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January 17, 2014
PBW Project No. 1358

Mr. Kirk Coulter
MC-127
Environmental Cleanup Section I, Team 3, Remediation Division
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

Subject: Correction Action Monitoring Report: 2013 Second Semi-Annual Event
Houston Wood Preserving Works, Houston, Texas
TCEQ SWR No. 31547; Hazardous Solid Waste Permit No. 50343

Dear Mr. Coulter:

Pastor, Behling & Wheeler, LLC (PBW), on behalf of Union Pacific Railroad Company (UPRR), is pleased to provide two copies of the Corrective Action Monitoring Report: 2013 Second Semi-Annual Event for your review. The report was prepared in accordance with Section VII.C.2 of Compliance Plan No. CP-50343, which was issued in conjunction with Post-Closure Care Permit No. HW-50343, both dated June 10, 2005.

If you have any questions or need additional information, please feel free to call me at (512) 671-3434 or Mr. Geoffrey Reeder of UPRR at (281) 350-7197.

Sincerely,

PASTOR, BEHLING & WHEELER, LLC

Eric C. Matzner, P.G.
Senior Hydrogeologist

cc: Waste Program Manager, TCEQ Region 12, Houston
Mr. Geoffrey Reeder, P.G., UPRR – Spring, TX

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TCEQ Remediation Division

CORRECTIVE ACTION MONITORING REPORT
2013 SECOND SEMIANNUAL EVENT

FORMER HOUSTON WOOD PRESERVING WORKS
4910 LIBERTY ROAD
HOUSTON, TEXAS

January 14, 2014

Prepared for:

Mr. Geoffrey Reeder, P.G.
UNION PACIFIC RAILROAD COMPANY

24125 Aldine Westfield Road
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Prepared by:

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PBW Project No. 1358

January 14, 2014

CERTIFICATION

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

1-8-2014

Date

JOEL STRAFELDA
GENERAL MANAGER
ENVIRONMENTAL MANAGEMENT

Name

Title

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1.0 EXECUTIVE SUMMARY

This semi-annual report presents a summary and evaluation of the Corrective Action Groundwater Monitoring for July through December 2013 for the Closed Surface Impoundment (Solid Waste Management Unit (SWMU) No. 1) at the former Wood Preserving Works facility (the Site) located in Houston, Texas. The groundwater monitoring activities for this period were performed by Pastor, Behling & Wheeler, LLC (PBW) on behalf of Union Pacific Railroad (UPRR) in July 2013.

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 July 2013 sampling event show groundwater flow in the A-TZ to the northwest with a hydraulic gradient of approximately 0.067 ft/ft. Groundwater flow during the previous event (2013 first semi-annual monitoring event) was observed to flow to the north to northeast.

Groundwater elevation data collected in the B-TZ show groundwater flow to the west-southwest at SWMU No. 1 with a hydraulic gradient of approximately 0.004 ft/ft. Groundwater flow during the previous event (2013 first semi-annual monitoring event) was observed to flow to the northeast.

Analytical results from the July 2013 sampling event were compared to Texas Commission on Environmental Quality (TCEQ) Texas Risk Reduction Program (TRRP) Protective Concentration Limits (PCLs), as designated in Section IV.D of the Compliance Plan, dated June 10, 2005. All constituent concentrations were below their respective PCLs for the sixteenth consecutive semi-annual monitoring event, except for an unverified dibenzofuran concentration detected at MW-10B (0.302 mg/L) that exceeded its PCL of 0.098 mg/L.

As detailed in a letter prepared by PBW and submitted to the TCEQ, dated November 8, 2013, a verification sample was collected for dibenzofuran at monitoring well MW-10B on October 14, 2013. Dibenzofuran was detected less than the PCL in the verification sample at 0.0334 mg/L, which is consistent with historical dibenzofuran concentrations detected at MW-10B over the past 10 years. Based on the results of the verification sample, the unverified dibenzofuran concentration detected at MW-10B during the July 2013 sampling event appears to be an anomaly (either sampling or laboratory bias) and monitoring wells in both 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 2013 second semi-annual monitoring period (July through December) 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) No. 1).

On behalf of UPRR, Pastor, Behling & Wheeler, LLC (PBW) conducted groundwater monitoring activities at the Site on July 11, 2013 and October 14, 2013. Groundwater monitoring activities included sampling and gauging the background and point of compliance (POC) wells and piezometers associated with SWMU No. 1, as well as the collection of a verification sample from MW-10B. The sampling events, analytical data, and data evaluation provided in this report fulfill the semi-annual corrective action reporting requirements for the second half of 2013 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
A notation of the presence or absence of non-aqueous phase liquids (NAPLs), both light and dense phases, in each well during each sampling event since the last event covered in the previous semiannual report and tabulation of depth and thickness of NAPLs, if detected (VII.C.2.g.)	Table 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 2013, 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. Conclusions and recommendations are provided in Section 4.0.

3.0 2013 SECOND 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 Second 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

PBW performed quarterly inspections of SWMU No. 1 in July and October 2013 and conducted semi-annual groundwater sampling activities on July 11, 2013 and October 14, 2013 (verification sampling). 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 TestAmerica Laboratories, in Houston, Texas for analysis. Chain-of-Custody (COC) 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 five gallons of purge water were generated during the July 2013 low-flow groundwater sampling event. The purge water was containerized in a Department of Transportation (DOT) certified, 55-gallon steel drum and temporarily stored on site in a fenced and locked container storage area (NOR 006). Wastes generated during the 2013 second semi-annual monitoring event were transported from the Site by USA Waste Transportation Services to the Clean Harbors Deer Park, LLC facility, located in La

Porte, Texas on August 13, 2013 for disposal under EPA waste code F034 and TCEQ Notice of Registration (NOR) waste code 0914101H (purge water). Waste manifests are 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 2013 second 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 any 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) were 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 2013 second 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.

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 July 2013 sampling event show groundwater flow in the A-TZ to the northwest with a hydraulic gradient of approximately 0.067 ft/ft. Groundwater flow during the previous event (2013 first semi-annual monitoring event) was observed to flow to the north to northeast.

Groundwater elevation data collected in the B-TZ show groundwater flow to the west-southwest at SWMU No. 1 with a hydraulic gradient of approximately 0.004 ft/ft. Groundwater flow during the previous event (2013 first semi-annual monitoring event) was observed to flow to the northeast.

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 No. 1; therefore, this provision is not applicable.

3.9 Contaminant Mass Recovered

With the groundwater analytical data for the POC wells in compliance and 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:

1) Analytical results may be either directly compared with PCLs (CP Table III; included in Appendix A), or
2) Analytical results can be statistically compared 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 July 2013 monitoring event, the compliance wells completed in both transmissive zones are compliant with GWPSs, except for MW-10B, which had an unverified, initial GWPS exceedance for dibenzofuran during the July 2013 monitoring event. Dibenzofuran was initially detected at MW-10B at a concentration of 0.302, mg/L which exceeds the GWPS for dibenzofuran of 0.098 mg/L.

As detailed in a letter prepared by PBW and submitted to the TCEQ, dated November 8, 2013, a verification sample was collected from MW-10B and analyzed for dibenzofuran on October 14, 2013. The dibenzofuran concentration detected in the verification sample of 0.0334 mg/L was less than the GWPS. In addition, the concentration in the verification sample is consistent with historical dibenzofuran concentrations at MW-10B over the past 10 years (Appendix E, Figure E-4), ranging from 0.0002J mg/L in January 2006 to 0.0401 in January 2013.

Based on the results of the verification sample, the dibenzofuran concentration detected at MW-10B during the July 2013 sampling event was not verified and appears to be an anomaly (either sampling or laboratory bias). Therefore, monitoring wells in both the A-TZ and B-TZ are considered to be compliant for this monitoring period. Compliance status for each of the monitoring wells is provided in Table 5. The analytical laboratory report prepared for the verification sample is provided in Appendix C.

Except for the unverified exceedance for dibenzofuran at MW-10B, COC concentrations in monitoring wells in A-TZ and B-TZ have not exceeded the established CP PCLs since July 2005, at which time dibenzofuran exceeded its respective PCL of 0.098 mg/L in MW-01A (0.11 mg/L). Including the 2013 second semi-annual analytical data, the SMWU No. 1 monitoring wells have been compliant for sixteen consecutive semi-annual monitoring events (8 years). 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 been stable or have shown a steady decrease over time, and are currently compliant with the TCEQ Remedy Standard A requirements for groundwater protection.

A QA/QC review and Data Usability Summary (DUS) were prepared for the July 2013 and October 14, 2013 analytical data by Conestoga-Rovers & Associates (CRA) (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). In addition to the laboratory qualifiers, CRA qualified the following results:

July 2013:

- MW-01A – The 2-methylnapthalene, acenaphthene, anthracene, dibenzofuran, fluorene, naphthalene and phenanthrene concentrations at MW-01A were J flagged due to variability in field duplicate results (DUP-1).
- P-10 – The anthracene concentration at P-10 was J flagged due to variability in field duplicate results (DUP-2).

Based on the QA/QC data review, CRA noted that the analytical data reported for July 2013 are usable for the intended use with the above qualifications. Data reviewed by CRA as part of the October 14, 2013 sampling event were reported to be usable for the intended use without additional qualification.

3.11 Reported Concentration Maps

Reported concentrations of each constituent analyzed for the 2013 second semi-annual monitoring event are presented on Figures 5 and 6 for the A-TZ and B-TZ compliance wells, respectively. In the event a constituent exceeded their respective PCL, the value would be highlighted on the figures. A PCL exceedance was reported for dibenzofuran at MW-10B during the July 2013 monitoring event; however, this PCL exceedance was not confirmed by the verification sample collected on October 14, 2013.

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.

3.16 Corrective Measures Implementation (CMI) Report

A Response Action Plan (RAP) has not been submitted; therefore, this provision does not apply.

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 No. 1 monitoring well elevations to be resurveyed every five years, the six A-TZ and four B-TZ monitoring well elevations were most recently surveyed on December 2, 2010.

3.18 Recommendation for Changes

There are no recommendations for changes to the monitoring program or to the Corrective Action 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: 2013 Second Semiannual Event

Houston Wood Preserving Works
Houston, Texas

Analyte	PCL (mg/L)	Monitoring Well IDs (Concentrations mg/L)																				
		MW-01A			DUP-01			MW-02			MW-07			MW-08			MW-10A			MW-11A		
		7/11/2013	LQ	VQ	7/11/2013	LQ	VQ	7/11/2013	LQ	VQ	7/11/2013	LQ	VQ	7/11/2013	LQ	VQ	7/11/2013	LQ	VQ	7/11/2013	LQ	VQ
Acenaphthene	1.5	0.098		J	0.132		J	0.0179			0.0000804	U		0.0000784	U		0.0306			0.000878		
Acenaphthylene	1.5	0.00122			0.00137			0.000335	J		0.0000603	U		0.0000588	U		0.000385	J		0.0000577	U	
Anthracene	7.3	0.0022		J	0.00331		J	0.0013			0.000749			0.000101	J		0.00036	J		0.00044	J	
bis(2-ethylhexyl)phthalate	0.006	0.000356	U		0.000356	U		0.000356	U		0.000372	U		0.000363	U		0.000356	U		0.000356	U	
Dibenzofuran	0.098	0.00264		J	0.0235		J	0.00734			0.0000804	U		0.0000784	U		0.00866			0.0000769	U	
Fluoranthene	0.98	0.00399			0.00456			0.00069			0.0000704	U		0.0000686	U		0.000186	J		0.000221	J	
Fluorene	0.98	0.0323		J	0.0545		J	0.00986			0.0000704	U		0.0000686	U		0.00631			0.0000673	U	
2-Methylnaphthalene	0.098	0.00193		J	0.0386		J	0.000897			0.0000704	U		0.0000686	U		0.00178			0.0000673	U	
Naphthalene	0.49	0.0169		J	0.441	J	J	0.00754			0.000111	J		0.0000784	U		0.199			0.0000769	U	
Phenanthrene	0.73	0.00109		J	0.00928		J	0.000776			0.0000603	U		0.0000588	U		0.00221			0.0000577	U	
Pyrene	0.73	0.00165			0.00192			0.000336	J		0.000111	U		0.000108	U		0.000106	U		0.000115	J	

Notes:
PCL = Protective Concentration Level
The Compliance Plan Section IV.D defines the Groundwater Protection Standard (GWPS) as the PCL
DUP-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

Table 2
Summary of Analytical Results for the B-Transmissive Zone (B-TZ)
Semiannual Monitoring Report: 2013 Second Semiannual Event

Houston Wood Preserving Works
Houston, Texas

Analyte	PCL (mg/L)	Monitoring Well IDs (Concentrations mg/L)																	
		MW-10B			MW-10B*			MW-11B			P-10			DUP-02			P-12		
		7/11/2013	LQ	VQ	10/14/2013	LQ	VQ	7/11/2013	LQ	VQ	7/11/2013	LQ	VQ	7/11/2013	LQ	VQ	7/11/2013	LQ	VQ
Acenaphthene	1.5	0.977			NA			0.108			0.0000808	U		0.0000812	U		0.00008	U	
Acenaphthylene	1.5	0.00986			NA			0.00119			0.0000606	U		0.0000609	U		0.00006	U	
Anthracene	7.3	0.0391			NA			0.00321			0.000133	J	J	0.000181	J	J	0.00005	U	
bis(2-ethylhexyl)phthalate	0.006	0.0037	U		NA			0.000356	U		0.000492	J		0.000575			0.00039	J	
Dibenzofuran	0.098	**0.302**			0.0334			0.0231			0.0000808	U		0.0000812	U		0.00008	U	
Di-n-butyl phthalate	2.4	0.011	U		NA			0.000106	U		0.000111	U		0.000112	U		0.00011	U	
Fluoranthene	0.98	0.0274			NA			0.00383			0.0000707	U		0.0000711	U		0.00007	U	
Fluorene	0.98	0.468			NA			0.0388			0.0000707	U		0.0000711	U		0.00007	U	
Naphthalene	0.49	0.207			NA			0.00535			0.0000808	U		0.0000812	U		0.00008	U	
Phenol	7.3	0.0004	U		NA			0.0000385	U		0.0000404	U		0.0000406	U		0.00004	U	
Pyrene	0.73	0.0101			NA			0.00196			0.000111	U		0.000112	U		0.00011	U	

Notes:
PCL = Protective Concentration Level
The Compliance Plan Section IV.D defines the Groundwater Protection Standard (GWPS) as the PCL
DUP-02 = Duplicate sample collected at P-10
Bolded concentrations indicate an exceedance of the PCL
* = Verification sample
NA = Not analyzed

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
UJ = Not detected; associated reporting limit is estimated

Table 3
Summary of Analytical Results for Quality Assurance/Quality Control Samples
Semiannual Monitoring Report: 2013 Second Semiannual Event

Houston Wood Preserving Works
Houston, Texas

Analyte	PCL (mg/L)	P-12(MS)[1] Matrix Spike 7/11/2013		P-12(MSD)[1] Matrix Spike Duplicate 7/11/2013	
Acenaphthene	1.5	0.004958		0.005325	
Acenaphthylene	1.5	0.004843		0.005125	
Anthracene	7.3	0.005331		0.005662	
bis(2-ethylhexyl)phthalate	0.006	0.006178		0.006559	
Dibenzofuran	0.098	0.005058		0.005257	
Di-n-butyl phthalate	2.4	0.005878		0.006416	
Fluoranthene	0.98	0.005920		0.006335	
Fluorene	0.98	0.005170		0.005493	
2-Methylnaphthalene	0.098	0.003871		0.004169	
Naphthalene	0.49	0.004036	J	0.00425	J
Phenanthrene	0.73	0.005445		0.00576	
Phenol	7.3	0.003054		0.003241	
Pyrene	0.73	0.005543		0.005939	

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.

Table 4

Water Level Measurements
Semiannual Monitoring Report: 2013 Second Semiannual 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	47.88	7/11/2013	9.96	ND	20.2	19.85	37.92
MW-02	48.00	7/11/2013	10.58	ND	20.3	24.10	37.42
MW-07	48.92	7/11/2013	10.62	ND	NA	25.25	38.30
MW-08	49.33	7/11/2013	11.07	ND	26.8	25.05	38.26
MW-10A	49.82	7/11/2013	12.07	ND	25.9	20.20	37.75
MW-11A	50.07	7/11/2013	12.01	ND	24.4	24.05	38.06
B-TZ Monitoring Locations							
MW-10B	49.95	7/11/2013	12.18	ND	48.8	46.45	37.77
MW-11B	50.23	7/11/2013	12.22	ND	46.8	46.65	38.01
P-10	47.73	7/11/2013	10.79	ND	40.0	42.85	36.94
P-12	48.80	7/11/2013	9.73	ND	40.0	42.85	39.07

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 2010 survey (see Section 3.17)

Table 5
Compliance Status of Wells and Piezometers
Semiannual Monitoring Report: 2013 Second Semiannual Event

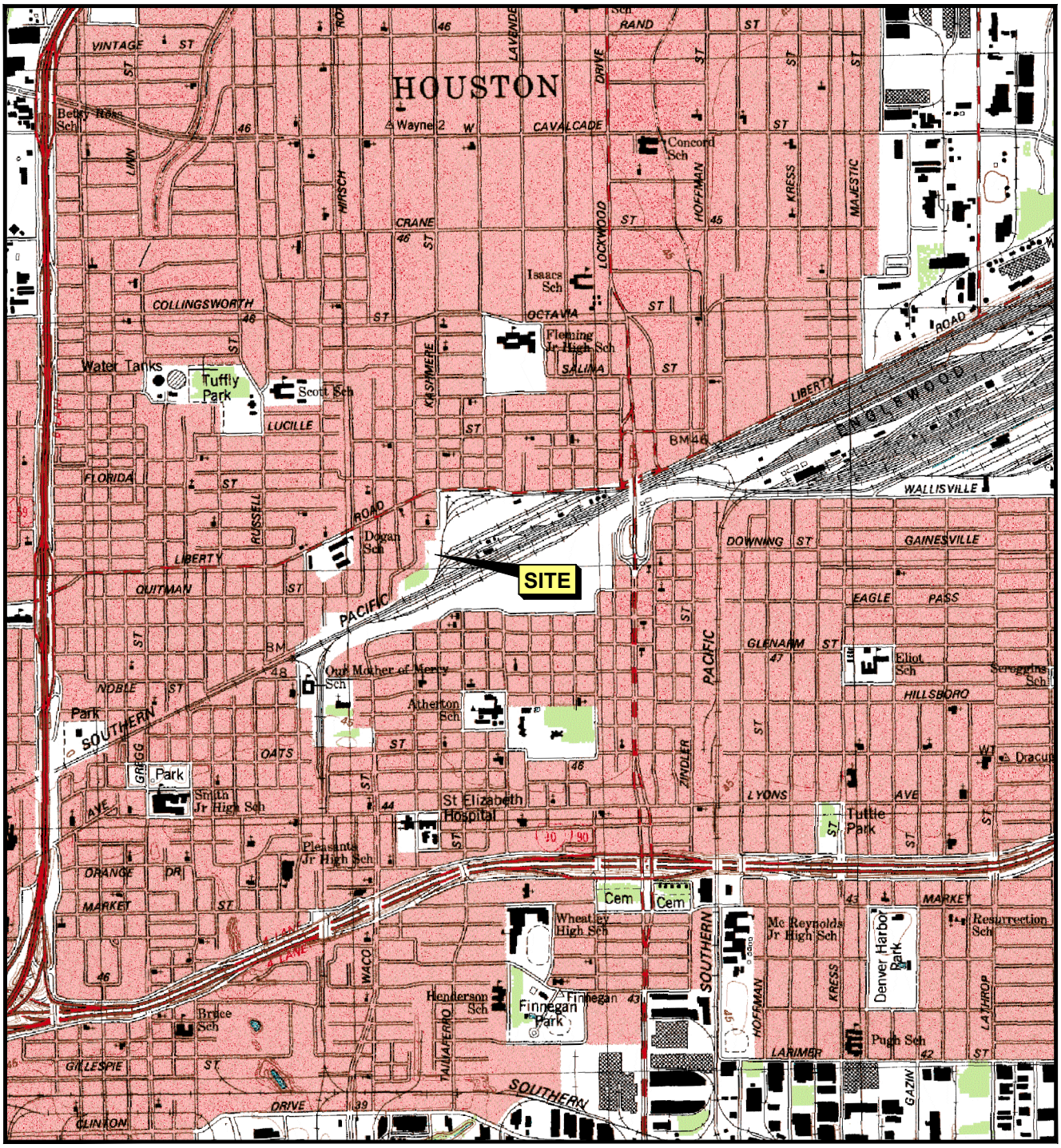
Houston Wood Preserving Works
Houston, Texas

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

Notes:

* - An initial, unverified exceedance was detected during the 2013 Second Semi-Annual Monitoring Event; however, the results of the verification resample indicated that this well is in compliance.

FIGURES



TEXAS

QUADRANGLE LOCATION

N

Scale in Feet

0 1000 2000

Source:
U.S.G.S. 7.5 minute quadrangle, Settegast, Texas, 1982.

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HOUSTON WOOD PRESERVING WORKS

Figure 1

SITE LOCATION MAP

PROJECT: 1358	BY: ZGK	REVISIONS
DATE: DEC., 2013	CHECKED: ECM	

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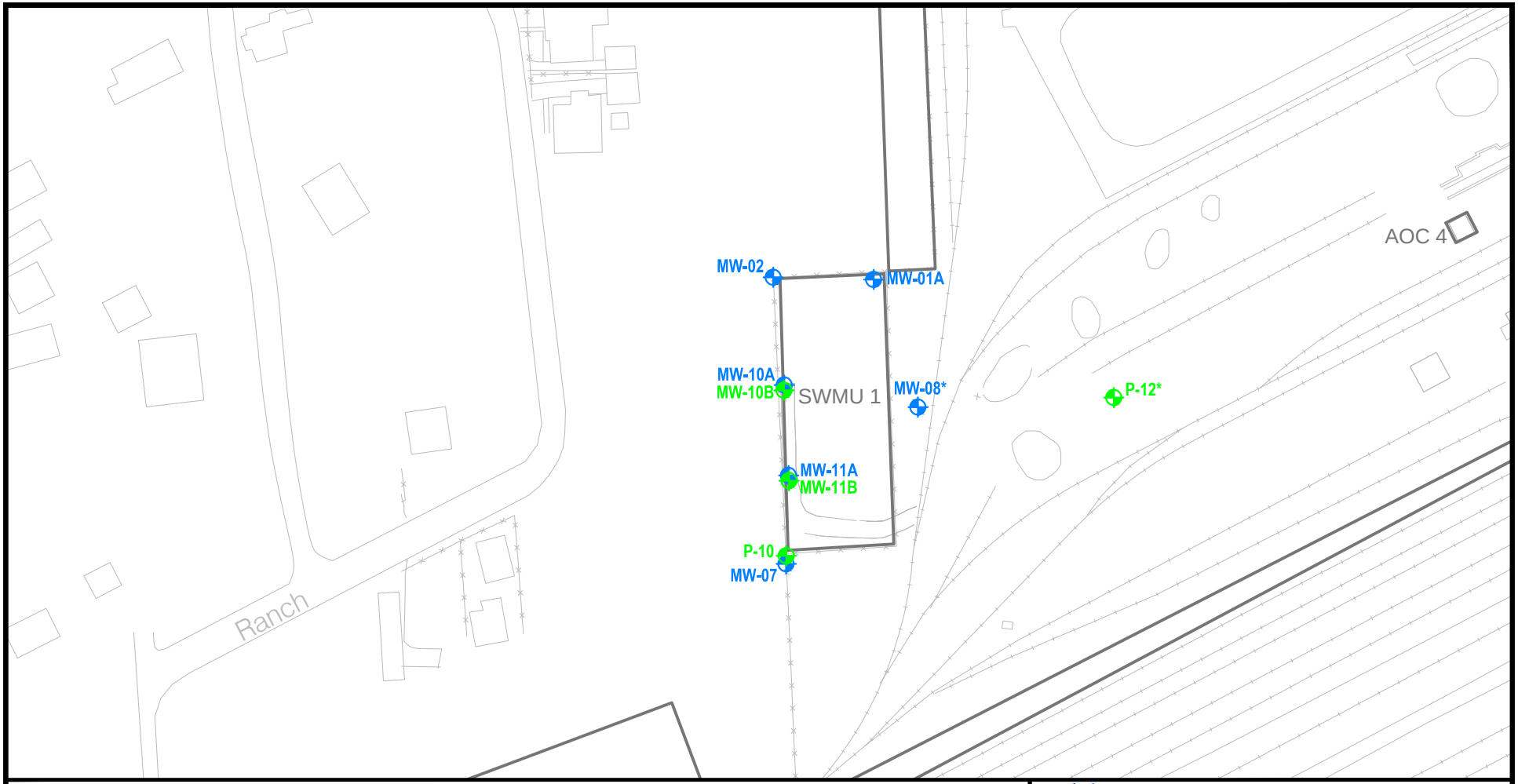

EXPLANATION

- Road, Parking Lot, Sidewalk
- Fence
- Railroad
- A-TZ Monitoring Well Location
- B-TZ Monitoring Well Location

Note:
* Background well.

