Texas Commission on Environmental Quality

Remediation Division Correspondence Identification Form

SITE & PROGRAM AREA IDENTIFICATION

SITE LOCATION				REMEDIATION DIVISION PROGRAM AND FACILITY IDENTIFICATION	
Site Name: **Former Cameron Iron Works Facility**				Is This Site Being Managed Under A State Lead Contract? ☐ Yes ☑ No	
Address 1: **1000 Silber Road**				Program Area: **VOLUNTARY CLEANUP PROGRAM**	
Address 2:				Mail Code: **MC-221**	
City: **Houston**		State: **Texas**		Is This A New Site To This Program Area? ☐ Yes ☑ No	
Zip Code: **77055**	County: **Harris**			**VCP No.:**	**221**
TCEQ Region: **Region 12 - Houston**				**--Leave This Field Blank--**	**--Leave This Field Blank--**

DOCUMENT(S) IDENTIFICATION

	PHASE OF REMEDIATION	DOCUMENT NAME
1.	**REMEDIATION**	**RESPONSE ACTION PLAN (RAP) REVISION**
2.		
3.		
4.		
5.		

CONTACT INFORMATION

RESPONSIBLE PARTY/APPLICANT/CUSTOMER

Name:	**Dawn Greening, Remediation Manager**						
Company:	**Schlumberger**	Phone Number:	**(318) 393-6480**		Fax Number:		
Address 1:	**121 Industrial Boulevard**	City:	**Sugar Land**	State:	**TX**	Zip Code:	**77478**
Address 2:		Email Address:	**DGreening@slb.com**				

ENVIRONMENTAL CONSULTANT/REPORT PREPARER/AGENT

Name:	**John Knott, Project Manager**						
Company:	**CH2M HILL Engineers, Inc.**	Phone Number:	**(409) 781-8015**		Fax Number:		
Address 1:	**7790 Village Drive**	City:	**Beaumont**	State:	**TX**	Zip Code:	**77713**
Address 2:		Email Address:	**john.knott@jacobs.com**				

TCEQ INTERNAL USE ONLY

Document No.	TCEQ Database Term	Document No.	TCEQ Database Term
1.	**RAP REV**	4.	
2.		5.	
3.			

2022 Response Action Plan Addendum

Voluntary Cleanup Program No. 221
Former Cameron Iron Works Facility
1000 Silber Road, Houston, Texas

September 2022

Prepared for:

CAMERON

Prepared by:

CH2M HILL Engineers, Inc.

Cameron International Corporation
121 Industrial Boulevard
Sugar Land, TX 77478
Tel: (281) 285-4747

September 30, 2022

Ms. Vitalie Morrison, P.G., Project Manager
Voluntary Cleanup Section
Texas Commission on Environmental Quality
Mail Code 221
12100 Park 35 Circle, Building D
Austin, Texas 78753

Re: 2022 Response Action Plan Addendum
Former Cameron Iron Works Facility
1000 Silber Road, Houston, Texas
Voluntary Cleanup Program (VCP) No. 221
CN No. 600374821; RN No. 101474880

Dear Ms. Morrison,

This 2022 Response Action Plan Addendum (2022 RAP Addendum) is submitted in response to the Texas Commission on Environmental Quality (TCEQ) comment letters dated June 7, 2022,[1] and July 5, 2022,[2] for the Former Cameron Iron Works Facility located at 1000 Silber Road, Houston, Texas (site). A written response to comment No. 2 of the June 7, 2022, letter was provided in the letter dated June 17, 2022.[3] Response to comments 3, 8, and 9 of the June 7, 2022, letter were provided in the letter dated August 22, 2022.[4] The remaining comments Nos. 1 and 4 through 7 of the June 7, 2022, letter and Nos. 1 through 6 of the July 5, 2022, letter are addressed in this RAP Addendum. For ease of review below, the TCEQ comment is restated, followed by the response of Cameron International Corporation (Cameron; a Schlumberger Company).

1. Response to TCEQ Comment Letter Dated June 7, 2022

Monitored Natural Attenuation (MNA) Results

TCEQ Comment No. 1

Based on information provided, chemical of concern (COC) concentrations appear to be increasing over time within the onsite plume, downgradient of the former facility (at MW-113, MW-15R, and MW-16R); along the downgradient (southern) edge of the offsite plume (at MW-161, MW-168, MW-97, MW-93R, MW-98, and MW-179); and at scattered locations within the off-site plumes (MW-89, MW-74, and MW-147). Furthermore, the southern offsite plume appears to be migrating to the south. Finally, the contaminant plumes are no longer delineated at MW-113, MW-65, MW-106, and MW-

[1] Texas Commission on Environmental Quality (TCEQ). 2022a. *Comments to 2021 Response Action Effectiveness Report (RAER), Cameron – Katy Road Facility (Site), located at 1000 Silber Road, Houston, Harris County, TX.* June 7.

[2] Texas Commission on Environmental Quality (TCEQ). 2022b. *Comments to 2022 Predesign Investigation Data Submittal and Request for Response Action Plan Addendum Extension, Cameron – Katy Road Facility (Site), located at 1000 Silber Road, Houston, Harris County, TX.* July 5.

[3] CH2M HILL Engineers, Inc. (CH2M). 2022a. *2022 Pre-Design Investigation Data Submittal and Request for Response Action Plan Addendum Extension.* June 17.

[4] CH2M HILL Engineers, Inc. (CH2M). 2022b. *Response to TCEQ Comments on 2021 Response Action Effectiveness Report Dated June 7, 2021.* August 22.

93R. As such, data indicates that MNA alone is not a sufficient remedy for the on-site and off-site plumes. The TCEQ understands that the revised RAP will address plume migration and the increasing COC concentrations. Remedial activities should be conducted as soon as possible at the monitoring wells/areas mentioned above.

Response to TCEQ Comment No. 1: Cameron will close the groundwater protective concentration level exceedance (PCLE) zone under Remedy Standard B (onsite plume) and Remedy Standard A (offsite plume), using a combined in situ chemical oxidation (ISCO) and monitored natural attenuation (MNA) approach under a reasonable time frame. The target treatment zone (TTZ), proposed ISCO injection wells, and performance monitor well locations are shown in Attachments 2A-1 and 2A-2 of the 2022 RAP Addendum.

Specifically, the ISCO will focus on treating TTZs with concentrations of indicator COCs, i.e., tetrachloroethene, trichloroethene, 1,1-dichloroethene, and vinyl chloride (VC), greater than 0.050 milligram per liter, and selected well locations as commented by TCEQ as follows:

- Former Burn Pit, MW-108, MW-111, and MW-113 (onsite)
- MW-15R and MW-16R
- MW-89, MW-74, MW-187, and MW-188
- MW-161 and MW-93R

The ISCO treatment zones will be addressed in two phases. The Phase 1 ISCO well installation and injection will be implemented as a pilot study between November 2022 and the first half of 2023, focusing on the onsite burn pit and MW-113 areas. The Phase 2 ISCO injection will treat remaining areas and locations mentioned previously in the second half of 2023.

The ISCO response action to prevent plume migration at the southern leading-edge plume, including MW-168 and MW-97, is pending access by the residential property owners for a predesign investigation. The proposed predesign investigation and potential response actions focusing on mitigating potential plume migration at the leading edge of the plume in the southern portion of the site depend on receiving approval to access this area from the residential property owner, which to this point has not been provided. The 11 soil borings planned within the leading-edge downgradient plume were not advanced because the property owner has not responded to the several requests made for access over the last 10 months in 2021 and 2022, including emails on December 10, 2021, January 31, 2022, February 10, 2022, March 7, 2022, March 29, 2022, and April 7, 2022, and formal letters on May 26, 2022, and September 28, 2022.

Because MW-147 is located crossgradient of groundwater flow direction, and COC concentrations are less than the critical protective concentration level (cPCL), ISCO treatment is not proposed at MW-147. Likewise, because MW-179 is located far downgradient, and COC concentrations are less than cPCLs, ISCO treatment is not proposed at MW-179.

Additional delineation and predesign investigation involving grab groundwater sampling was performed in May and June 2022 to refine the plume extent. MW-106 contained one sample in which one COC (VC) was detected slightly greater than the cPCL; therefore, further delineation is not recommended at MW-106 at this time. Further delineation of the plume south of MW-93R is limited by a lack of access from the residential property owner. However, MW-98 located downgradient of MW-93R does not contain COCs at concentrations greater than the cPCLs; therefore, the plume to the south of MW-93R is unlikely to have migrated beyond MW-98.

Additional Sampling

TCEQ Comment No. 4

Due to the apparently increasing trend in COC concentrations at MW-98 and MW-179, please sample downgradient monitoring well MW-180 during the next site-wide sampling event.

Response to TCEQ Comment No. 4: MW-180 has been designated as a point of exposure (POE) well, which will be sampled annually during future events (see Worksheet 3.1 of RAP Addendum).

Proposed Plume Management Zone (PMZ)

TCEQ Comment No. 5

Monitoring well MW-65 is located along the downgradient boundary of the proposed PMZ. As such, the well must be considered point of exposure (POE) well and concentrations be compared with groundwater ingestion PCLs.

Response to TCEQ Comment No. 5: MW-65 has been designated as a POE well (see Worksheet 3.1 of RAP Addendum).

TCEQ Comment No. 6

The proposed PMZ includes three attenuation monitoring points (AMPs) along the centerline of the onsite plume. Due to the size of the plume, AMP wells are also needed in the southeastern portion of the former facility. While these wells were not required when the North Treatment system was in operation, they are now requested for plume monitoring, especially detection of plume migration before it reaches POE wells. Please add additional AMPs on the southeastern portion of the site (upgradient of POE wells MW-110, MW-111, MW-112, MW-113 and MW-65).

Response to TCEQ Comment No. 6: The revised PMZ network consists of four AMPs (MW-50R, MW-181, MW-182, and MW-184) to monitor plume stability along the center line of the PMZ (Attachment 2D of RAP Addendum). MW-50R is an existing AMP well and will continue to be monitored as such. One proposed new AMP well (MW-184) has been added to the southeastern portion of the site upgradient of POE well MW-113. Two existing wells, MW-181 and MW-182, were installed in 2021, located upgradient of MW-109 and MW-110, and are designated as AMP wells.

PCL Exceedance (PCLE) Zone Map

TCEQ Comment No. 7

Please extend the groundwater PCLE zones to include locations where exceedances were previously documented. If you choose instead to collect grab groundwater samples at these locations to justify the proposed PCLE zone boundaries, please note that 1) grab samples are not representative of groundwater conditions and will be accepted as delineation samples only if results are not detected or below the quantitation limit; and 2) results from grab samples will be valid for a limited time – new delineation samples may be required at the same locations in the future.

Response to TCEQ Comment No. 7: The TCEQ comment is acknowledged. However, an evaluation of the data indicates that the use of the results from grab samples for delineation in combination with results from the broad network of existing wells and historical data supports the current interpretation of the overall PCLE zone for groundwater. Cameron does acknowledge that future delineation could be necessary based on changing conditions. Note too that analytical results from grab groundwater samples collected from locations SB-10, SB-17, SB-37, and SB-45 are less than the quantitation limit, and as a result served as delineation

samples for the groundwater PCLE zone at those locations. With the exception of 1,1-dichloroethene, COCs were detected at concentrations lower than the cPCL in samples from SB-16. With that in mind, a new monitor well (MW-190) has been proposed to monitor conditions at the location of SB-16. One additional permanent monitor well (MW-189) has also been proposed at SB-17 to monitor the extent of the offsite plume boundary confirmed during the predesign at SB-17 (Attachment 2D of RAP Addendum).

Response to TCEQ Comment Letter Dated July 7, 2022

TCEQ Comment No. 1

The extension for the RAP submittal is approved. The new due date is September 30, 2022.

Response to TCEQ Comment No. 1: See enclosed RAP Addendum.

TCEQ Comment No. 2

While the TCEQ concurs that the proposed locations for remedial actions are high priority, other areas with increasing chemical of concern (COC) concentrations will require active remediation as discussed in Comment 1 of our June 7, 2022 letter.

Response to TCEQ Comment No. 2: See response to TCEQ comment No. 1 of June 7, 2022, letter.

TCEQ Comment No. 3

Newly installed monitoring wells MW-181 and MW-182 are proposed to be plugged after two sampling events. Well construction details were not provided. If these wells were constructed as permanent wells, TCEQ strongly discourages plugging these wells even if COC concentrations are currently not detected because the plume does not appear to be stable in all directions.

Response to TCEQ Comment No. 3: Monitor wells MW-181 and MW-182 will be retained as AMP wells, and well construction details are provided in the 2022 RAP Addendum.

TCEQ Comment No. 4

The protective concentration level exceedance (PCLE) zones have been modified based on the grab sample groundwater results. It appears that some locations in which COC were detected above the quantitation limit but below the PCL were not included in the PCLE zone. The TCEQ reiterates Comment 7 of our June 7, 2022 letter regarding the extent of the PCLE zone: if you choose to collect groundwater grab samples to justify the proposed PCLE zone boundaries, they will be accepted as delineation samples only if results are not detected or below the quantitation limit.

Response to TCEQ Comment No. 4: TCEQ comment acknowledged. See response to Comment No. 7 of the TCEQ June 7, 2022, letter. The groundwater PCLE zone extent has been refined based on the most current 2021 sitewide annual monitoring and grab groundwater samples collected from soil borings installed where exceedances were previously documented. Two new monitor wells, MW-189 and MW-190, as well as one existing well, MW-180, are proposed to monitor potential future plume migration (Attachment 2D of 2022 RAP Addendum).

TCEQ Comment No. 5

Please address the modifications of the PCLE zone when responding to Comments 8 and 9 of our June 7, 2022 letter (regarding 30 Texas Administrative Code §350.55 notification requirements).

Response to TCEQ Comment No. 5: The PCLE zone has been modified as presented in Attachment 1A-9 of the 2022 RAP Addendum.

TCEQ Comment No. 6

Please include the field work methodology, boring logs, and data usability summaries for the May 2022 groundwater samples/new monitoring wells in the next most appropriate submittal.

Response to TCEQ Comment No. 6: The sampling procedures, data usability summaries, boring logs, and well construction diagrams for the May and June 2022 predesign investigation are provided in Appendix 2 and 6 of the 2022 RAP Addendum. In addition, Appendix 2 includes boring logs for monitor wells used for geological cross sections.

Please call me at (318) 393-6480 with any questions or concerns. I can also be emailed at DGreening@slb.com.

I look forward to our continued work with you.

Sincerely,

Dawn Greening
Remediation Manager on behalf of Cameron International Corporation

Enclosure:

- 2022 Response Action Plan Addendum

c: Alma L. Jefferson/TCEQ Region 12
Matthew Parish/Taunton, Snyder & Slade
Monica Schneider/CH2M HILL Engineers, Inc.
David Urann/CH2M HILL Engineers, Inc.
John Knott/CH2M HILL Engineers, Inc.
Sally Scott/CH2M HILL Engineers, Inc.

2022 Response Action Plan Addendum Voluntary Cleanup Program No. 221 Former Cameron Iron Works Facility 1000 Silber Road, Houston, Texas

Prepared for

Cameron International Corporation

September 2022

Prepared by
CH2M HILL Engineers, Inc.

Professional Signatures and Seals

Professional Geoscientist

Bret R. Rahe	2798	November 30, 2022
Professional Geoscientist TBPG Firm Registration No. 50264	Geoscientist License number	Expiration date
Signature	Date 9/29/2022	
210-403-6326		bret.rahe@jacobs.com
Telephone number	FAX number	E-mail

Professional Engineer

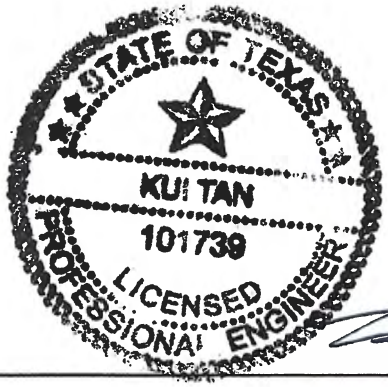
Kui Tan	101739	September 30, 2022
Professional Engineer TBPE Firm Registration No. 3699	P.E. License number	Expiration date
Signature	Date 09/30/2022	
281-891-5658		kui.tan@jacobs.com
Telephone number	FAX number	E-mail

Registered Corrective Action Specialists (RCASs) and Corrective Action Project Managers (CAPMs)

For LPST sites only.

Registered Corrective Action Specialist	RCAS Registration number	Expiration date
Signature	Date	
Corrective Action Project Manager	CAPM Registration number	Expiration date
Signature	Date	
Telephone number	FAX number	E-mail

Seals, as applicable: ***(The following seals are stamped for the 2022 Response Action Plan Addendum, Silber Road, Texas, dated September, 2022).***



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
Response Action Plan
Cover Page

Regulatory ID number (Solid waste registration number, VCP ID number, etc) VCP No. 221

check one: ___ Initial submittal for this onsite property **X** Subsequent submittal for this onsite property

Report date: September 30, 2022 TCEQ Region No.: 12

TCEQ Program (check one)

[ ]	Corrective Action (Mail Code 127)	[ ]	Superfund PRP Lead (Mail Code 143)
[X]	Voluntary Cleanup Program (Mail Code 221)	[ ]	Municipal Solid Waste Permits (Mail Code 124)
[ ]	RPR Section (Mail Code 137)		

On-Site Property Information

On-Site Property Name: Former Cameron Iron Works Facility

Street no. 1000 Pre dir: Street name Silber Street type: Road Post dir:

City: Houston County: Harris County Code: 101 Zip: 77024

Nearest street intersection or location description: Shavelson Street and Silber Road north of Interstate 10 (I-10)

Latitude: ~~Degrees, Minutes, Seconds~~ OR Decimal Degrees (circle one) North 29°47'13" N

Longitude: ~~Degrees, Minutes, Seconds~~ OR Decimal Degrees (circle one) West 95°27'56" W

Off-Site Affected Property Information

Off-Site Affected Property Name: Offsite PCLE Zones

Physical Address: Refer to list of properties in letter to TCEQ dated August 22, 2022 (CH2M 2022a)

Street no. Pre dir: Street name Street type: Post dir:

City: County: County Code: Zip:

[ ] Check if no off-site properties affected

Contact Person Information and Acknowledgement

Person (or company) Name: Cameron International Corporation (Cameron), a Schlumberger Company

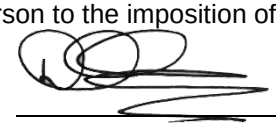
Contact Person: Dawn Greening Title: Remediation Manager

Mailing Address: 121 Industrial Boulevard

City: Sugar Land State: TX Zip: 77478 E-mail address DGreening@slb.com

Phone: (318) 393-6480 Fax:

By my signature below, I acknowledge the requirement of §350.2(a) that no person shall submit information to the executive director or to parties who are required to be provided information under this chapter which they know or reasonably should have known to be false or intentionally misleading, or fail to submit available information which is critical to the understanding of the matter at hand or to the basis of critical decisions which reasonably would have been influenced by that information. Violation of this rule may subject a person to the imposition of civil, criminal, or administrative penalties.

Signature of Person  Name, print: Dawn Greening Date: 09/30/2022

RAP Executive Summary	ID No.: VCP No. 221
	Report Date: September 2022

Use this worksheet to summarize the report. Be sure to complete and submit the Checklist for Report Completeness. **Attach a chronology of activities associated with the affected property.**

Briefly describe the affected property and PCLE zones, the conclusions from the assessment activities, identify any affected or threatened receptors, and describe any other major considerations taken into account when developing this response action plan. If any portion of the response action is necessitated due to an aesthetic or nuisance condition, identify the nature of that condition and identify that portion of the response action proposed to address it. If any media that contains a PCLE zone is not addressed in this RAP, provide justification.

This fourth addendum to the Response Action Plan (RAP) dated August 28, 2003 (hereafter referred as the 2022 RAP Addendum) was prepared for the Former Cameron Iron Works Facility (site), located at 1000 Silber Road, Houston, Texas. Site groundwater has been affected by historical usage and release associated with chlorinated organic constituents used for degreasing, as well as lubrication and hydraulic oils used in machining metals. This addendum describes proposed response actions, including in situ chemical oxidation (ISCO) treatment at target treatment zones (TTZs) and/or selected well locations per Texas Commission on Environmental Quality (TCEQ) comment letter dated June 7, 2022 (TCEQ 2022a) to expedite chemical of concern (COC) concentration decline and mass reduction, and to prevent further migration at the leading edge of the plume.

The site-specific COCs consist of tetrachloroethene (PCE), trichloroethene (TCE), 1,1-dichloroethene (1,1-DCE), cis-1,2-dichloroethene (cis-1,2-DCE), 1,1-dichloroethane (1,1-DCA), 1,2-dichloroethane (1,2-DCA), and vinyl chloride (VC). Concentrations of COCs, except 1,1-DCA, were greater than the respective critical protective concentration level (cPCL) during the most recent December 2021 annual groundwater sampling and May and June 2022 predesign grab groundwater sampling. The TTZ is defined as the groundwater plume area corresponding to 10 times the cPCLs for PCE and TCE, that is, 0.05 milligram per liter (mg/L). 1,1-DCE or VC greater than 0.05 mg/L are also defined as TTZ.

The ISCO treatment onsite plume management zone (PMZ) and offsite monitored natural attenuation (MNA) are anticipated to meet response action objectives (RAOs) within a reasonable time frame under Remedy Standard B closure for groundwater.

This 2022 RAP Addendum does not include soil, because the affected soil at the site has been remediated to residential protective concentration levels (PCLs) (Environmental Resources Management Group, Inc. [ERM] 2003a).

Site Background and Regulatory History

Previous investigations and remediation activities are summarized in the Chronology included at the end of this Executive Summary. This section provides a summary of the historical groundwater response actions.

Site groundwater response actions were performed in accordance with the 2003 RAP (ERM 2003a), 2009 RAP Addendum (ERM 2009), 2014 RAP Addendum (ERM 2014), and 2018 RAP Addendum (CH2M 2018a), which included ISCO treatment using permanganate at multiple areas, operation of the North and South Treatment Systems, and MNA:

- **ISCO Treatment:** Numerous rounds of ISCO injections using permanganate were performed by ERM at multiple areas (onsite and offsite) between 2004 and 2012.
- **Operation of Onsite North Treatment System:** A recovery, treatment, and injection system was in operation from September 2003 to November 2016. The system included six extraction wells that captured water from the southern property boundary of the site on the north side of I-10. The water was pumped through two granular activated carbon (GAC) vessels for treatment and then reinjected into nine injection wells located along the former northern boundary of the site.
- **Operation of Offsite South Treatment System:** The system (comprised of five extraction wells) operated from 2009 to November 2016 to provide hydraulic control and treat (via GAC) the offsite leading-edge downgradient plume. The treated water was directly discharged to the sanitary sewer of the City of Houston Publicly Owned Treatment Works collection system under City of Houston Industrial Waste Permit Number 10799. The South Treatment System was decommissioned in 2021.

In 2021, the TCEQ commented that MNA alone would not meet RAOs, due to increasing concentration trends at selected locations and potential migration of the leading-edge downgradient plume. Therefore, a predesign investigation was performed in May and June 2022, to refine the site conceptual model and confirm plume extent.

The extent of the groundwater protective concentration level exceedance (PCLE) zone was refined, based on the most current 2021 annual groundwater sampling event data in combination with results from the predesign investigation conducted in May and June 2022. The predesign investigation was conducted by using direct-push technology (DPT) to collect discrete grab groundwater samples from 36 soil boring locations for analysis of site-specific volatile organic compounds (VOCs). Generally, up to three grab samples at different vertical intervals were collected from each boring. In some instances grab samples could not be collected from the target sampling intervals due to low recharge rates. The sampling methods and procedures used during the predesign investigation are detailed in Appendix 6. The 11 soil borings planned within the leading-edge downgradient plume were not advanced because the property owner has not responded to the several requests made for access over the last 10 months in 2021 and 2022, including emails on December 10, 2021, January 31, 2022, February 10, 2022, March 7, 2022, March 29, 2022, and April 7, 2022, and formal letters on May 26, 2022, and September 28, 2022.

The 2021 groundwater VOC concentration data, field parameters, and groundwater elevation data are included in Appendixes 2-1, 2-2, and 2-3, respectively. Surface water samples collected in 2021 and 2022 are included in Appendix 2-4. Grab groundwater sample data collected during the 2022 predesign investigation are included in Appendix 2-5. Appendix 2-6 includes the data usability summary and laboratory reports for the 2022 predesign investigation data. The boring logs and well diagrams of available existing monitor wells and borings advanced in 2022 are included in Appendixes 2-7 and 2-8, respectively.

Maps and cross sections depicting the COC concentrations and PCLE zones are provided in Attachments 1A-1 through 1A-15. The COC concentrations versus time graph for the indicator COCs is provided in Attachment 1B.

Geology and Hydrogeology

The site geology consists of three strata:

- Stratum I consists of an asphalt, concrete, and fill layer underlain by clay. The Stratum I thickness varies between 10 and 25 feet.
- Stratum II is the uppermost water-bearing zone consisting of fine-grained sand with lenticular silty and clayey features and layers of consolidated sand. The top of the water-bearing zone is approximately 18 to 20 feet below ground surface (bgs) in the onsite and northern plume, and 22 to 30 feet bgs in the south and east plumes. Stratum II is approximately 15 to 35 feet thick, extending up to 50 feet bgs.
- Stratum III is beneath the water-bearing zone, consisting of more than 50 feet of clay.

The depth to groundwater varies between 18 and 30 feet bgs from the northern portion to the southern portion of the plumes. Groundwater flows generally toward the south.

Updated Groundwater PCLE Zone

The major findings of the 2022 predesign investigation include the following:

- Site groundwater has been affected by chlorinated volatile organic compounds (CVOCs). The CVOC-affected groundwater extends southward approximately 5,300 feet from the site boundary.
- The total groundwater PCLE zone includes an area of approximately 170 acres, including approximately 16 acres (onsite) and 154 acres (offsite). The offsite PCLE zones consist of primarily three large and disconnected PCLE zones, the north plume to the south of I-10 (19 acres), which is connected to and immediately downgradient of the onsite plume, the south plume to the west of the Harris County Flood Control Ditch (HCFCD) (21 acres), and the east plume to the east of the HCFCD (111 acres).
- The groundwater plume is characterized as a large and dilute-concentration plume. Based on 2022 grab groundwater sampling, the highest concentrations of PCE (5.6 mg/L) and TCE (2.85 mg/L) were measured at the former burn pit area onsite (north of I-10).

RAP Executive Summary	ID No.: VCP No. 221
	Report Date: September 2022

Groundwater Response Action Objectives

The groundwater RAOs are to achieve Remedy Standard B for the onsite groundwater PCLE zone, and to achieve Remedy Standard A for the offsite groundwater PCLE zones:

- Prevent human exposure of affected groundwater within the PMZ.
- Reduce the COC concentrations at TTZs with concentrations of PCE, TCE, 1,1-DCE, or VC greater than 0.05 mg/L, and/or selected well locations to less than the groundwater cPCLs within a reasonable time frame using combined ISCO treatment and MNA.
- Prevent offsite migration of groundwater containing COC concentrations exceeding cPCLs.
- Prevent further migration of COCs at concentrations exceeding the cPCLs at the leading-edge downgradient plume.
- Prevent the groundwater PCLE zone from migrating to adjacent surface water at concentrations exceeding the cPCLs for surface water protection.

The North Treatment System has achieved significant mass reduction, as evidenced by stable and declining trends within the onsite groundwater PCLE zone (Attachment 1B). The findings of the groundwater fate and transport modeling (Appendix 3) indicate that the groundwater PCLE zones will naturally attenuate to concentrations less than the cPCLs within a similar time period regardless of continued operation of the North Treatment System. In addition, the proposed ISCO treatment will replace the North Treatment System to reduce COC concentrations at the TTZs. Therefore, continued operation of the North Treatment System is not necessary.

Phased Conditional Certificates of Completion (CCOCs) are included in the real property records as institutional controls (ICs) to meet Remedy Standard B closure. These include Tier 1 residential use standards for soil and a PMZ for groundwater under the Texas Risk Reduction Program (TRRP) for three tracts of land:

- One 38.3-acre tract of land in 2003 under Voluntary Cleanup Program (VCP) No. 221
- One 5.96-acre tract of land in 2006 under VCP No. 1408
- One 7.37-acre tract of land in 2007 under VCP No. 1870

The fourth 35.7-acre tract of land consisting of three parcels owned by the same owner within the southern portion of the PMZ was historically closed under Risk Reduction Rules (predecessor to TRRP) for soil and groundwater between 1998 and 2000. A CCOC will be filed for this tract of land instead of filing CCOCs for each individual parcel, pending TCEQ review and approval of the draft CCOC included in Appendix 4 and the owner's consensus.

Proposed Response Actions

Cameron will close the groundwater PCLE zones under Remedy Standard B (onsite plume) and Remedy Standard A (offsite plume), using a combination of ISCO and MNA. The proposed response actions include the following:

- Install ISCO injection wells and new performance monitor wells, and perform ISCO injections using potassium or sodium permanganate.
- Use ISCO technology to reduce COC concentrations within selected TTZs with PCE, TCE, 1,1-DCE, or VC concentration greater than 0.05 mg/L, and/or at the selected monitor well locations described in the TCEQ comment letter dated June 7, 2022 (TCEQ 2022a). Treatment will commence in a phased approach, Attachment 2A-1 shows the Phase 1 and Phase 2 ISCO injection well locations.
- Conduct the Phase 1 ISCO injections as a pilot study that focuses on the former burn pit area and MW-113 area, shown in Attachment 2A-2, to reduce individual COC concentrations to less than 0.05 mg/L. The Phase 1 ISCO injections will serve as a pilot study to determine achievable injection flow rates, pressures, and logistics for oxidant delivery and mixing for implementation of Phase 2 injections where there is limited space available/less flexibility for adaptive management of injections in the streets or driveways.

- Conduct ISCO performance monitoring semiannually for the initial 5 years after ISCO injections, and then transition to annual MNA monitoring. Future ISCO injection events will be based on the results of the performance monitoring after the initial round of injections at each location.
- Conduct annual MNA monitoring for the groundwater PCLE zones until cPCLs are met within a reasonable time frame.
- The VCP CCOCs currently in place as ICs for the onsite plume will continue to restrict groundwater use within the PMZ. Coordinate with the owner of the 35.7-acre parcel to obtain a VCP CCOC as an IC to restrict groundwater and formally incorporate the property into the existing PMZ.
- Continue to attempt to gain access to complete the predesign investigation at the leading-edge downgradient plume and potentially implement additional ISCO injection.
- Perform surface water sampling (annually) at the HCFCD to confirm no exceedances of surface water cPCLs.
- Provide affected property owners or landowner associations with groundwater monitoring results for the wells sampled on their properties.

ISCO treatment will replace the North Treatment System as the selected response action. The inactive North Treatment System, including associated extraction wells, piezometers, injection wells, and treatment vessels, will be decommissioned and permanently removed from the site after TCEQ approval is received. Cameron will submit semiannual Class V Aquifer Remediation Injection Well Reports, to document ISCO injection activities and to comply with the requirements in the Amendment and Registration of Class V Aquifer Remediation Injection Wells letter from the TCEQ Underground Injection Control (UIC) and Remediation Division, dated April 11, 2011, and subsequent amendments, including for the proposed Phase 1 and Phase 2 ISCO injections described in Worksheet 2.0. Once ISCO injection is initiated, the UIC reports will be submitted to document ISCO injection status. Response Action Effectiveness Report (RAERs) will continue to be submitted on an annual basis. A Response Action Completion Report (RACR) will be submitted once groundwater concentrations have reached levels less than the cPCLs.

Future Modifications of Response Actions and Monitoring Network

The following updates to the schedule are proposed by Cameron:

- Recommendations and optimization of ISCO treatment and performance monitoring will be communicated to TCEQ, and the results and modifications included in future RAERs, without the need to revise the 2022 RAP Addendum unless otherwise requested by TCEQ.
- The predesign investigation will be completed at the leading edge of the plume following the property owner's approval to access the property. It is assumed that an additional ISCO treatment zone will be implemented to address further migration at the leading edge of the plume, upon approval to access the property and following the completion of the predesign investigation in this area. The layout and performance monitoring of the leading-edge downgradient plume ISCO treatment zone will be provided to the VCP program of TCEQ in a concise letter report for TCEQ approval in lieu of submittal of another RAP addendum.
- Upon TCEQ approval of the letter report, a UIC amendment will be submitted to the TCEQ UIC Division for review and approval of the injection plan (including injectate quantity and well construction diagrams).
- For future injection events, the injection dosage, injectate concentration, number of injection wells, and/or reinjection frequency will be evaluated based on previous performance monitoring results. The injection summary will be presented in Semiannual UIC Status Reports submitted to the TCEQ UIC Division.

The progress of groundwater response actions and monitoring will be provided annually in the RAER, which will be submitted by March 31 each year.

What is the selected remedy standard for this affected property? ___ A **X** B [1]

[1] Cameron will close the groundwater PCLE zone under Remedy Standard B (onsite plume) and Remedy Standard A (offsite plume).

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List all media that contains a PCLE zone and specify the proposed response action for each media. Indicate the type of removal, decontamination, physical control and/or institutional control action that is proposed.

Media	COCs[1]	Removal	Decontamination	Control			
				Physical/ Institutional Control	Modified Groundwater Response Objective[2]		
					PMZ	WCU	TI
Groundwater	VOCs		X		X		

Is there a media that contains a PCLE zone that is not addressed in this RAP? yes **X** no

If yes, provide justification for not addressing the PCLE zone in this RAP.

Not applicable

On-site land use: [ ] Residential [X] Commercial/Industrial
Off-site land use: [X] Residential [X] Commercial/Industrial (check all that apply)

Is this a re-submittal or revision of a previous RAP? **X** Yes ___ No

If yes, explain why the RAP is being revised or resubmitted.

This 2022 RAP Addendum is revised to include ISCO injection as a supplemental response action of a PMZ and MNA, to expedite COC concentration decline and mass reduction, and to prevent further migration at the leading-edge plume.

Were all the appropriate notifications made in accordance with §350.55? **X** Yes ___ No

If no, explain why notifications were not made:

In accordance with §350.55, notifications have been made to the affected property owners. On August 22, 2022, Cameron provided a letter report responding to TCEQ comments that included a notarized affidavit and documentation of recent and prior notifications.

[1] Specify either a specific COC or, if the response action is the same for all COCs in one type, specify the type of COC (for example, VOCs, SVOCs, metals).
[2] If a modified groundwater response objective is proposed, check the type(s) of proposed modifications.

Chronology

Event	Date of Actions	Description of all release abatement activities, assessment activities, and response actions conducted
Response to Comments No. 2, 3, 8, and 9 (CH2M 2022a)	August 22, 2022	Cameron provided written responses to comments No. 2, 3, 8, and 9 (TCEQ 2022a), and included a summary of residential affected property notifications.
TCEQ Approval of 2022 RAP Addendum Extension (TCEQ 2022b)	July 5, 2022	TCEQ approved the 2022 RAP Addendum submittal extension to September 30, 2022, with additional comments to be considered in the 2022 RAP Addendum.
2022 RAP Addendum Extension Request and Predesign Investigation Results (CH2M 2022b)	June 17, 2022	Cameron requested a 2022 RAP Addendum submittal deadline extension from June 30, 2022, to September 30, 2022. The letter also included a summary of results from the predesign investigation completed in May 2022 and path forward for an additional predesign investigation to fill data gaps at the former burn pit area.
TCEQ Comments on 2021 RAER (TCEQ 2022a)	June 7, 2022	TCEQ provided nine comments on the 2021 RAER, and requested written responses to comments No. 2, 3, 8, and 9 within 90 days. TCEQ requested incorporation of responses to remaining comments into the 2022 RAP Addendum.
2021 RAER (CH2M 2022c)	March 30, 2022	Cameron submitted the 2021 RAER.
South Treatment System Decommissioning	November 2021	Decommissioning of the South Treatment System and abandonment of associated extraction wells and piezometers were completed.
Response to TCEQ Comments on 2020 RAER (CH2M 2021a)	October 29, 2021	Cameron provided response to comment on the 2020 RAER.
TCEQ Comments on 2020 RAER (TCEQ 2021)	August 31, 2021	TCEQ provided 13 comments on 2020 RAER. As noted, TCEQ requested submittal of an amended RAP using TCEQ-10326/RAP, to depict the PMZ boundary and network wells, to evaluate MNA effectiveness, to propose additional response actions to supplement MNA to meet RAOs within 15 years, and to update the groundwater modeling.
2020 RAER (CH2M 2021b)	March 30, 2021	Cameron submitted the RAER based on the updated PMZ network in the conditionally accepted 2018 RAP Addendum.
Revised 2018 RAP Addendum (CH2M 2020a)	April 28, 2020	Cameron submitted the Revised 2018 RAP Addendum in response to TCEQ comments dated February 7, 2019.
TCEQ Approval of 2019 RAER (TCEQ 2020)	April 20, 2020	TCEQ approved the 2019 RAER.
2019 RAER (CH2M 2020b)	March 30, 2020	Cameron submitted the RAER based on the updated PMZ network in the conditionally accepted 2018 RAP Addendum.
2019 Semiannual Monitoring Data Submittal (CH2M 2019a)	September 6, 2019	Cameron submitted the 2019 semiannual monitoring event results. TCEQ approved and indicated that no new notifications to property owners were warranted at this time (TCEQ 2019a).
Site Status Update Meeting	June 11, 2019	Cameron met with TCEQ on June 11, 2019, to provide a site status update. The meeting summary and presentation slides were provided to TCEQ on June 24, 2019.
TCEQ Approval of 2019 Semiannual Monitoring Data Transmittal (TCEQ 2019a)	September 24, 2019	TCEQ approved the 2019 Semiannual Monitoring Data Transmittal.

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Event	Date of Actions	Description of all release abatement activities, assessment activities, and response actions conducted
2019 Semiannual Monitoring Data Submittal (CH2M 2019a)	September 6, 2019	Cameron submitted the 2019 semiannual monitoring event results.
TCEQ Approval of 2018 Annual Progress Report (TCEQ 2019b)	June 4, 2019	TCEQ approved the 2018 annual report.
2018 Annual Progress Report (CH2M 2019b)	March 27, 2019	Cameron submitted the 2018 annual report.
TCEQ Comments on 2018 RAP Addendum (TCEQ 2019c)	February 7, 2019	TCEQ conditionally accepted the 2018 RAP Addendum and provided additional comments.
2018 Semiannual Monitoring Data Submittal (CH2M 2018b)	August 28, 2018	Cameron submitted the 2018 semiannual monitoring event results.
2017 Annual Progress Report (CH2M 2018c)	April 12, 2018	Cameron submitted the 2017 annual report.
2018 RAP Addendum (CH2M 2018a)	February 15, 2018	The 2018 RAP Addendum was submitted to TCEQ.
2017 Semiannual Monitoring Data Submittal (CH2M 2017a)	September 8, 2017	Cameron submitted the 2017 semiannual monitoring event results.
Installation of Additional Delineation Wells and Replacement Wells	April 11, 2017, and November 27, 2017	MW-178 was installed south of the intersection of I-10 and east of the church near North Post Oak Road, and reinstallation was completed for two new replacement wells for MW-164 and MW-165.
TCEQ Approval of 2016 Annual Progress Report	June 1, 2017	Following review of 2016 Annual Progress Report (CH2M 2017b), TCEQ approved the request for well plugging and abandonment, the sampling method of HydraSleeve, and installation of two new wells near North Post Oak Road.
Plugging and Abandonment of 128 Wells	January–June 2017	A total of 55 ISCO injection wells and 73 monitor wells were plugged and abandoned.
Well Optimization Strategy Letter (CH2M 2017c)	March 2, 2017	Changes to the site groundwater sampling program were submitted to TCEQ, including the proposed plugging and abandonment of injection and monitor wells, changing of leading-edge plume well sampling frequency from quarterly to semiannually, and changing the groundwater sampling method from low flow to HydraSleeve method.
Status Meeting among TCEQ, Cameron, and CH2M	February 2017	CH2M presented modeling results and preliminary well network optimization recommendations.
TCEQ Approval of Rebound Study	December 15, 2016	TCEQ acknowledged the ongoing rebound test, approved abandonment of 24 wells and requested submittal of results of aquifer responses in a Revised RAP Addendum.
Rebound Study	November 15, 2016	The North and South Treatment Systems located onsite and offsite, respectively, were shut off to begin the rebound study.
Request for Rebound Study and Abandonment of Wells in the City of Houston Right-of-Way	November 2, 2016	A request was submitted to TCEQ, seeking approval of the shutdown of two pump-and-treat systems for a rebound study, and abandonment of 24 wells along City of Houston right-of-way regarding a sewerline capital improvement project along Memorial Drive.

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Event	Date of Actions	Description of all release abatement activities, assessment activities, and response actions conducted
Second Addendum to RAP (ERM 2014)	March 2014	The second Addendum to Groundwater RAP (2014 RAP Addendum) was submitted to TCEQ on March 12, 2014, to control plume expansion of onsite and offsite groundwater as requested in the TCEQ letter dated June 25, 2013. This addendum evaluated the effect of the Silber Tunnel dewatering system operated by TxDOT since 2007 on potential plume migration, with proposed response actions, including (1) maintaining the onsite PMZ, (2) continued groundwater monitoring of offsite PCLE zones, and (3) notification of affected property owners. The second pump-and-treat system for leading-edge downgradient plume hydraulic control was proposed for shutdown. The 2014 RAP Addendum was not approved by TCEQ as stated in a letter dated July 22, 2014.
Submittal of TxDOT Dewatering System Evaluation and Response Report	April 2013	This report summarized construction of the TxDOT Silber Tunnel dewatering system, evaluated the observed changes in groundwater elevations and flow direction, and included a summary of potential response actions evaluated.
ISCO Treatment	July 2011 March 2012	45,000 gallons of oxidant solution (over 6.5 tons of permanganate total weight) was injected at over 60 offsite injection wells (ERM 2014). 15,000 gallons of oxidant solution (over 2 tons of permanganate total weight) was injected at 16 injection wells in Pinewood Estates to control plume migration (ERM 2014).
Identification of Silber Tunnel Dewatering System	May 2011	Information from a TxDOT Open Records Request identified the Silber Tunnel dewatering system, which started operation in early 2007 (ERM 2014).
Semiannual Pump-and-Treat System Discharge Report	2009–2017	Semiannual System Discharge Reports were submitted to the City of Houston as required by Industrial Waste Permit No. 10799.
First Addendum to RAP (ERM 2009)	July 2009	The first addendum to the groundwater RAP (2009 RAP Addendum) was submitted to TCEQ on July 30, 2009, to address comments of TCEQ's June 19, 2009, letter. This addendum proposed an additional response action to address the PCLE zone at the Stablewood subdivision, via installation of the second pump-and-treat system (five extraction wells) for hydraulic control, with treated water discharged to the sanitary sewer, to meet cPCLs within an anticipated time frame of 3 to 5 years.
Installation of ISCO Injection Wells	May 2004	21 ISCO injection wells were installed along Carnarvon Drive, north of Stablewood, for ISCO treatment of the southern portion of the Sandringham Drive plume.
Quarterly Plume Perimeter and Plume Leading Edge Groundwater Monitoring and Reporting	2003 to 2016	Plume perimeter and plume leading edge monitoring wells have been sampled quarterly with quarterly reporting (ERM 2009, 2014).
Semiannual Groundwater Monitoring and Reporting	2003 to 2016	Sitewide monitor wells were sampled semiannually with semiannual reporting, including notification of affected property owners (ERM 2009, 2014).
Operation of North Treatment System	September 2003–November 2016	The north groundwater pump-and-treat system started operation on September 16, 2003. The operation ceased on November 15, 2016, for a rebound study.

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Event	Date of Actions	Description of all release abatement activities, assessment activities, and response actions conducted
2003 RAP	August 2003	The RAP was submitted to TCEQ on August 28, 2003 (ERM 2003a). The 2003 RAP proposed a combination of groundwater recovery and reinjection, permanganate injection, and a PMZ for the onsite PCLE zone to meet Remedy Standard B, and natural attenuation and ISCO injection (as necessary) to meet Remedy Standard A for offsite PCLE zone within a reasonable time frame. The RAP was approved by TCEQ on May 14, 2004.
Indoor Air, Soil, and Groundwater Assessment	2002–2003	Air, soil, and groundwater samples were collected from 10 residences to address a TCEQ request to evaluate the indoor air pathway in November 2002 (ERM 2003b).
Offsite Plume Delineation	2000–2003	An offsite groundwater assessment was performed.
ISCO Pilot Test Injection	March–July 2002	A pilot-scale permanganate injection at MW-49 was performed (ERM 2003a).
Installation of an LNAPL Recovery System	2001	The system was installed for the former UST area as approved by TCEQ (ERM 2003a).
Groundwater APAR Submittal	October 3, 2001	The groundwater APAR for the 39-acre northern portion of the site was submitted to TNRCC (ERM 2001).
Soil Closure Approval	January 2003	TNRCC issued a letter of assurance to approve the completion of soil remediation meeting residential PCLs at the site (ERM 2003).
Soil Excavation	1993–1994 and 1997–1999 1999–2000 June 2, 2000	Soil was excavated in the southern portion of the site to meet Risk Reduction Rule Standard 2. Soil was excavated in the northern portion of the site to meet residential cleanup levels (ERM 2001). A RACR for soil was submitted.
Operation of Nine-well Groundwater Recovery System	1995–1997	The nine-well recovery system was installed and operated at the southern portion of the site for 2 years and then approved for shutdown by TNRCC in 1997 (ERM 2003a).
Initial Onsite Soil and Groundwater Assessment	1989–1991	A soil boring investigation and groundwater assessment were performed at the onsite facility.

Notes:
APAR = affected property assessment report
LNAPL = light nonaqueous phase liquid
TCEQ = Texas Commission on Environmental Quality
TNRCC = Texas Natural Resource Conservation Commission
TxDOT = Texas Department of Transportation
UST = underground storage tank

Checklist for Report Completeness	ID No.: VCP No. 221
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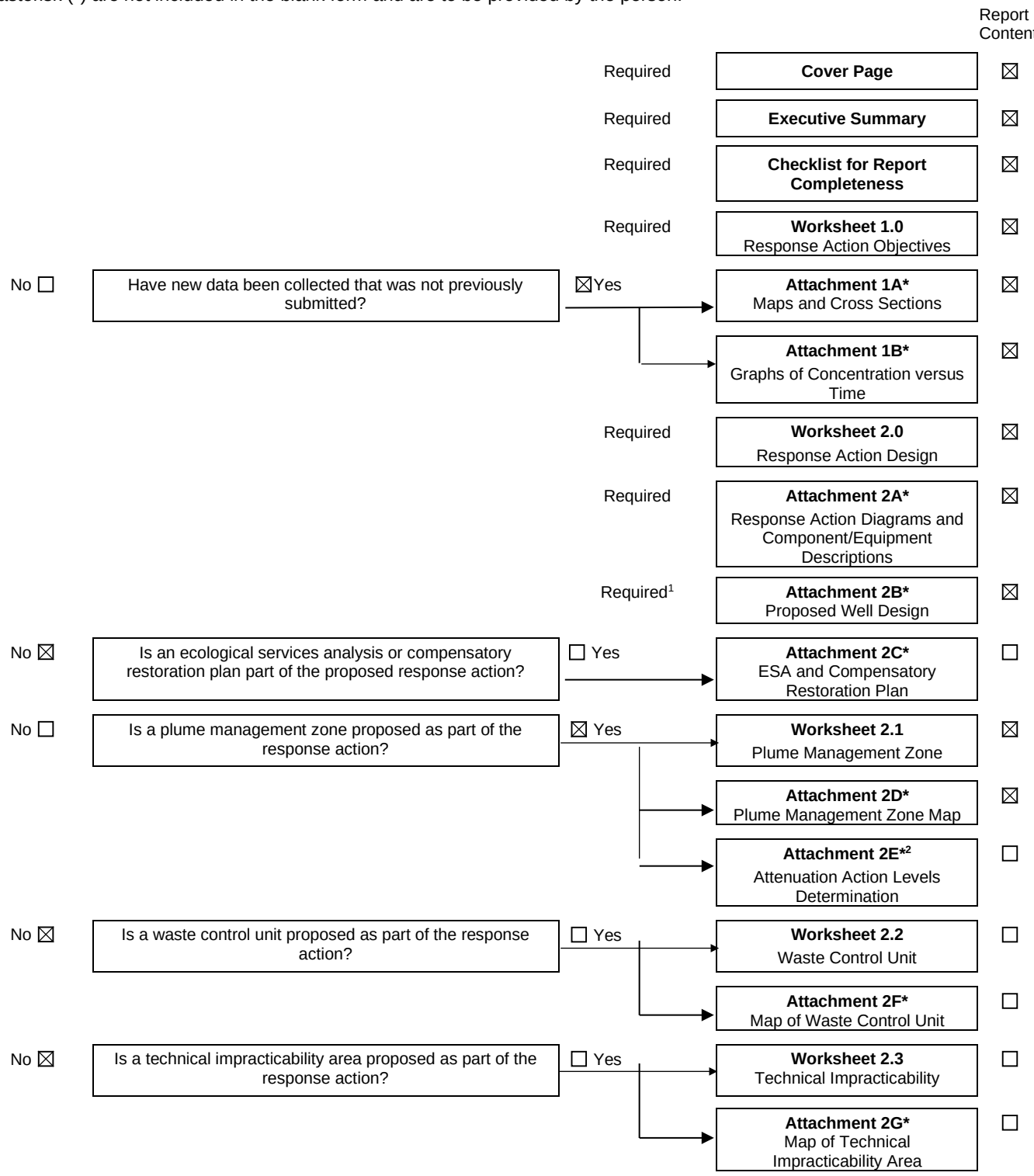
Use this checklist to determine the portions of the form that must be submitted for this report. Answer all questions by checking Yes or No. If the answer is Yes include that portion of the report. If the answer is No, do not complete or submit that portion of the report. All form contents that are marked "Required" must be submitted. Form contents marked with an asterisk (*) are not included in the blank form and are to be provided by the person.



[1] Proposed well design will be included in the UIC Permit Submittal.
[2] Attachment 2E is not included, because the AAL is based on the cPCL for 1,1-DCA or 10 times the cPCLs for other COCs.

Checklist for Report Completeness

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				Report Contents
No ☐	Is the response action a remedy standard B?	☒ Yes	**Worksheet 2.4** Institutional Controls	☒
		Required	**Worksheet 3.0** Performance Measures and Potential Problems	☒
		Required	**Worksheet 3.1** Monitoring and Sampling	☒
		Required[1]	**Attachment 3A*** Map of Monitoring and Sampling Points	☐
		Required	**Worksheet 3.2** Operation and Maintenance	☒
		Required	**Worksheet 4.0** Confirmation Sampling Plan	☒
		Required[2]	**Attachment 4A*** Map of Confirmation Sampling Points	☐
No ☐	Is the response action a Remedy Standard B?	☒ Yes	**Worksheet 5.0** Post Response Action Care	☒
			Attachment 5A* Map of PRAC Monitoring and Sampling Points	☐
			Attachment 5B* PRAC Costs	☐
No ☒	Does the person, who is a small business, desire to modify the financial assurance requirement?	☐ Yes	**Attachment 5C*** Small Business Affidavit	☐
		Required	**Worksheet 6.0** Implementation Schedule	☒
		Required	**Appendix 1*** References	☒
No ☐	Was any data collected that was not previously reported?	☒Yes	**Appendix 2*** Data Tables and Boring Logs	☒
No ☐	Were any studies or tests conducted?	☒ Yes	**Appendix 3*** Studies and Tests Documentation	☒
No ☐	Is the response action a Remedy Standard B?	☒ Yes	**Appendix 4*** Proposed Institutional Controls	☒
No ☐	Are any institutional controls proposed/required on property not owned by the person?	☒ Yes[3]	**Appendix 5*** Landowner Concurrence	☐
No ☐	Are any of the sample collection or handling procedures different from those reporting in the APAR or other previously submitted report?	☒ Yes	**Appendix 6*** Sampling Procedures	☒
No ☒	Are statistics or geostatistics proposed to be used as part of the response action?	☐ Yes	**Appendix 7*** Statistical Methodology	☐
No ☒	Was approval received from the TCEQ regarding the use of different rules to address a media?	☐ Yes	**Appendix 8*** Split Media Approval	☐

Form contents marked with an asterisk (*) are not included in the blank form.

[1] Refer to Worksheet 3.1 and Attachment 2D (confirmation sampling has been covered by ISCO performance and MNA sampling).
[2] Refer to Worksheet 3.1 and Attachment 2D (confirmation sampling has been covered by ISCO performance and MNA sampling).
[3] Landowner concurrence will be obtained after TCEQ review and approval of proposed CCOC language.

Use this worksheet to describe the objectives for the response action in each media.

Response Action Objectives

List the environmental media to which this applies: Groundwater

Repeat this section for each medium that has a different response action objective.

State the property-specific response objectives for the PCLE zone in each media in the context of the response objectives set forth in §350.32 or §350.33 as applicable. Explain how the response action is appropriate based on the hydrogeologic characteristics, COC characteristics, and potential unprotective conditions that could continue or result during the remedial period.

The groundwater RAOs are to achieve Remedy Standard B for the onsite groundwater PCLE zone, and to achieve Remedy Standard A for the offsite groundwater PCLE zones:

- Prevent human exposure of affected groundwater within the PMZ.
- Reduce the COC concentrations at TTZs with PCE, TCE, 1,1-DCE, or VC concentration greater than 0.05 mg/L, and/or selected well locations to less than the groundwater cPCLs within a reasonable time frame using a combined ISCO treatment and MNA.
- Prevent offsite migration of groundwater containing COC concentrations exceeding cPCLs.
- Prevent further migration of COCs at concentrations exceeding the cPCLs at the leading-edge downgradient plume.
- Prevent the groundwater PCLE zone from migrating to adjacent surface water at concentrations exceeding the cPCLs for surface water protection.

A predesign investigation was conducted at the site between May and June 2022 to delineate the horizontal and vertical extent of the groundwater PCLE zone. The predesign investigation was conducted by using DPT to collect discrete grab groundwater samples from 36 soil boring locations for analysis of site-specific VOCs. Generally, up to three grab samples at different vertical intervals were collected from each boring unless grab samples could not be collected from the target sampling intervals due to low recharge rates. The sampling methods and procedures used during the predesign investigation are detailed in Appendix 6. The 11 soil borings planned within the leading-edge downgradient plume were not advanced, because the property owner has not responded to the several requests made for access over the last 10 months in 2021 and 2022, including emails on December 10, 2021, January 31, 2022, February 10, 2022, March 7, 2022, March 29, 2022, and April 7, 2022, and formal letters on May 26, 2022 and September 28, 2022.

The groundwater data collected during the 2022 predesign investigation and the most recent 2021 annual groundwater monitoring data collected in December 2021 were evaluated to refine the groundwater PCLE zone. The 2021 groundwater VOC concentration data, field parameters, and groundwater elevation data are included in Appendix 2-1, 2-2, and 2-3, respectively. Surface water samples collected in 2021 and 2022 are included in Appendix 2-4. 2022 predesign investigation grab groundwater sample data are included in Appendix 2-5. Appendix 2-6 includes the data usability summary and laboratory reports for 2022 predesign investigation data. The boring logs and well diagrams of available existing monitor wells and 2022 borings are included in Appendixes 2-7 and 2-8, respectively.

The site-specific COCs consist of PCE, TCE, 1,1-DCE, cis 1,2-DCE, 1,1-DCA, 1,2-DCA, and VC. Concentrations of COCs, except 1,1-DCA, were greater than the respective cPCL during the most recent December 2021 annual groundwater sampling and May-June 2022 predesign grab groundwater sampling. The TTZ is defined as the groundwater plume area corresponding to 10 times the cPCLs for PCE and TCE, that is, 0.05 mg/L. Groundwater PCLE zones with 1,1-DCE or VC greater than 0.05 mg/L are also included in the TTZ. Maps and cross sections depicting the COC concentrations and PCLE zones are provided in Attachments 1A-1 through 1A-15. The COC concentration versus time graphs for the COCs are provided in Attachment 1B.

The affected groundwater-bearing unit (GWBU) is classified as a Class 2 GWBU. As shown in Attachment 1A-9, the PCLE zone encompasses an area of approximately 170 acres, including

approximately 16 acres (onsite) and 154 acres (offsite). The plume is migrating in a southerly direction toward the southern gaining stream of the HCFCD and Buffalo Bayou. Currently, surface water in the downgradient southern gaining stream of the HCFCD and Buffalo Bayou does not contain COCs at concentrations exceeding surface water cPCLs (Appendix 2-4). Exposure to site-related COCs in groundwater greater than cPCLs is unlikely, due to the availability of a public water supply to the affected offsite properties.

The response action under Remedy Standard B is appropriate, based on the following hydrogeologic characteristics, COC characteristics, and potential unprotective conditions that could continue or result during the remedial period:

- Based on the geologic cross sections, the uppermost GWBU is generally overlain by 10 to 25 feet of clay.
- ISCO injections will accelerate site remediation by focusing on TTZs where COC concentrations are greater than 0.05 mg/L and select locations noted by TCEQ in a letter dated June 7, 2022 (TCEQ 2022a).
- The groundwater PCLE zone contains COCs at concentrations less than the Tier 1 residential PCL for inhalation of volatile COCs from Class 1, 2, or 3 groundwater ($^{Air}Soil_{Inh\text{-}V}$) and less than the groundwater discharge to surface water (^{SW}GW) PCLs at the groundwater-to-surface-water interface. Residents south of I-10 obtain their water from a municipal supply, and previous vapor intrusion investigations and modeling results indicate that the indoor air exposure pathway is not a concern either onsite or offsite (ERM 2002a, 2002b). The only exposure pathway of concern is potential future use of groundwater within the PCLE zone as a source of drinking water. The proposed onsite and offsite response actions will reduce COC concentrations in the groundwater PCLE zone to less than cPCLs in a reasonable time frame and ultimately eliminate potential future exposure risk.
- Potential unprotective conditions are not anticipated during the remedial period because the proposed treatment technologies are well known and have been successfully implemented at this site and many other sites.
- The VCP CCOCs currently in place as ICs for the onsite plume will continue to restrict groundwater use within the PMZ. Cameron will coordinate with the owner of the 35.7-acre parcel to obtain a VCP CCOC as an IC to restrict groundwater and formally incorporate the property into the existing PMZ.
- Cameron is continuing attempts to gain access to complete a predesign investigation at the leading-edge downgradient plume and implement ISCO injection in this area.

Explain how the COCs will be handled, treated, disposed, or transferred to another media and document that the response action will not result in any additional potential exposure conditions due to response action activities.

The proposed response actions to reduce the COC concentrations in the groundwater PCLE zone consist of the following:

- Install ISCO injection wells, new performance monitor wells, and perform ISCO injections. Use ISCO technology to reduce COC concentrations within selected TTZs with PCE, TCE, 1,1-DCE, or VC concentrations greater than 0.05 mg/L, and/or at the monitor well locations per TCEQ comment letter dated June 7, 2022 (TCEQ 2022a). Attachment 2A-1 shows the Phase 1 and Phase 2 ISCO injection well locations.
- Conduct Phase 1 ISCO injection as a pilot study to focus on the former onsite burn pit area shown in Attachment 2A-2 to reduce COC concentrations to less than 0.05 mg/L. The Phase 1 ISCO injection pilot study will also reduce COC concentrations at MW-113 and stabilize the plume. The Phase 1 ISCO injection will serve as a pilot study to determine achievable injection flow rates, pressures, and logistics for oxidant delivery and mixing for implementation of Phase 2 injections where there is limited space available or less flexibility for adaptive management of injections in the streets or driveways.

- Conduct ISCO performance monitoring semiannually for 5 years after ISCO injections, and then transition to annual MNA monitoring. Future ISCO injection events will be based on the results of the performance monitoring after the initial round of injections at each location.
- Conduct annual MNA monitoring for the remaining groundwater PCLE zone until cPCLs are met within a reasonable time frame.

Bench-scale natural oxidant demand (NOD) testing was performed using persulfate and permanganate in 2022. The laboratory report is included in Appendix 2-6. Two soil samples from SB-07 (18 to 23 feet bgs) and SB-14 (30 to 35 feet bgs) and two grab groundwater samples from SB-07 and SB-14 were sent to Ursus Remediation Testing & Technologies, LLC for analysis of NOD for persulfate and permanganate. The measured persulfate NOD ranged from 0.6 to 1.7 grams persulfate per kilogram soil. The measured permanganate NOD ranged from 1.5 to 1.6 grams permanganate per kilogram soil. Due to the low to moderate NOD for both permanganate and persulfate at the site, but longer persistence and oxidation effectiveness for the site COCs of permanganate, permanganate is retained as the oxidant for the ISCO application at the site.

State the proposed "reasonable time frame" and provide the justification for that time frame in the context of any potential for unprotective exposures to exist or develop, COC characteristics, hydrogeologic and affected property characteristics. If the reasonable time frame is different for the different affected media or for particular tracts of land, be sure to discuss that. Provide how the proposed response action will meet the objectives in a reasonable time frame.

Overall concentrations within the PCLE zone beyond TTZs are low and generally decreasing over time. It is anticipated that ISCO injections will effectively reduce COC concentrations in TTZs in the upgradient portion of the site where COC concentrations are greater than 0.05 mg/L. This approach, in combination with isolated treatment in offsite areas (Phase 2), will collectively expedite COC mass reduction and subsequently promote further concentration reductions in downgradient areas over time. Collectively, these will achieve RAOs and facilitate meeting cPCLs in a reasonable time frame. Overall progress and potential modifications to the response action based on results from future performance monitoring will continue to be provided as a component of the annual RAERs submitted to TCEQ each year.

Soil Response Action Objectives

When using removal and/or decontamination with controls or controls only, demonstrate how that physical control or combination of measures will reliably contain COCs within and/or derived from the surface soil and subsurface soil PCLE zone materials over time.

Removal and/or decontamination of soils is not applicable because sitewide soils were closed to meet residential PCLs. This 2022 RAP Addendum addresses only the groundwater PCLE zone.

Explain how the removal or decontamination action will reduce the concentration of COCs to the critical surface soil and subsurface soil protective concentration level (PCL) throughout the soil PCLE zone and prevent COC concentrations above the critical soil PCLs from migrating beyond the existing boundary of the soil PCLE zone.

Removal and/or decontamination of soils is not applicable because this 2022 RAP Addendum addresses only the groundwater PCLE zone.

Groundwater Response Action Objectives

Name of groundwater-bearing unit to which this information applies: Uppermost Groundwater Bearing Unit

Repeat this section for each groundwater-bearing unit for which a different response action is proposed.

Groundwater classification ____ 1 **X** 2 ____ 3

Is a modified groundwater response action being proposed for any part of the groundwater PCLE zone (§350.33(f)(2), (3), or (4)) **X** Yes ____ No

If yes, does the affected property meet the qualifying criteria for a modified groundwater response action using a waste control unit, plume management zone, or technical impracticability? **X** Yes ___ No

If yes, complete the appropriate portions of this report.
If no to either question, complete the following:

Explain how the removal or decontamination action will reduce the concentration of COCs to the critical groundwater PCL throughout the groundwater PCLE zone and prevent COC concentrations above the critical groundwater PCL from migrating beyond the existing boundary of the groundwater PCLE zone.

ISCO injections will treat the portion of selected TTZs with PCE, TCE, 1,1-DCE, or VC concentration greater than 0.05 mg/L as well as selected well locations per TCEQ comment letter dated June 7, 2022 (TCEQ 2022a), including onsite locations (Former Burn Pit, MW-108, MW-111, and MW-113) and offsite locations (MW-15R and MW-16R, MW-89, MW-74, MW-187, MW-188, MW-161, and MW-93R), as shown in Attachments 2A-1 and 2A-2. The ISCO response action to prevent plume migration at the southern leading-edge plume, including MW-168 and MW-97, is pending access by the residential property owners for a predesign investigation. The remaining portion of the groundwater PCLE zone with concentrations slightly greater than cPCLs will be addressed by MNA.

With the implementation of ISCO and MNA combined, COC concentrations are expected to decrease to less than cPCLs within a reasonable time frame. Future ISCO injection events will be based on the results of the performance monitoring after the initial round of injections at each location.

Performance monitoring as described in Worksheet 3.0 will be conducted to evaluate the ISCO effectiveness and to determine whether additional response actions will be required to achieve the RAOs for the groundwater PCLE zone.

In addition, the current onsite PMZ groundwater monitoring program will verify that the onsite attenuation monitoring point (AMP) well will not exceed attenuation action levels (AALs) and that the onsite plume is stable or shrinking. COC concentrations will be monitored annually at the offsite plume until cPCLs are met at the point of exposure (POE) wells. The purpose of groundwater monitoring for the offsite plume is to verify declining COC concentrations as a result of ISCO and MNA. Performance monitoring, as described in Worksheet 3.0, will be conducted to evaluate the effectiveness of ISCO and MNA.

Explain how the response action will prevent COCs from migrating to air at concentrations above the PCLs for air if the groundwater-to-air PCLs ($^{Air}GW_{Inh\text{-}V}$) is exceeded.

Not applicable because the groundwater-to-air PCL ($^{Air}GW_{Inh\text{-}V}$) is not exceeded.

Explain how the response action will prevent COCs from migrating to surface water at concentrations above the PCLs for groundwater discharges to surface water if surface water is a factor.

The affected groundwater in the shallow GWBU flows in a southerly direction toward the HCFCD, before it enters Buffalo Bayou. Although the leading edge of the groundwater PCLE zone has not reached the downgradient HCFCD and Buffalo Bayou, surface water (^{SW}SW) PCLs for COCs were developed in the 2003 RAP by ERM (Appendix 2-4) to evaluate the potential impacts of the groundwater COCs on surface water quality. It is unlikely that potential discharge of affected groundwater from the PCLE zone to the downgradient southern gaining stream of the HCFCD will impact overall surface water quality. In addition, the proposed ISCO treatment for the onsite and offsite groundwater TTZs will further reduce the potential for COC migration from the groundwater PCLE zone to the downgradient surface water body.

Explain how the response action will prevent human and ecological receptor exposure to the groundwater PCLE zone.

The top of the groundwater PCLE zone is approximately 20 to 25 feet bgs, and the PCLE zone has not reached the downgradient surface water body. The pathway for exposure of ecological receptors to the underlying groundwater PCLE zone is not complete. Municipal water supply is available for the affected offsite properties, so there is no direct human exposure to the groundwater PCLE zone.

ISCO injection with follow-on MNA will further reduce the COC concentrations to less than the cPCLs within a reasonable time frame. New monitor wells will be installed crossgradient and downgradient of the ISCO TTZs and will be monitored to evaluate changes of COC concentrations over time. Given the distance of ISCO injection wells to the HCFCD, it is unlikely that injected oxidant would migrate into the HCFCD.

Attachment 1A
Maps and Cross Sections

Legend

- Former Facility Boundary
- Parcel

BASE MAP SOURCE:
Harris County Appraisal District, 2022.
ESRI World Imagery online mapping service.
ESRI World Street Map online mapping service.

N

0 500 1,000

Approximate scale in feet

Attachment 1A-1.
Site Location Map
2022 Response Action Plan Addendum
Former Cameron Iron Works Facility, Houston, TX

CH2M HILL Engineers, Inc.

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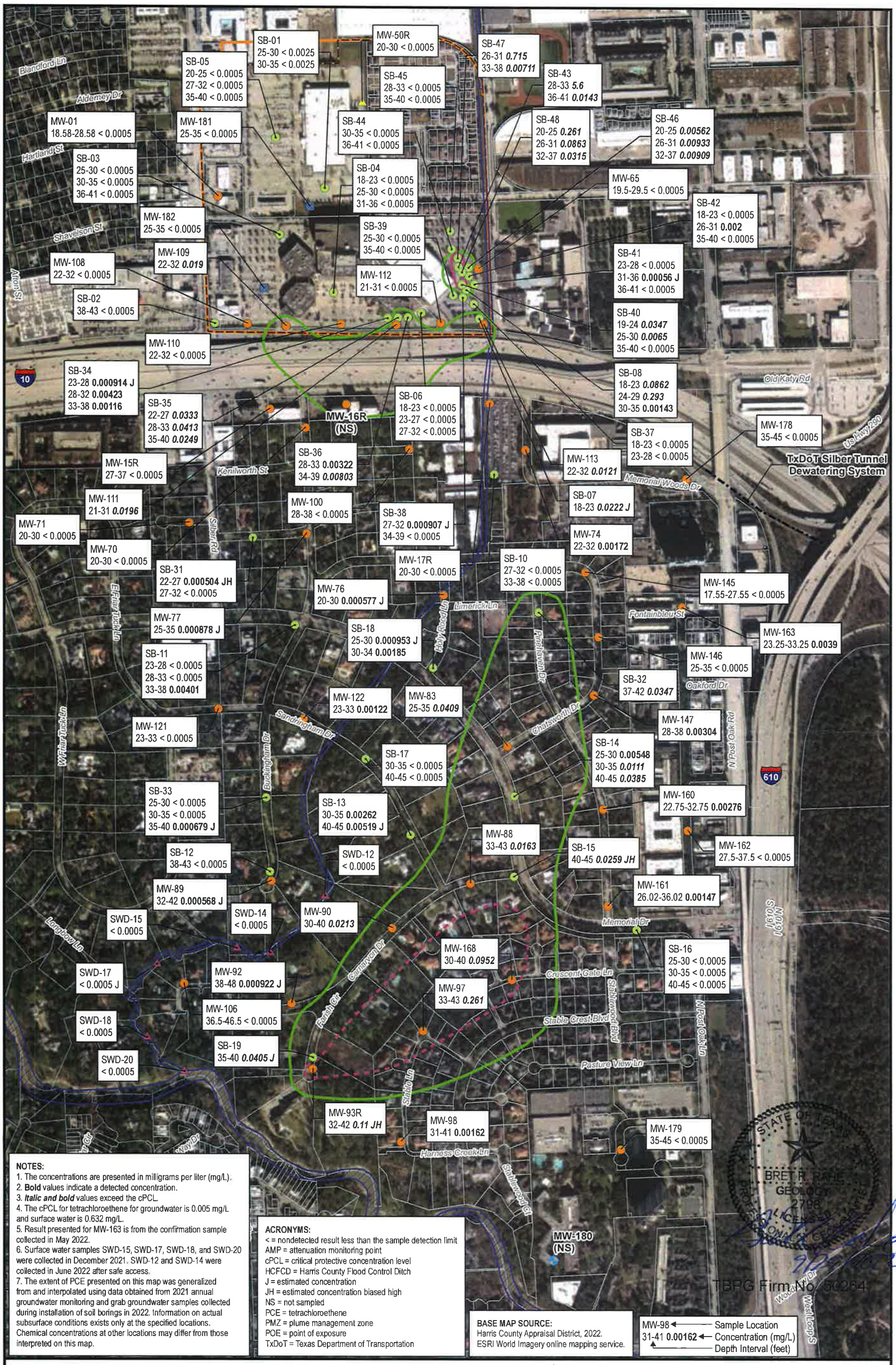

NOTES:
1. The concentrations are presented in milligrams per liter (mg/L).
2. **Bold** values indicate a detected concentration.
3. ***Italic and bold*** values exceed the cPCL.
4. The cPCL for tetrachloroethene for groundwater is 0.005 mg/L and surface water is 0.632 mg/L.
5. Result presented for MW-163 is from the confirmation sample collected in May 2022.
6. Surface water samples SWD-15, SWD-17, SWD-18, and SWD-20 were collected in December 2021. SWD-12 and SWD-14 were collected in June 2022 after safe access.
7. The extent of PCE presented on this map was generalized from and interpolated using data obtained from 2021 annual groundwater monitoring and grab groundwater samples collected during installation of soil borings in 2022. Information on actual subsurface conditions exists only at the specified locations. Chemical concentrations at other locations may differ from those interpreted on this map.

ACRONYMS:
< = nondetected result less than the sample detection limit
AMP = attenuation monitoring point
cPCL = critical protective concentration level
HCFCD = Harris County Flood Control Ditch
J = estimated concentration
JH = estimated concentration biased high
NS = not sampled
PCE = tetrachloroethene
PMZ = plume management zone
POE = point of exposure
TxDoT = Texas Department of Transportation

BASE MAP SOURCE:
Harris County Appraisal District, 2022.
ESRI World Imagery online mapping service.

MW-98 ← Sample Location
31-41 **0.00162** ← Concentration (mg/L)
Depth Interval (feet)

Legend

- AMP Well
- POE Well
- Monitor Well (2022)
- 2022 Soil Boring
- Surface Water Sample Locations
- Other Monitor Well
- Former Facility Boundary
- HCFCD
- Gaining Portion of Stream
- PMZ Boundary
- TxDoT Dewatering System
- PCE cPCL Exceedance Boundary
- PCE Isocontour Line (0.05 mg/L)
- Dashed Where Inferred
- Parcel

N

0 325 650

Approximate scale in feet

Attachment 1A-2.
Tetrachloroethene Concentration Map (2021 - 2022)
2022 Response Action Plan Addendum
Former Cameron Iron Works Facility, Houston, TX

CH2M HILL Engineers, Inc.

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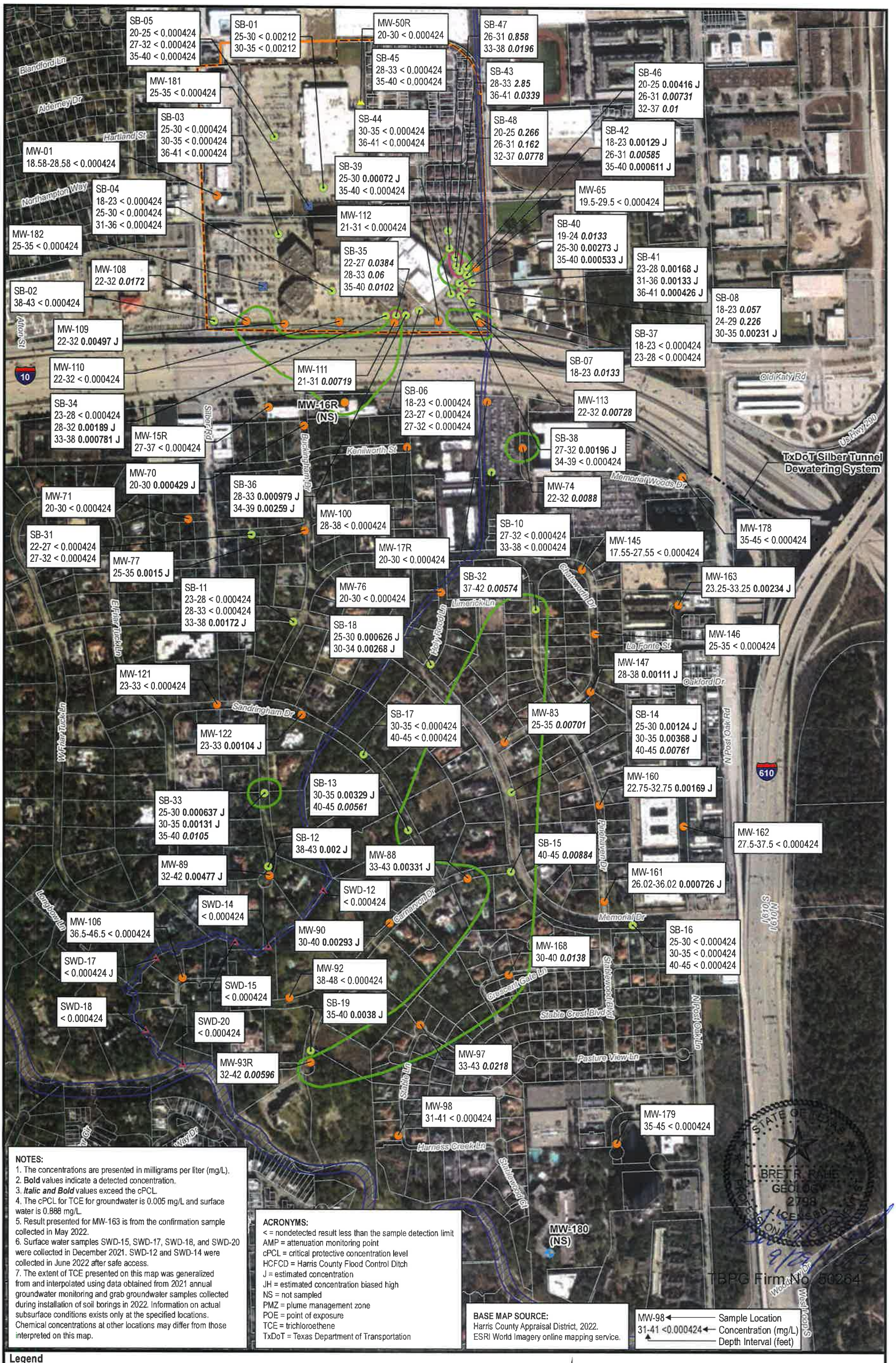

NOTES:
1. The concentrations are presented in milligrams per liter (mg/L).
2. **Bold** values indicate a detected concentration.
3. ***Italic and Bold*** values exceed the cPCL.
4. The cPCL for TCE for groundwater is 0.005 mg/L and surface water is 0.888 mg/L.
5. Result presented for MW-163 is from the confirmation sample collected in May 2022.
6. Surface water samples SWD-15, SWD-17, SWD-18, and SWD-20 were collected in December 2021. SWD-12 and SWD-14 were collected in June 2022 after safe access.
7. The extent of TCE presented on this map was generalized from and interpolated using data obtained from 2021 annual groundwater monitoring and grab groundwater samples collected during installation of soil borings in 2022. Information on actual subsurface conditions exists only at the specified locations. Chemical concentrations at other locations may differ from those interpreted on this map.

ACRONYMS:
< = nondetected result less than the sample detection limit
AMP = attenuation monitoring point
cPCL = critical protective concentration level
HCFCD = Harris County Flood Control Ditch
J = estimated concentration
JH = estimated concentration biased high
NS = not sampled
PMZ = plume management zone
POE = point of exposure
TCE = trichloroethene
TxDoT = Texas Department of Transportation

BASE MAP SOURCE:
Harris County Appraisal District, 2022.
ESRI World Imagery online mapping service.

MW-98 ← Sample Location
31-41 <0.000424 ← Concentration (mg/L)
Depth Interval (feet)

Legend

- AMP Well
- POE Well
- Monitor Well (2022)
- 2022 Soil Boring
- Surface Water Sample Locations
- Other Monitor Well
- Former Facility Boundary
- HCFCD
- Gaining Portion of Stream
- PMZ Boundary
- TxDoT Dewatering System
- TCE cPCL Exceedance Boundary
- Dashed Where Inferred
- TCE Isocontour Line (0.05 mg/L)
- Parcel

N

0 325 650

Approximate scale in feet

Attachment 1A-3.
Trichloroethene Concentration Map (2021 - 2022)
2022 Response Action Plan Addendum
Former Cameron Iron Works Facility, Houston, TX

CH2M HILL Engineers, Inc.

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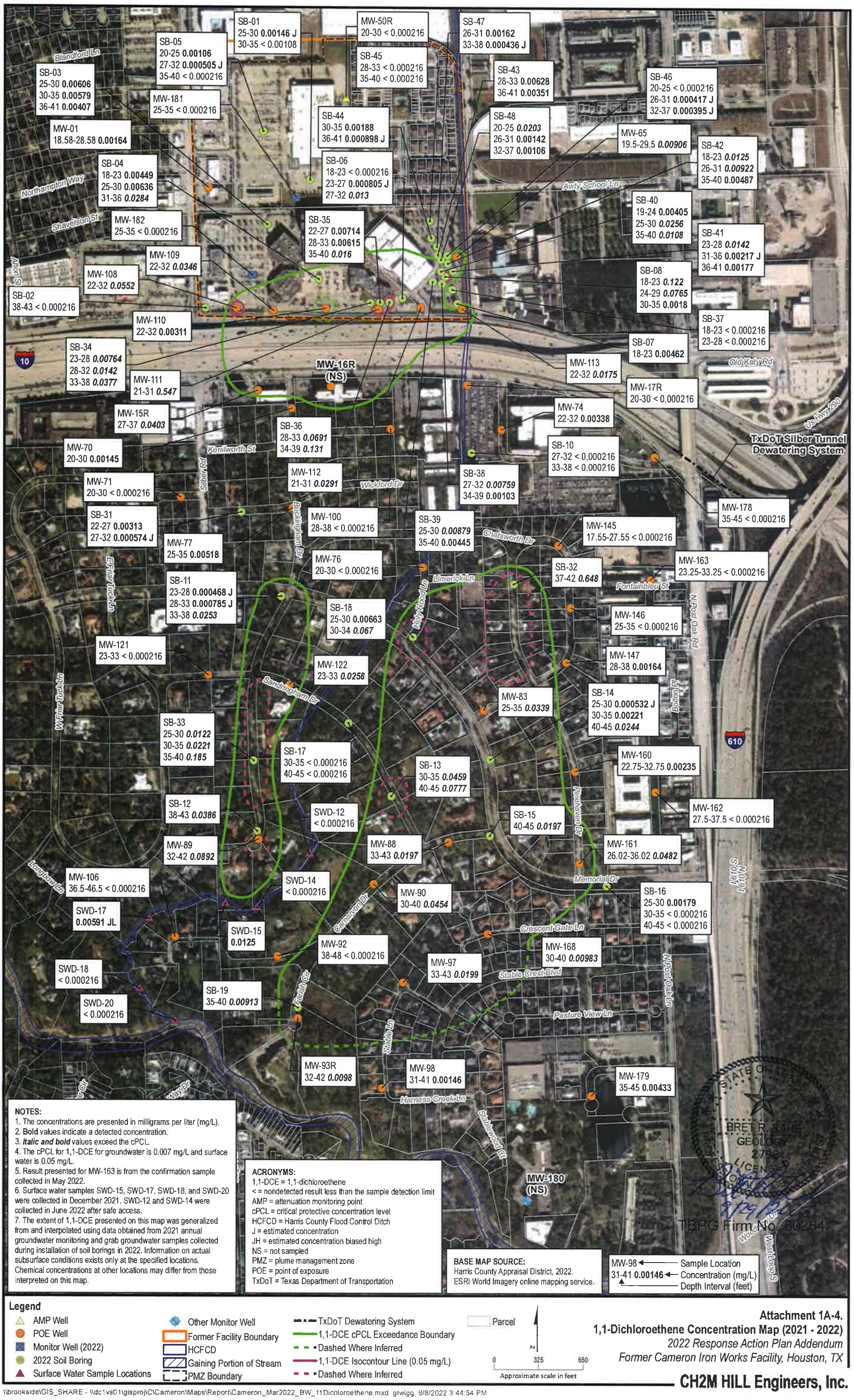

Attachment 1A-4.
1,1-Dichloroethene Concentration Map (2021 - 2022)
2022 Response Action Plan Addendum
Former Cameron Iron Works Facility, Houston, TX

CH2M HILL Engineers, Inc.

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SB-05
20-25 < 0.000174
27-32 < 0.000174
35-40 < 0.000174
SB-01
25-30 < 0.00087
30-35 < 0.00087
MW-50R
20-30 < 0.000174
SB-44
30-35 0.00333
36-41 0.0077
SB-45
28-33 < 0.000174
35-40 < 0.000174
SB-47
26-31 0.248
33-38 0.0121
MW-181
25-35 < 0.000174
SB-03
25-30 < 0.000174
30-35 < 0.000174
36-41 < 0.000174
SB-39
25-30 0.217
35-40 0.148
SB-43
28-33 1.2
36-41 0.0205
SB-46
20-25 0.000876 J
26-31 0.00126
32-37 0.00128
MW-01
18.58-28.58 < 0.000174
SB-48
20-25 0.272
26-31 0.0612
32-37 0.0365
MW-112
21-31 0.000379 J
MW-65
19.5-29.5 < 0.000174
SB-04
18-23 0.00221
25-30 0.00145
31-36 0.00224
SB-42
18-23 0.00421
26-31 0.01
35-40 0.00111
SB-06
18-23 < 0.000174
23-27 < 0.000174
27-32 0.000355 J
SB-34
23-28 0.000344 J
28-32 0.00191
33-38 0.00129
MW-182
25-35 < 0.000174
SB-41
23-28 0.0147
31-36 0.00259 J
36-41 0.00146
MW-110
22-32 0.00142
SB-40
19-24 0.11
25-30 0.0208
35-40 0.00346
SB-02
38-43 < 0.000174
MW-108
22-32 0.00711
SB-08
18-23 0.179
24-29 0.904
30-35 0.0257
MW-109
22-32 0.0397
SB-35
22-27 0.00937
28-33 0.0132
35-40 0.00489
MW-111
21-31 0.00466
SB-38
27-32 0.0116
34-39 0.00397
MW-16R
(NS)
MW-17R
20-30 < 0.000174
SB-37
18-23 < 0.000174
23-28 < 0.000174
SB-36
28-33 0.00201
34-39 0.00345 J
SB-07
18-23 0.0156
MW-113
22-32 0.00288
MW-15R
27-37 < 0.000174
MW-100
28-38 0.000211 J
MW-71
20-30 < 0.000174
MW-70
20-30 0.00115
SB-10
27-32 < 0.000174
33-38 < 0.000174
MW-74
22-32 0.0416
MW-178
35-45 < 0.000174
SB-31
22-27 < 0.000174
27-32 < 0.000174
MW-77
25-35 0.00163
SB-11
23-28 < 0.000174
28-33 < 0.000174
33-38 0.00121
MW-76
20-30 < 0.000174
MW-145
17.55-27.55 < 0.000174
MW-163
23.25-33.25 0.00453
SB-32
37-42 0.0056
MW-122
23-33 0.000254 J
SB-18
25-30 0.000951 J
30-34 0.00796
MW-146
25-35 < 0.000174
MW-147
28-38 0.00233
MW-121
23-33 < 0.000174
SB-17
30-35 < 0.000174
40-45 < 0.000174
MW-83
25-35 0.0115
SB-33
25-30 < 0.000174
30-35 0.000225 J
35-40 0.00174
SB-14
25-30 0.000952 J
30-35 0.00377
40-45 0.0097
SB-13
30-35 0.00651
40-45 0.0132
MW-162
27.5-37.5 < 0.000174
SB-12
38-43 0.00043 J
MW-88
33-43 0.00186
SB-15
40-45 0.0196
MW-160
22.75-32.75 0.00287
MW-89
32-42 0.000901 J
SWD-14
< 0.000174
SWD-12
< 0.000174
MW-106
36.5-46.5 0.00648
MW-161
26.02-36.02 0.00137
MW-90
30-40 0.00134
SWD-17
< 0.000174 J
MW-168
30-40 0.00638
SB-16
25-30 < 0.000174
30-35 < 0.000174
40-45 < 0.000174
MW-92
38-48 < 0.000174
SWD-15
< 0.000174
SWD-18
< 0.000174
SB-19
35-40 0.00118
MW-97
33-43 0.00523
SWD-20
< 0.000174
MW-93R
32-42 0.000885 J
MW-98
31-41 < 0.000174
MW-179
35-45 < 0.000174
MW-180
(NS)
Blandford Ln
Aldemey Dr
Cobblestream Rd
Northampton Way
Shavelson St
Allen St
Kenilworth St
Wickford Dr
Silber Rd
Buckingham Dr
El Friar Tuck Ln
W Friar Tuck Ln
Chatsworth Dr
Limerick Ln
Holy Roode Ln
Smithingham Dr
Carnarvon Dr
Longbow Ln
Parish Cir
Stable Ln
Old Katy Rd
Memorial Woods Dr
Fontainbleu St
La Fonte St
N Post Oak Rd
Bolton Pl
Pinehaven Dr
Memorial Dr
Crescent Gate Ln
Stablewood Blvd
Stable Crest Blvd
Pasture View Ln
Stablewood Ct
Harness Creek Ln
Westview Dr
Westhollow S
Us Hwy 290
I610 S
I610 N
TxDoT Silber Tunnel
Dewatering System
10
610
TBPG Firm No 50254
NOTES:
1. The concentrations are presented in milligrams per liter (mg/L).
2. Bold values indicate a detected concentration.
3. Italic and bold values exceed the cPCL.
4. The cPCL for cis-1,2-DCE for groundwater is 0.07 mg/L and surface water is 7.49 mg/L.
5. Result presented for MW-163 is from the confirmation sample collected in May 2022.
6. Surface water samples SWD-15, SWD-17, SWD-18, and SWD-20 were collected in December 2021. SWD-12 and SWD-14 were collected in June 2022 after safe access.
7. The extent of cis-1,2-DCE presented on this map was generalized from and interpolated using data obtained from 2021 annual groundwater monitoring and grab groundwater samples collected during installation of soil borings in 2022. Information on actual subsurface conditions exists only at the specified locations. Chemical concentrations at other locations may differ from those interpreted on this map.
ACRONYMS:
< = nondetected result less than the sample detection limit
AMP = attenuation monitoring point
cis-1,2-DCE = cis-1,2-dichloroethene
cPCL = critical protective concentration level
HCFCD = Harris County Flood Control Ditch
J = estimated concentration
JH = estimated concentration biased high
NS = not sampled
PMZ = plume management zone
POE = point of exposure
TxDoT = Texas Department of Transportation
BASE MAP SOURCE:
Harris County Appraisal District, 2022.
ESRI World Imagery online mapping service.
MW-98 ← Sample Location
31-41 <0.000174 ← Concentration (mg/L)
Depth Interval (feet)
Legend
AMP Well
POE Well
Monitor Well (2022)
2022 Soil Boring
Surface Water Sample Locations
Other Monitor Well
Former Facility Boundary
HCFCD
Gaining Portion of Stream
PMZ Boundary
TxDoT Dewatering System
Parcel
cis-1,2-DCE cPCL Exceedance Boundary
N
0
325
650
Approximate scale in feet
Attachment 1A-5.
cis-1,2-Dichloroethene Concentration Map (2021 - 2022)
2022 Response Action Plan Addendum
Former Cameron Iron Works Facility, Houston, TX
CH2M HILL Engineers, Inc.
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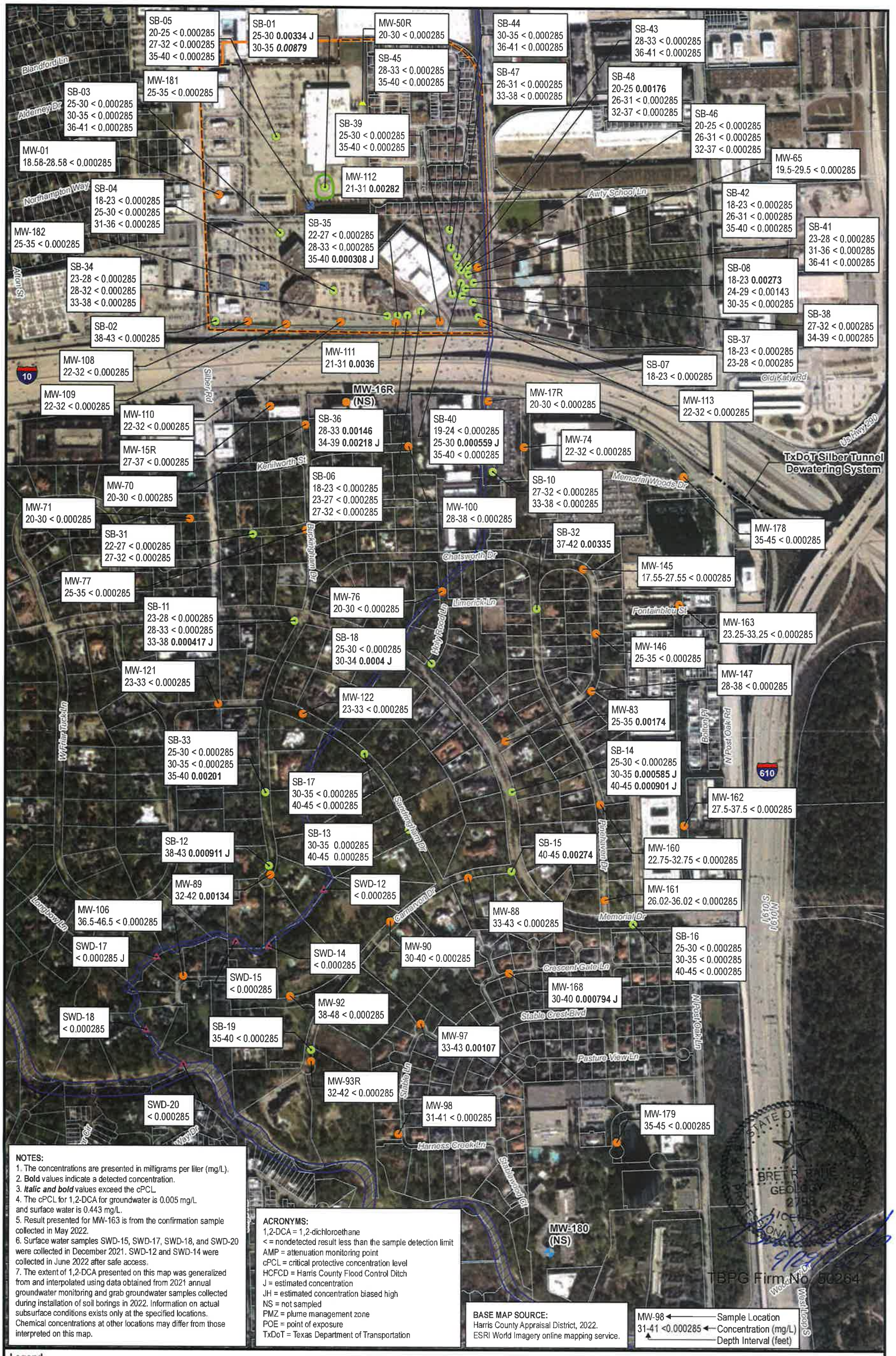

Attachment 1A-6.
1,2-Dichloroethane Concentration Map (2021 - 2022)
2022 Response Action Plan Addendum
Former Cameron Iron Works Facility, Houston, TX

CH2M HILL Engineers, Inc.

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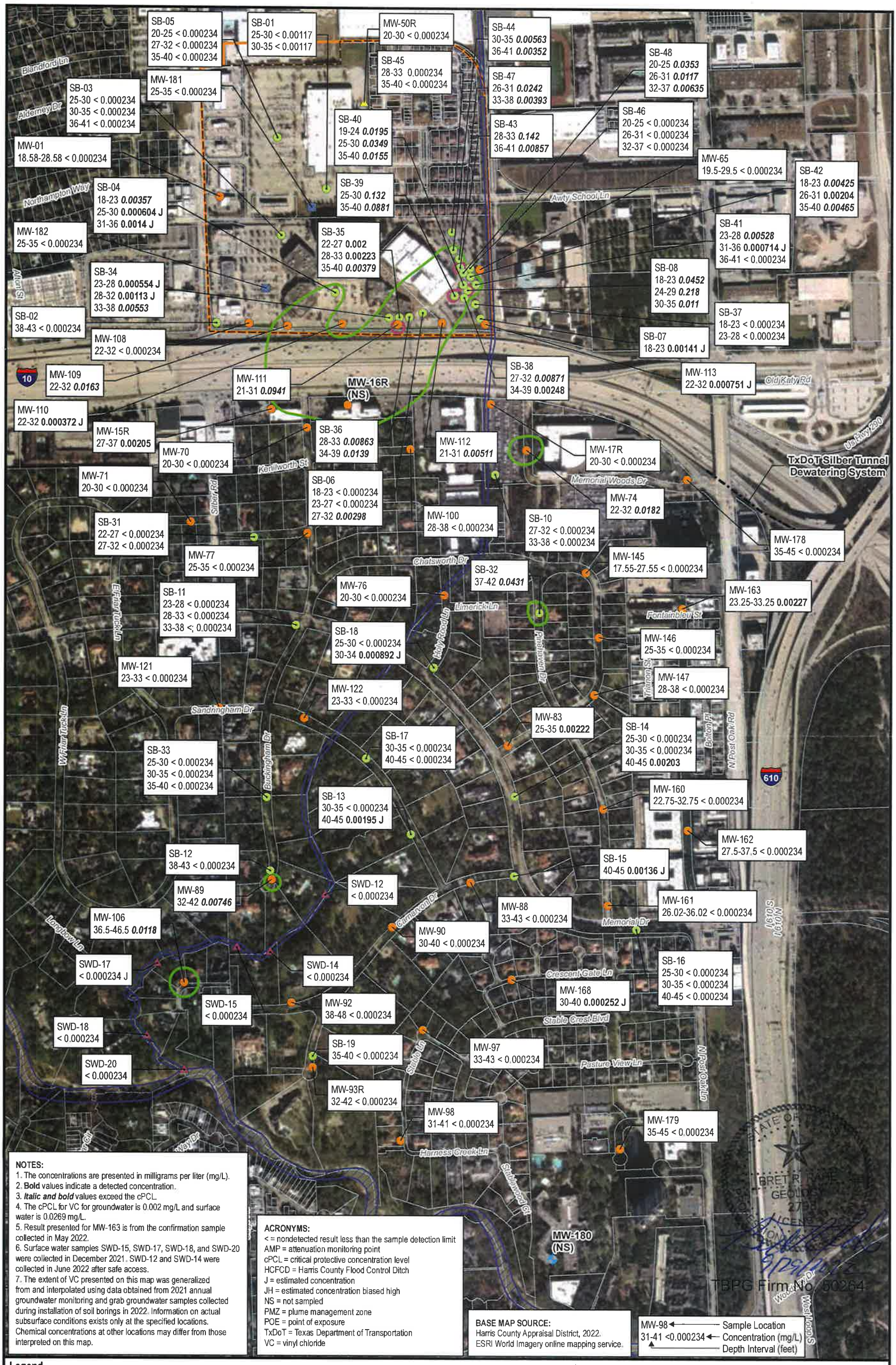

Attachment 1A-7.
Vinyl Chloride Concentration Map (2021 - 2022)
2022 Response Action Plan Addendum
Former Cameron Iron Works Facility, Houston, TX

CH2M HILL Engineers, Inc.

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MW-50R
49.22

North Plume
(Onsite Plume)

MW-01
48.73

MW-65
46.72

MW-112
46.05

MW-113
45.82

MW-108
47.30

MW-109
48.08

MW-110
46.82

MW-111
46.43

MW-16R
45.80

MW-17R
44.44

MW-15R
46.14

MW-70
45.79

MW-100
44.43

MW-74
43.14

MW-178
39.36

TxDoT Silber Tunnel
Dewatering System

MW-71
44.27

MW-77
43.75

MW-145
39.69

MW-76
40.83

MW-163
37.73

MW-146
38.79

Southern
Plume

MW-121
40.39

MW-122
39.28

MW-147
37.87

MW-83
37.27

Southeast
Plume

MW-160
35.60

MW-162
31.63

MW-89
31.47

MW-88
34.28

MW-161
33.78

SWD-12

MW-90
32.98

HCFCD

SWD-15

SWD-14

SWD-17

MW-168
32.32

MW-106
24.45

MW-92
28.41

MW-97
30.71

SWD-18

SWD-20

MW-93R
28.88

MW-98
27.42

MW-179
27.45

MW-180
NM

TBPG Firm No. 50264

NOTES:
1. The potentiometric surface presented on this map was generalized from and interpolated using water levels obtained from 2021 annual groundwater monitoring. Information on actual subsurface conditions exists only at the specified locations. Water levels at other locations may differ from those interpreted on this map.
2. Water level data used to generate this map were collected on December 13 and 14, 2021.
3. Water level elevation in feet above mean sea level.

ACRONYMS:
AMP = attenuation monitoring point
HCFCD = Harris County Flood Control Ditch
NM = not measured
PMZ = plume management zone
POE = point of exposure
TxDoT = Texas Department of Transportation

BASE MAP SOURCE:
Harris County Appraisal District, 2016.
ESRI World Imagery online mapping service.

Legend

- AMP Well
- POE Well
- Other Monitor Well
- Former Facility Boundary
- Surface Water Sample Locations
- HCFCD
- Gaining Portion of Stream
- Approximate Groundwater Flow Direction (December 2021)
- TxDoT Dewatering System
- Groundwater Elevation Contour
- (Dashed Where Inferred)
- PMZ Boundary

N

0 325 650

Approximate scale in feet

Attachment 1A-8.
Potentiometric Surface Map (December 2021)
2022 Response Action Plan Addendum
Former Cameron Iron Works Facility, Houston, TX

CH2M HILL Engineers, Inc.

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STATE OF TEXAS
BRETT R. RAHE
GEOLOGY
2798
LICENSED
PROFESSIONAL GEOLOGIST

9/28/22

TBPG Firm No. 50264

NOTES:

1. The PCLE zone presented on this map was generalized from and interpolated using data obtained from 2021 annual groundwater monitoring and grab groundwater samples collected during installation of soil borings in 2022. Information on actual subsurface conditions exists only at the specified locations. Chemical concentrations at other locations may differ from those interpreted on this map.

BASE MAP SOURCE:

Harris County Appraisal District, 2022.
ESRI World Imagery online mapping service.

ACRONYMS:

AMP = attenuation monitoring point
cPCL = Critical Protective Concentration Level
HCFCD = Harris County Flood Control Ditch
PCLE = protective concentration level exceedance
POE = point of exposure
PMZ = plume management zone
TxDoT = Texas Department of Transportation
VCP = voluntary cleanup program

Legend

- AMP Well
- POE Well
- Surface Water Sample Locations
- Monitor Well (2022)
- 2022 Soil Boring
- PMZ Boundary
- Former Facility Boundary
- TxDoT Dewatering System
- Former Burn Pit Excavation Boundary
- Parcel
- HCFCD
- Gaining Portion of Stream
- PCLE Zone
- (Dashed Where Inferred)
- Localized Area of Groundwater Concentration Below cPCL

N

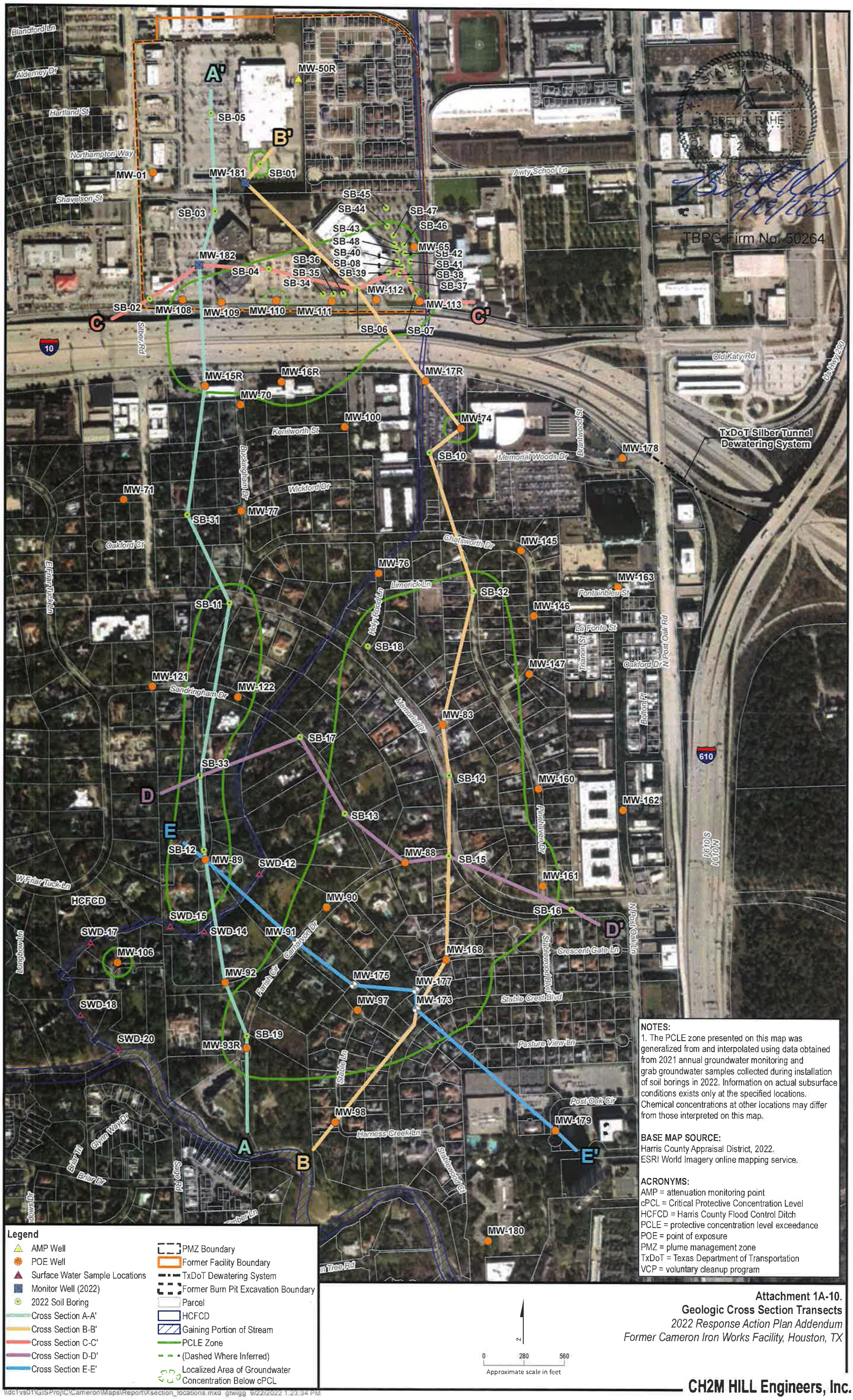
0 280 560

Approximate scale in feet

Attachment 1A-9.
Updated Groundwater PCLE Zone Map
2022 Response Action Plan Addendum
Former Cameron Iron Works Facility, Houston, TX

CH2M HILL Engineers, Inc.

