Texas Commission on Environmental Quality

Remediation Division Correspondence Identification Form

SITE & PROGRAM AREA IDENTIFICATION

SITE LOCATION

Site Name: Union Pacific Railroad Houston Wood Preserving Works

Address 1: 4910 Liberty Road

Address 2:

Houston State: **Texas**

Zip Code: 77026 County: Harris

TCEQ Region: Houston - 12

REMEDIATION DIVISION PROGRAM AND FACILITY IDENTIFICATION

Is This Site Being Managed Under A State Lead Contract? ☐ Yes ☑ No

Program Area: IHW Corrective Action

Mail Code: MC-127 (IHW)

Is This A New Site To This Program Area? ☐ Yes ☑ No

Additional Information: SWR No. 31547

Additional Information: Permit/ Compliance Plan No. 50343

DOCUMENT(S) IDENTIFICATION

	PHASE OF REMEDIATION	DOCUMENT NAME
1.	Miscellanous	2023 1st Semi-Annual Monitoring Report - SWMU 1
2.	Please select a phase of remediatic	
3.	Please select a phase of remediatic	
4.	Please select a phase of remediatic	
5.	Please select a phase of remediatic	

CONTACT INFORMATION

☑ I attest that all work has been done in accordance with TCEQ rules ☑ I certify that I am aware misrepresentation of any claim is a violation.

RESPONSIBLE PARTY/APPLICANT/CUSTOMER INFORMATION (IF APPLICABLE)

Union Pacific Railroad

ENVIRONMENTAL CONSULTANT/REPORT PREPARER/AGENT

Golder Associates Inc.

SIGNATURES

DATABASE CODES

Document No.	TCEQ Database Term	Document No.	TCEQ Database Term
1.		4.	
2.		5.	
3.			

REPORT

Correction Action Monitoring Report

2023 First Semi-Annual Event

Former Houston Wood Preserving Works

4910 Liberty Road

Houston, Texas

Submitted to:

Union Pacific

Submitted by:

WSP USA Inc
1601 S MoPac Expressway, Suite 325D
Austin, Texas, USA 78746

Texas Geoscience Firm No. 50561
Texas Engineering Firm No. 2263

July 10, 2023

Table of Contents

1.0 EXECUTIVE SUMMARY 5

2.0 INTRODUCTION 6

3.0 2023 FIRST SEMI-ANNUAL GROUNDWATER MONITORING EVENT 9

3.1 Narrative Summary of First Semi-Annual Monitoring Activities 9

3.1.1 Corrective Action Program 9

3.1.2 Groundwater Monitoring 9

3.2 Purge Water Management 10

3.3 Monitoring and Corrective Action System Wells 10

3.4 Analytical Results 10

3.5 Well Measurements 10

3.6 Potentiometric Surface Maps 11

3.7 Non-Aqueous Phase Liquids 11

3.8 Recovered Groundwater and NAPL 11

3.9 Contaminant Mass Recovered 11

3.10 Analytical Data Evaluation 11

3.11 Reported Concentration Maps 12

3.12 Extent of NAPL 12

3.13 Updated Compliance Schedule 12

3.14 Summary of Changes Made to Corrective Action Program 12

3.15 Modifications and Amendments to Compliance Plan 12

3.16 Corrective Measures Implementation (CMI) Report 12

3.17 Well Casing Elevations 12

3.18 Recommendation for Changes 13

3.19 Well Installation and/or Abandonment 13

3.20 Activity Within Area Subject to Institutional Control 13

3.21 Other Requested Items 13

TABLES

1 Summary of Analytical Results for the A-Transmissive Zone (A-TZ)

2 Summary of Analytical Results for the B-Transmissive Zone (B-TZ)

3 Summary of Analytical Results for Quality Assurance/Quality Control Samples

4 Water Level Measurements

5 Compliance Status of Wells and Piezometers

FIGURES

1 Site Location Map

2 Corrective Action Monitoring Well Network – TCEQ Permit Unit No. 1

3 A-TZ Potentiometric Surface Contour Map – January 2023

4 B-TZ Potentiometric Surface Contour Map – January 2023

5 A-TZ Reported Concentrations – 2023 1st Semi Annual Monitoring Event

6 B-TZ Reported Concentrations – 2023 1st Semi Annual Monitoring Event

Signature Page

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature

7/12/2023

Date

Mark Lutz

Name

AVP Fuel & Environmental

Title

1.0 EXECUTIVE SUMMARY

This semi-annual report presents a summary and evaluation of the Corrective Action Groundwater Monitoring for January through June 2023 for the Closed Surface Impoundment (Solid Waste Management Unit (SWMU) 1) at the former Wood Preserving Works facility (the Site) located in Houston, Texas. The groundwater monitoring activities for this period were performed by WSP USA Inc. (WSP), on behalf of Union Pacific Railroad (UPRR), in January 2023.

The two uppermost groundwater bearing units, the A-Transmissive Zone (A-TZ) and the B-Transmissive Zone (B-TZ), were monitored during this period. Groundwater elevation data collected during the January 2023 sampling event show A-TZ groundwater generally flows outward from SWMU 1 to the west and east with a hydraulic gradient of approximately 0.017 ft/ft. Groundwater flow during the previous event (2022 second semi-annual monitoring event) in the A-TZ was observed to have a hydraulic gradient of approximately 0.02 ft/ft with a general flow direction of northwest across SWMU 1.

Groundwater elevation data collected in the B-TZ during the January 2023 sampling event indicate groundwater flow to the southwest across SWMU 1 with a hydraulic gradient of approximately 0.004 ft/ft. Groundwater flow during the previous event (2022 second semi-annual monitoring event) was observed to have a hydraulic gradient of approximately 0.006 ft/ft with a general flow direction to the west-northwest across SWMU 1.

Analytical results from the semi-annual sampling event were compared to Texas Commission on Environmental Quality (TCEQ) Texas Risk Reduction Program (TRRP) Protective Concentration Limits (PCLs) or Groundwater Protection Standards (GWPs), as designated in Section IV.D of the Compliance Plan, dated June 10, 2005. Constituent concentrations were below their respective PCLs during the 2023 first semi-annual monitoring period. All POC monitoring wells in the A-TZ and B-TZ are considered to be compliant for this monitoring period.

2.0 INTRODUCTION

This semi-annual report presents a summary and evaluation of groundwater monitoring data collected during the 2023 first semi-annual monitoring period (January through June) at the Union Pacific Railroad (UPRR) former Houston Wood Preserving Works facility (the Site) located at 4910 Liberty Road in Houston, Texas (Figure 1). Semi-annual groundwater monitoring is required for the Site as a condition of the Texas Commission on Environmental Quality (TCEQ) Hazardous Waste Permit No. 50343 and associated Compliance Plan (CP) No. 50343, both renewed and issued on June 10, 2005. Groundwater monitoring at the Site is performed to monitor groundwater quality beneath the Closed Surface Impoundment Unit No. 001 (Solid Waste Management Unit (SWMU) 1).

On behalf of UPRR, WSP USA Inc. (WSP) conducted groundwater monitoring activities at SWMU 1 on January 3 and 4, 2023 (water level measurements and groundwater sampling). Groundwater monitoring activities included sampling and gauging the background and point of compliance (POC) wells and piezometers associated with SWMU 1. The sampling event, analytical data, and data evaluation provided in this report fulfill the semi-annual corrective action reporting requirements for the first half of 2023 as described in the CP, Section VII.C.2. This section requires the following reporting elements:

Semi-Annual Corrective Action Report Requirements	Report Section, Table(s) and/or Figure(s)
A narrative summary of the evaluations made in accordance with CP Sections V, VI, and VII for the preceding six-month period. These periods shall be January 1 through June 30 and July 1 through December 31 (VII.C.2.a.)	3.0
Summary of Methods utilized for management of recovered/purged water (VII.C.2.b.)	3.2
An updated table and map of the monitoring and corrective action system wells (VII.C.2.c.)	Section 3.1.1 and Figure 2
The results of the chemical analyses, submitted in a tabulated format in a form acceptable to the Executive Director, which clearly indicates each parameter that exceeds the Groundwater Protection Standard (GWPS). Copies of the original laboratory report for chemical analyses showing detection limits and quality control and quality assurance data shall be provided if requested by the Executive Director (VII.C.2.d.)	Tables 1 & 2 Appendix C
Tabulation of the water level elevations (relative to mean sea level), depth to water measurements, and total depth of well measurements collected since the data that was submitted in the previous semiannual report (VII.C.2.e.)	Table 4
Potentiometric surface maps showing the elevation of the water table at the time of sampling and direction of groundwater flow gradients (VII.C.2.f.)	Figures 3 & 4

Semi-Annual Corrective Action Report Requirements (cont'd)	Report Section, Table(s) and/or Figure(s)
Quarterly tabulations of quantities of recovered groundwater and NAPLs, and graphs of monthly recorded flow rates versus time for the recovery wells during each period. A narrative summary describing and evaluating the NAPL recovery program shall also be included (VII.C.2.h.)	Not Applicable
Tabulation of the total contaminant mass recovered from each recovery system for each reporting period, if such a system is installed (VII.C.2.i.)	Not Applicable
Tabulation of the data evaluation results pursuant to Section VI.D and status of each well listed on CP Table V with regard to compliance with the corrective action objectives and compliance with the GWPSs (VII.C.2.j.)	Table 5
Maps of the contaminated area depicting concentrations of constituents listed in Table IV and any newly detected Table III constituents as isopleths contours or discrete concentrations if isopleths contours cannot be inferred (VII.C.2.k.)	Not Applicable
Maps indicating the extent and thickness of the LNAPLs and DNAPLs, if detected (VII.C.2.l.)	Not Detected
An updated schedule summary as required by Section X (VII.C.2.m.)	Appendix D
Summary of any changes made to the monitoring/corrective action program and a summary of recovery well inspections, repairs, and any operational difficulties (VII.C.2.n.)	None
A table of the modifications and amendments made to this Compliance Plan with their corresponding approval dates by the executive director or the Commission and a brief description of each action (VII.C.2.o.)	None
Corrective Measures Implementation (CMI) Report to be submitted in accordance with Section VIII.F, if necessary (VII.C.2.p.)	Not Applicable
Tabulation of well casing elevations in accordance with Attachment B No. 16 (VII.C.2.q.)	Table 4
Recommendation for any changes (VII.C.2.r.)	None
Certification and well installation diagram for any new well installation or replacement and certification for any well plugging and abandonment (VII.C.2.s.)	Not Applicable
A summary of any activity within an area subject to institutional control (VII.C.2.t.)	None
Any other items requested by the Executive Director (VII.C.2.u.)	None

As of July 2023, a recovery system had not been installed and is not necessary for the regulated unit. Therefore, Provisions 8, 9, and 10 that relate to recovery wells or recovery system, are not applicable for this reporting period.

Responses to each of the semi-annual report provisions required by CP Section VII.C.2 are provided in Section 3.0.

3.0 2023 FIRST SEMI-ANNUAL GROUNDWATER MONITORING EVENT

A discussion of each of the semi-annual report provisions required by CP Section VII.C.2 is presented below by reference number to the list of provisions in Section 2.0.

3.1 Narrative Summary of First Semi-Annual Monitoring Activities

The CP requires an evaluation of the Corrective Action Program (Section V) and Groundwater Monitoring Program summarizing the overall effectiveness of the Corrective Action Program (Section VI). This narrative summary includes provisions for response and reporting requirements as detailed in the CP Section VII, as discussed below.

3.1.1 Corrective Action Program

Groundwater samples were collected from the Background and POC wells (as detailed in CP Table V, which is provided in Appendix A) to assess potentially affected groundwater quality in the A-Transmissive Zone (A-TZ) and the B-Transmissive Zone (B-TZ). These water-bearing zones are defined as:

- A-TZ refers to the first sand unit encountered at approximately 13 feet below ground surface (bgs) and averages 7 feet in thickness; and
- B-TZ refers to the second sand unit encountered at approximately 30 feet bgs and averages 9 feet in thickness.

The definitions of the A-TZ and B-TZ are consistent with the Uppermost Transmissive Zone (UTZ) and Second Transmissive Zone (STZ), respectively, as defined in CP Provision I.A.

The following monitoring wells were sampled during this event (Figure 2):

- A-TZ POC wells: MW-01A, MW-02, MW-07, MW-10A, and MW-11A;
- A-TZ Background well: MW-08;
- B-TZ POC wells: MW-10B, MW-11B, and P-10; and
- B-TZ Background well: P-12.

3.1.2 Groundwater Monitoring

WSP performed quarterly inspections of SWMU 1 in January and April 2023 and conducted first semi-annual groundwater sampling activities on January 3 and 4, 2023. Groundwater sampling was performed using procedures outlined in a U.S. Environmental Protection Agency (EPA) document titled Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures (EPA/540/S-95/504) published in April 1996 and approved in the CP application. Groundwater samples were analyzed for the Detected Hazardous and Solid Waste Constituents listed in the CP, Table III (Appendix A).

Monitoring wells are equipped with dedicated polytetrafluoroethylene (PTFE) tubing for groundwater sampling. A peristaltic pump was used to purge and collect the groundwater samples. An approximate one-foot section of disposable silicon tubing was placed around the pump head and attached to the PTFE tubing for proper operation of the pump. Groundwater was pumped from the screened interval of each well at a flow rate of less than 0.5 L/min using a flow-through cell. Field parameters including temperature, pH, specific conductivity, dissolved oxygen, and turbidity were measured during purging and sampling activities. When field parameters had

stabilized to the EPA-specified criteria, a sample was then collected for analysis. The samples were also collected at a flow rate of less than 0.5 L/min. Recorded field parameters are summarized in Appendix B.

For each well, sample bottles were filled directly from the pumping apparatus described above, and were sealed and packed in coolers with sufficient ice to maintain a sample temperature of approximately 4°C. The sample coolers were delivered to ALS Environmental in Houston, Texas for laboratory analysis. Chain-of-Custody forms were completed and kept with their respective samples. Copies of the analytical data and COCs are included in Appendix C. Groundwater samples were then analyzed for the Detected Hazardous and Solid Waste Constituents listed in the CP, Table III (Appendix A).

3.2 Purge Water Management

Approximately ten gallons of purge water were generated during the January 2023 low-flow groundwater sampling event. The purge water was containerized in a Department of Transportation (DOT) certified, 55-gallon steel drum, combined with purge water from site-wide sampling activities, and temporarily stored on site in a fenced and locked container storage area (NOR 007). Wastes generated during the SWMU 1 sampling event in 2023 were transported from the Site by OMI to the US Ecology Robstown facility, located in Robstown, Texas in April 2023. The waste manifest is provided in Appendix D.

3.3 Monitoring and Corrective Action System Wells

A summary of the current monitoring and corrective action groundwater wells is discussed in Section 3.1.1. Configuration of the current monitoring and corrective action well network is presented on Figure 2.

3.4 Analytical Results

The 2023 first semi-annual groundwater analytical results from the A-TZ and B-TZ are summarized in Tables 1 and 2, respectively and the laboratory analytical report is provided in Appendix C. The analytical results were compared to the Detected Hazardous and Solid Waste Constituent limits, which are taken from the current TCEQ Texas Risk Reduction Program (TRRP) Tier 1 Protective Concentration Levels (PCLs). TRRP PCLs serve as the Groundwater Protection Standard (GWPS), as detailed in Section IV.D and Table III of the CP. If concentrations exceeded the concentration limits of this report, the concentration is bolded within the table.

Quality assurance/quality control (QA/QC) samples (matrix spike and matrix spike duplicate results) are summarized in Table 3.

3.5 Well Measurements

During the sampling event, the following information was recorded at each monitoring well:

Before Sampling:

- The presence of light NAPLs was evaluated; and
- Depth to groundwater below the top of casing was measured to the nearest 0.01 foot.

After Sampling:

- The presence of dense non-aqueous phase liquids (DNAPLs) was evaluated using visual observations and an oil-water interface probe; and
- Total well depths of the wells were measured.

Table 4 provides a summary of these measurements. None of the compliance wells had measurable amounts or any indication of LNAPL or DNAPL.

3.6 Potentiometric Surface Maps

Groundwater elevation data recorded during the 2023 first semi-annual monitoring event were used to create potentiometric surface maps of the A-TZ and B-TZ, presented on Figures 3 and 4, respectively.

Based on groundwater elevation data collected in the A-TZ during the January 2023 gauging event, groundwater flows outward from SWMU 1 to the east and west with a hydraulic gradient of approximately 0.017 ft/ft. Groundwater flow during the previous event (2022 second semi-annual monitoring event) in the A-TZ was observed to have a hydraulic gradient of approximately 0.02 ft/ft with a general flow direction of northwest across SWMU 1.

Groundwater elevation data collected in the B-TZ show groundwater flow to the southwest across SWMU 1 with a hydraulic gradient of approximately 0.004 ft/ft. Groundwater flow during the previous event (2022 second semi-annual monitoring event) was observed to have hydraulic gradient of approximately 0.006 ft/ft with a general flow direction to the west-northwest across SWMU 1.

3.7 Non-Aqueous Phase Liquids

Measurable amounts of LNAPL and/or DNAPL were not observed in any of the compliance wells.

3.8 Recovered Groundwater and NAPL

To date, a recovery system has not been installed nor is necessary at the SWMU 1; therefore, this provision is not applicable.

3.9 Contaminant Mass Recovered

With no groundwater recovery system installed, or necessary, this provision is not applicable for the Site.

3.10 Analytical Data Evaluation

Section VI.D of the CP describes two methods which may be used to determine the compliance status of a given well:

- Analytical results may be either directly compared with PCLs (CP Table III; included in Appendix A), or
- Analytical results can be statistically compared with PCLs using the Confidence Interval Procedure for the mean concentration based on normal, log-normal, or non-parametric distribution, which the 95% confidence coefficient of the t-distribution will be used in construction of the confidence interval.

Direct comparison to PCLs was used to evaluate the analytical data. Tables 1 (A-TZ) and 2 (B-TZ) show the results of a direct comparison of data for this sampling event to the respective PCLs. Wells and piezometers are in compliance if each of the constituents listed in the CP Table III was reported at a concentration less than or equal to the PCL.

Based on the analytical results from the monitoring event, the compliance wells completed in both transmissive zones are compliant with GWPSs. Compliance status for each of the monitoring wells is provided in Table 5.

Concentration versus time graphs for COCs in the A-TZ (2-methylnaphthalene (Figure E-1), dibenzofuran (Figure E-2), and naphthalene (Figure E-3)) and the B-TZ (dibenzofuran (Figure E-4) and naphthalene (Figure E-5)) are provided in Appendix E. The graphs demonstrate that COC concentrations in the A-TZ and B-TZ POC wells have shown a steady decrease over time with sporadic detections.

A QA/QC review and Data Usability Summary (DUS) were prepared for the January 2023 analytical data by GHD Services Inc. (Appendix C). The laboratory qualified analytes with concentrations above the sample detection limits (SDLs) but below the method quantitation limits (MQLs) as estimated on analytical tables (Tables 1 and 2).

3.11 Reported Concentration Maps

Reported concentrations of each constituent analyzed for the 2023 first semi-annual monitoring event are presented on Figures 5 and 6 for the A-TZ and B-TZ compliance wells, respectively. Constituent concentrations in the POC and background wells were below PCLs. POC wells have been in compliance with the concentration limits during the last 7 semi-annual sampling events (3.5 years).

3.12 Extent of NAPL

No measurable amounts of LNAPL or DNAPL were detected in any of the compliance wells.

3.13 Updated Compliance Schedule

Section X of the CP requires that the Permittee submit a schedule summarizing the activities required by the Compliance Plan issued on June 10, 2005, which was originally submitted to the TCEQ on August 4, 2004. An updated compliance schedule is included as Appendix F of this report.

3.14 Summary of Changes Made to Corrective Action Program

No changes have been made to the corrective action program.

3.15 Modifications and Amendments to Compliance Plan

A compliance plan renewal application was submitted to TCEQ on December 23, 2003 consistent with the renewal requirements for the RCRA permit at the site. The RCRA permit and CP were issued June 10, 2005. There have been no modifications or amendments to the Compliance Plan since the last permit issued. However, a RCRA Part A and Part B Permit Renewal Application with a Major Modification to the Compliance Plan was submitted on December 10, 2014, with revisions dated December 7, 2015, July 29, 2016, June 24, 2017, July 9, 2019, August 31, 2020, October 26, 2020, and January 15, 2021. The TCEQ completed the technical review of the Permit Renewal Application and prepared a preliminary decision and final draft permit. The application is currently in the public comment review period. A Class 1 Permit Modification to update the facility contact information was submitted on February 28, 2018 and approved by the TCEQ in a letter dated March 20, 2018.

3.16 Corrective Measures Implementation (CMI) Report

A Response Action Plan (RAP) was submitted with the Compliance Plan to the TCEQ on December 10, 2014 with revisions dated December 7, 2015, July 29, 2016, June 24, 2017, July 9, 2019, August 31, 2020, October 26, 2020 and January 15, 2021.