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N

Approx. Scale in Feet

0 60 120

Source:
Base map from ERM-Southwest, Inc
0014419a310.dwg, 6/19/2006.

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HOUSTON WOOD PRESERVING WORKS

Figure 2

CORRECTIVE ACTION MONITORING WELL NETWORK TCEQ PERMIT UNIT NO. 1

PROJECT: 1358	BY: ZGK	REVISIONS
DATE: DEC., 2013	CHECKED: ECM	

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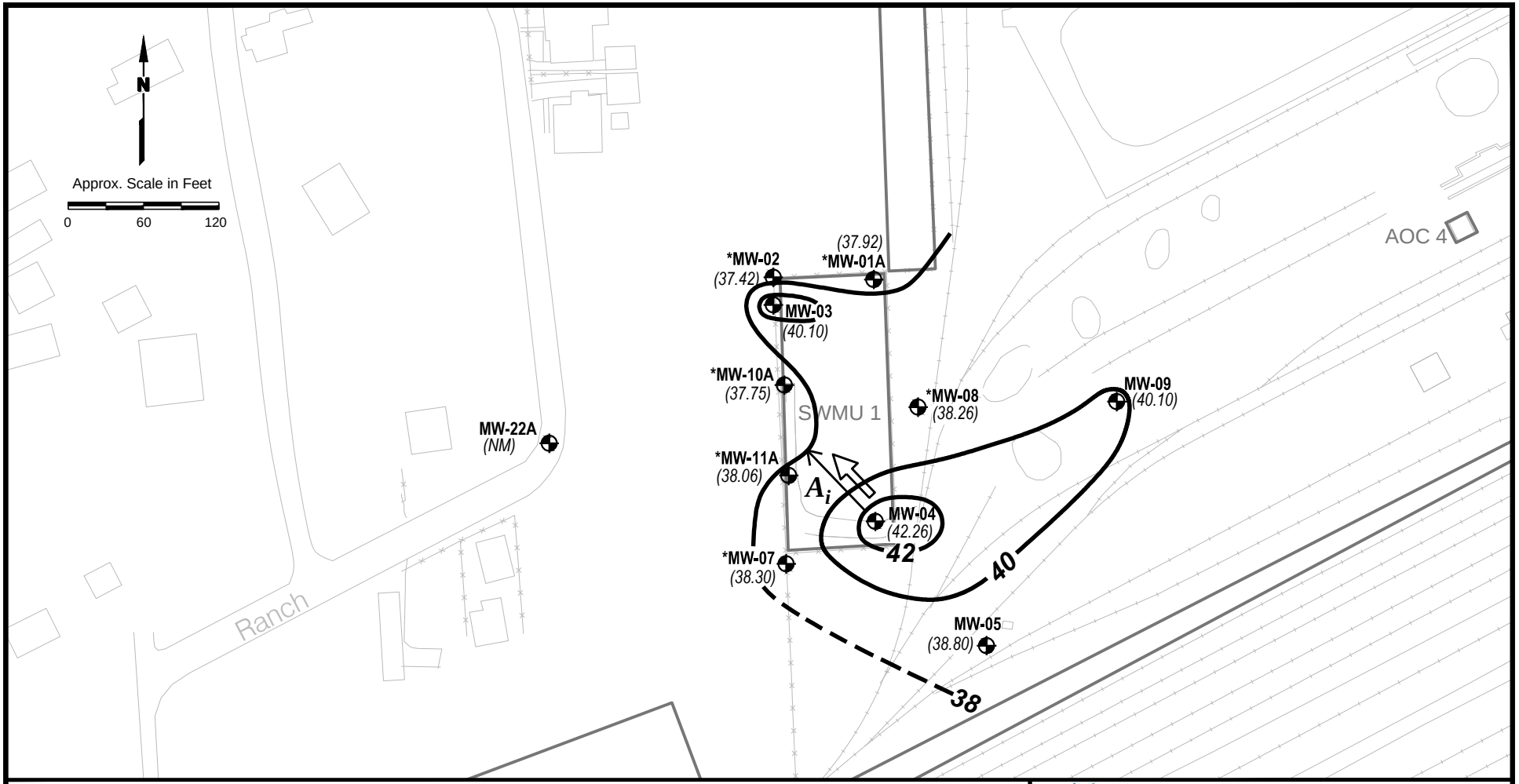

EXPLANATION

- Road, Parking Lot, Sidewalk
- Fence
- Railroad
- A-TZ Monitoring Well Location (* - Compliance Well)
- (38.30) Groundwater Elevation (Ft, MSL) (NM = Not Measured)
- 38 Groundwater Elevation Contour (Ft, MSL) C.I.= 2 Ft (dashed where inferred)
- General Groundwater Flow Direction

ESTIMATED GRADIENT

$A_i \rightarrow A_i = \frac{4ft}{67ft} = 0.06\ ft/ft$

Source:
Base map from ERM-Southwest, Inc
0014419a310.dwg, 6/19/2006.

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Figure 3

A-TZ POTENTIOMETRIC SURFACE CONTOUR MAP JULY 11, 2013

PROJECT: 1358	BY: ZGK	REVISIONS
DATE: DEC., 2013	CHECKED: ECM	

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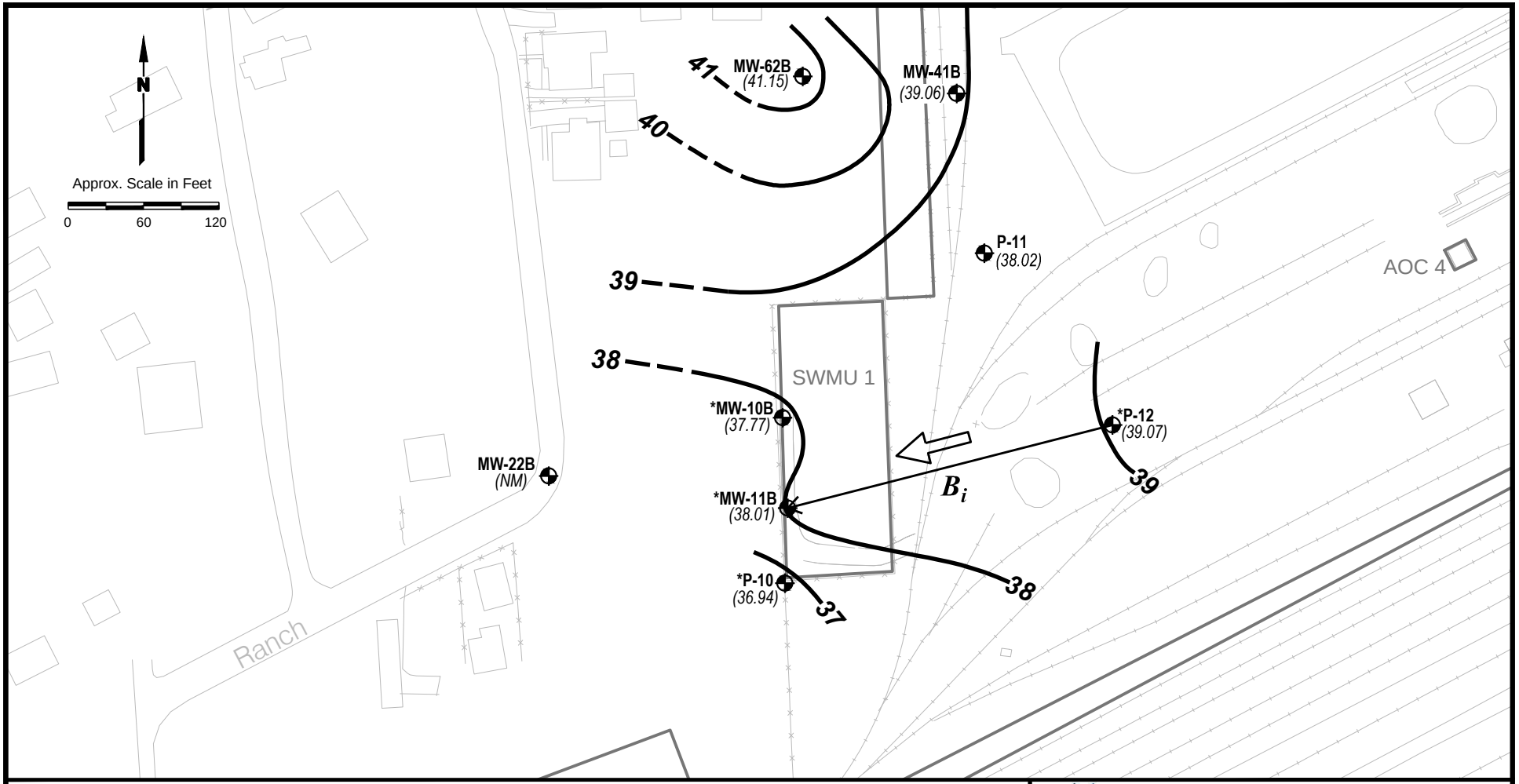

EXPLANATION

- Road, Parking Lot, Sidewalk
- Fence
- Railroad
- B-TZ Monitoring Well Location (* - Compliance Well)
- (37.77) Groundwater Elevation (Ft, MSL) (NM= Not Measured)
- 39 Groundwater Elevation Contour (Ft, MSL) C.I.= 1 Ft (dashed where inferred)
- General Groundwater Flow Direction

ESTIMATED GRADIENT

$$B_i \rightarrow B_i = \frac{1.06ft}{267ft} = 0.004\ ft/ft$$

Source:
Base map from ERM-Southwest, Inc
0014419a310.dwg, 6/19/2006.

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HOUSTON WOOD PRESERVING WORKS

Figure 4

B-TZ POTENTIOMETRIC SURFACE CONTOUR MAP JULY 11, 2013

PROJECT: 1358	BY: ZGK	REVISIONS
DATE: DEC., 2013	CHECKED: ECM	

PASTOR, BEHLING & WHEELER, LLC
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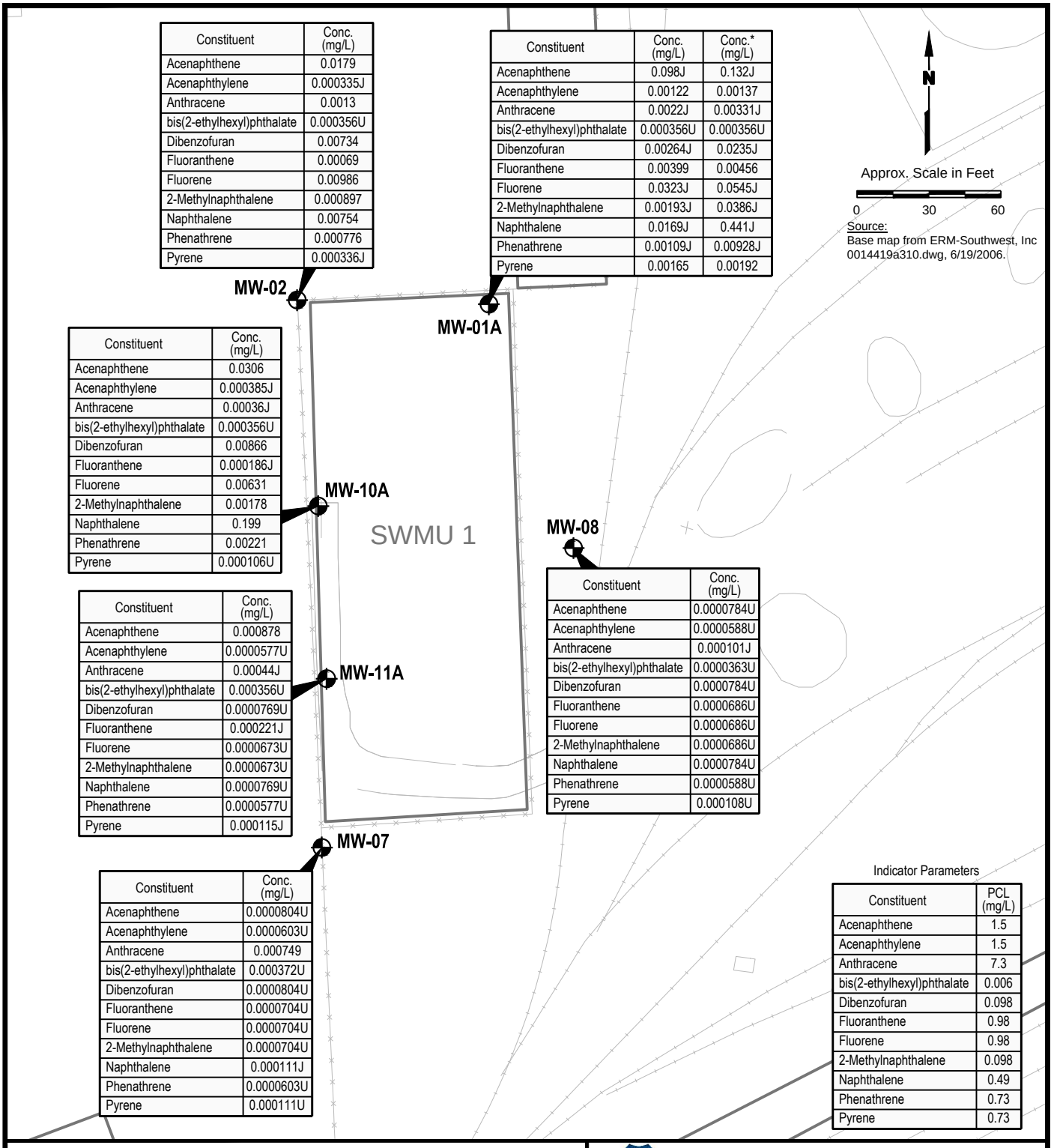

Constituent	Conc. (mg/L)
Acenaphthene	0.0179
Acenaphthylene	0.000335J
Anthracene	0.0013
bis(2-ethylhexyl)phthalate	0.000356U
Dibenzofuran	0.00734
Fluoranthene	0.00069
Fluorene	0.00986
2-Methylnaphthalene	0.000897
Naphthalene	0.00754
Phenathrene	0.000776
Pyrene	0.000336J

Constituent	Conc. (mg/L)	Conc.* (mg/L)
Acenaphthene	0.098J	0.132J
Acenaphthylene	0.00122	0.00137
Anthracene	0.0022J	0.00331J
bis(2-ethylhexyl)phthalate	0.000356U	0.000356U
Dibenzofuran	0.00264J	0.0235J
Fluoranthene	0.00399	0.00456
Fluorene	0.0323J	0.0545J
2-Methylnaphthalene	0.00193J	0.0386J
Naphthalene	0.0169J	0.441J
Phenathrene	0.00109J	0.00928J
Pyrene	0.00165	0.00192

Constituent	Conc. (mg/L)
Acenaphthene	0.0306
Acenaphthylene	0.000385J
Anthracene	0.00036J
bis(2-ethylhexyl)phthalate	0.000356U
Dibenzofuran	0.00866
Fluoranthene	0.000186J
Fluorene	0.00631
2-Methylnaphthalene	0.00178
Naphthalene	0.199
Phenathrene	0.00221
Pyrene	0.000106U

Constituent	Conc. (mg/L)
Acenaphthene	0.000878
Acenaphthylene	0.0000577U
Anthracene	0.00044J
bis(2-ethylhexyl)phthalate	0.000356U
Dibenzofuran	0.0000769U
Fluoranthene	0.000221J
Fluorene	0.0000673U
2-Methylnaphthalene	0.0000673U
Naphthalene	0.0000769U
Phenathrene	0.0000577U
Pyrene	0.000115J

Constituent	Conc. (mg/L)
Acenaphthene	0.0000784U
Acenaphthylene	0.0000588U
Anthracene	0.000101J
bis(2-ethylhexyl)phthalate	0.0000363U
Dibenzofuran	0.0000784U
Fluoranthene	0.0000686U
Fluorene	0.0000686U
2-Methylnaphthalene	0.0000686U
Naphthalene	0.0000784U
Phenathrene	0.0000588U
Pyrene	0.000108U

Constituent	Conc. (mg/L)
Acenaphthene	0.0000804U
Acenaphthylene	0.0000603U
Anthracene	0.000749
bis(2-ethylhexyl)phthalate	0.000372U
Dibenzofuran	0.0000804U
Fluoranthene	0.0000704U
Fluorene	0.0000704U
2-Methylnaphthalene	0.0000704U
Naphthalene	0.000111J
Phenathrene	0.0000603U
Pyrene	0.000111U

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

EXPLANATION

Fence

Railroad

A-TZ Monitoring Well Location

Notes:
1. * Duplicates sample taken at MW-01A.
2. Sample collected on July 11, 2013.
3. J= Estimated value between SQL and MDL.
4. U= Value not detected greater than the MDL.

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Figure 5

A-TZ REPORTED CONCENTRATIONS 2013 2nd SEMI ANNUAL MONITORING EVENT

PROJECT: 1358	BY: ZGK	REVISIONS
DATE: DEC., 2013	CHECKED: ECM	

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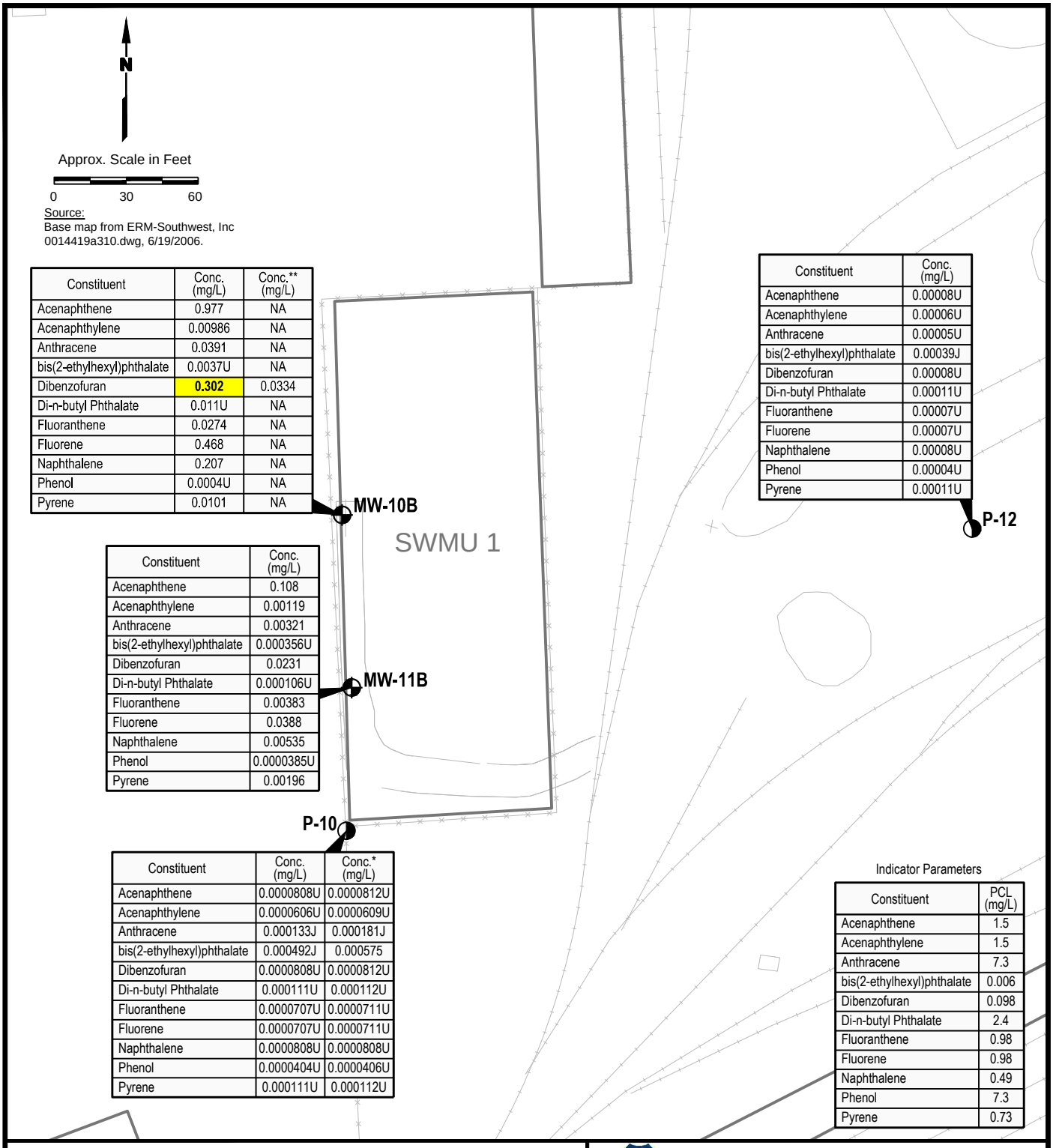

Source:
Base map from ERM-Southwest, Inc
0014419a310.dwg, 6/19/2006.

Constituent	Conc. (mg/L)	Conc.** (mg/L)
Acenaphthene	0.977	NA
Acenaphthylene	0.00986	NA
Anthracene	0.0391	NA
bis(2-ethylhexyl)phthalate	0.0037U	NA
Dibenzofuran	**0.302**	0.0334
Di-n-butyl Phthalate	0.011U	NA
Fluoranthene	0.0274	NA
Fluorene	0.468	NA
Naphthalene	0.207	NA
Phenol	0.0004U	NA
Pyrene	0.0101	NA

Constituent	Conc. (mg/L)
Acenaphthene	0.00008U
Acenaphthylene	0.00006U
Anthracene	0.00005U
bis(2-ethylhexyl)phthalate	0.00039J
Dibenzofuran	0.00008U
Di-n-butyl Phthalate	0.00011U
Fluoranthene	0.00007U
Fluorene	0.00007U
Naphthalene	0.00008U
Phenol	0.00004U
Pyrene	0.00011U

Constituent	Conc. (mg/L)
Acenaphthene	0.108
Acenaphthylene	0.00119
Anthracene	0.00321
bis(2-ethylhexyl)phthalate	0.000356U
Dibenzofuran	0.0231
Di-n-butyl Phthalate	0.000106U
Fluoranthene	0.00383
Fluorene	0.0388
Naphthalene	0.00535
Phenol	0.0000385U
Pyrene	0.00196

Constituent	Conc. (mg/L)	Conc.* (mg/L)
Acenaphthene	0.0000808U	0.0000812U
Acenaphthylene	0.0000606U	0.0000609U
Anthracene	0.000133J	0.000181J
bis(2-ethylhexyl)phthalate	0.000492J	0.000575
Dibenzofuran	0.0000808U	0.0000812U
Di-n-butyl Phthalate	0.000111U	0.000112U
Fluoranthene	0.0000707U	0.0000711U
Fluorene	0.0000707U	0.0000711U
Naphthalene	0.0000808U	0.0000808U
Phenol	0.0000404U	0.0000406U
Pyrene	0.000111U	0.000112U

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

EXPLANATION

- Fence
- Railroad
- B-TZ Monitoring Well Location
- Piezometer Location

Notes:
1. * Duplicates sample taken at P-10.
2. Sample collected on July 11, 2013.
3. J= Estimated value between SQL and MDL.
4. U= Value not detected greater than the MDL.
5. ** Verification sample collected on October 14, 2013.
6. NA= Not analyzed.