\\dc1vs01\GISProj\C\Cameron\Maps\Report\GW_PCLE_Aug2022.mxd gtwigg 9/22/2022 1:16:43 PM



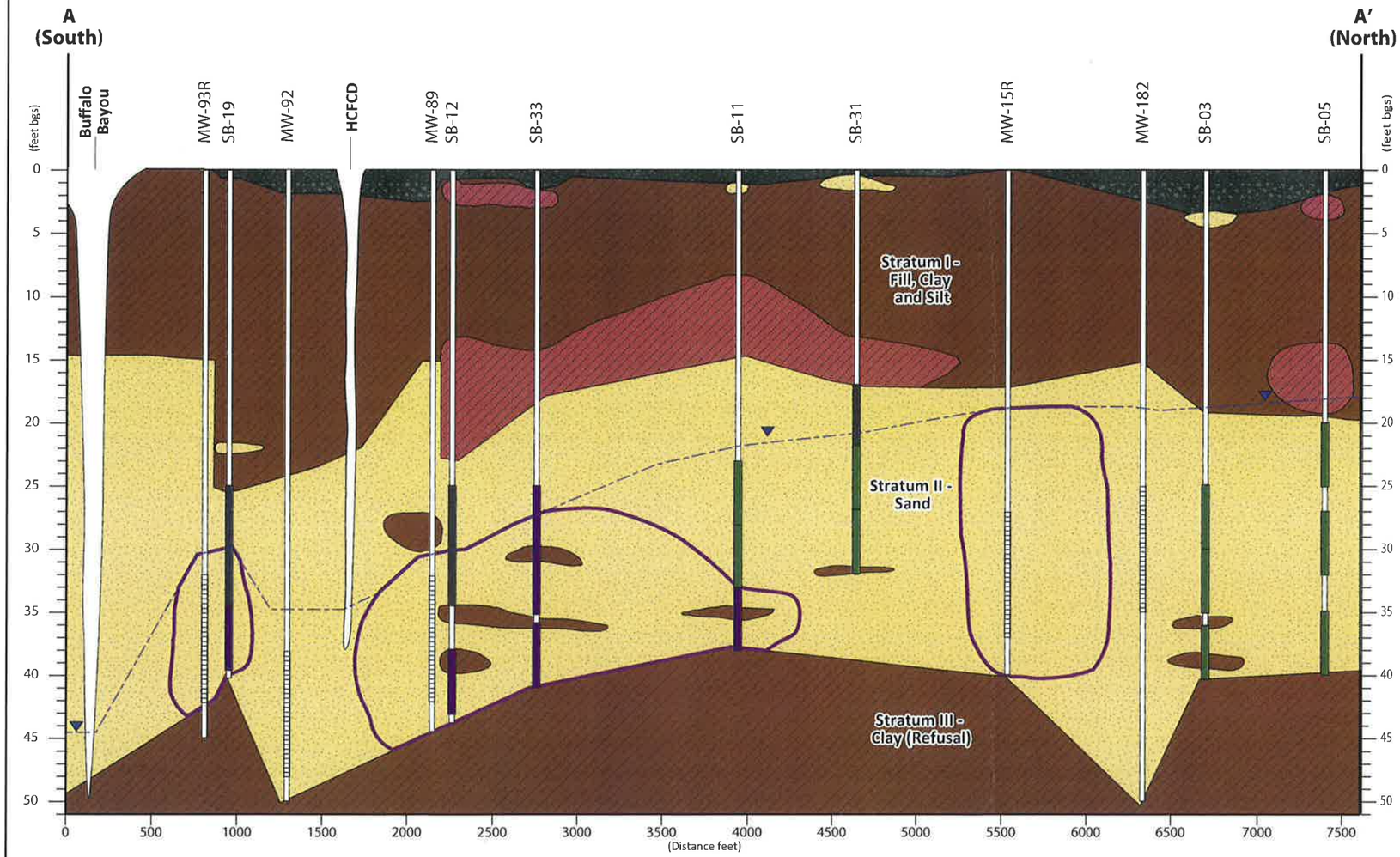
NOTES:
1. The PCLE zone presented on this map was generalized from and interpolated using data obtained from 2021 annual groundwater monitoring and grab groundwater samples collected during installation of soil borings in 2022. Information on actual subsurface conditions exists only at the specified locations. Chemical concentrations at other locations may differ from those interpreted on this map.

BASE MAP SOURCE:
Harris County Appraisal District, 2022.
ESRI World Imagery online mapping service.

ACRONYMS:
AMP = attenuation monitoring point
cPCL = Critical Protective Concentration Level
HCFCD = Harris County Flood Control Ditch
PCLE = protective concentration level exceedance
POE = point of exposure
PMZ = plume management zone
TxDoT = Texas Department of Transportation
VCP = voluntary cleanup program

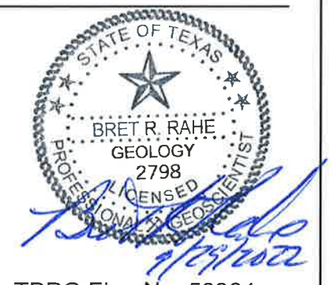
Attachment 1A-10.
Geologic Cross Section Transects
2022 Response Action Plan Addendum
Former Cameron Iron Works Facility, Houston, TX

CH2M HILL Engineers, Inc.

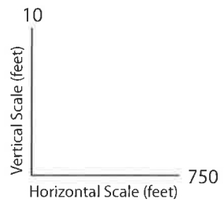


LEGEND

- Sand (well graded sand, poorly graded sand, silty sand, clayey sand, and flowing sand)
- Silt (silt, silt with sand, clayey silt)
- Concrete/Asphalt/Fill
- Clay (fat clay, silty clay, sandy clay)
- Well Screen
- Soil Boring
- Approximate Potentiometric Surface (May 2022)
- Approximate Groundwater PCLE Zone (Dashed Where Inferred)
- Grab Sample (COC Concentration Below cPCL)
- Grab Sample (COC Concentration Above cPCL)
- Attempted Grab Sample Interval with No Recovery



TBPG Firm No. 50264



Notes:

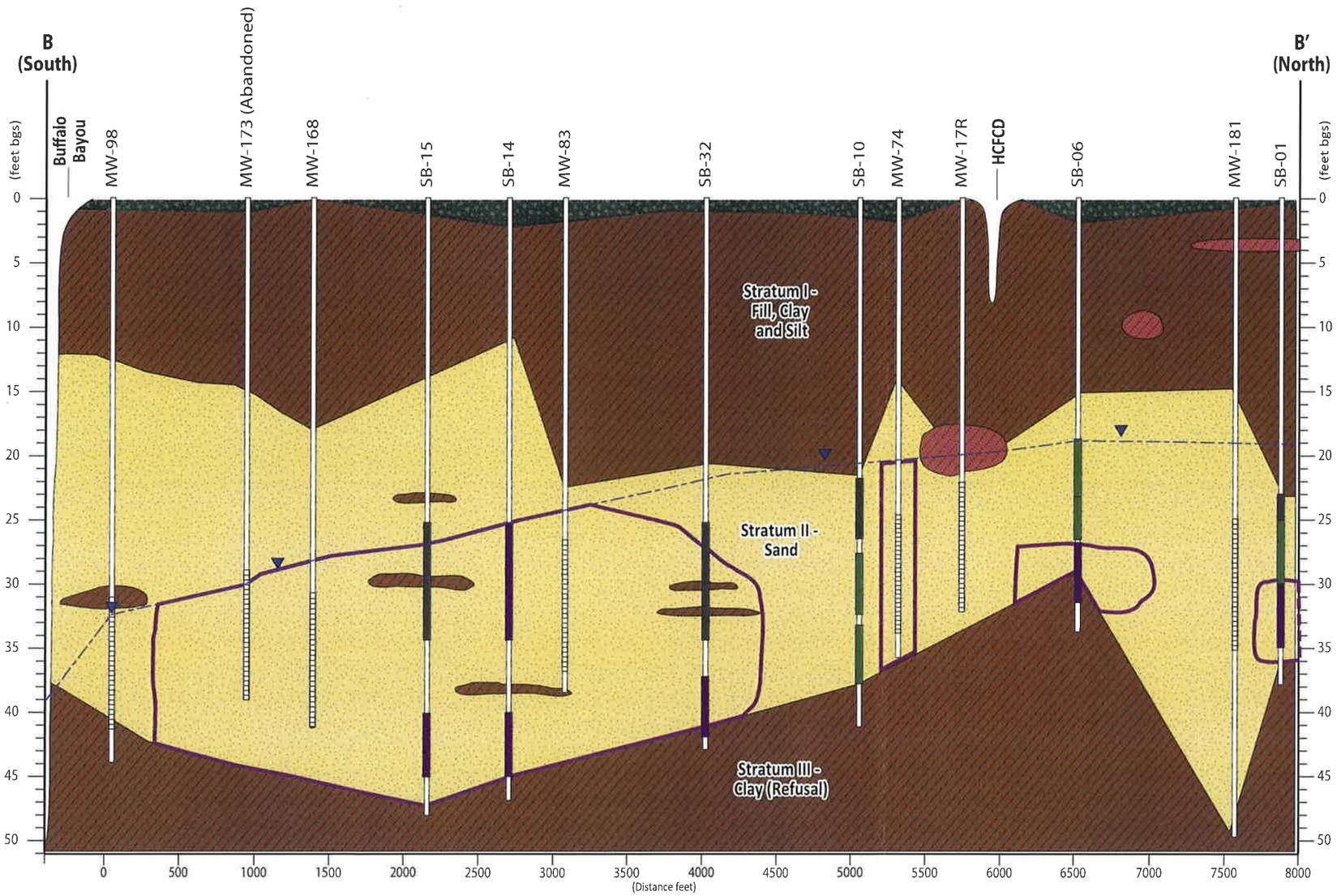
1. The geologic interpretations were generalized from and interpolated between soil boring locations. Information on actual subsurface conditions exist only at the specified locations.
2. Water levels for monitoring wells were measured in December 2021. Water levels for soil borings were measured in May 2022.
3. Groundwater PCLE zones shown are refined based on 2021 annual groundwater monitoring and grab groundwater samples collected during 2022 pre-design investigation.
4. Cross section viewed to the west.
5. The lithology is shown related to depth from ground surface (feet bgs) given the limited change in elevation across the site.

bgs = below ground surface
COC= chemical of concern
cPCL = critical protective concentration level
HCFCD = Harris County Flood Control Ditch
PCLE = protective concentration level exceedance

Attachment 1A-11.
Geologic Cross Section A-A'
2022 Response Action Plan Addendum
Former Cameron Iron Works Facility,
Houston, TX

CH2M HILL Engineers, Inc.

Fig 1A-11_Dowell-SilberRd_Geo-X-Section-A-A_v7 9-22-22 DCD



LEGEND

- Sand (well graded sand, poorly graded sand, silty sand, clayey sand, and flowing sand)
- Silt (silt, silt with sand, clayey silt)
- Concrete/Asphalt/Fill
- Clay (fat clay, silty clay, sandy clay)
- Well Screen
- Soil Boring
- Approximate Potentiometric Surface (May 2022)
- Approximate Groundwater PCLE Zone (Dashed Where Inferred)
- Grab Sample (COC Concentration Below cPCL)
- Grab Sample (COC Concentration Above cPCL)
- Attempted Grab Sample Interval with No Recovery

STATE OF TEXAS
BRET R. RAHE
GEOLOGY
2798
LICENSED
PROFESSIONAL GEOSCIENTIST

9/29/2022

TBPG Firm No. 50264

Vertical Scale (feet): 10
Horizontal Scale (feet): 800

Notes:

1. The geologic interpretations were generalized from and interpolated between soil boring locations. Information on actual subsurface conditions exist only at the specified locations.
2. Water levels for monitoring wells were measured in December 2021. Water levels for soil borings were measured in May 2022.
3. Groundwater PCLE zones shown are refined based on 2021 annual groundwater monitoring and grab groundwater samples collected during 2022 pre-design investigation.
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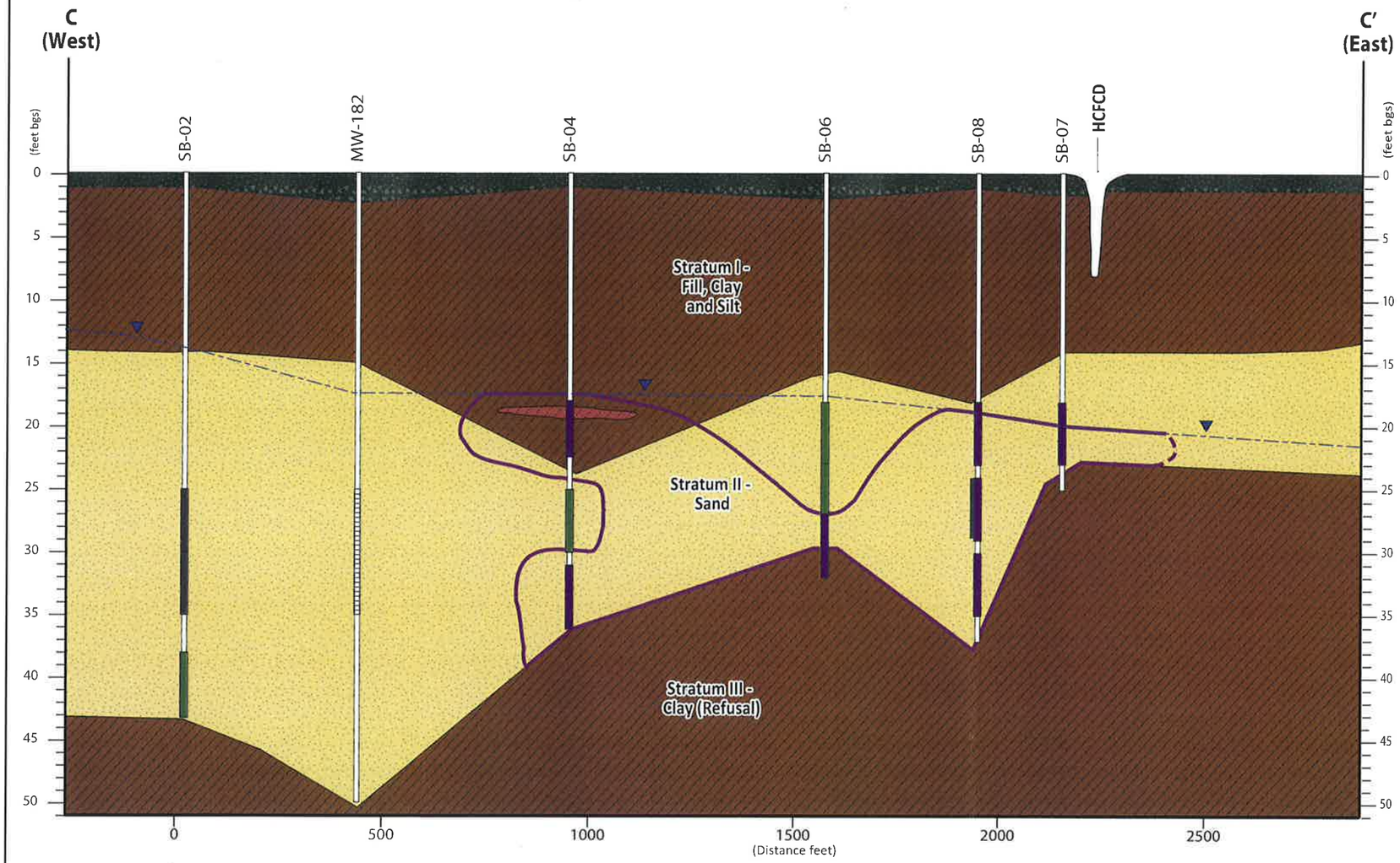
PCLE = protective concentration level exceedance

Attachment 1A-12.
Geologic Cross Section B-B'
2022 Response Action Plan Addendum
Former Cameron Iron Works Facility,
Houston, TX

CH2M HILL Engineers, Inc.

Fig 1A-12_Dowell-SilberRd_Geo-X-Section-B-B_v8 9-22-22 DCD



LEGEND

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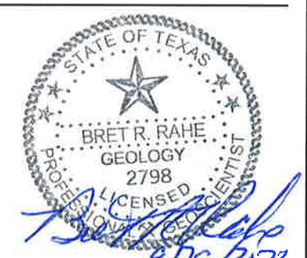
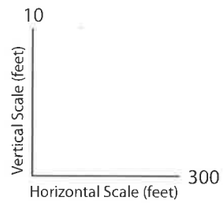
- Silt (silt, silt with sand, clayey silt)
- Concrete/Asphalt/Fill
- Clay (fat clay, silty clay, sandy clay)
- Well Screen
- Soil Boring
- Approximate Potentiometric Surface (May 2022)
- Approximate Groundwater PCLE Zone (Dashed Where Inferred)
- Grab Sample (COC Concentration Below cPCL)
- Grab Sample (COC Concentration Above cPCL)
- Attempted Grab Sample Interval with No Recovery



TBPG Firm No. 50264



Notes:

1. The geologic interpretations were generalized from and interpolated between soil boring locations. Information on actual subsurface conditions exist only at the specified locations.
2. Water levels for monitoring wells were measured in December 2021. Water levels for soil borings were measured in May 2022.
3. Groundwater PCLE zones shown are refined based on 2021 annual groundwater monitoring and grab groundwater samples collected during 2022 pre-design investigation.
4. Cross section viewed to the west.
5. The lithology is shown related to depth from ground surface (feet bgs) given the limited change in elevation across the site.

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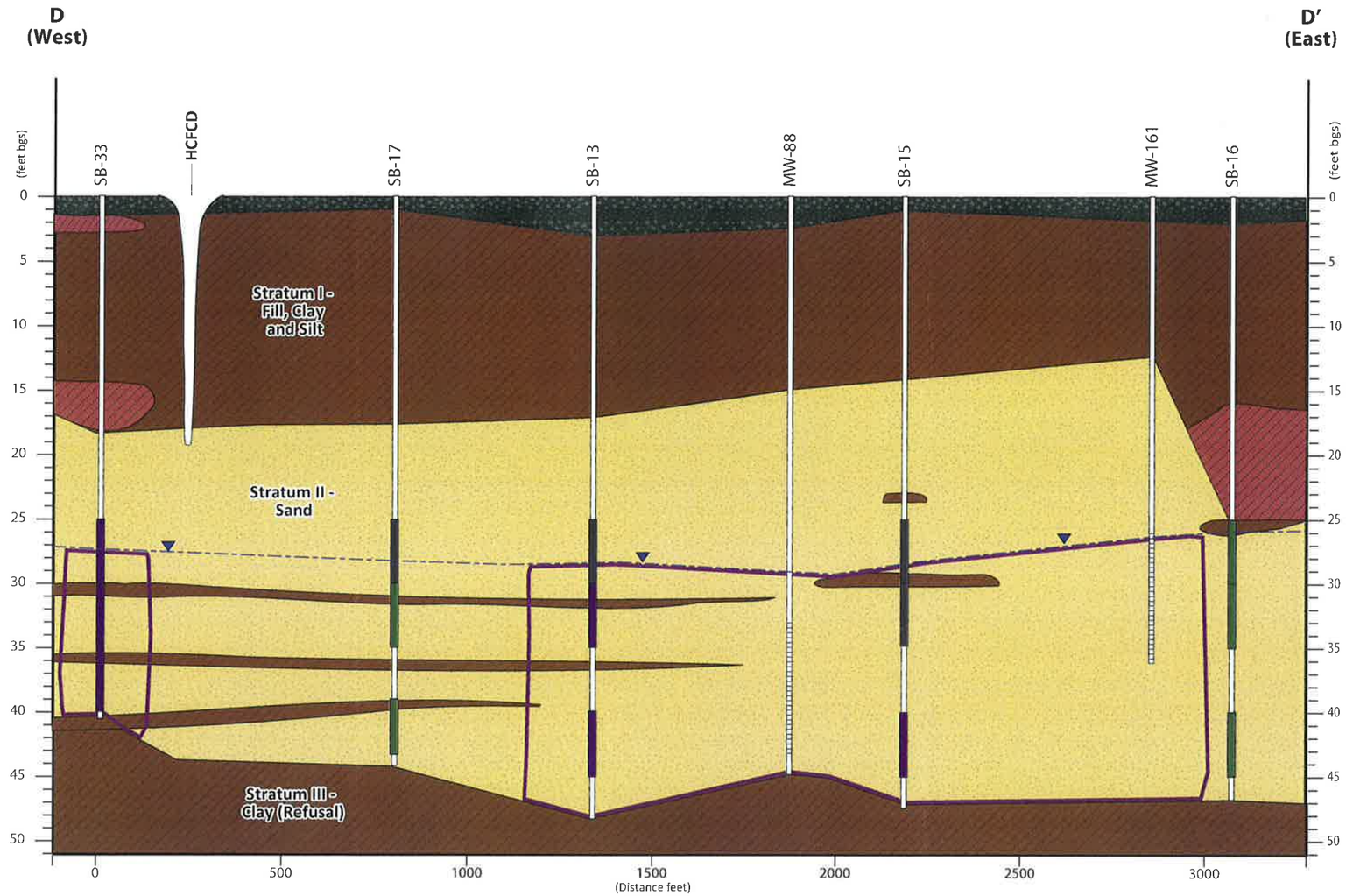
COC= chemical of concern
cPCL = critical protective concentration level
HCFCD = Harris County Flood Control Ditch
PCLE = protective concentration level exceedance

Attachment 1A-13.
Geologic Cross Section C-C'
2022 Response Action Plan Addendum
Former Cameron Iron Works Facility,
Houston, TX

CH2M HILL Engineers, Inc.

Fig 1A-13_Dowell-SilberRd_Geo-X-Section-C-C_v6 9-7-22 DCD



LEGEND

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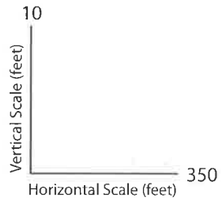
- Concrete/Asphalt/Fill
- Clay (fat clay, silty clay, sandy clay)
- Well Screen
- Soil Boring
- Approximate Potentiometric Surface (May 2022)
- Approximate Groundwater PCLE Zone (Dashed Where Inferred)
- Grab Sample (COC Concentration Below cPCL)
- Grab Sample (COC Concentration Above cPCL)
- Attempted Grab Sample Interval with No Recovery

TBPG Firm No. 50264



Notes:

1. The geologic interpretations were generalized from and interpolated between soil boring locations. Information on actual subsurface conditions exist only at the specified locations.
2. Water levels for monitoring wells were measured in December 2021. Water levels for soil borings were measured in May 2022.
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4. Cross section viewed to the west.
5. The lithology is shown related to depth from ground surface (feet bgs) given the limited change in elevation across the site.

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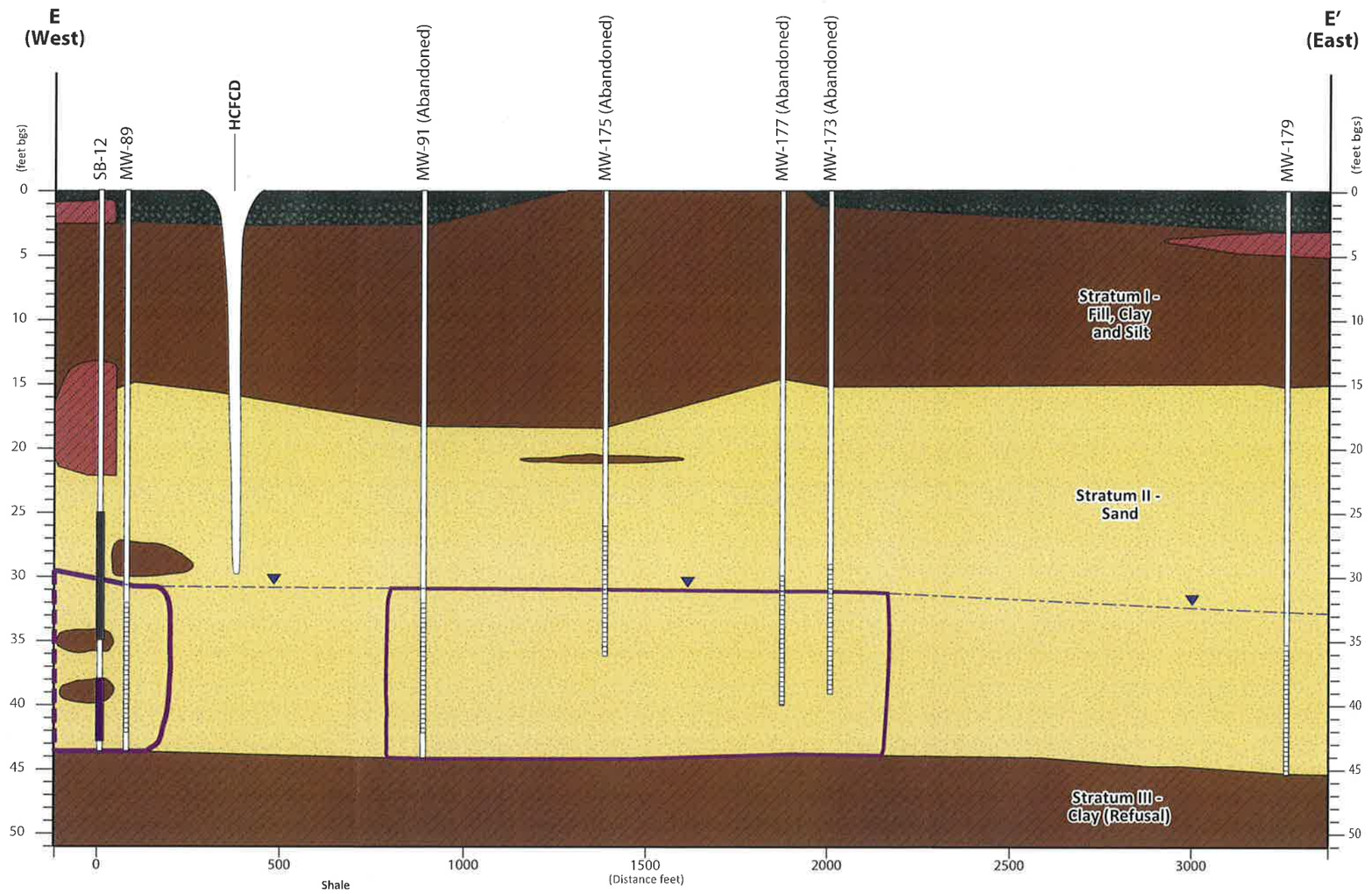
HCFCD = Harris County Flood Control Ditch
PCLE = protective concentration level exceedance

Attachment 1A-14.
Geologic Cross Section D-D'
2022 Response Action Plan Addendum
Former Cameron Iron Works Facility,
Houston, TX

CH2M HILL Engineers, Inc.

Fig 1A-14_Dowell-SilberRd_Geo-X-Section-D-D_v5 9-7-22 DCD



LEGEND

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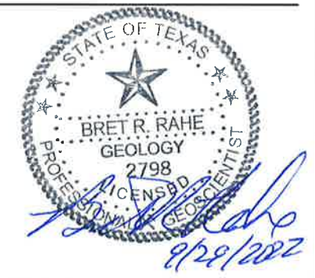
- Silt (silt, silt with sand, clayey silt)
- Concrete/Asphalt/Fill
- Clay (fat clay, silty clay, sandy clay)
- Well Screen
- Soil Boring
- Approximate Potentiometric Surface (May 2022)
- Approximate Groundwater PCLE Zone (Dashed Where Inferred)
- Grab Sample (COC Concentration Below cPCL)
- Grab Sample (COC Concentration Above cPCL)
- Attempted Grab Sample Interval with No Recovery



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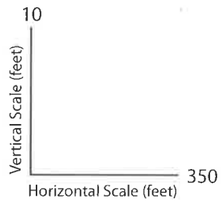

Notes:

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5. The lithology is shown related to depth from ground surface (feet bgs) given the limited change in elevation across the site.

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COC= chemical of concern
cPCL = critical protective concentration level
HCFCD = Harris County Flood Control Ditch
PCLE = protective concentration level exceedance

Attachment 1A-15.
Geologic Cross Section E-E'
2022 Response Action Plan Addendum
Former Cameron Iron Works Facility,
Houston, TX

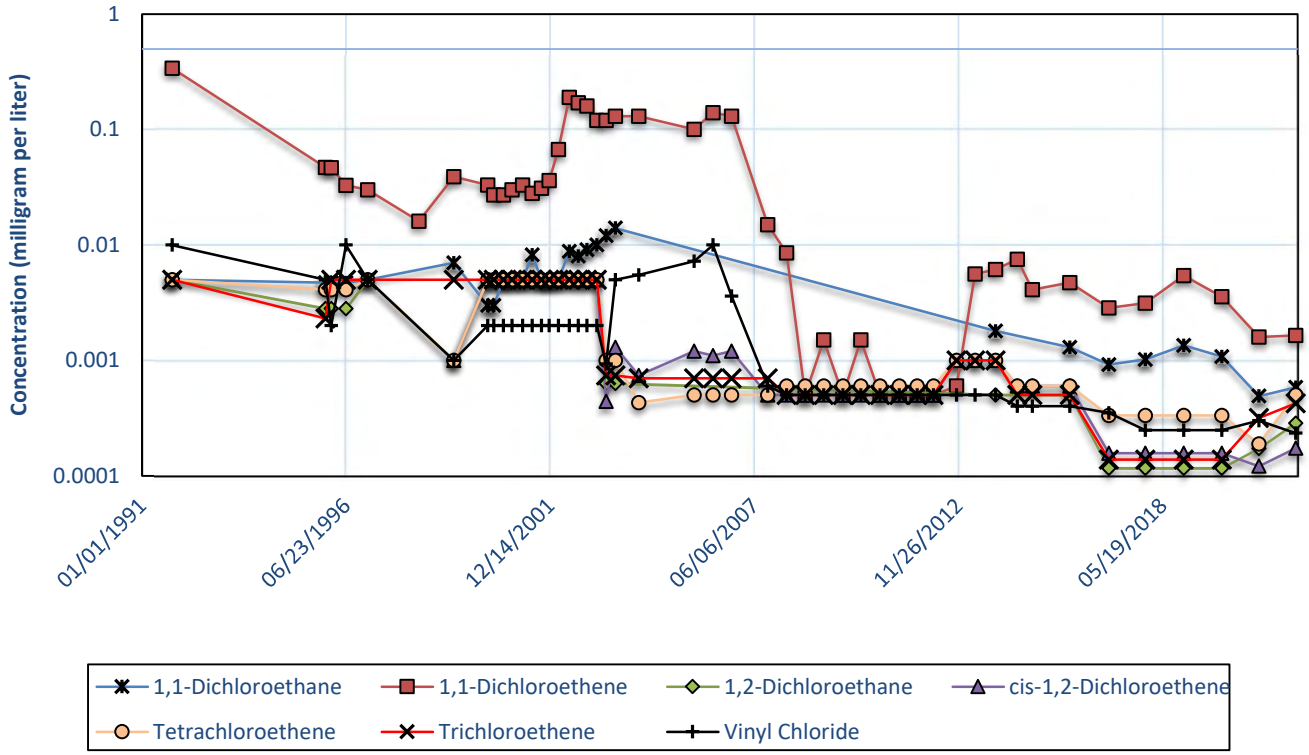
CH2M HILL Engineers, Inc.

Fig 1A-15_Dowell-SilberRd_Geo-X-Section-E-E_v6 9-22-22 DCD

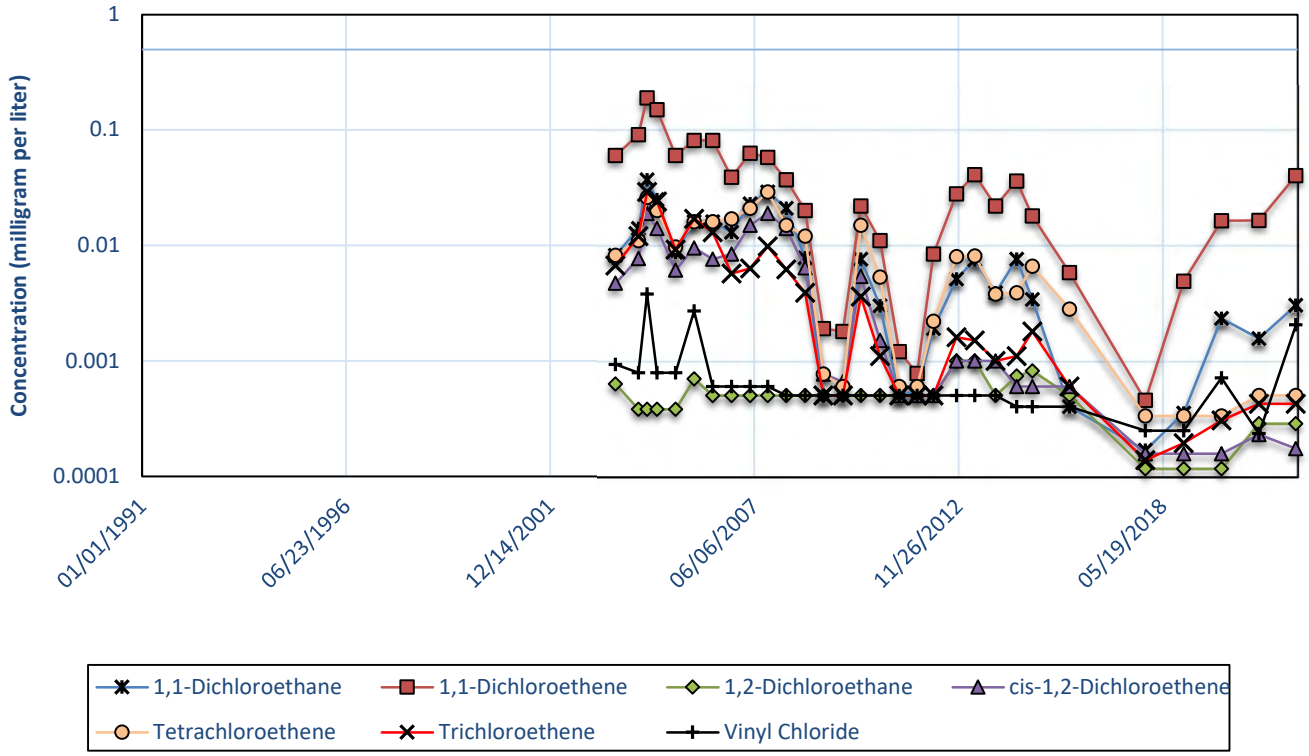
Attachment 1B
Graphs of Concentration versus Time

Attachment 1B
Concentration versus Time Graphs

MW-01

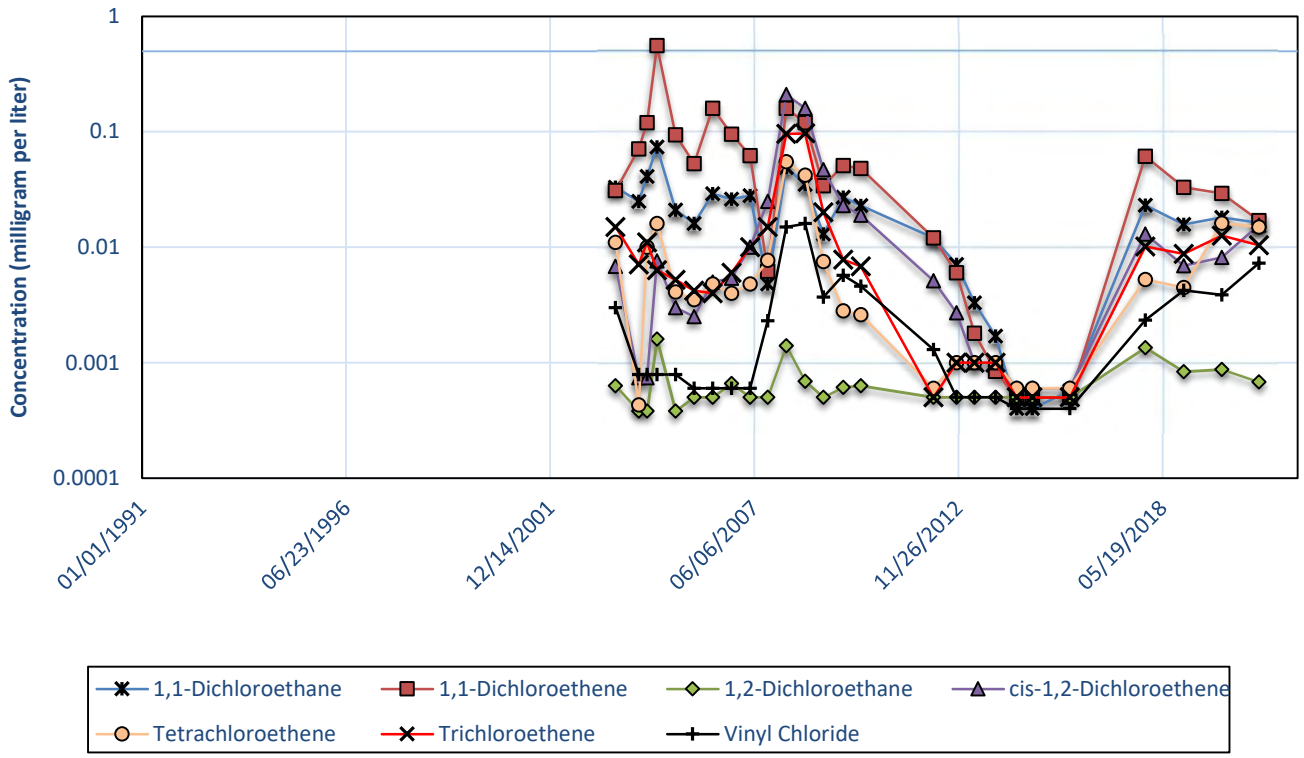


MW-15R

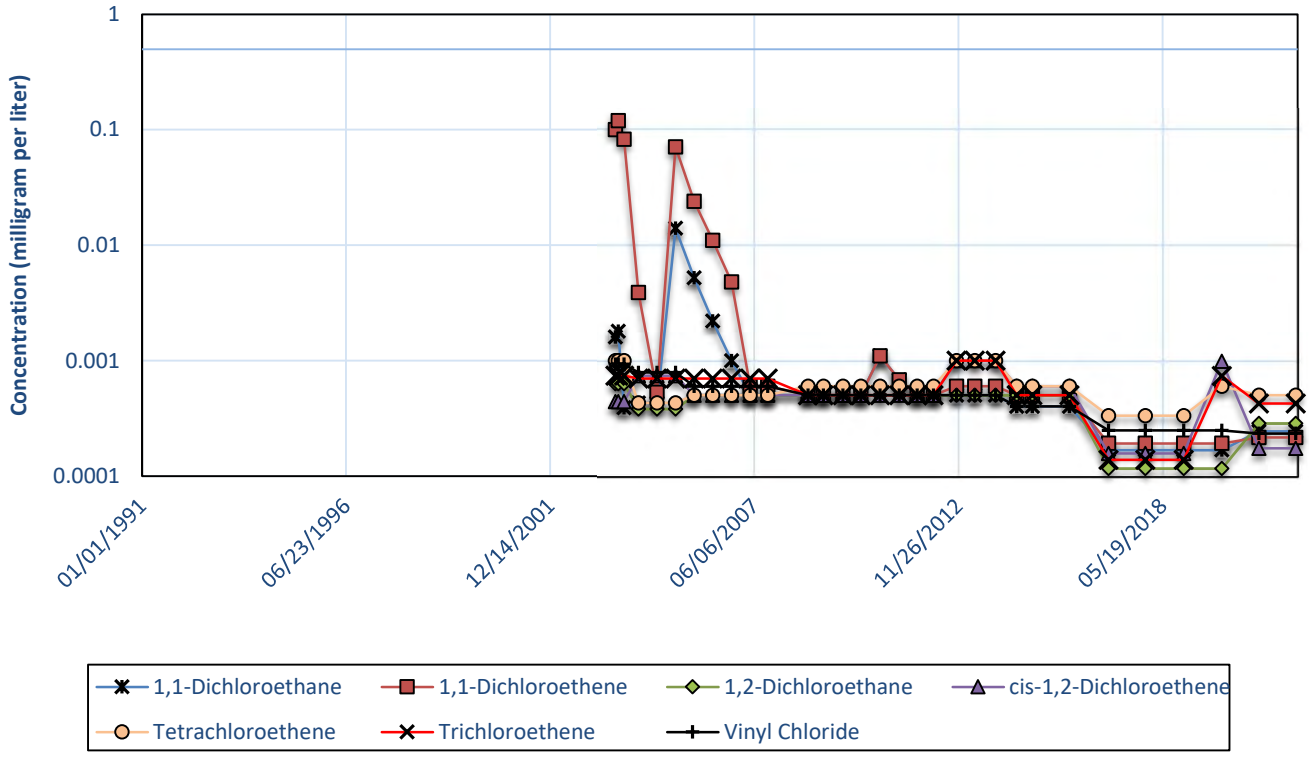


Attachment 1B
Concentration versus Time Graphs

MW-16R

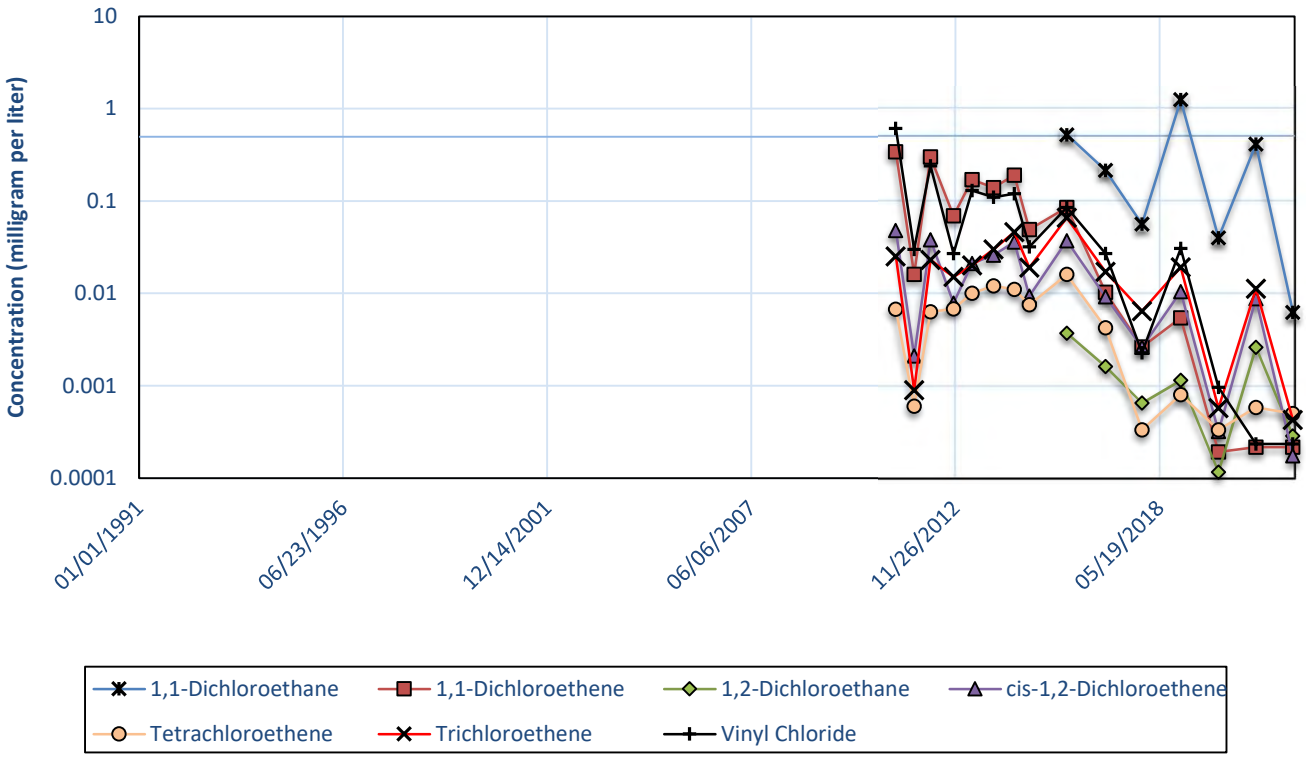


MW-17R

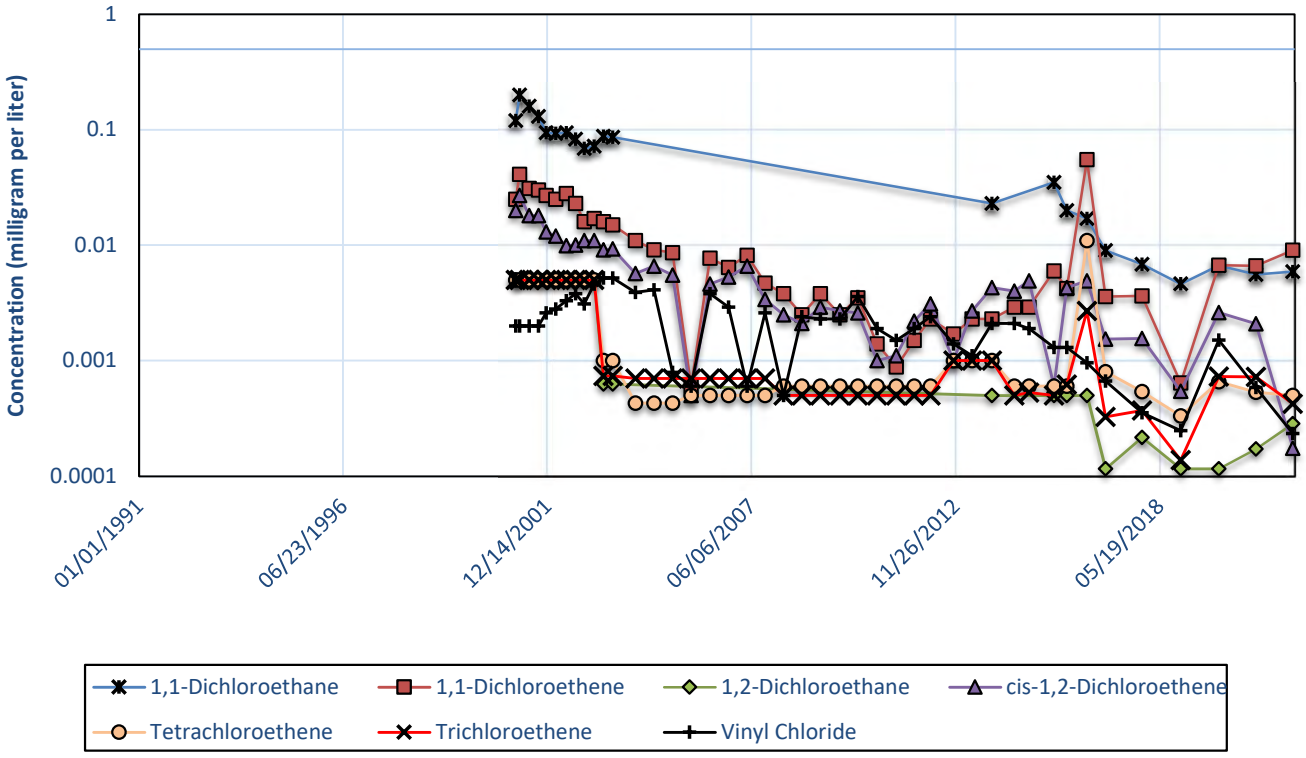


Attachment 1B
Concentration versus Time Graphs

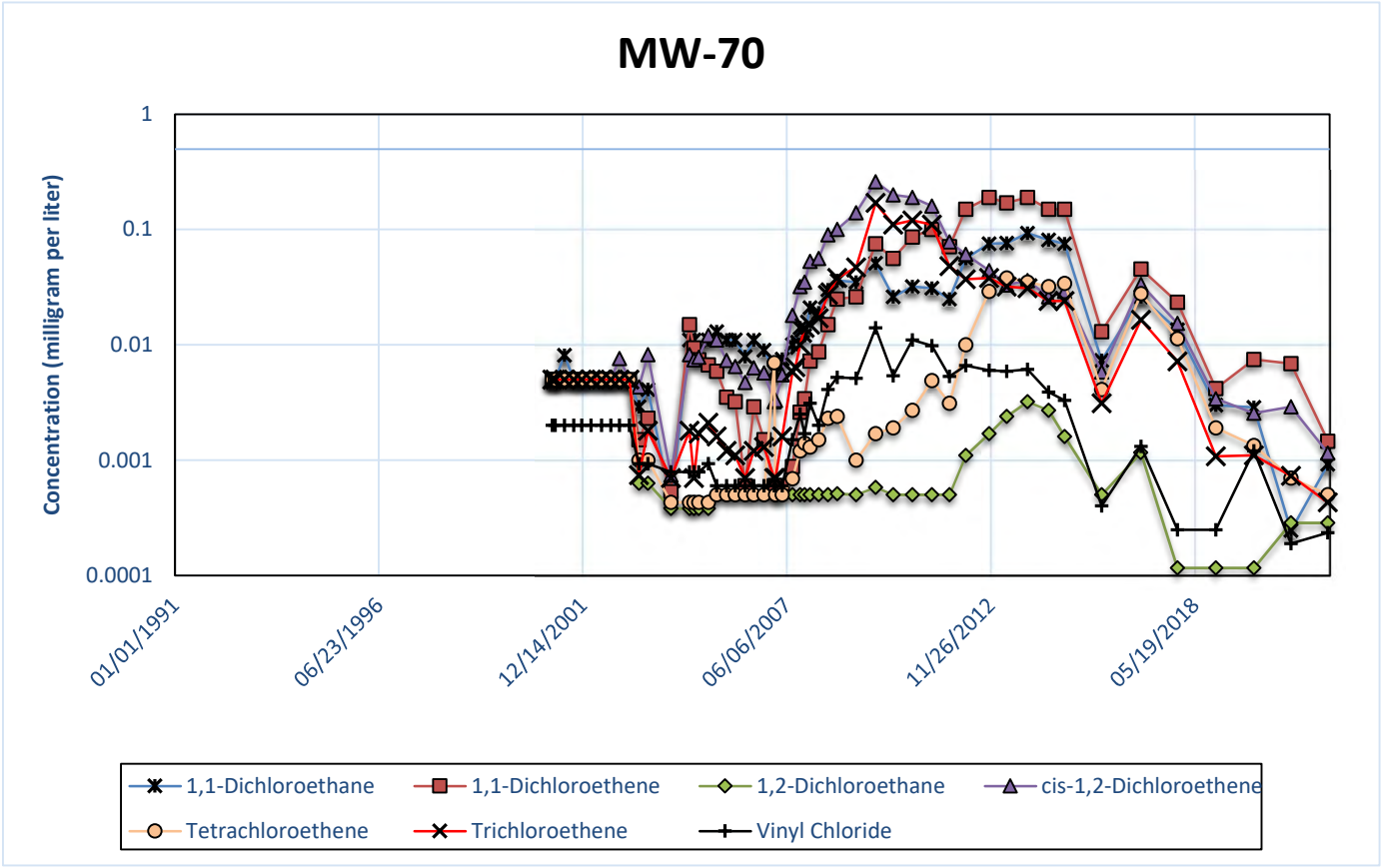
MW-50R

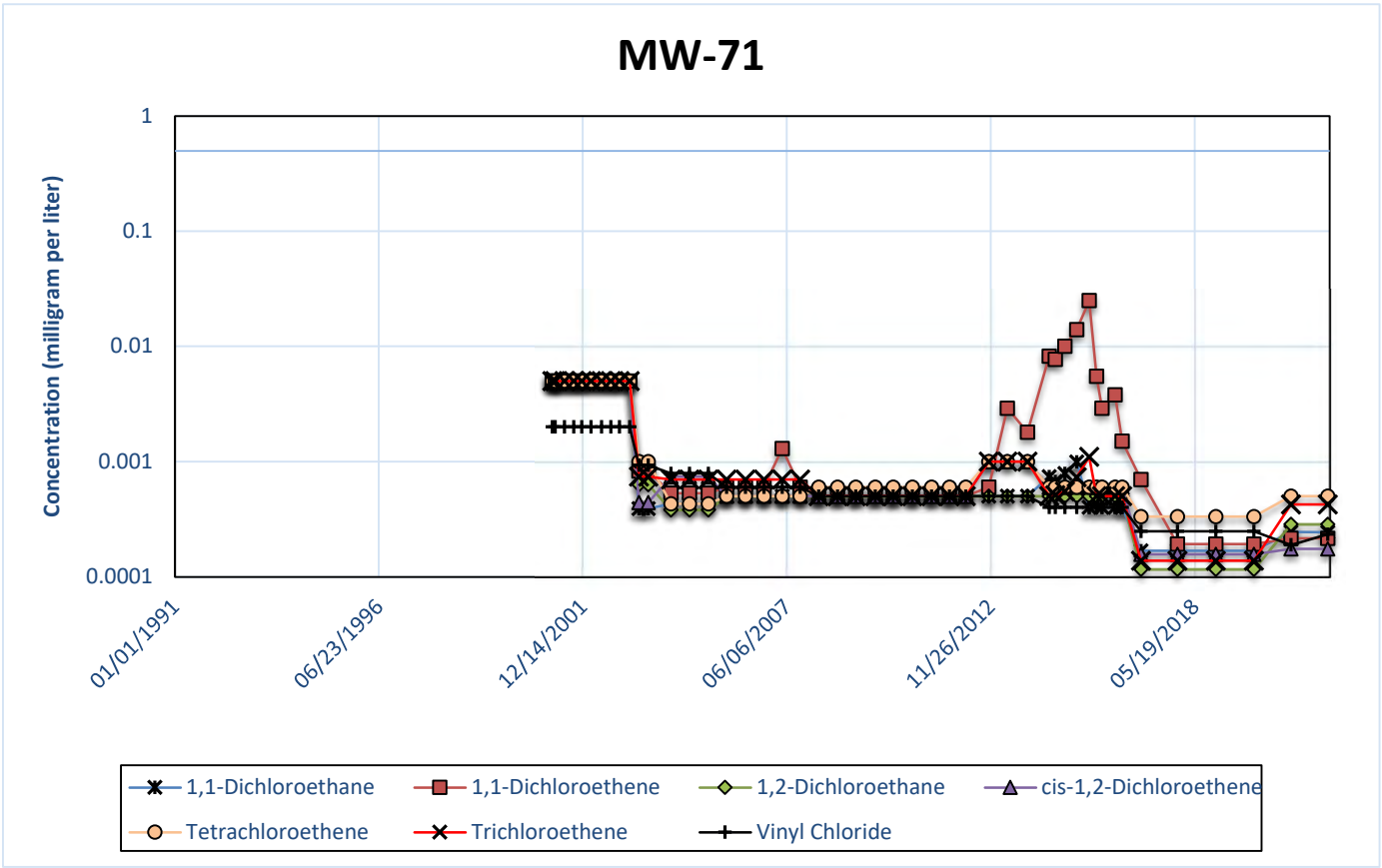


MW-65

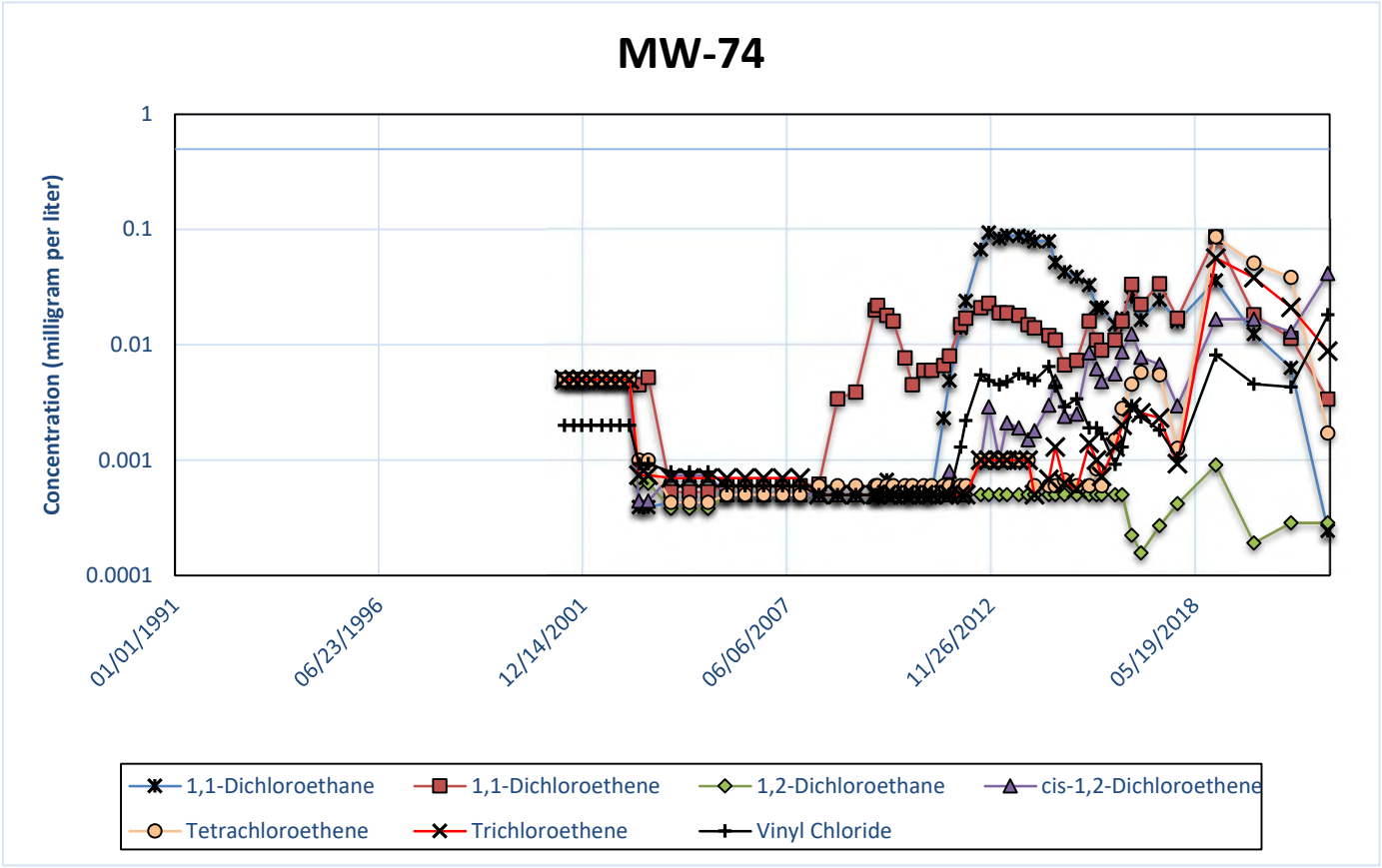


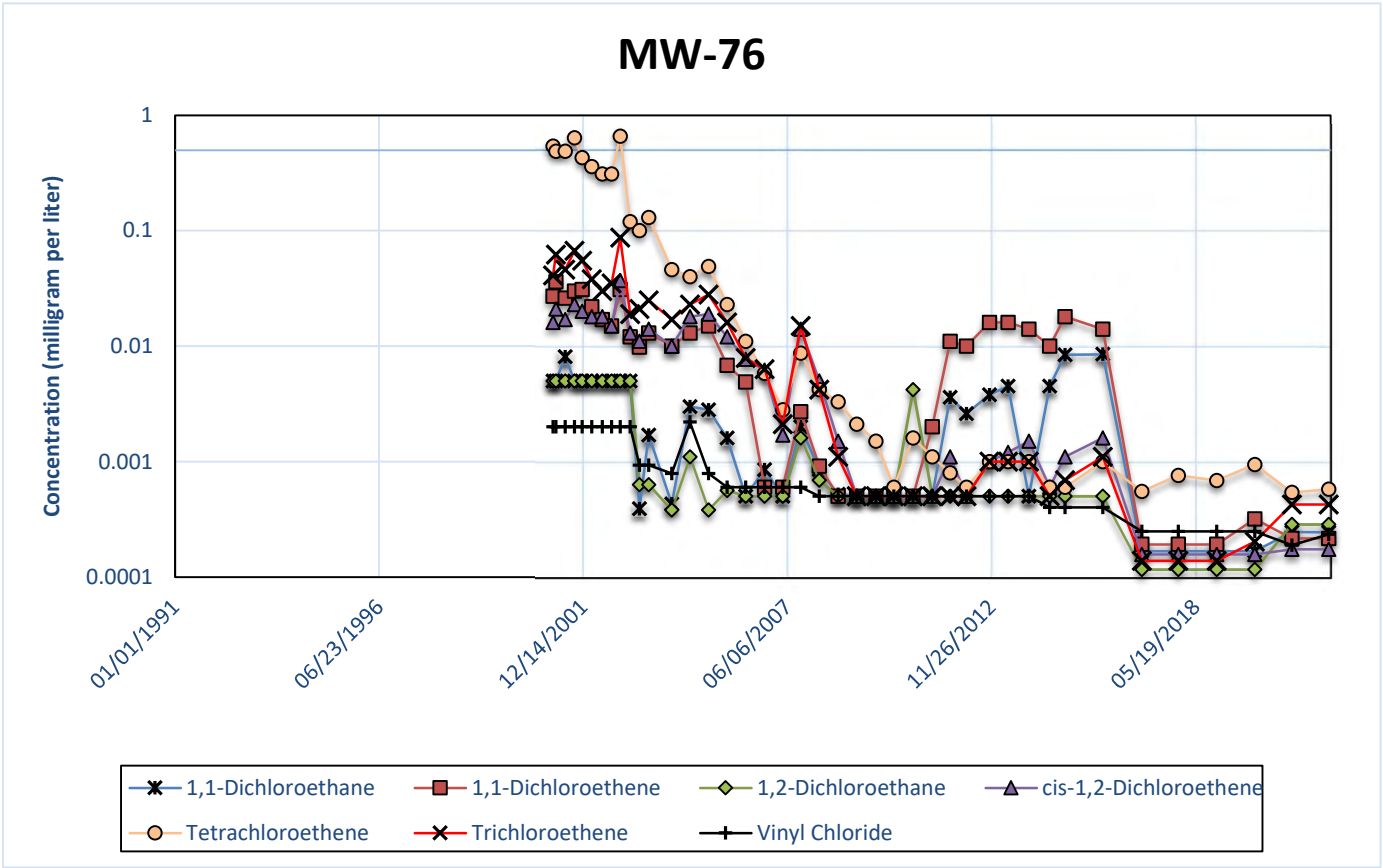
Attachment 1B
Concentration versus Time Graphs





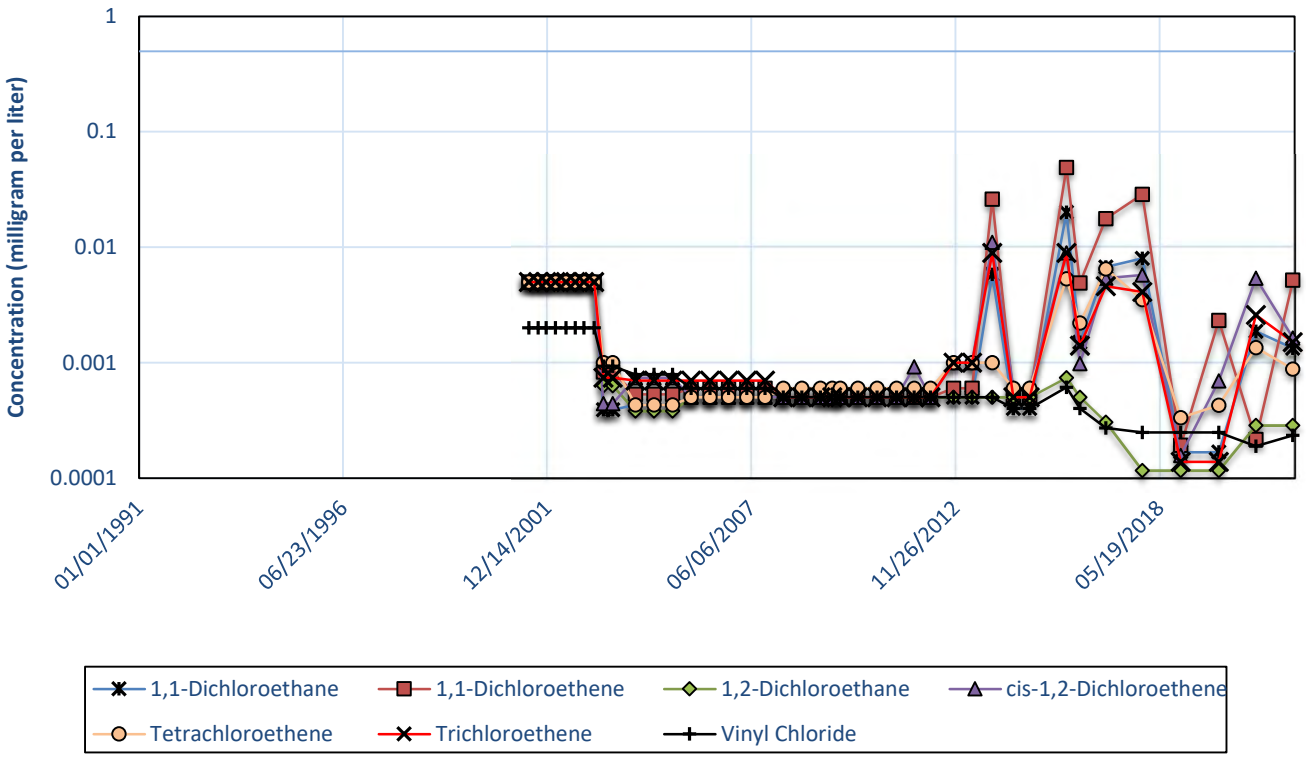
Attachment 1B
Concentration versus Time Graphs



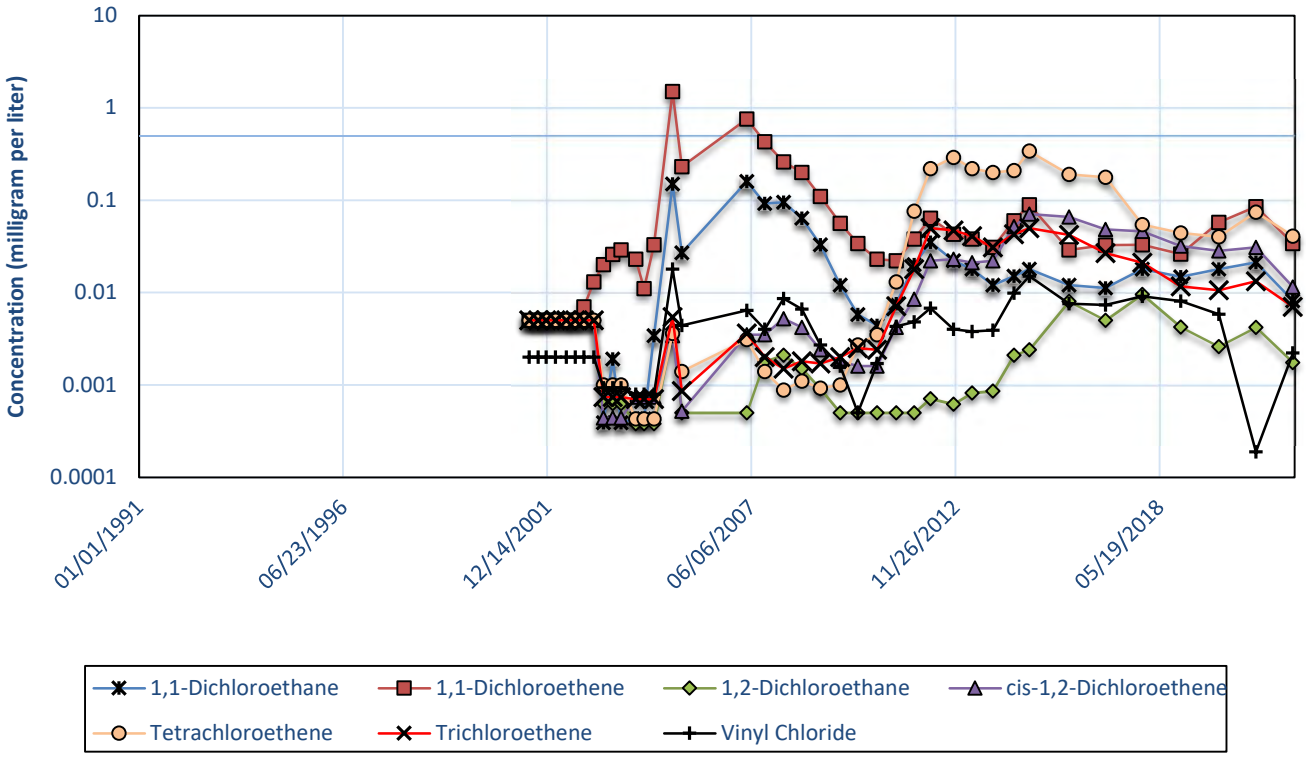


Attachment 1B
Concentration versus Time Graphs

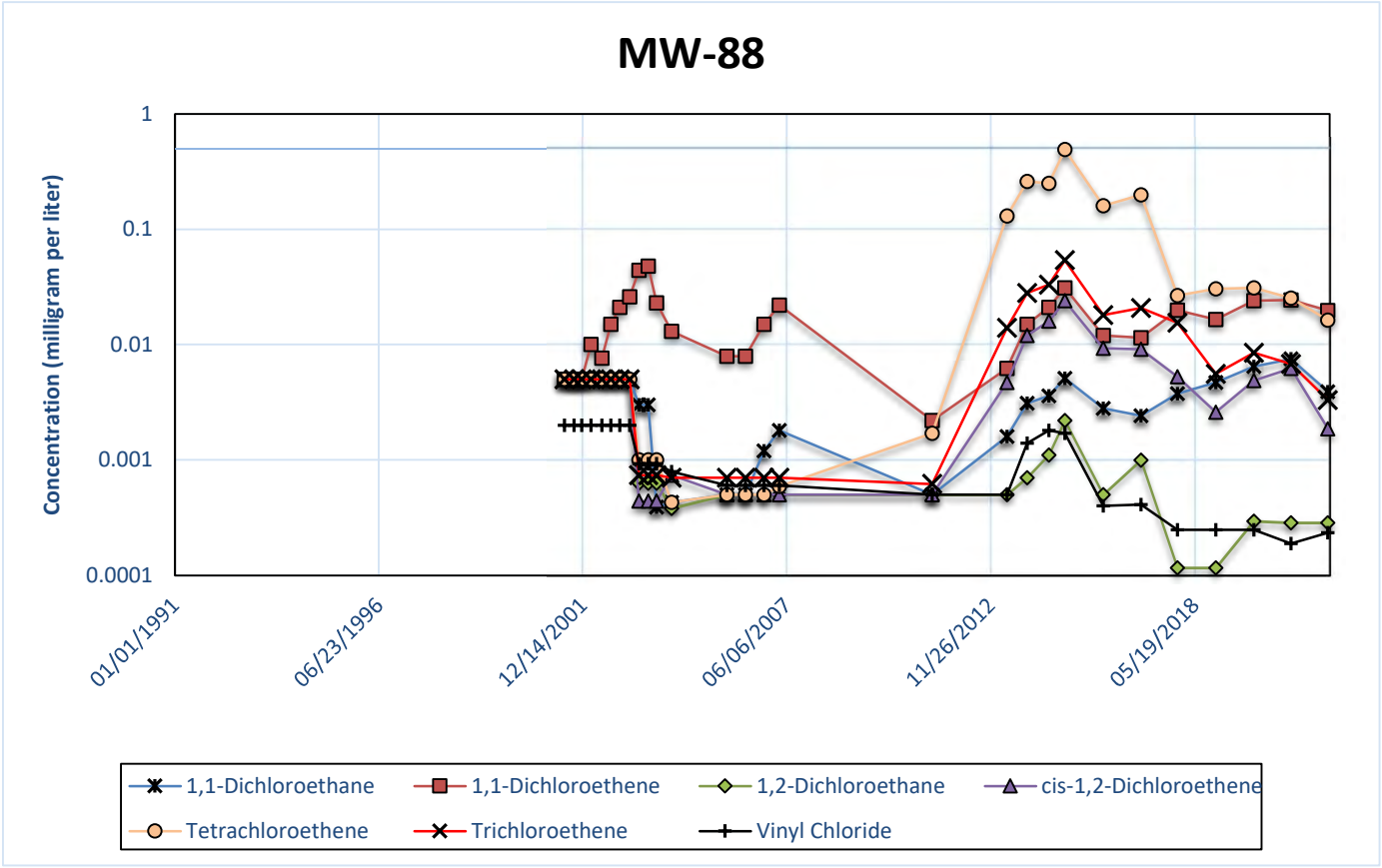
MW-77

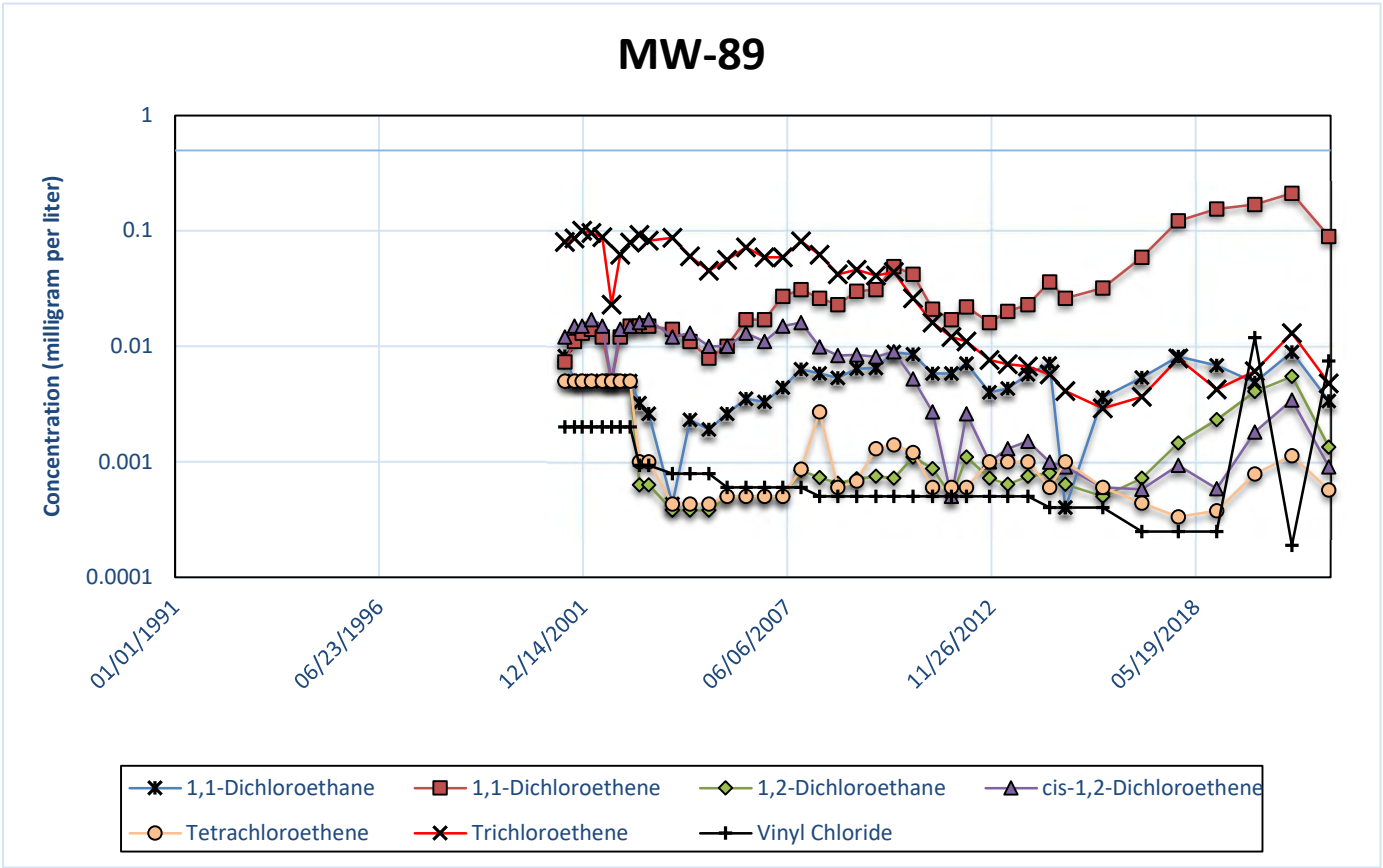


MW-83

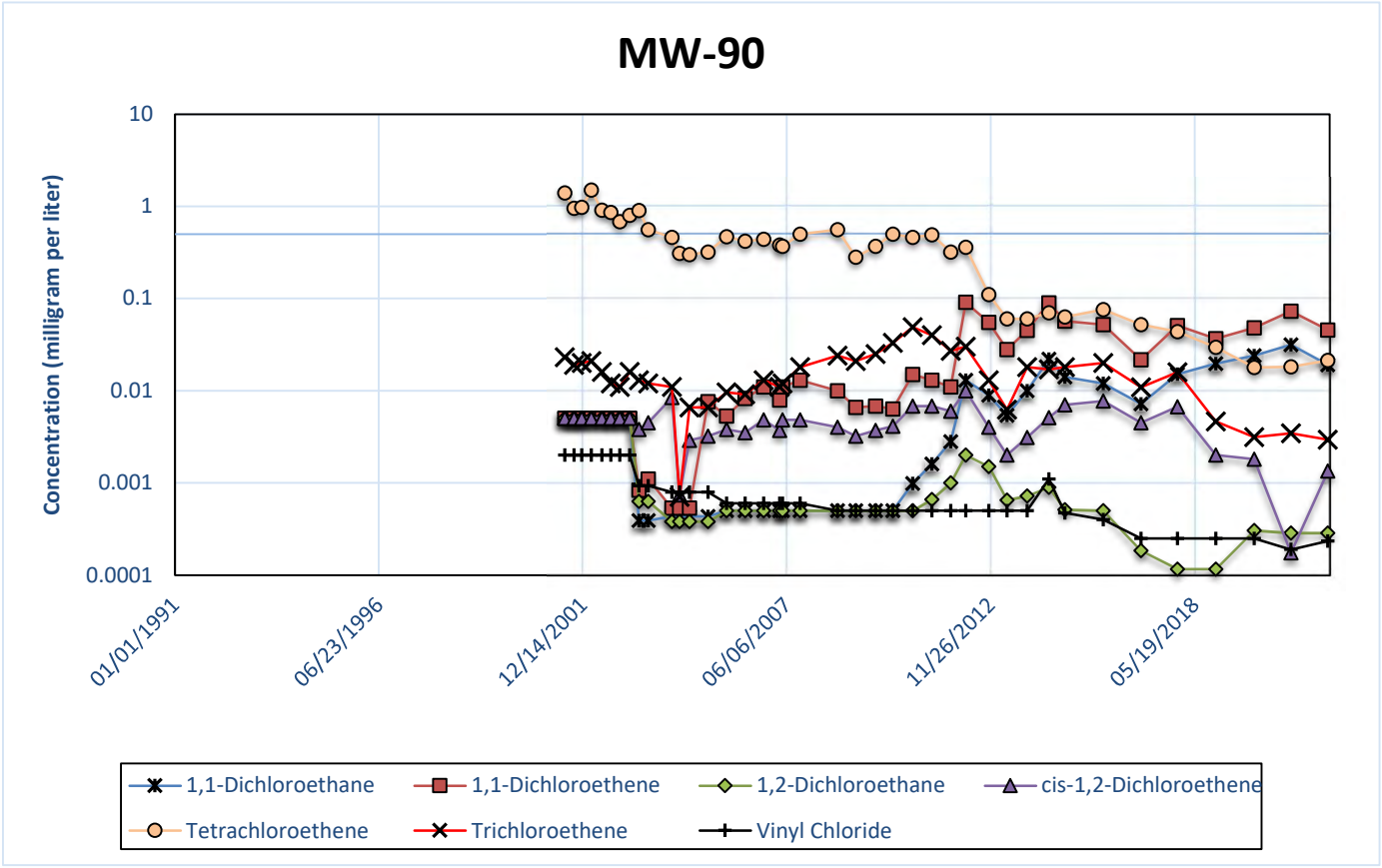


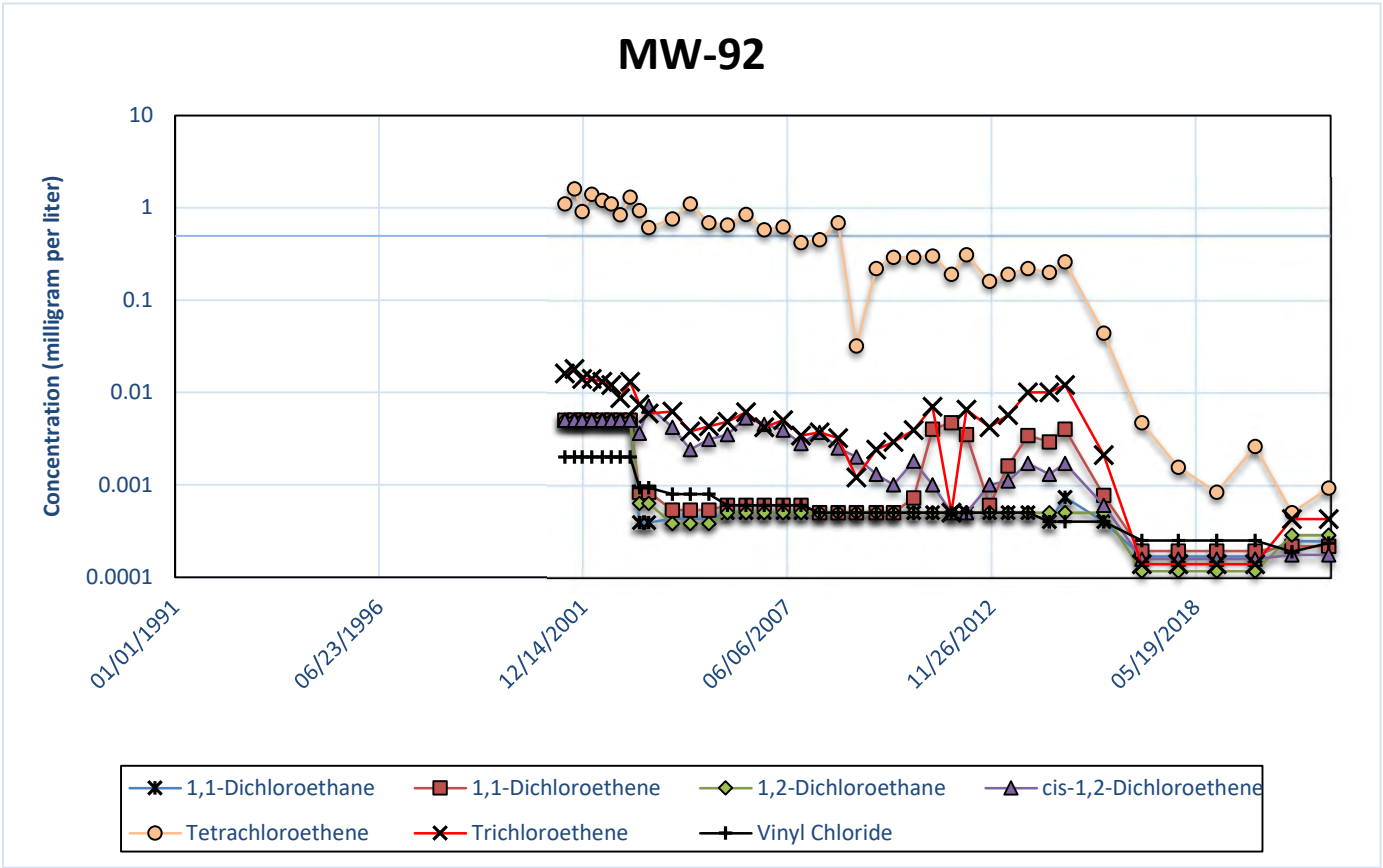
Attachment 1B
Concentration versus Time Graphs



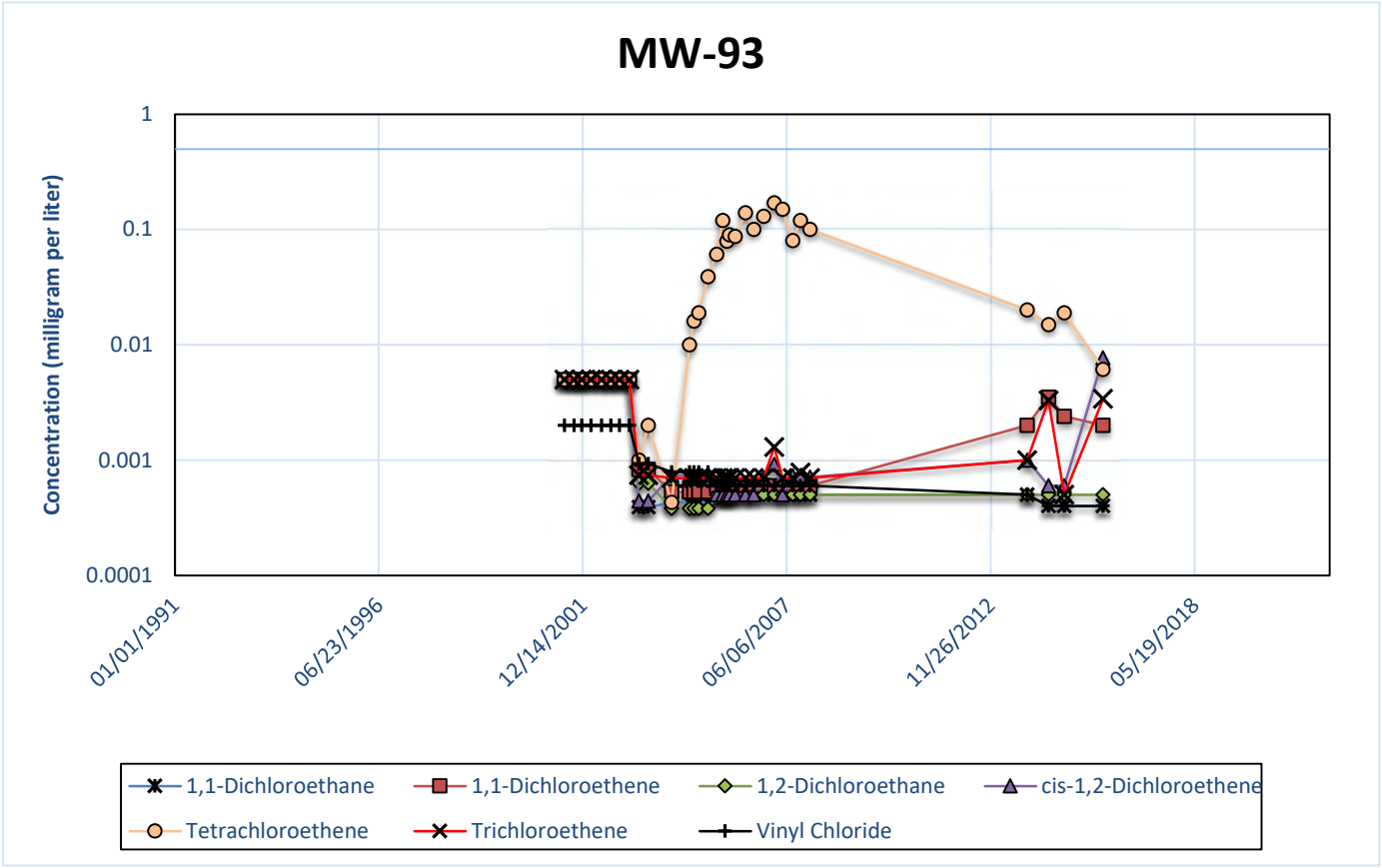


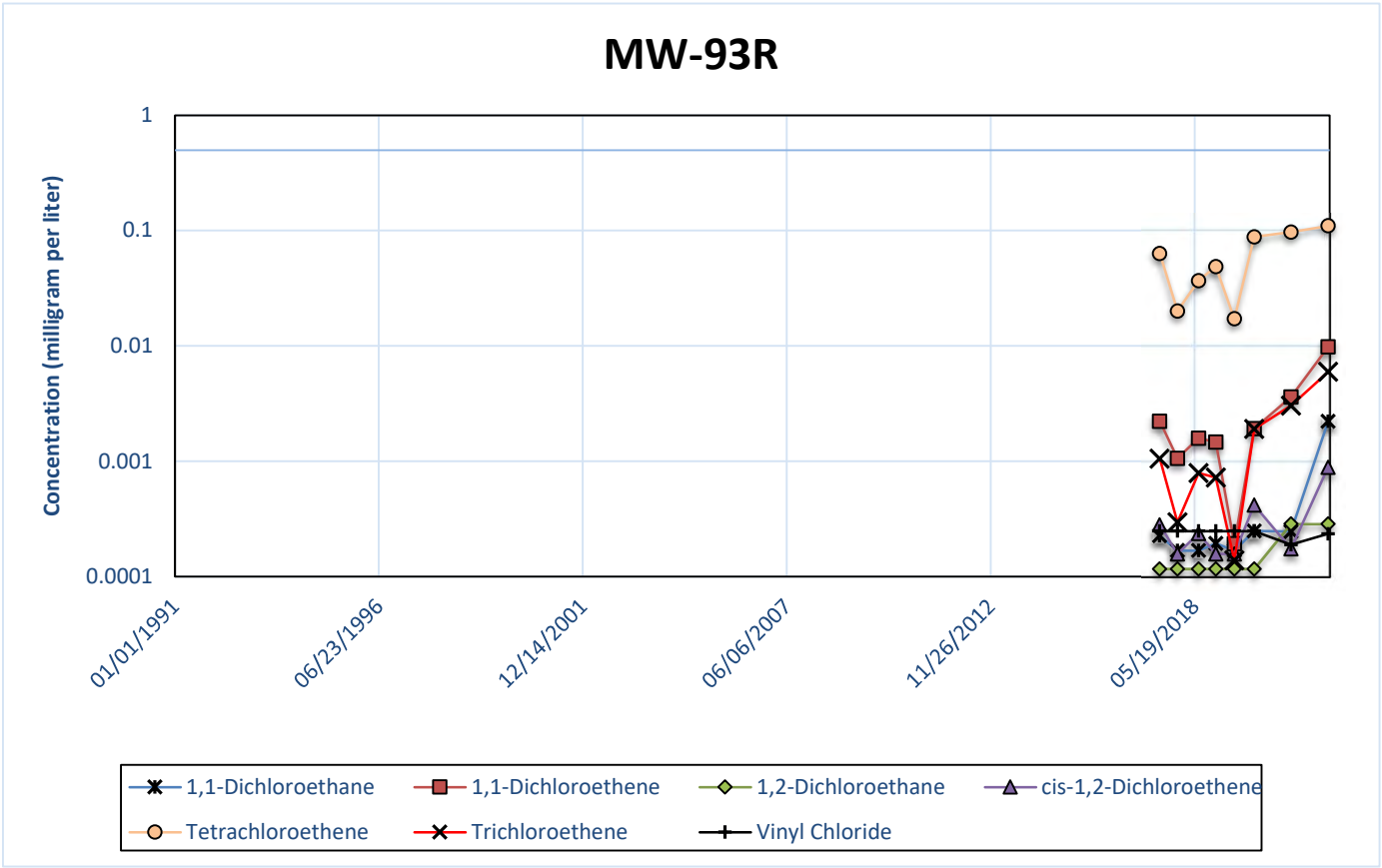
Attachment 1B
Concentration versus Time Graphs



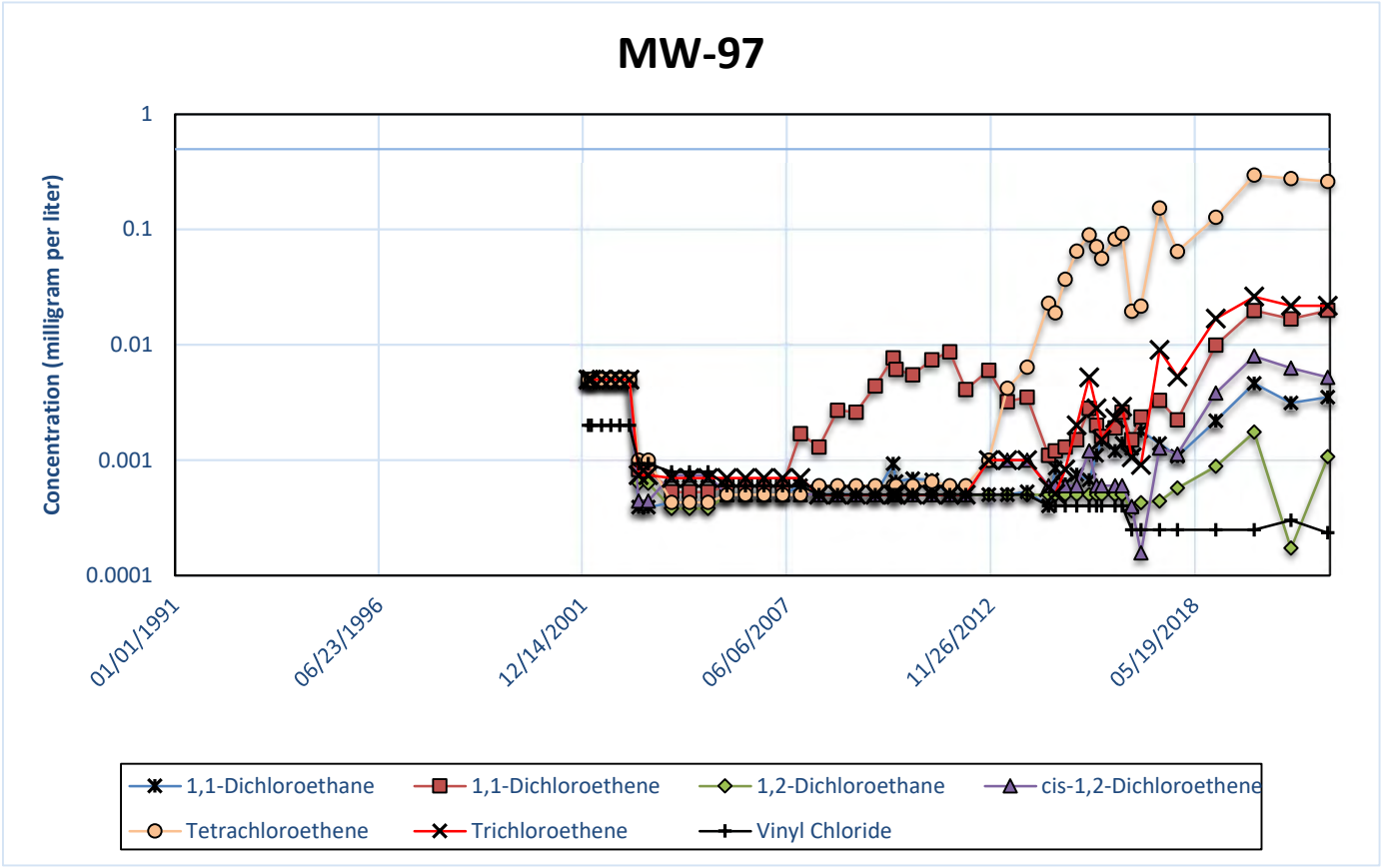


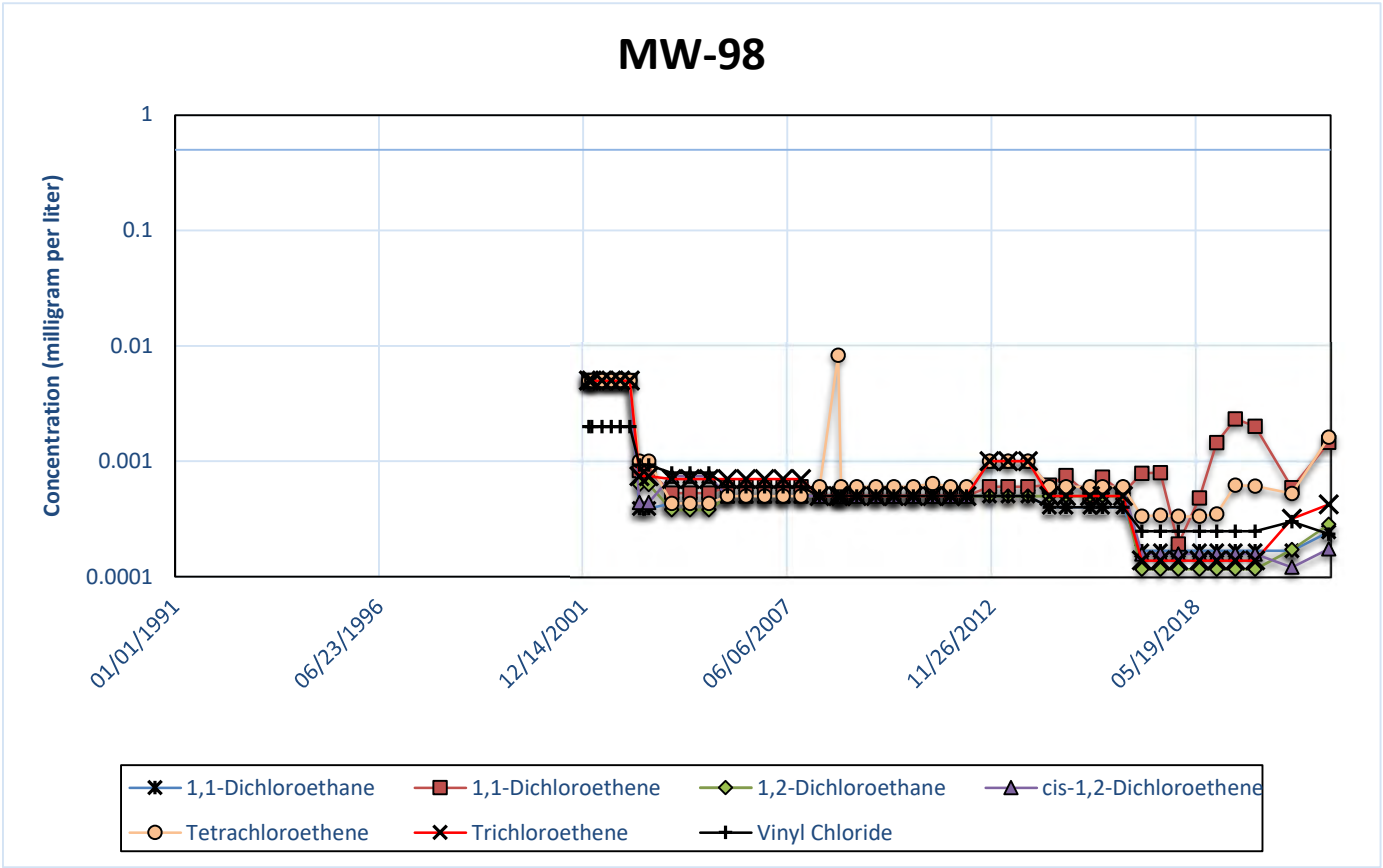
Attachment 1B
Concentration versus Time Graphs



