.23	60.81	ND	986.42	NA	0.00
EW12S	1/9/2020	1086.31	103.58	99.78	982.73	986.53	3.80
EW12S	4/6/2020	1086.31	103.73	99.84	982.58	986.47	3.89
EW13S	1/9/2020	1092.88	106.29	ND	986.59	NA	0.00
EW13S	4/6/2020	1092.88	106.48	ND	986.40	NA	0.00
EW14S	1/9/2020	1098.32	112.50	111.94	985.82	986.38	0.56
EW14S	4/6/2020	1098.32	112.81	112.00	985.51	986.32	0.81

Notes:

feet 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
NM - Not measured

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)
MW3	4/6/2020	W-200406-RA-01	14:51	0.0	11.06	515	109	0	7.91	-84	6.8	0
		Sample Time: 15:11	14:56	0.1	11.91	518	63.6	0	7.89	-89		
		Duplicate: W-200406-RA-02	15:01	0.3	12.03	517	51.5	0	7.87	-94		
			15:06	0.4	12.03	516	48.3	0	7.86	-95		
			15:11	0.5	12.03	516	47.6	0	7.86	-95		
MW12	4/7/2020	W-200407-RA-03	9:44	0.0	11.03	428	8.8	0	8	35	0	0
		Sample Time: 10:10	9:49	0.1	11.82	432	3.9	0	7.89	20		
			9:54	0.3	12.38	432	3.3	0	7.89	20		
			10:00	0.4	12.76	432	3	0	7.87	19		
			10:08	0.5	12.44	432	3	0	7.86	18		
MW16	4/7/2020	W-200407-RA-04	10:21	0.0	12.29	123	18.6	4.33	7.5	64	0	0
		Sample Time: 10:48	10:26	0.1	11.72	116	14.1	2.66	7.5	70		
			10:33	0.3	12.19	123	2.1	6.32	7.46	73		
			10:38	0.4	12.89	123	1.7	7.59	7.4	75		
			10:43	0.5	12.99	123	1.5	7.65	7.39	75		
			10:48	0.7	13.03	123	1.1	7.63	7.34	77		
MW17	4/7/2020	W-200407-RA-05	11:04	0.0	9.66	670	0	4.53	7.87	71	0	0
		Sample Time: 11:27	11:10	0.1	12.07	667	2.5	4.57	7.97	47		
			11:15	0.3	12.71	666	5.1	4.55	8.02	47		
			11:20	0.4	12.71	667	3.7	4.5	8.01	47		
			11:27	0.5	12.71	667	3.1	4.52	8.01	47		
MW25	4/7/2020	W-200407-RA-06	11:50	0.0	9.86	625	5.8	1.63	7.75	57	0	0
		Sample Time: 12:15	11:55	0.1	9.82	624	3.1	0.89	7.67	52		
			12:00	0.3	11.13	623	13.4	2.2	7.59	44		
			12:05	0.4	13.34	615	44.4	4.67	7.47	39		
			12:10	0.5	13.55	613	46.9	4.67	7.44	39		
			12:15	0.7	13.49	611	47.1	4.8	7.43	37		
MW4	4/7/2020	W-200407-RA-07	12:36	0.0	12.44	336	5.2	0	8.56	-184	0.2	0
		Sample Time: 12:57	12:42	0.1	12.11	343	5.7	0	8.76	-189		
			12:47	0.3	12.03	343	4.7	0	8.85	-186		
			12:52	0.4	12.01	341	4.4	0	8.86	-184		
			12:57	0.5	12.01	341	4.6	0	8.87	-183		

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)
MW28	4/7/2020	W-200407-RA-08	13:19	0.0	9.6	289	24.8	0	8.61	-6	0	0
		Sample Time: 13:40	13:24	0.1	10.53	290	22.6	0	8.57	-10		
			13:29	0.3	13.37	292	5.7	0	8.43	1		
			13:35	0.4	13.45	294	4	0	8.41	6		
			13:40	0.5	13.51	295	3.1	0	8.4	8		
EW13s	4/8/2020	W-200408-RA-15	9:20	0.0	10.25	749	55.9	0	7.63	-118	4.8	0
		Sample Time: 12:45										
MW10	4/8/2020	W-200408-RA-10	9:34	0.0	9.91	486	10.2	0	7.91	-133	1.8	0
		Sample Time: 10:01	9:46	0.1	11.34	484	33.9	0	7.91	-137		
			9:51	0.3	12.03	470	33.5	0	7.94	-134		
			9:56	0.4	12.15	468	33.7	0	7.93	-127		
			10:01	0.5	12.15	465	32.8	0	7.93	-125		
MW10s	4/8/2020	W-200408-RA-11	10:08	0.0	11.6	683	191	0	7.65	23	0.8	0
		Sample Time: 10:27	10:13	0.1	14.19	694	21.8	0	6.79	52		
		Duplicate: W-200408-RA-12	10:18	0.3	14.2	694	18.1	0	6.77	52		
			10:23	0.4	14.19	694	17.6	0	6.76	52		
			10:27	0.5	14.31	697	17.1	0	6.73	54		
MW23	4/8/2020	W-200408-RA-13	10:47	0.0	8.96	533	12.5	3.61	7.54	10	0.01	0
		Sample Time: 11:10	10:59	0.1	8.9	537	16.8	0	8.03	16		
			11:06	0.3	8.75	542	12.9	0	8.11	19		
			11:10	0.4	8.84	542	9.9	0	8.12	22		
MW14	4/8/2020	W-200408-RA-14	11:31	0.0	9.28	259	25.6	26.06	8.21	-99	0	0
		Sample Time: 11:57	11:40	0.1	10.66	314	9	3.32	8.28	-50		
			11:47	0.3	10.71	320	4.7	2.52	8.3	-41		
			11:52	0.4	10.87	323	4.3	3.22	8.32	-35		
			11:57	0.5	11.06	323	4.3	3.87	8.33	-32		
MW6s	4/9/2020	W-200409-RA-17	10:24	0.0	14.37	596	28.2	3.34	6.73	114		
		Sample Time: 10:34	10:29	0.1	14.41	603	27.9	4.27	6.72	114		
			10:34	0.3	14.46	595	27.2	4.18	6.7	114		
MW2	4/9/2020	W-200409-RA-18	11:00	0.0	0	0	0	0	0	0	0.6	0
		Sample Time: 11:00										

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)
MW22	4/9/2020	W-200409-RA-19	11:26	0.0	7.86	190	479	9.33	7.63	71	0.4	0
		Sample Time: 11:26										
MW21	4/9/2020	W-200409-RA-20	11:57	0.0	8.46	386	9	10.65	7.47	386	0.2	0
		Sample Time: 12:25	12:02	0.1	8.58	385	7.5	3.77	7.47	92		
			12:06	0.3	8.6	385	7.2	1.89	7.47	92		
			12:11	0.4	8.6	386	6.9	0.81	7.47	93		
			12:15	0.5	8.63	386	6	0	7.47	93		
			12:20	0.7	8.66	385	5.5	0	7.48	95		
			12:25	0.8	8.69	385	5.7	0	7.48	95		
MW1	4/9/2020	W-200409-RA-21	12:46	0.0	6.86	214	16.6	0.27	7.59	89	0.4	0
		Sample Time: 13:00	12:51	0.1	6.84	215	18	0.21	7.59	90		
			12:55	0.3	6.83	216	18	0.23	7.59	90		
			13:00	0.4	6.81	215	16.6	0.25	7.59	90		
MW13	4/9/2020	W-200409-RA-22	13:38	0.0	7.52	128	13.4	0	6.88	172		0
		Sample Time: 13:53	13:43	0.1	7.62	130	5.9	0	6.49	197		
			13:48	0.3	7.42	131	4.7	0	6.34	202		
			13:53	0.4	7.42	131	2.9	0	6.35	202		
MW32	4/13/2020	W-200413-RA-23	9:45	0.0	5.6	85	303	21.04	7.08	69	1.4	0
		Sample Time: 10:12	9:50	0.1	6.11	88	256	9.45	6.99	88		
			9:55	0.3	6.35	88	169	4.92	6.92	119		
			10:03	0.4	6.58	88	121	1.84	6.8	128		
			10:07	0.5	6.62	88	119	1.73	6.8	133		
			10:12	0.7	6.64	87	118	1.69	6.76	131		
MW30	4/13/2020	W-200413-RA-24	10:40	0.0	7.74	232	100	0	6.83	72	0.2	0
		Sample Time: 10:50	10:45	0.1	7.89	234	95.2	0	6.82	80		
			10:50	0.3	7.94	235	93.3	0	6.81	81		
MW5	4/13/2020	W-200413-RA-25	11:19	0.0	9.84	695	37.6	0	6.7	-79	3.6	0
		Sample Time: 11:35	11:25	0.1	9.9	698	26.1	0	6.74	-78		
			11:30	0.3	9.91	699	25.4	0	6.78	-75		
			11:35	0.4	9.91	701	23.9	0	6.81	-73		

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)
MW31	4/13/2020	W-200413-RA-26	12:20	0.0	7.92	444	46.2	2	7.2	82	0.2	0
		Sample Time: 12:45	0:25	0.1	8.28	441	15	1.55	7.2	88		
			12:30	0.3	8.27	441	14.7	1.37	7.2	88		
			12:35	0.4	8.27	441	10.2	0.66	7.2	87		
			12:40	0.5	8.41	441	9.9	0.58	7.2	95		
			12:45	0.7	8.35	440	9.7	0.59	7.2	94		
EW11D	4/13/2020	W-200413-RA-27	13:18	0.0	7.81	166	413	10.53	6.49	103	8.4	0
		Sample Time: 13:32	13:23	0.1	7.7	170	317	0	6.33	101		
			13:28	0.3	7.66	175	300	0	6.3	97		
			13:32	0.4	7.61	178	290	0	6.29	93		
EW11S	4/13/2020	W-200413-RA-28	14:10	0.0	7.37	296	16.6	0	6.89	85	0.2	0
		Sample Time: 14:20	14:15	0.1	7.44	291	18.1	0	6.92	91		
			14:20	0.3	7.45	292	17.7	0	6.92	92		

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 Idendification	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
Semiconfined Aquifer (Lower)																				
EW11D	W-200413-RA-27	4/13/2020	66.1	0.46	3.7	14.2	5.6	44.9	0.22 J	0.30 JB	4.6	**2180**	**162**	27.3	0.86	0.25 U	0.15 U	0.18 U	0.15 U	0.22 U
MW3	W-200406-RA-01	4/6/2020	213	24.9	1.4 H	7.0	0.58 J	199	22	0.23 U	0.91 J	**685**	31.9	6.9 U	0.090 U	0.23 U	0.15 U	0.18 U	0.15 U	0.22 U
MW3 (duplicate)	W-200406-RA-02	4/6/2020	219	25.4	1.4 H	7.0	0.57 J	203	21	0.25 J	0.86 J	**675**	32.0	6.9 U	0.089 U	0.24 U	0.15 U	0.18 U	0.15 U	0.22 U
MW4	W-200407-RA-07	4/7/2020	143	49.5	0.24	14.0	0.47 U	73.8	18	1.1	0.68 J	67.9 J	36.0	10 J	0.87	0.25 U	0.15 U	0.18 U	0.15 U	0.22 U
MW10	W-200408-RA-10	4/8/2020	196	37.5	0.068 U	20.0	42.1	136	230	1.3	2.9	**1150**	**1070**	6.9 U	**3600**	26	0.15 U	1.8	1.6	13
MW12	W-200407-RA-03	4/7/2020	192	9.3	0.31	37.6	4.2	160	0.17 U	0.78 J	1.9 J	46.7 U	**70.0**	6.9 U	**880**	0.24 U	0.15 U	0.18 U	0.15 U	0.70 J
MW14	W-200408-RA-14	4/8/2020	140	18.1	1.4	6.0	0.60 J	115	0.17 U	1.1	0.66 J	46.7 U	2.5	6.9 U	0.096 U	0.24 U	0.15 U	0.18 U	0.15 U	0.22 U
MW17	W-200407-RA-05	4/7/2020	310	12.6	1.8	131	0.47 U	181	0.17 U	0.88 J	1.3 J	46.7 U	0.79 U	6.9 U	0.085 U	0.25 U	0.15 U	0.18 U	0.15 U	0.22 U
MW23	W-200408-RA-13	4/8/2020	243	46.2	2.0	8.4	1.5	185	0.17 U	0.58 J	0.89 J	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-200413-RA-28	4/13/2020	96.0	2.2	4.5	20.7	2.2	72.7	0.17 U	0.30 JB	9.1	46.7 U	2.2 J	6.9 U	0.98	0.23 U	0.15 U	0.18 U	0.15 U	0.22 U
EW13S	W-200408-RA-15	4/8/2020	258	32.1	0.068 U	13.6	35.8	257	5.5	3.8	8.1	**10200**	**1310**	9.0 J	**3700**	27	0.15 U	0.74	0.81	12
MW1	W-200409-RA-21	4/9/2020	83.4	6.0	1.4	5.5	0.54 J	72.9	0.17 U	0.47 J	1.6 J	46.7 U	0.79 U	6.9 U	0.086 U	0.24 U	0.15 U	0.18 U	0.15 U	0.22 U
MW2	W-200409-RA-18	4/9/2020	160	0.30	0.24	1.4	0.70 J	73.3	0.17 U	1.4	28.2	**6900**	**292**	30.5	0.093 U	0.26 U	0.15 U	0.18 U	0.15 U	0.22 U
MW5	W-200413-RA-25	4/13/2020	286	27.0	0.068 U	23.8	42.5	253	13	0.92 JB	1.1 J	**17000**	**7190 B**	6.9 U	**6200**	22	0.15 U	0.72	0.60	7.0
MW6S	W-200409-RA-17	4/9/2020	297	11.0	7.3	11.1	2.8	245	0.17 U	0.41 J	3.7	89.8 J	5.1	6.9 U	0.089 U	0.25 U	0.15 U	0.18 U	0.15 U	0.22 U
MW10S	W-200408-RA-11	4/8/2020	345	21.7	0.068 U	22.6	34.0	312	0.17 U	0.54 J	2.3	**563**	**3530**	6.9 U	**2800**	17	0.15 U	0.82	0.25 J	11
MW10S (duplicate)	W-200408-RA-12	4/8/2020	341	19.4	0.068 U	21.1	34.5	301	0.17 U	0.57 J	2.8	**571**	**3670**	6.9 U	**2300**	16	0.15 U	0.91	0.26 J	12
MW13	W-200409-RA-22	4/9/2020	50.3	0.72	0.41	2.6	1.7	51.7	0.17 U	0.35 J	3.9	46.7 U	1.0 J	6.9 U	0.089 U	0.25 U	0.15 U	0.18 U	0.15 U	0.22 U
MW16	W-200407-RA-04	4/7/2020	35.4	2.2	0.56	3.3	0.47 U	44.1	0.17 U	0.34 J	5.3	46.7 U	0.79 U	8.6 J	0.52	0.25 U	0.15 U	0.18 U	0.15 U	0.22 U
MW21	W-200409-RA-20	4/9/2020	85.4	77.3	1.6	5.8	0.47 U	37.1	0.17 U	0.39 J	1.4 J	**488**	7.3	8.0 J	0.088 U	0.24 U	0.15 U	0.18 U	0.15 U	0.22 U
MW22	W-200409-RA-19	4/9/2020	116	3.9	0.61	5.4	1.3	72.9	0.17 U	0.53 J	6.1	**1160**	**67.8**	11.3 J	0.092 U	0.26 U	0.15 U	0.18 U	0.15 U	0.22 U
MW25	W-200407-RA-06	4/7/2020	286	11.7	2.3	5.5	0.87 J	268	0.17 U	0.47 J	6.2	103	3.4	6.9 U	0.090 U	0.26 U	0.15 U	0.18 U	0.15 U	0.22 U
MW28	W-200407-RA-08	4/7/2020	107	17.0	2.0	4.8	0.48 J	99.3	0.17 U	0.51 J	1.0 J	46.7 U	0.79 U	6.9 U	0.085 U	0.23 U	0.15 U	0.18 U	0.15 U	0.22 U
MW30	W-200413-RA-24	4/13/2020	102	0.98	1.5	3.3	1.4	97.3	0.25 J	0.29 JB	5.4	46.7 U	24.1	6.9 U	**270**	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 Idendification	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)																				
MW31	W-200413-RA-26	4/13/2020	207	0.33	0.42	1.1	1.3	210	0.21 J	0.23 JB	18.7	46.7 U	2.6	6.9 U	**6.0**	0.23 U	0.15 U	0.18 U	0.15 U	0.22 U
MW32	W-200413-RA-23	4/13/2020	30.6	0.67	0.69	4.4	0.47 U	31.5	0.17 U	0.23 JB	2.7	46.7 U	3.9	6.9 U	0.092 U	0.25 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
B - Compound was found in the blank and sample
H - Sample was prepped or analyzed beyond the specified holding time
- Concentration exceeds the ES
- Concentration exceeds the PAL
Wells MW20 and MW29 were not sampled due to the presence of LNAPL

Appendices

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											
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							

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	4/18/17	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							
DW01	10/1/19	N		0.087 U								0.26 U	0.15 U	0.18 U	0.15 U	0.23 J							
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		
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

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
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
EW11D	10/17/19	N	0.31 J	2.7	0.24 J	2.1	1260		66.1	15.2 J		0.24 U	0.15 U	0.18 U	0.15 J	0.22 U	149 H	3.9	172	5.4		29.5	6.4
EW11D	4/13/20	N	0.22 J	0.86	0.30 JB	4.6	2180		162	27.3		0.25 U	0.15 U	0.18 U	0.15 U	0.22 U	44.9	0.46	66.1	3.7		14.2	5.6
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
EW11S	10/17/19	N	0.21 J	2.1	0.23 U	2	46.7 U		24.6	6.9 U		0.24 U	0.15 U	0.18 U	0.15 J	0.22 U	93.6 H	3.2	128	7.3		22	3.6
EW11S	4/13/20	N	0.17 U	0.98	0.30 JB	9.1	46.7 U		2.2 J	6.9 U		0.23 U	0.15 U	0.18 U	0.15 U	0.22 U	72.7	2.2	96	4.5		20.7	2.2
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
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

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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
EW13S	10/15/19	N	6.3	11000	8.9	2.2	19800		3150	6.9 U		20	0.15 U	1.3	0.97	18	265	33.1	268	0.068 U		15.5	36.6
EW13S	4/8/20	N	5.5	3700	3.8	8.1	10200		1310	9.0 J		27	0.15 U	0.74	0.81	12	257	32.1	258	0.068 U		13.6	35.8
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
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

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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	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	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
MW1	10/14/19	N	0.17 U	0.085 U	0.37 J	1.5 J	76.5 J		4.7	6.9 U		0.23 U	0.15 U	0.18 U	0.15 U	0.22 U	99.1	14.7	116	3.7 H		5.7	0.55 J
MW1	4/9/20	N	0.17 U	0.086 U	0.47 J	1.6 J	46.7 U		0.79 U	6.9 U		0.24 U	0.15 U	0.18 U	0.15 U	0.22 U	72.9	6	83.4	1.4		5.5	0.54 J
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													

Appendix A.1

Historical Groundwater Analytical Data
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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
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
MW2	10/18/19	N	0.17 U	0.094 U	0.33 J	5.2	1170		40.9	12.1 J		0.26 U	0.15 U	0.18 U	0.15 U	0.22 U	67.9 H	0.34	75.6	0.3		1.4 B	5.3
MW2	4/9/20	N	0.17 U	0.093 U	1.4	28.2	6900		292	30.5		0.26 U	0.15 U	0.18 U	0.15 U	0.22 U	73.3	0.3	160	0.24		1.4	0.70 J
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
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													

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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
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
MW3	10/14/19	N	86	0.091 U	0.23 U	0.73 J	482		52.1	6.9 U		0.24 U	0.15 U	0.18 U	0.15 U	0.22 U	209	30.1	235	1.3 H		8.3	0.69 J
MW3	4/6/20	FD	21	0.089 U	0.25 J	0.86 J	675		32	6.9 U		0.24 U	0.15 U	0.18 U	0.15 U	0.22 U	203	25.4	219	1.4 H		7	0.57 J
MW3	4/6/20	N	22	0.090 U	0.23 U	0.91 J	685		31.9	6.9 U		0.23 U	0.15 U	0.18 U	0.15 U	0.22 U	199	24.9	213	1.4 H		7	0.58 J
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

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
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
MW4	10/16/19	N	25	5.7	1	0.50 U	214		134	6.9 U		0.25 U	0.15 U	0.18 U	0.15 U	0.22 U	80.3 H	50.4	147	0.090 J		13.6 B	0.47 U
MW4	4/7/20	N	18	0.87	1.1	0.68 J	67.9 J		36	10 J		0.25 U	0.15 U	0.18 U	0.15 U	0.22 U	73.8	49.5	143	0.24		14	0.47 U
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
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

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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
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
MW5	10/17/19	FD	32	5500	0.69 J	0.84 J	21900		6870	6.9 U		20	0.15 U	0.62	0.43 J	6.4	265	25.7	283	0.068 U		24.4	38.4
MW5	10/17/19	N	34	6000	0.75 J	0.70 J	22300		7140	6.9 U		22	0.15 U	0.62	0.46 J	6.3	452	28.2	273	0.068 U		25.6	38.7
MW5	4/13/20	N	13	6200	0.92 JB	1.1 J	17000		7190 B	6.9 U		22	0.15 U	0.72	0.6	7	253	27	286	0.068 U		23.8	42.5
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													
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

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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
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
MW6S	10/17/19	N	0.17 U	2.7	0.27 J	3.4	271		11	11.0 J		0.23 U	0.15 U	0.18 U	0.15 J	0.22 U	444 H	8.9	259	3.8		7.4	2.6
MW6S	4/9/20	N	0.17 U	0.089 U	0.41 J	3.7	89.8 J		5.1	6.9 U		0.25 U	0.15 U	0.18 U	0.15 U	0.22 U	245	11	297	7.3		11.1	2.8
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													
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

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
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
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

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	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													
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

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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
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
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
MW10	10/16/19	FD	180	1800	1.1	2.4	1640		937	6.9 U		7	0.15 U	0.18 U	0.98	7.7	144 B	30.3	183	0.068 U		14.4 B	26.6
MW10	10/16/19	N	81	1700	1.1	2.7	1800		937	6.9 U		7.5	0.15 U	0.69	0.15 U	7.4	143 B	31.2	186	0.068 U		14.4 B	27.1
MW10	4/8/20	N	230	3600	1.3	2.9	1150		1070	6.9 U		26	0.15 U	1.8	1.6	13	136	37.5	196	0.068 U		20	42.1
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				

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
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			
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
MW10S	10/16/19	N	0.31 J	2500	0.49 J	1.8 J	551		3010	6.9 U		13	0.15 U	0.18 U	0.15 U	14	345 B	20.5	379	0.19 J		18.8	27.7
MW10S	4/8/20	FD	0.17 U	2300	0.57 J	2.8	571		3670	6.9 U		16	0.15 U	0.91	0.26 J	12	301	19.4	341	0.068 U		21.1	34.5
MW10S	4/8/20	N	0.17 U	2800	0.54 J	2.3	563		3530	6.9 U		17	0.15 U	0.82	0.25 J	11	312	21.7	345	0.068 U		22.6	34
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

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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
MW11	4/24/01	N3	0.11 U		1.4	25 U	151		15 U	126		5.4 U								3.74 =			
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
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													

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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
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
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

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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
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
MW12	10/14/19	N	0.25 J	300	0.89 J	0.85 J	46.7 U		8.4	6.9 U		0.24 U	0.15 U	0.18 U	0.15 U	0.22 U	158	8.7	197	0.61 H		43.5	1.2
MW12	4/7/20	N	0.17 U	880	0.78 J	1.9 J	46.7 U		70	6.9 U		0.24 U	0.15 U	0.18 U	0.15 U	0.70 J	160	9.3	192	0.31		37.6	4.2
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											
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

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	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
MW13	10/14/19	N	0.17 U	0.086 U	0.28 J	2.3	149		4.3	6.9 J		0.25 U	0.15 U	0.18 U	0.15 U	0.22 U	44.7	1.2	40.1	0.29 H		1.8	1.9
MW13	4/9/20	N	0.17 U	0.089 U	0.35 J	3.9	46.7 U		1.0 J	6.9 U		0.25 U	0.15 U	0.18 U	0.15 U	0.22 U	51.7	0.72	50.3	0.41		2.6	1.7
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											
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
MW14	10/16/19	N	0.17 U	0.086 U	1.1	0.50 U	46.7 U		9.0 F2	6.9 U		0.25 U	0.15 U	0.18 U	0.15 U	0.22 U	123 H	17.5 F1	146	1.7		6.6 B	0.47 U
MW14	4/8/20	N	0.17 U	0.096 U	1.1	0.66 J	46.7 U		2.5	6.9 U		0.24 U	0.15 U	0.18 U	0.15 U	0.22 U	115	18.1	140	1.4		6	0.60 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

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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
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
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

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	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
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

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	10/14/19	FD	0.17 U	0.087 U	0.26 J	2.4	105		4.2	6.9 U		0.25 U	0.15 U	0.18 U	0.15 U	0.22 U	43.2	3.8	37.9	0.55 H		4.4	0.47 U
MW16	10/14/19	N	0.17 U	0.086 U	0.27 J	1.6 J	60.3 J		4	6.9 U		0.23 U	0.15 U	0.18 U	0.15 U	0.22 U	42.8	3.9	37.5	0.55 H		4.4	0.47 U
MW16	4/7/20	N	0.17 U	0.52	0.34 J	5.3	46.7 U		0.79 U	8.6 J		0.25 U	0.15 U	0.18 U	0.15 U	0.22 U	44.1	2.2	35.4	0.56		3.3	0.47 U
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
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

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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
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
MW17	10/15/19	N	0.17 U	0.087 U	0.55 J	1.0 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	193	13.8	338	2		128	0.47 U
MW17	4/7/20	N	0.17 U	0.085 U	0.88 J	1.3 J	46.7 U		0.79 U	6.9 U		0.25 U	0.15 U	0.18 U	0.15 U	0.22 U	181	12.6	310	1.8		131	0.47 U
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							
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

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
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
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

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
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
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

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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
MW21	10/15/19	N	0.17 U	0.088 U	0.23 J	0.72 J	46.7 U		0.79 U	7.0 J		0.23 U	0.15 U	0.18 U	0.15 U	0.22 U	35.1	87.1	83.1	1.6		5.9	0.47 U
MW21	4/9/20	N	0.17 U	0.088 U	0.39 J	1.4 J	488		7.3	8.0 J		0.24 U	0.15 U	0.18 U	0.15 U	0.22 U	37.1	77.3	85.4	1.6		5.8	0.47 U
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
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

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	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
MW22	10/16/19	N	0.17 U	0.095 U	0.35 J	3.3	509		99	11.5 J		0.23 U	0.15 U	0.18 U	0.15 U	0.22 U	62.6 H	3.6	71.2	0.71		4.5 B	12.4
MW22	4/9/20	N	0.17 U	0.092 U	0.53 J	6.1	1160		67.8	11.3 J		0.26 U	0.15 U	0.18 U	0.15 U	0.22 U	72.9	3.9	116	0.61		5.4	1.3
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
MW23	10/14/19	N	6.4	0.085 U	0.64 J	0.67 J	46.7 U		2.6	6.9 U		0.65 J	0.15 U	0.18 U	0.15 U	0.22 U	195	46.2	250	2.1 H		8.1	0.47 U
MW23	4/8/20	N	0.17 U	0.087 U	0.58 J	0.89 J	46.7 U		0.79 U	6.9 U		0.24 U	0.15 U	0.18 U	0.15 U	0.22 U	185	46.2	243	2		8.4	1.5
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
MW25	10/15/19	N	0.17 U	0.088 U	0.24 J	1.5 J	46.7 U		0.79 U	7.6 J		0.24 U	0.15 U	0.18 U	0.15 U	0.22 U	404	20.2	205	2.1		3.9	0.47 U
MW25	4/7/20	N	0.17 U	0.090 U	0.47 J	6.2	103		3.4	6.9 U		0.26 U	0.15 U	0.18 U	0.15 U	0.22 U	268	11.7	286	2.3		5.5	0.87 J
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													
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													

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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
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
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

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	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
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
MW28	10/16/19	N	0.17 U	0.086 U	0.31 J	0.50 U	46.7 U		0.79 U	6.9 U		0.23 U	0.15 U	0.18 U	0.15 U	0.22 U	105 H	22.9	120	2.1		5.3 B	0.51 J
MW28	4/7/20	N	0.17 U	0.085 U	0.51 J	1.0 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	99.3	17	107	2		4.8	0.48 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

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
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
MW30	10/17/19	N	0.17 U	41	0.23 U	1.2 J	46.7 U		22.6	6.9 U		0.24 U	0.15 U	0.18 U	0.15 U	0.28 J	88.8 H	0.62	92	0.53		2.4	0.85 J
MW30	4/13/20	N	0.25 J	270	0.29 JB	5.4	46.7 U		24.1	6.9 U		0.25 U	0.15 U	0.18 U	0.15 U	0.22 U	97.3	0.98	102	1.5		3.3	1.4
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
MW31	10/14/19	N	0.17 U	0.086 U	0.23 U	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	240	0.52	231	0.33 F1		0.84	0.47 U
MW31	4/13/20	N	0.21 J	6	0.23 JB	18.7	46.7 U		2.6	6.9 U		0.23 U	0.15 U	0.18 U	0.15 U	0.22 U	210	0.33	207	0.42		1.1	1.3
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
MW32	10/14/19	N	0.17 U	0.088 U	0.23 U	0.77 J	134		14.8	6.9 U		0.24 U	0.15 U	0.18 U	0.15 U	0.22 U	33.3	0.74	35.7	0.64 H		3.8	0.69 J
MW32	4/13/20	N	0.17 U	0.092 U	0.23 JB	2.7	46.7 U		3.9	6.9 U		0.25 U	0.15 U	0.18 U	0.15 U	0.22 U	31.5	0.67	30.6	0.69		4.4	0.47 U
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																			
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																			

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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
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	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							
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							

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
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							
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							

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
RW01	10/1/19	N		0.093 U								0.24 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							
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							

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	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	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							
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							
RW02	10/1/19	N		0.089 U								0.24 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																			

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
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							
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							
RW03	10/1/19	N		0.088 U								0.27 U	0.15 U	0.18 U	0.15 U	0.22 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	10/9/97	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							
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							

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
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							
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							
RW04	10/1/19	N		0.085 U								0.24 U	0.15 U	0.18 U	0.15 U	0.29 J							
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																			

Appendix A.1

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

Location	Date[2]	Compound [1] / Units	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
		Type[3]																					
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							
RW05	10/1/19	FD		0.091 U								0.26 U	0.15 U	0.18 U	0.15 U	0.22 U							
RW05	10/1/19	N		0.090 U								0.26 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	10/1/19	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							
RW06 SHOP	10/1/19	N		0.086 U								0.25 U	0.15 U	0.18 U	0.15 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
7/18/16	0.00	0.52	0.00	0.00	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**
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
7/22/19	0.00	0.49	0.00	0.03	0.00
10/2/19	0.00	0.51	0.03	0.07	0.00
1/9/20	0.00	0.48	0.00	0.04	0.00
4/6/20	0.00	0.45	0.01	0.30	0.01

Notes:

NM - Not Measured
NA - Not Applicable
* - MW10S measured on 6/1/18 and MW29 measured on 5/24/18

Appendix A.3

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
2019	0	0	0	0	0	0
2020	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	

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	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	Groundwater extraction system remained shutdown pending carbon change-out
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 restarted after carbon change-out
EW04	1/22/2015	115.36	NP	0.00	NA	
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	
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	

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	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
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	

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	11/5/2014	111.22	98.06	13.16	12.0	
EW06	11/12/2014	107.80	98.30	9.50	NA	Temporary system shutdown due to alarm condition
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	Measurements recorded prior to LNAPL removal
EW06	12/11/2014	100.35	98.40	1.95	12.0	Measurements recorded immediately after LNAPL removal
EW06	12/15/2014	108.40	98.01	10.39	NA	
EW06	12/23/2014	109.35	98.01	11.34	NA	Measurements recorded prior to LNAPL removal
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	
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	

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	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	
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	

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	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	
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	

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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	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	
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 and Extraction Wells

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

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

Laboratory Job ID: 500-180383-1
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:
4/20/2020 3:45:52 PM

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

Table of Contents

Job ID: 500-180383-1

Laboratory: Eurofins TestAmerica, Chicago

Narrative

Job Narrative
500-180383-1

Receipt
The samples were received on 4/8/2020 9:50 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 6 coolers at receipt time were 3.4º C, 4.4º C, 5.2º C, 5.8º C, 5.9º C and 6.0º 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 8151A: The following sample required a dilution due to the nature of the sample matrix: W-200407-RA-03 (500-180383-3). 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.

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 300.0: The following samples were analyzed outside of holding time for Nitrate as N. The samples were received with insufficient time due to analyst scheduling following COVID-19 protocols W-200406-RA-01 (500-180383-1) and W-200406-RA-02 (500-180383-2).

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: 500-180383-1

Client Sample ID: W-200406-RA-01 — Lab Sample ID: 500-180383-1

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methane	22		1.0	0.17	ug/L	1		RSK-175	Total/NA
Copper	0.91	J	2.0	0.50	ug/L	1		6020A	Dissolved
Iron	685		100	46.7	ug/L	1		6020A	Dissolved
Manganese	31.9		2.5	0.79	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	213		0.91	0.46	mg/L	1		SM 2340B	Total/NA
Chloride	24.9		2.0	1.7	mg/L	10		300.0	Total/NA
Nitrate as N	1.4	H	0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	7.0		0.20	0.095	mg/L	1		300.0	Total/NA
Total Organic Carbon - Duplicates	0.58	J	1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	199		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-200406-RA-02 — Lab Sample ID: 500-180383-2

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methane	21		1.0	0.17	ug/L	1		RSK-175	Total/NA
Arsenic	0.25	J	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	0.86	J	2.0	0.50	ug/L	1		6020A	Dissolved
Iron	675		100	46.7	ug/L	1		6020A	Dissolved
Manganese	32.0		2.5	0.79	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	219		0.91	0.46	mg/L	1		SM 2340B	Total/NA
Chloride	25.4		2.0	1.7	mg/L	10		300.0	Total/NA
Nitrate as N	1.4	H	0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	7.0		0.20	0.095	mg/L	1		300.0	Total/NA
Total Organic Carbon - Duplicates	0.57	J	1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	203		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-200407-RA-03 — Lab Sample ID: 500-180383-3

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Xylenes, Total	0.70	J	1.0	0.22	ug/L	1		8260B	Total/NA
Pentachlorophenol	880		38	34	ug/L	400		8151A	Total/NA
Arsenic	0.78	J	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	1.9	J	2.0	0.50	ug/L	1		6020A	Dissolved
Manganese	70.0		2.5	0.79	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	192		0.91	0.46	mg/L	1		SM 2340B	Total/NA
Chloride	9.3		0.40	0.34	mg/L	2		300.0	Total/NA
Nitrate as N	0.31		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	37.6		2.0	0.95	mg/L	10		300.0	Total/NA
Total Organic Carbon - Duplicates	4.2		1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	160		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-200407-RA-04 — Lab Sample ID: 500-180383-4

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Pentachlorophenol	0.52		0.099	0.089	ug/L	1		8151A	Total/NA
Arsenic	0.34	J	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	5.3		2.0	0.50	ug/L	1		6020A	Dissolved
Zinc	8.6	J	20.0	6.9	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	35.4		0.91	0.46	mg/L	1		SM 2340B	Total/NA
Chloride	2.2		0.20	0.17	mg/L	1		300.0	Total/NA
Nitrate as N	0.56		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	3.3		0.20	0.095	mg/L	1		300.0	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Chicago

Client Sample ID: W-200407-RA-04 (Continued) — Lab Sample ID: 500-180383-4

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Alkalinity	44.1		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-200407-RA-05 — Lab Sample ID: 500-180383-5

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.88	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	310		0.91	0.46	mg/L	1		SM 2340B	Total/NA
Chloride	12.6		2.0	1.7	mg/L	10		300.0	Total/NA
Nitrate as N	1.8		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	131		4.0	1.9	mg/L	20		300.0	Total/NA
Alkalinity	181		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-200407-RA-06 — Lab Sample ID: 500-180383-6

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.47	J	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	6.2		2.0	0.50	ug/L	1		6020A	Dissolved
Iron	103		100	46.7	ug/L	1		6020A	Dissolved
Manganese	3.4		2.5	0.79	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	286		0.91	0.46	mg/L	1		SM 2340B	Total/NA
Chloride	11.7		2.0	1.7	mg/L	10		300.0	Total/NA
Nitrate as N	2.3		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	5.5		0.20	0.095	mg/L	1		300.0	Total/NA
Total Organic Carbon - Duplicates	0.87	J	1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	268		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-200407-RA-07 — Lab Sample ID: 500-180383-7

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methane	18		1.0	0.17	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	0.87		0.097	0.087	ug/L	1		8151A	Total/NA
Arsenic	1.1		1.0	0.23	ug/L	1		6020A	Dissolved
Copper	0.68	J	2.0	0.50	ug/L	1		6020A	Dissolved
Iron	67.9	J	100	46.7	ug/L	1		6020A	Dissolved
Manganese	36.0		2.5	0.79	ug/L	1		6020A	Dissolved
Zinc	10	J	20.0	6.9	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	143		0.91	0.46	mg/L	1		SM 2340B	Total/NA
Chloride	49.5		2.0	1.7	mg/L	10		300.0	Total/NA
Nitrate as N	0.24		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	14.0		2.0	0.95	mg/L	10		300.0	Total/NA
Alkalinity	73.8		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-200407-RA-08 — Lab Sample ID: 500-180383-8

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.51	J	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	1.0	J	2.0	0.50	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	107		0.91	0.46	mg/L	1		SM 2340B	Total/NA
Chloride	17.0		2.0	1.7	mg/L	10		300.0	Total/NA
Nitrate as N	2.0		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	4.8		0.20	0.095	mg/L	1		300.0	Total/NA
Total Organic Carbon - Duplicates	0.48	J	1.0	0.47	mg/L	1		9060A	Total/NA

This Detection Summary does not include radiochemical test results.

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

Job ID: 500-180383-1

Client Sample ID: W-200407-RA-08 (Continued) — Lab Sample ID: 500-180383-8

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Alkalinity	99.3		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-200407-RA-09 — Lab Sample ID: 500-180383-9

No Detections.

Client Sample ID: Trip Blank — Lab Sample ID: 500-180383-10

No Detections.

This Detection Summary does not include radiochemical test results.