3.17 Well Casing Elevations

In accordance with the facility Groundwater Sampling and Analysis Plan (GWSAP) dated May 13, 2004 (Revision 1), which requires SWMU 1 monitoring well elevations to be resurveyed every five years, the six A-TZ and four B-

TZ monitoring well elevations were surveyed in December 2020. The top of casing elevations in Table 4 are based on the December 2020 survey.

3.18 Recommendation for Changes

As detailed in a response letter to TCEQ dated August 5, 2020, SWMU 1 will remain in the Corrective Action Program and continue to be evaluated in accordance with Section IV.F.3 of the CP. Once the compliance monitoring objectives are met, UPRR will propose to switch to the compliance monitoring program.

3.19 Well Installation and/or Abandonment

No monitoring wells were installed or abandoned as part of the monitoring program or the Corrective Action Program during the reporting period.

3.20 Activity Within Area Subject to Institutional Control

No areas are under institutional control; therefore, this provision does not apply.

3.21 Other Requested Items

No other items have been requested by the executive director.

Tables

Table 1
Summary of Analytical Results for the A-Transmissive Zone (A-TZ)
Semiannual Monitoring Report: 2023 First Semi-Annual Event

Houston Wood Preserving Works
Houston, Texas

Analyte	PCL (mg/L)	Monitoring Well IDs (Concentrations mg/L)																				
		MW-01A			FD-01 (MW-01A)			MW-02			MW-07			MW-08			MW-10A			MW-11A		
		1/3/2023	LQ	VQ	1/3/2023	LQ	VQ	1/3/2023	LQ	VQ	1/3/2023	LQ	VQ	1/3/2023	LQ	VQ	1/3/2023	LQ	VQ	1/3/2023	LQ	VQ
Acenaphthene	1.5	0.021			0.02			0.0046			0.000027	U	U	0.000027	U	U	0.000027	U	U	0.000027	U	U
Acenaphthylene	1.5	0.0003			0.0003			0.000015	U	U	0.000015	U	U	0.000015	U	U	0.000015	U	U	0.000015	U	U
Anthracene	7.3	0.00027			0.00025			0.000076	J	J	0.000014	U	U	0.000014	U	U	0.000014	U	U	0.000079	J	J
bis(2-ethylhexyl)phthalate	0.006	0.000037	U	U	0.000037	U	U	0.000037	U	U	0.000037	U	U	0.000061	J	J	0.000037	U	U	0.000037	U	U
Dibenzofuran	0.098	0.0017			0.0019			0.00045			0.00002	U	U	0.00002	U	U	0.00002	U	U	0.00002	U	U
Fluoranthene	0.98	0.00084			0.00077			0.00034			0.00001	U	U	0.00001	U	U	0.00001	U	U	0.00001	U	U
Fluorene	0.98	0.0048			0.0052			0.0025			0.00003	U	U	0.00003	U	U	0.00003	U	U	0.00003	U	U
2-Methylnaphthalene	0.098	0.000019	U	U	0.000019	U	U	0.000068	J	J	0.000019	U	U	0.000019	U	U	0.000019	U	U	0.000019	U	U
Naphthalene	0.49	0.000085	J	J	0.000076	J	J	0.000052	J	J	0.00002	U	U	0.00002	U	U	0.00002	U	U	0.00002	U	U
Phenanthrene	0.73	0.000021	U	U	0.000021	U	U	0.000073	J	J	0.000021	U	U	0.000021	U	U	0.000021	U	U	0.000021	U	U
Pyrene	0.73	0.0004			0.00039			0.00018			0.000019	U	U	0.000019	U	U	0.000019	U	U	0.000019	U	U

Notes:
PCL = Protective Concentration Level
The Compliance Plan Section IV.D defines the Groundwater Protection Standard (GWPS) as the PCL
FD-01 = Duplicate sample collected at MW-01A

LQ - Lab Qualifier
J = Estimated value between the SDL and the MQL
U = Value not detected greater than the MQL

VQ - Validation Qualifier
J = Estimated concentration
U = Non-detect due to low concentrations detected in the associated field blank

Table 2
Summary of Analytical Results for the B-Transmissive Zone (B-TZ)
Semiannual Monitoring Report: 2023 First Semi-Annual Event

Houston Wood Preserving Works
Houston, Texas

Analyte	PCL (mg/L)	Monitoring Well IDs (Concentrations mg/L)														
		MW-10B			MW-11B			P-10			FD-02 (P-10)			P-12		
		1/3/2023	LQ	VQ	1/3/2023	LQ	VQ	1/3/2023	LQ	VQ	1/3/2023	LQ	VQ	1/3/2023	LQ	VQ
Acenaphthene	1.5	0.023			0.038			0.000027	U	U	0.000027	U	U	0.000027	U	U
Acenaphthylene	1.5	0.00012			0.00064			0.000015	U	U	0.000015	U	U	0.000015	U	U
Anthracene	7.3	0.0006			0.00036			0.000014	U	U	0.000014	U	U	0.000014	U	U
bis(2-ethylhexyl)phthalate	0.006	0.000037	U	U	0.000037	J	J	0.00014	J	J	0.00014	J	J	0.000037	U	U
Dibenzofuran	0.098	0.0019			0.0021			0.00002	U	U	0.00002	U	U	0.00002	U	U
Di-n-butyl phthalate	2.4	0.000020	U	U	0.00002	U	U	0.00002	U	U	0.000031	J	J	0.00002	U	U
Fluoranthene	0.98	0.0011			0.0041			0.00001	U	U	0.00001	U	U	0.00001	U	U
Fluorene	0.98	0.005			0.0027			0.00003	U	U	0.00003	U	U	0.00003	U	U
Naphthalene	0.49	0.000099	J	J	0.00002	U	U	0.00002	U	U	0.00002	U	U	0.00002	U	U
Phenol	7.3	0.000035	U	U	0.000035	U	U	0.000035	U	U	0.000035	U	U	0.000035	U	U
Pyrene	0.73	0.00046			0.002			0.000019	U	U	0.000019	U	U	0.000019	U	U

Notes:
PCL = Protective Concentration Level
The Compliance Plan Section IV.D defines the Groundwater Protection Standard (GWPS) as the PCL
FD-02 = Duplicate sample collected at P-10

LQ - Lab Qualifier
J = Estimated value between the SDL and the MDQ
U = Value not detected greater than the MQL

VQ - Validation Qualifier
J = Estimated concentration
U = Non-detect due to low concentrations detected in the associated field blank

Table 3
Summary of Analytical Results for Quality Assurance/Quality Control Samples
Semiannual Monitoring Report: 2023 First Semi-Annual Event

Houston Wood Preserving Works
Houston, Texas

Analyte	P-12(MS)[1]		P-12(MSD)[1]	
	Matrix Spike		Matrix Spike Duplicate	
	1/3/2023		1/3/2023	
Acenaphthene	3.739		3.661	
Acenaphthylene	3.967		3.824	
Anthracene	3.913		3.888	
bis(2-ethylhexyl)phthalate	4.23		4.386	
Dibenzofuran	3.877		3.876	
Fluoranthene	4.145		4.132	
Fluorene	3.922		3.891	
2-Methylnaphthalene	3.645		3.558	
Naphthalene	3.504		3.4	
Phenanthrene	4.008		3.856	
Pyrene	3.931		3.781	

Notes:
PCL = Protective Concentration Level
(1) = P-12(MS) and P-12(MSD) are matrix spike and matrix spike duplicate samples collected at P-12, respectively.
N = Relative percent difference of the MS and MSD exceeds the control limits.

Table 4
Water Level Measurements
Semiannual Monitoring Report: 2023 First Semi-Annual Event

Houston Wood Preserving Works
Houston, Texas

Well ID	Top of Casing Elevation (TOC) (ft MSL)*	Date Measured	Water Depth (ft. BTOC)	Depth to NAPL (ft. BTOC)	Total Well Depth as Completed (ft. BTOC)	Total Well Depth (ft. BTOC)	Potentiometric Elevation (ft. MSL)
A-TZ Monitoring Locations							
MW-01A	47.85	1/3/2023	3.32	ND	20.2	19.85	44.53
MW-02	47.93	1/3/2023	3.41	ND	20.3	24.05	44.52
MW-07	48.87	1/3/2023	4.29	ND	25.9	22.25	44.58
MW-08	49.30	1/3/2023	4.91	ND	26.8	25.05	44.39
MW-10A	49.91	1/3/2023	5.37	ND	25.9	20.15	44.54
MW-11A	50.21	1/3/2023	5.69	ND	24.4	24.05	44.52
B-TZ Monitoring Locations							
MW-10B	49.85	1/3/2023	5.49	ND	48.8	46.45	44.36
MW-11B	50.09	1/3/2023	5.83	ND	46.8	46.65	44.26
P-10	47.91	1/3/2023	3.49	ND	40.0	42.85	44.42
P-12	48.65	1/3/2023	4.29	ND	40.0	42.80	44.36

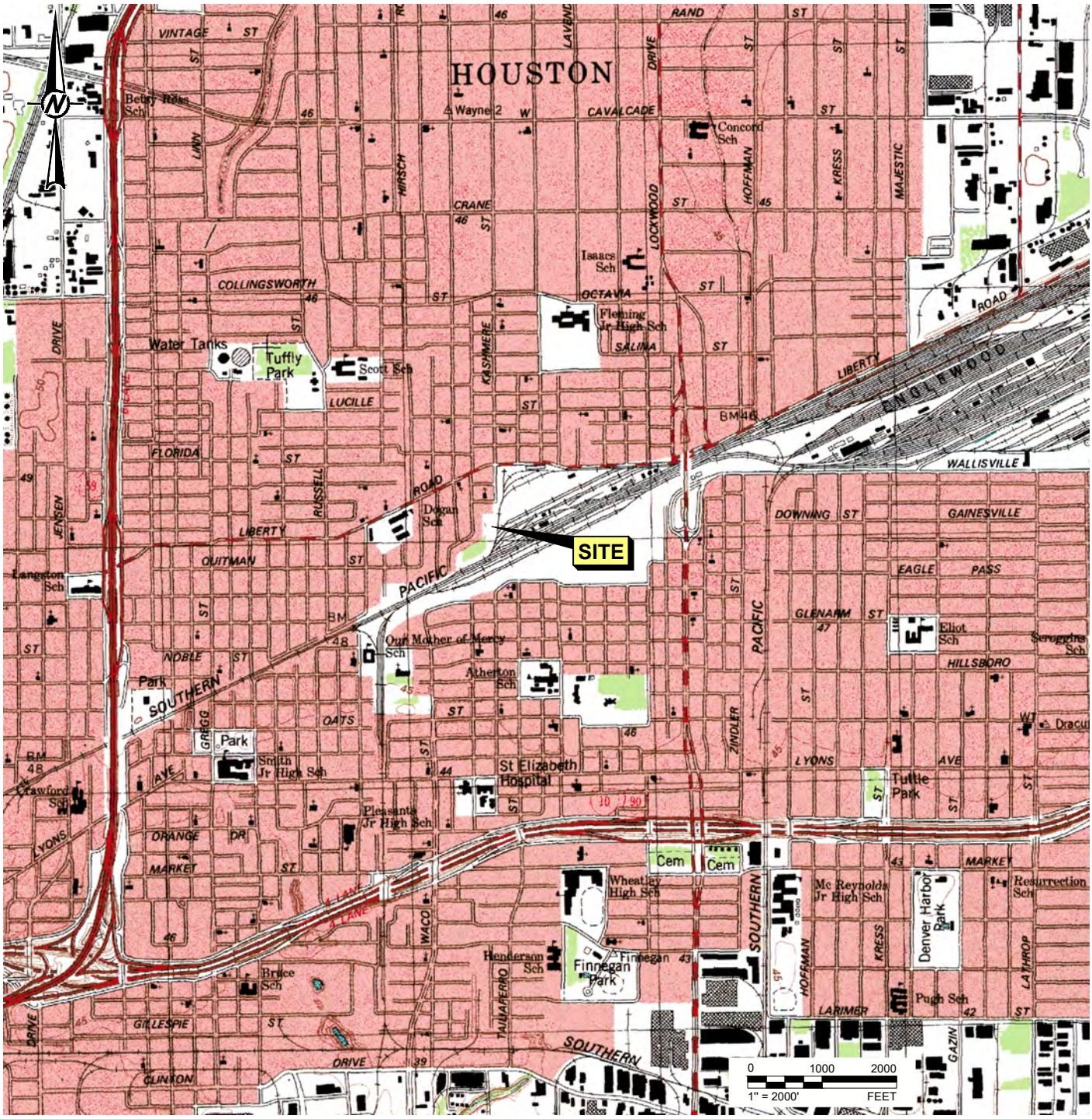
Notes
BTOC = feet below the top of the well casing
ft. MSL = feet above Mean Sea Level
NA = Not Available
*TOC elevations based on December 2020 survey (see Section 3.17)

Table 5
Compliance Status of Wells and Piezometers
Semiannual Monitoring Report: 2023 First Semi-Annual Event

Houston Wood Preserving Works
Houston, Texas

Zone	Monitoring Well Location	Well Designation	Compliance Status
A-TZ Monitoring Location	MW-01A	Point of Compliance	Compliant
	MW-02	Point of Compliance	Compliant
	MW-07	Point of Compliance	Compliant
	MW-08	Background Well	Compliant
	MW-10A	Point of Compliance	Compliant
	MW-11A	Point of Compliance	Compliant
B-TZ Monitoring Location	MW-10B	Point of Compliance	Compliant
	MW-11B	Point of Compliance	Compliant
	P-10	Point of Compliance	Compliant
	P-12	Background Well	Compliant

Figures



REFERENCE(S)
BASE MAP TAKEN FROM U.S.G.S. 7.5 MINUTE QUADRANGLE, SETTEGAST, TEXAS, 1982

QUADRANGLE LOCATION

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

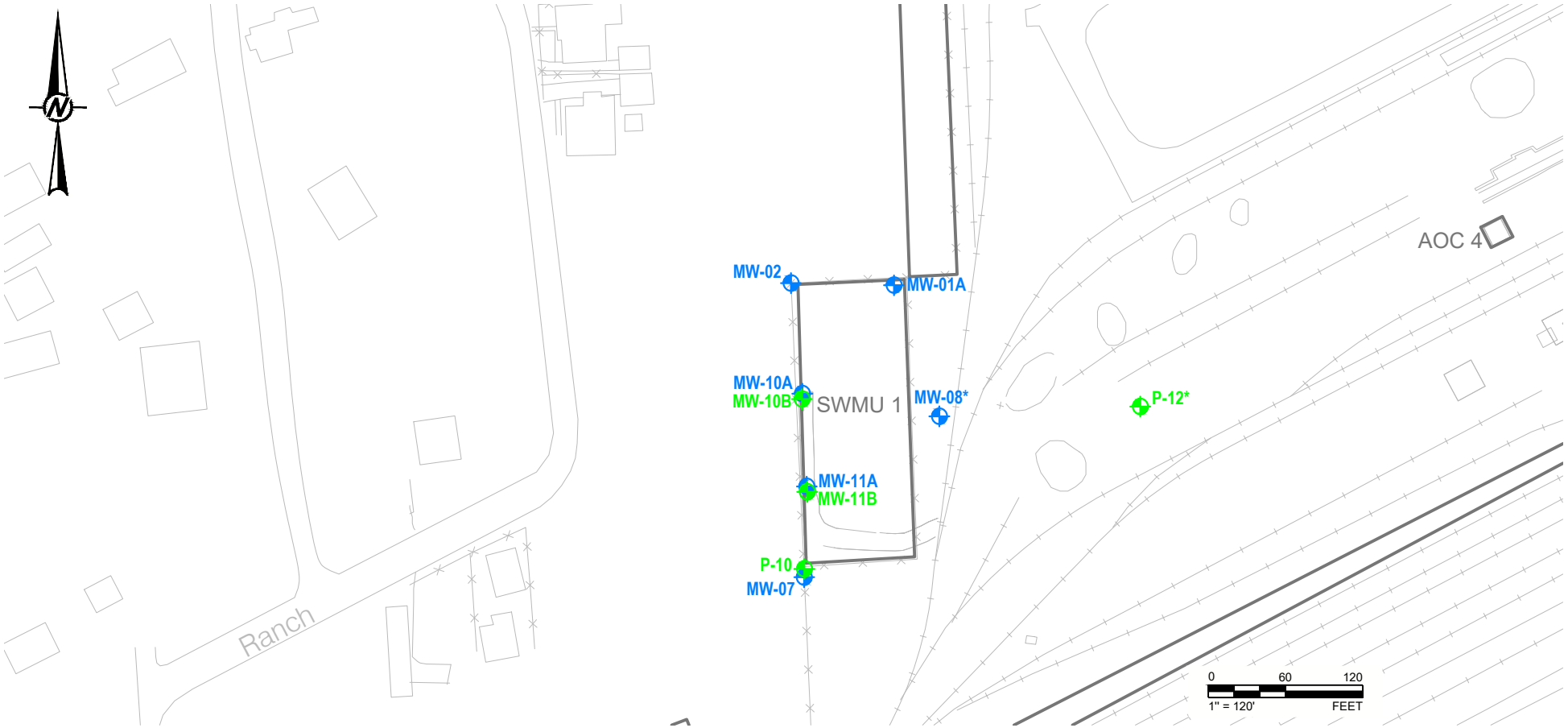
TITLE
SITE LOCATION MAP

CONSULTANT

YYYY-MM-DD	2023-04-11
DESIGNED	RS
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A



LEGEND

- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION
- B-TZ MONITORING WELL LOCATION

NOTE(S)

1. * BACKGROUND WELL.

REFERENCE(S)

BASE MAP TAKEN FROM ERM-SOUTHWEST, INC 0014419A310.DWG, 6/19/2006.

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
CORRECTIVE ACTION MONITORING WELL NETWORK
TCEQ PERMIT UNIT NO. 1

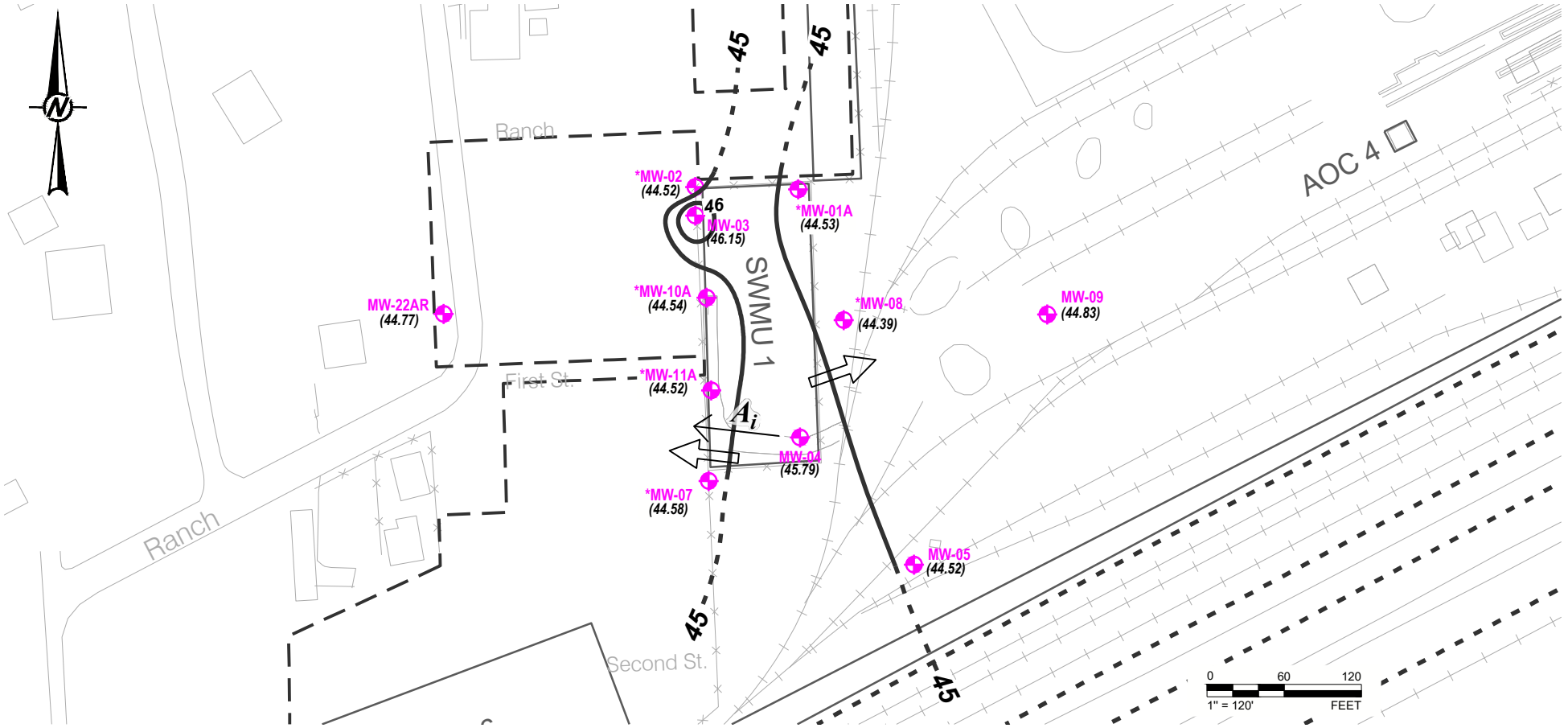
CONSULTANT

wsp

YYYY-MM-DD	2023-04-11
DESIGNED	RS
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO.	REV.	FIGURE
19119232	0	2