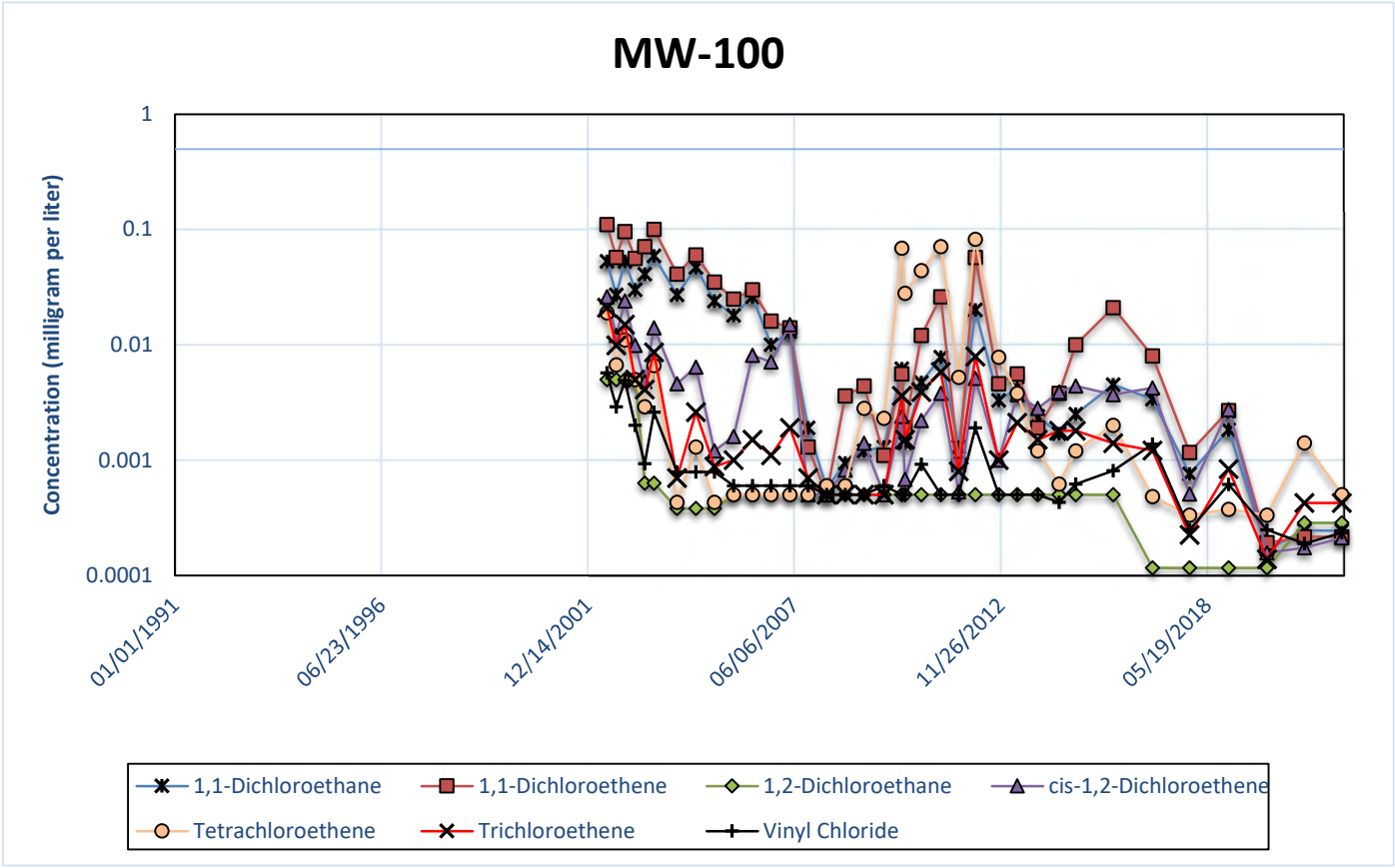


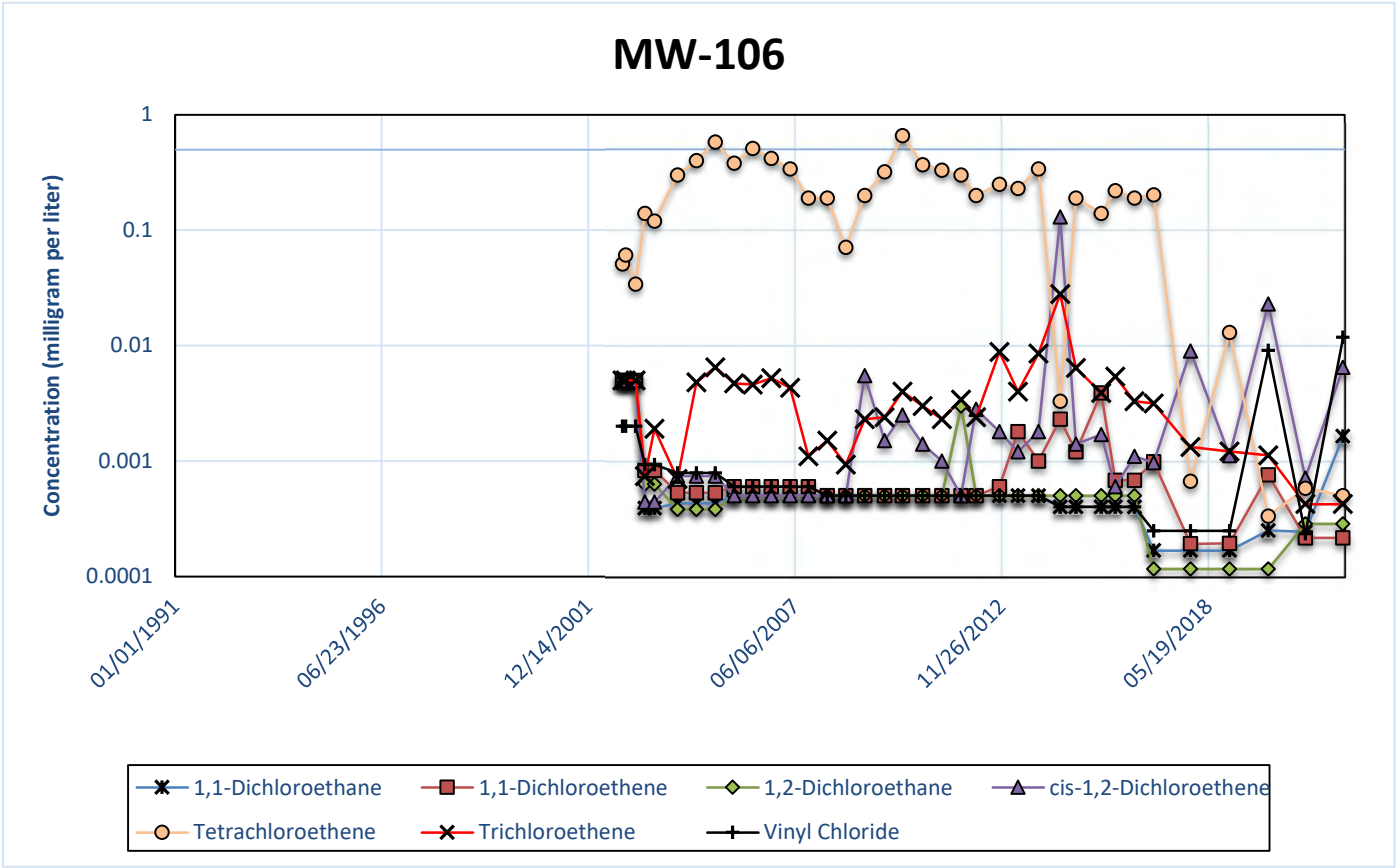
Attachment 1B
Concentration versus Time Graphs





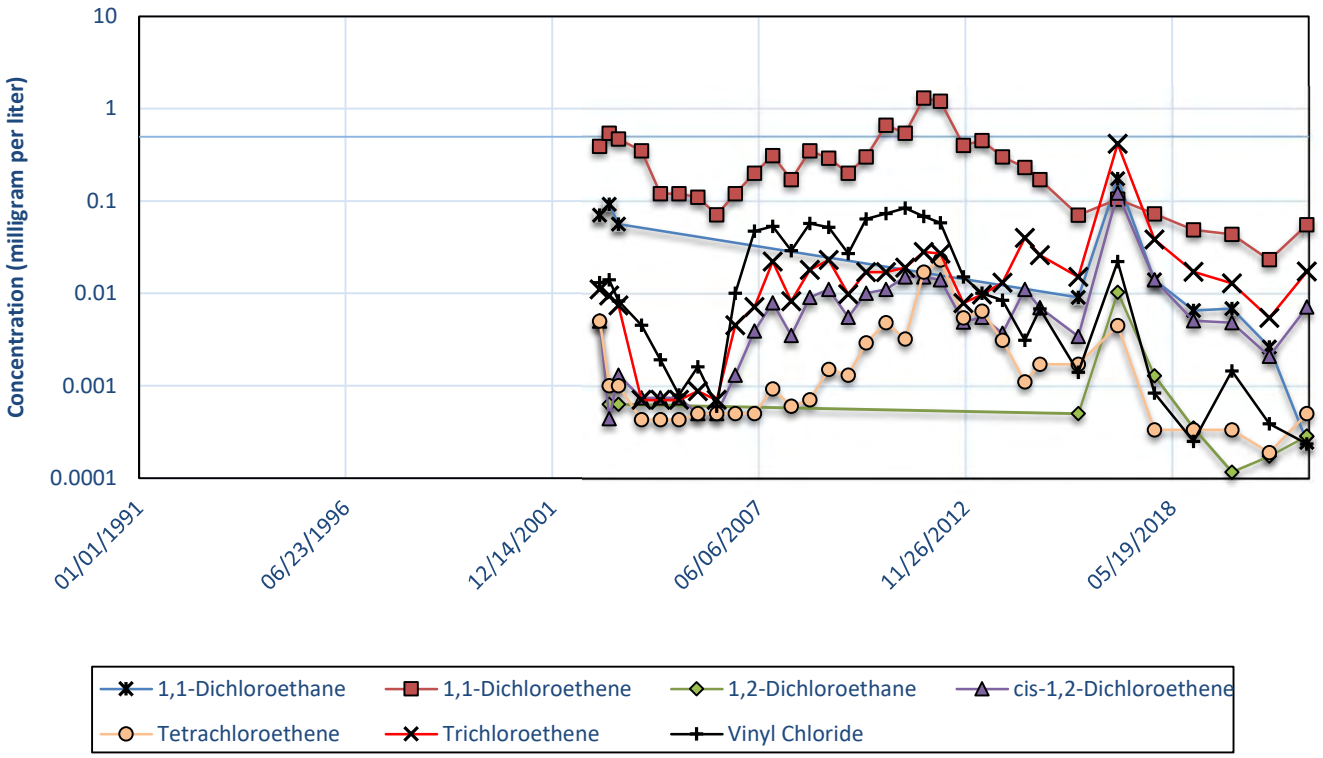
Attachment 1B
Concentration versus Time Graphs



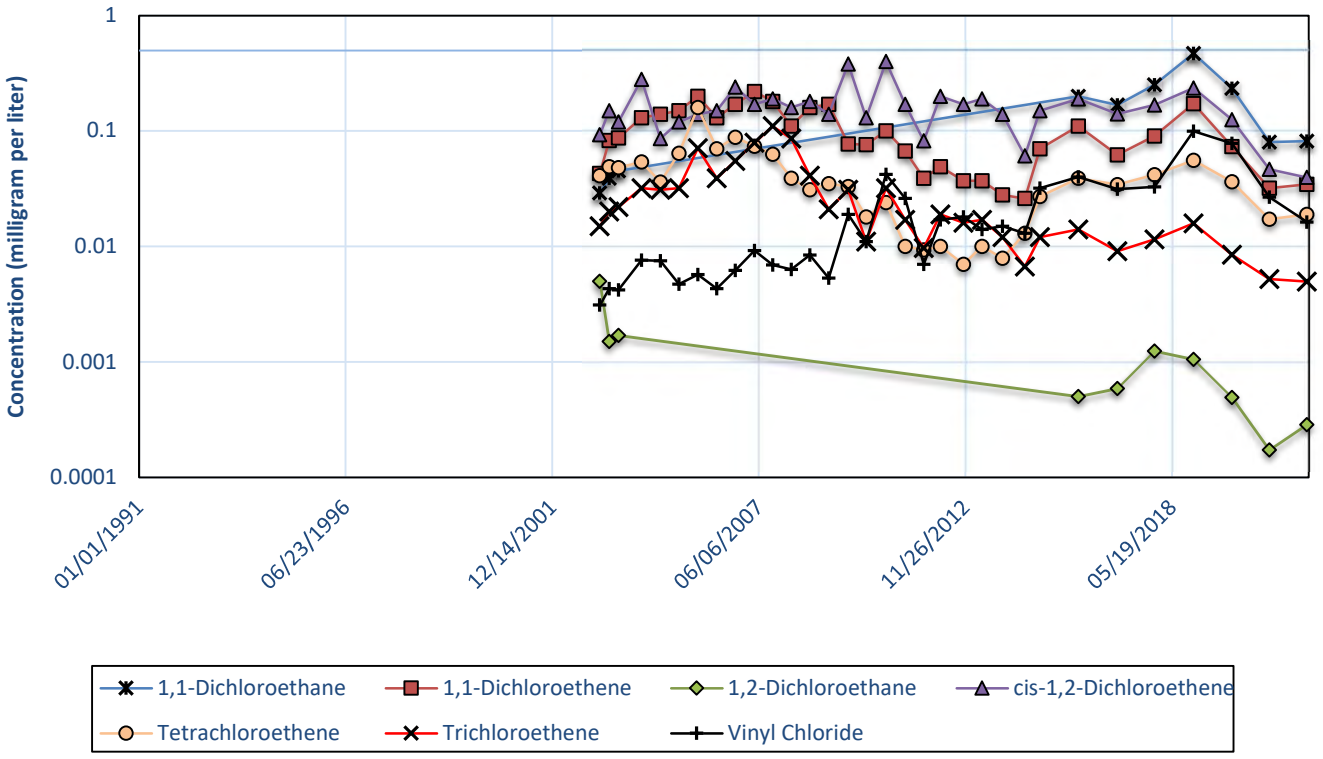


Attachment 1B
Concentration versus Time Graphs

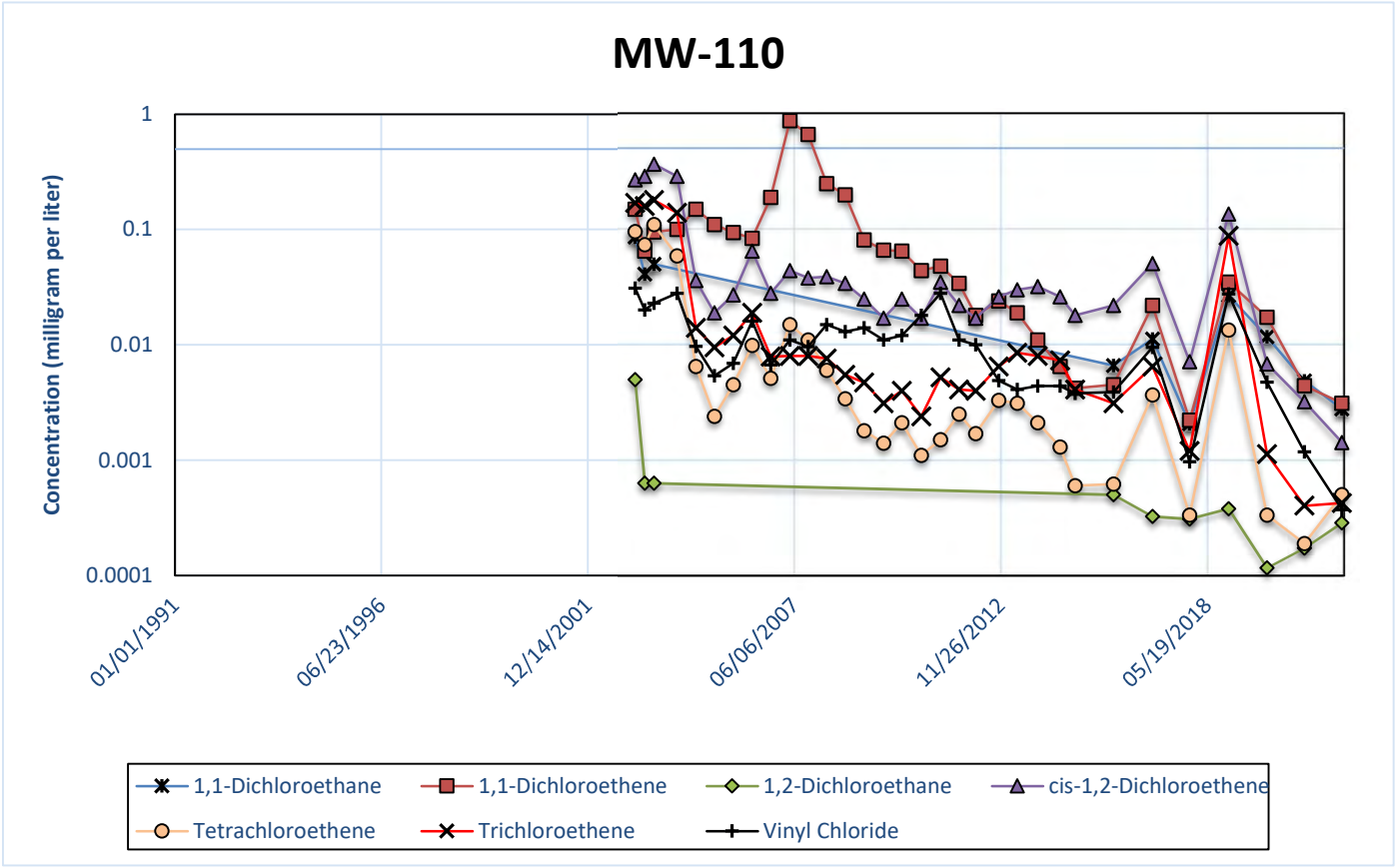
MW-108

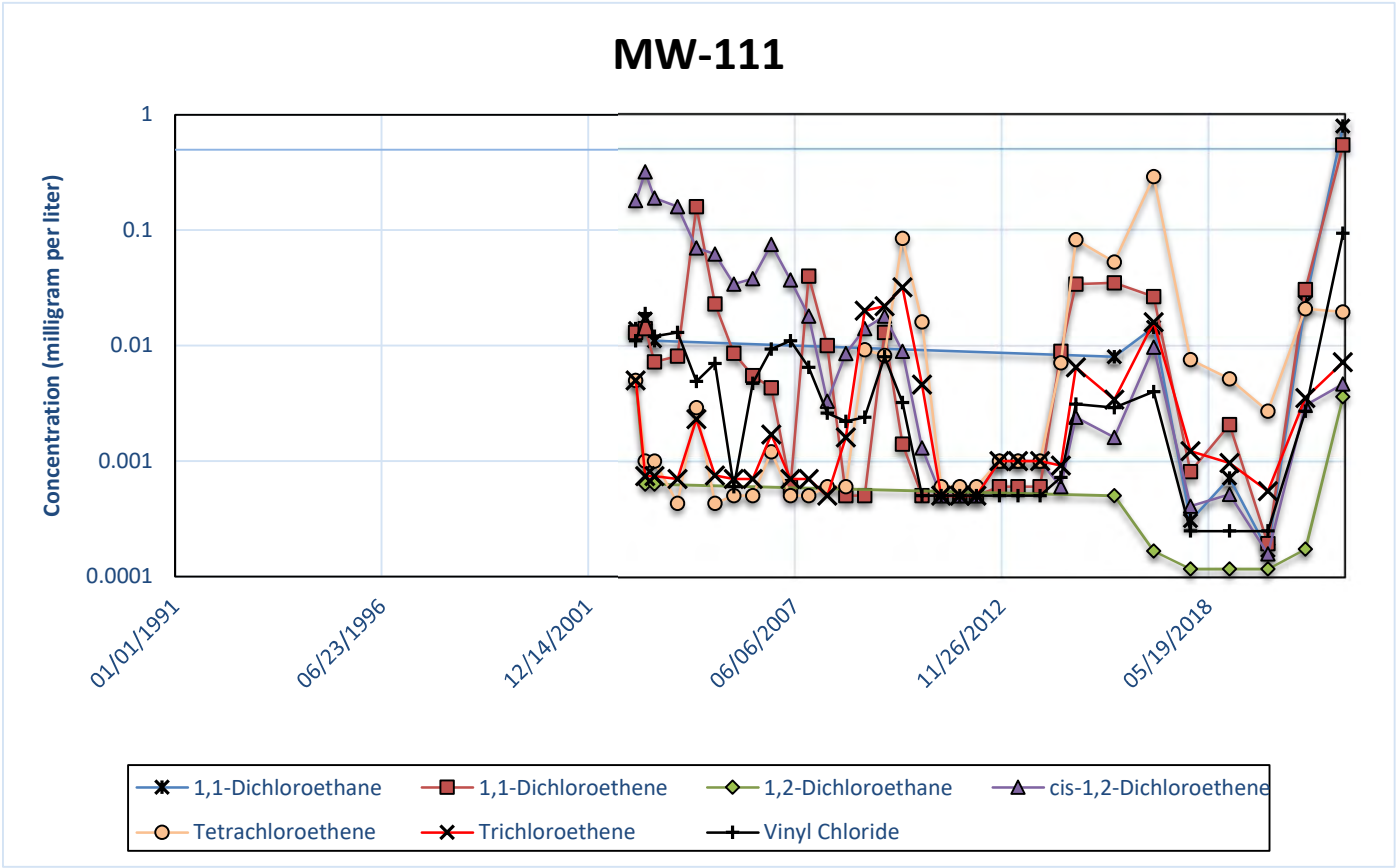


MW-109

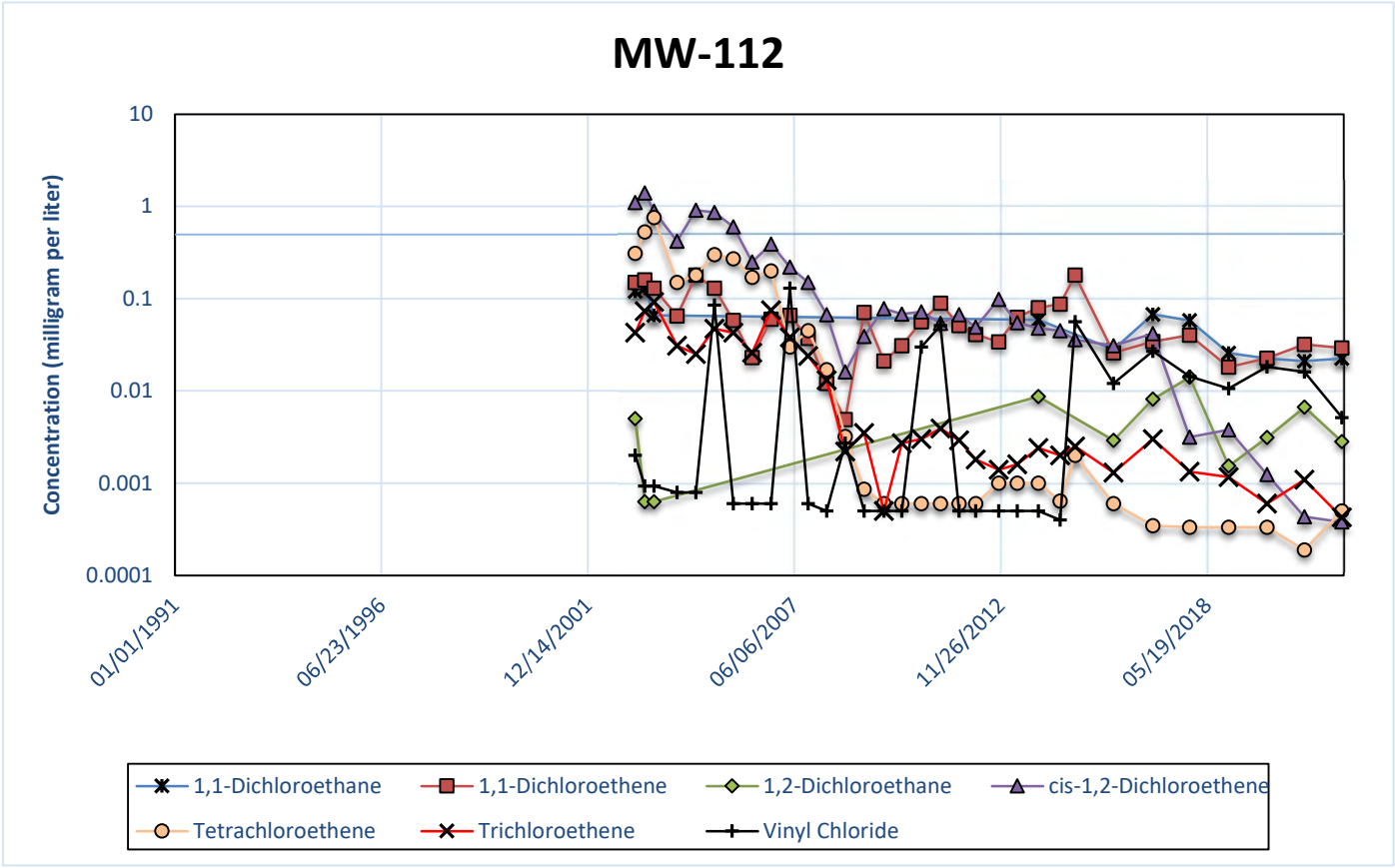


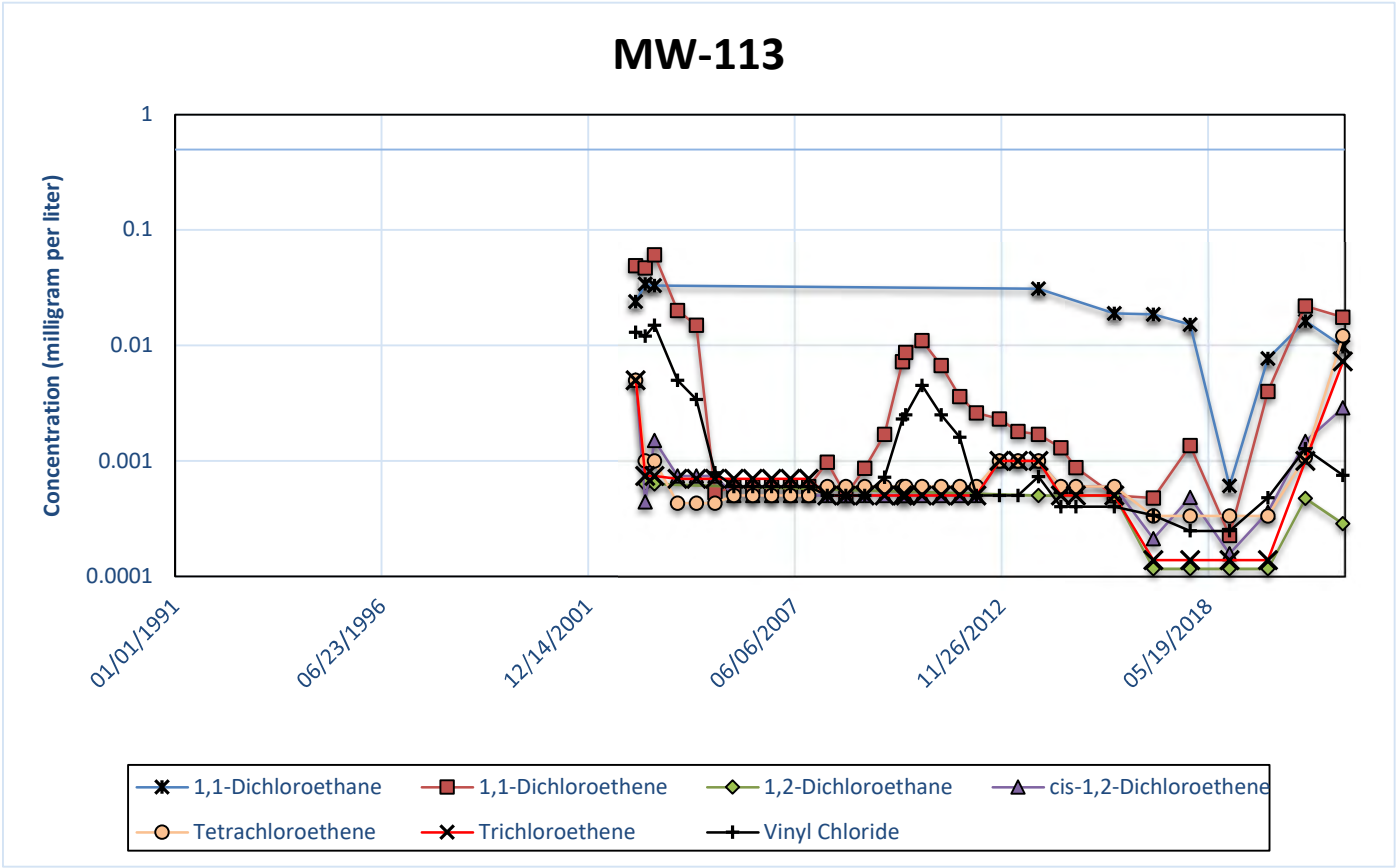
Attachment 1B
Concentration versus Time Graphs



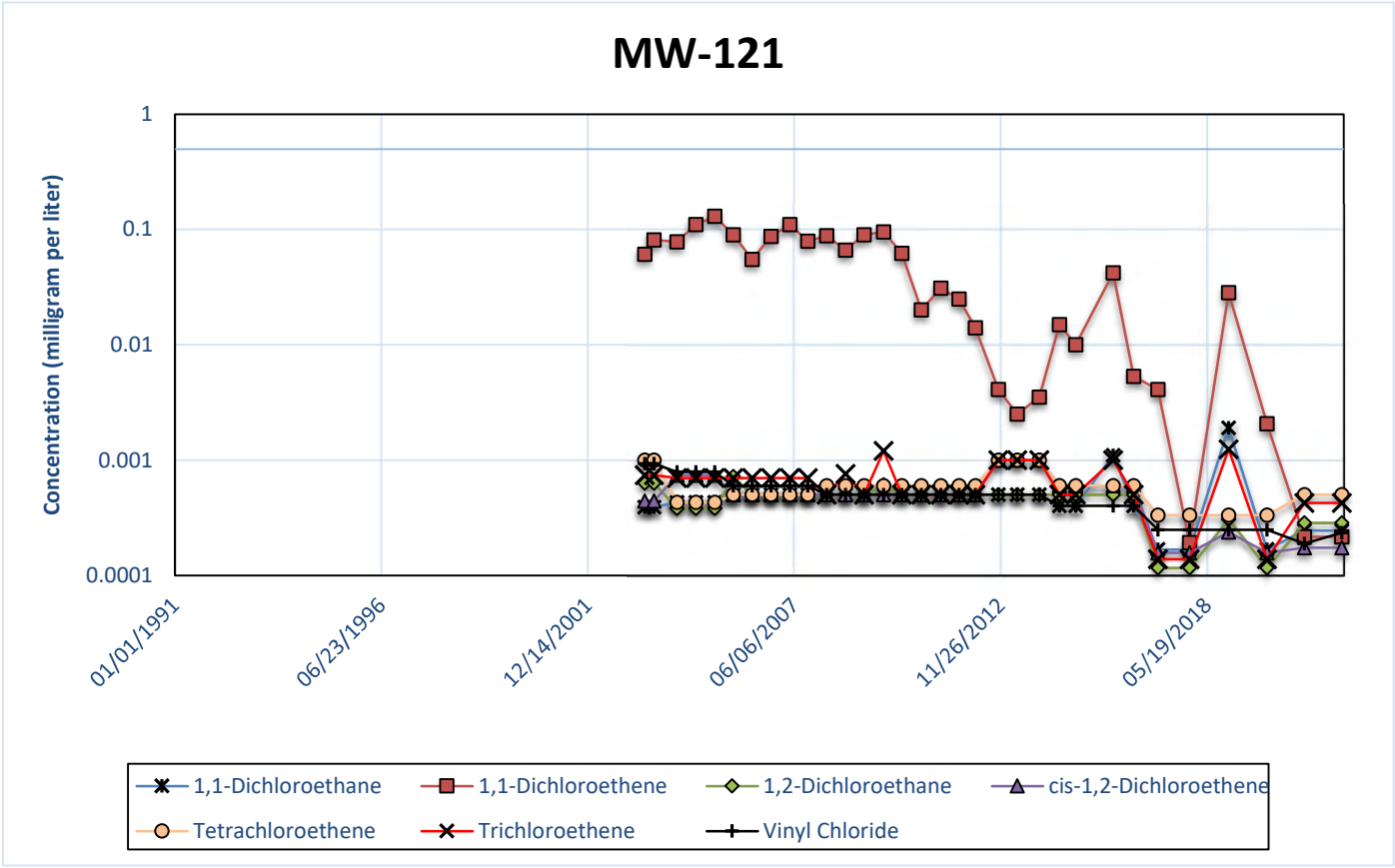


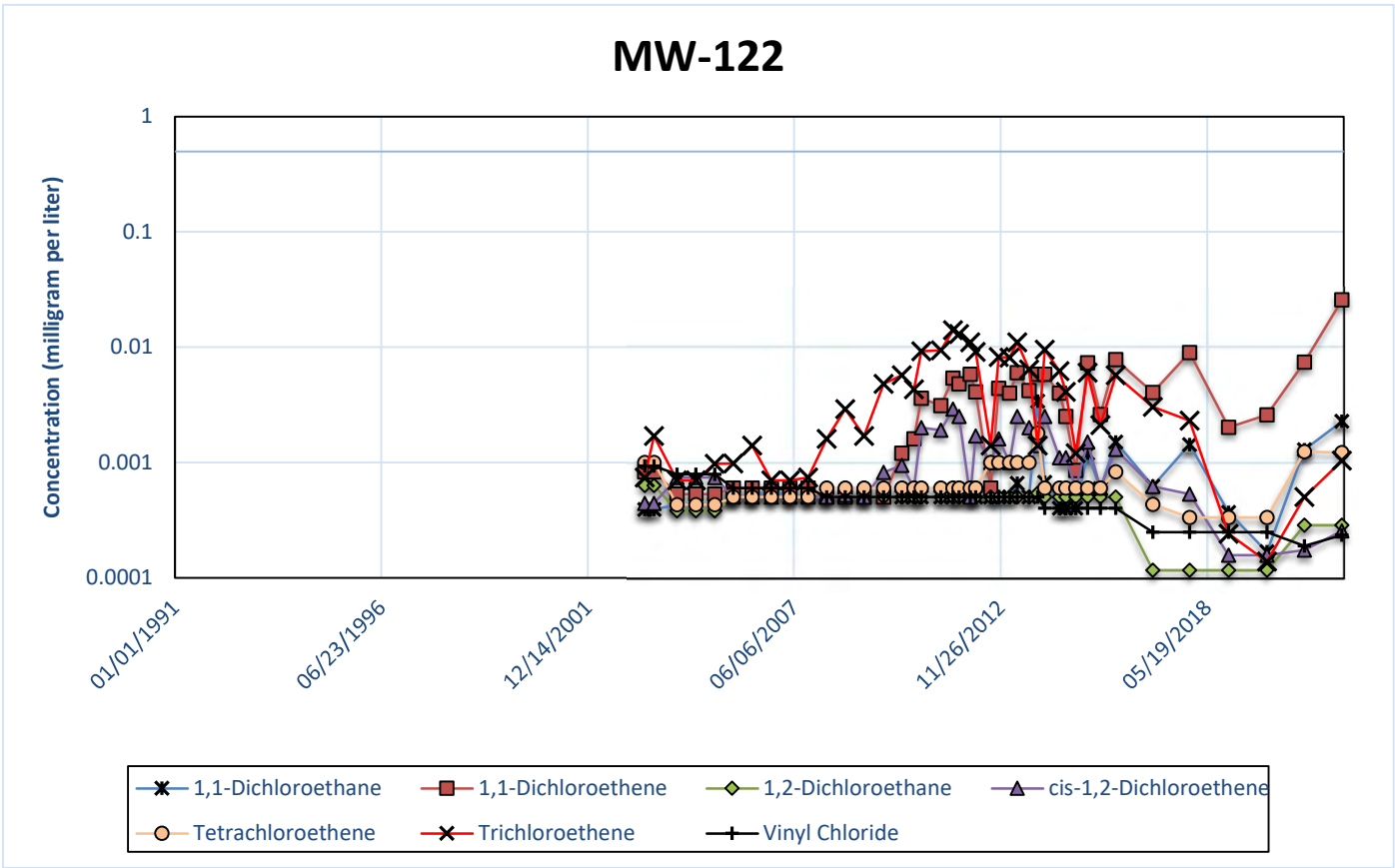
Attachment 1B
Concentration versus Time Graphs



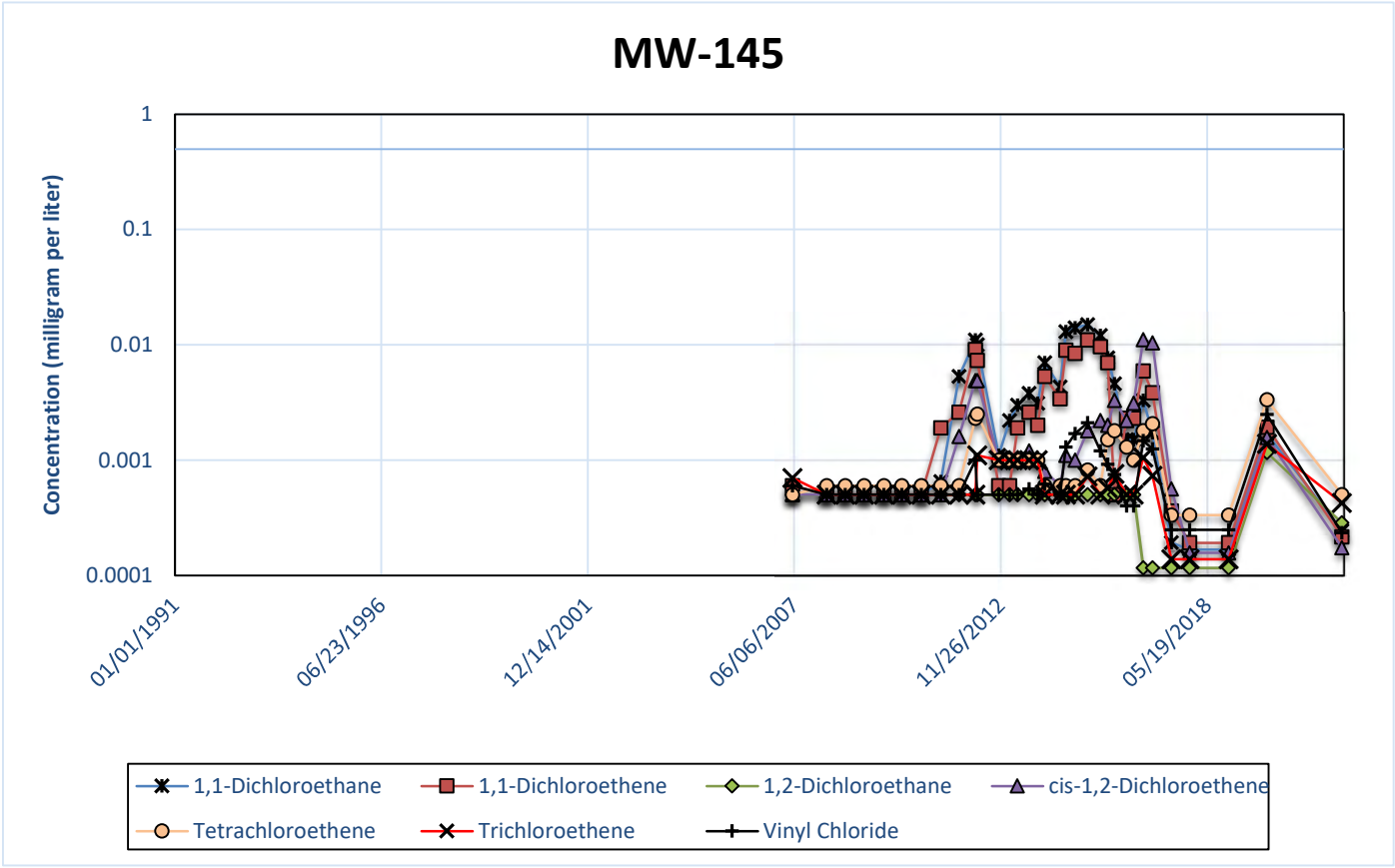


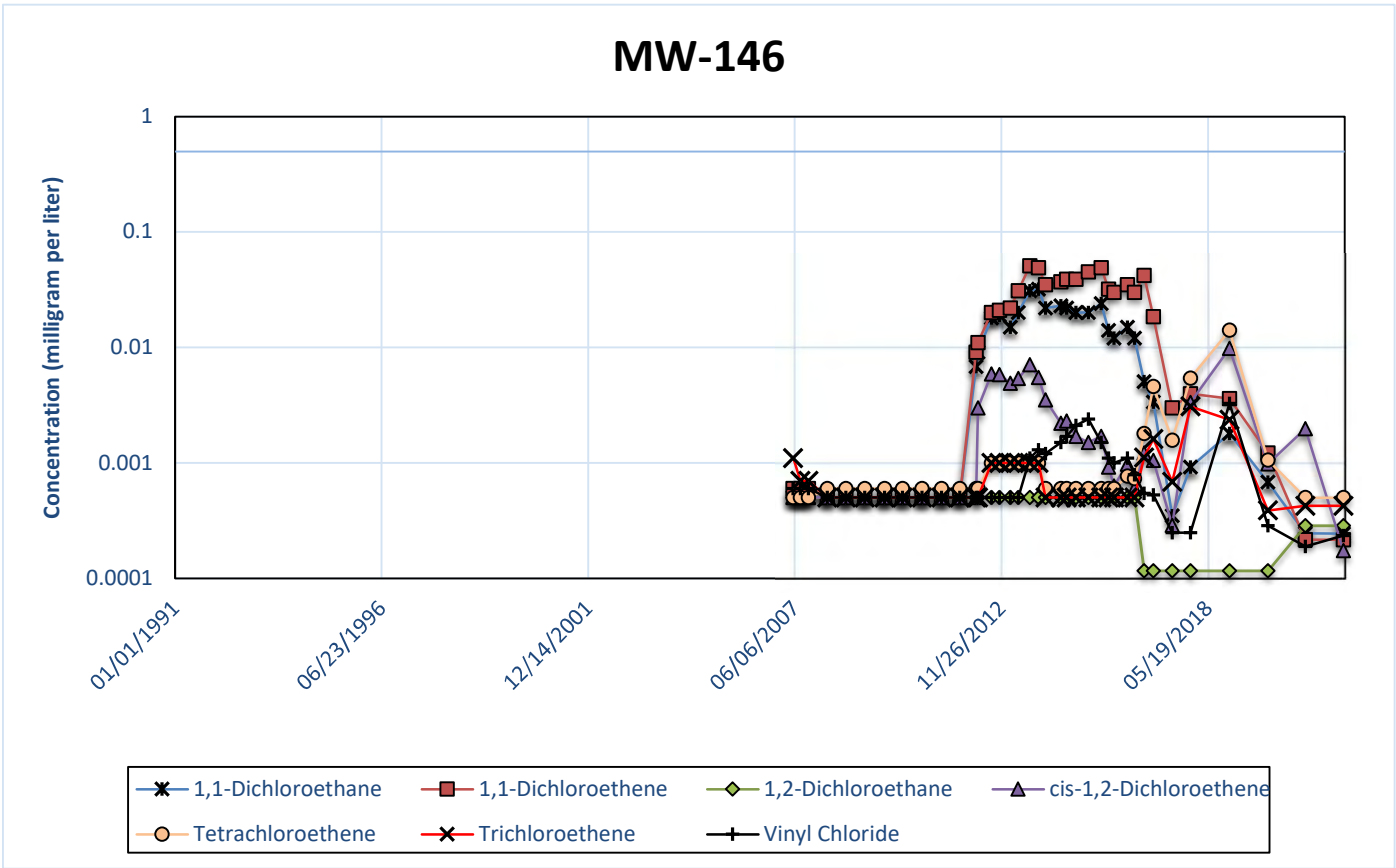
Attachment 1B
Concentration versus Time Graphs





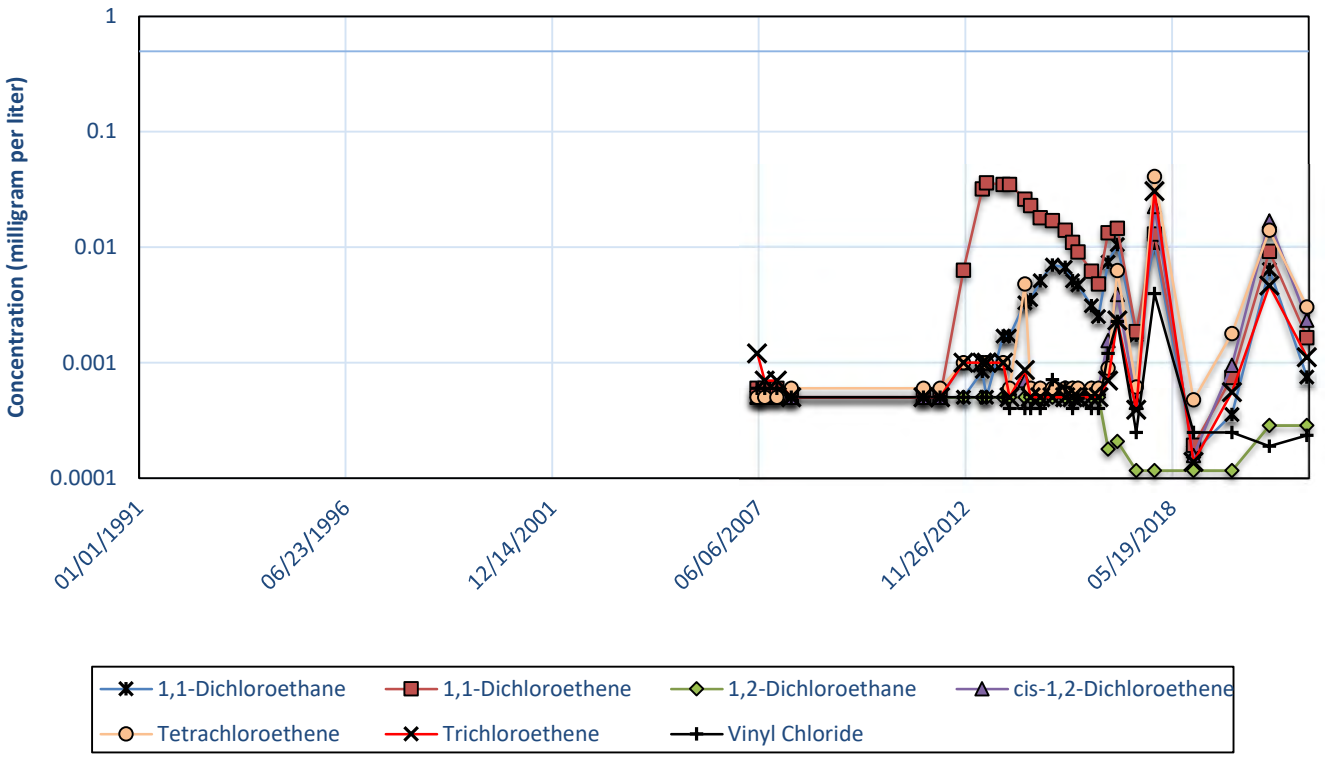
Attachment 1B
Concentration versus Time Graphs





Attachment 1B
Concentration versus Time Graphs

MW-147



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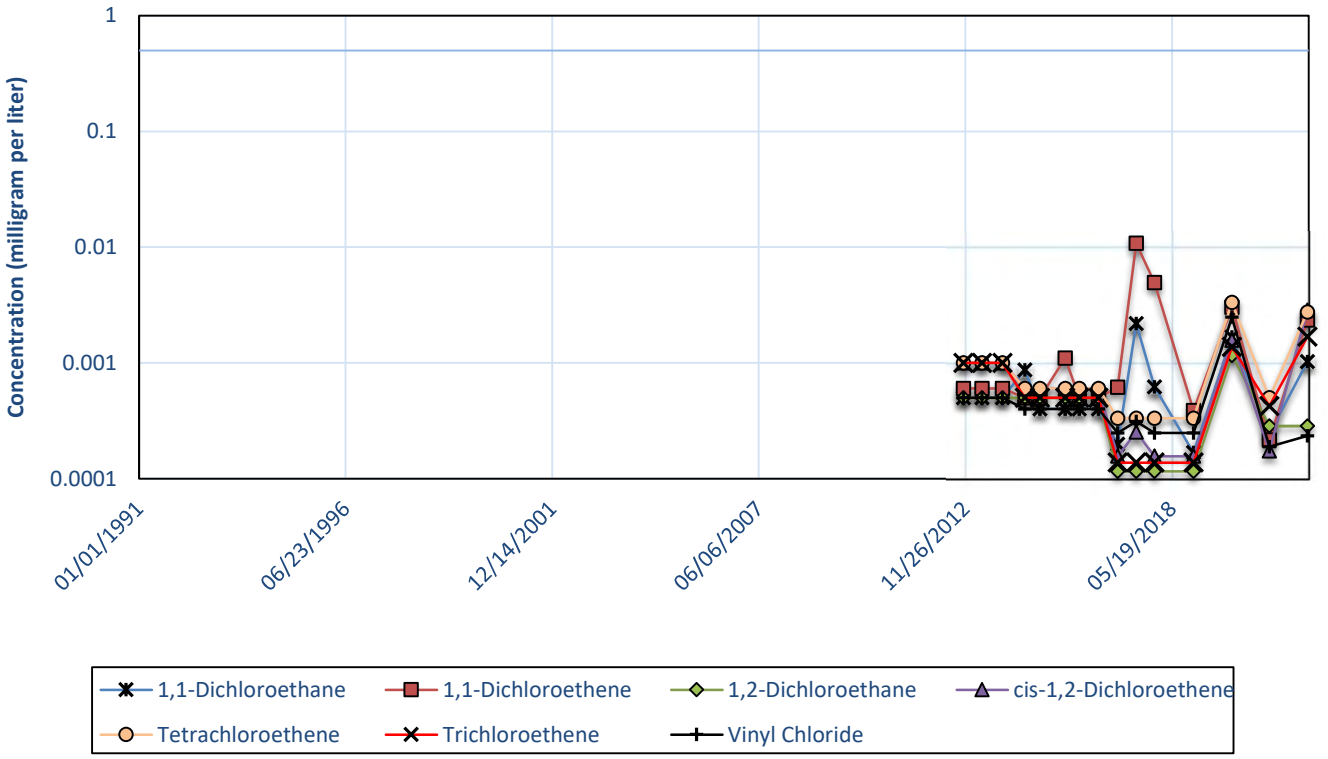
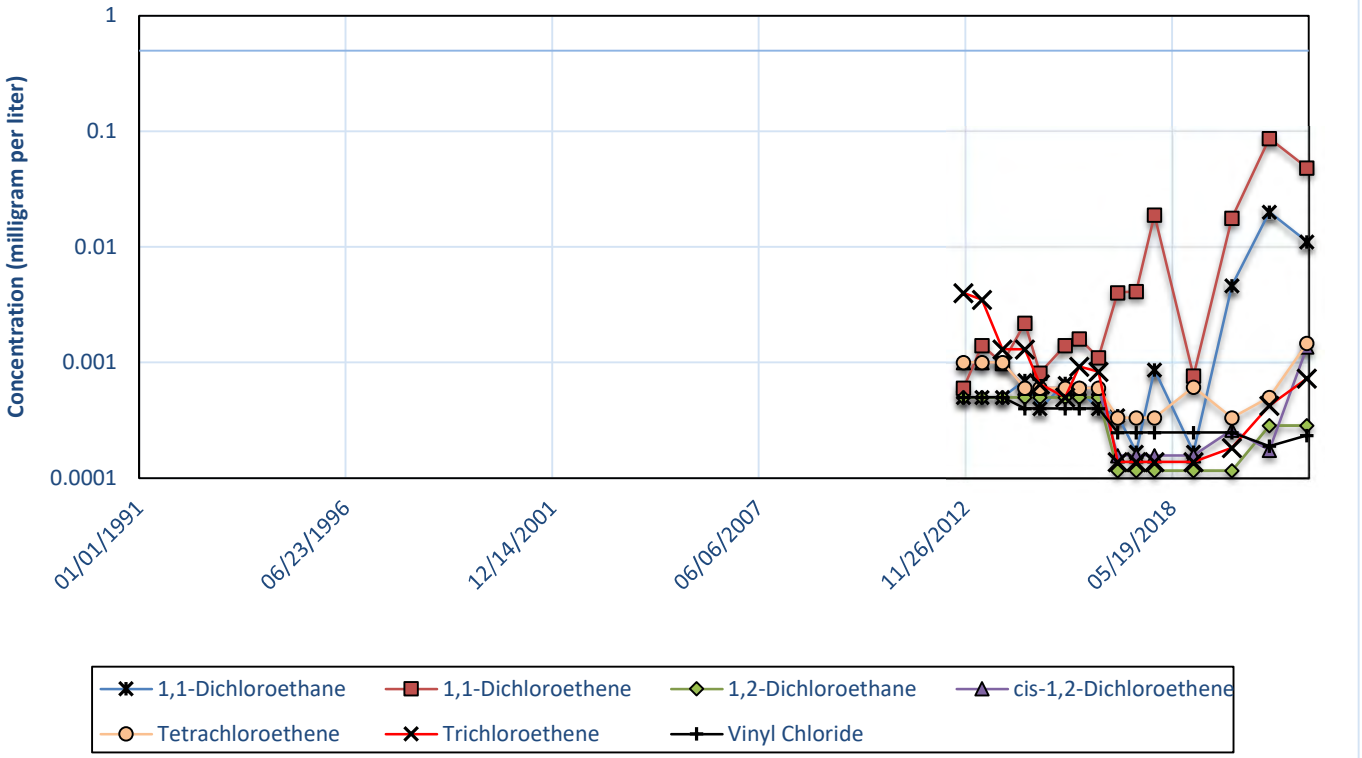


Attachment 1B
Concentration versus Time Graphs

MW-161



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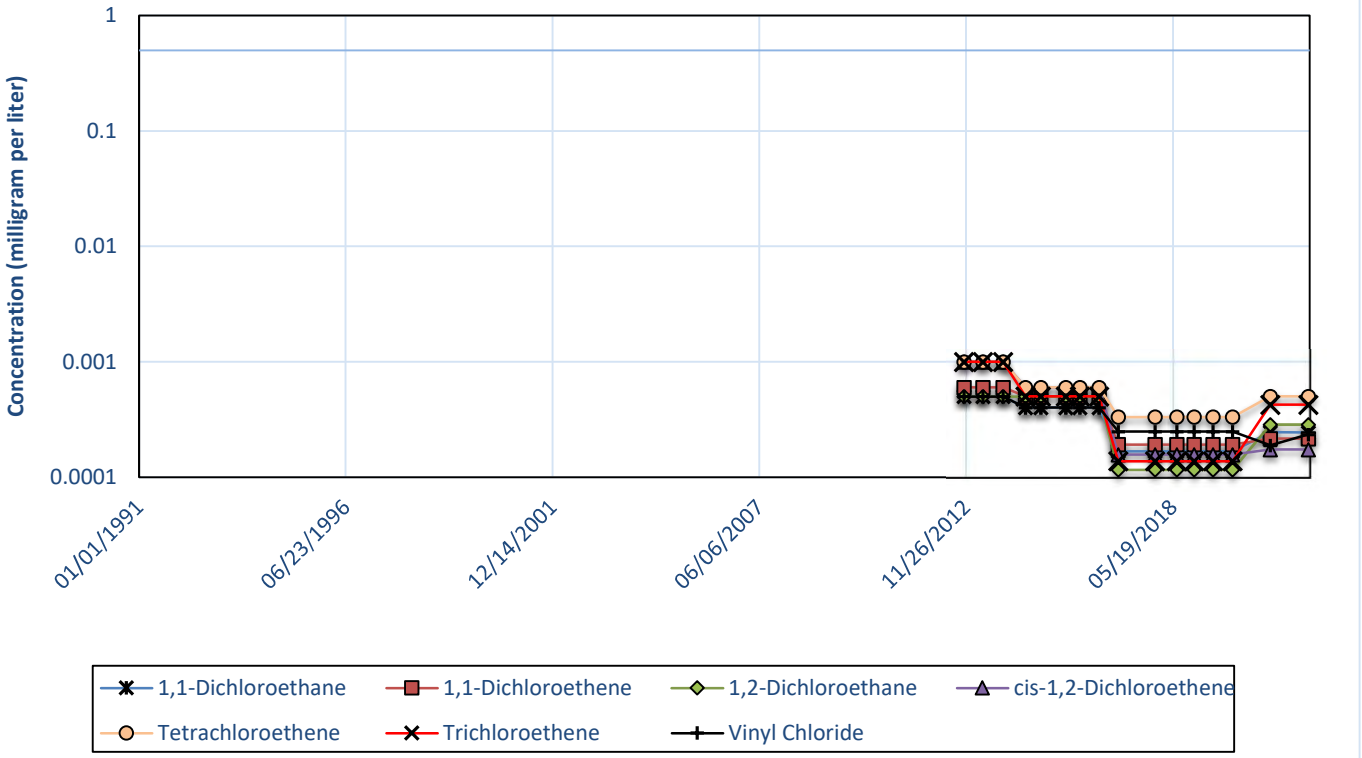
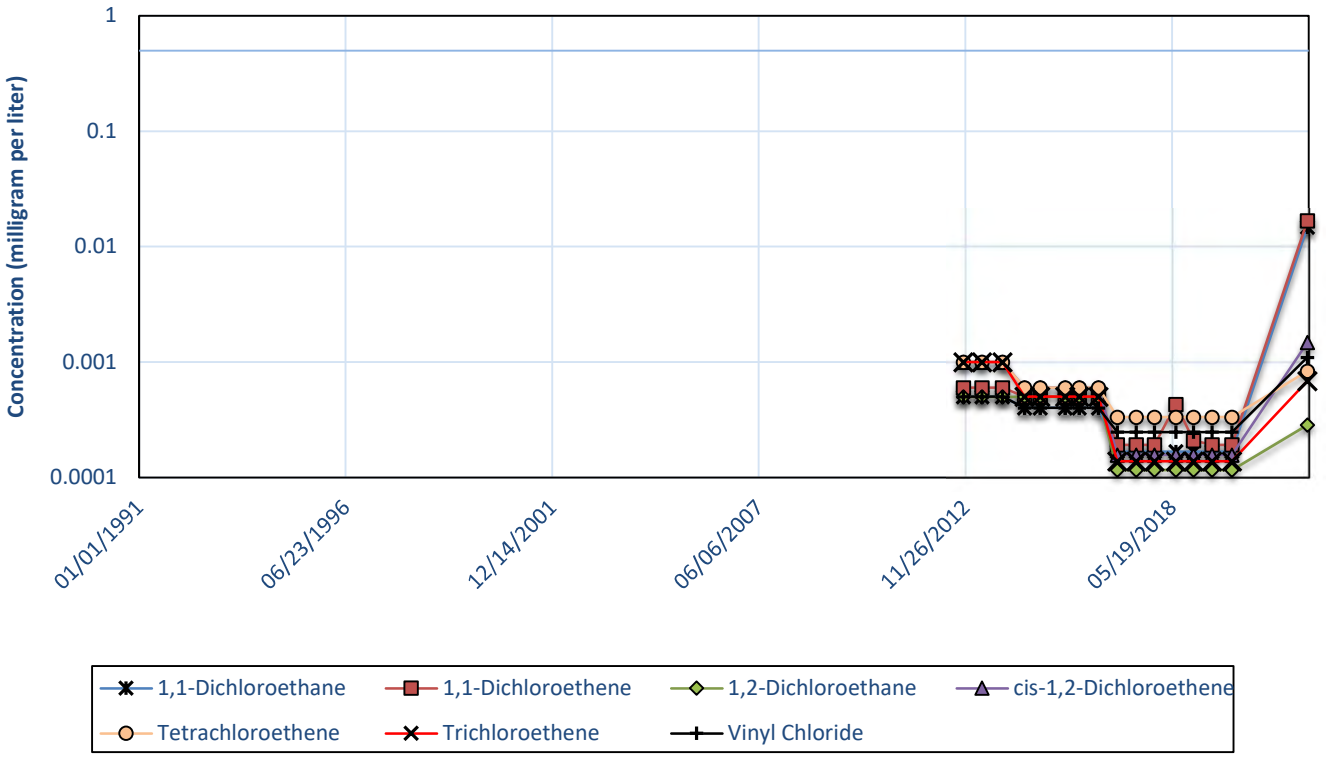


Attachment 1B
Concentration versus Time Graphs

MW-163



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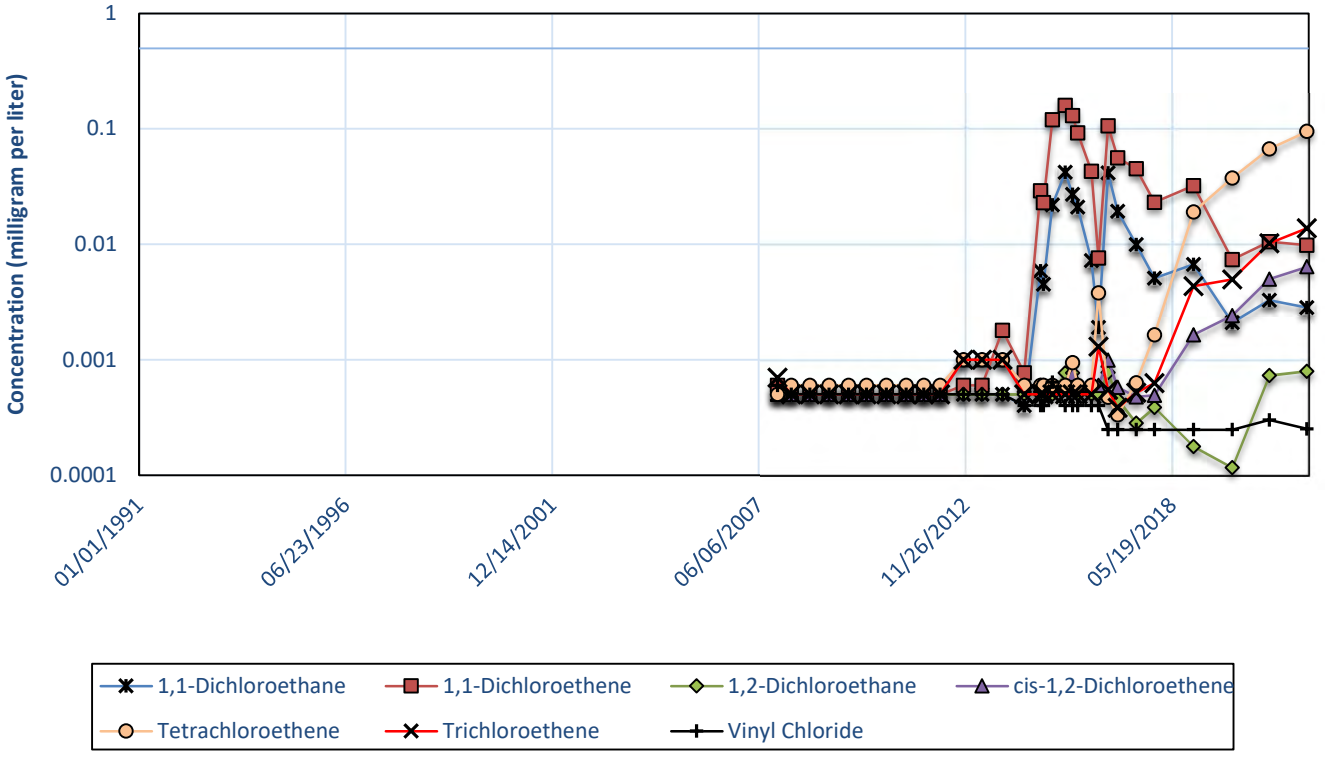
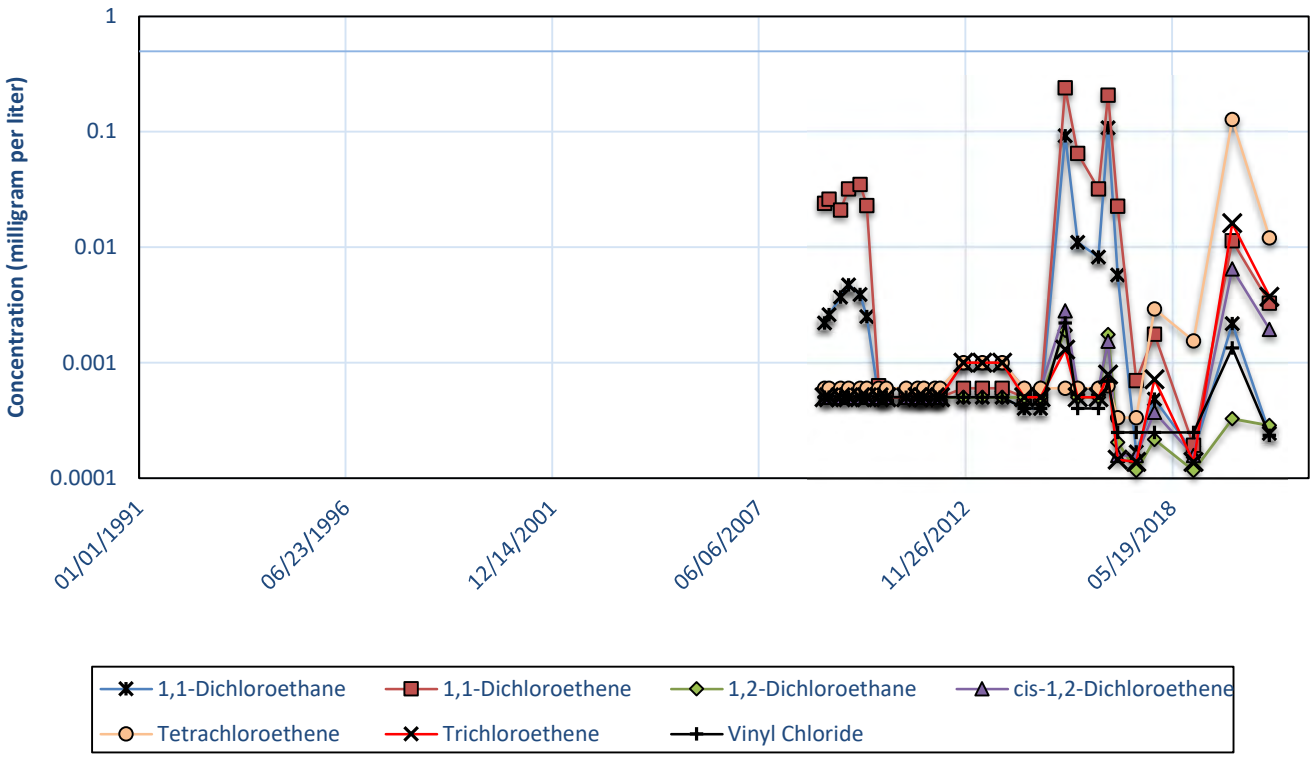
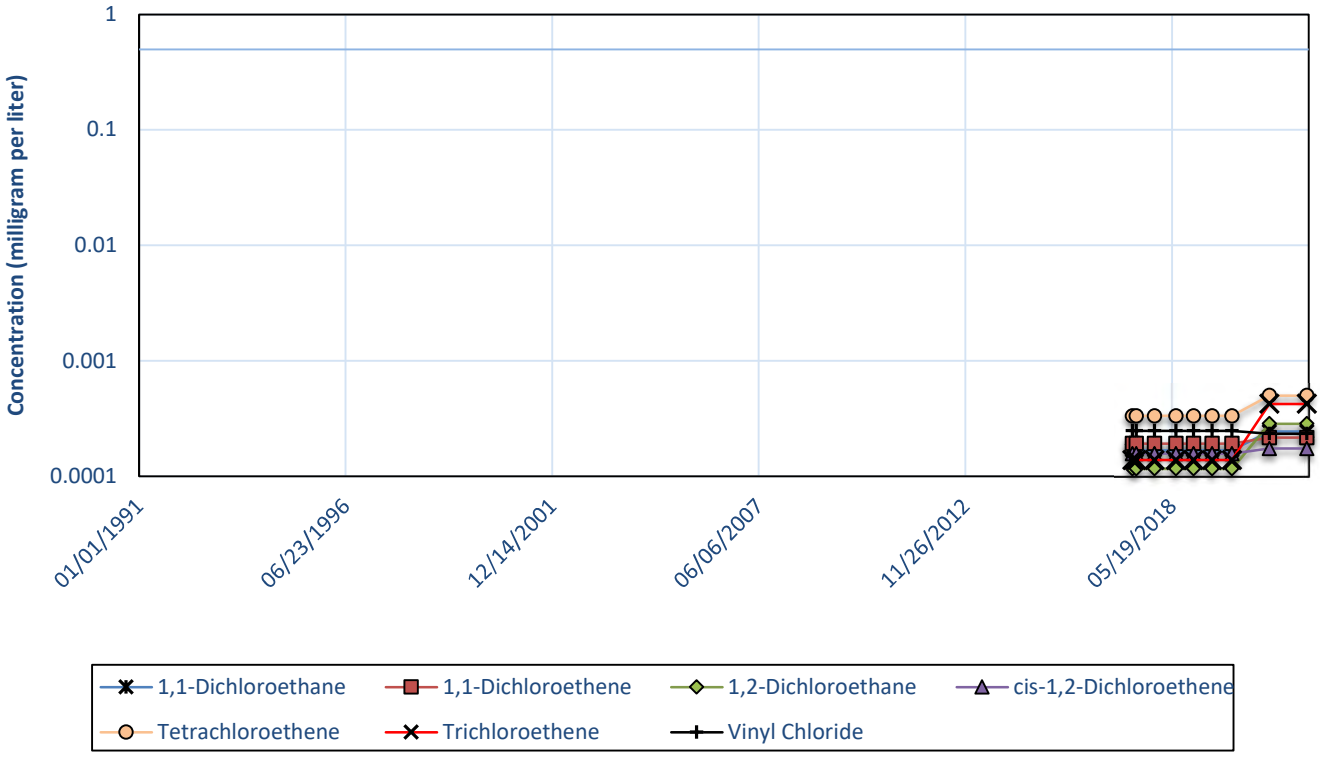


Attachment 1B
Concentration versus Time Graphs

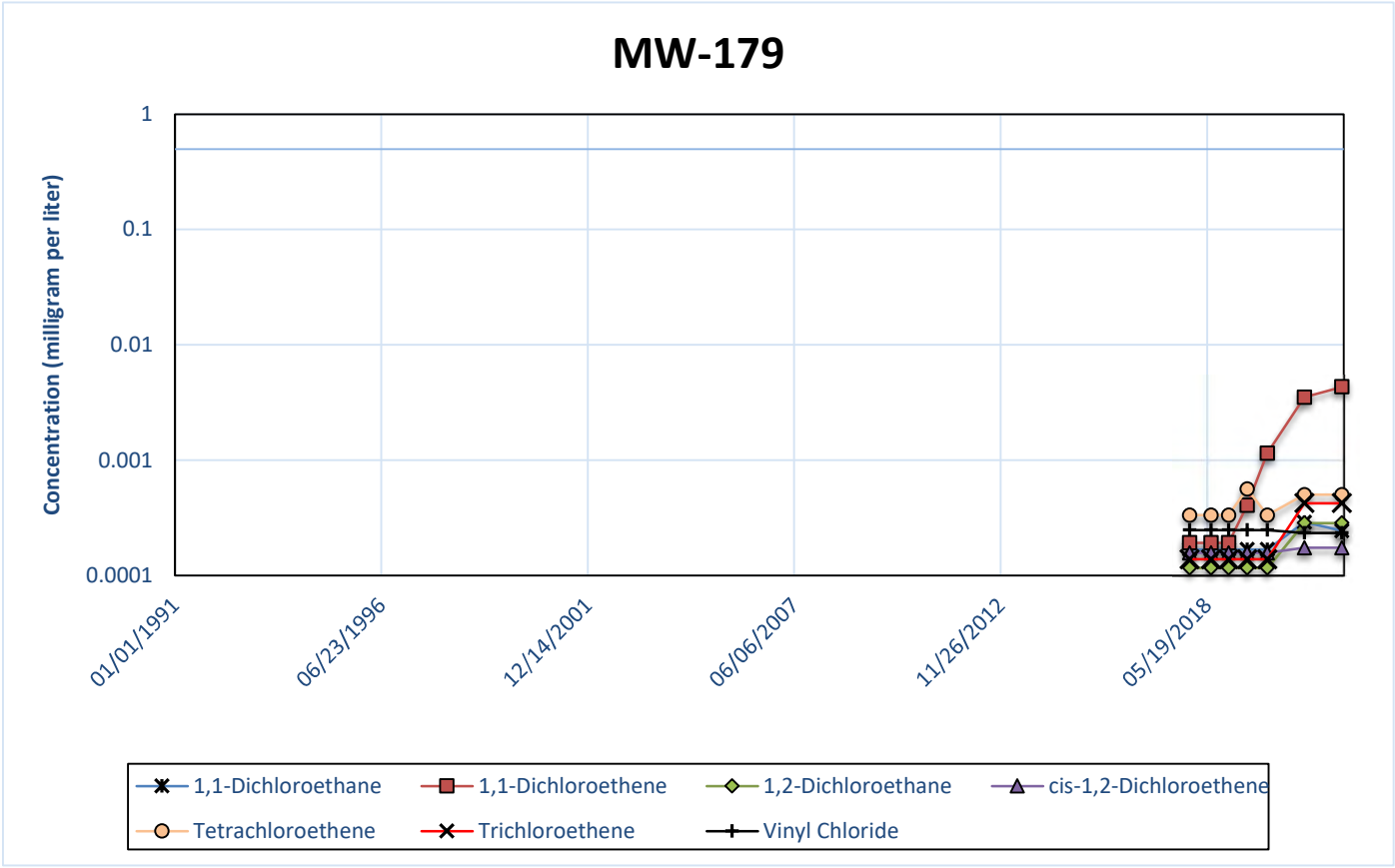
MW-173

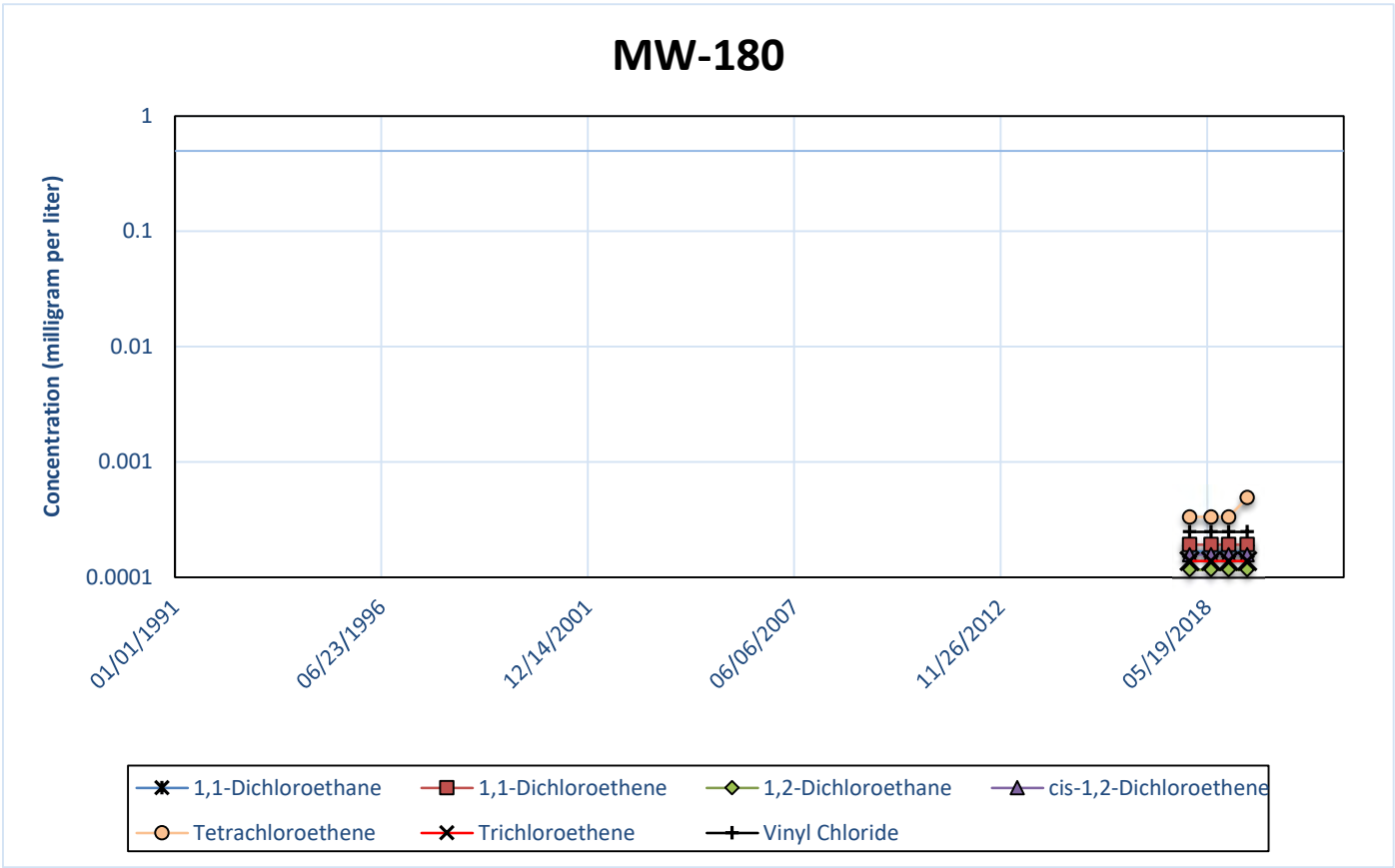


MW-178



Attachment 1B
Concentration versus Time Graphs





Response Action Design

Use this worksheet to provide detailed descriptions of the response action. Attach design and layout drawings and equipment specifications in Attachment 2A.

Media: Groundwater

List all media to which this information applies. If the response action is different for another media, complete a separate worksheet.

Provide a detailed description of the response action. Describe the removal action, decontamination, treatment system(s), and/or physical or institutional control actions that are proposed for each media and discuss the reasons for choosing the response action(s). Identify and describe any ecological services analysis and compensatory restoration plan that will be utilized (if so, include the complete ESA and compensatory restoration plan in Attachment 2C).

The response actions for the groundwater PCLE zone include the following major components:

- Install additional monitor wells crossgradient and downgradient to establish baseline conditions prior to implementation of the response action (injections), to monitor the potential plume migration, and to monitor the decline of COC concentrations resulting from ISCO and MNA.
- Install injection wells and perform ISCO injections in select groundwater TTZs that contain PCE, TCE, 1,1-DCE, and VC concentrations greater than 0.05 mg/L as well as selected monitor well locations per TCEQ comment letter dated June 7, 2022 (TCEQ 2022a).
- Conduct semiannual ISCO performance monitoring for selected performance monitor wells to evaluate the effectiveness of the response actions.
- Conduct annual groundwater monitoring for PMZ and MNA monitoring network wells until COC concentrations meet cPCLs.
- Provide affected property owners with groundwater monitoring results for the wells sampled on their properties.
- Submit a RAER annually to document groundwater monitoring results, evaluate the effectiveness of ISCO and MNA, propose additional response actions as necessary, and update the monitor well network to accommodate changes to the PCLE zone until cPCLs are met.

Modification of the PMZ Monitoring Network for Onsite PCLE Zone

The 2003 RAP established a PMZ for the onsite PCLE zone north of I-10. The findings of the groundwater fate and transport modeling (Appendix 3) indicate that the groundwater PCLE zones will naturally attenuate to concentrations less than the cPCLs within a similar time period regardless of continued operation of the North Treatment System. Because the plume is a large and diluted plume that is generally stable except for some localized areas with elevated COC concentrations greater than 0.050 mg/L, ISCO is the proposed response action to replace the North Treatment System. Therefore, further operation of the North Treatment System is not required to meet the RAOs for the site. The PMZ monitoring has been modified with the following changes:

- The updated PMZ monitoring network consists of four AMP and nine POE wells (Attachment 2D).
- The proposed AALs for AMP wells are the cPCL for 1,1-DCA and 10 times the cPCLs for remaining COCs.
- The AMP wells will be sampled annually for site-specific VOCs consisting of PCE, TCE, 1,1-DCE, cis-1,2-DCE, 1,1-DCA, 1,2-DCA, and VC.

Modifications to the PMZ monitoring network may be proposed in a future RAER and implemented after TCEQ approval.

MNA Monitoring Network for Offsite PCLE Zone

The purpose of MNA monitoring is to evaluate the effectiveness of natural attenuation to reduce COC concentrations in the areas downgradient of I-10 to less than cPCLs. Attachment 2D depicts the proposed MNA monitoring network, which consists of the offsite POE wells. A total of 34 POE wells will be sampled annually for site-specific VOCs consisting of PCE, TCE, 1,1-DCE, cis-1,2-DCE, 1,1-DCA, 1,2-DCA, and VC.

ISCO Treatment Zone Operation and Performance Monitoring

The ISCO treatment zones will be addressed in two phases. The objective of the Phase 1 onsite burn pit and MW-113 ISCO treatment zone is to further reduce the concentrations of CVOCs in the onsite groundwater PCLE zone. The objective of the Phase 2 ISCO treatment zones is to reduce CVOC concentrations in onsite groundwater PCLE zones at MW-108 and MW-111, as well as offsite groundwater PCLE zones at locations (MW-115R and MW-116R, MW-89, MW-74, MW-161, and MW-93R):

- The Phase 1 ISCO injection will be implemented as a pilot study for implementation of Phase 2 injections where there is limited space available or less flexibility for adaptive management of injections in the streets or driveways, and to obtain data regarding achievable injection flow rates and injection pressure. The Phase 1 pilot study ISCO treatment zone will consist of 14 injection wells (IW-80 through IW-93) and two performance monitor wells (MW-185 and MW-186) (Attachment 2A-2).
- The Phase 2 ISCO treatment zones consist of 16 injection wells (IW-94 through IW-109) and two performance monitor wells (MW-187 and MW-188) (Attachment 2A-1 and Attachment 2A-2).
- Permanganate will be injected into 30 injection wells over Phases 1 and 2. Injection pressure, injectate volume, and flow rates will be recorded during injection at each injection well.
- ISCO performance monitoring will be conducted semiannually for the initial 5 years after ISCO injections. Future ISCO injection events will be based on the results of the performance monitoring after the initial round of injections at each location. The ISCO performance monitoring network includes four proposed new ISCO performance monitor wells (MW-185 through MW-188) and 11 monitor wells located within and downgradient of the injection zone used for dual purpose of PMZ/MNA and ISCO performance monitoring (Worksheet 3.1). Sampling will be performed as follows:
    - Semiannual sampling will be performed for laboratory analyses of site-specific COCs.
    - During each event, field parameters (dissolved oxygen [DO], oxidation-reduction potential [ORP], temperature, pH, conductivity, and permanganate) will be measured.

The performance monitoring results will be used to determine when and if future oxidant injection events are warranted.

Surface Water Monitoring

The cPCLs for surface water shown in Worksheet 3.1 are based on the cPCLs calculated and approved in the Human Health Ecological Risk Assessment for Surface Water and Sediment (ERM 2003b).
Six surface water sampling locations (SWD-12, SWD-14, SWD-15, SWD-17, SWD-18, and SWD-20) will be sampled annually for site-specific COCs.

Describe all major treatment system components and equipment of the response action. Illustrate the response action design and provide equipment specifications in Attachment 2A.

The proposed new ISCO injection well and performance monitor well locations are shown in Attachments 2A-1 and 2A-2. The proposed ISCO TTZ for the Phase 1 pilot study at the former burn pit and MW-113 area are illustrated in Attachment 2A-2. The injection quantity will be provided in the UIC amendment for TCEQ review and approval.

Permanent injection wells will be used to deliver the oxidant solution to the subsurface. The injection interval will be set based on the depth of the groundwater PCLE zone or depths with elevated COC concentrations documented at specific locations. In the northern portion of the PCLE zone (onsite plume and near I-10), the injection well screen intervals will be generally 10 to 20 feet long within varying TTZ depths of 20 feet to 40 feet bgs; in the southern PCLE zones, the injection well screen intervals will be generally 10 to 20 feet long within varying TTZ depths of 23 feet to 43 feet bgs. Attachment 2B shows conceptual ISCO injection well and monitor well diagrams. The actual length of screen, depth intervals, and injectate volume anticipated for each injection well will be submitted in the UIC permit amendment authorization requests for Phase 1 and Phase 2 injections.

UIC amendment authorizations will be submitted to TCEQ during the field planning phase and prior to injection. In addition, monitor wells will be installed and sampled to collect baseline data prior to injection. Proposed locations of monitor wells are presented in Attachment 2A-1.

During the injection event, injection rates and pressures, and the start and end times for delivering the designated amount of solution to each injection well, will be monitored and recorded to ensure that the injection is performed as designed. Water level, DO, ORP, conductivity, pH, temperature, and permanganate concentration will be monitored at the nearby monitor wells during the injection process. The groundwater parameters will be measured using a peristaltic pump or in-well pump or bailer, YSI multi-parameter water quality instrument, and permanganate color chart or Hach colorimeter. These field measurements will be used to optimize the radius of influence of the ISCO injection locations and to adjust the injection rates and volumes as needed. Monitoring will also be implemented to inhibit potential impacts to the nearby surface water bodies during the injection process.

List permits or registrations needed to construct or implement the response action, including permits or registrations needed to conduct studies or tests. For VCP sites, list the permits that would be required if the site was not in the VCP (required by the VCP).

Permitting/Registration Authority	Type of permit/registration	Permit or registration number if already issued	Anticipated application date
TCEQ	UIC Authorization Amendment[1]	5X2600281	Prior to ISCO Injection

Identify and discuss the results of any studies or tests, such as pilot studies, feasibility studies, technical impracticability studies, treatability studies, and/or toxicity studies conducted or proposed to be conducted at the affected property. Discuss the reason for the study or test and how it verifies the effectiveness and appropriateness of the chosen response action or documents that a particular response action is not appropriate for the affected property. Describe how the results of completed studies or tests determined the design or choice of response action. Attach any separate reports and supporting documentation in Appendix 3.

Groundwater modeling was performed to predict cleanup time with and without the north pump-and-treat system. The groundwater modeling assumptions and results are included in Appendix 3.

Summary of Groundwater Fate and Transport Modeling
To address comments received from TCEQ on August 31, 2021, the groundwater models originally prepared in 2017 were updated to include the analysis of additional COCs, including PCE, TCE,

[1] This UIC amendment would be required for in situ groundwater remedy involving injection of chemical oxidants.

1,1-DCE, and VC. Groundwater flow and solute transport modeling were conducted using MODFLOW-SURFACT in conjunction with Groundwater Vistas Version 6.0 as the primary graphical user interface. The modeling objectives included the following:

- Estimate the remediation time frame for the site under MNA only (that is, decommissioning North Treatment System) or MNA with continued operation of the North Treatment System.
- Evaluate the possible benefit of running the North Treatment System to reduce the remediation time frame.
- Evaluate the possible future COC concentrations that might enter nearby surface water bodies.
- Evaluate potential risk to the surface water bodies that might arise from ceasing the operation of the North Treatment System.

The conclusions of the groundwater model are as follows:

- TCE has the longest remediation time frame, with estimated remediation time frames of 70 years under MNA only and 63 years under MNA with the operation of the North Treatment System. This is due to the elevated TCE concentration identified at the former burn pit area during the 2022 predesign investigation.
- 1,1-DCE has the second longest remediation time frame, with estimated remediation time frames of 47 years under MNA only. Operation of the North Treatment System does not reduce the remediation time frame for 1,1-DCE to less than MNA only.
- The estimated remediation time frames for PCE and VC are shorter and would not exceed 30 years with or without the operation of the North Treatment System.
- Continuous operation of the North Treatment System at the 2015 rates might shorten the remediation time frame for TCE from 70 years to 63 years, and for VC from 29 years to 26 years. Operation of the North Treatment System would not accelerate the remediation of the PCE and 1,1-DCE plumes.
- HCFCD, Buffalo Bayou and the Silber Tunnel dewatering systems would not be impacted by groundwater with COC concentrations exceeding the PCLs.

The overall conclusion is that operation of the North Treatment System would not significantly speed up remediation compared with natural attenuation. With ISCO as supplemental remediation for the TTZs, continued operation of the North Treatment System is not necessary. In addition, implementation of ISCO at the TTZ, especially the elevated PCE and TCE concentrations at the former burn pit area, will reduce the onsite source COC concentrations and ultimately mass flux, so that the cleanup time can be reduced to meet RAOs in a reasonable time frame. Therefore, Cameron is hereby proposing to decommission the North Treatment System.

Attachment 2A
Response Action Diagrams and Component/Equipment Descriptions

IW-80 through IW-93 and IW-95 through IW-99 (see Attachment 2A-2)

STATE OF TEXAS
BRET R. RAHE
GEOLOGY
2798
LICENSED PROFESSIONAL GEOSCIENTIST

TBPG Firm No. 50264

TxDoT Silber Tunnel Dewatering System

HCFCD

NOTES:
1. Selected TTZ and ISCO injection well locations are to address former burn pit and MW-113 areas and other monitor well locations with increasing or elevated concentration.
2. The PCLE zone presented on this map was generalized from and interpolated using data obtained from 2021 annual groundwater monitoring and grab groundwater samples collected during installation of soil borings in 2022. Information on actual subsurface conditions exists only at the specified locations. Chemical concentrations at other locations may differ from those interpreted on this map.
3. Installation of borings SB-20 through SB-30 and/or potential response actions to address groundwater in these areas will be based on obtaining access to the respective properties. Recommendations for potential response actions in this area will be provided in a future deliverable and after access is obtained.

BASE MAP SOURCE:
Harris County Appraisal District, 2022.
ESRI World Imagery online mapping service.

ACRONYMS:
AMP = attenuation monitoring point
cPCL = Critical Protective Concentration Level
HCFCD = Harris County Flood Control Ditch
ISCO = in situ chemical oxidation
PCLE = protective concentration level exceedance
POE = point of exposure
PMZ = plume management zone
TTZ = target treatment zone
TxDoT = Texas Department of Transportation

Legend

- AMP Well
- POE Well
- Surface Water Sample Locations
- 2022 Soil Boring
- Proposed Soil Boring
- Proposed ISCO Injection Well (Phase 1)
- Proposed ISCO Injection Well (Phase 2)
- Proposed AMP Well
- Proposed ISCO Performance Monitor Well
- Proposed POE Well
- Reinjection Well (Inactive)
- Extraction Well (Inactive)
- Former Facility Boundary
- PMZ Boundary
- HCFCD
- Gaining Portion of Stream
- TxDoT Dewatering System
- PCLE Zone
- (Dashed Where Inferred)
- Former Burn Pit Excavation Boundary
- Localized Area of Groundwater Concentration Below cPCL
- Parcel
- North Treatment System (Inactive)

0 280 560
Approximate scale in feet

N

Attachment 2A-1.
Target Treatment Zone Map
2022 Response Action Plan Addendum
Former Cameron Iron Works Facility, Houston, TX

CH2M HILL Engineers, Inc.

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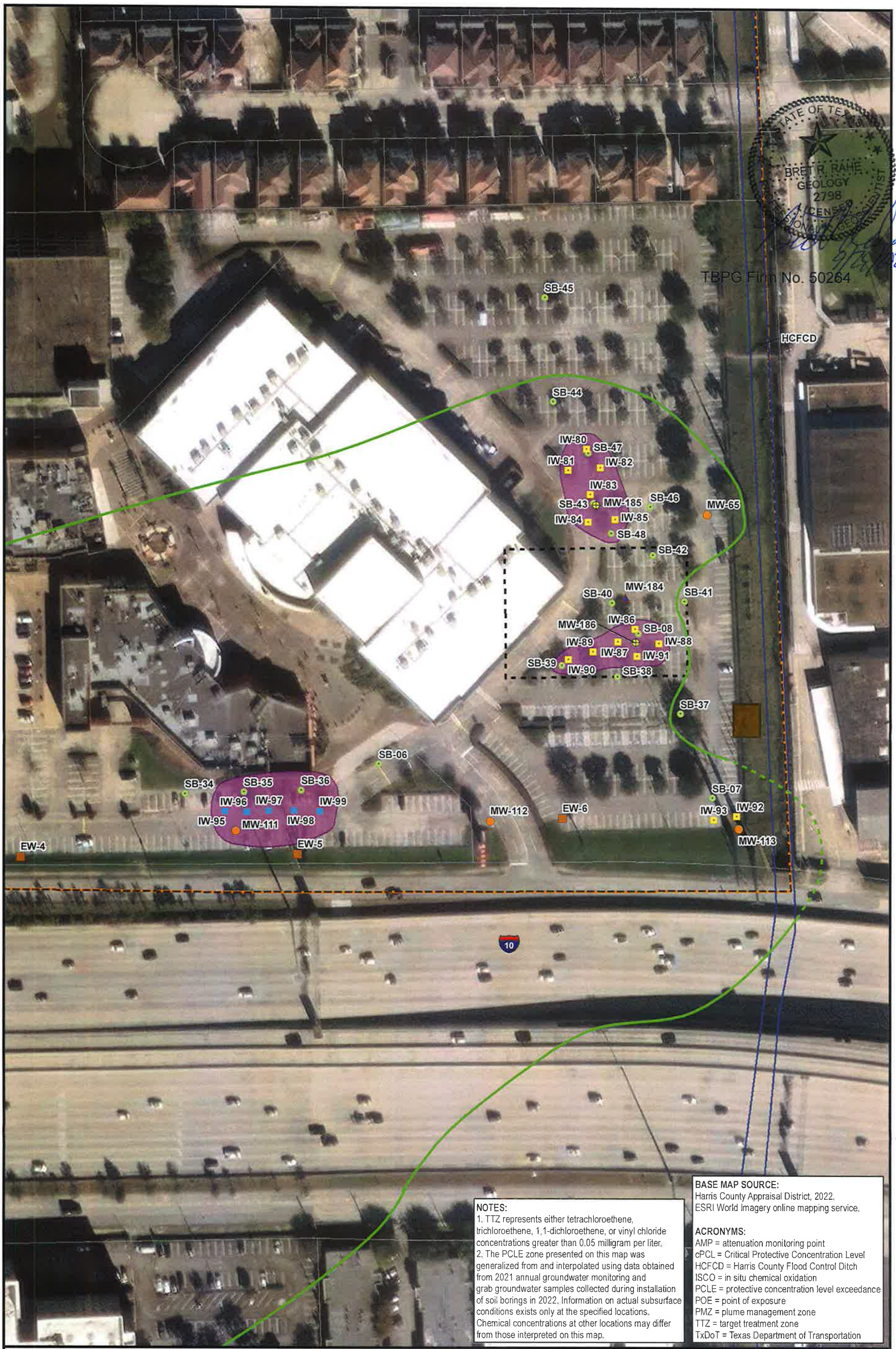


NOTES:
1. TTZ represents either tetrachloroethene, trichloroethene, 1,1-dichloroethene, or vinyl chloride concentrations greater than 0.05 milligram per liter.
2. The PCLE zone presented on this map was generalized from and interpolated using data obtained from 2021 annual groundwater monitoring and grab groundwater samples collected during installation of soil borings in 2022. Information on actual subsurface conditions exists only at the specified locations. Chemical concentrations at other locations may differ from those interpreted on this map.

BASE MAP SOURCE:
Harris County Appraisal District, 2022.
ESRI World Imagery online mapping service.

ACRONYMS:
AMP = attenuation monitoring point
cPCL = Critical Protective Concentration Level
HCFCD = Harris County Flood Control Ditch
ISCO = in situ chemical oxidation
PCLE = protective concentration level exceedance
POE = point of exposure
PMZ = plume management zone
TTZ = target treatment zone
TxDoT = Texas Department of Transportation

Legend

- POE Well
- Proposed ISCO Performance Monitor Well
- Proposed ISCO Injection Well (Phase 1)
- Proposed ISCO Injection Well (Phase 2)
- Proposed AMP Well
- 2022 Soil Boring
- Extraction Well (Inactive)
- PMZ Boundary
- PCLE Zone
- (Dashed Where Inferred)
- Former Burn Pit Excavation Boundary
- Former Facility Boundary
- TTZ
- North Treatment System (Inactive)
- Parcel
- HCFCD

0 55 110
Approximate scale in feet

N

Attachment 2A-2.
Burn Pit and MW-111 and MW-113 Area
ISCO Treatment Zone Map
2022 Response Action Plan Addendum
Former Cameron Iron Works Facility, Houston, TX

CH2M HILL Engineers, Inc.

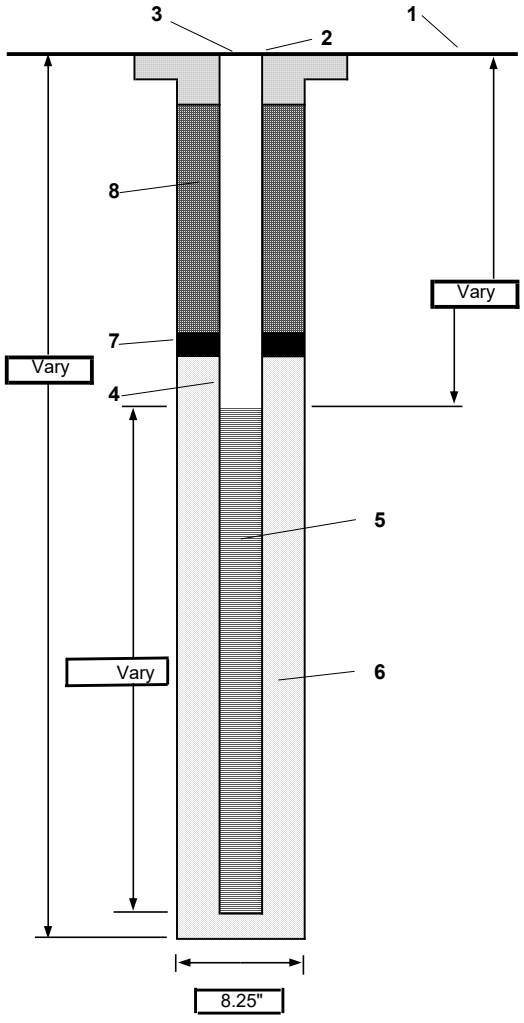
\\dc1vs01\gisproj\C\Cameron\Maps\Report\BurnPit_MW113areaISCO.mxd gtwigg 6/12/2022 11:57:11 AM

Attachment 2B
Proposed Well Design

	PROJECT NUMBER	WELL NUMBER	
ch2m.	D3542628	IW-XX	SHEET 1 OF 1

PROPOSED INJECTION WELL DIAGRAM

PROJECT : Former Cameron Iron Works Facility, LOCATION : Houston, Texas
DRILLING CONTRACTOR : TBD
DRILLING METHOD AND EQUIPMENT USED : CME Hollow Stem Auger
WATER LEVELS : 20 to 30 ft bgs (Varies) START : TBD END : TBD LOGGER : TBD



Drawing Not To Scale

1-	Ground elevation at well	TBD
2-	Top of casing elevation	TBD
	a) vent hole?	N/A
3-	Wellhead protection cover type	Traffic rated 6-inch steel manway
	a) weep hole?	N/A
	b) concrete pad dimensions	2 ft x 2 ft x 6 inches
4-	Dia./type of well riser	2-inch Schedule 40 PVC
5-	Type/slot size of screen	2-inch Schedule 40 PVC
	a) Slot size (inches)	V-wire 0.020-inch Machine Slotted
	b) Total screen length (feet)	10 to 20 feet long (varies)
6-	Type screen filter	10/20 Silica Sand
7-	Type of seal	3/8 inch Bentonite Chips (Minimum 2 ft)
8-	Grout	
	a) Grout mix	Portland Cement Bentonite Slurry
	b) Method of placement	Tremie Pipe
	Development method	Pump and Surge

Comments
Well depths and screen intervals vary at different locations and target treatment zones.

LEGEND:

bgs = below ground surface
Dia. = diameter
ft = feet
N/A = not applicable
IW = injection well
PVC = polyvinyl chloride
TBD = to be determined

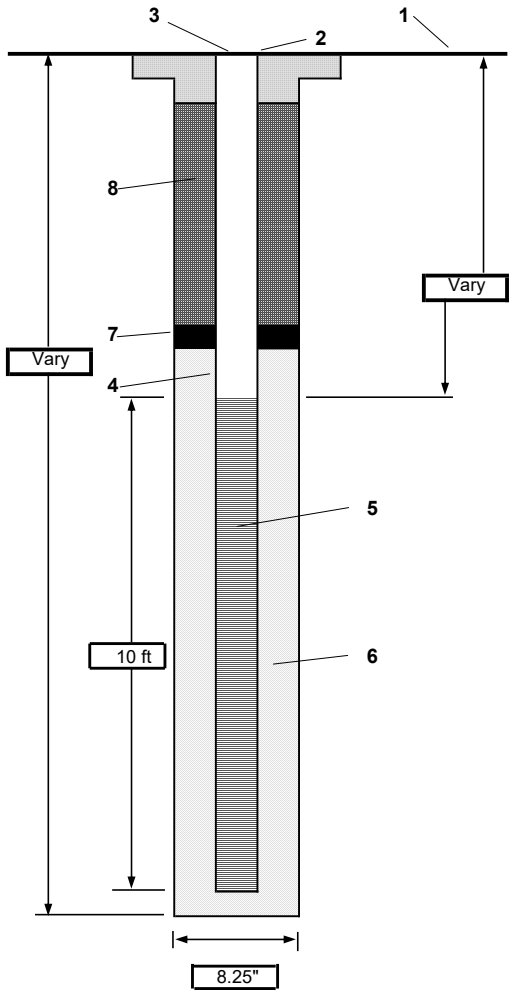
Attachment 2B.
Proposed Well Design - Injection Well Diagram
2022 Response Action Plan Addendum
Former Cameron Iron Works Facility, Houston, Texas

CH2M HILL Engineers, Inc.

PROJECT NUMBER	WELL NUMBER	
D3542628	MW-XX	SHEET 1 OF 1

PROPOSED MONITOR WELL DIAGRAM

PROJECT : Former Cameron Iron Works Facility, LOCATION : Houston, Texas
DRILLING CONTRACTOR : TBD
DRILLING METHOD AND EQUIPMENT USED : CME Hollow Stem Auger
WATER LEVELS : 20 to 30 ft bgs (Varies) START : TBD END : TBD LOGGER : TBD



Drawing Not To Scale

1- Ground elevation at well: TBD

2- Top of casing elevation: TBD
a) vent hole?: N/A

3- Wellhead protection cover type: Traffic rated 6-inch steel manway
a) weep hole?: N/A
b) concrete pad dimensions: 2 ft x 2 ft x 6 inches

4- Dia./type of well riser: 2-inch Schedule 40 PVC

5- Type/slot size of screen: 2-inch Schedule 40 PVC
a) Slot size (inches): 0.010-inch Machine Slotted
b) Total screen length (feet): 10 feet

6- Type screen filter: 20/40 Silica Sand

7- Type of seal: 3/8 inch Bentonite Chips (Minimum 2 ft)

8- Grout
a) Grout mix: Portland Cement Bentonite Slurry
b) Method of placement: Tremie Pipe

Development method: Pump and Surge

Comments
Well depths and screen intervals vary at different locations.

Well	Screen Interval (ft)	Total Depth
MW-183	25-35	36
MW-184	20-30	31
MW-185	25-35	36
MW-186	20-30	31
MW-187	30-40	41
MW-188	30-40	41
MW-189	30-40	41
MW-190	30-40	41

LEGEND:

bgs = below ground surface
Dia. = diameter
ft = feet
N/A = not applicable
MW = monitor well
PVC = polyvinyl chloride
TBD = to be determined

Attachment 2B.
Proposed Well Design - Monitor Well Diagram
2022 Response Action Plan Addendum
Former Cameron Iron Works Facility, Houston, Texas

CH2M HILL Engineers, Inc.

Plume Management Zone	RAP Worksheet 2.1 Page 1 of 2	
Associated Information: Attachments 2D, 2E	ID No.: VCP No. 221	Report Date: September 2022

Complete this worksheet when a PMZ is proposed as part of the response action. Include in Attachment 2D a map of the proposed PMZ with alternate POE(s) and attenuation monitoring points identified and the current groundwater PCLE zone. If a PMZ is not proposed, do not submit this worksheet.

Groundwater-bearing unit Uppermost Aquifer

Repeat this worksheet for each groundwater-bearing unit for which a PMZ is proposed.

Groundwater classification **X** 2 ____ 3

Provide justification as to why the PMZ is appropriate in accordance with §350.33(f)(4)(A). Include supporting documentation in Attachment 2E.

The response actions will reduce the extent of the groundwater PCLE zone via ISCO treatment and MNA. The onsite groundwater PCLE zone is generally stable or declining, except in limited areas, as demonstrated by the COC concentration trend graphs provided in Attachment 1B. Groundwater COC concentrations and the AALs proposed for the AMP wells are much less than the Tier 1 groundwater-to-air ($^{Air}GWP_{Inh\text{-}v}$) PCLs. ICs to restrict groundwater use within the fourth 35.7-acre parcel of land within the southern portion of the PMZ will be implemented to prevent potential future exposure from groundwater ingestion. Therefore, the proposed PMZ is the appropriate response action.

Is the alternate POE proposed to be beyond the current limits of the PCLE zone? ____ Yes **X** No
If yes, how far? _____ (§350.37(l) or (m) as applicable)
Is it to be off-site? ____ Yes **X** No

On an off-site property that currently does not contain a residential-based groundwater PCLE zone?

____ Yes **X** No

If yes and this is a Class 2 groundwater, provide the basis for concluding that this groundwater does not have a reasonably anticipated future beneficial use (§350.37(l)(3)).

Not applicable; an alternate point of exposure well (APOE) is not proposed. AMP wells MW-108 through MW-112 and APOE well MW-113 were changed to POE wells, per TCEQ comment letter dated January 24, 2022. APOE wells MW-65 and MW-01 were changed to POE wells per TCEQ comment letter dated June 7, 2022.

Is NAPL present? ____ Yes **X** No

If so, describe how the response action will achieve the performance criteria in §350.33(f)(4)(E).

Not applicable

If this is a Class 2 groundwater, explain how the response action will ensure that leachate from the surface soil and subsurface soil PCLE zones will not increase concentration of COCs greater than the current measured concentrations (at time of RAP submittal). (§350.33(a)(2))

Not applicable because affected soil was removed to meet residential PCLs. The proposed response action will not result in additional exposure conditions.

Provide the basis that the COCs will not migrate beyond the downgradient boundary of the PMZ at concentrations above the critical PCL. Include supporting documentation in Attachment 2E.

Although the plume has migrated offsite, COC concentrations in groundwater in the majority of wells are stable or declining (Attachment 1B). ISCO treatment will further stabilize conditions at the onsite TTZs with higher COC concentrations or increasing trends. As a result, COCs will ultimately decrease and fall below cPCLs at the downgradient boundary of the PMZ.

Describe the methods used to determine that there are no artificial penetrations which can allow COCs to migrate from the groundwater PCLE zone to currently unaffected groundwater-bearing units. Include supporting documentation in Attachment 2E.

During the affected property assessment and historical document review, there were no known artificial penetrations identified that could allow COCs to migrate to the underlying unaffected groundwater-bearing unit. The use of ICs will prevent future artificial penetrations.