Method Summary

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

Job ID: 500-180383-1

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: 500-180383-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
500-180383-1	W-200406-RA-01	Water	04/06/20 15:11	04/08/20 09:50	
500-180383-2	W-200406-RA-02	Water	04/06/20 15:11	04/08/20 09:50	
500-180383-3	W-200407-RA-03	Water	04/07/20 10:10	04/08/20 09:50	
500-180383-4	W-200407-RA-04	Water	04/07/20 10:18	04/08/20 09:50	
500-180383-5	W-200407-RA-05	Water	04/07/20 11:27	04/08/20 09:50	
500-180383-6	W-200407-RA-06	Water	04/07/20 12:15	04/08/20 09:50	
500-180383-7	W-200407-RA-07	Water	04/07/20 12:57	04/08/20 09:50	
500-180383-8	W-200407-RA-08	Water	04/07/20 13:40	04/08/20 09:50	
500-180383-9	W-200407-RA-09	Water	04/07/20 13:55	04/08/20 09:50	
500-180383-10	Trip Blank	Water	04/06/20 00:00	04/08/20 09:50	

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

Job ID: 500-180383-1

Client Sample ID: W-200406-RA-01

Date Collected: 04/06/20 15:11
Date Received: 04/08/20 09:50

Lab Sample ID: 500-180383-1

Matrix: Water

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			04/15/20 00:23	1
Toluene	<0.15		0.50	0.15	ug/L			04/15/20 00:23	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/15/20 00:23	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			04/15/20 00:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*75 - 126*		*04/15/20 00:23*	*1*
Toluene-d8 (Surr)	*98*		*75 - 120*		*04/15/20 00:23*	*1*
4-Bromofluorobenzene (Surr)	*110*		*72 - 124*		*04/15/20 00:23*	*1*
Dibromofluoromethane	*96*		*75 - 120*		*04/15/20 00:23*	*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		04/13/20 07:20	04/13/20 21:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5 (Surr)	*65*		*36 - 120*	*04/13/20 07:20*	*04/13/20 21:09*	*1*
2-Fluorobiphenyl (Surr)	*58*		*34 - 110*	*04/13/20 07:20*	*04/13/20 21:09*	*1*
Terphenyl-d14 (Surr)	*106*		*40 - 145*	*04/13/20 07:20*	*04/13/20 21:09*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**22**		1.0	0.17	ug/L			04/15/20 14:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*104*		*60 - 140*		*04/15/20 14:38*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.090		0.10	0.090	ug/L		04/13/20 10:31	04/14/20 22:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCAA	*67*		*25 - 130*	*04/13/20 10:31*	*04/14/20 22:30*	*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		04/08/20 17:41	04/10/20 12:28	1
Copper	**0.91**	**J**	2.0	0.50	ug/L		04/08/20 17:41	04/10/20 12:28	1
Iron	**685**		100	46.7	ug/L		04/08/20 17:41	04/10/20 12:28	1
Manganese	**31.9**		2.5	0.79	ug/L		04/08/20 17:41	04/10/20 12:28	1
Zinc	<6.9		20.0	6.9	ug/L		04/08/20 17:41	04/10/20 12:28	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	**213**		0.91	0.46	mg/L		04/08/20 17:38	04/09/20 14:27	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**24.9**		2.0	1.7	mg/L			04/08/20 18:43	10
Nitrate as N	**1.4**	**H**	0.20	0.068	mg/L			04/08/20 18:31	1
Sulfate	**7.0**		0.20	0.095	mg/L			04/08/20 18:31	1
Total Organic Carbon - Duplicates	**0.58**	**J**	1.0	0.47	mg/L			04/09/20 15:21	1

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

Job ID: 500-180383-1

Client Sample ID: W-200406-RA-01
Date Collected: 04/06/20 15:11
Date Received: 04/08/20 09:50

Lab Sample ID: 500-180383-1
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	199		5.0	3.7	mg/L			04/09/20 12:13	1

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

Job ID: 500-180383-1

Client Sample ID: W-200406-RA-02

Date Collected: 04/06/20 15:11
Date Received: 04/08/20 09:50

Lab Sample ID: 500-180383-2

Matrix: Water

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			04/15/20 00:48	1
Toluene	<0.15		0.50	0.15	ug/L			04/15/20 00:48	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/15/20 00:48	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			04/15/20 00:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*75 - 126*		*04/15/20 00:48*	*1*
Toluene-d8 (Surr)	*101*		*75 - 120*		*04/15/20 00:48*	*1*
4-Bromofluorobenzene (Surr)	*112*		*72 - 124*		*04/15/20 00:48*	*1*
Dibromofluoromethane	*95*		*75 - 120*		*04/15/20 00:48*	*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		04/13/20 07:20	04/13/20 21:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5 (Surr)	*85*		*36 - 120*	*04/13/20 07:20*	*04/13/20 21:37*	*1*
2-Fluorobiphenyl (Surr)	*81*		*34 - 110*	*04/13/20 07:20*	*04/13/20 21:37*	*1*
Terphenyl-d14 (Surr)	*118*		*40 - 145*	*04/13/20 07:20*	*04/13/20 21:37*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**21**		1.0	0.17	ug/L			04/15/20 14:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*105*		*60 - 140*		*04/15/20 14:55*	*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		04/13/20 10:31	04/14/20 23:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCAA	*61*		*25 - 130*	*04/13/20 10:31*	*04/14/20 23:28*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.25**	**J**	1.0	0.23	ug/L		04/08/20 17:41	04/10/20 12:32	1
Copper	**0.86**	**J**	2.0	0.50	ug/L		04/08/20 17:41	04/10/20 12:32	1
Iron	**675**		100	46.7	ug/L		04/08/20 17:41	04/10/20 12:32	1
Manganese	**32.0**		2.5	0.79	ug/L		04/08/20 17:41	04/10/20 12:32	1
Zinc	<6.9		20.0	6.9	ug/L		04/08/20 17:41	04/10/20 12:32	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	**219**		0.91	0.46	mg/L		04/08/20 17:38	04/09/20 14:27	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**25.4**		2.0	1.7	mg/L			04/08/20 19:09	10
Nitrate as N	**1.4**	**H**	0.20	0.068	mg/L			04/08/20 18:56	1
Sulfate	**7.0**		0.20	0.095	mg/L			04/08/20 18:56	1
Total Organic Carbon - Duplicates	**0.57**	**J**	1.0	0.47	mg/L			04/09/20 15:37	1

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

Job ID: 500-180383-1

Client Sample ID: W-200406-RA-02
Date Collected: 04/06/20 15:11
Date Received: 04/08/20 09:50

Lab Sample ID: 500-180383-2
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	203		5.0	3.7	mg/L			04/09/20 12:27	1

Client Sample ID: W-200407-RA-03

Date Collected: 04/07/20 10:10
Date Received: 04/08/20 09:50

Lab Sample ID: 500-180383-3

Matrix: Water

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			04/15/20 01:13	1
Toluene	<0.15		0.50	0.15	ug/L			04/15/20 01:13	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/15/20 01:13	1
Xylenes, Total	**0.70**	**J**	1.0	0.22	ug/L			04/15/20 01:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*75 - 126*		*04/15/20 01:13*	*1*
Toluene-d8 (Surr)	*97*		*75 - 120*		*04/15/20 01:13*	*1*
4-Bromofluorobenzene (Surr)	*114*		*72 - 124*		*04/15/20 01:13*	*1*
Dibromofluoromethane	*99*		*75 - 120*		*04/15/20 01:13*	*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		04/13/20 07:20	04/13/20 22:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5 (Surr)	*86*		*36 - 120*	*04/13/20 07:20*	*04/13/20 22:05*	*1*
2-Fluorobiphenyl (Surr)	*87*		*34 - 110*	*04/13/20 07:20*	*04/13/20 22:05*	*1*
Terphenyl-d14 (Surr)	*110*		*40 - 145*	*04/13/20 07:20*	*04/13/20 22:05*	*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			04/15/20 15:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*103*		*60 - 140*		*04/15/20 15:12*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**880**		38	34	ug/L		04/13/20 10:31	04/15/20 21:03	400

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCAA	*0*	*D*	*25 - 130*	*04/13/20 10:31*	*04/15/20 21:03*	*400*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.78**	**J**	1.0	0.23	ug/L		04/08/20 17:41	04/10/20 12:36	1
Copper	**1.9**	**J**	2.0	0.50	ug/L		04/08/20 17:41	04/10/20 12:36	1
Iron	<46.7		100	46.7	ug/L		04/08/20 17:41	04/10/20 12:36	1
Manganese	**70.0**		2.5	0.79	ug/L		04/08/20 17:41	04/10/20 12:36	1
Zinc	<6.9		20.0	6.9	ug/L		04/08/20 17:41	04/10/20 12:36	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	**192**		0.91	0.46	mg/L		04/08/20 17:38	04/09/20 14:27	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**9.3**		0.40	0.34	mg/L			04/14/20 01:55	2
Nitrate as N	**0.31**		0.20	0.068	mg/L			04/08/20 19:21	1
Sulfate	**37.6**		2.0	0.95	mg/L			04/08/20 19:34	10
Total Organic Carbon - Duplicates	**4.2**		1.0	0.47	mg/L			04/09/20 15:54	1

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

Job ID: 500-180383-1

Client Sample ID: W-200407-RA-03
Date Collected: 04/07/20 10:10
Date Received: 04/08/20 09:50

Lab Sample ID: 500-180383-3
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	160		5.0	3.7	mg/L			04/09/20 12:35	1

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

Job ID: 500-180383-1

Client Sample ID: W-200407-RA-04

Date Collected: 04/07/20 10:18
Date Received: 04/08/20 09:50

Lab Sample ID: 500-180383-4

Matrix: Water

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			04/15/20 13:54	1
Toluene	<0.15		0.50	0.15	ug/L			04/15/20 13:54	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/15/20 13:54	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			04/15/20 13:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*75 - 126*		*04/15/20 13:54*	*1*
Toluene-d8 (Surr)	*104*		*75 - 120*		*04/15/20 13:54*	*1*
4-Bromofluorobenzene (Surr)	*91*		*72 - 124*		*04/15/20 13:54*	*1*
Dibromofluoromethane	*102*		*75 - 120*		*04/15/20 13:54*	*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		04/13/20 07:20	04/13/20 22:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5 (Surr)	*86*		*36 - 120*	*04/13/20 07:20*	*04/13/20 22:33*	*1*
2-Fluorobiphenyl (Surr)	*86*		*34 - 110*	*04/13/20 07:20*	*04/13/20 22:33*	*1*
Terphenyl-d14 (Surr)	*107*		*40 - 145*	*04/13/20 07:20*	*04/13/20 22:33*	*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			04/15/20 15:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*101*		*60 - 140*		*04/15/20 15:30*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**0.52**		0.099	0.089	ug/L		04/13/20 10:31	04/15/20 00:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCAA	*75*		*25 - 130*	*04/13/20 10:31*	*04/15/20 00:06*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.34**	**J**	1.0	0.23	ug/L		04/08/20 17:41	04/10/20 12:39	1
Copper	**5.3**		2.0	0.50	ug/L		04/08/20 17:41	04/10/20 12:39	1
Iron	<46.7		100	46.7	ug/L		04/08/20 17:41	04/10/20 12:39	1
Manganese	<0.79		2.5	0.79	ug/L		04/08/20 17:41	04/10/20 12:39	1
Zinc	**8.6**	**J**	20.0	6.9	ug/L		04/08/20 17:41	04/10/20 12:39	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	**35.4**		0.91	0.46	mg/L		04/08/20 17:38	04/09/20 14:27	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**2.2**		0.20	0.17	mg/L			04/08/20 19:47	1
Nitrate as N	**0.56**		0.20	0.068	mg/L			04/08/20 19:47	1
Sulfate	**3.3**		0.20	0.095	mg/L			04/08/20 19:47	1
Total Organic Carbon - Duplicates	<0.47		1.0	0.47	mg/L			04/09/20 16:11	1

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

Job ID: 500-180383-1

Client Sample ID: W-200407-RA-04
Date Collected: 04/07/20 10:18
Date Received: 04/08/20 09:50

Lab Sample ID: 500-180383-4
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	44.1		5.0	3.7	mg/L			04/09/20 12:44	1

Client Sample ID: W-200407-RA-05

Date Collected: 04/07/20 11:27
Date Received: 04/08/20 09:50

Lab Sample ID: 500-180383-5

Matrix: Water

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			04/15/20 14:18	1
Toluene	<0.15		0.50	0.15	ug/L			04/15/20 14:18	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/15/20 14:18	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			04/15/20 14:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*75 - 126*		*04/15/20 14:18*	*1*
Toluene-d8 (Surr)	*103*		*75 - 120*		*04/15/20 14:18*	*1*
4-Bromofluorobenzene (Surr)	*90*		*72 - 124*		*04/15/20 14:18*	*1*
Dibromofluoromethane	*102*		*75 - 120*		*04/15/20 14:18*	*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		04/13/20 07:20	04/13/20 23:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5 (Surr)	*72*		*36 - 120*	*04/13/20 07:20*	*04/13/20 23:01*	*1*
2-Fluorobiphenyl (Surr)	*77*		*34 - 110*	*04/13/20 07:20*	*04/13/20 23:01*	*1*
Terphenyl-d14 (Surr)	*101*		*40 - 145*	*04/13/20 07:20*	*04/13/20 23:01*	*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			04/15/20 11:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*106*		*60 - 140*		*04/15/20 11:47*	*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		04/13/20 10:31	04/15/20 00:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCAA	*73*		*25 - 130*	*04/13/20 10:31*	*04/15/20 00:26*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.88**	**J**	1.0	0.23	ug/L		04/08/20 17:41	04/10/20 12:43	1
Copper	**1.3**	**J**	2.0	0.50	ug/L		04/08/20 17:41	04/10/20 12:43	1
Iron	<46.7		100	46.7	ug/L		04/08/20 17:41	04/10/20 12:43	1
Manganese	<0.79		2.5	0.79	ug/L		04/08/20 17:41	04/10/20 12:43	1
Zinc	<6.9		20.0	6.9	ug/L		04/08/20 17:41	04/10/20 12:43	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	**310**		0.91	0.46	mg/L		04/08/20 17:38	04/09/20 14:27	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**12.6**		2.0	1.7	mg/L			04/08/20 21:15	10
Nitrate as N	**1.8**		0.20	0.068	mg/L			04/08/20 20:37	1
Sulfate	**131**		4.0	1.9	mg/L			04/14/20 02:08	20
Total Organic Carbon - Duplicates	<0.47		1.0	0.47	mg/L			04/09/20 16:27	1

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

Job ID: 500-180383-1

Client Sample ID: W-200407-RA-05
Date Collected: 04/07/20 11:27
Date Received: 04/08/20 09:50

Lab Sample ID: 500-180383-5
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	181		5.0	3.7	mg/L			04/09/20 12:51	1

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

Job ID: 500-180383-1

Client Sample ID: W-200407-RA-06

Date Collected: 04/07/20 12:15
Date Received: 04/08/20 09:50

Lab Sample ID: 500-180383-6

Matrix: Water

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			04/15/20 14:42	1
Toluene	<0.15		0.50	0.15	ug/L			04/15/20 14:42	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/15/20 14:42	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			04/15/20 14:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*75 - 126*		*04/15/20 14:42*	*1*
Toluene-d8 (Surr)	*101*		*75 - 120*		*04/15/20 14:42*	*1*
4-Bromofluorobenzene (Surr)	*92*		*72 - 124*		*04/15/20 14:42*	*1*
Dibromofluoromethane	*108*		*75 - 120*		*04/15/20 14:42*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.26		0.86	0.26	ug/L		04/13/20 07:20	04/13/20 23:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5 (Surr)	*77*		*36 - 120*	*04/13/20 07:20*	*04/13/20 23:29*	*1*
2-Fluorobiphenyl (Surr)	*77*		*34 - 110*	*04/13/20 07:20*	*04/13/20 23:29*	*1*
Terphenyl-d14 (Surr)	*109*		*40 - 145*	*04/13/20 07:20*	*04/13/20 23:29*	*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			04/16/20 10:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*103*		*60 - 140*		*04/16/20 10:12*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.090		0.10	0.090	ug/L		04/13/20 10:31	04/15/20 01:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCAA	*72*		*25 - 130*	*04/13/20 10:31*	*04/15/20 01:24*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.47**	**J**	1.0	0.23	ug/L		04/08/20 17:41	04/10/20 13:09	1
Copper	**6.2**		2.0	0.50	ug/L		04/08/20 17:41	04/10/20 13:09	1
Iron	**103**		100	46.7	ug/L		04/08/20 17:41	04/10/20 13:09	1
Manganese	**3.4**		2.5	0.79	ug/L		04/08/20 17:41	04/10/20 13:09	1
Zinc	<6.9		20.0	6.9	ug/L		04/08/20 17:41	04/10/20 13:09	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	**286**		0.91	0.46	mg/L		04/08/20 17:38	04/09/20 14:27	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**11.7**		2.0	1.7	mg/L			04/08/20 22:06	10
Nitrate as N	**2.3**		0.20	0.068	mg/L			04/08/20 21:53	1
Sulfate	**5.5**		0.20	0.095	mg/L			04/08/20 21:53	1
Total Organic Carbon - Duplicates	**0.87**	**J**	1.0	0.47	mg/L			04/09/20 17:04	1

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

Job ID: 500-180383-1

Client Sample ID: W-200407-RA-06
Date Collected: 04/07/20 12:15
Date Received: 04/08/20 09:50

Lab Sample ID: 500-180383-6
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	268		5.0	3.7	mg/L			04/09/20 13:05	1

Client Sample ID: W-200407-RA-07

Lab Sample ID: 500-180383-7

Date Collected: 04/07/20 12:57

Matrix: Water

Date Received: 04/08/20 09:50

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			04/15/20 15:06	1
Toluene	<0.15		0.50	0.15	ug/L			04/15/20 15:06	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/15/20 15:06	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			04/15/20 15:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*75 - 126*		*04/15/20 15:06*	*1*
Toluene-d8 (Surr)	*99*		*75 - 120*		*04/15/20 15:06*	*1*
4-Bromofluorobenzene (Surr)	*91*		*72 - 124*		*04/15/20 15:06*	*1*
Dibromofluoromethane	*109*		*75 - 120*		*04/15/20 15:06*	*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		04/13/20 07:20	04/13/20 23:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5 (Surr)	*91*		*36 - 120*	*04/13/20 07:20*	*04/13/20 23:57*	*1*
2-Fluorobiphenyl (Surr)	*90*		*34 - 110*	*04/13/20 07:20*	*04/13/20 23:57*	*1*
Terphenyl-d14 (Surr)	*115*		*40 - 145*	*04/13/20 07:20*	*04/13/20 23:57*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**18**		1.0	0.17	ug/L			04/16/20 10:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*104*		*60 - 140*		*04/16/20 10:29*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**0.87**		0.097	0.087	ug/L		04/13/20 10:31	04/15/20 01:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCAA	*68*		*25 - 130*	*04/13/20 10:31*	*04/15/20 01:43*	*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		04/08/20 17:41	04/10/20 13:13	1
Copper	**0.68**	**J**	2.0	0.50	ug/L		04/08/20 17:41	04/10/20 13:13	1
Iron	**67.9**	**J**	100	46.7	ug/L		04/08/20 17:41	04/10/20 13:13	1
Manganese	**36.0**		2.5	0.79	ug/L		04/08/20 17:41	04/10/20 13:13	1
Zinc	**10**	**J**	20.0	6.9	ug/L		04/08/20 17:41	04/10/20 13:13	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	**143**		0.91	0.46	mg/L		04/08/20 17:38	04/09/20 14:27	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**49.5**		2.0	1.7	mg/L			04/08/20 22:31	10
Nitrate as N	**0.24**		0.20	0.068	mg/L			04/08/20 22:19	1
Sulfate	**14.0**		2.0	0.95	mg/L			04/08/20 22:31	10
Total Organic Carbon - Duplicates	<0.47		1.0	0.47	mg/L			04/09/20 17:41	1

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

Job ID: 500-180383-1

Client Sample ID: W-200407-RA-07
Date Collected: 04/07/20 12:57
Date Received: 04/08/20 09:50

Lab Sample ID: 500-180383-7
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	73.8		5.0	3.7	mg/L			04/09/20 13:11	1

Client Sample ID: W-200407-RA-08

Date Collected: 04/07/20 13:40
Date Received: 04/08/20 09:50

Lab Sample ID: 500-180383-8

Matrix: Water

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			04/15/20 15:30	1
Toluene	<0.15		0.50	0.15	ug/L			04/15/20 15:30	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/15/20 15:30	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			04/15/20 15:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*75 - 126*		*04/15/20 15:30*	*1*
Toluene-d8 (Surr)	*100*		*75 - 120*		*04/15/20 15:30*	*1*
4-Bromofluorobenzene (Surr)	*91*		*72 - 124*		*04/15/20 15:30*	*1*
Dibromofluoromethane	*109*		*75 - 120*		*04/15/20 15:30*	*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		04/13/20 07:20	04/14/20 00:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5 (Surr)	*88*		*36 - 120*	*04/13/20 07:20*	*04/14/20 00:25*	*1*
2-Fluorobiphenyl (Surr)	*86*		*34 - 110*	*04/13/20 07:20*	*04/14/20 00:25*	*1*
Terphenyl-d14 (Surr)	*115*		*40 - 145*	*04/13/20 07:20*	*04/14/20 00:25*	*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			04/16/20 10:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*105*		*60 - 140*		*04/16/20 10:46*	*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		04/13/20 10:31	04/15/20 02:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCAA	*77*		*25 - 130*	*04/13/20 10:31*	*04/15/20 02:02*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.51**	**J**	1.0	0.23	ug/L		04/08/20 17:41	04/10/20 13:16	1
Copper	**1.0**	**J**	2.0	0.50	ug/L		04/08/20 17:41	04/10/20 13:16	1
Iron	<46.7		100	46.7	ug/L		04/08/20 17:41	04/10/20 13:16	1
Manganese	<0.79		2.5	0.79	ug/L		04/08/20 17:41	04/10/20 13:16	1
Zinc	<6.9		20.0	6.9	ug/L		04/08/20 17:41	04/10/20 13:16	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	**107**		0.91	0.46	mg/L		04/08/20 17:38	04/09/20 14:27	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**17.0**		2.0	1.7	mg/L			04/08/20 23:22	10
Nitrate as N	**2.0**		0.20	0.068	mg/L			04/08/20 23:09	1
Sulfate	**4.8**		0.20	0.095	mg/L			04/08/20 23:09	1
Total Organic Carbon - Duplicates	**0.48**	**J**	1.0	0.47	mg/L			04/09/20 17:57	1

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

Job ID: 500-180383-1

Client Sample ID: W-200407-RA-08
Date Collected: 04/07/20 13:40
Date Received: 04/08/20 09:50

Lab Sample ID: 500-180383-8
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	99.3		5.0	3.7	mg/L			04/09/20 13:18	1

Client Sample ID: W-200407-RA-09

Date Collected: 04/07/20 13:55
Date Received: 04/08/20 09:50

Lab Sample ID: 500-180383-9

Matrix: Water

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			04/15/20 15:54	1
Toluene	<0.15		0.50	0.15	ug/L			04/15/20 15:54	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/15/20 15:54	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			04/15/20 15:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*75 - 126*		*04/15/20 15:54*	*1*
Toluene-d8 (Surr)	*100*		*75 - 120*		*04/15/20 15:54*	*1*
4-Bromofluorobenzene (Surr)	*88*		*72 - 124*		*04/15/20 15:54*	*1*
Dibromofluoromethane	*107*		*75 - 120*		*04/15/20 15:54*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.26		0.84	0.26	ug/L		04/13/20 07:20	04/14/20 00:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5 (Surr)	*46*		*36 - 120*	*04/13/20 07:20*	*04/14/20 00:53*	*1*
2-Fluorobiphenyl (Surr)	*49*		*34 - 110*	*04/13/20 07:20*	*04/14/20 00:53*	*1*
Terphenyl-d14 (Surr)	*67*		*40 - 145*	*04/13/20 07:20*	*04/14/20 00:53*	*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		04/13/20 10:31	04/15/20 02:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCAA	*68*		*25 - 130*	*04/13/20 10:31*	*04/15/20 02:21*	*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		04/08/20 17:41	04/10/20 13:20	1
Copper	<0.50		2.0	0.50	ug/L		04/08/20 17:41	04/10/20 13:20	1
Iron	<46.7		100	46.7	ug/L		04/08/20 17:41	04/10/20 13:20	1
Manganese	<0.79		2.5	0.79	ug/L		04/08/20 17:41	04/10/20 13:20	1
Zinc	<6.9		20.0	6.9	ug/L		04/08/20 17:41	04/10/20 13:20	1

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

Job ID: 500-180383-1

Client Sample ID: Trip Blank
Date Collected: 04/06/20 00:00
Date Received: 04/08/20 09:50

Lab Sample ID: 500-180383-10
Matrix: Water

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			04/15/20 16:18	1
Toluene	<0.15		0.50	0.15	ug/L			04/15/20 16:18	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/15/20 16:18	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			04/15/20 16:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*75 - 126*		*04/15/20 16:18*	*1*
Toluene-d8 (Surr)	*100*		*75 - 120*		*04/15/20 16:18*	*1*
4-Bromofluorobenzene (Surr)	*92*		*72 - 124*		*04/15/20 16:18*	*1*
Dibromofluoromethane	*109*		*75 - 120*		*04/15/20 16:18*	*1*

Definitions/Glossary

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

Job ID: 500-180383-1

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
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.

Metals

Qualifier	Qualifier Description
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
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.
¤	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)

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

Job ID: 500-180383-1

GC/MS VOA

Analysis Batch: 538091

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180383-1	W-200406-RA-01	Total/NA	Water	8260B	
500-180383-2	W-200406-RA-02	Total/NA	Water	8260B	
500-180383-3	W-200407-RA-03	Total/NA	Water	8260B	
MB 500-538091/6	Method Blank	Total/NA	Water	8260B	
LCS 500-538091/4	Lab Control Sample	Total/NA	Water	8260B	

Analysis Batch: 538169

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180383-4	W-200407-RA-04	Total/NA	Water	8260B	
500-180383-5	W-200407-RA-05	Total/NA	Water	8260B	
500-180383-6	W-200407-RA-06	Total/NA	Water	8260B	
500-180383-7	W-200407-RA-07	Total/NA	Water	8260B	
500-180383-8	W-200407-RA-08	Total/NA	Water	8260B	
500-180383-9	W-200407-RA-09	Total/NA	Water	8260B	
500-180383-10	Trip Blank	Total/NA	Water	8260B	
MB 500-538169/6	Method Blank	Total/NA	Water	8260B	
LCS 500-538169/4	Lab Control Sample	Total/NA	Water	8260B	
500-180383-5 MS	W-200407-RA-05	Total/NA	Water	8260B	
500-180383-5 MSD	W-200407-RA-05	Total/NA	Water	8260B	

GC/MS Semi VOA

Prep Batch: 537747

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180383-1	W-200406-RA-01	Total/NA	Water	3510C	
500-180383-2	W-200406-RA-02	Total/NA	Water	3510C	
500-180383-3	W-200407-RA-03	Total/NA	Water	3510C	
500-180383-4	W-200407-RA-04	Total/NA	Water	3510C	
500-180383-5	W-200407-RA-05	Total/NA	Water	3510C	
500-180383-6	W-200407-RA-06	Total/NA	Water	3510C	
500-180383-7	W-200407-RA-07	Total/NA	Water	3510C	
500-180383-8	W-200407-RA-08	Total/NA	Water	3510C	
500-180383-9	W-200407-RA-09	Total/NA	Water	3510C	
MB 500-537747/1-A	Method Blank	Total/NA	Water	3510C	
LCS 500-537747/2-A	Lab Control Sample	Total/NA	Water	3510C	
500-180383-5 MS	W-200407-RA-05	Total/NA	Water	3510C	
500-180383-5 MSD	W-200407-RA-05	Total/NA	Water	3510C	

Analysis Batch: 537883

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180383-1	W-200406-RA-01	Total/NA	Water	8270D	537747
500-180383-2	W-200406-RA-02	Total/NA	Water	8270D	537747
500-180383-3	W-200407-RA-03	Total/NA	Water	8270D	537747
500-180383-4	W-200407-RA-04	Total/NA	Water	8270D	537747
500-180383-5	W-200407-RA-05	Total/NA	Water	8270D	537747
500-180383-6	W-200407-RA-06	Total/NA	Water	8270D	537747
500-180383-7	W-200407-RA-07	Total/NA	Water	8270D	537747
500-180383-8	W-200407-RA-08	Total/NA	Water	8270D	537747
500-180383-9	W-200407-RA-09	Total/NA	Water	8270D	537747
MB 500-537747/1-A	Method Blank	Total/NA	Water	8270D	537747
LCS 500-537747/2-A	Lab Control Sample	Total/NA	Water	8270D	537747

GC/MS Semi VOA (Continued)

Analysis Batch: 537883 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180383-5 MS	W-200407-RA-05	Total/NA	Water	8270D	537747
500-180383-5 MSD	W-200407-RA-05	Total/NA	Water	8270D	537747

GC VOA

Analysis Batch: 430794

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180383-1	W-200406-RA-01	Total/NA	Water	RSK-175	
500-180383-2	W-200406-RA-02	Total/NA	Water	RSK-175	
500-180383-3	W-200407-RA-03	Total/NA	Water	RSK-175	
500-180383-4	W-200407-RA-04	Total/NA	Water	RSK-175	
500-180383-5	W-200407-RA-05	Total/NA	Water	RSK-175	
MB 240-430794/3	Method Blank	Total/NA	Water	RSK-175	
LCS 240-430794/4	Lab Control Sample	Total/NA	Water	RSK-175	
500-180383-5 MS	W-200407-RA-05	Total/NA	Water	RSK-175	
500-180383-5 MSD	W-200407-RA-05	Total/NA	Water	RSK-175	

Analysis Batch: 430965

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180383-6	W-200407-RA-06	Total/NA	Water	RSK-175	
500-180383-7	W-200407-RA-07	Total/NA	Water	RSK-175	
500-180383-8	W-200407-RA-08	Total/NA	Water	RSK-175	
MB 240-430965/3	Method Blank	Total/NA	Water	RSK-175	
LCS 240-430965/4	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 240-430965/5	Lab Control Sample Dup	Total/NA	Water	RSK-175	

GC Semi VOA

Prep Batch: 537824

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180383-1	W-200406-RA-01	Total/NA	Water	8151A	
500-180383-2	W-200406-RA-02	Total/NA	Water	8151A	
500-180383-3	W-200407-RA-03	Total/NA	Water	8151A	
500-180383-4	W-200407-RA-04	Total/NA	Water	8151A	
500-180383-5	W-200407-RA-05	Total/NA	Water	8151A	
500-180383-6	W-200407-RA-06	Total/NA	Water	8151A	
500-180383-7	W-200407-RA-07	Total/NA	Water	8151A	
500-180383-8	W-200407-RA-08	Total/NA	Water	8151A	
500-180383-9	W-200407-RA-09	Total/NA	Water	8151A	
MB 500-537824/1-A	Method Blank	Total/NA	Water	8151A	
LCS 500-537824/2-A	Lab Control Sample	Total/NA	Water	8151A	
500-180383-5 MS	W-200407-RA-05	Total/NA	Water	8151A	
500-180383-5 MSD	W-200407-RA-05	Total/NA	Water	8151A	

Analysis Batch: 537997

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180383-1	W-200406-RA-01	Total/NA	Water	8151A	537824
500-180383-2	W-200406-RA-02	Total/NA	Water	8151A	537824
500-180383-4	W-200407-RA-04	Total/NA	Water	8151A	537824
500-180383-5	W-200407-RA-05	Total/NA	Water	8151A	537824
500-180383-6	W-200407-RA-06	Total/NA	Water	8151A	537824
500-180383-7	W-200407-RA-07	Total/NA	Water	8151A	537824

GC Semi VOA (Continued)

Analysis Batch: 537997 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180383-8	W-200407-RA-08	Total/NA	Water	8151A	537824
500-180383-9	W-200407-RA-09	Total/NA	Water	8151A	537824
MB 500-537824/1-A	Method Blank	Total/NA	Water	8151A	537824
LCS 500-537824/2-A	Lab Control Sample	Total/NA	Water	8151A	537824
500-180383-5 MS	W-200407-RA-05	Total/NA	Water	8151A	537824
500-180383-5 MSD	W-200407-RA-05	Total/NA	Water	8151A	537824

Analysis Batch: 538177

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180383-3	W-200407-RA-03	Total/NA	Water	8151A	537824

Metals

Prep Batch: 537358

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180383-1	W-200406-RA-01	Total/NA	Water	3010A	
500-180383-2	W-200406-RA-02	Total/NA	Water	3010A	
500-180383-3	W-200407-RA-03	Total/NA	Water	3010A	
500-180383-4	W-200407-RA-04	Total/NA	Water	3010A	
500-180383-5	W-200407-RA-05	Total/NA	Water	3010A	
500-180383-6	W-200407-RA-06	Total/NA	Water	3010A	
500-180383-7	W-200407-RA-07	Total/NA	Water	3010A	
500-180383-8	W-200407-RA-08	Total/NA	Water	3010A	

Prep Batch: 537359

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180383-1	W-200406-RA-01	Dissolved	Water	3005A	
500-180383-2	W-200406-RA-02	Dissolved	Water	3005A	
500-180383-3	W-200407-RA-03	Dissolved	Water	3005A	
500-180383-4	W-200407-RA-04	Dissolved	Water	3005A	
500-180383-5	W-200407-RA-05	Dissolved	Water	3005A	
500-180383-6	W-200407-RA-06	Dissolved	Water	3005A	
500-180383-7	W-200407-RA-07	Dissolved	Water	3005A	
500-180383-8	W-200407-RA-08	Dissolved	Water	3005A	
500-180383-9	W-200407-RA-09	Dissolved	Water	3005A	
MB 500-537359/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 500-537359/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
500-180383-5 MS	W-200407-RA-05	Dissolved	Water	3005A	
500-180383-5 MSD	W-200407-RA-05	Dissolved	Water	3005A	
500-180383-5 DU	W-200407-RA-05	Dissolved	Water	3005A	

Analysis Batch: 537504

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180383-1	W-200406-RA-01	Total/NA	Water	SM 2340B	537358
500-180383-2	W-200406-RA-02	Total/NA	Water	SM 2340B	537358
500-180383-3	W-200407-RA-03	Total/NA	Water	SM 2340B	537358
500-180383-4	W-200407-RA-04	Total/NA	Water	SM 2340B	537358
500-180383-5	W-200407-RA-05	Total/NA	Water	SM 2340B	537358
500-180383-6	W-200407-RA-06	Total/NA	Water	SM 2340B	537358
500-180383-7	W-200407-RA-07	Total/NA	Water	SM 2340B	537358
500-180383-8	W-200407-RA-08	Total/NA	Water	SM 2340B	537358

Metals

Analysis Batch: 537673

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180383-1	W-200406-RA-01	Dissolved	Water	6020A	537359
500-180383-2	W-200406-RA-02	Dissolved	Water	6020A	537359
500-180383-3	W-200407-RA-03	Dissolved	Water	6020A	537359
500-180383-4	W-200407-RA-04	Dissolved	Water	6020A	537359
500-180383-5	W-200407-RA-05	Dissolved	Water	6020A	537359
500-180383-6	W-200407-RA-06	Dissolved	Water	6020A	537359
500-180383-7	W-200407-RA-07	Dissolved	Water	6020A	537359
500-180383-8	W-200407-RA-08	Dissolved	Water	6020A	537359
500-180383-9	W-200407-RA-09	Dissolved	Water	6020A	537359
MB 500-537359/1-A	Method Blank	Total Recoverable	Water	6020A	537359
LCS 500-537359/2-A	Lab Control Sample	Total Recoverable	Water	6020A	537359
500-180383-5 MS	W-200407-RA-05	Dissolved	Water	6020A	537359
500-180383-5 MSD	W-200407-RA-05	Dissolved	Water	6020A	537359
500-180383-5 DU	W-200407-RA-05	Dissolved	Water	6020A	537359

General Chemistry

Analysis Batch: 537357

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180383-1	W-200406-RA-01	Total/NA	Water	300.0	
500-180383-1	W-200406-RA-01	Total/NA	Water	300.0	
500-180383-2	W-200406-RA-02	Total/NA	Water	300.0	
500-180383-2	W-200406-RA-02	Total/NA	Water	300.0	
500-180383-3	W-200407-RA-03	Total/NA	Water	300.0	
500-180383-3	W-200407-RA-03	Total/NA	Water	300.0	
500-180383-4	W-200407-RA-04	Total/NA	Water	300.0	
500-180383-5	W-200407-RA-05	Total/NA	Water	300.0	
500-180383-5	W-200407-RA-05	Total/NA	Water	300.0	
500-180383-6	W-200407-RA-06	Total/NA	Water	300.0	
500-180383-6	W-200407-RA-06	Total/NA	Water	300.0	
500-180383-7	W-200407-RA-07	Total/NA	Water	300.0	
500-180383-7	W-200407-RA-07	Total/NA	Water	300.0	
500-180383-8	W-200407-RA-08	Total/NA	Water	300.0	
500-180383-8	W-200407-RA-08	Total/NA	Water	300.0	
MB 500-537357/3	Method Blank	Total/NA	Water	300.0	
LCS 500-537357/4	Lab Control Sample	Total/NA	Water	300.0	
500-180383-5 MS	W-200407-RA-05	Total/NA	Water	300.0	
500-180383-5 MS	W-200407-RA-05	Total/NA	Water	300.0	
500-180383-5 MSD	W-200407-RA-05	Total/NA	Water	300.0	
500-180383-5 MSD	W-200407-RA-05	Total/NA	Water	300.0	

Analysis Batch: 537502

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180383-1	W-200406-RA-01	Total/NA	Water	SM 2320B	
500-180383-2	W-200406-RA-02	Total/NA	Water	SM 2320B	
500-180383-3	W-200407-RA-03	Total/NA	Water	SM 2320B	
500-180383-4	W-200407-RA-04	Total/NA	Water	SM 2320B	
500-180383-5	W-200407-RA-05	Total/NA	Water	SM 2320B	
500-180383-6	W-200407-RA-06	Total/NA	Water	SM 2320B	
500-180383-7	W-200407-RA-07	Total/NA	Water	SM 2320B	
500-180383-8	W-200407-RA-08	Total/NA	Water	SM 2320B	

General Chemistry (Continued)

Analysis Batch: 537502 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 500-537502/3	Method Blank	Total/NA	Water	SM 2320B	
LCS 500-537502/4	Lab Control Sample	Total/NA	Water	SM 2320B	
500-180383-5 DU	W-200407-RA-05	Total/NA	Water	SM 2320B	

Analysis Batch: 537738

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180383-1	W-200406-RA-01	Total/NA	Water	9060A	
500-180383-2	W-200406-RA-02	Total/NA	Water	9060A	
500-180383-3	W-200407-RA-03	Total/NA	Water	9060A	
500-180383-4	W-200407-RA-04	Total/NA	Water	9060A	
500-180383-5	W-200407-RA-05	Total/NA	Water	9060A	
500-180383-6	W-200407-RA-06	Total/NA	Water	9060A	
500-180383-7	W-200407-RA-07	Total/NA	Water	9060A	
500-180383-8	W-200407-RA-08	Total/NA	Water	9060A	
MB 500-537738/4	Method Blank	Total/NA	Water	9060A	
LCS 500-537738/5	Lab Control Sample	Total/NA	Water	9060A	
500-180383-5 MS	W-200407-RA-05	Total/NA	Water	9060A	
500-180383-5 MSD	W-200407-RA-05	Total/NA	Water	9060A	

Analysis Batch: 537936

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180383-3	W-200407-RA-03	Total/NA	Water	300.0	
500-180383-5	W-200407-RA-05	Total/NA	Water	300.0	
MB 500-537936/9	Method Blank	Total/NA	Water	300.0	
LCS 500-537936/10	Lab Control Sample	Total/NA	Water	300.0	
500-180383-5 MS	W-200407-RA-05	Total/NA	Water	300.0	
500-180383-5 MSD	W-200407-RA-05	Total/NA	Water	300.0	

Surrogate Summary

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

Job ID: 500-180383-1

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

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	TOL	BFB	DBFM
Lab Sample ID	Client Sample ID	(75-126)	(75-120)	(72-124)	(75-120)
500-180383-1	W-200406-RA-01	90	98	110	96
500-180383-2	W-200406-RA-02	90	101	112	95
500-180383-3	W-200407-RA-03	96	97	114	99
500-180383-4	W-200407-RA-04	97	104	91	102
500-180383-5	W-200407-RA-05	99	103	90	102
500-180383-5 MS	W-200407-RA-05	105	100	93	108
500-180383-5 MSD	W-200407-RA-05	107	101	90	110
500-180383-6	W-200407-RA-06	106	101	92	108
500-180383-7	W-200407-RA-07	105	99	91	109
500-180383-8	W-200407-RA-08	108	100	91	109
500-180383-9	W-200407-RA-09	108	100	88	107
500-180383-10	Trip Blank	106	100	92	109
LCS 500-538091/4	Lab Control Sample	88	97	99	95
LCS 500-538169/4	Lab Control Sample	92	105	92	101
MB 500-538091/6	Method Blank	95	100	113	100
MB 500-538169/6	Method Blank	99	102	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)		
		NBZ	FBP	TPHL
Lab Sample ID	Client Sample ID	(36-120)	(34-110)	(40-145)
500-180383-1	W-200406-RA-01	65	58	106
500-180383-2	W-200406-RA-02	85	81	118
500-180383-3	W-200407-RA-03	86	87	110
500-180383-4	W-200407-RA-04	86	86	107
500-180383-5	W-200407-RA-05	72	77	101
500-180383-5 MS	W-200407-RA-05	89	90	110
500-180383-5 MSD	W-200407-RA-05	91	94	107
500-180383-6	W-200407-RA-06	77	77	109
500-180383-7	W-200407-RA-07	91	90	115
500-180383-8	W-200407-RA-08	88	86	115
500-180383-9	W-200407-RA-09	46	49	67
LCS 500-537747/2-A	Lab Control Sample	82	88	106
MB 500-537747/1-A	Method Blank	69	70	96

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: 500-180383-1

Method: RSK-175 - Dissolved Gases (GC)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	TFE1 (60-140)
500-180383-1	W-200406-RA-01	104
500-180383-2	W-200406-RA-02	105
500-180383-3	W-200407-RA-03	103
500-180383-4	W-200407-RA-04	101
500-180383-5	W-200407-RA-05	106
500-180383-5 MS	W-200407-RA-05	107
500-180383-5 MSD	W-200407-RA-05	107
500-180383-6	W-200407-RA-06	103
500-180383-7	W-200407-RA-07	104
500-180383-8	W-200407-RA-08	105
LCS 240-430794/4	Lab Control Sample	102
LCS 240-430965/4	Lab Control Sample	106
LCSD 240-430965/5	Lab Control Sample Dup	107
MB 240-430794/3	Method Blank	109
MB 240-430965/3	Method Blank	108

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)
500-180383-1	W-200406-RA-01	67
500-180383-2	W-200406-RA-02	61
500-180383-3	W-200407-RA-03	0 D
500-180383-4	W-200407-RA-04	75
500-180383-5	W-200407-RA-05	73
500-180383-5 MS	W-200407-RA-05	69
500-180383-5 MSD	W-200407-RA-05	77
500-180383-6	W-200407-RA-06	72
500-180383-7	W-200407-RA-07	68
500-180383-8	W-200407-RA-08	77
500-180383-9	W-200407-RA-09	68
LCS 500-537824/2-A	Lab Control Sample	75
MB 500-537824/1-A	Method Blank	67

Surrogate Legend

DCPAA = DCAA

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

Lab Sample ID: MB 500-538091/6
Matrix: Water
Analysis Batch: 538091

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		0.50	0.15	ug/L			04/14/20 23:58	1
Toluene	<0.15		0.50	0.15	ug/L			04/14/20 23:58	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/14/20 23:58	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			04/14/20 23:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*75 - 126*		*04/14/20 23:58*	*1*
Toluene-d8 (Surr)	*100*		*75 - 120*		*04/14/20 23:58*	*1*
4-Bromofluorobenzene (Surr)	*113*		*72 - 124*		*04/14/20 23:58*	*1*
Dibromofluoromethane	*100*		*75 - 120*		*04/14/20 23:58*	*1*

Lab Sample ID: LCS 500-538091/4
Matrix: Water
Analysis Batch: 538091

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	43.1		ug/L		86	70 - 120
Toluene	50.0	41.8		ug/L		84	70 - 125
Ethylbenzene	50.0	44.3		ug/L		89	70 - 123
Xylenes, Total	100	88.0		ug/L		88	70 - 125

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*75 - 126*
Toluene-d8 (Surr)	*97*		*75 - 120*
4-Bromofluorobenzene (Surr)	*99*		*72 - 124*
Dibromofluoromethane	*95*		*75 - 120*

Lab Sample ID: MB 500-538169/6
Matrix: Water
Analysis Batch: 538169

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		0.50	0.15	ug/L			04/15/20 11:29	1
Toluene	<0.15		0.50	0.15	ug/L			04/15/20 11:29	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/15/20 11:29	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			04/15/20 11:29	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*75 - 126*		*04/15/20 11:29*	*1*
Toluene-d8 (Surr)	*102*		*75 - 120*		*04/15/20 11:29*	*1*
4-Bromofluorobenzene (Surr)	*90*		*72 - 124*		*04/15/20 11:29*	*1*
Dibromofluoromethane	*106*		*75 - 120*		*04/15/20 11:29*	*1*

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

Lab Sample ID: LCS 500-538169/4
Matrix: Water
Analysis Batch: 538169

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	50.8		ug/L		102	70 - 120		
Toluene			50.0	52.2		ug/L		104	70 - 125		
Ethylbenzene			50.0	53.0		ug/L		106	70 - 123		
Xylenes, Total			100	104		ug/L		104	70 - 125		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*75 - 126*
Toluene-d8 (Surr)	*105*		*75 - 120*
4-Bromofluorobenzene (Surr)	*92*		*72 - 124*
Dibromofluoromethane	*101*		*75 - 120*