Last Edited By: adiamond Date: 2023-06-20 Time:10:48:49 AM | Printed By: adiamond Date: 2023-06-28 Time:4:57:50 PM |
Path: \\golder.gds\complexdata\office\Texarkana\Projects - Round Rock_2019\19119232 - HWPW\0-Semi-Annual Monitoring Event\SWMU Figures\2023 - 1st Semi-Annual\ | File Name: 003 - A-TZ Pot Surface Map (SWMU 1) - January 2023.dwg



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION (*-COMPLIANCE WELL)
- (44.62) GROUNDWATER ELEVATION (FT, HVD) (NM = NOT MEASURED)
- 45 GROUNDWATER ELEVATION CONTOUR (FT, HVD) C.I. = 1.0 FT (DASHED WHERE INFERRED)
- INFERRED GROUNDWATER FLOW DIRECTION

ESTIMATED GRADIENT

$A_i \rightarrow A_i = \frac{1.27\ ft}{74.4\ ft} = 0.017\ ft/ft$

REFERENCE(S)

BASE MAP TAKEN FROM ERM-SOUTHWEST, INC 0014419a310.DWG, 6/19/2006

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
7/10/23

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
A-TZ POTENTIOMETRIC SURFACE CONTOUR MAP JANUARY 2023

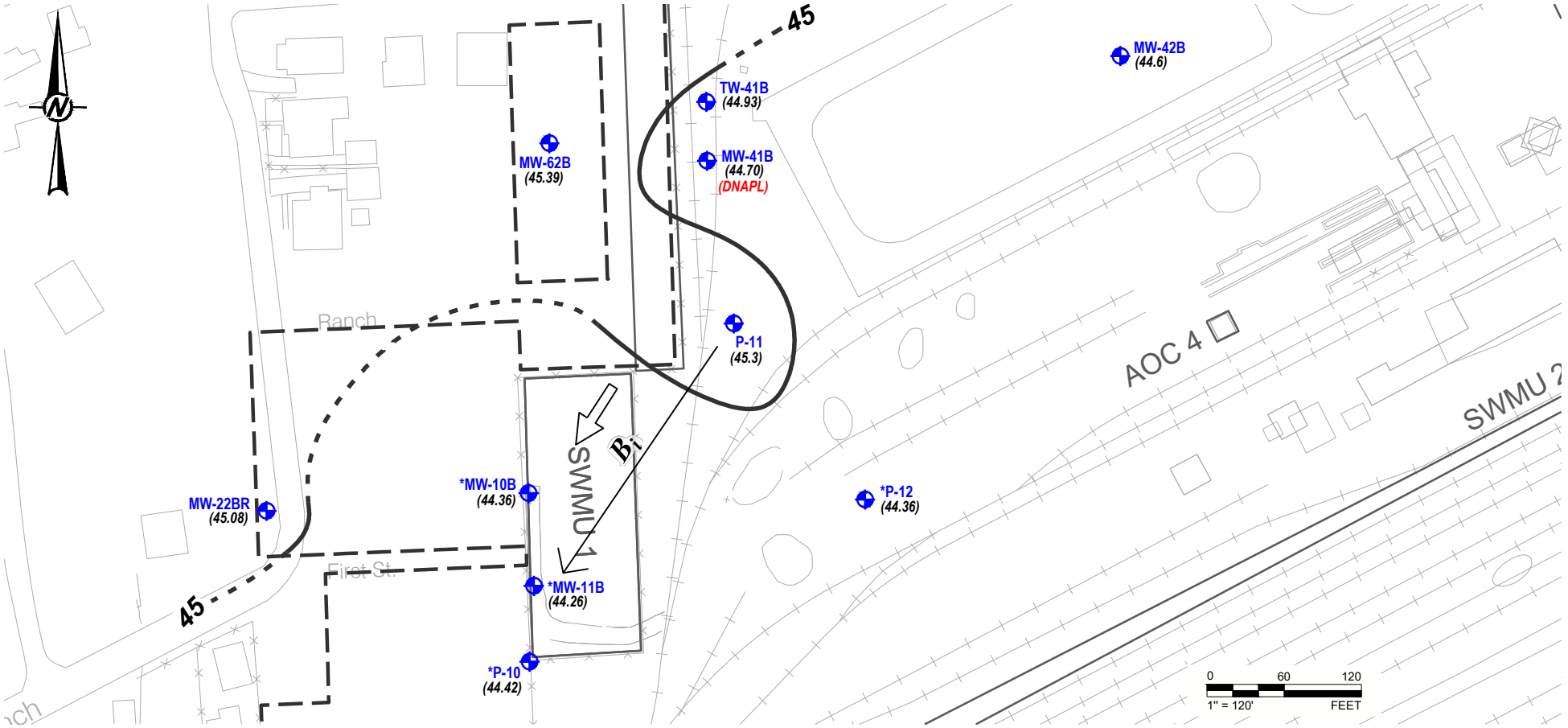
CONSULTANT
wsp
TEXAS GEOSCIENCE FIRM NO. 50561
TEXAS ENGINEERING FIRM NO. 2263

YYYY-MM-DD	2023-04-19
DESIGNED	RS
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 3

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A
1 in
0

Last Edited By: adiamond Date: 2023-06-20 Time:10:52:56 AM | Printed By: adiamond Date: 2023-06-28 Time:5:02:41 PM |
Path: \\golder.gds\complexdata\office\Texarkana\Projects - Round Rock_2019\19119232 - HWPW\0-Semi-Annual Monitoring Event\SWMU Figures\2023 - 1st Semi-Annual\ | File Name: 004 - B-TZ Pot Surface Map (SWMU 1) - January 2023.dwg



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- B-TZ MONITORING WELL LOCATION (*-COMPLIANCE WELL)
- (44.27) GROUNDWATER ELEVATION (FT, HVD) (NM = NOT MEASURED)
- 45 GROUNDWATER ELEVATION CONTOUR (FT, HVD) C.I. = 1.0 FT (DASHED WHERE INFERRED)
- INFERRED GROUNDWATER FLOW DIRECTION

ESTIMATED GRADIENT

$$B_i \rightarrow B_i = \frac{1.04\ ft}{260\ ft} = 0.004\ ft/ft$$

REFERENCE(S)

BASE MAP TAKEN FROM ERM-SOUTHWEST, INC 0014419a310.DWG, 6/19/2006

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
7/10/23

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

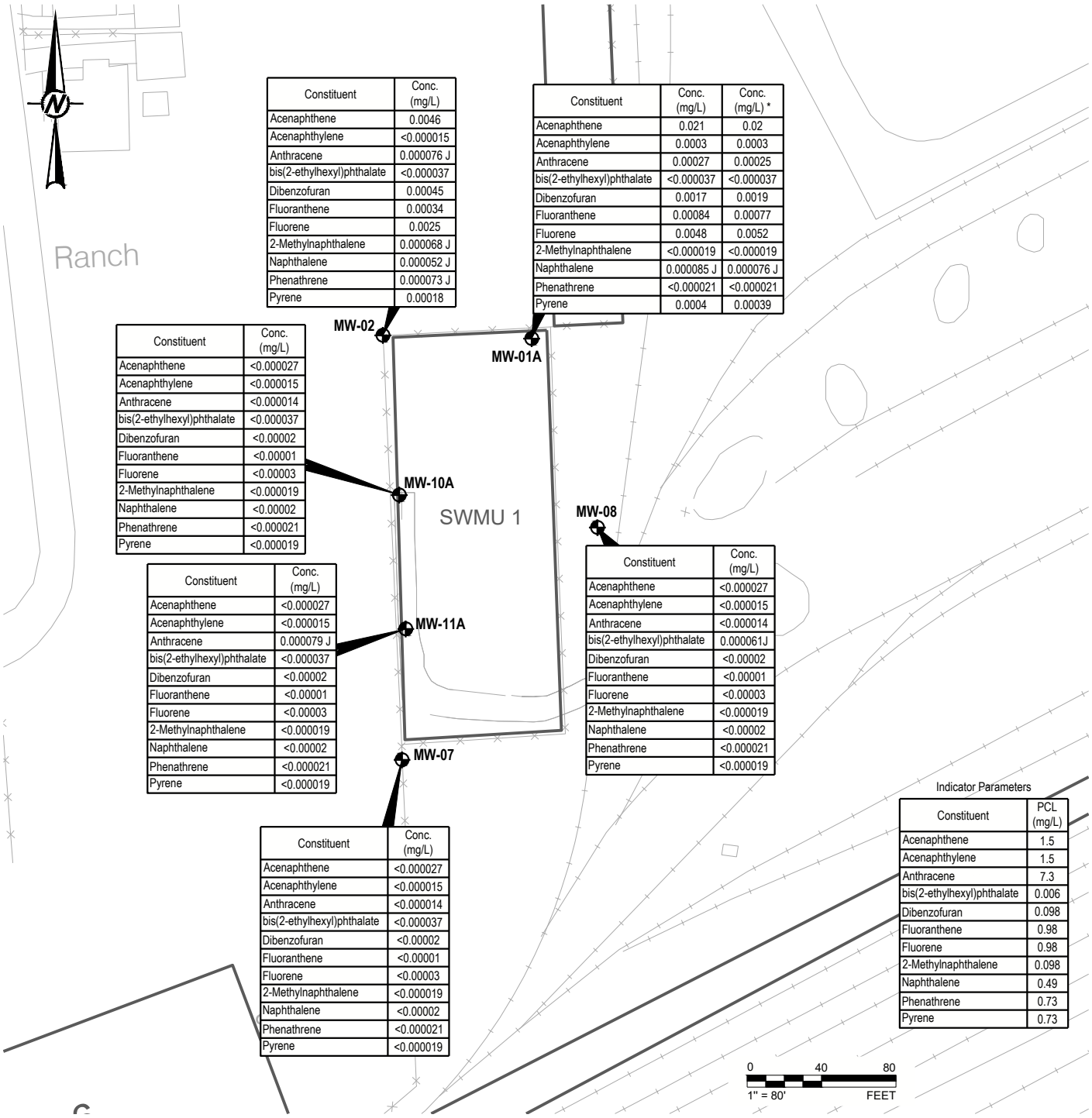
TITLE
B-TZ POTENTIOMETRIC SURFACE CONTOUR MAP JANUARY 2023

CONSULTANT
wsp
TEXAS GEOSCIENCE FIRM NO. 50561
TEXAS ENGINEERING FIRM NO. 2263

YYYY-MM-DD	2023-04-11
DESIGNED	RS
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 4

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A
1 in
0



Constituent	Conc. (mg/L)
Acenaphthene	0.0046
Acenaphthylene	<0.000015
Anthracene	0.000076 J
bis(2-ethylhexyl)phthalate	<0.000037
Dibenzofuran	0.00045
Fluoranthene	0.00034
Fluorene	0.0025
2-Methylnaphthalene	0.000068 J
Naphthalene	0.000052 J
Phenathrene	0.000073 J
Pyrene	0.00018

Constituent	Conc. (mg/L)	Conc. (mg/L) *
Acenaphthene	0.021	0.02
Acenaphthylene	0.0003	0.0003
Anthracene	0.00027	0.00025
bis(2-ethylhexyl)phthalate	<0.000037	<0.000037
Dibenzofuran	0.0017	0.0019
Fluoranthene	0.00084	0.00077
Fluorene	0.0048	0.0052
2-Methylnaphthalene	<0.000019	<0.000019
Naphthalene	0.000085 J	0.000076 J
Phenathrene	<0.000021	<0.000021
Pyrene	0.0004	0.00039

Constituent	Conc. (mg/L)
Acenaphthene	<0.000027
Acenaphthylene	<0.000015
Anthracene	<0.000014
bis(2-ethylhexyl)phthalate	<0.000037
Dibenzofuran	<0.00002
Fluoranthene	<0.00001
Fluorene	<0.00003
2-Methylnaphthalene	<0.000019
Naphthalene	<0.00002
Phenathrene	<0.000021
Pyrene	<0.000019

Constituent	Conc. (mg/L)
Acenaphthene	<0.000027
Acenaphthylene	<0.000015
Anthracene	0.000079 J
bis(2-ethylhexyl)phthalate	<0.000037
Dibenzofuran	<0.00002
Fluoranthene	<0.00001
Fluorene	<0.00003
2-Methylnaphthalene	<0.000019
Naphthalene	<0.00002
Phenathrene	<0.000021
Pyrene	<0.000019

Constituent	Conc. (mg/L)
Acenaphthene	<0.000027
Acenaphthylene	<0.000015
Anthracene	<0.000014
bis(2-ethylhexyl)phthalate	0.000061J
Dibenzofuran	<0.00002
Fluoranthene	<0.00001
Fluorene	<0.00003
2-Methylnaphthalene	<0.000019
Naphthalene	<0.00002
Phenathrene	<0.000021
Pyrene	<0.000019

Constituent	Conc. (mg/L)
Acenaphthene	<0.000027
Acenaphthylene	<0.000015
Anthracene	<0.000014
bis(2-ethylhexyl)phthalate	<0.000037
Dibenzofuran	<0.00002
Fluoranthene	<0.00001
Fluorene	<0.00003
2-Methylnaphthalene	<0.000019
Naphthalene	<0.00002
Phenathrene	<0.000021
Pyrene	<0.000019

Indicator Parameters

Constituent	PCL (mg/L)
Acenaphthene	1.5
Acenaphthylene	1.5
Anthracene	7.3
bis(2-ethylhexyl)phthalate	0.006
Dibenzofuran	0.098
Fluoranthene	0.98
Fluorene	0.98
2-Methylnaphthalene	0.098
Naphthalene	0.49
Phenathrene	0.73
Pyrene	0.73

LEGEND

FENCE

RAILROAD

A-TZ MONITORING WELL LOCATION

NOTE(S)

1. SAMPLES COLLECTED IN JANUARY 2023.
2. J = ESTIMATED VALUE BETWEEN SQL AND MDL.
3. < = VALUE NOT DETECTED GREATER THAN MDL.
4. * = FIELD DUPLICATE

REFERENCE(S)

BASE MAP TAKEN FROM ERM-SOUTHWEST, INC 0014419a310.DWG, 6/19/2006.

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
A-TZ REPORTED CONCENTRATIONS
2023 1ST SEMI-ANNUAL MONITORING EVENT

CONSULTANT

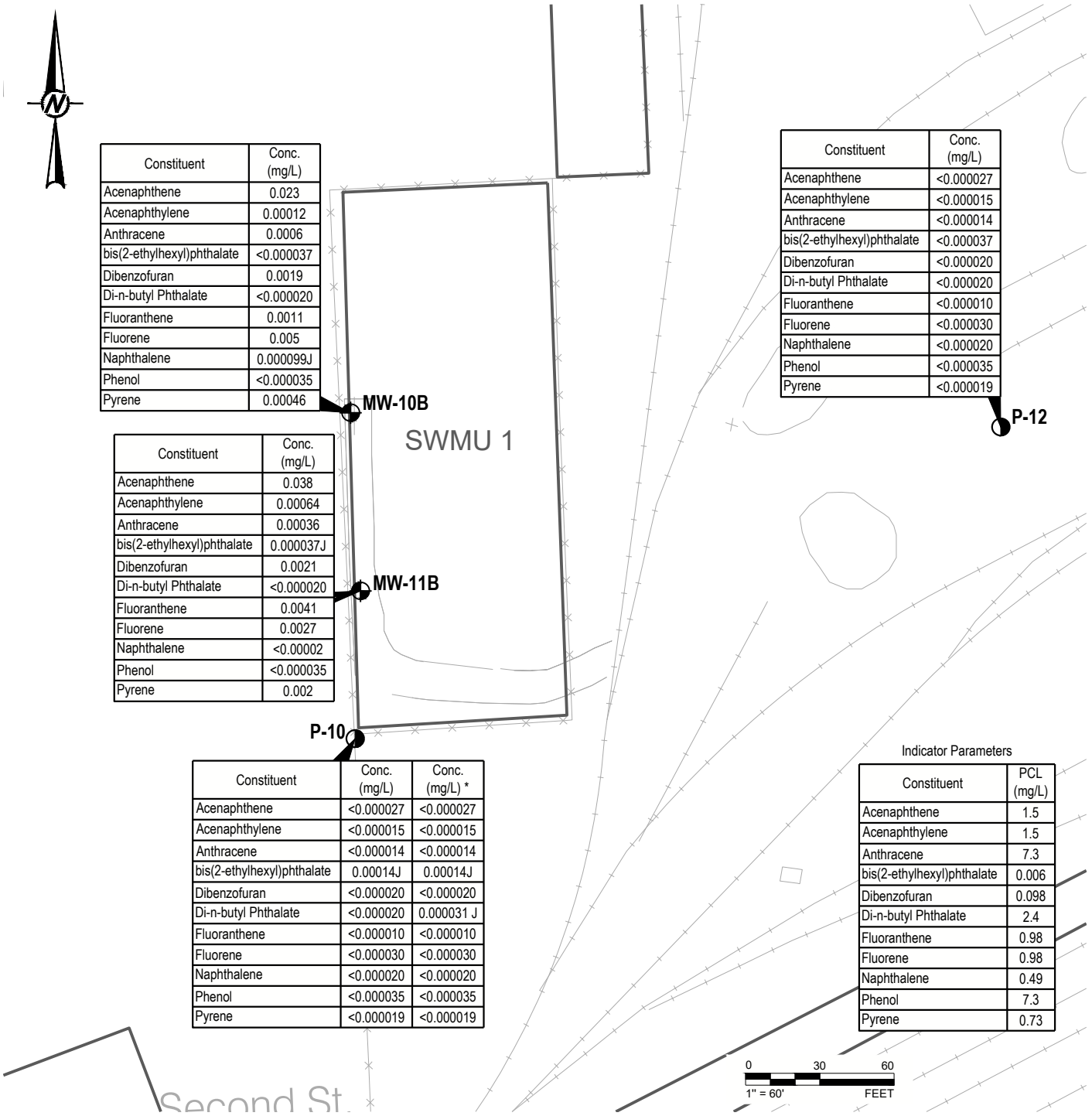
TEXAS GEOSCIENCE FIRM NO. 50561
TEXAS ENGINEERING FIRM NO. 2263

YYYY-MM-DD	2023-04-13
DESIGNED	RS
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A

Last Edited By: rsalazar Date: 2023-04-13 Time:3:28:57 PM | Printed By: adiamond Date: 2023-06-20 Time:10:54:25 AM
Path: \\golder.gds\complexdata\office\Texarkana\Projects - Round Rock_2019\19119232 - HWPWD-Semi-Annual Monitoring Event\SWMU Figures\2023 - 1st Semi-Annual\ | File Name: 005 - A-TZ Reported Concentrations 2023 1st SAME.dwg



Constituent	Conc. (mg/L)
Acenaphthene	0.023
Acenaphthylene	0.00012
Anthracene	0.0006
bis(2-ethylhexyl)phthalate	<0.000037
Dibenzofuran	0.0019
Di-n-butyl Phthalate	<0.000020
Fluoranthene	0.0011
Fluorene	0.005
Naphthalene	0.000099J
Phenol	<0.000035
Pyrene	0.00046

Constituent	Conc. (mg/L)
Acenaphthene	0.038
Acenaphthylene	0.00064
Anthracene	0.00036
bis(2-ethylhexyl)phthalate	0.000037J
Dibenzofuran	0.0021
Di-n-butyl Phthalate	<0.000020
Fluoranthene	0.0041
Fluorene	0.0027
Naphthalene	<0.00002
Phenol	<0.000035
Pyrene	0.002

Constituent	Conc. (mg/L)	Conc. (mg/L) *
Acenaphthene	<0.000027	<0.000027
Acenaphthylene	<0.000015	<0.000015
Anthracene	<0.000014	<0.000014
bis(2-ethylhexyl)phthalate	0.00014J	0.00014J
Dibenzofuran	<0.000020	<0.000020
Di-n-butyl Phthalate	<0.000020	0.000031 J
Fluoranthene	<0.000010	<0.000010
Fluorene	<0.000030	<0.000030
Naphthalene	<0.000020	<0.000020
Phenol	<0.000035	<0.000035
Pyrene	<0.000019	<0.000019

Constituent	Conc. (mg/L)
Acenaphthene	<0.000027
Acenaphthylene	<0.000015
Anthracene	<0.000014
bis(2-ethylhexyl)phthalate	<0.000037
Dibenzofuran	<0.000020
Di-n-butyl Phthalate	<0.000020
Fluoranthene	<0.000010
Fluorene	<0.000030
Naphthalene	<0.000020
Phenol	<0.000035
Pyrene	<0.000019

Indicator Parameters

Constituent	PCL (mg/L)
Acenaphthene	1.5
Acenaphthylene	1.5
Anthracene	7.3
bis(2-ethylhexyl)phthalate	0.006
Dibenzofuran	0.098
Di-n-butyl Phthalate	2.4
Fluoranthene	0.98
Fluorene	0.98
Naphthalene	0.49
Phenol	7.3
Pyrene	0.73

LEGEND

- FENCE
- RAILROAD
- B-TZ MONITORING WELL LOCATION
- PIEZOMETER LOCATION

NOTE(S)

1. SAMPLES COLLECTED IN JANUARY 2023
2. J = ESTIMATED VALUE BETWEEN SQL AND MDL.
3. < = VALUE NOT DETECTED GREATER THAN MDL.
4. * = FIELD DUPLICATE

REFERENCE(S)

BASE MAP TAKEN FROM ERM-SOUTHWEST, INC 0014419a310.DWG, 6/19/2006.