List the attenuation action level determined for each attenuation monitoring point. Illustrate the proposed attenuation monitoring points and the groundwater PCLE zone on the map in Attachment 2D. Include all calculations and other methods of determining the attenuation action levels in Attachment 2E.

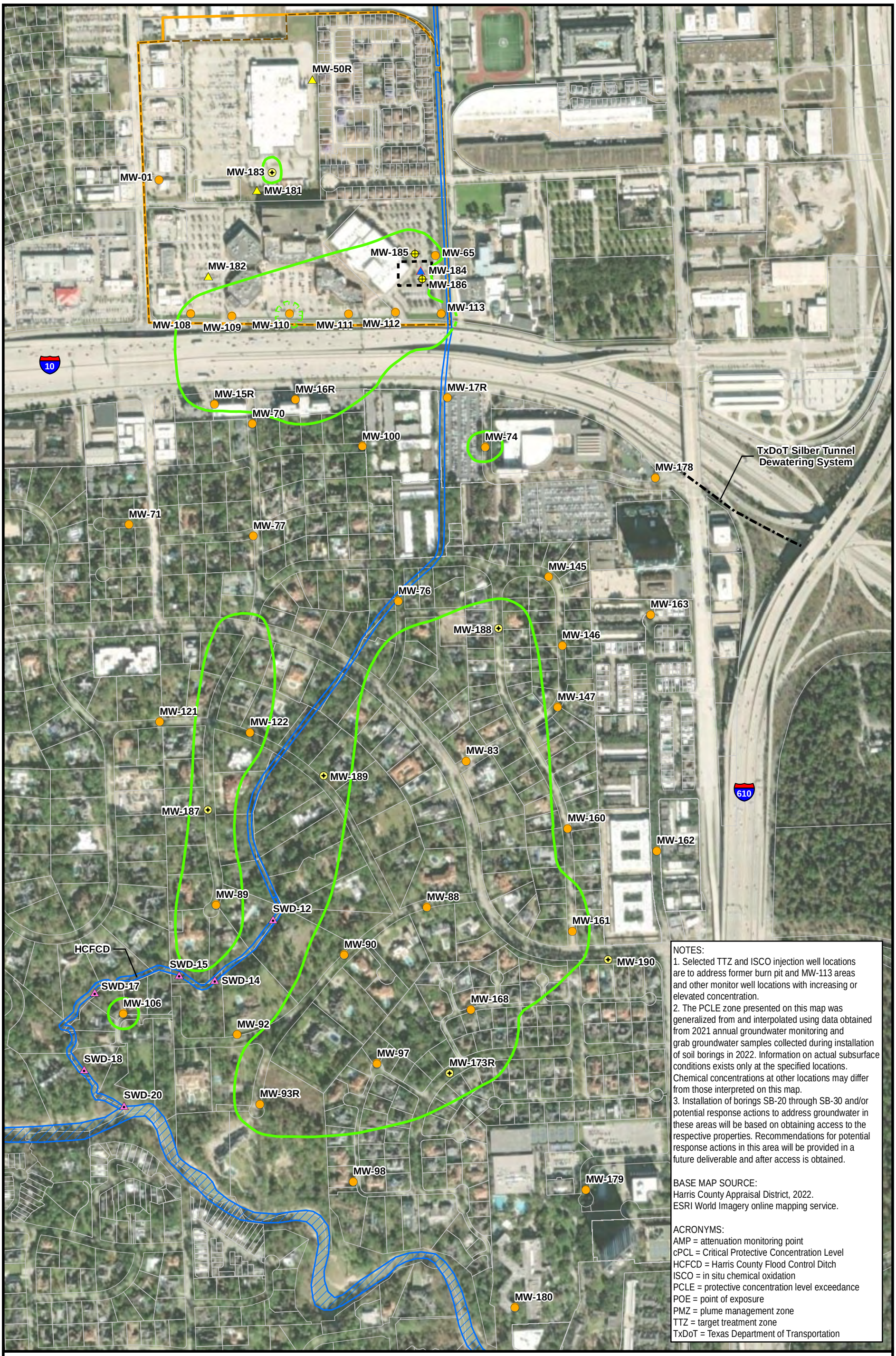
COC	Attenuation Monitoring Point (well number)	Attenuation Action Level (milligrams per liter [mg/L])	Attenuation Action Level limited by $^{Air}GW_{Inh\text{-}V}$ or existing COC concentration? Y/N
1,1-DCA	MW-50R	4.9	cPCL
1,1-DCE	MW-181	0.07	10 times cPCL
1,2-DCA	MW-182	0.05	10 times cPCL
cis-1,2-DCE	MW-184	0.70	10 times cPCL
PCE		0.05	10 times cPCL
TCE		0.05	10 times cPCL
VC		0.02	10 times cPCL

Notes:
Attachment 2E is not included, because the AAL is based on the cPCL for 1,1-DCA or 10 times the cPCLs for other COCs. The AALs may be revised in the future that take into account declining concentrations over time as a result of the proposed response action.

The TTZs with COC concentrations greater than 0.05 mg/L (corresponding to 10 times the cPCLs for PCE and TCE) will be stabilized via ISCO treatment so that the cPCLs can be met at the PMZ boundary within a reasonable time frame via combined ISCO and MNA.

The primary function of the PMZ as shown in Attachment 2D is to prevent exposure to groundwater within the onsite groundwater PCLE zone. The current groundwater COC concentrations within the onsite groundwater PCLE zone are less than the Tier 1 commercial/industrial $^{Air}GW_{Inh\text{-}V}$ PCLs, The only potential exposure pathway of concern is $^{GW}GW_{Ing}$.

Attachment 2D
Plume Management Zone Map



NOTES:
1. Selected TTZ and ISCO injection well locations are to address former burn pit and MW-113 areas and other monitor well locations with increasing or elevated concentration.
2. The PCLE zone presented on this map was generalized from and interpolated using data obtained from 2021 annual groundwater monitoring and grab groundwater samples collected during installation of soil borings in 2022. Information on actual subsurface conditions exists only at the specified locations. Chemical concentrations at other locations may differ from those interpreted on this map.
3. Installation of borings SB-20 through SB-30 and/or potential response actions to address groundwater in these areas will be based on obtaining access to the respective properties. Recommendations for potential response actions in this area will be provided in a future deliverable and after access is obtained.

BASE MAP SOURCE:
Harris County Appraisal District, 2022.
ESRI World Imagery online mapping service.

ACRONYMS:
AMP = attenuation monitoring point
cPCL = Critical Protective Concentration Level
HCFCD = Harris County Flood Control Ditch
ISCO = in situ chemical oxidation
PCLE = protective concentration level exceedance
POE = point of exposure
PMZ = plume management zone
TTZ = target treatment zone
TxDoT = Texas Department of Transportation

Legend

- AMP Well
- POE Well
- Surface Water Sample Locations
- Proposed AMP Well
- Proposed ISCO Performance Monitor Well
- Proposed POE Well
- Former Burn Pit Excavation Boundary
- Former Facility Boundary
- PMZ Boundary
- HCFCD
- Gaining Portion of Stream
- TxDoT Dewatering System
- PCLE Zone
- (Dashed Where Inferred)
- Localized Area of Groundwater Concentration Below cPCL
- Parcel

N

0 280 560

Approximate scale in feet

Attachment 2D.
Updated Groundwater and Surface Water Monitoring Network Map
2022 Response Action Plan Addendum
Former Cameron Iron Works Facility, Houston, TX

CH2M HILL Engineers, Inc.

\\dc1vs01\GISProj\C\Cameron\Maps\Report\SW_GW_MonitoringNetworkAug2022_NoIWs.mxd gtwigg 9/22/2022 1:41:11 PM

Institutional Control	RAP Worksheet 2.4	Page 1 of 1
Associated Information: Appendices 4, 5	ID No.: VCP No. 221	Report Date: September 2022

Complete this worksheet if an institutional control will be used as part of the response action. Include a draft of the proposed institutional controls in Appendix 4. Provide a list of landowners from whom landowner concurrence will be requested, as necessary, in Appendix 5.

Specify the property for which this applies. Onsite Affected Soil Area and Groundwater PCLE Zone

Repeat this worksheet for each different property for which an institutional control will be used.

Institutional Control	Type of Institutional Control[1]				Property Ownership		Anticipated Filing Date[2]
	Deed Notice	Restrictive Covenant	VCP Certificate of Completion	Equivalent zoning or governmental ordinance	Check if pertinent tract of land is owned by the person	Check if the pertinent tract of land is owned by an innocent owner or operator	
Document use of commercial/industrial land use (§350.31(g))			**X**			**X**	Within 120 days of approval of 2022 RAP Addendum
Document use of physical or institutional control under Remedy Standard B §350.31(g))							
Document notice of on-going long term response action (§350.31(h))							
Document use of occupational inhalation criteria as RBELs (§350.74(b)(1))							
Document variance from the default exposure factors (§350.74(j)(2)(L))							
Document the use of a non-default soil exposure area (§350.51(l)(3)&(4))							
Document WCU exclusion area (§350.33(f)(2))							
Document establishing a PMZ (§350.33(f)(4)(C)(I))			**X**			**X**	Within 120 days of approval of 2022 RAP Addendum
Document the demonstration of technical impracticability (§350.33(f)(3)(F))							
Relocation of soils containing COCs for reuse (§350.36(b)(4) and (c)(4))							

[1] Check the appropriate box(es) to indicate the type of institutional control required for the proposed response action.
[2] Specify date or amount of time after RAP approval.

Performance Measures

List and describe the performance measures for each environmental medium containing a PCLE zone that will be used to determine if reasonable progress is being made by the response action in a timely manner. Use these measures to document effectiveness of the response action in the RAER.

The monitoring network used to evaluate the effectiveness of ISCO and MNA is included in Attachment 2D.

The performance measures for the Remedy Standard B response actions for the PCLE zone include the following:

- Collect baseline groundwater samples from the sampling network identified in Attachment 2A-1. Groundwater samples will be analyzed for site-specific VOCs and field parameters (ORP, DO, specific conductance, temperature, turbidity, and pH).
- Conduct ISCO performance monitoring on a semiannual basis following ISCO injections. Future ISCO injection events will be based on the results of the performance monitoring after the initial round of injections at each location.
- Measure groundwater levels annually to evaluate groundwater flow across the site.
- Submit an annual RAER to evaluate the effectiveness of ISCO and MNA and propose additional response actions as necessary to meet the Remedy Standard B closure requirements.

Potential Problems

Complete the table for the response action. When the response action consists of several components or multiple actions, complete one table for each major component or action.

Response Action Name/Designation: ISCO with MNA

List the potential problems that might be reasonably anticipated for the response action, describe the impact of each problem, and the response to the problem.

Description of the Potential Problem	Impact	Will this cause a response action failure?		Corrective Response
		Yes	No	
Potential insufficient ISCO dosage	COC concentrations in the target treatment areas could not meet 0.05 mg/L, or COC concentration rebound could occur following ISCO injections.		**X**	Re-evaluate the site conditions and perform additional rounds of ISCO injections as necessary.
Plume expanding and increasing concentration trend at the downgradient MNA wells	There would be a potential risk for COC migration to the downgradient surface water body.		**X**	Evaluate the necessity of installing additional monitor wells downgradient to monitor COC migration, and evaluate necessary response actions to address the leading edge of the plume if there are potential unacceptable risks.
Insufficient or excessive monitoring network coverage during the response actions	There would be potential impacts on evaluation of response action effectiveness and cost associated with sampling and analysis.		**X**	Evaluate response action effectiveness and update the PCLE zone and monitoring network to accommodate changed conditions.

Monitoring and Sampling	RAP Worksheet 3.1	Page 1 of 4
Associated Information: Attachment 3A	ID No.: VCP No. 221	Report Date: September 2022

List the monitoring and sampling of COC concentrations or other parameters that will be conducted during the response action. Illustrate the monitoring or sampling locations in Attachment 3A. If statistics or geostatistics will be used, provide details in Appendix 7. If monitoring or observation wells will be constructed for the response action, provide well construction details in Attachment 2B if not previously provided.

Monitored Media	COC[1]	Other parameter (specify)	Sampling Method[2]	Sampling points or locations[3]	Depth/Height[4] (ft.)	Analytical or Field Screening Method	Sampling or Monitoring Frequency[5]
Groundwater ISCO Performance Monitoring	Site-specific VOCs ***(cPCLs)***: 1,1-DCA ***(4.9 mg/L)*** 1,1-DCE ***(0.007 mg/L)*** 1,2-DCA ***(0.005 mg/L)*** cis-1,2-DCE ***(0.070 mg/L)*** PCE ***(0.005 mg/L)*** TCE ***(0.005 mg/L)*** VC ***(0.002 mg/L)***	Field parameters (ORP, DO, specific conductance, temperature, turbidity, pH, and permanganate)	HydraSleeve or low-flow sampling method	***ISCO Performance Wells:*** MW-185 (new) MW-186 (new) MW-187 (new) MW-188 (new) ***Other Wells:*** MW-65 MW-74 MW-89 MW-93R MW-108 MW-111 MW-113 MW-15R MW-161 MW-16R MW-184 (new AMP)	 25–35 20–30 30–40 30–40 19.5–29.5 22–32 32–42 32–42 22–32 21–31 22–32 27–37 26.02–36.02 20–30 20–30	SW8260C (site-specific VOCs); field parameters (a YSI multi-parameter instrument, and permanganate color chart or Hach colorimeter)	Semiannual[a]

[1] Specify the COCs to be monitored in this media. List either type of COC (such as VOCs, metals) if all the COCs of that type will be monitored the same way.
[2] Describe the sampling or monitoring methods and QC procedures in Appendix 1 unless the proposed sampling or monitoring procedure is the same as the sampling or monitoring procedure described in the APAR.
[3] Specify the sampling or monitoring point, such as the specific monitor well or general sampling or monitoring location.
[4] Specify the depth or height of the sampling or monitoring points.
[5] Specify the frequency at which this monitoring or sampling will occur.

Monitored Media	COC[1]	Other parameter (specify)	Sampling Method[2]	Sampling points or locations[3]	Depth/Height[4] (ft.)	Analytical or Field Screening Method	Sampling or Monitoring Frequency[5]
Groundwater PMZ Monitoring (POE Wells – Onsite)	Site-specific VOCs ***(cPCLs)***: 1,1-DCA ***(4.9 mg/L)*** 1,1-DCE ***(0.007 mg/L)*** 1,2-DCA ***(0.005 mg/L)*** cis-1,2-DCE ***(0.070 mg/L)*** PCE ***(0.005 mg/L)*** TCE ***(0.005 mg/L)*** VC ***(0.002 mg/L)***	Field parameters (ORP, DO, specific conductance, temperature, turbidity, and pH)	HydraSleeve or low-flow sampling method	MW-01 MW-65 MW-108 MW-109 MW-110 MW-111 MW-112 MW-113 MW-183 (new)	18.58–28.58 19.5–29.5 22–32 22–32 22–32 21–31 21–31 22–32 25–35	SW8260C (site-specific VOCs); field parameters (a YSI multi-parameter instrument)	Annual

Groundwater MNA Monitoring (POE Wells – Offsite)	Site-specific VOCs ***(cPCLs)***: 1,1-DCA ***(4.9 mg/L)*** 1,1-DCE ***(0.007 mg/L)*** 1,2-DCA ***(0.005 mg/L)*** cis-1,2-DCE ***(0.070 mg/L)*** PCE ***(0.005 mg/L)*** TCE ***(0.005 mg/L)*** VC ***(0.002 mg/L)***	Field parameters (ORP, DO, specific conductance, temperature, turbidity, and pH)	HydraSleeve or low-flow sampling method	MW-15R MW-16R MW-17R MW-70 MW-71 MW-74 MW-76 MW-77 MW-83 MW-88 MW-89 MW-90 MW-92 MW-93R MW-97 MW-98 MW-100 MW-106 MW-121 MW-122 MW-145 MW-146 MW-147 MW-160 MW-161 MW-162 MW-163 MW-168 MW-173R (replacement) MW-178 MW-179 MW-180 MW-189 (new) MW-190 (new)	27–37 20–30 20–30 20–30 20–30 22–32 20–30 25–35 25–35 33–43 32–42 30–40 38–48 32–42 33–43 31–41 28–38 36.5–46.5 23–33 23–33 17.55–27.55 25–35 28–38 22.75–32.75 26.02–36.02 27.5–37.5 23.25–33.25 30–40 29.35–39.35 35–45 35–45 29–39 30–40 30–40	SW8260C (site-specific VOCs); field parameters (a YSI multi-parameter instrument)	Annual

Monitored Media	COC[1]	Other parameter (specify)	Sampling Method[2]	Sampling points or locations[3]	Depth/Height[4] (ft.)	Analytical or Field Screening Method	Sampling or Monitoring Frequency[5]
Surface Water (HCFCD)	Site-specific VOCs ***(cPCLs)***: 1,1-DCA ***(4.1 mg/L)*** 1,1-DCE ***(0.05 mg/L)*** 1,2-DCA ***(0.443 mg/L)*** cis-1,2-DCE ***(7.49 mg/L)*** PCE ***(0.632 mg/L)*** TCE ***(0.888 mg/L)*** VC ***(0.0269 mg/L)***	N/A	Grab	SWD-12 SWD-14 SWD-15 SWD-17 SWD-18 SWD-20	0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5	SW8260C (site-specific VOCs)	Annual

[a] A 3-month post ISCO injection performance monitoring event may be added as needed to assess ISCO performance.

Notes:

The depths are feet below top of casing (btoc) for groundwater and feet below water surface for surface water.

The cPCLs for surface water are 80% of the cPCLs calculated in the Human Health Ecological Risk Assessment for Surface Water and Sediment (ERM 2003b).

For ISCO performance monitor wells or adjacent monitor wells, if permanganate is present, the samples should be neutralized with ascorbic acid or other reagent prior to shipping to the laboratory for analysis of site-specific VOCs.

Explain the reasons for the above-listed monitoring and sampling plan.

The above-listed monitoring and sampling plan was developed to monitor the parameters required to evaluate effectiveness of the proposed ISCO injections and MNA, and to confirm that COCs concentrations within the PCLE zone meet the cPCLs at the end of the response action. The PMZ and MNA network wells were updated in accordance with the TCEQ comment letter dated August 31, 2021. Future modifications of the ISCO performance monitoring, PMZ, and MNA network will be proposed and documented in RAERs and/or letter reports to TCEQ in lieu of submittal of a RAP addendum, as long as the remedy remains consistent with the proposed approach in this document.

Operation and Maintenance	RAP Worksheet 3.2 Page 1 of 1	
	ID No.: VCP No. 221	Report Date: September 2022

Use this worksheet to describe the operation and maintenance (O&M) activities for each response action. In situations where the response action consists of more than one major component, for clarity one worksheet can be completed for each major component.

Response Action Name/Designation: ISCO and MNA
List all portions of the response action to which this information applies.

Describe the O&M and inspection activities that will be required to operate and maintain response action components.

ISCO injections will be conducted via injection wells. Routine O&M activities will include semiannual performance monitoring.

List and discuss the key operating parameters for a properly functioning response action. Address how changes in these parameters will result in operating changes, providing sufficient detail to explain how the operator will know the component is functioning properly.

During the injection event, injection rates and pressures, and the start and end times for delivering the designated amount of solution to each injection well, will be monitored and recorded to ensure that the injection is performed as designed. Water level, DO, ORP, conductivity, pH, temperature, and permanganate concentration will be monitored at the nearby monitor wells during the injection process. The groundwater parameters will be measured using a peristaltic pump or in-well pump or bailer, YSI multi-parameter water quality instrument, and permanganate color chart or Hach colorimeter. These field measurements will be used to optimize the radius of influence of the ISCO injection locations and to adjust the injection rates and volumes as needed. Monitoring will also be implemented to inhibit potential impacts to the nearby surface water bodies during the injection process.

List the routine tasks required to operate the response action.

Conduct ISCO performance monitoring semiannually following ISCO injections. Performance monitoring data will be used to evaluate effectiveness of the response action and determine whether additional ISCO injections are necessary to further reduce COC concentrations to less than 0.05 mg/L.

List the routine tasks required to maintain the response action, including scheduled inspections, maintenance, and component replacement.

The injection wells and monitor wells will be inspected annually. Damaged wells or wells with defects will be repaired or replaced promptly after discovering the defect.

Confirmation Sampling Plan Associated Information: Attachment 4A	RAP Worksheet 4.0 Page 1 of 1	
	ID No.: VCP No. 221	Report Date: September 2022

List the COCs and other parameters that will be sampled to confirm completion of the response action. Illustrate the monitoring or sampling locations in Attachment 4A. If monitoring or observation wells will be constructed for the response action, provide well construction details in Attachment 2B if not previously provided. If needed, describe the sample collection and handling methods, if not previously provided, in Appendix 6.

Media	COC[1]	Other parameter (specify)	Sampling Method	Sampling points[2]	Depth/height (ft.)	Analytical Method	Sampling Frequency
Groundwater	See Worksheet 3.1	None	HydraSleeve or low-flow method	See Worksheet 3.1	See Worksheet 3.1	See Worksheet 3.1	Once after all POE wells meet cPCLs

Explain the reasons for the above-listed sampling plan. Discuss statistical or geostatistical methodology(ies) which will be applied, if any, in the data collection process. Discuss any assumptions made in the statistical/geostatistical assessment, and how they will be met.

Refer to Worksheet 3.1 and Attachment 3A (confirmation sampling has been covered by ISCO performance monitoring, PMZ, and MNA network well monitoring). Sampling results will be used to verify that the residential PCLs are achieved within the offsite PCLE zones and onsite PCLE zones are within the PMZ. A statistical or geostatistical methodology will not be applied to the data collection process.

[1] Specify either a specific COC or type of COC (such as VOCs, metals).
[2] Specify the sampling point to the degree it is known, (for example, MW-1, or near former boring #2).

Complete this worksheet only if Remedy Standard B will be used.

What is the proposed initial post-response action care period? (default 30 yr.) Not applicable years

If the proposed initial post-response action care period is less than 30 years, provide a technical justification in accordance with §350.33(h).

Post-response action care will not be necessary for the onsite groundwater PCLE zone under Remedy Standard B due to the following reasons:

- The existing onsite groundwater PCLE zone is generally stable or declining based on COC concentration trends.
- ICs established as part of the PMZ will remove potential risk to human health and the environment by COCs in the groundwater. Thus, post-response action care will not be necessary in accordance with the *Texas Administrative Code* Title 30 §350.33(i).

What is the foreseeable land use during the post-response action care period? Commercial/Industrial

Describe how the future use of the property will not compromise the integrity of the physical controls, will not interfere with the function of the monitoring systems, will not pose a threat to human health or the environment, and will be in accordance with any institutional controls.

Future use of the properties in both the onsite and offsite groundwater PCLE zones is not expected to change and will not impact the function or intended use of monitor and injection wells. If a well is damaged or destroyed the need to repair or replace it will be evaluated on a case-by-case basis. No physical controls are proposed for these response actions that would be impacted by future changes in property use.

Briefly describe the proposed post-response action care activities. Describe the type of monitoring and/or inspections to be performed. Discuss the rationale for not including COC(s) analyzed during the response action, monitoring or sampling point location, frequency of monitoring and/or inspections, and the duration of the monitoring program.

Not applicable

Will PRAC sampling procedures be the same as those as previously documented for monitoring and/ or confirmation sampling? Not applicable Yes ___ No

If no, provide in Appendix 6 a description of the monitoring or sampling collection procedures to be conducted during the post-response action care period.

Cost Estimate

Complete this portion of the form only if a physical control is proposed (installed hydraulic control system, slurry wall, cap, etc.). Provide in Attachment 5B a detailed cost estimate for a third party to operate and maintain the physical control during the PRAC period, based on current dollar amount.

Specify the physical control to which this information applies: Not applicable

Complete this worksheet for each physical control that will be used as part of the response action.

What is the total estimated annual cost of O&M for the PRAC period? Not applicable

What is the total estimated cost for a third party to perform PRAC activities? Not applicable

Identify the type of financial assurance mechanism to be used, and the contact person managing fiduciary responsibility, if known.

Not applicable

Does the person meet the criteria and definition of a small business? (see §350.33(n)) ___ Yes **X** No

If yes and the person desires to pursue the reduced amount of financial assurance, provide a legally binding affidavit as Attachment 5C. Include in the affidavit the information requested in 30 TAC §350.33(l), (m), and (n). An example affidavit is attached in the instructions.

Document the proposed schedule for implementing the response action. Include all major response action activities through the life of the project, including all removal, decontamination, and control actions, component installations, O&M, monitoring, and post-response action care activities.

Implementation of Response Action (specify component or action)	Start	Finish	Duration
2022 RAP Addendum Submitted to TCEQ	September 30, 2022	September 30, 2022	1 day
UIC Permit Application and TCEQ Approval (Phase 1 ISCO Pilot Study – Burn Pit and MW-113 Area)	September 30, 2022	October 30, 2022	1 month
TCEQ Review and Comments on 2022 RAP Addendum	October 1, 2022	January 1, 2023	3 months
Phase 1 Pilot Study Well Installation, Baseline Sampling, ISCO Injection, and Performance Monitoring	November 1, 2022	February 15, 2023	4 months
Response to TCEQ Comments on 2022 RAP Addendum (if necessary)	January 1, 2023	February 25, 2023	1.5 months
TCEQ Approval of 2022 RAP Addendum	February 26, 2023	April 30, 2023	2 months
UIC Permit Amendment and TCEQ Approval (Phase 2 ISCO Injection for Remaining Areas)	May 1, 2023	May 30, 2023	1 month
Submittal of 1st Half UIC Report (by May 31 each year)	May 31 each year	May 31 each year	1 day
Phase 2 Well Installation, Baseline Sampling, ISCO Injection, and Performance Monitoring (Remaining Areas)*	June 1, 2023	August 30, 2023	3 months
Complete Predesign Investigation for Leading-edge Downgradient Plume (pending access)*	Pending access	By November 30, 2023	1 month
Submittal of 2nd Half UIC Report (by November 30 each year)	November 30 each year	November 30 each year	1 day
Decommission of North Treatment System including Reinjection Wells and Extraction Wells and Piping*	November 1, 2023	By November 30, 2023	1 month
Well Installation and ISCO Injection – Leading-edge Downgradient Plume [a]	Pending access	2024	1 month
Conduct Annual Groundwater Monitoring (December each year)	TCEQ approval of the RAP	15 years of TCEQ approval of the RAP	15 years or until cPCLs are met
Submit RAER Annually (by March 31 each following year)	TCEQ approval of the RAP	15 years of TCEQ approval of the RAP	15 years or until cPCLs are met
Submit Groundwater RACR	3 months prior to the end of the 15 year time frame following TCEQ approval of the 2022 RAP Addendum, or once cPCLs are met in the PCLE zone	15 years following TCEQ approval of the 2022 RAP Addendum, or once cPCLs are met in the PCLE zone	3 months

[a] The above schedule is subject to change pending TCEQ approval of the 2022 RAP Addendum and/or obtaining access to properties at the leading edge of the plume.

List the proposed schedule for report submittals. Add additional lines if more reports than listed will be needed to complete the response action.

Reports	Submittal date
Response Action Effectiveness Report (RAER)	
RAER Submittal Number 1	Annually until RACR approval
RAER Submittal Number 2	
RAER Submittal Number 3	
Response Action Completion Report (RACR)	15 years after TCEQ approval of the 2022 RAP Addendum, or whenever cPCLs are met in the PCLE zone
Post-Response Action Care Report (PRACR)	Not applicable

Appendix 1
References

CH2M HILL Engineers, Inc. (CH2M). 2017a. *2017 Semiannual Monitoring Data Submittal, Voluntary Cleanup Program No. 221, Former Cameron Iron Works Facility, 1000 Silber Road, Houston, Texas*. September 8.

CH2M HILL Engineers, Inc. (CH2M). 2017b. *2016 Annual Progress Report, Former Cameron Iron Works Facility, Houston, Texas.* March 31.

CH2M HILL Engineers, Inc. (CH2M). 2017c. *Well Optimization Strategy.* March.

CH2M HILL Engineers, Inc. (CH2M). 2018a. *2018 Response Action Plan Addendum, Voluntary Cleanup Program No. 221, Former Cameron Iron Works Facility, 1000 Silber Road, Houston, Texas*. February 15.

CH2M HILL Engineers, Inc. (CH2M). 2018b. *2018 Semiannual Monitoring Data Submittal, Voluntary Cleanup Program No. 221, Former Cameron Iron Works Facility, 1000 Silber Road, Houston, Texas*. August 28.

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CH2M HILL Engineers, Inc. (CH2M). 2019b. *2018 Annual Progress Report, Voluntary Cleanup Program No. 221, Former Cameron Iron Works Facility, 1000 Silber Road, Houston, Texas*. March 27.

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Appendix 2
Data Tables and Boring Logs

Appendix 2-1. Annual Groundwater Data Summary (2021)

2022 Response Action Plan Addendum

Former Cameron Iron Works Facility, Houston, Texas

				Analyte Group (Method):	Volatile Organic Compounds (SW8260C)						
				CAS:	75-34-3	75-35-4	107-06-2	156-59-2	127-18-4	79-01-6	75-01-4
				Analyte:	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	cis-1,2-Dichloroethene	Tetrachloroethene	Trichloroethene	Vinyl Chloride
				cPCL:	4.9	0.007	0.005	0.07	0.005	0.005	0.002
Well ID	**Sample ID**	**Well Type**	**Screen Interval (ft btoc)**	**Date Collected**							
MW-100	MW-100-12142021	POE	28-38	12/14/2021	< 0.000244	< 0.000216	< 0.000285	**0.000211 J**	< 0.0005	< 0.000424	< 0.000234
MW-106	MW-106-12142021	POE	36.5-46.5	12/14/2021	**0.00164**	< 0.000216	< 0.000285	**0.00648**	< 0.0005	< 0.000424	**0.0118**
MW-108	MW-108-121421	POE	22-32	12/14/2021	< 0.000244	**0.0552**	< 0.000285	**0.00711**	< 0.0005	**0.0172**	< 0.000234
MW-109	MW-109-121421	POE	22-32	12/14/2021	**0.0815**	**0.0346**	< 0.000285	**0.0397**	**0.019**	**0.00497 J**	**0.0163**
MW-110	MW-110-121421	POE	22-32	12/14/2021	**0.00277**	**0.00311**	< 0.000285	**0.00142**	< 0.0005	< 0.000424	**0.000372 J**
MW-111	MW-111-121521	POE	21-31	12/15/2021	**0.799**	**0.547**	**0.0036**	**0.00466**	**0.0196**	**0.00719**	**0.0941**
MW-112	MW-112-121421	POE	21-31	12/14/2021	**0.0225**	**0.0291**	**0.00282**	**0.000379 J**	< 0.0005	< 0.000424	**0.00511**
MW-113	MW-113-121421	POE	22-32	12/14/2021	**0.00973**	**0.0175**	< 0.000285	**0.00288**	**0.0121**	**0.00728**	**0.000751 J**
MW-121	MW-121-12142021	POE	23-33	12/14/2021	< 0.000244	< 0.000216	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
MW-122	MW-122-12142021	POE	23-33	12/14/2021	**0.00227**	**0.0258**	< 0.000285	**0.000254 J**	**0.00122**	**0.00104 J**	< 0.000234
MW-145	MW-145-12142021	POE	17.55-27.55	12/14/2021	< 0.000244	< 0.000216	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
MW-146	MW-146-12202021	POE	25-35	12/20/2021	< 0.000244	< 0.000216	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
MW-147	MW-147-12142021	POE	28-38	12/14/2021	**0.00075 J**	**0.00164**	< 0.000285	**0.00233**	**0.00304**	**0.00111 J**	< 0.000234
MW-15R	MW-15R-12142021	POE	27-37	12/14/2021	**0.00303**	**0.0403**	< 0.000285	< 0.000174	< 0.0005	< 0.000424	**0.00205**
MW-160	MW-160-12202021	POE	22.75-32.75	12/20/2021	**0.00103**	**0.00235**	< 0.000285	**0.00287**	**0.00276**	**0.00169 J**	< 0.000234
MW-161	MW-161-12142021	POE	26.02-36.02	12/14/2021	**0.0111**	**0.0482**	< 0.000285	**0.00137**	**0.00147**	**0.000726 J**	< 0.000234
MW-162	MW-162-12202021	POE	27.5-37.5	12/20/2021	< 0.000244	< 0.000216	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
MW-163	MW-163-12202021	POE	23.25-33.25	12/20/2021	**0.0148**	**0.0168**	< 0.000285	**0.00148**	**0.000835 J**	**0.000683 J**	**0.0011 J**
MW-168	MW-168-12142021	POE	30-40	12/14/2021	**0.00282**	**0.00983**	**0.000794 J**	**0.00638**	**0.0952**	**0.0138**	**0.000252 J**
MW-178	MW-178-12142021	POE	35-45	12/14/2021	< 0.000244	< 0.000216	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
MW-179	MW-179-12152021	POE	35-45	12/15/2021	< 0.000244	**0.00433**	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
MW-17R	MW-17R-12142021	POE	20-30	12/14/2021	< 0.000244	< 0.000216	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
MW-70	MW-70-12142021	POE	20-30	12/14/2021	**0.000919 J**	**0.00145**	< 0.000285	**0.00115**	< 0.0005	**0.000429 J**	< 0.000234
MW-71	MW-71-12142021	POE	20-30	12/14/2021	< 0.000244	< 0.000216	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
MW-74	MW-74-12142021	POE	22-32	12/14/2021	< 0.000244	**0.00338**	< 0.000285	**0.0416**	**0.00172**	**0.0088**	**0.0182**
MW-76	MW-76-12142021	POE	20-30	12/14/2021	< 0.000244	< 0.000216	< 0.000285	< 0.000174	**0.000577 J**	< 0.000424	< 0.000234
MW-77	MW-77-12142021	POE	25-35	12/14/2021	**0.00133**	**0.00518**	< 0.000285	**0.00163**	**0.000878 J**	**0.0015 J**	< 0.000234
MW-83	MW-83-12142021	POE	25-35	12/14/2021	**0.00815**	**0.0339**	**0.00174**	**0.0115**	**0.0409**	**0.00701**	**0.00222**
MW-88	MW-88-12142021	POE	33-43	12/14/2021	**0.00391**	**0.0197**	< 0.000285	**0.00186**	**0.0163**	**0.00331 J**	< 0.000234
MW-89	MW-89-12142021	POE	32-42	12/14/2021	**0.00335**	**0.0892**	**0.00134**	**0.000901 J**	**0.000568 J**	**0.00477 J**	**0.00746**
MW-90	MW-90-12142021	POE	30-40	12/14/2021	**0.0191**	**0.0454**	< 0.000285	**0.00134**	**0.0213**	**0.00293 J**	< 0.000234
MW-92	MW-92-12142021	POE	38-48	12/14/2021	< 0.000244	< 0.000216	< 0.000285	< 0.000174	**0.000922 J**	< 0.000424	< 0.000234
MW-93R	MW-93R-12152021	POE	32-42	12/15/2021	**0.00221**	**0.0098**	< 0.000285	**0.000885 J**	**0.11 JH**	**0.00596**	< 0.000234
MW-97	MW-97-12142021	POE	33-43	12/14/2021	**0.00352**	**0.0199**	**0.00107**	**0.00523**	**0.261**	**0.0218**	< 0.000234
MW-98	MW-98-12142021	POE	31-41	12/14/2021	< 0.000244	**0.00146**	< 0.000285	< 0.000174	**0.00162**	< 0.000424	< 0.000234
MW-50R	MW-50R-12142021	AMP	20-30	12/14/2021	**0.00622 J**	< 0.000216	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
MW-01	MW-01-121421	POE	18.58-28.58	12/14/2021	**0.000584 J**	**0.00164**	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
MW-65	MW-65-121421	POE	19.5-29.5	12/14/2021	**0.00592**	**0.00906**	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234

Appendix 2-1. Annual Groundwater Data Summary (2021)

2022 Response Action Plan Addendum

Former Cameron Iron Works Facility, Houston, Texas

			Analyte Group (Method):	Volatile Organic Compounds (SW8260C)						
			CAS:	75-34-3	75-35-4	107-06-2	156-59-2	127-18-4	79-01-6	75-01-4
			Analyte:	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	cis-1,2-Dichloroethene	Tetrachloroethene	Trichloroethene	Vinyl Chloride
			cPCL:	4.9	0.007	0.005	0.07	0.005	0.005	0.002
Well ID	**Sample ID**	**Well Type**	**Screen Interval (ft btoc)**	**Date Collected**						

Notes:

The concentrations are presented in milligrams per liter (mg/L).

The cPCLs are the lower of the $^{GW}GW_{Ing}$ and $^{Air}GW_{Inh\text{-}V}$ Tier I PCLs for residential land use based on the latest PCL tables (January 2021).

Bold values indicate a detected concentration.

Bold and shaded values exceed the cPCL at the same number of significant figures as the associated criterion.

POE well MW-16R could not be sampled due to permanganate in well.

< = nondetected result less than the sample detection limit

$^{GW}GW_{Ing}$ = groundwater ingestion pathway

$^{Air}GW_{Inh\text{-}V}$ = inhalation of volatiles from groundwater

btoc = below top of casing

CAS = Chemical Abstracts Service

cPCL = critical protective concentration level

ID = identification

J = estimated concentration

JH = estimated concentration biased high

MW = monitor well

PCL = protective concentration levels

POE = point of exposure

R = replacement well

Appendix 2-2. Annual Groundwater Indicator Parameter Summary (2021)
2022 Response Action Plan Addendum
Former Cameron Iron Works Facility, Houston, Texas

Well ID	Date Measured	pH (SU)	Temperature (°C)	Specific Conductance (mS/cm)	Oxidation-Reduction Potential (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
Annual Event							
MW-01	12/14/2021	6.55	24.6	0.689	107.0	3.48	7.60
MW-15R	12/14/2021	6.93	23.1	0.526	180.0	2.85	9.11
MW-16R	12/14/2021	NS	NS	NS	NS	NS	NS
MW-17R	12/14/2021	6.98	23.8	0.867	181.2	2.82	6.68
MW-50R	12/14/2021	6.62	23.3	0.747	42.1	3.24	1.20
MW-65	12/14/2021	7.00	23.3	0.796	175.0	2.62	3.87
MW-70	12/14/2021	6.87	23.9	0.797	145.8	2.98	20.60
MW-71	12/14/2021	6.92	23.3	0.762	163.2	3.21	6.54
MW-74	12/14/2021	6.98	24.8	0.795	98.0	2.65	10.20
MW-76	12/14/2021	6.61	22.4	1.029	176.0	2.68	13.50
MW-77	12/15/2021	6.89	22.9	1.268	184.0	2.61	8.32
MW-83	12/14/2021	6.83	23.8	1.243	178.4	2.97	14.00
MW-88	12/14/2021	6.97	23.4	1.498	179.2	2.98	12.80
MW-89	12/14/2021	6.72	23.6	1.345	206.0	3.21	450
MW-90	12/14/2021	6.85	23.7	1.930	176.9	3.82	1.75
MW-92	12/14/2021	7.00	23.7	0.939	200.1	3.28	3.23
MW-93R	12/15/2021	6.78	22.3	1.721	197.4	2.35	12.50
MW-97	12/14/2021	6.80	23.4	1.371	142.8	3.28	7.69
MW-98	12/14/2021	6.60	24.0	1.844	152.1	3.28	5.60
MW-100	12/14/2021	6.64	24.0	0.802	164.2	3.08	22.50
MW-106	12/14/2021	6.87	23.2	0.795	42.8	2.12	7.69
MW-108	12/14/2021	6.35	21.3	0.538	139.0	3.06	12.70
MW-109	12/14/2021	6.60	21.4	1.062	165.0	2.70	6.10
MW-110	12/14/2021	6.64	21.6	0.654	151.0	2.83	4.10
MW-111	12/15/2021	6.98	22.8	0.865	175.0	2.62	28.70
MW-112	12/14/2021	6.79	22.3	0.877	163.0	2.86	14.00
MW-113	12/14/2021	6.79	23.2	0.890	175.0	3.11	14.00
MW-121	12/14/2021	6.58	23.6	0.968	205.0	2.98	9.17
MW-122	12/14/2021	6.84	24.2	1.537	205.2	3.02	13.60
MW-145	12/14/2021	NM	NM	NM	NM	NM	NM
MW-146	12/20/2021	6.72	17.1	0.734	101.6	2.89	650
MW-147	12/14/2021	6.71	24.8	1.130	186.3	3.20	99.00
MW-160	12/20/2021	6.80	17.3	1.016	23.6	3.01	230
MW-161	12/14/2021	6.75	25.2	1.630	164.2	3.12	91.00
MW-162	12/20/2021	6.90	16.6	0.856	203.8	2.38	12.20
MW-163	12/20/2021	6.93	17.9	1.092	178.2	2.32	720
MW-168	12/14/2021	NM	NM	NM	NM	NM	NM
MW-178	12/14/2021	6.87	24.0	0.956	130.5	2.98	10.40
MW-179	12/15/2021	6.95	23.1	1.394	199.4	2.85	11.60

Notes:

Values represent the field parameter from residual water remaining after sample collection with HydraSleeve.

°C = degrees Celsius
ID = identification
mg/L = milligram per liter
mS/cm = millisiemens per centimeter
mV = millivolt
MW = monitor well
NM = parameter not measured due to insufficient sample volume
NS = Not Sampled
NTU = nephelometric turbidity unit
R = replacement well
SU = standard unit

Appendix 2-3. Annual Groundwater Elevation Data (2021)
2022 Response Action Plan Addendum
Former Cameron Iron Works Facility, Houston, Texas

Well ID	Date Installed	Casing Diameter (inches)	Constructed Total Depth (feet btoc)	Top of Screen Depth (feet btoc)	Top of Casing Elevation[a] (feet amsl)	Date Measured	Measured Depth to Water (feet btoc)	Groundwater Elevation (feet amsl)
MW-01	08/09/1991	2	28.58	18.58	65.78	12/13/2021	17.05	48.73
MW-15R	09/02/2003	2	39.00	27.00	65.23	12/13/2021	19.09	46.14
MW-16R	09/02/2003	2	32.00	20.00	64.23	12/13/2021	18.43	45.80
MW-17R	09/03/2003	2	32.00	20.00	65.44	12/13/2021	21.00	44.44
MW-50R	02/07/2010	2	32.00	--	66.93	12/13/2021	17.71	49.22
MW-65	--	2	32.00	--	65.17	12/13/2021	18.45	46.72
MW-70	02/02/2001	2	32.00	--	65.08	12/13/2021	19.29	45.79
MW-71	02/02/2001	2	32.00	--	63.45	12/13/2021	19.18	44.27
MW-74	06/04/2001	2	34.00	22.00	63.50	12/13/2021	20.36	43.14
MW-76	02/05/2001	2	32.00	--	62.64	12/13/2021	21.81	40.83
MW-77	05/30/2001	2	37.00	25.00	63.50	12/13/2021	19.75	43.75
MW-83	05/29/2001	2	37.00	25.00	61.52	12/13/2021	24.25	37.27
MW-88	05/22/2001	2	45.00	33.00	62.48	12/13/2021	28.20	34.28
MW-89	05/31/2001	2	44.00	32.00	62.18	12/13/2021	30.71	31.47
MW-90	05/23/2001	2	42.00	30.00	62.50	12/13/2021	29.52	32.98
MW-92	05/24/2001	2	50.00	38.00	63.32	12/13/2021	34.91	28.41
MW-93R	04/12/2017	2	42.00	32.00	59.99	12/13/2021	31.11	28.88
MW-97	02/04/2002	2	45.00	33.00	60.71	12/13/2021	30.00	30.71
MW-98	02/06/2002	2	43.00	31.00	60.43	12/13/2021	33.01	27.42
MW-100	06/13/2002	2	37.60	--	65.07	12/13/2021	20.64	44.43
MW-106	11/11/2001	2	50.00	--	59.42	12/13/2021	34.97	24.45
MW-108	--	2	33.50	--	64.47	12/13/2021	17.17	47.30
MW-109	--	2	33.50	--	65.47	12/13/2021	17.39	48.08
MW-110	--	2	33.50	--	64.92	12/13/2021	18.10	46.82
MW-111	--	2	32.50	--	64.40	12/14/2021	17.97	46.43
MW-112	--	2	33.00	--	65.94	12/13/2021	19.89	46.05
MW-113	--	2	33.50	--	64.20	12/13/2021	18.38	45.82
MW-121	06/11/2003	2	34.50	--	63.29	12/13/2021	22.90	40.39
MW-122	06/10/2003	2	34.00	--	62.78	12/13/2021	23.50	39.28
MW-145	05/18/2007	1	27.55	17.55	62.04	12/13/2021	22.35	39.69
MW-146	05/18/2007	1	35.00	25.00	61.74	12/13/2021	22.95	38.79
MW-147	05/16/2007	1	38.00	28.00	61.22	12/13/2021	23.35	37.87
MW-160	08/22/2007	1	32.75	22.75	60.85	12/13/2021	25.25	35.60
MW-161	08/22/2007	1	36.02	26.02	59.03	12/13/2021	25.25	33.78
MW-162	08/22/2007	1	37.50	27.50	59.13	12/13/2021	27.50	31.63
MW-163	08/22/2007	1	33.25	23.25	61.74	12/13/2021	24.01	37.73
MW-168	12/27/2007	1	40.00	30.00	60.44	12/13/2021	28.12	32.32
MW-178	04/12/2017	2	45.00	35.00	64.34	12/13/2021	24.98	39.36
MW-179	11/27/2017	2	44.39	34.00	60.95	12/13/2021	33.50	27.45

Notes:
[a] - Monitor well top-of-casing elevations were resurveyed between March 27 and April 16, 2018.
-- = Information not available
amsl = above mean sea level
btoc = below top of casing
ID = identification
MW = monitor well
NM = not measured
R = replacement well

Appendix 2-4. Surface Water Data Summary (2021 - 2022)

2022 Response Action Plan Addendum

Former Cameron Iron Works Facility, Houston, Texas

Analyte Group (Method):			Volatile Organic Compounds (SW8260C)						
		CAS:	75-34-3	75-35-4	107-06-2	156-59-2	127-18-4	79-01-6	75-01-4
		Analyte:	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	cis-1,2-Dichloroethene	Tetrachloroethene	Trichloroethene	Vinyl Chloride
		cPCL (Surface Water):	4.1	0.05	0.443	7.49	0.632	0.888	0.0269
Well ID	**Well Type**	**Date Collected**							
SWD-12	HCFCD	06/29/2022	< 0.000244	< 0.000216	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
SWD-14	HCFCD	06/29/2022	< 0.000244	< 0.000216	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
SWD-15	HCFCD	12/15/2021	< 0.000244	**0.0125**	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
SWD-17	HCFCD	12/15/2021	< 0.000244 J	**0.00591 JL**	< 0.000285 J	< 0.000174 J	< 0.0005 J	< 0.000424 J	< 0.000234 J
SWD-18	HCFCD	12/15/2021	< 0.000244	< 0.000216	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
SWD-20	HCFCD	12/15/2021	< 0.000244	< 0.000216	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234

Notes:

The concentrations are presented in milligrams per liter (mg/L).

The cPCLs for surface water are 80% of the cPCLs calculated in the *Human Health Ecological Risk Assessment for Surface Water and Sediment* (June 2003).

Bold values indicate a detected concentration.

< = nondetected result less than the sample detection limit

CAS = Chemical Abstracts Service

cPCL = critical protective concentration level

HCFCD = Harris County Flood Control Ditch

ID = identification

J = estimated concentration

JL = estimated concentration biased low

SWD = surface water sampling locations

Appendix 2-5. Predesign Investigation Groundwater Data Summary (2022)

2022 Response Action Plan Addendum

Former Cameron Iron Works Facility, Houston, Texas

				Analyte Group (Method):	Volatile Organic Compounds (SW8260C)						
				CAS:	75-34-3	75-35-4	107-06-2	156-59-2	127-18-4	79-01-6	75-01-4
				Analyte:	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	cis-1,2-Dichloroethene	Tetrachloroethene	Trichloroethene	Vinyl Chloride
				cPCL:	4.9	0.007	0.005	0.07	0.005	0.005	0.002
Well ID	**Sample ID**	**Well or Sample Type**	**Screen Interval (ft btoc) or Sample Interval (ft bgs)**	**Date Collected**							
MW-163	MW-163-051922	POE	23.25-33.25	05/19/2022	**0.0189**	< 0.000216	< 0.000285	**0.00453**	**0.0039**	**0.00234 J**	**0.00227**
MW-181	MW-181-051922	AMP	25-35	05/19/2022	< 0.000244	< 0.000216	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
MW-182	MW-182-051922	AMP	25-35	05/19/2022	< 0.000244	< 0.000216	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
SB-01	SB-01-02-051322	Grab	25-30	05/13/2022	**0.00971**	**0.00146 J**	**0.00334 J**	< 0.00087	< 0.0025	< 0.00212	< 0.00117
SB-01	SB-01-03-051322	Grab	30-35	05/13/2022	< 0.00122	< 0.00108	**0.00879**	< 0.00087	< 0.0025	< 0.00212	< 0.00117
SB-02	SB-02-03-051222	Grab	38-43	05/12/2022	< 0.000244	< 0.000216	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
SB-03	SB-03-01-051322	Grab	25-30	05/13/2022	**0.0024**	**0.00606**	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
SB-03	SB-03-02-051322	Grab	30-35	05/13/2022	**0.00269**	**0.00579**	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
SB-03	SB-03-03-051322	Grab	36-41	05/13/2022	**0.00233**	**0.00407**	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
SB-04	SB-04-01-051122	Grab	18-23	05/11/2022	**0.00694**	**0.00449**	< 0.000285	**0.00221**	< 0.0005	< 0.000424	**0.00357**
SB-04	SB-04-02-051122	Grab	25-30	05/11/2022	**0.00748**	**0.00636**	< 0.000285	**0.00145**	< 0.0005	< 0.000424	**0.000604 J**
SB-04	SB-04-03-051122	Grab	31-36	05/11/2022	**0.0168**	**0.0284**	< 0.000285	**0.00224**	< 0.0005	< 0.000424	**0.0014 J**
SB-05	SB-05-01-051622	Grab	20-25	05/16/2022	< 0.000244	**0.00106**	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
SB-05	SB-05-02-051622	Grab	27-32	05/16/2022	< 0.000244	**0.000505 J**	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
SB-05	SB-05-03-051622	Grab	35-40	05/16/2022	< 0.000244	< 0.000216	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
SB-06	SB-06-01-051122	Grab	18-23	05/11/2022	< 0.000244	< 0.000216	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
SB-06	SB-06-02-051122	Grab	23-27	05/11/2022	< 0.000244	**0.000805 J**	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
SB-06	SB-06-03-051122	Grab	27-32	05/11/2022	**0.0258**	**0.013**	< 0.000285	**0.000355 J**	< 0.0005	< 0.000424	**0.00298**
SB-07	SB-07-01-051022	Grab	18-23	05/10/2022	**0.00471**	**0.00462**	< 0.000285	**0.0156**	**0.0222 J**	**0.0133**	**0.00141 J**
SB-08	SB-08-01-051022	Grab	18-23	05/10/2022	**0.11**	**0.122**	**0.00273**	**0.179**	**0.0862**	**0.057**	**0.0452**
SB-08	SB-08-02-051022	Grab	24-29	05/10/2022	**0.0461**	**0.0765**	< 0.00143	**0.904**	**0.293**	**0.226**	**0.218**
SB-08	SB-08-03-051022	Grab	30-35	05/10/2022	**0.00807**	**0.0018**	< 0.000285	**0.0257**	**0.00143**	**0.00231 J**	**0.011**
SB-10	SB-10-02-051622	Grab	27-32	05/16/2022	< 0.000244	< 0.000216	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
SB-10	SB-10-03-051622	Grab	33-38	05/16/2022	< 0.000244	< 0.000216	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
SB-11	SB-11-01-050522	Grab	23-28	05/05/2022	< 0.000244	**0.000468 J**	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
SB-11	SB-11-02-050522	Grab	28-33	05/05/2022	< 0.000244	**0.000785 J**	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
SB-11	SB-11-03-050522	Grab	33-38	05/05/2022	**0.0052**	**0.0253**	**0.000417 J**	**0.00121**	**0.00401**	**0.00172 J**	< 0.000234
SB-12	SB-12-03-050622	Grab	38-43	05/06/2022	**0.00339**	**0.0386**	**0.000911 J**	**0.00043 J**	< 0.0005	**0.002 J**	< 0.000234
SB-13	SB-13-02-050422	Grab	30-35	05/04/2022	**0.00957**	**0.0459**	< 0.000285	**0.00651**	**0.00262**	**0.00329 J**	< 0.000234
SB-13	SB-13-03-050422	Grab	40-45	05/04/2022	**0.0179**	**0.0777**	< 0.000285	**0.0132**	**0.00519 J**	**0.00561**	**0.00195 J**
SB-14	SB-14-01-050322	Grab	25-30	05/03/2022	< 0.000244	**0.000532 J**	< 0.000285	**0.000952 J**	**0.00548**	**0.00124 J**	< 0.000234
SB-14	SB-14-02-050322	Grab	30-35	05/03/2022	**0.000657 J**	**0.00221**	**0.000585 J**	**0.00377**	**0.0111**	**0.00368 J**	< 0.000234
SB-14	SB-14-03-050322	Grab	40-45	05/03/2022	**0.00941**	**0.0244**	**0.000901 J**	**0.0097**	**0.0385**	**0.00761**	**0.00203**
SB-15	SB-15-03-050422	Grab	40-45	05/04/2022	**0.0111**	**0.0197**	**0.00274**	**0.0196**	**0.0259 JH**	**0.00884**	**0.00136 J**
SB-16	SB-16-01-050222	Grab	25-30	05/02/2022	< 0.000244	**0.00179**	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
SB-16	SB-16-02-050222	Grab	30-35	05/02/2022	< 0.000244	< 0.000216	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
SB-16	SB-16-03-050222	Grab	40-45	05/02/2022	< 0.000244	< 0.000216	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
SB-17	SB-17-02-051822	Grab	30-35	05/18/2022	< 0.000244	< 0.000216	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
SB-17	SB-17-03-051822	Grab	40-45	05/18/2022	< 0.000244	< 0.000216	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
SB-18	SB-18-02-050922	Grab	25-30	05/09/2022	**0.00119**	**0.00663**	< 0.000285	**0.000951 J**	**0.000953 J**	**0.000626 J**	< 0.000234
SB-18	SB-18-03-050922	Grab	30-34	05/09/2022	**0.0106**	**0.067**	**0.0004 J**	**0.00796**	**0.00185**	**0.00268 J**	**0.000892 J**
SB-19	SB-19-03-050522	Grab	35-40	05/05/2022	**0.00284**	**0.00913**	< 0.000285	**0.00118**	**0.0405 J**	**0.0038 J**	< 0.000234
SB-31	SB-31-02-050922	Grab	22-27	05/09/2022	< 0.000244	**0.00313**	< 0.000285	< 0.000174	**0.000504 JH**	< 0.000424	< 0.000234
SB-31	SB-31-03-050922	Grab	27-32	05/09/2022	< 0.000244	**0.000574 J**	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
SB-32	SB-32-03-050922	Grab	37-42	05/09/2022	**0.324**	**0.648**	**0.00335**	**0.0056**	**0.0347**	**0.00574**	**0.0431**
SB-33	SB-33-01-050622	Grab	25-30	05/06/2022	**0.000843 J**	**0.0122**	< 0.000285	< 0.000174	< 0.0005	**0.000637 J**	< 0.000234

Appendix 2-5. Predesign Investigation Groundwater Data Summary (2022)

2022 Response Action Plan Addendum

Former Cameron Iron Works Facility, Houston, Texas

				Analyte Group (Method):	Volatile Organic Compounds (SW8260C)						
				CAS:	75-34-3	75-35-4	107-06-2	156-59-2	127-18-4	79-01-6	75-01-4
				Analyte:	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	cis-1,2-Dichloroethene	Tetrachloroethene	Trichloroethene	Vinyl Chloride
				cPCL:	4.9	0.007	0.005	0.07	0.005	0.005	0.002
Well ID	Sample ID	Well or Sample Type	Screen Interval (ft btoc) or Sample Interval (ft bgs)	Date Collected							
SB-33	SB-33-02-050622	Grab	30-35	05/06/2022	**0.00136**	**0.0221**	< 0.000285	**0.000225 J**	< 0.0005	**0.00131 J**	< 0.000234
SB-33	SB-33-03-050622	Grab	35-40	05/06/2022	**0.0104**	**0.185**	**0.00201**	**0.00174**	**0.000679 J**	**0.0105**	< 0.000234
SB-34	SB-34-01-062822	Grab	23-28	06/28/2022	**0.00638**	**0.00764**	< 0.000285	**0.000344 J**	**0.000914 J**	< 0.000424	**0.000554 J**
SB-34	SB-34-02-062822	Grab	28-32	06/28/2022	**0.00781**	**0.0142**	< 0.000285	**0.00191**	**0.00423**	**0.00189 J**	**0.00113 J**
SB-34	SB-34-03-062822	Grab	33-38	06/28/2022	**0.0315**	**0.0377**	< 0.000285	**0.00129**	**0.00116**	**0.000781 J**	**0.00553**
SB-35	SB-35-01-062422	Grab	22-27	06/24/2022	**0.00926**	**0.00714**	< 0.000285	**0.00937**	**0.0333**	**0.0384**	**0.002**
SB-35	SB-35-02-062422	Grab	28-33	06/24/2022	**0.00726**	**0.00615**	< 0.000285	**0.0132**	**0.0413**	**0.06**	**0.00223**
SB-35	SB-35-03-062422	Grab	35-40	06/24/2022	**0.0212**	**0.016**	**0.000308 J**	**0.00489**	**0.0249**	**0.0102**	**0.00379**
SB-36	SB-36-02-062722	Grab	28-33	06/27/2022	**0.117**	**0.0691**	**0.00146**	**0.00201**	**0.00322**	**0.000979 J**	**0.00863**
SB-36	SB-36-03-062722	Grab	34-39	06/27/2022	**0.193**	**0.131**	**0.00218 J**	**0.00345 J**	**0.00803**	**0.00259 J**	**0.0139**
SB-37	SB-37-01-062222	Grab	18-23	06/22/2022	< 0.000244	< 0.000216	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
SB-37	SB-37-02-062222	Grab	23-28	06/22/2022	< 0.000244	< 0.000216	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
SB-38	SB-38-02-062222	Grab	27-32	06/23/2022	**0.0083**	**0.00759**	< 0.000285	**0.0116**	**0.000907 J**	**0.00196 J**	**0.00871**
SB-38	SB-38-03-062222	Grab	34-39	06/23/2022	**0.00335**	**0.00103**	< 0.000285	**0.00397**	< 0.0005	< 0.000424	**0.00248**
SB-39	SB-39-02-062322	Grab	25-30	06/23/2022	**0.0365**	**0.00879**	< 0.000285	**0.217**	< 0.0005	**0.00072 J**	**0.132**
SB-39	SB-39-03-062322	Grab	35-40	06/23/2022	**0.0235**	**0.00445**	< 0.000285	**0.148**	< 0.0005	< 0.000424	**0.0881**
SB-40	SB-40-01-062222	Grab	19-24	06/22/2022	**0.0155**	**0.00405**	< 0.000285	**0.11**	**0.0347**	**0.0133**	**0.0195**
SB-40	SB-40-02-062222	Grab	25-30	06/22/2022	**0.0855**	**0.0256**	**0.000559 J**	**0.0208**	**0.0065**	**0.00273 J**	**0.0349**
SB-40	SB-40-03-062222	Grab	35-40	06/22/2022	**0.0324 JH**	**0.0108**	< 0.000285	**0.00346**	< 0.0005	**0.000533 J**	**0.0155**
SB-41	SB-41-01-062222	Grab	23-28	06/22/2022	**0.0122**	**0.0142**	< 0.000285	**0.0147**	< 0.0005	**0.00168 J**	**0.00528**
SB-41	SB-41-02-062222	Grab	31-36	06/22/2022	**0.00431**	**0.00217 J**	< 0.000285	**0.00259 J**	**0.00056 J**	**0.00133 J**	**0.000714 J**
SB-41	SB-41-03-062222	Grab	36-41	06/22/2022	**0.00382**	**0.00177**	< 0.000285	**0.00146**	< 0.0005	**0.000426 J**	< 0.000234
SB-42	SB-42-01-062022	Grab	18-23	06/21/2022	**0.0195**	**0.0125**	< 0.000285	**0.00421**	< 0.0005	**0.00129 J**	**0.00425**
SB-42	SB-42-02-062022	Grab	26-31	06/21/2022	**0.0129**	**0.00922**	< 0.000285	**0.01**	**0.002**	**0.00585**	**0.00204**
SB-42	SB-42-03-062022	Grab	35-40	06/21/2022	**0.0111**	**0.00487**	< 0.000285	**0.00111**	< 0.0005	**0.000611 J**	**0.00465**
SB-43	SB-43-02-062022	Grab	28-33	06/21/2022	**0.00873**	**0.00628**	< 0.000285	**1.2**	**5.6**	**2.85**	**0.142**
SB-43	SB-43-03-062022	Grab	36-41	06/21/2022	**0.0136**	**0.00351**	< 0.000285	**0.0205**	**0.0143**	**0.0339**	**0.00857**
SB-44	SB-44-02-062022	Grab	30-35	06/20/2022	**0.0308**	**0.00188**	< 0.000285	**0.00333**	< 0.0005	< 0.000424	**0.00563**
SB-44	SB-44-03-062022	Grab	36-41	06/20/2022	**0.0245**	**0.000898 J**	< 0.000285	**0.0077**	< 0.0005	< 0.000424	**0.00352**
SB-45	SB-45-02-062422	Grab	28-33	06/24/2022	**0.000547 J**	< 0.000216	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
SB-45	SB-45-03-062422	Grab	35-40	06/24/2022	< 0.000244	< 0.000216	< 0.000285	< 0.000174	< 0.0005	< 0.000424	< 0.000234
SB-46	SB-46-01-062822	Grab	20-25	06/28/2022	**0.000945 J**	< 0.000216	< 0.000285	**0.000876 J**	**0.00562**	**0.00416 J**	< 0.000234
SB-46	SB-46-02-062822	Grab	26-31	06/28/2022	**0.00165**	**0.000417 J**	< 0.000285	**0.00126**	**0.00933**	**0.00731**	< 0.000234
SB-46	SB-46-03-062822	Grab	32-37	06/28/2022	**0.00163**	**0.000395 J**	< 0.000285	**0.00128**	**0.00909**	**0.01**	< 0.000234
SB-47	SB-47-02-062822	Grab	26-31	06/28/2022	**0.00457**	**0.00162**	< 0.000285	**0.248**	**0.715**	**0.858**	**0.0242**
SB-47	SB-47-03-062822	Grab	33-38	06/28/2022	**0.00276**	**0.000436 J**	< 0.000285	**0.0121**	**0.00711**	**0.0196**	**0.00393**
SB-48	SB-48-01-062922	Grab	20-25	06/29/2022	**0.03**	**0.0203**	**0.00176**	**0.272**	**0.261**	**0.266**	**0.0353**
SB-48	SB-48-02-062922	Grab	26-31	06/29/2022	**0.00528**	**0.00142**	< 0.000285	**0.0612**	**0.0863**	**0.162**	**0.0117**
SB-48	SB-48-03-062922	Grab	32-37	06/29/2022	**0.00476**	**0.00106**	< 0.000285	**0.0365**	**0.0315**	**0.0778**	**0.00635**

Appendix 2-5. Predesign Investigation Groundwater Data Summary (2022)

2022 Response Action Plan Addendum

Former Cameron Iron Works Facility, Houston, Texas

					Analyte Group (Method):	Volatile Organic Compounds (SW8260C)						
					CAS:	75-34-3	75-35-4	107-06-2	156-59-2	127-18-4	79-01-6	75-01-4
					Analyte:	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	cis-1,2-Dichloroethene	Tetrachloroethene	Trichloroethene	Vinyl Chloride
					cPCL:	4.9	0.007	0.005	0.07	0.005	0.005	0.002
Well ID	**Sample ID**	**Well or Sample Type**	**Screen Interval (ft btoc) or Sample Interval (ft bgs)**	**Date Collected**								

Notes:

The concentrations are presented in milligrams per liter.

The cPCLs are the lower of the $^{GW}GW_{Ing}$ and $^{Air}GW_{Inh\text{-}V}$ Tier I PCLs for residential land use based on the latest PCL tables (March 2022).

Bold values indicate a detected concentration.

Bold and shaded values exceed the cPCL at the same number of significant figures as the associated criterion.

< = nondetected result less than the sample detection limit

$^{Air}GW_{Inh\text{-}V}$ = inhalation of volatiles from groundwater

AMP = attenuation monitoring point

CAS = Chemical Abstracts Service

cPCL = critical protective concentration level

ft bgs = foot (feet) below ground surface

ft btoc = foot (feet) below top of casing

$^{GW}GW_{Ing}$ = groundwater ingestion pathway

ID = identification

J = estimated concentration

JH = estimated concentration biased high

PCL = protective concentration level

POE = point of exposure

APPENDIX 2-6

Data Usability Summary

2022 Pre-Design Investigation Groundwater Sampling
Voluntary Cleanup Program No. 221
Former Cameron Iron Works Facility
1000 Silber Road, Houston, Texas

A CH2M HILL Engineers, Inc. (CH2M) project chemist reviewed twenty data packages from Eurofins Xenco Stafford of Stafford, Texas for the analysis of groundwater samples collected between May 2 and June 29, 2022, at the Former Cameron Iron Works Facility in Houston, Texas (site).

Data were reviewed for conformance to the requirements of the Texas Commission on Environmental Quality (TCEQ) guidance document, *Review and Reporting of COC Concentration Data Under TRRP* (RG-366/Texas Risk Reduction Program [TRRP]-13) and adherence to project objectives.

CH2M asserts that, at the time the laboratory data were generated for the project, the laboratory was accredited by the National Environmental Laboratory Accreditation Conference under the Texas Laboratory Accreditation Program for the matrixes, analytes, and methods of analysis requested on the chain-of-custody documentation. A copy of the laboratory's National Environmental Laboratory Accreditation Program certificates (applicable to the period during which the laboratory generated the data in this report) is included with this data usability summary (DUS).

Intended Use of Data: The laboratory data included in this report provide information on concentrations of the chemicals of concern (COCs) in the groundwater at the site during the 2022 pre-design investigation.

The following analysis was performed:

- SW-846 5030/8260C and 5030/8260D — Volatile Organic Compounds (VOCs) by Gas Chromatography/Mass Spectrometry (GC/MS)

Data were reviewed and validated as described in *Review and Reporting of COC Concentration Data* (RG-366/TRRP-13). The results of the review and validation are discussed in this DUS. The following laboratory submittals were examined:

- Reportable data
- Laboratory review checklists (LRCs) and associated exception reports (ERs)
- Field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures before shipping the samples to the laboratory

The results of supporting quality control (QC) analyses were summarized in the LRCs, ERs, and case narratives.

The LRCs, associated ERs, and reportable data that were reviewed are included with this DUS.

Introduction

Eighty-seven groundwater samples were analyzed for VOCs. Field QC samples analyzed included ten field duplicates, twenty trip blanks, and two equipment rinsate blanks. Table 1 lists the sample identifications cross-referenced to laboratory identifications.

Table 1. Cross-referenced Field Sample Identifications and Laboratory Identifications
Data Usability Summary
Former Cameron Iron Works Facility, Houston, Texas

Field Identification	Laboratory Identification	Matrix	Date Collected
SB16-01-050222	860-25480-1	WATER	5/2/2022
SB16-02-050222	860-25480-2	WATER	5/2/2022
SB16-03-050222	860-25480-3	WATER	5/2/2022
FD-01-050222	860-25480-4	WATER	5/2/2022
TB-01-050222	860-25480-5	WATER	5/2/2022
SB14-03-050322	860-25535-1	WATER	5/3/2022
SB14-02-050322	860-25535-2	WATER	5/3/2022
SB14-01-050322	860-25535-3	WATER	5/3/2022
TB-01-050322	860-25535-4	WATER	5/3/2022
SB15-03-050422	860-25663-1	WATER	5/4/2022
SB13-03-050422	860-25663-2	WATER	5/4/2022
SB13-02-050422	860-25663-3	WATER	5/4/2022
FD-01-050422	860-25663-4	WATER	5/4/2022
TB-01-050422	860-25663-5	WATER	5/4/2022
SB19-03-050522	860-25762-1	WATER	5/5/2022
SB11-03-050522	860-25762-2	WATER	5/5/2022
SB11-02-050522	860-25762-3	WATER	5/5/2022
SB11-01-050522	860-25762-4	WATER	5/5/2022
TB-01-050522	860-25762-5	WATER	5/5/2022
SB33-03-050622	860-25832-1	WATER	5/6/2022
SB33-02-050622	860-25832-2	WATER	5/6/2022
SB33-01-050622	860-25832-3	WATER	5/6/2022
SB12-03-050622	860-25832-4	WATER	5/6/2022
FD-01-020622	860-25832-5	WATER	5/6/2022
TB-01-020622	860-25832-6	WATER	5/6/2022
SB31-03-050922	860-25901-1	WATER	5/9/2022
SB31-02-050922	860-25901-2	WATER	5/9/2022
SB32-03-050922	860-25901-3	WATER	5/9/2022
SB18-03-050922	860-25901-4	WATER	5/9/2022
SB18-02-050922	860-25901-5	WATER	5/9/2022
TB-01-050922	860-25901-6	WATER	5/9/2022
SB07-01-051022	860-25965-1	WATER	5/10/2022
SB08-03-051022	860-25965-2	WATER	5/10/2022

Table 1. Cross-referenced Field Sample Identifications and Laboratory Identifications
Data Usability Summary
Former Cameron Iron Works Facility, Houston, Texas

Field Identification	Laboratory Identification	Matrix	Date Collected
SB08-02-051022	860-25965-3	WATER	5/10/2022
SB08-01-051022	860-25965-4	WATER	5/10/2022
FD-01-051022	860-25965-5	WATER	5/10/2022
TB-01-051022	860-25965-6	WATER	5/10/2022
SB04-03-051122	860-26040-1	WATER	5/11/2022
SB04-02-051122	860-26040-2	WATER	5/11/2022
SB04-01-051122	860-26040-3	WATER	5/11/2022
SB06-03-051122	860-26040-4	WATER	5/11/2022
SB06-02-051122	860-26040-5	WATER	5/11/2022
SB06-01-051122	860-26040-6	WATER	5/11/2022
EB-01-051122	860-26040-7	WATER	5/11/2022
TB-01-051122	860-26040-8	WATER	5/11/2022
SB02-03-051222	860-26137-1	WATER	5/12/2022
FD-01-051222	860-26137-2	WATER	5/12/2022
TB-01-051222	860-26137-3	WATER	5/12/2022
SB03-03-051322	860-26203-1	WATER	5/13/2022
SB03-02-051322	860-26203-2	WATER	5/13/2022
SB03-01-051322	860-26203-3	WATER	5/13/2022
SB01-03-051322	860-26203-4	WATER	5/13/2022
SB01-02-051322	860-26203-5	WATER	5/13/2022
TB-01-051322	860-26203-6	WATER	5/13/2022
SB10-03-051622	860-26253-1	WATER	5/16/2022
SB10-02-051622	860-26253-2	WATER	5/16/2022
SB05-03-051622	860-26253-3	WATER	5/16/2022
SB05-02-051622	860-26253-4	WATER	5/16/2022
SB05-01-051622	860-26253-5	WATER	5/16/2022
TB-01-051622	860-26253-6	WATER	5/16/2022
SB17-03-051822	860-26450-1	WATER	5/18/2022
SB17-02-051822	860-26450-2	WATER	5/18/2022
MW-181-051922	860-26450-3	WATER	5/19/2022
MW-182-051922	860-26450-4	WATER	5/19/2022
MW-163-051922	860-26450-5	WATER	5/19/2022
FD-01-051922	860-26450-6	WATER	5/19/2022
TB-01-051822	860-26450-7	WATER	5/18/2022
SB44-03-062022	860-28301-1	WATER	6/20/2022
SB44-02-062022	860-28301-2	WATER	6/20/2022
FD-01-062022	860-28301-3	WATER	6/20/2022
TB-01-062022	860-28301-4	WATER	6/20/2022

Table 1. Cross-referenced Field Sample Identifications and Laboratory Identifications
Data Usability Summary
Former Cameron Iron Works Facility, Houston, Texas

Field Identification	Laboratory Identification	Matrix	Date Collected
SB43-03-062022	860-28301-5	WATER	6/20/2022
SB43-02-062022	860-28301-6	WATER	6/20/2022
SB42-03-062022	860-28301-7	WATER	6/20/2022
SB42-02-062022	860-28301-8	WATER	6/20/2022
SB42-01-062022	860-28301-9	WATER	6/20/2022
SB41-03-062222	860-28374-1	WATER	6/22/2022
SB41-02-062222	860-28374-2	WATER	6/22/2022
SB41-01-062222	860-28374-3	WATER	6/22/2022
FD-01-062222	860-28374-4	WATER	6/22/2022
SB40-03-062222	860-28374-5	WATER	6/22/2022
SB40-02-062222	860-28374-6	WATER	6/22/2022
SB40-01-062222	860-28374-7	WATER	6/22/2022
TB-01-062222	860-28374-8	WATER	6/22/2022
SB37-02-062222	860-28484-1	WATER	6/22/2022
SB37-01-062222	860-28484-2	WATER	6/22/2022
TB-02-062222	860-28484-3	WATER	6/22/2022
SB38-03-062222	860-28484-4	WATER	6/22/2022
SB38-02-062222	860-28484-5	WATER	6/22/2022
TB-01-062322	860-28537-1	WATER	6/23/2022
SB39-03-062322	860-28537-2	WATER	6/23/2022
SB39-02-062322	860-28537-3	WATER	6/23/2022
SB35-03-062422	860-28537-4	WATER	6/24/2022
SB35-02-062422	860-28537-5	WATER	6/24/2022
SB35-01-062422	860-28537-6	WATER	6/24/2022
FD-01-062422	860-28537-7	WATER	6/24/2022
TB-01-062422	860-28568-1	WATER	6/24/2022
SB45-03-062422	860-28568-2	WATER	6/24/2022
SB45-02-062422	860-28568-3	WATER	6/24/2022
TB-01-062722	860-28628-1	WATER	6/27/2022
SB36-03-062722	860-28628-2	WATER	6/27/2022
SB36-02-062722	860-28628-3	WATER	6/27/2022
TB-01-062922	860-28799-1	WATER	6/29/2022
SWD-14-062922	860-28799-2	WATER	6/29/2022
SWD-12-062922	860-28799-3	WATER	6/29/2022
TB-01-062822	860-28800-1	WATER	6/28/2022
SB34-03-062822	860-28800-2	WATER	6/28/2022
SB34-02-062822	860-28800-3	WATER	6/28/2022
SB34-01-062822	860-28800-4	WATER	6/28/2022

Table 1. Cross-referenced Field Sample Identifications and Laboratory Identifications
Data Usability Summary
Former Cameron Iron Works Facility, Houston, Texas

Field Identification	Laboratory Identification	Matrix	Date Collected
SB47-03-062822	860-28800-5	WATER	6/28/2022
SB47-02-062822	860-28800-6	WATER	6/28/2022
FD-01-062822	860-28800-7	WATER	6/28/2022
SB46-03-062822	860-28800-8	WATER	6/28/2022
SB46-02-062822	860-28800-9	WATER	6/28/2022
SB46-01-062822	860-28800-10	WATER	6/28/2022
EB-01-062922	860-28800-11	WATER	6/29/2022
SB48-03-062922	860-28800-12	WATER	6/29/2022
SB48-02-062922	860-28800-13	WATER	6/29/2022
SB48-01-062922	860-28800-14	WATER	6/29/2022

Project Measurement Quality Objectives

Organic Analytes:

- Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) recoveries and matrix spike (MS)/matrix spike duplicate (MSD) recoveries within 60 to 140 percent or laboratory control limits if more restrictive.
- LCS/LCSD relative percent differences (RPDs) and MS/MSD RPDs less than or equal to 20 percent or laboratory control limits if more restrictive.
- Sample and field duplicate RPD less than or equal to 30 percent or plus or minus 2 times the method quantitation limit (MQL) if concentrations are less than 5 times MQL
- Completeness greater than or equal to 95 percent

Data Review and Validation Results

Analytical Results

Nondetected results are reported as less than the sample detection limit (SDL) as defined by the TRRP rule. Table 2 lists data qualified during the data validation process.

Table 2. Qualified Analytical Data

Data Usability Summary
Former Cameron Iron Works Facility, Houston, Texas

Field Identification	Analytical Method	Analyte	Result	Units	Qualification	Reason for Qualification
SB15-03-050422	SW8260C	Tetrachloroethene	0.0259	mg/l	JH	Analyte recovered > UCL in MS/MSD.
SB31-03-050922	SW8260C	Tetrachloroethene	0.000504	mg/l	JH	Analyte recovered > UCL in MS/MSD.
SB40-03-062222	SW8260D	1,1-Dichloroethane	0.0324	mg/l	JH	Analyte recovered > UCL in MS/MSD.
SB15-03-050422	SW8260C	Tetrachloroethene	0.0259	mg/l	JH	Analyte recovered > UCL in MS/MSD.
SB31-03-050922	SW8260C	Tetrachloroethene	0.000504 J	mg/l	JH	Analyte recovered > UCL in MS/MSD.
SB40-03-062222	SW8260D	1,1-Dichloroethane	0.0324	mg/l	JH	Analyte recovered > UCL in MS/MSD.
SB19-03-050522	SW8260C	Tetrachloroethene	0.0405	mg/l	J	MS/MSD RPD outside criteria.
FD-01-050422	SW8260C	Tetrachloroethene	0.00257	mg/l	J	Field duplicate RPD > 30%.
SB13-03-050422	SW8260C	Tetrachloroethene	0.00519	mg/l	J	Field duplicate RPD > 30%.
FD-01-051022	SW8260C	Tetrachloroethene	0.0341	mg/l	J	Field duplicate RPD > 30%.
SB07-01-051022	SW8260C	Tetrachloroethene	0.0222	mg/l	J	Field duplicate RPD > 30%.
FD-01-062222	SW8260D	Vinyl Chloride	0.00523	mg/l	J	Field duplicate RPD > 30%.
FD-01-062222	SW8260D	1,1-Dichloroethene	0.0143	mg/l	J	Field duplicate RPD > 30%.
FD-01-062222	SW8260D	cis-1,2-Dichloroethene	0.0152	mg/l	J	Field duplicate RPD > 30%.
SB41-02-062222	SW8260D	Vinyl Chloride	0.000714 J	mg/l	J	Field duplicate RPD > 30%.
SB41-02-062222	SW8260D	1,1-Dichloroethene	0.00217	mg/l	J	Field duplicate RPD > 30%.
SB41-02-062222	SW8260D	cis-1,2-Dichloroethene	0.00259	mg/l	J	Field duplicate RPD > 30%.

mg/L = milligram per liter
JH = Estimated data; the reported sample concentration is approximated due to exceedance of one or more QC requirements; bias in result likely to be high.
J = Estimated data; the reported sample concentration is approximated due to exceedance of one or more QC requirements.
UCL = Upper Control Limit

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody documentation. All samples were received in the appropriate containers and in good condition with proper completion of the chain-of-custody documentation. Sample receipt temperatures were within the acceptance criteria of 4 ± 2 degrees Celsius (°C) except for some coolers that reported receipt temperatures below 2 °C but did not exhibit any impact to samples and thus did not require data qualification.

Samples were preserved as specified in SW-846 Tables 2-40(A) and 2-40(B). Samples were prepared and analyzed within holding times specified in SW-846 Tables 2-40(A) and 2-40(B).

Calibrations and Tunes

According to the LRCs and case narratives, initial calibrations and continuing calibration verifications met SW-846 method requirements. The LRCs also document satisfactory instrument performance calibrations (GC/MS tunes) for the GC/MS analysis (VOCs).

Blanks

No target analytes were detected in any laboratory blanks, trip blanks or equipment blanks.

Internal Standard Recoveries and Surrogate Recoveries

Surrogate recoveries were within acceptance criteria. According to the LRCs and case narratives, internal standard areas were within SW-846 method acceptance criteria.

Laboratory Control Samples

LCSs and LCSDs were spiked with all target analytes of interest for the analytical methods. LCS and LCSD recoveries and RPDs were within acceptance criteria.

Matrix Spike and Matrix Spike Duplicates

MS/MSDs were spiked with target analytes of interest for the analytical methods.

Tetrachloroethene was recovered at greater than the upper control limit in the MS/MSDs performed on SB15-03-050422 and SB31-03-050922; and 1,1-dichloroethane was recovered at greater than the upper control limit in the MS/MSD performed on SB40-03-062222; therefore, the detections of these analytes in these samples were qualified as estimated and potentially biased high (JH). The MS/MSD performed on SB19-03-050522 exhibited an RPD outside acceptance criteria for tetrachloroethene; therefore, the tetrachloroethene detection in the sample was qualified as estimated (J). Other MS/MSD recoveries and RPDs were within acceptance criteria.

Field Precision

Table 3 summarizes field duplicate precision calculations. Field duplicate precision was not calculated for results where both the normal and field duplicate results were reported as not detected (U). Based on the RPDs between the concentrations detected and the proximity of the concentrations to the MQL, overall field duplicate precision was within project acceptance criteria except for five VOCs results and

their associated field duplicate values which were qualified as estimated (J) due to field duplicate imprecision.

Field Procedures

Samples were collected following standard operating procedures detailed in the project sampling instructions.

Table 3. Field Precision
Data Usability Summary
Former Cameron Iron Works Facility, Houston, Texas

Field Identification	Analyte	Sample Result	Duplicate Result	MQL	RPD[a]	Qualified
SB16-01-050222 / FD-01-050222	1,1-Dichloroethene	0.00179	0.00173	0.001	3.4%	A
SB13-03-050422 / FD-01-050422	1,1-Dichloroethane	0.0179	0.016	0.001	11.2%	A
SB13-03-050422 / FD-01-050422	1,1-Dichloroethene	0.0777	0.0608	0.001	24.4%	A
SB13-03-050422 / FD-01-050422	cis-1,2-Dichloroethene	0.0132	0.0118	0.001	11.2%	A
SB13-03-050422 / FD-01-050422	Tetrachloroethene	0.00519	0.00257	0.001	67.5%	J
SB13-03-050422 / FD-01-050422	Trichloroethene	0.00561	0.00414 J	0.005	30.2%	A*
SB13-03-050422 / FD-01-050422	Vinyl Chloride	0.00195 J	0.00169 J	0.002	14.3%	A
SB33-03-050622 / FD-01-020622	1,1-Dichloroethane	0.0104	0.00972	0.001	6.8%	A
SB33-03-050622 / FD-01-020622	1,1-Dichloroethene	0.185	0.247	0.005	28.7%	A
SB33-03-050622 / FD-01-020622	1,2-Dichloroethane	0.00201	0.00194	0.001	3.5%	A
SB33-03-050622 / FD-01-020622	cis-1,2-Dichloroethene	0.00174	0.0016	0.001	8.4%	A
SB33-03-050622 / FD-01-020622	Tetrachloroethene	0.000679 J	0.000608 J	0.001	11.0%	A
SB33-03-050622 / FD-01-020622	Trichloroethene	0.0105	0.00961	0.005	8.9%	A
SB07-01-051022 / FD-01-051022	1,1-Dichloroethane	0.00471	0.00492	0.001	4.4%	A
SB07-01-051022 / FD-01-051022	1,1-Dichloroethene	0.00462	0.00544	0.001	16.3%	A
SB07-01-051022 / FD-01-051022	cis-1,2-Dichloroethene	0.0156	0.0173	0.001	10.3%	A
SB07-01-051022 / FD-01-051022	Tetrachloroethene	0.0222	0.0341	0.001	42.3%	J
SB07-01-051022 / FD-01-051022	Trichloroethene	0.0133	0.0166	0.005	22.1%	A

Table 3. Field Precision
Data Usability Summary
Former Cameron Iron Works Facility, Houston, Texas

Field Identification	Analyte	Sample Result	Duplicate Result	MQL	RPD[a]	Qualified
SB07-01-051022 / FD-01-051022	Vinyl Chloride	0.00141 J	0.00183 J	0.002	25.9%	A
SB44-03-062022 / FD-01-062022	1,1-Dichloroethane	0.0245	0.0219	0.001	11.2%	A
SB44-03-062022 / FD-01-062022	1,1-Dichloroethene	0.000898 J	0.000832 J	0.001	7.6%	A
SB44-03-062022 / FD-01-062022	cis-1,2-Dichloroethene	0.0077	0.00776	0.001	0.8%	A
SB44-03-062022 / FD-01-062022	Vinyl Chloride	0.00352	0.00349	0.002	0.9%	A
SB41-02-062222 / FD-01-062222	1,1-Dichloroethane	0.00431	0.0123	0.001	96.2%	A*
SB41-02-062222 / FD-01-062222	1,1-Dichloroethene	0.00217	0.0143	0.001	147.3%	J
SB41-02-062222 / FD-01-062222	cis-1,2-Dichloroethene	0.00259	0.0152	0.001	141.8%	J
SB41-02-062222 / FD-01-062222	Tetrachloroethene	0.00056 J	0.0005 U	0.001	11.3%	A
SB41-02-062222 / FD-01-062222	Trichloroethene	0.00133 J	0.00181 J	0.005	30.6%	A*
SB41-02-062222 / FD-01-062222	Vinyl Chloride	0.000714 J	0.00523	0.002	152.0%	J
SB35-03-062422 / FD-01-062422	1,1-Dichloroethane	0.0212	0.0221	0.001	4.2%	A
SB35-03-062422 / FD-01-062422	1,1-Dichloroethene	0.016	0.016	0.001	0.0%	A
SB35-03-062422 / FD-01-062422	1,2-Dichloroethane	0.000308 J	0.000315 J	0.001	2.2%	A
SB35-03-062422 / FD-01-062422	cis-1,2-Dichloroethene	0.00489	0.00537	0.001	9.4%	A
SB35-03-062422 / FD-01-062422	Tetrachloroethene	0.0249	0.0288	0.001	14.5%	A
SB35-03-062422 / FD-01-062422	Trichloroethene	0.0102	0.0128	0.005	22.6%	A
SB35-03-062422 / FD-01-062422	Vinyl Chloride	0.00379	0.00387	0.002	2.1%	A
SB47-03-062822 / FD-01-062822	1,1-Dichloroethane	0.00276	0.00271	0.001	1.8%	A
SB47-03-062822 / FD-01-062822	1,1-Dichloroethene	0.000436 J	0.000439 J	0.001	0.7%	A
SB47-03-062822 / FD-01-062822	cis-1,2-Dichloroethene	0.0121	0.014	0.001	14.6%	A

Table 3. Field Precision
Data Usability Summary
Former Cameron Iron Works Facility, Houston, Texas

Field Identification	Analyte	Sample Result	Duplicate Result	MQL	RPD[a]	Qualified
SB47-03-062822 / FD-01-062822	Tetrachloroethene	0.00711	0.00775	0.001	8.6%	A
SB47-03-062822 / FD-01-062822	Trichloroethene	0.0196	0.0212	0.005	7.8%	A
SB47-03-062822 / FD-01-062822	Vinyl Chloride	0.00393	0.00236	0.002	49.9%	A*

Notes:
[a] RPD = ((SR - DR)*200)/(SR + DR)
A = Acceptable Data. RPD is < 30%.
A* = Acceptable Data. RPD is > 30%, but results are < 5 x MQL and within +/- 2 x MQL
J (in Sample Result or Duplicate Result column) = Result > SDL < MQL
J (in Qualified column) = Results qualified as estimated due to field duplicate imprecision. RPD > 30%
SR = Sample result
DR = Duplicate result
MQL = method quantitation limit
RPD = relative percent difference
SDL = sample detection limit

Summary

Overall, the quality of the analytical data was found to be within the QC limits established by the project data quality objectives, analytical methods, and the review criteria presented in *Review and Reporting of COC Concentration Data* (RG-366/TRRP-13).

The following components were found to be within project acceptance criteria:

- Sample receipt conditions
- Sample preservation
- Holding time
- Initial calibrations
- Continuing calibration verification
- Instrument performance calibrations
- Laboratory blanks, trip blanks and equipment blanks
- Internal standard recoveries
- Surrogate recoveries
- LCS/LCSD recoveries and RPDs

QC issues encountered included three instances of high MS/MSD recoveries, one instance of MS/MSD RPD outside acceptance criteria and five instances of field duplicate RPDs outside of acceptance criteria as described above and listed in Table 2.

No results were rejected, giving the data set a completeness value of 100 percent. All analytical results may be used to support project decisions.

Attachment
National Environmental Laboratory Accreditation Program Certificates

Texas Commission on Environmental Quality

NELAP-Recognized Laboratory Accreditation is hereby awarded to

Eurofins Xenco, LLC - Houston

4147 Greenbriar Drive
Stafford, TX 77477-3907

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: T104704215-21-43
Effective Date: 7/7/2021
Expiration Date: 6/30/2022

Executive Director Texas Commission on Environmental Quality

Grab Sample Lab Reports

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ANALYTICAL REPORT

Eurofins Houston
4145 Greenbriar Dr
Stafford, TX 77477
Tel: (281)240-4200

Laboratory Job ID: 860-25480-1
Client Project/Site: STC Silber Rd Pre-Design Investigation

For:
Jacobs Engineering Group, Inc.
12750 Merit Drive
Suite 1100
Dallas, Texas 75251

Attn: John Knott

Bethany McDaniel

Authorized for release by:
5/3/2022 4:54:47 PM

Bethany McDaniel, Senior Project Manager
(713)358-2005
Bethany.McDaniel@et.eurofinsus.com

Table of Contents

Definitions/Glossary

Client: Jacobs Engineering Group, Inc. Job ID: 860-25480-1
Project/Site: STC Silber Rd Pre-Design Investigation

Qualifiers

GC/MS 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
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Jacobs Engineering Group, Inc. Job ID: 860-25480-1
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-25480-1

Laboratory: Eurofins Houston

Narrative

Job Narrative
860-25480-1

Receipt
The samples were received on 5/2/2022 4:25 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 2.5°C

Detection Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-25480-1

Client Sample ID: SB16-01-050222 — Lab Sample ID: 860-25480-1

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethene	0.00179		0.00100	0.000216	mg/L	1		8260C	Total/NA

Client Sample ID: SB16-02-050222 — Lab Sample ID: 860-25480-2

No Detections.

Client Sample ID: SB16-03-050222 — Lab Sample ID: 860-25480-3

No Detections.

Client Sample ID: FD-01-050222 — Lab Sample ID: 860-25480-4

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethene	0.00173		0.00100	0.000216	mg/L	1		8260C	Total/NA

Client Sample ID: TB-01-050222 — Lab Sample ID: 860-25480-5

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: SB16-01-050222 — Lab Sample ID: 860-25480-1

Date Collected: 05/02/22 13:50 — **Matrix: Water**
Date Received: 05/02/22 16:25

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/03/22 12:37	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/03/22 12:37	1
1,1-Dichloroethene	**0.00179**		0.00100	0.000216	mg/L			05/03/22 12:37	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/03/22 12:37	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/03/22 12:37	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/03/22 12:37	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/03/22 12:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*97*		*75 - 131*		*05/03/22 12:37*	*1*
Toluene-d8 (Surr)	*100*		*80 - 117*		*05/03/22 12:37*	*1*
4-Bromofluorobenzene (Surr)	*95*		*74 - 124*		*05/03/22 12:37*	*1*
1,2-Dichloroethane-d4 (Surr)	*90*		*63 - 144*		*05/03/22 12:37*	*1*

Client Sample ID: SB16-02-050222 — Lab Sample ID: 860-25480-2

Date Collected: 05/02/22 15:05 — **Matrix: Water**
Date Received: 05/02/22 16:25

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/03/22 12:57	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/03/22 12:57	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/03/22 12:57	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/03/22 12:57	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/03/22 12:57	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/03/22 12:57	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/03/22 12:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*96*		*75 - 131*		*05/03/22 12:57*	*1*
Toluene-d8 (Surr)	*100*		*80 - 117*		*05/03/22 12:57*	*1*
4-Bromofluorobenzene (Surr)	*97*		*74 - 124*		*05/03/22 12:57*	*1*
1,2-Dichloroethane-d4 (Surr)	*88*		*63 - 144*		*05/03/22 12:57*	*1*

Client Sample ID: SB16-03-050222 — Lab Sample ID: 860-25480-3

Date Collected: 05/02/22 15:25 — **Matrix: Water**
Date Received: 05/02/22 16:25

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/03/22 13:18	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/03/22 13:18	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/03/22 13:18	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/03/22 13:18	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/03/22 13:18	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/03/22 13:18	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/03/22 13:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*97*		*75 - 131*		*05/03/22 13:18*	*1*
Toluene-d8 (Surr)	*101*		*80 - 117*		*05/03/22 13:18*	*1*

Client Sample ID: SB16-03-050222 — Lab Sample ID: 860-25480-3

Date Collected: 05/02/22 15:25 — **Matrix: Water**
Date Received: 05/02/22 16:25

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*98*		*74 - 124*		*05/03/22 13:18*	*1*
1,2-Dichloroethane-d4 (Surr)	*89*		*63 - 144*		*05/03/22 13:18*	*1*

Client Sample ID: FD-01-050222 — Lab Sample ID: 860-25480-4

Date Collected: 05/02/22 00:00 — **Matrix: Water**
Date Received: 05/02/22 16:25

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/03/22 13:38	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/03/22 13:38	1
1,1-Dichloroethene	**0.00173**		0.00100	0.000216	mg/L			05/03/22 13:38	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/03/22 13:38	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/03/22 13:38	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/03/22 13:38	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/03/22 13:38	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	*97*		*75 - 131*		*05/03/22 13:38*	*1*
Toluene-d8 (Surr)	*100*		*80 - 117*		*05/03/22 13:38*	*1*
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*		*05/03/22 13:38*	*1*
1,2-Dichloroethane-d4 (Surr)	*89*		*63 - 144*		*05/03/22 13:38*	*1*

Client Sample ID: TB-01-050222 — Lab Sample ID: 860-25480-5

Date Collected: 05/02/22 07:45 — **Matrix: Water**
Date Received: 05/02/22 16:25

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/03/22 11:35	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/03/22 11:35	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/03/22 11:35	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/03/22 11:35	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/03/22 11:35	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/03/22 11:35	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/03/22 11:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	*96*		*75 - 131*		*05/03/22 11:35*	*1*
Toluene-d8 (Surr)	*102*		*80 - 117*		*05/03/22 11:35*	*1*
4-Bromofluorobenzene (Surr)	*97*		*74 - 124*		*05/03/22 11:35*	*1*
1,2-Dichloroethane-d4 (Surr)	*90*		*63 - 144*		*05/03/22 11:35*	*1*

Unadjusted Detection Limits

Client: Jacobs Engineering Group, Inc.
Job ID: 860-25480-1
Project/Site: STC Silber Rd Pre-Design Investigation

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	MQL	MDL	Units
1,1-Dichloroethane	0.00100	0.000244	mg/L
1,1-Dichloroethene	0.00100	0.000216	mg/L
1,2-Dichloroethane	0.00100	0.000285	mg/L
cis-1,2-Dichloroethene	0.00100	0.000174	mg/L
Tetrachloroethene	0.00100	0.000500	mg/L
Trichloroethene	0.00500	0.000424	mg/L
Vinyl chloride	0.00200	0.000234	mg/L

Surrogate Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-25480-1
Project/Site: STC Silber Rd Pre-Design Investigation

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Water
Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DBFM	TOL	BFB	DCA
Lab Sample ID	Client Sample ID	(75-131)	(80-117)	(74-124)	(63-144)
860-25229-F-2 MS	Matrix Spike	98	99	97	88
860-25480-1	SB16-01-050222	97	100	95	90
860-25480-2	SB16-02-050222	96	100	97	88
860-25480-3	SB16-03-050222	97	101	98	89
860-25480-4	FD-01-050222	97	100	99	89
860-25480-5	TB-01-050222	96	102	97	90
LCS 860-51109/3	Lab Control Sample	98	98	97	90
LCSD 860-51109/4	Lab Control Sample Dup	100	99	96	89
MB 860-51109/9	Method Blank	96	100	97	90

Surrogate Legend

DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 860-51109/9 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 51109

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/03/22 09:51	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/03/22 09:51	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/03/22 09:51	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/03/22 09:51	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/03/22 09:51	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/03/22 09:51	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/03/22 09:51	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*96*		*75 - 131*		*05/03/22 09:51*	*1*
Toluene-d8 (Surr)	*100*		*80 - 117*		*05/03/22 09:51*	*1*
4-Bromofluorobenzene (Surr)	*97*		*74 - 124*		*05/03/22 09:51*	*1*
1,2-Dichloroethane-d4 (Surr)	*90*		*63 - 144*		*05/03/22 09:51*	*1*

Lab Sample ID: LCS 860-51109/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 51109

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethane	0.0500	0.04479		mg/L		90	72 - 125
1,2-Dichloroethane	0.0500	0.04125		mg/L		83	68 - 127
1,1-Dichloroethene	0.0500	0.04628		mg/L		93	59 - 172
cis-1,2-Dichloroethene	0.0500	0.04128		mg/L		83	75 - 125
Tetrachloroethene	0.0500	0.04355		mg/L		87	71 - 125
Trichloroethene	0.0500	0.04361		mg/L		87	62 - 137
Vinyl chloride	0.0500	0.04603		mg/L		92	60 - 140

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*98*		*75 - 131*
Toluene-d8 (Surr)	*98*		*80 - 117*
4-Bromofluorobenzene (Surr)	*97*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*90*		*63 - 144*

Lab Sample ID: LCSD 860-51109/4 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 51109

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethane	0.0500	0.04583		mg/L		92	72 - 125	2	25
1,2-Dichloroethane	0.0500	0.04123		mg/L		82	68 - 127	0	25
1,1-Dichloroethene	0.0500	0.04690		mg/L		94	59 - 172	1	25
cis-1,2-Dichloroethene	0.0500	0.04261		mg/L		85	75 - 125	3	25
Tetrachloroethene	0.0500	0.04706		mg/L		94	71 - 125	8	25
Trichloroethene	0.0500	0.04629		mg/L		93	62 - 137	6	25
Vinyl chloride	0.0500	0.04078		mg/L		82	60 - 140	12	25

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

Lab Sample ID: LCSD 860-51109/4
Matrix: Water
Analysis Batch: 51109

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

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Dibromofluoromethane (Surr)	*100*		*75 - 131*
Toluene-d8 (Surr)	*99*		*80 - 117*
4-Bromofluorobenzene (Surr)	*96*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*89*		*63 - 144*

Lab Sample ID: 860-25229-F-2 MS
Matrix: Water
Analysis Batch: 51109

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethane	0.000244	U	0.0500	0.04758		mg/L		95	72 - 125
1,2-Dichloroethane	0.000285	U	0.0500	0.04139		mg/L		83	68 - 127
1,1-Dichloroethene	0.000216	U	0.0500	0.04975		mg/L		99	59 - 172
cis-1,2-Dichloroethene	0.000174	U	0.0500	0.04402		mg/L		88	75 - 125
Tetrachloroethene	0.000500	U	0.0500	0.04799		mg/L		96	71 - 125
Trichloroethene	0.000424	U	0.0500	0.04714		mg/L		94	62 - 137
Vinyl chloride	0.000234	U	0.0500	0.04809		mg/L		96	60 - 140

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*98*		*75 - 131*
Toluene-d8 (Surr)	*99*		*80 - 117*
4-Bromofluorobenzene (Surr)	*97*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*88*		*63 - 144*

QC Association Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-25480-1

GC/MS VOA

Analysis Batch: 51109

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-25480-1	SB16-01-050222	Total/NA	Water	8260C	
860-25480-2	SB16-02-050222	Total/NA	Water	8260C	
860-25480-3	SB16-03-050222	Total/NA	Water	8260C	
860-25480-4	FD-01-050222	Total/NA	Water	8260C	
860-25480-5	TB-01-050222	Total/NA	Water	8260C	
MB 860-51109/9	Method Blank	Total/NA	Water	8260C	
LCS 860-51109/3	Lab Control Sample	Total/NA	Water	8260C	
LCSD 860-51109/4	Lab Control Sample Dup	Total/NA	Water	8260C	
860-25229-F-2 MS	Matrix Spike	Total/NA	Water	8260C	

Lab Chronicle

Client: Jacobs Engineering Group, Inc. Job ID: 860-25480-1
Project/Site: STC Silber Rd Pre-Design Investigation

Client Sample ID: SB16-01-050222 — Lab Sample ID: 860-25480-1

Date Collected: 05/02/22 13:50 — **Matrix: Water**
Date Received: 05/02/22 16:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	51109	05/03/22 12:37	TTD	XEN STF

Client Sample ID: SB16-02-050222 — Lab Sample ID: 860-25480-2

Date Collected: 05/02/22 15:05 — **Matrix: Water**
Date Received: 05/02/22 16:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	51109	05/03/22 12:57	TTD	XEN STF

Client Sample ID: SB16-03-050222 — Lab Sample ID: 860-25480-3

Date Collected: 05/02/22 15:25 — **Matrix: Water**
Date Received: 05/02/22 16:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	51109	05/03/22 13:18	TTD	XEN STF

Client Sample ID: FD-01-050222 — Lab Sample ID: 860-25480-4

Date Collected: 05/02/22 00:00 — **Matrix: Water**
Date Received: 05/02/22 16:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	51109	05/03/22 13:38	TTD	XEN STF

Client Sample ID: TB-01-050222 — Lab Sample ID: 860-25480-5

Date Collected: 05/02/22 07:45 — **Matrix: Water**
Date Received: 05/02/22 16:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	51109	05/03/22 11:35	TTD	XEN STF

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Accreditation/Certification Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-25480-1
Project/Site: STC Silber Rd Pre-Design Investigation

Laboratory: Eurofins Houston

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

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	21-038-0	08-04-22
Florida	NELAP	E871002	06-30-22
Louisiana	NELAP	03054	06-30-22
Oklahoma	State	2021-168	08-31-22
Texas	NELAP	T104704215-21-44	06-30-22
Texas	TCEQ Water Supply	T104704215	06-30-22
USDA	US Federal Programs	P330-22-00025	03-02-23

Method Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-25480-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	XEN STF
5030C	Purge and Trap	SW846	XEN STF

Protocol References:

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

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Sample Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-25480-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
860-25480-1	SB16-01-050222	Water	05/02/22 13:50	05/02/22 16:25
860-25480-2	SB16-02-050222	Water	05/02/22 15:05	05/02/22 16:25
860-25480-3	SB16-03-050222	Water	05/02/22 15:25	05/02/22 16:25
860-25480-4	FD-01-050222	Water	05/02/22 00:00	05/02/22 16:25
860-25480-5	TB-01-050222	Water	05/02/22 07:45	05/02/22 16:25

Appendix A

Laboratory Data Package Cover Page - Page 1 of 4

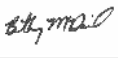
This data package is for Job No. 860-25480-1 and consists of:

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

- ☑ R1- Field chain-of-custody documentation;
- ☑ R2 - Sample identification cross-reference;
- ☑ R3 - Test reports (analytical data sheets) for each environmental sample that includes:
  a. Items consistent with NELAC Chapter 5,
  b. dilution factors,
  c. prepatation methods,
  d. cleanup methods, and
  e. if required for the project, tentatively identified coumpounds (TICs).
- ☑ R4 - Surrogate recovery data including:
  a. Calculated recovery (%R), and
  b. The laboratory's surrogate QC limits.
- ☑ R5 - Test reports/summary forms for blank samples;
- ☑ R6 - Test reports/summary forms for laboratory control samples (LCSs) including:
  a. LCS spiking amounts,
  b. Calculated %R for each analyte, and
  c. The laboratory's LCS QC limits.
- ☑ R7 - Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a. Samples associated with the MS/MSD clearly identified,
  b. MS/MSD spiking amounts,
  c. Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d. Calculated %Rs and relative percent differences (RPDs), and
  e. The laboratory's MS/MSD QC limits
- ☐ R8 - Laboratory analytical duplicate (if applicable) recovery and precision:
  a. The amount of analyte measured in the duplicate,
  b. The calculated RPD, and
  c. The laboratory's QC limits for analytical duplicates.
- ☑ R9 - List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
- ☑ R10 - Other problems or anomalies.
- ☐ Exception Report for every "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge 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.