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Figure 6

B-TZ REPORTED CONCENTRATIONS 2013 2nd SEMI ANNUAL MONITORING EVENT

PROJECT: 1358	BY: ZGK	REVISIONS
DATE: DEC., 2013	CHECKED: ECM	

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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: 2013 Second Semiannual Event

Houston Wood Preserving Works
Houston, Texas

Field Parameter	Monitoring Well IDs									
	A-Transmissive Zone									
	MW-01A	MW-02	MW-07	MW-08	MW-10A	MW-11A	MW-10B	MW-11B	P-10	P-12
	7/11/2013	7/11/2013	7/11/2013	7/11/2013	7/11/2013	7/11/2013	7/11/2013	7/11/2013	7/11/2013	7/11/2013
Time Sampled (hrs CST)	12:40	11:35	18:20	14:50	10:20	9:15	13:10	8:15	17:20	16:00
Temperature (ºC)	22.7	23.1	23.4	23.5	23.4	23.4	22.9	23.6	23.9	24.1
pH (Standard Units)	6.84	6.91	6.97	6.74	6.69	6.71	6.89	6.84	6.74	6.87
Specific Conductivity (mmhos/cm)	1,736	2,071	2,274	2,096	1,876	2,046	2,320	2,067	2,130	2,584
Dissolved Oxygen (mg/L)	0.74	0.61	0.51	0.91	0.46	0.56	0.52	0.87	0.67	0.26
Turbidity (NTU)	5.9	11.0	12.0	5.7	4.1	9.6	7.4	8.1	6.4	6.9

APPENDIX C
LABORATORY ANALYTICAL REPORTS and DATA USABILITY SUMMARIES

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Houston
6310 Rothway Street
Houston, TX 77040
Tel: (713)690-4444

TestAmerica Job ID: 600-76104-1
Client Project/Site: 1620 UPRR HWPW

For:
Pastor, Behling & Wheeler LLC
2201 Double Creek Dr
Suite 4004
Round Rock, Texas 78664

Attn: Mr. Eric Matzner

Authorized for release by:
7/31/2013 10:04:17 AM
Cathy Upton, Data Delivery Analyst
(713)690-4444
cathy.upton@testamericainc.com

Designee for

Sachin Kudchadkar, Project Manager II
sachin.kudchadkar@testamericainc.com

Table of Contents

TestAmerica Houston
TRRP Data Package Cover Page

Job Number: 600-76104-1

Project Name/Number: 1620 UPRR HWPW

This Data Package- consists of:

This signature page, the laboratory review checklist, and the following Reportable Data:

- ☒ R1 Field Chain-of-Custody Form
- ☒ 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
  - d) The laboratory's LCS QC limits
- ☒ R7 Test Reports for 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 sample,
  - d) Calculated %Rs and relative percent differences (RPDs), and
  - e) The laboratory's MS/MSD QC limits
- ☒ R8 Laboratory analytical duplicates (if applicable) recovery and precision, including:
  - 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 limit (MQL) 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 the 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.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under 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 Exception Reports. By my signature below, I affirm, to the best of my knowledge, that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Cathy Upton		07/31/2013
Name (printed)	Signature	Date
Data Delivery Analyst		
Official Title (printed)		

Appendix A (cont'd): Laboratory Review Checklist: Reportable Data

Laboratory Name: TestAmerica-Houston	LRC Date: 07/30/13
Project Name: 1620 UPRR HWPW	Laboratory Job Number: 600-76104
Reviewer Name: KP	Prep Batch Number(s): 600-110858-SV

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-custody (C-O-C)					
R1	OI	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 soil/solid samples for volatile analysis extracted with methanol per SW846 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			1
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 check sample 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				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	X				2
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				

1. 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.
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Appendix A (cont'd): Laboratory Review Checklist: Reportable Data

Laboratory Name: TestAmerica-Houston	LRC Date: 07/30/13
Project Name: 1620 UPRR HWPW	Laboratory Job Number: 600-76104
Reviewer Name: KP	Prep Batch Number(s): 600-110858-SV

#[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**					
		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 5.5.10)**					
		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 5?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods (NELAC Chapter 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				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ 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.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Appendix A (cont'd): Laboratory Review Checklist: Exception Reports	
Laboratory Name: TestAmerica-Houston	LRC Date: 07/30/13
Project Name: 1620 UPRR HWPW	Laboratory Job Number: 600-76104
Reviewer Name: KP	Prep Batch Number(s): 600-110858-SV

ER #[1]	DESCRIPTION
1	Due to the level of dilution required for sample 600-76104-6DL2, surrogate recoveries are not reported.
2	The Acenaphthene and Fluorene SDLs were elevated in samples 600-76104-1 and 5 due to the high concentrations of these analytes. The Acenaphthene and Naphthalene SDLs were elevated in sample 600-76104-3 due to the high concentrations of these analytes. The Naphthalene, 2-Methylnaphthalene, Acenaphthene and Fluorene SDLs were elevated in sample 600-76104-6 due to the high concentrations of these analytes. The Acenaphthene, Dibenzofuran, Fluorene, and Di-n-butyl phthalate SDLs were elevated in sample 600-76104-7 due to the high concentrations of these analytes.

ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on the LRC)

Quality Control Report

Detection Check Standard

Matrix:	Water
Method:	8270C LL
Preparation:	3510C
Date Analyzed:	1/3/2013
Date Prepared:	1/3/2013
Lab Sample ID:	600-96501/6-A
Units:	ug/L

Analyte	MDL	DCS Spike	DCS Result	MQL
Pyridine	0.04	0.5	0.573	0.5
N-Nitrosodimethylamine	0.26	0.5	0.224	0.5
bis (2-Chloroisopropyl) ether	0.4	0.5	0.353	0.5
Aniline	0.08	0.25	0.082	0.5
Phenol	0.04	0.25	0.0987	0.5
bis(2-Chloroethyl)ether	0.15	0.5	0.389	0.5
2-Chlorophenol	0.13	0.5	0.307	0.5
1,3-Dichlorobenzene	0.17	0.5	0.360	0.5
1,4-Dichlorobenzene	0.13	0.5	0.397	0.5
1,2-Dichlorobenzene	0.17	0.5	0.402	0.5
Benzyl alcohol	0.17	0.5	0.268	0.5
2-Methylphenol (o-cresol)	0.12	0.5	0.291	0.5
3&4-Methylphenol (m&p-Cresols)	0.2	0.5	0.287	1
N-Nitroso-di-n-propylamine	0.1	0.5	0.376	0.5
Hexachloroethane	0.1	0.5	0.384	0.5
Dibenzo(a,h)anthracene	0.08	0.5	0.553	0.5
Indeno(1,2,3-cd)pyrene	0.07	0.5	0.559	0.5
Nitrobenzene	0.11	0.25	0.167	0.5
Isophorone	0.11	0.25	0.158	0.5
2-Nitrophenol	0.22	0.5	0.331	0.5
Benzoic acid	2.51	12.5	6.330	2.5
2,4-Dimethylphenol	0.15	0.5	0.285	0.5
bis(2-Chloroethoxy)methane	0.13	0.5	0.363	0.5
2,4-Dichlorophenol	0.15	0.5	0.285	0.5
1,2,4-Trichlorobenzene	0.12	0.5	0.415	0.5
Naphthalene	0.08	0.25	0.190	0.5
Benzo(a)pyrene	0.08	0.25	0.398	0.5
Hexachlorobutadiene	0.18	0.5	0.418	0.5
4-Chloro-3-methylphenol	0.17	0.5	0.310	0.5
2-Methylnaphthalene	0.07	0.25	0.177	0.5
1-Methylnaphthalene	0.09	0.25	0.194	0.5
Benzo(k)fluoranthene	0.09	0.25	0.161	0.5
Hexachlorocyclopentadiene	0.13	0.5	0.198	0.5
2,4,6-Trichlorophenol	0.18	0.5	0.283	0.5
2,4,5-Trichlorophenol	0.25	0.5	0.305	0.5
2-Chloronaphthalene	0.08	0.25	0.165	0.5
2-Nitroaniline	0.19	0.5	0.482	0.5
1,4-Dinitrobenzene	0.5	0.5	0.282	0.5
1,3-Dinitrobenzene	0.08	0.25	0.124	0.5
1,2-Dinitrobenzene	0.5	0.5	0.413	0.5

Dimethylphthalate	0.07	0.25	0.185	0.5
Acenaphthylene	0.06	0.25	0.183	0.5
2,6-Dinitrotoluene	0.08	0.5	0.314	0.5
Benzo(b)fluoranthene	0.07	0.5	0.590	0.5
Acenaphthene	0.08	0.5	0.375	0.5
Di-n-octylphthalate	0.16	0.5	0.891	0.5
4-Nitrophenol	0.56	2.5	0.881	1
Dibenzofuran	0.08	0.25	0.164	0.5
2,4-Dinitrotoluene	0.13	0.5	0.201	0.5
2,3,4,6-Tetrachlorophenol	0.5	0.5	0.208	0.5
2,3,5,6-Tetrachlorophenol	0.5	0.5	0.200	0.5
Diethylphthalate	1.5	0.5	0.307	0.5
4-Chlorophenyl-phenylether	0.1	0.5	0.351	0.5
Fluorene	0.07	0.25	0.177	0.5
4-Nitroaniline	0.25	0.5	0.238	0.5
Chrysene	0.08	0.25	0.236	0.5
4,6-Dinitro-2-methylphenol	0.83	2.5	1.220	0.5
N-Nitrosodiphenylamine	0.1	0.5	0.737	0.5
Diphenylamine	0.1	0.5	0.121	0.5
1,2-Diphenylhydrazine	0.11	0.25	0.145	0.5
Azobenzene	0.07	0.25	0.143	0.5
4-Bromophenyl-phenylether	0.1	0.5	0.433	0.5
Hexachlorobenzene	0.11	0.25	0.090	0.5
Pentachlorophenol	0.61	2.5	1.400	0.5
Phenanthrene	0.06	0.25	0.182	0.5
Anthracene	0.05	0.25	0.160	0.5
Carbazole	0.17	0.5	0.530	0.5
Di-n-butylphthalate	0.11	0.25	0.187	0.5
Fluoranthene	0.07	0.25	0.178	0.5
Benzidine	0.61	12.5	9.300	0.5
Pyrene	0.11	0.25	0.168	0.5
Butylbenzylphthalate	0.12	0.5	0.631	0.5
3,3'-Dichlorobenzidine	0.18	0.5	0.100	0.5
Benzo(a)anthracene	0.08	0.25	0.192	0.5
bis(2-Ethylhexyl)phthalate	0.37	0.5	0.427	0.5
Benzo(g,h,i)perylene	0.08	0.25	0.137	0.5
4-Chloroaniline	0.21	0.5	0.316	0.5
3-Nitroaniline	0.16	0.5	0.803	0.5

Job ID: 600-76104-1

Laboratory: TestAmerica Houston

Narrative

Job Narrative
600-76104-1

Comments
No additional comments.

Receipt
The samples were received on 7/12/2013 8:41 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.6º C, 2.0º C and 2.2º C.

Except:

One or more containers for the following sample(s) was received broken or leaking: One 1L Amber from WG-1620-FD01-20130711.

GC/MS Semi VOA
Method(s) 8270C LL: The following sample(s) was diluted to bring the concentration of target analytes within the calibration range: WG-1620-FD01-20130711 (600-76104-6), WG-1620-MW01A-20130711 (600-76104-5), WG-1620-MW10A-20130711 (600-76104-3), WG-1620-MW11B-20130711 (600-76104-1). Elevated reporting limits (RLs) are provided.

Method(s) 8270C LL: The following sample(s) was diluted to bring the concentration of target analytes within the calibration range: WG-1620-MW10B-20130711 (600-76104-7). Elevated reporting limits (RLs) are provided.

Method(s) 8270C LL: The following sample(s) was diluted to bring the concentration of target analytes within the calibration range: WG-1620-FD01-20130711 (600-76104-6). Elevated reporting limits (RLs) are provided.

Method(s) 8270C LL: Due to the level of dilution required for the following sample(s), surrogate recoveries are not reported: WG-1620-FD01-20130711 (600-76104-6).

No other analytical or quality issues were noted.

Organic Prep
Method(s) 3510C: Elevated reporting limits are provided for the following sample(s) due to insufficient sample provided for preparation: WG-1620-FD02-20130711 (600-76104-11), WG-1620-MW07-20130711 (600-76104-12), WG-1620-P10-20130711 (600-76104-10).

No other analytical or quality issues were noted.

Method Summary

Client: Pastor, Behling & Wheeler LLC
Project/Site: 1620 UPRR HWPW

TestAmerica Job ID: 600-76104-1

Method	Method Description	Protocol	Laboratory
8270C LL	Semivolatile Organic Compounds by GCMS - Low Levels	SW846	TAL HOU

Protocol References:

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

Laboratory References:

TAL HOU = TestAmerica Houston, 6310 Rothway Street, Houston, TX 77040, TEL (713)690-4444

Sample Summary

Client: Pastor, Behling & Wheeler LLC
Project/Site: 1620 UPRR HWPW

TestAmerica Job ID: 600-76104-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
600-76104-1	WG-1620-MW11B-20130711	Water	07/11/13 08:15	07/12/13 08:41
600-76104-2	WG-1620-MW11A-20130711	Water	07/11/13 09:15	07/12/13 08:41
600-76104-3	WG-1620-MW10A-20130711	Water	07/11/13 10:20	07/12/13 08:41
600-76104-4	WG-1620-MW02-20130711	Water	07/11/13 11:35	07/12/13 08:41
600-76104-5	WG-1620-MW01A-20130711	Water	07/11/13 12:40	07/12/13 08:41
600-76104-6	WG-1620-FD01-20130711	Water	07/11/13 12:40	07/12/13 08:41
600-76104-7	WG-1620-MW10B-20130711	Water	07/11/13 13:40	07/12/13 08:41
600-76104-8	WG-1620-MW08-20130711	Water	07/11/13 14:50	07/12/13 08:41
600-76104-9	WG-1620-P12-20130711	Water	07/11/13 16:00	07/12/13 08:41
600-76104-10	WG-1620-P10-20130711	Water	07/11/13 17:20	07/12/13 08:41
600-76104-11	WG-1620-FD02-20130711	Water	07/11/13 17:20	07/12/13 08:41
600-76104-12	WG-1620-MW07-20130711	Water	07/11/13 18:20	07/12/13 08:41

Client Sample ID: WG-1620-MW11B-20130711

Lab Sample ID: 600-76104-1

Date Collected: 07/11/13 08:15

Matrix: Water

Date Received: 07/12/13 08:41

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	0.0000385	U	0.000481	0.0000385	mg/L		07/16/13 11:55	07/20/13 00:41	1
Naphthalene	**0.00535**		0.00481	0.0000769	mg/L		07/16/13 11:55	07/20/13 00:41	1
Acenaphthylene	**0.00119**		0.000481	0.0000577	mg/L		07/16/13 11:55	07/20/13 00:41	1
Dibenzofuran	**0.0231**		0.000481	0.0000769	mg/L		07/16/13 11:55	07/20/13 00:41	1
Anthracene	**0.00321**		0.000481	0.0000481	mg/L		07/16/13 11:55	07/20/13 00:41	1
Di-n-butyl phthalate	0.000106	U	0.000481	0.000106	mg/L		07/16/13 11:55	07/20/13 00:41	1
Fluoranthene	**0.00383**		0.000481	0.0000673	mg/L		07/16/13 11:55	07/20/13 00:41	1
Pyrene	**0.00196**		0.000481	0.000106	mg/L		07/16/13 11:55	07/20/13 00:41	1
Bis(2-ethylhexyl) phthalate	0.000356	U	0.000481	0.000356	mg/L		07/16/13 11:55	07/20/13 00:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*91*		*44 - 123*	*07/16/13 11:55*	*07/20/13 00:41*	*1*
2-Fluorobiphenyl	*86*		*43 - 120*	*07/16/13 11:55*	*07/20/13 00:41*	*1*
2-Fluorophenol	*64*		*18 - 120*	*07/16/13 11:55*	*07/20/13 00:41*	*1*
Nitrobenzene-d5	*72*		*47 - 120*	*07/16/13 11:55*	*07/20/13 00:41*	*1*
Terphenyl-d14	*91*		*33 - 141*	*07/16/13 11:55*	*07/20/13 00:41*	*1*
Phenol-d5 (Surr)	*33*		*12 - 128*	*07/16/13 11:55*	*07/20/13 00:41*	*1*

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels - DL

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	**0.108**		0.00481	0.000769	mg/L		07/16/13 11:55	07/24/13 03:07	10
Fluorene	**0.0388**		0.00481	0.000673	mg/L		07/16/13 11:55	07/24/13 03:07	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*52*		*44 - 123*	*07/16/13 11:55*	*07/24/13 03:07*	*10*
2-Fluorobiphenyl	*92*		*43 - 120*	*07/16/13 11:55*	*07/24/13 03:07*	*10*
2-Fluorophenol	*58*		*18 - 120*	*07/16/13 11:55*	*07/24/13 03:07*	*10*
Nitrobenzene-d5	*78*		*47 - 120*	*07/16/13 11:55*	*07/24/13 03:07*	*10*
Terphenyl-d14	*96*		*33 - 141*	*07/16/13 11:55*	*07/24/13 03:07*	*10*
Phenol-d5 (Surr)	*33*		*12 - 128*	*07/16/13 11:55*	*07/24/13 03:07*	*10*

Client Sample ID: WG-1620-MW11A-20130711

Lab Sample ID: 600-76104-2

Date Collected: 07/11/13 09:15

Matrix: Water

Date Received: 07/12/13 08:41

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.0000769	U	0.00481	0.0000769	mg/L		07/16/13 11:55	07/22/13 20:25	1
2-Methylnaphthalene	0.0000673	U	0.000481	0.0000673	mg/L		07/16/13 11:55	07/22/13 20:25	1
Acenaphthylene	0.0000577	U	0.000481	0.0000577	mg/L		07/16/13 11:55	07/22/13 20:25	1
Acenaphthene	**0.000878**		0.000481	0.0000769	mg/L		07/16/13 11:55	07/22/13 20:25	1
Dibenzofuran	0.0000769	U	0.000481	0.0000769	mg/L		07/16/13 11:55	07/22/13 20:25	1
Fluorene	0.0000673	U	0.000481	0.0000673	mg/L		07/16/13 11:55	07/22/13 20:25	1
Phenanthrene	0.0000577	U	0.000481	0.0000577	mg/L		07/16/13 11:55	07/22/13 20:25	1
Anthracene	**0.000440**	**J**	0.000481	0.0000481	mg/L		07/16/13 11:55	07/22/13 20:25	1
Fluoranthene	**0.000221**	**J**	0.000481	0.0000673	mg/L		07/16/13 11:55	07/22/13 20:25	1
Pyrene	**0.000115**	**J**	0.000481	0.000106	mg/L		07/16/13 11:55	07/22/13 20:25	1
Bis(2-ethylhexyl) phthalate	0.000356	U	0.000481	0.000356	mg/L		07/16/13 11:55	07/22/13 20:25	1

Client Sample ID: WG-1620-MW11A-20130711

Lab Sample ID: 600-76104-2

Date Collected: 07/11/13 09:15

Matrix: Water

Date Received: 07/12/13 08:41

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	88		44 - 123	07/16/13 11:55	07/22/13 20:25	1
2-Fluorobiphenyl	66		43 - 120	07/16/13 11:55	07/22/13 20:25	1
2-Fluorophenol	48		18 - 120	07/16/13 11:55	07/22/13 20:25	1
Nitrobenzene-d5	66		47 - 120	07/16/13 11:55	07/22/13 20:25	1
Terphenyl-d14	72		33 - 141	07/16/13 11:55	07/22/13 20:25	1
Phenol-d5 (Surr)	29		12 - 128	07/16/13 11:55	07/22/13 20:25	1

Client Sample ID: WG-1620-MW10A-20130711

Lab Sample ID: 600-76104-3

Date Collected: 07/11/13 10:20

Matrix: Water

Date Received: 07/12/13 08:41

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	0.00178		0.000481	0.0000673	mg/L		07/16/13 11:55	07/22/13 20:53	1
Acenaphthylene	0.000385	J	0.000481	0.0000577	mg/L		07/16/13 11:55	07/22/13 20:53	1
Dibenzofuran	0.00866		0.000481	0.0000769	mg/L		07/16/13 11:55	07/22/13 20:53	1
Fluorene	0.00631		0.000481	0.0000673	mg/L		07/16/13 11:55	07/22/13 20:53	1
Phenanthrene	0.00221		0.000481	0.0000577	mg/L		07/16/13 11:55	07/22/13 20:53	1
Anthracene	0.000360	J	0.000481	0.0000481	mg/L		07/16/13 11:55	07/22/13 20:53	1
Fluoranthene	0.000186	J	0.000481	0.0000673	mg/L		07/16/13 11:55	07/22/13 20:53	1
Pyrene	0.000106	U	0.000481	0.000106	mg/L		07/16/13 11:55	07/22/13 20:53	1
Bis(2-ethylhexyl) phthalate	0.000356	U	0.000481	0.000356	mg/L		07/16/13 11:55	07/22/13 20:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	98		44 - 123	07/16/13 11:55	07/22/13 20:53	1
2-Fluorobiphenyl	80		43 - 120	07/16/13 11:55	07/22/13 20:53	1
2-Fluorophenol	57		18 - 120	07/16/13 11:55	07/22/13 20:53	1
Nitrobenzene-d5	76		47 - 120	07/16/13 11:55	07/22/13 20:53	1
Terphenyl-d14	81		33 - 141	07/16/13 11:55	07/22/13 20:53	1
Phenol-d5 (Surr)	33		12 - 128	07/16/13 11:55	07/22/13 20:53	1

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels - DL

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.199		0.0481	0.000769	mg/L		07/16/13 11:55	07/24/13 03:36	10
Acenaphthene	0.0306		0.00481	0.000769	mg/L		07/16/13 11:55	07/24/13 03:36	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	90		44 - 123	07/16/13 11:55	07/24/13 03:36	10
2-Fluorobiphenyl	90		43 - 120	07/16/13 11:55	07/24/13 03:36	10
2-Fluorophenol	59		18 - 120	07/16/13 11:55	07/24/13 03:36	10
Nitrobenzene-d5	86		47 - 120	07/16/13 11:55	07/24/13 03:36	10
Terphenyl-d14	92		33 - 141	07/16/13 11:55	07/24/13 03:36	10
Phenol-d5 (Surr)	33		12 - 128	07/16/13 11:55	07/24/13 03:36	10

Client Sample ID: WG-1620-MW02-20130711

Lab Sample ID: 600-76104-4

Date Collected: 07/11/13 11:35

Matrix: Water

Date Received: 07/12/13 08:41

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.00754		0.00481	0.0000769	mg/L		07/16/13 11:55	07/22/13 21:22	1

Client Sample ID: WG-1620-MW02-20130711

Lab Sample ID: 600-76104-4

Date Collected: 07/11/13 11:35
Matrix: Water
Date Received: 07/12/13 08:41

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels (Continued)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	0.000897		0.000481	0.0000673	mg/L		07/16/13 11:55	07/22/13 21:22	1
Acenaphthylene	0.000335	J	0.000481	0.0000577	mg/L		07/16/13 11:55	07/22/13 21:22	1
Acenaphthene	0.0179		0.000481	0.0000769	mg/L		07/16/13 11:55	07/22/13 21:22	1
Dibenzofuran	0.00734		0.000481	0.0000769	mg/L		07/16/13 11:55	07/22/13 21:22	1
Fluorene	0.00986		0.000481	0.0000673	mg/L		07/16/13 11:55	07/22/13 21:22	1
Phenanthrene	0.000776		0.000481	0.0000577	mg/L		07/16/13 11:55	07/22/13 21:22	1
Anthracene	0.00130		0.000481	0.0000481	mg/L		07/16/13 11:55	07/22/13 21:22	1
Fluoranthene	0.000690		0.000481	0.0000673	mg/L		07/16/13 11:55	07/22/13 21:22	1
Pyrene	0.000336	J	0.000481	0.000106	mg/L		07/16/13 11:55	07/22/13 21:22	1
Bis(2-ethylhexyl) phthalate	0.000356	U	0.000481	0.000356	mg/L		07/16/13 11:55	07/22/13 21:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*96*		*44 - 123*	*07/16/13 11:55*	*07/22/13 21:22*	*1*
2-Fluorobiphenyl	*78*		*43 - 120*	*07/16/13 11:55*	*07/22/13 21:22*	*1*
2-Fluorophenol	*51*		*18 - 120*	*07/16/13 11:55*	*07/22/13 21:22*	*1*
Nitrobenzene-d5	*74*		*47 - 120*	*07/16/13 11:55*	*07/22/13 21:22*	*1*
Terphenyl-d14	*78*		*33 - 141*	*07/16/13 11:55*	*07/22/13 21:22*	*1*
Phenol-d5 (Surr)	*33*		*12 - 128*	*07/16/13 11:55*	*07/22/13 21:22*	*1*