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
B-TZ REPORTED CONCENTRATIONS
2023 1ST SEMI-ANNUAL MONITORING EVENT

CONSULTANT

TEXAS GEOSCIENCE FIRM NO. 50561
TEXAS ENGINEERING FIRM NO. 2263

YYYY-MM-DD	2023-04-13
DESIGNED	RS
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 6

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A

APPENDIX A

Compliance Plan Tables

TABLE III - CORRECTIVE ACTION PROGRAM
Table of Detected Hazardous and Solid Waste Constituents and
Concentration Limits for the Ground-Water Protection Standard

Closed Surface Impoundment (NOR Unit No. 001, SWMU No. 01)

A-Transmissive Zone		B-Transmissive Zone	
COLUMN A Hazardous Constituents	COLUMN B Concentration Limits (mg/l)	COLUMN A Hazardous Constituents	COLUMN B Concentration Limits (mg/l)
Acenaphthene	1.5[PCL]	Acenaphthene	1.5[PCL]
Acenaphthylene	1.5[PCL]	Acenaphthylene	1.5[PCL]
Anthracene	7.3[PCL]	Anthracene	7.3[PCL]
Dibenzofuran	0.098[PCL]	Dibenzofuran	0.098[PCL]
Bis(2-ethylhexyl)phthalate	0.006[PCL]	Bis(2-ethylhexyl)phthalate	0.006[PCL]
Fluoranthene	0.98[PCL]	Fluoranthene	0.98[PCL]
Fluorene	0.98[PCL]	Fluorene	0.98[PCL]
2-Methylnaphthalene	0.098[PCL]	Di-n-butyl phthalate	2.4[PCL]
Naphthalene	0.49[PCL]	Naphthalene	0.49[PCL]
Phenanthrene	0.73[PCL]	Phenol	7.3[PCL]
Pyrene	0.73[PCL]	Pyrene	0.73[PCL]

PCL Alternate Concentration Limit pursuant to 30 TAC §335.160(b) based upon the Protective Concentration Level determined under 30 TAC Chapter 350 for Residential Land Use. The PCL value, Column B, will change as updates to the rule are promulgated. Changes to the rule automatically change the concentration value established in Column B in this table.

TABLE V
Designation of Wells by Function

POINT OF COMPLIANCE WELLS

1. Closed Surface Impoundment (NOR Unit No. 001, SWMU No. 01)
A-Transmissive Zone: MW-01A, MW-02, MW-07, MW-10A, and MW-11A
B-Transmissive Zone: MW-10B, MW-11B, and P-10

POINT OF EXPOSURE WELLS

1. Closed Surface Impoundment (NOR Unit No. 001, SWMU No. 01)
None

BACKGROUND WELLS

1. Closed Surface Impoundment (NOR Unit No. 001, SWMU No. 01)
A-Transmissive Zone: MW-8
B-Transmissive Zone: P-12

Note: Wells and piezometers identified on Attachment A maps that are not listed in this table are subject to change, upon approval by the executive director, without modification to the Compliance Plan. The wells and piezometers for the Closed Surface Impoundment are depicted on Attachment A, Sheets 3 and 4.

APPENDIX B

Field Parameters

Table B-1
Groundwater Sampling Field Parameters
Semiannual Monitoring Report: 2023 First Semi-Annual Event

Houston Wood Preserving Works
Houston, Texas

Field Parameter	Monitoring Well IDs									
	A-Transmissive Zone						B-Transmissive Zone			
	MW-01A	MW-02	MW-07	MW-08	MW-10A	MW-11A	MW-10B	MW-11B	P-10	P-12
	1/3/2023	1/3/2023	1/4/2023	1/3/2023	1/3/2023	1/3/2023	1/3/2023	1/3/2023	1/4/2023	1/3/2023
Time Sampled (hrs CST)	13:10	12:15	8:25	14:35	11:25	9:55	10:45	9:10	7:40	15:50
Temperature (ºC)	22.29	21.72	22.52	21.77	22.19	22.16	22.62	22.27	21.87	21.58
pH (Standard Units)	6.89	6.93	6.84	6.86	6.79	6.87	6.75	6.84	7.04	6.88
Specific Conductivity (mmhos/cm)	815	1,080	796	747	969	1,080	905	922	819	974
Dissolved Oxygen (mg/L)	0.78	0.62	0.58	0.69	0.64	0.48	1.26	0.53	1.08	0.67
Turbidity (NTU)	5.9	6.5	5	12.9	8.4	4.9	4.4	5.1	7.6	3.7

APPENDIX C

Laboratory Analytical Reports and Data Usability Summaries

Technical Memorandum

30 March 2023

To	Eric Matzner (eric.matzner@wsp.com)		
Copy to	Jesse Orth, Julie Lidstone		
From	Chris G. Knight/eew/1504	**Tel**	512-506-8803
Subject	Data Usability Summary HWPW - Semiannual SWMU No. 1 Monitoring Event Union Pacific Railroad (UPRR)/Houston TX Wood Preserving Works Houston, Texas January 2023	**Project no.**	11183954-1620

1. Scope of Data Usability Study

This document details a Data Usability Summary (DUS) of analytical results for groundwater samples collected in support of the HWPW - Semiannual SWMU No. 1 Monitoring Event at the UPRR/Houston TX-Wood Preserving Works site during January 2023. Samples were submitted to ALS Global, located in Houston, Texas and are reported in data package HS23010181. The intended use of the data is to support the HWPW - Semi-Annual SWMU No. 1 Monitoring Event at the site by providing current concentration of chemicals of concern.

Data were reviewed and validated by Chris G. Knight of GHD Services Inc. (GHD), in accordance with Title 30 of the Texas Administrative Code Section 350.54 (30 TAC 350.54) as described in the Texas Commission on Environmental Quality (TCEQ) Regulatory Guidance document entitled "Review and Reporting of COC Concentration Data under TRRP", (RG-366/TRRP-13), revised May 2010, herein referred to as "TRRP-13 Guidance". Evaluation of the data was based on information obtained from the chain of custody form, the finished report forms, method blank data, recovery data from surrogate spikes/laboratory control samples (LCS)/matrix spikes (MS), field quality assurance/quality control (QA/QC) samples, the laboratory review checklist (LRC), and the laboratory exceptions (ER).

A sample collection and analysis summary are presented in Table 1. This summary provides a cross-reference of field sample identification numbers and location identification. Each sample is assigned a unique field identification number.

The validated sample results are presented in Table 2. A summary of the analytical methodology is presented in Table 3.

2. Laboratory Qualifications

The Laboratory's quality assurance program is consistent with the quality standards outlined in the National Environmental Laboratory Accreditation Program (NELAP). This laboratory was accredited under Texas

Certification number # TX104704231 at the time the analysis was performed and the certificate is included in Attachment A.

3. Project Objectives

3.1 Sampling/Analytical QA/QC Objectives

The QA/QC program was designed to identify contamination resulting from the sampling, sample transport and analytical process through the analysis of field blank samples, field duplicate sample sets, and method blanks. The QA/QC program was designed to evaluate the quality of the resulting data with respect to bias and precision through analysis of LCS and MS.

4. Data Review/Validation Results

4.1 Sample Hold Time and Preservation

Samples were shipped with chains of custody and the paperwork was filled out properly. All samples were properly preserved, delivered on ice, and stored by the laboratory at the required temperature (0-6°C).

Sample chain of custody documents and the analytical report were used to determine sample holding times. All samples were prepared and analyzed within the required holding times.

4.2 Sample Containers

Sample containers used were certified pre-cleaned glass containers provided by the laboratory. These containers meet or exceed analyte specifications established in the United States Environmental Protection Agency (USEPA) *Specifications and Guidance for Contaminant-free Sample Containers*.

4.3 Calibrations

According to the LRC, initial calibration and continuing calibration data met the criteria for the selected methods.

4.4 Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures. As these were not discrete samples handled in the field, these blanks are not listed on the sample identification cross-reference list found in the data packages.

For this study, laboratory method blanks were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch and results are reported in the laboratory data package.

All method blank results were non-detect or below the method quantitation limit (MQL), indicating that laboratory contamination was not a factor for this investigation.

4.5 Internal Standard and Surrogate Spike Recoveries

Recoveries of internal standards are addressed in the LRC of the data packages. All internal standard recoveries associated with the compounds of interest were acceptable per the LRC.

In accordance with the methods employed, all samples, blanks, and QC samples analyzed for organic determinations are spiked with surrogate compounds prior to sample extraction and analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project. Each individual surrogate compound is expected to meet the laboratory control limits. According to the TRRP-13 Guidelines, one outlying surrogate is acceptable for methods with multiple surrogate spike compounds if the recovery is at least 10 percent. Samples analyzed at elevated sample dilutions (5 times or greater) were not assessed.

Surrogate recoveries were assessed against laboratory control limits and/or the guidance in TRRP-13. All surrogate recoveries met the above criteria.

4.6 Laboratory Control Sample Analyses

LCS are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project.

For this study, LCS were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

The LCS contained all compounds specified in the method. All LCS recoveries were within the laboratory control limits, demonstrating acceptable analytical accuracy.

4.7 Matrix Spike Analyses

To evaluate the effects of sample matrices on the preparation process, measurement procedures, and accuracy of a particular analysis, samples are spiked with a known concentration of the analytes of concern and analyzed as MS/matrix spike duplicate (MSD) samples. The RPD between the MS and MSD is used to assess analytical precision.

An MS/MSD analysis was performed as specified in Table 1. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project.

The MS/MSD samples were spiked with all compounds specified in the method. All percent recoveries and RPD values were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision.

4.8 Field QA/QC Samples

The field QA/QC consisted of 2 field blank samples and 2 field duplicate sample sets.

Field Blank Sample Analysis

To assess ambient conditions at the site, 2 field blank samples were submitted for analysis, as identified in Table 1. All results were non-detect for the analytes of interest.

Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, 2 field duplicate sample sets were collected and submitted to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples must be less than 30 percent for water samples. The RPDs are only used when sample concentrations are above the estimated regions of detection.

Field duplicate summary data are presented in Table 2. All field duplicate results were within acceptable agreement, demonstrating acceptable sampling and analytical precision.

4.9 Field Procedures

WSP USA Inc. collected groundwater samples in accordance with their Standard Operating Procedures (SOP) for sample collection.

5. Analyte Reporting

The laboratory reported detected results for each analyte down to the sample detection limit (SDL), which is defined as the laboratory method detection limits (MDL) with sample-specific adjustments for dilutions, aliquot size, volumes, etc. Positive analyte detections less than the MQL but greater than the SDL were qualified as estimated (J) in Table 2.

All detectability check standard (DCS) results supported the MDLs.

6. Conclusion

Based on the assessment detailed in the foregoing, the analytical data summarized in Table 2 are usable for the purpose of supporting the HWPW - Semiannual SWMU No. 1 Monitoring Event by providing current concentrations of the chemicals of concern in groundwater samples at the site without qualification.

Regards

Chris G. Knight
Data Management Team – Data Validator

Table 1

Sample Collection and Analysis Summary
Semiannual SWMU No. 1 Monitoring Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January 2023

					Analysis/Parameters	
Sample Identification	**Location**	**Matrix**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**SVOCs**	**Comments**
WG-1620-MW11B-20230103	MW-11B	Water	01/03/2023	09:10	X	
WG-1620-MW11A-20230103	MW-11A	Water	01/03/2023	09:55	X	
WG-1620-MW10B-20230103	MW-10B	Water	01/03/2023	10:45	X	
WG-1620-MW10A-20230103	MW-10A	Water	01/03/2023	11:25	X	
WG-1620-MW02-20230103	MW-02	Water	01/03/2023	12:15	X	
WG-1620-MW01A-20230103	MW-01A	Water	01/03/2023	13:10	X	
WG-1620-DUP1-20230103	MW-01A	Water	01/03/2023	13:10	X	Field duplicate of MW-01A
WG-1620-MW08-20230103	MW-08	Water	01/03/2023	14:35	X	
WG-1620-P12-20230103	P-12	Water	01/03/2023	15:50	X	MS/MSD
WG-1620-FB01-20230103	-	Water	01/03/2023	16:30	X	Field Blank
WG-1620-P10-20230104	P-10	Water	01/04/2023	07:40	X	
WG-1620-DUP2-0230104	P-10	Water	01/04/2023	07:40	X	Field duplicate of P-10
WG-1620-MW07-20230104	MW-07	Water	01/04/2023	08:25	X	
WG-1620-FB02-20230104	-	Water	01/04/2023	09:00	X	Field Blank

Notes:

SVOCs - Semi-volatile Organic Compounds
MS/MSD - Matrix Spike/ Matrix Spike Duplicate
"-" - Not Applicable

Table 2

Analytical Results Summary
Semiannual SWMU No. 1 Monitoring Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January 2023

Location ID:		MW-01A	MW-01A	MW-02	MW-07
Sample Name:		WG-1620-MW01A-20230103	WG-1620-DUP1-20230103	WG-1620-MW02-20230103	WG-1620-MW07-20230104
Sample Date:		01/03/2023	01/03/2023	01/03/2023	01/04/2023
			Duplicate		
Parameters	**Unit**				
Semi-volatile Organic Compounds					
2-Methylnaphthalene	mg/L	<0.000019	<0.000019	0.000068 J	<0.000019
Acenaphthene	mg/L	0.021	0.020	0.0046	<0.000027
Acenaphthylene	mg/L	0.00030	0.00030	<0.000015	<0.000015
Anthracene	mg/L	0.00027	0.00025	0.000076 J	<0.000014
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000037	<0.000037	<0.000037	<0.000037
Di-n-butylphthalate (DBP)	mg/L	--	--	--	--
Dibenzofuran	mg/L	0.0017	0.0019	0.00045	<0.000020
Fluoranthene	mg/L	0.00084	0.00077	0.00034	<0.000010
Fluorene	mg/L	0.0048	0.0052	0.0025	<0.000030
Naphthalene	mg/L	0.000085 J	0.000076 J	0.000052 J	<0.000020
Phenanthrene	mg/L	<0.000021	<0.000021	0.000073 J	<0.000021
Phenol	mg/L	--	--	--	--
Pyrene	mg/L	0.00040	0.00039	0.00018	<0.000019

Table 2

Analytical Results Summary
Semiannual SWMU No. 1 Monitoring Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January 2023

Location ID:		MW-08	MW-10A	MW-10B	MW-11A
Sample Name:		WG-1620-MW08-20230103	WG-1620-MW10A-20230103	WG-1620-MW10B-20230103	WG-1620-MW11A-20230103
Sample Date:		01/03/2023	01/03/2023	01/03/2023	01/03/2023
Parameters	**Unit**				
Semi-volatile Organic Compounds					
2-Methylnaphthalene	mg/L	<0.000019	<0.000019	--	<0.000019
Acenaphthene	mg/L	<0.000027	<0.000027	0.023	<0.000027
Acenaphthylene	mg/L	<0.000015	<0.000015	0.00012	<0.000015
Anthracene	mg/L	<0.000014	<0.000014	0.00060	0.000079 J
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	0.000061 J	<0.000037	<0.000037	<0.000037
Di-n-butylphthalate (DBP)	mg/L	--	--	<0.000020	--
Dibenzofuran	mg/L	<0.000020	<0.000020	0.0019	<0.000020
Fluoranthene	mg/L	<0.000010	<0.000010	0.0011	<0.000010
Fluorene	mg/L	<0.000030	<0.000030	0.0050	<0.000030
Naphthalene	mg/L	<0.000020	<0.000020	0.000099 J	<0.000020
Phenanthrene	mg/L	<0.000021	<0.000021	--	<0.000021
Phenol	mg/L	--	--	<0.000035	--
Pyrene	mg/L	<0.000019	<0.000019	0.00046	<0.000019

Table 2

Analytical Results Summary
Semiannual SWMU No. 1 Monitoring Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January 2023

Location ID:		MW-11B	P-10	P-10	P-12
Sample Name:		WG-1620-MW11B-20230103	WG-1620-P10-20230104	WG-1620-DUP2-0230104	WG-1620-P12-20230103
Sample Date:		01/03/2023	01/04/2023	01/04/2023	01/03/2023
				Duplicate	
Parameters	**Unit**				
Semi-volatile Organic Compounds					
2-Methylnaphthalene	mg/L	--	--	--	--
Acenaphthene	mg/L	0.038	<0.000027	<0.000027	<0.000027
Acenaphthylene	mg/L	0.00064	<0.000015	<0.000015	<0.000015
Anthracene	mg/L	0.00036	<0.000014	<0.000014	<0.000014
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	0.000037 J	0.00014 J	0.00014 J	<0.000037
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	0.000031 J	<0.000020
Dibenzofuran	mg/L	0.0021	<0.000020	<0.000020	<0.000020
Fluoranthene	mg/L	0.0041	<0.000010	<0.000010	<0.000010
Fluorene	mg/L	0.0027	<0.000030	<0.000030	<0.000030
Naphthalene	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
Phenanthrene	mg/L	--	--	--	--
Phenol	mg/L	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	mg/L	0.0020	<0.000019	<0.000019	<0.000019

Notes:

< - Not detected at the associated reporting limit

J - Estimated concentration

"--" - Not analyzed

Table 3

Analytical Methods
Semiannual SWMU No. 1 Monitoring Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January 2023

			Holding Time	
Parameter	**Method**	**Matrix**	**Collection to Extraction (Days)**	**Extraction to Analysis (Days)**
SVOCs	SW-846 8270D	Water	7	40

Notes:

SVOCs - Semi-volatile Organic Compounds

Method References:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions

Attachment A

Laboratory NELAP Certificate(s)

Texas Commission on Environmental Quality

NELAP-Recognized Laboratory Accreditation is hereby awarded to

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

10450 Stancliff Road, Suite 115
Houston, TX 77099-4338

in accordance with Texas Water Code Chapter 5, Subchapter R, Title 30 Texas Administrative Code Chapter 25, and the National Environmental Laboratory Accreditation Program.

The laboratory's scope of accreditation includes the fields of accreditation that accompany this certificate. Continued accreditation depends upon successful ongoing participation in the program. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current location(s) and accreditation status for particular methods and analyses (www.tceq.texas.gov/goto/lab). Accreditation does not imply that a product, process, system or person is approved by the Texas Commission on Environmental Quality.