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

Name (Printed)	Signature	Official Title (Printed)	Date
Bethany McDaniel		Senior Project Manager	05/03/2022

Laboratory Data Package Cover Page - Page 2 of 4

Laboratory Name: Eurofins Houston	LRC Date: 05/03/2022
Project Name: STC Silber Rd Pre-Design Investigation	Laboratory Job Number: 860-25480-1
Reviewer Name: Bethany McDaniel	

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
		Were all departures from standard conditions described in an exception report?	✓				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	✓				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	✓				
		Were calculations checked by a peer or supervisor?	✓				
		Were all analyte identifications checked by a peer or supervisor?	✓				
		Were sample detection limits reported for all analytes not detected?	✓				
		Were all results for soil and sediment samples reported on a dry weight basis?			✓		
		Were % moisture (or solids) reported for all soil and sediment samples?			✓		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			✓		
		If required for the project, are TICs reported?			✓		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	✓				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	✓				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	✓				
		Were blanks analyzed at the appropriate frequency?	✓				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
		Were blank concentrations < MQL?	✓				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	✓				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
		Were LCSs analyzed at the required frequency?	✓				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	✓				
		Was the LCSD RPD within QC limits?	✓				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	✓				
		Were MS/MSD analyzed at the appropriate frequency?	✓				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	✓				
		Were MS/MSD RPDs within laboratory QC limits?			✓		
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			✓		
		Were analytical duplicates analyzed at the appropriate frequency?			✓		
		Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	✓				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	✓				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	✓				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	✓				

Laboratory Data Package Cover Page - Page 3 of 4

Laboratory Name: Eurofins Houston	LRC Date: 05/03/2022
Project Name: STC Silber Rd Pre-Design Investigation	Laboratory Job Number: 860-25480-1
Reviewer Name: Bethany McDaniel	

#[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?	✓				
		Were percent RSDs or correlation coefficient criteria met?	✓				
		Was the number of standards recommended in the method used for all analytes?	✓				
		Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
		Are ICAL data available for all instruments used?	✓				
		Has the initial calibration curve been verified using an appropriate second source standard?	✓				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?	✓				
		Were percent differences for each analyte within the method-required QC limits?	✓				
		Was the ICAL curve verified for each analyte?	✓				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			✓		
S3	O	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?	✓				
		Were ion abundance data within the method-required QC limits?	✓				
S4	O	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?	✓				
S5	OI	**Raw data (NELAC Section 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
		Were data associated with manual integrations flagged on the raw data?	✓				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			✓		
S7	O	**Tentatively identified compounds (TICs)**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
S8	I	**Interference Check Sample (ICS) results**					
		Were percent recoveries within method QC limits?			✓		
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?			✓		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	✓				
		Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
S11	OI	**Proficiency test reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	✓				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	✓				
		Is documentation of the analyst's competency up-to-date and on file?	✓				
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?	✓				
S16	OI	**Laboratory standard operating procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	✓				

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).

Laboratory Data Package Cover Page - Page 4 of 4

Laboratory Name: Eurofins Houston	LRC Date: 05/03/2022
Project Name: STC Silber Rd Pre-Design Investigation	Laboratory Job Number: 860-25480-1
Reviewer Name: Bethany McDaniel	

ER#[1]	Description
	No Exceptions

1. ER# = Exception Report identification number (an Exception Report should be completed for an item if “NR” or “No” is checked).

Detection Check Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-25480-1
Project/Site: STC Silber Rd Pre-Design Investigation

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Water
Prep Type: Total/NA
Prep Method: 5030C-Purge and Trap
Instrument: A325
Detector: MSD/0
Column: DB-624

Analyte	Spike Added	Result	Qualifier	Unit	RL	MDL	Analysis Date	Analysis Batch
1,1-Dichloroethane	0.00100	0.00483		mg/L	0.00100	0.000244	03/03/2022	860-43530
1,2-Dichloroethane	0.00100	0.00498		mg/L	0.00100	0.000285	03/03/2022	860-43530
1,1-Dichloroethene	0.00100	0.00411		mg/L	0.00100	0.000216	03/03/2022	860-43530
cis-1,2-Dichloroethene	0.00100	0.00499		mg/L	0.00100	0.000174	03/03/2022	860-43530
Tetrachloroethene	0.00100	0.00463		mg/L	0.00100	0.000500	03/03/2022	860-43530
Trichloroethene	0.00100	0.00503		mg/L	0.00500	0.000424	03/03/2022	860-43530
Vinyl chloride	0.00100	0.00381		mg/L	0.00200	0.000234	03/03/2022	860-43530

Eurofins Xenco, Stafford
4145 Greenbriar Dr
Stafford TX 77477
Phone (281) 240-4200

Temp: 3.4 IR ID:HOU-323
C/F:-0.9
Corrected Temp: 2.5

Chain of Custody Record

860-25480 Chain of Custody

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5/3/2022

Client Information	Sampler: DR	Lab PM: McDaniel, Bethany A	07-2299.1
Client Contact: John Ynfante	Phone:	E-Mail: Bethany.McDaniel@Eurofinset.com	Page 1 of 1
Company: Jacobs Engineering Group, Inc.	PWSID:	Analysis Requested	Job #:
Address: 14701 St. Mary's Lane Suite 300	Due Date Requested:		Preservation Codes:
City: Houston	TAT Requested (days): 1 day RUSH		A HCL M Hexane B NaOH N None C Zn Acetate O AsNaO2 D Nitric Acid P Na2O4S E NaHSO4 Q Na2SO3 F MeOH R Na2S2O3 G Amchlor S H2SO4 H Ascorbic Acid T TSP Dodecahydrate I Ice U Acetone J DI Water V MCAA K EDTA W pH 4-5 L EDA Z other (specify) Other:
State, Zip: TX, 77079	Compliance Project: Δ Yes Δ No		
Phone:	PO #:		
Email: John.Ynfante@jacobs.com	WO #:		
Project Name: STC Silber Road Pre-Design Investigation	Project #: 86002024		
Site:	SSOW#:		

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)	8260B (MOD) VOCs Custom List (7)	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A		
SB16-01-050222	5/2/22	1350	G	Water			X	3	
SB16-02-050222	5/2/22	1505	G	Water			X	3	
SB16-03-050222	5/2/22	1525	G	Water			X	3	
FD-01-050222	5/2/22	NG	G	Water			X	3	
TB-01-050222	5/2/22	0745		Water			X	2	
				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) TRRP

Special Instructions/QC Requirements:

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

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
[signature]	5/2/22 1625		[signature]	5/2/22 1625	Ex
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

Ver 01/16/2019

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc.

Job Number: 860-25480-1

Login Number: 25480
List Number: 1
Creator: Torres, Sandra

List Source: Eurofins Houston

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	2.5
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	True	

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ANALYTICAL REPORT

Eurofins Houston
4145 Greenbriar Dr
Stafford, TX 77477
Tel: (281)240-4200

Laboratory Job ID: 860-25535-1
Client Project/Site: STC Silber Rd Pre-Design Investigation

For:
Jacobs Engineering Group, Inc.
12750 Merit Drive
Suite 1100
Dallas, Texas 75251

Attn: John Knott

Bethany McDaniel

Authorized for release by:
5/4/2022 5:07:45 PM

Bethany McDaniel, Senior Project Manager
(713)358-2005
Bethany.McDaniel@et.eurofinsus.com

Table of Contents

Definitions/Glossary

Client: Jacobs Engineering Group, Inc. Job ID: 860-25535-1
Project/Site: STC Silber Rd Pre-Design Investigation

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the MQL but greater than or equal to the SDL and the concentration is an estimated value.
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
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 860-25535-1

Laboratory: Eurofins Houston

Narrative

Job Narrative
860-25535-1

Receipt
The samples were received on 5/3/2022 5:14 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.6°C

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

Detection Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-25535-1

Client Sample ID: SB14-03-050322 — Lab Sample ID: 860-25535-1

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.00941		0.00100	0.000244	mg/L	1		8260C	Total/NA
1,2-Dichloroethane	0.000901	J	0.00100	0.000285	mg/L	1		8260C	Total/NA
1,1-Dichloroethene	0.0244		0.00100	0.000216	mg/L	1		8260C	Total/NA
cis-1,2-Dichloroethene	0.00970		0.00100	0.000174	mg/L	1		8260C	Total/NA
Tetrachloroethene	0.0385		0.00100	0.000500	mg/L	1		8260C	Total/NA
Trichloroethene	0.00761		0.00500	0.000424	mg/L	1		8260C	Total/NA
Vinyl chloride	0.00203		0.00200	0.000234	mg/L	1		8260C	Total/NA

Client Sample ID: SB14-02-050322 — Lab Sample ID: 860-25535-2

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.000657	J	0.00100	0.000244	mg/L	1		8260C	Total/NA
1,2-Dichloroethane	0.000585	J	0.00100	0.000285	mg/L	1		8260C	Total/NA
1,1-Dichloroethene	0.00221		0.00100	0.000216	mg/L	1		8260C	Total/NA
cis-1,2-Dichloroethene	0.00377		0.00100	0.000174	mg/L	1		8260C	Total/NA
Tetrachloroethene	0.0111		0.00100	0.000500	mg/L	1		8260C	Total/NA
Trichloroethene	0.00368	J	0.00500	0.000424	mg/L	1		8260C	Total/NA

Client Sample ID: SB14-01-050322 — Lab Sample ID: 860-25535-3

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethene	0.000532	J	0.00100	0.000216	mg/L	1		8260C	Total/NA
cis-1,2-Dichloroethene	0.000952	J	0.00100	0.000174	mg/L	1		8260C	Total/NA
Tetrachloroethene	0.00548		0.00100	0.000500	mg/L	1		8260C	Total/NA
Trichloroethene	0.00124	J	0.00500	0.000424	mg/L	1		8260C	Total/NA

Client Sample ID: TB-01-050322 — Lab Sample ID: 860-25535-4

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: SB14-03-050322 — Lab Sample ID: 860-25535-1

Date Collected: 05/03/22 12:45 — **Matrix: Water**
Date Received: 05/03/22 17:14

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.00941		0.00100	0.000244	mg/L			05/04/22 12:26	1
1,2-Dichloroethane	0.000901	J	0.00100	0.000285	mg/L			05/04/22 12:26	1
1,1-Dichloroethene	0.0244		0.00100	0.000216	mg/L			05/04/22 12:26	1
cis-1,2-Dichloroethene	0.00970		0.00100	0.000174	mg/L			05/04/22 12:26	1
Tetrachloroethene	0.0385		0.00100	0.000500	mg/L			05/04/22 12:26	1
Trichloroethene	0.00761		0.00500	0.000424	mg/L			05/04/22 12:26	1
Vinyl chloride	0.00203		0.00200	0.000234	mg/L			05/04/22 12:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*97*		*75 - 131*		*05/04/22 12:26*	*1*
Toluene-d8 (Surr)	*100*		*80 - 117*		*05/04/22 12:26*	*1*
4-Bromofluorobenzene (Surr)	*97*		*74 - 124*		*05/04/22 12:26*	*1*
1,2-Dichloroethane-d4 (Surr)	*88*		*63 - 144*		*05/04/22 12:26*	*1*

Client Sample ID: SB14-02-050322 — Lab Sample ID: 860-25535-2

Date Collected: 05/03/22 13:35 — **Matrix: Water**
Date Received: 05/03/22 17:14

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000657	J	0.00100	0.000244	mg/L			05/04/22 12:46	1
1,2-Dichloroethane	0.000585	J	0.00100	0.000285	mg/L			05/04/22 12:46	1
1,1-Dichloroethene	0.00221		0.00100	0.000216	mg/L			05/04/22 12:46	1
cis-1,2-Dichloroethene	0.00377		0.00100	0.000174	mg/L			05/04/22 12:46	1
Tetrachloroethene	0.0111		0.00100	0.000500	mg/L			05/04/22 12:46	1
Trichloroethene	0.00368	J	0.00500	0.000424	mg/L			05/04/22 12:46	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/04/22 12:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*95*		*75 - 131*		*05/04/22 12:46*	*1*
Toluene-d8 (Surr)	*99*		*80 - 117*		*05/04/22 12:46*	*1*
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*		*05/04/22 12:46*	*1*
1,2-Dichloroethane-d4 (Surr)	*90*		*63 - 144*		*05/04/22 12:46*	*1*

Client Sample ID: SB14-01-050322 — Lab Sample ID: 860-25535-3

Date Collected: 05/03/22 14:10 — **Matrix: Water**
Date Received: 05/03/22 17:14

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/04/22 13:06	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/04/22 13:06	1
1,1-Dichloroethene	0.000532	J	0.00100	0.000216	mg/L			05/04/22 13:06	1
cis-1,2-Dichloroethene	0.000952	J	0.00100	0.000174	mg/L			05/04/22 13:06	1
Tetrachloroethene	0.00548		0.00100	0.000500	mg/L			05/04/22 13:06	1
Trichloroethene	0.00124	J	0.00500	0.000424	mg/L			05/04/22 13:06	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/04/22 13:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*96*		*75 - 131*		*05/04/22 13:06*	*1*
Toluene-d8 (Surr)	*99*		*80 - 117*		*05/04/22 13:06*	*1*

Client Sample ID: SB14-01-050322 — Lab Sample ID: 860-25535-3

Date Collected: 05/03/22 14:10 — **Matrix: Water**
Date Received: 05/03/22 17:14

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*74 - 124*		*05/04/22 13:06*	*1*
1,2-Dichloroethane-d4 (Surr)	*90*		*63 - 144*		*05/04/22 13:06*	*1*

Client Sample ID: TB-01-050322 — Lab Sample ID: 860-25535-4

Date Collected: 05/03/22 07:45 — **Matrix: Water**
Date Received: 05/03/22 17:14

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/04/22 11:24	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/04/22 11:24	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/04/22 11:24	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/04/22 11:24	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/04/22 11:24	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/04/22 11:24	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/04/22 11:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*95*		*75 - 131*		*05/04/22 11:24*	*1*
Toluene-d8 (Surr)	*100*		*80 - 117*		*05/04/22 11:24*	*1*
4-Bromofluorobenzene (Surr)	*97*		*74 - 124*		*05/04/22 11:24*	*1*
1,2-Dichloroethane-d4 (Surr)	*89*		*63 - 144*		*05/04/22 11:24*	*1*

Unadjusted Detection Limits

Client: Jacobs Engineering Group, Inc.
Job ID: 860-25535-1
Project/Site: STC Silber Rd Pre-Design Investigation

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	MQL	MDL	Units
1,1-Dichloroethane	0.00100	0.000244	mg/L
1,1-Dichloroethene	0.00100	0.000216	mg/L
1,2-Dichloroethane	0.00100	0.000285	mg/L
cis-1,2-Dichloroethene	0.00100	0.000174	mg/L
Tetrachloroethene	0.00100	0.000500	mg/L
Trichloroethene	0.00500	0.000424	mg/L
Vinyl chloride	0.00200	0.000234	mg/L

Surrogate Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-25535-1
Project/Site: STC Silber Rd Pre-Design Investigation

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Water
Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DBFM	TOL	BFB	DCA
Lab Sample ID	Client Sample ID	(75-131)	(80-117)	(74-124)	(63-144)
860-25486-Q-21 MS	Matrix Spike	99	99	95	90
860-25486-R-21 MSD	Matrix Spike Duplicate	98	99	95	89
860-25535-1	SB14-03-050322	97	100	97	88
860-25535-2	SB14-02-050322	95	99	99	90
860-25535-3	SB14-01-050322	96	99	97	90
860-25535-4	TB-01-050322	95	100	97	89
LCS 860-51279/3	Lab Control Sample	98	100	96	89
LCSD 860-51279/4	Lab Control Sample Dup	99	99	95	88
MB 860-51279/11	Method Blank	96	100	95	89

Surrogate Legend

DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 860-51279/11 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 51279

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/04/22 11:04	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/04/22 11:04	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/04/22 11:04	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/04/22 11:04	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/04/22 11:04	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/04/22 11:04	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/04/22 11:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*96*		*75 - 131*		*05/04/22 11:04*	*1*
Toluene-d8 (Surr)	*100*		*80 - 117*		*05/04/22 11:04*	*1*
4-Bromofluorobenzene (Surr)	*95*		*74 - 124*		*05/04/22 11:04*	*1*
1,2-Dichloroethane-d4 (Surr)	*89*		*63 - 144*		*05/04/22 11:04*	*1*

Lab Sample ID: LCS 860-51279/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 51279

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethane			0.0500	0.04797		mg/L		96	72 - 125		
1,2-Dichloroethane			0.0500	0.04213		mg/L		84	68 - 127		
1,1-Dichloroethene			0.0500	0.05261		mg/L		105	59 - 172		
cis-1,2-Dichloroethene			0.0500	0.04469		mg/L		89	75 - 125		
Tetrachloroethene			0.0500	0.05061		mg/L		101	71 - 125		
Trichloroethene			0.0500	0.04945		mg/L		99	62 - 137		
Vinyl chloride			0.0500	0.05019		mg/L		100	60 - 140		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*98*		*75 - 131*
Toluene-d8 (Surr)	*100*		*80 - 117*
4-Bromofluorobenzene (Surr)	*96*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*89*		*63 - 144*

Lab Sample ID: LCSD 860-51279/4 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 51279

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethane			0.0500	0.04557		mg/L		91	72 - 125	5	25
1,2-Dichloroethane			0.0500	0.04100		mg/L		82	68 - 127	3	25
1,1-Dichloroethene			0.0500	0.04975		mg/L		100	59 - 172	6	25
cis-1,2-Dichloroethene			0.0500	0.04261		mg/L		85	75 - 125	5	25
Tetrachloroethene			0.0500	0.04667		mg/L		93	71 - 125	8	25
Trichloroethene			0.0500	0.04626		mg/L		93	62 - 137	7	25
Vinyl chloride			0.0500	0.04585		mg/L		92	60 - 140	9	25

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

Lab Sample ID: LCSD 860-51279/4
Matrix: Water
Analysis Batch: 51279

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

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Dibromofluoromethane (Surr)	*99*		*75 - 131*
Toluene-d8 (Surr)	*99*		*80 - 117*
4-Bromofluorobenzene (Surr)	*95*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*88*		*63 - 144*

Lab Sample ID: 860-25486-Q-21 MS
Matrix: Water
Analysis Batch: 51279

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethane	0.000244	U	0.0500	0.04609		mg/L		92	72 - 125
1,2-Dichloroethane	0.000285	U	0.0500	0.04089		mg/L		82	68 - 127
1,1-Dichloroethene	0.000216	U	0.0500	0.04936		mg/L		99	59 - 172
cis-1,2-Dichloroethene	0.000174	U	0.0500	0.04243		mg/L		85	75 - 125
Tetrachloroethene	0.000500	U	0.0500	0.04660		mg/L		93	71 - 125
Trichloroethene	0.000424	U	0.0500	0.04667		mg/L		93	62 - 137
Vinyl chloride	0.000234	U	0.0500	0.03968		mg/L		79	60 - 140

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*99*		*75 - 131*
Toluene-d8 (Surr)	*99*		*80 - 117*
4-Bromofluorobenzene (Surr)	*95*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*90*		*63 - 144*

Lab Sample ID: 860-25486-R-21 MSD
Matrix: Water
Analysis Batch: 51279

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethane	0.000244	U	0.0500	0.04504		mg/L		90	72 - 125	2	25
1,2-Dichloroethane	0.000285	U	0.0500	0.04080		mg/L		82	68 - 127	0	25
1,1-Dichloroethene	0.000216	U	0.0500	0.04907		mg/L		98	59 - 172	1	25
cis-1,2-Dichloroethene	0.000174	U	0.0500	0.04157		mg/L		83	75 - 125	2	25
Tetrachloroethene	0.000500	U	0.0500	0.04689		mg/L		94	71 - 125	1	25
Trichloroethene	0.000424	U	0.0500	0.04564		mg/L		91	62 - 137	2	25
Vinyl chloride	0.000234	U	0.0500	0.03810		mg/L		76	60 - 140	4	25

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Dibromofluoromethane (Surr)	*98*		*75 - 131*
Toluene-d8 (Surr)	*99*		*80 - 117*
4-Bromofluorobenzene (Surr)	*95*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*89*		*63 - 144*

QC Association Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-25535-1

GC/MS VOA

Analysis Batch: 51279

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-25535-1	SB14-03-050322	Total/NA	Water	8260C	
860-25535-2	SB14-02-050322	Total/NA	Water	8260C	
860-25535-3	SB14-01-050322	Total/NA	Water	8260C	
860-25535-4	TB-01-050322	Total/NA	Water	8260C	
MB 860-51279/11	Method Blank	Total/NA	Water	8260C	
LCS 860-51279/3	Lab Control Sample	Total/NA	Water	8260C	
LCSD 860-51279/4	Lab Control Sample Dup	Total/NA	Water	8260C	
860-25486-Q-21 MS	Matrix Spike	Total/NA	Water	8260C	
860-25486-R-21 MSD	Matrix Spike Duplicate	Total/NA	Water	8260C	

Lab Chronicle

Client: Jacobs Engineering Group, Inc.
Job ID: 860-25535-1
Project/Site: STC Silber Rd Pre-Design Investigation

Client Sample ID: SB14-03-050322
Lab Sample ID: 860-25535-1
Date Collected: 05/03/22 12:45
Matrix: Water
Date Received: 05/03/22 17:14

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	51279	05/04/22 12:26	NA	XEN STF

Client Sample ID: SB14-02-050322
Lab Sample ID: 860-25535-2
Date Collected: 05/03/22 13:35
Matrix: Water
Date Received: 05/03/22 17:14

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	51279	05/04/22 12:46	NA	XEN STF

Client Sample ID: SB14-01-050322
Lab Sample ID: 860-25535-3
Date Collected: 05/03/22 14:10
Matrix: Water
Date Received: 05/03/22 17:14

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	51279	05/04/22 13:06	NA	XEN STF

Client Sample ID: TB-01-050322
Lab Sample ID: 860-25535-4
Date Collected: 05/03/22 07:45
Matrix: Water
Date Received: 05/03/22 17:14

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	51279	05/04/22 11:24	NA	XEN STF

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Accreditation/Certification Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-25535-1
Project/Site: STC Silber Rd Pre-Design Investigation

Laboratory: Eurofins Houston

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

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	21-038-0	08-04-22
Florida	NELAP	E871002	06-30-22
Louisiana	NELAP	03054	06-30-22
Oklahoma	State	2021-168	08-31-22
Texas	NELAP	T104704215-21-44	06-30-22
Texas	TCEQ Water Supply	T104704215	06-30-22
USDA	US Federal Programs	P330-22-00025	03-02-23

Method Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-25535-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	XEN STF
5030C	Purge and Trap	SW846	XEN STF

Protocol References:

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

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Sample Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-25535-1
Project/Site: STC Silber Rd Pre-Design Investigation

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
860-25535-1	SB14-03-050322	Water	05/03/22 12:45	05/03/22 17:14
860-25535-2	SB14-02-050322	Water	05/03/22 13:35	05/03/22 17:14
860-25535-3	SB14-01-050322	Water	05/03/22 14:10	05/03/22 17:14
860-25535-4	TB-01-050322	Water	05/03/22 07:45	05/03/22 17:14

Appendix A

Laboratory Data Package Cover Page - Page 1 of 4

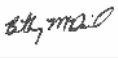
This data package is for Job No. 860-25535-1 and consists of:

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

- ☑ R1- Field chain-of-custody documentation;
- ☑ R2 - Sample identification cross-reference;
- ☑ R3 - Test reports (analytical data sheets) for each environmental sample that includes:
  a. Items consistent with NELAC Chapter 5,
  b. dilution factors,
  c. prepatation methods,
  d. cleanup methods, and
  e. if required for the project, tentatively identified coumpounds (TICs).
- ☑ R4 - Surrogate recovery data including:
  a. Calculated recovery (%R), and
  b. The laboratory's surrogate QC limits.
- ☑ R5 - Test reports/summary forms for blank samples;
- ☑ R6 - Test reports/summary forms for laboratory control samples (LCSs) including:
  a. LCS spiking amounts,
  b. Calculated %R for each analyte, and
  c. The laboratory's LCS QC limits.
- ☑ R7 - Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a. Samples associated with the MS/MSD clearly identified,
  b. MS/MSD spiking amounts,
  c. Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d. Calculated %Rs and relative percent differences (RPDs), and
  e. The laboratory's MS/MSD QC limits
- ☐ R8 - Laboratory analytical duplicate (if applicable) recovery and precision:
  a. The amount of analyte measured in the duplicate,
  b. The calculated RPD, and
  c. The laboratory's QC limits for analytical duplicates.
- ☑ R9 - List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
- ☑ R10 - Other problems or anomalies.
- ☐ Exception Report for every "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge 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.

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

Name (Printed)	Signature	Official Title (Printed)	Date
Bethany McDaniel		Senior Project Manager	05/04/2022

Laboratory Data Package Cover Page - Page 2 of 4

Laboratory Name: Eurofins Houston	LRC Date: 05/04/2022
Project Name: STC Silber Rd Pre-Design Investigation	Laboratory Job Number: 860-25535-1
Reviewer Name: Bethany McDaniel	

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
		Were all departures from standard conditions described in an exception report?	✓				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	✓				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	✓				
		Were calculations checked by a peer or supervisor?	✓				
		Were all analyte identifications checked by a peer or supervisor?	✓				
		Were sample detection limits reported for all analytes not detected?	✓				
		Were all results for soil and sediment samples reported on a dry weight basis?			✓		
		Were % moisture (or solids) reported for all soil and sediment samples?			✓		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			✓		
		If required for the project, are TICs reported?			✓		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	✓				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	✓				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	✓				
		Were blanks analyzed at the appropriate frequency?	✓				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
		Were blank concentrations < MQL?	✓				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	✓				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
		Were LCSs analyzed at the required frequency?	✓				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	✓				
		Was the LCSD RPD within QC limits?	✓				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	✓				
		Were MS/MSD analyzed at the appropriate frequency?	✓				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	✓				
		Were MS/MSD RPDs within laboratory QC limits?	✓				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			✓		
		Were analytical duplicates analyzed at the appropriate frequency?			✓		
		Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	✓				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	✓				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	✓				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	✓				

Laboratory Data Package Cover Page - Page 3 of 4

Laboratory Name: Eurofins Houston	LRC Date: 05/04/2022
Project Name: STC Silber Rd Pre-Design Investigation	Laboratory Job Number: 860-25535-1
Reviewer Name: Bethany McDaniel	

#[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?	✓				
		Were percent RSDs or correlation coefficient criteria met?	✓				
		Was the number of standards recommended in the method used for all analytes?	✓				
		Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
		Are ICAL data available for all instruments used?	✓				
		Has the initial calibration curve been verified using an appropriate second source standard?	✓				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?	✓				
		Were percent differences for each analyte within the method-required QC limits?	✓				
		Was the ICAL curve verified for each analyte?	✓				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			✓		
S3	O	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?	✓				
		Were ion abundance data within the method-required QC limits?	✓				
S4	O	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?	✓				
S5	OI	**Raw data (NELAC Section 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
		Were data associated with manual integrations flagged on the raw data?	✓				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			✓		
S7	O	**Tentatively identified compounds (TICs)**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
S8	I	**Interference Check Sample (ICS) results**					
		Were percent recoveries within method QC limits?			✓		
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?			✓		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	✓				
		Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
S11	OI	**Proficiency test reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	✓				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	✓				
		Is documentation of the analyst's competency up-to-date and on file?	✓				
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?	✓				
S16	OI	**Laboratory standard operating procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	✓				

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).

Laboratory Data Package Cover Page - Page 4 of 4

Laboratory Name: Eurofins Houston	LRC Date: 05/04/2022
Project Name: STC Silber Rd Pre-Design Investigation	Laboratory Job Number: 860-25535-1
Reviewer Name: Bethany McDaniel	

ER#[1]	Description
	No Exceptions

1. ER# = Exception Report identification number (an Exception Report should be completed for an item if “NR” or “No” is checked).

Detection Check Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-25535-1
Project/Site: STC Silber Rd Pre-Design Investigation

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Water
Prep Type: Total/NA
Prep Method: 5030C-Purge and Trap
Instrument: A325
Detector: MSD/0
Column: DB-624

Analyte	Spike Added	Result	Qualifier	Unit	RL	MDL	Analysis Date	Analysis Batch
1,1-Dichloroethane	0.00100	0.00483		mg/L	0.00100	0.000244	03/03/2022	860-43530
1,2-Dichloroethane	0.00100	0.00498		mg/L	0.00100	0.000285	03/03/2022	860-43530
1,1-Dichloroethene	0.00100	0.00411		mg/L	0.00100	0.000216	03/03/2022	860-43530
cis-1,2-Dichloroethene	0.00100	0.00499		mg/L	0.00100	0.000174	03/03/2022	860-43530
Tetrachloroethene	0.00100	0.00463		mg/L	0.00100	0.000500	03/03/2022	860-43530
Trichloroethene	0.00100	0.00503		mg/L	0.00500	0.000424	03/03/2022	860-43530
Vinyl chloride	0.00100	0.00381		mg/L	0.00200	0.000234	03/03/2022	860-43530

Eurofins Xenco, Stafford
4145 Greenbriar Dr
Stafford, TX 77477
Phone (281) 240-4200

Chain of Custody Record

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Client Information	Sampler:	Lab PM: McDaniel, Bethany A	Carrier Tracking No(s):	COC No: 860-6507-2299.1
Client Contact: John Ynfante	Phone:	E-Mail: Bethany.McDaniel@Eurofinset.com	State of Origin:	Page: Page 1 of 1
Company: Jacobs Engineering Group, Inc.	PWSID:			Job #:
Address: 14701 St. Mary's Lane Suite 300	Due Date Requested:			
City: Houston	TAT Requested (days): 1 day RUSH			
State, Zip: TX, 77079	Compliance Project: Δ Yes Δ No			
Phone:	PO #:			
Email: John.Ynfante@jacobs.com	WO #:			
Project Name: STC Silber Road Pre-Design Investigation	Project #: 86002024			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification	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)	8260B - (MOD) VOCs Custom List (7)	Total Number of containers	Special Instructions/Note:
			Preservation Code:		X	X	A	X	
SB14-03-050322	5/3/22	1245	G	Water			X	3	
SB14-02-050322	5/3/22	1335	G	Water			X	3	
SB14-01-050322	5/3/22	1410	G	Water			X	3	
TB-01-050322	5/3/22	0745		Water			X	2	
				Water					
				Water					
				Water					
				Water					
				Water					
				Water					
				Water					

860-25535 Chain of Custody

Temp: 1.5 IR ID:HOU-323
C/F:-0.9
Corrected Temp: 0.6

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) TRRP

Special Instructions/QC Requirements:

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

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	[signature]	5/3/22 1714		[signature]	5/3/22 1714	E
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc.

Job Number: 860-25535-1

Login Number: 25535
List Number: 1
Creator: Rubio, Yuri

List Source: Eurofins Houston

Question	Answer	Comment
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 (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	

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ANALYTICAL REPORT

Eurofins Houston
4145 Greenbriar Dr
Stafford, TX 77477
Tel: (281)240-4200

Laboratory Job ID: 860-25663-1
Client Project/Site: STC Silber Rd Pre-Design Investigation

For:
Jacobs Engineering Group, Inc.
12750 Merit Drive
Suite 1100
Dallas, Texas 75251

Attn: John Knott

Bethany McDaniel

Authorized for release by:
5/5/2022 5:13:17 PM

Bethany McDaniel, Senior Project Manager
(713)358-2005
Bethany.McDaniel@et.eurofinsus.com

Table of Contents

Definitions/Glossary

Client: Jacobs Engineering Group, Inc. Job ID: 860-25663-1
Project/Site: STC Silber Rd Pre-Design Investigation

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the MQL but greater than or equal to the SDL and the concentration is an estimated value.
N1	MS, MSD: Spike recovery exceeds upper or lower control limits.
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
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Jacobs Engineering Group, Inc. Job ID: 860-25663-1
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-25663-1

Laboratory: Eurofins Houston

Narrative

Job Narrative
860-25663-1

Comments
No additional comments.

Receipt
The samples were received on 5/5/2022 8:03 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.8º C.

Detection Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-25663-1

Client Sample ID: SB15-03-050422 — Lab Sample ID: 860-25663-1

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.0111		0.00100	0.000244	mg/L	1		8260C	Total/NA
1,2-Dichloroethane	0.00274		0.00100	0.000285	mg/L	1		8260C	Total/NA
1,1-Dichloroethene	0.0197		0.00100	0.000216	mg/L	1		8260C	Total/NA
cis-1,2-Dichloroethene	0.0196		0.00100	0.000174	mg/L	1		8260C	Total/NA
Tetrachloroethene	0.0259		0.00100	0.000500	mg/L	1		8260C	Total/NA
Trichloroethene	0.00884		0.00500	0.000424	mg/L	1		8260C	Total/NA
Vinyl chloride	0.00136	J	0.00200	0.000234	mg/L	1		8260C	Total/NA

Client Sample ID: SB13-03-050422 — Lab Sample ID: 860-25663-2

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.0179		0.00100	0.000244	mg/L	1		8260C	Total/NA
1,1-Dichloroethene	0.0777		0.00100	0.000216	mg/L	1		8260C	Total/NA
cis-1,2-Dichloroethene	0.0132		0.00100	0.000174	mg/L	1		8260C	Total/NA
Tetrachloroethene	0.00519		0.00100	0.000500	mg/L	1		8260C	Total/NA
Trichloroethene	0.00561		0.00500	0.000424	mg/L	1		8260C	Total/NA
Vinyl chloride	0.00195	J	0.00200	0.000234	mg/L	1		8260C	Total/NA

Client Sample ID: SB13-02-050422 — Lab Sample ID: 860-25663-3

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.00957		0.00100	0.000244	mg/L	1		8260C	Total/NA
1,1-Dichloroethene	0.0459		0.00100	0.000216	mg/L	1		8260C	Total/NA
cis-1,2-Dichloroethene	0.00651		0.00100	0.000174	mg/L	1		8260C	Total/NA
Tetrachloroethene	0.00262		0.00100	0.000500	mg/L	1		8260C	Total/NA
Trichloroethene	0.00329	J	0.00500	0.000424	mg/L	1		8260C	Total/NA

Client Sample ID: FD-01-050422 — Lab Sample ID: 860-25663-4

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.0160		0.00100	0.000244	mg/L	1		8260C	Total/NA
1,1-Dichloroethene	0.0608		0.00100	0.000216	mg/L	1		8260C	Total/NA
cis-1,2-Dichloroethene	0.0118		0.00100	0.000174	mg/L	1		8260C	Total/NA
Tetrachloroethene	0.00257		0.00100	0.000500	mg/L	1		8260C	Total/NA
Trichloroethene	0.00414	J	0.00500	0.000424	mg/L	1		8260C	Total/NA
Vinyl chloride	0.00169	J	0.00200	0.000234	mg/L	1		8260C	Total/NA

Client Sample ID: TB-01-050422 — Lab Sample ID: 860-25663-5

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: SB15-03-050422 — Lab Sample ID: 860-25663-1

Date Collected: 05/04/22 11:40 — **Matrix: Water**
Date Received: 05/05/22 08:03

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.0111		0.00100	0.000244	mg/L			05/05/22 13:36	1
1,2-Dichloroethane	0.00274		0.00100	0.000285	mg/L			05/05/22 13:36	1
1,1-Dichloroethene	0.0197		0.00100	0.000216	mg/L			05/05/22 13:36	1
cis-1,2-Dichloroethene	0.0196		0.00100	0.000174	mg/L			05/05/22 13:36	1
Tetrachloroethene	0.0259		0.00100	0.000500	mg/L			05/05/22 13:36	1
Trichloroethene	0.00884		0.00500	0.000424	mg/L			05/05/22 13:36	1
Vinyl chloride	0.00136	J	0.00200	0.000234	mg/L			05/05/22 13:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*92*		*75 - 131*		*05/05/22 13:36*	*1*
Toluene-d8 (Surr)	*98*		*80 - 117*		*05/05/22 13:36*	*1*
4-Bromofluorobenzene (Surr)	*98*		*74 - 124*		*05/05/22 13:36*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*63 - 144*		*05/05/22 13:36*	*1*

Client Sample ID: SB13-03-050422 — Lab Sample ID: 860-25663-2

Date Collected: 05/04/22 16:15 — **Matrix: Water**
Date Received: 05/05/22 08:03

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.0179		0.00100	0.000244	mg/L			05/05/22 13:55	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/05/22 13:55	1
1,1-Dichloroethene	0.0777		0.00100	0.000216	mg/L			05/05/22 13:55	1
cis-1,2-Dichloroethene	0.0132		0.00100	0.000174	mg/L			05/05/22 13:55	1
Tetrachloroethene	0.00519		0.00100	0.000500	mg/L			05/05/22 13:55	1
Trichloroethene	0.00561		0.00500	0.000424	mg/L			05/05/22 13:55	1
Vinyl chloride	0.00195	J	0.00200	0.000234	mg/L			05/05/22 13:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*91*		*75 - 131*		*05/05/22 13:55*	*1*
Toluene-d8 (Surr)	*103*		*80 - 117*		*05/05/22 13:55*	*1*
4-Bromofluorobenzene (Surr)	*106*		*74 - 124*		*05/05/22 13:55*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*63 - 144*		*05/05/22 13:55*	*1*

Client Sample ID: SB13-02-050422 — Lab Sample ID: 860-25663-3

Date Collected: 05/04/22 16:30 — **Matrix: Water**
Date Received: 05/05/22 08:03

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.00957		0.00100	0.000244	mg/L			05/05/22 14:14	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/05/22 14:14	1
1,1-Dichloroethene	0.0459		0.00100	0.000216	mg/L			05/05/22 14:14	1
cis-1,2-Dichloroethene	0.00651		0.00100	0.000174	mg/L			05/05/22 14:14	1
Tetrachloroethene	0.00262		0.00100	0.000500	mg/L			05/05/22 14:14	1
Trichloroethene	0.00329	J	0.00500	0.000424	mg/L			05/05/22 14:14	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/05/22 14:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*98*		*75 - 131*		*05/05/22 14:14*	*1*
Toluene-d8 (Surr)	*101*		*80 - 117*		*05/05/22 14:14*	*1*

Client Sample ID: SB13-02-050422 — Lab Sample ID: 860-25663-3

Date Collected: 05/04/22 16:30 — **Matrix: Water**
Date Received: 05/05/22 08:03

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*97*		*74 - 124*		*05/05/22 14:14*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*63 - 144*		*05/05/22 14:14*	*1*

Client Sample ID: FD-01-050422 — Lab Sample ID: 860-25663-4

Date Collected: 05/04/22 00:00 — **Matrix: Water**
Date Received: 05/05/22 08:03

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	**0.0160**		0.00100	0.000244	mg/L			05/05/22 14:33	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/05/22 14:33	1
1,1-Dichloroethene	**0.0608**		0.00100	0.000216	mg/L			05/05/22 14:33	1
cis-1,2-Dichloroethene	**0.0118**		0.00100	0.000174	mg/L			05/05/22 14:33	1
Tetrachloroethene	**0.00257**		0.00100	0.000500	mg/L			05/05/22 14:33	1
Trichloroethene	**0.00414**	**J**	0.00500	0.000424	mg/L			05/05/22 14:33	1
Vinyl chloride	**0.00169**	**J**	0.00200	0.000234	mg/L			05/05/22 14:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	*97*		*75 - 131*		*05/05/22 14:33*	*1*
Toluene-d8 (Surr)	*99*		*80 - 117*		*05/05/22 14:33*	*1*
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*		*05/05/22 14:33*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*63 - 144*		*05/05/22 14:33*	*1*

Client Sample ID: TB-01-050422 — Lab Sample ID: 860-25663-5

Date Collected: 05/04/22 07:45 — **Matrix: Water**
Date Received: 05/05/22 08:03

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/05/22 13:17	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/05/22 13:17	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/05/22 13:17	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/05/22 13:17	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/05/22 13:17	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/05/22 13:17	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/05/22 13:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	*95*		*75 - 131*		*05/05/22 13:17*	*1*
Toluene-d8 (Surr)	*100*		*80 - 117*		*05/05/22 13:17*	*1*
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*		*05/05/22 13:17*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*63 - 144*		*05/05/22 13:17*	*1*

Unadjusted Detection Limits

Client: Jacobs Engineering Group, Inc. Job ID: 860-25663-1
Project/Site: STC Silber Rd Pre-Design Investigation

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	MQL	MDL	Units
1,1-Dichloroethane	0.00100	0.000244	mg/L
1,1-Dichloroethene	0.00100	0.000216	mg/L
1,2-Dichloroethane	0.00100	0.000285	mg/L
cis-1,2-Dichloroethene	0.00100	0.000174	mg/L
Tetrachloroethene	0.00100	0.000500	mg/L
Trichloroethene	0.00500	0.000424	mg/L
Vinyl chloride	0.00200	0.000234	mg/L

Surrogate Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-25663-1

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DBFM	TOL	BFB	DCA
Lab Sample ID	Client Sample ID	(75-131)	(80-117)	(74-124)	(63-144)
860-25663-1	SB15-03-050422	92	98	98	104
860-25663-1 MS	SB15-03-050422	98	103	101	101
860-25663-2	SB13-03-050422	91	103	106	100
860-25663-3	SB13-02-050422	98	101	97	101
860-25663-4	FD-01-050422	97	99	99	102
860-25663-5	TB-01-050422	95	100	99	102
LCS 860-51704/3	Lab Control Sample	102	100	100	99
LCSD 860-51704/4	Lab Control Sample Dup	101	99	100	101
MB 860-51704/8	Method Blank	92	101	98	101

Surrogate Legend

DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 860-51704/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 51704

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/05/22 12:21	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/05/22 12:21	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/05/22 12:21	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/05/22 12:21	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/05/22 12:21	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/05/22 12:21	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/05/22 12:21	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*92*		*75 - 131*		*05/05/22 12:21*	*1*
Toluene-d8 (Surr)	*101*		*80 - 117*		*05/05/22 12:21*	*1*
4-Bromofluorobenzene (Surr)	*98*		*74 - 124*		*05/05/22 12:21*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*63 - 144*		*05/05/22 12:21*	*1*

Lab Sample ID: LCS 860-51704/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 51704

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethane	0.0500	0.05501		mg/L		110	72 - 125
1,2-Dichloroethane	0.0500	0.05764		mg/L		115	68 - 127
1,1-Dichloroethene	0.0500	0.05340		mg/L		107	59 - 172
cis-1,2-Dichloroethene	0.0500	0.05703		mg/L		114	75 - 125
Tetrachloroethene	0.0500	0.05172		mg/L		103	71 - 125
Trichloroethene	0.0500	0.05280		mg/L		106	62 - 137
Vinyl chloride	0.0500	0.05288		mg/L		106	60 - 140

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*102*		*75 - 131*
Toluene-d8 (Surr)	*100*		*80 - 117*
4-Bromofluorobenzene (Surr)	*100*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*99*		*63 - 144*

Lab Sample ID: LCSD 860-51704/4 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 51704

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethane	0.0500	0.04912		mg/L		98	72 - 125	11	25
1,2-Dichloroethane	0.0500	0.05488		mg/L		110	68 - 127	5	25
1,1-Dichloroethene	0.0500	0.05162		mg/L		103	59 - 172	3	25
cis-1,2-Dichloroethene	0.0500	0.05403		mg/L		108	75 - 125	5	25
Tetrachloroethene	0.0500	0.04850		mg/L		97	71 - 125	6	25
Trichloroethene	0.0500	0.04799		mg/L		96	62 - 137	10	25
Vinyl chloride	0.0500	0.05091		mg/L		102	60 - 140	4	25

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

Lab Sample ID: LCSD 860-51704/4
Matrix: Water
Analysis Batch: 51704

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

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Dibromofluoromethane (Surr)	*101*		*75 - 131*
Toluene-d8 (Surr)	*99*		*80 - 117*
4-Bromofluorobenzene (Surr)	*100*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*101*		*63 - 144*

Lab Sample ID: 860-25663-1 MS
Matrix: Water
Analysis Batch: 51704

Client Sample ID: SB15-03-050422
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethane	0.0111		0.0500	0.06357		mg/L		105	72 - 125
1,2-Dichloroethane	0.00274		0.0500	0.06590		mg/L		126	68 - 127
1,1-Dichloroethene	0.0197		0.0500	0.08096		mg/L		122	59 - 172
cis-1,2-Dichloroethene	0.0196		0.0500	0.07706		mg/L		115	75 - 125
Tetrachloroethene	0.0259		0.0500	0.1042	N1	mg/L		157	71 - 125
Trichloroethene	0.00884		0.0500	0.06358		mg/L		109	62 - 137
Vinyl chloride	0.00136	J	0.0500	0.05884		mg/L		115	60 - 140

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*98*		*75 - 131*
Toluene-d8 (Surr)	*103*		*80 - 117*
4-Bromofluorobenzene (Surr)	*101*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*101*		*63 - 144*

QC Association Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-25663-1
Project/Site: STC Silber Rd Pre-Design Investigation

GC/MS VOA

Analysis Batch: 51704

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-25663-1	SB15-03-050422	Total/NA	Water	8260C	
860-25663-2	SB13-03-050422	Total/NA	Water	8260C	
860-25663-3	SB13-02-050422	Total/NA	Water	8260C	
860-25663-4	FD-01-050422	Total/NA	Water	8260C	
860-25663-5	TB-01-050422	Total/NA	Water	8260C	
MB 860-51704/8	Method Blank	Total/NA	Water	8260C	
LCS 860-51704/3	Lab Control Sample	Total/NA	Water	8260C	
LCSD 860-51704/4	Lab Control Sample Dup	Total/NA	Water	8260C	
860-25663-1 MS	SB15-03-050422	Total/NA	Water	8260C	

Lab Chronicle

Client: Jacobs Engineering Group, Inc. Job ID: 860-25663-1
Project/Site: STC Silber Rd Pre-Design Investigation

Client Sample ID: SB15-03-050422 — Lab Sample ID: 860-25663-1

Date Collected: 05/04/22 11:40 — **Matrix: Water**
Date Received: 05/05/22 08:03

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	51704	05/05/22 13:36	NA	XEN STF

Client Sample ID: SB13-03-050422 — Lab Sample ID: 860-25663-2

Date Collected: 05/04/22 16:15 — **Matrix: Water**
Date Received: 05/05/22 08:03

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	51704	05/05/22 13:55	NA	XEN STF

Client Sample ID: SB13-02-050422 — Lab Sample ID: 860-25663-3

Date Collected: 05/04/22 16:30 — **Matrix: Water**
Date Received: 05/05/22 08:03

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	51704	05/05/22 14:14	NA	XEN STF

Client Sample ID: FD-01-050422 — Lab Sample ID: 860-25663-4

Date Collected: 05/04/22 00:00 — **Matrix: Water**
Date Received: 05/05/22 08:03

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	51704	05/05/22 14:33	NA	XEN STF

Client Sample ID: TB-01-050422 — Lab Sample ID: 860-25663-5

Date Collected: 05/04/22 07:45 — **Matrix: Water**
Date Received: 05/05/22 08:03

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	51704	05/05/22 13:17	NA	XEN STF

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Accreditation/Certification Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-25663-1
Project/Site: STC Silber Rd Pre-Design Investigation

Laboratory: Eurofins Houston

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

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	21-038-0	08-04-22
Florida	NELAP	E871002	06-30-22
Louisiana	NELAP	03054	06-30-22
Oklahoma	State	2021-168	08-31-22
Texas	NELAP	T104704215-21-44	06-30-22
Texas	TCEQ Water Supply	T104704215	06-30-22
USDA	US Federal Programs	P330-22-00025	03-02-23

Method Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-25663-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	XEN STF
5030C	Purge and Trap	SW846	XEN STF

Protocol References:

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

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Sample Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-25663-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
860-25663-1	SB15-03-050422	Water	05/04/22 11:40	05/05/22 08:03
860-25663-2	SB13-03-050422	Water	05/04/22 16:15	05/05/22 08:03
860-25663-3	SB13-02-050422	Water	05/04/22 16:30	05/05/22 08:03
860-25663-4	FD-01-050422	Water	05/04/22 00:00	05/05/22 08:03
860-25663-5	TB-01-050422	Water	05/04/22 07:45	05/05/22 08:03

Appendix A

Laboratory Data Package Cover Page - Page 1 of 4

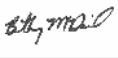
This data package is for Job No. 860-25663-1 and consists of:

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

- ☑ R1- Field chain-of-custody documentation;
- ☑ R2 - Sample identification cross-reference;
- ☑ R3 - Test reports (analytical data sheets) for each environmental sample that includes:
  a. Items consistent with NELAC Chapter 5,
  b. dilution factors,
  c. prepatation methods,
  d. cleanup methods, and
  e. if required for the project, tentatively identified coumpounds (TICs).
- ☑ R4 - Surrogate recovery data including:
  a. Calculated recovery (%R), and
  b. The laboratory's surrogate QC limits.
- ☑ R5 - Test reports/summary forms for blank samples;
- ☑ R6 - Test reports/summary forms for laboratory control samples (LCSs) including:
  a. LCS spiking amounts,
  b. Calculated %R for each analyte, and
  c. The laboratory's LCS QC limits.
- ☑ R7 - Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a. Samples associated with the MS/MSD clearly identified,
  b. MS/MSD spiking amounts,
  c. Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d. Calculated %Rs and relative percent differences (RPDs), and
  e. The laboratory's MS/MSD QC limits
- ☐ R8 - Laboratory analytical duplicate (if applicable) recovery and precision:
  a. The amount of analyte measured in the duplicate,
  b. The calculated RPD, and
  c. The laboratory's QC limits for analytical duplicates.
- ☑ R9 - List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
- ☑ R10 - Other problems or anomalies.
- ☐ Exception Report for every "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge 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.

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

Name (Printed)	Signature	Official Title (Printed)	Date
Bethany McDaniel		Senior Project Manager	05/05/2022

Laboratory Data Package Cover Page - Page 2 of 4

Laboratory Name: Eurofins Houston	LRC Date: 05/05/2022
Project Name: STC Silber Rd Pre-Design Investigation	Laboratory Job Number: 860-25663-1
Reviewer Name: Bethany McDaniel	

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
		Were all departures from standard conditions described in an exception report?	✓				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	✓				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	✓				
		Were calculations checked by a peer or supervisor?	✓				
		Were all analyte identifications checked by a peer or supervisor?	✓				
		Were sample detection limits reported for all analytes not detected?	✓				
		Were all results for soil and sediment samples reported on a dry weight basis?			✓		
		Were % moisture (or solids) reported for all soil and sediment samples?			✓		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			✓		
		If required for the project, are TICs reported?			✓		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	✓				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	✓				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	✓				
		Were blanks analyzed at the appropriate frequency?	✓				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
		Were blank concentrations < MQL?	✓				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	✓				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
		Were LCSs analyzed at the required frequency?	✓				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	✓				
		Was the LCSD RPD within QC limits?	✓				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	✓				
		Were MS/MSD analyzed at the appropriate frequency?	✓				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		✓			1
		Were MS/MSD RPDs within laboratory QC limits?			✓		
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			✓		
		Were analytical duplicates analyzed at the appropriate frequency?			✓		
		Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	✓				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	✓				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	✓				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	✓				

Laboratory Data Package Cover Page - Page 3 of 4

Laboratory Name: Eurofins Houston	LRC Date: 05/05/2022
Project Name: STC Silber Rd Pre-Design Investigation	Laboratory Job Number: 860-25663-1
Reviewer Name: Bethany McDaniel	

#[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?	✓				
		Were percent RSDs or correlation coefficient criteria met?	✓				
		Was the number of standards recommended in the method used for all analytes?	✓				
		Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
		Are ICAL data available for all instruments used?	✓				
		Has the initial calibration curve been verified using an appropriate second source standard?	✓				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?	✓				
		Were percent differences for each analyte within the method-required QC limits?	✓				
		Was the ICAL curve verified for each analyte?	✓				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			✓		
S3	O	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?	✓				
		Were ion abundance data within the method-required QC limits?	✓				
S4	O	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?	✓				
S5	OI	**Raw data (NELAC Section 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
		Were data associated with manual integrations flagged on the raw data?	✓				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			✓		
S7	O	**Tentatively identified compounds (TICs)**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
S8	I	**Interference Check Sample (ICS) results**					
		Were percent recoveries within method QC limits?			✓		
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?			✓		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	✓				
		Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
S11	OI	**Proficiency test reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	✓				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	✓				
		Is documentation of the analyst's competency up-to-date and on file?	✓				
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?	✓				
S16	OI	**Laboratory standard operating procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	✓				

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).

Laboratory Data Package Cover Page - Page 4 of 4

Laboratory Name: Eurofins Houston	LRC Date: 05/05/2022
Project Name: STC Silber Rd Pre-Design Investigation	Laboratory Job Number: 860-25663-1
Reviewer Name: Bethany McDaniel	

ER#[1]	Description
1	Method 8260C: The matrix spike(MS) recoveries for analytical batch 860-51704 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

1. ER# = Exception Report identification number (an Exception Report should be completed for an item if “NR” or “No” is checked).

Detection Check Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-25663-1
Project/Site: STC Silber Rd Pre-Design Investigation

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Water
Prep Type: Total/NA
Prep Method: 5030C-Purge and Trap
Instrument: A294
Detector: MSD/0
Column: DB-624

Analyte	Spike Added	Result	Qualifier	Unit	RL	MDL	Analysis Date	Analysis Batch
1,1-Dichloroethane	0.00500	0.00501		mg/L	0.00100	0.000244	02/23/2022	860-42516
1,2-Dichloroethane	0.00500	0.00495		mg/L	0.00100	0.000285	02/23/2022	860-42516
1,1-Dichloroethene	0.00500	0.00478		mg/L	0.00100	0.000216	02/23/2022	860-42516
cis-1,2-Dichloroethene	0.00500	0.00494		mg/L	0.00100	0.000174	02/23/2022	860-42516
Tetrachloroethene	0.00500	0.00496		mg/L	0.00100	0.000500	02/23/2022	860-42516
Trichloroethene	0.00500	0.00510		mg/L	0.00500	0.000424	02/23/2022	860-42516
Vinyl chloride	0.00500	0.00494		mg/L	0.00200	0.000234	02/23/2022	860-42516

Eurofins Xenco, Stafford
4145 Greenbriar Dr
Stafford, TX 77477
Phone (281) 240-4200

Chain of Custody Record

eurofins | Environment Testing America

Client Information	Sampler	Lab PM: McDaniel, Bethany A	Carrier Tracking No(s):	COC No: 860-6507-2299.1
Client Contact: John Ynfante	Phone:	E-Mail: Bethany.McDaniel@Eurofinset.com	State of Origin:	Page: Page 1 of 1
Company: Jacobs Engineering Group, Inc.	PWSID:			Job #:
Address: 14701 St. Mary's Lane Suite 300	Due Date Requested:			
City: Houston	TAT Requested (days): 1 day RUSH			
State, Zip: TX, 77079	Compliance Project: Δ Yes Δ No			
Phone:	PO #:			
Email: John.Ynfante@jacobs.com	WO #:			
Project Name: STC Silber Road Pre-Design Investigation	Project #: 86002024			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

860-25663 Chain of Custody

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=soil, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B (MOD) VOCs Custom List (7)	Total Number of containers	Special Instructions/Note:
			Preservation Code:		X	X	A	X	
SB15-03-050422	5/4/22	1140	G	Water			X	3	
~~SB15-02-050422~~	~~5/4/22~~		G	~~Water~~			X	3	
~~SB15-01-050422~~	~~5/4/22~~		G	~~Water~~			X	3	
SB13-03-050422	5/4/22	1615	G	Water			X	3	
SB13-02-050422	5/4/22	1630	G	Water			X	3	
ED-01-050422	5/4/22	NG	G	Water			X	3	
TB-01-050422	5/4/22	0745		Water			X	2	
				Water					
				Water					
				Water					
				Water					

DSR 5/4/22 5/4/22

Temp: 2.7 IR ID HOU-323
C/F -0.9
Corrected Temp: 1.8

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) TRRP

Special Instructions/QC Requirements:

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

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	5/5/22 0803		[signature]	5/5/22 0803	
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks: 3.0

Ver 01/16/2019

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc.

Job Number: 860-25663-1

Login Number: 25663
List Number: 1
Creator: Rubio, Yuri

List Source: Eurofins Houston

Question	Answer	Comment
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 (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	

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ANALYTICAL REPORT

Eurofins Houston
4145 Greenbriar Dr
Stafford, TX 77477
Tel: (281)240-4200

Laboratory Job ID: 860-25762-1
Client Project/Site: STC Silber Rd Pre-Design Investigation

For:
Jacobs Engineering Group, Inc.
12750 Merit Drive
Suite 1100
Dallas, Texas 75251

Attn: John Knott

Bethany McDaniel

Authorized for release by:
5/9/2022 8:17:04 AM

Bethany McDaniel, Senior Project Manager
(713)358-2005
Bethany.McDaniel@et.eurofinsus.com

Table of Contents

Definitions/Glossary

Client: Jacobs Engineering Group, Inc. Job ID: 860-25762-1
Project/Site: STC Silber Rd Pre-Design Investigation

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the MQL but greater than or equal to the SDL and the concentration is an estimated value.
N1	MS, MSD: Spike recovery exceeds upper or lower control limits.
N2	RPD of the MS and MSD exceeds the control limits
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
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Jacobs Engineering Group, Inc. Job ID: 860-25762-1
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-25762-1

Laboratory: Eurofins Houston

Narrative

Job Narrative
860-25762-1

Receipt
The samples were received on 5/6/2022 8:17 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.7°C

Detection Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-25762-1

Client Sample ID: SB19-03-050522 — Lab Sample ID: 860-25762-1

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.00284		0.00100	0.000244	mg/L	1		8260C	Total/NA
1,1-Dichloroethene	0.00913		0.00100	0.000216	mg/L	1		8260C	Total/NA
cis-1,2-Dichloroethene	0.00118		0.00100	0.000174	mg/L	1		8260C	Total/NA
Tetrachloroethene	0.0405		0.00100	0.000500	mg/L	1		8260C	Total/NA
Trichloroethene	0.00380	J	0.00500	0.000424	mg/L	1		8260C	Total/NA

Client Sample ID: SB11-03-050522 — Lab Sample ID: 860-25762-2

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.00520		0.00100	0.000244	mg/L	1		8260C	Total/NA
1,2-Dichloroethane	0.000417	J	0.00100	0.000285	mg/L	1		8260C	Total/NA
1,1-Dichloroethene	0.0253		0.00100	0.000216	mg/L	1		8260C	Total/NA
cis-1,2-Dichloroethene	0.00121		0.00100	0.000174	mg/L	1		8260C	Total/NA
Tetrachloroethene	0.00401		0.00100	0.000500	mg/L	1		8260C	Total/NA
Trichloroethene	0.00172	J	0.00500	0.000424	mg/L	1		8260C	Total/NA

Client Sample ID: SB11-02-050522 — Lab Sample ID: 860-25762-3

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethene	0.000785	J	0.00100	0.000216	mg/L	1		8260C	Total/NA

Client Sample ID: SB11-01-050522 — Lab Sample ID: 860-25762-4

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethene	0.000468	J	0.00100	0.000216	mg/L	1		8260C	Total/NA

Client Sample ID: TB-01-050522 — Lab Sample ID: 860-25762-5

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: SB19-03-050522 — Lab Sample ID: 860-25762-1

Date Collected: 05/05/22 11:05 — **Matrix: Water**
Date Received: 05/06/22 08:17

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	**0.00284**		0.00100	0.000244	mg/L			05/06/22 13:10	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/06/22 13:10	1
1,1-Dichloroethene	**0.00913**		0.00100	0.000216	mg/L			05/06/22 13:10	1
cis-1,2-Dichloroethene	**0.00118**		0.00100	0.000174	mg/L			05/06/22 13:10	1
Tetrachloroethene	**0.0405**		0.00100	0.000500	mg/L			05/06/22 13:10	1
Trichloroethene	**0.00380**	**J**	0.00500	0.000424	mg/L			05/06/22 13:10	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/06/22 13:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*95*		*75 - 131*		*05/06/22 13:10*	*1*
Toluene-d8 (Surr)	*99*		*80 - 117*		*05/06/22 13:10*	*1*
4-Bromofluorobenzene (Surr)	*94*		*74 - 124*		*05/06/22 13:10*	*1*
1,2-Dichloroethane-d4 (Surr)	*84*		*63 - 144*		*05/06/22 13:10*	*1*

Client Sample ID: SB11-03-050522 — Lab Sample ID: 860-25762-2

Date Collected: 05/05/22 15:30 — **Matrix: Water**
Date Received: 05/06/22 08:17

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	**0.00520**		0.00100	0.000244	mg/L			05/06/22 13:30	1
1,2-Dichloroethane	**0.000417**	**J**	0.00100	0.000285	mg/L			05/06/22 13:30	1
1,1-Dichloroethene	**0.0253**		0.00100	0.000216	mg/L			05/06/22 13:30	1
cis-1,2-Dichloroethene	**0.00121**		0.00100	0.000174	mg/L			05/06/22 13:30	1
Tetrachloroethene	**0.00401**		0.00100	0.000500	mg/L			05/06/22 13:30	1
Trichloroethene	**0.00172**	**J**	0.00500	0.000424	mg/L			05/06/22 13:30	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/06/22 13:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*95*		*75 - 131*		*05/06/22 13:30*	*1*
Toluene-d8 (Surr)	*99*		*80 - 117*		*05/06/22 13:30*	*1*
4-Bromofluorobenzene (Surr)	*95*		*74 - 124*		*05/06/22 13:30*	*1*
1,2-Dichloroethane-d4 (Surr)	*85*		*63 - 144*		*05/06/22 13:30*	*1*

Client Sample ID: SB11-02-050522 — Lab Sample ID: 860-25762-3

Date Collected: 05/05/22 15:50 — **Matrix: Water**
Date Received: 05/06/22 08:17

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/06/22 13:51	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/06/22 13:51	1
1,1-Dichloroethene	**0.000785**	**J**	0.00100	0.000216	mg/L			05/06/22 13:51	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/06/22 13:51	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/06/22 13:51	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/06/22 13:51	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/06/22 13:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*96*		*75 - 131*		*05/06/22 13:51*	*1*
Toluene-d8 (Surr)	*99*		*80 - 117*		*05/06/22 13:51*	*1*

Client Sample ID: SB11-02-050522 — Lab Sample ID: 860-25762-3

Date Collected: 05/05/22 15:50 — **Matrix: Water**
Date Received: 05/06/22 08:17

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*94*		*74 - 124*		*05/06/22 13:51*	*1*
1,2-Dichloroethane-d4 (Surr)	*86*		*63 - 144*		*05/06/22 13:51*	*1*

Client Sample ID: SB11-01-050522 — Lab Sample ID: 860-25762-4

Date Collected: 05/05/22 16:00 — **Matrix: Water**
Date Received: 05/06/22 08:17

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/06/22 14:11	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/06/22 14:11	1
1,1-Dichloroethene	**0.000468**	**J**	0.00100	0.000216	mg/L			05/06/22 14:11	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/06/22 14:11	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/06/22 14:11	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/06/22 14:11	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/06/22 14:11	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	*94*		*75 - 131*		*05/06/22 14:11*	*1*
Toluene-d8 (Surr)	*99*		*80 - 117*		*05/06/22 14:11*	*1*
4-Bromofluorobenzene (Surr)	*96*		*74 - 124*		*05/06/22 14:11*	*1*
1,2-Dichloroethane-d4 (Surr)	*87*		*63 - 144*		*05/06/22 14:11*	*1*

Client Sample ID: TB-01-050522 — Lab Sample ID: 860-25762-5

Date Collected: 05/05/22 07:45 — **Matrix: Water**
Date Received: 05/06/22 08:17

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/06/22 14:32	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/06/22 14:32	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/06/22 14:32	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/06/22 14:32	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/06/22 14:32	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/06/22 14:32	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/06/22 14:32	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	*95*		*75 - 131*		*05/06/22 14:32*	*1*
Toluene-d8 (Surr)	*102*		*80 - 117*		*05/06/22 14:32*	*1*
4-Bromofluorobenzene (Surr)	*98*		*74 - 124*		*05/06/22 14:32*	*1*
1,2-Dichloroethane-d4 (Surr)	*85*		*63 - 144*		*05/06/22 14:32*	*1*

Unadjusted Detection Limits

Client: Jacobs Engineering Group, Inc.
Job ID: 860-25762-1
Project/Site: STC Silber Rd Pre-Design Investigation

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	MQL	MDL	Units
1,1-Dichloroethane	0.00100	0.000244	mg/L
1,1-Dichloroethene	0.00100	0.000216	mg/L
1,2-Dichloroethane	0.00100	0.000285	mg/L
cis-1,2-Dichloroethene	0.00100	0.000174	mg/L
Tetrachloroethene	0.00100	0.000500	mg/L
Trichloroethene	0.00500	0.000424	mg/L
Vinyl chloride	0.00200	0.000234	mg/L

Surrogate Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-25762-1
Project/Site: STC Silber Rd Pre-Design Investigation

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Water
Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DBFM	TOL	BFB	DCA
Lab Sample ID	Client Sample ID	(75-131)	(80-117)	(74-124)	(63-144)
860-25762-1	SB19-03-050522	95	99	94	84
860-25762-1 MS	SB19-03-050522	99	97	95	85
860-25762-1 MSD	SB19-03-050522	98	97	94	85
860-25762-2	SB11-03-050522	95	99	95	85
860-25762-3	SB11-02-050522	96	99	94	86
860-25762-4	SB11-01-050522	94	99	96	87
860-25762-5	TB-01-050522	95	102	98	85
LCS 860-51727/3	Lab Control Sample	97	98	96	84
LCSD 860-51727/4	Lab Control Sample Dup	97	99	96	84
MB 860-51727/10	Method Blank	94	99	96	85

Surrogate Legend

DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 860-51727/10 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 51727

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/06/22 11:47	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/06/22 11:47	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/06/22 11:47	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/06/22 11:47	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/06/22 11:47	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/06/22 11:47	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/06/22 11:47	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*94*		*75 - 131*		*05/06/22 11:47*	*1*
Toluene-d8 (Surr)	*99*		*80 - 117*		*05/06/22 11:47*	*1*
4-Bromofluorobenzene (Surr)	*96*		*74 - 124*		*05/06/22 11:47*	*1*
1,2-Dichloroethane-d4 (Surr)	*85*		*63 - 144*		*05/06/22 11:47*	*1*

Lab Sample ID: LCS 860-51727/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 51727

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethane	0.0500	0.04732		mg/L		95	72 - 125
1,2-Dichloroethane	0.0500	0.04031		mg/L		81	68 - 127
1,1-Dichloroethene	0.0500	0.05406		mg/L		108	59 - 172
cis-1,2-Dichloroethene	0.0500	0.04316		mg/L		86	75 - 125
Tetrachloroethene	0.0500	0.05011		mg/L		100	71 - 125
Trichloroethene	0.0500	0.05032		mg/L		101	62 - 137
Vinyl chloride	0.0500	0.05398		mg/L		108	60 - 140

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*97*		*75 - 131*
Toluene-d8 (Surr)	*98*		*80 - 117*
4-Bromofluorobenzene (Surr)	*96*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*84*		*63 - 144*

Lab Sample ID: LCSD 860-51727/4 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 51727

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethane	0.0500	0.04582		mg/L		92	72 - 125	3	25
1,2-Dichloroethane	0.0500	0.03941		mg/L		79	68 - 127	2	25
1,1-Dichloroethene	0.0500	0.05066		mg/L		101	59 - 172	6	25
cis-1,2-Dichloroethene	0.0500	0.04211		mg/L		84	75 - 125	2	25
Tetrachloroethene	0.0500	0.04928		mg/L		99	71 - 125	2	25
Trichloroethene	0.0500	0.04760		mg/L		95	62 - 137	6	25
Vinyl chloride	0.0500	0.05050		mg/L		101	60 - 140	7	25

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

Lab Sample ID: LCSD 860-51727/4 **Client Sample ID: Lab Control Sample Dup**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 51727

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Dibromofluoromethane (Surr)	*97*		*75 - 131*
Toluene-d8 (Surr)	*99*		*80 - 117*
4-Bromofluorobenzene (Surr)	*96*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*84*		*63 - 144*

Lab Sample ID: 860-25762-1 MS **Client Sample ID: SB19-03-050522**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 51727

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethane	0.00284		0.0500	0.05612		mg/L		107	72 - 125
1,2-Dichloroethane	0.000285	U	0.0500	0.04632		mg/L		93	68 - 127
1,1-Dichloroethene	0.00913		0.0500	0.06500		mg/L		112	59 - 172
cis-1,2-Dichloroethene	0.00118		0.0500	0.04954		mg/L		97	75 - 125
Tetrachloroethene	0.0405		0.0500	0.06266	N1	mg/L		44	71 - 125
Trichloroethene	0.00380	J	0.0500	0.05640		mg/L		105	62 - 137
Vinyl chloride	0.000234	U	0.0500	0.05516		mg/L		110	60 - 140

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*99*		*75 - 131*
Toluene-d8 (Surr)	*97*		*80 - 117*
4-Bromofluorobenzene (Surr)	*95*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*85*		*63 - 144*

Lab Sample ID: 860-25762-1 MSD **Client Sample ID: SB19-03-050522**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 51727

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethane	0.00284		0.0500	0.05926		mg/L		113	72 - 125	5	25
1,2-Dichloroethane	0.000285	U	0.0500	0.04893		mg/L		98	68 - 127	5	25
1,1-Dichloroethene	0.00913		0.0500	0.07447		mg/L		131	59 - 172	14	25
cis-1,2-Dichloroethene	0.00118		0.0500	0.05202		mg/L		102	75 - 125	5	25
Tetrachloroethene	0.0405		0.0500	0.1014	N2	mg/L		122	71 - 125	47	25
Trichloroethene	0.00380	J	0.0500	0.06253		mg/L		117	62 - 137	10	25
Vinyl chloride	0.000234	U	0.0500	0.05826		mg/L		117	60 - 140	5	25

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Dibromofluoromethane (Surr)	*98*		*75 - 131*
Toluene-d8 (Surr)	*97*		*80 - 117*
4-Bromofluorobenzene (Surr)	*94*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*85*		*63 - 144*

QC Association Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-25762-1

GC/MS VOA

Analysis Batch: 51727

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-25762-1	SB19-03-050522	Total/NA	Water	8260C	
860-25762-2	SB11-03-050522	Total/NA	Water	8260C	
860-25762-3	SB11-02-050522	Total/NA	Water	8260C	
860-25762-4	SB11-01-050522	Total/NA	Water	8260C	
860-25762-5	TB-01-050522	Total/NA	Water	8260C	
MB 860-51727/10	Method Blank	Total/NA	Water	8260C	
LCS 860-51727/3	Lab Control Sample	Total/NA	Water	8260C	
LCSD 860-51727/4	Lab Control Sample Dup	Total/NA	Water	8260C	
860-25762-1 MS	SB19-03-050522	Total/NA	Water	8260C	
860-25762-1 MSD	SB19-03-050522	Total/NA	Water	8260C	

Lab Chronicle

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-25762-1

Client Sample ID: SB19-03-050522
Lab Sample ID: 860-25762-1
Date Collected: 05/05/22 11:05
Matrix: Water
Date Received: 05/06/22 08:17

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	51727	05/06/22 13:10	TTD	XEN STF

Client Sample ID: SB11-03-050522
Lab Sample ID: 860-25762-2
Date Collected: 05/05/22 15:30
Matrix: Water
Date Received: 05/06/22 08:17

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	51727	05/06/22 13:30	TTD	XEN STF

Client Sample ID: SB11-02-050522
Lab Sample ID: 860-25762-3
Date Collected: 05/05/22 15:50
Matrix: Water
Date Received: 05/06/22 08:17

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	51727	05/06/22 13:51	TTD	XEN STF

Client Sample ID: SB11-01-050522
Lab Sample ID: 860-25762-4
Date Collected: 05/05/22 16:00
Matrix: Water
Date Received: 05/06/22 08:17

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	51727	05/06/22 14:11	TTD	XEN STF

Client Sample ID: TB-01-050522
Lab Sample ID: 860-25762-5
Date Collected: 05/05/22 07:45
Matrix: Water
Date Received: 05/06/22 08:17

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	51727	05/06/22 14:32	TTD	XEN STF

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Accreditation/Certification Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-25762-1
Project/Site: STC Silber Rd Pre-Design Investigation

Laboratory: Eurofins Houston

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

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	21-038-0	08-04-22
Florida	NELAP	E871002	06-30-22
Louisiana	NELAP	03054	06-30-22
Oklahoma	State	2021-168	08-31-22
Texas	NELAP	T104704215-21-44	06-30-22
Texas	TCEQ Water Supply	T104704215	06-30-22
USDA	US Federal Programs	P330-22-00025	03-02-23

Method Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-25762-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	XEN STF
5030C	Purge and Trap	SW846	XEN STF

Protocol References:

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

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Sample Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-25762-1
Project/Site: STC Silber Rd Pre-Design Investigation

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
860-25762-1	SB19-03-050522	Water	05/05/22 11:05	05/06/22 08:17
860-25762-2	SB11-03-050522	Water	05/05/22 15:30	05/06/22 08:17
860-25762-3	SB11-02-050522	Water	05/05/22 15:50	05/06/22 08:17
860-25762-4	SB11-01-050522	Water	05/05/22 16:00	05/06/22 08:17
860-25762-5	TB-01-050522	Water	05/05/22 07:45	05/06/22 08:17

Appendix A

Laboratory Data Package Cover Page - Page 1 of 4

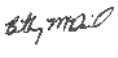
This data package is for Job No. 860-25762-1 and consists of:

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

- ☑ R1- Field chain-of-custody documentation;
- ☑ R2 - Sample identification cross-reference;
- ☑ R3 - Test reports (analytical data sheets) for each environmental sample that includes:
  a. Items consistent with NELAC Chapter 5,
  b. dilution factors,
  c. prepatation methods,
  d. cleanup methods, and
  e. if required for the project, tentatively identified coumpounds (TICs).
- ☑ R4 - Surrogate recovery data including:
  a. Calculated recovery (%R), and
  b. The laboratory's surrogate QC limits.
- ☑ R5 - Test reports/summary forms for blank samples;
- ☑ R6 - Test reports/summary forms for laboratory control samples (LCSs) including:
  a. LCS spiking amounts,
  b. Calculated %R for each analyte, and
  c. The laboratory's LCS QC limits.
- ☑ R7 - Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a. Samples associated with the MS/MSD clearly identified,
  b. MS/MSD spiking amounts,
  c. Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d. Calculated %Rs and relative percent differences (RPDs), and
  e. The laboratory's MS/MSD QC limits
- ☐ R8 - Laboratory analytical duplicate (if applicable) recovery and precision:
  a. The amount of analyte measured in the duplicate,
  b. The calculated RPD, and
  c. The laboratory's QC limits for analytical duplicates.
- ☑ R9 - List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
- ☑ R10 - Other problems or anomalies.
- ☐ Exception Report for every "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge 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.

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

Name (Printed)	Signature	Official Title (Printed)	Date
Bethany McDaniel		Senior Project Manager	05/09/2022

Laboratory Data Package Cover Page - Page 2 of 4

Laboratory Name: Eurofins Houston	LRC Date: 05/09/2022
Project Name: STC Silber Rd Pre-Design Investigation	Laboratory Job Number: 860-25762-1
Reviewer Name: Bethany McDaniel	

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
		Were all departures from standard conditions described in an exception report?	✓				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	✓				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	✓				
		Were calculations checked by a peer or supervisor?	✓				
		Were all analyte identifications checked by a peer or supervisor?	✓				
		Were sample detection limits reported for all analytes not detected?	✓				
		Were all results for soil and sediment samples reported on a dry weight basis?			✓		
		Were % moisture (or solids) reported for all soil and sediment samples?			✓		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			✓		
		If required for the project, are TICs reported?			✓		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	✓				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	✓				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	✓				
		Were blanks analyzed at the appropriate frequency?	✓				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
		Were blank concentrations < MQL?	✓				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	✓				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
		Were LCSs analyzed at the required frequency?	✓				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	✓				
		Was the LCSD RPD within QC limits?	✓				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	✓				
		Were MS/MSD analyzed at the appropriate frequency?	✓				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		✓			1
		Were MS/MSD RPDs within laboratory QC limits?	✓				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			✓		
		Were analytical duplicates analyzed at the appropriate frequency?			✓		
		Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	✓				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	✓				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	✓				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	✓				

Laboratory Data Package Cover Page - Page 3 of 4

Laboratory Name: Eurofins Houston	LRC Date: 05/09/2022
Project Name: STC Silber Rd Pre-Design Investigation	Laboratory Job Number: 860-25762-1
Reviewer Name: Bethany McDaniel	

#[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?	✓				
		Were percent RSDs or correlation coefficient criteria met?	✓				
		Was the number of standards recommended in the method used for all analytes?	✓				
		Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
		Are ICAL data available for all instruments used?	✓				
		Has the initial calibration curve been verified using an appropriate second source standard?	✓				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?	✓				
		Were percent differences for each analyte within the method-required QC limits?	✓				
		Was the ICAL curve verified for each analyte?	✓				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			✓		
S3	O	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?	✓				
		Were ion abundance data within the method-required QC limits?	✓				
S4	O	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?	✓				
S5	OI	**Raw data (NELAC Section 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
		Were data associated with manual integrations flagged on the raw data?	✓				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			✓		
S7	O	**Tentatively identified compounds (TICs)**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
S8	I	**Interference Check Sample (ICS) results**					
		Were percent recoveries within method QC limits?			✓		
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?			✓		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	✓				
		Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
S11	OI	**Proficiency test reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	✓				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	✓				
		Is documentation of the analyst's competency up-to-date and on file?	✓				
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?	✓				
S16	OI	**Laboratory standard operating procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	✓				

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).

Laboratory Data Package Cover Page - Page 4 of 4

Laboratory Name: Eurofins Houston	LRC Date: 05/09/2022
Project Name: STC Silber Rd Pre-Design Investigation	Laboratory Job Number: 860-25762-1
Reviewer Name: Bethany McDaniel	

ER#[1]	Description
1	Method 8260C: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for analytical batch 860-51727 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS/LCSD) recovery was within acceptance limits.

1. ER# = Exception Report identification number (an Exception Report should be completed for an item if “NR” or “No” is checked).

Detection Check Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-25762-1
Project/Site: STC Silber Rd Pre-Design Investigation

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Water
Prep Type: Total/NA
Prep Method: 5030C-Purge and Trap
Instrument: A325
Detector: MSD/0
Column: DB-624

Analyte	Spike Added	Result	Qualifier	Unit	RL	MDL	Analysis Date	Analysis Batch
1,1-Dichloroethane	0.00100	0.00483		mg/L	0.00100	0.000244	03/03/2022	860-43530
1,2-Dichloroethane	0.00100	0.00498		mg/L	0.00100	0.000285	03/03/2022	860-43530
1,1-Dichloroethene	0.00100	0.00411		mg/L	0.00100	0.000216	03/03/2022	860-43530
cis-1,2-Dichloroethene	0.00100	0.00499		mg/L	0.00100	0.000174	03/03/2022	860-43530
Tetrachloroethene	0.00100	0.00463		mg/L	0.00100	0.000500	03/03/2022	860-43530
Trichloroethene	0.00100	0.00503		mg/L	0.00500	0.000424	03/03/2022	860-43530
Vinyl chloride	0.00100	0.00381		mg/L	0.00200	0.000234	03/03/2022	860-43530

Eurofins Xenco, Stafford
4145 Greenbriar Dr
Stafford, TX 77477
Phone (281) 240-4200

Chain of Custody Record

eurofins | Environment Testing America

Client Information	Sampler	Lab PM: McDaniel, Bethany A	Carrier Tracking No(s):	COC No: 860-6507-2299.1
Client Contact: John Ynfante	Phone:	E-Mail: Bethany.McDaniel@Eurofinset.com	State of Origin:	Page: Page 1 of 1
Company: Jacobs Engineering Group, Inc.	PWSID:			Job #:
Address: 14701 St. Mary's Lane Suite 300	Due Date Requested:			
City: Houston	TAT Requested (days): 1 day RUSH			
State, Zip: TX, 77079	Compliance Project: Δ Yes Δ No			
Phone:	PO #:			
Email: John.Ynfante@jacobs.com	WO #:			
Project Name: STC Silber Road Pre-Design Investigation	Project #: 86002024			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other

Sample Identification	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)	8260B (MOD) VOCs Custom List (7)	Total Number of containers	Special Instructions/Note:
			Preservation Code:		X	X	A	X	
SB19-03-050522	5/5/22	1105	G	Water	X	X		3	MS/MSD
SB11-03-050522	5/5/22	1530	G	Water			X	3	
SB11-02-050522	5/5/22	1550	G	Water			X	3	
SB11-01-050522	5/5/22	1600	G	Water			X	3	
TB-01-050522	5/5/22	0745	G	Water			X	2	
				Water					
				Water					
				Water					
				Water					
				Water					
				Water					

860-25762 Chain of Custody

Temp: 1 6 IR ID:HOU-323
C/F: -0 9
Corrected Temp: 0 7

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) TRRP

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:			
Relinquished by:	Date/Time: 5/6/22 0817	Company	Received by:	Date/Time: 5/6/22 0817	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:

Ver 01/16/2019

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc.

Job Number: 860-25762-1

Login Number: 25762
List Number: 1
Creator: Rubio, Yuri

List Source: Eurofins Houston

Question	Answer	Comment
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 (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	

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ANALYTICAL REPORT

Eurofins Houston
4145 Greenbriar Dr
Stafford, TX 77477
Tel: (281)240-4200

Laboratory Job ID: 860-25832-1
Client Project/Site: STC Silber Rd Pre-Design Investigation

For:
Jacobs Engineering Group, Inc.
12750 Merit Drive
Suite 1100
Dallas, Texas 75251

Attn: John Knott

Bethany McDaniel

Authorized for release by:
5/9/2022 6:11:47 PM

Bethany McDaniel, Senior Project Manager
(713)358-2005
Bethany.McDaniel@et.eurofinsus.com

Table of Contents

Definitions/Glossary

Client: Jacobs Engineering Group, Inc. Job ID: 860-25832-1
Project/Site: STC Silber Rd Pre-Design Investigation

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the MQL but greater than or equal to the SDL and the concentration is an estimated value.
N1	MS, MSD: Spike recovery exceeds upper or lower control limits.
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
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Jacobs Engineering Group, Inc. Job ID: 860-25832-1
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-25832-1

Laboratory: Eurofins Houston

Narrative

Job Narrative
860-25832-1

Receipt
The samples were received on 5/6/2022 4:42 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.7°C

Detection Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-25832-1
Project/Site: STC Silber Rd Pre-Design Investigation

Client Sample ID: SB33-03-050622 Lab Sample ID: 860-25832-1

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.0104		0.00100	0.000244	mg/L	1		8260C	Total/NA
1,2-Dichloroethane	0.00201		0.00100	0.000285	mg/L	1		8260C	Total/NA
cis-1,2-Dichloroethene	0.00174		0.00100	0.000174	mg/L	1		8260C	Total/NA
Tetrachloroethene	0.000679	J	0.00100	0.000500	mg/L	1		8260C	Total/NA
Trichloroethene	0.0105		0.00500	0.000424	mg/L	1		8260C	Total/NA
1,1-Dichloroethene - DL	0.185		0.00500	0.00108	mg/L	5		8260C	Total/NA

Client Sample ID: SB33-02-050622 Lab Sample ID: 860-25832-2

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.00136		0.00100	0.000244	mg/L	1		8260C	Total/NA
1,1-Dichloroethene	0.0221		0.00100	0.000216	mg/L	1		8260C	Total/NA
cis-1,2-Dichloroethene	0.000225	J	0.00100	0.000174	mg/L	1		8260C	Total/NA
Trichloroethene	0.00131	J	0.00500	0.000424	mg/L	1		8260C	Total/NA

Client Sample ID: SB33-01-050622 Lab Sample ID: 860-25832-3

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.000843	J	0.00100	0.000244	mg/L	1		8260C	Total/NA
1,1-Dichloroethene	0.0122		0.00100	0.000216	mg/L	1		8260C	Total/NA
Trichloroethene	0.000637	J	0.00500	0.000424	mg/L	1		8260C	Total/NA

Client Sample ID: SB12-03-050622 Lab Sample ID: 860-25832-4

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.00339		0.00100	0.000244	mg/L	1		8260C	Total/NA
1,2-Dichloroethane	0.000911	J	0.00100	0.000285	mg/L	1		8260C	Total/NA
1,1-Dichloroethene	0.0386		0.00100	0.000216	mg/L	1		8260C	Total/NA
cis-1,2-Dichloroethene	0.000430	J	0.00100	0.000174	mg/L	1		8260C	Total/NA
Trichloroethene	0.00200	J	0.00500	0.000424	mg/L	1		8260C	Total/NA

Client Sample ID: FD-01-020622 Lab Sample ID: 860-25832-5

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.00972		0.00100	0.000244	mg/L	1		8260C	Total/NA
1,2-Dichloroethane	0.00194		0.00100	0.000285	mg/L	1		8260C	Total/NA
cis-1,2-Dichloroethene	0.00160		0.00100	0.000174	mg/L	1		8260C	Total/NA
Tetrachloroethene	0.000608	J	0.00100	0.000500	mg/L	1		8260C	Total/NA
Trichloroethene	0.00961		0.00500	0.000424	mg/L	1		8260C	Total/NA
1,1-Dichloroethene - DL	0.247		0.00500	0.00108	mg/L	5		8260C	Total/NA

Client Sample ID: TB-01-020622 Lab Sample ID: 860-25832-6

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: SB33-03-050622 — Lab Sample ID: 860-25832-1

Date Collected: 05/06/22 09:25 — **Matrix: Water**
Date Received: 05/06/22 16:42

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.0104		0.00100	0.000244	mg/L			05/09/22 14:25	1
1,2-Dichloroethane	0.00201		0.00100	0.000285	mg/L			05/09/22 14:25	1
cis-1,2-Dichloroethene	0.00174		0.00100	0.000174	mg/L			05/09/22 14:25	1
Tetrachloroethene	0.000679	J	0.00100	0.000500	mg/L			05/09/22 14:25	1
Trichloroethene	0.0105		0.00500	0.000424	mg/L			05/09/22 14:25	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/09/22 14:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*100*		*75 - 131*		*05/09/22 14:25*	*1*
Toluene-d8 (Surr)	*105*		*80 - 117*		*05/09/22 14:25*	*1*
4-Bromofluorobenzene (Surr)	*103*		*74 - 124*		*05/09/22 14:25*	*1*
1,2-Dichloroethane-d4 (Surr)	*105*		*63 - 144*		*05/09/22 14:25*	*1*

Method: 8260C - Volatile Organic Compounds by GC/MS - DL

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.185		0.00500	0.00108	mg/L			05/09/22 15:12	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*95*		*75 - 131*		*05/09/22 15:12*	*5*
Toluene-d8 (Surr)	*100*		*80 - 117*		*05/09/22 15:12*	*5*
4-Bromofluorobenzene (Surr)	*96*		*74 - 124*		*05/09/22 15:12*	*5*
1,2-Dichloroethane-d4 (Surr)	*82*		*63 - 144*		*05/09/22 15:12*	*5*

Client Sample ID: SB33-02-050622 — Lab Sample ID: 860-25832-2

Date Collected: 05/06/22 10:30 — **Matrix: Water**
Date Received: 05/06/22 16:42

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.00136		0.00100	0.000244	mg/L			05/09/22 14:46	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/09/22 14:46	1
1,1-Dichloroethene	0.0221		0.00100	0.000216	mg/L			05/09/22 14:46	1
cis-1,2-Dichloroethene	0.000225	J	0.00100	0.000174	mg/L			05/09/22 14:46	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/09/22 14:46	1
Trichloroethene	0.00131	J	0.00500	0.000424	mg/L			05/09/22 14:46	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/09/22 14:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*101*		*75 - 131*		*05/09/22 14:46*	*1*
Toluene-d8 (Surr)	*100*		*80 - 117*		*05/09/22 14:46*	*1*
4-Bromofluorobenzene (Surr)	*102*		*74 - 124*		*05/09/22 14:46*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*63 - 144*		*05/09/22 14:46*	*1*

Client Sample ID: SB33-01-050622 — Lab Sample ID: 860-25832-3

Date Collected: 05/06/22 10:45 — **Matrix: Water**
Date Received: 05/06/22 16:42

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000843	J	0.00100	0.000244	mg/L			05/09/22 15:06	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/09/22 15:06	1

Client Sample ID: SB33-01-050622 — Lab Sample ID: 860-25832-3

Date Collected: 05/06/22 10:45 — **Matrix: Water**
Date Received: 05/06/22 16:42

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

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	**0.0122**		0.00100	0.000216	mg/L			05/09/22 15:06	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/09/22 15:06	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/09/22 15:06	1
Trichloroethene	**0.000637**	**J**	0.00500	0.000424	mg/L			05/09/22 15:06	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/09/22 15:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*102*		*75 - 131*		*05/09/22 15:06*	*1*
Toluene-d8 (Surr)	*103*		*80 - 117*		*05/09/22 15:06*	*1*
4-Bromofluorobenzene (Surr)	*102*		*74 - 124*		*05/09/22 15:06*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*63 - 144*		*05/09/22 15:06*	*1*

Client Sample ID: SB12-03-050622 — Lab Sample ID: 860-25832-4

Date Collected: 05/06/22 14:20 — **Matrix: Water**
Date Received: 05/06/22 16:42

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	**0.00339**		0.00100	0.000244	mg/L			05/09/22 15:27	1
1,2-Dichloroethane	**0.000911**	**J**	0.00100	0.000285	mg/L			05/09/22 15:27	1
1,1-Dichloroethene	**0.0386**		0.00100	0.000216	mg/L			05/09/22 15:27	1
cis-1,2-Dichloroethene	**0.000430**	**J**	0.00100	0.000174	mg/L			05/09/22 15:27	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/09/22 15:27	1
Trichloroethene	**0.00200**	**J**	0.00500	0.000424	mg/L			05/09/22 15:27	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/09/22 15:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*103*		*75 - 131*		*05/09/22 15:27*	*1*
Toluene-d8 (Surr)	*102*		*80 - 117*		*05/09/22 15:27*	*1*
4-Bromofluorobenzene (Surr)	*103*		*74 - 124*		*05/09/22 15:27*	*1*
1,2-Dichloroethane-d4 (Surr)	*105*		*63 - 144*		*05/09/22 15:27*	*1*

Client Sample ID: FD-01-020622 — Lab Sample ID: 860-25832-5

Date Collected: 05/06/22 00:00 — **Matrix: Water**
Date Received: 05/06/22 16:42

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	**0.00972**		0.00100	0.000244	mg/L			05/09/22 15:47	1
1,2-Dichloroethane	**0.00194**		0.00100	0.000285	mg/L			05/09/22 15:47	1
cis-1,2-Dichloroethene	**0.00160**		0.00100	0.000174	mg/L			05/09/22 15:47	1
Tetrachloroethene	**0.000608**	**J**	0.00100	0.000500	mg/L			05/09/22 15:47	1
Trichloroethene	**0.00961**		0.00500	0.000424	mg/L			05/09/22 15:47	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/09/22 15:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*102*		*75 - 131*		*05/09/22 15:47*	*1*
Toluene-d8 (Surr)	*104*		*80 - 117*		*05/09/22 15:47*	*1*
4-Bromofluorobenzene (Surr)	*101*		*74 - 124*		*05/09/22 15:47*	*1*
1,2-Dichloroethane-d4 (Surr)	*105*		*63 - 144*		*05/09/22 15:47*	*1*

Client Sample ID: FD-01-020622 — Lab Sample ID: 860-25832-5

Date Collected: 05/06/22 00:00 — **Matrix: Water**
Date Received: 05/06/22 16:42

Method: 8260C - Volatile Organic Compounds by GC/MS - DL

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.247		0.00500	0.00108	mg/L			05/09/22 16:29	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*103*		*75 - 131*		*05/09/22 16:29*	*5*
Toluene-d8 (Surr)	*100*		*80 - 117*		*05/09/22 16:29*	*5*
4-Bromofluorobenzene (Surr)	*102*		*74 - 124*		*05/09/22 16:29*	*5*
1,2-Dichloroethane-d4 (Surr)	*104*		*63 - 144*		*05/09/22 16:29*	*5*

Client Sample ID: TB-01-020622 — Lab Sample ID: 860-25832-6

Date Collected: 05/06/22 07:45 — **Matrix: Water**
Date Received: 05/06/22 16:42

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/09/22 12:22	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/09/22 12:22	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/09/22 12:22	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/09/22 12:22	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/09/22 12:22	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/09/22 12:22	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/09/22 12:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*100*		*75 - 131*		*05/09/22 12:22*	*1*
Toluene-d8 (Surr)	*101*		*80 - 117*		*05/09/22 12:22*	*1*
4-Bromofluorobenzene (Surr)	*102*		*74 - 124*		*05/09/22 12:22*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*63 - 144*		*05/09/22 12:22*	*1*

Unadjusted Detection Limits

Client: Jacobs Engineering Group, Inc. Job ID: 860-25832-1
Project/Site: STC Silber Rd Pre-Design Investigation

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	MQL	MDL	Units
1,1-Dichloroethane	0.00100	0.000244	mg/L
1,1-Dichloroethene	0.00100	0.000216	mg/L
1,2-Dichloroethane	0.00100	0.000285	mg/L
cis-1,2-Dichloroethene	0.00100	0.000174	mg/L
Tetrachloroethene	0.00100	0.000500	mg/L
Trichloroethene	0.00500	0.000424	mg/L
Vinyl chloride	0.00200	0.000234	mg/L

Surrogate Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-25832-1
Project/Site: STC Silber Rd Pre-Design Investigation

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Water
Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DBFM	TOL	BFB	DCA
Lab Sample ID	Client Sample ID	(75-131)	(80-117)	(74-124)	(63-144)
860-25829-A-1 MS	Matrix Spike	101	101	102	99
860-25832-1 - DL	SB33-03-050622	95	100	96	82
860-25832-1	SB33-03-050622	100	105	103	105
860-25832-2	SB33-02-050622	101	100	102	101
860-25832-3	SB33-01-050622	102	103	102	104
860-25832-4	SB12-03-050622	103	102	103	105
860-25832-5	FD-01-020622	102	104	101	105
860-25832-5 - DL	FD-01-020622	103	100	102	104
860-25832-6	TB-01-020622	100	101	102	98
880-14475-E-1 MS	Matrix Spike	97	96	94	80
LCS 860-52114/3	Lab Control Sample	99	97	93	82
LCS 860-52115/3	Lab Control Sample	102	100	101	99
LCSD 860-52114/4	Lab Control Sample Dup	96	99	96	80
LCSD 860-52115/4	Lab Control Sample Dup	101	100	102	98
MB 860-52114/9	Method Blank	95	98	97	81
MB 860-52115/9	Method Blank	101	100	104	99

Surrogate Legend

DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 860-52114/9 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 52114

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/09/22 11:27	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/09/22 11:27	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/09/22 11:27	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/09/22 11:27	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/09/22 11:27	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/09/22 11:27	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/09/22 11:27	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*95*		*75 - 131*		*05/09/22 11:27*	*1*
Toluene-d8 (Surr)	*98*		*80 - 117*		*05/09/22 11:27*	*1*
4-Bromofluorobenzene (Surr)	*97*		*74 - 124*		*05/09/22 11:27*	*1*
1,2-Dichloroethane-d4 (Surr)	*81*		*63 - 144*		*05/09/22 11:27*	*1*

Lab Sample ID: LCS 860-52114/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 52114

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethane			0.0500	0.04525		mg/L		90	72 - 125		
1,2-Dichloroethane			0.0500	0.03737		mg/L		75	68 - 127		
1,1-Dichloroethene			0.0500	0.05345		mg/L		107	59 - 172		
cis-1,2-Dichloroethene			0.0500	0.04128		mg/L		83	75 - 125		
Tetrachloroethene			0.0500	0.04970		mg/L		99	71 - 125		
Trichloroethene			0.0500	0.04879		mg/L		98	62 - 137		
Vinyl chloride			0.0500	0.05517		mg/L		110	60 - 140		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*99*		*75 - 131*
Toluene-d8 (Surr)	*97*		*80 - 117*
4-Bromofluorobenzene (Surr)	*93*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*82*		*63 - 144*

Lab Sample ID: LCSD 860-52114/4 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 52114

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethane			0.0500	0.04488		mg/L		90	72 - 125	1	25
1,2-Dichloroethane			0.0500	0.03835		mg/L		77	68 - 127	3	25
1,1-Dichloroethene			0.0500	0.05118		mg/L		102	59 - 172	4	25
cis-1,2-Dichloroethene			0.0500	0.04130		mg/L		83	75 - 125	0	25
Tetrachloroethene			0.0500	0.04863		mg/L		97	71 - 125	2	25
Trichloroethene			0.0500	0.04805		mg/L		96	62 - 137	2	25
Vinyl chloride			0.0500	0.05306		mg/L		106	60 - 140	4	25

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

Lab Sample ID: LCSD 860-52114/4 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 52114

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Dibromofluoromethane (Surr)	*96*		*75 - 131*
Toluene-d8 (Surr)	*99*		*80 - 117*
4-Bromofluorobenzene (Surr)	*96*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*80*		*63 - 144*

Lab Sample ID: 880-14475-E-1 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 52114

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethane	0.000244	U	0.0500	0.04299		mg/L		86	72 - 125
1,2-Dichloroethane	0.000285	U	0.0500	0.03682		mg/L		74	68 - 127
1,1-Dichloroethene	0.000216	U	0.0500	0.05034		mg/L		101	59 - 172
cis-1,2-Dichloroethene	0.000174	U	0.0500	0.04005		mg/L		80	75 - 125
Tetrachloroethene	0.000500	U	0.0500	0.04703		mg/L		94	71 - 125
Trichloroethene	0.000424	U	0.0500	0.04602		mg/L		92	62 - 137
Vinyl chloride	0.000234	U	0.0500	0.04999		mg/L		100	60 - 140

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*97*		*75 - 131*
Toluene-d8 (Surr)	*96*		*80 - 117*
4-Bromofluorobenzene (Surr)	*94*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*80*		*63 - 144*

Lab Sample ID: MB 860-52115/9 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 52115

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/09/22 12:02	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/09/22 12:02	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/09/22 12:02	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/09/22 12:02	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/09/22 12:02	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/09/22 12:02	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/09/22 12:02	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	*101*		*75 - 131*		*05/09/22 12:02*	*1*
Toluene-d8 (Surr)	*100*		*80 - 117*		*05/09/22 12:02*	*1*
4-Bromofluorobenzene (Surr)	*104*		*74 - 124*		*05/09/22 12:02*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*63 - 144*		*05/09/22 12:02*	*1*

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

Lab Sample ID: LCS 860-52115/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 52115

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethane			0.0500	0.05937		mg/L		119	72 - 125		
1,2-Dichloroethane			0.0500	0.05664		mg/L		113	68 - 127		
1,1-Dichloroethene			0.0500	0.05791		mg/L		116	59 - 172		
cis-1,2-Dichloroethene			0.0500	0.05963		mg/L		119	75 - 125		
Tetrachloroethene			0.0500	0.05923		mg/L		118	71 - 125		
Trichloroethene			0.0500	0.05795		mg/L		116	62 - 137		
Vinyl chloride			0.0500	0.06733		mg/L		135	60 - 140		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*102*		*75 - 131*
Toluene-d8 (Surr)	*100*		*80 - 117*
4-Bromofluorobenzene (Surr)	*101*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*99*		*63 - 144*

Lab Sample ID: LCSD 860-52115/4 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 52115

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethane			0.0500	0.05787		mg/L		116	72 - 125	3	25
1,2-Dichloroethane			0.0500	0.05336		mg/L		107	68 - 127	6	25
1,1-Dichloroethene			0.0500	0.05745		mg/L		115	59 - 172	1	25
cis-1,2-Dichloroethene			0.0500	0.05768		mg/L		115	75 - 125	3	25
Tetrachloroethene			0.0500	0.05922		mg/L		118	71 - 125	0	25
Trichloroethene			0.0500	0.05737		mg/L		115	62 - 137	1	25
Vinyl chloride			0.0500	0.06563		mg/L		131	60 - 140	3	25

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*101*		*75 - 131*
Toluene-d8 (Surr)	*100*		*80 - 117*
4-Bromofluorobenzene (Surr)	*102*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*98*		*63 - 144*

Lab Sample ID: 860-25829-A-1 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 52115

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethane	0.000244	U	0.0500	0.06342	N1	mg/L		127	72 - 125		
1,2-Dichloroethane	0.000285	U	0.0500	0.05989		mg/L		120	68 - 127		
1,1-Dichloroethene	0.000216	U	0.0500	0.06215		mg/L		124	59 - 172		
cis-1,2-Dichloroethene	0.000174	U	0.0500	0.06240		mg/L		125	75 - 125		
Tetrachloroethene	0.000500	U	0.0500	0.06296	N1	mg/L		126	71 - 125		
Trichloroethene	0.000424	U	0.0500	0.06216		mg/L		124	62 - 137		
Vinyl chloride	0.000234	U	0.0500	0.06478		mg/L		130	60 - 140		

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

Lab Sample ID: 860-25829-A-1 MS
Matrix: Water
Analysis Batch: 52115

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*101*		*75 - 131*
Toluene-d8 (Surr)	*101*		*80 - 117*
4-Bromofluorobenzene (Surr)	*102*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*99*		*63 - 144*

QC Association Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-25832-1
Project/Site: STC Silber Rd Pre-Design Investigation

GC/MS VOA

Analysis Batch: 52114

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-25832-1 - DL	SB33-03-050622	Total/NA	Water	8260C	
MB 860-52114/9	Method Blank	Total/NA	Water	8260C	
LCS 860-52114/3	Lab Control Sample	Total/NA	Water	8260C	
LCSD 860-52114/4	Lab Control Sample Dup	Total/NA	Water	8260C	
880-14475-E-1 MS	Matrix Spike	Total/NA	Water	8260C	

Analysis Batch: 52115

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-25832-1	SB33-03-050622	Total/NA	Water	8260C	
860-25832-2	SB33-02-050622	Total/NA	Water	8260C	
860-25832-3	SB33-01-050622	Total/NA	Water	8260C	
860-25832-4	SB12-03-050622	Total/NA	Water	8260C	
860-25832-5	FD-01-020622	Total/NA	Water	8260C	
860-25832-5 - DL	FD-01-020622	Total/NA	Water	8260C	
860-25832-6	TB-01-020622	Total/NA	Water	8260C	
MB 860-52115/9	Method Blank	Total/NA	Water	8260C	
LCS 860-52115/3	Lab Control Sample	Total/NA	Water	8260C	
LCSD 860-52115/4	Lab Control Sample Dup	Total/NA	Water	8260C	
860-25829-A-1 MS	Matrix Spike	Total/NA	Water	8260C	

Lab Chronicle

Client: Jacobs Engineering Group, Inc. Job ID: 860-25832-1
Project/Site: STC Silber Rd Pre-Design Investigation

Client Sample ID: SB33-03-050622 — Lab Sample ID: 860-25832-1

Date Collected: 05/06/22 09:25 **Matrix: Water**
Date Received: 05/06/22 16:42

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	52115	05/09/22 14:25	NA	XEN STF
Total/NA	Analysis	8260C	DL	5	5 mL	5 mL	52114	05/09/22 15:12	TTD	XEN STF

Client Sample ID: SB33-02-050622 — Lab Sample ID: 860-25832-2

Date Collected: 05/06/22 10:30 **Matrix: Water**
Date Received: 05/06/22 16:42

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	52115	05/09/22 14:46	NA	XEN STF

Client Sample ID: SB33-01-050622 — Lab Sample ID: 860-25832-3

Date Collected: 05/06/22 10:45 **Matrix: Water**
Date Received: 05/06/22 16:42

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	52115	05/09/22 15:06	NA	XEN STF

Client Sample ID: SB12-03-050622 — Lab Sample ID: 860-25832-4

Date Collected: 05/06/22 14:20 **Matrix: Water**
Date Received: 05/06/22 16:42

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	52115	05/09/22 15:27	NA	XEN STF

Client Sample ID: FD-01-020622 — Lab Sample ID: 860-25832-5

Date Collected: 05/06/22 00:00 **Matrix: Water**
Date Received: 05/06/22 16:42

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	52115	05/09/22 15:47	NA	XEN STF
Total/NA	Analysis	8260C	DL	5	5 mL	5 mL	52115	05/09/22 16:29	NA	XEN STF

Client Sample ID: TB-01-020622 — Lab Sample ID: 860-25832-6

Date Collected: 05/06/22 07:45 **Matrix: Water**
Date Received: 05/06/22 16:42

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	52115	05/09/22 12:22	NA	XEN STF

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Accreditation/Certification Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-25832-1
Project/Site: STC Silber Rd Pre-Design Investigation

Laboratory: Eurofins Houston

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

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	21-038-0	08-04-22
Florida	NELAP	E871002	06-30-22
Louisiana	NELAP	03054	06-30-22
Oklahoma	State	2021-168	08-31-22
Texas	NELAP	T104704215-21-44	06-30-22
Texas	TCEQ Water Supply	T104704215	06-30-22
USDA	US Federal Programs	P330-22-00025	03-02-23

Method Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-25832-1
Project/Site: STC Silber Rd Pre-Design Investigation

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	XEN STF
5030C	Purge and Trap	SW846	XEN STF

Protocol References:

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

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Sample Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-25832-1
Project/Site: STC Silber Rd Pre-Design Investigation

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
860-25832-1	SB33-03-050622	Water	05/06/22 09:25	05/06/22 16:42
860-25832-2	SB33-02-050622	Water	05/06/22 10:30	05/06/22 16:42
860-25832-3	SB33-01-050622	Water	05/06/22 10:45	05/06/22 16:42
860-25832-4	SB12-03-050622	Water	05/06/22 14:20	05/06/22 16:42
860-25832-5	FD-01-020622	Water	05/06/22 00:00	05/06/22 16:42
860-25832-6	TB-01-020622	Water	05/06/22 07:45	05/06/22 16:42

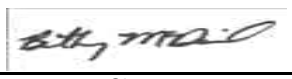
Appendix A
Laboratory Data Package Cover Page - Page 1 of 4

This data package is for Eurofins Houston job number 860-25832-1 and consists of:

- ☑ R1 - Field chain-of-custody documentation;
- ☑ R2 - Sample identification cross-reference;
- ☑ R3 - Test reports (analytical data sheets) for each environmental sample that includes:
  - a. Items consistent with NELAC Chapter 5,
  - b. dilution factors,
  - c. preparation methods,
  - d. cleanup methods, and
  - e. if required for the project, tentatively identified compounds (TICs).
- ☑ R4 - Surrogate recovery data including:
  - a. Calculated recovery (%R), and
  - b. The laboratory's surrogate QC limits.
- ☑ R5 - Test reports/summary forms for blank samples;
- ☑ R6 - Test reports/summary forms for laboratory control samples (LCSs) including:
  - a. LCS spiking amounts,
  - b. Calculated %R for each analyte, and
  - c. The laboratory's LCS QC limits.
- ☑ R7 - Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  - a. Samples associated with the MS/MSD clearly identified,
  - b. MS/MSD spiking amounts,
  - c. Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  - d. Calculated %Rs and relative percent differences (RPDs), and
  - e. The laboratory's MS/MSD QC limits
- ☐ R8 - Laboratory analytical duplicate (if applicable) recovery and precision:
  - a. The amount of analyte measured in the duplicate,
  - b. The calculated RPD, and
  - c. The laboratory's QC limits for analytical duplicates.
- ☑ R9 - List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.
- ☑ R10 - Other problems or anomalies.