Client Sample ID: WG-1620-MW01A-20130711

Lab Sample ID: 600-76104-5

Date Collected: 07/11/13 12:40
Matrix: Water
Date Received: 07/12/13 08:41

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.0169		0.00481	0.0000769	mg/L		07/16/13 11:55	07/22/13 21:50	1
2-Methylnaphthalene	0.00193		0.000481	0.0000673	mg/L		07/16/13 11:55	07/22/13 21:50	1
Acenaphthylene	0.00122		0.000481	0.0000577	mg/L		07/16/13 11:55	07/22/13 21:50	1
Dibenzofuran	0.00264		0.000481	0.0000769	mg/L		07/16/13 11:55	07/22/13 21:50	1
Phenanthrene	0.00109		0.000481	0.0000577	mg/L		07/16/13 11:55	07/22/13 21:50	1
Anthracene	0.00220		0.000481	0.0000481	mg/L		07/16/13 11:55	07/22/13 21:50	1
Fluoranthene	0.00399		0.000481	0.0000673	mg/L		07/16/13 11:55	07/22/13 21:50	1
Pyrene	0.00165		0.000481	0.000106	mg/L		07/16/13 11:55	07/22/13 21:50	1
Bis(2-ethylhexyl) phthalate	0.000356	U	0.000481	0.000356	mg/L		07/16/13 11:55	07/22/13 21:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*110*		*44 - 123*	*07/16/13 11:55*	*07/22/13 21:50*	*1*
2-Fluorobiphenyl	*86*		*43 - 120*	*07/16/13 11:55*	*07/22/13 21:50*	*1*
2-Fluorophenol	*68*		*18 - 120*	*07/16/13 11:55*	*07/22/13 21:50*	*1*
Nitrobenzene-d5	*84*		*47 - 120*	*07/16/13 11:55*	*07/22/13 21:50*	*1*
Terphenyl-d14	*86*		*33 - 141*	*07/16/13 11:55*	*07/22/13 21:50*	*1*
Phenol-d5 (Surr)	*36*		*12 - 128*	*07/16/13 11:55*	*07/22/13 21:50*	*1*

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels - DL

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	0.0980		0.00481	0.000769	mg/L		07/16/13 11:55	07/24/13 04:04	10
Fluorene	0.0323		0.00481	0.000673	mg/L		07/16/13 11:55	07/24/13 04:04	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*115*		*44 - 123*	*07/16/13 11:55*	*07/24/13 04:04*	*10*
2-Fluorobiphenyl	*105*		*43 - 120*	*07/16/13 11:55*	*07/24/13 04:04*	*10*

Client Sample ID: WG-1620-MW01A-20130711

Lab Sample ID: 600-76104-5

Date Collected: 07/11/13 12:40

Matrix: Water

Date Received: 07/12/13 08:41

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels - DL (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol	69		18 - 120	07/16/13 11:55	07/24/13 04:04	10
Nitrobenzene-d5	78		47 - 120	07/16/13 11:55	07/24/13 04:04	10
Terphenyl-d14	103		33 - 141	07/16/13 11:55	07/24/13 04:04	10
Phenol-d5 (Surr)	36		12 - 128	07/16/13 11:55	07/24/13 04:04	10

Client Sample ID: WG-1620-FD01-20130711

Lab Sample ID: 600-76104-6

Date Collected: 07/11/13 12:40

Matrix: Water

Date Received: 07/12/13 08:41

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthylene	**0.00137**		0.000481	0.0000577	mg/L		07/16/13 11:55	07/22/13 22:18	1
Dibenzofuran	**0.0235**		0.000481	0.0000769	mg/L		07/16/13 11:55	07/22/13 22:18	1
Phenanthrene	**0.00928**		0.000481	0.0000577	mg/L		07/16/13 11:55	07/22/13 22:18	1
Anthracene	**0.00331**		0.000481	0.0000481	mg/L		07/16/13 11:55	07/22/13 22:18	1
Fluoranthene	**0.00456**		0.000481	0.0000673	mg/L		07/16/13 11:55	07/22/13 22:18	1
Pyrene	**0.00192**		0.000481	0.000106	mg/L		07/16/13 11:55	07/22/13 22:18	1
Bis(2-ethylhexyl) phthalate	0.000356	U	0.000481	0.000356	mg/L		07/16/13 11:55	07/22/13 22:18	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	101		44 - 123	07/16/13 11:55	07/22/13 22:18	1
2-Fluorobiphenyl	82		43 - 120	07/16/13 11:55	07/22/13 22:18	1
2-Fluorophenol	62		18 - 120	07/16/13 11:55	07/22/13 22:18	1
Nitrobenzene-d5	89		47 - 120	07/16/13 11:55	07/22/13 22:18	1
Terphenyl-d14	78		33 - 141	07/16/13 11:55	07/22/13 22:18	1
Phenol-d5 (Surr)	36		12 - 128	07/16/13 11:55	07/22/13 22:18	1

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels - DL

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	**0.0386**		0.00481	0.000673	mg/L		07/16/13 11:55	07/24/13 04:32	10
Acenaphthene	**0.132**		0.00481	0.000769	mg/L		07/16/13 11:55	07/24/13 04:32	10
Fluorene	**0.0545**		0.00481	0.000673	mg/L		07/16/13 11:55	07/24/13 04:32	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	102		44 - 123	07/16/13 11:55	07/24/13 04:32	10
2-Fluorobiphenyl	97		43 - 120	07/16/13 11:55	07/24/13 04:32	10
2-Fluorophenol	63		18 - 120	07/16/13 11:55	07/24/13 04:32	10
Nitrobenzene-d5	84		47 - 120	07/16/13 11:55	07/24/13 04:32	10
Terphenyl-d14	98		33 - 141	07/16/13 11:55	07/24/13 04:32	10
Phenol-d5 (Surr)	40		12 - 128	07/16/13 11:55	07/24/13 04:32	10

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels - DL2

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	**0.441**	**J**	0.481	0.00769	mg/L		07/16/13 11:55	07/24/13 22:35	100

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	0	X	44 - 123	07/16/13 11:55	07/24/13 22:35	100
2-Fluorobiphenyl	0	X	43 - 120	07/16/13 11:55	07/24/13 22:35	100
2-Fluorophenol	0	X	18 - 120	07/16/13 11:55	07/24/13 22:35	100
Nitrobenzene-d5	0	X	47 - 120	07/16/13 11:55	07/24/13 22:35	100

Client Sample ID: WG-1620-FD01-20130711

Lab Sample ID: 600-76104-6

Date Collected: 07/11/13 12:40

Matrix: Water

Date Received: 07/12/13 08:41

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels - DL2 (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Terphenyl-d14	*0*	*X*	*33 - 141*	*07/16/13 11:55*	*07/24/13 22:35*	*100*
Phenol-d5 (Surr)	*0*	*X*	*12 - 128*	*07/16/13 11:55*	*07/24/13 22:35*	*100*

Client Sample ID: WG-1620-MW10B-20130711

Lab Sample ID: 600-76104-7

Date Collected: 07/11/13 13:40

Matrix: Water

Date Received: 07/12/13 08:41

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	0.000400	U	0.00500	0.000400	mg/L		07/16/13 11:55	07/22/13 22:46	1
Naphthalene	**0.207**		0.0500	0.000800	mg/L		07/16/13 11:55	07/22/13 22:46	1
Acenaphthylene	**0.00986**		0.00500	0.000600	mg/L		07/16/13 11:55	07/22/13 22:46	1
Anthracene	**0.0391**		0.00500	0.000500	mg/L		07/16/13 11:55	07/22/13 22:46	1
Fluoranthene	**0.0274**		0.00500	0.000700	mg/L		07/16/13 11:55	07/22/13 22:46	1
Pyrene	**0.0101**		0.00500	0.00110	mg/L		07/16/13 11:55	07/22/13 22:46	1
Bis(2-ethylhexyl) phthalate	0.00370	U	0.00500	0.00370	mg/L		07/16/13 11:55	07/22/13 22:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*105*		*44 - 123*	*07/16/13 11:55*	*07/22/13 22:46*	*1*
2-Fluorobiphenyl	*83*		*43 - 120*	*07/16/13 11:55*	*07/22/13 22:46*	*1*
2-Fluorophenol	*67*		*18 - 120*	*07/16/13 11:55*	*07/22/13 22:46*	*1*
Nitrobenzene-d5	*82*		*47 - 120*	*07/16/13 11:55*	*07/22/13 22:46*	*1*
Terphenyl-d14	*81*		*33 - 141*	*07/16/13 11:55*	*07/22/13 22:46*	*1*
Phenol-d5 (Surr)	*36*		*12 - 128*	*07/16/13 11:55*	*07/22/13 22:46*	*1*

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels - DL

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	**0.977**		0.0500	0.00800	mg/L		07/16/13 11:55	07/24/13 05:00	10
Dibenzofuran	**0.302**		0.0500	0.00800	mg/L		07/16/13 11:55	07/24/13 05:00	10
Fluorene	**0.468**		0.0500	0.00700	mg/L		07/16/13 11:55	07/24/13 05:00	10
Di-n-butyl phthalate	0.0110	U	0.0500	0.0110	mg/L		07/16/13 11:55	07/24/13 05:00	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*75*		*44 - 123*	*07/16/13 11:55*	*07/24/13 05:00*	*10*
2-Fluorobiphenyl	*91*		*43 - 120*	*07/16/13 11:55*	*07/24/13 05:00*	*10*
2-Fluorophenol	*54*		*18 - 120*	*07/16/13 11:55*	*07/24/13 05:00*	*10*
Nitrobenzene-d5	*74*		*47 - 120*	*07/16/13 11:55*	*07/24/13 05:00*	*10*
Terphenyl-d14	*86*		*33 - 141*	*07/16/13 11:55*	*07/24/13 05:00*	*10*
Phenol-d5 (Surr)	*31*		*12 - 128*	*07/16/13 11:55*	*07/24/13 05:00*	*10*

Client Sample ID: WG-1620-MW08-20130711

Lab Sample ID: 600-76104-8

Date Collected: 07/11/13 14:50

Matrix: Water

Date Received: 07/12/13 08:41

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.0000784	U	0.00490	0.0000784	mg/L		07/16/13 11:55	07/22/13 23:15	1
2-Methylnaphthalene	0.0000686	U	0.000490	0.0000686	mg/L		07/16/13 11:55	07/22/13 23:15	1
Acenaphthylene	0.0000588	U	0.000490	0.0000588	mg/L		07/16/13 11:55	07/22/13 23:15	1
Acenaphthene	0.0000784	U	0.000490	0.0000784	mg/L		07/16/13 11:55	07/22/13 23:15	1

Client Sample ID: WG-1620-MW08-20130711

Lab Sample ID: 600-76104-8

Date Collected: 07/11/13 14:50

Matrix: Water

Date Received: 07/12/13 08:41

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels (Continued)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibenzofuran	0.0000784	U	0.000490	0.0000784	mg/L		07/16/13 11:55	07/22/13 23:15	1
Fluorene	0.0000686	U	0.000490	0.0000686	mg/L		07/16/13 11:55	07/22/13 23:15	1
Phenanthrene	0.0000588	U	0.000490	0.0000588	mg/L		07/16/13 11:55	07/22/13 23:15	1
Anthracene	**0.000101**	**J**	0.000490	0.0000490	mg/L		07/16/13 11:55	07/22/13 23:15	1
Fluoranthene	0.0000686	U	0.000490	0.0000686	mg/L		07/16/13 11:55	07/22/13 23:15	1
Pyrene	0.000108	U	0.000490	0.000108	mg/L		07/16/13 11:55	07/22/13 23:15	1
Bis(2-ethylhexyl) phthalate	0.000363	U	0.000490	0.000363	mg/L		07/16/13 11:55	07/22/13 23:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*92*		*44 - 123*	*07/16/13 11:55*	*07/22/13 23:15*	*1*
2-Fluorobiphenyl	*80*		*43 - 120*	*07/16/13 11:55*	*07/22/13 23:15*	*1*
2-Fluorophenol	*55*		*18 - 120*	*07/16/13 11:55*	*07/22/13 23:15*	*1*
Nitrobenzene-d5	*76*		*47 - 120*	*07/16/13 11:55*	*07/22/13 23:15*	*1*
Terphenyl-d14	*80*		*33 - 141*	*07/16/13 11:55*	*07/22/13 23:15*	*1*
Phenol-d5 (Surr)	*33*		*12 - 128*	*07/16/13 11:55*	*07/22/13 23:15*	*1*

Client Sample ID: WG-1620-P12-20130711

Lab Sample ID: 600-76104-9

Date Collected: 07/11/13 16:00

Matrix: Water

Date Received: 07/12/13 08:41

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	0.0000400	U	0.000500	0.0000400	mg/L		07/16/13 11:55	07/22/13 23:43	1
Naphthalene	0.0000800	U	0.00500	0.0000800	mg/L		07/16/13 11:55	07/22/13 23:43	1
Acenaphthylene	0.0000600	U	0.000500	0.0000600	mg/L		07/16/13 11:55	07/22/13 23:43	1
Acenaphthene	0.0000800	U	0.000500	0.0000800	mg/L		07/16/13 11:55	07/22/13 23:43	1
Dibenzofuran	0.0000800	U	0.000500	0.0000800	mg/L		07/16/13 11:55	07/22/13 23:43	1
Fluorene	0.0000700	U	0.000500	0.0000700	mg/L		07/16/13 11:55	07/22/13 23:43	1
Anthracene	0.0000500	U	0.000500	0.0000500	mg/L		07/16/13 11:55	07/22/13 23:43	1
Di-n-butyl phthalate	0.000110	U	0.000500	0.000110	mg/L		07/16/13 11:55	07/22/13 23:43	1
Fluoranthene	0.0000700	U	0.000500	0.0000700	mg/L		07/16/13 11:55	07/22/13 23:43	1
Pyrene	0.000110	U	0.000500	0.000110	mg/L		07/16/13 11:55	07/22/13 23:43	1
Bis(2-ethylhexyl) phthalate	**0.000390**	**J**	0.000500	0.000370	mg/L		07/16/13 11:55	07/22/13 23:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*84*		*44 - 123*	*07/16/13 11:55*	*07/22/13 23:43*	*1*
2-Fluorobiphenyl	*71*		*43 - 120*	*07/16/13 11:55*	*07/22/13 23:43*	*1*
2-Fluorophenol	*78*		*18 - 120*	*07/16/13 11:55*	*07/22/13 23:43*	*1*
Nitrobenzene-d5	*69*		*47 - 120*	*07/16/13 11:55*	*07/22/13 23:43*	*1*
Terphenyl-d14	*75*		*33 - 141*	*07/16/13 11:55*	*07/22/13 23:43*	*1*
Phenol-d5 (Surr)	*63*		*12 - 128*	*07/16/13 11:55*	*07/22/13 23:43*	*1*

Client Sample ID: WG-1620-P10-20130711

Lab Sample ID: 600-76104-10

Date Collected: 07/11/13 17:20

Matrix: Water

Date Received: 07/12/13 08:41

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	0.0000404	U	0.000505	0.0000404	mg/L		07/16/13 12:06	07/23/13 01:08	1
Naphthalene	0.0000808	U	0.00505	0.0000808	mg/L		07/16/13 12:06	07/23/13 01:08	1

Client Sample ID: WG-1620-P10-20130711 — **Lab Sample ID: 600-76104-10**
Date Collected: 07/11/13 17:20 — **Matrix: Water**
Date Received: 07/12/13 08:41

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels (Continued)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	0.0000707	U	0.000505	0.0000707	mg/L		07/16/13 12:06	07/23/13 01:08	1
Acenaphthylene	0.0000606	U	0.000505	0.0000606	mg/L		07/16/13 12:06	07/23/13 01:08	1
Acenaphthene	0.0000808	U	0.000505	0.0000808	mg/L		07/16/13 12:06	07/23/13 01:08	1
Dibenzofuran	0.0000808	U	0.000505	0.0000808	mg/L		07/16/13 12:06	07/23/13 01:08	1
Fluorene	0.0000707	U	0.000505	0.0000707	mg/L		07/16/13 12:06	07/23/13 01:08	1
Phenanthrene	0.0000606	U	0.000505	0.0000606	mg/L		07/16/13 12:06	07/23/13 01:08	1
Anthracene	**0.000133**	**J**	0.000505	0.0000505	mg/L		07/16/13 12:06	07/23/13 01:08	1
Di-n-butyl phthalate	0.000111	U	0.000505	0.000111	mg/L		07/16/13 12:06	07/23/13 01:08	1
Fluoranthene	0.0000707	U	0.000505	0.0000707	mg/L		07/16/13 12:06	07/23/13 01:08	1
Pyrene	0.000111	U	0.000505	0.000111	mg/L		07/16/13 12:06	07/23/13 01:08	1
Bis(2-ethylhexyl) phthalate	**0.000492**	**J**	0.000505	0.000374	mg/L		07/16/13 12:06	07/23/13 01:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*94*		*44 - 123*	*07/16/13 12:06*	*07/23/13 01:08*	*1*
2-Fluorobiphenyl	*75*		*43 - 120*	*07/16/13 12:06*	*07/23/13 01:08*	*1*
2-Fluorophenol	*57*		*18 - 120*	*07/16/13 12:06*	*07/23/13 01:08*	*1*
Nitrobenzene-d5	*75*		*47 - 120*	*07/16/13 12:06*	*07/23/13 01:08*	*1*
Terphenyl-d14	*93*		*33 - 141*	*07/16/13 12:06*	*07/23/13 01:08*	*1*
Phenol-d5 (Surr)	*33*		*12 - 128*	*07/16/13 12:06*	*07/23/13 01:08*	*1*

Client Sample ID: WG-1620-FD02-20130711 — **Lab Sample ID: 600-76104-11**
Date Collected: 07/11/13 17:20 — **Matrix: Water**
Date Received: 07/12/13 08:41

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	0.0000406	U	0.000508	0.0000406	mg/L		07/16/13 12:06	07/23/13 01:36	1
Naphthalene	0.0000812	U	0.00508	0.0000812	mg/L		07/16/13 12:06	07/23/13 01:36	1
Acenaphthylene	0.0000609	U	0.000508	0.0000609	mg/L		07/16/13 12:06	07/23/13 01:36	1
Acenaphthene	0.0000812	U	0.000508	0.0000812	mg/L		07/16/13 12:06	07/23/13 01:36	1
Dibenzofuran	0.0000812	U	0.000508	0.0000812	mg/L		07/16/13 12:06	07/23/13 01:36	1
Fluorene	0.0000711	U	0.000508	0.0000711	mg/L		07/16/13 12:06	07/23/13 01:36	1
Anthracene	**0.000181**	**J**	0.000508	0.0000508	mg/L		07/16/13 12:06	07/23/13 01:36	1
Di-n-butyl phthalate	0.000112	U	0.000508	0.000112	mg/L		07/16/13 12:06	07/23/13 01:36	1
Fluoranthene	0.0000711	U	0.000508	0.0000711	mg/L		07/16/13 12:06	07/23/13 01:36	1
Pyrene	0.000112	U	0.000508	0.000112	mg/L		07/16/13 12:06	07/23/13 01:36	1
Bis(2-ethylhexyl) phthalate	**0.000575**		0.000508	0.000376	mg/L		07/16/13 12:06	07/23/13 01:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*104*		*44 - 123*	*07/16/13 12:06*	*07/23/13 01:36*	*1*
2-Fluorobiphenyl	*71*		*43 - 120*	*07/16/13 12:06*	*07/23/13 01:36*	*1*
2-Fluorophenol	*54*		*18 - 120*	*07/16/13 12:06*	*07/23/13 01:36*	*1*
Nitrobenzene-d5	*67*		*47 - 120*	*07/16/13 12:06*	*07/23/13 01:36*	*1*
Terphenyl-d14	*89*		*33 - 141*	*07/16/13 12:06*	*07/23/13 01:36*	*1*
Phenol-d5 (Surr)	*35*		*12 - 128*	*07/16/13 12:06*	*07/23/13 01:36*	*1*

Client: Pastor, Behling & Wheeler LLC
Project/Site: 1620 UPRR HWPW

TestAmerica Job ID: 600-76104-1

Client Sample ID: WG-1620-MW07-20130711
Date Collected: 07/11/13 18:20
Date Received: 07/12/13 08:41

Lab Sample ID: 600-76104-12
Matrix: Water

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	**0.000111**	**J**	0.00503	0.0000804	mg/L		07/16/13 12:06	07/23/13 02:04	1
2-Methylnaphthalene	0.0000704	U	0.000503	0.0000704	mg/L		07/16/13 12:06	07/23/13 02:04	1
Acenaphthylene	0.0000603	U	0.000503	0.0000603	mg/L		07/16/13 12:06	07/23/13 02:04	1
Acenaphthene	0.0000804	U	0.000503	0.0000804	mg/L		07/16/13 12:06	07/23/13 02:04	1
Dibenzofuran	0.0000804	U	0.000503	0.0000804	mg/L		07/16/13 12:06	07/23/13 02:04	1
Fluorene	0.0000704	U	0.000503	0.0000704	mg/L		07/16/13 12:06	07/23/13 02:04	1
Phenanthrene	0.0000603	U	0.000503	0.0000603	mg/L		07/16/13 12:06	07/23/13 02:04	1
Anthracene	**0.000749**		0.000503	0.0000503	mg/L		07/16/13 12:06	07/23/13 02:04	1
Fluoranthene	0.0000704	U	0.000503	0.0000704	mg/L		07/16/13 12:06	07/23/13 02:04	1
Pyrene	0.000111	U	0.000503	0.000111	mg/L		07/16/13 12:06	07/23/13 02:04	1
Bis(2-ethylhexyl) phthalate	0.000372	U	0.000503	0.000372	mg/L		07/16/13 12:06	07/23/13 02:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*101*		*44 - 123*	*07/16/13 12:06*	*07/23/13 02:04*	*1*
2-Fluorobiphenyl	*75*		*43 - 120*	*07/16/13 12:06*	*07/23/13 02:04*	*1*
2-Fluorophenol	*52*		*18 - 120*	*07/16/13 12:06*	*07/23/13 02:04*	*1*
Nitrobenzene-d5	*76*		*47 - 120*	*07/16/13 12:06*	*07/23/13 02:04*	*1*
Terphenyl-d14	*89*		*33 - 141*	*07/16/13 12:06*	*07/23/13 02:04*	*1*
Phenol-d5 (Surr)	*35*		*12 - 128*	*07/16/13 12:06*	*07/23/13 02:04*	*1*

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
U	Analyte was not detected at or above the SDL.
J	Result is less than the MQL but greater than or equal to the SDL and the concentration is an estimated value.
X	Surrogate is outside control limits