Lab Sample ID: 500-180383-5 MS
Matrix: Water
Analysis Batch: 538169

Client Sample ID: W-200407-RA-05
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	49.4		ug/L		99	70 - 120		
Toluene	<0.15		50.0	47.3		ug/L		95	70 - 125		
Ethylbenzene	<0.18		50.0	47.2		ug/L		94	70 - 123		
Xylenes, Total	<0.22		100	93.7		ug/L		94	70 - 125		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*105*		*75 - 126*
Toluene-d8 (Surr)	*100*		*75 - 120*
4-Bromofluorobenzene (Surr)	*93*		*72 - 124*
Dibromofluoromethane	*108*		*75 - 120*

Lab Sample ID: 500-180383-5 MSD
Matrix: Water
Analysis Batch: 538169

Client Sample ID: W-200407-RA-05
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	51.7		ug/L		103	70 - 120	5	20
Toluene	<0.15		50.0	48.8		ug/L		98	70 - 125	3	20
Ethylbenzene	<0.18		50.0	48.6		ug/L		97	70 - 123	3	20
Xylenes, Total	<0.22		100	98.2		ug/L		98	70 - 125	5	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*75 - 126*
Toluene-d8 (Surr)	*101*		*75 - 120*
4-Bromofluorobenzene (Surr)	*90*		*72 - 124*
Dibromofluoromethane	*110*		*75 - 120*

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

Lab Sample ID: MB 500-537747/1-A
Matrix: Water
Analysis Batch: 537883

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 537747

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.25		0.80	0.25	ug/L		04/13/20 07:20	04/13/20 20:41	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5 (Surr)	*69*		*36 - 120*	*04/13/20 07:20*	*04/13/20 20:41*	*1*
2-Fluorobiphenyl (Surr)	*70*		*34 - 110*	*04/13/20 07:20*	*04/13/20 20:41*	*1*
Terphenyl-d14 (Surr)	*96*		*40 - 145*	*04/13/20 07:20*	*04/13/20 20:41*	*1*

Lab Sample ID: LCS 500-537747/2-A
Matrix: Water
Analysis Batch: 537883

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 537747

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Naphthalene			32.0	21.4		ug/L		67	36 - 110		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Nitrobenzene-d5 (Surr)	*82*		*36 - 120*
2-Fluorobiphenyl (Surr)	*88*		*34 - 110*
Terphenyl-d14 (Surr)	*106*		*40 - 145*

Lab Sample ID: 500-180383-5 MS
Matrix: Water
Analysis Batch: 537883

Client Sample ID: W-200407-RA-05
Prep Type: Total/NA
Prep Batch: 537747

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Naphthalene	<0.25		33.0	23.1		ug/L		70	36 - 110		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Nitrobenzene-d5 (Surr)	*89*		*36 - 120*
2-Fluorobiphenyl (Surr)	*90*		*34 - 110*
Terphenyl-d14 (Surr)	*110*		*40 - 145*

Lab Sample ID: 500-180383-5 MSD
Matrix: Water
Analysis Batch: 537883

Client Sample ID: W-200407-RA-05
Prep Type: Total/NA
Prep Batch: 537747

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Naphthalene	<0.25		31.6	24.3		ug/L		77	36 - 110	5	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Nitrobenzene-d5 (Surr)	*91*		*36 - 120*
2-Fluorobiphenyl (Surr)	*94*		*34 - 110*
Terphenyl-d14 (Surr)	*107*		*40 - 145*

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 240-430794/3
Matrix: Water
Analysis Batch: 430794

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			04/15/20 08:38	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*109*		*60 - 140*		*04/15/20 08:38*	*1*

Lab Sample ID: LCS 240-430794/4
Matrix: Water
Analysis Batch: 430794

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Methane			475	461		ug/L		97	80 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,1,1-Trifluoroethane	*102*		*60 - 140*

Lab Sample ID: 500-180383-5 MS
Matrix: Water
Analysis Batch: 430794

Client Sample ID: W-200407-RA-05
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Methane	<0.17		285	308		ug/L		108	50 - 150		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,1,1-Trifluoroethane	*107*		*60 - 140*

Lab Sample ID: 500-180383-5 MSD
Matrix: Water
Analysis Batch: 430794

Client Sample ID: W-200407-RA-05
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	307		ug/L		108	50 - 150	0	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,1,1-Trifluoroethane	*107*		*60 - 140*

Lab Sample ID: MB 240-430965/3
Matrix: Water
Analysis Batch: 430965

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			04/16/20 08:12	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*108*		*60 - 140*		*04/16/20 08:12*	*1*

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

Lab Sample ID: LCS 240-430965/4
Matrix: Water
Analysis Batch: 430965

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Methane			475	453		ug/L		95	80 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,1,1-Trifluoroethane	*106*		*60 - 140*

Lab Sample ID: LCSD 240-430965/5
Matrix: Water
Analysis Batch: 430965

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			475	480		ug/L		101	80 - 120	6	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,1,1-Trifluoroethane	*107*		*60 - 140*

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 500-537824/1-A
Matrix: Water
Analysis Batch: 537997

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 537824

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.090		0.10	0.090	ug/L		04/13/20 10:31	04/14/20 19:36	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCAA	*67*		*25 - 130*	*04/13/20 10:31*	*04/14/20 19:36*	*1*

Lab Sample ID: LCS 500-537824/2-A
Matrix: Water
Analysis Batch: 537997

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 537824

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Pentachlorophenol			2.53	1.54		ug/L		61	40 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCAA	*75*		*25 - 130*

Lab Sample ID: 500-180383-5 MS
Matrix: Water
Analysis Batch: 537997

Client Sample ID: W-200407-RA-05
Prep Type: Total/NA
Prep Batch: 537824

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Pentachlorophenol	<0.085		2.56	1.66		ug/L		65	40 - 122		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
DCAA	*69*		*25 - 130*

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

Lab Sample ID: 500-180383-5 MSD
Matrix: Water
Analysis Batch: 537997

Client Sample ID: W-200407-RA-05
Prep Type: Total/NA
Prep Batch: 537824

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Pentachlorophenol	<0.085		2.57	1.75		ug/L		68	40 - 122	6	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
DCAA	*77*		*25 - 130*

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 500-537359/1-A
Matrix: Water
Analysis Batch: 537673

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 537359

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.23		1.0	0.23	ug/L		04/08/20 17:41	04/10/20 12:21	1
Copper	<0.50		2.0	0.50	ug/L		04/08/20 17:41	04/10/20 12:21	1
Iron	<46.7		100	46.7	ug/L		04/08/20 17:41	04/10/20 12:21	1
Manganese	<0.79		2.5	0.79	ug/L		04/08/20 17:41	04/10/20 12:21	1
Zinc	<6.9		20.0	6.9	ug/L		04/08/20 17:41	04/10/20 12:21	1

Lab Sample ID: LCS 500-537359/2-A
Matrix: Water
Analysis Batch: 537673

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 537359

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	97.03		ug/L		97	80 - 120
Copper	250	263.4		ug/L		105	80 - 120
Iron	1000	1069		ug/L		107	80 - 120
Manganese	500	533.5		ug/L		107	80 - 120
Zinc	500	521.9		ug/L		104	80 - 120

Lab Sample ID: 500-180383-5 MS
Matrix: Water
Analysis Batch: 537673

Client Sample ID: W-200407-RA-05
Prep Type: Dissolved
Prep Batch: 537359

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.88	J	100	98.81		ug/L		98	75 - 125
Copper	1.3	J	250	262.2		ug/L		104	75 - 125
Iron	<46.7		1000	1056		ug/L		106	75 - 125
Manganese	<0.79		500	519.0		ug/L		104	75 - 125
Zinc	<6.9		500	515.1		ug/L		103	75 - 125

Lab Sample ID: 500-180383-5 MSD
Matrix: Water
Analysis Batch: 537673

Client Sample ID: W-200407-RA-05
Prep Type: Dissolved
Prep Batch: 537359

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	0.88	J	100	97.54		ug/L		97	75 - 125	1	20
Copper	1.3	J	250	257.3		ug/L		102	75 - 125	2	20
Iron	<46.7		1000	1037		ug/L		104	75 - 125	2	20
Manganese	<0.79		500	505.9		ug/L		101	75 - 125	3	20

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

Lab Sample ID: 500-180383-5 MSD
Matrix: Water
Analysis Batch: 537673

Client Sample ID: W-200407-RA-05
Prep Type: Dissolved
Prep Batch: 537359

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Zinc	<6.9		500	499.7		ug/L		100	75 - 125	3	20

Lab Sample ID: 500-180383-5 DU
Matrix: Water
Analysis Batch: 537673

Client Sample ID: W-200407-RA-05
Prep Type: Dissolved
Prep Batch: 537359

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Arsenic	0.88	J	0.896	J	ug/L		2	20
Copper	1.3	J	1.24	J	ug/L		7	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

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 500-537357/3
Matrix: Water
Analysis Batch: 537357

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			04/08/20 18:05	1
Nitrate as N	<0.068		0.20	0.068	mg/L			04/08/20 18:05	1
Sulfate	<0.095		0.20	0.095	mg/L			04/08/20 18:05	1

Lab Sample ID: LCS 500-537357/4
Matrix: Water
Analysis Batch: 537357

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	2.97		mg/L		99	90 - 110
Nitrate as N	2.00	1.99		mg/L		100	90 - 110
Sulfate	5.00	5.29		mg/L		106	90 - 110

Lab Sample ID: 500-180383-5 MS
Matrix: Water
Analysis Batch: 537357

Client Sample ID: W-200407-RA-05
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	1.8		1.00	2.79		mg/L		102	80 - 120

Lab Sample ID: 500-180383-5 MS
Matrix: Water
Analysis Batch: 537357

Client Sample ID: W-200407-RA-05
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	12.6		10.0	21.29		mg/L		87	80 - 120

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 500-180383-5 MSD
Matrix: Water
Analysis Batch: 537357

Client Sample ID: W-200407-RA-05
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	1.8		1.00	2.80		mg/L		103	80 - 120	0	20

Lab Sample ID: 500-180383-5 MSD
Matrix: Water
Analysis Batch: 537357

Client Sample ID: W-200407-RA-05
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	12.6		10.0	21.40		mg/L		88	80 - 120	1	20

Lab Sample ID: MB 500-537936/9
Matrix: Water
Analysis Batch: 537936

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			04/13/20 20:51	1
Sulfate	<0.095		0.20	0.095	mg/L			04/13/20 20:51	1

Lab Sample ID: LCS 500-537936/10
Matrix: Water
Analysis Batch: 537936

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	3.11		mg/L		104	90 - 110
Sulfate	5.00	5.12		mg/L		102	90 - 110

Lab Sample ID: 500-180383-5 MS
Matrix: Water
Analysis Batch: 537936

Client Sample ID: W-200407-RA-05
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	131		50.0	188.6		mg/L		115	80 - 120

Lab Sample ID: 500-180383-5 MSD
Matrix: Water
Analysis Batch: 537936

Client Sample ID: W-200407-RA-05
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	131		50.0	190.5		mg/L		119	80 - 120	1	20

Method: 9060A - Organic Carbon, Total (TOC)

Lab Sample ID: MB 500-537738/4
Matrix: Water
Analysis Batch: 537738

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			04/09/20 14:47	1

Method: 9060A - Organic Carbon, Total (TOC) (Continued)

Lab Sample ID: LCS 500-537738/5
Matrix: Water
Analysis Batch: 537738

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	10.27		mg/L		103	80 - 120		

Lab Sample ID: 500-180383-5 MS
Matrix: Water
Analysis Batch: 537738

Client Sample ID: W-200407-RA-05
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Organic Carbon - Duplicates	<0.47		10.0	10.51		mg/L		105	75 - 125		

Lab Sample ID: 500-180383-5 MSD
Matrix: Water
Analysis Batch: 537738

Client Sample ID: W-200407-RA-05
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	<0.47		10.0	10.58		mg/L		106	75 - 125	1	20

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 500-537502/3
Matrix: Water
Analysis Batch: 537502

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			04/09/20 11:31	1

Lab Sample ID: LCS 500-537502/4
Matrix: Water
Analysis Batch: 537502

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Alkalinity			100	98.81		mg/L		99	90 - 110		

Lab Sample ID: 500-180383-5 DU
Matrix: Water
Analysis Batch: 537502

Client Sample ID: W-200407-RA-05
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Alkalinity	181			181.0		mg/L				0.2	20

Lab Chronicle

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

Job ID: 500-180383-1

Client Sample ID: W-200406-RA-01

Lab Sample ID: 500-180383-1
Matrix: Water
Date Collected: 04/06/20 15:11
Date Received: 04/08/20 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	538091	04/15/20 00:23	JDD	TAL CHI
Total/NA	Prep	3510C			537747	04/13/20 07:20	BSO	TAL CHI
Total/NA	Analysis	8270D		1	537883	04/13/20 21:09	NRJ	TAL CHI
Total/NA	Analysis	RSK-175		1	430794	04/15/20 14:38	JBN	TAL CAN
Total/NA	Prep	8151A			537824	04/13/20 10:31	BSO	TAL CHI
Total/NA	Analysis	8151A		1	537997	04/14/20 22:30	JBJ	TAL CHI
Dissolved	Prep	3005A			537359	04/08/20 17:41	BDE	TAL CHI
Dissolved	Analysis	6020A		1	537673	04/10/20 12:28	FXG	TAL CHI
Total/NA	Prep	3010A			537358	04/08/20 17:38	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	537504	04/09/20 14:27	JEF	TAL CHI
Total/NA	Analysis	300.0		1	537357	04/08/20 18:31	EAT	TAL CHI
Total/NA	Analysis	300.0		10	537357	04/08/20 18:43	EAT	TAL CHI
Total/NA	Analysis	9060A		1	537738	04/09/20 15:21	JJB	TAL CHI
Total/NA	Analysis	SM 2320B		1	537502	04/09/20 12:13	SMO	TAL CHI

Client Sample ID: W-200406-RA-02

Lab Sample ID: 500-180383-2
Matrix: Water
Date Collected: 04/06/20 15:11
Date Received: 04/08/20 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	538091	04/15/20 00:48	JDD	TAL CHI
Total/NA	Prep	3510C			537747	04/13/20 07:20	BSO	TAL CHI
Total/NA	Analysis	8270D		1	537883	04/13/20 21:37	NRJ	TAL CHI
Total/NA	Analysis	RSK-175		1	430794	04/15/20 14:55	JBN	TAL CAN
Total/NA	Prep	8151A			537824	04/13/20 10:31	BSO	TAL CHI
Total/NA	Analysis	8151A		1	537997	04/14/20 23:28	JBJ	TAL CHI
Dissolved	Prep	3005A			537359	04/08/20 17:41	BDE	TAL CHI
Dissolved	Analysis	6020A		1	537673	04/10/20 12:32	FXG	TAL CHI
Total/NA	Prep	3010A			537358	04/08/20 17:38	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	537504	04/09/20 14:27	JEF	TAL CHI
Total/NA	Analysis	300.0		1	537357	04/08/20 18:56	EAT	TAL CHI
Total/NA	Analysis	300.0		10	537357	04/08/20 19:09	EAT	TAL CHI
Total/NA	Analysis	9060A		1	537738	04/09/20 15:37	JJB	TAL CHI
Total/NA	Analysis	SM 2320B		1	537502	04/09/20 12:27	SMO	TAL CHI

Client Sample ID: W-200407-RA-03

Lab Sample ID: 500-180383-3
Matrix: Water
Date Collected: 04/07/20 10:10
Date Received: 04/08/20 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	538091	04/15/20 01:13	JDD	TAL CHI
Total/NA	Prep	3510C			537747	04/13/20 07:20	BSO	TAL CHI
Total/NA	Analysis	8270D		1	537883	04/13/20 22:05	NRJ	TAL CHI

Client Sample ID: W-200407-RA-03

Lab Sample ID: 500-180383-3

Date Collected: 04/07/20 10:10

Matrix: Water

Date Received: 04/08/20 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		1	430794	04/15/20 15:12	JBN	TAL CAN
Total/NA	Prep	8151A			537824	04/13/20 10:31	BSO	TAL CHI
Total/NA	Analysis	8151A		400	538177	04/15/20 21:03	JBJ	TAL CHI
Dissolved	Prep	3005A			537359	04/08/20 17:41	BDE	TAL CHI
Dissolved	Analysis	6020A		1	537673	04/10/20 12:36	FXG	TAL CHI
Total/NA	Prep	3010A			537358	04/08/20 17:38	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	537504	04/09/20 14:27	JEF	TAL CHI
Total/NA	Analysis	300.0		1	537357	04/08/20 19:21	EAT	TAL CHI
Total/NA	Analysis	300.0		10	537357	04/08/20 19:34	EAT	TAL CHI
Total/NA	Analysis	300.0		2	537936	04/14/20 01:55	EAT	TAL CHI
Total/NA	Analysis	9060A		1	537738	04/09/20 15:54	JJB	TAL CHI
Total/NA	Analysis	SM 2320B		1	537502	04/09/20 12:35	SMO	TAL CHI

Client Sample ID: W-200407-RA-04

Lab Sample ID: 500-180383-4

Date Collected: 04/07/20 10:18

Matrix: Water

Date Received: 04/08/20 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	538169	04/15/20 13:54	JDD	TAL CHI
Total/NA	Prep	3510C			537747	04/13/20 07:20	BSO	TAL CHI
Total/NA	Analysis	8270D		1	537883	04/13/20 22:33	NRJ	TAL CHI
Total/NA	Analysis	RSK-175		1	430794	04/15/20 15:30	JBN	TAL CAN
Total/NA	Prep	8151A			537824	04/13/20 10:31	BSO	TAL CHI
Total/NA	Analysis	8151A		1	537997	04/15/20 00:06	JBJ	TAL CHI
Dissolved	Prep	3005A			537359	04/08/20 17:41	BDE	TAL CHI
Dissolved	Analysis	6020A		1	537673	04/10/20 12:39	FXG	TAL CHI
Total/NA	Prep	3010A			537358	04/08/20 17:38	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	537504	04/09/20 14:27	JEF	TAL CHI
Total/NA	Analysis	300.0		1	537357	04/08/20 19:47	EAT	TAL CHI
Total/NA	Analysis	9060A		1	537738	04/09/20 16:11	JJB	TAL CHI
Total/NA	Analysis	SM 2320B		1	537502	04/09/20 12:44	SMO	TAL CHI

Client Sample ID: W-200407-RA-05

Lab Sample ID: 500-180383-5

Date Collected: 04/07/20 11:27

Matrix: Water

Date Received: 04/08/20 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	538169	04/15/20 14:18	JDD	TAL CHI
Total/NA	Prep	3510C			537747	04/13/20 07:20	BSO	TAL CHI
Total/NA	Analysis	8270D		1	537883	04/13/20 23:01	NRJ	TAL CHI
Total/NA	Analysis	RSK-175		1	430794	04/15/20 11:47	JBN	TAL CAN
Total/NA	Prep	8151A			537824	04/13/20 10:31	BSO	TAL CHI
Total/NA	Analysis	8151A		1	537997	04/15/20 00:26	JBJ	TAL CHI

Lab Chronicle

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

Job ID: 500-180383-1

Client Sample ID: W-200407-RA-05

Lab Sample ID: 500-180383-5

Date Collected: 04/07/20 11:27
Matrix: Water
Date Received: 04/08/20 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			537359	04/08/20 17:41	BDE	TAL CHI
Dissolved	Analysis	6020A		1	537673	04/10/20 12:43	FXG	TAL CHI
Total/NA	Prep	3010A			537358	04/08/20 17:38	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	537504	04/09/20 14:27	JEF	TAL CHI
Total/NA	Analysis	300.0		1	537357	04/08/20 20:37	EAT	TAL CHI
Total/NA	Analysis	300.0		10	537357	04/08/20 21:15	EAT	TAL CHI
Total/NA	Analysis	300.0		20	537936	04/14/20 02:08	EAT	TAL CHI
Total/NA	Analysis	9060A		1	537738	04/09/20 16:27	JJB	TAL CHI
Total/NA	Analysis	SM 2320B		1	537502	04/09/20 12:51	SMO	TAL CHI

Client Sample ID: W-200407-RA-06

Lab Sample ID: 500-180383-6

Date Collected: 04/07/20 12:15
Matrix: Water
Date Received: 04/08/20 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	538169	04/15/20 14:42	JDD	TAL CHI
Total/NA	Prep	3510C			537747	04/13/20 07:20	BSO	TAL CHI
Total/NA	Analysis	8270D		1	537883	04/13/20 23:29	NRJ	TAL CHI
Total/NA	Analysis	RSK-175		1	430965	04/16/20 10:12	JBN	TAL CAN
Total/NA	Prep	8151A			537824	04/13/20 10:31	BSO	TAL CHI
Total/NA	Analysis	8151A		1	537997	04/15/20 01:24	JBJ	TAL CHI
Dissolved	Prep	3005A			537359	04/08/20 17:41	BDE	TAL CHI
Dissolved	Analysis	6020A		1	537673	04/10/20 13:09	FXG	TAL CHI
Total/NA	Prep	3010A			537358	04/08/20 17:38	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	537504	04/09/20 14:27	JEF	TAL CHI
Total/NA	Analysis	300.0		1	537357	04/08/20 21:53	EAT	TAL CHI
Total/NA	Analysis	300.0		10	537357	04/08/20 22:06	EAT	TAL CHI
Total/NA	Analysis	9060A		1	537738	04/09/20 17:04	JJB	TAL CHI
Total/NA	Analysis	SM 2320B		1	537502	04/09/20 13:05	SMO	TAL CHI

Client Sample ID: W-200407-RA-07

Lab Sample ID: 500-180383-7

Date Collected: 04/07/20 12:57
Matrix: Water
Date Received: 04/08/20 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	538169	04/15/20 15:06	JDD	TAL CHI
Total/NA	Prep	3510C			537747	04/13/20 07:20	BSO	TAL CHI
Total/NA	Analysis	8270D		1	537883	04/13/20 23:57	NRJ	TAL CHI
Total/NA	Analysis	RSK-175		1	430965	04/16/20 10:29	JBN	TAL CAN
Total/NA	Prep	8151A			537824	04/13/20 10:31	BSO	TAL CHI
Total/NA	Analysis	8151A		1	537997	04/15/20 01:43	JBJ	TAL CHI
Dissolved	Prep	3005A			537359	04/08/20 17:41	BDE	TAL CHI
Dissolved	Analysis	6020A		1	537673	04/10/20 13:13	FXG	TAL CHI

Lab Chronicle

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

Job ID: 500-180383-1

Client Sample ID: W-200407-RA-07

Lab Sample ID: 500-180383-7
Date Collected: 04/07/20 12:57
Matrix: Water
Date Received: 04/08/20 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			537358	04/08/20 17:38	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	537504	04/09/20 14:27	JEF	TAL CHI
Total/NA	Analysis	300.0		1	537357	04/08/20 22:19	EAT	TAL CHI
Total/NA	Analysis	300.0		10	537357	04/08/20 22:31	EAT	TAL CHI
Total/NA	Analysis	9060A		1	537738	04/09/20 17:41	JJB	TAL CHI
Total/NA	Analysis	SM 2320B		1	537502	04/09/20 13:11	SMO	TAL CHI

Client Sample ID: W-200407-RA-08

Lab Sample ID: 500-180383-8
Date Collected: 04/07/20 13:40
Matrix: Water
Date Received: 04/08/20 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	538169	04/15/20 15:30	JDD	TAL CHI
Total/NA	Prep	3510C			537747	04/13/20 07:20	BSO	TAL CHI
Total/NA	Analysis	8270D		1	537883	04/14/20 00:25	NRJ	TAL CHI
Total/NA	Analysis	RSK-175		1	430965	04/16/20 10:46	JBN	TAL CAN
Total/NA	Prep	8151A			537824	04/13/20 10:31	BSO	TAL CHI
Total/NA	Analysis	8151A		1	537997	04/15/20 02:02	JBJ	TAL CHI
Dissolved	Prep	3005A			537359	04/08/20 17:41	BDE	TAL CHI
Dissolved	Analysis	6020A		1	537673	04/10/20 13:16	FXG	TAL CHI
Total/NA	Prep	3010A			537358	04/08/20 17:38	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	537504	04/09/20 14:27	JEF	TAL CHI
Total/NA	Analysis	300.0		1	537357	04/08/20 23:09	EAT	TAL CHI
Total/NA	Analysis	300.0		10	537357	04/08/20 23:22	EAT	TAL CHI
Total/NA	Analysis	9060A		1	537738	04/09/20 17:57	JJB	TAL CHI
Total/NA	Analysis	SM 2320B		1	537502	04/09/20 13:18	SMO	TAL CHI

Client Sample ID: W-200407-RA-09

Lab Sample ID: 500-180383-9
Date Collected: 04/07/20 13:55
Matrix: Water
Date Received: 04/08/20 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	538169	04/15/20 15:54	JDD	TAL CHI
Total/NA	Prep	3510C			537747	04/13/20 07:20	BSO	TAL CHI
Total/NA	Analysis	8270D		1	537883	04/14/20 00:53	NRJ	TAL CHI
Total/NA	Prep	8151A			537824	04/13/20 10:31	BSO	TAL CHI
Total/NA	Analysis	8151A		1	537997	04/15/20 02:21	JBJ	TAL CHI
Dissolved	Prep	3005A			537359	04/08/20 17:41	BDE	TAL CHI
Dissolved	Analysis	6020A		1	537673	04/10/20 13:20	FXG	TAL CHI

Lab Chronicle

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

Job ID: 500-180383-1

Client Sample ID: Trip Blank

Date Collected: 04/06/20 00:00
Date Received: 04/08/20 09:50

Lab Sample ID: 500-180383-10

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	538169	04/15/20 16:18	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.
Job ID: 500-180383-1
Project/Site: Penta Wood 086165

Laboratory: Eurofins TestAmerica, Chicago

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	999580010	08-31-20

Laboratory: Eurofins TestAmerica, Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-21
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-20
Georgia	State	4062	02-23-21
Illinois	NELAP	004498	07-31-20
Iowa	State	421	06-01-21
Kansas	NELAP	E-10336	04-30-20
Kentucky (UST)	State	112225	02-23-21
Kentucky (WW)	State	KY98016	12-31-20
Minnesota	NELAP	OH00048	12-31-20
Minnesota (Petrofund)	State	3506	08-01-21
New Jersey	NELAP	OH001	06-30-20
New York	NELAP	10975	03-31-20 *
Ohio VAP	State	CL0024	06-05-21
Oregon	NELAP	4062	02-24-21
Pennsylvania	NELAP	68-00340	08-31-20
Texas	NELAP	T104704517-18-10	08-31-20
USDA	US Federal Programs	P330-18-00281	09-17-21
Virginia	NELAP	010101	09-14-20
Washington	State	C971	01-12-21
West Virginia DEP	State	210	12-31-20

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

Chain of Custody Record

382369

eurofins | Environment Testing TestAmerica

Address: _____

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other: TAL-8210

Client Contact	Project Manager: Ree	Site Contact: RAymot	Date: 4/7/2020	COC No:
Company Name: GHD	Tel/Email:	Lab Contact:	Carrier:	1 of 1 COCs
Address: 1801 Old Highway 8 NW 114	Analysis Turnaround Time			Sampler:
City/State/Zip: St. Paul MN 55112	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: 651 639-0913	TAT if different from Below _____			Walk-in Client:
Fax:	☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day			Lab Sampling:
Project Name: PantaVoo2 086165				Job / SDG No.: 500-180383
Site:				
P O #				

500-180383 COC

	Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	RCP	BTEX	Naphthalene	Alk, Cl, hardness, nitrate sulfate, TOC, methane	Select dissolved metals*	Sample Specific Notes:
1	W-200106-RA-01	4/6/20	1511	G	W6	15			✓	✓	✓	✓	✓	* arsenic, copper, iron, manganese, zinc - all field filtered metals
2	W-200106-RA-02	4/6/20	1511			15			✓	✓	✓	✓	✓	
3	W-200407-RA-03	4/7/20	1010			15			✓	✓	✓	✓	✓	
4	W-200107-RA-04	4/7/20	1018			15			✓	✓	✓	✓	✓	
5	W-200107-RA-05	4/7/20	1127			45		X	✓	✓	✓	✓	✓	
6	W-200107-RA-06	4/7/20	1215			15			✓	✓	✓	✓	✓	
7	W-200407-RA-07	4/7/20	1257			15			✓	✓	✓	✓	✓	
8	W-200107-RA-08	4/7/20	1340			15			✓	✓	✓	✓	✓	
9	W-200407-RA-09	4/7/20	1355	✓	✓	8			✓	✓	✓		✓	
10	trip blank									✓				

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

2,3

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

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 & Comments:

5183, 4600, 5.2, 5.9, 4.4

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd:_____ Corr'd:_____ | Therm ID No.:_____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	GHD	4/7/2020 1600			
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: Shawn Scott	Company: TA-CHT	Date/Time: 4/8/20 0950

ORIGIN ID:JOTA (651) 639-0913
RYAN AAMOT
GHD SERVICES INC.
1801 OLD HIGHWAY 8 NW
SUITE 114
ST. PAUL, MN 55112
UNITED STATES US

SHIP DATE: 23MAR20
ACTWGT: 20.00 LB MAN
CAD: 33264/CAFE3311

TO SAMPLE LOGIN
TESTAMERICA LABS
2417 BOND ST

UNIVERSITY PARK IL 60484
(708) 534-5200
REF: 086165-07-06 PENTA WOOD

500-180383 Wayb

RMA:

FedEx Express

TRK# 0221 1648 4105 9626

FedEx
TRK# 0221 1648 4105 9626

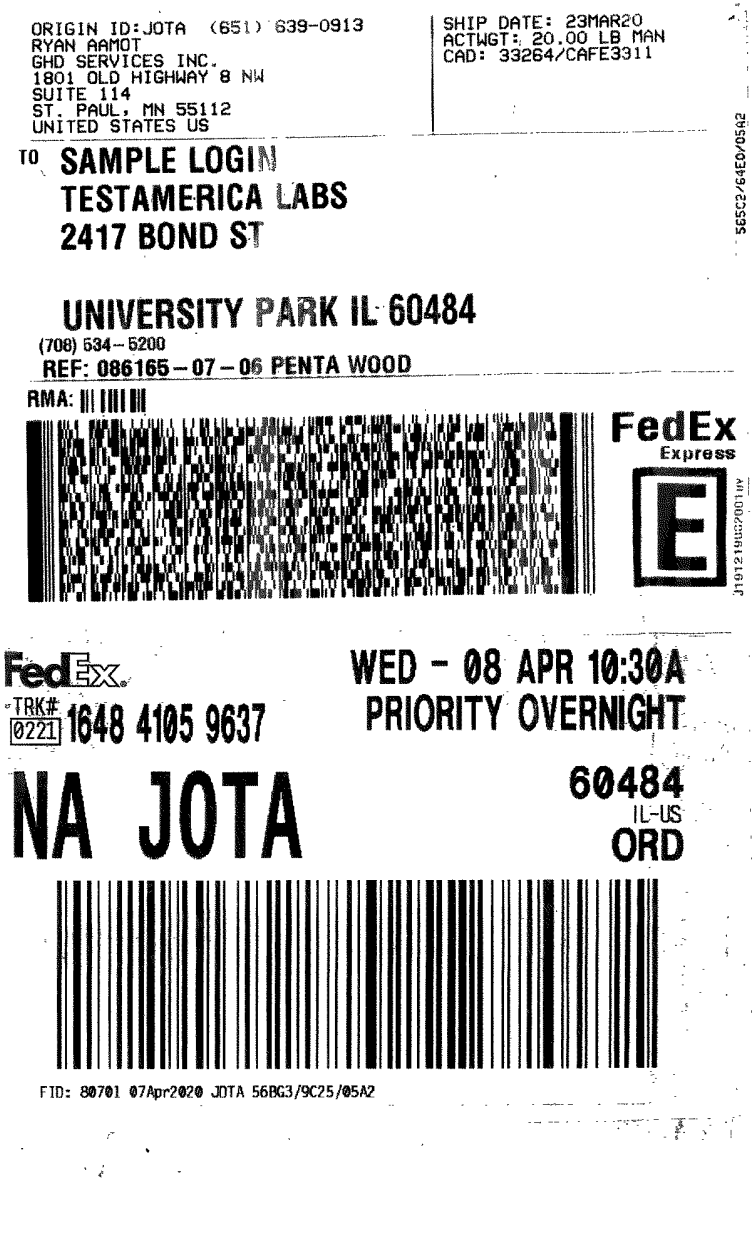
WED - 08 APR 10:30A
PRIORITY OVERNIGHT

NA JOTA

60484
IL-US
ORD

JOTA 56BG3/9C25/05A2

48 qt.



ORIGIN ID:JOTA (651) 639-0913
RYAN AAMOT
GHD SERVICES INC.
1801 OLD HIGHWAY 8 NW
SUITE 114
ST. PAUL, MN 55112
UNITED STATES US

SHIP DATE: 23MAR20
ACTWGT: 20.00 LB MAN
CAD: 33264/CAFE3311

TO SAMPLE LOGIN
TESTAMERICA LABS
2417 BOND ST

UNIVERSITY PARK IL 60484
(708) 534-5200
REF: 086165-07-06 PENTA WOOD

RMA:

FedEx Express

FedEx
TRK# 0221 1648 4105 9637

WED - 08 APR 10:30A
PRIORITY OVERNIGHT

NA JOTA

60484
IL-US
ORD

FID: 80701 07Apr2020 JOTA 56BG3/9C25/05A2

48 qt.

ORIGIN ID:JOTA (651) 639-0913
RYAN AAMOT
GHD SERVICES INC.
1801 OLD HIGHWAY 8 NW
SUITE 114
ST. PAUL, MN 55112
UNITED STATES US

SHIP DATE: 23MAR20
ACTWGT: 20.00 LB MAN
CAD: 33264/CAFE3311

565C2/64E0/05A2

TO **SAMPLE LOGIN**
TESTAMERICA LABS
2417 BOND ST

UNIVERSITY PARK IL 60484
(708) 534-5200
REF: 086165-07-06 PENTA WOOD

RMA:

FedEx Express

TRK# 0221 **1648 4105 9660**

FedEx
TRK# 0221 1648 4105 9660

WED 08 APR 10:30A
PRIORITY OVERNIGHT

NA JOTA

60484
IL-US
ORD

FID: 80701 07Apr2020 JDTA 56BG3/9C25/05A2

48qt.

ORIGIN ID:JOTA (651) 639-0913
RYAN AAMOT
GHD SERVICES INC.
1801 OLD HIGHWAY 8 NW
SUITE 114
ST. PAUL, MN 55112
UNITED STATES US

SHIP DATE: 23MAR20
ACTWGT: 20.00 LB MAN
CAD: 33264/CAFE3311

565C2/64E0/05A2

TO SAMPLE LOGIN
TESTAMERICA LABS
2417 BOND ST

UNIVERSITY PARK IL 60484
(708) 534-5200
REF: 086165-07-06 PENTA WOOD

RMA:

FedEx Express

FedEx
TRK# 0221 1648 4105 9648

WED - 08 APR 10:30A
PRIORITY OVERNIGHT

NA JOTA

60484
IL-US
ORD

FID: 80701 07Apr2020 JDTA 56BG3/9C25/05A2

48qt.

ORIGIN ID:JOTA (651) 639-0913
RYAN AAMOT
GHD SERVICES INC.
1801 OLD HIGHWAY 8 NW
SUITE 114
ST. PAUL, MN 55112
UNITED STATES US

SHIP DATE: 23MAR20
ACTWGT: 20.00 LB MAN
CAD: 33264/CAFE3311

565C2/64E0/05A2

TO SAMPLE LOGIN
TESTAMERICA LABS
2417 BOND ST

UNIVERSITY PARK IL 60484
(708) 534-5200
REF: 086165 - 07 - 06 PENTA WOOD

RMA:

FedEx Express

TRK# 0221 1648 4105 9615

FedEx
TRK# 0221 1648 4105 9615

WED - 08 APR 10:30A
PRIORITY OVERNIGHT

60484
IL-US
ORD

NA JOTA

48qt.

ORIGIN ID:JOTA (651) 639-0913
RYAN AAMOT
GHD SERVICES INC.
1801 OLD HIGHWAY 8 NW
SUITE 114
ST. PAUL, MN 55112
UNITED STATES US

SHIP DATE: 23M
ACTWGT: 20.00 LB
CAD: 33264/CAFE331

9659
04.08

565C2/64E0/05A2

TO SAMPLE LOGIN
TESTAMERICA LABS
2417 BOND ST

UNIVERSITY PARK IL 60484
(708) 534-5200
REF: 086165 - 07 - 06 PENTA WOOD

RMA:

FedEx Express

FedEx
TRK# 0221 1648 4105 9659

WED - 08 APR 10:30A
PRIORITY OVERNIGHT

60484
IL-US
ORD

NA JOTA

48qt.

Eurofins TestAmerica, Chicago
2417 Bond Street
University Park, IL 60484
Phone: 708-534-5200 Fax: 708-534-5211

1.9/2.6

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Wright, Richard	Carrier Tracking No(s):	COC No: 500-133945.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: richard.wright@testamericainc.com	State of Origin: Wisconsin	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - Wisconsin		Job #: 500-180383-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 4/21/2020			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Penta Wood 086165	Project #: 50013796			
Site:	SSOW#:			

Analysis Requested

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)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	RSK_175/ (MOD) Methane	Total Number of containers	Special Instructions/Note: RSK
			Preservation Code:						
W-200406-RA-01 (500-180383-1)	4/6/20	15:11 Central		Water			X	3	WI
W-200406-RA-02 (500-180383-2)	4/6/20	15:11 Central		Water			X	3	WI
W-200407-RA-03 (500-180383-3)	4/7/20	10:10 Central		Water			X	3	WI
W-200407-RA-04 (500-180383-4)	4/7/20	10:18 Central		Water			X	3	WI
W-200407-RA-05 (500-180383-5)	4/7/20	11:27 Central		Water			X	3	WI
W-200407-RA-05 (500-180383-5MS)	4/7/20	11:27 Central	MS	Water			X	3	WI
W-200407-RA-05 (500-180383-5MSD)	4/7/20	11:27 Central	MSD	Water			X	3	WI
W-200407-RA-06 (500-180383-6)	4/7/20	12:15 Central		Water			X	3	WI
W-200407-RA-07 (500-180383-7)	4/7/20	12:57 Central		Water			X	3	WI

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica 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/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time: 4/8/20 1600	Company TA	Received by:	Date/Time: 4-9-20 920	Company TA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Eurofins TestAmerica, Chicago
2417 Bond Street
University Park, IL 60484
Phone: 708-534-5200 Fax: 708-534-5211

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Wright, Richard	Carrier Tracking No(s):	COC No: 500-133945.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: richard.wright@testamericainc.com	State of Origin: Wisconsin	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - Wisconsin		Job #: 500-180383-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 4/21/2020			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Penta Wood 086165	Project #: 50013796			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	RSK_175i (MOD) Methane	Total Number of containers	Special Instructions/Note:
			Preservation Code:						RSK
W-200407-RA-08 (500-180383-8)	4/7/20	13:40 Central		Water			X	3	WI

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica 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/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	4/8/20 1600	TA		4-9-20 920	TA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # :** _____
Canton Facility

Client Chicago Site Name _____ Cooler unpacked by:

Cooler Received on 4-9-20 Opened on 4-10-20

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # 1 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-10 (CF **+0.7** °C) Observed Cooler Temp. 1.9 °C Corrected Cooler Temp. 2.6 °C
   IR GUN #IR-11 (CF **+0.9**°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
    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# **HC902937**
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: _____

WI-NC-099

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 500-180383-1

Login Number: 180383
List Number: 1
Creator: Scott, Sherri L

List Source: Eurofins TestAmerica, Chicago

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	5.8,3.4,6.0,5.2,5.9,4.4
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	

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

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

Laboratory Job ID: 500-180435-1
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:
4/20/2020 3:54:04 PM

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

Table of Contents

Case Narrative

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

Job ID: 500-180435-1

Job ID: 500-180435-1

Laboratory: Eurofins TestAmerica, Chicago

Narrative

Job Narrative
500-180435-1

Receipt
The samples were received on 4/9/2020 9:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 3.6º C, 5.4º C, 5.9º C and 6.0º C.
A trip blank was submitted for analysis with these samples; however, it was not listed on the Chain of Custody (COC). Added to COC and logged in.

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

GC/MS Semi VOA
Method 8270D: The following sample contained one base surrogate outside acceptance limits: W-200408-RA-10 (500-180435-1). The laboratory's SOP allows one base surrogate to be outside acceptance limits; therefore, re-extraction was not performed. These results have been reported and qualified.

No additional analytical or quality issues were noted, other than those described above or 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 8151A: The following samples required a dilution due to the nature of the sample matrix: W-200408-RA-10 (500-180435-1), W-200408-RA-11 (500-180435-2), W-200408-RA-12 (500-180435-3) and W-200408-RA-15 (500-180435-6). 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.