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

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge 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.

Bethany McDaniel		5/9/2022
Name (printed)	Signature	Date

Senior Project Manager
Official Title (printed)

Laboratory Review Checklist: Reportable Data - Page 2 of 4

Laboratory Name:	Eurofins Houston	LRC Date:	5/9/2022
Project Name:	STC Silber Rd Pre-Design Investigation	Laboratory Job Number:	860-25832-1
Reviewer Name:	Bethany McDaniel		

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
		If required for the project, are 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			R07C
		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 effects on the sample results?		X			R10B
		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).

Laboratory Review checklist: Supporting Data - Page 3 of 4

Laboratory Name:	Eurofins Houston	LRC Date:	5/9/2022
Project Name:	STC Silber Rd Pre-Design Investigation	Laboratory Job Number:	860-25832-1
Reviewer Name:	Bethany McDaniel		

#[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 (ICV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data (NELAC Section 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" 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).

Laboratory Review Checklist: Exception Reports - Page 4 of 4

Laboratory Name:	Eurofins Houston	LRC Date:	5/9/2022
Project Name:	STC Silber Rd Pre-Design Investigation	Laboratory Job Number:	860-25832-1
Reviewer Name:	Bethany McDaniel		

ER #[1]	Description
R07C	Method 8260C: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 860-52115 were outside control limits. Sample matrix interference is suspected.
R10B	Method 8260C: The following samples were diluted to bring the concentration of target analytes within the calibration range: SB33-03-050622 (860-25832-1) and FD-01-020622 (860-25832-5). Elevated reporting limits (RLs) are provided.

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).

Detection Check Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-25832-1
Project/Site: STC Silber Rd Pre-Design Investigation

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**
Prep Method: 5030C-Purge and Trap
Instrument: A292 **Detector: MSD/0** **Column: DB-624**

Analyte	Spike Added	Result	Qualifier	Unit	RL	MDL	Analysis Date	Analysis Batch
1,1-Dichloroethane	0.00500	0.00501		mg/L	0.00100	0.000244	01/07/2022	860-36806
1,2-Dichloroethane	0.00500	0.00493		mg/L	0.00100	0.000285	01/07/2022	860-36806
1,1-Dichloroethene	0.00500	0.00500		mg/L	0.00100	0.000216	01/07/2022	860-36806
cis-1,2-Dichloroethene	0.00500	0.00502		mg/L	0.00100	0.000174	01/07/2022	860-36806
Tetrachloroethene	0.00500	0.00523		mg/L	0.00100	0.000500	01/07/2022	860-36806
Trichloroethene	0.00500	0.00484	J	mg/L	0.00500	0.000424	01/07/2022	860-36806
Vinyl chloride	0.00500	0.00496		mg/L	0.00200	0.000234	01/07/2022	860-36806

Matrix: Water **Prep Type: Total/NA**
Prep Method: 5030C-Purge and Trap
Instrument: A325 **Detector: MSD/0** **Column: DB-624**

Analyte	Spike Added	Result	Qualifier	Unit	RL	MDL	Analysis Date	Analysis Batch
1,1-Dichloroethene	0.00100	0.00411		mg/L	0.00100	0.000216	03/03/2022	860-43530

Eurofins Xenco, Stafford
4145 Greenbriar Dr
Stafford TX 77477
Phone (281) 240-4200

Temp. 1.6 IR ID.HOU-323
C/F:-0.9
Corrected Temp: 0.7

Chain of Custody Record

eurofins | Environment Testing America

Client Information		Lab PM: McDaniel, Bethany A	Carrier Tracking No(s):	COC No: 860-6507-2299.1
Client Contact: John Ynfante	Phone:	E-Mail: Bethany.McDaniel@Eurofinset.com	State of Origin:	Page: Page 1 of 1
Company: Jacobs Engineering Group, Inc.	PWSID:	Analysis Requested		Job #:
Address: 14701 St. Mary's Lane Suite 300	Due Date Requested:			Preservation Codes:
City: Houston	TAT Requested (days): 1 day RUSH			A HCL M Hexane B NaOH N None C Zn Acetate O AsNaO2 D Nitric Acid P Na2O4S E NaHSO4 Q Na2SO3 F MeOH R Na2S2O3 G Amchlor S H2SO4 H Ascorbic Acid T TSP Dodecahydrate I Ice U Acetone J DI Water V MCAA K EDTA W pH 4-5 L EDA Z other (specify) Other
State, Zip: TX, 77079	Compliance Project: Δ Yes Δ No			
Phone:	PO #:			
Email: John.Ynfante@jacobs.com	WO #:			
Project Name: STC Silber Road Pre-Design Investigation	Project #: 86002024			
Site:	SSOW#:			

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)	8260B - (MOD) VOCs Custom List (7)	Total Number of containers	Special Instructions/Note:
			Preservation Code:		X	X	A	X	
SB333-03-050622	5/6/22	0925	G	Water			X	3	
SB333-02-050622	5/6/22	1030	G	Water			X	3	
SB333-01-050622	5/6/22	1045	G	Water			X	3	
SB312-03-050622	5/6/22	1420	G	Water			X	3	
FD-01-050622	5/6/22	NG	G	Water			X	3	
TB-01-050622	5/6/22	0745		Water			X	2	
				Water					
				Water					
				Water					
				Water					
				Water					

860-25832 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 longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

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

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:				
Relinquished by:	Date/Time: 5/6/22 4:42	Company	Received by:	Date/Time: 5/6/22 1642	Company Xenco
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

Ver 01/16/2019

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc.

Job Number: 860-25832-1

Login Number: 25832

List Source: Eurofins Houston

List Number: 1

Creator: Rubio, Yuri

Question	Answer	Comment
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 (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	

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ANALYTICAL REPORT

Eurofins Houston
4145 Greenbriar Dr
Stafford, TX 77477
Tel: (281)240-4200

Laboratory Job ID: 860-25901-1
Client Project/Site: STC Silber Rd Pre-Design Investigation

For:
Jacobs Engineering Group, Inc.
12750 Merit Drive
Suite 1100
Dallas, Texas 75251

Attn: John Knott

Bethany McDaniel

Authorized for release by:
5/11/2022 3:03:33 PM

Bethany McDaniel, Senior Project Manager
(713)358-2005
Bethany.McDaniel@et.eurofinsus.com

Table of Contents

Definitions/Glossary

Client: Jacobs Engineering Group, Inc. Job ID: 860-25901-1
Project/Site: STC Silber Rd Pre-Design Investigation

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the MQL but greater than or equal to the SDL and the concentration is an estimated value.
N1	MS, MSD: Spike recovery exceeds upper or lower control limits.
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
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 860-25901-1

Laboratory: Eurofins Houston

Narrative

Job Narrative
860-25901-1

Receipt
The samples were received on 5/10/2022 8:17 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.1°C

Detection Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-25901-1
Project/Site: STC Silber Rd Pre-Design Investigation

Client Sample ID: SB31-03-050922 Lab Sample ID: 860-25901-1

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethene	0.00313		0.00100	0.000216	mg/L	1		8260C	Total/NA
Tetrachloroethene	0.000504	J	0.00100	0.000500	mg/L	1		8260C	Total/NA

Client Sample ID: SB31-02-050922 Lab Sample ID: 860-25901-2

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethene	0.000574	J	0.00100	0.000216	mg/L	1		8260C	Total/NA

Client Sample ID: SB32-03-050922 Lab Sample ID: 860-25901-3

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,2-Dichloroethane	0.00335		0.00100	0.000285	mg/L	1		8260C	Total/NA
cis-1,2-Dichloroethene	0.00560		0.00100	0.000174	mg/L	1		8260C	Total/NA
Tetrachloroethene	0.0347		0.00100	0.000500	mg/L	1		8260C	Total/NA
Trichloroethene	0.00574		0.00500	0.000424	mg/L	1		8260C	Total/NA
Vinyl chloride	0.0431		0.00200	0.000234	mg/L	1		8260C	Total/NA
1,1-Dichloroethane - DL	0.324		0.0100	0.00244	mg/L	10		8260C	Total/NA
1,1-Dichloroethene - DL	0.648		0.0100	0.00216	mg/L	10		8260C	Total/NA

Client Sample ID: SB18-03-050922 Lab Sample ID: 860-25901-4

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.0106		0.00100	0.000244	mg/L	1		8260C	Total/NA
1,2-Dichloroethane	0.000400	J	0.00100	0.000285	mg/L	1		8260C	Total/NA
1,1-Dichloroethene	0.0670		0.00100	0.000216	mg/L	1		8260C	Total/NA
cis-1,2-Dichloroethene	0.00796		0.00100	0.000174	mg/L	1		8260C	Total/NA
Tetrachloroethene	0.00185		0.00100	0.000500	mg/L	1		8260C	Total/NA
Trichloroethene	0.00268	J	0.00500	0.000424	mg/L	1		8260C	Total/NA
Vinyl chloride	0.000892	J	0.00200	0.000234	mg/L	1		8260C	Total/NA

Client Sample ID: SB18-02-050922 Lab Sample ID: 860-25901-5

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.00119		0.00100	0.000244	mg/L	1		8260C	Total/NA
1,1-Dichloroethene	0.00663		0.00100	0.000216	mg/L	1		8260C	Total/NA
cis-1,2-Dichloroethene	0.000951	J	0.00100	0.000174	mg/L	1		8260C	Total/NA
Tetrachloroethene	0.000953	J	0.00100	0.000500	mg/L	1		8260C	Total/NA
Trichloroethene	0.000626	J	0.00500	0.000424	mg/L	1		8260C	Total/NA

Client Sample ID: TB-01-050922 Lab Sample ID: 860-25901-6

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Houston

Client Sample ID: SB31-03-050922 — Lab Sample ID: 860-25901-1

Date Collected: 05/09/22 08:40 — **Matrix: Water**
Date Received: 05/10/22 08:17

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/10/22 22:17	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/10/22 22:17	1
1,1-Dichloroethene	**0.00313**		0.00100	0.000216	mg/L			05/10/22 22:17	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/10/22 22:17	1
Tetrachloroethene	**0.000504**	**J**	0.00100	0.000500	mg/L			05/10/22 22:17	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/10/22 22:17	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/10/22 22:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*101*		*75 - 131*		*05/10/22 22:17*	*1*
Toluene-d8 (Surr)	*102*		*80 - 117*		*05/10/22 22:17*	*1*
4-Bromofluorobenzene (Surr)	*102*		*74 - 124*		*05/10/22 22:17*	*1*
1,2-Dichloroethane-d4 (Surr)	*107*		*63 - 144*		*05/10/22 22:17*	*1*

Client Sample ID: SB31-02-050922 — Lab Sample ID: 860-25901-2

Date Collected: 05/09/22 08:55 — **Matrix: Water**
Date Received: 05/10/22 08:17

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/10/22 13:24	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/10/22 13:24	1
1,1-Dichloroethene	**0.000574**	**J**	0.00100	0.000216	mg/L			05/10/22 13:24	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/10/22 13:24	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/10/22 13:24	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/10/22 13:24	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/10/22 13:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*103*		*75 - 131*		*05/10/22 13:24*	*1*
Toluene-d8 (Surr)	*102*		*80 - 117*		*05/10/22 13:24*	*1*
4-Bromofluorobenzene (Surr)	*103*		*74 - 124*		*05/10/22 13:24*	*1*
1,2-Dichloroethane-d4 (Surr)	*106*		*63 - 144*		*05/10/22 13:24*	*1*

Client Sample ID: SB32-03-050922 — Lab Sample ID: 860-25901-3

Date Collected: 05/09/22 12:45 — **Matrix: Water**
Date Received: 05/10/22 08:17

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane	**0.00335**		0.00100	0.000285	mg/L			05/10/22 13:44	1
cis-1,2-Dichloroethene	**0.00560**		0.00100	0.000174	mg/L			05/10/22 13:44	1
Tetrachloroethene	**0.0347**		0.00100	0.000500	mg/L			05/10/22 13:44	1
Trichloroethene	**0.00574**		0.00500	0.000424	mg/L			05/10/22 13:44	1
Vinyl chloride	**0.0431**		0.00200	0.000234	mg/L			05/10/22 13:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*101*		*75 - 131*		*05/10/22 13:44*	*1*
Toluene-d8 (Surr)	*102*		*80 - 117*		*05/10/22 13:44*	*1*
4-Bromofluorobenzene (Surr)	*102*		*74 - 124*		*05/10/22 13:44*	*1*
1,2-Dichloroethane-d4 (Surr)	*105*		*63 - 144*		*05/10/22 13:44*	*1*

Client Sample ID: SB32-03-050922 — Lab Sample ID: 860-25901-3

Date Collected: 05/09/22 12:45 — **Matrix: Water**
Date Received: 05/10/22 08:17

Method: 8260C - Volatile Organic Compounds by GC/MS - DL

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.324		0.0100	0.00244	mg/L			05/10/22 17:30	10
1,1-Dichloroethene	0.648		0.0100	0.00216	mg/L			05/10/22 17:30	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*103*		*75 - 131*		*05/10/22 17:30*	*10*
Toluene-d8 (Surr)	*100*		*80 - 117*		*05/10/22 17:30*	*10*
4-Bromofluorobenzene (Surr)	*104*		*74 - 124*		*05/10/22 17:30*	*10*
1,2-Dichloroethane-d4 (Surr)	*103*		*63 - 144*		*05/10/22 17:30*	*10*

Client Sample ID: SB18-03-050922 — Lab Sample ID: 860-25901-4

Date Collected: 05/09/22 16:50 — **Matrix: Water**
Date Received: 05/10/22 08:17

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.0106		0.00100	0.000244	mg/L			05/10/22 16:28	1
1,2-Dichloroethane	0.000400	J	0.00100	0.000285	mg/L			05/10/22 16:28	1
1,1-Dichloroethene	0.0670		0.00100	0.000216	mg/L			05/10/22 16:28	1
cis-1,2-Dichloroethene	0.00796		0.00100	0.000174	mg/L			05/10/22 16:28	1
Tetrachloroethene	0.00185		0.00100	0.000500	mg/L			05/10/22 16:28	1
Trichloroethene	0.00268	J	0.00500	0.000424	mg/L			05/10/22 16:28	1
Vinyl chloride	0.000892	J	0.00200	0.000234	mg/L			05/10/22 16:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*104*		*75 - 131*		*05/10/22 16:28*	*1*
Toluene-d8 (Surr)	*101*		*80 - 117*		*05/10/22 16:28*	*1*
4-Bromofluorobenzene (Surr)	*102*		*74 - 124*		*05/10/22 16:28*	*1*
1,2-Dichloroethane-d4 (Surr)	*109*		*63 - 144*		*05/10/22 16:28*	*1*

Client Sample ID: SB18-02-050922 — Lab Sample ID: 860-25901-5

Date Collected: 05/09/22 17:15 — **Matrix: Water**
Date Received: 05/10/22 08:17

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.00119		0.00100	0.000244	mg/L			05/10/22 17:09	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/10/22 17:09	1
1,1-Dichloroethene	0.00663		0.00100	0.000216	mg/L			05/10/22 17:09	1
cis-1,2-Dichloroethene	0.000951	J	0.00100	0.000174	mg/L			05/10/22 17:09	1
Tetrachloroethene	0.000953	J	0.00100	0.000500	mg/L			05/10/22 17:09	1
Trichloroethene	0.000626	J	0.00500	0.000424	mg/L			05/10/22 17:09	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/10/22 17:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*101*		*75 - 131*		*05/10/22 17:09*	*1*
Toluene-d8 (Surr)	*101*		*80 - 117*		*05/10/22 17:09*	*1*
4-Bromofluorobenzene (Surr)	*102*		*74 - 124*		*05/10/22 17:09*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*63 - 144*		*05/10/22 17:09*	*1*

Client: Jacobs Engineering Group, Inc.
Job ID: 860-25901-1
Project/Site: STC Silber Rd Pre-Design Investigation

Client Sample ID: TB-01-050922
Lab Sample ID: 860-25901-6
Date Collected: 05/09/22 07:45
Matrix: Water
Date Received: 05/10/22 08:17

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/10/22 11:00	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/10/22 11:00	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/10/22 11:00	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/10/22 11:00	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/10/22 11:00	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/10/22 11:00	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/10/22 11:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*101*		*75 - 131*		*05/10/22 11:00*	*1*
Toluene-d8 (Surr)	*102*		*80 - 117*		*05/10/22 11:00*	*1*
4-Bromofluorobenzene (Surr)	*104*		*74 - 124*		*05/10/22 11:00*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*63 - 144*		*05/10/22 11:00*	*1*

Unadjusted Detection Limits

Client: Jacobs Engineering Group, Inc. Job ID: 860-25901-1
Project/Site: STC Silber Rd Pre-Design Investigation

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	MQL	MDL	Units
1,1-Dichloroethane	0.00100	0.000244	mg/L
1,1-Dichloroethene	0.00100	0.000216	mg/L
1,2-Dichloroethane	0.00100	0.000285	mg/L
cis-1,2-Dichloroethene	0.00100	0.000174	mg/L
Tetrachloroethene	0.00100	0.000500	mg/L
Trichloroethene	0.00500	0.000424	mg/L
Vinyl chloride	0.00200	0.000234	mg/L

Surrogate Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-25901-1
Project/Site: STC Silber Rd Pre-Design Investigation

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Water
Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DBFM	TOL	BFB	DCA
Lab Sample ID	Client Sample ID	(75-131)	(80-117)	(74-124)	(63-144)
860-25737-C-4 MS	Matrix Spike	102	100	101	98
860-25901-1	SB31-03-050922	101	102	102	107
860-25901-1 MS	SB31-03-050922	102	99	101	102
860-25901-1 MSD	SB31-03-050922	101	101	102	102
860-25901-2	SB31-02-050922	103	102	103	106
860-25901-3	SB32-03-050922	101	102	102	105
860-25901-3 - DL	SB32-03-050922	103	100	104	103
860-25901-4	SB18-03-050922	104	101	102	109
860-25901-5	SB18-02-050922	101	101	102	103
860-25901-6	TB-01-050922	101	102	104	103
LCS 860-52306/3	Lab Control Sample	100	101	103	99
LCS 860-52399/3	Lab Control Sample	103	100	102	99
LCSD 860-52306/4	Lab Control Sample Dup	101	99	102	100
LCSD 860-52399/4	Lab Control Sample Dup	101	101	102	101
MB 860-52306/10	Method Blank	101	102	105	101
MB 860-52399/10	Method Blank	101	100	104	103

Surrogate Legend

DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 860-52306/10 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 52306

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/10/22 09:58	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/10/22 09:58	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/10/22 09:58	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/10/22 09:58	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/10/22 09:58	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/10/22 09:58	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/10/22 09:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*101*		*75 - 131*		*05/10/22 09:58*	*1*
Toluene-d8 (Surr)	*102*		*80 - 117*		*05/10/22 09:58*	*1*
4-Bromofluorobenzene (Surr)	*105*		*74 - 124*		*05/10/22 09:58*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*63 - 144*		*05/10/22 09:58*	*1*

Lab Sample ID: LCS 860-52306/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 52306

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethane			0.0500	0.05669		mg/L		113	72 - 125		
1,2-Dichloroethane			0.0500	0.05343		mg/L		107	68 - 127		
1,1-Dichloroethene			0.0500	0.05363		mg/L		107	59 - 172		
cis-1,2-Dichloroethene			0.0500	0.05581		mg/L		112	75 - 125		
Tetrachloroethene			0.0500	0.05337		mg/L		107	71 - 125		
Trichloroethene			0.0500	0.05374		mg/L		107	62 - 137		
Vinyl chloride			0.0500	0.06221		mg/L		124	60 - 140		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*100*		*75 - 131*
Toluene-d8 (Surr)	*101*		*80 - 117*
4-Bromofluorobenzene (Surr)	*103*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*99*		*63 - 144*

Lab Sample ID: LCSD 860-52306/4 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 52306

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethane			0.0500	0.05212		mg/L		104	72 - 125	8	25
1,2-Dichloroethane			0.0500	0.05071		mg/L		101	68 - 127	5	25
1,1-Dichloroethene			0.0500	0.05051		mg/L		101	59 - 172	6	25
cis-1,2-Dichloroethene			0.0500	0.05256		mg/L		105	75 - 125	6	25
Tetrachloroethene			0.0500	0.05014		mg/L		100	71 - 125	6	25
Trichloroethene			0.0500	0.04967		mg/L		99	62 - 137	8	25
Vinyl chloride			0.0500	0.05801		mg/L		116	60 - 140	7	25

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

Lab Sample ID: LCSD 860-52306/4 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 52306

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Dibromofluoromethane (Surr)	*101*		*75 - 131*
Toluene-d8 (Surr)	*99*		*80 - 117*
4-Bromofluorobenzene (Surr)	*102*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*100*		*63 - 144*

Lab Sample ID: 860-25737-C-4 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 52306

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethane	0.000244	U	0.0500	0.05803		mg/L		116	72 - 125
1,2-Dichloroethane	0.000285	U	0.0500	0.05355		mg/L		107	68 - 127
1,1-Dichloroethene	0.000216	U	0.0500	0.05496		mg/L		110	59 - 172
cis-1,2-Dichloroethene	0.000174	U	0.0500	0.05749		mg/L		115	75 - 125
Tetrachloroethene	0.000500	U	0.0500	0.05604		mg/L		112	71 - 125
Trichloroethene	0.000424	U	0.0500	0.05518		mg/L		110	62 - 137
Vinyl chloride	0.000234	U	0.0500	0.06563		mg/L		131	60 - 140

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*102*		*75 - 131*
Toluene-d8 (Surr)	*100*		*80 - 117*
4-Bromofluorobenzene (Surr)	*101*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*98*		*63 - 144*

Lab Sample ID: MB 860-52399/10 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 52399

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/10/22 21:56	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/10/22 21:56	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/10/22 21:56	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/10/22 21:56	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/10/22 21:56	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/10/22 21:56	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/10/22 21:56	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	*101*		*75 - 131*		*05/10/22 21:56*	*1*
Toluene-d8 (Surr)	*100*		*80 - 117*		*05/10/22 21:56*	*1*
4-Bromofluorobenzene (Surr)	*104*		*74 - 124*		*05/10/22 21:56*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*63 - 144*		*05/10/22 21:56*	*1*

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

Lab Sample ID: LCS 860-52399/3 **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 52399

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethane			0.0500	0.05581		mg/L		112	72 - 125		
1,2-Dichloroethane			0.0500	0.05041		mg/L		101	68 - 127		
1,1-Dichloroethene			0.0500	0.04940		mg/L		99	59 - 172		
cis-1,2-Dichloroethene			0.0500	0.05311		mg/L		106	75 - 125		
Tetrachloroethene			0.0500	0.04843		mg/L		97	71 - 125		
Trichloroethene			0.0500	0.05035		mg/L		101	62 - 137		
Vinyl chloride			0.0500	0.05801		mg/L		116	60 - 140		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*103*		*75 - 131*
Toluene-d8 (Surr)	*100*		*80 - 117*
4-Bromofluorobenzene (Surr)	*102*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*99*		*63 - 144*

Lab Sample ID: LCSD 860-52399/4 **Client Sample ID: Lab Control Sample Dup**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 52399

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethane			0.0500	0.05816		mg/L		116	72 - 125	4	25
1,2-Dichloroethane			0.0500	0.05441		mg/L		109	68 - 127	8	25
1,1-Dichloroethene			0.0500	0.05521		mg/L		110	59 - 172	11	25
cis-1,2-Dichloroethene			0.0500	0.05654		mg/L		113	75 - 125	6	25
Tetrachloroethene			0.0500	0.05069		mg/L		101	71 - 125	5	25
Trichloroethene			0.0500	0.05359		mg/L		107	62 - 137	6	25
Vinyl chloride			0.0500	0.06351		mg/L		127	60 - 140	9	25

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*101*		*75 - 131*
Toluene-d8 (Surr)	*101*		*80 - 117*
4-Bromofluorobenzene (Surr)	*102*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*101*		*63 - 144*

Lab Sample ID: 860-25901-1 MS **Client Sample ID: SB31-03-050922**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 52399

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethane	0.000244	U	0.0500	0.06456	N1	mg/L		129	72 - 125		
1,2-Dichloroethane	0.000285	U	0.0500	0.06186		mg/L		124	68 - 127		
1,1-Dichloroethene	0.00313		0.0500	0.06909		mg/L		132	59 - 172		
cis-1,2-Dichloroethene	0.000174	U	0.0500	0.06289	N1	mg/L		126	75 - 125		
Tetrachloroethene	0.000504	J	0.0500	0.06405	N1	mg/L		127	71 - 125		
Trichloroethene	0.000424	U	0.0500	0.06342		mg/L		127	62 - 137		
Vinyl chloride	0.000234	U	0.0500	0.05489		mg/L		110	60 - 140		

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

Lab Sample ID: 860-25901-1 MS **Client Sample ID: SB31-03-050922**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 52399

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*102*		*75 - 131*
Toluene-d8 (Surr)	*99*		*80 - 117*
4-Bromofluorobenzene (Surr)	*101*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*102*		*63 - 144*

Lab Sample ID: 860-25901-1 MSD **Client Sample ID: SB31-03-050922**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 52399

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethane	0.000244	U	0.0500	0.07082	N1	mg/L		142	72 - 125	9	25
1,2-Dichloroethane	0.000285	U	0.0500	0.06573	N1	mg/L		131	68 - 127	6	25
1,1-Dichloroethene	0.00313		0.0500	0.07470		mg/L		143	59 - 172	8	25
cis-1,2-Dichloroethene	0.000174	U	0.0500	0.06855	N1	mg/L		137	75 - 125	9	25
Tetrachloroethene	0.000504	J	0.0500	0.07049	N1	mg/L		140	71 - 125	10	25
Trichloroethene	0.000424	U	0.0500	0.06953	N1	mg/L		139	62 - 137	9	25
Vinyl chloride	0.000234	U	0.0500	0.06119		mg/L		122	60 - 140	11	25

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Dibromofluoromethane (Surr)	*101*		*75 - 131*
Toluene-d8 (Surr)	*101*		*80 - 117*
4-Bromofluorobenzene (Surr)	*102*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*102*		*63 - 144*

QC Association Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-25901-1
Project/Site: STC Silber Rd Pre-Design Investigation

GC/MS VOA

Analysis Batch: 52306

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-25901-2	SB31-02-050922	Total/NA	Water	8260C	
860-25901-3	SB32-03-050922	Total/NA	Water	8260C	
860-25901-3 - DL	SB32-03-050922	Total/NA	Water	8260C	
860-25901-4	SB18-03-050922	Total/NA	Water	8260C	
860-25901-5	SB18-02-050922	Total/NA	Water	8260C	
860-25901-6	TB-01-050922	Total/NA	Water	8260C	
MB 860-52306/10	Method Blank	Total/NA	Water	8260C	
LCS 860-52306/3	Lab Control Sample	Total/NA	Water	8260C	
LCSD 860-52306/4	Lab Control Sample Dup	Total/NA	Water	8260C	
860-25737-C-4 MS	Matrix Spike	Total/NA	Water	8260C	

Analysis Batch: 52399

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-25901-1	SB31-03-050922	Total/NA	Water	8260C	
MB 860-52399/10	Method Blank	Total/NA	Water	8260C	
LCS 860-52399/3	Lab Control Sample	Total/NA	Water	8260C	
LCSD 860-52399/4	Lab Control Sample Dup	Total/NA	Water	8260C	
860-25901-1 MS	SB31-03-050922	Total/NA	Water	8260C	
860-25901-1 MSD	SB31-03-050922	Total/NA	Water	8260C	

Lab Chronicle

Client: Jacobs Engineering Group, Inc.
Job ID: 860-25901-1
Project/Site: STC Silber Rd Pre-Design Investigation

Client Sample ID: SB31-03-050922
Lab Sample ID: 860-25901-1
Date Collected: 05/09/22 08:40
Matrix: Water
Date Received: 05/10/22 08:17

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	52399	05/10/22 22:17	A1S	XEN STF

Client Sample ID: SB31-02-050922
Lab Sample ID: 860-25901-2
Date Collected: 05/09/22 08:55
Matrix: Water
Date Received: 05/10/22 08:17

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	52306	05/10/22 13:24	NA	XEN STF

Client Sample ID: SB32-03-050922
Lab Sample ID: 860-25901-3
Date Collected: 05/09/22 12:45
Matrix: Water
Date Received: 05/10/22 08:17

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	52306	05/10/22 13:44	NA	XEN STF
Total/NA	Analysis	8260C	DL	10	5 mL	5 mL	52306	05/10/22 17:30	NA	XEN STF

Client Sample ID: SB18-03-050922
Lab Sample ID: 860-25901-4
Date Collected: 05/09/22 16:50
Matrix: Water
Date Received: 05/10/22 08:17

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	52306	05/10/22 16:28	NA	XEN STF

Client Sample ID: SB18-02-050922
Lab Sample ID: 860-25901-5
Date Collected: 05/09/22 17:15
Matrix: Water
Date Received: 05/10/22 08:17

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	52306	05/10/22 17:09	NA	XEN STF

Client Sample ID: TB-01-050922
Lab Sample ID: 860-25901-6
Date Collected: 05/09/22 07:45
Matrix: Water
Date Received: 05/10/22 08:17

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	52306	05/10/22 11:00	NA	XEN STF

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Accreditation/Certification Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-25901-1
Project/Site: STC Silber Rd Pre-Design Investigation

Laboratory: Eurofins Houston

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

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	21-038-0	08-04-22
Florida	NELAP	E871002	06-30-22
Louisiana	NELAP	03054	06-30-22
Oklahoma	State	2021-168	08-31-22
Texas	NELAP	T104704215-21-44	06-30-22
Texas	TCEQ Water Supply	T104704215	06-30-22
USDA	US Federal Programs	P330-22-00025	03-02-23

Method Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-25901-1
Project/Site: STC Silber Rd Pre-Design Investigation

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	XEN STF
5030C	Purge and Trap	SW846	XEN STF

Protocol References:

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

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Sample Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-25901-1
Project/Site: STC Silber Rd Pre-Design Investigation

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
860-25901-1	SB31-03-050922	Water	05/09/22 08:40	05/10/22 08:17
860-25901-2	SB31-02-050922	Water	05/09/22 08:55	05/10/22 08:17
860-25901-3	SB32-03-050922	Water	05/09/22 12:45	05/10/22 08:17
860-25901-4	SB18-03-050922	Water	05/09/22 16:50	05/10/22 08:17
860-25901-5	SB18-02-050922	Water	05/09/22 17:15	05/10/22 08:17
860-25901-6	TB-01-050922	Water	05/09/22 07:45	05/10/22 08:17

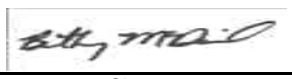
Appendix A
Laboratory Data Package Cover Page - Page 1 of 4

This data package is for Eurofins Houston job number 860-25901-1 and consists of:

- ☑ R1 - Field chain-of-custody documentation;
- ☑ R2 - Sample identification cross-reference;
- ☑ R3 - Test reports (analytical data sheets) for each environmental sample that includes:
  - a. Items consistent with NELAC Chapter 5,
  - b. dilution factors,
  - c. preparation methods,
  - d. cleanup methods, and
  - e. if required for the project, tentatively identified compounds (TICs).
- ☑ R4 - Surrogate recovery data including:
  - a. Calculated recovery (%R), and
  - b. The laboratory's surrogate QC limits.
- ☑ R5 - Test reports/summary forms for blank samples;
- ☑ R6 - Test reports/summary forms for laboratory control samples (LCSs) including:
  - a. LCS spiking amounts,
  - b. Calculated %R for each analyte, and
  - c. The laboratory's LCS QC limits.
- ☑ R7 - Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  - a. Samples associated with the MS/MSD clearly identified,
  - b. MS/MSD spiking amounts,
  - c. Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  - d. Calculated %Rs and relative percent differences (RPDs), and
  - e. The laboratory's MS/MSD QC limits
- ☐ R8 - Laboratory analytical duplicate (if applicable) recovery and precision:
  - a. The amount of analyte measured in the duplicate,
  - b. The calculated RPD, and
  - c. The laboratory's QC limits for analytical duplicates.
- ☑ R9 - List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.
- ☑ R10 - Other problems or anomalies.

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

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge 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.

Bethany McDaniel		5/11/2022
Name (printed)	Signature	Date

Senior Project Manager
Official Title (printed)

Laboratory Review Checklist: Reportable Data - Page 2 of 4

Laboratory Name:	Eurofins Houston	LRC Date:	5/11/2022
Project Name:	STC Silber Rd Pre-Design Investigation	Laboratory Job Number:	860-25901-1
Reviewer Name:	Bethany McDaniel		

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
		If required for the project, are 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			R07C
		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 effects on the sample results?		X			R10B
		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).

Laboratory Review checklist: Supporting Data - Page 3 of 4

Laboratory Name:	Eurofins Houston	LRC Date:	5/11/2022
Project Name:	STC Silber Rd Pre-Design Investigation	Laboratory Job Number:	860-25901-1
Reviewer Name:	Bethany McDaniel		

#[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 (ICV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?		X			S02B
		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" 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);
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Laboratory Review Checklist: Exception Reports - Page 4 of 4

Laboratory Name:	Eurofins Houston	LRC Date:	5/11/2022
Project Name:	STC Silber Rd Pre-Design Investigation	Laboratory Job Number:	860-25901-1
Reviewer Name:	Bethany McDaniel		

ER #[1]	Description
R07C	Method 8260C: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 860-52399 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.
R10B	Method 8260C: The following sample was diluted to bring the concentration of target analytes within the calibration range: SB32-03-050922 (860-25901-3). Elevated reporting limits (RLs) are provided.
S02B	Method 8260C: The continuing calibration verification (CCV) associated with batch 860-52399 exhibited % difference of > 20% for the following analyte(s) Vinyl chloride (23.8%); however, the results were within the LCS acceptance limits. The EPA method requires that all target analytes in the continuing calibration verification standard be within 20% difference from the initial calibration. According to the laboratory standard operating procedure, the continuing calibration is acceptable if it meets the laboratory control sample acceptance criteria.

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.
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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).

Detection Check Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-25901-1
Project/Site: STC Silber Rd Pre-Design Investigation

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**
Prep Method: 5030C-Purge and Trap
Instrument: A292 **Detector: MSD/0** **Column: DB-624**

Analyte	Spike Added	Result	Qualifier	Unit	RL	MDL	Analysis Date	Analysis Batch
1,1-Dichloroethane	0.00500	0.00501		mg/L	0.00100	0.000244	01/07/2022	860-36806
1,2-Dichloroethane	0.00500	0.00493		mg/L	0.00100	0.000285	01/07/2022	860-36806
1,1-Dichloroethene	0.00500	0.00500		mg/L	0.00100	0.000216	01/07/2022	860-36806
cis-1,2-Dichloroethene	0.00500	0.00502		mg/L	0.00100	0.000174	01/07/2022	860-36806
Tetrachloroethene	0.00500	0.00523		mg/L	0.00100	0.000500	01/07/2022	860-36806
Trichloroethene	0.00500	0.00484	J	mg/L	0.00500	0.000424	01/07/2022	860-36806
Vinyl chloride	0.00500	0.00496		mg/L	0.00200	0.000234	01/07/2022	860-36806

Eurofins Xenco, Stafford
4145 Greenbriar Dr
Stafford, TX 77477
Phone (281) 240-4200

Chain of Custody Record

eurofins | Environment Testing America

Client Information	Sampler	Lab PM: McDaniel, Bethany A	Carrier Tracking No(s):	COC No: 860-6507-2299.1
Client Contact: John Ynfante	Phone:	E-Mail: Bethany.McDaniel@Eurofinset.com	State of Origin:	Page: Page 1 of 1
Company: Jacobs Engineering Group, Inc.	PWSID:			Job #:
Address: 14701 St. Mary's Lane Suite 300	Due Date Requested:			
City: Houston	TAT Requested (days): 1 day RUSH			
State, Zip: TX, 77079	Compliance Project: Δ Yes Δ No			
Phone:	PO #:			
Email: John.Ynfante@jacobs.com	WO #:			
Project Name: STC Silber Road Pre-Design Investigation	Project #: 86002024			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification	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)	8260B - (MOD) VOCs Custom List (7)	Total Number of containers	Special Instructions/Note:
Preservation Code:						A		
SB31-03-050922	5/9/22	0840	G	Water	X	X	9	MS/MSD
SB31-02-050922	5/9/22	0855	G	Water	X	X	3	
SB32-03-050922	5/9/22	1245	G	Water	X	X	3	
SB18-03-050922	5/9/22	1650	G	Water	X	X	3	
SB18-02-050922	5/9/22	1715	G	Water	X	X	3	
PT3-01-050922	5/9/22	0745		Water	X	X	2	
				Water				
				Water				
				Water				
				Water				
				Water				

860-25901 Chain of Custody

Temp: 1 0 IR ID HOU-323
C/F -0 9
Corrected Temp: 01

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) TRRP

Special Instructions/QC Requirements.

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

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
		5/10/22 0817			5/10/22 817	E
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.

Cooler Temperature(s) °C and Other Remarks:

Ver 01/16/2019

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc.

Job Number: 860-25901-1

Login Number: 25901

List Source: Eurofins Houston

List Number: 1

Creator: Rubio, Yuri

Question	Answer	Comment
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 (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Houston
4145 Greenbriar Dr
Stafford, TX 77477
Tel: (281)240-4200

Laboratory Job ID: 860-25965-1
Client Project/Site: STC Silber Rd Pre-Design Investigation

For:
Jacobs Engineering Group, Inc.
12750 Merit Drive
Suite 1100
Dallas, Texas 75251

Attn: John Knott

Bethany McDaniel

Authorized for release by:
5/12/2022 2:29:38 PM

Bethany McDaniel, Senior Project Manager
(713)358-2005
Bethany.McDaniel@et.eurofinsus.com

Table of Contents

Definitions/Glossary

Client: Jacobs Engineering Group, Inc. Job ID: 860-25965-1
Project/Site: STC Silber Rd Pre-Design Investigation

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the MQL but greater than or equal to the SDL and the concentration is an estimated value.
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
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Jacobs Engineering Group, Inc. Job ID: 860-25965-1
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-25965-1

Laboratory: Eurofins Houston

Narrative

Job Narrative
860-25965-1

Receipt
The samples were received on 5/11/2022 8:11 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 2.8°C

Detection Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-25965-1

Client Sample ID: SB07-01-051022 — Lab Sample ID: 860-25965-1

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.00471		0.00100	0.000244	mg/L	1		8260C	Total/NA
1,1-Dichloroethene	0.00462		0.00100	0.000216	mg/L	1		8260C	Total/NA
cis-1,2-Dichloroethene	0.0156		0.00100	0.000174	mg/L	1		8260C	Total/NA
Tetrachloroethene	0.0222		0.00100	0.000500	mg/L	1		8260C	Total/NA
Trichloroethene	0.0133		0.00500	0.000424	mg/L	1		8260C	Total/NA
Vinyl chloride	0.00141	J	0.00200	0.000234	mg/L	1		8260C	Total/NA

Client Sample ID: SB08-03-051022 — Lab Sample ID: 860-25965-2

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.00807		0.00100	0.000244	mg/L	1		8260C	Total/NA
1,1-Dichloroethene	0.00180		0.00100	0.000216	mg/L	1		8260C	Total/NA
cis-1,2-Dichloroethene	0.0257		0.00100	0.000174	mg/L	1		8260C	Total/NA
Tetrachloroethene	0.00143		0.00100	0.000500	mg/L	1		8260C	Total/NA
Trichloroethene	0.00231	J	0.00500	0.000424	mg/L	1		8260C	Total/NA
Vinyl chloride	0.0110		0.00200	0.000234	mg/L	1		8260C	Total/NA

Client Sample ID: SB08-02-051022 — Lab Sample ID: 860-25965-3

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.0461		0.00500	0.00122	mg/L	5		8260C	Total/NA
1,1-Dichloroethene	0.0765		0.00500	0.00108	mg/L	5		8260C	Total/NA
Tetrachloroethene	0.293		0.00500	0.00250	mg/L	5		8260C	Total/NA
Trichloroethene	0.226		0.0250	0.00212	mg/L	5		8260C	Total/NA
Vinyl chloride	0.218		0.0100	0.00117	mg/L	5		8260C	Total/NA
cis-1,2-Dichloroethene - DL	0.904		0.0200	0.00348	mg/L	20		8260C	Total/NA

Client Sample ID: SB08-01-051022 — Lab Sample ID: 860-25965-4

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.110		0.00100	0.000244	mg/L	1		8260C	Total/NA
1,2-Dichloroethane	0.00273		0.00100	0.000285	mg/L	1		8260C	Total/NA
1,1-Dichloroethene	0.122		0.00100	0.000216	mg/L	1		8260C	Total/NA
Tetrachloroethene	0.0862		0.00100	0.000500	mg/L	1		8260C	Total/NA
Trichloroethene	0.0570		0.00500	0.000424	mg/L	1		8260C	Total/NA
Vinyl chloride	0.0452		0.00200	0.000234	mg/L	1		8260C	Total/NA
cis-1,2-Dichloroethene - DL	0.179		0.00500	0.000870	mg/L	5		8260C	Total/NA

Client Sample ID: FD-01-051022 — Lab Sample ID: 860-25965-5

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.00492		0.00100	0.000244	mg/L	1		8260C	Total/NA
1,1-Dichloroethene	0.00544		0.00100	0.000216	mg/L	1		8260C	Total/NA
cis-1,2-Dichloroethene	0.0173		0.00100	0.000174	mg/L	1		8260C	Total/NA
Tetrachloroethene	0.0341		0.00100	0.000500	mg/L	1		8260C	Total/NA
Trichloroethene	0.0166		0.00500	0.000424	mg/L	1		8260C	Total/NA
Vinyl chloride	0.00183	J	0.00200	0.000234	mg/L	1		8260C	Total/NA

Client Sample ID: TB-01-051022 — Lab Sample ID: 860-25965-6

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: SB07-01-051022 — Lab Sample ID: 860-25965-1

Date Collected: 05/10/22 12:50 — **Matrix: Water**
Date Received: 05/11/22 08:11

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	**0.00471**		0.00100	0.000244	mg/L			05/11/22 14:15	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/11/22 14:15	1
1,1-Dichloroethene	**0.00462**		0.00100	0.000216	mg/L			05/11/22 14:15	1
cis-1,2-Dichloroethene	**0.0156**		0.00100	0.000174	mg/L			05/11/22 14:15	1
Tetrachloroethene	**0.0222**		0.00100	0.000500	mg/L			05/11/22 14:15	1
Trichloroethene	**0.0133**		0.00500	0.000424	mg/L			05/11/22 14:15	1
Vinyl chloride	**0.00141**	**J**	0.00200	0.000234	mg/L			05/11/22 14:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*101*		*75 - 131*		*05/11/22 14:15*	*1*
Toluene-d8 (Surr)	*100*		*80 - 117*		*05/11/22 14:15*	*1*
4-Bromofluorobenzene (Surr)	*100*		*74 - 124*		*05/11/22 14:15*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*63 - 144*		*05/11/22 14:15*	*1*

Client Sample ID: SB08-03-051022 — Lab Sample ID: 860-25965-2

Date Collected: 05/10/22 16:55 — **Matrix: Water**
Date Received: 05/11/22 08:11

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	**0.00807**		0.00100	0.000244	mg/L			05/11/22 13:54	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/11/22 13:54	1
1,1-Dichloroethene	**0.00180**		0.00100	0.000216	mg/L			05/11/22 13:54	1
cis-1,2-Dichloroethene	**0.0257**		0.00100	0.000174	mg/L			05/11/22 13:54	1
Tetrachloroethene	**0.00143**		0.00100	0.000500	mg/L			05/11/22 13:54	1
Trichloroethene	**0.00231**	**J**	0.00500	0.000424	mg/L			05/11/22 13:54	1
Vinyl chloride	**0.0110**		0.00200	0.000234	mg/L			05/11/22 13:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*101*		*75 - 131*		*05/11/22 13:54*	*1*
Toluene-d8 (Surr)	*99*		*80 - 117*		*05/11/22 13:54*	*1*
4-Bromofluorobenzene (Surr)	*101*		*74 - 124*		*05/11/22 13:54*	*1*
1,2-Dichloroethane-d4 (Surr)	*106*		*63 - 144*		*05/11/22 13:54*	*1*

Client Sample ID: SB08-02-051022 — Lab Sample ID: 860-25965-3

Date Collected: 05/10/22 17:05 — **Matrix: Water**
Date Received: 05/11/22 08:11

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	**0.0461**		0.00500	0.00122	mg/L			05/11/22 15:36	5
1,2-Dichloroethane	0.00143	U	0.00500	0.00143	mg/L			05/11/22 15:36	5
1,1-Dichloroethene	**0.0765**		0.00500	0.00108	mg/L			05/11/22 15:36	5
Tetrachloroethene	**0.293**		0.00500	0.00250	mg/L			05/11/22 15:36	5
Trichloroethene	**0.226**		0.0250	0.00212	mg/L			05/11/22 15:36	5
Vinyl chloride	**0.218**		0.0100	0.00117	mg/L			05/11/22 15:36	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*102*		*75 - 131*		*05/11/22 15:36*	*5*
Toluene-d8 (Surr)	*99*		*80 - 117*		*05/11/22 15:36*	*5*
4-Bromofluorobenzene (Surr)	*101*		*74 - 124*		*05/11/22 15:36*	*5*

Client Sample ID: SB08-02-051022 — Lab Sample ID: 860-25965-3

Date Collected: 05/10/22 17:05 — **Matrix: Water**
Date Received: 05/11/22 08:11

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	104		63 - 144		05/11/22 15:36	5

Method: 8260C - Volatile Organic Compounds by GC/MS - DL

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.904		0.0200	0.00348	mg/L			05/11/22 15:57	20

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	100		75 - 131		05/11/22 15:57	20
Toluene-d8 (Surr)	102		80 - 117		05/11/22 15:57	20
4-Bromofluorobenzene (Surr)	101		74 - 124		05/11/22 15:57	20
1,2-Dichloroethane-d4 (Surr)	106		63 - 144		05/11/22 15:57	20

Client Sample ID: SB08-01-051022 — Lab Sample ID: 860-25965-4

Date Collected: 05/10/22 17:20 — **Matrix: Water**
Date Received: 05/11/22 08:11

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.110		0.00100	0.000244	mg/L			05/11/22 14:55	1
1,2-Dichloroethane	0.00273		0.00100	0.000285	mg/L			05/11/22 14:55	1
1,1-Dichloroethene	0.122		0.00100	0.000216	mg/L			05/11/22 14:55	1
Tetrachloroethene	0.0862		0.00100	0.000500	mg/L			05/11/22 14:55	1
Trichloroethene	0.0570		0.00500	0.000424	mg/L			05/11/22 14:55	1
Vinyl chloride	0.0452		0.00200	0.000234	mg/L			05/11/22 14:55	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	101		75 - 131		05/11/22 14:55	1
Toluene-d8 (Surr)	99		80 - 117		05/11/22 14:55	1
4-Bromofluorobenzene (Surr)	100		74 - 124		05/11/22 14:55	1
1,2-Dichloroethane-d4 (Surr)	106		63 - 144		05/11/22 14:55	1

Method: 8260C - Volatile Organic Compounds by GC/MS - DL

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.179		0.00500	0.000870	mg/L			05/11/22 15:16	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	102		75 - 131		05/11/22 15:16	5
Toluene-d8 (Surr)	100		80 - 117		05/11/22 15:16	5
4-Bromofluorobenzene (Surr)	101		74 - 124		05/11/22 15:16	5
1,2-Dichloroethane-d4 (Surr)	105		63 - 144		05/11/22 15:16	5

Client Sample ID: FD-01-051022 — Lab Sample ID: 860-25965-5

Date Collected: 05/10/22 00:00 — **Matrix: Water**
Date Received: 05/11/22 08:11

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.00492		0.00100	0.000244	mg/L			05/11/22 14:35	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/11/22 14:35	1
1,1-Dichloroethene	0.00544		0.00100	0.000216	mg/L			05/11/22 14:35	1
cis-1,2-Dichloroethene	0.0173		0.00100	0.000174	mg/L			05/11/22 14:35	1

Client Sample ID: FD-01-051022 — Lab Sample ID: 860-25965-5

Date Collected: 05/10/22 00:00 **Matrix: Water**
Date Received: 05/11/22 08:11

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

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	0.0341		0.00100	0.000500	mg/L			05/11/22 14:35	1
Trichloroethene	0.0166		0.00500	0.000424	mg/L			05/11/22 14:35	1
Vinyl chloride	0.00183	J	0.00200	0.000234	mg/L			05/11/22 14:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*101*		*75 - 131*		*05/11/22 14:35*	*1*
Toluene-d8 (Surr)	*100*		*80 - 117*		*05/11/22 14:35*	*1*
4-Bromofluorobenzene (Surr)	*102*		*74 - 124*		*05/11/22 14:35*	*1*
1,2-Dichloroethane-d4 (Surr)	*106*		*63 - 144*		*05/11/22 14:35*	*1*

Client Sample ID: TB-01-051022 — Lab Sample ID: 860-25965-6

Date Collected: 05/10/22 07:45 **Matrix: Water**
Date Received: 05/11/22 08:11

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/11/22 13:33	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/11/22 13:33	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/11/22 13:33	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/11/22 13:33	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/11/22 13:33	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/11/22 13:33	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/11/22 13:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*99*		*75 - 131*		*05/11/22 13:33*	*1*
Toluene-d8 (Surr)	*102*		*80 - 117*		*05/11/22 13:33*	*1*
4-Bromofluorobenzene (Surr)	*105*		*74 - 124*		*05/11/22 13:33*	*1*
1,2-Dichloroethane-d4 (Surr)	*105*		*63 - 144*		*05/11/22 13:33*	*1*

Unadjusted Detection Limits

Client: Jacobs Engineering Group, Inc.
Job ID: 860-25965-1
Project/Site: STC Silber Rd Pre-Design Investigation

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	MQL	MDL	Units
1,1-Dichloroethane	0.00100	0.000244	mg/L
1,1-Dichloroethene	0.00100	0.000216	mg/L
1,2-Dichloroethane	0.00100	0.000285	mg/L
cis-1,2-Dichloroethene	0.00100	0.000174	mg/L
Tetrachloroethene	0.00100	0.000500	mg/L
Trichloroethene	0.00500	0.000424	mg/L
Vinyl chloride	0.00200	0.000234	mg/L

Surrogate Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-25965-1
Project/Site: STC Silber Rd Pre-Design Investigation

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Water
Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DBFM	TOL	BFB	DCA
Lab Sample ID	Client Sample ID	(75-131)	(80-117)	(74-124)	(63-144)
820-4204-B-1 MS	Matrix Spike	100	99	99	96
860-25965-1	SB07-01-051022	101	100	100	104
860-25965-2	SB08-03-051022	101	99	101	106
860-25965-3	SB08-02-051022	102	99	101	104
860-25965-3 - DL	SB08-02-051022	100	102	101	106
860-25965-4	SB08-01-051022	101	99	100	106
860-25965-4 - DL	SB08-01-051022	102	100	101	105
860-25965-5	FD-01-051022	101	100	102	106
860-25965-6	TB-01-051022	99	102	105	105
LCS 860-52514/3	Lab Control Sample	100	98	98	99
LCSD 860-52514/4	Lab Control Sample Dup	100	100	99	99
MB 860-52514/11	Method Blank	98	99	101	101

Surrogate Legend

DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 860-52514/11 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 52514

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/11/22 10:09	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/11/22 10:09	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/11/22 10:09	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/11/22 10:09	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/11/22 10:09	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/11/22 10:09	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/11/22 10:09	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*98*		*75 - 131*		*05/11/22 10:09*	*1*
Toluene-d8 (Surr)	*99*		*80 - 117*		*05/11/22 10:09*	*1*
4-Bromofluorobenzene (Surr)	*101*		*74 - 124*		*05/11/22 10:09*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*63 - 144*		*05/11/22 10:09*	*1*

Lab Sample ID: LCS 860-52514/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 52514

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethane	0.0500	0.04783		mg/L		96	72 - 125
1,2-Dichloroethane	0.0500	0.04791		mg/L		96	68 - 127
1,1-Dichloroethene	0.0500	0.04979		mg/L		100	59 - 172
cis-1,2-Dichloroethene	0.0500	0.04751		mg/L		95	75 - 125
Tetrachloroethene	0.0500	0.04752		mg/L		95	71 - 125
Trichloroethene	0.0500	0.04757		mg/L		95	62 - 137
Vinyl chloride	0.0500	0.05212		mg/L		104	60 - 140

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*100*		*75 - 131*
Toluene-d8 (Surr)	*98*		*80 - 117*
4-Bromofluorobenzene (Surr)	*98*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*99*		*63 - 144*

Lab Sample ID: LCSD 860-52514/4 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 52514

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethane	0.0500	0.04799		mg/L		96	72 - 125	0	25
1,2-Dichloroethane	0.0500	0.04800		mg/L		96	68 - 127	0	25
1,1-Dichloroethene	0.0500	0.04905		mg/L		98	59 - 172	1	25
cis-1,2-Dichloroethene	0.0500	0.04693		mg/L		94	75 - 125	1	25
Tetrachloroethene	0.0500	0.04804		mg/L		96	71 - 125	1	25
Trichloroethene	0.0500	0.04728		mg/L		95	62 - 137	1	25
Vinyl chloride	0.0500	0.05103		mg/L		102	60 - 140	2	25

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

Lab Sample ID: LCSD 860-52514/4
Matrix: Water
Analysis Batch: 52514

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

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Dibromofluoromethane (Surr)	*100*		*75 - 131*
Toluene-d8 (Surr)	*100*		*80 - 117*
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*99*		*63 - 144*

Lab Sample ID: 820-4204-B-1 MS
Matrix: Water
Analysis Batch: 52514

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethane	0.000244	U	0.0500	0.04848		mg/L		97	72 - 125
1,2-Dichloroethane	0.000285	U	0.0500	0.04863		mg/L		97	68 - 127
1,1-Dichloroethene	0.000216	U	0.0500	0.04906		mg/L		98	59 - 172
cis-1,2-Dichloroethene	0.000174	U	0.0500	0.04736		mg/L		95	75 - 125
Tetrachloroethene	0.000500	U	0.0500	0.04820		mg/L		96	71 - 125
Trichloroethene	0.000424	U	0.0500	0.04790		mg/L		96	62 - 137
Vinyl chloride	0.000234	U	0.0500	0.05213		mg/L		104	60 - 140

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*100*		*75 - 131*
Toluene-d8 (Surr)	*99*		*80 - 117*
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*96*		*63 - 144*

QC Association Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-25965-1
Project/Site: STC Silber Rd Pre-Design Investigation

GC/MS VOA

Analysis Batch: 52514

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-25965-1	SB07-01-051022	Total/NA	Water	8260C	
860-25965-2	SB08-03-051022	Total/NA	Water	8260C	
860-25965-3	SB08-02-051022	Total/NA	Water	8260C	
860-25965-3 - DL	SB08-02-051022	Total/NA	Water	8260C	
860-25965-4	SB08-01-051022	Total/NA	Water	8260C	
860-25965-4 - DL	SB08-01-051022	Total/NA	Water	8260C	
860-25965-5	FD-01-051022	Total/NA	Water	8260C	
860-25965-6	TB-01-051022	Total/NA	Water	8260C	
MB 860-52514/11	Method Blank	Total/NA	Water	8260C	
LCS 860-52514/3	Lab Control Sample	Total/NA	Water	8260C	
LCSD 860-52514/4	Lab Control Sample Dup	Total/NA	Water	8260C	
820-4204-B-1 MS	Matrix Spike	Total/NA	Water	8260C	

Lab Chronicle

Client: Jacobs Engineering Group, Inc. Job ID: 860-25965-1
Project/Site: STC Silber Rd Pre-Design Investigation

Client Sample ID: SB07-01-051022 — Lab Sample ID: 860-25965-1
Date Collected: 05/10/22 12:50 — **Matrix: Water**
Date Received: 05/11/22 08:11

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	52514	05/11/22 14:15	TTD	XEN STF

Client Sample ID: SB08-03-051022 — Lab Sample ID: 860-25965-2
Date Collected: 05/10/22 16:55 — **Matrix: Water**
Date Received: 05/11/22 08:11

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	52514	05/11/22 13:54	TTD	XEN STF

Client Sample ID: SB08-02-051022 — Lab Sample ID: 860-25965-3
Date Collected: 05/10/22 17:05 — **Matrix: Water**
Date Received: 05/11/22 08:11

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		5	5 mL	5 mL	52514	05/11/22 15:36	TTD	XEN STF
Total/NA	Analysis	8260C	DL	20	5 mL	5 mL	52514	05/11/22 15:57	TTD	XEN STF

Client Sample ID: SB08-01-051022 — Lab Sample ID: 860-25965-4
Date Collected: 05/10/22 17:20 — **Matrix: Water**
Date Received: 05/11/22 08:11

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	52514	05/11/22 14:55	TTD	XEN STF
Total/NA	Analysis	8260C	DL	5	5 mL	5 mL	52514	05/11/22 15:16	TTD	XEN STF

Client Sample ID: FD-01-051022 — Lab Sample ID: 860-25965-5
Date Collected: 05/10/22 00:00 — **Matrix: Water**
Date Received: 05/11/22 08:11

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	52514	05/11/22 14:35	TTD	XEN STF

Client Sample ID: TB-01-051022 — Lab Sample ID: 860-25965-6
Date Collected: 05/10/22 07:45 — **Matrix: Water**
Date Received: 05/11/22 08:11

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	52514	05/11/22 13:33	TTD	XEN STF

Laboratory References:
XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Accreditation/Certification Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-25965-1
Project/Site: STC Silber Rd Pre-Design Investigation

Laboratory: Eurofins Houston

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

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	21-038-0	08-04-22
Florida	NELAP	E871002	06-30-22
Louisiana	NELAP	03054	06-30-22
Oklahoma	State	2021-168	08-31-22
Texas	NELAP	T104704215-21-44	06-30-22
Texas	TCEQ Water Supply	T104704215	06-30-22
USDA	US Federal Programs	P330-22-00025	03-02-23

Method Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-25965-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	XEN STF
5030C	Purge and Trap	SW846	XEN STF

Protocol References:

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

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Sample Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-25965-1
Project/Site: STC Silber Rd Pre-Design Investigation

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
860-25965-1	SB07-01-051022	Water	05/10/22 12:50	05/11/22 08:11
860-25965-2	SB08-03-051022	Water	05/10/22 16:55	05/11/22 08:11
860-25965-3	SB08-02-051022	Water	05/10/22 17:05	05/11/22 08:11
860-25965-4	SB08-01-051022	Water	05/10/22 17:20	05/11/22 08:11
860-25965-5	FD-01-051022	Water	05/10/22 00:00	05/11/22 08:11
860-25965-6	TB-01-051022	Water	05/10/22 07:45	05/11/22 08:11

Appendix A

Laboratory Data Package Cover Page - Page 1 of 4

This data package is for Job No. 860-25965-1 and consists of:

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

- ☑ R1- Field chain-of-custody documentation;
- ☑ R2 - Sample identification cross-reference;
- ☑ R3 - Test reports (analytical data sheets) for each environmental sample that includes:
  a. Items consistent with NELAC Chapter 5,
  b. dilution factors,
  c. prepatation methods,
  d. cleanup methods, and
  e. if required for the project, tentatively identified coumpounds (TICs).
- ☑ R4 - Surrogate recovery data including:
  a. Calculated recovery (%R), and
  b. The laboratory's surrogate QC limits.
- ☑ R5 - Test reports/summary forms for blank samples;
- ☑ R6 - Test reports/summary forms for laboratory control samples (LCSs) including:
  a. LCS spiking amounts,
  b. Calculated %R for each analyte, and
  c. The laboratory's LCS QC limits.
- ☑ R7 - Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a. Samples associated with the MS/MSD clearly identified,
  b. MS/MSD spiking amounts,
  c. Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d. Calculated %Rs and relative percent differences (RPDs), and
  e. The laboratory's MS/MSD QC limits
- ☐ R8 - Laboratory analytical duplicate (if applicable) recovery and precision:
  a. The amount of analyte measured in the duplicate,
  b. The calculated RPD, and
  c. The laboratory's QC limits for analytical duplicates.
- ☑ R9 - List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
- ☑ R10 - Other problems or anomalies.
- ☐ Exception Report for every "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge 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.

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

Name (Printed)	Signature	Official Title (Printed)	Date
Bethany McDaniel	Bethany McDaniel	Senior Project Manager	05/12/2022

Laboratory Data Package Cover Page - Page 2 of 4

Laboratory Name: Eurofins Houston	LRC Date: 05/12/2022
Project Name: STC Silber Rd Pre-Design Investigation	Laboratory Job Number: 860-25965-1
Reviewer Name: Bethany McDaniel	

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
		Were all departures from standard conditions described in an exception report?	✓				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	✓				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	✓				
		Were calculations checked by a peer or supervisor?	✓				
		Were all analyte identifications checked by a peer or supervisor?	✓				
		Were sample detection limits reported for all analytes not detected?	✓				
		Were all results for soil and sediment samples reported on a dry weight basis?			✓		
		Were % moisture (or solids) reported for all soil and sediment samples?			✓		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			✓		
		If required for the project, are TICs reported?			✓		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	✓				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	✓				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	✓				
		Were blanks analyzed at the appropriate frequency?	✓				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
		Were blank concentrations < MQL?	✓				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	✓				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
		Were LCSs analyzed at the required frequency?	✓				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	✓				
		Was the LCSD RPD within QC limits?	✓				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	✓				
		Were MS/MSD analyzed at the appropriate frequency?	✓				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	✓				
		Were MS/MSD RPDs within laboratory QC limits?			✓		
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			✓		
		Were analytical duplicates analyzed at the appropriate frequency?			✓		
		Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	✓				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	✓				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?		✓			1
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	✓				

Laboratory Data Package Cover Page - Page 3 of 4

Laboratory Name: Eurofins Houston	LRC Date: 05/12/2022
Project Name: STC Silber Rd Pre-Design Investigation	Laboratory Job Number: 860-25965-1
Reviewer Name: Bethany McDaniel	

#[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?	✓				
		Were percent RSDs or correlation coefficient criteria met?	✓				
		Was the number of standards recommended in the method used for all analytes?	✓				
		Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
		Are ICAL data available for all instruments used?	✓				
		Has the initial calibration curve been verified using an appropriate second source standard?	✓				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?	✓				
		Were percent differences for each analyte within the method-required QC limits?	✓				
		Was the ICAL curve verified for each analyte?			✓		
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			✓		
S3	O	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?	✓				
		Were ion abundance data within the method-required QC limits?	✓				
S4	O	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?	✓				
S5	OI	**Raw data (NELAC Section 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
		Were data associated with manual integrations flagged on the raw data?	✓				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			✓		
S7	O	**Tentatively identified compounds (TICs)**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
S8	I	**Interference Check Sample (ICS) results**					
		Were percent recoveries within method QC limits?			✓		
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?			✓		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	✓				
		Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
S11	OI	**Proficiency test reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	✓				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	✓				
		Is documentation of the analyst's competency up-to-date and on file?	✓				
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?	✓				
S16	OI	**Laboratory standard operating procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	✓				

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).

Laboratory Data Package Cover Page - Page 4 of 4

Laboratory Name: Eurofins Houston	LRC Date: 05/12/2022
Project Name: STC Silber Rd Pre-Design Investigation	Laboratory Job Number: 860-25965-1
Reviewer Name: Bethany McDaniel	

ER#[1]	Description
1	Method 8260C: The following sample was diluted due to the nature of the sample matrix: SB08-02-051022 (860-25965-3). Elevated reporting limits (RLs) are provided. Method 8260C: The following samples were diluted to bring the concentration of target analytes within the calibration range: SB08-02-051022 (860-25965-3) and SB08-01-051022 (860-25965-4). Elevated reporting limits (RLs) are provided.

1. ER# = Exception Report identification number (an Exception Report should be completed for an item if “NR” or “No” is checked).

Detection Check Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-25965-1
Project/Site: STC Silber Rd Pre-Design Investigation

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Water
Prep Type: Total/NA
Prep Method: 5030C-Purge and Trap
Instrument: A325
Detector: MSD/0
Column: DB-624

Analyte	Spike Added	Result	Qualifier	Unit	RL	MDL	Analysis Date	Analysis Batch
1,1-Dichloroethane	0.00100	0.00483		mg/L	0.00100	0.000244	03/03/2022	860-43530
1,2-Dichloroethane	0.00100	0.00498		mg/L	0.00100	0.000285	03/03/2022	860-43530
1,1-Dichloroethene	0.00100	0.00411		mg/L	0.00100	0.000216	03/03/2022	860-43530
cis-1,2-Dichloroethene	0.00100	0.00499		mg/L	0.00100	0.000174	03/03/2022	860-43530
Tetrachloroethene	0.00100	0.00463		mg/L	0.00100	0.000500	03/03/2022	860-43530
Trichloroethene	0.00100	0.00503		mg/L	0.00500	0.000424	03/03/2022	860-43530
Vinyl chloride	0.00100	0.00381		mg/L	0.00200	0.000234	03/03/2022	860-43530

Eurofins Xenco, Stafford
4145 Greenbriar Dr
Stafford TX 77477
Phone (261) 240-4200

Chain of Custody Record

eurofins | Environment Testing America

Client Information	Sampler	Lab PM: McDaniel, Bethany A	Carrier Tracking No(s):	COC No: 860-6507-2299.1
Client Contact: John Ynfante	Phone:	E-Mail: Bethany.McDaniel@Eurofinset.com	State of Origin:	Page: Page 1 of 1
Company: Jacobs Engineering Group, Inc.	PWSID:	Analysis Requested		Job #:
Address: 14701 St. Mary's Lane Suite 300	Due Date Requested:			Preservation Codes:
City: Houston	TAT Requested (days): 1 day RUSH			A HCL M Hexane B NaOH N None C Zn Acetate O AsNaO2 D Nitric Acid P Na2O4S E NaHSO4 Q Na2SO3 F MeOH R Na2S2O3 G Amchlor S H2SO4 H Ascorbic Acid T TSP Dodecahydrate I Ice U Acetone J DI Water V MCAA K EDTA W pH 4-5 L EDA Z other (specify) Other:
State, Zip: TX, 77079	Compliance Project: Δ Yes Δ No			
Phone:	PO #:			
Email: John.Ynfante@jacobs.com	WO #:			
Project Name: STC Silber Road Pre-Design Investigation	Project #: 86002024			
Site:	SSOW#:			

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)	8260B (MOD) VOCs Custom List (7)	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A		
SB07-01-051022	5/10/22	1250	G	Water			X	3	
SB08-03-051022	5/10/22	1655	G	Water			X	3	
SB08-02-051022	5/10/22	1705	G	Water			X	3	
SB08-01-051022	5/10/22	1720	G	Water			X	3	
FD-01-051022	5/10/22	NG	G	Water			X	3	
TB-01-051022	5/10/22	0745		Water			X	2	
				Water					
				Water					
				Water					
				Water					
				Water					

860-25985 Chain of Custody

Temp. 37 IR ID HOU-323
C/F: -0 9
Corrected Temp. 28

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) TRRP

Special Instructions/QC Requirements:

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

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	5/11/22 0811			5/11/22 0811	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

Ver 01/16/2019

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc.

Job Number: 860-25965-1

Login Number: 25965
List Number: 1
Creator: Rubio, Yuri

List Source: Eurofins Houston

Question	Answer	Comment
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 (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Houston
4145 Greenbriar Dr
Stafford, TX 77477
Tel: (281)240-4200

Laboratory Job ID: 860-26040-1
Client Project/Site: STC Silber Rd Pre-Design Investigation

For:
Jacobs Engineering Group, Inc.
12750 Merit Drive
Suite 1100
Dallas, Texas 75251

Attn: John Knott

Bethany McDaniel

Authorized for release by:
5/13/2022 10:34:44 AM

Bethany McDaniel, Senior Project Manager
(713)358-2005
Bethany.McDaniel@et.eurofinsus.com

Table of Contents

Definitions/Glossary

Client: Jacobs Engineering Group, Inc. Job ID: 860-26040-1
Project/Site: STC Silber Rd Pre-Design Investigation

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the MQL but greater than or equal to the SDL and the concentration is an estimated value.
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
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Jacobs Engineering Group, Inc. Job ID: 860-26040-1
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-26040-1

Laboratory: Eurofins Houston

Narrative

Job Narrative
860-26040-1

Receipt
The samples were received on 5/12/2022 8:10 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.6°C

Detection Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-26040-1

Client Sample ID: SB04-03-051122 — Lab Sample ID: 860-26040-1

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.0168		0.00100	0.000244	mg/L	1		8260C	Total/NA
1,1-Dichloroethene	0.0284		0.00100	0.000216	mg/L	1		8260C	Total/NA
cis-1,2-Dichloroethene	0.00224		0.00100	0.000174	mg/L	1		8260C	Total/NA
Vinyl chloride	0.00140	J	0.00200	0.000234	mg/L	1		8260C	Total/NA

Client Sample ID: SB04-02-051122 — Lab Sample ID: 860-26040-2

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.00748		0.00100	0.000244	mg/L	1		8260C	Total/NA
1,1-Dichloroethene	0.00636		0.00100	0.000216	mg/L	1		8260C	Total/NA
cis-1,2-Dichloroethene	0.00145		0.00100	0.000174	mg/L	1		8260C	Total/NA
Vinyl chloride	0.000604	J	0.00200	0.000234	mg/L	1		8260C	Total/NA

Client Sample ID: SB04-01-051122 — Lab Sample ID: 860-26040-3

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.00694		0.00100	0.000244	mg/L	1		8260C	Total/NA
1,1-Dichloroethene	0.00449		0.00100	0.000216	mg/L	1		8260C	Total/NA
cis-1,2-Dichloroethene	0.00221		0.00100	0.000174	mg/L	1		8260C	Total/NA
Vinyl chloride	0.00357		0.00200	0.000234	mg/L	1		8260C	Total/NA

Client Sample ID: SB06-03-051122 — Lab Sample ID: 860-26040-4

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.0258		0.00100	0.000244	mg/L	1		8260C	Total/NA
1,1-Dichloroethene	0.0130		0.00100	0.000216	mg/L	1		8260C	Total/NA
cis-1,2-Dichloroethene	0.000355	J	0.00100	0.000174	mg/L	1		8260C	Total/NA
Vinyl chloride	0.00298		0.00200	0.000234	mg/L	1		8260C	Total/NA

Client Sample ID: SB06-02-051122 — Lab Sample ID: 860-26040-5

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethene	0.000805	J	0.00100	0.000216	mg/L	1		8260C	Total/NA

Client Sample ID: SB06-01-051122 — Lab Sample ID: 860-26040-6

No Detections.

Client Sample ID: EB-01-051122 — Lab Sample ID: 860-26040-7

No Detections.

Client Sample ID: TB-01-051122 — Lab Sample ID: 860-26040-8

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Houston

Client Sample ID: SB04-03-051122 — Lab Sample ID: 860-26040-1

Date Collected: 05/11/22 11:35 — **Matrix: Water**
Date Received: 05/12/22 08:10

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	**0.0168**		0.00100	0.000244	mg/L			05/12/22 16:54	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/12/22 16:54	1
1,1-Dichloroethene	**0.0284**		0.00100	0.000216	mg/L			05/12/22 16:54	1
cis-1,2-Dichloroethene	**0.00224**		0.00100	0.000174	mg/L			05/12/22 16:54	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/12/22 16:54	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/12/22 16:54	1
Vinyl chloride	**0.00140**	**J**	0.00200	0.000234	mg/L			05/12/22 16:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*100*		*75 - 131*		*05/12/22 16:54*	*1*
Toluene-d8 (Surr)	*100*		*80 - 117*		*05/12/22 16:54*	*1*
4-Bromofluorobenzene (Surr)	*100*		*74 - 124*		*05/12/22 16:54*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*63 - 144*		*05/12/22 16:54*	*1*

Client Sample ID: SB04-02-051122 — Lab Sample ID: 860-26040-2

Date Collected: 05/11/22 11:45 — **Matrix: Water**
Date Received: 05/12/22 08:10

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	**0.00748**		0.00100	0.000244	mg/L			05/12/22 17:14	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/12/22 17:14	1
1,1-Dichloroethene	**0.00636**		0.00100	0.000216	mg/L			05/12/22 17:14	1
cis-1,2-Dichloroethene	**0.00145**		0.00100	0.000174	mg/L			05/12/22 17:14	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/12/22 17:14	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/12/22 17:14	1
Vinyl chloride	**0.000604**	**J**	0.00200	0.000234	mg/L			05/12/22 17:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*101*		*75 - 131*		*05/12/22 17:14*	*1*
Toluene-d8 (Surr)	*100*		*80 - 117*		*05/12/22 17:14*	*1*
4-Bromofluorobenzene (Surr)	*101*		*74 - 124*		*05/12/22 17:14*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*63 - 144*		*05/12/22 17:14*	*1*

Client Sample ID: SB04-01-051122 — Lab Sample ID: 860-26040-3

Date Collected: 05/11/22 11:55 — **Matrix: Water**
Date Received: 05/12/22 08:10

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	**0.00694**		0.00100	0.000244	mg/L			05/12/22 17:35	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/12/22 17:35	1
1,1-Dichloroethene	**0.00449**		0.00100	0.000216	mg/L			05/12/22 17:35	1
cis-1,2-Dichloroethene	**0.00221**		0.00100	0.000174	mg/L			05/12/22 17:35	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/12/22 17:35	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/12/22 17:35	1
Vinyl chloride	**0.00357**		0.00200	0.000234	mg/L			05/12/22 17:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*100*		*75 - 131*		*05/12/22 17:35*	*1*
Toluene-d8 (Surr)	*99*		*80 - 117*		*05/12/22 17:35*	*1*

Client Sample ID: SB04-01-051122 — Lab Sample ID: 860-26040-3

Date Collected: 05/11/22 11:55 — **Matrix: Water**
Date Received: 05/12/22 08:10

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*100*		*74 - 124*		*05/12/22 17:35*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*63 - 144*		*05/12/22 17:35*	*1*

Client Sample ID: SB06-03-051122 — Lab Sample ID: 860-26040-4

Date Collected: 05/11/22 16:15 — **Matrix: Water**
Date Received: 05/12/22 08:10

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	**0.0258**		0.00100	0.000244	mg/L			05/12/22 17:55	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/12/22 17:55	1
1,1-Dichloroethene	**0.0130**		0.00100	0.000216	mg/L			05/12/22 17:55	1
cis-1,2-Dichloroethene	**0.000355**	**J**	0.00100	0.000174	mg/L			05/12/22 17:55	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/12/22 17:55	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/12/22 17:55	1
Vinyl chloride	**0.00298**		0.00200	0.000234	mg/L			05/12/22 17:55	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	*100*		*75 - 131*		*05/12/22 17:55*	*1*
Toluene-d8 (Surr)	*101*		*80 - 117*		*05/12/22 17:55*	*1*
4-Bromofluorobenzene (Surr)	*102*		*74 - 124*		*05/12/22 17:55*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*63 - 144*		*05/12/22 17:55*	*1*

Client Sample ID: SB06-02-051122 — Lab Sample ID: 860-26040-5

Date Collected: 05/11/22 16:45 — **Matrix: Water**
Date Received: 05/12/22 08:10

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/12/22 18:16	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/12/22 18:16	1
1,1-Dichloroethene	**0.000805**	**J**	0.00100	0.000216	mg/L			05/12/22 18:16	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/12/22 18:16	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/12/22 18:16	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/12/22 18:16	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/12/22 18:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	*99*		*75 - 131*		*05/12/22 18:16*	*1*
Toluene-d8 (Surr)	*98*		*80 - 117*		*05/12/22 18:16*	*1*
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*		*05/12/22 18:16*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*63 - 144*		*05/12/22 18:16*	*1*

Client Sample ID: SB06-01-051122 — Lab Sample ID: 860-26040-6

Date Collected: 05/11/22 16:55 — **Matrix: Water**
Date Received: 05/12/22 08:10

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/12/22 18:36	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/12/22 18:36	1

Client Sample ID: SB06-01-051122 — Lab Sample ID: 860-26040-6

Date Collected: 05/11/22 16:55 — **Matrix: Water**
Date Received: 05/12/22 08:10

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

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/12/22 18:36	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/12/22 18:36	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/12/22 18:36	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/12/22 18:36	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/12/22 18:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*98*		*75 - 131*		*05/12/22 18:36*	*1*
Toluene-d8 (Surr)	*99*		*80 - 117*		*05/12/22 18:36*	*1*
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*		*05/12/22 18:36*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*63 - 144*		*05/12/22 18:36*	*1*

Client Sample ID: EB-01-051122 — Lab Sample ID: 860-26040-7

Date Collected: 05/11/22 08:10 — **Matrix: Water**
Date Received: 05/12/22 08:10

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/12/22 13:29	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/12/22 13:29	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/12/22 13:29	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/12/22 13:29	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/12/22 13:29	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/12/22 13:29	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/12/22 13:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*98*		*75 - 131*		*05/12/22 13:29*	*1*
Toluene-d8 (Surr)	*102*		*80 - 117*		*05/12/22 13:29*	*1*
4-Bromofluorobenzene (Surr)	*101*		*74 - 124*		*05/12/22 13:29*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*63 - 144*		*05/12/22 13:29*	*1*

Client Sample ID: TB-01-051122 — Lab Sample ID: 860-26040-8

Date Collected: 05/11/22 07:45 — **Matrix: Water**
Date Received: 05/12/22 08:10

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/12/22 13:08	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/12/22 13:08	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/12/22 13:08	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/12/22 13:08	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/12/22 13:08	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/12/22 13:08	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/12/22 13:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*99*		*75 - 131*		*05/12/22 13:08*	*1*
Toluene-d8 (Surr)	*101*		*80 - 117*		*05/12/22 13:08*	*1*
4-Bromofluorobenzene (Surr)	*100*		*74 - 124*		*05/12/22 13:08*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*63 - 144*		*05/12/22 13:08*	*1*

Unadjusted Detection Limits

Client: Jacobs Engineering Group, Inc.
Job ID: 860-26040-1
Project/Site: STC Silber Rd Pre-Design Investigation

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	MQL	MDL	Units
1,1-Dichloroethane	0.00100	0.000244	mg/L
1,1-Dichloroethene	0.00100	0.000216	mg/L
1,2-Dichloroethane	0.00100	0.000285	mg/L
cis-1,2-Dichloroethene	0.00100	0.000174	mg/L
Tetrachloroethene	0.00100	0.000500	mg/L
Trichloroethene	0.00500	0.000424	mg/L
Vinyl chloride	0.00200	0.000234	mg/L

Surrogate Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-26040-1

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DBFM	TOL	BFB	DCA
Lab Sample ID	Client Sample ID	(75-131)	(80-117)	(74-124)	(63-144)
860-25835-J-40 MS	Matrix Spike	103	98	100	103
860-26040-1	SB04-03-051122	100	100	100	101
860-26040-2	SB04-02-051122	101	100	101	102
860-26040-3	SB04-01-051122	100	99	100	101
860-26040-4	SB06-03-051122	100	101	102	104
860-26040-5	SB06-02-051122	99	98	99	104
860-26040-6	SB06-01-051122	98	99	99	100
860-26040-7	EB-01-051122	98	102	101	103
860-26040-8	TB-01-051122	99	101	100	102
LCS 860-52599/3	Lab Control Sample	103	98	100	102
LCSD 860-52599/4	Lab Control Sample Dup	101	98	99	101
MB 860-52599/11	Method Blank	100	100	99	102

Surrogate Legend

DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 860-52599/11 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 52599

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/12/22 12:07	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/12/22 12:07	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/12/22 12:07	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/12/22 12:07	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/12/22 12:07	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/12/22 12:07	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/12/22 12:07	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*100*		*75 - 131*		*05/12/22 12:07*	*1*
Toluene-d8 (Surr)	*100*		*80 - 117*		*05/12/22 12:07*	*1*
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*		*05/12/22 12:07*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*63 - 144*		*05/12/22 12:07*	*1*

Lab Sample ID: LCS 860-52599/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 52599

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethane	0.0500	0.05692		mg/L		114	72 - 125
1,2-Dichloroethane	0.0500	0.05813		mg/L		116	68 - 127
1,1-Dichloroethene	0.0500	0.05711		mg/L		114	59 - 172
cis-1,2-Dichloroethene	0.0500	0.05650		mg/L		113	75 - 125
Tetrachloroethene	0.0500	0.05525		mg/L		110	71 - 125
Trichloroethene	0.0500	0.05604		mg/L		112	62 - 137
Vinyl chloride	0.0500	0.05740		mg/L		115	60 - 140

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*103*		*75 - 131*
Toluene-d8 (Surr)	*98*		*80 - 117*
4-Bromofluorobenzene (Surr)	*100*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*102*		*63 - 144*

Lab Sample ID: LCSD 860-52599/4 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 52599

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethane	0.0500	0.05177		mg/L		104	72 - 125	9	25
1,2-Dichloroethane	0.0500	0.05382		mg/L		108	68 - 127	8	25
1,1-Dichloroethene	0.0500	0.05081		mg/L		102	59 - 172	12	25
cis-1,2-Dichloroethene	0.0500	0.05149		mg/L		103	75 - 125	9	25
Tetrachloroethene	0.0500	0.05039		mg/L		101	71 - 125	9	25
Trichloroethene	0.0500	0.04995		mg/L		100	62 - 137	11	25
Vinyl chloride	0.0500	0.05015		mg/L		100	60 - 140	13	25

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

Lab Sample ID: LCSD 860-52599/4 **Client Sample ID: Lab Control Sample Dup**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 52599

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Dibromofluoromethane (Surr)	*101*		*75 - 131*
Toluene-d8 (Surr)	*98*		*80 - 117*
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*101*		*63 - 144*

Lab Sample ID: 860-25835-J-40 MS **Client Sample ID: Matrix Spike**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 52599

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethane	0.000244	U	0.0500	0.04432		mg/L		89	72 - 125
1,2-Dichloroethane	0.000285	U	0.0500	0.04412		mg/L		88	68 - 127
1,1-Dichloroethene	0.000216	U	0.0500	0.04373		mg/L		87	59 - 172
cis-1,2-Dichloroethene	0.000174	U	0.0500	0.04284		mg/L		86	75 - 125
Tetrachloroethene	0.000500	U	0.0500	0.04386		mg/L		88	71 - 125
Trichloroethene	0.000424	U	0.0500	0.04274		mg/L		85	62 - 137
Vinyl chloride	0.000234	U	0.0500	0.04934		mg/L		99	60 - 140

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*103*		*75 - 131*
Toluene-d8 (Surr)	*98*		*80 - 117*
4-Bromofluorobenzene (Surr)	*100*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*103*		*63 - 144*

QC Association Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-26040-1
Project/Site: STC Silber Rd Pre-Design Investigation

GC/MS VOA

Analysis Batch: 52599

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-26040-1	SB04-03-051122	Total/NA	Water	8260C	
860-26040-2	SB04-02-051122	Total/NA	Water	8260C	
860-26040-3	SB04-01-051122	Total/NA	Water	8260C	
860-26040-4	SB06-03-051122	Total/NA	Water	8260C	
860-26040-5	SB06-02-051122	Total/NA	Water	8260C	
860-26040-6	SB06-01-051122	Total/NA	Water	8260C	
860-26040-7	EB-01-051122	Total/NA	Water	8260C	
860-26040-8	TB-01-051122	Total/NA	Water	8260C	
MB 860-52599/11	Method Blank	Total/NA	Water	8260C	
LCS 860-52599/3	Lab Control Sample	Total/NA	Water	8260C	
LCSD 860-52599/4	Lab Control Sample Dup	Total/NA	Water	8260C	
860-25835-J-40 MS	Matrix Spike	Total/NA	Water	8260C	

Lab Chronicle

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-26040-1

Client Sample ID: SB04-03-051122
Date Collected: 05/11/22 11:35
Date Received: 05/12/22 08:10

Lab Sample ID: 860-26040-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	52599	05/12/22 16:54	A1S	XEN STF

Client Sample ID: SB04-02-051122
Date Collected: 05/11/22 11:45
Date Received: 05/12/22 08:10

Lab Sample ID: 860-26040-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	52599	05/12/22 17:14	A1S	XEN STF

Client Sample ID: SB04-01-051122
Date Collected: 05/11/22 11:55
Date Received: 05/12/22 08:10

Lab Sample ID: 860-26040-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	52599	05/12/22 17:35	A1S	XEN STF

Client Sample ID: SB06-03-051122
Date Collected: 05/11/22 16:15
Date Received: 05/12/22 08:10

Lab Sample ID: 860-26040-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	52599	05/12/22 17:55	A1S	XEN STF

Client Sample ID: SB06-02-051122
Date Collected: 05/11/22 16:45
Date Received: 05/12/22 08:10

Lab Sample ID: 860-26040-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	52599	05/12/22 18:16	A1S	XEN STF

Client Sample ID: SB06-01-051122
Date Collected: 05/11/22 16:55
Date Received: 05/12/22 08:10

Lab Sample ID: 860-26040-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	52599	05/12/22 18:36	A1S	XEN STF

Client Sample ID: EB-01-051122
Date Collected: 05/11/22 08:10
Date Received: 05/12/22 08:10

Lab Sample ID: 860-26040-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	52599	05/12/22 13:29	A1S	XEN STF

Lab Chronicle

Client: Jacobs Engineering Group, Inc.
Job ID: 860-26040-1
Project/Site: STC Silber Rd Pre-Design Investigation

Client Sample ID: TB-01-051122
Lab Sample ID: 860-26040-8

Date Collected: 05/11/22 07:45
Matrix: Water

Date Received: 05/12/22 08:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	52599	05/12/22 13:08	A1S	XEN STF

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Accreditation/Certification Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-26040-1
Project/Site: STC Silber Rd Pre-Design Investigation

Laboratory: Eurofins Houston

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

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	21-038-0	08-04-22
Florida	NELAP	E871002	06-30-22
Louisiana	NELAP	03054	06-30-22
Oklahoma	State	2021-168	08-31-22
Texas	NELAP	T104704215-21-44	06-30-22
Texas	TCEQ Water Supply	T104704215	06-30-22
USDA	US Federal Programs	P330-22-00025	03-02-23

Method Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-26040-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	XEN STF
5030C	Purge and Trap	SW846	XEN STF

Protocol References:

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

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Sample Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-26040-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
860-26040-1	SB04-03-051122	Water	05/11/22 11:35	05/12/22 08:10
860-26040-2	SB04-02-051122	Water	05/11/22 11:45	05/12/22 08:10
860-26040-3	SB04-01-051122	Water	05/11/22 11:55	05/12/22 08:10
860-26040-4	SB06-03-051122	Water	05/11/22 16:15	05/12/22 08:10
860-26040-5	SB06-02-051122	Water	05/11/22 16:45	05/12/22 08:10
860-26040-6	SB06-01-051122	Water	05/11/22 16:55	05/12/22 08:10
860-26040-7	EB-01-051122	Water	05/11/22 08:10	05/12/22 08:10
860-26040-8	TB-01-051122	Water	05/11/22 07:45	05/12/22 08:10

Appendix A

Laboratory Data Package Cover Page - Page 1 of 4

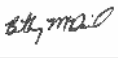
This data package is for Job No. 860-26040-1 and consists of:

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

- ☑ R1- Field chain-of-custody documentation;
- ☑ R2 - Sample identification cross-reference;
- ☑ R3 - Test reports (analytical data sheets) for each environmental sample that includes:
  a. Items consistent with NELAC Chapter 5,
  b. dilution factors,
  c. prepatation methods,
  d. cleanup methods, and
  e. if required for the project, tentatively identified coumpounds (TICs).
- ☑ R4 - Surrogate recovery data including:
  a. Calculated recovery (%R), and
  b. The laboratory's surrogate QC limits.
- ☑ R5 - Test reports/summary forms for blank samples;
- ☑ R6 - Test reports/summary forms for laboratory control samples (LCSs) including:
  a. LCS spiking amounts,
  b. Calculated %R for each analyte, and
  c. The laboratory's LCS QC limits.
- ☑ R7 - Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a. Samples associated with the MS/MSD clearly identified,
  b. MS/MSD spiking amounts,
  c. Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d. Calculated %Rs and relative percent differences (RPDs), and
  e. The laboratory's MS/MSD QC limits
- ☐ R8 - Laboratory analytical duplicate (if applicable) recovery and precision:
  a. The amount of analyte measured in the duplicate,
  b. The calculated RPD, and
  c. The laboratory's QC limits for analytical duplicates.
- ☑ R9 - List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
- ☑ R10 - Other problems or anomalies.
- ☐ Exception Report for every "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge 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.

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

Name (Printed)	Signature	Official Title (Printed)	Date
Bethany McDaniel		Senior Project Manager	05/13/2022

Laboratory Data Package Cover Page - Page 2 of 4

Laboratory Name: Eurofins Houston	LRC Date: 05/13/2022
Project Name: STC Silber Rd Pre-Design Investigation	Laboratory Job Number: 860-26040-1
Reviewer Name: Bethany McDaniel	

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
		Were all departures from standard conditions described in an exception report?	✓				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	✓				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	✓				
		Were calculations checked by a peer or supervisor?	✓				
		Were all analyte identifications checked by a peer or supervisor?	✓				
		Were sample detection limits reported for all analytes not detected?	✓				
		Were all results for soil and sediment samples reported on a dry weight basis?			✓		
		Were % moisture (or solids) reported for all soil and sediment samples?			✓		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			✓		
		If required for the project, are TICs reported?			✓		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	✓				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	✓				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	✓				
		Were blanks analyzed at the appropriate frequency?	✓				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
		Were blank concentrations < MQL?	✓				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	✓				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
		Were LCSs analyzed at the required frequency?	✓				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	✓				
		Was the LCSD RPD within QC limits?	✓				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	✓				
		Were MS/MSD analyzed at the appropriate frequency?	✓				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	✓				
		Were MS/MSD RPDs within laboratory QC limits?			✓		
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			✓		
		Were analytical duplicates analyzed at the appropriate frequency?			✓		
		Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	✓				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	✓				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	✓				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	✓				

Laboratory Data Package Cover Page - Page 3 of 4

Laboratory Name: Eurofins Houston	LRC Date: 05/13/2022
Project Name: STC Silber Rd Pre-Design Investigation	Laboratory Job Number: 860-26040-1
Reviewer Name: Bethany McDaniel	

#[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?	✓				
		Were percent RSDs or correlation coefficient criteria met?	✓				
		Was the number of standards recommended in the method used for all analytes?	✓				
		Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
		Are ICAL data available for all instruments used?	✓				
		Has the initial calibration curve been verified using an appropriate second source standard?	✓				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?	✓				
		Were percent differences for each analyte within the method-required QC limits?	✓				
		Was the ICAL curve verified for each analyte?	✓				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			✓		
S3	O	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?	✓				
		Were ion abundance data within the method-required QC limits?	✓				
S4	O	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?	✓				
S5	OI	**Raw data (NELAC Section 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
		Were data associated with manual integrations flagged on the raw data?	✓				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			✓		
S7	O	**Tentatively identified compounds (TICs)**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
S8	I	**Interference Check Sample (ICS) results**					
		Were percent recoveries within method QC limits?			✓		
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?			✓		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	✓				
		Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
S11	OI	**Proficiency test reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	✓				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	✓				
		Is documentation of the analyst's competency up-to-date and on file?	✓				
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?	✓				
S16	OI	**Laboratory standard operating procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	✓				

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).

Laboratory Data Package Cover Page - Page 4 of 4

Laboratory Name: Eurofins Houston	LRC Date: 05/13/2022
Project Name: STC Silber Rd Pre-Design Investigation	Laboratory Job Number: 860-26040-1
Reviewer Name: Bethany McDaniel	

ER#[1]	Description
	No Exceptions

1. ER# = Exception Report identification number (an Exception Report should be completed for an item if “NR” or “No” is checked).

Detection Check Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-26040-1
Project/Site: STC Silber Rd Pre-Design Investigation

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Water
Prep Type: Total/NA
Prep Method: 5030C-Purge and Trap
Instrument: A325
Detector: MSD/0
Column: DB-624

Analyte	Spike Added	Result	Qualifier	Unit	RL	MDL	Analysis Date	Analysis Batch
1,1-Dichloroethane	0.00100	0.00483		mg/L	0.00100	0.000244	03/03/2022	860-43530
1,2-Dichloroethane	0.00100	0.00498		mg/L	0.00100	0.000285	03/03/2022	860-43530
1,1-Dichloroethene	0.00100	0.00411		mg/L	0.00100	0.000216	03/03/2022	860-43530
cis-1,2-Dichloroethene	0.00100	0.00499		mg/L	0.00100	0.000174	03/03/2022	860-43530
Tetrachloroethene	0.00100	0.00463		mg/L	0.00100	0.000500	03/03/2022	860-43530
Trichloroethene	0.00100	0.00503		mg/L	0.00500	0.000424	03/03/2022	860-43530
Vinyl chloride	0.00100	0.00381		mg/L	0.00200	0.000234	03/03/2022	860-43530

Eurofins Xenco, Stafford
4145 Greenbriar Dr
Stafford TX 77477
Phone (281) 240-4200

Chain of Custody Record

eurofins | Environment Testing America

Client Information	Sampler	Lab PM: McDaniel Bethany A	Carrier Tracking No(s):	COC No: 860-6507-2299.1
Client Contact: John Ynfante	Phone:	E-Mail: Bethany.McDaniel@Eurofinset.com	State of Origin:	Page: Page 1 of 1
Company: Jacobs Engineering Group Inc.	PWSID:			Job #:
Address: 14701 St. Mary's Lane Suite 300	Due Date Requested:			
City: Houston	TAT Requested (days): 1 day RUSH			
State, Zip: TX, 77079	Compliance Project: Δ Yes Δ No			
Phone:	PO #:			
Email: John.Ynfante@jacobs.com	WO #:			
Project Name: STC Silber Road Pre-Design Investigation	Project #: 86002024			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification	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)	8260B (MOD) VOCs Custom List (7)	Total Number of containers	Special Instructions/Note:
			Preservation Code:			A		
SB04-03-051122	5/11/22	1135	G	Water		X	3	
SB04-02-051122	5/11/22	1145	G	Water		X	3	
SB04-01-051122	5/11/22	1155	G	Water		X	3	
SB06-03-051122	5/11/22	1615	G	Water		X	3	
SB06-02-051122	5/11/22	1645	G	Water		X	3	
SB06-01-051122	5/11/22	1655	G	Water		X	3	
EB-01-051122	5/11/22	0810	G	Water		X	3	
TB-01-051122	5/11/22	0745		Water		X	2	
				Water				
				Water				
				Water				

860-26040 Chain of Custody

Temp: 1.5 IR ID HOU-323
C/F -0.9
Corrected Temp: 0.6

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) TRRP

Special Instructions/QC Requirements:

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

Relinquished by:	Date/Time: 5/12/22 0808	Company	Received by:	Date/Time: 5/12/22 8:10	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: 1.5

Ver 01/16/2019

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc.

Job Number: 860-26040-1

Login Number: 26040
List Number: 1
Creator: Rubio, Yuri

List Source: Eurofins Houston

Question	Answer	Comment
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 (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Houston
4145 Greenbriar Dr
Stafford, TX 77477
Tel: (281)240-4200

Laboratory Job ID: 860-26137-1
Client Project/Site: STC Silber Rd Pre-Design Investigation

For:
Jacobs Engineering Group, Inc.
12750 Merit Drive
Suite 1100
Dallas, Texas 75251

Attn: John Knott

Bethany McDaniel

Authorized for release by:
5/16/2022 11:33:00 AM

Bethany McDaniel, Senior Project Manager
(713)358-2005
Bethany.McDaniel@et.eurofinsus.com

Table of Contents

Definitions/Glossary

Client: Jacobs Engineering Group, Inc. Job ID: 860-26137-1
Project/Site: STC Silber Rd Pre-Design Investigation

Qualifiers

GC/MS 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
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 860-26137-1

Laboratory: Eurofins Houston

Narrative

Job Narrative
860-26137-1

Comments
No additional comments.

Receipt
The samples were received on 5/13/2022 8:13 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 0.7º C.

Detection Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-26137-1
Project/Site: STC Silber Rd Pre-Design Investigation

Client Sample ID: SB02-03-051222 Lab Sample ID: 860-26137-1

No Detections.

Client Sample ID: FD-01-051222 Lab Sample ID: 860-26137-2

No Detections.