Glossary

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

Surrogate Summary

Client: Pastor, Behling & Wheeler LLC
Project/Site: 1620 UPRR HWPW

TestAmerica Job ID: 600-76104-1

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels

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

		Percent Surrogate Recovery (Acceptance Limits)							
		TBP	FBP	2FP	NBZ	TPH	PHL		
Lab Sample ID	Client Sample ID	(44-123)	(43-120)	(18-120)	(47-120)	(33-141)	(12-128)		
600-76104-1	WG-1620-MW11B-20130711	91	86	64	72	91	33		
600-76104-1 - DL	WG-1620-MW11B-20130711	52	92	58	78	96	33		
600-76104-2	WG-1620-MW11A-20130711	88	66	48	66	72	29		
600-76104-3	WG-1620-MW10A-20130711	98	80	57	76	81	33		
600-76104-3 - DL	WG-1620-MW10A-20130711	90	90	59	86	92	33		
600-76104-4	WG-1620-MW02-20130711	96	78	51	74	78	33		
600-76104-5	WG-1620-MW01A-20130711	110	86	68	84	86	36		
600-76104-5 - DL	WG-1620-MW01A-20130711	115	105	69	78	103	36		
600-76104-6	WG-1620-FD01-20130711	101	82	62	89	78	36		
600-76104-6 - DL	WG-1620-FD01-20130711	102	97	63	84	98	40		
600-76104-6 - DL2	WG-1620-FD01-20130711	0 X	0 X	0 X	0 X	0 X	0 X		
600-76104-7	WG-1620-MW10B-20130711	105	83	67	82	81	36		
600-76104-7 - DL	WG-1620-MW10B-20130711	75	91	54	74	86	31		
600-76104-8	WG-1620-MW08-20130711	92	80	55	76	80	33		
600-76104-9	WG-1620-P12-20130711	84	71	78	69	75	63		
600-76104-9 MS	WG-1620-P12-20130711	72	53	35	50	65	37		
600-76104-9 MSD	WG-1620-P12-20130711	78	56	43	52	69	40		
600-76104-10	WG-1620-P10-20130711	94	75	57	75	93	33		
600-76104-11	WG-1620-FD02-20130711	104	71	54	67	89	35		
600-76104-12	WG-1620-MW07-20130711	101	75	52	76	89	35		
LCS 600-110858/2-A	Lab Control Sample	89	94	77	95	94	63		
MB 600-110858/1-A	Method Blank	73	91	69	82	97	56		

Surrogate Legend

TBP = 2,4,6-Tribromophenol
FBP = 2-Fluorobiphenyl
2FP = 2-Fluorophenol
NBZ = Nitrobenzene-d5
TPH = Terphenyl-d14
PHL = Phenol-d5 (Surr)

Client: Pastor, Behling & Wheeler LLC
Project/Site: 1620 UPRR HWPW

TestAmerica Job ID: 600-76104-1

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels

Lab Sample ID: MB 600-110858/1-A
Matrix: Water
Analysis Batch: 111074

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 110858

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	0.0000400	U	0.000500	0.0000400	mg/L		07/16/13 11:55	07/17/13 12:36	1
Naphthalene	0.0000800	U	0.00500	0.0000800	mg/L		07/16/13 11:55	07/17/13 12:36	1
Acenaphthylene	0.0000600	U	0.000500	0.0000600	mg/L		07/16/13 11:55	07/17/13 12:36	1
Acenaphthene	0.0000800	U	0.000500	0.0000800	mg/L		07/16/13 11:55	07/17/13 12:36	1
Dibenzofuran	0.0000800	U	0.000500	0.0000800	mg/L		07/16/13 11:55	07/17/13 12:36	1
Fluorene	0.0000700	U	0.000500	0.0000700	mg/L		07/16/13 11:55	07/17/13 12:36	1
Anthracene	0.0000500	U	0.000500	0.0000500	mg/L		07/16/13 11:55	07/17/13 12:36	1
Di-n-butyl phthalate	0.000110	U	0.000500	0.000110	mg/L		07/16/13 11:55	07/17/13 12:36	1
Fluoranthene	0.0000700	U	0.000500	0.0000700	mg/L		07/16/13 11:55	07/17/13 12:36	1
Pyrene	0.000110	U	0.000500	0.000110	mg/L		07/16/13 11:55	07/17/13 12:36	1
Bis(2-ethylhexyl) phthalate	0.000370	U	0.000500	0.000370	mg/L		07/16/13 11:55	07/17/13 12:36	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*73*		*44 - 123*	*07/16/13 11:55*	*07/17/13 12:36*	*1*
2-Fluorobiphenyl	*91*		*43 - 120*	*07/16/13 11:55*	*07/17/13 12:36*	*1*
2-Fluorophenol	*69*		*18 - 120*	*07/16/13 11:55*	*07/17/13 12:36*	*1*
Nitrobenzene-d5	*82*		*47 - 120*	*07/16/13 11:55*	*07/17/13 12:36*	*1*
Terphenyl-d14	*97*		*33 - 141*	*07/16/13 11:55*	*07/17/13 12:36*	*1*
Phenol-d5 (Surr)	*56*		*12 - 128*	*07/16/13 11:55*	*07/17/13 12:36*	*1*

Lab Sample ID: LCS 600-110858/2-A
Matrix: Water
Analysis Batch: 111074

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 110858

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Phenol	0.0100	0.005568		mg/L		56	11 - 112
Naphthalene	0.0100	0.008062		mg/L		81	39 - 120
Acenaphthylene	0.0100	0.008103		mg/L		81	35 - 135
Acenaphthene	0.0100	0.008284		mg/L		83	47 - 145
Dibenzofuran	0.0100	0.007838		mg/L		78	46 - 123
Fluorene	0.0100	0.008018		mg/L		80	48 - 127
Anthracene	0.0100	0.008188		mg/L		82	53 - 124
Di-n-butyl phthalate	0.0100	0.008723		mg/L		87	54 - 138
Fluoranthene	0.0100	0.008599		mg/L		86	53 - 127
Pyrene	0.0100	0.008875		mg/L		89	49 - 121
Bis(2-ethylhexyl) phthalate	0.0100	0.008523		mg/L		85	47 - 132

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol	*89*		*44 - 123*
2-Fluorobiphenyl	*94*		*43 - 120*
2-Fluorophenol	*77*		*18 - 120*
Nitrobenzene-d5	*95*		*47 - 120*
Terphenyl-d14	*94*		*33 - 141*
Phenol-d5 (Surr)	*63*		*12 - 128*

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels (Continued)

Lab Sample ID: 600-76104-9 MS
Matrix: Water
Analysis Batch: 111423

Client Sample ID: WG-1620-P12-20130711
Prep Type: Total/NA
Prep Batch: 110858

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Phenol	0.0000400	U	0.00962	0.003054		mg/L		32	10 - 62
Naphthalene	0.0000800	U	0.00962	0.004036	J	mg/L		42	34 - 99
2-Methylnaphthalene	0.0000700		0.00962	0.003871		mg/L		40	36 - 111
Acenaphthylene	0.0000600	U	0.00962	0.004843		mg/L		50	38 - 115
Acenaphthene	0.0000800	U	0.00962	0.004958		mg/L		52	46 - 118
Dibenzofuran	0.0000800	U	0.00962	0.005058		mg/L		53	46 - 110
Fluorene	0.0000700	U	0.00962	0.005170		mg/L		54	44 - 112
Phenanthrene	0.0000600		0.00962	0.005445		mg/L		57	41 - 117
Anthracene	0.0000500	U	0.00962	0.005331		mg/L		55	35 - 116
Di-n-butyl phthalate	0.000110	U	0.00962	0.005878		mg/L		61	31 - 137
Fluoranthene	0.0000700	U	0.00962	0.005920		mg/L		62	14 - 145
Pyrene	0.000110	U	0.00962	0.005543		mg/L		58	28 - 133
Bis(2-ethylhexyl) phthalate	0.000390	J	0.00962	0.006178		mg/L		60	14 - 123

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
2,4,6-Tribromophenol	*72*		*44 - 123*
2-Fluorobiphenyl	*53*		*43 - 120*
2-Fluorophenol	*35*		*18 - 120*
Nitrobenzene-d5	*50*		*47 - 120*
Terphenyl-d14	*65*		*33 - 141*
Phenol-d5 (Surr)	*37*		*12 - 128*

Lab Sample ID: 600-76104-9 MSD
Matrix: Water
Analysis Batch: 111423

Client Sample ID: WG-1620-P12-20130711
Prep Type: Total/NA
Prep Batch: 110858

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Phenol	0.0000400	U	0.00962	0.003241		mg/L		34	10 - 62	6	20
Naphthalene	0.0000800	U	0.00962	0.004250	J	mg/L		44	34 - 99	5	20
2-Methylnaphthalene	0.0000700		0.00962	0.004169		mg/L		43	36 - 111	7	20
Acenaphthylene	0.0000600	U	0.00962	0.005125		mg/L		53	38 - 115	6	20
Acenaphthene	0.0000800	U	0.00962	0.005325		mg/L		55	46 - 118	7	20
Dibenzofuran	0.0000800	U	0.00962	0.005257		mg/L		55	46 - 110	4	20
Fluorene	0.0000700	U	0.00962	0.005493		mg/L		57	44 - 112	6	20
Phenanthrene	0.0000600		0.00962	0.005760		mg/L		60	41 - 117	6	20
Anthracene	0.0000500	U	0.00962	0.005662		mg/L		59	35 - 116	6	20
Di-n-butyl phthalate	0.000110	U	0.00962	0.006416		mg/L		67	31 - 137	9	20
Fluoranthene	0.0000700	U	0.00962	0.006335		mg/L		66	14 - 145	7	20
Pyrene	0.000110	U	0.00962	0.005939		mg/L		62	28 - 133	7	20
Bis(2-ethylhexyl) phthalate	0.000390	J	0.00962	0.006559		mg/L		64	14 - 123	6	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
2,4,6-Tribromophenol	*78*		*44 - 123*
2-Fluorobiphenyl	*56*		*43 - 120*
2-Fluorophenol	*43*		*18 - 120*
Nitrobenzene-d5	*52*		*47 - 120*
Terphenyl-d14	*69*		*33 - 141*

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels (Continued)

Lab Sample ID: 600-76104-9 MSD
Matrix: Water
Analysis Batch: 111423

Client Sample ID: WG-1620-P12-20130711
Prep Type: Total/NA
Prep Batch: 110858

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Phenol-d5 (Surr)	40		12 - 128

Unadjusted Detection Limits

Client: Pastor, Behling & Wheeler LLC
Project/Site: 1620 UPRR HWPW

TestAmerica Job ID: 600-76104-1

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels

Analyte	MQL	MDL	Units	Method
2-Methylnaphthalene	0.000500	0.0000700	mg/L	8270C LL
Acenaphthene	0.000500	0.0000800	mg/L	8270C LL
Acenaphthylene	0.000500	0.0000600	mg/L	8270C LL
Anthracene	0.000500	0.0000500	mg/L	8270C LL
Bis(2-ethylhexyl) phthalate	0.000500	0.000370	mg/L	8270C LL
Dibenzofuran	0.000500	0.0000800	mg/L	8270C LL
Di-n-butyl phthalate	0.000500	0.000110	mg/L	8270C LL
Fluoranthene	0.000500	0.0000700	mg/L	8270C LL
Fluorene	0.000500	0.0000700	mg/L	8270C LL
Naphthalene	0.00500	0.0000800	mg/L	8270C LL
Phenanthrene	0.000500	0.0000600	mg/L	8270C LL
Phenol	0.000500	0.0000400	mg/L	8270C LL
Pyrene	0.000500	0.000110	mg/L	8270C LL

GC/MS Semi VOA

Prep Batch: 110858

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-76104-1	WG-1620-MW11B-20130711	Total/NA	Water	3510C	
600-76104-1 - DL	WG-1620-MW11B-20130711	Total/NA	Water	3510C	
600-76104-2	WG-1620-MW11A-20130711	Total/NA	Water	3510C	
600-76104-3 - DL	WG-1620-MW10A-20130711	Total/NA	Water	3510C	
600-76104-3	WG-1620-MW10A-20130711	Total/NA	Water	3510C	
600-76104-4	WG-1620-MW02-20130711	Total/NA	Water	3510C	
600-76104-5	WG-1620-MW01A-20130711	Total/NA	Water	3510C	
600-76104-5 - DL	WG-1620-MW01A-20130711	Total/NA	Water	3510C	
600-76104-6 - DL	WG-1620-FD01-20130711	Total/NA	Water	3510C	
600-76104-6	WG-1620-FD01-20130711	Total/NA	Water	3510C	
600-76104-6 - DL2	WG-1620-FD01-20130711	Total/NA	Water	3510C	
600-76104-7	WG-1620-MW10B-20130711	Total/NA	Water	3510C	
600-76104-7 - DL	WG-1620-MW10B-20130711	Total/NA	Water	3510C	
600-76104-8	WG-1620-MW08-20130711	Total/NA	Water	3510C	
600-76104-9	WG-1620-P12-20130711	Total/NA	Water	3510C	
600-76104-9 MS	WG-1620-P12-20130711	Total/NA	Water	3510C	
600-76104-9 MSD	WG-1620-P12-20130711	Total/NA	Water	3510C	
600-76104-10	WG-1620-P10-20130711	Total/NA	Water	3510C	
600-76104-11	WG-1620-FD02-20130711	Total/NA	Water	3510C	
600-76104-12	WG-1620-MW07-20130711	Total/NA	Water	3510C	
LCS 600-110858/2-A	Lab Control Sample	Total/NA	Water	3510C	
MB 600-110858/1-A	Method Blank	Total/NA	Water	3510C	

Analysis Batch: 111074

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 600-110858/2-A	Lab Control Sample	Total/NA	Water	8270C LL	110858
MB 600-110858/1-A	Method Blank	Total/NA	Water	8270C LL	110858

Analysis Batch: 111323

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-76104-1	WG-1620-MW11B-20130711	Total/NA	Water	8270C LL	110858

Analysis Batch: 111423

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-76104-2	WG-1620-MW11A-20130711	Total/NA	Water	8270C LL	110858
600-76104-3	WG-1620-MW10A-20130711	Total/NA	Water	8270C LL	110858
600-76104-4	WG-1620-MW02-20130711	Total/NA	Water	8270C LL	110858
600-76104-5	WG-1620-MW01A-20130711	Total/NA	Water	8270C LL	110858
600-76104-6	WG-1620-FD01-20130711	Total/NA	Water	8270C LL	110858
600-76104-7	WG-1620-MW10B-20130711	Total/NA	Water	8270C LL	110858
600-76104-8	WG-1620-MW08-20130711	Total/NA	Water	8270C LL	110858
600-76104-9	WG-1620-P12-20130711	Total/NA	Water	8270C LL	110858
600-76104-9 MS	WG-1620-P12-20130711	Total/NA	Water	8270C LL	110858
600-76104-9 MSD	WG-1620-P12-20130711	Total/NA	Water	8270C LL	110858
600-76104-10	WG-1620-P10-20130711	Total/NA	Water	8270C LL	110858
600-76104-11	WG-1620-FD02-20130711	Total/NA	Water	8270C LL	110858
600-76104-12	WG-1620-MW07-20130711	Total/NA	Water	8270C LL	110858

Analysis Batch: 111485

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-76104-1 - DL	WG-1620-MW11B-20130711	Total/NA	Water	8270C LL	110858

GC/MS Semi VOA (Continued)

Analysis Batch: 111485 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-76104-3 - DL	WG-1620-MW10A-20130711	Total/NA	Water	8270C LL	110858
600-76104-5 - DL	WG-1620-MW01A-20130711	Total/NA	Water	8270C LL	110858
600-76104-6 - DL	WG-1620-FD01-20130711	Total/NA	Water	8270C LL	110858
600-76104-7 - DL	WG-1620-MW10B-20130711	Total/NA	Water	8270C LL	110858

Analysis Batch: 111680

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-76104-6 - DL2	WG-1620-FD01-20130711	Total/NA	Water	8270C LL	110858

Client Sample ID: WG-1620-MW11B-20130711 — **Lab Sample ID: 600-76104-1**
Date Collected: 07/11/13 08:15 — **Matrix: Water**
Date Received: 07/12/13 08:41

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			110858	07/16/13 11:55	LMB	TAL HOU
Total/NA	Analysis	8270C LL		1	111323	07/20/13 00:41	TTD	TAL HOU
Total/NA	Prep	3510C	DL		110858	07/16/13 11:55	LMB	TAL HOU
Total/NA	Analysis	8270C LL	DL	10	111485	07/24/13 03:07	JAH	TAL HOU

Client Sample ID: WG-1620-MW11A-20130711 — **Lab Sample ID: 600-76104-2**
Date Collected: 07/11/13 09:15 — **Matrix: Water**
Date Received: 07/12/13 08:41

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			110858	07/16/13 11:55	LMB	TAL HOU
Total/NA	Analysis	8270C LL		1	111423	07/22/13 20:25	JAH	TAL HOU

Client Sample ID: WG-1620-MW10A-20130711 — **Lab Sample ID: 600-76104-3**
Date Collected: 07/11/13 10:20 — **Matrix: Water**
Date Received: 07/12/13 08:41

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			110858	07/16/13 11:55	LMB	TAL HOU
Total/NA	Analysis	8270C LL		1	111423	07/22/13 20:53	JAH	TAL HOU
Total/NA	Prep	3510C	DL		110858	07/16/13 11:55	LMB	TAL HOU
Total/NA	Analysis	8270C LL	DL	10	111485	07/24/13 03:36	JAH	TAL HOU

Client Sample ID: WG-1620-MW02-20130711 — **Lab Sample ID: 600-76104-4**
Date Collected: 07/11/13 11:35 — **Matrix: Water**
Date Received: 07/12/13 08:41

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			110858	07/16/13 11:55	LMB	TAL HOU
Total/NA	Analysis	8270C LL		1	111423	07/22/13 21:22	JAH	TAL HOU

Client Sample ID: WG-1620-MW01A-20130711 — **Lab Sample ID: 600-76104-5**
Date Collected: 07/11/13 12:40 — **Matrix: Water**
Date Received: 07/12/13 08:41

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			110858	07/16/13 11:55	LMB	TAL HOU
Total/NA	Analysis	8270C LL		1	111423	07/22/13 21:50	JAH	TAL HOU
Total/NA	Prep	3510C	DL		110858	07/16/13 11:55	LMB	TAL HOU
Total/NA	Analysis	8270C LL	DL	10	111485	07/24/13 04:04	JAH	TAL HOU

Lab Chronicle

Client: Pastor, Behling & Wheeler LLC
Project/Site: 1620 UPRR HWPW

TestAmerica Job ID: 600-76104-1

Client Sample ID: WG-1620-FD01-20130711

Lab Sample ID: 600-76104-6

Date Collected: 07/11/13 12:40
Matrix: Water
Date Received: 07/12/13 08:41

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			110858	07/16/13 11:55	LMB	TAL HOU
Total/NA	Analysis	8270C LL		1	111423	07/22/13 22:18	JAH	TAL HOU
Total/NA	Prep	3510C	DL		110858	07/16/13 11:55	LMB	TAL HOU
Total/NA	Analysis	8270C LL	DL	10	111485	07/24/13 04:32	JAH	TAL HOU
Total/NA	Prep	3510C	DL2		110858	07/16/13 11:55	LMB	TAL HOU
Total/NA	Analysis	8270C LL	DL2	100	111680	07/24/13 22:35	JAH	TAL HOU

Client Sample ID: WG-1620-MW10B-20130711

Lab Sample ID: 600-76104-7

Date Collected: 07/11/13 13:40
Matrix: Water
Date Received: 07/12/13 08:41

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			110858	07/16/13 11:55	LMB	TAL HOU
Total/NA	Analysis	8270C LL		1	111423	07/22/13 22:46	JAH	TAL HOU
Total/NA	Prep	3510C	DL		110858	07/16/13 11:55	LMB	TAL HOU
Total/NA	Analysis	8270C LL	DL	10	111485	07/24/13 05:00	JAH	TAL HOU

Client Sample ID: WG-1620-MW08-20130711

Lab Sample ID: 600-76104-8

Date Collected: 07/11/13 14:50
Matrix: Water
Date Received: 07/12/13 08:41

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			110858	07/16/13 11:55	LMB	TAL HOU
Total/NA	Analysis	8270C LL		1	111423	07/22/13 23:15	JAH	TAL HOU

Client Sample ID: WG-1620-P12-20130711

Lab Sample ID: 600-76104-9

Date Collected: 07/11/13 16:00
Matrix: Water
Date Received: 07/12/13 08:41

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			110858	07/16/13 11:55	LMB	TAL HOU
Total/NA	Analysis	8270C LL		1	111423	07/22/13 23:43	JAH	TAL HOU

Client Sample ID: WG-1620-P10-20130711

Lab Sample ID: 600-76104-10

Date Collected: 07/11/13 17:20
Matrix: Water
Date Received: 07/12/13 08:41

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			110858	07/16/13 12:06	LMB	TAL HOU
Total/NA	Analysis	8270C LL		1	111423	07/23/13 01:08	JAH	TAL HOU

Lab Chronicle

Client: Pastor, Behling & Wheeler LLC
Project/Site: 1620 UPRR HWPW

TestAmerica Job ID: 600-76104-1

Client Sample ID: WG-1620-FD02-20130711

Lab Sample ID: 600-76104-11

Date Collected: 07/11/13 17:20

Matrix: Water

Date Received: 07/12/13 08:41

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			110858	07/16/13 12:06	LMB	TAL HOU
Total/NA	Analysis	8270C LL		1	111423	07/23/13 01:36	JAH	TAL HOU

Client Sample ID: WG-1620-MW07-20130711

Lab Sample ID: 600-76104-12

Date Collected: 07/11/13 18:20

Matrix: Water

Date Received: 07/12/13 08:41

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			110858	07/16/13 12:06	LMB	TAL HOU
Total/NA	Analysis	8270C LL		1	111423	07/23/13 02:04	JAH	TAL HOU

Laboratory References:

TAL HOU = TestAmerica Houston, 6310 Rothway Street, Houston, TX 77040, TEL (713)690-4444

Certification Summary

Client: Pastor, Behling & Wheeler LLC
Project/Site: 1620 UPRR HWPW

TestAmerica Job ID: 600-76104-1

Laboratory: TestAmerica Houston

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Arkansas DEQ	State Program	6	88-0759	08-04-13
Louisiana	NELAP	6	01967	06-30-14
Oklahoma	State Program	6	9503	08-31-13
Texas	NELAP	6	T104704223-10-6-TX	10-31-13
USDA	Federal		P330-08-00217	04-01-14
Utah	NELAP	8	GULF	10-31-13

TestAmerica Houston
6310 Rothway Street
Houston, TX 77040
Phone (713) 690-4444 Fax (713) 690-5646

Chain of Custody Record

TestAmerica

7/31/2013

Client Information	Sampler: JOHN BEAUTON	Lab PM: Kudchadkar, Sachin G	Carrier Tracking No(s):	COC No: 600-21569-8088.1
Client Contact: Mr. Eric Matzner	Phone: 512-671-3434	E-Mail: sachin.kudchadkar@testamericainc.com		Page: Page 1 of 2
Company: Pastor, Behling & Wheeler LLC				Job #:
Address: 2201 Double Creek Dr Suite 4004	Due Date Requested:			
City: Round Rock	TAT Requested (days):			
State, Zip: TX, 78664				
Phone: 512-671-3434(Tel) 512-671-3446(Fax)	PO #: Purchase Order not required			
Email: eric.matzner@pbwllc.com	WO #:			
Project Name: 1620 UPRR HWPW	Project #: 60003722			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2SO3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - ph 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8270C_LL - (MOD) 8270C-ATZ and BTZ	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N		
WG-1620-MW11B-20130711	7-11-13	0815	G	Water			X		
WG-1620-MW11A-20130711		0915	G	Water			X		
WG-1620-MW10A-20130711		1020	G	Water			X		
WG-1620-MW02-20130711		1135	G	Water			X		
WG-1620-MW01A-20130711		1240	G	Water			X		
WG-1620-FD01-20130711		1240	G	Water			X		
WG-1620-MW10B-20130711		1340	G	Water			X		
WG-1620-MW08-20130711		1450	G	Water			X		
WG-1620-P12-20130711		1600	G	Water			X		
WG-1620-P12MS-20130711		1600	G	Water			X		
WG-1620-P12MSD-20130711		1600	G	Water			X		

600-76104 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained long
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:				
Relinquished by:	Date/Time: 7-12-13 841	Company PBW	Received by:	Date/Time: 7/12/13 841	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

TestAmerica Houston
5310 Rothway Street
Houston, TX 77040
Phone (713) 690-4444 Fax (713) 690-5646

Chain of Custody Record

TestAmerica

7/31/2013

Client Information	Sampler: JOHN BRAYTON	Lab PM: Kudchadkar, Sachin G	Carrier Tracking No(s):	COC No: 600-21569-8088.1
Client Contact: Mr. Eric Matzner	Phone: 512-671-3434	E-Mail: sachin.kudchadkar@testamericainc.com		Page: Page 2 of 2
Company: Pastor, Behling & Wheeler LLC				Job #:
Address: 2201 Double Creek Dr Suite 4004	Due Date Requested:			
City: Round Rock	TAT Requested (days):			
State, Zip: TX, 78664				
Phone: 512-671-3434(Tel) 512-671-3446(Fax)	PO #: Purchase Order not required			
Email: eric.matzner@pbwllc.com	WO #:			
Project Name: 1620 UPRR HWPW	Project #: 60003722			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2SO3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - ph 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8270C_LL - (MOD) 8270C-ATZ and BTZ	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N		
WG-1620-PID-20130711	7-11-13	1720	G	Water			X		
WG-1620-FD02-20130711	"	1720	G	Water			X		
WG-1620-MW07-20130711	"	1820	G	Water			X		
				Water					
				Water					
				Water					
				Water					
				Water					
				Water					
				Water					
				Water					

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:				
Relinquished by: John Bray	Date/Time: 7-12-13 841	Company PBW	Received by:	Date/Time: 7/12/13 841	Company		
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company		
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company		

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

Login Sample Receipt Checklist

Client: Pastor, Behling & Wheeler LLC

Job Number: 600-76104-1

Login Number: 76104

List Source: TestAmerica Houston

List Number: 1

Creator: Capps, Dana R

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

CONESTOGA-ROVERS & ASSOCIATES

E-Mail Date: August 20, 2013
E-Mail To: Eric Matzner/ Pastor, Behling & Wheeler, LLC
c.c.: Angela Bown
E-Mail and Hard Copy if Requested

DATA USABILITY SUMMARY
UNION PACIFIC RAILROAD (UPRR)
SEMI-ANNUAL GROUNDWATER MONITORING
HOUSTON WOOD PRESERVING WORKS
HOUSTON, TEXAS
JULY 2013

PREPARED BY:
CONESTOGA-ROVERS & ASSOCIATES
9033 Meridian Way
West Chester, Ohio 45069
Telephone: 513-942-4750 Fax: 513-942-8585
Contact: Angela Bown [bjw] *AB/bjw*
Date: August 20, 2013
www.CRAworld.com

Data Usability Summary

Reviewer:	Angela Bown – Conestoga-Rovers & Associates, Inc.
Contract Laboratory:	TestAmerica Laboratories, Inc.—Houston, Texas
Project/Area of Interest:	UPRR Houston Wood Preserving Works – Houston, Texas
Description of Data Packages Reviewed:	Groundwater sample results in data package: 600-76104
Sample Collection Date(s):	July 11, 2013
Intended Use of Data:	To monitor the COCs in groundwater at the site and to evaluate whether migration of Chemicals of Concern (COC) could result in risk to human or ecological health.