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: 500-180435-1

Client Sample ID: W-200408-RA-10 — Lab Sample ID: 500-180435-1

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Toluene	1.6		0.50	0.15	ug/L	1		8260B	Total/NA
Ethylbenzene	1.8		0.50	0.18	ug/L	1		8260B	Total/NA
Xylenes, Total	13		1.0	0.22	ug/L	1		8260B	Total/NA
Naphthalene	26		0.77	0.24	ug/L	1		8270D	Total/NA
Methane	230		1.0	0.17	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	3600		390	350	ug/L	4000		8151A	Total/NA
Arsenic	1.3		1.0	0.23	ug/L	1		6020A	Dissolved
Copper	2.9		2.0	0.50	ug/L	1		6020A	Dissolved
Iron	1150		100	46.7	ug/L	1		6020A	Dissolved
Manganese	1070		2.5	0.79	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	196		0.91	0.46	mg/L	1		SM 2340B	Total/NA
Chloride	37.5		2.0	1.7	mg/L	10		300.0	Total/NA
Sulfate	20.0		2.0	0.95	mg/L	10		300.0	Total/NA
Total Organic Carbon - Duplicates	42.1		2.0	0.94	mg/L	2		9060A	Total/NA
Alkalinity	136		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-200408-RA-11 — Lab Sample ID: 500-180435-2

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.25	J	0.50	0.15	ug/L	1		8260B	Total/NA
Ethylbenzene	0.82		0.50	0.18	ug/L	1		8260B	Total/NA
Xylenes, Total	11		1.0	0.22	ug/L	1		8260B	Total/NA
Naphthalene	17		0.76	0.24	ug/L	1		8270D	Total/NA
Pentachlorophenol	2800		380	340	ug/L	4000		8151A	Total/NA
Arsenic	0.54	J	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	2.3		2.0	0.50	ug/L	1		6020A	Dissolved
Iron	563		100	46.7	ug/L	1		6020A	Dissolved
Manganese	3530		2.5	0.79	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	345		0.91	0.46	mg/L	1		SM 2340B	Total/NA
Chloride	21.7		1.0	0.85	mg/L	5		300.0	Total/NA
Sulfate	22.6		1.0	0.48	mg/L	5		300.0	Total/NA
Total Organic Carbon - Duplicates	34.0		1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	312		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-200408-RA-12 — Lab Sample ID: 500-180435-3

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.26	J	0.50	0.15	ug/L	1		8260B	Total/NA
Ethylbenzene	0.91		0.50	0.18	ug/L	1		8260B	Total/NA
Xylenes, Total	12		1.0	0.22	ug/L	1		8260B	Total/NA
Naphthalene	16		0.76	0.23	ug/L	1		8270D	Total/NA
Pentachlorophenol	2300		380	340	ug/L	4000		8151A	Total/NA
Arsenic	0.57	J	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	2.8		2.0	0.50	ug/L	1		6020A	Dissolved
Iron	571		100	46.7	ug/L	1		6020A	Dissolved
Manganese	3670		2.5	0.79	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	341		0.91	0.46	mg/L	1		SM 2340B	Total/NA
Chloride	19.4		1.0	0.85	mg/L	5		300.0	Total/NA
Sulfate	21.1		1.0	0.48	mg/L	5		300.0	Total/NA
Total Organic Carbon - Duplicates	34.5		1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	301		5.0	3.7	mg/L	1		SM 2320B	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

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

Job ID: 500-180435-1

Client Sample ID: W-200408-RA-13 — Lab Sample ID: 500-180435-4

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.58	J	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	0.89	J	2.0	0.50	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	243		0.91	0.46	mg/L	1		SM 2340B	Total/NA
Chloride	46.2		2.0	1.7	mg/L	10		300.0	Total/NA
Nitrate as N	2.0		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	8.4		0.20	0.095	mg/L	1		300.0	Total/NA
Total Organic Carbon - Duplicates	1.5		1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	185		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-200408-RA-14 — Lab Sample ID: 500-180435-5

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Arsenic	1.1		1.0	0.23	ug/L	1		6020A	Dissolved
Copper	0.66	J	2.0	0.50	ug/L	1		6020A	Dissolved
Manganese	2.5		2.5	0.79	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	140		0.91	0.46	mg/L	1		SM 2340B	Total/NA
Chloride	18.1		1.0	0.85	mg/L	5		300.0	Total/NA
Nitrate as N	1.4		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	6.0		0.20	0.095	mg/L	1		300.0	Total/NA
Total Organic Carbon - Duplicates	0.60	J	1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	115		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-200408-RA-15 — Lab Sample ID: 500-180435-6

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.81		0.50	0.15	ug/L	1		8260B	Total/NA
Ethylbenzene	0.74		0.50	0.18	ug/L	1		8260B	Total/NA
Xylenes, Total	12		1.0	0.22	ug/L	1		8260B	Total/NA
Naphthalene	27		0.77	0.24	ug/L	1		8270D	Total/NA
Methane	5.5		1.0	0.17	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	3700		390	350	ug/L	4000		8151A	Total/NA
Arsenic	3.8		1.0	0.23	ug/L	1		6020A	Dissolved
Copper	8.1		2.0	0.50	ug/L	1		6020A	Dissolved
Iron	10200		100	46.7	ug/L	1		6020A	Dissolved
Manganese	1310		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	258		0.91	0.46	mg/L	1		SM 2340B	Total/NA
Chloride	32.1		2.0	1.7	mg/L	10		300.0	Total/NA
Sulfate	13.6		2.0	0.95	mg/L	10		300.0	Total/NA
Total Organic Carbon - Duplicates	35.8		1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	257		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-200408-RA-16 — Lab Sample ID: 500-180435-7

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Pentachlorophenol	0.82		0.095	0.085	ug/L	1		8151A	Total/NA

Client Sample ID: Trip Blank — Lab Sample ID: 500-180435-8

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: 500-180435-1

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: 500-180435-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
500-180435-1	W-200408-RA-10	Water	04/08/20 10:01	04/09/20 08:00	
500-180435-2	W-200408-RA-11	Water	04/08/20 10:27	04/09/20 08:00	
500-180435-3	W-200408-RA-12	Water	04/08/20 10:27	04/09/20 08:00	
500-180435-4	W-200408-RA-13	Water	04/08/20 11:10	04/09/20 08:00	
500-180435-5	W-200408-RA-14	Water	04/08/20 11:57	04/09/20 08:00	
500-180435-6	W-200408-RA-15	Water	04/08/20 12:45	04/09/20 08:00	
500-180435-7	W-200408-RA-16	Water	04/08/20 12:45	04/09/20 08:00	
500-180435-8	Trip Blank	Water	04/08/20 00:00	04/09/20 09:40	

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

Job ID: 500-180435-1

Client Sample ID: W-200408-RA-10

Date Collected: 04/08/20 10:01
Date Received: 04/09/20 08:00

Lab Sample ID: 500-180435-1

Matrix: Water

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			04/16/20 03:02	1
Toluene	**1.6**		0.50	0.15	ug/L			04/16/20 03:02	1
Ethylbenzene	**1.8**		0.50	0.18	ug/L			04/16/20 03:02	1
Xylenes, Total	**13**		1.0	0.22	ug/L			04/16/20 03:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*75 - 126*		*04/16/20 03:02*	*1*
Toluene-d8 (Surr)	*102*		*75 - 120*		*04/16/20 03:02*	*1*
4-Bromofluorobenzene (Surr)	*84*		*72 - 124*		*04/16/20 03:02*	*1*
Dibromofluoromethane	*103*		*75 - 120*		*04/16/20 03:02*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	**26**		0.77	0.24	ug/L		04/13/20 07:20	04/14/20 04:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5 (Surr)	*86*		*36 - 120*	*04/13/20 07:20*	*04/14/20 04:38*	*1*
2-Fluorobiphenyl (Surr)	*23*	*X*	*34 - 110*	*04/13/20 07:20*	*04/14/20 04:38*	*1*
Terphenyl-d14 (Surr)	*108*		*40 - 145*	*04/13/20 07:20*	*04/14/20 04:38*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**230**		1.0	0.17	ug/L			04/16/20 11:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*106*		*60 - 140*		*04/16/20 11:38*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**3600**		390	350	ug/L		04/14/20 10:34	04/16/20 12:50	4000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCAA	*0*	*D*	*25 - 130*	*04/14/20 10:34*	*04/16/20 12:50*	*4000*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**1.3**		1.0	0.23	ug/L		04/10/20 06:22	04/10/20 13:45	1
Copper	**2.9**		2.0	0.50	ug/L		04/10/20 06:22	04/10/20 13:45	1
Iron	**1150**		100	46.7	ug/L		04/10/20 06:22	04/10/20 13:45	1
Manganese	**1070**		2.5	0.79	ug/L		04/10/20 06:22	04/10/20 13:45	1
Zinc	<6.9		20.0	6.9	ug/L		04/10/20 06:22	04/10/20 13:45	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	**196**		0.91	0.46	mg/L		04/09/20 17:38	04/10/20 12:57	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**37.5**		2.0	1.7	mg/L			04/10/20 02:49	10
Nitrate as N	<0.068		0.20	0.068	mg/L			04/09/20 18:34	1
Sulfate	**20.0**		2.0	0.95	mg/L			04/10/20 02:49	10
Total Organic Carbon - Duplicates	**42.1**		2.0	0.94	mg/L			04/14/20 10:02	2

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

Job ID: 500-180435-1

Client Sample ID: W-200408-RA-10
Date Collected: 04/08/20 10:01
Date Received: 04/09/20 08:00

Lab Sample ID: 500-180435-1
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	136		5.0	3.7	mg/L			04/09/20 11:51	1

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

Job ID: 500-180435-1

Client Sample ID: W-200408-RA-11

Date Collected: 04/08/20 10:27
Date Received: 04/09/20 08:00

Lab Sample ID: 500-180435-2

Matrix: Water

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			04/16/20 03:28	1
Toluene	**0.25**	**J**	0.50	0.15	ug/L			04/16/20 03:28	1
Ethylbenzene	**0.82**		0.50	0.18	ug/L			04/16/20 03:28	1
Xylenes, Total	**11**		1.0	0.22	ug/L			04/16/20 03:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*117*		*75 - 126*		*04/16/20 03:28*	*1*
Toluene-d8 (Surr)	*99*		*75 - 120*		*04/16/20 03:28*	*1*
4-Bromofluorobenzene (Surr)	*93*		*72 - 124*		*04/16/20 03:28*	*1*
Dibromofluoromethane	*103*		*75 - 120*		*04/16/20 03:28*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	**17**		0.76	0.24	ug/L		04/13/20 07:20	04/14/20 05:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5 (Surr)	*87*		*36 - 120*	*04/13/20 07:20*	*04/14/20 05:06*	*1*
2-Fluorobiphenyl (Surr)	*90*		*34 - 110*	*04/13/20 07:20*	*04/14/20 05:06*	*1*
Terphenyl-d14 (Surr)	*105*		*40 - 145*	*04/13/20 07:20*	*04/14/20 05:06*	*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			04/16/20 11:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*101*		*60 - 140*		*04/16/20 11:55*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**2800**		380	340	ug/L		04/14/20 10:34	04/16/20 13:09	4000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCAA	*0*	*D*	*25 - 130*	*04/14/20 10:34*	*04/16/20 13:09*	*4000*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.54**	**J**	1.0	0.23	ug/L		04/10/20 06:22	04/10/20 13:48	1
Copper	**2.3**		2.0	0.50	ug/L		04/10/20 06:22	04/10/20 13:48	1
Iron	**563**		100	46.7	ug/L		04/10/20 06:22	04/10/20 13:48	1
Manganese	**3530**		2.5	0.79	ug/L		04/10/20 06:22	04/10/20 13:48	1
Zinc	<6.9		20.0	6.9	ug/L		04/10/20 06:22	04/10/20 13:48	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	**345**		0.91	0.46	mg/L		04/09/20 17:38	04/10/20 12:57	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**21.7**		1.0	0.85	mg/L			04/10/20 03:01	5
Nitrate as N	<0.068		0.20	0.068	mg/L			04/09/20 18:47	1
Sulfate	**22.6**		1.0	0.48	mg/L			04/10/20 03:01	5
Total Organic Carbon - Duplicates	**34.0**		1.0	0.47	mg/L			04/13/20 17:09	1

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

Job ID: 500-180435-1

Client Sample ID: W-200408-RA-11
Date Collected: 04/08/20 10:27
Date Received: 04/09/20 08:00

Lab Sample ID: 500-180435-2
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	312		5.0	3.7	mg/L			04/09/20 11:59	1

Client Sample ID: W-200408-RA-12

Date Collected: 04/08/20 10:27
Date Received: 04/09/20 08:00

Lab Sample ID: 500-180435-3

Matrix: Water

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			04/16/20 03:55	1
Toluene	**0.26**	**J**	0.50	0.15	ug/L			04/16/20 03:55	1
Ethylbenzene	**0.91**		0.50	0.18	ug/L			04/16/20 03:55	1
Xylenes, Total	**12**		1.0	0.22	ug/L			04/16/20 03:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*75 - 126*		*04/16/20 03:55*	*1*
Toluene-d8 (Surr)	*93*		*75 - 120*		*04/16/20 03:55*	*1*
4-Bromofluorobenzene (Surr)	*89*		*72 - 124*		*04/16/20 03:55*	*1*
Dibromofluoromethane	*101*		*75 - 120*		*04/16/20 03:55*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	**16**		0.76	0.23	ug/L		04/13/20 07:20	04/14/20 05:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5 (Surr)	*86*		*36 - 120*	*04/13/20 07:20*	*04/14/20 05:34*	*1*
2-Fluorobiphenyl (Surr)	*83*		*34 - 110*	*04/13/20 07:20*	*04/14/20 05:34*	*1*
Terphenyl-d14 (Surr)	*108*		*40 - 145*	*04/13/20 07:20*	*04/14/20 05:34*	*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			04/16/20 12:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*96*		*60 - 140*		*04/16/20 12:12*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**2300**		380	340	ug/L		04/14/20 10:34	04/16/20 13:28	4000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCAA	*0*	*D*	*25 - 130*	*04/14/20 10:34*	*04/16/20 13:28*	*4000*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.57**	**J**	1.0	0.23	ug/L		04/10/20 06:22	04/10/20 13:52	1
Copper	**2.8**		2.0	0.50	ug/L		04/10/20 06:22	04/10/20 13:52	1
Iron	**571**		100	46.7	ug/L		04/10/20 06:22	04/10/20 13:52	1
Manganese	**3670**		2.5	0.79	ug/L		04/10/20 06:22	04/10/20 13:52	1
Zinc	<6.9		20.0	6.9	ug/L		04/10/20 06:22	04/10/20 13:52	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	**341**		0.91	0.46	mg/L		04/09/20 17:38	04/10/20 12:57	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**19.4**		1.0	0.85	mg/L			04/10/20 03:14	5
Nitrate as N	<0.068		0.20	0.068	mg/L			04/09/20 19:00	1
Sulfate	**21.1**		1.0	0.48	mg/L			04/10/20 03:14	5
Total Organic Carbon - Duplicates	**34.5**		1.0	0.47	mg/L			04/13/20 17:25	1

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

Job ID: 500-180435-1

Client Sample ID: W-200408-RA-12
Date Collected: 04/08/20 10:27
Date Received: 04/09/20 08:00

Lab Sample ID: 500-180435-3
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	301		5.0	3.7	mg/L			04/09/20 12:06	1

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

Job ID: 500-180435-1

Client Sample ID: W-200408-RA-13

Date Collected: 04/08/20 11:10
Date Received: 04/09/20 08:00

Lab Sample ID: 500-180435-4

Matrix: Water

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			04/16/20 14:54	1
Toluene	<0.15		0.50	0.15	ug/L			04/16/20 14:54	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/16/20 14:54	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			04/16/20 14:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*75 - 126*		*04/16/20 14:54*	*1*
Toluene-d8 (Surr)	*100*		*75 - 120*		*04/16/20 14:54*	*1*
4-Bromofluorobenzene (Surr)	*90*		*72 - 124*		*04/16/20 14:54*	*1*
Dibromofluoromethane	*106*		*75 - 120*		*04/16/20 14:54*	*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		04/13/20 07:20	04/14/20 02:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5 (Surr)	*80*		*36 - 120*	*04/13/20 07:20*	*04/14/20 02:47*	*1*
2-Fluorobiphenyl (Surr)	*82*		*34 - 110*	*04/13/20 07:20*	*04/14/20 02:47*	*1*
Terphenyl-d14 (Surr)	*115*		*40 - 145*	*04/13/20 07:20*	*04/14/20 02:47*	*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			04/16/20 12:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*105*		*60 - 140*		*04/16/20 12:46*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.087		0.096	0.087	ug/L		04/14/20 10:34	04/15/20 19:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCAA	*65*		*25 - 130*	*04/14/20 10:34*	*04/15/20 19:46*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.58**	**J**	1.0	0.23	ug/L		04/10/20 06:22	04/10/20 13:55	1
Copper	**0.89**	**J**	2.0	0.50	ug/L		04/10/20 06:22	04/10/20 13:55	1
Iron	<46.7		100	46.7	ug/L		04/10/20 06:22	04/10/20 13:55	1
Manganese	<0.79		2.5	0.79	ug/L		04/10/20 06:22	04/10/20 13:55	1
Zinc	<6.9		20.0	6.9	ug/L		04/10/20 06:22	04/10/20 13:55	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	**243**		0.91	0.46	mg/L		04/09/20 17:38	04/10/20 12:57	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**46.2**		2.0	1.7	mg/L			04/10/20 03:27	10
Nitrate as N	**2.0**		0.20	0.068	mg/L			04/09/20 19:12	1
Sulfate	**8.4**		0.20	0.095	mg/L			04/09/20 19:12	1
Total Organic Carbon - Duplicates	**1.5**		1.0	0.47	mg/L			04/13/20 17:42	1

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

Job ID: 500-180435-1

Client Sample ID: W-200408-RA-13
Date Collected: 04/08/20 11:10
Date Received: 04/09/20 08:00

Lab Sample ID: 500-180435-4
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	185		5.0	3.7	mg/L			04/09/20 13:25	1

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

Job ID: 500-180435-1

Client Sample ID: W-200408-RA-14

Date Collected: 04/08/20 11:57
Date Received: 04/09/20 08:00

Lab Sample ID: 500-180435-5

Matrix: Water

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			04/16/20 01:43	1
Toluene	<0.15		0.50	0.15	ug/L			04/16/20 01:43	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/16/20 01:43	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			04/16/20 01:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*125*		*75 - 126*		*04/16/20 01:43*	*1*
Toluene-d8 (Surr)	*96*		*75 - 120*		*04/16/20 01:43*	*1*
4-Bromofluorobenzene (Surr)	*95*		*72 - 124*		*04/16/20 01:43*	*1*
Dibromofluoromethane	*105*		*75 - 120*		*04/16/20 01:43*	*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		04/13/20 07:20	04/14/20 03:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5 (Surr)	*78*		*36 - 120*	*04/13/20 07:20*	*04/14/20 03:15*	*1*
2-Fluorobiphenyl (Surr)	*85*		*34 - 110*	*04/13/20 07:20*	*04/14/20 03:15*	*1*
Terphenyl-d14 (Surr)	*111*		*40 - 145*	*04/13/20 07:20*	*04/14/20 03:15*	*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			04/16/20 13:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*107*		*60 - 140*		*04/16/20 13:03*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.096		0.11	0.096	ug/L		04/14/20 10:34	04/15/20 20:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCAA	*69*		*25 - 130*	*04/14/20 10:34*	*04/15/20 20:05*	*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		04/10/20 06:22	04/10/20 14:20	1
Copper	**0.66**	**J**	2.0	0.50	ug/L		04/10/20 06:22	04/10/20 14:20	1
Iron	<46.7		100	46.7	ug/L		04/10/20 06:22	04/10/20 14:20	1
Manganese	**2.5**		2.5	0.79	ug/L		04/10/20 06:22	04/10/20 14:20	1
Zinc	<6.9		20.0	6.9	ug/L		04/10/20 06:22	04/10/20 14:20	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**		0.91	0.46	mg/L		04/09/20 17:38	04/10/20 12:57	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**18.1**		1.0	0.85	mg/L			04/10/20 03:39	5
Nitrate as N	**1.4**		0.20	0.068	mg/L			04/09/20 19:25	1
Sulfate	**6.0**		0.20	0.095	mg/L			04/09/20 19:25	1
Total Organic Carbon - Duplicates	**0.60**	**J**	1.0	0.47	mg/L			04/13/20 17:58	1

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

Job ID: 500-180435-1

Client Sample ID: W-200408-RA-14
Date Collected: 04/08/20 11:57
Date Received: 04/09/20 08:00

Lab Sample ID: 500-180435-5
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	115		5.0	3.7	mg/L			04/09/20 13:32	1

Client Sample ID: W-200408-RA-15

Date Collected: 04/08/20 12:45
Date Received: 04/09/20 08:00

Lab Sample ID: 500-180435-6

Matrix: Water

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			04/16/20 02:09	1
Toluene	**0.81**		0.50	0.15	ug/L			04/16/20 02:09	1
Ethylbenzene	**0.74**		0.50	0.18	ug/L			04/16/20 02:09	1
Xylenes, Total	**12**		1.0	0.22	ug/L			04/16/20 02:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*123*		*75 - 126*		*04/16/20 02:09*	*1*
Toluene-d8 (Surr)	*94*		*75 - 120*		*04/16/20 02:09*	*1*
4-Bromofluorobenzene (Surr)	*95*		*72 - 124*		*04/16/20 02:09*	*1*
Dibromofluoromethane	*107*		*75 - 120*		*04/16/20 02:09*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	**27**		0.77	0.24	ug/L		04/13/20 07:20	04/14/20 04:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5 (Surr)	*86*		*36 - 120*	*04/13/20 07:20*	*04/14/20 04:11*	*1*
2-Fluorobiphenyl (Surr)	*69*		*34 - 110*	*04/13/20 07:20*	*04/14/20 04:11*	*1*
Terphenyl-d14 (Surr)	*101*		*40 - 145*	*04/13/20 07:20*	*04/14/20 04:11*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**5.5**		1.0	0.17	ug/L			04/16/20 13:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*104*		*60 - 140*		*04/16/20 13:20*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**3700**		390	350	ug/L		04/14/20 10:34	04/16/20 13:48	4000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCAA	*0*	*D*	*25 - 130*	*04/14/20 10:34*	*04/16/20 13:48*	*4000*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**3.8**		1.0	0.23	ug/L		04/10/20 06:22	04/10/20 14:24	1
Copper	**8.1**		2.0	0.50	ug/L		04/10/20 06:22	04/10/20 14:24	1
Iron	**10200**		100	46.7	ug/L		04/10/20 06:22	04/10/20 14:24	1
Manganese	**1310**		2.5	0.79	ug/L		04/10/20 06:22	04/10/20 14:24	1
Zinc	**9.0**	**J**	20.0	6.9	ug/L		04/10/20 06:22	04/10/20 14:24	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	**258**		0.91	0.46	mg/L		04/09/20 17:38	04/10/20 12:57	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**32.1**		2.0	1.7	mg/L			04/10/20 04:17	10
Nitrate as N	<0.068		0.20	0.068	mg/L			04/09/20 19:38	1
Sulfate	**13.6**		2.0	0.95	mg/L			04/10/20 04:17	10
Total Organic Carbon - Duplicates	**35.8**		1.0	0.47	mg/L			04/13/20 18:15	1

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

Job ID: 500-180435-1

Client Sample ID: W-200408-RA-15
Date Collected: 04/08/20 12:45
Date Received: 04/09/20 08:00

Lab Sample ID: 500-180435-6
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	257		5.0	3.7	mg/L			04/09/20 11:44	1

Client Sample ID: W-200408-RA-16

Date Collected: 04/08/20 12:45
Date Received: 04/09/20 08:00

Lab Sample ID: 500-180435-7

Matrix: Water

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			04/16/20 02:35	1
Toluene	<0.15		0.50	0.15	ug/L			04/16/20 02:35	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/16/20 02:35	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			04/16/20 02:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*121*		*75 - 126*		*04/16/20 02:35*	*1*
Toluene-d8 (Surr)	*93*		*75 - 120*		*04/16/20 02:35*	*1*
4-Bromofluorobenzene (Surr)	*91*		*72 - 124*		*04/16/20 02:35*	*1*
Dibromofluoromethane	*104*		*75 - 120*		*04/16/20 02:35*	*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		04/13/20 07:20	04/14/20 12:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5 (Surr)	*91*		*36 - 120*	*04/13/20 07:20*	*04/14/20 12:24*	*1*
2-Fluorobiphenyl (Surr)	*101*		*34 - 110*	*04/13/20 07:20*	*04/14/20 12:24*	*1*
Terphenyl-d14 (Surr)	*134*		*40 - 145*	*04/13/20 07:20*	*04/14/20 12:24*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**0.82**		0.095	0.085	ug/L		04/14/20 10:34	04/15/20 20:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCAA	*59*		*25 - 130*	*04/14/20 10:34*	*04/15/20 20:44*	*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		04/10/20 06:22	04/10/20 14:27	1
Copper	<0.50		2.0	0.50	ug/L		04/10/20 06:22	04/10/20 14:27	1
Iron	<46.7		100	46.7	ug/L		04/10/20 06:22	04/10/20 14:27	1
Manganese	<0.79		2.5	0.79	ug/L		04/10/20 06:22	04/10/20 14:27	1
Zinc	<6.9		20.0	6.9	ug/L		04/10/20 06:22	04/10/20 14:27	1

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

Job ID: 500-180435-1

Client Sample ID: Trip Blank
Date Collected: 04/08/20 00:00
Date Received: 04/09/20 09:40

Lab Sample ID: 500-180435-8
Matrix: Water

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			04/15/20 22:14	1
Toluene	<0.15		0.50	0.15	ug/L			04/15/20 22:14	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/15/20 22:14	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			04/15/20 22:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*75 - 126*		*04/15/20 22:14*	*1*
Toluene-d8 (Surr)	*111*		*75 - 120*		*04/15/20 22:14*	*1*
4-Bromofluorobenzene (Surr)	*89*		*72 - 124*		*04/15/20 22:14*	*1*
Dibromofluoromethane	*100*		*75 - 120*		*04/15/20 22:14*	*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
X	Surrogate recovery exceeds control limits

GC Semi VOA

Qualifier	Qualifier Description
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.

Metals

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

General Chemistry

Qualifier	Qualifier Description
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.
¤	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: 500-180435-1

GC/MS VOA

Analysis Batch: 538292

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180435-1	W-200408-RA-10	Total/NA	Water	8260B	
500-180435-2	W-200408-RA-11	Total/NA	Water	8260B	
500-180435-3	W-200408-RA-12	Total/NA	Water	8260B	
500-180435-5	W-200408-RA-14	Total/NA	Water	8260B	
500-180435-6	W-200408-RA-15	Total/NA	Water	8260B	
500-180435-7	W-200408-RA-16	Total/NA	Water	8260B	
500-180435-8	Trip Blank	Total/NA	Water	8260B	
MB 500-538292/6	Method Blank	Total/NA	Water	8260B	
LCS 500-538292/4	Lab Control Sample	Total/NA	Water	8260B	

Analysis Batch: 538445

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180435-4	W-200408-RA-13	Total/NA	Water	8260B	
MB 500-538445/6	Method Blank	Total/NA	Water	8260B	
LCS 500-538445/4	Lab Control Sample	Total/NA	Water	8260B	

GC/MS Semi VOA

Prep Batch: 537747

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180435-1	W-200408-RA-10	Total/NA	Water	3510C	
500-180435-2	W-200408-RA-11	Total/NA	Water	3510C	
500-180435-3	W-200408-RA-12	Total/NA	Water	3510C	
500-180435-4	W-200408-RA-13	Total/NA	Water	3510C	
500-180435-5	W-200408-RA-14	Total/NA	Water	3510C	
500-180435-6	W-200408-RA-15	Total/NA	Water	3510C	
500-180435-7	W-200408-RA-16	Total/NA	Water	3510C	
MB 500-537747/1-A	Method Blank	Total/NA	Water	3510C	
LCS 500-537747/2-A	Lab Control Sample	Total/NA	Water	3510C	

Analysis Batch: 537883

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180435-1	W-200408-RA-10	Total/NA	Water	8270D	537747
500-180435-2	W-200408-RA-11	Total/NA	Water	8270D	537747
500-180435-3	W-200408-RA-12	Total/NA	Water	8270D	537747
500-180435-4	W-200408-RA-13	Total/NA	Water	8270D	537747
500-180435-5	W-200408-RA-14	Total/NA	Water	8270D	537747
500-180435-6	W-200408-RA-15	Total/NA	Water	8270D	537747
MB 500-537747/1-A	Method Blank	Total/NA	Water	8270D	537747
LCS 500-537747/2-A	Lab Control Sample	Total/NA	Water	8270D	537747

Analysis Batch: 537982

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180435-7	W-200408-RA-16	Total/NA	Water	8270D	537747

GC VOA

Analysis Batch: 430965

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180435-1	W-200408-RA-10	Total/NA	Water	RSK-175	
500-180435-2	W-200408-RA-11	Total/NA	Water	RSK-175	
500-180435-3	W-200408-RA-12	Total/NA	Water	RSK-175	

GC VOA (Continued)

Analysis Batch: 430965 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180435-4	W-200408-RA-13	Total/NA	Water	RSK-175	
500-180435-5	W-200408-RA-14	Total/NA	Water	RSK-175	
500-180435-6	W-200408-RA-15	Total/NA	Water	RSK-175	
MB 240-430965/3	Method Blank	Total/NA	Water	RSK-175	
LCS 240-430965/4	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 240-430965/5	Lab Control Sample Dup	Total/NA	Water	RSK-175	

GC Semi VOA

Prep Batch: 538027

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180435-1	W-200408-RA-10	Total/NA	Water	8151A	
500-180435-2	W-200408-RA-11	Total/NA	Water	8151A	
500-180435-3	W-200408-RA-12	Total/NA	Water	8151A	
500-180435-4	W-200408-RA-13	Total/NA	Water	8151A	
500-180435-5	W-200408-RA-14	Total/NA	Water	8151A	
500-180435-6	W-200408-RA-15	Total/NA	Water	8151A	
500-180435-7	W-200408-RA-16	Total/NA	Water	8151A	
MB 500-538027/1-A	Method Blank	Total/NA	Water	8151A	
LCS 500-538027/2-A	Lab Control Sample	Total/NA	Water	8151A	
LCSD 500-538027/3-A	Lab Control Sample Dup	Total/NA	Water	8151A	

Analysis Batch: 538177

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180435-4	W-200408-RA-13	Total/NA	Water	8151A	538027
500-180435-5	W-200408-RA-14	Total/NA	Water	8151A	538027
500-180435-7	W-200408-RA-16	Total/NA	Water	8151A	538027
MB 500-538027/1-A	Method Blank	Total/NA	Water	8151A	538027
LCS 500-538027/2-A	Lab Control Sample	Total/NA	Water	8151A	538027
LCSD 500-538027/3-A	Lab Control Sample Dup	Total/NA	Water	8151A	538027

Analysis Batch: 538185

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180435-1	W-200408-RA-10	Total/NA	Water	8151A	538027
500-180435-2	W-200408-RA-11	Total/NA	Water	8151A	538027
500-180435-3	W-200408-RA-12	Total/NA	Water	8151A	538027
500-180435-6	W-200408-RA-15	Total/NA	Water	8151A	538027

Metals

Prep Batch: 537522

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180435-1	W-200408-RA-10	Total/NA	Water	3010A	
500-180435-2	W-200408-RA-11	Total/NA	Water	3010A	
500-180435-3	W-200408-RA-12	Total/NA	Water	3010A	
500-180435-4	W-200408-RA-13	Total/NA	Water	3010A	
500-180435-5	W-200408-RA-14	Total/NA	Water	3010A	
500-180435-6	W-200408-RA-15	Total/NA	Water	3010A	

Prep Batch: 537564

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180435-1	W-200408-RA-10	Dissolved	Water	3005A	

Metals (Continued)

Prep Batch: 537564 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180435-2	W-200408-RA-11	Dissolved	Water	3005A	
500-180435-3	W-200408-RA-12	Dissolved	Water	3005A	
500-180435-4	W-200408-RA-13	Dissolved	Water	3005A	
500-180435-5	W-200408-RA-14	Dissolved	Water	3005A	
500-180435-6	W-200408-RA-15	Dissolved	Water	3005A	
500-180435-7	W-200408-RA-16	Dissolved	Water	3005A	
MB 500-537564/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 500-537564/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
500-180435-4 MS	W-200408-RA-13	Dissolved	Water	3005A	
500-180435-4 MSD	W-200408-RA-13	Dissolved	Water	3005A	
500-180435-4 DU	W-200408-RA-13	Dissolved	Water	3005A	

Analysis Batch: 537656

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180435-1	W-200408-RA-10	Total/NA	Water	SM 2340B	537522
500-180435-2	W-200408-RA-11	Total/NA	Water	SM 2340B	537522
500-180435-3	W-200408-RA-12	Total/NA	Water	SM 2340B	537522
500-180435-4	W-200408-RA-13	Total/NA	Water	SM 2340B	537522
500-180435-5	W-200408-RA-14	Total/NA	Water	SM 2340B	537522
500-180435-6	W-200408-RA-15	Total/NA	Water	SM 2340B	537522

Analysis Batch: 537672

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180435-1	W-200408-RA-10	Dissolved	Water	6020A	537564
500-180435-2	W-200408-RA-11	Dissolved	Water	6020A	537564
500-180435-3	W-200408-RA-12	Dissolved	Water	6020A	537564
500-180435-4	W-200408-RA-13	Dissolved	Water	6020A	537564
500-180435-5	W-200408-RA-14	Dissolved	Water	6020A	537564
500-180435-6	W-200408-RA-15	Dissolved	Water	6020A	537564
500-180435-7	W-200408-RA-16	Dissolved	Water	6020A	537564
MB 500-537564/1-A	Method Blank	Total Recoverable	Water	6020A	537564
LCS 500-537564/2-A	Lab Control Sample	Total Recoverable	Water	6020A	537564
500-180435-4 MS	W-200408-RA-13	Dissolved	Water	6020A	537564
500-180435-4 MSD	W-200408-RA-13	Dissolved	Water	6020A	537564
500-180435-4 DU	W-200408-RA-13	Dissolved	Water	6020A	537564

General Chemistry

Analysis Batch: 537502

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180435-1	W-200408-RA-10	Total/NA	Water	SM 2320B	
500-180435-2	W-200408-RA-11	Total/NA	Water	SM 2320B	
500-180435-3	W-200408-RA-12	Total/NA	Water	SM 2320B	
500-180435-4	W-200408-RA-13	Total/NA	Water	SM 2320B	
500-180435-5	W-200408-RA-14	Total/NA	Water	SM 2320B	
500-180435-6	W-200408-RA-15	Total/NA	Water	SM 2320B	
MB 500-537502/3	Method Blank	Total/NA	Water	SM 2320B	
LCS 500-537502/4	Lab Control Sample	Total/NA	Water	SM 2320B	

QC Association Summary

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

Job ID: 500-180435-1

General Chemistry

Analysis Batch: 537529

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180435-1	W-200408-RA-10	Total/NA	Water	300.0	
500-180435-1	W-200408-RA-10	Total/NA	Water	300.0	
500-180435-2	W-200408-RA-11	Total/NA	Water	300.0	
500-180435-2	W-200408-RA-11	Total/NA	Water	300.0	
500-180435-3	W-200408-RA-12	Total/NA	Water	300.0	
500-180435-3	W-200408-RA-12	Total/NA	Water	300.0	
500-180435-4	W-200408-RA-13	Total/NA	Water	300.0	
500-180435-4	W-200408-RA-13	Total/NA	Water	300.0	
500-180435-5	W-200408-RA-14	Total/NA	Water	300.0	
500-180435-5	W-200408-RA-14	Total/NA	Water	300.0	
500-180435-6	W-200408-RA-15	Total/NA	Water	300.0	
500-180435-6	W-200408-RA-15	Total/NA	Water	300.0	
MB 500-537529/3	Method Blank	Total/NA	Water	300.0	
LCS 500-537529/4	Lab Control Sample	Total/NA	Water	300.0	

Analysis Batch: 537988

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180435-2	W-200408-RA-11	Total/NA	Water	9060A	
500-180435-3	W-200408-RA-12	Total/NA	Water	9060A	
500-180435-4	W-200408-RA-13	Total/NA	Water	9060A	
500-180435-5	W-200408-RA-14	Total/NA	Water	9060A	
500-180435-6	W-200408-RA-15	Total/NA	Water	9060A	
MB 500-537988/4	Method Blank	Total/NA	Water	9060A	
LCS 500-537988/5	Lab Control Sample	Total/NA	Water	9060A	

Analysis Batch: 538045

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180435-1	W-200408-RA-10	Total/NA	Water	9060A	
MB 500-538045/4	Method Blank	Total/NA	Water	9060A	
LCS 500-538045/5	Lab Control Sample	Total/NA	Water	9060A	

Surrogate Summary

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

Job ID: 500-180435-1

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)
500-180435-1	W-200408-RA-10	110	102	84	103
500-180435-2	W-200408-RA-11	117	99	93	103
500-180435-3	W-200408-RA-12	108	93	89	101
500-180435-4	W-200408-RA-13	106	100	90	106
500-180435-5	W-200408-RA-14	125	96	95	105
500-180435-6	W-200408-RA-15	123	94	95	107
500-180435-7	W-200408-RA-16	121	93	91	104
500-180435-8	Trip Blank	114	111	89	100
LCS 500-538292/4	Lab Control Sample	107	96	90	98
LCS 500-538445/4	Lab Control Sample	102	101	90	104
MB 500-538292/6	Method Blank	120	95	91	104
MB 500-538445/6	Method Blank	101	102	91	105

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)
500-180435-1	W-200408-RA-10	86	23 X	108
500-180435-2	W-200408-RA-11	87	90	105
500-180435-3	W-200408-RA-12	86	83	108
500-180435-4	W-200408-RA-13	80	82	115
500-180435-5	W-200408-RA-14	78	85	111
500-180435-6	W-200408-RA-15	86	69	101
500-180435-7	W-200408-RA-16	91	101	134
LCS 500-537747/2-A	Lab Control Sample	82	88	106
MB 500-537747/1-A	Method Blank	69	70	96

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	TFE1 (60-140)
500-180435-1	W-200408-RA-10	106
500-180435-2	W-200408-RA-11	101
500-180435-3	W-200408-RA-12	96
500-180435-4	W-200408-RA-13	105
500-180435-5	W-200408-RA-14	107

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

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	TFE1 (60-140)
500-180435-6	W-200408-RA-15	104
LCS 240-430965/4	Lab Control Sample	106
LCSD 240-430965/5	Lab Control Sample Dup	107
MB 240-430965/3	Method Blank	108

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)
500-180435-1	W-200408-RA-10	0 D
500-180435-2	W-200408-RA-11	0 D
500-180435-3	W-200408-RA-12	0 D
500-180435-4	W-200408-RA-13	65
500-180435-5	W-200408-RA-14	69
500-180435-6	W-200408-RA-15	0 D
500-180435-7	W-200408-RA-16	59
LCS 500-538027/2-A	Lab Control Sample	78
LCSD 500-538027/3-A	Lab Control Sample Dup	76
MB 500-538027/1-A	Method Blank	74

Surrogate Legend

DCPAA = DCAA

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

Lab Sample ID: MB 500-538292/6
Matrix: Water
Analysis Batch: 538292

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		0.50	0.15	ug/L			04/15/20 21:01	1
Toluene	<0.15		0.50	0.15	ug/L			04/15/20 21:01	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/15/20 21:01	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			04/15/20 21:01	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*120*		*75 - 126*		*04/15/20 21:01*	*1*
Toluene-d8 (Surr)	*95*		*75 - 120*		*04/15/20 21:01*	*1*
4-Bromofluorobenzene (Surr)	*91*		*72 - 124*		*04/15/20 21:01*	*1*
Dibromofluoromethane	*104*		*75 - 120*		*04/15/20 21:01*	*1*

Lab Sample ID: LCS 500-538292/4
Matrix: Water
Analysis Batch: 538292

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	55.6		ug/L		111	70 - 120
Toluene	50.0	54.7		ug/L		109	70 - 125
Ethylbenzene	50.0	56.2		ug/L		112	70 - 123
Xylenes, Total	100	106		ug/L		106	70 - 125

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*75 - 126*
Toluene-d8 (Surr)	*96*		*75 - 120*
4-Bromofluorobenzene (Surr)	*90*		*72 - 124*
Dibromofluoromethane	*98*		*75 - 120*

Lab Sample ID: MB 500-538445/6
Matrix: Water
Analysis Batch: 538445

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		0.50	0.15	ug/L			04/16/20 12:54	1
Toluene	<0.15		0.50	0.15	ug/L			04/16/20 12:54	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/16/20 12:54	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			04/16/20 12:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*75 - 126*		*04/16/20 12:54*	*1*
Toluene-d8 (Surr)	*102*		*75 - 120*		*04/16/20 12:54*	*1*
4-Bromofluorobenzene (Surr)	*91*		*72 - 124*		*04/16/20 12:54*	*1*
Dibromofluoromethane	*105*		*75 - 120*		*04/16/20 12:54*	*1*

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

Lab Sample ID: LCS 500-538445/4
Matrix: Water
Analysis Batch: 538445

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	48.9		ug/L		98	70 - 125
Ethylbenzene	50.0	50.0		ug/L		100	70 - 123
Xylenes, Total	100	96.3		ug/L		96	70 - 125

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*75 - 126*
Toluene-d8 (Surr)	*101*		*75 - 120*
4-Bromofluorobenzene (Surr)	*90*		*72 - 124*
Dibromofluoromethane	*104*		*75 - 120*

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

Lab Sample ID: MB 500-537747/1-A
Matrix: Water
Analysis Batch: 537883

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 537747

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.25		0.80	0.25	ug/L		04/13/20 07:20	04/13/20 20:41	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5 (Surr)	*69*		*36 - 120*	*04/13/20 07:20*	*04/13/20 20:41*	*1*
2-Fluorobiphenyl (Surr)	*70*		*34 - 110*	*04/13/20 07:20*	*04/13/20 20:41*	*1*
Terphenyl-d14 (Surr)	*96*		*40 - 145*	*04/13/20 07:20*	*04/13/20 20:41*	*1*

Lab Sample ID: LCS 500-537747/2-A
Matrix: Water
Analysis Batch: 537883

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 537747

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Naphthalene	32.0	21.4		ug/L		67	36 - 110

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Nitrobenzene-d5 (Surr)	*82*		*36 - 120*
2-Fluorobiphenyl (Surr)	*88*		*34 - 110*
Terphenyl-d14 (Surr)	*106*		*40 - 145*

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 240-430965/3
Matrix: Water
Analysis Batch: 430965

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			04/16/20 08:12	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*108*		*60 - 140*		*04/16/20 08:12*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: LCS 240-430965/4
Matrix: Water
Analysis Batch: 430965

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Methane			475	453		ug/L		95	80 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,1,1-Trifluoroethane	*106*		*60 - 140*

Lab Sample ID: LCSD 240-430965/5
Matrix: Water
Analysis Batch: 430965

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			475	480		ug/L		101	80 - 120	6	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,1,1-Trifluoroethane	*107*		*60 - 140*

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 500-538027/1-A
Matrix: Water
Analysis Batch: 538177

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 538027

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.090		0.10	0.090	ug/L		04/14/20 10:34	04/15/20 14:17	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCAA	*74*		*25 - 130*	*04/14/20 10:34*	*04/15/20 14:17*	*1*

Lab Sample ID: LCS 500-538027/2-A
Matrix: Water
Analysis Batch: 538177

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 538027

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Pentachlorophenol			2.53	1.59		ug/L		63	40 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCAA	*78*		*25 - 130*

Lab Sample ID: LCSD 500-538027/3-A
Matrix: Water
Analysis Batch: 538177

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 538027

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Pentachlorophenol			2.53	1.60		ug/L		63	40 - 122	0	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
DCAA	*76*		*25 - 130*

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 500-537564/1-A
Matrix: Water
Analysis Batch: 537672