Certificate Number: T104704231-22-29
Effective Date: 5/1/2022
Expiration Date: 4/30/2023

Executive Director Texas Commission on Environmental Quality

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

January 19, 2023

Eric Matzner
WSP Golder
1601 S. MoPac Expressway
Suite 325D
Austin, TX 78746

Work Order: **HS23010181**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric Matzner,

ALS Environmental received 14 sample(s) on Jan 05, 2023 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client:	WSP Golder	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS23010181**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	WSP Golder	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS23010181**	

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 01/19/2023				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS23010181				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 188156				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference effects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 01/19/2023				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS23010181				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 188156				
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);NA = Not Applicable; NR = Not Reviewed; R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 01/19/2023
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS23010181
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 188156

ER#[5]	Description
	No Exceptions

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: WSP Golder
Project: Houston TX-Wood Preserving Works
Work Order: HS23010181

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS23010181-01	WG-1620-MW11B-20230103	Groundwater		03-Jan-2023 09:10	05-Jan-2023 11:15	☐
HS23010181-02	WG-1620-MW11A-20230103	Groundwater		03-Jan-2023 09:55	05-Jan-2023 11:15	☐
HS23010181-03	WG-1620-MW10B-20230103	Groundwater		03-Jan-2023 10:45	05-Jan-2023 11:15	☐
HS23010181-04	WG-1620-MW10A-20230103	Groundwater		03-Jan-2023 11:25	05-Jan-2023 11:15	☐
HS23010181-05	WG-1620-MW02-20230103	Groundwater		03-Jan-2023 12:15	05-Jan-2023 11:15	☐
HS23010181-06	WG-1620-MW01A-20230103	Groundwater		03-Jan-2023 13:10	05-Jan-2023 11:15	☐
HS23010181-07	WG-1620-DUP1-20230103	Groundwater		03-Jan-2023 13:10	05-Jan-2023 11:15	☐
HS23010181-08	WG-1620-MW08-20230103	Groundwater		03-Jan-2023 14:35	05-Jan-2023 11:15	☐
HS23010181-09	WG-1620-P12-20230103	Groundwater		03-Jan-2023 15:50	05-Jan-2023 11:15	☐
HS23010181-10	WG-1620-FB01-20230103	Water		03-Jan-2023 16:30	05-Jan-2023 11:15	☐
HS23010181-11	WG-1620-P10-20230104	Groundwater		04-Jan-2023 07:40	05-Jan-2023 11:15	☐
HS23010181-12	WG-1620-DUP2-0230104	Groundwater		04-Jan-2023 07:40	05-Jan-2023 11:15	☐
HS23010181-13	WG-1620-MW07-20230104	Groundwater		04-Jan-2023 08:25	05-Jan-2023 11:15	☐
HS23010181-14	WG-1620-FB02-20230104	Water		04-Jan-2023 09:00	05-Jan-2023 11:15	☐

Client: WSP Golder
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW11B-20230103
Collection Date: 03-Jan-2023 09:10

ANALYTICAL REPORT
WorkOrder:HS23010181
Lab ID:HS23010181-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 06-Jan-2023		Analyst: GEY
Acenaphthene	**0.038**		**0.00027**	**0.0010**	**mg/L**	10	16-Jan-2023 22:45
Acenaphthylene	**0.00064**		**0.000015**	**0.00010**	**mg/L**	1	13-Jan-2023 20:42
Anthracene	**0.00036**		**0.000014**	**0.00010**	**mg/L**	1	13-Jan-2023 20:42
Bis(2-ethylhexyl)phthalate	**0.000037**	J	**0.000037**	**0.00020**	**mg/L**	1	13-Jan-2023 20:42
Dibenzofuran	**0.0021**		**0.000020**	**0.00010**	**mg/L**	1	13-Jan-2023 20:42
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	13-Jan-2023 20:42
Fluoranthene	**0.0041**		**0.000010**	**0.00010**	**mg/L**	1	13-Jan-2023 20:42
Fluorene	**0.0027**		**0.000030**	**0.00010**	**mg/L**	1	13-Jan-2023 20:42
Naphthalene	U		0.000020	0.00010	mg/L	1	13-Jan-2023 20:42
Phenol	U		0.000035	0.00020	mg/L	1	13-Jan-2023 20:42
Pyrene	**0.0020**		**0.000019**	**0.00010**	**mg/L**	1	13-Jan-2023 20:42
Surr: 2,4,6-Tribromophenol	*75.1*			*34-129*	*%REC*	*1*	*13-Jan-2023 20:42*
Surr: 2,4,6-Tribromophenol	*126*			*34-129*	*%REC*	*10*	*16-Jan-2023 22:45*
Surr: 2-Fluorobiphenyl	*74.8*			*40-125*	*%REC*	*10*	*16-Jan-2023 22:45*
Surr: 2-Fluorobiphenyl	*44.5*			*40-125*	*%REC*	*1*	*13-Jan-2023 20:42*
Surr: 2-Fluorophenol	*32.8*			*20-120*	*%REC*	*1*	*13-Jan-2023 20:42*
Surr: 2-Fluorophenol	*58.7*			*20-120*	*%REC*	*10*	*16-Jan-2023 22:45*
Surr: 4-Terphenyl-d14	*64.5*			*40-135*	*%REC*	*1*	*13-Jan-2023 20:42*
Surr: 4-Terphenyl-d14	*123*			*40-135*	*%REC*	*10*	*16-Jan-2023 22:45*
Surr: Nitrobenzene-d5	*50.6*			*41-120*	*%REC*	*1*	*13-Jan-2023 20:42*
Surr: Nitrobenzene-d5	*55.9*			*41-120*	*%REC*	*10*	*16-Jan-2023 22:45*
Surr: Phenol-d6	*49.0*			*20-120*	*%REC*	*10*	*16-Jan-2023 22:45*
Surr: Phenol-d6	*38.9*			*20-120*	*%REC*	*1*	*13-Jan-2023 20:42*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Golder
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW11A-20230103
Collection Date: 03-Jan-2023 09:55

ANALYTICAL REPORT
WorkOrder:HS23010181
Lab ID:HS23010181-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 06-Jan-2023		Analyst: GEY
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	13-Jan-2023 21:03
Acenaphthene	U		0.000027	0.00010	mg/L	1	13-Jan-2023 21:03
Acenaphthylene	U		0.000015	0.00010	mg/L	1	13-Jan-2023 21:03
Anthracene	**0.000079**	J	**0.000014**	**0.00010**	**mg/L**	1	13-Jan-2023 21:03
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	13-Jan-2023 21:03
Dibenzofuran	U		0.000020	0.00010	mg/L	1	13-Jan-2023 21:03
Fluoranthene	U		0.000010	0.00010	mg/L	1	13-Jan-2023 21:03
Fluorene	U		0.000030	0.00010	mg/L	1	13-Jan-2023 21:03
Naphthalene	U		0.000020	0.00010	mg/L	1	13-Jan-2023 21:03
Phenanthrene	U		0.000021	0.00010	mg/L	1	13-Jan-2023 21:03
Pyrene	U		0.000019	0.00010	mg/L	1	13-Jan-2023 21:03
Surr: 2,4,6-Tribromophenol	*53.6*			*34-129*	*%REC*	*1*	*13-Jan-2023 21:03*
Surr: 2-Fluorobiphenyl	*42.9*			*40-125*	*%REC*	*1*	*13-Jan-2023 21:03*
Surr: 2-Fluorophenol	*43.9*			*20-120*	*%REC*	*1*	*13-Jan-2023 21:03*
Surr: 4-Terphenyl-d14	*69.8*			*40-135*	*%REC*	*1*	*13-Jan-2023 21:03*
Surr: Nitrobenzene-d5	*43.2*			*41-120*	*%REC*	*1*	*13-Jan-2023 21:03*
Surr: Phenol-d6	*45.1*			*20-120*	*%REC*	*1*	*13-Jan-2023 21:03*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Golder
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW10B-20230103
Collection Date: 03-Jan-2023 10:45

ANALYTICAL REPORT
WorkOrder:HS23010181
Lab ID:HS23010181-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 06-Jan-2023		Analyst: GEY
Acenaphthene	**0.023**		**0.00027**	**0.0010**	**mg/L**	10	17-Jan-2023 20:07
Acenaphthylene	**0.00012**		**0.000015**	**0.00010**	**mg/L**	1	13-Jan-2023 21:24
Anthracene	**0.00060**		**0.000014**	**0.00010**	**mg/L**	1	13-Jan-2023 21:24
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	13-Jan-2023 21:24
Dibenzofuran	**0.0019**		**0.000020**	**0.00010**	**mg/L**	1	13-Jan-2023 21:24
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	13-Jan-2023 21:24
Fluoranthene	**0.0011**		**0.000010**	**0.00010**	**mg/L**	1	13-Jan-2023 21:24
Fluorene	**0.0050**		**0.000030**	**0.00010**	**mg/L**	1	13-Jan-2023 21:24
Naphthalene	**0.000099**	J	**0.000020**	**0.00010**	**mg/L**	1	13-Jan-2023 21:24
Phenol	U		0.000035	0.00020	mg/L	1	13-Jan-2023 21:24
Pyrene	**0.00046**		**0.000019**	**0.00010**	**mg/L**	1	13-Jan-2023 21:24
Surr: 2,4,6-Tribromophenol	*57.4*			*34-129*	*%REC*	*1*	*13-Jan-2023 21:24*
Surr: 2,4,6-Tribromophenol	*91.8*			*34-129*	*%REC*	*10*	*17-Jan-2023 20:07*
Surr: 2-Fluorobiphenyl	*76.0*			*40-125*	*%REC*	*10*	*17-Jan-2023 20:07*
Surr: 2-Fluorobiphenyl	*41.0*			*40-125*	*%REC*	*1*	*13-Jan-2023 21:24*
Surr: 2-Fluorophenol	*25.7*			*20-120*	*%REC*	*1*	*13-Jan-2023 21:24*
Surr: 2-Fluorophenol	*61.4*			*20-120*	*%REC*	*10*	*17-Jan-2023 20:07*
Surr: 4-Terphenyl-d14	*123*			*40-135*	*%REC*	*10*	*17-Jan-2023 20:07*
Surr: 4-Terphenyl-d14	*57.5*			*40-135*	*%REC*	*1*	*13-Jan-2023 21:24*
Surr: Nitrobenzene-d5	*41.1*			*41-120*	*%REC*	*1*	*13-Jan-2023 21:24*
Surr: Nitrobenzene-d5	*72.0*			*41-120*	*%REC*	*10*	*17-Jan-2023 20:07*
Surr: Phenol-d6	*54.8*			*20-120*	*%REC*	*10*	*17-Jan-2023 20:07*
Surr: Phenol-d6	*30.0*			*20-120*	*%REC*	*1*	*13-Jan-2023 21:24*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Golder
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW10A-20230103
Collection Date: 03-Jan-2023 11:25

ANALYTICAL REPORT
WorkOrder:HS23010181
Lab ID:HS23010181-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 06-Jan-2023		Analyst: GEY
2-Methylnaphthalene		U	0.000019	0.00010	mg/L	1	13-Jan-2023 21:45
Acenaphthene		U	0.000027	0.00010	mg/L	1	13-Jan-2023 21:45
Acenaphthylene		U	0.000015	0.00010	mg/L	1	13-Jan-2023 21:45
Anthracene		U	0.000014	0.00010	mg/L	1	13-Jan-2023 21:45
Bis(2-ethylhexyl)phthalate		U	0.000037	0.00020	mg/L	1	13-Jan-2023 21:45
Dibenzofuran		U	0.000020	0.00010	mg/L	1	13-Jan-2023 21:45
Fluoranthene		U	0.000010	0.00010	mg/L	1	13-Jan-2023 21:45
Fluorene		U	0.000030	0.00010	mg/L	1	13-Jan-2023 21:45
Naphthalene		U	0.000020	0.00010	mg/L	1	13-Jan-2023 21:45
Phenanthrene		U	0.000021	0.00010	mg/L	1	13-Jan-2023 21:45
Pyrene		U	0.000019	0.00010	mg/L	1	13-Jan-2023 21:45
Surr: 2,4,6-Tribromophenol	*49.3*			*34-129*	*%REC*	*1*	*13-Jan-2023 21:45*
Surr: 2-Fluorobiphenyl	*41.0*			*40-125*	*%REC*	*1*	*13-Jan-2023 21:45*
Surr: 2-Fluorophenol	*31.8*			*20-120*	*%REC*	*1*	*13-Jan-2023 21:45*
Surr: 4-Terphenyl-d14	*58.7*			*40-135*	*%REC*	*1*	*13-Jan-2023 21:45*
Surr: Nitrobenzene-d5	*42.7*			*41-120*	*%REC*	*1*	*13-Jan-2023 21:45*
Surr: Phenol-d6	*34.4*			*20-120*	*%REC*	*1*	*13-Jan-2023 21:45*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Golder
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW02-20230103
Collection Date: 03-Jan-2023 12:15

ANALYTICAL REPORT
WorkOrder:HS23010181
Lab ID:HS23010181-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 06-Jan-2023		Analyst: GEY
2-Methylnaphthalene	**0.000068**	J	**0.000019**	**0.00010**	**mg/L**	1	16-Jan-2023 18:49
Acenaphthene	**0.0046**		**0.000027**	**0.00010**	**mg/L**	1	16-Jan-2023 18:49
Acenaphthylene	U		0.000015	0.00010	mg/L	1	16-Jan-2023 18:49
Anthracene	**0.000076**	J	**0.000014**	**0.00010**	**mg/L**	1	16-Jan-2023 18:49
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	16-Jan-2023 18:49
Dibenzofuran	**0.00045**		**0.000020**	**0.00010**	**mg/L**	1	16-Jan-2023 18:49
Fluoranthene	**0.00034**		**0.000010**	**0.00010**	**mg/L**	1	16-Jan-2023 18:49
Fluorene	**0.0025**		**0.000030**	**0.00010**	**mg/L**	1	16-Jan-2023 18:49
Naphthalene	**0.000052**	J	**0.000020**	**0.00010**	**mg/L**	1	16-Jan-2023 18:49
Phenanthrene	**0.000073**	J	**0.000021**	**0.00010**	**mg/L**	1	16-Jan-2023 18:49
Pyrene	**0.00018**		**0.000019**	**0.00010**	**mg/L**	1	16-Jan-2023 18:49
Surr: 2,4,6-Tribromophenol	*61.5*			*34-129*	*%REC*	*1*	*16-Jan-2023 18:49*
Surr: 2-Fluorobiphenyl	*57.2*			*40-125*	*%REC*	*1*	*16-Jan-2023 18:49*
Surr: 2-Fluorophenol	*44.9*			*20-120*	*%REC*	*1*	*16-Jan-2023 18:49*
Surr: 4-Terphenyl-d14	*70.7*			*40-135*	*%REC*	*1*	*16-Jan-2023 18:49*
Surr: Nitrobenzene-d5	*49.9*			*41-120*	*%REC*	*1*	*16-Jan-2023 18:49*
Surr: Phenol-d6	*49.5*			*20-120*	*%REC*	*1*	*16-Jan-2023 18:49*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Golder
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW01A-20230103
Collection Date: 03-Jan-2023 13:10

ANALYTICAL REPORT
WorkOrder:HS23010181
Lab ID:HS23010181-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 06-Jan-2023		Analyst: GEY
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	16-Jan-2023 19:10
Acenaphthene	**0.021**		**0.00027**	**0.0010**	**mg/L**	10	17-Jan-2023 20:28
Acenaphthylene	**0.00030**		**0.000015**	**0.00010**	**mg/L**	1	16-Jan-2023 19:10
Anthracene	**0.00027**		**0.000014**	**0.00010**	**mg/L**	1	16-Jan-2023 19:10
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	16-Jan-2023 19:10
Dibenzofuran	**0.0017**		**0.000020**	**0.00010**	**mg/L**	1	16-Jan-2023 19:10
Fluoranthene	**0.00084**		**0.000010**	**0.00010**	**mg/L**	1	16-Jan-2023 19:10
Fluorene	**0.0048**		**0.000030**	**0.00010**	**mg/L**	1	16-Jan-2023 19:10
Naphthalene	**0.000085**	J	**0.000020**	**0.00010**	**mg/L**	1	16-Jan-2023 19:10
Phenanthrene	U		0.000021	0.00010	mg/L	1	16-Jan-2023 19:10
Pyrene	**0.00040**		**0.000019**	**0.00010**	**mg/L**	1	16-Jan-2023 19:10
Surr: 2,4,6-Tribromophenol	*64.3*			*34-129*	*%REC*	*1*	*16-Jan-2023 19:10*
Surr: 2,4,6-Tribromophenol	*74.1*			*34-129*	*%REC*	*10*	*17-Jan-2023 20:28*
Surr: 2-Fluorobiphenyl	*62.7*			*40-125*	*%REC*	*10*	*17-Jan-2023 20:28*
Surr: 2-Fluorobiphenyl	*51.0*			*40-125*	*%REC*	*1*	*16-Jan-2023 19:10*
Surr: 2-Fluorophenol	*42.7*			*20-120*	*%REC*	*1*	*16-Jan-2023 19:10*
Surr: 2-Fluorophenol	*56.4*			*20-120*	*%REC*	*10*	*17-Jan-2023 20:28*
Surr: 4-Terphenyl-d14	*98.4*			*40-135*	*%REC*	*10*	*17-Jan-2023 20:28*
Surr: 4-Terphenyl-d14	*63.5*			*40-135*	*%REC*	*1*	*16-Jan-2023 19:10*
Surr: Nitrobenzene-d5	*44.8*			*41-120*	*%REC*	*1*	*16-Jan-2023 19:10*
Surr: Nitrobenzene-d5	*68.0*			*41-120*	*%REC*	*10*	*17-Jan-2023 20:28*
Surr: Phenol-d6	*58.4*			*20-120*	*%REC*	*10*	*17-Jan-2023 20:28*
Surr: Phenol-d6	*52.2*			*20-120*	*%REC*	*1*	*16-Jan-2023 19:10*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Golder
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-DUP1-20230103
Collection Date: 03-Jan-2023 13:10

ANALYTICAL REPORT
WorkOrder:HS23010181
Lab ID:HS23010181-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 06-Jan-2023		Analyst: GEY
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	16-Jan-2023 19:31
Acenaphthene	**0.020**		**0.00027**	**0.0010**	**mg/L**	10	17-Jan-2023 20:50
Acenaphthylene	**0.00030**		**0.000015**	**0.00010**	**mg/L**	1	16-Jan-2023 19:31
Anthracene	**0.00025**		**0.000014**	**0.00010**	**mg/L**	1	16-Jan-2023 19:31
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	16-Jan-2023 19:31
Dibenzofuran	**0.0019**		**0.000020**	**0.00010**	**mg/L**	1	16-Jan-2023 19:31
Fluoranthene	**0.00077**		**0.000010**	**0.00010**	**mg/L**	1	16-Jan-2023 19:31
Fluorene	**0.0052**		**0.000030**	**0.00010**	**mg/L**	1	16-Jan-2023 19:31
Naphthalene	**0.000076**	J	**0.000020**	**0.00010**	**mg/L**	1	16-Jan-2023 19:31
Phenanthrene	U		0.000021	0.00010	mg/L	1	16-Jan-2023 19:31
Pyrene	**0.00039**		**0.000019**	**0.00010**	**mg/L**	1	16-Jan-2023 19:31
Surr: 2,4,6-Tribromophenol	*79.0*			*34-129*	*%REC*	*10*	*17-Jan-2023 20:50*
Surr: 2,4,6-Tribromophenol	*84.3*			*34-129*	*%REC*	*1*	*16-Jan-2023 19:31*
Surr: 2-Fluorobiphenyl	*77.1*			*40-125*	*%REC*	*10*	*17-Jan-2023 20:50*
Surr: 2-Fluorobiphenyl	*58.2*			*40-125*	*%REC*	*1*	*16-Jan-2023 19:31*
Surr: 2-Fluorophenol	*49.6*			*20-120*	*%REC*	*10*	*17-Jan-2023 20:50*
Surr: 2-Fluorophenol	*37.8*			*20-120*	*%REC*	*1*	*16-Jan-2023 19:31*
Surr: 4-Terphenyl-d14	*75.5*			*40-135*	*%REC*	*1*	*16-Jan-2023 19:31*
Surr: 4-Terphenyl-d14	*102*			*40-135*	*%REC*	*10*	*17-Jan-2023 20:50*
Surr: Nitrobenzene-d5	*63.6*			*41-120*	*%REC*	*10*	*17-Jan-2023 20:50*
Surr: Nitrobenzene-d5	*45.1*			*41-120*	*%REC*	*1*	*16-Jan-2023 19:31*
Surr: Phenol-d6	*46.9*			*20-120*	*%REC*	*1*	*16-Jan-2023 19:31*
Surr: Phenol-d6	*48.0*			*20-120*	*%REC*	*10*	*17-Jan-2023 20:50*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Golder
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW08-20230103
Collection Date: 03-Jan-2023 14:35

ANALYTICAL REPORT
WorkOrder:HS23010181
Lab ID:HS23010181-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 06-Jan-2023		Analyst: GEY
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	16-Jan-2023 19:53
Acenaphthene	U		0.000027	0.00010	mg/L	1	16-Jan-2023 19:53
Acenaphthylene	U		0.000015	0.00010	mg/L	1	16-Jan-2023 19:53
Anthracene	U		0.000014	0.00010	mg/L	1	16-Jan-2023 19:53
Bis(2-ethylhexyl)phthalate	**0.000061**	J	**0.000037**	**0.00020**	**mg/L**	1	16-Jan-2023 19:53
Dibenzofuran	U		0.000020	0.00010	mg/L	1	16-Jan-2023 19:53
Fluoranthene	U		0.000010	0.00010	mg/L	1	16-Jan-2023 19:53
Fluorene	U		0.000030	0.00010	mg/L	1	16-Jan-2023 19:53
Naphthalene	U		0.000020	0.00010	mg/L	1	16-Jan-2023 19:53
Phenanthrene	U		0.000021	0.00010	mg/L	1	16-Jan-2023 19:53
Pyrene	U		0.000019	0.00010	mg/L	1	16-Jan-2023 19:53
Surr: 2,4,6-Tribromophenol	*62.6*			*34-129*	*%REC*	*1*	*16-Jan-2023 19:53*
Surr: 2-Fluorobiphenyl	*46.2*			*40-125*	*%REC*	*1*	*16-Jan-2023 19:53*
Surr: 2-Fluorophenol	*30.3*			*20-120*	*%REC*	*1*	*16-Jan-2023 19:53*
Surr: 4-Terphenyl-d14	*71.3*			*40-135*	*%REC*	*1*	*16-Jan-2023 19:53*
Surr: Nitrobenzene-d5	*44.5*			*41-120*	*%REC*	*1*	*16-Jan-2023 19:53*
Surr: Phenol-d6	*38.5*			*20-120*	*%REC*	*1*	*16-Jan-2023 19:53*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Golder
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-P12-20230103
Collection Date: 03-Jan-2023 15:50