1.0 Scope of Data Usability Summary

Data were reviewed and validated in accordance with Title 30 of the Texas Administrative Code Section 350.54 (30 TAC 350.54) as described in *Review and Reporting of COC Concentration Data,* (RG-366/TRRP-13) and the results of the review/validation are discussed in this Data Usability Summary (DUS). The review included examination of the reported data, the laboratory review checklist (LRC), and field/laboratory quality assurance/quality control (QA/QC) samples collected at the Site. Tables summarizing data qualifications discussed in this DUS can be found in Appendix A.

A sampling and analysis summary is presented in Table 1. This summary includes a cross-reference of field sample identification numbers and location codes. Each sample was assigned a unique field identification number.

Twelve groundwater samples including quality control samples were analyzed for the parameters outlined in Table 2. The validated sample results are presented in Table 3.

2.0 Laboratory Qualifications

Analytical services were provided by TestAmerica Laboratories, Inc. (TestAmerica) located in Houston, Texas. The laboratory's quality assurance program is consistent with the quality standards outlined in the National Environmental Laboratory Accreditation Program (NELAP). The laboratory was accredited under Texas Certification Number T104704223-10-6-TX at the time the analyses were performed.

3.0 Project Objectives

3.1 Levels of Required Performance (LORP)

Prior to sampling, the LORP for each COC was established for the investigation. Standard available analytical methods were selected and minimal detection limits that are at or below the Texas Risk Reduction Tier 1 Residential Protective Concentration Levels (PCLs), ^{GW}GW $_{ING}$ for groundwater were sought.

3.2 Sampling/Analytical QA/QC Objectives

Pastor, Behling & Wheeler, LLC designed the QA/QC program to identify contamination resulting from sample collection, sample transport and the analytical process.

- The trip blank is a zero headspace sample container filled by the laboratory with analyte-free water. Trip blanks were submitted and analyzed with the samples requiring volatile organic analyses. The trip blank samples were kept in the same environment in which the other field samples were collected.
- Field and equipment blanks are sample containers filled in the field with analyte-free water, which has been used to rinse sampling equipment to check effectiveness of the decontamination procedures.
- Method blanks of a similar matrix to that of the associated samples are prepared by the laboratory and analyzed to determine if laboratory contaminants are affecting the analytical results. Method blanks are prepared and analyzed with each batch.

Similarly, the QA/QC program was designed to evaluate the quality of the resulting data with respect to bias and precision. First, a laboratory control sample (LCS) or laboratory control sample duplicate (LCSD) was prepared and analyzed with each batch. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project. Second, a matrix spike/matrix spike duplicate (MS/MSD) was prepared and analyzed with each batch. The recovery ranges and RPDs established by the laboratory are adopted as the acceptance criteria for the project. Third, field duplicates were collected and submitted for analysis. The RPD acceptance criterion for the water field duplicates is 30 percent. This RPD criterion is only used when sample concentrations are above the estimated regions of detection.

4.0 Data Review/Validation Results

4.1 Analytical Results

Analytes with concentrations above the Sample Detection Limits (SDLs) but below the Method Quantitation Limits (MQL) have been qualified as estimated on the analytical tables per the TRRP-13 document.

4.2 LORP

All SDLs and unadjusted MQLs met the LORP for this investigation.

Some Detectability Check Standard (DCS) results supported the laboratory Method Detection Limits (MDL). Most results were greater than 3 times the MDL.

4.3 Preservation and Holding Times

Samples were properly preserved in the field and cooled to 4°C (±2°C). Samples were shipped with chains of custody, and the paperwork was filled out properly. All samples were shipped on ice. All samples were prepared and analyzed within the applicable holding times.

4.4 Sample Containers

Sample containers were certified pre-cleaned glass provided by the laboratory. These containers meet or exceed analyte specifications established in the USEPA *Specifications and Guidance for Contaminant-free Sample Containers*.

4.5 Calibrations

According to the LRCs, instrument tuning and initial calibration and continuing calibration data met the criteria for the selected methods.

4.6 Blanks

Method Blanks: As these were not discrete samples handled in the field, the method blanks are not listed on the sample identification cross-reference list found in Table 1. Results are reported in the data packages on a laboratory batch basis. All of the laboratory blank results were reported as ND (not detected).

4.7 Internal Standard and Surrogate Recoveries

Recoveries of internal standards and surrogates are addressed in the LRCs of the laboratory data packages. All surrogate recoveries and internal standard areas and retention limits were within the acceptance limits.

4.8 Laboratory Control Samples (LCS)/ Laboratory Control Sample Duplicates (LCSD)

LCS or LCS/LCSD data for all COCs were reported for each batch. LCS spike recoveries and RPDs for all COCs were within the project objectives.

4.9 Matrix Spikes

Matrix spike/matrix spike duplicates were prepared and analyzed with most batches for all requested parameters. The results are reported in the data package on a laboratory batch basis.

All recoveries and RPD were within acceptance criteria limits.

4.10 Field Duplicate

Field duplicate samples were collected and analyzed for the target analytes as outlined in Table 1. The laboratory reported 2-methylnaphthalene and phenanthrene for sample WG-1620-P10-20130711 although it was not needed. These compounds were not reported in the

field duplicate sample, WG-1620-FD02-20130711, therefore, no field duplicate criteria evaluation was performed for these compounds.

Most relative percent differences (RPDs) were < 30% for sample results greater than 5 times the MQL indicating acceptable precision above the estimated regions of detection. Table 4 presents the sample data that were qualified due to variability in the field duplicate results.

4.11 Field Procedures

Pastor, Behling & Wheeler, LLC collected groundwater samples in accordance with their Standard Operating Procedures (SOP) for sample collection.

4.12 Summary

The analytical data in this report are usable to assess the impact of COCs in groundwater at the site with the qualifications noted herein.

APPENDIX A

TABLES

TABLE 1

SAMPLE AND ANALYSIS SUMMARY
SEMI-ANNUAL SITE-WIDE GROUNDWATER MONITORING
UNION PACIFIC RAILROAD (UPRR)
HOUSTON WOOD PRESERVING WORKS
HOUSTON, TEXAS
JULY 2013

					Analytes/Parameters	
Sample I.D.	*Location I.D.*	*Matrix*	*Collection Date (mm/dd/yyyy)*	*Collection Time (hr:min)*	*Select SVOCs*	*Comment*
TestAmerica Job Number: 600-76104						
WG-1620-MW11B-20130711	MW-11B	WG	7/11/2013	8:15:00 AM	X	
WG-1620-MW11A-20130711	MW-11A	WG	7/11/2013	9:15:00 AM	X	
WG-1620-MW10A-20130711	MW-10A	WG	7/11/2013	10:20:00 AM	X	
WG-1620-MW02-20130711	MW-02	WG	7/11/2013	11:35:00 AM	X	
WG-1620-MW01A-20130711	MW-01A	WG	7/11/2013	12:40:00 PM	X	
WG-1620-FD01-20130711	MW-01A	WG	7/11/2013	12:40:00 PM	X	Field Duplicate of WG-1620-MW01A-20130711
WG-1620-MW10B-20130711	MW-10B	WG	7/11/2013	1:40:00 PM	X	
WG-1620-MW08-20130711	MW-08	WG	7/11/2013	2:50:00 PM	X	
WG-1620-P12-20130711	P-12	WG	7/11/2013	4:00:00 PM	X	MS/MSD
WG-1620-P10-20130711	P-10	WG	7/11/2013	5:20:00 PM	X	
WG-1620-FD02-20130711	P-10	WG	7/11/2013	5:20:00 PM	X	Field Duplicate of WG-1620-P10-20130711
WG-1620-MW07-20130711	MW-07	WG	7/11/2013	6:20:00 PM	X	

Notes:

MS Matrix Spike.
MSD Matrix Spike Duplicate.
SVOCs Semi-Volatile Organic Compounds.
WG Groundwater.

TABLE 2

ANALYTICAL METHODS AND HOLDING TIME CRITERIA
SEMI-ANNUAL SITE-WIDE GROUNDWATER MONITORING
UNION PACIFIC RAILROAD (UPRR)
HOUSTON WOOD PRESERVING WORKS
HOUSTON, TEXAS
JULY 2013

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

Notes

SW-846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions.
SVOCs Semi-Volatile Organic Compounds.

TABLE 3

ANALYTICAL RESULTS SUMMARY
SEMI-ANNUAL SITE-WIDE GROUNDWATER MONITORING
UNION PACIFIC RAILROAD (UPRR)
HOUSTON WOOD PRESERVING WORKS
HOUSTON, TEXAS
JULY 2013

Sample Location:		*MW-01A*	*MW-01A*	*MW-02*	*MW-07*
Sample ID:		*WG-1620-MW01A-20130711*	*WG-1620-FD01-20130711*	*WG-1620-MW02-20130711*	*WG-1620-MW07-20130711*
Sample Date:		*7/11/2013*	*7/11/2013* *Duplicate*	*7/11/2013*	*7/11/2013*
Parameters	***Units***				
Semi-volatile Organic Compounds					
2-Methylnaphthalene	mg/L	0.00193 J	0.0386 J	0.000897	<0.0000704
Acenaphthene	mg/L	0.0980 J	0.132 J	0.0179	<0.0000804
Acenaphthylene	mg/L	0.00122	0.00137	0.000335 J	<0.0000603
Anthracene	mg/L	0.00220 J	0.00331 J	0.00130	0.000749
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000356	<0.000356	<0.000356	<0.000372
Dibenzofuran	mg/L	0.00264 J	0.0235 J	0.00734	<0.0000804
Di-n-butylphthalate (DBP)	mg/L	-	-	-	-
Fluoranthene	mg/L	0.00399	0.00456	0.000690	<0.0000704
Fluorene	mg/L	0.0323 J	0.0545 J	0.00986	<0.0000704
Naphthalene	mg/L	0.0169 J	0.441 J	0.00754	0.000111 J
Phenanthrene	mg/L	0.00109 J	0.00928 J	0.000776	<0.0000603
Phenol	mg/L	-	-	-	-
Pyrene	mg/L	0.00165	0.00192	0.000336 J	<0.000111

TABLE 3

ANALYTICAL RESULTS SUMMARY
SEMI-ANNUAL SITE-WIDE GROUNDWATER MONITORING
UNION PACIFIC RAILROAD (UPRR)
HOUSTON WOOD PRESERVING WORKS
HOUSTON, TEXAS
JULY 2013

	Sample Location:	***MW-08***	***MW-10A***	***MW-10B***	***MW-11A***
	Sample ID:	***WG-1620-MW08-20130711***	***WG-1620-MW10A-20130711***	***WG-1620-MW10B-20130711***	***WG-1620-MW11A-20130711***
	Sample Date:	***7/11/2013***	***7/11/2013***	***7/11/2013***	***7/11/2013***
Parameters	***Units***				
Semi-volatile Organic Compounds					
2-Methylnaphthalene	mg/L	<0.0000686	0.00178	-	<0.0000673
Acenaphthene	mg/L	<0.0000784	0.0306	0.977	0.000878
Acenaphthylene	mg/L	<0.0000588	0.000385 J	0.00986	<0.0000577
Anthracene	mg/L	0.000101 J	0.000360 J	0.0391	0.000440 J
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000363	<0.000356	<0.00370	<0.000356
Dibenzofuran	mg/L	<0.0000784	0.00866	0.302	<0.0000769
Di-n-butylphthalate (DBP)	mg/L	-	-	<0.0110	-
Fluoranthene	mg/L	<0.0000686	0.000186 J	0.0274	0.000221 J
Fluorene	mg/L	<0.0000686	0.00631	0.468	<0.0000673
Naphthalene	mg/L	<0.0000784	0.199	0.207	<0.0000769
Phenanthrene	mg/L	<0.0000588	0.00221	-	<0.0000577
Phenol	mg/L	-	-	<0.000400	-
Pyrene	mg/L	<0.000108	<0.000106	0.0101	0.000115 J

TABLE 3

ANALYTICAL RESULTS SUMMARY
SEMI-ANNUAL SITE-WIDE GROUNDWATER MONITORING
UNION PACIFIC RAILROAD (UPRR)
HOUSTON WOOD PRESERVING WORKS
HOUSTON, TEXAS
JULY 2013

	Sample Location:	*MW-11B*	*P-10*	*P-10*	*P-12*
	Sample ID:	*WG-1620-MW11B-20130711*	*WG-1620-P10-20130711*	*WG-1620-FD02-20130711*	*WG-1620-P12-20130711*
	Sample Date:	*7/11/2013*	*7/11/2013*	*7/11/2013 Duplicate*	*7/11/2013*
Parameters	***Units***				
Semi-volatile Organic Compounds					
2-Methylnaphthalene	mg/L	-	-	-	-
Acenaphthene	mg/L	0.108	<0.0000808	<0.0000812	<0.0000800
Acenaphthylene	mg/L	0.00119	<0.0000606	<0.0000609	<0.0000600
Anthracene	mg/L	0.00321	0.000133 J	0.000181 J	<0.0000500
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000356	0.000492 J	0.000575	0.000390 J
Dibenzofuran	mg/L	0.0231	<0.0000808	<0.0000812	<0.0000800
Di-n-butylphthalate (DBP)	mg/L	<0.000106	<0.000111	<0.000112	<0.000110
Fluoranthene	mg/L	0.00383	<0.0000707	<0.0000711	<0.0000700
Fluorene	mg/L	0.0388	<0.0000707	<0.0000711	<0.0000700
Naphthalene	mg/L	0.00535	<0.0000808	<0.0000812	<0.0000800
Phenanthrene	mg/L	-	-	-	-
Phenol	mg/L	<0.0000385	<0.0000404	<0.0000406	<0.0000400
Pyrene	mg/L	0.00196	<0.000111	<0.000112	<0.000110

Notes:

J Estimated concentration.
- Not analyzed.

TABLE 4

QUALIFIED SAMPLE DATA DUE TO VARIABILITY IN FIELD DUPLICATE RESULTS
SEMI-ANNUAL SITE-WIDE GROUNDWATER MONITORING
UNION PACIFIC RAILROAD (UPRR)
HOUSTON WOOD PRESERVING WORKS
HOUSTON, TEXAS
JULY 2013

Parameter	*Analyte*	*RPD*	*Sample ID*	*Qualified Result*	*Field Duplicate Sample ID*	*Qualified Result*	*Units*
SVOCs	2-Methylnaphthalene	181	WG-1620-MW01A-20130711	0.00193 J	WG-1620-FD01-20130711	0.0386 J	mg/L
	Acenaphthene	30		0.0980 J		0.132 J	mg/L
	Anthracene	40		0.00220 J		0.00331 J	mg/L
	Dibenzofuran	160		0.00264 J		0.0235 J	mg/L
	Fluorene	51		0.0323 J		0.0545 J	mg/L
	Naphthalene	185		0.0169 J		0.441 J	mg/L
	Phenanthrene	158		0.00109 J		0.00928 J	mg/L
SVOCs	Anthracene	31	WG-1620-P10-20130711	0.000133 J	WG-1620-FD02-20130711	0.000181 J	mg/L

Notes:

J Estimated.
RPD Relative Percent Difference.
SVOCs Semi-Volatile Organic Compounds.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Houston
6310 Rothway Street
Houston, TX 77040
Tel: (713)690-4444

TestAmerica Job ID: 600-81036-2
Client Project/Site: 1620 UPRR HWPW

For:
Pastor, Behling & Wheeler LLC
2201 Double Creek Dr
Suite 4004
Round Rock, Texas 78664

Attn: Mr. Eric Matzner

Authorized for release by:
10/22/2013 5:38:37 PM
Cathy Upton, Data Delivery Analyst
(713)690-4444
cathy.upton@testamericainc.com

Designee for

Sachin Kudchadkar, Project Manager II
(713)690-4444
sachin.kudchadkar@testamericainc.com

Table of Contents

TestAmerica Houston
TRRP Data Package Cover Page

Job Number: 600-81036-2

Project Name/Number: 1620 UPRR HWPW

This Data Package- consists of:

This signature page, the laboratory review checklist, and the following Reportable Data:

- ☒ R1 Field Chain-of-Custody Form
- ☒ 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
  - d) The laboratory's LCS QC limits
- ☒ R7 Test Reports for 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 sample,
  - d) Calculated %Rs and relative percent differences (RPDs), and
  - e) The laboratory's MS/MSD QC limits
- ☒ R8 Laboratory analytical duplicates (if applicable) recovery and precision, including:
  - 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 limit (MQL) 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 the 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.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under 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 Exception Reports. By my signature below, I affirm, to the best of my knowledge, that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Cathy Upton		10/22/2013
Name (printed)	Signature	Date
Project Manager Assistant II		
Official Title (printed)		

Appendix A (cont'd): Laboratory Review Checklist: Reportable Data

Laboratory Name: TestAmerica-Houston	LRC Date: 10/21/13
Project Name: 1620 UPRR HWPW	Laboratory Job Number: 600-81036-2
Reviewer Name: TTD	Prep Batch Number(s): 600-118413-SV

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-custody (C-O-C)					
R1	OI	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 soil/solid samples for volatile analysis extracted with methanol per SW846 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 check sample 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		1
		Were MS/MSD RPDs within laboratory QC limits?			X		1
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				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	X				2
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				

1. 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.
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Appendix A (cont'd): Laboratory Review Checklist: Reportable Data

Laboratory Name: TestAmerica-Houston	LRC Date: 10/21/13
Project Name: 1620 UPRR HWPW	Laboratory Job Number: 600-81036-2
Reviewer Name: TTD	Prep Batch Number(s): 600-118413-SV

#[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**					
		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 5.5.10)**					
		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 5?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods (NELAC Chapter 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				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ 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.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Appendix A (cont'd): Laboratory Review Checklist: Exception Reports	
Laboratory Name: TestAmerica-Houston	LRC Date: 10/21/13
Project Name: 1620 UPRR HWPW	Laboratory Job Number: 600-81036-2
Reviewer Name: TTD	Prep Batch Number(s): 600-118413-SV

ER #[1]	DESCRIPTION
1	The laboratory selected a sample from another group to perform as the MS/MSD.
2	All of the SDLs in sample 600-81036-1 were elevated due to the nature of the sample matrix.

ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on the LRC)

.

Quality Control Report

Detection Check Standard

Matrix:	Water
Method:	8270C LL
Preparation:	3510C
Date Analyzed:	7/22/2013
Date Prepared:	7/19/2013
Lab Sample ID:	600-11162
Units:	ug/L

Analyte	MDL	DCS Spike	DCS Result	MQL
Pyridine	0.04	0.5	0.153	0.5
N-Nitrosodimethylamine	0.26	0.5	0.484	0.5
bis (2-Chloroisopropyl) ether	0.4	0.5	0.463	0.5
Aniline	0.08	0.25	0.064	0.5
Phenol	0.04	0.25	0.114	0.5
bis(2-Chloroethyl)ether	0.15	0.5	0.393	0.5
2-Chlorophenol	0.13	0.5	0.389	0.5
1,3-Dichlorobenzene	0.17	0.5	0.416	0.5
1,4-Dichlorobenzene	0.13	0.5	0.462	0.5
1,2-Dichlorobenzene	0.17	0.5	0.423	0.5
Benzyl alcohol	0.17	0.5	0.167	0.5
2-Methylphenol (o-cresol)	0.12	0.25	0.130	0.5
3&4-Methylphenol (m&p-Cresols)	0.2	0.5	0.277	1
N-Nitroso-di-n-propylamine	0.1	0.25	0.156	0.5
Hexachloroethane	0.1	0.25	0.168	0.5
Dibenzo(a,h)anthracene	0.08	0.25	0.133	0.5
Indeno(1,2,3-cd)pyrene	0.07	0.25	0.135	0.5
Nitrobenzene	0.11	0.25	0.144	0.5
Isophorone	0.11	0.25	0.120	0.5
2-Nitrophenol	0.22	0.5	0.230	0.5
Benzoic acid	2.51	2.5	5.980	2.5
2,4-Dimethylphenol	0.15	0.5	0.275	0.5
bis(2-Chloroethoxy)methane	0.13	0.5	0.116	0.5
2,4-Dichlorophenol	0.15	0.5	0.265	0.5
1,2,4-Trichlorobenzene	0.12	0.5	0.135	0.5
Naphthalene	0.08	0.25	0.140	0.5
Benzo(a)pyrene	0.08	0.25	0.101	0.5
Hexachlorobutadiene	0.18	0.5	0.393	0.5
4-Chloro-3-methylphenol	0.17	0.5	0.310	0.5
2-Methylnaphthalene	0.07	0.25	0.134	0.5
1-Methylnaphthalene	0.09	0.25	0.133	0.5
Benzo(k)fluoranthene	0.09	0.25	0.119	0.5
Hexachlorocyclopentadiene	0.13	0.5	0.297	0.5
2,4,6-Trichlorophenol	0.18	0.5	0.364	0.5
2,4,5-Trichlorophenol	0.25	0.5	0.354	0.5
2-Chloronaphthalene	0.08	0.25	0.127	0.5
2-Nitroaniline	0.19	0.5	0.333	0.5
1,4-Dinitrobenzene	0.5	0.5	0.487	0.5
1,3-Dinitrobenzene	0.08	0.25	0.172	0.5
1,2-Dinitrobenzene	0.5	0.5	0.525	0.5

Dimethylphthalate	0.07	0.25	0.129	0.5
Acenaphthylene	0.06	0.25	0.121	0.5
2,6-Dinitrotoluene	0.08	0.25	0.104	0.5
Benzo(b)fluoranthene	0.07	0.25	0.094	0.5
Acenaphthene	0.08	0.25	0.139	0.5
Di-n-octylphthalate	0.16	0.5	0.184	0.5
4-Nitrophenol	0.56	1	0.272	1
Dibenzofuran	0.08	0.25	0.133	0.5
2,4-Dinitrotoluene	0.13	0.5	0.277	0.5
2,3,4,6-Tetrachlorophenol	0.5	0.5	0.057	0.5
2,3,5,6-Tetrachlorophenol	0.5	0.5	0.800	0.5
Diethylphthalate	1.5	0.5	0.449	0.5
4-Chlorophenyl-phenylether	0.1	0.25	0.134	0.5
Fluorene	0.07	0.25	0.130	0.5
4-Nitroaniline	0.25	0.5	0.360	0.5
Chrysene	0.08	0.25	0.151	0.5
4,6-Dinitro-2-methylphenol	0.83	1	0.651	0.5
N-Nitrosodiphenylamine	0.1	0.25	0.123	0.5
Diphenylamine	0.1	0.25	0.123	0.5
1,2-Diphenylhydrazine	0.11	0.25	0.115	0.5
Azobenzene	0.07	0.25	0.116	0.5
4-Bromophenyl-phenylether	0.1	0.25	0.128	0.5
Hexachlorobenzene	0.11	0.25	0.147	0.5
Pentachlorophenol	0.61	1	3.720	0.5
Phenanthrene	0.06	0.25	0.133	0.5
Anthracene	0.05	0.25	0.118	0.5
Carbazole	0.17	0.5	0.361	0.5
Di-n-butylphthalate	0.11	0.25	0.104	0.5
Fluoranthene	0.07	0.25	0.119	0.5
Benzidine	0.61	2.5	3.810	0.5
Pyrene	0.11	0.25	0.120	0.5
Butylbenzylphthalate	0.12	0.25	0.089	0.5
3,3'-Dichlorobenzidine	0.18	0.25	0.064	0.5
Benzo(a)anthracene	0.08	0.25	0.133	0.5
bis(2-Ethylhexyl)phthalate	0.37	0.5	0.256	0.5
Benzo(g,h,i)perylene	0.08	0.25	0.156	0.5
4-Chloroaniline	0.21	0.5	0.179	0.5
3-Nitroaniline	0.16	0.5	0.177	0.5
2,4-Dinitrophenol	0.39	1	4.910	0.5

Job ID: 600-81036-2

Laboratory: TestAmerica Houston

Narrative

Job Narrative
600-81036-2

Comments
No additional comments.