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 537564

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.23		1.0	0.23	ug/L		04/10/20 06:22	04/10/20 13:38	1
Copper	<0.50		2.0	0.50	ug/L		04/10/20 06:22	04/10/20 13:38	1
Iron	<46.7		100	46.7	ug/L		04/10/20 06:22	04/10/20 13:38	1
Manganese	<0.79		2.5	0.79	ug/L		04/10/20 06:22	04/10/20 13:38	1
Zinc	<6.9		20.0	6.9	ug/L		04/10/20 06:22	04/10/20 13:38	1

Lab Sample ID: LCS 500-537564/2-A
Matrix: Water
Analysis Batch: 537672

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 537564

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Arsenic			100	96.36		ug/L		96	80 - 120		
Copper			250	246.5		ug/L		99	80 - 120		
Iron			1000	990.5		ug/L		99	80 - 120		
Manganese			500	487.9		ug/L		98	80 - 120		
Zinc			500	499.4		ug/L		100	80 - 120		

Lab Sample ID: 500-180435-4 MS
Matrix: Water
Analysis Batch: 537672

Client Sample ID: W-200408-RA-13
Prep Type: Dissolved
Prep Batch: 537564

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Arsenic	0.58	J	100	95.23		ug/L		95	75 - 125		
Copper	0.89	J	250	239.6		ug/L		95	75 - 125		
Iron	<46.7		1000	1160		ug/L		116	75 - 125		
Manganese	<0.79		500	498.5		ug/L		100	75 - 125		
Zinc	<6.9		500	481.1		ug/L		96	75 - 125		

Lab Sample ID: 500-180435-4 MSD
Matrix: Water
Analysis Batch: 537672

Client Sample ID: W-200408-RA-13
Prep Type: Dissolved
Prep Batch: 537564

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	0.58	J	100	93.22		ug/L		93	75 - 125	2	20
Copper	0.89	J	250	234.5		ug/L		93	75 - 125	2	20
Iron	<46.7		1000	1001		ug/L		100	75 - 125	15	20
Manganese	<0.79		500	479.1		ug/L		96	75 - 125	4	20
Zinc	<6.9		500	474.7		ug/L		95	75 - 125	1	20

Lab Sample ID: 500-180435-4 DU
Matrix: Water
Analysis Batch: 537672

Client Sample ID: W-200408-RA-13
Prep Type: Dissolved
Prep Batch: 537564

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Arsenic	0.58	J		0.581	J	ug/L				0.3	20
Copper	0.89	J		0.846	J	ug/L				5	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

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 500-537529/3
Matrix: Water
Analysis Batch: 537529

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			04/09/20 18:09	1
Nitrate as N	<0.068		0.20	0.068	mg/L			04/09/20 18:09	1
Sulfate	<0.095		0.20	0.095	mg/L			04/09/20 18:09	1

Lab Sample ID: LCS 500-537529/4
Matrix: Water
Analysis Batch: 537529

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	2.95		mg/L		98	90 - 110
Nitrate as N	2.00	1.98		mg/L		99	90 - 110
Sulfate	5.00	5.12		mg/L		102	90 - 110

Method: 9060A - Organic Carbon, Total (TOC)

Lab Sample ID: MB 500-537988/4
Matrix: Water
Analysis Batch: 537988

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			04/13/20 13:10	1

Lab Sample ID: LCS 500-537988/5
Matrix: Water
Analysis Batch: 537988

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	10.00		mg/L		100	80 - 120

Lab Sample ID: MB 500-538045/4
Matrix: Water
Analysis Batch: 538045

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			04/14/20 09:29	1

Lab Sample ID: LCS 500-538045/5
Matrix: Water
Analysis Batch: 538045

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	9.91		mg/L		99	80 - 120

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

Job ID: 500-180435-1

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 500-537502/3
Matrix: Water
Analysis Batch: 537502

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			04/09/20 11:31	1

Lab Sample ID: LCS 500-537502/4
Matrix: Water
Analysis Batch: 537502

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Alkalinity			100	98.81		mg/L		99	90 - 110		

Lab Chronicle

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

Job ID: 500-180435-1

Client Sample ID: W-200408-RA-10

Lab Sample ID: 500-180435-1
Date Collected: 04/08/20 10:01
Matrix: Water
Date Received: 04/09/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	538292	04/16/20 03:02	JDD	TAL CHI
Total/NA	Prep	3510C			537747	04/13/20 07:20	BSO	TAL CHI
Total/NA	Analysis	8270D		1	537883	04/14/20 04:38	NRJ	TAL CHI
Total/NA	Analysis	RSK-175		1	430965	04/16/20 11:38	JBN	TAL CAN
Total/NA	Prep	8151A			538027	04/14/20 10:34	BSO	TAL CHI
Total/NA	Analysis	8151A		4000	538185	04/16/20 12:50	JBJ	TAL CHI
Dissolved	Prep	3005A			537564	04/10/20 06:22	LMN	TAL CHI
Dissolved	Analysis	6020A		1	537672	04/10/20 13:45	FXG	TAL CHI
Total/NA	Prep	3010A			537522	04/09/20 17:38	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	537656	04/10/20 12:57	JEF	TAL CHI
Total/NA	Analysis	300.0		1	537529	04/09/20 18:34	EAT	TAL CHI
Total/NA	Analysis	300.0		10	537529	04/10/20 02:49	EAT	TAL CHI
Total/NA	Analysis	9060A		2	538045	04/14/20 10:02	JJB	TAL CHI
Total/NA	Analysis	SM 2320B		1	537502	04/09/20 11:51	SMO	TAL CHI

Client Sample ID: W-200408-RA-11

Lab Sample ID: 500-180435-2
Date Collected: 04/08/20 10:27
Matrix: Water
Date Received: 04/09/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	538292	04/16/20 03:28	JDD	TAL CHI
Total/NA	Prep	3510C			537747	04/13/20 07:20	BSO	TAL CHI
Total/NA	Analysis	8270D		1	537883	04/14/20 05:06	NRJ	TAL CHI
Total/NA	Analysis	RSK-175		1	430965	04/16/20 11:55	JBN	TAL CAN
Total/NA	Prep	8151A			538027	04/14/20 10:34	BSO	TAL CHI
Total/NA	Analysis	8151A		4000	538185	04/16/20 13:09	JBJ	TAL CHI
Dissolved	Prep	3005A			537564	04/10/20 06:22	LMN	TAL CHI
Dissolved	Analysis	6020A		1	537672	04/10/20 13:48	FXG	TAL CHI
Total/NA	Prep	3010A			537522	04/09/20 17:38	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	537656	04/10/20 12:57	JEF	TAL CHI
Total/NA	Analysis	300.0		1	537529	04/09/20 18:47	EAT	TAL CHI
Total/NA	Analysis	300.0		5	537529	04/10/20 03:01	EAT	TAL CHI
Total/NA	Analysis	9060A		1	537988	04/13/20 17:09	JJB	TAL CHI
Total/NA	Analysis	SM 2320B		1	537502	04/09/20 11:59	SMO	TAL CHI

Client Sample ID: W-200408-RA-12

Lab Sample ID: 500-180435-3
Date Collected: 04/08/20 10:27
Matrix: Water
Date Received: 04/09/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	538292	04/16/20 03:55	JDD	TAL CHI
Total/NA	Prep	3510C			537747	04/13/20 07:20	BSO	TAL CHI
Total/NA	Analysis	8270D		1	537883	04/14/20 05:34	NRJ	TAL CHI

Lab Chronicle

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

Job ID: 500-180435-1

Client Sample ID: W-200408-RA-12

Lab Sample ID: 500-180435-3

Date Collected: 04/08/20 10:27
Matrix: Water
Date Received: 04/09/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		1	430965	04/16/20 12:12	JBN	TAL CAN
Total/NA	Prep	8151A			538027	04/14/20 10:34	BSO	TAL CHI
Total/NA	Analysis	8151A		4000	538185	04/16/20 13:28	JBJ	TAL CHI
Dissolved	Prep	3005A			537564	04/10/20 06:22	LMN	TAL CHI
Dissolved	Analysis	6020A		1	537672	04/10/20 13:52	FXG	TAL CHI
Total/NA	Prep	3010A			537522	04/09/20 17:38	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	537656	04/10/20 12:57	JEF	TAL CHI
Total/NA	Analysis	300.0		1	537529	04/09/20 19:00	EAT	TAL CHI
Total/NA	Analysis	300.0		5	537529	04/10/20 03:14	EAT	TAL CHI
Total/NA	Analysis	9060A		1	537988	04/13/20 17:25	JJB	TAL CHI
Total/NA	Analysis	SM 2320B		1	537502	04/09/20 12:06	SMO	TAL CHI

Client Sample ID: W-200408-RA-13

Lab Sample ID: 500-180435-4

Date Collected: 04/08/20 11:10
Matrix: Water
Date Received: 04/09/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	538445	04/16/20 14:54	JDD	TAL CHI
Total/NA	Prep	3510C			537747	04/13/20 07:20	BSO	TAL CHI
Total/NA	Analysis	8270D		1	537883	04/14/20 02:47	NRJ	TAL CHI
Total/NA	Analysis	RSK-175		1	430965	04/16/20 12:46	JBN	TAL CAN
Total/NA	Prep	8151A			538027	04/14/20 10:34	BSO	TAL CHI
Total/NA	Analysis	8151A		1	538177	04/15/20 19:46	JBJ	TAL CHI
Dissolved	Prep	3005A			537564	04/10/20 06:22	LMN	TAL CHI
Dissolved	Analysis	6020A		1	537672	04/10/20 13:55	FXG	TAL CHI
Total/NA	Prep	3010A			537522	04/09/20 17:38	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	537656	04/10/20 12:57	JEF	TAL CHI
Total/NA	Analysis	300.0		1	537529	04/09/20 19:12	EAT	TAL CHI
Total/NA	Analysis	300.0		10	537529	04/10/20 03:27	EAT	TAL CHI
Total/NA	Analysis	9060A		1	537988	04/13/20 17:42	JJB	TAL CHI
Total/NA	Analysis	SM 2320B		1	537502	04/09/20 13:25	SMO	TAL CHI

Client Sample ID: W-200408-RA-14

Lab Sample ID: 500-180435-5

Date Collected: 04/08/20 11:57
Matrix: Water
Date Received: 04/09/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	538292	04/16/20 01:43	JDD	TAL CHI
Total/NA	Prep	3510C			537747	04/13/20 07:20	BSO	TAL CHI
Total/NA	Analysis	8270D		1	537883	04/14/20 03:15	NRJ	TAL CHI
Total/NA	Analysis	RSK-175		1	430965	04/16/20 13:03	JBN	TAL CAN
Total/NA	Prep	8151A			538027	04/14/20 10:34	BSO	TAL CHI
Total/NA	Analysis	8151A		1	538177	04/15/20 20:05	JBJ	TAL CHI

Lab Chronicle

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

Job ID: 500-180435-1

Client Sample ID: W-200408-RA-14

Lab Sample ID: 500-180435-5

Date Collected: 04/08/20 11:57
Matrix: Water
Date Received: 04/09/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			537564	04/10/20 06:22	LMN	TAL CHI
Dissolved	Analysis	6020A		1	537672	04/10/20 14:20	FXG	TAL CHI
Total/NA	Prep	3010A			537522	04/09/20 17:38	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	537656	04/10/20 12:57	JEF	TAL CHI
Total/NA	Analysis	300.0		1	537529	04/09/20 19:25	EAT	TAL CHI
Total/NA	Analysis	300.0		5	537529	04/10/20 03:39	EAT	TAL CHI
Total/NA	Analysis	9060A		1	537988	04/13/20 17:58	JJB	TAL CHI
Total/NA	Analysis	SM 2320B		1	537502	04/09/20 13:32	SMO	TAL CHI

Client Sample ID: W-200408-RA-15

Lab Sample ID: 500-180435-6

Date Collected: 04/08/20 12:45
Matrix: Water
Date Received: 04/09/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	538292	04/16/20 02:09	JDD	TAL CHI
Total/NA	Prep	3510C			537747	04/13/20 07:20	BSO	TAL CHI
Total/NA	Analysis	8270D		1	537883	04/14/20 04:11	NRJ	TAL CHI
Total/NA	Analysis	RSK-175		1	430965	04/16/20 13:20	JBN	TAL CAN
Total/NA	Prep	8151A			538027	04/14/20 10:34	BSO	TAL CHI
Total/NA	Analysis	8151A		4000	538185	04/16/20 13:48	JBJ	TAL CHI
Dissolved	Prep	3005A			537564	04/10/20 06:22	LMN	TAL CHI
Dissolved	Analysis	6020A		1	537672	04/10/20 14:24	FXG	TAL CHI
Total/NA	Prep	3010A			537522	04/09/20 17:38	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	537656	04/10/20 12:57	JEF	TAL CHI
Total/NA	Analysis	300.0		1	537529	04/09/20 19:38	EAT	TAL CHI
Total/NA	Analysis	300.0		10	537529	04/10/20 04:17	EAT	TAL CHI
Total/NA	Analysis	9060A		1	537988	04/13/20 18:15	JJB	TAL CHI
Total/NA	Analysis	SM 2320B		1	537502	04/09/20 11:44	SMO	TAL CHI

Client Sample ID: W-200408-RA-16

Lab Sample ID: 500-180435-7

Date Collected: 04/08/20 12:45
Matrix: Water
Date Received: 04/09/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	538292	04/16/20 02:35	JDD	TAL CHI
Total/NA	Prep	3510C			537747	04/13/20 07:20	BSO	TAL CHI
Total/NA	Analysis	8270D		1	537982	04/14/20 12:24	AJD	TAL CHI
Total/NA	Prep	8151A			538027	04/14/20 10:34	BSO	TAL CHI
Total/NA	Analysis	8151A		1	538177	04/15/20 20:44	JBJ	TAL CHI
Dissolved	Prep	3005A			537564	04/10/20 06:22	LMN	TAL CHI
Dissolved	Analysis	6020A		1	537672	04/10/20 14:27	FXG	TAL CHI

Lab Chronicle

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

Job ID: 500-180435-1

Client Sample ID: Trip Blank

Date Collected: 04/08/20 00:00
Date Received: 04/09/20 09:40

Lab Sample ID: 500-180435-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	538292	04/15/20 22:14	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.
Job ID: 500-180435-1
Project/Site: Penta Wood 086165

Laboratory: Eurofins TestAmerica, Chicago

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	999580010	08-31-20

Laboratory: Eurofins TestAmerica, Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-21
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-20
Georgia	State	4062	02-23-21
Illinois	NELAP	004498	07-31-20
Iowa	State	421	06-01-21
Kansas	NELAP	E-10336	04-30-20
Kentucky (UST)	State	112225	02-23-21
Kentucky (WW)	State	KY98016	12-31-20
Minnesota	NELAP	OH00048	12-31-20
Minnesota (Petrofund)	State	3506	08-01-21
New Jersey	NELAP	OH001	06-30-20
New York	NELAP	10975	03-31-20 *
Ohio VAP	State	CL0024	06-05-21
Oregon	NELAP	4062	02-24-21
Pennsylvania	NELAP	68-00340	08-31-20
Texas	NELAP	T104704517-18-10	08-31-20
USDA	US Federal Programs	P330-18-00281	09-17-21
Virginia	NELAP	010101	09-14-20
Washington	State	C971	01-12-21
West Virginia DEP	State	210	12-31-20

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

Chain of Custody Record

382170

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Address: _____

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TAL-82

Client Contact	Project Manager: Lee	Site Contact: Aamot	Date: 4/8/2020	COC No: 1 of 1 COCs
Company Name: GHD	Tel/Email:	Lab Contact:	Carrier: FedEx	Sampler:
Address: 1801 Old Highway 8 NW 114	Analysis Turnaround Time			For Lab Use Only:
City/State/Zip: St. Paul MN 55112	☐ CALENDAR DAYS ☐ WORKING DAYS			Walk-in Client:
Phone: 6516390913	TAT if different from Below _____			Lab Sampling:
Fax:	☐ 2 weeks			Job / SDG No.: 500-180435
Project Name: Penta Wood	☐ 1 week			
Site:	☐ 2 days			
P O #	☐ 1 day			

	Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	PCP	BTEX	Naphthalene	Alkyl hazard, nitrate	sulfide, TOC, methane	Select dissolved metals *	Sample Specific Notes:
1	W-200408-RA-10	4/8/2020	1001	G	WG	15			1	1	1	1	1	1	* arsenic, copper, iron
2	W-200408-RA-11		1027			15			1	1	1	1	1	1	manganese, zinc
3	W-200408-RA-12		1027			15			1	1	1	1	1	1	- metals were field
4	W-200408-RA-13		1110			15			1	1	1	1	1	1	filtered
5	W-200408-RA-14		1157			15			1	1	1	1	1	1	
6	W-200408-RA-15		1245			15			1	1	1	1	1	1	
7	W-200408-RA-16		1245			8			1	1	1			1	
8	Trip Blank														Added by TA

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

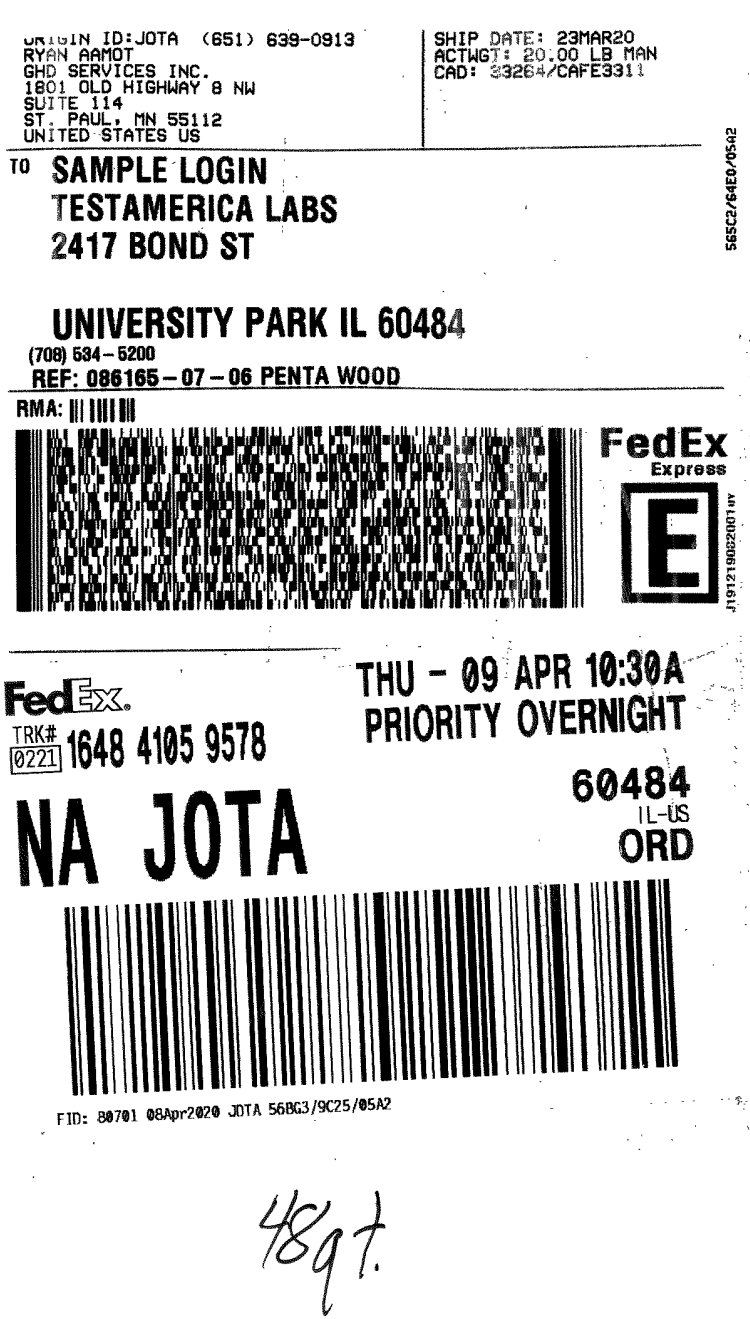
Special Instructions/QC Requirements & Comments:

3.6, 6.0, 5.4, 5.9

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ | Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	GHD	4/8/20 1500			
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
				FA-CHI	4/9/20 0940


ORIGIN ID:JOTA (651) 639-0913
RYAN AAMOT
GHD SERVICES INC.
1801 OLD HIGHWAY 8 NW
SUITE 114
ST. PAUL, MN 55112
UNITED STATES US
SHIP DATE: 23MAR20
ACTWGT: 20.00 LB MAN
CAD: 33284/CAFE3311
TO SAMPLE LOGIN
TESTAMERICA LABS
2417 BOND ST
UNIVERSITY PARK IL 60484
(708) 534-5200
REF: 086165-07-06 PENTA WOOD
500-180435 Waybill
RMA:
FedEx Express
TRK# 0221 1648 4105 9590
THU - 09 APR 10:30A
PRIORITY OVERNIGHT
60484
IL-US
ORD
NA JOTA
FID: 80701 08Apr2020 JOTA 56BG3/9C25/05A2
48qt.


ORIGIN ID:JOTA (651) 639-0913
RYAN AAMOT
GHD SERVICES INC.
1801 OLD HIGHWAY 8 NW
SUITE 114
ST. PAUL, MN 55112
UNITED STATES US
SHIP DATE: 23MAR20
ACTWGT: 20.00 LB MAN
CAD: 33284/CAFE3311
TO SAMPLE LOGIN
TESTAMERICA LABS
2417 BOND ST
UNIVERSITY PARK IL 60484
(708) 534-5200
REF: 086165-07-06 PENTA WOOD
RMA:
FedEx Express
FedEx
TRK# 0221 1648 4105 9578
THU - 09 APR 10:30A
PRIORITY OVERNIGHT
60484
IL-US
ORD
NA JOTA
FID: 80701 08Apr2020 JOTA 56BG3/9C25/05A2
48qt.

ORIGIN ID:JOTA (651) 639-0913
RYAN AAMOT
GHD SERVICES INC.
1801 OLD HIGHWAY 8 NW
SUITE 114
ST. PAUL, MN 55112
UNITED STATES US

SHIP DATE: 23MAR20
ACTWGT: 20.00 LB MAN
CAD: 33264/CAFE3311

TO **SAMPLE LOGIN**
TESTAMERICA LABS
2417 BOND ST

UNIVERSITY PARK IL 60484
(708) 534-5200
REF: 086165-07-06 PENTA WOOD

RMA:

FedEx Express

FedEx
TRK# 0221 1648 4105 9604

THU - 09 APR 10:30A
PRIORITY OVERNIGHT

60484
IL-US
ORD

NA JOTA

FID: 80701 08Apr2020 JOTA 56BG3/9C25/05A2

48 qt.

ORIGIN ID:JOTA (651) 639-0913
RYAN AAMOT
GHD SERVICES INC.
1801 OLD HIGHWAY 8 NW
SUITE 114
ST. PAUL, MN 55112
UNITED STATES US

SHIP DATE: 23MAR20
ACTWGT: 20.00 LB MAN
CAD: 33264/CAFE3311

TO **SAMPLE LOGIN**
TESTAMERICA LABS
2417 BOND ST

UNIVERSITY PARK IL 60484
(708) 534-5200
REF: 086165-07-06 PENTA WOOD

RMA:

FedEx Express

FedEx
TRK# 0221 1648 4105 9589

THU - 09 APR 10:30A
PRIORITY OVERNIGHT

60484
IL-US
ORD

NA JOTA

48 qt.

Eurofins TestAmerica, Chicago
2417 Bond Street
University Park, IL 60484
Phone: 708-534-5200 Fax: 708-534-5211

2.413.1

Chain of Custody Record

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Client Information (Sub Contract Lab)	Sampler:	Lab PM: Wright, Richard	Carrier Tracking No(s):	COC No: 500-133966.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: richard.wright@testamericainc.com	State of Origin: Wisconsin	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - Wisconsin		Job #: 500-180435-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 4/22/2020			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Penta Wood 086165	Project #: 50013796			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	RSK_175/ (MOD) Methane	Total Number of containers	Special Instructions/Note:
			Preservation Code:		X	X		X	RSK
W-200408-RA-10 (500-180435-1)	4/8/20	10:01 Central		Water			X	3	WI
W-200408-RA-11 (500-180435-2)	4/8/20	10:27 Central		Water			X	3	WI
W-200408-RA-12 (500-180435-3)	4/8/20	10:27 Central		Water			X	3	WI
W-200408-RA-13 (500-180435-4)	4/8/20	11:10 Central		Water			X	3	WI
W-200408-RA-14 (500-180435-5)	4/8/20	11:57 Central		Water			X	3	WI
W-200408-RA-15 (500-180435-6)	4/8/20	12:45 Central		Water			X	3	WI

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica 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/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	4/9/20 1600	TA	[signature]	4-10-20 950	EMAC
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # :** _____
Canton Facility

Client ETA Chicago Site Name _____ Cooler unpacked by: MM

Cooler Received on 4-10-20 Opened on 4-10-20

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # 777 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-10 (CF **+0.7** °C) Observed Cooler Temp. 2.4 °C Corrected Cooler Temp 3.1 °C

IR GUN #IR-11 (CF **+0.9**°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
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# **HC902937**
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: _____

WI-NC-099

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 500-180435-1

Login Number: 180435
List Number: 1
Creator: Scott, Sherri L

List Source: Eurofins TestAmerica, Chicago

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	3.6,6.0,5.4,5.9
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").	False	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

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

Laboratory Job ID: 500-180492-1
Client Project/Site: Penta Wood 086165

For:
GHD Services Inc.
1801 Old Highway 8 NW
Suite 114
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Attn: Mr. Grant Anderson

Authorized for release by:
4/23/2020 4:52:04 PM

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Job ID: 500-180492-1

Laboratory: Eurofins TestAmerica, Chicago

Narrative

Job Narrative
500-180492-1

Receipt
The samples were received on 4/10/2020 9:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 3.4º C, 4.8º C and 5.0º 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 8151A: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 500-538468 and analytical batch 500-538488 recovered outside control limits for the following analytes: Pentachlorophenol.

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: 500-180492-1

Client Sample ID: W-200409-RA-17 — Lab Sample ID: 500-180492-1

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.41	J	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	3.7		2.0	0.50	ug/L	1		6020A	Dissolved
Iron	89.8	J	100	46.7	ug/L	1		6020A	Dissolved
Manganese	5.1		2.5	0.79	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	297		0.91	0.46	mg/L	1		SM 2340B	Total/NA
Chloride	11.0		1.0	0.85	mg/L	5		300.0	Total/NA
Nitrate as N	7.3		1.0	0.34	mg/L	5		300.0	Total/NA
Sulfate	11.1		1.0	0.48	mg/L	5		300.0	Total/NA
Total Organic Carbon - Duplicates	2.8		1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	245		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-200409-RA-18 — Lab Sample ID: 500-180492-2

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Arsenic	1.4		1.0	0.23	ug/L	1		6020A	Dissolved
Copper	28.2		2.0	0.50	ug/L	1		6020A	Dissolved
Iron	6900		100	46.7	ug/L	1		6020A	Dissolved
Manganese	292		2.5	0.79	ug/L	1		6020A	Dissolved
Zinc	30.5		20.0	6.9	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	160		0.91	0.46	mg/L	1		SM 2340B	Total/NA
Chloride	0.30		0.20	0.17	mg/L	1		300.0	Total/NA
Nitrate as N	0.24		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	1.4		0.20	0.095	mg/L	1		300.0	Total/NA
Total Organic Carbon - Duplicates	0.70	J	1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	73.3		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-200409-RA-19 — Lab Sample ID: 500-180492-3

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.53	J	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	6.1		2.0	0.50	ug/L	1		6020A	Dissolved
Iron	1160		100	46.7	ug/L	1		6020A	Dissolved
Manganese	67.8		2.5	0.79	ug/L	1		6020A	Dissolved
Zinc	11.3	J	20.0	6.9	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	116		0.91	0.46	mg/L	1		SM 2340B	Total/NA
Chloride	3.9		0.20	0.17	mg/L	1		300.0	Total/NA
Nitrate as N	0.61		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	1.3		1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	72.9		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-200409-RA-20 — Lab Sample ID: 500-180492-4

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.39	J	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	1.4	J	2.0	0.50	ug/L	1		6020A	Dissolved
Iron	488		100	46.7	ug/L	1		6020A	Dissolved
Manganese	7.3		2.5	0.79	ug/L	1		6020A	Dissolved
Zinc	8.0	J	20.0	6.9	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	85.4		0.91	0.46	mg/L	1		SM 2340B	Total/NA
Chloride	77.3		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

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Chicago

Client Sample ID: W-200409-RA-20 (Continued) — Lab Sample ID: 500-180492-4

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Sulfate	5.8		0.20	0.095	mg/L	1		300.0	Total/NA
Alkalinity	37.1		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-200409-RA-21 — Lab Sample ID: 500-180492-5

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.47	J	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	1.6	J	2.0	0.50	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	83.4		0.91	0.46	mg/L	1		SM 2340B	Total/NA
Chloride	6.0		0.20	0.17	mg/L	1		300.0	Total/NA
Nitrate as N	1.4		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	5.5		0.20	0.095	mg/L	1		300.0	Total/NA
Total Organic Carbon - Duplicates	0.54	J	1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	72.9		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-200409-RA-22 — Lab Sample ID: 500-180492-6

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.35	J	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	3.9		2.0	0.50	ug/L	1		6020A	Dissolved
Manganese	1.0	J	2.5	0.79	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	50.3		0.91	0.46	mg/L	1		SM 2340B	Total/NA
Chloride	0.72		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	2.6		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	51.7		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: Trip Blank — Lab Sample ID: 500-180492-7

No Detections.

This Detection Summary does not include radiochemical test results.

Method Summary

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

Job ID: 500-180492-1

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: 500-180492-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
500-180492-1	W-200409-RA-17	Water	04/09/20 10:34	04/10/20 09:45	
500-180492-2	W-200409-RA-18	Water	04/09/20 11:00	04/10/20 09:45	
500-180492-3	W-200409-RA-19	Water	04/09/20 11:26	04/10/20 09:45	
500-180492-4	W-200409-RA-20	Water	04/09/20 12:25	04/10/20 09:45	
500-180492-5	W-200409-RA-21	Water	04/09/20 13:00	04/10/20 09:45	
500-180492-6	W-200409-RA-22	Water	04/09/20 13:53	04/10/20 09:45	
500-180492-7	Trip Blank	Water	04/09/20 00:00	04/10/20 09:45	

Client Sample ID: W-200409-RA-17

Date Collected: 04/09/20 10:34
Date Received: 04/10/20 09:45

Lab Sample ID: 500-180492-1

Matrix: Water

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			04/15/20 22:40	1
Toluene	<0.15		0.50	0.15	ug/L			04/15/20 22:40	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/15/20 22:40	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			04/15/20 22:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*118*		*75 - 126*		*04/15/20 22:40*	*1*
Toluene-d8 (Surr)	*110*		*75 - 120*		*04/15/20 22:40*	*1*
4-Bromofluorobenzene (Surr)	*89*		*72 - 124*		*04/15/20 22:40*	*1*
Dibromofluoromethane	*110*		*75 - 120*		*04/15/20 22:40*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.25		0.79	0.25	ug/L		04/15/20 08:21	04/16/20 01:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5 (Surr)	*71*		*36 - 120*	*04/15/20 08:21*	*04/16/20 01:49*	*1*
2-Fluorobiphenyl (Surr)	*76*		*34 - 110*	*04/15/20 08:21*	*04/16/20 01:49*	*1*
Terphenyl-d14 (Surr)	*98*		*40 - 145*	*04/15/20 08:21*	*04/16/20 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			04/20/20 13:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*91*		*60 - 140*		*04/20/20 13:03*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.089	*	0.099	0.089	ug/L		04/16/20 11:19	04/17/20 12:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCAA	*69*		*25 - 130*	*04/16/20 11:19*	*04/17/20 12:41*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.41**	**J**	1.0	0.23	ug/L		04/13/20 08:23	04/13/20 16:22	1
Copper	**3.7**		2.0	0.50	ug/L		04/13/20 08:23	04/13/20 16:22	1
Iron	**89.8**	**J**	100	46.7	ug/L		04/13/20 08:23	04/13/20 16:22	1
Manganese	**5.1**		2.5	0.79	ug/L		04/13/20 08:23	04/13/20 16:22	1
Zinc	<6.9		20.0	6.9	ug/L		04/13/20 08:23	04/13/20 16:22	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	**297**		0.91	0.46	mg/L		04/10/20 17:49	04/13/20 13:41	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**11.0**		1.0	0.85	mg/L			04/11/20 02:09	5
Nitrate as N	**7.3**		1.0	0.34	mg/L			04/11/20 02:09	5
Sulfate	**11.1**		1.0	0.48	mg/L			04/11/20 02:09	5
Total Organic Carbon - Duplicates	**2.8**		1.0	0.47	mg/L			04/13/20 18:31	1

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

Job ID: 500-180492-1

Client Sample ID: W-200409-RA-17
Date Collected: 04/09/20 10:34
Date Received: 04/10/20 09:45

Lab Sample ID: 500-180492-1
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	245		5.0	3.7	mg/L			04/14/20 10:55	1

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

Job ID: 500-180492-1

Client Sample ID: W-200409-RA-18

Date Collected: 04/09/20 11:00
Date Received: 04/10/20 09:45

Lab Sample ID: 500-180492-2

Matrix: Water

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			04/15/20 23:06	1
Toluene	<0.15		0.50	0.15	ug/L			04/15/20 23:06	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/15/20 23:06	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			04/15/20 23:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*119*		*75 - 126*		*04/15/20 23:06*	*1*
Toluene-d8 (Surr)	*100*		*75 - 120*		*04/15/20 23:06*	*1*
4-Bromofluorobenzene (Surr)	*87*		*72 - 124*		*04/15/20 23:06*	*1*
Dibromofluoromethane	*103*		*75 - 120*		*04/15/20 23:06*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.26		0.85	0.26	ug/L		04/15/20 08:21	04/16/20 02:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5 (Surr)	*63*		*36 - 120*	*04/15/20 08:21*	*04/16/20 02:17*	*1*
2-Fluorobiphenyl (Surr)	*67*		*34 - 110*	*04/15/20 08:21*	*04/16/20 02:17*	*1*
Terphenyl-d14 (Surr)	*99*		*40 - 145*	*04/15/20 08:21*	*04/16/20 02:17*	*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			04/20/20 13:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*102*		*60 - 140*		*04/20/20 13:20*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.093	*	0.10	0.093	ug/L		04/16/20 11:19	04/17/20 13:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCAA	*73*		*25 - 130*	*04/16/20 11:19*	*04/17/20 13:00*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**1.4**		1.0	0.23	ug/L		04/13/20 08:23	04/13/20 16:25	1
Copper	**28.2**		2.0	0.50	ug/L		04/13/20 08:23	04/13/20 16:25	1
Iron	**6900**		100	46.7	ug/L		04/13/20 08:23	04/13/20 16:25	1
Manganese	**292**		2.5	0.79	ug/L		04/13/20 08:23	04/13/20 16:25	1
Zinc	**30.5**		20.0	6.9	ug/L		04/13/20 08:23	04/13/20 16:25	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	**160**		0.91	0.46	mg/L		04/10/20 17:49	04/13/20 13:41	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**0.30**		0.20	0.17	mg/L			04/10/20 20:39	1
Nitrate as N	**0.24**		0.20	0.068	mg/L			04/10/20 20:39	1
Sulfate	**1.4**		0.20	0.095	mg/L			04/10/20 20:39	1
Total Organic Carbon - Duplicates	**0.70**	**J**	1.0	0.47	mg/L			04/13/20 19:08	1

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

Job ID: 500-180492-1

Client Sample ID: W-200409-RA-18
Date Collected: 04/09/20 11:00
Date Received: 04/10/20 09:45

Lab Sample ID: 500-180492-2
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	73.3		5.0	3.7	mg/L			04/14/20 10:42	1

Client Sample ID: W-200409-RA-19

Date Collected: 04/09/20 11:26
Date Received: 04/10/20 09:45

Lab Sample ID: 500-180492-3

Matrix: Water

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			04/15/20 23:32	1
Toluene	<0.15		0.50	0.15	ug/L			04/15/20 23:32	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/15/20 23:32	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			04/15/20 23:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*75 - 126*		*04/15/20 23:32*	*1*
Toluene-d8 (Surr)	*91*		*75 - 120*		*04/15/20 23:32*	*1*
4-Bromofluorobenzene (Surr)	*89*		*72 - 124*		*04/15/20 23:32*	*1*
Dibromofluoromethane	*92*		*75 - 120*		*04/15/20 23:32*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.26		0.85	0.26	ug/L		04/15/20 08:21	04/16/20 02:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5 (Surr)	*65*		*36 - 120*	*04/15/20 08:21*	*04/16/20 02:45*	*1*
2-Fluorobiphenyl (Surr)	*69*		*34 - 110*	*04/15/20 08:21*	*04/16/20 02:45*	*1*
Terphenyl-d14 (Surr)	*82*		*40 - 145*	*04/15/20 08:21*	*04/16/20 02:45*	*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			04/20/20 13:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*103*		*60 - 140*		*04/20/20 13:37*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.092	*	0.10	0.092	ug/L		04/16/20 11:19	04/17/20 13:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCAA	*82*		*25 - 130*	*04/16/20 11:19*	*04/17/20 13:20*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.53**	**J**	1.0	0.23	ug/L		04/13/20 08:23	04/13/20 16:29	1
Copper	**6.1**		2.0	0.50	ug/L		04/13/20 08:23	04/13/20 16:29	1
Iron	**1160**		100	46.7	ug/L		04/13/20 08:23	04/13/20 16:29	1
Manganese	**67.8**		2.5	0.79	ug/L		04/13/20 08:23	04/13/20 16:29	1
Zinc	**11.3**	**J**	20.0	6.9	ug/L		04/13/20 08:23	04/13/20 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	**116**		0.91	0.46	mg/L		04/10/20 17:49	04/13/20 13:41	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**3.9**		0.20	0.17	mg/L			04/10/20 20:52	1
Nitrate as N	**0.61**		0.20	0.068	mg/L			04/10/20 20:52	1
Sulfate	**5.4**		0.20	0.095	mg/L			04/10/20 20:52	1
Total Organic Carbon - Duplicates	**1.3**		1.0	0.47	mg/L			04/13/20 19:24	1

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

Job ID: 500-180492-1

Client Sample ID: W-200409-RA-19
Date Collected: 04/09/20 11:26
Date Received: 04/10/20 09:45

Lab Sample ID: 500-180492-3
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	72.9		5.0	3.7	mg/L			04/14/20 10:48	1

Client Sample ID: W-200409-RA-20

Date Collected: 04/09/20 12:25
Date Received: 04/10/20 09:45

Lab Sample ID: 500-180492-4

Matrix: Water

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			04/15/20 23:59	1
Toluene	<0.15		0.50	0.15	ug/L			04/15/20 23:59	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/15/20 23:59	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			04/15/20 23:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*119*		*75 - 126*		*04/15/20 23:59*	*1*
Toluene-d8 (Surr)	*94*		*75 - 120*		*04/15/20 23:59*	*1*
4-Bromofluorobenzene (Surr)	*89*		*72 - 124*		*04/15/20 23:59*	*1*
Dibromofluoromethane	*101*		*75 - 120*		*04/15/20 23:59*	*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		04/15/20 08:21	04/16/20 03:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5 (Surr)	*61*		*36 - 120*	*04/15/20 08:21*	*04/16/20 03:13*	*1*
2-Fluorobiphenyl (Surr)	*64*		*34 - 110*	*04/15/20 08:21*	*04/16/20 03:13*	*1*
Terphenyl-d14 (Surr)	*99*		*40 - 145*	*04/15/20 08:21*	*04/16/20 03:13*	*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			04/20/20 14:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*103*		*60 - 140*		*04/20/20 14:46*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.088	*	0.097	0.088	ug/L		04/16/20 11:19	04/17/20 13:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCAA	*79*		*25 - 130*	*04/16/20 11:19*	*04/17/20 13:39*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.39**	**J**	1.0	0.23	ug/L		04/13/20 08:23	04/13/20 16:33	1
Copper	**1.4**	**J**	2.0	0.50	ug/L		04/13/20 08:23	04/13/20 16:33	1
Iron	**488**		100	46.7	ug/L		04/13/20 08:23	04/13/20 16:33	1
Manganese	**7.3**		2.5	0.79	ug/L		04/13/20 08:23	04/13/20 16:33	1
Zinc	**8.0**	**J**	20.0	6.9	ug/L		04/13/20 08:23	04/13/20 16:33	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	**85.4**		0.91	0.46	mg/L		04/10/20 17:49	04/13/20 13:41	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**77.3**		4.0	3.4	mg/L			04/11/20 03:12	20
Nitrate as N	**1.6**		0.20	0.068	mg/L			04/10/20 21:05	1
Sulfate	**5.8**		0.20	0.095	mg/L			04/10/20 21:05	1
Total Organic Carbon - Duplicates	<0.47		1.0	0.47	mg/L			04/13/20 19:41	1

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

Job ID: 500-180492-1

Client Sample ID: W-200409-RA-20
Date Collected: 04/09/20 12:25
Date Received: 04/10/20 09:45

Lab Sample ID: 500-180492-4
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	37.1		5.0	3.7	mg/L			04/14/20 11:01	1

Client Sample ID: W-200409-RA-21

Date Collected: 04/09/20 13:00
Date Received: 04/10/20 09:45

Lab Sample ID: 500-180492-5

Matrix: Water

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			04/16/20 00:25	1
Toluene	<0.15		0.50	0.15	ug/L			04/16/20 00:25	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/16/20 00:25	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			04/16/20 00:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*122*		*75 - 126*		*04/16/20 00:25*	*1*
Toluene-d8 (Surr)	*86*		*75 - 120*		*04/16/20 00:25*	*1*
4-Bromofluorobenzene (Surr)	*95*		*72 - 124*		*04/16/20 00:25*	*1*
Dibromofluoromethane	*105*		*75 - 120*		*04/16/20 00:25*	*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		04/15/20 08:21	04/16/20 03:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5 (Surr)	*67*		*36 - 120*	*04/15/20 08:21*	*04/16/20 03:41*	*1*
2-Fluorobiphenyl (Surr)	*70*		*34 - 110*	*04/15/20 08:21*	*04/16/20 03:41*	*1*
Terphenyl-d14 (Surr)	*98*		*40 - 145*	*04/15/20 08:21*	*04/16/20 03:41*	*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			04/20/20 15:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*98*		*60 - 140*		*04/20/20 15:03*	*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		04/16/20 11:19	04/17/20 13:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCAA	*70*		*25 - 130*	*04/16/20 11:19*	*04/17/20 13:58*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.47**	**J**	1.0	0.23	ug/L		04/13/20 08:23	04/13/20 16:36	1
Copper	**1.6**	**J**	2.0	0.50	ug/L		04/13/20 08:23	04/13/20 16:36	1
Iron	<46.7		100	46.7	ug/L		04/13/20 08:23	04/13/20 16:36	1
Manganese	<0.79		2.5	0.79	ug/L		04/13/20 08:23	04/13/20 16:36	1
Zinc	<6.9		20.0	6.9	ug/L		04/13/20 08:23	04/13/20 16:36	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	**83.4**		0.91	0.46	mg/L		04/10/20 17:49	04/13/20 13:41	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**6.0**		0.20	0.17	mg/L			04/10/20 21:17	1
Nitrate as N	**1.4**		0.20	0.068	mg/L			04/10/20 21:17	1
Sulfate	**5.5**		0.20	0.095	mg/L			04/10/20 21:17	1
Total Organic Carbon - Duplicates	**0.54**	**J**	1.0	0.47	mg/L			04/13/20 19:58	1