Client Sample ID: TB-01-051222 Lab Sample ID: 860-26137-3

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: SB02-03-051222 — Lab Sample ID: 860-26137-1

Date Collected: 05/12/22 11:10 — **Matrix: Water**
Date Received: 05/13/22 08:13

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/13/22 15:16	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/13/22 15:16	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/13/22 15:16	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/13/22 15:16	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/13/22 15:16	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/13/22 15:16	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/13/22 15:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*102*		*75 - 131*		*05/13/22 15:16*	*1*
Toluene-d8 (Surr)	*99*		*80 - 117*		*05/13/22 15:16*	*1*
4-Bromofluorobenzene (Surr)	*98*		*74 - 124*		*05/13/22 15:16*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*63 - 144*		*05/13/22 15:16*	*1*

Client Sample ID: FD-01-051222 — Lab Sample ID: 860-26137-2

Date Collected: 05/12/22 00:00 — **Matrix: Water**
Date Received: 05/13/22 08:13

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/13/22 15:36	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/13/22 15:36	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/13/22 15:36	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/13/22 15:36	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/13/22 15:36	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/13/22 15:36	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/13/22 15:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*101*		*75 - 131*		*05/13/22 15:36*	*1*
Toluene-d8 (Surr)	*99*		*80 - 117*		*05/13/22 15:36*	*1*
4-Bromofluorobenzene (Surr)	*98*		*74 - 124*		*05/13/22 15:36*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*63 - 144*		*05/13/22 15:36*	*1*

Client Sample ID: TB-01-051222 — Lab Sample ID: 860-26137-3

Date Collected: 05/12/22 07:35 — **Matrix: Water**
Date Received: 05/13/22 08:13

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/13/22 12:29	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/13/22 12:29	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/13/22 12:29	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/13/22 12:29	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/13/22 12:29	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/13/22 12:29	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/13/22 12:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*97*		*75 - 131*		*05/13/22 12:29*	*1*
Toluene-d8 (Surr)	*102*		*80 - 117*		*05/13/22 12:29*	*1*

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-26137-1

Client Sample ID: TB-01-051222
Date Collected: 05/12/22 07:35
Date Received: 05/13/22 08:13

Lab Sample ID: 860-26137-3
Matrix: Water

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	100		74 - 124		05/13/22 12:29	1
1,2-Dichloroethane-d4 (Surr)	96		63 - 144		05/13/22 12:29	1

Unadjusted Detection Limits

Client: Jacobs Engineering Group, Inc.
Job ID: 860-26137-1
Project/Site: STC Silber Rd Pre-Design Investigation

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	MQL	MDL	Units
1,1-Dichloroethane	0.00100	0.000244	mg/L
1,1-Dichloroethene	0.00100	0.000216	mg/L
1,2-Dichloroethane	0.00100	0.000285	mg/L
cis-1,2-Dichloroethene	0.00100	0.000174	mg/L
Tetrachloroethene	0.00100	0.000500	mg/L
Trichloroethene	0.00500	0.000424	mg/L
Vinyl chloride	0.00200	0.000234	mg/L

Surrogate Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-26137-1

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DBFM	TOL	BFB	DCA
Lab Sample ID	Client Sample ID	(75-131)	(80-117)	(74-124)	(63-144)
860-26035-B-2 MS	Matrix Spike	102	98	97	97
860-26035-B-2 MSD	Matrix Spike Duplicate	102	99	98	94
860-26137-1	SB02-03-051222	102	99	98	100
860-26137-2	FD-01-051222	101	99	98	99
860-26137-3	TB-01-051222	97	102	100	96
LCS 860-52790/3	Lab Control Sample	102	97	97	97
LCSD 860-52790/4	Lab Control Sample Dup	100	101	99	97
MB 860-52790/10	Method Blank	99	101	100	95

Surrogate Legend

DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 860-52790/10
Matrix: Water
Analysis Batch: 52790

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

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/13/22 12:08	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/13/22 12:08	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/13/22 12:08	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/13/22 12:08	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/13/22 12:08	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/13/22 12:08	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/13/22 12:08	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*99*		*75 - 131*		*05/13/22 12:08*	*1*
Toluene-d8 (Surr)	*101*		*80 - 117*		*05/13/22 12:08*	*1*
4-Bromofluorobenzene (Surr)	*100*		*74 - 124*		*05/13/22 12:08*	*1*
1,2-Dichloroethane-d4 (Surr)	*95*		*63 - 144*		*05/13/22 12:08*	*1*

Lab Sample ID: LCS 860-52790/3
Matrix: Water
Analysis Batch: 52790

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethane			0.0500	0.04942		mg/L		99	72 - 125		
1,2-Dichloroethane			0.0500	0.04730		mg/L		95	68 - 127		
1,1-Dichloroethene			0.0500	0.05117		mg/L		102	59 - 172		
cis-1,2-Dichloroethene			0.0500	0.04880		mg/L		98	75 - 125		
Tetrachloroethene			0.0500	0.04918		mg/L		98	71 - 125		
Trichloroethene			0.0500	0.04863		mg/L		97	62 - 137		
Vinyl chloride			0.0500	0.05428		mg/L		109	60 - 140		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*102*		*75 - 131*
Toluene-d8 (Surr)	*97*		*80 - 117*
4-Bromofluorobenzene (Surr)	*97*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*97*		*63 - 144*

Lab Sample ID: LCSD 860-52790/4
Matrix: Water
Analysis Batch: 52790

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethane			0.0500	0.04494		mg/L		90	72 - 125	10	25
1,2-Dichloroethane			0.0500	0.04575		mg/L		91	68 - 127	3	25
1,1-Dichloroethene			0.0500	0.04492		mg/L		90	59 - 172	13	25
cis-1,2-Dichloroethene			0.0500	0.04451		mg/L		89	75 - 125	9	25
Tetrachloroethene			0.0500	0.04665		mg/L		93	71 - 125	5	25
Trichloroethene			0.0500	0.04539		mg/L		91	62 - 137	7	25
Vinyl chloride			0.0500	0.04659		mg/L		93	60 - 140	15	25

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

Lab Sample ID: LCSD 860-52790/4
Matrix: Water
Analysis Batch: 52790

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

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Dibromofluoromethane (Surr)	*100*		*75 - 131*
Toluene-d8 (Surr)	*101*		*80 - 117*
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*97*		*63 - 144*

Lab Sample ID: 860-26035-B-2 MS
Matrix: Water
Analysis Batch: 52790

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethane	0.000244	U	0.0500	0.04749		mg/L		95	72 - 125
1,2-Dichloroethane	0.000285	U	0.0500	0.04854		mg/L		97	68 - 127
1,1-Dichloroethene	0.000216	U	0.0500	0.04665		mg/L		93	59 - 172
cis-1,2-Dichloroethene	0.00881		0.0500	0.05678		mg/L		96	75 - 125
Tetrachloroethene	0.00140		0.0500	0.04842		mg/L		94	71 - 125
Trichloroethene	0.00332	J	0.0500	0.05090		mg/L		95	62 - 137
Vinyl chloride	0.000234	U	0.0500	0.04930		mg/L		99	60 - 140

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*102*		*75 - 131*
Toluene-d8 (Surr)	*98*		*80 - 117*
4-Bromofluorobenzene (Surr)	*97*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*97*		*63 - 144*

Lab Sample ID: 860-26035-B-2 MSD
Matrix: Water
Analysis Batch: 52790

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethane	0.000244	U	0.0500	0.04204		mg/L		84	72 - 125	12	25
1,2-Dichloroethane	0.000285	U	0.0500	0.04080		mg/L		82	68 - 127	17	25
1,1-Dichloroethene	0.000216	U	0.0500	0.04307		mg/L		86	59 - 172	8	25
cis-1,2-Dichloroethene	0.00881		0.0500	0.05016		mg/L		83	75 - 125	12	25
Tetrachloroethene	0.00140		0.0500	0.04379		mg/L		85	71 - 125	10	25
Trichloroethene	0.00332	J	0.0500	0.04475		mg/L		83	62 - 137	13	25
Vinyl chloride	0.000234	U	0.0500	0.04801		mg/L		96	60 - 140	3	25

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Dibromofluoromethane (Surr)	*102*		*75 - 131*
Toluene-d8 (Surr)	*99*		*80 - 117*
4-Bromofluorobenzene (Surr)	*98*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*94*		*63 - 144*

QC Association Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-26137-1

GC/MS VOA

Analysis Batch: 52790

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-26137-1	SB02-03-051222	Total/NA	Water	8260C	
860-26137-2	FD-01-051222	Total/NA	Water	8260C	
860-26137-3	TB-01-051222	Total/NA	Water	8260C	
MB 860-52790/10	Method Blank	Total/NA	Water	8260C	
LCS 860-52790/3	Lab Control Sample	Total/NA	Water	8260C	
LCSD 860-52790/4	Lab Control Sample Dup	Total/NA	Water	8260C	
860-26035-B-2 MS	Matrix Spike	Total/NA	Water	8260C	
860-26035-B-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260C	

Lab Chronicle

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-26137-1

Client Sample ID: SB02-03-051222

Lab Sample ID: 860-26137-1

Date Collected: 05/12/22 11:10

Matrix: Water

Date Received: 05/13/22 08:13

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	52790	05/13/22 15:16	NA	XEN STF

Client Sample ID: FD-01-051222

Lab Sample ID: 860-26137-2

Date Collected: 05/12/22 00:00

Matrix: Water

Date Received: 05/13/22 08:13

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	52790	05/13/22 15:36	NA	XEN STF

Client Sample ID: TB-01-051222

Lab Sample ID: 860-26137-3

Date Collected: 05/12/22 07:35

Matrix: Water

Date Received: 05/13/22 08:13

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	52790	05/13/22 12:29	NA	XEN STF

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Accreditation/Certification Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-26137-1
Project/Site: STC Silber Rd Pre-Design Investigation

Laboratory: Eurofins Houston

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

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	21-038-0	08-04-22
Florida	NELAP	E871002	06-30-22
Louisiana	NELAP	03054	06-30-22
Oklahoma	State	2021-168	08-31-22
Texas	NELAP	T104704215-21-44	06-30-22
Texas	TCEQ Water Supply	T104704215	06-30-22
USDA	US Federal Programs	P330-22-00025	03-02-23

Method Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-26137-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	XEN STF
5030C	Purge and Trap	SW846	XEN STF

Protocol References:

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

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Sample Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-26137-1
Project/Site: STC Silber Rd Pre-Design Investigation

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
860-26137-1	SB02-03-051222	Water	05/12/22 11:10	05/13/22 08:13
860-26137-2	FD-01-051222	Water	05/12/22 00:00	05/13/22 08:13
860-26137-3	TB-01-051222	Water	05/12/22 07:35	05/13/22 08:13

Appendix A

Laboratory Data Package Cover Page - Page 1 of 4

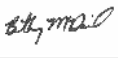
This data package is for Job No. 860-26137-1 and consists of:

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

- ☑ R1- Field chain-of-custody documentation;
- ☑ R2 - Sample identification cross-reference;
- ☑ R3 - Test reports (analytical data sheets) for each environmental sample that includes:
  a. Items consistent with NELAC Chapter 5,
  b. dilution factors,
  c. prepatation methods,
  d. cleanup methods, and
  e. if required for the project, tentatively identified coumpounds (TICs).
- ☑ R4 - Surrogate recovery data including:
  a. Calculated recovery (%R), and
  b. The laboratory's surrogate QC limits.
- ☑ R5 - Test reports/summary forms for blank samples;
- ☑ R6 - Test reports/summary forms for laboratory control samples (LCSs) including:
  a. LCS spiking amounts,
  b. Calculated %R for each analyte, and
  c. The laboratory's LCS QC limits.
- ☑ R7 - Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a. Samples associated with the MS/MSD clearly identified,
  b. MS/MSD spiking amounts,
  c. Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d. Calculated %Rs and relative percent differences (RPDs), and
  e. The laboratory's MS/MSD QC limits
- ☐ R8 - Laboratory analytical duplicate (if applicable) recovery and precision:
  a. The amount of analyte measured in the duplicate,
  b. The calculated RPD, and
  c. The laboratory's QC limits for analytical duplicates.
- ☑ R9 - List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
- ☑ R10 - Other problems or anomalies.
- ☐ Exception Report for every "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge 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.

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

Name (Printed)	Signature	Official Title (Printed)	Date
Bethany McDaniel		Senior Project Manager	05/16/2022

Laboratory Data Package Cover Page - Page 2 of 4

Laboratory Name: Eurofins Houston	LRC Date: 05/16/2022
Project Name: STC Silber Rd Pre-Design Investigation	Laboratory Job Number: 860-26137-1
Reviewer Name: Bethany McDaniel	

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
		Were all departures from standard conditions described in an exception report?	✓				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	✓				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	✓				
		Were calculations checked by a peer or supervisor?	✓				
		Were all analyte identifications checked by a peer or supervisor?	✓				
		Were sample detection limits reported for all analytes not detected?	✓				
		Were all results for soil and sediment samples reported on a dry weight basis?			✓		
		Were % moisture (or solids) reported for all soil and sediment samples?			✓		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			✓		
		If required for the project, are TICs reported?			✓		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	✓				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	✓				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	✓				
		Were blanks analyzed at the appropriate frequency?	✓				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
		Were blank concentrations < MQL?	✓				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	✓				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
		Were LCSs analyzed at the required frequency?	✓				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	✓				
		Was the LCSD RPD within QC limits?	✓				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	✓				
		Were MS/MSD analyzed at the appropriate frequency?	✓				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	✓				
		Were MS/MSD RPDs within laboratory QC limits?	✓				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			✓		
		Were analytical duplicates analyzed at the appropriate frequency?			✓		
		Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	✓				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	✓				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	✓				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	✓				

Laboratory Data Package Cover Page - Page 3 of 4

Laboratory Name: Eurofins Houston	LRC Date: 05/16/2022
Project Name: STC Silber Rd Pre-Design Investigation	Laboratory Job Number: 860-26137-1
Reviewer Name: Bethany McDaniel	

#[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?	✓				
		Were percent RSDs or correlation coefficient criteria met?	✓				
		Was the number of standards recommended in the method used for all analytes?	✓				
		Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
		Are ICAL data available for all instruments used?	✓				
		Has the initial calibration curve been verified using an appropriate second source standard?	✓				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?	✓				
		Were percent differences for each analyte within the method-required QC limits?	✓				
		Was the ICAL curve verified for each analyte?	✓				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			✓		
S3	O	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?	✓				
		Were ion abundance data within the method-required QC limits?	✓				
S4	O	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?	✓				
S5	OI	**Raw data (NELAC Section 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
		Were data associated with manual integrations flagged on the raw data?	✓				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			✓		
S7	O	**Tentatively identified compounds (TICs)**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
S8	I	**Interference Check Sample (ICS) results**					
		Were percent recoveries within method QC limits?			✓		
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?			✓		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	✓				
		Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
S11	OI	**Proficiency test reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	✓				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	✓				
		Is documentation of the analyst's competency up-to-date and on file?	✓				
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?	✓				
S16	OI	**Laboratory standard operating procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	✓				

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).

Laboratory Data Package Cover Page - Page 4 of 4

Laboratory Name: Eurofins Houston	LRC Date: 05/16/2022
Project Name: STC Silber Rd Pre-Design Investigation	Laboratory Job Number: 860-26137-1
Reviewer Name: Bethany McDaniel	

ER#[1]	Description
	No Exceptions

1. ER# = Exception Report identification number (an Exception Report should be completed for an item if “NR” or “No” is checked).

Detection Check Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-26137-1
Project/Site: STC Silber Rd Pre-Design Investigation

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Water
Prep Type: Total/NA
Prep Method: 5030C-Purge and Trap
Instrument: A325
Detector: MSD/0
Column: DB-624

Analyte	Spike Added	Result	Qualifier	Unit	RL	MDL	Analysis Date	Analysis Batch
1,1-Dichloroethane	0.00100	0.00483		mg/L	0.00100	0.000244	03/03/2022	860-43530
1,2-Dichloroethane	0.00100	0.00498		mg/L	0.00100	0.000285	03/03/2022	860-43530
1,1-Dichloroethene	0.00100	0.00411		mg/L	0.00100	0.000216	03/03/2022	860-43530
cis-1,2-Dichloroethene	0.00100	0.00499		mg/L	0.00100	0.000174	03/03/2022	860-43530
Tetrachloroethene	0.00100	0.00463		mg/L	0.00100	0.000500	03/03/2022	860-43530
Trichloroethene	0.00100	0.00503		mg/L	0.00500	0.000424	03/03/2022	860-43530
Vinyl chloride	0.00100	0.00381		mg/L	0.00200	0.000234	03/03/2022	860-43530

Eurofins Xenco, Stafford
4145 Greenbriar Dr
Stafford, TX 77477
Phone (281) 240-4200

Chain of Custody Record

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Client Information	Sampler	Lab PM: McDaniel, Bethany A	Carrier Tracking No(s):	COC No: 860-6507-2299 1
Client Contact: John Ynfante	Phone:	E-Mail: Bethany McDaniel@Eurofinset.com	State of Origin:	Page: Page 1 of 1
Company: Jacobs Engineering Group, Inc.	PWSID:			Job #:
Address: 14701 St. Mary's Lane Suite 300	Due Date Requested:			
City: Houston	TAT Requested (days): 1 day RUSH			
State, Zip: TX, 77079	Compliance Project: Δ Yes Δ No			
Phone:	PO #:			
Email: John.Ynfante@jacobs.com	WO #: D3542628.C.CS.TPE.SIL.22-01-02			
Project Name: STC Silber Road Pre-Design Investigation	Project #: 86002024			
Site:	SSOW#:			

Analysis Requested

Preservation Codes.

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

Other:

Sample Identification	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)	8260B (MOD) VOCs Custom List (7)	Total Number of containers	Special Instructions/Note:
			Preservation Code:			A		
SB02-03-051222	5/12/22	~~1110~~	G	Water		X	3	
FD-01-051222	5/12/22	NG	G	Water		X	3	
TB-01-051222	5/12/22	0735		Water		X	2	
				Water				
				Water				
				Water				
				Water				
				Water				
				Water				
				Water				
				Water				

860-26137 Chain of Custody

Temp: 1.6 IR ID:HOU-323
C/F:-0.9
Corrected Temp: 0.7

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) TRRP

Special Instructions/QC Requirements:

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

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	5/13/22 0813		[signature]	5/13/22 813	E
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc.

Job Number: 860-26137-1

Login Number: 26137
List Number: 1
Creator: Rubio, Yuri

List Source: Eurofins Houston

Question	Answer	Comment
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 (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	

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ANALYTICAL REPORT

Eurofins Houston
4145 Greenbriar Dr
Stafford, TX 77477
Tel: (281)240-4200

Laboratory Job ID: 860-26203-1
Client Project/Site: STC Silber Rd Pre-Design Investigation

For:
Jacobs Engineering Group, Inc.
12750 Merit Drive
Suite 1100
Dallas, Texas 75251

Attn: John Knott

Bethany McDaniel

Authorized for release by:
5/17/2022 9:47:43 AM

Bethany McDaniel, Senior Project Manager
(713)358-2005
Bethany.McDaniel@et.eurofinsus.com

Table of Contents

Definitions/Glossary

Client: Jacobs Engineering Group, Inc. Job ID: 860-26203-1
Project/Site: STC Silber Rd Pre-Design Investigation

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the MQL but greater than or equal to the SDL and the concentration is an estimated value.
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
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Jacobs Engineering Group, Inc. Job ID: 860-26203-1
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-26203-1

Laboratory: Eurofins Houston

Narrative

Job Narrative
860-26203-1

Receipt
The samples were received on 5/14/2022 8:10 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.2°C

Detection Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-26203-1

Client Sample ID: SB03-03-051322 — Lab Sample ID: 860-26203-1

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.00233		0.00100	0.000244	mg/L	1		8260C	Total/NA
1,1-Dichloroethene	0.00407		0.00100	0.000216	mg/L	1		8260C	Total/NA

Client Sample ID: SB03-02-051322 — Lab Sample ID: 860-26203-2

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.00269		0.00100	0.000244	mg/L	1		8260C	Total/NA
1,1-Dichloroethene	0.00579		0.00100	0.000216	mg/L	1		8260C	Total/NA

Client Sample ID: SB03-01-051322 — Lab Sample ID: 860-26203-3

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.00240		0.00100	0.000244	mg/L	1		8260C	Total/NA
1,1-Dichloroethene	0.00606		0.00100	0.000216	mg/L	1		8260C	Total/NA

Client Sample ID: SB01-03-051322 — Lab Sample ID: 860-26203-4

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,2-Dichloroethane	0.00879		0.00500	0.00143	mg/L	5		8260C	Total/NA

Client Sample ID: SB01-02-051322 — Lab Sample ID: 860-26203-5

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.00971		0.00500	0.00122	mg/L	5		8260C	Total/NA
1,2-Dichloroethane	0.00334	J	0.00500	0.00143	mg/L	5		8260C	Total/NA
1,1-Dichloroethene	0.00146	J	0.00500	0.00108	mg/L	5		8260C	Total/NA

Client Sample ID: TB-01-051322 — Lab Sample ID: 860-26203-6

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Houston

Client Sample ID: SB03-03-051322 — Lab Sample ID: 860-26203-1

Date Collected: 05/13/22 08:20 — **Matrix: Water**
Date Received: 05/14/22 08:10

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	**0.00233**		0.00100	0.000244	mg/L			05/16/22 12:22	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/16/22 12:22	1
1,1-Dichloroethene	**0.00407**		0.00100	0.000216	mg/L			05/16/22 12:22	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/16/22 12:22	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/16/22 12:22	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/16/22 12:22	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/16/22 12:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*102*		*75 - 131*		*05/16/22 12:22*	*1*
Toluene-d8 (Surr)	*102*		*80 - 117*		*05/16/22 12:22*	*1*
4-Bromofluorobenzene (Surr)	*102*		*74 - 124*		*05/16/22 12:22*	*1*
1,2-Dichloroethane-d4 (Surr)	*94*		*63 - 144*		*05/16/22 12:22*	*1*

Client Sample ID: SB03-02-051322 — Lab Sample ID: 860-26203-2

Date Collected: 05/13/22 08:35 — **Matrix: Water**
Date Received: 05/14/22 08:10

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	**0.00269**		0.00100	0.000244	mg/L			05/16/22 12:42	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/16/22 12:42	1
1,1-Dichloroethene	**0.00579**		0.00100	0.000216	mg/L			05/16/22 12:42	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/16/22 12:42	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/16/22 12:42	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/16/22 12:42	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/16/22 12:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*100*		*75 - 131*		*05/16/22 12:42*	*1*
Toluene-d8 (Surr)	*102*		*80 - 117*		*05/16/22 12:42*	*1*
4-Bromofluorobenzene (Surr)	*100*		*74 - 124*		*05/16/22 12:42*	*1*
1,2-Dichloroethane-d4 (Surr)	*94*		*63 - 144*		*05/16/22 12:42*	*1*

Client Sample ID: SB03-01-051322 — Lab Sample ID: 860-26203-3

Date Collected: 05/13/22 08:45 — **Matrix: Water**
Date Received: 05/14/22 08:10

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	**0.00240**		0.00100	0.000244	mg/L			05/16/22 13:03	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/16/22 13:03	1
1,1-Dichloroethene	**0.00606**		0.00100	0.000216	mg/L			05/16/22 13:03	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/16/22 13:03	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/16/22 13:03	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/16/22 13:03	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/16/22 13:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*101*		*75 - 131*		*05/16/22 13:03*	*1*
Toluene-d8 (Surr)	*105*		*80 - 117*		*05/16/22 13:03*	*1*

Client Sample ID: SB03-01-051322 — Lab Sample ID: 860-26203-3

Date Collected: 05/13/22 08:45 — **Matrix: Water**
Date Received: 05/14/22 08:10

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*104*		*74 - 124*		*05/16/22 13:03*	*1*
1,2-Dichloroethane-d4 (Surr)	*93*		*63 - 144*		*05/16/22 13:03*	*1*

Client Sample ID: SB01-03-051322 — Lab Sample ID: 860-26203-4

Date Collected: 05/13/22 11:55 — **Matrix: Water**
Date Received: 05/14/22 08:10

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.00122	U	0.00500	0.00122	mg/L			05/16/22 14:46	5
1,2-Dichloroethane	**0.00879**		0.00500	0.00143	mg/L			05/16/22 14:46	5
1,1-Dichloroethene	0.00108	U	0.00500	0.00108	mg/L			05/16/22 14:46	5
cis-1,2-Dichloroethene	0.000870	U	0.00500	0.000870	mg/L			05/16/22 14:46	5
Tetrachloroethene	0.00250	U	0.00500	0.00250	mg/L			05/16/22 14:46	5
Trichloroethene	0.00212	U	0.0250	0.00212	mg/L			05/16/22 14:46	5
Vinyl chloride	0.00117	U	0.0100	0.00117	mg/L			05/16/22 14:46	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	*100*		*75 - 131*		*05/16/22 14:46*	*5*
Toluene-d8 (Surr)	*101*		*80 - 117*		*05/16/22 14:46*	*5*
4-Bromofluorobenzene (Surr)	*102*		*74 - 124*		*05/16/22 14:46*	*5*
1,2-Dichloroethane-d4 (Surr)	*96*		*63 - 144*		*05/16/22 14:46*	*5*

Client Sample ID: SB01-02-051322 — Lab Sample ID: 860-26203-5

Date Collected: 05/13/22 12:20 — **Matrix: Water**
Date Received: 05/14/22 08:10

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	**0.00971**		0.00500	0.00122	mg/L			05/16/22 15:06	5
1,2-Dichloroethane	**0.00334**	**J**	0.00500	0.00143	mg/L			05/16/22 15:06	5
1,1-Dichloroethene	**0.00146**	**J**	0.00500	0.00108	mg/L			05/16/22 15:06	5
cis-1,2-Dichloroethene	0.000870	U	0.00500	0.000870	mg/L			05/16/22 15:06	5
Tetrachloroethene	0.00250	U	0.00500	0.00250	mg/L			05/16/22 15:06	5
Trichloroethene	0.00212	U	0.0250	0.00212	mg/L			05/16/22 15:06	5
Vinyl chloride	0.00117	U	0.0100	0.00117	mg/L			05/16/22 15:06	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	*102*		*75 - 131*		*05/16/22 15:06*	*5*
Toluene-d8 (Surr)	*102*		*80 - 117*		*05/16/22 15:06*	*5*
4-Bromofluorobenzene (Surr)	*103*		*74 - 124*		*05/16/22 15:06*	*5*
1,2-Dichloroethane-d4 (Surr)	*97*		*63 - 144*		*05/16/22 15:06*	*5*

Client Sample ID: TB-01-051322 — Lab Sample ID: 860-26203-6

Date Collected: 05/13/22 07:35 — **Matrix: Water**
Date Received: 05/14/22 08:10

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/16/22 10:19	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/16/22 10:19	1

Client: Jacobs Engineering Group, Inc.
Job ID: 860-26203-1
Project/Site: STC Silber Rd Pre-Design Investigation

Client Sample ID: TB-01-051322
Lab Sample ID: 860-26203-6
Date Collected: 05/13/22 07:35
Matrix: Water
Date Received: 05/14/22 08:10

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

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/16/22 10:19	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/16/22 10:19	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/16/22 10:19	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/16/22 10:19	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/16/22 10:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*100*		*75 - 131*		*05/16/22 10:19*	*1*
Toluene-d8 (Surr)	*102*		*80 - 117*		*05/16/22 10:19*	*1*
4-Bromofluorobenzene (Surr)	*102*		*74 - 124*		*05/16/22 10:19*	*1*
1,2-Dichloroethane-d4 (Surr)	*92*		*63 - 144*		*05/16/22 10:19*	*1*

Unadjusted Detection Limits

Client: Jacobs Engineering Group, Inc. Job ID: 860-26203-1
Project/Site: STC Silber Rd Pre-Design Investigation

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	MQL	MDL	Units
1,1-Dichloroethane	0.00100	0.000244	mg/L
1,1-Dichloroethene	0.00100	0.000216	mg/L
1,2-Dichloroethane	0.00100	0.000285	mg/L
cis-1,2-Dichloroethene	0.00100	0.000174	mg/L
Tetrachloroethene	0.00100	0.000500	mg/L
Trichloroethene	0.00500	0.000424	mg/L
Vinyl chloride	0.00200	0.000234	mg/L

Surrogate Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-26203-1
Project/Site: STC Silber Rd Pre-Design Investigation

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Water
Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DBFM	TOL	BFB	DCA
Lab Sample ID	Client Sample ID	(75-131)	(80-117)	(74-124)	(63-144)
860-26108-B-19 MS	Matrix Spike	102	101	102	91
860-26203-1	SB03-03-051322	102	102	102	94
860-26203-2	SB03-02-051322	100	102	100	94
860-26203-3	SB03-01-051322	101	105	104	93
860-26203-4	SB01-03-051322	100	101	102	96
860-26203-5	SB01-02-051322	102	102	103	97
860-26203-6	TB-01-051322	100	102	102	92
LCS 860-52953/3	Lab Control Sample	102	102	102	92
LCSD 860-52953/4	Lab Control Sample Dup	100	102	103	91
MB 860-52953/9	Method Blank	100	103	103	92

Surrogate Legend

DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 860-52953/9 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 52953

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/16/22 09:58	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/16/22 09:58	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/16/22 09:58	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/16/22 09:58	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/16/22 09:58	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/16/22 09:58	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/16/22 09:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*100*		*75 - 131*		*05/16/22 09:58*	*1*
Toluene-d8 (Surr)	*103*		*80 - 117*		*05/16/22 09:58*	*1*
4-Bromofluorobenzene (Surr)	*103*		*74 - 124*		*05/16/22 09:58*	*1*
1,2-Dichloroethane-d4 (Surr)	*92*		*63 - 144*		*05/16/22 09:58*	*1*

Lab Sample ID: LCS 860-52953/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 52953

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethane			0.0500	0.05004		mg/L		100	72 - 125		
1,2-Dichloroethane			0.0500	0.04493		mg/L		90	68 - 127		
1,1-Dichloroethene			0.0500	0.05414		mg/L		108	59 - 172		
cis-1,2-Dichloroethene			0.0500	0.04755		mg/L		95	75 - 125		
Tetrachloroethene			0.0500	0.04905		mg/L		98	71 - 125		
Trichloroethene			0.0500	0.04829		mg/L		97	62 - 137		
Vinyl chloride			0.0500	0.05295		mg/L		106	60 - 140		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*102*		*75 - 131*
Toluene-d8 (Surr)	*102*		*80 - 117*
4-Bromofluorobenzene (Surr)	*102*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*92*		*63 - 144*

Lab Sample ID: LCSD 860-52953/4 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 52953

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethane			0.0500	0.05013		mg/L		100	72 - 125	0	25
1,2-Dichloroethane			0.0500	0.04648		mg/L		93	68 - 127	3	25
1,1-Dichloroethene			0.0500	0.05333		mg/L		107	59 - 172	2	25
cis-1,2-Dichloroethene			0.0500	0.04779		mg/L		96	75 - 125	1	25
Tetrachloroethene			0.0500	0.04920		mg/L		98	71 - 125	0	25
Trichloroethene			0.0500	0.04849		mg/L		97	62 - 137	0	25
Vinyl chloride			0.0500	0.05182		mg/L		104	60 - 140	2	25

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

Lab Sample ID: LCSD 860-52953/4
Matrix: Water
Analysis Batch: 52953

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

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Dibromofluoromethane (Surr)	*100*		*75 - 131*
Toluene-d8 (Surr)	*102*		*80 - 117*
4-Bromofluorobenzene (Surr)	*103*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*91*		*63 - 144*

Lab Sample ID: 860-26108-B-19 MS
Matrix: Water
Analysis Batch: 52953

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethane	0.000244	U	0.0500	0.05249		mg/L		105	72 - 125
1,2-Dichloroethane	0.000285	U	0.0500	0.04563		mg/L		91	68 - 127
1,1-Dichloroethene	0.000216	U	0.0500	0.05740		mg/L		115	59 - 172
cis-1,2-Dichloroethene	0.000174	U	0.0500	0.04958		mg/L		99	75 - 125
Tetrachloroethene	0.000500	U	0.0500	0.05132		mg/L		103	71 - 125
Trichloroethene	0.000424	U	0.0500	0.05058		mg/L		101	62 - 137
Vinyl chloride	0.000234	U	0.0500	0.05528		mg/L		111	60 - 140

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*102*		*75 - 131*
Toluene-d8 (Surr)	*101*		*80 - 117*
4-Bromofluorobenzene (Surr)	*102*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*91*		*63 - 144*

QC Association Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-26203-1
Project/Site: STC Silber Rd Pre-Design Investigation

GC/MS VOA

Analysis Batch: 52953

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-26203-1	SB03-03-051322	Total/NA	Water	8260C	
860-26203-2	SB03-02-051322	Total/NA	Water	8260C	
860-26203-3	SB03-01-051322	Total/NA	Water	8260C	
860-26203-4	SB01-03-051322	Total/NA	Water	8260C	
860-26203-5	SB01-02-051322	Total/NA	Water	8260C	
860-26203-6	TB-01-051322	Total/NA	Water	8260C	
MB 860-52953/9	Method Blank	Total/NA	Water	8260C	
LCS 860-52953/3	Lab Control Sample	Total/NA	Water	8260C	
LCSD 860-52953/4	Lab Control Sample Dup	Total/NA	Water	8260C	
860-26108-B-19 MS	Matrix Spike	Total/NA	Water	8260C	

Lab Chronicle

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-26203-1

Client Sample ID: SB03-03-051322
Date Collected: 05/13/22 08:20
Date Received: 05/14/22 08:10

Lab Sample ID: 860-26203-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	52953	05/16/22 12:22	TTD	XEN STF

Client Sample ID: SB03-02-051322
Date Collected: 05/13/22 08:35
Date Received: 05/14/22 08:10

Lab Sample ID: 860-26203-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	52953	05/16/22 12:42	TTD	XEN STF

Client Sample ID: SB03-01-051322
Date Collected: 05/13/22 08:45
Date Received: 05/14/22 08:10

Lab Sample ID: 860-26203-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	52953	05/16/22 13:03	TTD	XEN STF

Client Sample ID: SB01-03-051322
Date Collected: 05/13/22 11:55
Date Received: 05/14/22 08:10

Lab Sample ID: 860-26203-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		5	5 mL	5 mL	52953	05/16/22 14:46	TTD	XEN STF

Client Sample ID: SB01-02-051322
Date Collected: 05/13/22 12:20
Date Received: 05/14/22 08:10

Lab Sample ID: 860-26203-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		5	5 mL	5 mL	52953	05/16/22 15:06	TTD	XEN STF

Client Sample ID: TB-01-051322
Date Collected: 05/13/22 07:35
Date Received: 05/14/22 08:10

Lab Sample ID: 860-26203-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	52953	05/16/22 10:19	TTD	XEN STF

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Accreditation/Certification Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-26203-1
Project/Site: STC Silber Rd Pre-Design Investigation

Laboratory: Eurofins Houston

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

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	21-038-0	08-04-22
Florida	NELAP	E871002	06-30-22
Louisiana	NELAP	03054	06-30-22
Oklahoma	State	2021-168	08-31-22
Texas	NELAP	T104704215-21-44	06-30-22
Texas	TCEQ Water Supply	T104704215	06-30-22
USDA	US Federal Programs	P330-22-00025	03-02-23

Method Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-26203-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	XEN STF
5030C	Purge and Trap	SW846	XEN STF

Protocol References:

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

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Sample Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-26203-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
860-26203-1	SB03-03-051322	Water	05/13/22 08:20	05/14/22 08:10
860-26203-2	SB03-02-051322	Water	05/13/22 08:35	05/14/22 08:10
860-26203-3	SB03-01-051322	Water	05/13/22 08:45	05/14/22 08:10
860-26203-4	SB01-03-051322	Water	05/13/22 11:55	05/14/22 08:10
860-26203-5	SB01-02-051322	Water	05/13/22 12:20	05/14/22 08:10
860-26203-6	TB-01-051322	Water	05/13/22 07:35	05/14/22 08:10

Appendix A

Laboratory Data Package Cover Page - Page 1 of 4

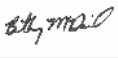
This data package is for Job No. 860-26203-1 and consists of:

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

- ☑ R1- Field chain-of-custody documentation;
- ☑ R2 - Sample identification cross-reference;
- ☑ R3 - Test reports (analytical data sheets) for each environmental sample that includes:
  a. Items consistent with NELAC Chapter 5,
  b. dilution factors,
  c. prepatation methods,
  d. cleanup methods, and
  e. if required for the project, tentatively identified coumpounds (TICs).
- ☑ R4 - Surrogate recovery data including:
  a. Calculated recovery (%R), and
  b. The laboratory's surrogate QC limits.
- ☑ R5 - Test reports/summary forms for blank samples;
- ☑ R6 - Test reports/summary forms for laboratory control samples (LCSs) including:
  a. LCS spiking amounts,
  b. Calculated %R for each analyte, and
  c. The laboratory's LCS QC limits.
- ☑ R7 - Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a. Samples associated with the MS/MSD clearly identified,
  b. MS/MSD spiking amounts,
  c. Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d. Calculated %Rs and relative percent differences (RPDs), and
  e. The laboratory's MS/MSD QC limits
- ☐ R8 - Laboratory analytical duplicate (if applicable) recovery and precision:
  a. The amount of analyte measured in the duplicate,
  b. The calculated RPD, and
  c. The laboratory's QC limits for analytical duplicates.
- ☑ R9 - List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
- ☑ R10 - Other problems or anomalies.
- ☐ Exception Report for every "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge 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.

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

Name (Printed)	Signature	Official Title (Printed)	Date
Bethany McDaniel		Senior Project Manager	05/17/2022

Laboratory Data Package Cover Page - Page 2 of 4

Laboratory Name: Eurofins Houston	LRC Date: 05/17/2022
Project Name: STC Silber Rd Pre-Design Investigation	Laboratory Job Number: 860-26203-1
Reviewer Name: Bethany McDaniel	

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
		Were all departures from standard conditions described in an exception report?	✓				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	✓				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	✓				
		Were calculations checked by a peer or supervisor?	✓				
		Were all analyte identifications checked by a peer or supervisor?	✓				
		Were sample detection limits reported for all analytes not detected?	✓				
		Were all results for soil and sediment samples reported on a dry weight basis?			✓		
		Were % moisture (or solids) reported for all soil and sediment samples?			✓		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			✓		
		If required for the project, are TICs reported?			✓		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	✓				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	✓				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	✓				
		Were blanks analyzed at the appropriate frequency?	✓				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
		Were blank concentrations < MQL?	✓				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	✓				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
		Were LCSs analyzed at the required frequency?	✓				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	✓				
		Was the LCSD RPD within QC limits?	✓				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	✓				
		Were MS/MSD analyzed at the appropriate frequency?	✓				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	✓				
		Were MS/MSD RPDs within laboratory QC limits?			✓		
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			✓		
		Were analytical duplicates analyzed at the appropriate frequency?			✓		
		Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	✓				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	✓				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?		✓			1
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	✓				

Laboratory Data Package Cover Page - Page 3 of 4

Laboratory Name: Eurofins Houston	LRC Date: 05/17/2022
Project Name: STC Silber Rd Pre-Design Investigation	Laboratory Job Number: 860-26203-1
Reviewer Name: Bethany McDaniel	

#[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?	✓				
		Were percent RSDs or correlation coefficient criteria met?	✓				
		Was the number of standards recommended in the method used for all analytes?	✓				
		Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
		Are ICAL data available for all instruments used?	✓				
		Has the initial calibration curve been verified using an appropriate second source standard?	✓				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?	✓				
		Were percent differences for each analyte within the method-required QC limits?	✓				
		Was the ICAL curve verified for each analyte?	✓				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			✓		
S3	O	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?	✓				
		Were ion abundance data within the method-required QC limits?	✓				
S4	O	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?	✓				
S5	OI	**Raw data (NELAC Section 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
		Were data associated with manual integrations flagged on the raw data?	✓				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			✓		
S7	O	**Tentatively identified compounds (TICs)**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
S8	I	**Interference Check Sample (ICS) results**					
		Were percent recoveries within method QC limits?			✓		
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?			✓		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	✓				
		Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
S11	OI	**Proficiency test reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	✓				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	✓				
		Is documentation of the analyst's competency up-to-date and on file?	✓				
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?	✓				
S16	OI	**Laboratory standard operating procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	✓				

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).

Laboratory Data Package Cover Page - Page 4 of 4

Laboratory Name: Eurofins Houston	LRC Date: 05/17/2022
Project Name: STC Silber Rd Pre-Design Investigation	Laboratory Job Number: 860-26203-1
Reviewer Name: Bethany McDaniel	

ER#[1]	Description
1	Method 8260C: The following samples were diluted due to the abundance of non-target analytes: SB01-03-051322 (860-26203-4) and SB01-02-051322 (860-26203-5). Elevated reporting limits (RLs) are provided.

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

Detection Check Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-26203-1
Project/Site: STC Silber Rd Pre-Design Investigation

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Water
Prep Type: Total/NA
Prep Method: 5030C-Purge and Trap
Instrument: A325
Detector: MSD/0
Column: DB-624

Analyte	Spike Added	Result	Qualifier	Unit	RL	MDL	Analysis Date	Analysis Batch
1,1-Dichloroethane	0.00100	0.00483		mg/L	0.00100	0.000244	03/03/2022	860-43530
1,2-Dichloroethane	0.00100	0.00498		mg/L	0.00100	0.000285	03/03/2022	860-43530
1,1-Dichloroethene	0.00100	0.00411		mg/L	0.00100	0.000216	03/03/2022	860-43530
cis-1,2-Dichloroethene	0.00100	0.00499		mg/L	0.00100	0.000174	03/03/2022	860-43530
Tetrachloroethene	0.00100	0.00463		mg/L	0.00100	0.000500	03/03/2022	860-43530
Trichloroethene	0.00100	0.00503		mg/L	0.00500	0.000424	03/03/2022	860-43530
Vinyl chloride	0.00100	0.00381		mg/L	0.00200	0.000234	03/03/2022	860-43530

Eurofins Xenco, Stafford
4145 Greenbriar Dr
Stafford, TX 77477
Phone (281) 240-4200

Chain of Custody Record

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Client Information	Sampler	Lab PM: McDaniel, Bethany A	Carrier Tracking No(s):	COC No: 860-6507-2299.1
Client Contact: John Ynfante	Phone:	E-Mail: Bethany McDaniel@Eurofinset.com	State of Origin:	Page: Page 1 of 1
Company: Jacobs Engineering Group, Inc.	PWSID:			Job #:
Address: 14701 St. Mary's Lane Suite 300	Due Date Requested:			
City: Houston	TAT Requested (days): 1 day RUSH			
State, Zip: TX, 77079	Compliance Project: Δ Yes Δ No			
Phone:	PO #:			
Email: John.Ynfante@jacobs.com	WO #: D3542628.C CS.TPE.SIL.22-01-02			
Project Name: STC Silber Road Pre-Design Investigation	Project #: 86002024			
Site:	SSOW#:			

Analysis Requested

860-26203 Chain of Custody

Preservation Codes:

A	HCL	M	Hexane
B	NaOH	N	None
C	Zn Acetate	O	AsNaO2
D	Nitric Acid	P	Na2O4S
E	NaHSO4	Q	Na2SO3
F	MeOH	R	Na2S2O3
G	Amchlor	S	H2SO4
H	Ascorbic Acid	T	TSP Dodecahydrate
	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)	8260B (MOD) VOCs Custom List (7)	Total Number of containers	Special Instructions/Note:
			Preservation Code:			A		
SB03-03-051322	5/13/22	0820	G	Water		X	3	
SB03-02-051322	5/13/22	0835	G	Water		X	3	
SB03-01-051322	5/13/22	0845	G	Water		X	3	
SB01-03-051322	5/13/22	1155	G	Water		X	3	
SB01-02-051322	5/13/22	1220	G	Water		X	2	Only 2 VOAs
TB-01-051322	5/13/22	0735		Water		X	2	
				Water				
				Water				
				Water				
				Water				
				Water				

Temp: 4.1 IR ID:HOU-332
C/F:-0.9
Corrected Temp: 3.2

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) TRRP

Special Instructions/QC Requirements:

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

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		5/14/22 0810			5/14/22 0810	
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc.

Job Number: 860-26203-1

Login Number: 26203
List Number: 1
Creator: Palmar, Pedro

List Source: Eurofins Houston

Question	Answer	Comment
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 (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	N/A	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	

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ANALYTICAL REPORT

Eurofins Houston
4145 Greenbriar Dr
Stafford, TX 77477
Tel: (281)240-4200

Laboratory Job ID: 860-26253-1
Client Project/Site: STC Silber Rd Pre-Design Investigation

For:
Jacobs Engineering Group, Inc.
12750 Merit Drive
Suite 1100
Dallas, Texas 75251

Attn: John Knott

Bethany McDaniel

Authorized for release by:
5/17/2022 6:33:56 PM

Bethany McDaniel, Senior Project Manager
(713)358-2005
Bethany.McDaniel@et.eurofinsus.com

Table of Contents

Definitions/Glossary

Client: Jacobs Engineering Group, Inc. Job ID: 860-26253-1
Project/Site: STC Silber Rd Pre-Design Investigation

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the MQL but greater than or equal to the SDL and the concentration is an estimated value.
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
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Jacobs Engineering Group, Inc. Job ID: 860-26253-1
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-26253-1

Laboratory: Eurofins Houston

Narrative

Job Narrative
860-26253-1

Receipt
The samples were received on 5/16/2022 2:13 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.6°C

Detection Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-26253-1
Project/Site: STC Silber Rd Pre-Design Investigation

Client Sample ID: SB10-03-051622 Lab Sample ID: 860-26253-1

No Detections.

Client Sample ID: SB10-02-051622 Lab Sample ID: 860-26253-2

No Detections.

Client Sample ID: SB05-03-051622 Lab Sample ID: 860-26253-3

No Detections.

Client Sample ID: SB05-02-051622 Lab Sample ID: 860-26253-4

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethene	0.000505	J	0.00100	0.000216	mg/L	1		8260C	Total/NA

Client Sample ID: SB05-01-051622 Lab Sample ID: 860-26253-5

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethene	0.00106		0.00100	0.000216	mg/L	1		8260C	Total/NA

Client Sample ID: TB-01-051622 Lab Sample ID: 860-26253-6

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: SB10-03-051622 — Lab Sample ID: 860-26253-1

Date Collected: 05/16/22 08:10 — **Matrix: Water**
Date Received: 05/16/22 14:13

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/17/22 11:18	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/17/22 11:18	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/17/22 11:18	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/17/22 11:18	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/17/22 11:18	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/17/22 11:18	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/17/22 11:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*104*		*75 - 131*		*05/17/22 11:18*	*1*
Toluene-d8 (Surr)	*101*		*80 - 117*		*05/17/22 11:18*	*1*
4-Bromofluorobenzene (Surr)	*100*		*74 - 124*		*05/17/22 11:18*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*63 - 144*		*05/17/22 11:18*	*1*

Client Sample ID: SB10-02-051622 — Lab Sample ID: 860-26253-2

Date Collected: 05/16/22 08:20 — **Matrix: Water**
Date Received: 05/16/22 14:13

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/17/22 11:39	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/17/22 11:39	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/17/22 11:39	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/17/22 11:39	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/17/22 11:39	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/17/22 11:39	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/17/22 11:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*104*		*75 - 131*		*05/17/22 11:39*	*1*
Toluene-d8 (Surr)	*100*		*80 - 117*		*05/17/22 11:39*	*1*
4-Bromofluorobenzene (Surr)	*102*		*74 - 124*		*05/17/22 11:39*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*63 - 144*		*05/17/22 11:39*	*1*

Client Sample ID: SB05-03-051622 — Lab Sample ID: 860-26253-3

Date Collected: 05/16/22 12:20 — **Matrix: Water**
Date Received: 05/16/22 14:13

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/17/22 11:59	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/17/22 11:59	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/17/22 11:59	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/17/22 11:59	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/17/22 11:59	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/17/22 11:59	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/17/22 11:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*102*		*75 - 131*		*05/17/22 11:59*	*1*
Toluene-d8 (Surr)	*102*		*80 - 117*		*05/17/22 11:59*	*1*

Client Sample ID: SB05-03-051622 — Lab Sample ID: 860-26253-3

Date Collected: 05/16/22 12:20 — **Matrix: Water**
Date Received: 05/16/22 14:13

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*74 - 124*		*05/17/22 11:59*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*63 - 144*		*05/17/22 11:59*	*1*

Client Sample ID: SB05-02-051622 — Lab Sample ID: 860-26253-4

Date Collected: 05/16/22 12:45 — **Matrix: Water**
Date Received: 05/16/22 14:13

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/17/22 12:20	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/17/22 12:20	1
1,1-Dichloroethene	**0.000505**	**J**	0.00100	0.000216	mg/L			05/17/22 12:20	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/17/22 12:20	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/17/22 12:20	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/17/22 12:20	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/17/22 12:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*103*		*75 - 131*		*05/17/22 12:20*	*1*
Toluene-d8 (Surr)	*102*		*80 - 117*		*05/17/22 12:20*	*1*
4-Bromofluorobenzene (Surr)	*100*		*74 - 124*		*05/17/22 12:20*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*63 - 144*		*05/17/22 12:20*	*1*

Client Sample ID: SB05-01-051622 — Lab Sample ID: 860-26253-5

Date Collected: 05/16/22 13:00 — **Matrix: Water**
Date Received: 05/16/22 14:13

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/17/22 12:40	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/17/22 12:40	1
1,1-Dichloroethene	**0.00106**		0.00100	0.000216	mg/L			05/17/22 12:40	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/17/22 12:40	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/17/22 12:40	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/17/22 12:40	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/17/22 12:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*103*		*75 - 131*		*05/17/22 12:40*	*1*
Toluene-d8 (Surr)	*102*		*80 - 117*		*05/17/22 12:40*	*1*
4-Bromofluorobenzene (Surr)	*103*		*74 - 124*		*05/17/22 12:40*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*63 - 144*		*05/17/22 12:40*	*1*

Client Sample ID: TB-01-051622 — Lab Sample ID: 860-26253-6

Date Collected: 05/16/22 07:30 — **Matrix: Water**
Date Received: 05/16/22 14:13

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/16/22 17:38	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/16/22 17:38	1

Client Sample ID: TB-01-051622 Lab Sample ID: 860-26253-6

Date Collected: 05/16/22 07:30 **Matrix: Water**
Date Received: 05/16/22 14:13

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

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/16/22 17:38	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/16/22 17:38	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/16/22 17:38	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/16/22 17:38	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/16/22 17:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*99*		*75 - 131*		*05/16/22 17:38*	*1*
Toluene-d8 (Surr)	*99*		*80 - 117*		*05/16/22 17:38*	*1*
4-Bromofluorobenzene (Surr)	*97*		*74 - 124*		*05/16/22 17:38*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*63 - 144*		*05/16/22 17:38*	*1*

Unadjusted Detection Limits

Client: Jacobs Engineering Group, Inc.
Job ID: 860-26253-1
Project/Site: STC Silber Rd Pre-Design Investigation

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	MQL	MDL	Units
1,1-Dichloroethane	0.00100	0.000244	mg/L
1,1-Dichloroethene	0.00100	0.000216	mg/L
1,2-Dichloroethane	0.00100	0.000285	mg/L
cis-1,2-Dichloroethene	0.00100	0.000174	mg/L
Tetrachloroethene	0.00100	0.000500	mg/L
Trichloroethene	0.00500	0.000424	mg/L
Vinyl chloride	0.00200	0.000234	mg/L

Surrogate Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-26253-1

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DBFM	TOL	BFB	DCA
Lab Sample ID	Client Sample ID	(75-131)	(80-117)	(74-124)	(63-144)
860-26190-A-3 MS	Matrix Spike	99	97	96	94
860-26253-1	SB10-03-051622	104	101	100	102
860-26253-1 MS	SB10-03-051622	105	100	98	101
860-26253-2	SB10-02-051622	104	100	102	101
860-26253-3	SB05-03-051622	102	102	102	104
860-26253-4	SB05-02-051622	103	102	100	102
860-26253-5	SB05-01-051622	103	102	103	103
860-26253-6	TB-01-051622	99	99	97	101
LCS 860-53050/3	Lab Control Sample	98	99	97	95
LCS 860-53084/3	Lab Control Sample	105	102	101	100
LCSD 860-53050/4	Lab Control Sample Dup	97	97	96	95
LCSD 860-53084/4	Lab Control Sample Dup	106	100	100	103
MB 860-53050/10	Method Blank	100	99	98	99
MB 860-53084/9	Method Blank	103	102	101	102

Surrogate Legend

DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 860-53050/10
Matrix: Water
Analysis Batch: 53050

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

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/16/22 10:28	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/16/22 10:28	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/16/22 10:28	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/16/22 10:28	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/16/22 10:28	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/16/22 10:28	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/16/22 10:28	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*100*		*75 - 131*		*05/16/22 10:28*	*1*
Toluene-d8 (Surr)	*99*		*80 - 117*		*05/16/22 10:28*	*1*
4-Bromofluorobenzene (Surr)	*98*		*74 - 124*		*05/16/22 10:28*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*63 - 144*		*05/16/22 10:28*	*1*

Lab Sample ID: LCS 860-53050/3
Matrix: Water
Analysis Batch: 53050

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethane			0.0500	0.04570		mg/L		91	72 - 125		
1,2-Dichloroethane			0.0500	0.04745		mg/L		95	68 - 127		
1,1-Dichloroethene			0.0500	0.04890		mg/L		98	59 - 172		
cis-1,2-Dichloroethene			0.0500	0.04718		mg/L		94	75 - 125		
Tetrachloroethene			0.0500	0.05048		mg/L		101	71 - 125		
Trichloroethene			0.0500	0.05036		mg/L		101	62 - 137		
Vinyl chloride			0.0500	0.04758		mg/L		95	60 - 140		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*98*		*75 - 131*
Toluene-d8 (Surr)	*99*		*80 - 117*
4-Bromofluorobenzene (Surr)	*97*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*95*		*63 - 144*

Lab Sample ID: LCSD 860-53050/4
Matrix: Water
Analysis Batch: 53050

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethane			0.0500	0.04607		mg/L		92	72 - 125	1	25
1,2-Dichloroethane			0.0500	0.04865		mg/L		97	68 - 127	2	25
1,1-Dichloroethene			0.0500	0.04884		mg/L		98	59 - 172	0	25
cis-1,2-Dichloroethene			0.0500	0.04845		mg/L		97	75 - 125	3	25
Tetrachloroethene			0.0500	0.05250		mg/L		105	71 - 125	4	25
Trichloroethene			0.0500	0.05141		mg/L		103	62 - 137	2	25
Vinyl chloride			0.0500	0.04937		mg/L		99	60 - 140	4	25

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

Lab Sample ID: LCSD 860-53050/4
Matrix: Water
Analysis Batch: 53050

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

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Dibromofluoromethane (Surr)	*97*		*75 - 131*
Toluene-d8 (Surr)	*97*		*80 - 117*
4-Bromofluorobenzene (Surr)	*96*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*95*		*63 - 144*

Lab Sample ID: 860-26190-A-3 MS
Matrix: Water
Analysis Batch: 53050

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethane	0.000244	U	0.0500	0.04707		mg/L		94	72 - 125
1,2-Dichloroethane	0.000285	U	0.0500	0.04912		mg/L		98	68 - 127
1,1-Dichloroethene	0.000216	U	0.0500	0.05041		mg/L		101	59 - 172
cis-1,2-Dichloroethene	0.000174	U	0.0500	0.05049		mg/L		101	75 - 125
Tetrachloroethene	0.000500	U	0.0500	0.05414		mg/L		108	71 - 125
Trichloroethene	0.000424	U	0.0500	0.05318		mg/L		106	62 - 137
Vinyl chloride	0.000234	U	0.0500	0.04876		mg/L		98	60 - 140

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*99*		*75 - 131*
Toluene-d8 (Surr)	*97*		*80 - 117*
4-Bromofluorobenzene (Surr)	*96*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*94*		*63 - 144*

Lab Sample ID: MB 860-53084/9
Matrix: Water
Analysis Batch: 53084

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

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/17/22 10:58	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/17/22 10:58	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/17/22 10:58	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/17/22 10:58	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/17/22 10:58	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/17/22 10:58	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/17/22 10:58	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	*103*		*75 - 131*		*05/17/22 10:58*	*1*
Toluene-d8 (Surr)	*102*		*80 - 117*		*05/17/22 10:58*	*1*
4-Bromofluorobenzene (Surr)	*101*		*74 - 124*		*05/17/22 10:58*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*63 - 144*		*05/17/22 10:58*	*1*

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

Lab Sample ID: LCS 860-53084/3
Matrix: Water
Analysis Batch: 53084

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethane			0.0500	0.05226		mg/L		105	72 - 125		
1,2-Dichloroethane			0.0500	0.05088		mg/L		102	68 - 127		
1,1-Dichloroethene			0.0500	0.05088		mg/L		102	59 - 172		
cis-1,2-Dichloroethene			0.0500	0.05055		mg/L		101	75 - 125		
Tetrachloroethene			0.0500	0.05247		mg/L		105	71 - 125		
Trichloroethene			0.0500	0.05127		mg/L		103	62 - 137		
Vinyl chloride			0.0500	0.05441		mg/L		109	60 - 140		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*105*		*75 - 131*
Toluene-d8 (Surr)	*102*		*80 - 117*
4-Bromofluorobenzene (Surr)	*101*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*100*		*63 - 144*

Lab Sample ID: LCSD 860-53084/4
Matrix: Water
Analysis Batch: 53084

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethane			0.0500	0.05103		mg/L		102	72 - 125	2	25
1,2-Dichloroethane			0.0500	0.05054		mg/L		101	68 - 127	1	25
1,1-Dichloroethene			0.0500	0.04872		mg/L		97	59 - 172	4	25
cis-1,2-Dichloroethene			0.0500	0.04991		mg/L		100	75 - 125	1	25
Tetrachloroethene			0.0500	0.05056		mg/L		101	71 - 125	4	25
Trichloroethene			0.0500	0.04952		mg/L		99	62 - 137	3	25
Vinyl chloride			0.0500	0.04856		mg/L		97	60 - 140	11	25

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*106*		*75 - 131*
Toluene-d8 (Surr)	*100*		*80 - 117*
4-Bromofluorobenzene (Surr)	*100*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*103*		*63 - 144*

Lab Sample ID: 860-26253-1 MS
Matrix: Water
Analysis Batch: 53084

Client Sample ID: SB10-03-051622
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethane	0.000244	U	0.0500	0.05043		mg/L		101	72 - 125		
1,2-Dichloroethane	0.000285	U	0.0500	0.05274		mg/L		105	68 - 127		
1,1-Dichloroethene	0.000216	U	0.0500	0.04597		mg/L		92	59 - 172		
cis-1,2-Dichloroethene	0.000174	U	0.0500	0.05037		mg/L		101	75 - 125		
Tetrachloroethene	0.000500	U	0.0500	0.04797		mg/L		96	71 - 125		
Trichloroethene	0.000424	U	0.0500	0.04852		mg/L		97	62 - 137		
Vinyl chloride	0.000234	U	0.0500	0.05152		mg/L		103	60 - 140		

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

Lab Sample ID: 860-26253-1 MS
Matrix: Water
Analysis Batch: 53084

Client Sample ID: SB10-03-051622
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	105		75 - 131
Toluene-d8 (Surr)	100		80 - 117
4-Bromofluorobenzene (Surr)	98		74 - 124
1,2-Dichloroethane-d4 (Surr)	101		63 - 144

GC/MS VOA

Analysis Batch: 53050

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-26253-6	TB-01-051622	Total/NA	Water	8260C	
MB 860-53050/10	Method Blank	Total/NA	Water	8260C	
LCS 860-53050/3	Lab Control Sample	Total/NA	Water	8260C	
LCSD 860-53050/4	Lab Control Sample Dup	Total/NA	Water	8260C	
860-26190-A-3 MS	Matrix Spike	Total/NA	Water	8260C	

Analysis Batch: 53084

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-26253-1	SB10-03-051622	Total/NA	Water	8260C	
860-26253-2	SB10-02-051622	Total/NA	Water	8260C	
860-26253-3	SB05-03-051622	Total/NA	Water	8260C	
860-26253-4	SB05-02-051622	Total/NA	Water	8260C	
860-26253-5	SB05-01-051622	Total/NA	Water	8260C	
MB 860-53084/9	Method Blank	Total/NA	Water	8260C	
LCS 860-53084/3	Lab Control Sample	Total/NA	Water	8260C	
LCSD 860-53084/4	Lab Control Sample Dup	Total/NA	Water	8260C	
860-26253-1 MS	SB10-03-051622	Total/NA	Water	8260C	

Lab Chronicle

Client: Jacobs Engineering Group, Inc.
Job ID: 860-26253-1
Project/Site: STC Silber Rd Pre-Design Investigation

Client Sample ID: SB10-03-051622
Lab Sample ID: 860-26253-1
Date Collected: 05/16/22 08:10
Matrix: Water
Date Received: 05/16/22 14:13

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	53084	05/17/22 11:18	TTD	XEN STF

Client Sample ID: SB10-02-051622
Lab Sample ID: 860-26253-2
Date Collected: 05/16/22 08:20
Matrix: Water
Date Received: 05/16/22 14:13

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	53084	05/17/22 11:39	TTD	XEN STF

Client Sample ID: SB05-03-051622
Lab Sample ID: 860-26253-3
Date Collected: 05/16/22 12:20
Matrix: Water
Date Received: 05/16/22 14:13

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	53084	05/17/22 11:59	TTD	XEN STF

Client Sample ID: SB05-02-051622
Lab Sample ID: 860-26253-4
Date Collected: 05/16/22 12:45
Matrix: Water
Date Received: 05/16/22 14:13

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	53084	05/17/22 12:20	TTD	XEN STF

Client Sample ID: SB05-01-051622
Lab Sample ID: 860-26253-5
Date Collected: 05/16/22 13:00
Matrix: Water
Date Received: 05/16/22 14:13

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	53084	05/17/22 12:40	TTD	XEN STF

Client Sample ID: TB-01-051622
Lab Sample ID: 860-26253-6
Date Collected: 05/16/22 07:30
Matrix: Water
Date Received: 05/16/22 14:13

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	53050	05/16/22 17:38	NA	XEN STF

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Accreditation/Certification Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-26253-1
Project/Site: STC Silber Rd Pre-Design Investigation

Laboratory: Eurofins Houston

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

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	21-038-0	08-04-22
Florida	NELAP	E871002	06-30-22
Louisiana	NELAP	03054	06-30-22
Oklahoma	State	2021-168	08-31-22
Texas	NELAP	T104704215-21-44	06-30-22
Texas	TCEQ Water Supply	T104704215	06-30-22
USDA	US Federal Programs	P330-22-00025	03-02-23

Method Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-26253-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	XEN STF
5030C	Purge and Trap	SW846	XEN STF

Protocol References:

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

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Sample Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-26253-1
Project/Site: STC Silber Rd Pre-Design Investigation

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
860-26253-1	SB10-03-051622	Water	05/16/22 08:10	05/16/22 14:13
860-26253-2	SB10-02-051622	Water	05/16/22 08:20	05/16/22 14:13
860-26253-3	SB05-03-051622	Water	05/16/22 12:20	05/16/22 14:13
860-26253-4	SB05-02-051622	Water	05/16/22 12:45	05/16/22 14:13
860-26253-5	SB05-01-051622	Water	05/16/22 13:00	05/16/22 14:13
860-26253-6	TB-01-051622	Water	05/16/22 07:30	05/16/22 14:13

Appendix A

Laboratory Data Package Cover Page - Page 1 of 4

This data package is for Job No. 860-26253-1 and consists of:

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

- ☑ R1- Field chain-of-custody documentation;
- ☑ R2 - Sample identification cross-reference;
- ☑ R3 - Test reports (analytical data sheets) for each environmental sample that includes:
  a. Items consistent with NELAC Chapter 5,
  b. dilution factors,
  c. prepatation methods,
  d. cleanup methods, and
  e. if required for the project, tentatively identified coumpounds (TICs).
- ☑ R4 - Surrogate recovery data including:
  a. Calculated recovery (%R), and
  b. The laboratory's surrogate QC limits.
- ☑ R5 - Test reports/summary forms for blank samples;
- ☑ R6 - Test reports/summary forms for laboratory control samples (LCSs) including:
  a. LCS spiking amounts,
  b. Calculated %R for each analyte, and
  c. The laboratory's LCS QC limits.
- ☑ R7 - Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a. Samples associated with the MS/MSD clearly identified,
  b. MS/MSD spiking amounts,
  c. Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d. Calculated %Rs and relative percent differences (RPDs), and
  e. The laboratory's MS/MSD QC limits
- ☐ R8 - Laboratory analytical duplicate (if applicable) recovery and precision:
  a. The amount of analyte measured in the duplicate,
  b. The calculated RPD, and
  c. The laboratory's QC limits for analytical duplicates.
- ☑ R9 - List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
- ☑ R10 - Other problems or anomalies.
- ☐ Exception Report for every "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge 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.

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

Name (Printed)	Signature	Official Title (Printed)	Date
Bethany McDaniel	Bethany McDaniel	Senior Project Manager	05/17/2022

Laboratory Data Package Cover Page - Page 2 of 4

Laboratory Name: Eurofins Houston	LRC Date: 05/17/2022
Project Name: STC Silber Rd Pre-Design Investigation	Laboratory Job Number: 860-26253-1
Reviewer Name: Bethany McDaniel	

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
		Were all departures from standard conditions described in an exception report?	✓				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	✓				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	✓				
		Were calculations checked by a peer or supervisor?	✓				
		Were all analyte identifications checked by a peer or supervisor?	✓				
		Were sample detection limits reported for all analytes not detected?	✓				
		Were all results for soil and sediment samples reported on a dry weight basis?			✓		
		Were % moisture (or solids) reported for all soil and sediment samples?			✓		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			✓		
		If required for the project, are TICs reported?			✓		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	✓				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	✓				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	✓				
		Were blanks analyzed at the appropriate frequency?	✓				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
		Were blank concentrations < MQL?	✓				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	✓				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
		Were LCSs analyzed at the required frequency?	✓				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	✓				
		Was the LCSD RPD within QC limits?	✓				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	✓				
		Were MS/MSD analyzed at the appropriate frequency?	✓				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	✓				
		Were MS/MSD RPDs within laboratory QC limits?			✓		
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			✓		
		Were analytical duplicates analyzed at the appropriate frequency?			✓		
		Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	✓				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	✓				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	✓				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	✓				

Laboratory Data Package Cover Page - Page 3 of 4

Laboratory Name: Eurofins Houston	LRC Date: 05/17/2022
Project Name: STC Silber Rd Pre-Design Investigation	Laboratory Job Number: 860-26253-1
Reviewer Name: Bethany McDaniel	

#[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?	✓				
		Were percent RSDs or correlation coefficient criteria met?	✓				
		Was the number of standards recommended in the method used for all analytes?	✓				
		Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
		Are ICAL data available for all instruments used?	✓				
		Has the initial calibration curve been verified using an appropriate second source standard?	✓				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?	✓				
		Were percent differences for each analyte within the method-required QC limits?	✓				
		Was the ICAL curve verified for each analyte?	✓				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			✓		
S3	O	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?	✓				
		Were ion abundance data within the method-required QC limits?	✓				
S4	O	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?	✓				
S5	OI	**Raw data (NELAC Section 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
		Were data associated with manual integrations flagged on the raw data?	✓				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			✓		
S7	O	**Tentatively identified compounds (TICs)**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
S8	I	**Interference Check Sample (ICS) results**					
		Were percent recoveries within method QC limits?			✓		
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?			✓		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	✓				
		Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
S11	OI	**Proficiency test reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	✓				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	✓				
		Is documentation of the analyst's competency up-to-date and on file?	✓				
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?	✓				
S16	OI	**Laboratory standard operating procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	✓				

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).

Laboratory Data Package Cover Page - Page 4 of 4

Laboratory Name: Eurofins Houston	LRC Date: 05/17/2022
Project Name: STC Silber Rd Pre-Design Investigation	Laboratory Job Number: 860-26253-1
Reviewer Name: Bethany McDaniel	

ER#[1]	Description
	No Exceptions

1. ER# = Exception Report identification number (an Exception Report should be completed for an item if “NR” or “No” is checked).

Detection Check Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-26253-1
Project/Site: STC Silber Rd Pre-Design Investigation

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**
Prep Method: 5030C-Purge and Trap
Instrument: A292 **Detector: MSD/0** **Column: DB-624**

Analyte	Spike Added	Result	Qualifier	Unit	RL	MDL	Analysis Date	Analysis Batch
1,1-Dichloroethane	0.00500	0.00501		mg/L	0.00100	0.000244	01/07/2022	860-36806
1,2-Dichloroethane	0.00500	0.00493		mg/L	0.00100	0.000285	01/07/2022	860-36806
1,1-Dichloroethene	0.00500	0.00500		mg/L	0.00100	0.000216	01/07/2022	860-36806
cis-1,2-Dichloroethene	0.00500	0.00502		mg/L	0.00100	0.000174	01/07/2022	860-36806
Tetrachloroethene	0.00500	0.00523		mg/L	0.00100	0.000500	01/07/2022	860-36806
Trichloroethene	0.00500	0.00484	J	mg/L	0.00500	0.000424	01/07/2022	860-36806
Vinyl chloride	0.00500	0.00496		mg/L	0.00200	0.000234	01/07/2022	860-36806

Matrix: Water **Prep Type: Total/NA**
Prep Method: 5030C-Purge and Trap
Instrument: A325 **Detector: MSD/0** **Column: DB-624**

Analyte	Spike Added	Result	Qualifier	Unit	RL	MDL	Analysis Date	Analysis Batch
1,1-Dichloroethane	0.00100	0.00483		mg/L	0.00100	0.000244	03/03/2022	860-43530
1,2-Dichloroethane	0.00100	0.00498		mg/L	0.00100	0.000285	03/03/2022	860-43530
1,1-Dichloroethene	0.00100	0.00411		mg/L	0.00100	0.000216	03/03/2022	860-43530
cis-1,2-Dichloroethene	0.00100	0.00499		mg/L	0.00100	0.000174	03/03/2022	860-43530
Tetrachloroethene	0.00100	0.00463		mg/L	0.00100	0.000500	03/03/2022	860-43530
Trichloroethene	0.00100	0.00503		mg/L	0.00500	0.000424	03/03/2022	860-43530
Vinyl chloride	0.00100	0.00381		mg/L	0.00200	0.000234	03/03/2022	860-43530

Eurofins Xenco, Stafford
4145 Greenbriar Dr
Stafford, TX 77477
Phone (281) 240-4200

Chain of Custody Record

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Client Information	Sampler	Lab PM: McDaniel Bethany A	Carrier Tracking No(s):	COC No: 860-6507-2299.1
Client Contact: John Ynfante	Phone:	E-Mail: Bethany McDaniel@Eurofinset.com	State of Origin:	Page: Page 1 of 1
Company: Jacobs Engineering Group, Inc.	PWSID:			Job #:
Address: 14701 St. Mary's Lane Suite 300	Due Date Requested:			
City: Houston	TAT Requested (days): 1 day RUSH			
State, Zip: TX, 77079	Compliance Project: Δ Yes Δ No			
Phone:	PO #:			
Email: John.Ynfante@jacobs.com	WO #: D3542628.C CS.TPE.SIL.22-01-02			
Project Name: STC Silber Road Pre-Design Investigation	Project #: 86002024			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification	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)	8260B (MOD) VOCs Custom List (7)	Total Number of containers	Special Instructions/Note:
			Preservation Code:			A		
SB10-03-051622	5/16/22	0810	G	Water		X	3	
SB10-02-051622	5/16/22	0820	G	Water		X	3	
SB05-03-051622	5/16/22	1220	G	Water		X	3	
SB05-02-051622	5/16/22	1245	G	Water		X	3	
SB05-01-051622	5/16/22	1300	G	Water		X	3	
TB-01-051622	5/16/22	0730		Water		X	2	
				Water				
				Water				
				Water				
				Water				
				Water				

860-26253 Chain of Custody

Temp: 2.5 IR ID:HOU-332
C/F: -0.9
Corrected Temp: 1.6

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) TRRP

Special Instructions/QC Requirements:

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

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		5/16/22 1330			5/16/22 1330	
2		5/16/22 1413			5/16/22 1413	Ex
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

Ver: 01/16/2019

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5/17/2022

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc.

Job Number: 860-26253-1

Login Number: 26253
List Number: 1
Creator: Palmar, Pedro

List Source: Eurofins Houston

Question	Answer	Comment
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 (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	N/A	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	

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ANALYTICAL REPORT

Eurofins Houston
4145 Greenbriar Dr
Stafford, TX 77477
Tel: (281)240-4200

Laboratory Job ID: 860-26450-1
Client Project/Site: STC Silber Rd Pre-Design Investigation

For:
Jacobs Engineering Group, Inc.
12750 Merit Drive
Suite 1100
Dallas, Texas 75251

Attn: John Knott

Bethany McDaniel

Authorized for release by:
5/20/2022 5:18:02 PM

Bethany McDaniel, Senior Project Manager
(713)358-2005
Bethany.McDaniel@et.eurofinsus.com

Table of Contents

Definitions/Glossary

Client: Jacobs Engineering Group, Inc. Job ID: 860-26450-1
Project/Site: STC Silber Rd Pre-Design Investigation

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the MQL but greater than or equal to the SDL and the concentration is an estimated value.
N1	MS, MSD: Spike recovery exceeds upper or lower control limits.
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
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Jacobs Engineering Group, Inc. Job ID: 860-26450-1
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-26450-1

Laboratory: Eurofins Houston

Narrative

Job Narrative
860-26450-1

Receipt
The samples were received on 5/19/2022 12:37 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 4.3°C

Detection Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-26450-1
Project/Site: STC Silber Rd Pre-Design Investigation

Client Sample ID: SB17-03-051822 Lab Sample ID: 860-26450-1

No Detections.

Client Sample ID: SB17-02-051822 Lab Sample ID: 860-26450-2

No Detections.

Client Sample ID: MW-181-051922 Lab Sample ID: 860-26450-3

No Detections.

Client Sample ID: MW-182-051922 Lab Sample ID: 860-26450-4

No Detections.

Client Sample ID: MW-163-051922 Lab Sample ID: 860-26450-5

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.0189		0.00100	0.000244	mg/L	1		8260C	Total/NA
cis-1,2-Dichloroethene	0.00453		0.00100	0.000174	mg/L	1		8260C	Total/NA
Tetrachloroethene	0.00390		0.00100	0.000500	mg/L	1		8260C	Total/NA
Trichloroethene	0.00234	J	0.00500	0.000424	mg/L	1		8260C	Total/NA
Vinyl chloride	0.00227		0.00200	0.000234	mg/L	1		8260C	Total/NA

Client Sample ID: FD-01-051922 Lab Sample ID: 860-26450-6

No Detections.

Client Sample ID: TB-01-051822 Lab Sample ID: 860-26450-7

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: SB17-03-051822 — Lab Sample ID: 860-26450-1

Date Collected: 05/18/22 13:40 — **Matrix: Water**
Date Received: 05/19/22 12:37

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/19/22 17:51	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/19/22 17:51	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/19/22 17:51	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/19/22 17:51	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/19/22 17:51	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/19/22 17:51	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/19/22 17:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*94*		*75 - 131*		*05/19/22 17:51*	*1*
Toluene-d8 (Surr)	*99*		*80 - 117*		*05/19/22 17:51*	*1*
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*		*05/19/22 17:51*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*63 - 144*		*05/19/22 17:51*	*1*

Client Sample ID: SB17-02-051822 — Lab Sample ID: 860-26450-2

Date Collected: 05/18/22 14:30 — **Matrix: Water**
Date Received: 05/19/22 12:37

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/19/22 18:09	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/19/22 18:09	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/19/22 18:09	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/19/22 18:09	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/19/22 18:09	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/19/22 18:09	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/19/22 18:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*97*		*75 - 131*		*05/19/22 18:09*	*1*
Toluene-d8 (Surr)	*99*		*80 - 117*		*05/19/22 18:09*	*1*
4-Bromofluorobenzene (Surr)	*101*		*74 - 124*		*05/19/22 18:09*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*63 - 144*		*05/19/22 18:09*	*1*

Client Sample ID: MW-181-051922 — Lab Sample ID: 860-26450-3

Date Collected: 05/19/22 09:05 — **Matrix: Water**
Date Received: 05/19/22 12:37

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/19/22 16:54	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/19/22 16:54	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/19/22 16:54	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/19/22 16:54	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/19/22 16:54	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/19/22 16:54	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/19/22 16:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*97*		*75 - 131*		*05/19/22 16:54*	*1*
Toluene-d8 (Surr)	*101*		*80 - 117*		*05/19/22 16:54*	*1*

Client Sample ID: MW-181-051922 — Lab Sample ID: 860-26450-3

Date Collected: 05/19/22 09:05 — **Matrix: Water**
Date Received: 05/19/22 12:37

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*		*05/19/22 16:54*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*63 - 144*		*05/19/22 16:54*	*1*

Client Sample ID: MW-182-051922 — Lab Sample ID: 860-26450-4

Date Collected: 05/19/22 09:55 — **Matrix: Water**
Date Received: 05/19/22 12:37

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/19/22 17:13	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/19/22 17:13	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/19/22 17:13	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/19/22 17:13	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/19/22 17:13	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/19/22 17:13	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/19/22 17:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*95*		*75 - 131*		*05/19/22 17:13*	*1*
Toluene-d8 (Surr)	*101*		*80 - 117*		*05/19/22 17:13*	*1*
4-Bromofluorobenzene (Surr)	*100*		*74 - 124*		*05/19/22 17:13*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*63 - 144*		*05/19/22 17:13*	*1*

Client Sample ID: MW-163-051922 — Lab Sample ID: 860-26450-5

Date Collected: 05/19/22 10:55 — **Matrix: Water**
Date Received: 05/19/22 12:37

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	**0.0189**		0.00100	0.000244	mg/L			05/19/22 17:32	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/19/22 17:32	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/19/22 17:32	1
cis-1,2-Dichloroethene	**0.00453**		0.00100	0.000174	mg/L			05/19/22 17:32	1
Tetrachloroethene	**0.00390**		0.00100	0.000500	mg/L			05/19/22 17:32	1
Trichloroethene	**0.00234**	**J**	0.00500	0.000424	mg/L			05/19/22 17:32	1
Vinyl chloride	**0.00227**		0.00200	0.000234	mg/L			05/19/22 17:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*96*		*75 - 131*		*05/19/22 17:32*	*1*
Toluene-d8 (Surr)	*101*		*80 - 117*		*05/19/22 17:32*	*1*
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*		*05/19/22 17:32*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*63 - 144*		*05/19/22 17:32*	*1*

Client Sample ID: FD-01-051922 — Lab Sample ID: 860-26450-6

Date Collected: 05/19/22 00:00 — **Matrix: Water**
Date Received: 05/19/22 12:37

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/19/22 16:35	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/19/22 16:35	1

Client Sample ID: FD-01-051922 — Lab Sample ID: 860-26450-6

Date Collected: 05/19/22 00:00 — **Matrix: Water**
Date Received: 05/19/22 12:37

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

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/19/22 16:35	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/19/22 16:35	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/19/22 16:35	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/19/22 16:35	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/19/22 16:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*95*		*75 - 131*		*05/19/22 16:35*	*1*
Toluene-d8 (Surr)	*101*		*80 - 117*		*05/19/22 16:35*	*1*
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*		*05/19/22 16:35*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*63 - 144*		*05/19/22 16:35*	*1*

Client Sample ID: TB-01-051822 — Lab Sample ID: 860-26450-7

Date Collected: 05/18/22 10:00 — **Matrix: Water**
Date Received: 05/19/22 12:37

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/19/22 16:16	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/19/22 16:16	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/19/22 16:16	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/19/22 16:16	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/19/22 16:16	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/19/22 16:16	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/19/22 16:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*99*		*75 - 131*		*05/19/22 16:16*	*1*
Toluene-d8 (Surr)	*103*		*80 - 117*		*05/19/22 16:16*	*1*
4-Bromofluorobenzene (Surr)	*101*		*74 - 124*		*05/19/22 16:16*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*63 - 144*		*05/19/22 16:16*	*1*

Unadjusted Detection Limits

Client: Jacobs Engineering Group, Inc.
Job ID: 860-26450-1
Project/Site: STC Silber Rd Pre-Design Investigation

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	MQL	MDL	Units
1,1-Dichloroethane	0.00100	0.000244	mg/L
1,1-Dichloroethene	0.00100	0.000216	mg/L
1,2-Dichloroethane	0.00100	0.000285	mg/L
cis-1,2-Dichloroethene	0.00100	0.000174	mg/L
Tetrachloroethene	0.00100	0.000500	mg/L
Trichloroethene	0.00500	0.000424	mg/L
Vinyl chloride	0.00200	0.000234	mg/L

Surrogate Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-26450-1
Project/Site: STC Silber Rd Pre-Design Investigation

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Water
Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DBFM	TOL	BFB	DCA
Lab Sample ID	Client Sample ID	(75-131)	(80-117)	(74-124)	(63-144)
860-26450-1	SB17-03-051822	94	99	99	100
860-26450-2	SB17-02-051822	97	99	101	99
860-26450-3	MW-181-051922	97	101	99	101
860-26450-4	MW-182-051922	95	101	100	101
860-26450-5	MW-163-051922	96	101	99	100
860-26450-5 MS	MW-163-051922	100	98	95	98
860-26450-5 MSD	MW-163-051922	102	99	101	104
860-26450-6	FD-01-051922	95	101	99	101
860-26450-7	TB-01-051822	99	103	101	103
LCS 860-53551/1010	Lab Control Sample	100	101	99	101
LCSD 860-53551/11	Lab Control Sample Dup	104	101	100	102
MB 860-53551/15	Method Blank	94	101	96	101

Surrogate Legend

DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 860-53551/15
Matrix: Water
Analysis Batch: 53551

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

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/19/22 13:54	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/19/22 13:54	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/19/22 13:54	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/19/22 13:54	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/19/22 13:54	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/19/22 13:54	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/19/22 13:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*94*		*75 - 131*		*05/19/22 13:54*	*1*
Toluene-d8 (Surr)	*101*		*80 - 117*		*05/19/22 13:54*	*1*
4-Bromofluorobenzene (Surr)	*96*		*74 - 124*		*05/19/22 13:54*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*63 - 144*		*05/19/22 13:54*	*1*

Lab Sample ID: LCS 860-53551/1010
Matrix: Water
Analysis Batch: 53551

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethane			0.0500	0.05676		mg/L		114	72 - 125		
1,2-Dichloroethane			0.0500	0.05635		mg/L		113	68 - 127		
1,1-Dichloroethene			0.0500	0.05416		mg/L		108	59 - 172		
cis-1,2-Dichloroethene			0.0500	0.05407		mg/L		108	75 - 125		
Tetrachloroethene			0.0500	0.05075		mg/L		102	71 - 125		
Trichloroethene			0.0500	0.05505		mg/L		110	62 - 137		
Vinyl chloride			0.0500	0.05043		mg/L		101	60 - 140		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*100*		*75 - 131*
Toluene-d8 (Surr)	*101*		*80 - 117*
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*101*		*63 - 144*

Lab Sample ID: LCSD 860-53551/11
Matrix: Water
Analysis Batch: 53551

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethane			0.0500	0.05632		mg/L		113	72 - 125	1	25
1,2-Dichloroethane			0.0500	0.05764		mg/L		115	68 - 127	2	25
1,1-Dichloroethene			0.0500	0.05712		mg/L		114	59 - 172	5	25
cis-1,2-Dichloroethene			0.0500	0.05660		mg/L		113	75 - 125	5	25
Tetrachloroethene			0.0500	0.05226		mg/L		105	71 - 125	3	25
Trichloroethene			0.0500	0.05518		mg/L		110	62 - 137	0	25
Vinyl chloride			0.0500	0.05323		mg/L		106	60 - 140	5	25

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

Lab Sample ID: LCSD 860-53551/11
Matrix: Water
Analysis Batch: 53551

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

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Dibromofluoromethane (Surr)	*104*		*75 - 131*
Toluene-d8 (Surr)	*101*		*80 - 117*
4-Bromofluorobenzene (Surr)	*100*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*102*		*63 - 144*

Lab Sample ID: 860-26450-5 MS
Matrix: Water
Analysis Batch: 53551

Client Sample ID: MW-163-051922
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethane	0.0189		0.0500	0.07817		mg/L		119	72 - 125
1,2-Dichloroethane	0.000285	U	0.0500	0.05579		mg/L		112	68 - 127
1,1-Dichloroethene	0.000216	U	0.0500	0.09627	N1	mg/L		193	59 - 172
cis-1,2-Dichloroethene	0.00453		0.0500	0.06266		mg/L		116	75 - 125
Tetrachloroethene	0.00390		0.0500	0.05402		mg/L		100	71 - 125
Trichloroethene	0.00234	J	0.0500	0.05983		mg/L		115	62 - 137
Vinyl chloride	0.00227		0.0500	0.05384		mg/L		103	60 - 140

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*100*		*75 - 131*
Toluene-d8 (Surr)	*98*		*80 - 117*
4-Bromofluorobenzene (Surr)	*95*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*98*		*63 - 144*

Lab Sample ID: 860-26450-5 MSD
Matrix: Water
Analysis Batch: 53551

Client Sample ID: MW-163-051922
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethane	0.0189		0.0500	0.07732		mg/L		117	72 - 125	1	25
1,2-Dichloroethane	0.000285	U	0.0500	0.05814		mg/L		116	68 - 127	4	25
1,1-Dichloroethene	0.000216	U	0.0500	0.09434	N1	mg/L		189	59 - 172	2	25
cis-1,2-Dichloroethene	0.00453		0.0500	0.06265		mg/L		116	75 - 125	0	25
Tetrachloroethene	0.00390		0.0500	0.05721		mg/L		107	71 - 125	6	25
Trichloroethene	0.00234	J	0.0500	0.05825		mg/L		112	62 - 137	3	25
Vinyl chloride	0.00227		0.0500	0.05257		mg/L		101	60 - 140	2	25

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Dibromofluoromethane (Surr)	*102*		*75 - 131*
Toluene-d8 (Surr)	*99*		*80 - 117*
4-Bromofluorobenzene (Surr)	*101*		*74 - 124*
1,2-Dichloroethane-d4 (Surr)	*104*		*63 - 144*

QC Association Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-26450-1

GC/MS VOA

Analysis Batch: 53551

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-26450-1	SB17-03-051822	Total/NA	Water	8260C	
860-26450-2	SB17-02-051822	Total/NA	Water	8260C	
860-26450-3	MW-181-051922	Total/NA	Water	8260C	
860-26450-4	MW-182-051922	Total/NA	Water	8260C	
860-26450-5	MW-163-051922	Total/NA	Water	8260C	
860-26450-6	FD-01-051922	Total/NA	Water	8260C	
860-26450-7	TB-01-051822	Total/NA	Water	8260C	
MB 860-53551/15	Method Blank	Total/NA	Water	8260C	
LCS 860-53551/1010	Lab Control Sample	Total/NA	Water	8260C	
LCSD 860-53551/11	Lab Control Sample Dup	Total/NA	Water	8260C	
860-26450-5 MS	MW-163-051922	Total/NA	Water	8260C	
860-26450-5 MSD	MW-163-051922	Total/NA	Water	8260C	

Lab Chronicle

Client: Jacobs Engineering Group, Inc.
Job ID: 860-26450-1
Project/Site: STC Silber Rd Pre-Design Investigation

Client Sample ID: SB17-03-051822
Lab Sample ID: 860-26450-1
Date Collected: 05/18/22 13:40
Matrix: Water
Date Received: 05/19/22 12:37

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	53551	05/19/22 17:51	NA	XEN STF

Client Sample ID: SB17-02-051822
Lab Sample ID: 860-26450-2
Date Collected: 05/18/22 14:30
Matrix: Water
Date Received: 05/19/22 12:37

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	53551	05/19/22 18:09	NA	XEN STF

Client Sample ID: MW-181-051922
Lab Sample ID: 860-26450-3
Date Collected: 05/19/22 09:05
Matrix: Water
Date Received: 05/19/22 12:37

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	53551	05/19/22 16:54	NA	XEN STF

Client Sample ID: MW-182-051922
Lab Sample ID: 860-26450-4
Date Collected: 05/19/22 09:55
Matrix: Water
Date Received: 05/19/22 12:37

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	53551	05/19/22 17:13	NA	XEN STF

Client Sample ID: MW-163-051922
Lab Sample ID: 860-26450-5
Date Collected: 05/19/22 10:55
Matrix: Water
Date Received: 05/19/22 12:37

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	53551	05/19/22 17:32	NA	XEN STF

Client Sample ID: FD-01-051922
Lab Sample ID: 860-26450-6
Date Collected: 05/19/22 00:00
Matrix: Water
Date Received: 05/19/22 12:37

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	53551	05/19/22 16:35	NA	XEN STF

Client Sample ID: TB-01-051822
Lab Sample ID: 860-26450-7
Date Collected: 05/18/22 10:00
Matrix: Water
Date Received: 05/19/22 12:37

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	5 mL	5 mL	53551	05/19/22 16:16	NA	XEN STF

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Accreditation/Certification Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-26450-1
Project/Site: STC Silber Rd Pre-Design Investigation

Laboratory: Eurofins Houston

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

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	21-038-0	08-04-22
Florida	NELAP	E871002	06-30-22
Louisiana	NELAP	03054	06-30-22
Oklahoma	State	2021-168	08-31-22
Texas	NELAP	T104704215-21-44	06-30-22
Texas	TCEQ Water Supply	T104704215	06-30-22
USDA	US Federal Programs	P330-22-00025	03-02-23

Method Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-26450-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	XEN STF
5030C	Purge and Trap	SW846	XEN STF

Protocol References:

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

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Sample Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation

Job ID: 860-26450-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
860-26450-1	SB17-03-051822	Water	05/18/22 13:40	05/19/22 12:37
860-26450-2	SB17-02-051822	Water	05/18/22 14:30	05/19/22 12:37
860-26450-3	MW-181-051922	Water	05/19/22 09:05	05/19/22 12:37
860-26450-4	MW-182-051922	Water	05/19/22 09:55	05/19/22 12:37
860-26450-5	MW-163-051922	Water	05/19/22 10:55	05/19/22 12:37
860-26450-6	FD-01-051922	Water	05/19/22 00:00	05/19/22 12:37
860-26450-7	TB-01-051822	Water	05/18/22 10:00	05/19/22 12:37

Appendix A

Laboratory Data Package Cover Page - Page 1 of 4

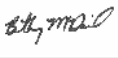
This data package is for Job No. 860-26450-1 and consists of:

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

- ☑ R1- Field chain-of-custody documentation;
- ☑ R2 - Sample identification cross-reference;
- ☑ R3 - Test reports (analytical data sheets) for each environmental sample that includes:
  a. Items consistent with NELAC Chapter 5,
  b. dilution factors,
  c. prepatation methods,
  d. cleanup methods, and
  e. if required for the project, tentatively identified coumpounds (TICs).
- ☑ R4 - Surrogate recovery data including:
  a. Calculated recovery (%R), and
  b. The laboratory's surrogate QC limits.
- ☑ R5 - Test reports/summary forms for blank samples;
- ☑ R6 - Test reports/summary forms for laboratory control samples (LCSs) including:
  a. LCS spiking amounts,
  b. Calculated %R for each analyte, and
  c. The laboratory's LCS QC limits.
- ☑ R7 - Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a. Samples associated with the MS/MSD clearly identified,
  b. MS/MSD spiking amounts,
  c. Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d. Calculated %Rs and relative percent differences (RPDs), and
  e. The laboratory's MS/MSD QC limits
- ☐ R8 - Laboratory analytical duplicate (if applicable) recovery and precision:
  a. The amount of analyte measured in the duplicate,
  b. The calculated RPD, and
  c. The laboratory's QC limits for analytical duplicates.
- ☑ R9 - List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
- ☑ R10 - Other problems or anomalies.
- ☐ Exception Report for every "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge 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.

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

Name (Printed)	Signature	Official Title (Printed)	Date
Bethany McDaniel		Senior Project Manager	05/20/2022

Laboratory Data Package Cover Page - Page 2 of 4

Laboratory Name: Eurofins Houston	LRC Date: 05/20/2022
Project Name: STC Silber Rd Pre-Design Investigation	Laboratory Job Number: 860-26450-1
Reviewer Name: Bethany McDaniel	

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
		Were all departures from standard conditions described in an exception report?	✓				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	✓				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	✓				
		Were calculations checked by a peer or supervisor?	✓				
		Were all analyte identifications checked by a peer or supervisor?	✓				
		Were sample detection limits reported for all analytes not detected?	✓				
		Were all results for soil and sediment samples reported on a dry weight basis?			✓		
		Were % moisture (or solids) reported for all soil and sediment samples?			✓		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			✓		
		If required for the project, are TICs reported?			✓		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	✓				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	✓				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	✓				
		Were blanks analyzed at the appropriate frequency?	✓				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
		Were blank concentrations < MQL?	✓				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	✓				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
		Were LCSs analyzed at the required frequency?	✓				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	✓				
		Was the LCSD RPD within QC limits?	✓				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	✓				
		Were MS/MSD analyzed at the appropriate frequency?	✓				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		✓			1
		Were MS/MSD RPDs within laboratory QC limits?	✓				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			✓		
		Were analytical duplicates analyzed at the appropriate frequency?			✓		
		Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	✓				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	✓				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	✓				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	✓				

Laboratory Data Package Cover Page - Page 3 of 4

Laboratory Name: Eurofins Houston	LRC Date: 05/20/2022
Project Name: STC Silber Rd Pre-Design Investigation	Laboratory Job Number: 860-26450-1
Reviewer Name: Bethany McDaniel	

#[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?	✓				
		Were percent RSDs or correlation coefficient criteria met?	✓				
		Was the number of standards recommended in the method used for all analytes?	✓				
		Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
		Are ICAL data available for all instruments used?	✓				
		Has the initial calibration curve been verified using an appropriate second source standard?	✓				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?			✓		
		Were percent differences for each analyte within the method-required QC limits?			✓		
		Was the ICAL curve verified for each analyte?	✓				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			✓		
S3	O	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?	✓				
		Were ion abundance data within the method-required QC limits?	✓				
S4	O	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?	✓				
S5	OI	**Raw data (NELAC Section 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
		Were data associated with manual integrations flagged on the raw data?	✓				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			✓		
S7	O	**Tentatively identified compounds (TICs)**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
S8	I	**Interference Check Sample (ICS) results**					
		Were percent recoveries within method QC limits?			✓		
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?			✓		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	✓				
		Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
S11	OI	**Proficiency test reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	✓				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	✓				
		Is documentation of the analyst's competency up-to-date and on file?	✓				
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?	✓				
S16	OI	**Laboratory standard operating procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	✓				

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).

Laboratory Data Package Cover Page - Page 4 of 4

Laboratory Name: Eurofins Houston	LRC Date: 05/20/2022
Project Name: STC Silber Rd Pre-Design Investigation	Laboratory Job Number: 860-26450-1
Reviewer Name: Bethany McDaniel	

ER#[1]	Description
1	Method 8260C: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 860-53551 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

1. ER# = Exception Report identification number (an Exception Report should be completed for an item if “NR” or “No” is checked).

Detection Check Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-26450-1
Project/Site: STC Silber Rd Pre-Design Investigation

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Water
Prep Type: Total/NA
Prep Method: 5030C-Purge and Trap
Instrument: A294
Detector: MSD/0
Column: DB-624

Analyte	Spike Added	Result	Qualifier	Unit	RL	MDL	Analysis Date	Analysis Batch
1,1-Dichloroethane	0.00500	0.00501		mg/L	0.00100	0.000244	02/23/2022	860-42516
1,2-Dichloroethane	0.00500	0.00495		mg/L	0.00100	0.000285	02/23/2022	860-42516
1,1-Dichloroethene	0.00500	0.00478		mg/L	0.00100	0.000216	02/23/2022	860-42516
cis-1,2-Dichloroethene	0.00500	0.00494		mg/L	0.00100	0.000174	02/23/2022	860-42516
Tetrachloroethene	0.00500	0.00496		mg/L	0.00100	0.000500	02/23/2022	860-42516
Trichloroethene	0.00500	0.00510		mg/L	0.00500	0.000424	02/23/2022	860-42516
Vinyl chloride	0.00500	0.00494		mg/L	0.00200	0.000234	02/23/2022	860-42516

Eurofins Xenco, Stafford
4145 Greenbriar Dr
Stafford, TX 77477
Phone (281) 240-4200

Chain of Custody Record

eurofins | Environment Testing America

Temp. 5.2 IR ID:HOU-323
C/F -0.9
Corrected Temp: 4.3

Client Information	Lab PM: McDaniel Bethany A	Carrier Tracking No(s):	COC No: 860-6507-2299 1
Client Contact: John Ynfante	E-Mail: Bethany McDaniel@Eurofinset.com	State of Origin:	Page: Page 1 of 1
Company: Jacobs Engineering Group, Inc.	PWSID:		Job #:

Address: 14701 St. Mary's Lane Suite 300	Due Date Requested:	Analysis Requested
City: Houston	TAT Requested (days): 1 day RUSH	
State, Zip: TX, 77079	Compliance Project: Δ Yes Δ No	
Phone:	PO #:	
Email: John.Ynfante@jacobs.com	WO #: D3542628.C CS.TPE.SIL.22-01-02	
Project Name: STC Silber Road Pre-Design Investigation	Project #: 86002024	
Site:	SSOW#:	

Preservation Codes.

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

Other:

Sample Identification	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)	8260B (MOD) VOCs Custom List (7)	Total Number of containers	Special Instructions/Note:
			Preservation Code:			A		
SB17-03-051822	5/18/22	1340	G	Water		X	3	
SB17-02-051822	5/18/22	1430	G	Water		X	3	
MW-181-051922	5/19/22	0905	G	Water		X	3	
MW-182-051922	5/19/22	0956	G	Water		X	3	
MW-183-051922	5/19/22	1055	G	Water	X	X	9	MS/MSD
FD-01-051922	5/19/22	NG	G	Water		X	3	
TB-01-051822	5/18/22	1000	-	Water		X	2	
				Water				
				Water				
				Water				
				Water				

860-26450 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 longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

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

Special Instructions/QC Requirements:

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

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		5/19/22 1237			5/19/22 1237	
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc.

Job Number: 860-26450-1

Login Number: 26450
List Number: 1
Creator: Rubio, Yuri

List Source: Eurofins Houston

Question	Answer	Comment
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 (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	

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ANALYTICAL REPORT

Eurofins Houston
4145 Greenbriar Dr
Stafford, TX 77477
Tel: (281)240-4200

Laboratory Job ID: 860-28301-1
Client Project/Site: STC Silber Rd Pre-Design Inv Part 2

For:
Jacobs Engineering Group, Inc.
12750 Merit Drive
Suite 1100
Dallas, Texas 75251

Attn: John Knott

Bethany McDaniel

Authorized for release by:
6/22/2022 10:41:27 PM

Bethany McDaniel, Senior Project Manager
(713)358-2005
Bethany.McDaniel@et.eurofinsus.com

Table of Contents

Definitions/Glossary

Client: Jacobs Engineering Group, Inc. Job ID: 860-28301-1
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the MQL but greater than or equal to the SDL and the concentration is an estimated value.
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
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 860-28301-1

Laboratory: Eurofins Houston

Narrative

Job Narrative
860-28301-1

Receipt
The samples were received on 6/21/2022 4:48 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.9°C

Detection Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Job ID: 860-28301-1

Client Sample ID: SB44-03-062022 — Lab Sample ID: 860-28301-1

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.00770		0.00100	0.000174	mg/L	1		8260D	Total/NA
1,1-Dichloroethane	0.0245		0.00100	0.000244	mg/L	1		8260D	Total/NA
1,1-Dichloroethene	0.000898	J	0.00100	0.000216	mg/L	1		8260D	Total/NA
Vinyl chloride	0.00352		0.00200	0.000234	mg/L	1		8260D	Total/NA

Client Sample ID: SB44-02-062022 — Lab Sample ID: 860-28301-2

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.00333		0.00100	0.000174	mg/L	1		8260D	Total/NA
1,1-Dichloroethane	0.0308		0.00100	0.000244	mg/L	1		8260D	Total/NA
1,1-Dichloroethene	0.00188		0.00100	0.000216	mg/L	1		8260D	Total/NA
Vinyl chloride	0.00563		0.00200	0.000234	mg/L	1		8260D	Total/NA

Client Sample ID: FD-01-062022 — Lab Sample ID: 860-28301-3

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.00776		0.00100	0.000174	mg/L	1		8260D	Total/NA
1,1-Dichloroethane	0.0219		0.00100	0.000244	mg/L	1		8260D	Total/NA
1,1-Dichloroethene	0.000832	J	0.00100	0.000216	mg/L	1		8260D	Total/NA
Vinyl chloride	0.00349		0.00200	0.000234	mg/L	1		8260D	Total/NA

Client Sample ID: TB-01-062022 — Lab Sample ID: 860-28301-4

No Detections.