Receipt
The samples were received on 10/15/2013 9:07 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.2º C.

Method Summary

Client: Pastor, Behling & Wheeler LLC
Project/Site: 1620 UPRR HWPW

TestAmerica Job ID: 600-81036-2

Method	Method Description	Protocol	Laboratory
8270C LL	Semivolatile Organic Compounds by GCMS - Low Levels	SW846	TAL HOU

Protocol References:

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

Laboratory References:

TAL HOU = TestAmerica Houston, 6310 Rothway Street, Houston, TX 77040, TEL (713)690-4444

Sample Summary

Client: Pastor, Behling & Wheeler LLC
Project/Site: 1620 UPRR HWPW

TestAmerica Job ID: 600-81036-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
600-81036-1	WG-1620-MW10B-20131014	Water	10/14/13 15:30	10/15/13 09:07

Client: Pastor, Behling & Wheeler LLC
Project/Site: 1620 UPRR HWPW

TestAmerica Job ID: 600-81036-2

Client Sample ID: WG-1620-MW10B-20131014
Date Collected: 10/14/13 15:30
Date Received: 10/15/13 09:07

Lab Sample ID: 600-81036-1
Matrix: Water

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibenzofuran	0.0334		0.00485	0.000777	mg/L		10/18/13 14:51	10/21/13 15:28	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*106*		*44 - 123*	*10/18/13 14:51*	*10/21/13 15:28*	*10*
2-Fluorobiphenyl	*75*		*43 - 120*	*10/18/13 14:51*	*10/21/13 15:28*	*10*
2-Fluorophenol	*42*		*18 - 120*	*10/18/13 14:51*	*10/21/13 15:28*	*10*
Nitrobenzene-d5	*51*		*47 - 120*	*10/18/13 14:51*	*10/21/13 15:28*	*10*
Terphenyl-d14	*125*		*33 - 141*	*10/18/13 14:51*	*10/21/13 15:28*	*10*
Phenol-d5 (Surr)	*21*		*12 - 128*	*10/18/13 14:51*	*10/21/13 15:28*	*10*

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
U	Analyte was not detected at or above the SDL.

Glossary

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

Surrogate Summary

Client: Pastor, Behling & Wheeler LLC
Project/Site: 1620 UPRR HWPW

TestAmerica Job ID: 600-81036-2

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels

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

		Percent Surrogate Recovery (Acceptance Limits)							
		TBP	FBP	2FP	NBZ	TPH	PHL		
Lab Sample ID	Client Sample ID	(44-123)	(43-120)	(18-120)	(47-120)	(33-141)	(12-128)		
600-81036-1	WG-1620-MW10B-20131014	106	75	42	51	125	21		
LCS 600-118413/2-A	Lab Control Sample	112	97	90	89	94	98		
MB 600-118413/1-A	Method Blank	82	96	96	89	112	101		

Surrogate Legend

TBP = 2,4,6-Tribromophenol
FBP = 2-Fluorobiphenyl
2FP = 2-Fluorophenol
NBZ = Nitrobenzene-d5
TPH = Terphenyl-d14
PHL = Phenol-d5 (Surr)

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels

Lab Sample ID: MB 600-118413/1-A
Matrix: Water
Analysis Batch: 118584

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 118413

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibenzofuran	0.0000800	U	0.000500	0.0000800	mg/L		10/18/13 10:46	10/21/13 09:50	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*82*		*44 - 123*	*10/18/13 10:46*	*10/21/13 09:50*	*1*
2-Fluorobiphenyl	*96*		*43 - 120*	*10/18/13 10:46*	*10/21/13 09:50*	*1*
2-Fluorophenol	*96*		*18 - 120*	*10/18/13 10:46*	*10/21/13 09:50*	*1*
Nitrobenzene-d5	*89*		*47 - 120*	*10/18/13 10:46*	*10/21/13 09:50*	*1*
Terphenyl-d14	*112*		*33 - 141*	*10/18/13 10:46*	*10/21/13 09:50*	*1*
Phenol-d5 (Surr)	*101*		*12 - 128*	*10/18/13 10:46*	*10/21/13 09:50*	*1*

Lab Sample ID: LCS 600-118413/2-A
Matrix: Water
Analysis Batch: 118584

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 118413

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Dibenzofuran			0.0100	0.009525		mg/L		95	46 - 123		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol	*112*		*44 - 123*
2-Fluorobiphenyl	*97*		*43 - 120*
2-Fluorophenol	*90*		*18 - 120*
Nitrobenzene-d5	*89*		*47 - 120*
Terphenyl-d14	*94*		*33 - 141*
Phenol-d5 (Surr)	*98*		*12 - 128*

Unadjusted Detection Limits

Client: Pastor, Behling & Wheeler LLC
Project/Site: 1620 UPRR HWPW

TestAmerica Job ID: 600-81036-2

Method: 8270C LL - Semivolatile Organic Compounds by GCMS - Low Levels

Analyte	MQL	MDL	Units	Method
Dibenzofuran	0.000500	0.0000800	mg/L	8270C LL

QC Association Summary

Client: Pastor, Behling & Wheeler LLC
Project/Site: 1620 UPRR HWPW

TestAmerica Job ID: 600-81036-2

GC/MS Semi VOA

Prep Batch: 118413

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-81036-1	WG-1620-MW10B-20131014	Total/NA	Water	3510C	
LCS 600-118413/2-A	Lab Control Sample	Total/NA	Water	3510C	
MB 600-118413/1-A	Method Blank	Total/NA	Water	3510C	

Analysis Batch: 118584

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-81036-1	WG-1620-MW10B-20131014	Total/NA	Water	8270C LL	118413
LCS 600-118413/2-A	Lab Control Sample	Total/NA	Water	8270C LL	118413
MB 600-118413/1-A	Method Blank	Total/NA	Water	8270C LL	118413

Lab Chronicle

Client: Pastor, Behling & Wheeler LLC
Project/Site: 1620 UPRR HWPW

TestAmerica Job ID: 600-81036-2

Client Sample ID: WG-1620-MW10B-20131014
Date Collected: 10/14/13 15:30
Date Received: 10/15/13 09:07

Lab Sample ID: 600-81036-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			118413	10/18/13 14:51	SMB	TAL HOU
Total/NA	Analysis	8270C LL		10	118584	10/21/13 15:28	MBB	TAL HOU

Laboratory References:

TAL HOU = TestAmerica Houston, 6310 Rothway Street, Houston, TX 77040, TEL (713)690-4444

Certification Summary

Client: Pastor, Behling & Wheeler LLC
Project/Site: 1620 UPRR HWPW

TestAmerica Job ID: 600-81036-2

Laboratory: TestAmerica Houston

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Arkansas DEQ	State Program	6	88-0759	08-04-13 *
Louisiana	NELAP	6	01967	06-30-14
Oklahoma	State Program	6	9503	08-31-13 *
Texas	NELAP	6	T104704223-10-6-TX	10-31-13
USDA	Federal		P330-08-00217	04-01-14
Utah	NELAP	8	GULF	10-31-13

* Expired certification is currently pending renewal and is considered valid.

Chain of Custody Record

Temperature on Receipt _____

Drinking Water? Yes ☐ No ☒

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)

Client	Project Manager	Date	Chain of Custody Number
PBW	ERIC MATZNER	10-14-13	252132

Address	Telephone Number (Area Code)/Fax Number	Lab Number	Page
2201 DOUBLE CREEK DR	512-671-3434		Page 1 of 1

City	State	Zip Code	Site Contact	Lab Contact
Round Rock	TX	78664		

Project Name and Location (State)	Carrier/Waybill Number
UPRR – HWPW	

Contract/Purchase Order/Quote No.

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Analysis: 8270 SVOCS	8260 VOCS	Special Instructions/ Conditions of Receipt
WG-1620-MW10B-20131014	10-14-13	1530		X			X						X		
WG-1620-MW26A-20131014	10-14-13	1615		X						X				X	
WG-1620-TB01-20131014	10-14-13	—		X										X	

600-81036 Chain of Custody

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

Sample Disposal
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
(A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

1. Relinquished By: Julia Bray	0907	10-15-13		1. Received By	Date: 10/15/13 Time: 0907
2. Relinquished By		Date	Time	2. Received By	Date Time
3. Relinquished By		Date	Time	3. Received By	Date Time

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Login Sample Receipt Checklist

Client: Pastor, Behling & Wheeler LLC

Job Number: 600-81036-2

Login Number: 81036

List Source: TestAmerica Houston

List Number: 1

Creator: Lopez, Sandro R

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	5.2
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

CONESTOGA-ROVERS & ASSOCIATES

E-Mail Date: October 29, 2013
E-Mail To: Eric Matzner
c.c.: Jesse Orth
Julie Lidstone
Chris G. Knight
E-Mail and Hard Copy if Requested

DATA USABILITY SUMMARY

2nd 2013 SEMIANNUAL GROUNDWATER MONITORING EVENT

VERIFICATION RE-SAMPLE AT MW-10B

UNION PACIFIC RAILROAD (UPRR)

1620 – WOOD PRESERVING WORKS

HOUSTON, TEXAS

OCTOBER 2013

PREPARED BY:
CONESTOGA-ROVERS & ASSOCIATES
13091 Pond Springs Road, Suite A 100
Austin, TX 78729
Telephone: 512-506-8803 Fax: 512-506-8823
Contact: Chris G. Knight [eew]
Date: October 29, 2013
www.CRAworld.com

Data Usability Summary

Reviewer:	Chris G. Knight – Conestoga-Rovers & Associates, Inc.
Contract Laboratory:	TestAmerica Laboratories, Inc., Houston, Texas
Project/Area of Interest:	1620 – Wood Preserving Works
Description of Data Package Reviewed:	Groundwater sample results in data package: J81036-2
Sample Collection Date(s):	October 2013
Intended Use of Data:	*To determine the concentrations of chemicals of concern (COCs) in the groundwater sample at the site.*

1.0 Scope of Data Usability Summary

Data were reviewed and validated in accordance with Title 30 of the Texas Administrative Code Section 350.54 (30 TAC 350.54) as described in *Review and Reporting of COC Concentration Data,* (RG-366/TRRP-13) and the results of the review/validation are discussed in this Data Usability Summary (DUS). The review included examination of the reported data, the laboratory review checklist (LRC), and field/laboratory quality assurance/quality control (QA/QC) samples collected at the Site. Tables summarizing data qualifications discussed in this DUS can be found in Appendix A.

A groundwater sampling and analysis summary is presented in Appendix A, Table 1. The summary includes a cross-reference of field sample identification numbers and location identification. Each sample is assigned a unique field identification number.

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

2.0 Laboratory Qualifications

Analytical services were provided by TestAmerica Laboratories, Inc., located in Houston, Texas. This 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 # T104704223-10-6-TX at the time the analysis was performed and the certificate is included in Appendix C.

3.0 Project Objectives

3.1 Levels of Required Performance (LORP)

LORP for COCs are intended to ensure laboratory detection limits are below Protective Concentration Levels (PCL). Prior to sampling, the LORP for each organic COC was established for the investigation. Standard available analytical methods were selected and minimal detection limits were sought that are at or below the Texas Risk Reduction for groundwater.

3.2 Sampling/Analytical QA/QC Objectives

The QA/QC program was designed to identify contamination resulting from the sampling, sample transport and analytical process.

- Method blanks of a matrix similar to that of the associated samples are prepared by the laboratory and analyzed to determine if laboratory contaminants are affecting the analytical results. Method blanks are prepared and analyzed on a batch basis.

Similarly, the QA/QC program was designed to evaluate the quality of the resulting data with respect to bias and precision. First, laboratory control samples (LCS) were prepared and analyzed on a batch basis. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project. Second, matrix spike/matrix spike duplicate (MS/MSD) analyses were performed on a batch basis. The recovery ranges and relative percent differences (RPD) established by the laboratory are adopted as the acceptance criteria for the project. Third, field duplicates were collected and submitted for analysis. The RPDs associated with these duplicate samples must be less than 30 percent for water samples. The above RPDs are only used when sample concentrations are above the estimated regions of detection.

4.0 Data Review / Validation Results

4.1 Analytical Results

A summary of the groundwater analytical results with qualifiers applied is reported in Appendix A, Table 2. Analytes with concentrations above the sample detection limits (SDL) but below the method quantitation limits (MQL) have been qualified as J (estimated) on the analytical table per the TRRP-13 document.

4.2 LORP

All SDLs and unadjusted MQLs met the LORP for this investigation.

All detectability check standard (DCS) results supported the laboratory method detection limits (MDL).

4.3 Preservation and Holding Times

Samples were preserved in the field and cooled to 4°C (±2°C). All samples were shipped on ice. Samples were shipped with chains-of-custody and the paperwork was filled out properly.

All samples were prepared and analyzed within the applicable holding time.

4.4 Sample Containers

Sample containers used were certified pre-cleaned glass and plastic 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*.

4.5 Calibrations

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

4.6 Blanks

Method Blanks: As these were not discrete samples handled in the field, method blanks are not listed on the sample identification cross-reference list found in the data package. Results are reported in the data package on a laboratory batch basis. All of the laboratory blank results were non-detect or below the MQL.

4.7 Internal Standard and Surrogate Recoveries

Recoveries of internal standards for semi-volatile organic compounds (SVOCs) are addressed in the LRC of the data package. All internal standard recoveries associated with the compounds of interest were acceptable per the LRC.

Surrogate results are reported with the other project sample results in the data package. According to the Texas Commission on Environmental Quality (TCEQ) Regulatory Guidelines, one outlying surrogate is acceptable for methods with multiple surrogate spike compounds.

Surrogate recoveries for all samples were within laboratory acceptance criteria and the guidance in TRRP-13, indicating good analytical efficiency.

4.8 Laboratory Control Samples (LCS)

LCS were reported for all COCs. These results are reported in the data package on a laboratory batch basis. LCS spike recoveries for all parameters were within the project objectives.

4.9 Matrix Spikes/Matrix Spike Duplicates (MS/MSD)

MS or MS/MSD analyses were prepared and analyzed for all parameters. These results are reported in the data package on a laboratory batch basis.

For this investigation, laboratory performed MS/MSD on a non-Site sample. The analysis of non-Site spike samples cannot be used to assess accuracy and precision for the Site samples.

4.10 Field Procedures

Pastor, Behling & Wheeling (PB&W) collected groundwater samples in accordance with their Standard Operating Procedures (SOP) for groundwater sample collection.

4.11 Summary

The analytical data in this report are usable for the purpose of determining the concentrations of chemicals of concern in groundwater samples at the Site and may be used without qualification.

APPENDIX A

TABLES

TABLE 1

GROUNDWATER SAMPLE COLLECTION AND ANALYSIS SUMMARY
2nd 2013 SEMIANNUAL GROUNDWATER MONITORING EVENT
VERIFICATION RESAMPLE AT MW-10B
UNION PACIFIC RAILROAD (UPRR) - 1620 WOOD PRESERVING WORKS
HOUSTON, TEXAS
OCTOBER 2013

					Analysis/Parameters	
Sample Identification	***Location***	***Matrix***	***Collection Date (mm/dd/yyyy)***	***Collection Time (hr:min)***	***SVOCs - Dibenzofuran***	***Comments***
WG-1620-MW10B-20131014	MW-10B	water	10/14/2013	15:30	X	

Notes:

SVOCs Semi-volatile organic compounds.

TABLE 2

GROUNDWATER ANALYTICAL RESULTS SUMMARY
2nd 2013 SEMIANNUAL GROUNDWATER MONITORING EVENT
VERIFICATION RE-SAMPLE AT MW-10B
UNION PACIFIC RAILROAD (UPRR) - 1620 WOOD PRESERVING WORKS
HOUSTON, TEXAS
OCTOBER 2013

Sample Location:		***MW-10B***
Sample ID:		***WG-1620-MW10B-20131014***
Sample Date:		***10/14/2013***
Parameters	***Units***	
Semi-volatile Organic Compounds		
Dibenzofuran	mg/L	0.0334

TABLE 3

ANALYTICAL METHODS AND HOLDING TIME CRITERIA
GROUNDWATER AND SOIL SAMPLING
2nd 2013 SEMIANNUAL GROUNDWATER MONITORING EVENT
VERIFICATION RE-SAMPLE AT MW-10B
UNION PACIFIC RAILROAD (UPRR) - 1620 WOOD PRESERVING WORKS
HOUSTON, TEXAS
OCTOBER 2013

			Holding Time	
Parameter	***Method***	***Matrix***	***Collection to Extraction (Days)***	***Collection or Extraction to Analysis (Days)***
SVOCs - Dibenzofuran	SW-846 8270	Water	7	14

Notes
SW-846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions.
SVOCs Semi-volatile organic compounds.

APPENDIX B

LABORATORY NELAP CERTIFICATE

Texas Commission on Environmental Quality

NELAP-Recognized Laboratory Accreditation is hereby awarded to

TestAmerica Laboratories, Inc. - Houston

6310 Rothway Drive
Houston, TX 77040-5056

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: T104704223-12-9
Effective Date: 11/1/2012
Expiration Date: 10/31/2013

Executive Director Texas Commission on Environmental Quality

APPENDIX D
WASTE MANIFEST

DX7697138 DX7697138 SC PPW 3/02/2011 2469-TD-#156

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
TXD000820266	1 2	866-780-3116	011917032 JJK

GENERATOR

5. Generator's Name and Mailing Address
UNION PACIFIC RAILROAD
c/o USA, P.O. Box 87687
Houston, TX 77287

Generator's Site Address (if different than mailing address)
4910 Liberty Road
Houston, TX 77287

Generator's Phone: 281-350-7197

6. Transporter 1 Company Name: USA WASTE TRANSPORTATION SERVICES — U.S. EPA ID Number: TXR000032045

7. Transporter 2 Company Name: Clean Harbors Env. Srv. — U.S. EPA ID Number: MAD 373222 50

8. Designated Facility Name and Site Address
CLEAN HARBORS DEER PARK, LLC
2027 INDEPENDENCE PARKWAY SOUTH
LA PORTE, TX 77571
U.S. EPA ID Number: TXD065141378
Facility's Phone: 281-930-2300

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, ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S., PGIII, RQ (CREOSOTE) 9.	~~001~~ 1	DM	250	P	0918	219H	F034
X	2. NA3082, HAZARDOUS WASTE, LIQUID, N.O.S. (F034 PURGE WATER), 9, PGIII	~~001~~ 2	DM	350	P	0914	101H	F034
	3.							
	4.							