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

Job ID: 500-180492-1

Client Sample ID: W-200409-RA-21
Date Collected: 04/09/20 13:00
Date Received: 04/10/20 09:45

Lab Sample ID: 500-180492-5
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	72.9		5.0	3.7	mg/L			04/14/20 11:07	1

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

Job ID: 500-180492-1

Client Sample ID: W-200409-RA-22

Date Collected: 04/09/20 13:53
Date Received: 04/10/20 09:45

Lab Sample ID: 500-180492-6

Matrix: Water

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			04/16/20 00:51	1
Toluene	<0.15		0.50	0.15	ug/L			04/16/20 00:51	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/16/20 00:51	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			04/16/20 00:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*122*		*75 - 126*		*04/16/20 00:51*	*1*
Toluene-d8 (Surr)	*92*		*75 - 120*		*04/16/20 00:51*	*1*
4-Bromofluorobenzene (Surr)	*84*		*72 - 124*		*04/16/20 00:51*	*1*
Dibromofluoromethane	*110*		*75 - 120*		*04/16/20 00:51*	*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		04/15/20 08:21	04/16/20 04:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5 (Surr)	*65*		*36 - 120*	*04/15/20 08:21*	*04/16/20 04:09*	*1*
2-Fluorobiphenyl (Surr)	*71*		*34 - 110*	*04/15/20 08:21*	*04/16/20 04:09*	*1*
Terphenyl-d14 (Surr)	*99*		*40 - 145*	*04/15/20 08:21*	*04/16/20 04:09*	*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			04/20/20 15:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*100*		*60 - 140*		*04/20/20 15:20*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.089	*	0.099	0.089	ug/L		04/16/20 11:19	04/17/20 14:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCAA	*80*		*25 - 130*	*04/16/20 11:19*	*04/17/20 14:18*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.35**	**J**	1.0	0.23	ug/L		04/13/20 08:23	04/13/20 16:40	1
Copper	**3.9**		2.0	0.50	ug/L		04/13/20 08:23	04/13/20 16:40	1
Iron	<46.7		100	46.7	ug/L		04/13/20 08:23	04/13/20 16:40	1
Manganese	**1.0**	**J**	2.5	0.79	ug/L		04/13/20 08:23	04/13/20 16:40	1
Zinc	<6.9		20.0	6.9	ug/L		04/13/20 08:23	04/13/20 16:40	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	**50.3**		0.91	0.46	mg/L		04/10/20 17:49	04/13/20 13:41	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**0.72**		0.20	0.17	mg/L			04/10/20 21:30	1
Nitrate as N	**0.41**		0.20	0.068	mg/L			04/10/20 21:30	1
Sulfate	**2.6**		0.20	0.095	mg/L			04/10/20 21:30	1
Total Organic Carbon - Duplicates	**1.7**		1.0	0.47	mg/L			04/13/20 20:47	1

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

Job ID: 500-180492-1

Client Sample ID: W-200409-RA-22
Date Collected: 04/09/20 13:53
Date Received: 04/10/20 09:45

Lab Sample ID: 500-180492-6
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	51.7		5.0	3.7	mg/L			04/14/20 11:16	1

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

Job ID: 500-180492-1

Client Sample ID: Trip Blank

Date Collected: 04/09/20 00:00
Date Received: 04/10/20 09:45

Lab Sample ID: 500-180492-7

Matrix: Water

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			04/15/20 21:47	1
Toluene	<0.15		0.50	0.15	ug/L			04/15/20 21:47	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/15/20 21:47	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			04/15/20 21:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*113*		*75 - 126*		*04/15/20 21:47*	*1*
Toluene-d8 (Surr)	*95*		*75 - 120*		*04/15/20 21:47*	*1*
4-Bromofluorobenzene (Surr)	*99*		*72 - 124*		*04/15/20 21:47*	*1*
Dibromofluoromethane	*96*		*75 - 120*		*04/15/20 21:47*	*1*

Definitions/Glossary

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

Job ID: 500-180492-1

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
*	RPD of the LCS and LCSD exceeds the control limits

Metals

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

General Chemistry

Qualifier	Qualifier Description
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.
¤	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: 500-180492-1

GC/MS VOA

Analysis Batch: 538292

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180492-1	W-200409-RA-17	Total/NA	Water	8260B	
500-180492-2	W-200409-RA-18	Total/NA	Water	8260B	
500-180492-3	W-200409-RA-19	Total/NA	Water	8260B	
500-180492-4	W-200409-RA-20	Total/NA	Water	8260B	
500-180492-5	W-200409-RA-21	Total/NA	Water	8260B	
500-180492-6	W-200409-RA-22	Total/NA	Water	8260B	
500-180492-7	Trip Blank	Total/NA	Water	8260B	
MB 500-538292/6	Method Blank	Total/NA	Water	8260B	
LCS 500-538292/4	Lab Control Sample	Total/NA	Water	8260B	

GC/MS Semi VOA

Prep Batch: 538178

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180492-1	W-200409-RA-17	Total/NA	Water	3510C	
500-180492-2	W-200409-RA-18	Total/NA	Water	3510C	
500-180492-3	W-200409-RA-19	Total/NA	Water	3510C	
500-180492-4	W-200409-RA-20	Total/NA	Water	3510C	
500-180492-5	W-200409-RA-21	Total/NA	Water	3510C	
500-180492-6	W-200409-RA-22	Total/NA	Water	3510C	
MB 500-538178/1-A	Method Blank	Total/NA	Water	3510C	
LCS 500-538178/2-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 500-538178/3-A	Lab Control Sample Dup	Total/NA	Water	3510C	

Analysis Batch: 538277

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180492-1	W-200409-RA-17	Total/NA	Water	8270D	538178
500-180492-2	W-200409-RA-18	Total/NA	Water	8270D	538178
500-180492-3	W-200409-RA-19	Total/NA	Water	8270D	538178
500-180492-4	W-200409-RA-20	Total/NA	Water	8270D	538178
500-180492-5	W-200409-RA-21	Total/NA	Water	8270D	538178
500-180492-6	W-200409-RA-22	Total/NA	Water	8270D	538178
MB 500-538178/1-A	Method Blank	Total/NA	Water	8270D	538178
LCS 500-538178/2-A	Lab Control Sample	Total/NA	Water	8270D	538178
LCSD 500-538178/3-A	Lab Control Sample Dup	Total/NA	Water	8270D	538178

GC VOA

Analysis Batch: 431334

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180492-1	W-200409-RA-17	Total/NA	Water	RSK-175	
500-180492-2	W-200409-RA-18	Total/NA	Water	RSK-175	
500-180492-3	W-200409-RA-19	Total/NA	Water	RSK-175	
500-180492-4	W-200409-RA-20	Total/NA	Water	RSK-175	
500-180492-5	W-200409-RA-21	Total/NA	Water	RSK-175	
500-180492-6	W-200409-RA-22	Total/NA	Water	RSK-175	
MB 240-431334/3	Method Blank	Total/NA	Water	RSK-175	
LCS 240-431334/4	Lab Control Sample	Total/NA	Water	RSK-175	

GC Semi VOA

Prep Batch: 538468

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180492-1	W-200409-RA-17	Total/NA	Water	8151A	
500-180492-2	W-200409-RA-18	Total/NA	Water	8151A	
500-180492-3	W-200409-RA-19	Total/NA	Water	8151A	
500-180492-4	W-200409-RA-20	Total/NA	Water	8151A	
500-180492-5	W-200409-RA-21	Total/NA	Water	8151A	
500-180492-6	W-200409-RA-22	Total/NA	Water	8151A	
MB 500-538468/1-A	Method Blank	Total/NA	Water	8151A	
LCS 500-538468/2-A	Lab Control Sample	Total/NA	Water	8151A	
LCSD 500-538468/3-A	Lab Control Sample Dup	Total/NA	Water	8151A	

Analysis Batch: 538488

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180492-1	W-200409-RA-17	Total/NA	Water	8151A	538468
500-180492-2	W-200409-RA-18	Total/NA	Water	8151A	538468
500-180492-3	W-200409-RA-19	Total/NA	Water	8151A	538468
500-180492-4	W-200409-RA-20	Total/NA	Water	8151A	538468
500-180492-5	W-200409-RA-21	Total/NA	Water	8151A	538468
500-180492-6	W-200409-RA-22	Total/NA	Water	8151A	538468
MB 500-538468/1-A	Method Blank	Total/NA	Water	8151A	538468
LCS 500-538468/2-A	Lab Control Sample	Total/NA	Water	8151A	538468
LCSD 500-538468/3-A	Lab Control Sample Dup	Total/NA	Water	8151A	538468

Metals

Prep Batch: 537686

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180492-1	W-200409-RA-17	Total/NA	Water	3010A	
500-180492-2	W-200409-RA-18	Total/NA	Water	3010A	
500-180492-3	W-200409-RA-19	Total/NA	Water	3010A	
500-180492-4	W-200409-RA-20	Total/NA	Water	3010A	
500-180492-5	W-200409-RA-21	Total/NA	Water	3010A	
500-180492-6	W-200409-RA-22	Total/NA	Water	3010A	

Prep Batch: 537783

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180492-1	W-200409-RA-17	Dissolved	Water	3005A	
500-180492-2	W-200409-RA-18	Dissolved	Water	3005A	
500-180492-3	W-200409-RA-19	Dissolved	Water	3005A	
500-180492-4	W-200409-RA-20	Dissolved	Water	3005A	
500-180492-5	W-200409-RA-21	Dissolved	Water	3005A	
500-180492-6	W-200409-RA-22	Dissolved	Water	3005A	
MB 500-537783/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 500-537783/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 537855

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180492-1	W-200409-RA-17	Total/NA	Water	SM 2340B	537686
500-180492-2	W-200409-RA-18	Total/NA	Water	SM 2340B	537686
500-180492-3	W-200409-RA-19	Total/NA	Water	SM 2340B	537686
500-180492-4	W-200409-RA-20	Total/NA	Water	SM 2340B	537686
500-180492-5	W-200409-RA-21	Total/NA	Water	SM 2340B	537686

Metals (Continued)

Analysis Batch: 537855 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180492-6	W-200409-RA-22	Total/NA	Water	SM 2340B	537686

Analysis Batch: 538014

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180492-1	W-200409-RA-17	Dissolved	Water	6020A	537783
500-180492-2	W-200409-RA-18	Dissolved	Water	6020A	537783
500-180492-3	W-200409-RA-19	Dissolved	Water	6020A	537783
500-180492-4	W-200409-RA-20	Dissolved	Water	6020A	537783
500-180492-5	W-200409-RA-21	Dissolved	Water	6020A	537783
500-180492-6	W-200409-RA-22	Dissolved	Water	6020A	537783
MB 500-537783/1-A	Method Blank	Total Recoverable	Water	6020A	537783
LCS 500-537783/2-A	Lab Control Sample	Total Recoverable	Water	6020A	537783

General Chemistry

Analysis Batch: 537685

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180492-1	W-200409-RA-17	Total/NA	Water	300.0	
500-180492-2	W-200409-RA-18	Total/NA	Water	300.0	
500-180492-3	W-200409-RA-19	Total/NA	Water	300.0	
500-180492-4	W-200409-RA-20	Total/NA	Water	300.0	
500-180492-4	W-200409-RA-20	Total/NA	Water	300.0	
500-180492-5	W-200409-RA-21	Total/NA	Water	300.0	
500-180492-6	W-200409-RA-22	Total/NA	Water	300.0	
MB 500-537685/3	Method Blank	Total/NA	Water	300.0	
LCS 500-537685/4	Lab Control Sample	Total/NA	Water	300.0	
500-180492-1 MS	W-200409-RA-17	Total/NA	Water	300.0	
500-180492-1 MSD	W-200409-RA-17	Total/NA	Water	300.0	
500-180492-2 MS	W-200409-RA-18	Total/NA	Water	300.0	
500-180492-2 MSD	W-200409-RA-18	Total/NA	Water	300.0	

Analysis Batch: 537988

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180492-1	W-200409-RA-17	Total/NA	Water	9060A	
500-180492-2	W-200409-RA-18	Total/NA	Water	9060A	
500-180492-3	W-200409-RA-19	Total/NA	Water	9060A	
500-180492-4	W-200409-RA-20	Total/NA	Water	9060A	
500-180492-5	W-200409-RA-21	Total/NA	Water	9060A	
500-180492-6	W-200409-RA-22	Total/NA	Water	9060A	
MB 500-537988/32	Method Blank	Total/NA	Water	9060A	
MB 500-537988/4	Method Blank	Total/NA	Water	9060A	
LCS 500-537988/33	Lab Control Sample	Total/NA	Water	9060A	
LCS 500-537988/5	Lab Control Sample	Total/NA	Water	9060A	

Analysis Batch: 538053

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180492-1	W-200409-RA-17	Total/NA	Water	SM 2320B	
500-180492-2	W-200409-RA-18	Total/NA	Water	SM 2320B	
500-180492-3	W-200409-RA-19	Total/NA	Water	SM 2320B	
500-180492-4	W-200409-RA-20	Total/NA	Water	SM 2320B	
500-180492-5	W-200409-RA-21	Total/NA	Water	SM 2320B	

General Chemistry (Continued)

Analysis Batch: 538053 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180492-6	W-200409-RA-22	Total/NA	Water	SM 2320B	
MB 500-538053/3	Method Blank	Total/NA	Water	SM 2320B	
LCS 500-538053/4	Lab Control Sample	Total/NA	Water	SM 2320B	
500-180492-6 DU	W-200409-RA-22	Total/NA	Water	SM 2320B	

Surrogate Summary

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

Job ID: 500-180492-1

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

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	TOL	BFB	DBFM
Lab Sample ID	Client Sample ID	(75-126)	(75-120)	(72-124)	(75-120)
500-180492-1	W-200409-RA-17	118	110	89	110
500-180492-2	W-200409-RA-18	119	100	87	103
500-180492-3	W-200409-RA-19	111	91	89	92
500-180492-4	W-200409-RA-20	119	94	89	101
500-180492-5	W-200409-RA-21	122	86	95	105
500-180492-6	W-200409-RA-22	122	92	84	110
500-180492-7	Trip Blank	113	95	99	96
LCS 500-538292/4	Lab Control Sample	107	96	90	98
MB 500-538292/6	Method Blank	120	95	91	104

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)		
		NBZ	FBP	TPHL
Lab Sample ID	Client Sample ID	(36-120)	(34-110)	(40-145)
500-180492-1	W-200409-RA-17	71	76	98
500-180492-2	W-200409-RA-18	63	67	99
500-180492-3	W-200409-RA-19	65	69	82
500-180492-4	W-200409-RA-20	61	64	99
500-180492-5	W-200409-RA-21	67	70	98
500-180492-6	W-200409-RA-22	65	71	99
LCS 500-538178/2-A	Lab Control Sample	66	70	87
LCSD 500-538178/3-A	Lab Control Sample Dup	66	72	95
MB 500-538178/1-A	Method Blank	58	63	88

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)
		TFE1
Lab Sample ID	Client Sample ID	(60-140)
500-180492-1	W-200409-RA-17	91
500-180492-2	W-200409-RA-18	102
500-180492-3	W-200409-RA-19	103
500-180492-4	W-200409-RA-20	103
500-180492-5	W-200409-RA-21	98
500-180492-6	W-200409-RA-22	100
LCS 240-431334/4	Lab Control Sample	103
MB 240-431334/3	Method Blank	103

Surrogate Summary

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

Job ID: 500-180492-1

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)**
500-180492-1	W-200409-RA-17	69
500-180492-2	W-200409-RA-18	73
500-180492-3	W-200409-RA-19	82
500-180492-4	W-200409-RA-20	79
500-180492-5	W-200409-RA-21	70
500-180492-6	W-200409-RA-22	80
LCS 500-538468/2-A	Lab Control Sample	74
LCSD 500-538468/3-A	Lab Control Sample Dup	70
MB 500-538468/1-A	Method Blank	64

Surrogate Legend

DCPAA = DCAA

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

Lab Sample ID: MB 500-538292/6
Matrix: Water
Analysis Batch: 538292

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		0.50	0.15	ug/L			04/15/20 21:01	1
Toluene	<0.15		0.50	0.15	ug/L			04/15/20 21:01	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/15/20 21:01	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			04/15/20 21:01	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*120*		*75 - 126*		*04/15/20 21:01*	*1*
Toluene-d8 (Surr)	*95*		*75 - 120*		*04/15/20 21:01*	*1*
4-Bromofluorobenzene (Surr)	*91*		*72 - 124*		*04/15/20 21:01*	*1*
Dibromofluoromethane	*104*		*75 - 120*		*04/15/20 21:01*	*1*

Lab Sample ID: LCS 500-538292/4
Matrix: Water
Analysis Batch: 538292

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	55.6		ug/L		111	70 - 120
Toluene	50.0	54.7		ug/L		109	70 - 125
Ethylbenzene	50.0	56.2		ug/L		112	70 - 123
Xylenes, Total	100	106		ug/L		106	70 - 125

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*75 - 126*
Toluene-d8 (Surr)	*96*		*75 - 120*
4-Bromofluorobenzene (Surr)	*90*		*72 - 124*
Dibromofluoromethane	*98*		*75 - 120*

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

Lab Sample ID: MB 500-538178/1-A
Matrix: Water
Analysis Batch: 538277

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 538178

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.25		0.80	0.25	ug/L		04/15/20 08:21	04/16/20 01:21	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5 (Surr)	*58*		*36 - 120*	*04/15/20 08:21*	*04/16/20 01:21*	*1*
2-Fluorobiphenyl (Surr)	*63*		*34 - 110*	*04/15/20 08:21*	*04/16/20 01:21*	*1*
Terphenyl-d14 (Surr)	*88*		*40 - 145*	*04/15/20 08:21*	*04/16/20 01:21*	*1*

Lab Sample ID: LCS 500-538178/2-A
Matrix: Water
Analysis Batch: 538277

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 538178

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Naphthalene	32.0	18.7		ug/L		58	36 - 110

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

Lab Sample ID: LCS 500-538178/2-A
Matrix: Water
Analysis Batch: 538277

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 538178

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Nitrobenzene-d5 (Surr)	66		36 - 120
2-Fluorobiphenyl (Surr)	70		34 - 110
Terphenyl-d14 (Surr)	87		40 - 145

Lab Sample ID: LCSD 500-538178/3-A
Matrix: Water
Analysis Batch: 538277

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 538178

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Naphthalene			32.0	16.7		ug/L		52	36 - 110	11	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Nitrobenzene-d5 (Surr)	66		36 - 120
2-Fluorobiphenyl (Surr)	72		34 - 110
Terphenyl-d14 (Surr)	95		40 - 145

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 240-431334/3
Matrix: Water
Analysis Batch: 431334

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			04/20/20 10:12	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	103		60 - 140		04/20/20 10:12	1

Lab Sample ID: LCS 240-431334/4
Matrix: Water
Analysis Batch: 431334

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Methane			475	467		ug/L		98	80 - 120		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,1,1-Trifluoroethane	103		60 - 140

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 500-538468/1-A
Matrix: Water
Analysis Batch: 538488

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 538468

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.090		0.10	0.090	ug/L		04/16/20 11:19	04/17/20 08:29	1

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

Lab Sample ID: MB 500-538468/1-A
Matrix: Water
Analysis Batch: 538488

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 538468

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCAA	64		25 - 130	04/16/20 11:19	04/17/20 08:29	1

Lab Sample ID: LCS 500-538468/2-A
Matrix: Water
Analysis Batch: 538488

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 538468

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Pentachlorophenol	2.53	1.74		ug/L		69	40 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
DCAA	74		25 - 130

Lab Sample ID: LCSD 500-538468/3-A
Matrix: Water
Analysis Batch: 538488

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 538468

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Pentachlorophenol	2.53	2.28	*	ug/L		90	40 - 122	27	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
DCAA	70		25 - 130

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 500-537783/1-A
Matrix: Water
Analysis Batch: 538014

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 537783

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.23		1.0	0.23	ug/L		04/13/20 08:23	04/13/20 16:14	1
Copper	<0.50		2.0	0.50	ug/L		04/13/20 08:23	04/13/20 16:14	1
Iron	<46.7		100	46.7	ug/L		04/13/20 08:23	04/13/20 16:14	1
Manganese	<0.79		2.5	0.79	ug/L		04/13/20 08:23	04/13/20 16:14	1
Zinc	<6.9		20.0	6.9	ug/L		04/13/20 08:23	04/13/20 16:14	1

Lab Sample ID: LCS 500-537783/2-A
Matrix: Water
Analysis Batch: 538014

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 537783

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	96.11		ug/L		96	80 - 120
Copper	250	259.3		ug/L		104	80 - 120
Iron	1000	1028		ug/L		103	80 - 120
Manganese	500	498.5		ug/L		100	80 - 120
Zinc	500	512.1		ug/L		102	80 - 120

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 500-537685/3
Matrix: Water
Analysis Batch: 537685

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			04/10/20 17:42	1
Nitrate as N	<0.068		0.20	0.068	mg/L			04/10/20 17:42	1
Sulfate	<0.095		0.20	0.095	mg/L			04/10/20 17:42	1

Lab Sample ID: LCS 500-537685/4
Matrix: Water
Analysis Batch: 537685

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	2.99		mg/L		100	90 - 110
Nitrate as N	2.00	2.01		mg/L		100	90 - 110
Sulfate	5.00	5.18		mg/L		104	90 - 110

Lab Sample ID: 500-180492-1 MS
Matrix: Water
Analysis Batch: 537685

Client Sample ID: W-200409-RA-17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	11.0		5.00	15.96		mg/L		100	80 - 120
Nitrate as N	7.3		5.00	12.38		mg/L		101	80 - 120
Sulfate	11.1		12.5	24.42		mg/L		106	80 - 120

Lab Sample ID: 500-180492-1 MSD
Matrix: Water
Analysis Batch: 537685

Client Sample ID: W-200409-RA-17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	11.0		5.00	15.95		mg/L		100	80 - 120	0	20
Nitrate as N	7.3		5.00	12.40		mg/L		102	80 - 120	0	20
Sulfate	11.1		12.5	24.36		mg/L		106	80 - 120	0	20

Lab Sample ID: 500-180492-2 MS
Matrix: Water
Analysis Batch: 537685

Client Sample ID: W-200409-RA-18
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	0.30		1.00	1.25		mg/L		95	80 - 120
Nitrate as N	0.24		1.00	1.19		mg/L		95	80 - 120
Sulfate	1.4		2.50	4.02		mg/L		106	80 - 120

Lab Sample ID: 500-180492-2 MSD
Matrix: Water
Analysis Batch: 537685

Client Sample ID: W-200409-RA-18
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	0.30		1.00	1.28		mg/L		99	80 - 120	3	20
Nitrate as N	0.24		1.00	1.22		mg/L		97	80 - 120	2	20
Sulfate	1.4		2.50	4.06		mg/L		108	80 - 120	1	20

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

Job ID: 500-180492-1

Method: 9060A - Organic Carbon, Total (TOC)

Lab Sample ID: MB 500-537988/32
Matrix: Water
Analysis Batch: 537988

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			04/13/20 20:14	1

Lab Sample ID: MB 500-537988/4
Matrix: Water
Analysis Batch: 537988

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			04/13/20 13:10	1

Lab Sample ID: LCS 500-537988/33
Matrix: Water
Analysis Batch: 537988

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	9.96		mg/L		100	80 - 120

Lab Sample ID: LCS 500-537988/5
Matrix: Water
Analysis Batch: 537988

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	10.00		mg/L		100	80 - 120

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 500-538053/3
Matrix: Water
Analysis Batch: 538053

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			04/14/20 10:11	1

Lab Sample ID: LCS 500-538053/4
Matrix: Water
Analysis Batch: 538053

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	100	98.64		mg/L		99	90 - 110

Lab Sample ID: 500-180492-6 DU
Matrix: Water
Analysis Batch: 538053

Client Sample ID: W-200409-RA-22
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Alkalinity	51.7		52.14		mg/L		0.8	20

Lab Chronicle

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

Job ID: 500-180492-1

Client Sample ID: W-200409-RA-17

Lab Sample ID: 500-180492-1
Date Collected: 04/09/20 10:34
Matrix: Water
Date Received: 04/10/20 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	538292	04/15/20 22:40	JDD	TAL CHI
Total/NA	Prep	3510C			538178	04/15/20 08:21	BSO	TAL CHI
Total/NA	Analysis	8270D		1	538277	04/16/20 01:49	NRJ	TAL CHI
Total/NA	Analysis	RSK-175		1	431334	04/20/20 13:03	JBN	TAL CAN
Total/NA	Prep	8151A			538468	04/16/20 11:19	BSO	TAL CHI
Total/NA	Analysis	8151A		1	538488	04/17/20 12:41	JBJ	TAL CHI
Dissolved	Prep	3005A			537783	04/13/20 08:23	LMN	TAL CHI
Dissolved	Analysis	6020A		1	538014	04/13/20 16:22	FXG	TAL CHI
Total/NA	Prep	3010A			537686	04/10/20 17:49	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	537855	04/13/20 13:41	JEF	TAL CHI
Total/NA	Analysis	300.0		5	537685	04/11/20 02:09	EAT	TAL CHI
Total/NA	Analysis	9060A		1	537988	04/13/20 18:31	JJB	TAL CHI
Total/NA	Analysis	SM 2320B		1	538053	04/14/20 10:55	SMO	TAL CHI

Client Sample ID: W-200409-RA-18

Lab Sample ID: 500-180492-2
Date Collected: 04/09/20 11:00
Matrix: Water
Date Received: 04/10/20 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	538292	04/15/20 23:06	JDD	TAL CHI
Total/NA	Prep	3510C			538178	04/15/20 08:21	BSO	TAL CHI
Total/NA	Analysis	8270D		1	538277	04/16/20 02:17	NRJ	TAL CHI
Total/NA	Analysis	RSK-175		1	431334	04/20/20 13:20	JBN	TAL CAN
Total/NA	Prep	8151A			538468	04/16/20 11:19	BSO	TAL CHI
Total/NA	Analysis	8151A		1	538488	04/17/20 13:00	JBJ	TAL CHI
Dissolved	Prep	3005A			537783	04/13/20 08:23	LMN	TAL CHI
Dissolved	Analysis	6020A		1	538014	04/13/20 16:25	FXG	TAL CHI
Total/NA	Prep	3010A			537686	04/10/20 17:49	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	537855	04/13/20 13:41	JEF	TAL CHI
Total/NA	Analysis	300.0		1	537685	04/10/20 20:39	EAT	TAL CHI
Total/NA	Analysis	9060A		1	537988	04/13/20 19:08	JJB	TAL CHI
Total/NA	Analysis	SM 2320B		1	538053	04/14/20 10:42	SMO	TAL CHI

Client Sample ID: W-200409-RA-19

Lab Sample ID: 500-180492-3
Date Collected: 04/09/20 11:26
Matrix: Water
Date Received: 04/10/20 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	538292	04/15/20 23:32	JDD	TAL CHI
Total/NA	Prep	3510C			538178	04/15/20 08:21	BSO	TAL CHI
Total/NA	Analysis	8270D		1	538277	04/16/20 02:45	NRJ	TAL CHI
Total/NA	Analysis	RSK-175		1	431334	04/20/20 13:37	JBN	TAL CAN
Total/NA	Prep	8151A			538468	04/16/20 11:19	BSO	TAL CHI
Total/NA	Analysis	8151A		1	538488	04/17/20 13:20	JBJ	TAL CHI

Lab Chronicle

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

Job ID: 500-180492-1

Client Sample ID: W-200409-RA-19

Lab Sample ID: 500-180492-3
Date Collected: 04/09/20 11:26
Matrix: Water
Date Received: 04/10/20 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			537783	04/13/20 08:23	LMN	TAL CHI
Dissolved	Analysis	6020A		1	538014	04/13/20 16:29	FXG	TAL CHI
Total/NA	Prep	3010A			537686	04/10/20 17:49	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	537855	04/13/20 13:41	JEF	TAL CHI
Total/NA	Analysis	300.0		1	537685	04/10/20 20:52	EAT	TAL CHI
Total/NA	Analysis	9060A		1	537988	04/13/20 19:24	JJB	TAL CHI
Total/NA	Analysis	SM 2320B		1	538053	04/14/20 10:48	SMO	TAL CHI

Client Sample ID: W-200409-RA-20

Lab Sample ID: 500-180492-4
Date Collected: 04/09/20 12:25
Matrix: Water
Date Received: 04/10/20 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	538292	04/15/20 23:59	JDD	TAL CHI
Total/NA	Prep	3510C			538178	04/15/20 08:21	BSO	TAL CHI
Total/NA	Analysis	8270D		1	538277	04/16/20 03:13	NRJ	TAL CHI
Total/NA	Analysis	RSK-175		1	431334	04/20/20 14:46	JBN	TAL CAN
Total/NA	Prep	8151A			538468	04/16/20 11:19	BSO	TAL CHI
Total/NA	Analysis	8151A		1	538488	04/17/20 13:39	JBJ	TAL CHI
Dissolved	Prep	3005A			537783	04/13/20 08:23	LMN	TAL CHI
Dissolved	Analysis	6020A		1	538014	04/13/20 16:33	FXG	TAL CHI
Total/NA	Prep	3010A			537686	04/10/20 17:49	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	537855	04/13/20 13:41	JEF	TAL CHI
Total/NA	Analysis	300.0		1	537685	04/10/20 21:05	EAT	TAL CHI
Total/NA	Analysis	300.0		20	537685	04/11/20 03:12	EAT	TAL CHI
Total/NA	Analysis	9060A		1	537988	04/13/20 19:41	JJB	TAL CHI
Total/NA	Analysis	SM 2320B		1	538053	04/14/20 11:01	SMO	TAL CHI

Client Sample ID: W-200409-RA-21

Lab Sample ID: 500-180492-5
Date Collected: 04/09/20 13:00
Matrix: Water
Date Received: 04/10/20 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	538292	04/16/20 00:25	JDD	TAL CHI
Total/NA	Prep	3510C			538178	04/15/20 08:21	BSO	TAL CHI
Total/NA	Analysis	8270D		1	538277	04/16/20 03:41	NRJ	TAL CHI
Total/NA	Analysis	RSK-175		1	431334	04/20/20 15:03	JBN	TAL CAN
Total/NA	Prep	8151A			538468	04/16/20 11:19	BSO	TAL CHI
Total/NA	Analysis	8151A		1	538488	04/17/20 13:58	JBJ	TAL CHI
Dissolved	Prep	3005A			537783	04/13/20 08:23	LMN	TAL CHI
Dissolved	Analysis	6020A		1	538014	04/13/20 16:36	FXG	TAL CHI
Total/NA	Prep	3010A			537686	04/10/20 17:49	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	537855	04/13/20 13:41	JEF	TAL CHI
Total/NA	Analysis	300.0		1	537685	04/10/20 21:17	EAT	TAL CHI

Lab Chronicle

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

Job ID: 500-180492-1

Client Sample ID: W-200409-RA-21

Lab Sample ID: 500-180492-5

Date Collected: 04/09/20 13:00

Matrix: Water

Date Received: 04/10/20 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060A		1	537988	04/13/20 19:58	JJB	TAL CHI
Total/NA	Analysis	SM 2320B		1	538053	04/14/20 11:07	SMO	TAL CHI

Client Sample ID: W-200409-RA-22

Lab Sample ID: 500-180492-6

Date Collected: 04/09/20 13:53

Matrix: Water

Date Received: 04/10/20 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	538292	04/16/20 00:51	JDD	TAL CHI
Total/NA	Prep	3510C			538178	04/15/20 08:21	BSO	TAL CHI
Total/NA	Analysis	8270D		1	538277	04/16/20 04:09	NRJ	TAL CHI
Total/NA	Analysis	RSK-175		1	431334	04/20/20 15:20	JBN	TAL CAN
Total/NA	Prep	8151A			538468	04/16/20 11:19	BSO	TAL CHI
Total/NA	Analysis	8151A		1	538488	04/17/20 14:18	JBJ	TAL CHI
Dissolved	Prep	3005A			537783	04/13/20 08:23	LMN	TAL CHI
Dissolved	Analysis	6020A		1	538014	04/13/20 16:40	FXG	TAL CHI
Total/NA	Prep	3010A			537686	04/10/20 17:49	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	537855	04/13/20 13:41	JEF	TAL CHI
Total/NA	Analysis	300.0		1	537685	04/10/20 21:30	EAT	TAL CHI
Total/NA	Analysis	9060A		1	537988	04/13/20 20:47	JJB	TAL CHI
Total/NA	Analysis	SM 2320B		1	538053	04/14/20 11:16	SMO	TAL CHI

Client Sample ID: Trip Blank

Lab Sample ID: 500-180492-7

Date Collected: 04/09/20 00:00

Matrix: Water

Date Received: 04/10/20 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	538292	04/15/20 21:47	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.
Job ID: 500-180492-1
Project/Site: Penta Wood 086165

Laboratory: Eurofins TestAmerica, Chicago

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	999580010	08-31-20

Laboratory: Eurofins TestAmerica, Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-21
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-20
Georgia	State	4062	02-23-21
Illinois	NELAP	004498	07-31-20
Iowa	State	421	06-01-21
Kansas	NELAP	E-10336	04-30-20
Kentucky (UST)	State	112225	02-23-21
Kentucky (WW)	State	KY98016	12-31-20
Minnesota	NELAP	OH00048	12-31-20
Minnesota (Petrofund)	State	3506	08-01-21
New Jersey	NELAP	OH001	06-30-20
New York	NELAP	10975	03-31-20 *
Ohio VAP	State	CL0024	06-05-21
Oregon	NELAP	4062	02-24-21
Pennsylvania	NELAP	68-00340	08-31-20
Texas	NELAP	T104704517-18-10	08-31-20
USDA	US Federal Programs	P330-18-00281	09-17-21
Virginia	NELAP	010101	09-14-20
Washington	State	C971	01-12-21
West Virginia DEP	State	210	12-31-20

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

Chain of Custody Record

382171

eurofins | Environment Testing TestAmerica

Address: _____

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TAL-8210

Client Contact	Project Manager: Ree	Site Contact: Hamot	Date: 4/9/2020	COC No:
Company Name: GHD	Tel/Email:	Lab Contact:	Carrier:	1 of 1 COCs
Address: 1801 Old Highway 8 NW	Analysis Turnaround Time			Sampler:
City/State/Zip: St. Paul MN 55112	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: 651-639-0913	TAT if different from Below _____			Walk-in Client:
Fax:	☐ 2 weeks			Lab Sampling:
Project Name: Penta Wood	☐ 1 week			
Site:	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			500-180492

500-180492 COC

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	PCP	BTEX	Naphthalene	Alk, Cl, Hardness, Nitrate	Sulfide, TOC, Methane	Select dissolved Metals	Sample Specific Notes:
1 W-200409-RA-17	4/9/20	1034	G	WG	15			✓	✓	✓	✓	✓	✓	* arsenic, copper, iron, manganese, zinc - metals were field filtered
2 W-200409-RA-18		1100	G	WG	15			✓	✓	✓	✓	✓	✓	
3 W-200409-RA-19		1126	G	WG	15			✓	✓	✓	✓	✓	✓	
4 W-200409-RA-20		1225	G	WG	15			✓	✓	✓	✓	✓	✓	
5 W-200409-RA-21		1300	G	WG	15			✓	✓	✓	✓	✓	✓	
6 W-200409-RA-22	↓	1353	G	WG	15			✓	✓	✓	✓	✓	✓	
7 trip blank					2				✓					

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

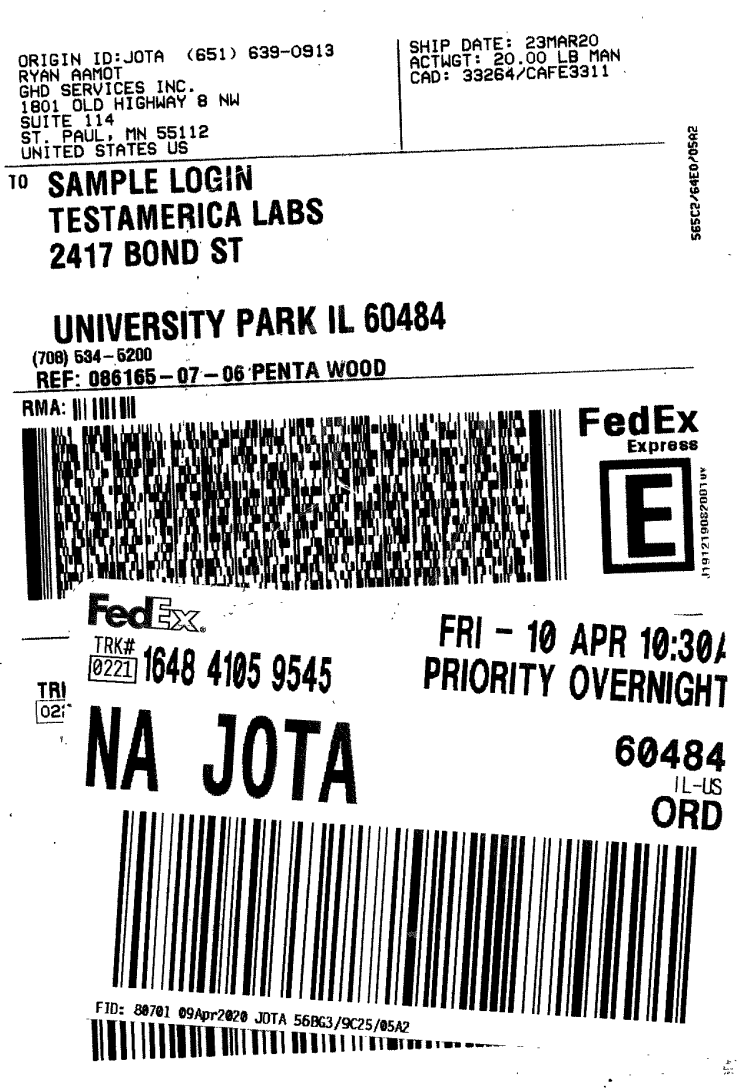
Special Instructions/QC Requirements & Comments:

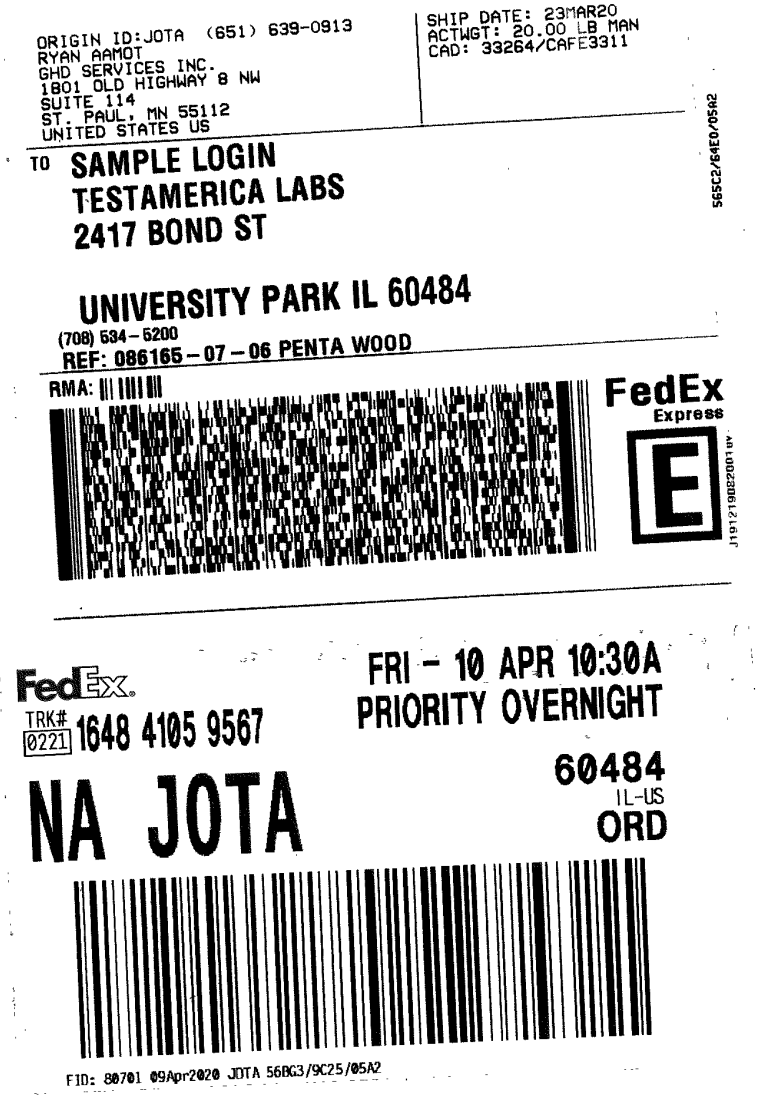
4.8, 5.0, 3.4

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:	Cooler Temp. (°C): Obs'd: 1	Corr'd:	Therm ID No.:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	GHD	4/9/20 1500			
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
				TA-CHT	4/10/20 0945


ORIGIN ID:JOTA (651) 639-0913
RYAN AAMOT
GHD SERVICES INC.
1801 OLD HIGHWAY 8 NW
SUITE 114
ST. PAUL, MN 55112
UNITED STATES US
SHIP DATE: 23MAR20
ACTWGT: 20.00 LB MAN
CAD: 33264/CAFE3311
E0/05A2
500-180492 Waybill
TO SAMPLE LOGIN
TESTAMERICA LABS
2417 BOND ST
UNIVERSITY PARK IL 60484
(708) 534-6200
REF: 086165-07-06 PENTA WOOD
RMA:
FedEx Express
J191219082001uv
FedEx
TRK# 0221 1648 4105 9556
FRI - 10 APR 10:30A
PRIORITY OVERNIGHT
NA JOTA
60484
IL-US
ORD


ORIGIN ID:JOTA (651) 639-0913
RYAN AAMOT
GHD SERVICES INC.
1801 OLD HIGHWAY 8 NW
SUITE 114
ST. PAUL, MN 55112
UNITED STATES US
SHIP DATE: 23MAR20
ACTWGT: 20.00 LB MAN
CAD: 33264/CAFE3311
565C2/64E0/05A2
TO SAMPLE LOGIN
TESTAMERICA LABS
2417 BOND ST
UNIVERSITY PARK IL 60484
(708) 534-6200
REF: 086165-07-06 PENTA WOOD
RMA:
FedEx Express
J191219082001uv
FedEx
TRK# 0221 1648 4105 9545
FRI - 10 APR 10:30A
PRIORITY OVERNIGHT
NA JOTA
60484
IL-US
ORD
FID: 80701 09Apr2020 JOTA 56BG3/9C25/05A2


ORIGIN ID:JOTA (651) 639-0913
RYAN AAMOT
GHD SERVICES INC.
1801 OLD HIGHWAY 8 NW
SUITE 114
ST. PAUL, MN 55112
UNITED STATES US
SHIP DATE: 23MAR20
ACTWGT: 20.00 LB MAN
CAD: 33264/CAFE3311
TO SAMPLE LOGIN
TESTAMERICA LABS
2417 BOND ST
UNIVERSITY PARK IL 60484
(708) 534-6200
REF: 086165-07-06 PENTA WOOD
RMA:
FedEx Express
FedEx
TRK# 0221 1648 4105 9567
FRI - 10 APR 10:30A
PRIORITY OVERNIGHT
NA JOTA
60484
IL-US
ORD
FID: 80701 09Apr2020 JOTA 56BG3/9C25/05A2

Eurofins TestAmerica, Chicago
2417 Bond Street
University Park, IL 60484
Phone: 708-534-5200 Fax: 708-534-5211

3/9/4.6

Chain of Custody Record

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Client Information (Sub Contract Lab)	Sampler:	Lab PM: Wright, Richard	Carrier Tracking No(s):	COC No: 500-134001.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: richard.wright@testamericainc.com	State of Origin: Wisconsin	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - Wisconsin		Job #: 500-180492-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 4/23/2020			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Penta Wood 086165	Project #: 50013796			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	RSK_175/ (MOD) Methane	Total Number of containers	Special Instructions/Note:
			Preservation Code:						RSK
W-200409-RA-17 (500-180492-1)	4/9/20	10:34 Central		Water			X	3	WI
W-200409-RA-18 (500-180492-2)	4/9/20	11:00 Central		Water			X	3	WI
W-200409-RA-19 (500-180492-3)	4/9/20	11:26 Central		Water			X	3	WI
W-200409-RA-20 (500-180492-4)	4/9/20	12:25 Central		Water			X	3	WI
W-200409-RA-21 (500-180492-5)	4/9/20	13:00 Central		Water			X	3	WI
W-200409-RA-22 (500-180492-6)	4/9/20	13:53 Central		Water			X	3	WI

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica 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/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

Possible Hazard Identification	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)***
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by: Stephanie Hernandez	4/10/20 1500	TA-CHI		4/11-20 930	EMC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Eurofins TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # : _____

Client EPA Chicago Site Name _____

Cooler Received on 4-11-20 Opened on 4-11-20

Cooler unpacked by: [illegible]

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # 114 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-10 (CF **+0.7** °C) Observed Cooler Temp. 3.7 °C Corrected Cooler Temp. 4.4 °C

IR GUN #IR-11 (CF **+0.9**°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
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# **HC902937**
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: 500-180492-1

Login Number: 180492
List Number: 1
Creator: Scott, Sherri L

List Source: Eurofins TestAmerica, Chicago

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	4.8,5.0,3.4
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	

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

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

Laboratory Job ID: 500-180585-1
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:
4/28/2020 9:12:59 AM

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

Table of Contents

Job ID: 500-180585-1

Laboratory: Eurofins TestAmerica, Chicago

Narrative

Job Narrative
500-180585-1

Receipt
The samples were received on 4/14/2020 8:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 4.1º C, 4.2º C, 5.4º C, 5.8º C and 5.8º C.