ANALYTICAL REPORT
WorkOrder:HS23010181
Lab ID:HS23010181-09
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 06-Jan-2023		Analyst: GEY
Acenaphthene		U	0.000027	0.00010	mg/L	1	10-Jan-2023 16:34
Acenaphthylene		U	0.000015	0.00010	mg/L	1	10-Jan-2023 16:34
Anthracene		U	0.000014	0.00010	mg/L	1	10-Jan-2023 16:34
Bis(2-ethylhexyl)phthalate		U	0.000037	0.00020	mg/L	1	10-Jan-2023 16:34
Dibenzofuran		U	0.000020	0.00010	mg/L	1	10-Jan-2023 16:34
Di-n-butyl phthalate		U	0.000020	0.00020	mg/L	1	10-Jan-2023 16:34
Fluoranthene		U	0.000010	0.00010	mg/L	1	10-Jan-2023 16:34
Fluorene		U	0.000030	0.00010	mg/L	1	10-Jan-2023 16:34
Naphthalene		U	0.000020	0.00010	mg/L	1	10-Jan-2023 16:34
Phenol		U	0.000035	0.00020	mg/L	1	10-Jan-2023 16:34
Pyrene		U	0.000019	0.00010	mg/L	1	10-Jan-2023 16:34
Surr: 2,4,6-Tribromophenol	*74.0*			*34-129*	*%REC*	*1*	*10-Jan-2023 16:34*
Surr: 2-Fluorobiphenyl	*68.1*			*40-125*	*%REC*	*1*	*10-Jan-2023 16:34*
Surr: 2-Fluorophenol	*57.3*			*20-120*	*%REC*	*1*	*10-Jan-2023 16:34*
Surr: 4-Terphenyl-d14	*84.7*			*40-135*	*%REC*	*1*	*10-Jan-2023 16:34*
Surr: Nitrobenzene-d5	*61.1*			*41-120*	*%REC*	*1*	*10-Jan-2023 16:34*
Surr: Phenol-d6	*56.6*			*20-120*	*%REC*	*1*	*10-Jan-2023 16:34*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Golder
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB01-20230103
Collection Date: 03-Jan-2023 16:30

ANALYTICAL REPORT
WorkOrder:HS23010181
Lab ID:HS23010181-10
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 06-Jan-2023		Analyst: GEY
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	16-Jan-2023 20:14
Acenaphthene	U		0.000027	0.00010	mg/L	1	16-Jan-2023 20:14
Acenaphthylene	U		0.000015	0.00010	mg/L	1	16-Jan-2023 20:14
Anthracene	U		0.000014	0.00010	mg/L	1	16-Jan-2023 20:14
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	16-Jan-2023 20:14
Dibenzofuran	U		0.000020	0.00010	mg/L	1	16-Jan-2023 20:14
Fluoranthene	U		0.000010	0.00010	mg/L	1	16-Jan-2023 20:14
Fluorene	U		0.000030	0.00010	mg/L	1	16-Jan-2023 20:14
Naphthalene	U		0.000020	0.00010	mg/L	1	16-Jan-2023 20:14
Phenanthrene	U		0.000021	0.00010	mg/L	1	16-Jan-2023 20:14
Pyrene	U		0.000019	0.00010	mg/L	1	16-Jan-2023 20:14
Surr: 2,4,6-Tribromophenol	*77.8*			*34-129*	*%REC*	*1*	*16-Jan-2023 20:14*
Surr: 2-Fluorobiphenyl	*66.7*			*40-125*	*%REC*	*1*	*16-Jan-2023 20:14*
Surr: 2-Fluorophenol	*45.6*			*20-120*	*%REC*	*1*	*16-Jan-2023 20:14*
Surr: 4-Terphenyl-d14	*78.3*			*40-135*	*%REC*	*1*	*16-Jan-2023 20:14*
Surr: Nitrobenzene-d5	*57.5*			*41-120*	*%REC*	*1*	*16-Jan-2023 20:14*
Surr: Phenol-d6	*61.8*			*20-120*	*%REC*	*1*	*16-Jan-2023 20:14*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Golder
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-P10-20230104
Collection Date: 04-Jan-2023 07:40

ANALYTICAL REPORT
WorkOrder:HS23010181
Lab ID:HS23010181-11
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 06-Jan-2023		Analyst: GEY
Acenaphthene	U		0.000027	0.00010	mg/L	1	16-Jan-2023 20:35
Acenaphthylene	U		0.000015	0.00010	mg/L	1	16-Jan-2023 20:35
Anthracene	U		0.000014	0.00010	mg/L	1	16-Jan-2023 20:35
Bis(2-ethylhexyl)phthalate	**0.00014**	J	**0.000037**	**0.00020**	**mg/L**	1	16-Jan-2023 20:35
Dibenzofuran	U		0.000020	0.00010	mg/L	1	16-Jan-2023 20:35
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	16-Jan-2023 20:35
Fluoranthene	U		0.000010	0.00010	mg/L	1	16-Jan-2023 20:35
Fluorene	U		0.000030	0.00010	mg/L	1	16-Jan-2023 20:35
Naphthalene	U		0.000020	0.00010	mg/L	1	16-Jan-2023 20:35
Phenol	U		0.000035	0.00020	mg/L	1	16-Jan-2023 20:35
Pyrene	U		0.000019	0.00010	mg/L	1	16-Jan-2023 20:35
Surr: 2,4,6-Tribromophenol	*82.1*			*34-129*	*%REC*	*1*	*16-Jan-2023 20:35*
Surr: 2-Fluorobiphenyl	*64.7*			*40-125*	*%REC*	*1*	*16-Jan-2023 20:35*
Surr: 2-Fluorophenol	*43.2*			*20-120*	*%REC*	*1*	*16-Jan-2023 20:35*
Surr: 4-Terphenyl-d14	*80.0*			*40-135*	*%REC*	*1*	*16-Jan-2023 20:35*
Surr: Nitrobenzene-d5	*48.3*			*41-120*	*%REC*	*1*	*16-Jan-2023 20:35*
Surr: Phenol-d6	*53.3*			*20-120*	*%REC*	*1*	*16-Jan-2023 20:35*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Golder
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-DUP2-0230104
Collection Date: 04-Jan-2023 07:40

ANALYTICAL REPORT
WorkOrder:HS23010181
Lab ID:HS23010181-12
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 06-Jan-2023		Analyst: GEY
Acenaphthene	U		0.000027	0.00010	mg/L	1	16-Jan-2023 20:57
Acenaphthylene	U		0.000015	0.00010	mg/L	1	16-Jan-2023 20:57
Anthracene	U		0.000014	0.00010	mg/L	1	16-Jan-2023 20:57
Bis(2-ethylhexyl)phthalate	**0.00014**	J	**0.000037**	**0.00020**	**mg/L**	1	16-Jan-2023 20:57
Dibenzofuran	U		0.000020	0.00010	mg/L	1	16-Jan-2023 20:57
Di-n-butyl phthalate	**0.000031**	J	**0.000020**	**0.00020**	**mg/L**	1	16-Jan-2023 20:57
Fluoranthene	U		0.000010	0.00010	mg/L	1	16-Jan-2023 20:57
Fluorene	U		0.000030	0.00010	mg/L	1	16-Jan-2023 20:57
Naphthalene	U		0.000020	0.00010	mg/L	1	16-Jan-2023 20:57
Phenol	U		0.000035	0.00020	mg/L	1	16-Jan-2023 20:57
Pyrene	U		0.000019	0.00010	mg/L	1	16-Jan-2023 20:57
Surr: 2,4,6-Tribromophenol	*81.2*			*34-129*	*%REC*	*1*	*16-Jan-2023 20:57*
Surr: 2-Fluorobiphenyl	*61.3*			*40-125*	*%REC*	*1*	*16-Jan-2023 20:57*
Surr: 2-Fluorophenol	*47.9*			*20-120*	*%REC*	*1*	*16-Jan-2023 20:57*
Surr: 4-Terphenyl-d14	*84.1*			*40-135*	*%REC*	*1*	*16-Jan-2023 20:57*
Surr: Nitrobenzene-d5	*57.4*			*41-120*	*%REC*	*1*	*16-Jan-2023 20:57*
Surr: Phenol-d6	*58.8*			*20-120*	*%REC*	*1*	*16-Jan-2023 20:57*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Golder
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW07-20230104
Collection Date: 04-Jan-2023 08:25

ANALYTICAL REPORT
WorkOrder:HS23010181
Lab ID:HS23010181-13
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 06-Jan-2023		Analyst: GEY
2-Methylnaphthalene		U	0.000019	0.00010	mg/L	1	16-Jan-2023 21:19
Acenaphthene		U	0.000027	0.00010	mg/L	1	16-Jan-2023 21:19
Acenaphthylene		U	0.000015	0.00010	mg/L	1	16-Jan-2023 21:19
Anthracene		U	0.000014	0.00010	mg/L	1	16-Jan-2023 21:19
Bis(2-ethylhexyl)phthalate		U	0.000037	0.00020	mg/L	1	16-Jan-2023 21:19
Dibenzofuran		U	0.000020	0.00010	mg/L	1	16-Jan-2023 21:19
Fluoranthene		U	0.000010	0.00010	mg/L	1	16-Jan-2023 21:19
Fluorene		U	0.000030	0.00010	mg/L	1	16-Jan-2023 21:19
Naphthalene		U	0.000020	0.00010	mg/L	1	16-Jan-2023 21:19
Phenanthrene		U	0.000021	0.00010	mg/L	1	16-Jan-2023 21:19
Pyrene		U	0.000019	0.00010	mg/L	1	16-Jan-2023 21:19
Surr: 2,4,6-Tribromophenol	*75.8*			*34-129*	*%REC*	*1*	*16-Jan-2023 21:19*
Surr: 2-Fluorobiphenyl	*59.7*			*40-125*	*%REC*	*1*	*16-Jan-2023 21:19*
Surr: 2-Fluorophenol	*38.8*			*20-120*	*%REC*	*1*	*16-Jan-2023 21:19*
Surr: 4-Terphenyl-d14	*88.1*			*40-135*	*%REC*	*1*	*16-Jan-2023 21:19*
Surr: Nitrobenzene-d5	*47.3*			*41-120*	*%REC*	*1*	*16-Jan-2023 21:19*
Surr: Phenol-d6	*47.6*			*20-120*	*%REC*	*1*	*16-Jan-2023 21:19*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Golder
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB02-20230104
Collection Date: 04-Jan-2023 09:00

ANALYTICAL REPORT
WorkOrder:HS23010181
Lab ID:HS23010181-14
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 06-Jan-2023		Analyst: GEY
Acenaphthene		U	0.000027	0.00010	mg/L	1	16-Jan-2023 21:41
Acenaphthylene		U	0.000015	0.00010	mg/L	1	16-Jan-2023 21:41
Anthracene		U	0.000014	0.00010	mg/L	1	16-Jan-2023 21:41
Bis(2-ethylhexyl)phthalate		U	0.000037	0.00020	mg/L	1	16-Jan-2023 21:41
Dibenzofuran		U	0.000020	0.00010	mg/L	1	16-Jan-2023 21:41
Di-n-butyl phthalate		U	0.000020	0.00020	mg/L	1	16-Jan-2023 21:41
Fluoranthene		U	0.000010	0.00010	mg/L	1	16-Jan-2023 21:41
Fluorene		U	0.000030	0.00010	mg/L	1	16-Jan-2023 21:41
Naphthalene		U	0.000020	0.00010	mg/L	1	16-Jan-2023 21:41
Phenol		U	0.000035	0.00020	mg/L	1	16-Jan-2023 21:41
Pyrene		U	0.000019	0.00010	mg/L	1	16-Jan-2023 21:41
Surr: 2,4,6-Tribromophenol	*76.2*			*34-129*	*%REC*	*1*	*16-Jan-2023 21:41*
Surr: 2-Fluorobiphenyl	*73.4*			*40-125*	*%REC*	*1*	*16-Jan-2023 21:41*
Surr: 2-Fluorophenol	*62.8*			*20-120*	*%REC*	*1*	*16-Jan-2023 21:41*
Surr: 4-Terphenyl-d14	*85.1*			*40-135*	*%REC*	*1*	*16-Jan-2023 21:41*
Surr: Nitrobenzene-d5	*61.1*			*41-120*	*%REC*	*1*	*16-Jan-2023 21:41*
Surr: Phenol-d6	*72.1*			*20-120*	*%REC*	*1*	*16-Jan-2023 21:41*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: WSP Golder
Project: Houston TX-Wood Preserving Works
WorkOrder: HS23010181

Batch ID: 188156 **Start Date:** 06 Jan 2023 06:30 **End Date:** 06 Jan 2023 10:30
Method: SV AQ SEP FUN EXTRACT-LOWLEV - 3510C **Prep Code:** 3510_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS23010181-01	1	1000 (mL)	1 (mL)	0.001	1-L glass, Neat
HS23010181-02	1	1000 (mL)	1 (mL)	0.001	1-L glass, Neat
HS23010181-03	1	1000 (mL)	1 (mL)	0.001	1-L glass, Neat
HS23010181-04	1	1000 (mL)	1 (mL)	0.001	1-L glass, Neat
HS23010181-05	1	1000 (mL)	1 (mL)	0.001	1-L glass, Neat
HS23010181-06	1	1000 (mL)	1 (mL)	0.001	1-L glass, Neat
HS23010181-07	1	1000 (mL)	1 (mL)	0.001	1-L glass, Neat
HS23010181-08	1	1000 (mL)	1 (mL)	0.001	1-L glass, Neat
HS23010181-09	1	1000 (mL)	1 (mL)	0.001	1-L glass, Neat
HS23010181-10	1	1000 (mL)	1 (mL)	0.001	1-L glass, Neat
HS23010181-11	1	1000 (mL)	1 (mL)	0.001	1-L glass, Neat
HS23010181-12	1	1000 (mL)	1 (mL)	0.001	1-L glass, Neat
HS23010181-13	1	1000 (mL)	1 (mL)	0.001	1-L glass, Neat
HS23010181-14	1	1000 (mL)	1 (mL)	0.001	1-L glass, Neat

Client: WSP Golder
Project: Houston TX-Wood Preserving Works
WorkOrder: HS23010181

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 188156 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Water	
HS23010181-10	WG-1620-FB01-20230103	03 Jan 2023 16:30		06 Jan 2023 07:18	16 Jan 2023 20:14	1
HS23010181-14	WG-1620-FB02-20230104	04 Jan 2023 09:00		06 Jan 2023 07:18	16 Jan 2023 21:41	1
Batch ID: 188156 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Groundwater	
HS23010181-01	WG-1620-MW11B-20230103	03 Jan 2023 09:10		06 Jan 2023 06:30	16 Jan 2023 22:45	10
HS23010181-01	WG-1620-MW11B-20230103	03 Jan 2023 09:10		06 Jan 2023 06:30	13 Jan 2023 20:42	1
HS23010181-02	WG-1620-MW11A-20230103	03 Jan 2023 09:55		06 Jan 2023 07:18	13 Jan 2023 21:03	1
HS23010181-03	WG-1620-MW10B-20230103	03 Jan 2023 10:45		06 Jan 2023 07:18	17 Jan 2023 20:07	10
HS23010181-03	WG-1620-MW10B-20230103	03 Jan 2023 10:45		06 Jan 2023 07:18	13 Jan 2023 21:24	1
HS23010181-04	WG-1620-MW10A-20230103	03 Jan 2023 11:25		06 Jan 2023 07:18	13 Jan 2023 21:45	1
HS23010181-05	WG-1620-MW02-20230103	03 Jan 2023 12:15		06 Jan 2023 07:18	16 Jan 2023 18:49	1
HS23010181-06	WG-1620-MW01A-20230103	03 Jan 2023 13:10		06 Jan 2023 07:18	17 Jan 2023 20:28	10
HS23010181-06	WG-1620-MW01A-20230103	03 Jan 2023 13:10		06 Jan 2023 07:18	16 Jan 2023 19:10	1
HS23010181-07	WG-1620-DUP1-20230103	03 Jan 2023 13:10		06 Jan 2023 07:18	17 Jan 2023 20:50	10
HS23010181-07	WG-1620-DUP1-20230103	03 Jan 2023 13:10		06 Jan 2023 07:18	16 Jan 2023 19:31	1
HS23010181-08	WG-1620-MW08-20230103	03 Jan 2023 14:35		06 Jan 2023 07:18	16 Jan 2023 19:53	1
HS23010181-09	WG-1620-P12-20230103	03 Jan 2023 15:50		06 Jan 2023 07:18	10 Jan 2023 16:34	1
HS23010181-11	WG-1620-P10-20230104	04 Jan 2023 07:40		06 Jan 2023 07:18	16 Jan 2023 20:35	1
HS23010181-12	WG-1620-DUP2-0230104	04 Jan 2023 07:40		06 Jan 2023 07:18	16 Jan 2023 20:57	1
HS23010181-13	WG-1620-MW07-20230104	04 Jan 2023 08:25		06 Jan 2023 07:18	16 Jan 2023 21:19	1

WorkOrder: HS23010181
InstrumentID: SV-7
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	2-Methylnaphthalene	91-57-6	0.000050	0.000087	0.000019	0.00010
A	Acenaphthene	83-32-9	0.000050	0.000077	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000065	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.000057	0.000014	0.00010
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.000060	0.000037	0.00020
A	Dibenzofuran	132-64-9	0.000050	0.000077	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.000053	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000067	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.000096	0.000030	0.00010
A	Naphthalene	91-20-3	0.000050	0.000096	0.000020	0.00010
A	Phenanthrene	85-01-8	0.000050	0.00013	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.000071	0.000035	0.00020
A	Pyrene	129-00-0	0.000050	0.000061	0.000019	0.00010
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0.00020
S	2-Fluorobiphenyl	321-60-8	0	0	0	0.00020
S	2-Fluorophenol	367-12-4	0	0	0	0.00020
S	4-Terphenyl-d14	1718-51-0	0	0	0	0.00020
S	Nitrobenzene-d5	4165-60-0	0	0	0	0.00020
S	Phenol-d6	13127-88-3	0	0	0	0.00020

Client: WSP Golder
Project: Houston TX-Wood Preserving Works
WorkOrder: HS23010181

QC BATCH REPORT

Batch ID: 188156 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-188156** Units: **ug/L** Analysis Date: **10-Jan-2023 11:14**
Client ID: Run ID: **SV-7_425589** SeqNo: **7068829** PrepDate: **06-Jan-2023** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	U	0.10								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Bis(2-ethylhexyl)phthalate	U	0.20								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*3.999*	*0.20*	*5*	*0*	*80.0*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.756*	*0.20*	*5*	*0*	*75.1*	*40 - 125*				
Surr: 2-Fluorophenol	*3.54*	*0.20*	*5*	*0*	*70.8*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.568*	*0.20*	*5*	*0*	*91.4*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.281*	*0.20*	*5*	*0*	*65.6*	*41 - 120*				
Surr: Phenol-d6	*3.218*	*0.20*	*5*	*0*	*64.4*	*20 - 120*				

Client: WSP Golder
Project: Houston TX-Wood Preserving Works
WorkOrder: HS23010181

QC BATCH REPORT

Batch ID: 188156 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCS Sample ID: **LCS-188156** Units: **ug/L** Analysis Date: **10-Jan-2023 14:48**
Client ID: Run ID: **SV-7_425589** SeqNo: **7068830** PrepDate: **06-Jan-2023** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	3.448	0.10	5	0	69.0	50 - 120				
Acenaphthene	3.54	0.10	5	0	70.8	45 - 120				
Acenaphthylene	3.674	0.10	5	0	73.5	47 - 120				
Anthracene	3.393	0.10	5	0	67.9	45 - 120				
Bis(2-ethylhexyl)phthalate	3.309	0.20	5	0	66.2	40 - 139				
Dibenzofuran	3.62	0.10	5	0	72.4	50 - 120				
Di-n-butyl phthalate	3.571	0.20	5	0	71.4	45 - 123				
Fluoranthene	3.551	0.10	5	0	71.0	45 - 125				
Fluorene	3.524	0.10	5	0	70.5	49 - 120				
Naphthalene	3.28	0.10	5	0	65.6	45 - 120				
Phenanthrene	3.439	0.10	5	0	68.8	45 - 121				
Phenol	3.169	0.20	5	0	63.4	20 - 124				
Pyrene	3.243	0.10	5	0	64.9	40 - 130				
Surr: 2,4,6-Tribromophenol	*4.589*	*0.20*	*5*	*0*	*91.8*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.926*	*0.20*	*5*	*0*	*78.5*	*40 - 125*				
Surr: 2-Fluorophenol	*3.292*	*0.20*	*5*	*0*	*65.8*	*20 - 120*				
Surr: 4-Terphenyl-d14	*3.874*	*0.20*	*5*	*0*	*77.5*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.249*	*0.20*	*5*	*0*	*65.0*	*41 - 120*				
Surr: Phenol-d6	*3.63*	*0.20*	*5*	*0*	*72.6*	*20 - 120*				

Client: WSP Golder
Project: Houston TX-Wood Preserving Works
WorkOrder: HS23010181