14. Special Handling Instructions and Additional Information
1) CH629200 2)CH229097

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: GEOFFREY REEDER — Signature: Geoffrey Reeder — Month 8 Day 13 Year 13

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: L. DE. MONE HATCH — Signature: L. De Mone Hatch — Month 8 Day 13 Year 13

Transporter 2 Printed/Typed Name: by Lead Driver for CHES — Signature: [signature] — Month 8 Day 14 Year 13

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator) U.S. EPA ID Number

Facility's Phone:

18c. Signature of Alternate Facility (or Generator) Month Day Year

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

1.	2.	3.	4.
H040	H040		

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: JENN STURNER — Signature: Jenn Sturner — Month 8 Day 20 Year 13

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO GENERATOR

APPENDIX E
POC CONCENTRATIONS VS. TIME GRAPHS

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

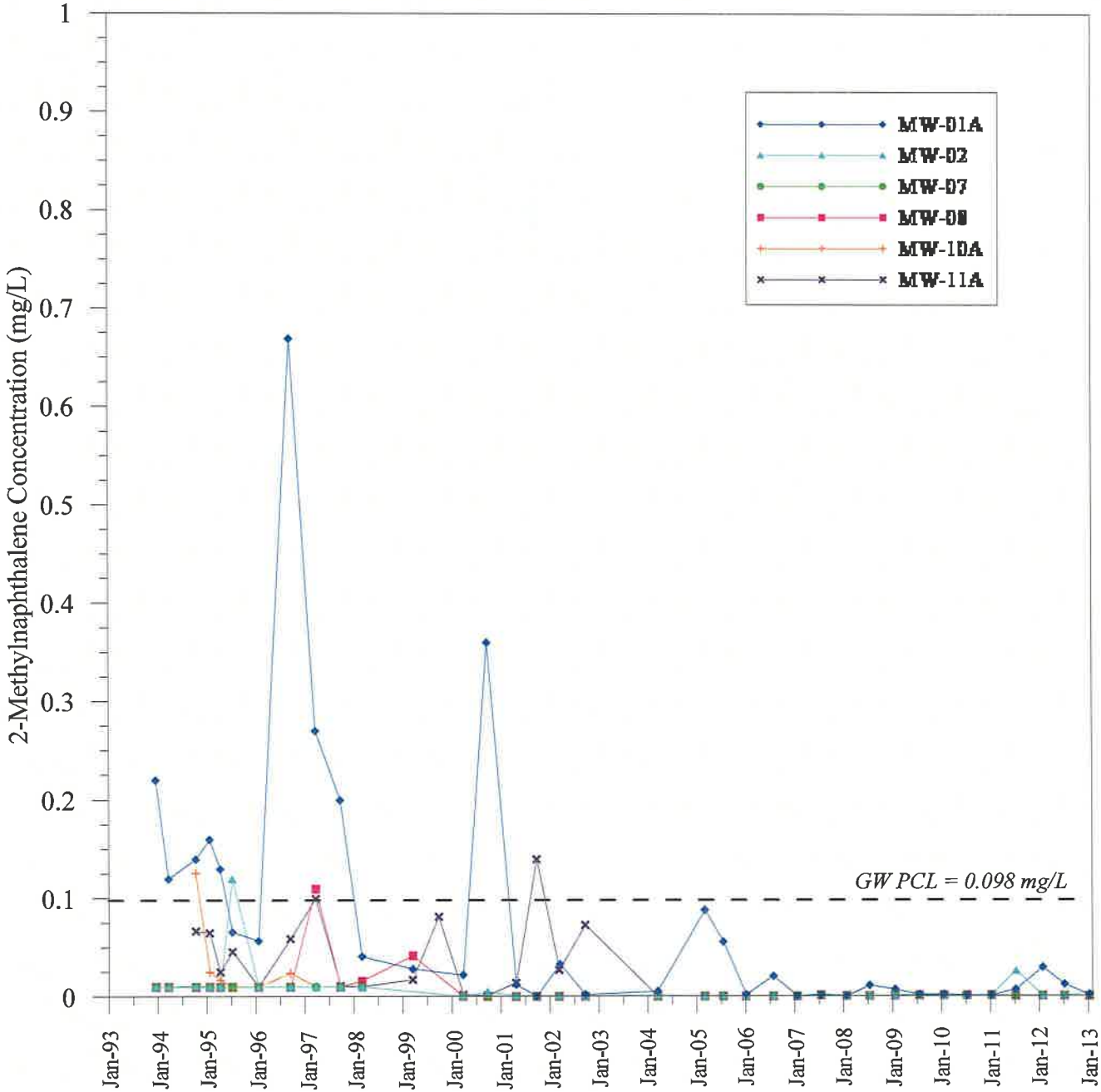


Figure E-2
Dibenzofuran Concentrations vs Time - A-TZ Unit
UPRR HWPW Facility - RCRA SWMU No. 1

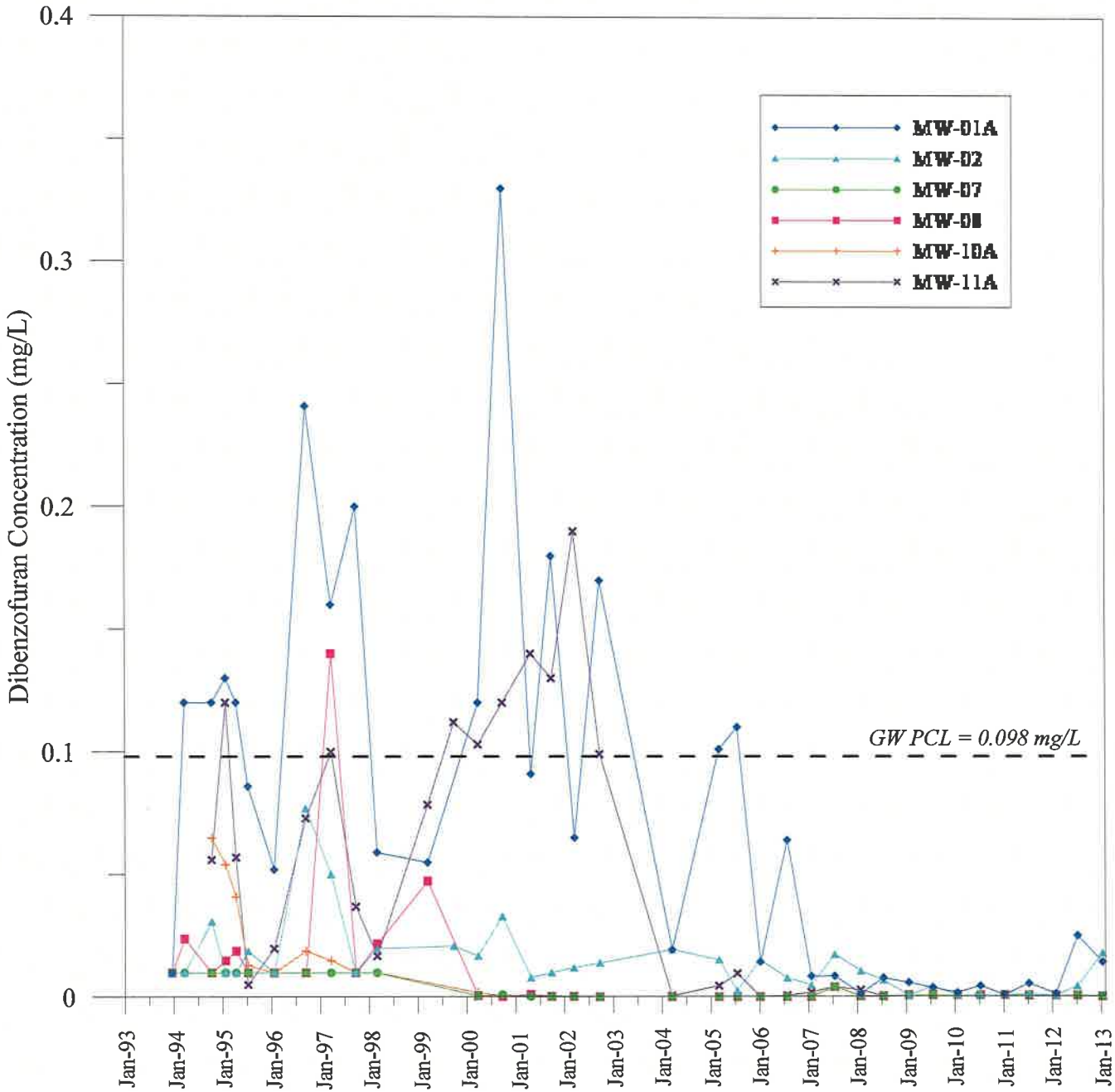


Figure E-3
Naphthalene Concentrations vs Time - A-TZ Unit
UPRR HWPW Facility - RCRA SWMU No. 1

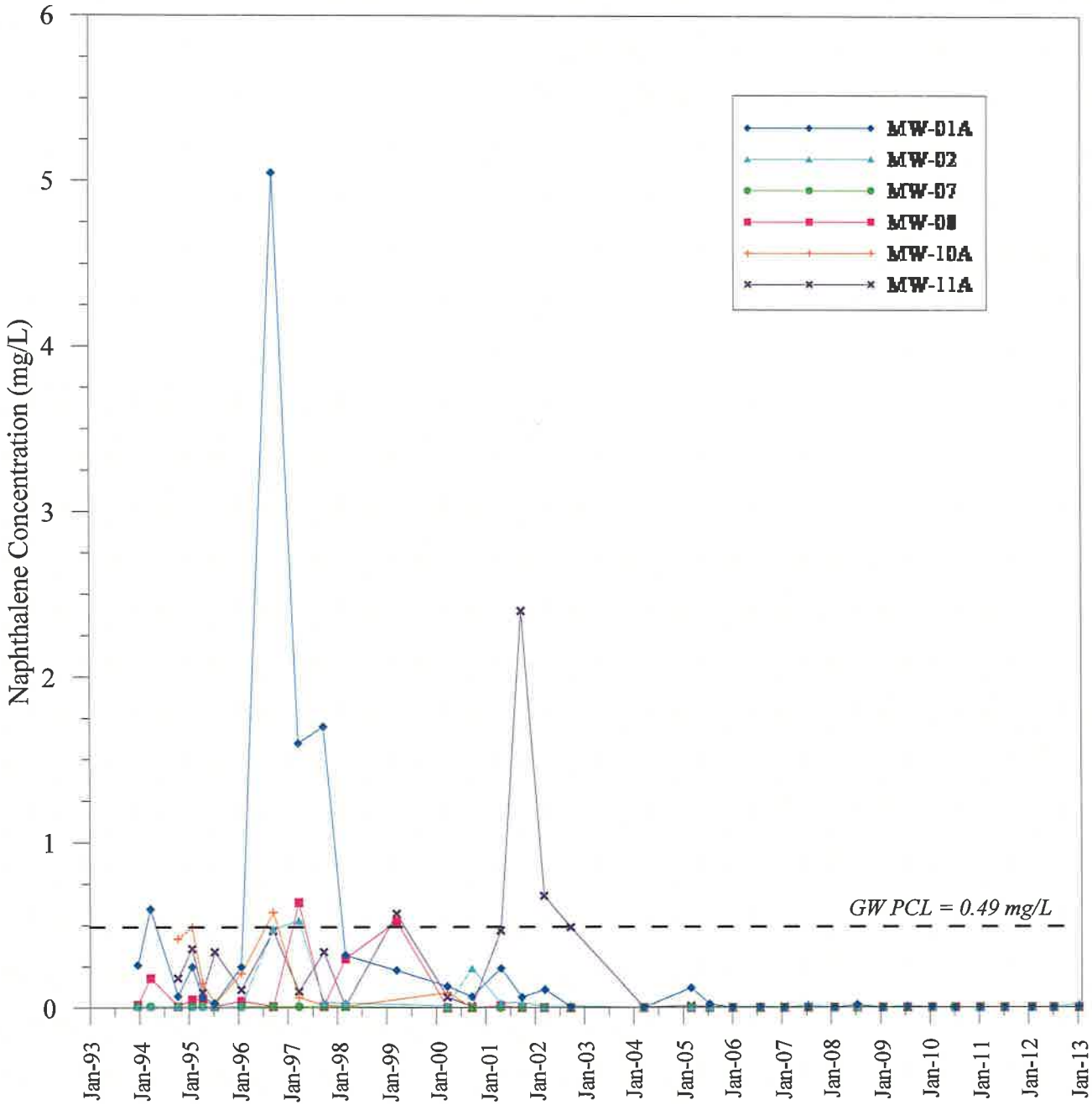


Figure E-4
Dibenzofuran Concentrations vs Time - B-TZ Unit
UPRR HWPW Facility - RCRA SWMU No. 1

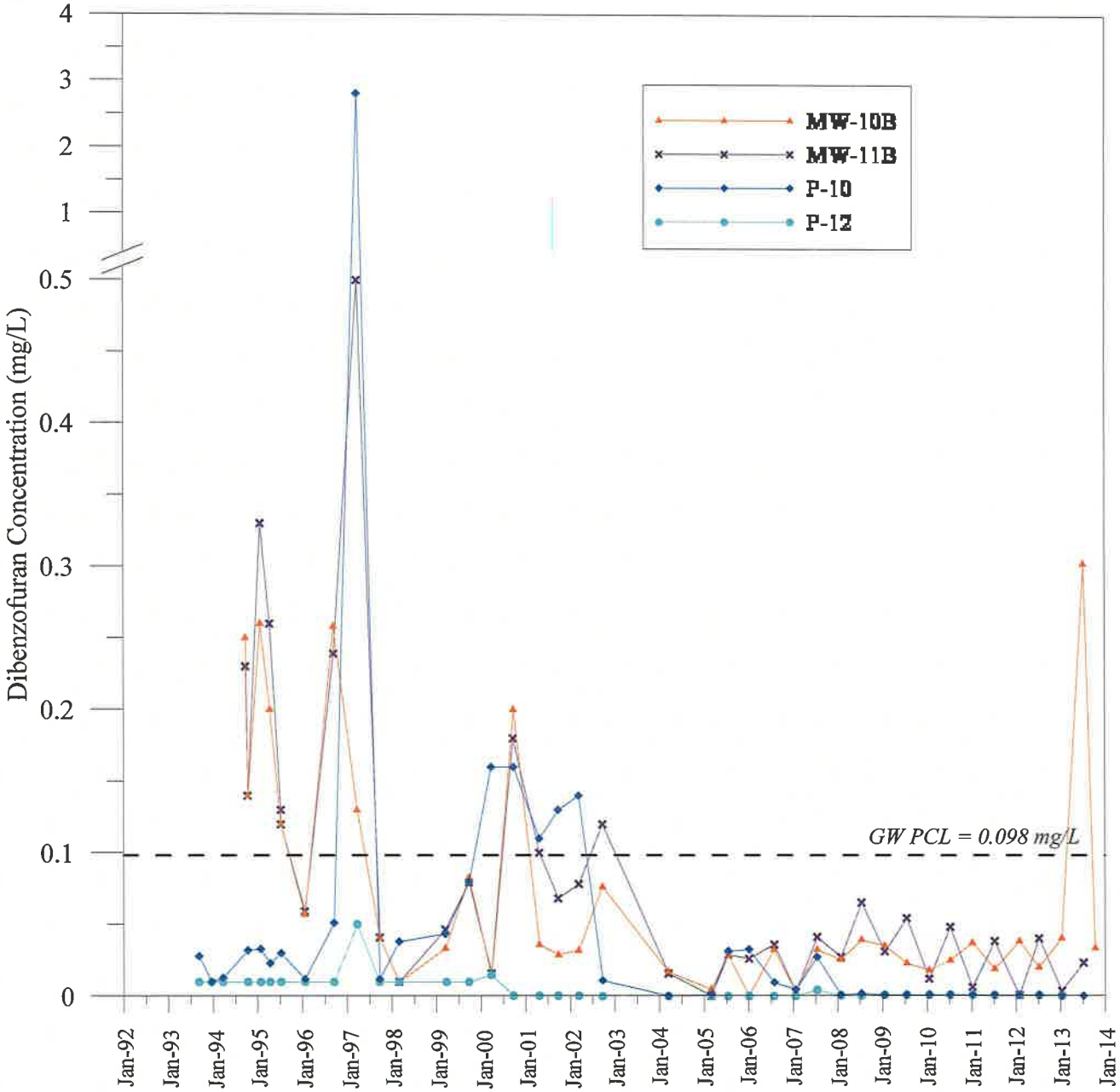
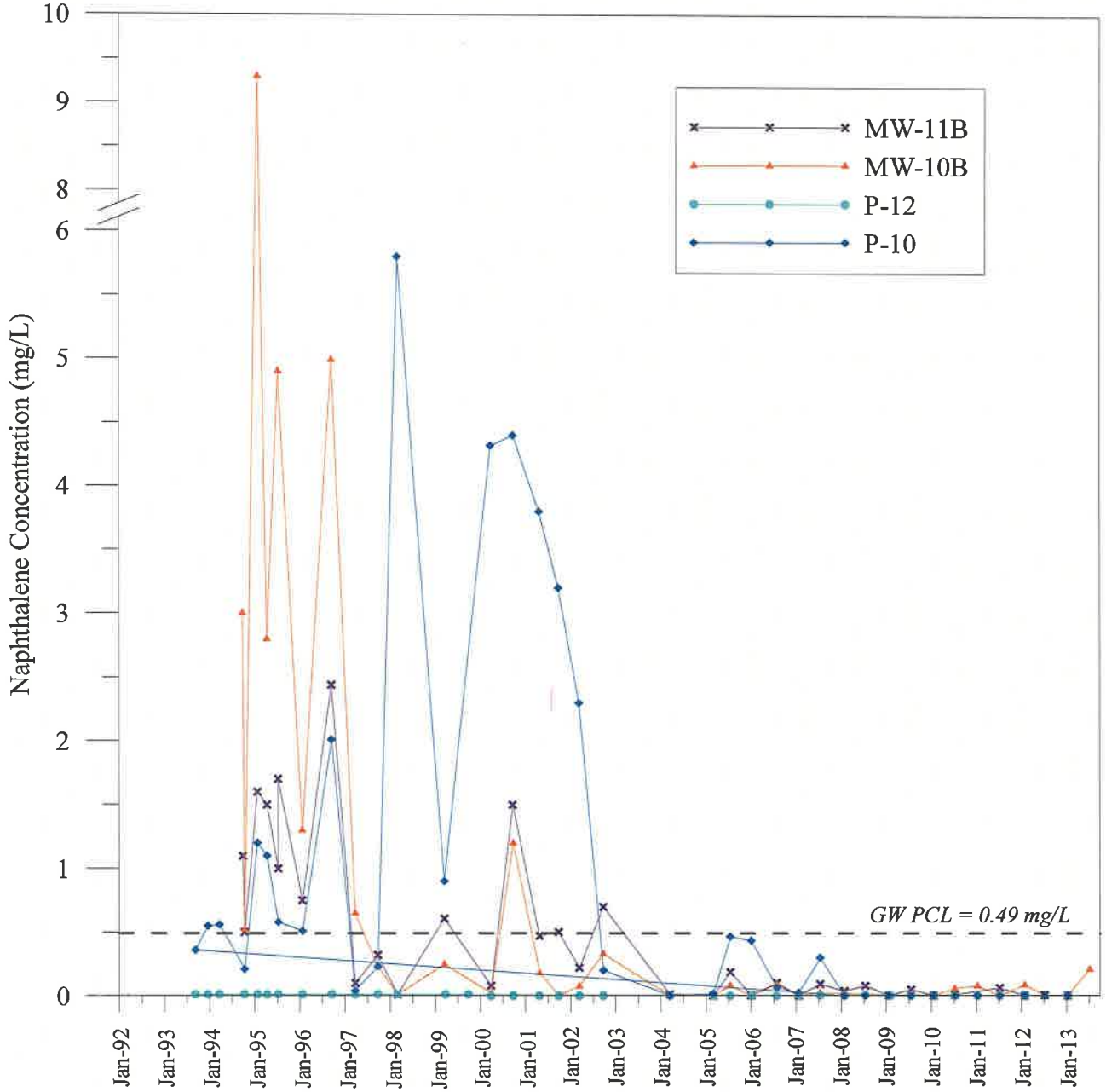
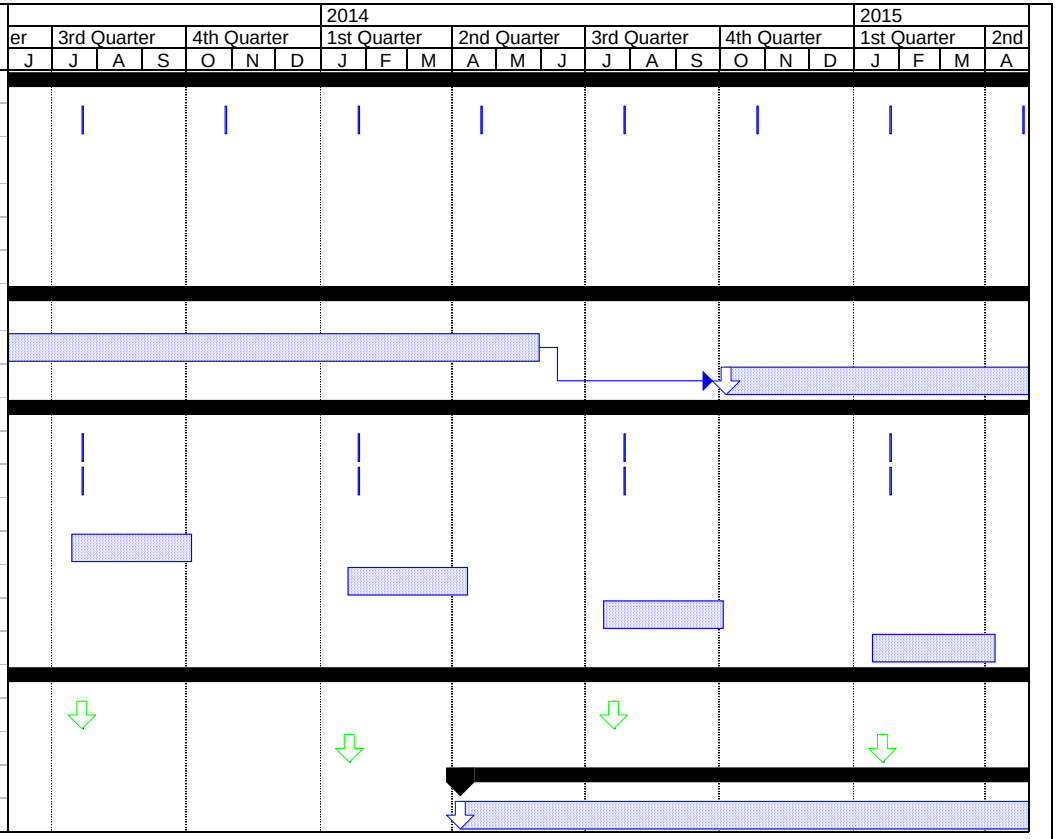


Figure E-5
Naphthalene Concentrations vs Time - B-TZ Unit
UPRR HWPW Facility - RCRA SWMU No. 1



APPENDIX F
UPDATED COMPLIANCE SCHEDULE

ID	Task Name/Permit or CP Section No.
1	**Facility Management**
2	General Inspection Requirements (quaterly) [Permit Section III.D; Table III.D]
41	**Addendum to the Affected Property Assessment Report (APAR) [Permit Section IX.A; CP Section VIII.D]**
42	Respond to TCEQ Comments on the APAR Addendum
43	Addition Delineation Field Investigation (Groundwater/Soil)
44	Prepare and Submit Final APAR Addendum
45	**Corrective Measures Implementation (CMI)/Response Action Plan (RAP) [CP Section VIII.F]**
46	Prepare and Submit Response Action Plan (RAP)
47	Implement Corrective Action as detailed in RAP
48	**Ground-Water Monitoring Program [Permit Section VI.A.; CP Section VI.]**
49	Water Level Measurements (Semiannually) [CP Section VI.C.4.a]1
78	Monitoring Well Inspections (Semiannually) [CP Section VI.C.4.a]1
107	Ground Water Sampling and Data Evaluation (1st Semiannual) [CP Setion VI.C.2]
108	Ground Water Sampling and Data Evaluation (2nd Semiannual) [CP Setion VI.C.2]
109	Ground Water Sampling and Data Evaluation (1st Semiannual) [CP Setion VI.C.2]
110	Ground Water Sampling and Data Evaluation (2nd Semiannual) [CP Setion VI.C.2]
111	Ground Water Sampling and Data Evaluation (1st Semiannual) [CP Setion VI.C.2]
112	**Response and Reporting [Permit Section II.B.7; CP Section VII.)**
113	First Semi-Annual GW Monitoring Report - July 21 [CP Section VII.C.2]
129	Second Semi-Annual GW Monitoring Report - January 21 [CP Section VII.C.2]
145	**Permit/Compliance Plan Renewal**
146	Draft Permit/Compliance Plan



Compliance Schedule
UPRR Houston Wood Preserving Works Site
Houston, Texas

Task
Progress
Milestone
Summary
Rolled Up Task
Rolled Up Milestone
Rolled Up Progress
Split
External Tasks
Project Summary
External Milestone
Deadline

APPENDIX G
LABORATORY DATA QA/QC REPORT CHECKLIST

FORMER HOUSTON WOOD PRESERVING WORKS
LABORATORY DATA QA/QC REPORT CHECKLIST
ANALYTICAL REPORT 600-761904-1
July 31, 2013

Facility Name: Former Houston Wood Preserving Works SWMU 1	**Permit/ISW Reg No.: 50343**	**For TCEQ Use Only**
Laboratory Name: TestAmerica Laboratories, Inc.	**EPA I.D. No.:**	**Project Mgr:**
Reviewer Name: Jennifer Bush	**TCEQ Project Manager/Data Reviewer:**	
Date: January 14, 2014	**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 POC=s included within the analytical method=s 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:	**Permit/ISW Reg No.:**
Laboratory Name:	**EPA I.D. No.:**

Method No.	Non-conformance Description	Method Modification Description
	Due to the level of dilution for sample 600-76104-6DL2, surrogate recoveries are not reported.	
	Several SDLs were elevated due to the high concentrations of some analytes (see laboratory review checklist).	

FORMER HOUSTON WOOD PRESERVING WORKS
LABORATORY DATA QA/QC REPORT CHECKLIST
ANALYTICAL REPORT 600-81036-2-1
October 22, 2013

Facility Name: Former Houston Wood Preserving Works SWMU 1	**Permit/ISW Reg No.: 50343**	**For TCEQ Use Only**
Laboratory Name: TestAmerica Laboratories, Inc.	**EPA I.D. No.:**	**Project Mgr:**
Reviewer Name: Jennifer Bush	**TCEQ Project Manager/Data Reviewer:**	
Date: January 14, 2014	**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 POC=s included within the analytical method=s 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:	**Permit/ISW Reg No.:**
Laboratory Name:	**EPA I.D. No.:**

Method No.	Non-conformance Description	Method Modification Description
	The laboratory selected a sample from another group to perform the MS/MSD	
	All of the SDLs in sample 600-81036-1 were elevated due to the nature of the sample matrix.	