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

GC/MS Semi VOA
Method 8270D: The following sample(s) was diluted due to the abundance of non-target analytes: Pentachlorophenol. Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or 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 8151A: The following samples required a dilution due to the nature of the sample matrix: W-200413-RA-24 (500-180585-2) and W-200413-RA-25 (500-180585-3). 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 8151A: Surrogate recovery for the following sample was outside control limits: W-200413-RA-26 (500-180585-4). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

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: 500-180585-1

Client Sample ID: W-200413-RA-23 — Lab Sample ID: 500-180585-1

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.23	J B	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	2.7		2.0	0.50	ug/L	1		6020A	Dissolved
Manganese	3.9		2.5	0.79	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	30.6		0.91	0.46	mg/L	1		SM 2340B	Total/NA
Chloride	0.67		0.20	0.17	mg/L	1		300.0	Total/NA
Nitrate as N	0.69		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	4.4		0.20	0.095	mg/L	1		300.0	Total/NA
Alkalinity	31.5		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-200413-RA-24 — Lab Sample ID: 500-180585-2

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methane	0.25	J	1.0	0.17	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	270		9.7	8.7	ug/L	100		8151A	Total/NA
Arsenic	0.29	J B	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	5.4		2.0	0.50	ug/L	1		6020A	Dissolved
Manganese	24.1		2.5	0.79	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	102		0.91	0.46	mg/L	1		SM 2340B	Total/NA
Chloride	0.98		0.20	0.17	mg/L	1		300.0	Total/NA
Nitrate as N	1.5		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	3.3		0.20	0.095	mg/L	1		300.0	Total/NA
Total Organic Carbon - Duplicates	1.4		1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	97.3		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-200413-RA-25 — Lab Sample ID: 500-180585-3

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.60		0.50	0.15	ug/L	1		8260B	Total/NA
Ethylbenzene	0.72		0.50	0.18	ug/L	1		8260B	Total/NA
Xylenes, Total	7.0		1.0	0.22	ug/L	1		8260B	Total/NA
Naphthalene	22		7.9	2.4	ug/L	10		8270D	Total/NA
Methane	13		1.0	0.17	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	6200		520	470	ug/L	4000		8151A	Total/NA
Arsenic	0.92	J B	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	1.1	J	2.0	0.50	ug/L	1		6020A	Dissolved
Iron	17000		100	46.7	ug/L	1		6020A	Dissolved
Manganese	7190	B	12.5	4.0	ug/L	5		6020A	Dissolved
Hardness as calcium carbonate	286		0.91	0.46	mg/L	1		SM 2340B	Total/NA
Chloride	27.0		2.0	1.7	mg/L	10		300.0	Total/NA
Sulfate	23.8		2.0	0.95	mg/L	10		300.0	Total/NA
Total Organic Carbon - Duplicates	42.5		2.0	0.94	mg/L	2		9060A	Total/NA
Alkalinity	253		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-200413-RA-26 — Lab Sample ID: 500-180585-4

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methane	0.21	J	1.0	0.17	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	6.0		0.96	0.87	ug/L	10		8151A	Total/NA
Arsenic	0.23	J B	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	18.7		2.0	0.50	ug/L	1		6020A	Dissolved
Manganese	2.6		2.5	0.79	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	207		0.91	0.46	mg/L	1		SM 2340B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Chicago

Client Sample ID: W-200413-RA-26 (Continued) — Lab Sample ID: 500-180585-4

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Chloride	0.33		0.20	0.17	mg/L	1		300.0	Total/NA
Nitrate as N	0.42		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	1.1		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	210		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-200413-RA-27 — Lab Sample ID: 500-180585-5

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methane	0.22	J	1.0	0.17	ug/L	1		RSK-175	Total/NA
Pentachlorophenol	0.86		0.098	0.088	ug/L	1		8151A	Total/NA
Arsenic	0.30	J B	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	4.6		2.0	0.50	ug/L	1		6020A	Dissolved
Iron	2180		100	46.7	ug/L	1		6020A	Dissolved
Manganese	162		2.5	0.79	ug/L	1		6020A	Dissolved
Zinc	27.3		20.0	6.9	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	66.1		0.91	0.46	mg/L	1		SM 2340B	Total/NA
Chloride	0.46		0.20	0.17	mg/L	1		300.0	Total/NA
Nitrate as N	3.7		0.20	0.068	mg/L	1		300.0	Total/NA
Sulfate	14.2		1.0	0.48	mg/L	5		300.0	Total/NA
Total Organic Carbon - Duplicates	5.6		1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	44.9		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-200413-RA-28 — Lab Sample ID: 500-180585-6

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Pentachlorophenol	0.98		0.097	0.087	ug/L	1		8151A	Total/NA
Arsenic	0.30	J B	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	9.1		2.0	0.50	ug/L	1		6020A	Dissolved
Manganese	2.2	J	2.5	0.79	ug/L	1		6020A	Dissolved
Hardness as calcium carbonate	96.0		0.91	0.46	mg/L	1		SM 2340B	Total/NA
Chloride	2.2		0.20	0.17	mg/L	1		300.0	Total/NA
Nitrate as N	4.5		0.40	0.14	mg/L	2		300.0	Total/NA
Sulfate	20.7		1.0	0.48	mg/L	5		300.0	Total/NA
Total Organic Carbon - Duplicates	2.2		1.0	0.47	mg/L	1		9060A	Total/NA
Alkalinity	72.7		5.0	3.7	mg/L	1		SM 2320B	Total/NA

Client Sample ID: W-200413-RA-29 — Lab Sample ID: 500-180585-7

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.32	J B	1.0	0.23	ug/L	1		6020A	Dissolved
Copper	13.9		2.0	0.50	ug/L	1		6020A	Dissolved
Iron	214		100	46.7	ug/L	1		6020A	Dissolved
Manganese	3.2		2.5	0.79	ug/L	1		6020A	Dissolved
Zinc	669		20.0	6.9	ug/L	1		6020A	Dissolved

Client Sample ID: Trip Blank — Lab Sample ID: 500-180585-8

No Detections.

This Detection Summary does not include radiochemical test results.

Method Summary

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

Job ID: 500-180585-1

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: 500-180585-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
500-180585-1	W-200413-RA-23	Water	04/13/20 10:12	04/14/20 08:00	
500-180585-2	W-200413-RA-24	Water	04/13/20 10:50	04/14/20 08:00	
500-180585-3	W-200413-RA-25	Water	04/13/20 11:35	04/14/20 08:00	
500-180585-4	W-200413-RA-26	Water	04/13/20 12:45	04/14/20 08:00	
500-180585-5	W-200413-RA-27	Water	04/13/20 13:32	04/14/20 08:00	
500-180585-6	W-200413-RA-28	Water	04/13/20 14:20	04/14/20 08:00	
500-180585-7	W-200413-RA-29	Water	04/13/20 14:20	04/14/20 08:00	
500-180585-8	Trip Blank	Water	04/13/20 00:00	04/14/20 08:00	

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

Job ID: 500-180585-1

Client Sample ID: W-200413-RA-23

Date Collected: 04/13/20 10:12
Date Received: 04/14/20 08:00

Lab Sample ID: 500-180585-1

Matrix: Water

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			04/17/20 05:38	1
Toluene	<0.15		0.50	0.15	ug/L			04/17/20 05:38	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/17/20 05:38	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			04/17/20 05:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*75 - 126*		*04/17/20 05:38*	*1*
Toluene-d8 (Surr)	*98*		*75 - 120*		*04/17/20 05:38*	*1*
4-Bromofluorobenzene (Surr)	*88*		*72 - 124*		*04/17/20 05:38*	*1*
Dibromofluoromethane	*92*		*75 - 120*		*04/17/20 05:38*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.25		0.79	0.25	ug/L		04/17/20 07:55	04/17/20 16:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5 (Surr)	*68*		*36 - 120*	*04/17/20 07:55*	*04/17/20 16:57*	*1*
2-Fluorobiphenyl (Surr)	*84*		*34 - 110*	*04/17/20 07:55*	*04/17/20 16:57*	*1*
Terphenyl-d14 (Surr)	*142*		*40 - 145*	*04/17/20 07:55*	*04/17/20 16:57*	*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			04/22/20 11:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*102*		*60 - 140*		*04/22/20 11:13*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.092		0.10	0.092	ug/L		04/17/20 10:34	04/20/20 14:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCAA	*91*		*25 - 130*	*04/17/20 10:34*	*04/20/20 14:25*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.23**	**J B**	1.0	0.23	ug/L		04/14/20 17:10	04/15/20 13:23	1
Copper	**2.7**		2.0	0.50	ug/L		04/14/20 17:10	04/15/20 13:23	1
Iron	<46.7		100	46.7	ug/L		04/14/20 17:10	04/15/20 13:23	1
Manganese	**3.9**		2.5	0.79	ug/L		04/14/20 17:10	04/15/20 13:23	1
Zinc	<6.9		20.0	6.9	ug/L		04/14/20 17:10	04/15/20 13:23	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	**30.6**		0.91	0.46	mg/L		04/14/20 17:09	04/15/20 13:41	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**0.67**		0.20	0.17	mg/L			04/14/20 17:25	1
Nitrate as N	**0.69**		0.20	0.068	mg/L			04/14/20 17:25	1
Sulfate	**4.4**		0.20	0.095	mg/L			04/14/20 17:25	1
Total Organic Carbon - Duplicates	<0.47		1.0	0.47	mg/L			04/16/20 18:20	1

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

Job ID: 500-180585-1

Client Sample ID: W-200413-RA-23
Date Collected: 04/13/20 10:12
Date Received: 04/14/20 08:00

Lab Sample ID: 500-180585-1
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	31.5		5.0	3.7	mg/L			04/16/20 11:37	1

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

Job ID: 500-180585-1

Client Sample ID: W-200413-RA-24

Date Collected: 04/13/20 10:50
Date Received: 04/14/20 08:00

Lab Sample ID: 500-180585-2

Matrix: Water

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			04/17/20 10:42	1
Toluene	<0.15		0.50	0.15	ug/L			04/17/20 10:42	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/17/20 10:42	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			04/17/20 10:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*117*		*75 - 126*		*04/17/20 10:42*	*1*
Toluene-d8 (Surr)	*106*		*75 - 120*		*04/17/20 10:42*	*1*
4-Bromofluorobenzene (Surr)	*86*		*72 - 124*		*04/17/20 10:42*	*1*
Dibromofluoromethane	*102*		*75 - 120*		*04/17/20 10:42*	*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		04/17/20 07:55	04/17/20 17:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5 (Surr)	*65*		*36 - 120*	*04/17/20 07:55*	*04/17/20 17:20*	*1*
2-Fluorobiphenyl (Surr)	*79*		*34 - 110*	*04/17/20 07:55*	*04/17/20 17:20*	*1*
Terphenyl-d14 (Surr)	*122*		*40 - 145*	*04/17/20 07:55*	*04/17/20 17:20*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**0.25**	**J**	1.0	0.17	ug/L			04/22/20 11:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*101*		*60 - 140*		*04/22/20 11:30*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**270**		9.7	8.7	ug/L		04/17/20 10:34	04/20/20 18:00	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCAA	*0*	*D*	*25 - 130*	*04/17/20 10:34*	*04/20/20 18:00*	*100*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.29**	**J B**	1.0	0.23	ug/L		04/14/20 17:10	04/15/20 13:26	1
Copper	**5.4**		2.0	0.50	ug/L		04/14/20 17:10	04/15/20 13:26	1
Iron	<46.7		100	46.7	ug/L		04/14/20 17:10	04/15/20 13:26	1
Manganese	**24.1**		2.5	0.79	ug/L		04/14/20 17:10	04/15/20 13:26	1
Zinc	<6.9		20.0	6.9	ug/L		04/14/20 17:10	04/15/20 13:26	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**		0.91	0.46	mg/L		04/14/20 17:09	04/15/20 13:41	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**0.98**		0.20	0.17	mg/L			04/14/20 17:37	1
Nitrate as N	**1.5**		0.20	0.068	mg/L			04/14/20 17:37	1
Sulfate	**3.3**		0.20	0.095	mg/L			04/14/20 17:37	1
Total Organic Carbon - Duplicates	**1.4**		1.0	0.47	mg/L			04/16/20 18:37	1

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

Job ID: 500-180585-1

Client Sample ID: W-200413-RA-24
Date Collected: 04/13/20 10:50
Date Received: 04/14/20 08:00

Lab Sample ID: 500-180585-2
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	97.3		5.0	3.7	mg/L			04/16/20 11:46	1

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

Job ID: 500-180585-1

Client Sample ID: W-200413-RA-25

Date Collected: 04/13/20 11:35
Date Received: 04/14/20 08:00

Lab Sample ID: 500-180585-3

Matrix: Water

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			04/17/20 11:09	1
Toluene	**0.60**		0.50	0.15	ug/L			04/17/20 11:09	1
Ethylbenzene	**0.72**		0.50	0.18	ug/L			04/17/20 11:09	1
Xylenes, Total	**7.0**		1.0	0.22	ug/L			04/17/20 11:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*75 - 126*		*04/17/20 11:09*	*1*
Toluene-d8 (Surr)	*88*		*75 - 120*		*04/17/20 11:09*	*1*
4-Bromofluorobenzene (Surr)	*79*		*72 - 124*		*04/17/20 11:09*	*1*
Dibromofluoromethane	*98*		*75 - 120*		*04/17/20 11:09*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	**22**		7.9	2.4	ug/L		04/17/20 07:55	04/17/20 18:51	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5 (Surr)	*61*		*36 - 120*	*04/17/20 07:55*	*04/17/20 18:51*	*10*
2-Fluorobiphenyl (Surr)	*79*		*34 - 110*	*04/17/20 07:55*	*04/17/20 18:51*	*10*
Terphenyl-d14 (Surr)	*110*		*40 - 145*	*04/17/20 07:55*	*04/17/20 18:51*	*10*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**13**		1.0	0.17	ug/L			04/22/20 11:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*92*		*60 - 140*		*04/22/20 11:47*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**6200**		520	470	ug/L		04/17/20 10:34	04/20/20 15:43	4000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCAA	*0*	*D*	*25 - 130*	*04/17/20 10:34*	*04/20/20 15:43*	*4000*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.92**	**J B**	1.0	0.23	ug/L		04/14/20 17:10	04/15/20 13:30	1
Copper	**1.1**	**J**	2.0	0.50	ug/L		04/14/20 17:10	04/15/20 13:30	1
Iron	**17000**		100	46.7	ug/L		04/14/20 17:10	04/15/20 13:30	1
Manganese	**7190**	**B**	12.5	4.0	ug/L		04/14/20 17:10	04/16/20 15:15	5
Zinc	<6.9		20.0	6.9	ug/L		04/14/20 17:10	04/15/20 13:30	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	**286**		0.91	0.46	mg/L		04/14/20 17:09	04/15/20 13:41	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**27.0**		2.0	1.7	mg/L			04/14/20 23:32	10
Nitrate as N	<0.068		0.20	0.068	mg/L			04/14/20 17:50	1
Sulfate	**23.8**		2.0	0.95	mg/L			04/14/20 23:32	10
Total Organic Carbon - Duplicates	**42.5**		2.0	0.94	mg/L			04/20/20 12:50	2

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

Job ID: 500-180585-1

Client Sample ID: W-200413-RA-25
Date Collected: 04/13/20 11:35
Date Received: 04/14/20 08:00

Lab Sample ID: 500-180585-3
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	253		5.0	3.7	mg/L			04/16/20 10:45	1

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

Job ID: 500-180585-1

Client Sample ID: W-200413-RA-26

Date Collected: 04/13/20 12:45
Date Received: 04/14/20 08:00

Lab Sample ID: 500-180585-4

Matrix: Water

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			04/17/20 11:35	1
Toluene	<0.15		0.50	0.15	ug/L			04/17/20 11:35	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/17/20 11:35	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			04/17/20 11:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*75 - 126*		*04/17/20 11:35*	*1*
Toluene-d8 (Surr)	*94*		*75 - 120*		*04/17/20 11:35*	*1*
4-Bromofluorobenzene (Surr)	*89*		*72 - 124*		*04/17/20 11:35*	*1*
Dibromofluoromethane	*97*		*75 - 120*		*04/17/20 11:35*	*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		04/17/20 07:55	04/17/20 17:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5 (Surr)	*70*		*36 - 120*	*04/17/20 07:55*	*04/17/20 17:43*	*1*
2-Fluorobiphenyl (Surr)	*89*		*34 - 110*	*04/17/20 07:55*	*04/17/20 17:43*	*1*
Terphenyl-d14 (Surr)	*125*		*40 - 145*	*04/17/20 07:55*	*04/17/20 17:43*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**0.21**	**J**	1.0	0.17	ug/L			04/22/20 12:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*102*		*60 - 140*		*04/22/20 12:04*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**6.0**		0.96	0.87	ug/L		04/17/20 10:34	04/20/20 18:59	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCAA	*134*	*X*	*25 - 130*	*04/17/20 10:34*	*04/20/20 18:59*	*10*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.23**	**J B**	1.0	0.23	ug/L		04/14/20 17:10	04/15/20 13:34	1
Copper	**18.7**		2.0	0.50	ug/L		04/14/20 17:10	04/15/20 13:34	1
Iron	<46.7		100	46.7	ug/L		04/14/20 17:10	04/15/20 13:34	1
Manganese	**2.6**		2.5	0.79	ug/L		04/14/20 17:10	04/15/20 13:34	1
Zinc	<6.9		20.0	6.9	ug/L		04/14/20 17:10	04/15/20 13:34	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	**207**		0.91	0.46	mg/L		04/14/20 17:09	04/15/20 13:41	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**0.33**		0.20	0.17	mg/L			04/14/20 18:03	1
Nitrate as N	**0.42**		0.20	0.068	mg/L			04/14/20 18:03	1
Sulfate	**1.1**		0.20	0.095	mg/L			04/14/20 18:03	1
Total Organic Carbon - Duplicates	**1.3**		1.0	0.47	mg/L			04/16/20 19:10	1

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

Job ID: 500-180585-1

Client Sample ID: W-200413-RA-26
Date Collected: 04/13/20 12:45
Date Received: 04/14/20 08:00

Lab Sample ID: 500-180585-4
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	210		5.0	3.7	mg/L			04/16/20 11:53	1

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

Job ID: 500-180585-1

Client Sample ID: W-200413-RA-27

Date Collected: 04/13/20 13:32
Date Received: 04/14/20 08:00

Lab Sample ID: 500-180585-5

Matrix: Water

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			04/17/20 12:01	1
Toluene	<0.15		0.50	0.15	ug/L			04/17/20 12:01	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/17/20 12:01	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			04/17/20 12:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*75 - 126*		*04/17/20 12:01*	*1*
Toluene-d8 (Surr)	*94*		*75 - 120*		*04/17/20 12:01*	*1*
4-Bromofluorobenzene (Surr)	*92*		*72 - 124*		*04/17/20 12:01*	*1*
Dibromofluoromethane	*95*		*75 - 120*		*04/17/20 12:01*	*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		04/17/20 07:55	04/17/20 19:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5 (Surr)	*81*		*36 - 120*	*04/17/20 07:55*	*04/17/20 19:13*	*1*
2-Fluorobiphenyl (Surr)	*88*		*34 - 110*	*04/17/20 07:55*	*04/17/20 19:13*	*1*
Terphenyl-d14 (Surr)	*130*		*40 - 145*	*04/17/20 07:55*	*04/17/20 19:13*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**0.22**	**J**	1.0	0.17	ug/L			04/22/20 12:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*99*		*60 - 140*		*04/22/20 12:56*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**0.86**		0.098	0.088	ug/L		04/17/20 10:34	04/20/20 17:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCAA	*73*		*25 - 130*	*04/17/20 10:34*	*04/20/20 17:02*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.30**	**J B**	1.0	0.23	ug/L		04/14/20 17:10	04/15/20 14:00	1
Copper	**4.6**		2.0	0.50	ug/L		04/14/20 17:10	04/15/20 14:00	1
Iron	**2180**		100	46.7	ug/L		04/14/20 17:10	04/15/20 14:00	1
Manganese	**162**		2.5	0.79	ug/L		04/14/20 17:10	04/15/20 14:00	1
Zinc	**27.3**		20.0	6.9	ug/L		04/14/20 17:10	04/15/20 14:00	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	**66.1**		0.91	0.46	mg/L		04/14/20 17:09	04/15/20 13:41	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**0.46**		0.20	0.17	mg/L			04/14/20 18:41	1
Nitrate as N	**3.7**		0.20	0.068	mg/L			04/14/20 18:41	1
Sulfate	**14.2**		1.0	0.48	mg/L			04/14/20 23:45	5
Total Organic Carbon - Duplicates	**5.6**		1.0	0.47	mg/L			04/16/20 20:07	1

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

Job ID: 500-180585-1

Client Sample ID: W-200413-RA-27
Date Collected: 04/13/20 13:32
Date Received: 04/14/20 08:00

Lab Sample ID: 500-180585-5
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	44.9		5.0	3.7	mg/L			04/16/20 11:15	1

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

Job ID: 500-180585-1

Client Sample ID: W-200413-RA-28

Date Collected: 04/13/20 14:20
Date Received: 04/14/20 08:00

Lab Sample ID: 500-180585-6

Matrix: Water

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			04/17/20 12:27	1
Toluene	<0.15		0.50	0.15	ug/L			04/17/20 12:27	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/17/20 12:27	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			04/17/20 12:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*75 - 126*		*04/17/20 12:27*	*1*
Toluene-d8 (Surr)	*97*		*75 - 120*		*04/17/20 12:27*	*1*
4-Bromofluorobenzene (Surr)	*95*		*72 - 124*		*04/17/20 12:27*	*1*
Dibromofluoromethane	*99*		*75 - 120*		*04/17/20 12:27*	*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		04/17/20 07:55	04/17/20 19:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5 (Surr)	*83*		*36 - 120*	*04/17/20 07:55*	*04/17/20 19:36*	*1*
2-Fluorobiphenyl (Surr)	*93*		*34 - 110*	*04/17/20 07:55*	*04/17/20 19:36*	*1*
Terphenyl-d14 (Surr)	*133*		*40 - 145*	*04/17/20 07:55*	*04/17/20 19:36*	*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			04/22/20 13:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*103*		*60 - 140*		*04/22/20 13:13*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	**0.98**		0.097	0.087	ug/L		04/17/20 10:34	04/20/20 17:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCAA	*79*		*25 - 130*	*04/17/20 10:34*	*04/20/20 17:21*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.30**	**J B**	1.0	0.23	ug/L		04/14/20 17:10	04/15/20 14:04	1
Copper	**9.1**		2.0	0.50	ug/L		04/14/20 17:10	04/15/20 14:04	1
Iron	<46.7		100	46.7	ug/L		04/14/20 17:10	04/15/20 14:04	1
Manganese	**2.2**	**J**	2.5	0.79	ug/L		04/14/20 17:10	04/15/20 14:04	1
Zinc	<6.9		20.0	6.9	ug/L		04/14/20 17:10	04/15/20 14:04	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	**96.0**		0.91	0.46	mg/L		04/14/20 17:09	04/15/20 13:41	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**2.2**		0.20	0.17	mg/L			04/14/20 18:53	1
Nitrate as N	**4.5**		0.40	0.14	mg/L			04/14/20 23:57	2
Sulfate	**20.7**		1.0	0.48	mg/L			04/17/20 01:45	5
Total Organic Carbon - Duplicates	**2.2**		1.0	0.47	mg/L			04/16/20 20:24	1

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

Job ID: 500-180585-1

Client Sample ID: W-200413-RA-28
Date Collected: 04/13/20 14:20
Date Received: 04/14/20 08:00

Lab Sample ID: 500-180585-6
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	72.7		5.0	3.7	mg/L			04/16/20 12:06	1

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

Job ID: 500-180585-1

Client Sample ID: W-200413-RA-29

Lab Sample ID: 500-180585-7

Date Collected: 04/13/20 14:20

Matrix: Water

Date Received: 04/14/20 08:00

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			04/17/20 12:53	1
Toluene	<0.15		0.50	0.15	ug/L			04/17/20 12:53	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/17/20 12:53	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			04/17/20 12:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*75 - 126*		*04/17/20 12:53*	*1*
Toluene-d8 (Surr)	*92*		*75 - 120*		*04/17/20 12:53*	*1*
4-Bromofluorobenzene (Surr)	*93*		*72 - 124*		*04/17/20 12:53*	*1*
Dibromofluoromethane	*96*		*75 - 120*		*04/17/20 12:53*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.26		0.84	0.26	ug/L		04/17/20 07:55	04/17/20 19:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5 (Surr)	*80*		*36 - 120*	*04/17/20 07:55*	*04/17/20 19:59*	*1*
2-Fluorobiphenyl (Surr)	*87*		*34 - 110*	*04/17/20 07:55*	*04/17/20 19:59*	*1*
Terphenyl-d14 (Surr)	*133*		*40 - 145*	*04/17/20 07:55*	*04/17/20 19:59*	*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		04/17/20 10:34	04/20/20 17:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCAA	*68*		*25 - 130*	*04/17/20 10:34*	*04/20/20 17:41*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.32**	**J B**	1.0	0.23	ug/L		04/14/20 17:10	04/15/20 14:07	1
Copper	**13.9**		2.0	0.50	ug/L		04/14/20 17:10	04/15/20 14:07	1
Iron	**214**		100	46.7	ug/L		04/14/20 17:10	04/15/20 14:07	1
Manganese	**3.2**		2.5	0.79	ug/L		04/14/20 17:10	04/15/20 14:07	1
Zinc	**669**		20.0	6.9	ug/L		04/14/20 17:10	04/15/20 14:07	1

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

Job ID: 500-180585-1

Client Sample ID: Trip Blank

Date Collected: 04/13/20 00:00
Date Received: 04/14/20 08:00

Lab Sample ID: 500-180585-8

Matrix: Water

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			04/17/20 05:10	1
Toluene	<0.15		0.50	0.15	ug/L			04/17/20 05:10	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/17/20 05:10	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			04/17/20 05:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*75 - 126*		*04/17/20 05:10*	*1*
Toluene-d8 (Surr)	*99*		*75 - 120*		*04/17/20 05:10*	*1*
4-Bromofluorobenzene (Surr)	*88*		*72 - 124*		*04/17/20 05:10*	*1*
Dibromofluoromethane	*94*		*75 - 120*		*04/17/20 05:10*	*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			04/22/20 13:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*103*		*60 - 140*		*04/22/20 13:48*	*1*

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
F2	MS/MSD RPD exceeds control limits

GC VOA

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

GC Semi VOA

Qualifier	Qualifier Description
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 recovery 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.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	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)

GC/MS VOA

Analysis Batch: 538537

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180585-1	W-200413-RA-23	Total/NA	Water	8260B	
500-180585-8	Trip Blank	Total/NA	Water	8260B	
MB 500-538537/7	Method Blank	Total/NA	Water	8260B	
LCS 500-538537/5	Lab Control Sample	Total/NA	Water	8260B	

Analysis Batch: 538597

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180585-2	W-200413-RA-24	Total/NA	Water	8260B	
500-180585-3	W-200413-RA-25	Total/NA	Water	8260B	
500-180585-4	W-200413-RA-26	Total/NA	Water	8260B	
500-180585-5	W-200413-RA-27	Total/NA	Water	8260B	
500-180585-6	W-200413-RA-28	Total/NA	Water	8260B	
500-180585-7	W-200413-RA-29	Total/NA	Water	8260B	
MB 500-538597/6	Method Blank	Total/NA	Water	8260B	
LCS 500-538597/4	Lab Control Sample	Total/NA	Water	8260B	
500-180585-4 MS	W-200413-RA-26	Total/NA	Water	8260B	
500-180585-4 MSD	W-200413-RA-26	Total/NA	Water	8260B	

GC/MS Semi VOA

Analysis Batch: 538611

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180585-1	W-200413-RA-23	Total/NA	Water	8270D	538618
500-180585-2	W-200413-RA-24	Total/NA	Water	8270D	538618
500-180585-3	W-200413-RA-25	Total/NA	Water	8270D	538618
500-180585-4	W-200413-RA-26	Total/NA	Water	8270D	538618
500-180585-5	W-200413-RA-27	Total/NA	Water	8270D	538618
500-180585-6	W-200413-RA-28	Total/NA	Water	8270D	538618
500-180585-7	W-200413-RA-29	Total/NA	Water	8270D	538618
500-180585-4 MS	W-200413-RA-26	Total/NA	Water	8270D	538618
500-180585-4 MSD	W-200413-RA-26	Total/NA	Water	8270D	538618

Prep Batch: 538618

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180585-1	W-200413-RA-23	Total/NA	Water	3510C	
500-180585-2	W-200413-RA-24	Total/NA	Water	3510C	
500-180585-3	W-200413-RA-25	Total/NA	Water	3510C	
500-180585-4	W-200413-RA-26	Total/NA	Water	3510C	
500-180585-5	W-200413-RA-27	Total/NA	Water	3510C	
500-180585-6	W-200413-RA-28	Total/NA	Water	3510C	
500-180585-7	W-200413-RA-29	Total/NA	Water	3510C	
MB 500-538618/1-A	Method Blank	Total/NA	Water	3510C	
LCS 500-538618/2-A	Lab Control Sample	Total/NA	Water	3510C	
500-180585-4 MS	W-200413-RA-26	Total/NA	Water	3510C	
500-180585-4 MSD	W-200413-RA-26	Total/NA	Water	3510C	

Analysis Batch: 538708

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 500-538618/1-A	Method Blank	Total/NA	Water	8270D	538618
LCS 500-538618/2-A	Lab Control Sample	Total/NA	Water	8270D	538618

GC VOA

Analysis Batch: 431713

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180585-1	W-200413-RA-23	Total/NA	Water	RSK-175	
500-180585-2	W-200413-RA-24	Total/NA	Water	RSK-175	
500-180585-3	W-200413-RA-25	Total/NA	Water	RSK-175	
500-180585-4	W-200413-RA-26	Total/NA	Water	RSK-175	
500-180585-5	W-200413-RA-27	Total/NA	Water	RSK-175	
500-180585-6	W-200413-RA-28	Total/NA	Water	RSK-175	
500-180585-8	Trip Blank	Total/NA	Water	RSK-175	
MB 240-431713/3	Method Blank	Total/NA	Water	RSK-175	
LCS 240-431713/4	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 240-431713/5	Lab Control Sample Dup	Total/NA	Water	RSK-175	
500-180585-4 MS	W-200413-RA-26	Total/NA	Water	RSK-175	
500-180585-4 MSD	W-200413-RA-26	Total/NA	Water	RSK-175	

GC Semi VOA

Prep Batch: 538658

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180585-1	W-200413-RA-23	Total/NA	Water	8151A	
500-180585-2	W-200413-RA-24	Total/NA	Water	8151A	
500-180585-3	W-200413-RA-25	Total/NA	Water	8151A	
500-180585-4	W-200413-RA-26	Total/NA	Water	8151A	
500-180585-5	W-200413-RA-27	Total/NA	Water	8151A	
500-180585-6	W-200413-RA-28	Total/NA	Water	8151A	
500-180585-7	W-200413-RA-29	Total/NA	Water	8151A	
MB 500-538658/1-A	Method Blank	Total/NA	Water	8151A	
LCS 500-538658/2-A	Lab Control Sample	Total/NA	Water	8151A	
500-180585-4 MS	W-200413-RA-26	Total/NA	Water	8151A	
500-180585-4 MSD	W-200413-RA-26	Total/NA	Water	8151A	

Analysis Batch: 538821

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180585-1	W-200413-RA-23	Total/NA	Water	8151A	538658
500-180585-2	W-200413-RA-24	Total/NA	Water	8151A	538658
500-180585-3	W-200413-RA-25	Total/NA	Water	8151A	538658
500-180585-4	W-200413-RA-26	Total/NA	Water	8151A	538658
500-180585-5	W-200413-RA-27	Total/NA	Water	8151A	538658
500-180585-6	W-200413-RA-28	Total/NA	Water	8151A	538658
500-180585-7	W-200413-RA-29	Total/NA	Water	8151A	538658
MB 500-538658/1-A	Method Blank	Total/NA	Water	8151A	538658
LCS 500-538658/2-A	Lab Control Sample	Total/NA	Water	8151A	538658
500-180585-4 MS	W-200413-RA-26	Total/NA	Water	8151A	538658
500-180585-4 MSD	W-200413-RA-26	Total/NA	Water	8151A	538658

Metals

Prep Batch: 538070

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180585-1	W-200413-RA-23	Total/NA	Water	3010A	
500-180585-2	W-200413-RA-24	Total/NA	Water	3010A	
500-180585-3	W-200413-RA-25	Total/NA	Water	3010A	
500-180585-4	W-200413-RA-26	Total/NA	Water	3010A	
500-180585-5	W-200413-RA-27	Total/NA	Water	3010A	

Metals (Continued)

Prep Batch: 538070 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180585-6	W-200413-RA-28	Total/NA	Water	3010A	

Prep Batch: 538071

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180585-1	W-200413-RA-23	Dissolved	Water	3005A	
500-180585-2	W-200413-RA-24	Dissolved	Water	3005A	
500-180585-3	W-200413-RA-25	Dissolved	Water	3005A	
500-180585-4	W-200413-RA-26	Dissolved	Water	3005A	
500-180585-5	W-200413-RA-27	Dissolved	Water	3005A	
500-180585-6	W-200413-RA-28	Dissolved	Water	3005A	
500-180585-7	W-200413-RA-29	Dissolved	Water	3005A	
MB 500-538071/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 500-538071/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
500-180585-4 MS	W-200413-RA-26	Dissolved	Water	3005A	
500-180585-4 MSD	W-200413-RA-26	Dissolved	Water	3005A	
500-180585-4 DU	W-200413-RA-26	Dissolved	Water	3005A	

Analysis Batch: 538262

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180585-1	W-200413-RA-23	Total/NA	Water	SM 2340B	538070
500-180585-2	W-200413-RA-24	Total/NA	Water	SM 2340B	538070
500-180585-3	W-200413-RA-25	Total/NA	Water	SM 2340B	538070
500-180585-4	W-200413-RA-26	Total/NA	Water	SM 2340B	538070
500-180585-5	W-200413-RA-27	Total/NA	Water	SM 2340B	538070
500-180585-6	W-200413-RA-28	Total/NA	Water	SM 2340B	538070

Analysis Batch: 538431

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180585-1	W-200413-RA-23	Dissolved	Water	6020A	538071
500-180585-2	W-200413-RA-24	Dissolved	Water	6020A	538071
500-180585-3	W-200413-RA-25	Dissolved	Water	6020A	538071
500-180585-4	W-200413-RA-26	Dissolved	Water	6020A	538071
500-180585-5	W-200413-RA-27	Dissolved	Water	6020A	538071
500-180585-6	W-200413-RA-28	Dissolved	Water	6020A	538071
500-180585-7	W-200413-RA-29	Dissolved	Water	6020A	538071
MB 500-538071/1-A	Method Blank	Total Recoverable	Water	6020A	538071
LCS 500-538071/2-A	Lab Control Sample	Total Recoverable	Water	6020A	538071
500-180585-4 MS	W-200413-RA-26	Dissolved	Water	6020A	538071
500-180585-4 MSD	W-200413-RA-26	Dissolved	Water	6020A	538071
500-180585-4 DU	W-200413-RA-26	Dissolved	Water	6020A	538071

Analysis Batch: 538648

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180585-3	W-200413-RA-25	Dissolved	Water	6020A	538071

General Chemistry

Analysis Batch: 538075

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180585-1	W-200413-RA-23	Total/NA	Water	300.0	
500-180585-2	W-200413-RA-24	Total/NA	Water	300.0	

General Chemistry (Continued)

Analysis Batch: 538075 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180585-3	W-200413-RA-25	Total/NA	Water	300.0	
500-180585-3	W-200413-RA-25	Total/NA	Water	300.0	
500-180585-4	W-200413-RA-26	Total/NA	Water	300.0	
500-180585-5	W-200413-RA-27	Total/NA	Water	300.0	
500-180585-5	W-200413-RA-27	Total/NA	Water	300.0	
500-180585-6	W-200413-RA-28	Total/NA	Water	300.0	
500-180585-6	W-200413-RA-28	Total/NA	Water	300.0	
MB 500-538075/3	Method Blank	Total/NA	Water	300.0	
LCS 500-538075/4	Lab Control Sample	Total/NA	Water	300.0	
500-180585-4 MS	W-200413-RA-26	Total/NA	Water	300.0	
500-180585-4 MSD	W-200413-RA-26	Total/NA	Water	300.0	

Analysis Batch: 538532

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180585-6	W-200413-RA-28	Total/NA	Water	300.0	
MB 500-538532/3	Method Blank	Total/NA	Water	300.0	
LCS 500-538532/4	Lab Control Sample	Total/NA	Water	300.0	

Analysis Batch: 538631

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180585-1	W-200413-RA-23	Total/NA	Water	SM 2320B	
500-180585-2	W-200413-RA-24	Total/NA	Water	SM 2320B	
500-180585-3	W-200413-RA-25	Total/NA	Water	SM 2320B	
500-180585-4	W-200413-RA-26	Total/NA	Water	SM 2320B	
500-180585-5	W-200413-RA-27	Total/NA	Water	SM 2320B	
500-180585-6	W-200413-RA-28	Total/NA	Water	SM 2320B	
MB 500-538631/3	Method Blank	Total/NA	Water	SM 2320B	
LCS 500-538631/4	Lab Control Sample	Total/NA	Water	SM 2320B	
500-180585-4 DU	W-200413-RA-26	Total/NA	Water	SM 2320B	

Analysis Batch: 538681

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180585-1	W-200413-RA-23	Total/NA	Water	9060A	
500-180585-2	W-200413-RA-24	Total/NA	Water	9060A	
500-180585-4	W-200413-RA-26	Total/NA	Water	9060A	
500-180585-5	W-200413-RA-27	Total/NA	Water	9060A	
500-180585-6	W-200413-RA-28	Total/NA	Water	9060A	
MB 500-538681/4	Method Blank	Total/NA	Water	9060A	
LCS 500-538681/5	Lab Control Sample	Total/NA	Water	9060A	
500-180585-4 MS	W-200413-RA-26	Total/NA	Water	9060A	
500-180585-4 MSD	W-200413-RA-26	Total/NA	Water	9060A	