QC BATCH REPORT

Batch ID: 188156 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MS Sample ID: **HS23010181-09MS** Units: **ug/L** Analysis Date: **10-Jan-2023 16:55**
Client ID: **WG-1620-P12-20230103** Run ID: **SV-7_425589** SeqNo: **7069616** PrepDate: **06-Jan-2023** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	3.645	0.10	5	0	72.9	50 - 120				
Acenaphthene	3.739	0.10	5	0	74.8	45 - 120				
Acenaphthylene	3.967	0.10	5	0	79.3	47 - 120				
Anthracene	3.913	0.10	5	0	78.3	45 - 120				
Bis(2-ethylhexyl)phthalate	4.23	0.20	5	0	84.6	40 - 139				
Dibenzofuran	3.877	0.10	5	0	77.5	50 - 120				
Di-n-butyl phthalate	4.388	0.20	5	0	87.8	45 - 123				
Fluoranthene	4.145	0.10	5	0	82.9	45 - 125				
Fluorene	3.922	0.10	5	0	78.4	49 - 120				
Naphthalene	3.504	0.10	5	0	70.1	45 - 120				
Phenanthrene	4.008	0.10	5	0	80.2	45 - 121				
Phenol	3.471	0.20	5	0	69.4	20 - 124				
Pyrene	3.931	0.10	5	0	78.6	40 - 130				
Surr: 2,4,6-Tribromophenol	*5.041*	*0.20*	*5*	*0*	*101*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.879*	*0.20*	*5*	*0*	*77.6*	*40 - 125*				
Surr: 2-Fluorophenol	*3.394*	*0.20*	*5*	*0*	*67.9*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.5*	*0.20*	*5*	*0*	*90.0*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.105*	*0.20*	*5*	*0*	*62.1*	*41 - 120*				
Surr: Phenol-d6	*3.689*	*0.20*	*5*	*0*	*73.8*	*20 - 120*				

Client: WSP Golder
Project: Houston TX-Wood Preserving Works
WorkOrder: HS23010181

QC BATCH REPORT

Batch ID: 188156 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MSD Sample ID: **HS23010181-09MSD** Units: **ug/L** Analysis Date: **11-Jan-2023 13:11**
Client ID: **WG-1620-P12-20230103** Run ID: **SV-7_425650** SeqNo: **7070146** PrepDate: **06-Jan-2023** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
2-Methylnaphthalene	3.558	0.10	5	0	71.2	50 - 120	3.645	2.41	20	
Acenaphthene	3.661	0.10	5	0	73.2	45 - 120	3.739	2.09	20	
Acenaphthylene	3.824	0.10	5	0	76.5	47 - 120	3.967	3.67	20	
Anthracene	3.888	0.10	5	0	77.8	45 - 120	3.913	0.637	20	
Bis(2-ethylhexyl)phthalate	4.386	0.20	5	0	87.7	40 - 139	4.23	3.64	20	
Dibenzofuran	3.876	0.10	5	0	77.5	50 - 120	3.877	0.0286	20	
Di-n-butyl phthalate	4.247	0.20	5	0	84.9	45 - 123	4.388	3.26	20	
Fluoranthene	4.132	0.10	5	0	82.6	45 - 125	4.145	0.3	20	
Fluorene	3.891	0.10	5	0	77.8	49 - 120	3.922	0.798	20	
Naphthalene	3.4	0.10	5	0	68.0	45 - 120	3.504	3.03	20	
Phenanthrene	3.856	0.10	5	0	77.1	45 - 121	4.008	3.88	20	
Phenol	2.921	0.20	5	0	58.4	20 - 124	3.471	17.2	20	
Pyrene	3.781	0.10	5	0	75.6	40 - 130	3.931	3.89	20	
Surr: 2,4,6-Tribromophenol	*5.413*	*0.20*	*5*	*0*	*108*	*34 - 129*	*5.041*	*7.13*	*20*	
Surr: 2-Fluorobiphenyl	*3.797*	*0.20*	*5*	*0*	*75.9*	*40 - 125*	*3.879*	*2.15*	*20*	
Surr: 2-Fluorophenol	*2.936*	*0.20*	*5*	*0*	*58.7*	*20 - 120*	*3.394*	*14.5*	*20*	
Surr: 4-Terphenyl-d14	*4.457*	*0.20*	*5*	*0*	*89.1*	*40 - 135*	*4.5*	*0.968*	*20*	
Surr: Nitrobenzene-d5	*2.976*	*0.20*	*5*	*0*	*59.5*	*41 - 120*	*3.105*	*4.24*	*20*	
Surr: Phenol-d6	*3.262*	*0.20*	*5*	*0*	*65.2*	*20 - 120*	*3.689*	*12.3*	*20*	

The following samples were analyzed in this batch:

HS23010181-01	HS23010181-02	HS23010181-03	HS23010181-04
HS23010181-05	HS23010181-06	HS23010181-07	HS23010181-08
HS23010181-09	HS23010181-10	HS23010181-11	HS23010181-12
HS23010181-13	HS23010181-14		

Client: WSP Golder
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS23010181**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	22-041-0	27-Mar-2023
California	2919 2022-2023	30-Apr-2023
Dept of Defense	L21-682	31-Dec-2023
Florida	E87611-36	30-Jun-2023
Illinois	2000322022-9	09-May-2023
Kansas	E-10352; 2022-2023	31-Jul-2023
Kentucky	123043, 2022-2023	30-Apr-2023
Louisiana	03087, 2022-2023	30-Jun-2023
Maryland	343, 2022-2023	30-Jun-2023
North Carolina	624-2023	31-Dec-2023
North Dakota	R-193 2022-2023	30-Apr-2023
Oklahoma	2022-141	31-Aug-2023
Texas	T104704231-22-29	30-Apr-2023
Utah	TX026932022-13	31-Jul-2023

Sample Receipt Checklist

Work Order ID: HS23010181 **Date/Time Received:** **05-Jan-2023 11:15**

Client Name: PBW **Received by:** **Paresh M. Giga**

Completed By: */S/ Malcolm Burleson* 05-Jan-2023 14:05 **Reviewed by:** */S/ Ragen Giga* 11-Jan-2023 13:41

eSignature Date/Time eSignature Date/Time

Matrices: **GW** Carrier name: **Client**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	2 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:286256 286254
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	0.9UC/0.4C 0.6UC/0.1C 1.0UC/0.5C	IR31
Cooler(s)/Kit(s):	49645 50131 50166	
Date/Time sample(s) sent to storage:	01/05/2023	

Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600
Holland, MI +1 616 399 6070

Chain of Custody Form

Page 1 of 2

COC ID: 286256

HS23010181

WSP Golder

Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information			
Purchase Order	4300139407/K.Peterburs 1620-19	Project Name	Houston TX-Wood Preserving Works	A	8270_LOW_W (5632532 ATZ SemiVolatiles)
Work Order		Project Number	1620-19-Rev0 SR 92688 SWMU1	B	8270_LOW_W (5632532 BTZ SemiVolatiles)
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P	C	8270_LOW_W (5632532 ATZ & BTZ SemiVolatiles)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	MS/MSD
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	eric_matzner@golder.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	WG-1620-MW11B-20230103	1-3-23	0910	Groundwa	6	2		X									
2	WG-1620-MW11A-20230103		0955			2	X										
3	WG-1620-MW10B-20230103		1045			2		X									
4	WG-1620-MW10A-20230103		1125			2	X										
5	WG-1620-MW02-20230103		1215			2	X										
6	WG-1620-MW01A-20230103		1310			2	X										
7	WG-1620-DUP1-20230103		1310			2	X										
8	WG-1620-MW08-20230103		1435			2	X										
9	WG-1620-P12-20230103		1550			4		X		X							
10	WG-1620-FB01-20230103		1630			2	X										

Sampler(s) Please Print & Sign: JOHN BRAYTON

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) ☐ Other ____ ☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour

Results Due Date:

Relinquished by: Date: 1-5-23 Time: 1115 Received by: —

Relinquished by: — Date: Time: Received by (Laboratory): 1/5/23 1115

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.
99645	5.8°C
30131	6.6
30166	1.0

QC Package: (Check One Box Below)

☐ Level II Std QC ☒ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

#31

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

Cincinnati, OH +1 513 733 5336
Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600
Holland, MI +1 616 399 6070

Chain of Custody Form

Page 2 of 2

COC ID: 286254

HS23010181

WSP Golder

Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information			
Purchase Order	4300139407/K.Peterburs 1620-19	Project Name	Houston TX-Wood Preserving Works	A	8270_LOW_W (5632532 ATZ SemiVolatiles)
Work Order		Project Number	1620-19-Rev0 SR 92688 SWMU1	B	8270_LOW_W (5632532 BTZ SemiVolatiles)
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P	C	8270_LOW_W (5632532 ATZ & BTZ SemiVolatiles)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	MS/MSD
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	eric_matzner@golder.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	WG-1620-P10-20230104	1-4-23	0740	Groundwa	8	2		X									
2	WG-1620-DUP2-20230104	↓	0740					X									
3	WG-1620-MW07-20230104		0825				X										
4	WG-1620-FB02-20230104		0900					X									
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: JOHN BRAYTON

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) ☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other

Results Due Date:

Relinquished by: Date: 1-5-23 Time: 1115 Received by:

Relinquished by: Date: Time: Received by (Laboratory): 1/5/23 11:15

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)

☐ Level II Std QC ☒ TRRP Checklist

☐ Level III Std QC/Raw Data ☐ TRRP Level IV

☐ Level IV SW846/CLP

☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

APPENDIX D

Waste Manifest

Please print or type.

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: TXD000820766
2. Page 1 of: 1
3. Emergency Response Phone: 888-877-7267
4. Manifest Tracking Number: 025006235 JJK

GENERATOR

5. Generator's Name and Mailing Address
UNION PACIFIC RAILROAD c/o GHD SERVICES, INC.
6520 Corporate Drive
Indianapolis, IN 46278
Generator's Phone: (414) 267-4144

Generator's Site Address (if different than mailing address)
UNION PACIFIC RAILROAD (UPRR)
4910 LIBERTY ROAD
Houston TX 77026

6. Transporter 1 Company Name: E3 OMI
U.S. EPA ID Number: TXD981055763

7. Transporter 2 Company Name: US Ecology Transportation Solutions
U.S. EPA ID Number: MIT 593 743 838

8. Designated Facility Name and Site Address
US Ecology
3277 County Rd. 69
Robstown, TX 78380
Facility's Phone: (800) 242-3209
U.S. EPA ID Number: TXD069452340

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
X	1. NA3082, Hazardous Waste, Liquid, n.o.s. (CREOSOTE), 9, III, RQ (F034), ERG#171	3	DM	900	lbs	F034	D014	D018
	2.							
	3.							
	4.							

14. Special Handling Instructions and Additional Information
WR# 13960
Profile # 090129643-0
E3OMI JOB # 035-23-0026 - Deliver Drums to USE today
Republic Services
3500 Brookglen Dr. Houston

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: [illegible] Agent
Signature: [signature]
Month 4 Day 4 Year 23

TRANSPORTER INT'L

16. International Ship
Transporter signatur

17. Transporter Ackno
Transporter 1 Printed
Month 4 Day 4 Year 23

Transporter 2 Printed
Month 4 Day 11 Year 23

NIXIE 462 DE 1 0005/13/23
RETURN TO SENDER
NOT DELIVERABLE AS ADDRESSED
UNABLE TO FORWARD
BC: 78380030707 *1310-06143-25-44

DESIGNATED FACILITY

18. Discrepancy
18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
U.S. EPA ID Number

18b. Alternate Facility (or Generator)
Facility's Phone:
Month Day Year

18c. Signature of Alternate Facility (or Generator)

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)
1. H047 2. 3. 4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name: Gabriel Velez
Signature: [signature]
Month 4 Day 12 Year 23

DESIGNATED FACILITY TO GENERATOR

EPA Form 8700-22 (Rev. 12-17) Previous editions are obsolete.

APPENDIX E

POC Concentration vs. Time Graphs

Figure E-1
2-Methylnaphthalene Concentrations vs Time - A-TZ Unit
UPRR HWPW Facility - RCRA SWMU No. 1

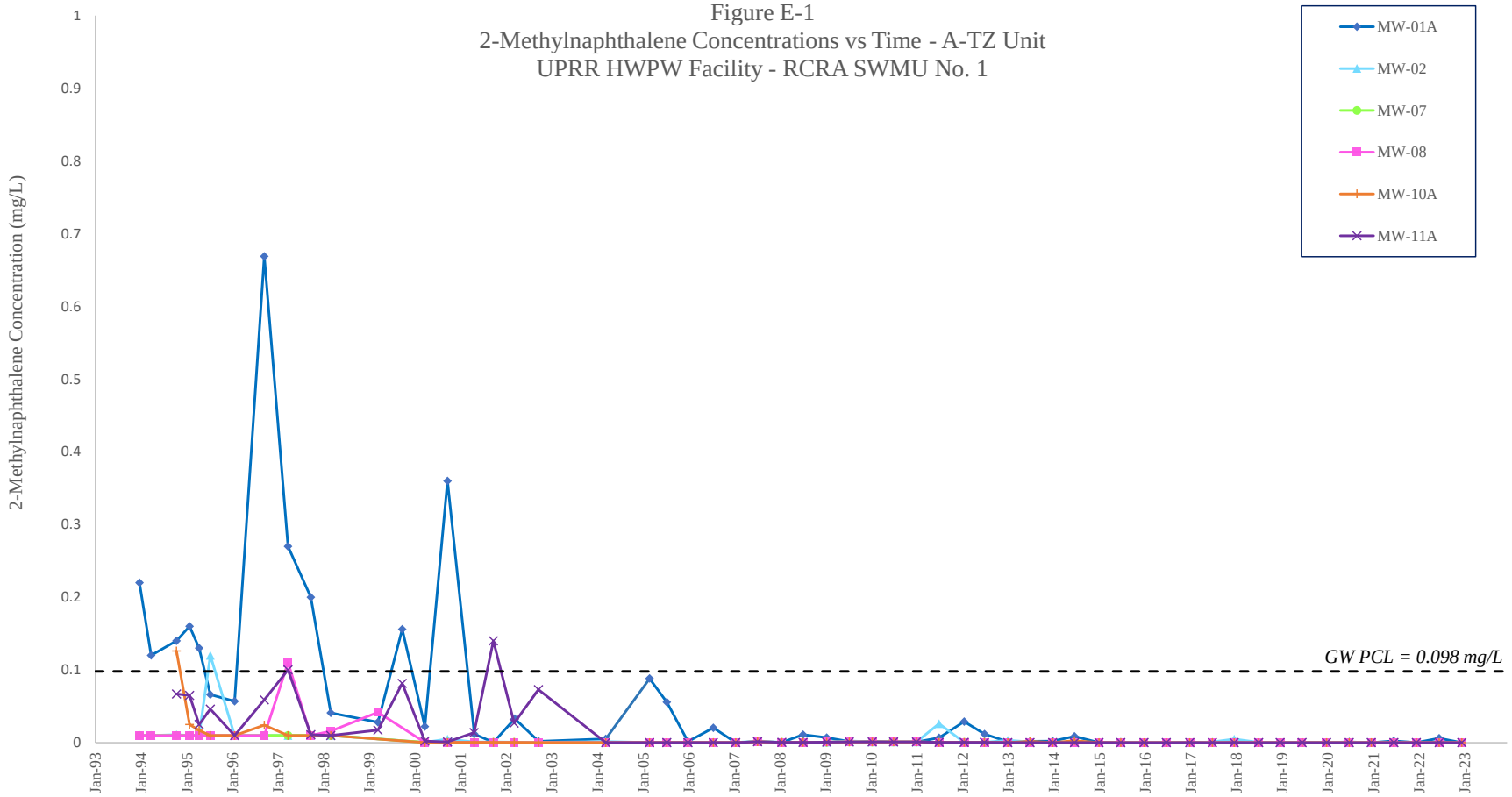


Figure E-2
Dibenzofuran Concentrations vs Time - A-TZ Unit
UPRR HWPW Facility - RCRA SWMU No. 1

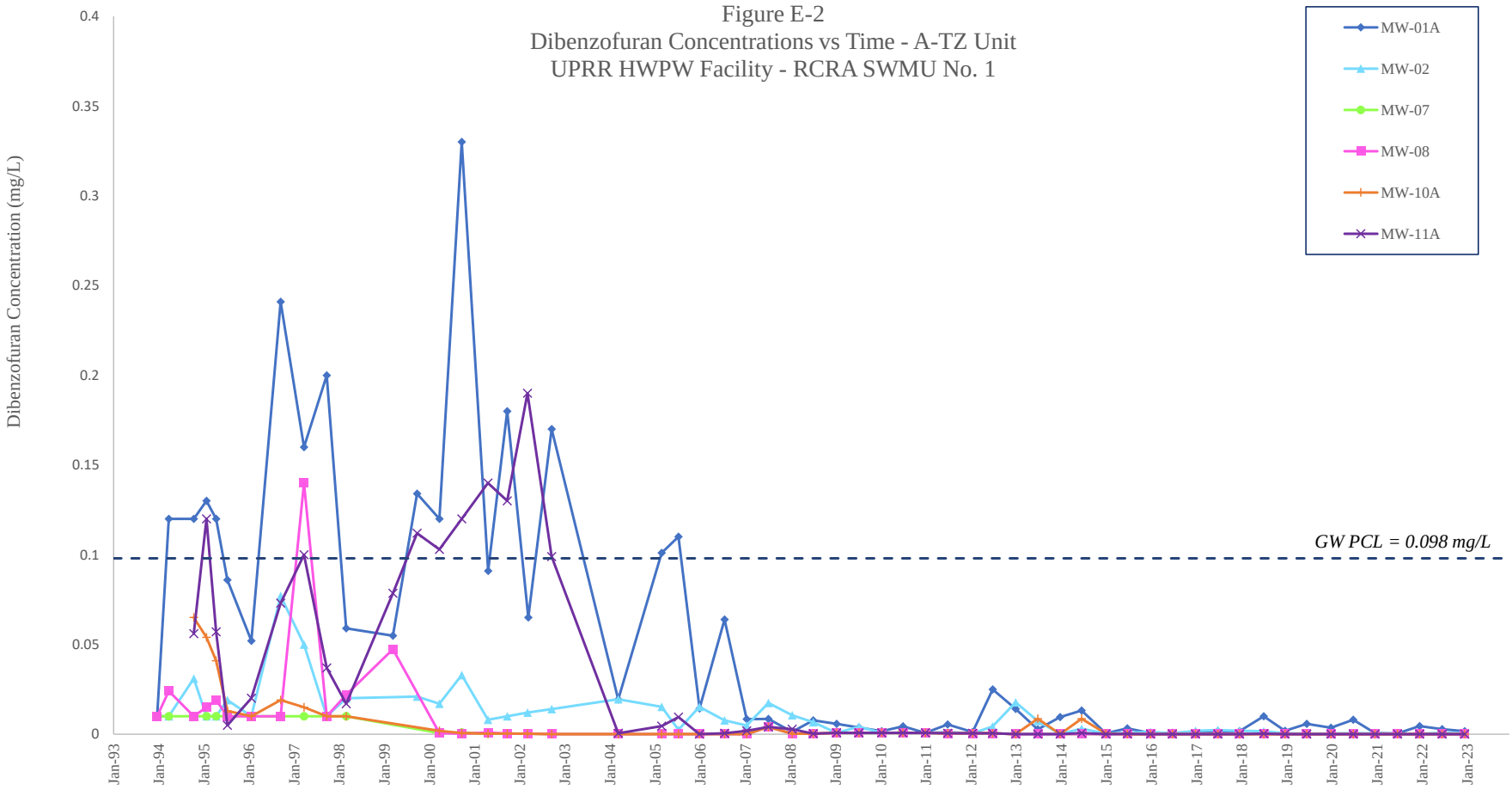


Figure E-3
Naphthalene Concentrations vs Time - A-TZ Unit
UPRR HWPW Facility - RCRA SWMU No. 1