Analysis Batch: 539061

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-180585-3	W-200413-RA-25	Total/NA	Water	9060A	
MB 500-539061/4	Method Blank	Total/NA	Water	9060A	
LCS 500-539061/5	Lab Control Sample	Total/NA	Water	9060A	

Surrogate Summary

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

Job ID: 500-180585-1

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

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	TOL	BFB	DBFM
Lab Sample ID	Client Sample ID	(75-126)	(75-120)	(72-124)	(75-120)
500-180585-1	W-200413-RA-23	95	98	88	92
500-180585-2	W-200413-RA-24	117	106	86	102
500-180585-3	W-200413-RA-25	104	88	79	98
500-180585-4	W-200413-RA-26	101	94	89	97
500-180585-4 MS	W-200413-RA-26	104	96	94	98
500-180585-4 MSD	W-200413-RA-26	104	94	95	96
500-180585-5	W-200413-RA-27	100	94	92	95
500-180585-6	W-200413-RA-28	109	97	95	99
500-180585-7	W-200413-RA-29	110	92	93	96
500-180585-8	Trip Blank	95	99	88	94
LCS 500-538537/5	Lab Control Sample	95	98	85	96
LCS 500-538597/4	Lab Control Sample	97	102	90	94
MB 500-538537/7	Method Blank	96	97	90	94
MB 500-538597/6	Method Blank	104	103	91	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**

		Percent Surrogate Recovery (Acceptance Limits)		
		NBZ	FBP	TPHL
Lab Sample ID	Client Sample ID	(36-120)	(34-110)	(40-145)
500-180585-1	W-200413-RA-23	68	84	142
500-180585-2	W-200413-RA-24	65	79	122
500-180585-3	W-200413-RA-25	61	79	110
500-180585-4	W-200413-RA-26	70	89	125
500-180585-4 MS	W-200413-RA-26	76	89	114
500-180585-4 MSD	W-200413-RA-26	48	55	104
500-180585-5	W-200413-RA-27	81	88	130
500-180585-6	W-200413-RA-28	83	93	133
500-180585-7	W-200413-RA-29	80	87	133
LCS 500-538618/2-A	Lab Control Sample	79	95	106
MB 500-538618/1-A	Method Blank	75	86	109

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)
		TFE1
Lab Sample ID	Client Sample ID	(60-140)
500-180585-1	W-200413-RA-23	102

Surrogate Summary

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

Job ID: 500-180585-1

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

Matrix: Water **Prep Type: Total/NA**

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits) TFE1 (60-140)
500-180585-2	W-200413-RA-24	101
500-180585-3	W-200413-RA-25	92
500-180585-4	W-200413-RA-26	102
500-180585-4 MS	W-200413-RA-26	98
500-180585-4 MSD	W-200413-RA-26	97
500-180585-5	W-200413-RA-27	99
500-180585-6	W-200413-RA-28	103
500-180585-8	Trip Blank	103
LCS 240-431713/4	Lab Control Sample	103
LCSD 240-431713/5	Lab Control Sample Dup	102
MB 240-431713/3	Method Blank	104

Surrogate Legend

TFE = 1,1,1-Trifluoroethane

Method: 8151A - Herbicides (GC)

Matrix: Water **Prep Type: Total/NA**

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits) DCPAA2 (25-130)
500-180585-1	W-200413-RA-23	91
LCS 500-538658/2-A	Lab Control Sample	93
MB 500-538658/1-A	Method Blank	79

Surrogate Legend

DCPAA = DCAA

Method: 8151A - Herbicides (GC)

Matrix: Water **Prep Type: Total/NA**

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits) DCPAA1 (25-130)
500-180585-2	W-200413-RA-24	0 D
500-180585-3	W-200413-RA-25	0 D
500-180585-4	W-200413-RA-26	134 X
500-180585-4 MS	W-200413-RA-26	124
500-180585-4 MSD	W-200413-RA-26	118
500-180585-5	W-200413-RA-27	73
500-180585-6	W-200413-RA-28	79
500-180585-7	W-200413-RA-29	68

Surrogate Legend

DCPAA = DCAA

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

Lab Sample ID: MB 500-538537/7
Matrix: Water
Analysis Batch: 538537

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		0.50	0.15	ug/L			04/17/20 00:38	1
Toluene	<0.15		0.50	0.15	ug/L			04/17/20 00:38	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/17/20 00:38	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			04/17/20 00:38	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*75 - 126*		*04/17/20 00:38*	*1*
Toluene-d8 (Surr)	*97*		*75 - 120*		*04/17/20 00:38*	*1*
4-Bromofluorobenzene (Surr)	*90*		*72 - 124*		*04/17/20 00:38*	*1*
Dibromofluoromethane	*94*		*75 - 120*		*04/17/20 00:38*	*1*

Lab Sample ID: LCS 500-538537/5
Matrix: Water
Analysis Batch: 538537

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	41.7		ug/L		83	70 - 120
Toluene	50.0	43.6		ug/L		87	70 - 125
Ethylbenzene	50.0	46.8		ug/L		94	70 - 123
Xylenes, Total	100	95.3		ug/L		95	70 - 125

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*75 - 126*
Toluene-d8 (Surr)	*98*		*75 - 120*
4-Bromofluorobenzene (Surr)	*85*		*72 - 124*
Dibromofluoromethane	*96*		*75 - 120*

Lab Sample ID: MB 500-538597/6
Matrix: Water
Analysis Batch: 538597

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		0.50	0.15	ug/L			04/17/20 10:16	1
Toluene	<0.15		0.50	0.15	ug/L			04/17/20 10:16	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/17/20 10:16	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			04/17/20 10:16	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*75 - 126*		*04/17/20 10:16*	*1*
Toluene-d8 (Surr)	*103*		*75 - 120*		*04/17/20 10:16*	*1*
4-Bromofluorobenzene (Surr)	*91*		*72 - 124*		*04/17/20 10:16*	*1*
Dibromofluoromethane	*97*		*75 - 120*		*04/17/20 10:16*	*1*

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

Lab Sample ID: LCS 500-538597/4
Matrix: Water
Analysis Batch: 538597

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	50.0		ug/L		100	70 - 120		
Toluene			50.0	52.5		ug/L		105	70 - 125		
Ethylbenzene			50.0	49.2		ug/L		98	70 - 123		
Xylenes, Total			100	97.1		ug/L		97	70 - 125		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*75 - 126*
Toluene-d8 (Surr)	*102*		*75 - 120*
4-Bromofluorobenzene (Surr)	*90*		*72 - 124*
Dibromofluoromethane	*94*		*75 - 120*

Lab Sample ID: 500-180585-4 MS
Matrix: Water
Analysis Batch: 538597

Client Sample ID: W-200413-RA-26
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	49.8		ug/L		100	70 - 120		
Toluene	<0.15		50.0	50.5		ug/L		101	70 - 125		
Ethylbenzene	<0.18		50.0	49.0		ug/L		98	70 - 123		
Xylenes, Total	<0.22		100	96.0		ug/L		96	70 - 125		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*104*		*75 - 126*
Toluene-d8 (Surr)	*96*		*75 - 120*
4-Bromofluorobenzene (Surr)	*94*		*72 - 124*
Dibromofluoromethane	*98*		*75 - 120*

Lab Sample ID: 500-180585-4 MSD
Matrix: Water
Analysis Batch: 538597

Client Sample ID: W-200413-RA-26
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	51.1		ug/L		102	70 - 120	3	20
Toluene	<0.15		50.0	50.1		ug/L		100	70 - 125	1	20
Ethylbenzene	<0.18		50.0	48.9		ug/L		98	70 - 123	0	20
Xylenes, Total	<0.22		100	95.3		ug/L		95	70 - 125	1	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*104*		*75 - 126*
Toluene-d8 (Surr)	*94*		*75 - 120*
4-Bromofluorobenzene (Surr)	*95*		*72 - 124*
Dibromofluoromethane	*96*		*75 - 120*

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

Lab Sample ID: MB 500-538618/1-A
Matrix: Water
Analysis Batch: 538708

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 538618

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.25		0.80	0.25	ug/L		04/17/20 07:55	04/17/20 23:43	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5 (Surr)	*75*		*36 - 120*	*04/17/20 07:55*	*04/17/20 23:43*	*1*
2-Fluorobiphenyl (Surr)	*86*		*34 - 110*	*04/17/20 07:55*	*04/17/20 23:43*	*1*
Terphenyl-d14 (Surr)	*109*		*40 - 145*	*04/17/20 07:55*	*04/17/20 23:43*	*1*

Lab Sample ID: LCS 500-538618/2-A
Matrix: Water
Analysis Batch: 538708

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 538618

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Naphthalene			32.0	22.4		ug/L		70	36 - 110		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Nitrobenzene-d5 (Surr)	*79*		*36 - 120*
2-Fluorobiphenyl (Surr)	*95*		*34 - 110*
Terphenyl-d14 (Surr)	*106*		*40 - 145*

Lab Sample ID: 500-180585-4 MS
Matrix: Water
Analysis Batch: 538611

Client Sample ID: W-200413-RA-26
Prep Type: Total/NA
Prep Batch: 538618

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Naphthalene	<0.23		34.2	15.2		ug/L		44	36 - 110		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Nitrobenzene-d5 (Surr)	*76*		*36 - 120*
2-Fluorobiphenyl (Surr)	*89*		*34 - 110*
Terphenyl-d14 (Surr)	*114*		*40 - 145*

Lab Sample ID: 500-180585-4 MSD
Matrix: Water
Analysis Batch: 538611

Client Sample ID: W-200413-RA-26
Prep Type: Total/NA
Prep Batch: 538618

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Naphthalene	<0.23		33.0	11.8	F2	ug/L		36	36 - 110	25	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Nitrobenzene-d5 (Surr)	*48*		*36 - 120*
2-Fluorobiphenyl (Surr)	*55*		*34 - 110*
Terphenyl-d14 (Surr)	*104*		*40 - 145*

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 240-431713/3
Matrix: Water
Analysis Batch: 431713

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			04/22/20 09:13	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*104*		*60 - 140*		*04/22/20 09:13*	*1*

Lab Sample ID: LCS 240-431713/4
Matrix: Water
Analysis Batch: 431713

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Methane			475	463		ug/L		97	80 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,1,1-Trifluoroethane	*103*		*60 - 140*

Lab Sample ID: LCSD 240-431713/5
Matrix: Water
Analysis Batch: 431713

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			475	458		ug/L		96	80 - 120	1	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,1,1-Trifluoroethane	*102*		*60 - 140*

Lab Sample ID: 500-180585-4 MS
Matrix: Water
Analysis Batch: 431713

Client Sample ID: W-200413-RA-26
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Methane	0.21	J	285	277		ug/L		97	50 - 150		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,1,1-Trifluoroethane	*98*		*60 - 140*

Lab Sample ID: 500-180585-4 MSD
Matrix: Water
Analysis Batch: 431713

Client Sample ID: W-200413-RA-26
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methane	0.21	J	285	271		ug/L		95	50 - 150	2	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,1,1-Trifluoroethane	*97*		*60 - 140*

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 500-538658/1-A
Matrix: Water
Analysis Batch: 538821

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 538658

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	<0.090		0.10	0.090	ug/L		04/17/20 10:34	04/20/20 11:30	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCAA	*79*		*25 - 130*	*04/17/20 10:34*	*04/20/20 11:30*	*1*

Lab Sample ID: LCS 500-538658/2-A
Matrix: Water
Analysis Batch: 538821

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 538658

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Pentachlorophenol	2.53	1.75		ug/L		69	40 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCAA	*93*		*25 - 130*

Lab Sample ID: 500-180585-4 MS
Matrix: Water
Analysis Batch: 538821

Client Sample ID: W-200413-RA-26
Prep Type: Total/NA
Prep Batch: 538658

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Pentachlorophenol	6.0		2.92	9.43		ug/L		117	40 - 122

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
DCAA	*124*		*25 - 130*

Lab Sample ID: 500-180585-4 MSD
Matrix: Water
Analysis Batch: 538821

Client Sample ID: W-200413-RA-26
Prep Type: Total/NA
Prep Batch: 538658

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Pentachlorophenol	6.0		2.49	7.73		ug/L		69	40 - 122	20	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
DCAA	*118*		*25 - 130*

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 500-538071/1-A
Matrix: Water
Analysis Batch: 538431

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 538071

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.340	J	1.0	0.23	ug/L		04/14/20 17:10	04/15/20 13:15	1
Copper	<0.50		2.0	0.50	ug/L		04/14/20 17:10	04/15/20 13:15	1
Iron	<46.7		100	46.7	ug/L		04/14/20 17:10	04/15/20 13:15	1
Manganese	<0.79		2.5	0.79	ug/L		04/14/20 17:10	04/15/20 13:15	1
Zinc	<6.9		20.0	6.9	ug/L		04/14/20 17:10	04/15/20 13:15	1

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

Lab Sample ID: LCS 500-538071/2-A
Matrix: Water
Analysis Batch: 538431

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 538071

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Arsenic			100	90.38		ug/L		90	80 - 120		
Copper			250	243.3		ug/L		97	80 - 120		
Iron			1000	1022		ug/L		102	80 - 120		
Manganese			500	510.8		ug/L		102	80 - 120		
Zinc			500	490.0		ug/L		98	80 - 120		

Lab Sample ID: 500-180585-4 MS
Matrix: Water
Analysis Batch: 538431

Client Sample ID: W-200413-RA-26
Prep Type: Dissolved
Prep Batch: 538071

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Arsenic	0.23	J B	100	86.43		ug/L		86	75 - 125		
Copper	18.7		250	252.6		ug/L		94	75 - 125		
Iron	<46.7		1000	1003		ug/L		100	75 - 125		
Manganese	2.6		500	488.5		ug/L		97	75 - 125		
Zinc	<6.9		500	466.4		ug/L		93	75 - 125		

Lab Sample ID: 500-180585-4 MSD
Matrix: Water
Analysis Batch: 538431

Client Sample ID: W-200413-RA-26
Prep Type: Dissolved
Prep Batch: 538071

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	0.23	J B	100	89.12		ug/L		89	75 - 125	3	20
Copper	18.7		250	259.8		ug/L		96	75 - 125	3	20
Iron	<46.7		1000	1045		ug/L		104	75 - 125	4	20
Manganese	2.6		500	500.6		ug/L		100	75 - 125	2	20
Zinc	<6.9		500	484.6		ug/L		97	75 - 125	4	20

Lab Sample ID: 500-180585-4 DU
Matrix: Water
Analysis Batch: 538431

Client Sample ID: W-200413-RA-26
Prep Type: Dissolved
Prep Batch: 538071

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Arsenic	0.23	J B		0.519	J F5	ug/L				78	20
Copper	18.7			21.55		ug/L				14	20
Iron	<46.7			<46.7		ug/L				NC	20
Manganese	2.6			2.94		ug/L				13	20
Zinc	<6.9			<6.9		ug/L				NC	20

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 500-538075/3
Matrix: Water
Analysis Batch: 538075

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			04/14/20 16:59	1
Nitrate as N	<0.068		0.20	0.068	mg/L			04/14/20 16:59	1
Sulfate	<0.095		0.20	0.095	mg/L			04/14/20 16:59	1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 500-538075/4
Matrix: Water
Analysis Batch: 538075

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	3.20		mg/L		107	90 - 110
Nitrate as N	2.00	2.09		mg/L		105	90 - 110
Sulfate	5.00	5.25		mg/L		105	90 - 110

Lab Sample ID: MB 500-538532/3
Matrix: Water
Analysis Batch: 538532

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	<0.095		0.20	0.095	mg/L			04/16/20 19:12	1

Lab Sample ID: LCS 500-538532/4
Matrix: Water
Analysis Batch: 538532

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	5.00	5.05		mg/L		101	90 - 110

Method: 9060A - Organic Carbon, Total (TOC)

Lab Sample ID: MB 500-538681/4
Matrix: Water
Analysis Batch: 538681

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			04/16/20 13:34	1

Lab Sample ID: LCS 500-538681/5
Matrix: Water
Analysis Batch: 538681

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	9.92		mg/L		99	80 - 120

Lab Sample ID: 500-180585-4 MS
Matrix: Water
Analysis Batch: 538681

Client Sample ID: W-200413-RA-26
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon - Duplicates	1.3		10.0	10.32		mg/L		90	75 - 125

Lab Sample ID: 500-180585-4 MSD
Matrix: Water
Analysis Batch: 538681

Client Sample ID: W-200413-RA-26
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	1.3		10.0	10.24		mg/L		89	75 - 125	1	20

Method: 9060A - Organic Carbon, Total (TOC) (Continued)

Lab Sample ID: MB 500-539061/4
Matrix: Water
Analysis Batch: 539061

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			04/20/20 11:43	1

Lab Sample ID: LCS 500-539061/5
Matrix: Water
Analysis Batch: 539061

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	9.96		mg/L		100	80 - 120		

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 500-538631/3
Matrix: Water
Analysis Batch: 538631

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			04/16/20 10:32	1

Lab Sample ID: LCS 500-538631/4
Matrix: Water
Analysis Batch: 538631

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Alkalinity			100	98.70		mg/L		99	90 - 110		

Lab Sample ID: 500-180585-4 DU
Matrix: Water
Analysis Batch: 538631

Client Sample ID: W-200413-RA-26
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Alkalinity	210			213.4		mg/L				2	20

Lab Chronicle

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

Job ID: 500-180585-1

Client Sample ID: W-200413-RA-23

Lab Sample ID: 500-180585-1
Date Collected: 04/13/20 10:12
Matrix: Water
Date Received: 04/14/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	538537	04/17/20 05:38	JDD	TAL CHI
Total/NA	Prep	3510C			538618	04/17/20 07:55	BSO	TAL CHI
Total/NA	Analysis	8270D		1	538611	04/17/20 16:57	AJD	TAL CHI
Total/NA	Analysis	RSK-175		1	431713	04/22/20 11:13	JBN	TAL CAN
Total/NA	Prep	8151A			538658	04/17/20 10:34	BSO	TAL CHI
Total/NA	Analysis	8151A		1	538821	04/20/20 14:25	JBJ	TAL CHI
Dissolved	Prep	3005A			538071	04/14/20 17:10	BDE	TAL CHI
Dissolved	Analysis	6020A		1	538431	04/15/20 13:23	FXG	TAL CHI
Total/NA	Prep	3010A			538070	04/14/20 17:09	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	538262	04/15/20 13:41	JEF	TAL CHI
Total/NA	Analysis	300.0		1	538075	04/14/20 17:25	EAT	TAL CHI
Total/NA	Analysis	9060A		1	538681	04/16/20 18:20	JJB	TAL CHI
Total/NA	Analysis	SM 2320B		1	538631	04/16/20 11:37	SMO	TAL CHI

Client Sample ID: W-200413-RA-24

Lab Sample ID: 500-180585-2
Date Collected: 04/13/20 10:50
Matrix: Water
Date Received: 04/14/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	538597	04/17/20 10:42	JDD	TAL CHI
Total/NA	Prep	3510C			538618	04/17/20 07:55	BSO	TAL CHI
Total/NA	Analysis	8270D		1	538611	04/17/20 17:20	AJD	TAL CHI
Total/NA	Analysis	RSK-175		1	431713	04/22/20 11:30	JBN	TAL CAN
Total/NA	Prep	8151A			538658	04/17/20 10:34	BSO	TAL CHI
Total/NA	Analysis	8151A		100	538821	04/20/20 18:00	JBJ	TAL CHI
Dissolved	Prep	3005A			538071	04/14/20 17:10	BDE	TAL CHI
Dissolved	Analysis	6020A		1	538431	04/15/20 13:26	FXG	TAL CHI
Total/NA	Prep	3010A			538070	04/14/20 17:09	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	538262	04/15/20 13:41	JEF	TAL CHI
Total/NA	Analysis	300.0		1	538075	04/14/20 17:37	EAT	TAL CHI
Total/NA	Analysis	9060A		1	538681	04/16/20 18:37	JJB	TAL CHI
Total/NA	Analysis	SM 2320B		1	538631	04/16/20 11:46	SMO	TAL CHI

Client Sample ID: W-200413-RA-25

Lab Sample ID: 500-180585-3
Date Collected: 04/13/20 11:35
Matrix: Water
Date Received: 04/14/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	538597	04/17/20 11:09	JDD	TAL CHI
Total/NA	Prep	3510C			538618	04/17/20 07:55	BSO	TAL CHI
Total/NA	Analysis	8270D		10	538611	04/17/20 18:51	AJD	TAL CHI
Total/NA	Analysis	RSK-175		1	431713	04/22/20 11:47	JBN	TAL CAN
Total/NA	Prep	8151A			538658	04/17/20 10:34	BSO	TAL CHI
Total/NA	Analysis	8151A		4000	538821	04/20/20 15:43	JBJ	TAL CHI

Lab Chronicle

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

Job ID: 500-180585-1

Client Sample ID: W-200413-RA-25

Lab Sample ID: 500-180585-3

Date Collected: 04/13/20 11:35
Matrix: Water
Date Received: 04/14/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			538071	04/14/20 17:10	BDE	TAL CHI
Dissolved	Analysis	6020A		1	538431	04/15/20 13:30	FXG	TAL CHI
Dissolved	Prep	3005A			538071	04/14/20 17:10	BDE	TAL CHI
Dissolved	Analysis	6020A		5	538648	04/16/20 15:15	FXG	TAL CHI
Total/NA	Prep	3010A			538070	04/14/20 17:09	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	538262	04/15/20 13:41	JEF	TAL CHI
Total/NA	Analysis	300.0		1	538075	04/14/20 17:50	EAT	TAL CHI
Total/NA	Analysis	300.0		10	538075	04/14/20 23:32	EAT	TAL CHI
Total/NA	Analysis	9060A		2	539061	04/20/20 12:50	JJB	TAL CHI
Total/NA	Analysis	SM 2320B		1	538631	04/16/20 10:45	SMO	TAL CHI

Client Sample ID: W-200413-RA-26

Lab Sample ID: 500-180585-4

Date Collected: 04/13/20 12:45
Matrix: Water
Date Received: 04/14/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	538597	04/17/20 11:35	JDD	TAL CHI
Total/NA	Prep	3510C			538618	04/17/20 07:55	BSO	TAL CHI
Total/NA	Analysis	8270D		1	538611	04/17/20 17:43	AJD	TAL CHI
Total/NA	Analysis	RSK-175		1	431713	04/22/20 12:04	JBN	TAL CAN
Total/NA	Prep	8151A			538658	04/17/20 10:34	BSO	TAL CHI
Total/NA	Analysis	8151A		10	538821	04/20/20 18:59	JBJ	TAL CHI
Dissolved	Prep	3005A			538071	04/14/20 17:10	BDE	TAL CHI
Dissolved	Analysis	6020A		1	538431	04/15/20 13:34	FXG	TAL CHI
Total/NA	Prep	3010A			538070	04/14/20 17:09	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	538262	04/15/20 13:41	JEF	TAL CHI
Total/NA	Analysis	300.0		1	538075	04/14/20 18:03	EAT	TAL CHI
Total/NA	Analysis	9060A		1	538681	04/16/20 19:10	JJB	TAL CHI
Total/NA	Analysis	SM 2320B		1	538631	04/16/20 11:53	SMO	TAL CHI

Client Sample ID: W-200413-RA-27

Lab Sample ID: 500-180585-5

Date Collected: 04/13/20 13:32
Matrix: Water
Date Received: 04/14/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	538597	04/17/20 12:01	JDD	TAL CHI
Total/NA	Prep	3510C			538618	04/17/20 07:55	BSO	TAL CHI
Total/NA	Analysis	8270D		1	538611	04/17/20 19:13	AJD	TAL CHI
Total/NA	Analysis	RSK-175		1	431713	04/22/20 12:56	JBN	TAL CAN
Total/NA	Prep	8151A			538658	04/17/20 10:34	BSO	TAL CHI
Total/NA	Analysis	8151A		1	538821	04/20/20 17:02	JBJ	TAL CHI
Dissolved	Prep	3005A			538071	04/14/20 17:10	BDE	TAL CHI
Dissolved	Analysis	6020A		1	538431	04/15/20 14:00	FXG	TAL CHI

Lab Chronicle

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

Job ID: 500-180585-1

Client Sample ID: W-200413-RA-27

Lab Sample ID: 500-180585-5
Date Collected: 04/13/20 13:32
Matrix: Water
Date Received: 04/14/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			538070	04/14/20 17:09	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	538262	04/15/20 13:41	JEF	TAL CHI
Total/NA	Analysis	300.0		1	538075	04/14/20 18:41	EAT	TAL CHI
Total/NA	Analysis	300.0		5	538075	04/14/20 23:45	EAT	TAL CHI
Total/NA	Analysis	9060A		1	538681	04/16/20 20:07	JJB	TAL CHI
Total/NA	Analysis	SM 2320B		1	538631	04/16/20 11:15	SMO	TAL CHI

Client Sample ID: W-200413-RA-28

Lab Sample ID: 500-180585-6
Date Collected: 04/13/20 14:20
Matrix: Water
Date Received: 04/14/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	538597	04/17/20 12:27	JDD	TAL CHI
Total/NA	Prep	3510C			538618	04/17/20 07:55	BSO	TAL CHI
Total/NA	Analysis	8270D		1	538611	04/17/20 19:36	AJD	TAL CHI
Total/NA	Analysis	RSK-175		1	431713	04/22/20 13:13	JBN	TAL CAN
Total/NA	Prep	8151A			538658	04/17/20 10:34	BSO	TAL CHI
Total/NA	Analysis	8151A		1	538821	04/20/20 17:21	JBJ	TAL CHI
Dissolved	Prep	3005A			538071	04/14/20 17:10	BDE	TAL CHI
Dissolved	Analysis	6020A		1	538431	04/15/20 14:04	FXG	TAL CHI
Total/NA	Prep	3010A			538070	04/14/20 17:09	BDE	TAL CHI
Total/NA	Analysis	SM 2340B		1	538262	04/15/20 13:41	JEF	TAL CHI
Total/NA	Analysis	300.0		1	538075	04/14/20 18:53	EAT	TAL CHI
Total/NA	Analysis	300.0		2	538075	04/14/20 23:57	EAT	TAL CHI
Total/NA	Analysis	300.0		5	538532	04/17/20 01:45	EAT	TAL CHI
Total/NA	Analysis	9060A		1	538681	04/16/20 20:24	JJB	TAL CHI
Total/NA	Analysis	SM 2320B		1	538631	04/16/20 12:06	SMO	TAL CHI

Client Sample ID: W-200413-RA-29

Lab Sample ID: 500-180585-7
Date Collected: 04/13/20 14:20
Matrix: Water
Date Received: 04/14/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	538597	04/17/20 12:53	JDD	TAL CHI
Total/NA	Prep	3510C			538618	04/17/20 07:55	BSO	TAL CHI
Total/NA	Analysis	8270D		1	538611	04/17/20 19:59	AJD	TAL CHI
Total/NA	Prep	8151A			538658	04/17/20 10:34	BSO	TAL CHI
Total/NA	Analysis	8151A		1	538821	04/20/20 17:41	JBJ	TAL CHI
Dissolved	Prep	3005A			538071	04/14/20 17:10	BDE	TAL CHI
Dissolved	Analysis	6020A		1	538431	04/15/20 14:07	FXG	TAL CHI

Lab Chronicle

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

Job ID: 500-180585-1

Client Sample ID: Trip Blank

Date Collected: 04/13/20 00:00
Date Received: 04/14/20 08:00

Lab Sample ID: 500-180585-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	538537	04/17/20 05:10	JDD	TAL CHI
Total/NA	Analysis	RSK-175		1	431713	04/22/20 13:48	JBN	TAL CAN

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.
Job ID: 500-180585-1
Project/Site: Penta Wood 086165

Laboratory: Eurofins TestAmerica, Chicago

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	999580010	08-31-20

Laboratory: Eurofins TestAmerica, Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-21
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-20
Georgia	State	4062	02-23-21
Illinois	NELAP	004498	07-31-20
Iowa	State	421	06-01-21
Kansas	NELAP	E-10336	04-30-20
Kentucky (UST)	State	112225	02-23-21
Kentucky (WW)	State	KY98016	12-31-20
Minnesota	NELAP	OH00048	12-31-20
Minnesota (Petrofund)	State	3506	08-01-21
New Jersey	NELAP	OH001	06-30-20
New York	NELAP	10975	03-31-20 *
Ohio VAP	State	CL0024	06-05-21
Oregon	NELAP	4062	02-24-21
Pennsylvania	NELAP	68-00340	08-31-20
Texas	NELAP	T104704517-18-10	08-31-20
USDA	US Federal Programs	P330-18-00281	09-17-21
Virginia	NELAP	010101	09-14-20
Washington	State	C971	01-12-21
West Virginia DEP	State	210	12-31-20

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

Chain of Custody Record 382172

eurofins | Environment Testing TestAmerica

Address: ____________

TAL-8210

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	
Company Name:	GAI
Address:	[illegible]
City/State/Zip:	St Paul MN 551[illegible]
Phone:	[illegible]
Fax:	
Project Name:	[illegible]
Site:	
P O #	

Project Manager: Rec
Tel/Email:
Site Contact: RA[illegible]
Lab Contact:
Date: 4/13/20
Carrier:

COC No: 1 of 1 COCs
Sampler:
For Lab Use Only:
Walk-in Client:
Lab Sampling:
Job / SDG No.:

Analysis Turnaround Time

☐ CALENDAR DAYS ☐ WORKING DAYS

TAT if different from Below ______

☐ 2 weeks
☐ 1 week
☐ 2 days
☐ 1 day

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	PCP	BTEX	Naphthalene	Alk Cl hardness nitrate	sulfate TOC methane	Sol. dissolved metals	Sample Specific Notes:
W-200413-RA-23	4/13/20	1012	G	WG	15			✓	✓	✓	✓	✓	✓	* arsenic, copper, iron
RA-24	↓	1050	↓	↓	15			✓	✓	✓	✓	✓	✓	manganese, zinc
RA-25	↓	1135	↓	↓	15			✓	✓	✓	✓	✓	✓	- field filtered
RA-26	↓	1245	↓	↓	45		X	✓	✓	✓	✓	✓	✓	
RA-27	↓	1332	↓	↓	15			✓	✓	✓	✓	✓	✓	
RA-28	↓	1420	↓	↓	15			✓	✓	✓	✓	✓	✓	
W-200413-RA-29	↓	1420	↓	↓	8			✓	✓	✓			✓	
trip blank														

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

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 & Comments:

Custody Seals Intact: ☐ Yes ☐ No
Custody Seal No.:
Cooler Temp. (°C): Obs'd: ______ Corr'd: ______ Therm ID No.: ______

Relinquished by:	Company: GAI	Date/Time: 4/13/20 16[illegible]	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Chain of Custody Record

382172

eurofins | Environment Testing TestAmerica

Address: ____________________

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TAL-8210

Client Contact	Project Manager: Ree	Site Contact: RAanot	Date: 4/13/20	COC No:
Company Name: GHD	Tel/Email:	Lab Contact:	Carrier:	1 of 1 COCs
Address: 1801 Old Highway 8 NW · 114	Analysis Turnaround Time			Sampler:
City/State/Zip: St. Paul MN 55112	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: 651-639-0913	TAT if different from Below ______			Walk-in Client:
Fax:	☐ 2 weeks			Lab Sampling:
Project Name: Penta Wood 086165	☐ 1 week			
Site:	☐ 2 days			Job / SDG No.: 500-180585
P O #	☐ 1 day		500-180585 COC	

	Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	PCP	BTEX	Naphthalene	Alk, Cl, hardness, nitrate	sulfate, TOC, methane	Select dissolved metals*	Sample Specific Notes
1	W-200413-RA-23	4/13/20		G	WG	15									* arsenic, copper, iron
2	RA-24	↓		↓	↓	15									manganese, zinc
3	RA-25					15									- field filtered
4	RA-26					45									
5	RA-27					15									
6	RA-28		1420			15									
7	RA-29	↓		↓	↓	8									
8	Trip Blank														Added by TA

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ______

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

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 & Comments:

5.8, 5.4, 5.8, 4.4, 4.2

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:	Cooler Temp. (°C): Obs'd: ____ Corr'd: ____	Therm ID No.: ____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	GHD	4/13/20 1600			0
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: Shiri Scott	Company: TA-Chi	Date/Time: 4/14/20 0940

ORIGIN ID:JOTA (651) 639-0913
RYAN AAMOT
GHD SERVICES INC.
1801 OLD HIGHWAY 8 NW
SUITE 114
ST. PAUL, MN 55112
UNITED STATES US

SHIP DATE: 23MAR20
ACTWGT: 20.00 LB MAN
CAD: 33264/CAFE3311

TO SAMPLE LOGIN
TESTAMERICA LABS
2417 BOND ST

UNIVERSITY PARK IL 60484
(708) 534-5200
REF: 086165-07-06 PENTA WOOD

500-180585 Waybill

RMA:

FedEx Express

FedEx
TRK# 0221 1648 4105 9512

TUE - 14 APR 10:30A
PRIORITY OVERNIGHT

NA JOTA

60484
IL-US
ORD

FID: 323510 13Apr2020 JDTA 56BG4/7B3A/05A2

48qt

ORIGIN ID:JOTA (651) 639-0913
RYAN AAMOT
GHD SERVICES INC.
1801 OLD HIGHWAY 8 NW
SUITE 114
ST. PAUL, MN 55112
UNITED STATES US

SHIP DATE: 23MAR20
ACTWGT: 20.00 LB MAN
CAD: 33264/CAFE3311

TO SAMPLE LOGIN
TESTAMERICA LABS
2417 BOND ST

UNIVERSITY PARK IL 60484
(708) 534-5200
REF: 086165-07-06 PENTA WOOD

RMA:

FedEx Express

FedEx
TRK# 0221 1648 4105 9501

TUE - 14 APR 10:30A
PRIORITY OVERNIGHT

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565C2/64E0/05A2

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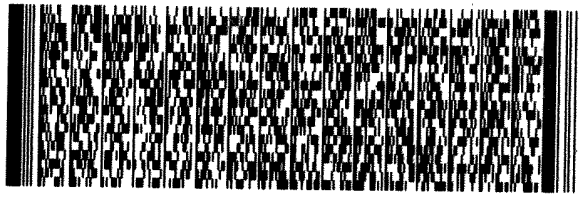
UNIVERSITY PARK IL 60484
(708) 534-5200
REF: 086165-07-06 PENTA WOOD

RMA:



FedEx Express

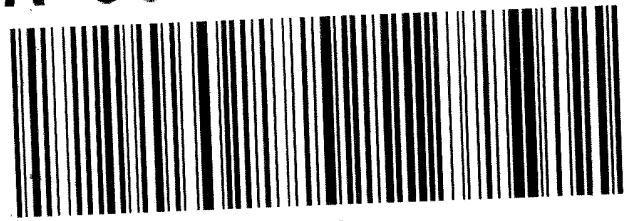
J191219002001uv

FedEx
TRK# 0221 1648 4105 9497

TUE - 14 APR 10:30A
PRIORITY OVERNIGHT

NA JOTA

60484
IL-US
ORD



FID: 323510 13Apr2020 JOTA 56BG4/7B3A/05A2

48 qt.

ORIGIN ID:JOTA (
RYAN AAMOT
GHD SERVICES INC.
1801 OLD HIGHWAY 8 NW
SUITE 114
ST. PAUL, MN 55112
UNITED STATES US

RT 519
ST 29

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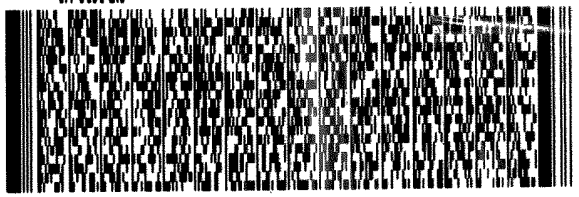
10:30
A
9486
04.14

565C2/6

TO **SAMPLE LOGIN**
TESTAMERICA LABS
2417 BOND ST

UNIVERSITY PARK IL 60484
(708) 534-5200
REF: 086165-07-06 PENTA WOOD

RMA:



FedEx Express

J191219002001uv

FedEx
TRK# 0221 1648 4105 9486

TUE - 14 APR 10:30A
PRIORITY OVERNIGHT

NA JOTA

60484
IL-US
ORD

FID: 323510 13Apr2020 JOTA 56BG4/7B3A/05A2

48 qt.


ORIGIN ID:JOTA (651) 639-0913
RYAN AAMOT
GHD SERVICES INC.
1801 OLD HIGHWAY 8 NW
SUITE 114
ST. PAUL, MN 55112
UNITED STATES US
SHIP DATE: 23MAR20
ACTWGT: 20.00 LB MAN
CAD: 33264/CAFE3311
TO SAMPLE LOGIN
TESTAMERICA LABS
2417 BOND ST
UNIVERSITY PARK IL 60484
(708) 534-6200
REF: 086165-07-06 PENTA WOOD
RMA:
FedEx Express
FedEx
TRK# 0221 1648 4105 9475
RETURNS MON-SAT
TUE - 14 APR 10:30A
PRIORITY OVERNIGHT
NA JOTA
60484
IL-US
ORD
FID: 323510 13Apr2020 JDTA 56BG4/7B3A/05A2

Eurofins TestAmerica, Chicago
2417 Bond Street
University Park, IL 60484
Phone: 708-534-5200 Fax: 708-534-5211

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Wright, Richard	Carrier Tracking No(s):	COC No: 500-134122.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: richard.wright@testamericainc.com	State of Origin: Wisconsin	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - Wisconsin		Job #: 500-180585-1
Address: 4101 Shuffel Street NW, ,	Due Date Requested: 4/27/2020			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Penta Wood 086165	Project #: 50013796			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	RSK_175/ (MOD) Methane	Total Number of containers	Special Instructions/Note: RSK
			Preservation Code:		X	X		X	
W-200413-RA-23 (500-180585-1)	4/13/20	10:12 Central		Water			X	3	WI
W-200413-RA-24 (500-180585-2)	4/13/20	10:50 Central		Water			X	3	WI
W-200413-RA-25 (500-180585-3)	4/13/20	11:35 Central		Water			X	3	WI
W-200413-RA-26 (500-180585-4)	4/13/20	12:45 Central		Water			X	3	WI
W-200413-RA-26 (500-180585-4MS)	4/13/20	12:45 Central	MS	Water			X	3	WI
W-200413-RA-26 (500-180585-4MSD)	4/13/20	12:45 Central	MSD	Water			X	3	WI
W-200413-RA-27 (500-180585-5)	4/13/20	13:32 Central		Water			X	3	WI
W-200413-RA-28 (500-180585-6)	4/13/20	14:20 Central		Water			X	3	WI
Trip Blank (500-180585-8)	4/13/20	Central		Water			X	2	WI

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica 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/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Stephanie Hernandez	4/14/20 1600	TA-CHI		4-15-20 920	TA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # :** _____
Canton Facility

Client Chicago Site Name _____ Cooler unpacked by:

Cooler Received on 4-15-20 Opened on 4-15-20

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-10 (CF **+0.7** °C) Observed Cooler Temp. 0.9 °C Corrected Cooler Temp. 1.6 °C
   IR GUN #IR-11 (CF **+0.9**°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
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# **HC902937**
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: _____

WI-NC-099

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 500-180585-1

Login Number: 180585
List Number: 1
Creator: Scott, Sherri L

List Source: Eurofins TestAmerica, Chicago

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	5.8,5.4,5.8,4.1,4.2
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	

Appendix C
Site Inspection Forms

Well Inspection Form
Penta Wood Products Superfund Site
Siren, Wisconsin

086165

Monitoring Wells

	Protective Casing	Lock & Cover	J-Plug	Well Casing	Ground Surface	Notes
MW1	✓	✓	✓	✓	✓	
MW2	✓	✓	✓	✓	✓	
MW3	✓	✓	✓	✓	✓	
MW4	✓	✓	✓	✓	✓	
MW5	✓	✓	✓	✓	✓	
MW6	✓	✓	✓	✓	✓	
MW6S	✓	✓	✓	✓	✓	
MW7	✓	✓	✓	✓	✓	
MW8	✓	✓	✓	✓	✓	
MW9	✓	✓	✓	✓	✓	
MW10	✓	✓	✓	✓	✓	
MW10S	✓	✓	✓	✓	✓	
MW11	✓	✓		✓	✓	Missing J plug
MW12	✓	✓	✓	✓	✓	
MW13	✓	✓	✓	✓	✓	
MW14	✓	✓	✓	✓	✓	
MW15	✓	✓	✓	✓	✓	
MW16	✓	✓	✓	✓	✓	
MW17	✓	✓	✓	✓	✓	
MW18	✓	✓	✓	✓	✓	
MW19	✓	✓	✓	✓	✓	
MW20	✓	✓	✓	✓	✓	
MW21	✓	✓	✓	✓	✓	
MW22	✓	✓	✓	✓	✓	
MW23	✓	✓	✓	✓	✓	
MW24	✓	✓	✓	✓	✓	
MW25	✓	✓	✓	✓	✓	
MW26	✓	✓	✓	✓	✓	
MW27	✓	✓	✓	✓	✓	
MW28	✓	✓	✓	✓	✓	
MW29	✓	✓	✓	✓	✓	
MW30	✓	✓	✓	✓	✓	
MW31	✓	✓	✓	✓	✓	
MW32	✓	✓	✓	✓	✓	

Extraction Wells

	Vault & Cover	Well Casings	Ground Surface	Notes
EW2	✓	✓	✓	
EW3	✓	✓	✓	
EW4	✓	✓	✓	
EW5	✓	✓	✓	
EW6	✓	✓	✓	
EW7	✓	✓	✓	
EW10	✓	✓	✓	
EW12	✓	✓	✓	
EW13	✓	✓	✓	
EW14	✓	✓	✓	

Gas Probes

	Protective Casing	Lock & Cover	Ground Surface	Inner Casing/Tubing	Notes
SG-04DIS	✓				
SG-05DIS	✓				
SG-06DIS	✓				
SG-07DIS	✓				
SG-22	✓				
SG-23	✓				
SG-24	✓				
SG-25	✓				
SG-26	✓				

Inspected By: RAgm.
Date: 4/6/2020
Additonal Notes:

Continuing Obligations Inspection Form
Penta Wood Products Superfund Site
Siren, Wisconsin

086165

	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 satifactory 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	✓	
Verify situations have not and are not occuring		
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: RAamot

Date: 4/6/2020

* Snow plow contractor scraped up topsoil in multiple spots

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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