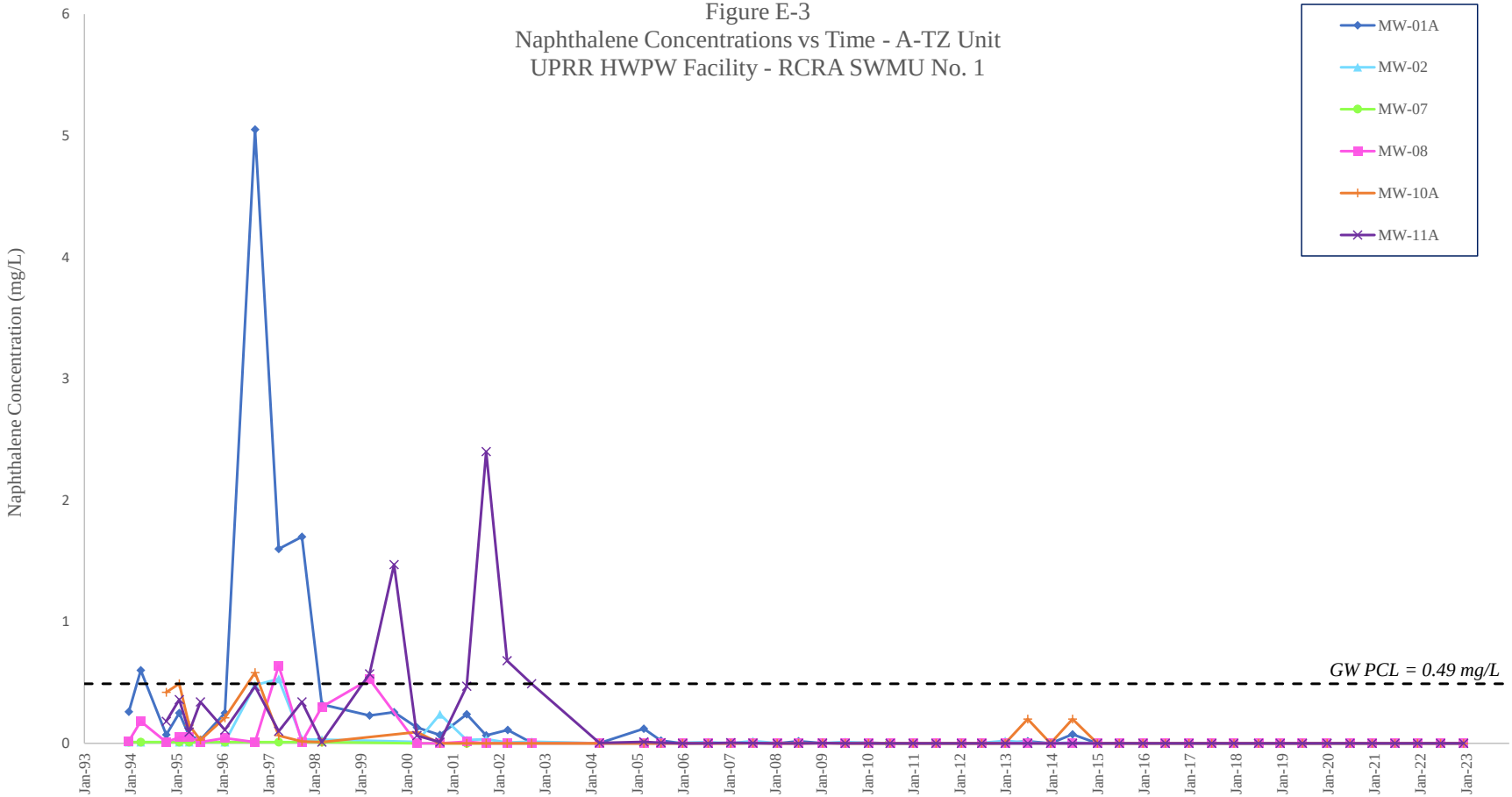
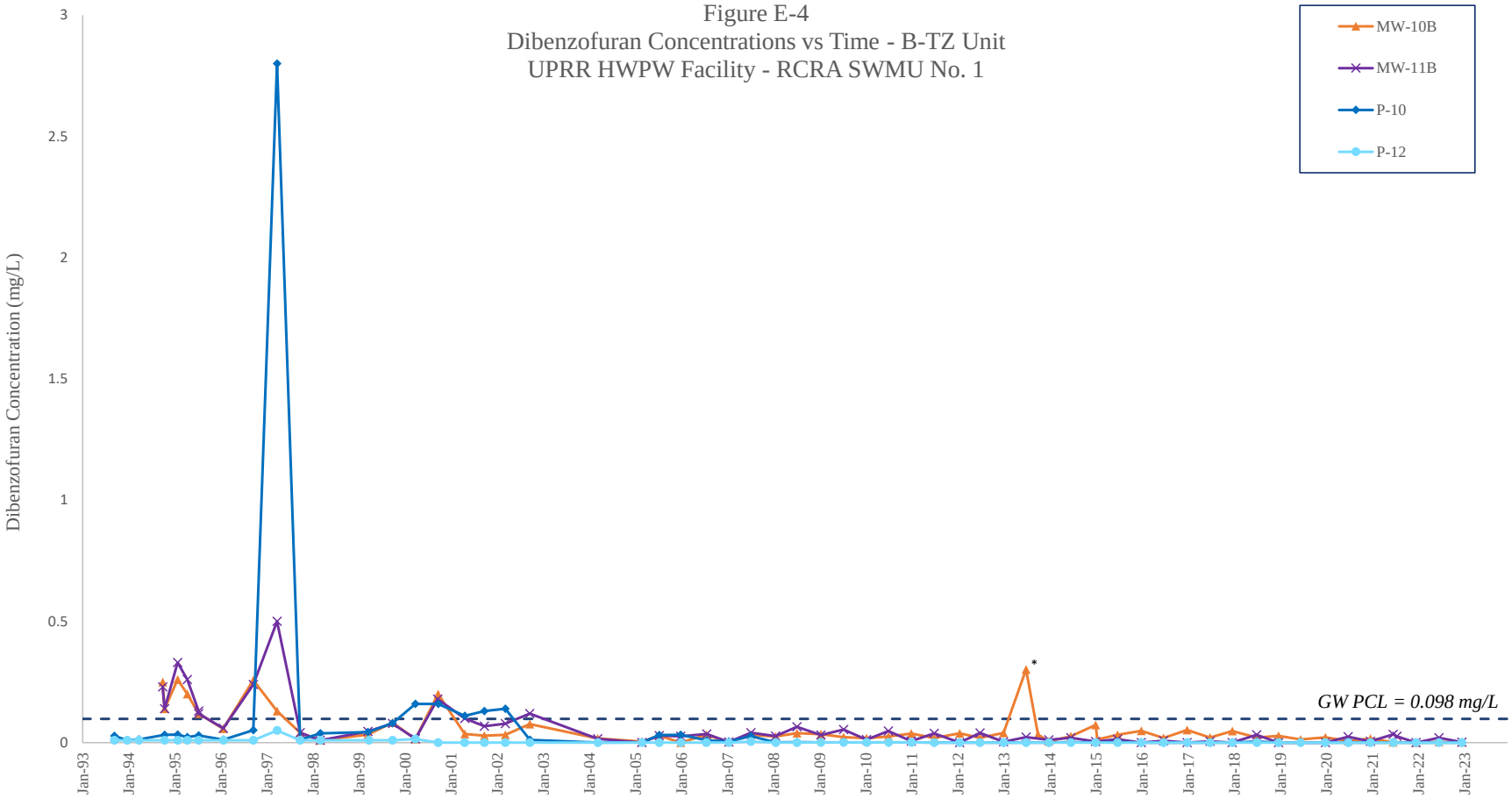
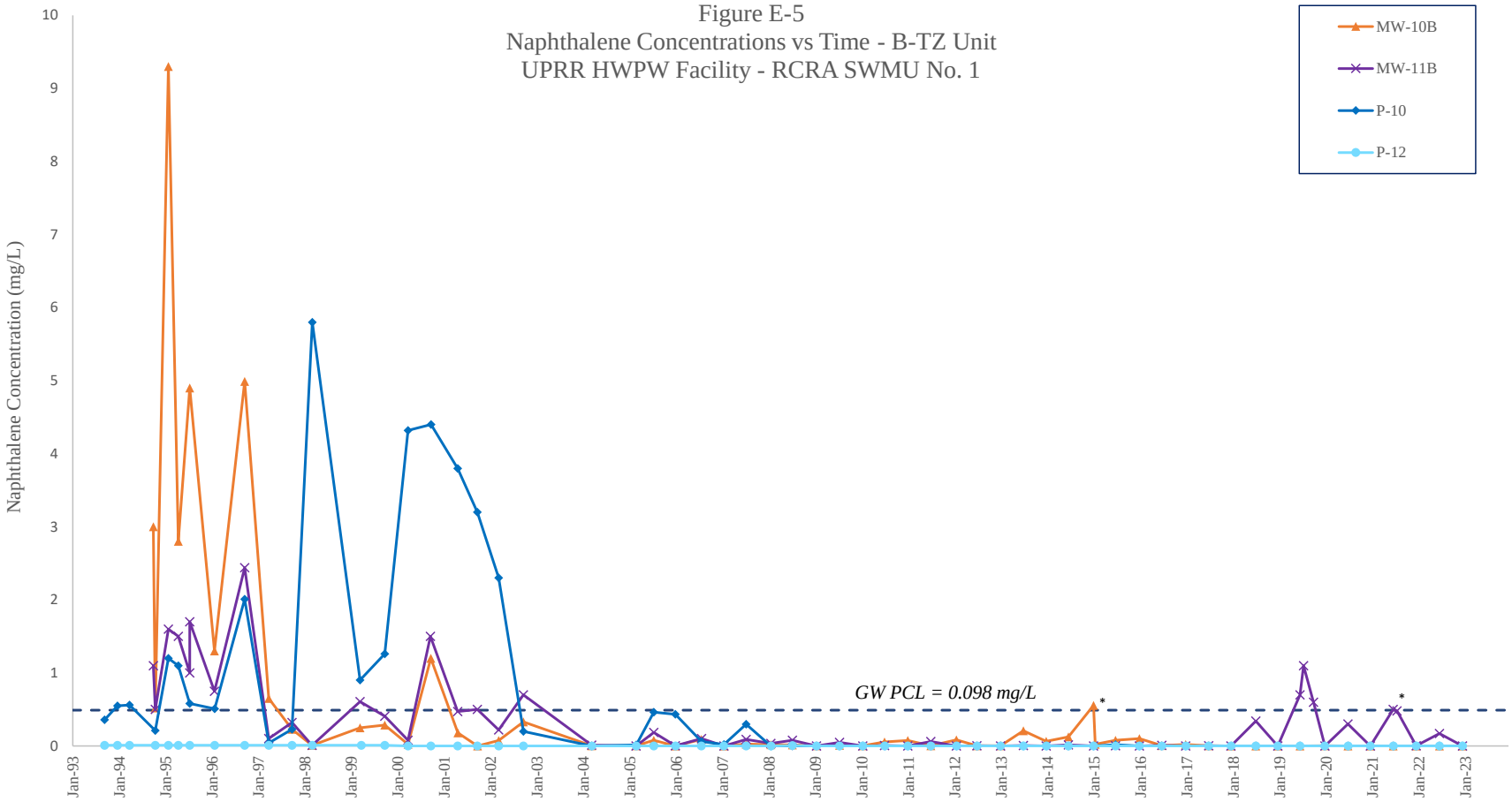


Figure E-4
Dibenzofuran Concentrations vs Time - B-TZ Unit
UPRR HWPW Facility - RCRA SWMU No. 1



* = unverified result

Figure E-5
Naphthalene Concentrations vs Time - B-TZ Unit
UPRR HWPW Facility - RCRA SWMU No. 1

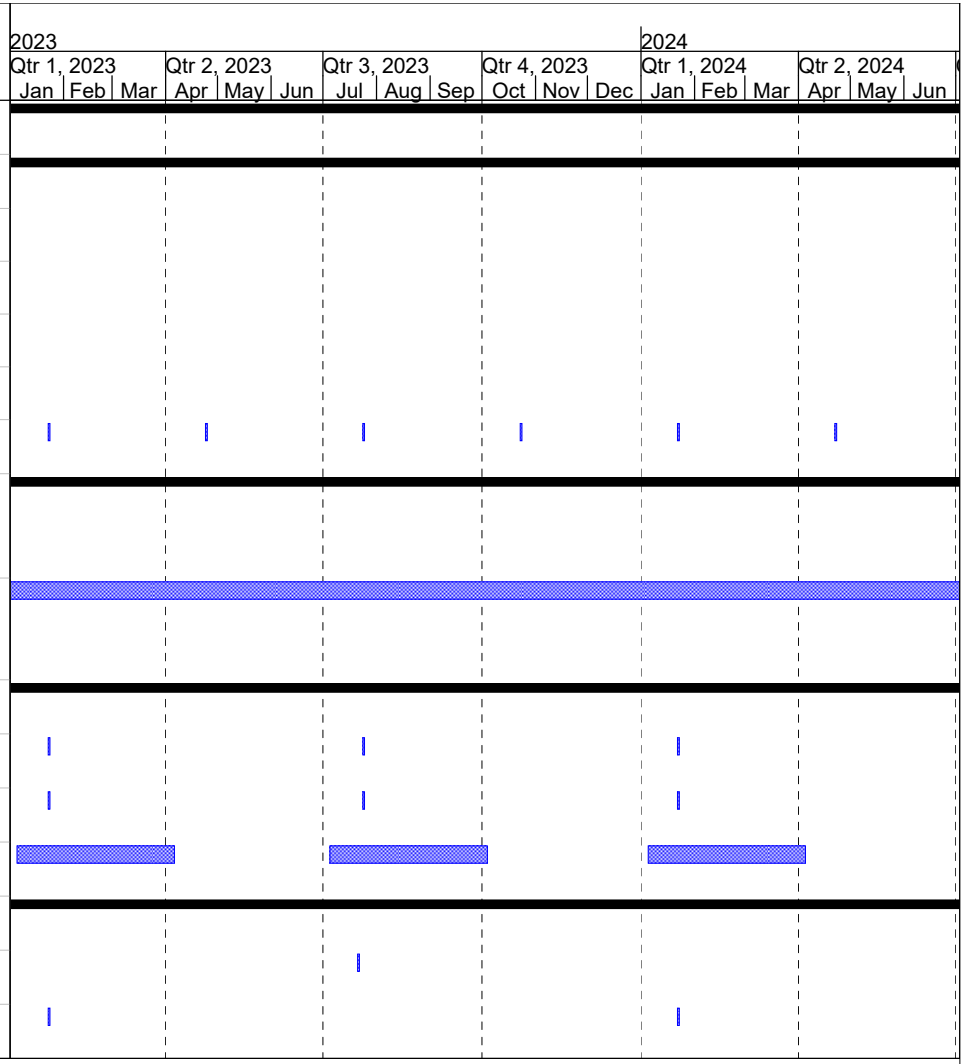


* = unverified result

APPENDIX F

Updated Compliance Schedule

ID	Task Name/Permit or CP Section No.
1	**Facility Management**
2	**RCRA Permit/Compliance Plan Renewal and Major Amendments**
15	Permit Revision No. 5, 6, and 7
16	Preliminary Decision and Final Draft Permit Issued
17	Public Meeting
18	Public Comment Period
19	General Inspection Requirements (quaterly) [Permit Section III.D; Table III.D]
103	**Corrective Measures Implementation (CMI)/Response Action Plan (RAP) [CP Section VIII.F]**
110	Implement Corrective Action as detailed in RAP (pending approval of Permit Renewal/Compliance Plan)
111	**Ground-Water Monitoring Program [Permit Section VI.A.; CP Section VI.]**
112	Water Level Measurements (Semiannually) [CP Section VI.C.4.a]1
152	Monitoring Well Inspections (Semiannually) [CP Section VI.C.4.a]1
193	**Groundwater Sampling and Data Evaluation [CP Section VI.C.2]**
244	**Response and Reporting [Permit Section II.B.7; CP Section VII.)**
245	First Semi-Annual GW Monitoring Report - July 21 [CP Section VII.C.2]
265	Second Semi-Annual GW Monitoring Report - January 21 [CP Section VII.C.2]



Compliance Schedule
UPRR Houston Wood Preserving Works Site
Houston, Texas

Task
Milestone
Summary
Rolled Up Task
Rolled Up Milestone
Rolled Up Progress
External Tasks
Manual Summary

APPENDIX G

Laboratory Data QA/QC Report Checklist

FORMER HOUSTON WOOD PRESERVING WORKS
LABORATORY DATA QA/QC REPORT CHECKLIST
ANALYTICAL REPORT HS23010181
January 19, 2023

Facility Name: Former Houston Wood Preserving Works SWMU 1	**Permit/ISW Reg No.: 50343**	**For TCEQ Use Only**
Laboratory Name: ALS Environmental	**EPA I.D. No.:**	**Project Mgr:**
Reviewer Name: Catherine Mear		
Date: 4/4/2023	**Date:**	

Description	Status	More in Case Narrative (Check Box)	Technically Complete
1. Were laboratory analyses performed by a laboratory accredited by TCEQ, whose accreditation included the matrix (ces), methods, and parameters associated with the data? If not was an explanation given in the Case-Narrative (e.g., laboratory exemption, accreditation for method /parameter not available from TCEQ)?	Yes☒ No☐ NA☐	☐	Yes☐ No☐ NA☐
2. Was a Case Narrative from laboratory (QC data description summary) submitted with the data set?	Yes☒ No☐ NA☐	☐	Yes☐ No☐ NA☐
3. Are the sample collection, preparation and analyses methods listed in the permit, preparation and analysis methods listed in the permit or other documents specifying criteria the ones used on the final report?	Yes☒ No☐ NA☐	☐	Yes☐ No☐ NA☐
4. Were there any modifications to the sample collection, preparation and/or analytical methodology (ies)? If so was the description included on the Case-Narrative?	Yes☐ No☒ NA☐ Yes☐ No☐ NA☒	☐	Yes☐ No☐ NA☐
5. Were all samples prepared and analyzed within required holding times?	Yes☒ No☐ NA☐	☐	Yes☐ No☐ NA☐
6. Were samples properly preserved according to method and QAPP requirements?	Yes☒ No☐ NA☐	☐	Yes☐ No☐ NA☐

Description	Status	More in Case Narrative (Check Box)	Technically Complete
7. Have the method detection limits (MDL) and/or practical quantitation limit (PQL) been defined in the final report? Note: NELAC uses terms limit of detection (LOD) and Limit of Quantitation respectively.	**Yes☒ No☐ NA☐**	☐	**Yes☐ No☐ NA☐**
8. Do parameters listed on final report match regulatory parameters of concern (POC) specified in permit and/or Waste Analysis Plan or other required document? Note: POC may also be referred to chemicals of concern (COCs)	**Yes☒ No☐ NA☐**	☐	**Yes☐ No☐ NA☐**
9. Are the POCs included within the analytical methods target analyte list?	**Yes☒ No☐ NA☐**	☐	**Yes☐ No☐ NA☐**
10. Were the appropriate type(s) of blanks analyzed?	**Yes☒ No☐ NA☐**	☐	
11. Did any blank samples contain POC concentrations >5x or 10x of MDL? If so, please explain potential bias?	**Yes☐ No☒ NA☐**	☐	**Yes☐ No☐ NA☐**
12. Were method blanks taken through the entire preparation and analytical process?	**Yes☒ No☐ NA☐**	☐	**Yes☐ No☐ NA☐**
13. Did the calibration curve and continuing calibration verification meet regulatory (e.g. NELAC Standards) method specifications (No. of standards, acceptance criteria, etc.)?	**Yes☒ No☐ NA☐**	☐	**Yes☐ No☐ NA☐**
14. Do the initial calibration standards include a concentration below the regulatory limit/decision level? If not please explain? If an MDL and PQL are each used on a report then the relationship between the two must be defined for each method.	**Yes☒ No☐ NA☐** **Yes☐ No☐ NA☒**	☐	**Yes☐ No☐ NA☐**
15. Were manual peak integrations performed? If so pre and post chromatograms and method change histories may be requested?	**Yes☐ No☒ NA☐** **Yes☐ No☐ NA☒**	☐	**Yes☐ No☐ NA☐**
16. Were all results bracketed by a lower and upper range calibration standard?	**Yes☒ No☐ NA☐**	☐	**Yes☐ No☐ NA☐**
17. Was any result reported outside of the range of the calibration standards?	**Yes☐ No☒ NA☐**	☐	**Yes☐ No☐ NA☐**
18. Were all matrix spike (MS) and MS duplicate (MSD) recoveries within the data decision making goals of QC data in the RCRA/UIC QAPP and/or within the laboratories control charts? If not were data flagged with explanation in case narrative?	**Yes☒ No☐ NA☐** **Yes☐ No☐ NA☒**	☐	**Yes☐ No☐ NA☐**
19. Were all of the MS and MSD relative percent differences (RPDs) within the data decision making goals of QC data in the RCRA/UIC QAPP? If not were data flagged with explanation in case narrative?	**Yes☒ No☐ NA☐** **Yes☒ No☐ NA☐**	☐	**Yes☐ No☐ NA☐**
20. Were all laboratory control sample (LCS) recoveries at least within the MS and MSD ranges of recoveries and within laboratories control charts? If not were data flagged with explanation in Case Narrative?	**Yes☐ No☒ NA☐** **Yes☐ No☒ NA☐**	☐	**Yes☐ No☐ NA☐**

Description	Status	More in Case Narrative (Check Box)	Technically Complete
21. Were all POCs (COCs) in the LCS?	**Yes☒ No☐ NA☐**	☐	**Yes☐ No☐ NA☐**
22. Were the MS and MSD from samples collected for this work order or other samples in the analytical batch as defined by the NELAC Standards? *This information is used to identify factors contributing to matrix interferences. It should not be assumed, unless it is understood by the laboratory, that samples relating to this report were the ones selected to be fortified with the POCs.*	**Yes☒ No☐ NA☐**	☐	**Yes☐ No☐ NA☐**
23. Were any of the samples diluted? If so were appropriate calculations made to the MDL and/or PQL of the final report?	**Yes☒ No☐ NA☐**	☐	**Yes☐ No☐ NA☐**

LABORATORY DATA REPORT QA/QC CHECKLIST
LABORATORY CASE-NARRATIVE
(To accompany laboratory checklist)

	Facility Name: Former Houston Wood Preserving Works SWMU 1	**Permit/ISW Reg No.: 50343**
	Laboratory Name: ALS Environmental	**EPA I.D. No.:**

Method No.	Non-conformance Description	Method Modification Description
SW8270		
SW8270		