Client Sample ID: SB43-03-062022 — Lab Sample ID: 860-28301-5

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.0205		0.00100	0.000174	mg/L	1		8260D	Total/NA
1,1-Dichloroethane	0.0136		0.00100	0.000244	mg/L	1		8260D	Total/NA
1,1-Dichloroethene	0.00351		0.00100	0.000216	mg/L	1		8260D	Total/NA
Tetrachloroethene	0.0143		0.00100	0.000500	mg/L	1		8260D	Total/NA
Trichloroethene	0.0339		0.00500	0.000424	mg/L	1		8260D	Total/NA
Vinyl chloride	0.00857		0.00200	0.000234	mg/L	1		8260D	Total/NA

Client Sample ID: SB43-02-062022 — Lab Sample ID: 860-28301-6

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.00873		0.00100	0.000244	mg/L	1		8260D	Total/NA
1,1-Dichloroethene	0.00628		0.00100	0.000216	mg/L	1		8260D	Total/NA
Vinyl chloride	0.142		0.00200	0.000234	mg/L	1		8260D	Total/NA
cis-1,2-Dichloroethene - DL	1.20		0.100	0.0174	mg/L	100		8260D	Total/NA
Tetrachloroethene - DL	5.60		0.100	0.0500	mg/L	100		8260D	Total/NA
Trichloroethene - DL	2.85		0.500	0.0424	mg/L	100		8260D	Total/NA

Client Sample ID: SB42-03-062022 — Lab Sample ID: 860-28301-7

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.00111		0.00100	0.000174	mg/L	1		8260D	Total/NA
1,1-Dichloroethane	0.0111		0.00100	0.000244	mg/L	1		8260D	Total/NA
1,1-Dichloroethene	0.00487		0.00100	0.000216	mg/L	1		8260D	Total/NA
Trichloroethene	0.000611	J	0.00500	0.000424	mg/L	1		8260D	Total/NA
Vinyl chloride	0.00465		0.00200	0.000234	mg/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Houston

Detection Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Job ID: 860-28301-1

Client Sample ID: SB42-02-062022 — Lab Sample ID: 860-28301-8

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.0100		0.00100	0.000174	mg/L	1		8260D	Total/NA
1,1-Dichloroethane	0.0129		0.00100	0.000244	mg/L	1		8260D	Total/NA
1,1-Dichloroethene	0.00922		0.00100	0.000216	mg/L	1		8260D	Total/NA
Tetrachloroethene	0.00200		0.00100	0.000500	mg/L	1		8260D	Total/NA
Trichloroethene	0.00585		0.00500	0.000424	mg/L	1		8260D	Total/NA
Vinyl chloride	0.00204		0.00200	0.000234	mg/L	1		8260D	Total/NA

Client Sample ID: SB42-01-062022 — Lab Sample ID: 860-28301-9

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.00421		0.00100	0.000174	mg/L	1		8260D	Total/NA
1,1-Dichloroethane	0.0195		0.00100	0.000244	mg/L	1		8260D	Total/NA
1,1-Dichloroethene	0.0125		0.00100	0.000216	mg/L	1		8260D	Total/NA
Trichloroethene	0.00129	J	0.00500	0.000424	mg/L	1		8260D	Total/NA
Vinyl chloride	0.00425		0.00200	0.000234	mg/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: SB44-03-062022 — Lab Sample ID: 860-28301-1

Date Collected: 06/20/22 12:40 — **Matrix: Water**
Date Received: 06/21/22 16:48

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**0.00770**		0.00100	0.000174	mg/L			06/22/22 03:49	1
1,1-Dichloroethane	**0.0245**		0.00100	0.000244	mg/L			06/22/22 03:49	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/22/22 03:49	1
1,1-Dichloroethene	**0.000898**	**J**	0.00100	0.000216	mg/L			06/22/22 03:49	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/22/22 03:49	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			06/22/22 03:49	1
Vinyl chloride	**0.00352**		0.00200	0.000234	mg/L			06/22/22 03:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*74 - 124*		*06/22/22 03:49*	*1*
Dibromofluoromethane (Surr)	*103*		*75 - 131*		*06/22/22 03:49*	*1*
1,2-Dichloroethane-d4 (Surr)	*114*		*63 - 144*		*06/22/22 03:49*	*1*
Toluene-d8 (Surr)	*96*		*80 - 117*		*06/22/22 03:49*	*1*

Client Sample ID: SB44-02-062022 — Lab Sample ID: 860-28301-2

Date Collected: 06/20/22 13:30 — **Matrix: Water**
Date Received: 06/21/22 16:48

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**0.00333**		0.00100	0.000174	mg/L			06/22/22 04:08	1
1,1-Dichloroethane	**0.0308**		0.00100	0.000244	mg/L			06/22/22 04:08	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/22/22 04:08	1
1,1-Dichloroethene	**0.00188**		0.00100	0.000216	mg/L			06/22/22 04:08	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/22/22 04:08	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			06/22/22 04:08	1
Vinyl chloride	**0.00563**		0.00200	0.000234	mg/L			06/22/22 04:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*74 - 124*		*06/22/22 04:08*	*1*
Dibromofluoromethane (Surr)	*101*		*75 - 131*		*06/22/22 04:08*	*1*
1,2-Dichloroethane-d4 (Surr)	*114*		*63 - 144*		*06/22/22 04:08*	*1*
Toluene-d8 (Surr)	*99*		*80 - 117*		*06/22/22 04:08*	*1*

Client Sample ID: FD-01-062022 — Lab Sample ID: 860-28301-3

Date Collected: 06/20/22 00:00 — **Matrix: Water**
Date Received: 06/21/22 16:48

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**0.00776**		0.00100	0.000174	mg/L			06/22/22 04:27	1
1,1-Dichloroethane	**0.0219**		0.00100	0.000244	mg/L			06/22/22 04:27	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/22/22 04:27	1
1,1-Dichloroethene	**0.000832**	**J**	0.00100	0.000216	mg/L			06/22/22 04:27	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/22/22 04:27	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			06/22/22 04:27	1
Vinyl chloride	**0.00349**		0.00200	0.000234	mg/L			06/22/22 04:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*74 - 124*		*06/22/22 04:27*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 131*		*06/22/22 04:27*	*1*

Client Sample ID: FD-01-062022 — Lab Sample ID: 860-28301-3

Date Collected: 06/20/22 00:00 — **Matrix: Water**
Date Received: 06/21/22 16:48

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*108*		*63 - 144*		*06/22/22 04:27*	*1*
Toluene-d8 (Surr)	*96*		*80 - 117*		*06/22/22 04:27*	*1*

Client Sample ID: TB-01-062022 — Lab Sample ID: 860-28301-4

Date Collected: 06/20/22 07:30 — **Matrix: Water**
Date Received: 06/21/22 16:48

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			06/22/22 03:12	1
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			06/22/22 03:12	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/22/22 03:12	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			06/22/22 03:12	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/22/22 03:12	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			06/22/22 03:12	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			06/22/22 03:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*		*06/22/22 03:12*	*1*
Dibromofluoromethane (Surr)	*105*		*75 - 131*		*06/22/22 03:12*	*1*
1,2-Dichloroethane-d4 (Surr)	*111*		*63 - 144*		*06/22/22 03:12*	*1*
Toluene-d8 (Surr)	*101*		*80 - 117*		*06/22/22 03:12*	*1*

Client Sample ID: SB43-03-062022 — Lab Sample ID: 860-28301-5

Date Collected: 06/21/22 08:15 — **Matrix: Water**
Date Received: 06/21/22 16:48

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**0.0205**		0.00100	0.000174	mg/L			06/22/22 13:16	1
1,1-Dichloroethane	**0.0136**		0.00100	0.000244	mg/L			06/22/22 06:02	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/22/22 06:02	1
1,1-Dichloroethene	**0.00351**		0.00100	0.000216	mg/L			06/22/22 06:02	1
Tetrachloroethene	**0.0143**		0.00100	0.000500	mg/L			06/22/22 13:16	1
Trichloroethene	**0.0339**		0.00500	0.000424	mg/L			06/22/22 13:16	1
Vinyl chloride	**0.00857**		0.00200	0.000234	mg/L			06/22/22 06:02	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*		*06/22/22 06:02*	*1*
4-Bromofluorobenzene (Surr)	*107*		*74 - 124*		*06/22/22 13:16*	*1*
Dibromofluoromethane (Surr)	*106*		*75 - 131*		*06/22/22 06:02*	*1*
Dibromofluoromethane (Surr)	*105*		*75 - 131*		*06/22/22 13:16*	*1*
1,2-Dichloroethane-d4 (Surr)	*119*		*63 - 144*		*06/22/22 06:02*	*1*
1,2-Dichloroethane-d4 (Surr)	*113*		*63 - 144*		*06/22/22 13:16*	*1*
Toluene-d8 (Surr)	*100*		*80 - 117*		*06/22/22 06:02*	*1*
Toluene-d8 (Surr)	*100*		*80 - 117*		*06/22/22 13:16*	*1*

Client Sample ID: SB43-02-062022 — Lab Sample ID: 860-28301-6

Date Collected: 06/21/22 08:35 — **Matrix: Water**
Date Received: 06/21/22 16:48

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	**0.00873**		0.00100	0.000244	mg/L			06/22/22 04:46	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/22/22 04:46	1
1,1-Dichloroethene	**0.00628**		0.00100	0.000216	mg/L			06/22/22 04:46	1
Vinyl chloride	**0.142**		0.00200	0.000234	mg/L			06/22/22 04:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*74 - 124*		*06/22/22 04:46*	*1*
Dibromofluoromethane (Surr)	*101*		*75 - 131*		*06/22/22 04:46*	*1*
1,2-Dichloroethane-d4 (Surr)	*113*		*63 - 144*		*06/22/22 04:46*	*1*
Toluene-d8 (Surr)	*98*		*80 - 117*		*06/22/22 04:46*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS - DL

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**1.20**		0.100	0.0174	mg/L			06/22/22 10:11	100
Tetrachloroethene	**5.60**		0.100	0.0500	mg/L			06/22/22 10:11	100
Trichloroethene	**2.85**		0.500	0.0424	mg/L			06/22/22 10:11	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*74 - 124*		*06/22/22 10:11*	*100*
Dibromofluoromethane (Surr)	*100*		*75 - 131*		*06/22/22 10:11*	*100*
1,2-Dichloroethane-d4 (Surr)	*107*		*63 - 144*		*06/22/22 10:11*	*100*
Toluene-d8 (Surr)	*101*		*80 - 117*		*06/22/22 10:11*	*100*

Client Sample ID: SB42-03-062022 — Lab Sample ID: 860-28301-7

Date Collected: 06/21/22 12:20 — **Matrix: Water**
Date Received: 06/21/22 16:48

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**0.00111**		0.00100	0.000174	mg/L			06/22/22 12:56	1
1,1-Dichloroethane	**0.0111**		0.00100	0.000244	mg/L			06/22/22 05:05	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/22/22 05:05	1
1,1-Dichloroethene	**0.00487**		0.00100	0.000216	mg/L			06/22/22 05:05	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/22/22 12:56	1
Trichloroethene	**0.000611**	**J**	0.00500	0.000424	mg/L			06/22/22 12:56	1
Vinyl chloride	**0.00465**		0.00200	0.000234	mg/L			06/22/22 05:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*		*06/22/22 05:05*	*1*
4-Bromofluorobenzene (Surr)	*106*		*74 - 124*		*06/22/22 12:56*	*1*
Dibromofluoromethane (Surr)	*102*		*75 - 131*		*06/22/22 05:05*	*1*
Dibromofluoromethane (Surr)	*104*		*75 - 131*		*06/22/22 12:56*	*1*
1,2-Dichloroethane-d4 (Surr)	*110*		*63 - 144*		*06/22/22 05:05*	*1*
1,2-Dichloroethane-d4 (Surr)	*113*		*63 - 144*		*06/22/22 12:56*	*1*
Toluene-d8 (Surr)	*98*		*80 - 117*		*06/22/22 05:05*	*1*
Toluene-d8 (Surr)	*101*		*80 - 117*		*06/22/22 12:56*	*1*

Client Sample ID: SB42-02-062022 — Lab Sample ID: 860-28301-8

Date Collected: 06/21/22 13:20 — **Matrix: Water**
Date Received: 06/21/22 16:48

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**0.0100**		0.00100	0.000174	mg/L			06/22/22 12:15	1
1,1-Dichloroethane	**0.0129**		0.00100	0.000244	mg/L			06/22/22 05:43	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/22/22 05:43	1
1,1-Dichloroethene	**0.00922**		0.00100	0.000216	mg/L			06/22/22 05:43	1
Tetrachloroethene	**0.00200**		0.00100	0.000500	mg/L			06/22/22 12:15	1
Trichloroethene	**0.00585**		0.00500	0.000424	mg/L			06/22/22 12:15	1
Vinyl chloride	**0.00204**		0.00200	0.000234	mg/L			06/22/22 05:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*74 - 124*		*06/22/22 05:43*	*1*
4-Bromofluorobenzene (Surr)	*106*		*74 - 124*		*06/22/22 12:15*	*1*
Dibromofluoromethane (Surr)	*103*		*75 - 131*		*06/22/22 05:43*	*1*
Dibromofluoromethane (Surr)	*105*		*75 - 131*		*06/22/22 12:15*	*1*
1,2-Dichloroethane-d4 (Surr)	*115*		*63 - 144*		*06/22/22 05:43*	*1*
1,2-Dichloroethane-d4 (Surr)	*112*		*63 - 144*		*06/22/22 12:15*	*1*
Toluene-d8 (Surr)	*100*		*80 - 117*		*06/22/22 05:43*	*1*
Toluene-d8 (Surr)	*99*		*80 - 117*		*06/22/22 12:15*	*1*

Client Sample ID: SB42-01-062022 — Lab Sample ID: 860-28301-9

Date Collected: 06/21/22 13:30 — **Matrix: Water**
Date Received: 06/21/22 16:48

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**0.00421**		0.00100	0.000174	mg/L			06/22/22 12:35	1
1,1-Dichloroethane	**0.0195**		0.00100	0.000244	mg/L			06/22/22 05:24	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/22/22 05:24	1
1,1-Dichloroethene	**0.0125**		0.00100	0.000216	mg/L			06/22/22 05:24	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/22/22 12:35	1
Trichloroethene	**0.00129**	**J**	0.00500	0.000424	mg/L			06/22/22 12:35	1
Vinyl chloride	**0.00425**		0.00200	0.000234	mg/L			06/22/22 05:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*		*06/22/22 05:24*	*1*
4-Bromofluorobenzene (Surr)	*105*		*74 - 124*		*06/22/22 12:35*	*1*
Dibromofluoromethane (Surr)	*101*		*75 - 131*		*06/22/22 05:24*	*1*
Dibromofluoromethane (Surr)	*106*		*75 - 131*		*06/22/22 12:35*	*1*
1,2-Dichloroethane-d4 (Surr)	*117*		*63 - 144*		*06/22/22 05:24*	*1*
1,2-Dichloroethane-d4 (Surr)	*113*		*63 - 144*		*06/22/22 12:35*	*1*
Toluene-d8 (Surr)	*98*		*80 - 117*		*06/22/22 05:24*	*1*
Toluene-d8 (Surr)	*100*		*80 - 117*		*06/22/22 12:35*	*1*

Unadjusted Detection Limits

Client: Jacobs Engineering Group, Inc.
Job ID: 860-28301-1
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	MQL	MDL	Units
1,1-Dichloroethane	0.00100	0.000244	mg/L
1,1-Dichloroethene	0.00100	0.000216	mg/L
1,2-Dichloroethane	0.00100	0.000285	mg/L
cis-1,2-Dichloroethene	0.00100	0.000174	mg/L
Tetrachloroethene	0.00100	0.000500	mg/L
Trichloroethene	0.00500	0.000424	mg/L
Vinyl chloride	0.00200	0.000234	mg/L

Surrogate Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Job ID: 860-28301-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		BFB	DBFM	DCA	TOL
Lab Sample ID	Client Sample ID	(74-124)	(75-131)	(63-144)	(80-117)
820-4668-C-1 MS	Matrix Spike	100	105	109	98
860-28101-B-7 MS	Matrix Spike	100	98	97	99
860-28301-1	SB44-03-062022	96	103	114	96
860-28301-2	SB44-02-062022	97	101	114	99
860-28301-3	FD-01-062022	101	99	108	96
860-28301-4	TB-01-062022	99	105	111	101
860-28301-5	SB43-03-062022	99	106	119	100
860-28301-5	SB43-03-062022	107	105	113	100
860-28301-6	SB43-02-062022	100	101	113	98
860-28301-6 - DL	SB43-02-062022	102	100	107	101
860-28301-7	SB42-03-062022	99	102	110	98
860-28301-7	SB42-03-062022	106	104	113	101
860-28301-8	SB42-02-062022	97	103	115	100
860-28301-8	SB42-02-062022	106	105	112	99
860-28301-9	SB42-01-062022	99	101	117	98
860-28301-9	SB42-01-062022	105	106	113	100
LCS 860-57931/3	Lab Control Sample	100	101	102	97
LCS 860-57943/3	Lab Control Sample	99	105	109	99
LCSD 860-57931/4	Lab Control Sample Dup	99	103	99	100
LCSD 860-57943/5	Lab Control Sample Dup	99	106	110	99
MB 860-57931/9	Method Blank	98	97	107	100
MB 860-57943/12	Method Blank	103	103	112	101

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 860-57931/9
Matrix: Water
Analysis Batch: 57931

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

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			06/22/22 02:15	1
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			06/22/22 02:15	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/22/22 02:15	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			06/22/22 02:15	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/22/22 02:15	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			06/22/22 02:15	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			06/22/22 02:15	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*74 - 124*		*06/22/22 02:15*	*1*
Dibromofluoromethane (Surr)	*97*		*75 - 131*		*06/22/22 02:15*	*1*
1,2-Dichloroethane-d4 (Surr)	*107*		*63 - 144*		*06/22/22 02:15*	*1*
Toluene-d8 (Surr)	*100*		*80 - 117*		*06/22/22 02:15*	*1*

Lab Sample ID: LCS 860-57931/3
Matrix: Water
Analysis Batch: 57931

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
cis-1,2-Dichloroethene			0.0500	0.05581		mg/L		112	75 - 125		
1,1-Dichloroethane			0.0500	0.05505		mg/L		110	72 - 125		
1,2-Dichloroethane			0.0500	0.05835		mg/L		117	68 - 127		
1,1-Dichloroethene			0.0500	0.05695		mg/L		114	59 - 172		
Tetrachloroethene			0.0500	0.05480		mg/L		110	71 - 125		
Trichloroethene			0.0500	0.05596		mg/L		112	62 - 137		
Vinyl chloride			0.0500	0.04731		mg/L		95	60 - 140		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*100*		*74 - 124*
Dibromofluoromethane (Surr)	*101*		*75 - 131*
1,2-Dichloroethane-d4 (Surr)	*102*		*63 - 144*
Toluene-d8 (Surr)	*97*		*80 - 117*

Lab Sample ID: LCSD 860-57931/4
Matrix: Water
Analysis Batch: 57931

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
cis-1,2-Dichloroethene			0.0500	0.05484		mg/L		110	75 - 125	2	25
1,1-Dichloroethane			0.0500	0.05586		mg/L		112	72 - 125	1	25
1,2-Dichloroethane			0.0500	0.05597		mg/L		112	68 - 127	4	25
1,1-Dichloroethene			0.0500	0.05458		mg/L		109	59 - 172	4	25
Tetrachloroethene			0.0500	0.05553		mg/L		111	71 - 125	1	25
Trichloroethene			0.0500	0.05660		mg/L		113	62 - 137	1	25
Vinyl chloride			0.0500	0.04670		mg/L		93	60 - 140	1	25

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

Lab Sample ID: LCSD 860-57931/4
Matrix: Water
Analysis Batch: 57931

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

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*
Dibromofluoromethane (Surr)	*103*		*75 - 131*
1,2-Dichloroethane-d4 (Surr)	*99*		*63 - 144*
Toluene-d8 (Surr)	*100*		*80 - 117*

Lab Sample ID: 860-28101-B-7 MS
Matrix: Water
Analysis Batch: 57931

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
cis-1,2-Dichloroethene	0.000174	U	0.0500	0.05416		mg/L		108	75 - 125
1,1-Dichloroethane	0.000244	U	0.0500	0.05466		mg/L		109	72 - 125
1,2-Dichloroethane	0.0127		0.0500	0.06663		mg/L		108	68 - 127
1,1-Dichloroethene	0.000216	U	0.0500	0.05187		mg/L		104	59 - 172
Tetrachloroethene	0.000500	U	0.0500	0.05473		mg/L		109	71 - 125
Trichloroethene	0.000424	U	0.0500	0.05515		mg/L		110	62 - 137
Vinyl chloride	0.000234	U	0.0500	0.04705		mg/L		94	60 - 140

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	*100*		*74 - 124*
Dibromofluoromethane (Surr)	*98*		*75 - 131*
1,2-Dichloroethane-d4 (Surr)	*97*		*63 - 144*
Toluene-d8 (Surr)	*99*		*80 - 117*

Lab Sample ID: MB 860-57943/12
Matrix: Water
Analysis Batch: 57943

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

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			06/22/22 10:32	1
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			06/22/22 10:32	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/22/22 10:32	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			06/22/22 10:32	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/22/22 10:32	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			06/22/22 10:32	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			06/22/22 10:32	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*103*		*74 - 124*		*06/22/22 10:32*	*1*
Dibromofluoromethane (Surr)	*103*		*75 - 131*		*06/22/22 10:32*	*1*
1,2-Dichloroethane-d4 (Surr)	*112*		*63 - 144*		*06/22/22 10:32*	*1*
Toluene-d8 (Surr)	*101*		*80 - 117*		*06/22/22 10:32*	*1*

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

Lab Sample ID: LCS 860-57943/3
Matrix: Water
Analysis Batch: 57943

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
cis-1,2-Dichloroethene			0.0500	0.05204		mg/L		104	75 - 125		
1,1-Dichloroethane			0.0500	0.05193		mg/L		104	72 - 125		
1,2-Dichloroethane			0.0500	0.05553		mg/L		111	68 - 127		
1,1-Dichloroethene			0.0500	0.05103		mg/L		102	59 - 172		
Tetrachloroethene			0.0500	0.04973		mg/L		99	71 - 125		
Trichloroethene			0.0500	0.05014		mg/L		100	62 - 137		
Vinyl chloride			0.0500	0.05429		mg/L		109	60 - 140		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*
Dibromofluoromethane (Surr)	*105*		*75 - 131*
1,2-Dichloroethane-d4 (Surr)	*109*		*63 - 144*
Toluene-d8 (Surr)	*99*		*80 - 117*

Lab Sample ID: LCSD 860-57943/5
Matrix: Water
Analysis Batch: 57943

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
cis-1,2-Dichloroethene			0.0500	0.05257		mg/L		105	75 - 125	1	25
1,1-Dichloroethane			0.0500	0.05192		mg/L		104	72 - 125	0	25
1,2-Dichloroethane			0.0500	0.05460		mg/L		109	68 - 127	2	25
1,1-Dichloroethene			0.0500	0.05032		mg/L		101	59 - 172	1	25
Tetrachloroethene			0.0500	0.05051		mg/L		101	71 - 125	2	25
Trichloroethene			0.0500	0.05089		mg/L		102	62 - 137	1	25
Vinyl chloride			0.0500	0.05239		mg/L		105	60 - 140	4	25

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*
Dibromofluoromethane (Surr)	*106*		*75 - 131*
1,2-Dichloroethane-d4 (Surr)	*110*		*63 - 144*
Toluene-d8 (Surr)	*99*		*80 - 117*

Lab Sample ID: 820-4668-C-1 MS
Matrix: Water
Analysis Batch: 57943

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
cis-1,2-Dichloroethene	0.000174	U	0.0500	0.05025		mg/L		101	75 - 125		
1,1-Dichloroethane	0.000244	U	0.0500	0.04918		mg/L		98	72 - 125		
1,2-Dichloroethane	0.000285	U	0.0500	0.05200		mg/L		104	68 - 127		
1,1-Dichloroethene	0.000216	U	0.0500	0.04892		mg/L		98	59 - 172		
Tetrachloroethene	0.000500	U	0.0500	0.04882		mg/L		98	71 - 125		
Trichloroethene	0.000424	U	0.0500	0.04890		mg/L		98	62 - 137		
Vinyl chloride	0.000234	U	0.0500	0.05538		mg/L		111	60 - 140		

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

Lab Sample ID: 820-4668-C-1 MS
Matrix: Water
Analysis Batch: 57943

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	*100*		*74 - 124*
Dibromofluoromethane (Surr)	*105*		*75 - 131*
1,2-Dichloroethane-d4 (Surr)	*109*		*63 - 144*
Toluene-d8 (Surr)	*98*		*80 - 117*

QC Association Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Job ID: 860-28301-1

GC/MS VOA

Analysis Batch: 57931

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-28301-1	SB44-03-062022	Total/NA	Water	8260D	
860-28301-2	SB44-02-062022	Total/NA	Water	8260D	
860-28301-3	FD-01-062022	Total/NA	Water	8260D	
860-28301-4	TB-01-062022	Total/NA	Water	8260D	
860-28301-5	SB43-03-062022	Total/NA	Water	8260D	
860-28301-6	SB43-02-062022	Total/NA	Water	8260D	
860-28301-6 - DL	SB43-02-062022	Total/NA	Water	8260D	
860-28301-7	SB42-03-062022	Total/NA	Water	8260D	
860-28301-8	SB42-02-062022	Total/NA	Water	8260D	
860-28301-9	SB42-01-062022	Total/NA	Water	8260D	
MB 860-57931/9	Method Blank	Total/NA	Water	8260D	
LCS 860-57931/3	Lab Control Sample	Total/NA	Water	8260D	
LCSD 860-57931/4	Lab Control Sample Dup	Total/NA	Water	8260D	
860-28101-B-7 MS	Matrix Spike	Total/NA	Water	8260D	

Analysis Batch: 57943

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-28301-5	SB43-03-062022	Total/NA	Water	8260D	
860-28301-7	SB42-03-062022	Total/NA	Water	8260D	
860-28301-8	SB42-02-062022	Total/NA	Water	8260D	
860-28301-9	SB42-01-062022	Total/NA	Water	8260D	
MB 860-57943/12	Method Blank	Total/NA	Water	8260D	
LCS 860-57943/3	Lab Control Sample	Total/NA	Water	8260D	
LCSD 860-57943/5	Lab Control Sample Dup	Total/NA	Water	8260D	
820-4668-C-1 MS	Matrix Spike	Total/NA	Water	8260D	

Client Sample ID: SB44-03-062022
Lab Sample ID: 860-28301-1
Date Collected: 06/20/22 12:40
Matrix: Water
Date Received: 06/21/22 16:48

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	57931	06/22/22 03:49	A1S	XEN STF

Client Sample ID: SB44-02-062022
Lab Sample ID: 860-28301-2
Date Collected: 06/20/22 13:30
Matrix: Water
Date Received: 06/21/22 16:48

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	57931	06/22/22 04:08	A1S	XEN STF

Client Sample ID: FD-01-062022
Lab Sample ID: 860-28301-3
Date Collected: 06/20/22 00:00
Matrix: Water
Date Received: 06/21/22 16:48

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	57931	06/22/22 04:27	A1S	XEN STF

Client Sample ID: TB-01-062022
Lab Sample ID: 860-28301-4
Date Collected: 06/20/22 07:30
Matrix: Water
Date Received: 06/21/22 16:48

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	57931	06/22/22 03:12	A1S	XEN STF

Client Sample ID: SB43-03-062022
Lab Sample ID: 860-28301-5
Date Collected: 06/21/22 08:15
Matrix: Water
Date Received: 06/21/22 16:48

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	57931	06/22/22 06:02	A1S	XEN STF
Total/NA	Analysis	8260D		1	5 mL	5 mL	57943	06/22/22 13:16	TTD	XEN STF

Client Sample ID: SB43-02-062022
Lab Sample ID: 860-28301-6
Date Collected: 06/21/22 08:35
Matrix: Water
Date Received: 06/21/22 16:48

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	57931	06/22/22 04:46	A1S	XEN STF
Total/NA	Analysis	8260D	DL	100	5 mL	5 mL	57931	06/22/22 10:11	A1S	XEN STF

Client Sample ID: SB42-03-062022
Lab Sample ID: 860-28301-7
Date Collected: 06/21/22 12:20
Matrix: Water
Date Received: 06/21/22 16:48

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	57931	06/22/22 05:05	A1S	XEN STF
Total/NA	Analysis	8260D		1	5 mL	5 mL	57943	06/22/22 12:56	TTD	XEN STF

Lab Chronicle

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Job ID: 860-28301-1

Client Sample ID: SB42-02-062022

Lab Sample ID: 860-28301-8

Date Collected: 06/21/22 13:20

Matrix: Water

Date Received: 06/21/22 16:48

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	57931	06/22/22 05:43	A1S	XEN STF
Total/NA	Analysis	8260D		1	5 mL	5 mL	57943	06/22/22 12:15	TTD	XEN STF

Client Sample ID: SB42-01-062022

Lab Sample ID: 860-28301-9

Date Collected: 06/21/22 13:30

Matrix: Water

Date Received: 06/21/22 16:48

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	57931	06/22/22 05:24	A1S	XEN STF
Total/NA	Analysis	8260D		1	5 mL	5 mL	57943	06/22/22 12:35	TTD	XEN STF

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Accreditation/Certification Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-28301-1
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Laboratory: Eurofins Houston

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

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	21-038-0	08-04-22
Florida	NELAP	E871002	06-30-22
Louisiana	NELAP	03054	06-30-22
Oklahoma	State	2021-168	08-31-22
Texas	NELAP	T104704215-21-44	06-30-22
Texas	TCEQ Water Supply	T104704215	06-30-22
USDA	US Federal Programs	P330-22-00025	03-02-23

Method Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Job ID: 860-28301-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	XEN STF
5030C	Purge and Trap	SW846	XEN STF

Protocol References:

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

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Sample Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-28301-1
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
860-28301-1	SB44-03-062022	Water	06/20/22 12:40	06/21/22 16:48
860-28301-2	SB44-02-062022	Water	06/20/22 13:30	06/21/22 16:48
860-28301-3	FD-01-062022	Water	06/20/22 00:00	06/21/22 16:48
860-28301-4	TB-01-062022	Water	06/20/22 07:30	06/21/22 16:48
860-28301-5	SB43-03-062022	Water	06/21/22 08:15	06/21/22 16:48
860-28301-6	SB43-02-062022	Water	06/21/22 08:35	06/21/22 16:48
860-28301-7	SB42-03-062022	Water	06/21/22 12:20	06/21/22 16:48
860-28301-8	SB42-02-062022	Water	06/21/22 13:20	06/21/22 16:48
860-28301-9	SB42-01-062022	Water	06/21/22 13:30	06/21/22 16:48

Appendix A

Laboratory Data Package Cover Page - Page 1 of 4

This data package is for Job No. 860-28301-1 and consists of:

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

- ☑ R1- Field chain-of-custody documentation;
- ☑ R2 - Sample identification cross-reference;
- ☑ R3 - Test reports (analytical data sheets) for each environmental sample that includes:
  a. Items consistent with NELAC Chapter 5,
  b. dilution factors,
  c. prepatation methods,
  d. cleanup methods, and
  e. if required for the project, tentatively identified coumpounds (TICs).
- ☑ R4 - Surrogate recovery data including:
  a. Calculated recovery (%R), and
  b. The laboratory's surrogate QC limits.
- ☑ R5 - Test reports/summary forms for blank samples;
- ☑ R6 - Test reports/summary forms for laboratory control samples (LCSs) including:
  a. LCS spiking amounts,
  b. Calculated %R for each analyte, and
  c. The laboratory's LCS QC limits.
- ☑ R7 - Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a. Samples associated with the MS/MSD clearly identified,
  b. MS/MSD spiking amounts,
  c. Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d. Calculated %Rs and relative percent differences (RPDs), and
  e. The laboratory's MS/MSD QC limits
- ☐ R8 - Laboratory analytical duplicate (if applicable) recovery and precision:
  a. The amount of analyte measured in the duplicate,
  b. The calculated RPD, and
  c. The laboratory's QC limits for analytical duplicates.
- ☑ R9 - List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
- ☑ R10 - Other problems or anomalies.
- ☐ Exception Report for every "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge 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.

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

Name (Printed)	Signature	Official Title (Printed)	Date
Bethany McDaniel	Bethany McDaniel	Senior Project Manager	06/22/2022

Laboratory Data Package Cover Page - Page 2 of 4

Laboratory Name: Eurofins Houston	LRC Date: 06/22/2022
Project Name: STC Silber Rd Pre-Design Inv Part 2	Laboratory Job Number: 860-28301-1
Reviewer Name: Bethany McDaniel	

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
		Were all departures from standard conditions described in an exception report?	✓				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	✓				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	✓				
		Were calculations checked by a peer or supervisor?	✓				
		Were all analyte identifications checked by a peer or supervisor?	✓				
		Were sample detection limits reported for all analytes not detected?	✓				
		Were all results for soil and sediment samples reported on a dry weight basis?			✓		
		Were % moisture (or solids) reported for all soil and sediment samples?			✓		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			✓		
		If required for the project, are TICs reported?			✓		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	✓				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	✓				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	✓				
		Were blanks analyzed at the appropriate frequency?	✓				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
		Were blank concentrations < MQL?	✓				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	✓				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
		Were LCSs analyzed at the required frequency?	✓				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	✓				
		Was the LCSD RPD within QC limits?	✓				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	✓				
		Were MS/MSD analyzed at the appropriate frequency?	✓				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	✓				
		Were MS/MSD RPDs within laboratory QC limits?			✓		
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			✓		
		Were analytical duplicates analyzed at the appropriate frequency?			✓		
		Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	✓				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	✓				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?		✓			1
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	✓				

Laboratory Data Package Cover Page - Page 3 of 4

Laboratory Name: Eurofins Houston	LRC Date: 06/22/2022
Project Name: STC Silber Rd Pre-Design Inv Part 2	Laboratory Job Number: 860-28301-1
Reviewer Name: Bethany McDaniel	

#[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?	✓				
		Were percent RSDs or correlation coefficient criteria met?	✓				
		Was the number of standards recommended in the method used for all analytes?	✓				
		Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
		Are ICAL data available for all instruments used?	✓				
		Has the initial calibration curve been verified using an appropriate second source standard?	✓				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?	✓				
		Were percent differences for each analyte within the method-required QC limits?	✓				
		Was the ICAL curve verified for each analyte?	✓				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			✓		
S3	O	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?	✓				
		Were ion abundance data within the method-required QC limits?	✓				
S4	O	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?	✓				
S5	OI	**Raw data (NELAC Section 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
		Were data associated with manual integrations flagged on the raw data?	✓				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			✓		
S7	O	**Tentatively identified compounds (TICs)**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
S8	I	**Interference Check Sample (ICS) results**					
		Were percent recoveries within method QC limits?			✓		
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?			✓		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	✓				
		Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
S11	OI	**Proficiency test reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	✓				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	✓				
		Is documentation of the analyst's competency up-to-date and on file?	✓				
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?	✓				
S16	OI	**Laboratory standard operating procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	✓				

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).

Laboratory Data Package Cover Page - Page 4 of 4

Laboratory Name: Eurofins Houston	LRC Date: 06/22/2022
Project Name: STC Silber Rd Pre-Design Inv Part 2	Laboratory Job Number: 860-28301-1
Reviewer Name: Bethany McDaniel	

ER#[1]	Description
1	Method 8260D: The following sample was diluted to bring the concentration of target analytes within the calibration range: SB43-02-062022 (860-28301-6). Elevated reporting limits (RLs) are provided.

1. ER# = Exception Report identification number (an Exception Report should be completed for an item if “NR” or “No” is checked).

Detection Check Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-28301-1
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**
Prep Method: 5030C-Purge and Trap
Instrument: A294 **Detector: MSD/0** **Column: DB-624**

Analyte	Spike Added	Result	Qualifier	Unit	RL	MDL	Analysis Date	Analysis Batch
Trichloroethene	0.00500	0.00510		mg/L	0.00500	0.000424	02/23/2022	860-42516
Vinyl chloride	0.00500	0.00494		mg/L	0.00200	0.000234	02/23/2022	860-42516
cis-1,2-Dichloroethene	0.00500	0.00494		mg/L	0.00100	0.000174	02/23/2022	860-42516
1,1-Dichloroethane	0.00500	0.00501		mg/L	0.00100	0.000244	02/23/2022	860-42516
1,2-Dichloroethane	0.00500	0.00495		mg/L	0.00100	0.000285	02/23/2022	860-42516
1,1-Dichloroethene	0.00500	0.00478		mg/L	0.00100	0.000216	02/23/2022	860-42516
Tetrachloroethene	0.00500	0.00496		mg/L	0.00100	0.000500	02/23/2022	860-42516

Matrix: Water **Prep Type: Total/NA**
Prep Method: 5030C-Purge and Trap
Instrument: A325 **Detector: MSD/0** **Column: DB-624**

Analyte	Spike Added	Result	Qualifier	Unit	RL	MDL	Analysis Date	Analysis Batch
Trichloroethene	0.00100	0.00503		mg/L	0.00500	0.000424	03/03/2022	860-43530
cis-1,2-Dichloroethene	0.00100	0.00499		mg/L	0.00100	0.000174	03/03/2022	860-43530
Tetrachloroethene	0.00100	0.00463		mg/L	0.00100	0.000500	03/03/2022	860-43530

Eurofins Houston
4145 Greenbriar Dr
Stafford TX 77477
Phone (281) 240-4200

Chain of Custody Record

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Client Information	Sampler	Lab PM: McDaniel, Bethany A	Carrier Tracking No(s):	COC No: 860-11069-3875.1
Client Contact: John Ynfante	Phone:	E-Mail: Bethany.McDaniel@et.eurofinsus.com	State of Origin:	Page: Page 1 of __
Company: Jacobs Engineering Group, Inc.	PWSID:			Job #:
Address: 14701 St. Mary's Lane Suite 300	Due Date Requested:			
City: Houston	TAT Requested (days): 1 day RUSH			
State, Zip: TX, 77079	Compliance Project: Δ Yes Δ No			
Phone:	PO #: D3542628.C.CS.TPE.SIL.22-01-02			
Email: John.Ynfante@jacobs.com	WO #: D3542628.C.CS.TPE.SIL.22-01-02			
Project Name: STC Silber Rd Pre-Design Inv Part 2	Project #: 86002024			
Site:	SSOW#:			

Analysis Requested

860-28301 Chain of Custody

Preservation Codes:

A HCL, B NaOH, C Zn Acetate, D Nitric Acid, E NaHSO4, F MeOH, G Amchlor, H Ascorbic Acid, I Ice, J DI Water, K EDTA, L EDA, M Hexane, N None, O AsNaO2, P Na2O4S, Q Na2SO3, R Na2S2O3, S H2SO4, T TSP Dodecahydrate, U Acetone, V MCAA, W pH 4-5, Y Trizma, 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)	8260C (MOD) VOCs Custom List (7)	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A		
SB44-03-062022	6/20/22	1240	G	Water			X	3	
SB44-02-062022	6/20/22	1330	G	Water			X	3	
FD-01-062022	6/20/22	NG	G	Water			X	3	
TB-01-062022	6/20/22	0730	—	Water			X	2	
SB43-03-062122	6/21/22	0815	G	Water			X	3	
SB43-02-062122	6/21/22	0835	G	Water			X	3	
SB42-03-062122	6/21/22	1220	G	Water			X	3	
SB42-02-062122	6/21/22	1320	G	Water			X	3	
SB42-01-062122	6/21/22	1330	G	Water			X	3	
				Water					
				Water					

Temp: 2.1 IR ID HOU-332
C/F: -0.9
Corrected Temp: 19

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) TRRP

Special Instructions/QC Requirements:

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

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		6/21/22 1340			6.21.22 1340	
2		6.21.22 1648			6/21/22 1648	FX
3						

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

Ver 01/16/2019

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc.

Job Number: 860-28301-1

Login Number: 28301
List Number: 1
Creator: Palmar, Pedro

List Source: Eurofins Houston

Question	Answer	Comment
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 (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	

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ANALYTICAL REPORT

Eurofins Houston
4145 Greenbriar Dr
Stafford, TX 77477
Tel: (281)240-4200

Laboratory Job ID: 860-28374-1
Client Project/Site: STC Silber Rd Pre-Design Inv Part 2

For:
Jacobs Engineering Group, Inc.
12750 Merit Drive
Suite 1100
Dallas, Texas 75251

Attn: John Knott

Bethany McDaniel

Authorized for release by:
6/23/2022 4:39:46 PM

Bethany McDaniel, Senior Project Manager
(713)358-2005
Bethany.McDaniel@et.eurofinsus.com

Table of Contents

Definitions/Glossary

Client: Jacobs Engineering Group, Inc. Job ID: 860-28374-1
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the MQL but greater than or equal to the SDL and the concentration is an estimated value.
N1	MS, MSD: Spike recovery exceeds upper or lower control limits.
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
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 860-28374-1

Laboratory: Eurofins Houston

Narrative

Job Narrative
860-28374-1

Receipt
The samples were received on 6/22/2022 3:32 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 2.5°C

Detection Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Job ID: 860-28374-1

Client Sample ID: SB41-03-062222 — Lab Sample ID: 860-28374-1

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.00146		0.00100	0.000174	mg/L	1		8260D	Total/NA
1,1-Dichloroethane	0.00382		0.00100	0.000244	mg/L	1		8260D	Total/NA
1,1-Dichloroethene	0.00177		0.00100	0.000216	mg/L	1		8260D	Total/NA
Trichloroethene	0.000426	J	0.00500	0.000424	mg/L	1		8260D	Total/NA

Client Sample ID: SB41-02-062222 — Lab Sample ID: 860-28374-2

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.00259		0.00100	0.000174	mg/L	1		8260D	Total/NA
1,1-Dichloroethane	0.00431		0.00100	0.000244	mg/L	1		8260D	Total/NA
1,1-Dichloroethene	0.00217		0.00100	0.000216	mg/L	1		8260D	Total/NA
Tetrachloroethene	0.000560	J	0.00100	0.000500	mg/L	1		8260D	Total/NA
Trichloroethene	0.00133	J	0.00500	0.000424	mg/L	1		8260D	Total/NA
Vinyl chloride	0.000714	J	0.00200	0.000234	mg/L	1		8260D	Total/NA

Client Sample ID: SB41-01-062222 — Lab Sample ID: 860-28374-3

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.0147		0.00100	0.000174	mg/L	1		8260D	Total/NA
1,1-Dichloroethane	0.0122		0.00100	0.000244	mg/L	1		8260D	Total/NA
1,1-Dichloroethene	0.0142		0.00100	0.000216	mg/L	1		8260D	Total/NA
Trichloroethene	0.00168	J	0.00500	0.000424	mg/L	1		8260D	Total/NA
Vinyl chloride	0.00528		0.00200	0.000234	mg/L	1		8260D	Total/NA

Client Sample ID: FD-01-062222 — Lab Sample ID: 860-28374-4

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.0152		0.00100	0.000174	mg/L	1		8260D	Total/NA
1,1-Dichloroethane	0.0123		0.00100	0.000244	mg/L	1		8260D	Total/NA
1,1-Dichloroethene	0.0143		0.00100	0.000216	mg/L	1		8260D	Total/NA
Trichloroethene	0.00181	J	0.00500	0.000424	mg/L	1		8260D	Total/NA
Vinyl chloride	0.00523		0.00200	0.000234	mg/L	1		8260D	Total/NA

Client Sample ID: SB40-03-062222 — Lab Sample ID: 860-28374-5

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.00346		0.00100	0.000174	mg/L	1		8260D	Total/NA
1,1-Dichloroethane	0.0324		0.00100	0.000244	mg/L	1		8260D	Total/NA
1,1-Dichloroethene	0.0108		0.00100	0.000216	mg/L	1		8260D	Total/NA
Trichloroethene	0.000533	J	0.00500	0.000424	mg/L	1		8260D	Total/NA
Vinyl chloride	0.0155		0.00200	0.000234	mg/L	1		8260D	Total/NA

Client Sample ID: SB40-02-062222 — Lab Sample ID: 860-28374-6

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.0208		0.00100	0.000174	mg/L	1		8260D	Total/NA
1,1-Dichloroethane	0.0855		0.00100	0.000244	mg/L	1		8260D	Total/NA
1,2-Dichloroethane	0.000559	J	0.00100	0.000285	mg/L	1		8260D	Total/NA
1,1-Dichloroethene	0.0256		0.00100	0.000216	mg/L	1		8260D	Total/NA
Tetrachloroethene	0.00650		0.00100	0.000500	mg/L	1		8260D	Total/NA
Trichloroethene	0.00273	J	0.00500	0.000424	mg/L	1		8260D	Total/NA
Vinyl chloride	0.0349		0.00200	0.000234	mg/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Job ID: 860-28374-1

Client Sample ID: SB40-01-062222 — Lab Sample ID: 860-28374-7

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.110		0.00100	0.000174	mg/L	1		8260D	Total/NA
1,1-Dichloroethane	0.0155		0.00100	0.000244	mg/L	1		8260D	Total/NA
1,1-Dichloroethene	0.00405		0.00100	0.000216	mg/L	1		8260D	Total/NA
Tetrachloroethene	0.0347		0.00100	0.000500	mg/L	1		8260D	Total/NA
Trichloroethene	0.0133		0.00500	0.000424	mg/L	1		8260D	Total/NA
Vinyl chloride	0.0195		0.00200	0.000234	mg/L	1		8260D	Total/NA

Client Sample ID: TB-01-062222 — Lab Sample ID: 860-28374-8

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: SB41-03-062222 — Lab Sample ID: 860-28374-1

Date Collected: 06/22/22 08:10 — **Matrix: Water**
Date Received: 06/22/22 15:32

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**0.00146**		0.00100	0.000174	mg/L			06/23/22 05:21	1
1,1-Dichloroethane	**0.00382**		0.00100	0.000244	mg/L			06/23/22 05:21	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/23/22 05:21	1
1,1-Dichloroethene	**0.00177**		0.00100	0.000216	mg/L			06/23/22 05:21	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/23/22 05:21	1
Trichloroethene	**0.000426**	**J**	0.00500	0.000424	mg/L			06/23/22 05:21	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			06/23/22 05:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*74 - 124*		*06/23/22 05:21*	*1*
Dibromofluoromethane (Surr)	*95*		*75 - 131*		*06/23/22 05:21*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*63 - 144*		*06/23/22 05:21*	*1*
Toluene-d8 (Surr)	*100*		*80 - 117*		*06/23/22 05:21*	*1*

Client Sample ID: SB41-02-062222 — Lab Sample ID: 860-28374-2

Date Collected: 06/22/22 08:25 — **Matrix: Water**
Date Received: 06/22/22 15:32

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**0.00259**		0.00100	0.000174	mg/L			06/23/22 05:40	1
1,1-Dichloroethane	**0.00431**		0.00100	0.000244	mg/L			06/23/22 05:40	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/23/22 05:40	1
1,1-Dichloroethene	**0.00217**		0.00100	0.000216	mg/L			06/23/22 05:40	1
Tetrachloroethene	**0.000560**	**J**	0.00100	0.000500	mg/L			06/23/22 05:40	1
Trichloroethene	**0.00133**	**J**	0.00500	0.000424	mg/L			06/23/22 05:40	1
Vinyl chloride	**0.000714**	**J**	0.00200	0.000234	mg/L			06/23/22 05:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*		*06/23/22 05:40*	*1*
Dibromofluoromethane (Surr)	*98*		*75 - 131*		*06/23/22 05:40*	*1*
1,2-Dichloroethane-d4 (Surr)	*106*		*63 - 144*		*06/23/22 05:40*	*1*
Toluene-d8 (Surr)	*97*		*80 - 117*		*06/23/22 05:40*	*1*

Client Sample ID: SB41-01-062222 — Lab Sample ID: 860-28374-3

Date Collected: 06/22/22 08:45 — **Matrix: Water**
Date Received: 06/22/22 15:32

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**0.0147**		0.00100	0.000174	mg/L			06/23/22 05:59	1
1,1-Dichloroethane	**0.0122**		0.00100	0.000244	mg/L			06/23/22 05:59	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/23/22 05:59	1
1,1-Dichloroethene	**0.0142**		0.00100	0.000216	mg/L			06/23/22 05:59	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/23/22 05:59	1
Trichloroethene	**0.00168**	**J**	0.00500	0.000424	mg/L			06/23/22 05:59	1
Vinyl chloride	**0.00528**		0.00200	0.000234	mg/L			06/23/22 05:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*74 - 124*		*06/23/22 05:59*	*1*
Dibromofluoromethane (Surr)	*94*		*75 - 131*		*06/23/22 05:59*	*1*

Client Sample ID: SB41-01-062222 — Lab Sample ID: 860-28374-3

Date Collected: 06/22/22 08:45 **Matrix: Water**
Date Received: 06/22/22 15:32

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*63 - 144*		*06/23/22 05:59*	*1*
Toluene-d8 (Surr)	*97*		*80 - 117*		*06/23/22 05:59*	*1*

Client Sample ID: FD-01-062222 — Lab Sample ID: 860-28374-4

Date Collected: 06/22/22 00:00 **Matrix: Water**
Date Received: 06/22/22 15:32

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**0.0152**		0.00100	0.000174	mg/L			06/23/22 06:18	1
1,1-Dichloroethane	**0.0123**		0.00100	0.000244	mg/L			06/23/22 06:18	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/23/22 06:18	1
1,1-Dichloroethene	**0.0143**		0.00100	0.000216	mg/L			06/23/22 06:18	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/23/22 06:18	1
Trichloroethene	**0.00181**	**J**	0.00500	0.000424	mg/L			06/23/22 06:18	1
Vinyl chloride	**0.00523**		0.00200	0.000234	mg/L			06/23/22 06:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*74 - 124*		*06/23/22 06:18*	*1*
Dibromofluoromethane (Surr)	*103*		*75 - 131*		*06/23/22 06:18*	*1*
1,2-Dichloroethane-d4 (Surr)	*110*		*63 - 144*		*06/23/22 06:18*	*1*
Toluene-d8 (Surr)	*100*		*80 - 117*		*06/23/22 06:18*	*1*

Client Sample ID: SB40-03-062222 — Lab Sample ID: 860-28374-5

Date Collected: 06/22/22 11:35 **Matrix: Water**
Date Received: 06/22/22 15:32

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**0.00346**		0.00100	0.000174	mg/L			06/23/22 05:02	1
1,1-Dichloroethane	**0.0324**		0.00100	0.000244	mg/L			06/23/22 05:02	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/23/22 05:02	1
1,1-Dichloroethene	**0.0108**		0.00100	0.000216	mg/L			06/23/22 05:02	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/23/22 05:02	1
Trichloroethene	**0.000533**	**J**	0.00500	0.000424	mg/L			06/23/22 05:02	1
Vinyl chloride	**0.0155**		0.00200	0.000234	mg/L			06/23/22 05:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*74 - 124*		*06/23/22 05:02*	*1*
Dibromofluoromethane (Surr)	*98*		*75 - 131*		*06/23/22 05:02*	*1*
1,2-Dichloroethane-d4 (Surr)	*108*		*63 - 144*		*06/23/22 05:02*	*1*
Toluene-d8 (Surr)	*102*		*80 - 117*		*06/23/22 05:02*	*1*

Client Sample ID: SB40-02-062222 — Lab Sample ID: 860-28374-6

Date Collected: 06/22/22 11:50 **Matrix: Water**
Date Received: 06/22/22 15:32

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**0.0208**		0.00100	0.000174	mg/L			06/23/22 06:37	1
1,1-Dichloroethane	**0.0855**		0.00100	0.000244	mg/L			06/23/22 06:37	1

Client Sample ID: SB40-02-062222 — Lab Sample ID: 860-28374-6

Date Collected: 06/22/22 11:50 — **Matrix: Water**
Date Received: 06/22/22 15:32

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

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane	0.000559	J	0.00100	0.000285	mg/L			06/23/22 06:37	1
1,1-Dichloroethene	0.0256		0.00100	0.000216	mg/L			06/23/22 06:37	1
Tetrachloroethene	0.00650		0.00100	0.000500	mg/L			06/23/22 06:37	1
Trichloroethene	0.00273	J	0.00500	0.000424	mg/L			06/23/22 06:37	1
Vinyl chloride	0.0349		0.00200	0.000234	mg/L			06/23/22 06:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*74 - 124*		*06/23/22 06:37*	*1*
Dibromofluoromethane (Surr)	*101*		*75 - 131*		*06/23/22 06:37*	*1*
1,2-Dichloroethane-d4 (Surr)	*107*		*63 - 144*		*06/23/22 06:37*	*1*
Toluene-d8 (Surr)	*98*		*80 - 117*		*06/23/22 06:37*	*1*

Client Sample ID: SB40-01-062222 — Lab Sample ID: 860-28374-7

Date Collected: 06/22/22 12:05 — **Matrix: Water**
Date Received: 06/22/22 15:32

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.110		0.00100	0.000174	mg/L			06/23/22 06:56	1
1,1-Dichloroethane	0.0155		0.00100	0.000244	mg/L			06/23/22 06:56	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/23/22 06:56	1
1,1-Dichloroethene	0.00405		0.00100	0.000216	mg/L			06/23/22 06:56	1
Tetrachloroethene	0.0347		0.00100	0.000500	mg/L			06/23/22 06:56	1
Trichloroethene	0.0133		0.00500	0.000424	mg/L			06/23/22 06:56	1
Vinyl chloride	0.0195		0.00200	0.000234	mg/L			06/23/22 06:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*74 - 124*		*06/23/22 06:56*	*1*
Dibromofluoromethane (Surr)	*101*		*75 - 131*		*06/23/22 06:56*	*1*
1,2-Dichloroethane-d4 (Surr)	*108*		*63 - 144*		*06/23/22 06:56*	*1*
Toluene-d8 (Surr)	*98*		*80 - 117*		*06/23/22 06:56*	*1*

Client Sample ID: TB-01-062222 — Lab Sample ID: 860-28374-8

Date Collected: 06/22/22 07:20 — **Matrix: Water**
Date Received: 06/22/22 15:32

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			06/23/22 04:43	1
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			06/23/22 04:43	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/23/22 04:43	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			06/23/22 04:43	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/23/22 04:43	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			06/23/22 04:43	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			06/23/22 04:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*74 - 124*		*06/23/22 04:43*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 131*		*06/23/22 04:43*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*63 - 144*		*06/23/22 04:43*	*1*
Toluene-d8 (Surr)	*97*		*80 - 117*		*06/23/22 04:43*	*1*

Unadjusted Detection Limits

Client: Jacobs Engineering Group, Inc. Job ID: 860-28374-1
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	MQL	MDL	Units
1,1-Dichloroethane	0.00100	0.000244	mg/L
1,1-Dichloroethene	0.00100	0.000216	mg/L
1,2-Dichloroethane	0.00100	0.000285	mg/L
cis-1,2-Dichloroethene	0.00100	0.000174	mg/L
Tetrachloroethene	0.00100	0.000500	mg/L
Trichloroethene	0.00500	0.000424	mg/L
Vinyl chloride	0.00200	0.000234	mg/L

Surrogate Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Job ID: 860-28374-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		BFB	DBFM	DCA	TOL
Lab Sample ID	Client Sample ID	(74-124)	(75-131)	(63-144)	(80-117)
860-28374-1	SB41-03-062222	98	95	104	100
860-28374-2	SB41-02-062222	99	98	106	97
860-28374-3	SB41-01-062222	98	94	108	97
860-28374-4	FD-01-062222	98	103	110	100
860-28374-5	SB40-03-062222	102	98	108	102
860-28374-5 MS	SB40-03-062222	97	99	97	99
860-28374-5 MSD	SB40-03-062222	99	95	94	101
860-28374-6	SB40-02-062222	98	101	107	98
860-28374-7	SB40-01-062222	97	101	108	98
860-28374-8	TB-01-062222	98	99	100	97
LCS 860-58090/3	Lab Control Sample	99	98	96	98
LCSD 860-58090/4	Lab Control Sample Dup	101	98	96	99
MB 860-58090/10	Method Blank	101	98	103	98

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 860-58090/10
Matrix: Water
Analysis Batch: 58090

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

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			06/23/22 04:24	1
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			06/23/22 04:24	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/23/22 04:24	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			06/23/22 04:24	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/23/22 04:24	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			06/23/22 04:24	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			06/23/22 04:24	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*74 - 124*		*06/23/22 04:24*	*1*
Dibromofluoromethane (Surr)	*98*		*75 - 131*		*06/23/22 04:24*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*63 - 144*		*06/23/22 04:24*	*1*
Toluene-d8 (Surr)	*98*		*80 - 117*		*06/23/22 04:24*	*1*

Lab Sample ID: LCS 860-58090/3
Matrix: Water
Analysis Batch: 58090

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
cis-1,2-Dichloroethene			0.0500	0.05322		mg/L		106	75 - 125		
1,1-Dichloroethane			0.0500	0.05207		mg/L		104	72 - 125		
1,2-Dichloroethane			0.0500	0.05451		mg/L		109	68 - 127		
1,1-Dichloroethene			0.0500	0.04938		mg/L		99	59 - 172		
Tetrachloroethene			0.0500	0.05420		mg/L		108	71 - 125		
Trichloroethene			0.0500	0.05366		mg/L		107	62 - 137		
Vinyl chloride			0.0500	0.04531		mg/L		91	60 - 140		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*
Dibromofluoromethane (Surr)	*98*		*75 - 131*
1,2-Dichloroethane-d4 (Surr)	*96*		*63 - 144*
Toluene-d8 (Surr)	*98*		*80 - 117*

Lab Sample ID: LCSD 860-58090/4
Matrix: Water
Analysis Batch: 58090

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
cis-1,2-Dichloroethene			0.0500	0.05047		mg/L		101	75 - 125	5	25
1,1-Dichloroethane			0.0500	0.04842		mg/L		97	72 - 125	7	25
1,2-Dichloroethane			0.0500	0.05326		mg/L		107	68 - 127	2	25
1,1-Dichloroethene			0.0500	0.05121		mg/L		102	59 - 172	4	25
Tetrachloroethene			0.0500	0.05316		mg/L		106	71 - 125	2	25
Trichloroethene			0.0500	0.05400		mg/L		108	62 - 137	1	25
Vinyl chloride			0.0500	0.04282		mg/L		86	60 - 140	6	25

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

Lab Sample ID: LCSD 860-58090/4
Matrix: Water
Analysis Batch: 58090

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

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	*101*		*74 - 124*
Dibromofluoromethane (Surr)	*98*		*75 - 131*
1,2-Dichloroethane-d4 (Surr)	*96*		*63 - 144*
Toluene-d8 (Surr)	*99*		*80 - 117*

Lab Sample ID: 860-28374-5 MS
Matrix: Water
Analysis Batch: 58090

Client Sample ID: SB40-03-062222
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
cis-1,2-Dichloroethene	0.00346		0.0500	0.05971		mg/L		113	75 - 125
1,1-Dichloroethane	0.0324		0.0500	0.1280	N1	mg/L		191	72 - 125
1,2-Dichloroethane	0.000285	U	0.0500	0.05415		mg/L		108	68 - 127
1,1-Dichloroethene	0.0108		0.0500	0.07919		mg/L		137	59 - 172
Tetrachloroethene	0.000500	U	0.0500	0.05399		mg/L		108	71 - 125
Trichloroethene	0.000533	J	0.0500	0.05614		mg/L		111	62 - 137
Vinyl chloride	0.0155		0.0500	0.08155		mg/L		132	60 - 140

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	*97*		*74 - 124*
Dibromofluoromethane (Surr)	*99*		*75 - 131*
1,2-Dichloroethane-d4 (Surr)	*97*		*63 - 144*
Toluene-d8 (Surr)	*99*		*80 - 117*

Lab Sample ID: 860-28374-5 MSD
Matrix: Water
Analysis Batch: 58090

Client Sample ID: SB40-03-062222
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
cis-1,2-Dichloroethene	0.00346		0.0500	0.05958		mg/L		112	75 - 125	0	25
1,1-Dichloroethane	0.0324		0.0500	0.1308	N1	mg/L		197	72 - 125	2	25
1,2-Dichloroethane	0.000285	U	0.0500	0.05329		mg/L		107	68 - 127	2	25
1,1-Dichloroethene	0.0108		0.0500	0.08029		mg/L		139	59 - 172	1	25
Tetrachloroethene	0.000500	U	0.0500	0.05582		mg/L		112	71 - 125	3	25
Trichloroethene	0.000533	J	0.0500	0.05470		mg/L		108	62 - 137	3	25
Vinyl chloride	0.0155		0.0500	0.08076		mg/L		131	60 - 140	1	25

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*
Dibromofluoromethane (Surr)	*95*		*75 - 131*
1,2-Dichloroethane-d4 (Surr)	*94*		*63 - 144*
Toluene-d8 (Surr)	*101*		*80 - 117*

QC Association Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Job ID: 860-28374-1

GC/MS VOA

Analysis Batch: 58090

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-28374-1	SB41-03-062222	Total/NA	Water	8260D	
860-28374-2	SB41-02-062222	Total/NA	Water	8260D	
860-28374-3	SB41-01-062222	Total/NA	Water	8260D	
860-28374-4	FD-01-062222	Total/NA	Water	8260D	
860-28374-5	SB40-03-062222	Total/NA	Water	8260D	
860-28374-6	SB40-02-062222	Total/NA	Water	8260D	
860-28374-7	SB40-01-062222	Total/NA	Water	8260D	
860-28374-8	TB-01-062222	Total/NA	Water	8260D	
MB 860-58090/10	Method Blank	Total/NA	Water	8260D	
LCS 860-58090/3	Lab Control Sample	Total/NA	Water	8260D	
LCSD 860-58090/4	Lab Control Sample Dup	Total/NA	Water	8260D	
860-28374-5 MS	SB40-03-062222	Total/NA	Water	8260D	
860-28374-5 MSD	SB40-03-062222	Total/NA	Water	8260D	

Lab Chronicle

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Job ID: 860-28374-1

Client Sample ID: SB41-03-062222
Lab Sample ID: 860-28374-1
Date Collected: 06/22/22 08:10
Matrix: Water
Date Received: 06/22/22 15:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	58090	06/23/22 05:21	A1S	XEN STF

Client Sample ID: SB41-02-062222
Lab Sample ID: 860-28374-2
Date Collected: 06/22/22 08:25
Matrix: Water
Date Received: 06/22/22 15:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	58090	06/23/22 05:40	A1S	XEN STF

Client Sample ID: SB41-01-062222
Lab Sample ID: 860-28374-3
Date Collected: 06/22/22 08:45
Matrix: Water
Date Received: 06/22/22 15:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	58090	06/23/22 05:59	A1S	XEN STF

Client Sample ID: FD-01-062222
Lab Sample ID: 860-28374-4
Date Collected: 06/22/22 00:00
Matrix: Water
Date Received: 06/22/22 15:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	58090	06/23/22 06:18	A1S	XEN STF

Client Sample ID: SB40-03-062222
Lab Sample ID: 860-28374-5
Date Collected: 06/22/22 11:35
Matrix: Water
Date Received: 06/22/22 15:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	58090	06/23/22 05:02	A1S	XEN STF

Client Sample ID: SB40-02-062222
Lab Sample ID: 860-28374-6
Date Collected: 06/22/22 11:50
Matrix: Water
Date Received: 06/22/22 15:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	58090	06/23/22 06:37	A1S	XEN STF

Client Sample ID: SB40-01-062222
Lab Sample ID: 860-28374-7
Date Collected: 06/22/22 12:05
Matrix: Water
Date Received: 06/22/22 15:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	58090	06/23/22 06:56	A1S	XEN STF

Lab Chronicle

Client: Jacobs Engineering Group, Inc.
Job ID: 860-28374-1
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Client Sample ID: TB-01-062222
Lab Sample ID: 860-28374-8

Date Collected: 06/22/22 07:20
Matrix: Water
Date Received: 06/22/22 15:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	58090	06/23/22 04:43	A1S	XEN STF

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Accreditation/Certification Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-28374-1
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Laboratory: Eurofins Houston

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

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	21-038-0	08-04-22
Florida	NELAP	E871002	06-30-22
Louisiana	NELAP	03054	06-30-22
Oklahoma	State	2021-168	08-31-22
Texas	NELAP	T104704215-21-44	06-30-22
Texas	TCEQ Water Supply	T104704215	06-30-22
USDA	US Federal Programs	P330-22-00025	03-02-23

Method Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Job ID: 860-28374-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	XEN STF
5030C	Purge and Trap	SW846	XEN STF

Protocol References:

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

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Sample Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Job ID: 860-28374-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
860-28374-1	SB41-03-062222	Water	06/22/22 08:10	06/22/22 15:32
860-28374-2	SB41-02-062222	Water	06/22/22 08:25	06/22/22 15:32
860-28374-3	SB41-01-062222	Water	06/22/22 08:45	06/22/22 15:32
860-28374-4	FD-01-062222	Water	06/22/22 00:00	06/22/22 15:32
860-28374-5	SB40-03-062222	Water	06/22/22 11:35	06/22/22 15:32
860-28374-6	SB40-02-062222	Water	06/22/22 11:50	06/22/22 15:32
860-28374-7	SB40-01-062222	Water	06/22/22 12:05	06/22/22 15:32
860-28374-8	TB-01-062222	Water	06/22/22 07:20	06/22/22 15:32

Appendix A

Laboratory Data Package Cover Page - Page 1 of 4

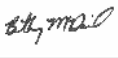
This data package is for Job No. 860-28374-1 and consists of:

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

- ☑ R1- Field chain-of-custody documentation;
- ☑ R2 - Sample identification cross-reference;
- ☑ R3 - Test reports (analytical data sheets) for each environmental sample that includes:
  a. Items consistent with NELAC Chapter 5,
  b. dilution factors,
  c. prepatation methods,
  d. cleanup methods, and
  e. if required for the project, tentatively identified coumpounds (TICs).
- ☑ R4 - Surrogate recovery data including:
  a. Calculated recovery (%R), and
  b. The laboratory's surrogate QC limits.
- ☑ R5 - Test reports/summary forms for blank samples;
- ☑ R6 - Test reports/summary forms for laboratory control samples (LCSs) including:
  a. LCS spiking amounts,
  b. Calculated %R for each analyte, and
  c. The laboratory's LCS QC limits.
- ☑ R7 - Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a. Samples associated with the MS/MSD clearly identified,
  b. MS/MSD spiking amounts,
  c. Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d. Calculated %Rs and relative percent differences (RPDs), and
  e. The laboratory's MS/MSD QC limits
- ☐ R8 - Laboratory analytical duplicate (if applicable) recovery and precision:
  a. The amount of analyte measured in the duplicate,
  b. The calculated RPD, and
  c. The laboratory's QC limits for analytical duplicates.
- ☑ R9 - List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
- ☑ R10 - Other problems or anomalies.
- ☐ Exception Report for every "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge 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.

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

Name (Printed)	Signature	Official Title (Printed)	Date
Bethany McDaniel		Senior Project Manager	06/23/2022

Laboratory Data Package Cover Page - Page 2 of 4

Laboratory Name: Eurofins Houston	LRC Date: 06/23/2022
Project Name: STC Silber Rd Pre-Design Inv Part 2	Laboratory Job Number: 860-28374-1
Reviewer Name: Bethany McDaniel	

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
		Were all departures from standard conditions described in an exception report?	✓				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	✓				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	✓				
		Were calculations checked by a peer or supervisor?	✓				
		Were all analyte identifications checked by a peer or supervisor?	✓				
		Were sample detection limits reported for all analytes not detected?	✓				
		Were all results for soil and sediment samples reported on a dry weight basis?			✓		
		Were % moisture (or solids) reported for all soil and sediment samples?			✓		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			✓		
		If required for the project, are TICs reported?			✓		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	✓				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	✓				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	✓				
		Were blanks analyzed at the appropriate frequency?	✓				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
		Were blank concentrations < MQL?	✓				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	✓				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
		Were LCSs analyzed at the required frequency?	✓				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	✓				
		Was the LCSD RPD within QC limits?	✓				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	✓				
		Were MS/MSD analyzed at the appropriate frequency?	✓				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		✓			1
		Were MS/MSD RPDs within laboratory QC limits?	✓				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			✓		
		Were analytical duplicates analyzed at the appropriate frequency?			✓		
		Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	✓				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	✓				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	✓				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	✓				

Laboratory Data Package Cover Page - Page 3 of 4

Laboratory Name: Eurofins Houston	LRC Date: 06/23/2022
Project Name: STC Silber Rd Pre-Design Inv Part 2	Laboratory Job Number: 860-28374-1
Reviewer Name: Bethany McDaniel	

#[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?	✓				
		Were percent RSDs or correlation coefficient criteria met?	✓				
		Was the number of standards recommended in the method used for all analytes?	✓				
		Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
		Are ICAL data available for all instruments used?	✓				
		Has the initial calibration curve been verified using an appropriate second source standard?	✓				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?	✓				
		Were percent differences for each analyte within the method-required QC limits?	✓				
		Was the ICAL curve verified for each analyte?	✓				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			✓		
S3	O	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?	✓				
		Were ion abundance data within the method-required QC limits?	✓				
S4	O	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?	✓				
S5	OI	**Raw data (NELAC Section 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
		Were data associated with manual integrations flagged on the raw data?	✓				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			✓		
S7	O	**Tentatively identified compounds (TICs)**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
S8	I	**Interference Check Sample (ICS) results**					
		Were percent recoveries within method QC limits?			✓		
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?			✓		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	✓				
		Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
S11	OI	**Proficiency test reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	✓				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	✓				
		Is documentation of the analyst's competency up-to-date and on file?	✓				
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?	✓				
S16	OI	**Laboratory standard operating procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	✓				

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).

Laboratory Data Package Cover Page - Page 4 of 4

Laboratory Name: Eurofins Houston	LRC Date: 06/23/2022
Project Name: STC Silber Rd Pre-Design Inv Part 2	Laboratory Job Number: 860-28374-1
Reviewer Name: Bethany McDaniel	

ER#[1]	Description
1	Method 8260D: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 860-58090 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

1. ER# = Exception Report identification number (an Exception Report should be completed for an item if “NR” or “No” is checked).

Detection Check Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-28374-1
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water
Prep Type: Total/NA
Prep Method: 5030C-Purge and Trap
Instrument: A294
Detector: MSD/0
Column: DB-624

Analyte	Spike Added	Result	Qualifier	Unit	RL	MDL	Analysis Date	Analysis Batch
Trichloroethene	0.00500	0.00510		mg/L	0.00500	0.000424	02/23/2022	860-42516
Vinyl chloride	0.00500	0.00494		mg/L	0.00200	0.000234	02/23/2022	860-42516
cis-1,2-Dichloroethene	0.00500	0.00494		mg/L	0.00100	0.000174	02/23/2022	860-42516
1,1-Dichloroethane	0.00500	0.00501		mg/L	0.00100	0.000244	02/23/2022	860-42516
1,2-Dichloroethane	0.00500	0.00495		mg/L	0.00100	0.000285	02/23/2022	860-42516
1,1-Dichloroethene	0.00500	0.00478		mg/L	0.00100	0.000216	02/23/2022	860-42516
Tetrachloroethene	0.00500	0.00496		mg/L	0.00100	0.000500	02/23/2022	860-42516

Eurofins Houston
4145 Greenbriar Dr
Stafford TX 77477
Phone (281) 240-4200

Chain of Custody Record

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Client Information	Sampler	Lab PM: McDaniel, Bethany A	Carrier Tracking No(s):	COC No: 860-11069-3875.1
Client Contact: John Ynfante	Phone:	E-Mail: Bethany.McDaniel@et.eurofinsus.com	State of Origin:	Page: Page 1 of __
Company: Jacobs Engineering Group, Inc.	PWSID:			Job #:
Address: 14701 St. Mary's Lane Suite 300	Due Date Requested:			
City: Houston	TAT Requested (days): 1 day RUSH			
State, Zip: TX, 77079	Compliance Project: Δ Yes Δ No			
Phone:	PO #: D3542628.C.CS.TPE.SIL.22-01-02			
Email: John.Ynfante@jacobs.com	WO #: D3542628.C.CS.TPE.SIL.22-01-02			
Project Name: STC Silber Rd Pre-Design Inv Part 2	Project #: 86002024			
Site:	SSOW#:			

Analysis Requested

860-28374 Chain of Custody

Preservation Codes:

A HCL, B NaOH, C Zn Acetate, D Nitric Acid, E NaHSO4, F MeOH, G Amchlor, H Ascorbic Acid, I Ice, J DI Water, K EDTA, L EDA, M Hexane, N None, O AsNaO2, P Na2O4S, Q Na2SO3, R Na2S2O3, S H2SO4, T TSP Dodecahydrate, U Acetone, V MCAA, W pH 4-5, Y Trizma, 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)	8260C (MOD) VOCs Custom List (7)	Total Number of containers	Special Instructions/Note:
	Preservation Code:					A		
SB41-03-062222	6/22/22	0810	G	Water		X	3	
SB41-02-062222	6/22/22	0825	G	Water		X	3	
SB41-01-062222	6/22/22	0845	G	Water		X	3	
FD-01-062222	6/22/22	NG	G	Water		X	3	
SB40-03-062222	6/22/22	1135	G	Water	X	X	9	MS/MSD
SB40-02-062222	6/22/22	1150	G	Water		X	3	
SB40-01-062222	6/22/22	1205	G	Water		X	3	
TB-01-062222	6/22/22	0720	—	Water		X	2	
				Water				
				Water				
				Water				

Temp: 2.7 IR ID HOU-332
C/F: -0.9
Corrected Temp: 2.5

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) TRRP

Special Instructions/QC Requirements:

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

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		6/22/22 1726			6.22.22 1824	
2		6.22.22 1832			6/22/22 1532	Ex
3		Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.

Cooler Temperature(s) °C and Other Remarks:

Ver 01/16/2019

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc.

Job Number: 860-28374-1

Login Number: 28374
List Number: 1
Creator: Palmar, Pedro

List Source: Eurofins Houston

Question	Answer	Comment
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 (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Houston
4145 Greenbriar Dr
Stafford, TX 77477
Tel: (281)240-4200

Laboratory Job ID: 860-28484-1
Client Project/Site: STC Silber Rd Pre-Design Inv Part 2

For:
Jacobs Engineering Group, Inc.
12750 Merit Drive
Suite 1100
Dallas, Texas 75251

Attn: John Knott

Bethany McDaniel

Authorized for release by:
6/24/2022 4:14:16 PM

Bethany McDaniel, Senior Project Manager
(713)358-2005
Bethany.McDaniel@et.eurofinsus.com

Table of Contents

Definitions/Glossary

Client: Jacobs Engineering Group, Inc. Job ID: 860-28484-1
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the MQL but greater than or equal to the SDL and the concentration is an estimated value.
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
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Job ID: 860-28484-1

Job ID: 860-28484-1

Laboratory: Eurofins Houston

Narrative

Job Narrative
860-28484-1

Receipt
The samples were received on 6/23/2022 1:40 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 5.2°C

Detection Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Job ID: 860-28484-1

Client Sample ID: SB37-02-062222 — Lab Sample ID: 860-28484-1

No Detections.

Client Sample ID: SB37-01-062222 — Lab Sample ID: 860-28484-2

No Detections.

Client Sample ID: TB-02-062222 — Lab Sample ID: 860-28484-3

No Detections.

Client Sample ID: SB38-03-062222 — Lab Sample ID: 860-28484-4

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.00397		0.00100	0.000174	mg/L	1		8260D	Total/NA
1,1-Dichloroethane	0.00335		0.00100	0.000244	mg/L	1		8260D	Total/NA
1,1-Dichloroethene	0.00103		0.00100	0.000216	mg/L	1		8260D	Total/NA
Vinyl chloride	0.00248		0.00200	0.000234	mg/L	1		8260D	Total/NA

Client Sample ID: SB38-02-062222 — Lab Sample ID: 860-28484-5

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.0116		0.00100	0.000174	mg/L	1		8260D	Total/NA
1,1-Dichloroethane	0.00830		0.00100	0.000244	mg/L	1		8260D	Total/NA
1,1-Dichloroethene	0.00759		0.00100	0.000216	mg/L	1		8260D	Total/NA
Tetrachloroethene	0.000907	J	0.00100	0.000500	mg/L	1		8260D	Total/NA
Trichloroethene	0.00196	J	0.00500	0.000424	mg/L	1		8260D	Total/NA
Vinyl chloride	0.00871		0.00200	0.000234	mg/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: SB37-02-062222 — Lab Sample ID: 860-28484-1

Date Collected: 06/22/22 15:40 **Matrix: Water**
Date Received: 06/23/22 13:40

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			06/24/22 07:10	1
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			06/24/22 07:10	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/24/22 07:10	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			06/24/22 07:10	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/24/22 07:10	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			06/24/22 07:10	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			06/24/22 07:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*74 - 124*		*06/24/22 07:10*	*1*
Dibromofluoromethane (Surr)	*105*		*75 - 131*		*06/24/22 07:10*	*1*
1,2-Dichloroethane-d4 (Surr)	*116*		*63 - 144*		*06/24/22 07:10*	*1*
Toluene-d8 (Surr)	*100*		*80 - 117*		*06/24/22 07:10*	*1*

Client Sample ID: SB37-01-062222 — Lab Sample ID: 860-28484-2

Date Collected: 06/22/22 15:55 **Matrix: Water**
Date Received: 06/23/22 13:40

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			06/24/22 07:31	1
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			06/24/22 07:31	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/24/22 07:31	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			06/24/22 07:31	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/24/22 07:31	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			06/24/22 07:31	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			06/24/22 07:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*106*		*74 - 124*		*06/24/22 07:31*	*1*
Dibromofluoromethane (Surr)	*106*		*75 - 131*		*06/24/22 07:31*	*1*
1,2-Dichloroethane-d4 (Surr)	*117*		*63 - 144*		*06/24/22 07:31*	*1*
Toluene-d8 (Surr)	*101*		*80 - 117*		*06/24/22 07:31*	*1*

Client Sample ID: TB-02-062222 — Lab Sample ID: 860-28484-3

Date Collected: 06/22/22 13:00 **Matrix: Water**
Date Received: 06/23/22 13:40

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			06/24/22 06:50	1
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			06/24/22 06:50	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/24/22 06:50	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			06/24/22 06:50	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/24/22 06:50	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			06/24/22 06:50	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			06/24/22 06:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*74 - 124*		*06/24/22 06:50*	*1*
Dibromofluoromethane (Surr)	*106*		*75 - 131*		*06/24/22 06:50*	*1*

Client Sample ID: TB-02-062222 — Lab Sample ID: 860-28484-3

Date Collected: 06/22/22 13:00 — **Matrix: Water**
Date Received: 06/23/22 13:40

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	116		63 - 144		06/24/22 06:50	1
Toluene-d8 (Surr)	100		80 - 117		06/24/22 06:50	1

Client Sample ID: SB38-03-062222 — Lab Sample ID: 860-28484-4

Date Collected: 06/23/22 11:00 — **Matrix: Water**
Date Received: 06/23/22 13:40

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**0.00397**		0.00100	0.000174	mg/L			06/24/22 08:14	1
1,1-Dichloroethane	**0.00335**		0.00100	0.000244	mg/L			06/24/22 08:14	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/24/22 08:14	1
1,1-Dichloroethene	**0.00103**		0.00100	0.000216	mg/L			06/24/22 08:14	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/24/22 08:14	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			06/24/22 08:14	1
Vinyl chloride	**0.00248**		0.00200	0.000234	mg/L			06/24/22 08:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	107		74 - 124		06/24/22 08:14	1
Dibromofluoromethane (Surr)	106		75 - 131		06/24/22 08:14	1
1,2-Dichloroethane-d4 (Surr)	118		63 - 144		06/24/22 08:14	1
Toluene-d8 (Surr)	100		80 - 117		06/24/22 08:14	1

Client Sample ID: SB38-02-062222 — Lab Sample ID: 860-28484-5

Date Collected: 06/23/22 11:20 — **Matrix: Water**
Date Received: 06/23/22 13:40

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**0.0116**		0.00100	0.000174	mg/L			06/24/22 08:35	1
1,1-Dichloroethane	**0.00830**		0.00100	0.000244	mg/L			06/24/22 08:35	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/24/22 08:35	1
1,1-Dichloroethene	**0.00759**		0.00100	0.000216	mg/L			06/24/22 08:35	1
Tetrachloroethene	**0.000907**	**J**	0.00100	0.000500	mg/L			06/24/22 08:35	1
Trichloroethene	**0.00196**	**J**	0.00500	0.000424	mg/L			06/24/22 08:35	1
Vinyl chloride	**0.00871**		0.00200	0.000234	mg/L			06/24/22 08:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	107		74 - 124		06/24/22 08:35	1
Dibromofluoromethane (Surr)	108		75 - 131		06/24/22 08:35	1
1,2-Dichloroethane-d4 (Surr)	115		63 - 144		06/24/22 08:35	1
Toluene-d8 (Surr)	100		80 - 117		06/24/22 08:35	1

Unadjusted Detection Limits

Client: Jacobs Engineering Group, Inc.
Job ID: 860-28484-1
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	MQL	MDL	Units
1,1-Dichloroethane	0.00100	0.000244	mg/L
1,1-Dichloroethene	0.00100	0.000216	mg/L
1,2-Dichloroethane	0.00100	0.000285	mg/L
cis-1,2-Dichloroethene	0.00100	0.000174	mg/L
Tetrachloroethene	0.00100	0.000500	mg/L
Trichloroethene	0.00500	0.000424	mg/L
Vinyl chloride	0.00200	0.000234	mg/L

Surrogate Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Job ID: 860-28484-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		BFB	DBFM	DCA	TOL
Lab Sample ID	Client Sample ID	(74-124)	(75-131)	(63-144)	(80-117)
860-28318-C-1 MS	Matrix Spike	101	108	111	99
860-28318-C-1 MSD	Matrix Spike Duplicate	103	107	113	101
860-28484-1	SB37-02-062222	104	105	116	100
860-28484-2	SB37-01-062222	106	106	117	101
860-28484-3	TB-02-062222	105	106	116	100
860-28484-4	SB38-03-062222	107	106	118	100
860-28484-5	SB38-02-062222	107	108	115	100
LCS 860-58333/31	Lab Control Sample	99	107	113	99
LCSD 860-58333/32	Lab Control Sample Dup	101	108	110	99
MB 860-58333/10	Method Blank	105	105	113	100

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 860-58333/10
Matrix: Water
Analysis Batch: 58333

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

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			06/24/22 01:21	1
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			06/24/22 01:21	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/24/22 01:21	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			06/24/22 01:21	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/24/22 01:21	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			06/24/22 01:21	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			06/24/22 01:21	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*74 - 124*		*06/24/22 01:21*	*1*
Dibromofluoromethane (Surr)	*105*		*75 - 131*		*06/24/22 01:21*	*1*
1,2-Dichloroethane-d4 (Surr)	*113*		*63 - 144*		*06/24/22 01:21*	*1*
Toluene-d8 (Surr)	*100*		*80 - 117*		*06/24/22 01:21*	*1*

Lab Sample ID: LCS 860-58333/31
Matrix: Water
Analysis Batch: 58333

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
cis-1,2-Dichloroethene	0.0500	0.05032		mg/L		101	75 - 125
1,1-Dichloroethane	0.0500	0.04997		mg/L		100	72 - 125
1,2-Dichloroethane	0.0500	0.05447		mg/L		109	68 - 127
1,1-Dichloroethene	0.0500	0.04644		mg/L		93	59 - 172
Tetrachloroethene	0.0500	0.04702		mg/L		94	71 - 125
Trichloroethene	0.0500	0.04796		mg/L		96	62 - 137
Vinyl chloride	0.0500	0.04938		mg/L		99	60 - 140

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*
Dibromofluoromethane (Surr)	*107*		*75 - 131*
1,2-Dichloroethane-d4 (Surr)	*113*		*63 - 144*
Toluene-d8 (Surr)	*99*		*80 - 117*

Lab Sample ID: LCSD 860-58333/32
Matrix: Water
Analysis Batch: 58333

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
cis-1,2-Dichloroethene	0.0500	0.05034		mg/L		101	75 - 125	0	25
1,1-Dichloroethane	0.0500	0.05015		mg/L		100	72 - 125	0	25
1,2-Dichloroethane	0.0500	0.05353		mg/L		107	68 - 127	2	25
1,1-Dichloroethene	0.0500	0.04611		mg/L		92	59 - 172	1	25
Tetrachloroethene	0.0500	0.04634		mg/L		93	71 - 125	1	25
Trichloroethene	0.0500	0.04793		mg/L		96	62 - 137	0	25
Vinyl chloride	0.0500	0.05020		mg/L		100	60 - 140	2	25

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

Lab Sample ID: LCSD 860-58333/32
Matrix: Water
Analysis Batch: 58333

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

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	*101*		*74 - 124*
Dibromofluoromethane (Surr)	*108*		*75 - 131*
1,2-Dichloroethane-d4 (Surr)	*110*		*63 - 144*
Toluene-d8 (Surr)	*99*		*80 - 117*

Lab Sample ID: 860-28318-C-1 MS
Matrix: Water
Analysis Batch: 58333

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
cis-1,2-Dichloroethene	0.00103		0.0500	0.05050		mg/L		99	75 - 125
1,1-Dichloroethane	0.000244	U	0.0500	0.04909		mg/L		98	72 - 125
1,2-Dichloroethane	0.000285	U	0.0500	0.05290		mg/L		106	68 - 127
1,1-Dichloroethene	0.000216	U	0.0500	0.04757		mg/L		95	59 - 172
Tetrachloroethene	0.000500	U	0.0500	0.04615		mg/L		92	71 - 125
Trichloroethene	0.000424	U	0.0500	0.04794		mg/L		96	62 - 137
Vinyl chloride	0.000234	U	0.0500	0.05354		mg/L		107	60 - 140

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	*101*		*74 - 124*
Dibromofluoromethane (Surr)	*108*		*75 - 131*
1,2-Dichloroethane-d4 (Surr)	*111*		*63 - 144*
Toluene-d8 (Surr)	*99*		*80 - 117*

Lab Sample ID: 860-28318-C-1 MSD
Matrix: Water
Analysis Batch: 58333

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
cis-1,2-Dichloroethene	0.00103		0.0500	0.04802		mg/L		94	75 - 125	5	25
1,1-Dichloroethane	0.000244	U	0.0500	0.04708		mg/L		94	72 - 125	4	25
1,2-Dichloroethane	0.000285	U	0.0500	0.05108		mg/L		102	68 - 127	4	25
1,1-Dichloroethene	0.000216	U	0.0500	0.04604		mg/L		92	59 - 172	3	25
Tetrachloroethene	0.000500	U	0.0500	0.04602		mg/L		92	71 - 125	0	25
Trichloroethene	0.000424	U	0.0500	0.04582		mg/L		92	62 - 137	5	25
Vinyl chloride	0.000234	U	0.0500	0.05165		mg/L		103	60 - 140	4	25

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	*103*		*74 - 124*
Dibromofluoromethane (Surr)	*107*		*75 - 131*
1,2-Dichloroethane-d4 (Surr)	*113*		*63 - 144*
Toluene-d8 (Surr)	*101*		*80 - 117*

QC Association Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Job ID: 860-28484-1

GC/MS VOA

Analysis Batch: 58333

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-28484-1	SB37-02-062222	Total/NA	Water	8260D	
860-28484-2	SB37-01-062222	Total/NA	Water	8260D	
860-28484-3	TB-02-062222	Total/NA	Water	8260D	
860-28484-4	SB38-03-062222	Total/NA	Water	8260D	
860-28484-5	SB38-02-062222	Total/NA	Water	8260D	
MB 860-58333/10	Method Blank	Total/NA	Water	8260D	
LCS 860-58333/31	Lab Control Sample	Total/NA	Water	8260D	
LCSD 860-58333/32	Lab Control Sample Dup	Total/NA	Water	8260D	
860-28318-C-1 MS	Matrix Spike	Total/NA	Water	8260D	
860-28318-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Job ID: 860-28484-1

Client Sample ID: SB37-02-062222
Lab Sample ID: 860-28484-1
Date Collected: 06/22/22 15:40
Matrix: Water
Date Received: 06/23/22 13:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	58333	06/24/22 07:10	TTD	XEN STF

Client Sample ID: SB37-01-062222
Lab Sample ID: 860-28484-2
Date Collected: 06/22/22 15:55
Matrix: Water
Date Received: 06/23/22 13:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	58333	06/24/22 07:31	TTD	XEN STF

Client Sample ID: TB-02-062222
Lab Sample ID: 860-28484-3
Date Collected: 06/22/22 13:00
Matrix: Water
Date Received: 06/23/22 13:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	58333	06/24/22 06:50	TTD	XEN STF

Client Sample ID: SB38-03-062222
Lab Sample ID: 860-28484-4
Date Collected: 06/23/22 11:00
Matrix: Water
Date Received: 06/23/22 13:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	58333	06/24/22 08:14	TTD	XEN STF

Client Sample ID: SB38-02-062222
Lab Sample ID: 860-28484-5
Date Collected: 06/23/22 11:20
Matrix: Water
Date Received: 06/23/22 13:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	58333	06/24/22 08:35	TTD	XEN STF

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Accreditation/Certification Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-28484-1
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Laboratory: Eurofins Houston

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

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	21-038-0	08-04-22
Florida	NELAP	E871002	06-30-22
Louisiana	NELAP	03054	06-30-22
Oklahoma	State	2021-168	08-31-22
Texas	NELAP	T104704215-21-44	06-30-22
Texas	TCEQ Water Supply	T104704215	06-30-22
USDA	US Federal Programs	P330-22-00025	03-02-23

Method Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Job ID: 860-28484-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	XEN STF
5030C	Purge and Trap	SW846	XEN STF

Protocol References:

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

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Sample Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-28484-1
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
860-28484-1	SB37-02-062222	Water	06/22/22 15:40	06/23/22 13:40
860-28484-2	SB37-01-062222	Water	06/22/22 15:55	06/23/22 13:40
860-28484-3	TB-02-062222	Water	06/22/22 13:00	06/23/22 13:40
860-28484-4	SB38-03-062222	Water	06/23/22 11:00	06/23/22 13:40
860-28484-5	SB38-02-062222	Water	06/23/22 11:20	06/23/22 13:40

Appendix A

Laboratory Data Package Cover Page - Page 1 of 4

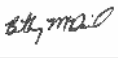
This data package is for Job No. 860-28484-1 and consists of:

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

- ☑ R1- Field chain-of-custody documentation;
- ☑ R2 - Sample identification cross-reference;
- ☑ R3 - Test reports (analytical data sheets) for each environmental sample that includes:
  a. Items consistent with NELAC Chapter 5,
  b. dilution factors,
  c. prepatation methods,
  d. cleanup methods, and
  e. if required for the project, tentatively identified coumpounds (TICs).
- ☑ R4 - Surrogate recovery data including:
  a. Calculated recovery (%R), and
  b. The laboratory's surrogate QC limits.
- ☑ R5 - Test reports/summary forms for blank samples;
- ☑ R6 - Test reports/summary forms for laboratory control samples (LCSs) including:
  a. LCS spiking amounts,
  b. Calculated %R for each analyte, and
  c. The laboratory's LCS QC limits.
- ☑ R7 - Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a. Samples associated with the MS/MSD clearly identified,
  b. MS/MSD spiking amounts,
  c. Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d. Calculated %Rs and relative percent differences (RPDs), and
  e. The laboratory's MS/MSD QC limits
- ☐ R8 - Laboratory analytical duplicate (if applicable) recovery and precision:
  a. The amount of analyte measured in the duplicate,
  b. The calculated RPD, and
  c. The laboratory's QC limits for analytical duplicates.
- ☑ R9 - List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
- ☑ R10 - Other problems or anomalies.
- ☐ Exception Report for every "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge 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.

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

Name (Printed)	Signature	Official Title (Printed)	Date
Bethany McDaniel		Senior Project Manager	06/24/2022

Laboratory Data Package Cover Page - Page 2 of 4

Laboratory Name: Eurofins Houston	LRC Date: 06/24/2022
Project Name: STC Silber Rd Pre-Design Inv Part 2	Laboratory Job Number: 860-28484-1
Reviewer Name: Bethany McDaniel	

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
		Were all departures from standard conditions described in an exception report?	✓				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	✓				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	✓				
		Were calculations checked by a peer or supervisor?	✓				
		Were all analyte identifications checked by a peer or supervisor?	✓				
		Were sample detection limits reported for all analytes not detected?	✓				
		Were all results for soil and sediment samples reported on a dry weight basis?			✓		
		Were % moisture (or solids) reported for all soil and sediment samples?			✓		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			✓		
		If required for the project, are TICs reported?			✓		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	✓				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	✓				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	✓				
		Were blanks analyzed at the appropriate frequency?	✓				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
		Were blank concentrations < MQL?	✓				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	✓				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
		Were LCSs analyzed at the required frequency?	✓				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	✓				
		Was the LCSD RPD within QC limits?	✓				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	✓				
		Were MS/MSD analyzed at the appropriate frequency?	✓				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	✓				
		Were MS/MSD RPDs within laboratory QC limits?	✓				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			✓		
		Were analytical duplicates analyzed at the appropriate frequency?			✓		
		Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	✓				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	✓				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	✓				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	✓				

Laboratory Data Package Cover Page - Page 3 of 4

Laboratory Name: Eurofins Houston	LRC Date: 06/24/2022
Project Name: STC Silber Rd Pre-Design Inv Part 2	Laboratory Job Number: 860-28484-1
Reviewer Name: Bethany McDaniel	

#[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?	✓				
		Were percent RSDs or correlation coefficient criteria met?	✓				
		Was the number of standards recommended in the method used for all analytes?	✓				
		Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
		Are ICAL data available for all instruments used?	✓				
		Has the initial calibration curve been verified using an appropriate second source standard?	✓				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?	✓				
		Were percent differences for each analyte within the method-required QC limits?	✓				
		Was the ICAL curve verified for each analyte?	✓				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			✓		
S3	O	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?	✓				
		Were ion abundance data within the method-required QC limits?	✓				
S4	O	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?	✓				
S5	OI	**Raw data (NELAC Section 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
		Were data associated with manual integrations flagged on the raw data?	✓				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			✓		
S7	O	**Tentatively identified compounds (TICs)**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
S8	I	**Interference Check Sample (ICS) results**					
		Were percent recoveries within method QC limits?			✓		
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?			✓		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	✓				
		Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
S11	OI	**Proficiency test reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	✓				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	✓				
		Is documentation of the analyst's competency up-to-date and on file?	✓				
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?	✓				
S16	OI	**Laboratory standard operating procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	✓				

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).

Laboratory Data Package Cover Page - Page 4 of 4

Laboratory Name: Eurofins Houston	LRC Date: 06/24/2022
Project Name: STC Silber Rd Pre-Design Inv Part 2	Laboratory Job Number: 860-28484-1
Reviewer Name: Bethany McDaniel	

ER#[1]	Description
	No Exceptions

1. ER# = Exception Report identification number (an Exception Report should be completed for an item if “NR” or “No” is checked).

Detection Check Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-28484-1
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water
Prep Type: Total/NA
Prep Method: 5030C-Purge and Trap
Instrument: A325
Detector: MSD/0
Column: DB-624

Analyte	Spike Added	Result	Qualifier	Unit	RL	MDL	Analysis Date	Analysis Batch
Trichloroethene	0.00100	0.00503		mg/L	0.00500	0.000424	03/03/2022	860-43530
Vinyl chloride	0.00100	0.00381		mg/L	0.00200	0.000234	03/03/2022	860-43530
cis-1,2-Dichloroethene	0.00100	0.00499		mg/L	0.00100	0.000174	03/03/2022	860-43530
1,1-Dichloroethane	0.00100	0.00483		mg/L	0.00100	0.000244	03/03/2022	860-43530
1,2-Dichloroethane	0.00100	0.00498		mg/L	0.00100	0.000285	03/03/2022	860-43530
1,1-Dichloroethene	0.00100	0.00411		mg/L	0.00100	0.000216	03/03/2022	860-43530
Tetrachloroethene	0.00100	0.00463		mg/L	0.00100	0.000500	03/03/2022	860-43530

Eurofins Houston
4145 Greenbriar Dr
Stafford, TX 77477
Phone (281) 240-4200

Chain of Custody Record

eurofins | Environment Testing America

Client Information	Sampler	Lab PM: McDaniel, Bethany A	Carrier Tracking No(s):	COC No. 860-11069-3875.1
Client Contact: John Ynfante	Phone:	E-Mail: Bethany.McDaniel@et.eurofinsus.com	State of Origin:	Page: Page 1 of __
Company: Jacobs Engineering Group, Inc.	PWSID:	Analysis Requested		Job #:
Address: 14701 St. Mary's Lane Suite 300	Due Date Requested:			Preservation Codes: A HCL, B NaOH, C Zn Acetate, D Nitric Acid, E NaHSO4, F MeOH, G Amchlor, H Ascorbic Acid, I Ice, J DI Water, K EDTA, L EDA; M Hexane, N None, O AsNaO2, P Na2O4S, Q Na2SO3, R Na2S2O3, S H2SO4, T TSP Dodecahydrate, U Acetone, V MCAA, W pH 4-5, Y Trizma, Z other (specify); Other
City: Houston	TAT Requested (days): 1 day RUSH			
State, Zip: TX, 77079	Compliance Project: Δ Yes Δ No			
Phone:	PO #: D3542628.C.CS.TPE.SIL.22-01-02			
Email: John.Ynfante@jacobs.com	WO #: D3542628.C.CS.TPE.SIL.22-01-02			
Project Name: STC Silber Rd Pre-Design Inv Part 2	Project #: 86002024			
Site:	SSOW#:			

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)	8260C (MOD) VOCs Custom List (7)	Total Number of containers	Special Instructions/Note:
			Preservation Code:		X	X A	X	
SB337-02-062222	6/22/22	1540	G	Water		X	3	
SB337-01-062222	6/22/22	1585	G	Water		X	3	
TB-02-062222	6/22/22	1300	G	Water		X	2	
SB338-03-062322	6/23/22	1100	G	Water		X	3	
SB338-02-062322	6/23/22	1120	G	Water		X	2	ONLY 2x VOA
				Water				
				Water				
				Water				
				Water				
				Water				
				Water				

860-28484 Chain of Custody

Temp. 5.2 °C C/F -0.0 IR ID HOU-323
Corrected Temp: 5.2

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) TRRP

Special Instructions/QC Requirements.

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

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		6/23/22 1305			6.23.22 1305	
2		6-23-22 1340			6-23-22 1340	Ex
3						

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

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc.

Job Number: 860-28484-1

Login Number: 28484
List Number: 1
Creator: Palmar, Pedro

List Source: Eurofins Houston

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

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ANALYTICAL REPORT

Eurofins Houston
4145 Greenbriar Dr
Stafford, TX 77477
Tel: (281)240-4200

Laboratory Job ID: 860-28537-1
Client Project/Site: STC Silber Rd Pre-Design Investigation P

For:
Jacobs Engineering Group, Inc.
12750 Merit Drive
Suite 1100
Dallas, Texas 75251

Attn: John Knott

Bethany McDaniel

Authorized for release by:
6/27/2022 4:35:05 PM

Bethany McDaniel, Senior Project Manager
(713)358-2005
Bethany.McDaniel@et.eurofinsus.com

Table of Contents

Definitions/Glossary

Client: Jacobs Engineering Group, Inc. Job ID: 860-28537-1
Project/Site: STC Silber Rd Pre-Design Investigation P

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the MQL but greater than or equal to the SDL and the concentration is an estimated value.
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
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Jacobs Engineering Group, Inc. Job ID: 860-28537-1
Project/Site: STC Silber Rd Pre-Design Investigation P

Job ID: 860-28537-1

Laboratory: Eurofins Houston

Narrative

Job Narrative
860-28537-1

Receipt
The samples were received on 6/24/2022 3:00 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.8°C

Detection Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-28537-1
Project/Site: STC Silber Rd Pre-Design Investigation P

Client Sample ID: TB-01-062322 Lab Sample ID: 860-28537-1

No Detections.

Client Sample ID: SB39-03-062322 Lab Sample ID: 860-28537-2

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.148		0.00100	0.000174	mg/L	1		8260D	Total/NA
1,1-Dichloroethane	0.0235		0.00100	0.000244	mg/L	1		8260D	Total/NA
1,1-Dichloroethene	0.00445		0.00100	0.000216	mg/L	1		8260D	Total/NA
Vinyl chloride	0.0881		0.00200	0.000234	mg/L	1		8260D	Total/NA

Client Sample ID: SB39-02-062322 Lab Sample ID: 860-28537-3

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.0365		0.00100	0.000244	mg/L	1		8260D	Total/NA
1,1-Dichloroethene	0.00879		0.00100	0.000216	mg/L	1		8260D	Total/NA
Trichloroethene	0.000720	J	0.00500	0.000424	mg/L	1		8260D	Total/NA
cis-1,2-Dichloroethene - DL	0.217		0.00500	0.000870	mg/L	5		8260D	Total/NA
Vinyl chloride - DL	0.132		0.0100	0.00117	mg/L	5		8260D	Total/NA

Client Sample ID: SB35-03-062422 Lab Sample ID: 860-28537-4

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.00489		0.00100	0.000174	mg/L	1		8260D	Total/NA
1,1-Dichloroethane	0.0212		0.00100	0.000244	mg/L	1		8260D	Total/NA
1,2-Dichloroethane	0.000308	J	0.00100	0.000285	mg/L	1		8260D	Total/NA
1,1-Dichloroethene	0.0160		0.00100	0.000216	mg/L	1		8260D	Total/NA
Tetrachloroethene	0.0249		0.00100	0.000500	mg/L	1		8260D	Total/NA
Trichloroethene	0.0102		0.00500	0.000424	mg/L	1		8260D	Total/NA
Vinyl chloride	0.00379		0.00200	0.000234	mg/L	1		8260D	Total/NA

Client Sample ID: SB35-02-062422 Lab Sample ID: 860-28537-5

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.0132		0.00100	0.000174	mg/L	1		8260D	Total/NA
1,1-Dichloroethane	0.00726		0.00100	0.000244	mg/L	1		8260D	Total/NA
1,1-Dichloroethene	0.00615		0.00100	0.000216	mg/L	1		8260D	Total/NA
Tetrachloroethene	0.0413		0.00100	0.000500	mg/L	1		8260D	Total/NA
Trichloroethene	0.0600		0.00500	0.000424	mg/L	1		8260D	Total/NA
Vinyl chloride	0.00223		0.00200	0.000234	mg/L	1		8260D	Total/NA

Client Sample ID: SB35-01-062422 Lab Sample ID: 860-28537-6

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.00937		0.00100	0.000174	mg/L	1		8260D	Total/NA
1,1-Dichloroethane	0.00926		0.00100	0.000244	mg/L	1		8260D	Total/NA
1,1-Dichloroethene	0.00714		0.00100	0.000216	mg/L	1		8260D	Total/NA
Tetrachloroethene	0.0333		0.00100	0.000500	mg/L	1		8260D	Total/NA
Trichloroethene	0.0384		0.00500	0.000424	mg/L	1		8260D	Total/NA
Vinyl chloride	0.00200		0.00200	0.000234	mg/L	1		8260D	Total/NA

Client Sample ID: FD-01-062422 Lab Sample ID: 860-28537-7

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.00537		0.00100	0.000174	mg/L	1		8260D	Total/NA
1,1-Dichloroethane	0.0221		0.00100	0.000244	mg/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Houston

Client Sample ID: FD-01-062422 (Continued) Lab Sample ID: 860-28537-7

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,2-Dichloroethane	0.000315	J	0.00100	0.000285	mg/L	1		8260D	Total/NA
1,1-Dichloroethene	0.0160		0.00100	0.000216	mg/L	1		8260D	Total/NA
Tetrachloroethene	0.0288		0.00100	0.000500	mg/L	1		8260D	Total/NA
Trichloroethene	0.0128		0.00500	0.000424	mg/L	1		8260D	Total/NA
Vinyl chloride	0.00387		0.00200	0.000234	mg/L	1		8260D	Total/NA

Client Sample ID: TB-01-062322 — Lab Sample ID: 860-28537-1

Date Collected: 06/23/22 13:00 — **Matrix: Water**
Date Received: 06/24/22 15:00

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			06/25/22 11:50	1
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			06/25/22 11:50	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/25/22 11:50	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			06/25/22 11:50	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/25/22 11:50	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			06/25/22 11:50	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			06/25/22 11:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*74 - 124*		*06/25/22 11:50*	*1*
Dibromofluoromethane (Surr)	*105*		*75 - 131*		*06/25/22 11:50*	*1*
1,2-Dichloroethane-d4 (Surr)	*113*		*63 - 144*		*06/25/22 11:50*	*1*
Toluene-d8 (Surr)	*101*		*80 - 117*		*06/25/22 11:50*	*1*

Client Sample ID: SB39-03-062322 — Lab Sample ID: 860-28537-2

Date Collected: 06/23/22 15:20 — **Matrix: Water**
Date Received: 06/24/22 15:00

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**0.148**		0.00100	0.000174	mg/L			06/25/22 13:53	1
1,1-Dichloroethane	**0.0235**		0.00100	0.000244	mg/L			06/25/22 13:53	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/25/22 13:53	1
1,1-Dichloroethene	**0.00445**		0.00100	0.000216	mg/L			06/25/22 13:53	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/25/22 13:53	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			06/25/22 13:53	1
Vinyl chloride	**0.0881**		0.00200	0.000234	mg/L			06/25/22 13:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*106*		*74 - 124*		*06/25/22 13:53*	*1*
Dibromofluoromethane (Surr)	*104*		*75 - 131*		*06/25/22 13:53*	*1*
1,2-Dichloroethane-d4 (Surr)	*114*		*63 - 144*		*06/25/22 13:53*	*1*
Toluene-d8 (Surr)	*101*		*80 - 117*		*06/25/22 13:53*	*1*

Client Sample ID: SB39-02-062322 — Lab Sample ID: 860-28537-3

Date Collected: 06/23/22 15:40 — **Matrix: Water**
Date Received: 06/24/22 15:00

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	**0.0365**		0.00100	0.000244	mg/L			06/25/22 14:14	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/25/22 14:14	1
1,1-Dichloroethene	**0.00879**		0.00100	0.000216	mg/L			06/25/22 14:14	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/25/22 14:14	1
Trichloroethene	**0.000720**	**J**	0.00500	0.000424	mg/L			06/25/22 14:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*74 - 124*		*06/25/22 14:14*	*1*
Dibromofluoromethane (Surr)	*107*		*75 - 131*		*06/25/22 14:14*	*1*
1,2-Dichloroethane-d4 (Surr)	*112*		*63 - 144*		*06/25/22 14:14*	*1*
Toluene-d8 (Surr)	*98*		*80 - 117*		*06/25/22 14:14*	*1*

Client Sample ID: SB39-02-062322 — Lab Sample ID: 860-28537-3

Date Collected: 06/23/22 15:40 — **Matrix: Water**
Date Received: 06/24/22 15:00

Method: 8260D - Volatile Organic Compounds by GC/MS - DL

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.217		0.00500	0.000870	mg/L			06/27/22 11:15	5
Vinyl chloride	0.132		0.0100	0.00117	mg/L			06/27/22 11:15	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*74 - 124*		*06/27/22 11:15*	*5*
Dibromofluoromethane (Surr)	*98*		*75 - 131*		*06/27/22 11:15*	*5*
1,2-Dichloroethane-d4 (Surr)	*97*		*63 - 144*		*06/27/22 11:15*	*5*
Toluene-d8 (Surr)	*100*		*80 - 117*		*06/27/22 11:15*	*5*

Client Sample ID: SB35-03-062422 — Lab Sample ID: 860-28537-4

Date Collected: 06/24/22 10:30 — **Matrix: Water**
Date Received: 06/24/22 15:00

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.00489		0.00100	0.000174	mg/L			06/25/22 14:34	1
1,1-Dichloroethane	0.0212		0.00100	0.000244	mg/L			06/25/22 14:34	1
1,2-Dichloroethane	0.000308	J	0.00100	0.000285	mg/L			06/25/22 14:34	1
1,1-Dichloroethene	0.0160		0.00100	0.000216	mg/L			06/25/22 14:34	1
Tetrachloroethene	0.0249		0.00100	0.000500	mg/L			06/25/22 14:34	1
Trichloroethene	0.0102		0.00500	0.000424	mg/L			06/25/22 14:34	1
Vinyl chloride	0.00379		0.00200	0.000234	mg/L			06/25/22 14:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*74 - 124*		*06/25/22 14:34*	*1*
Dibromofluoromethane (Surr)	*104*		*75 - 131*		*06/25/22 14:34*	*1*
1,2-Dichloroethane-d4 (Surr)	*112*		*63 - 144*		*06/25/22 14:34*	*1*
Toluene-d8 (Surr)	*98*		*80 - 117*		*06/25/22 14:34*	*1*

Client Sample ID: SB35-02-062422 — Lab Sample ID: 860-28537-5

Date Collected: 06/24/22 10:40 — **Matrix: Water**
Date Received: 06/24/22 15:00

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.0132		0.00100	0.000174	mg/L			06/25/22 14:55	1
1,1-Dichloroethane	0.00726		0.00100	0.000244	mg/L			06/25/22 14:55	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/25/22 14:55	1
1,1-Dichloroethene	0.00615		0.00100	0.000216	mg/L			06/25/22 14:55	1
Tetrachloroethene	0.0413		0.00100	0.000500	mg/L			06/25/22 14:55	1
Trichloroethene	0.0600		0.00500	0.000424	mg/L			06/25/22 14:55	1
Vinyl chloride	0.00223		0.00200	0.000234	mg/L			06/25/22 14:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*74 - 124*		*06/25/22 14:55*	*1*
Dibromofluoromethane (Surr)	*105*		*75 - 131*		*06/25/22 14:55*	*1*
1,2-Dichloroethane-d4 (Surr)	*112*		*63 - 144*		*06/25/22 14:55*	*1*
Toluene-d8 (Surr)	*99*		*80 - 117*		*06/25/22 14:55*	*1*

Client Sample ID: SB35-01-062422 — Lab Sample ID: 860-28537-6

Date Collected: 06/24/22 10:50 — **Matrix: Water**
Date Received: 06/24/22 15:00

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.00937		0.00100	0.000174	mg/L			06/25/22 15:15	1
1,1-Dichloroethane	0.00926		0.00100	0.000244	mg/L			06/25/22 15:15	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/25/22 15:15	1
1,1-Dichloroethene	0.00714		0.00100	0.000216	mg/L			06/25/22 15:15	1
Tetrachloroethene	0.0333		0.00100	0.000500	mg/L			06/25/22 15:15	1
Trichloroethene	0.0384		0.00500	0.000424	mg/L			06/25/22 15:15	1
Vinyl chloride	0.00200		0.00200	0.000234	mg/L			06/25/22 15:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*106*		*74 - 124*		*06/25/22 15:15*	*1*
Dibromofluoromethane (Surr)	*106*		*75 - 131*		*06/25/22 15:15*	*1*
1,2-Dichloroethane-d4 (Surr)	*113*		*63 - 144*		*06/25/22 15:15*	*1*
Toluene-d8 (Surr)	*100*		*80 - 117*		*06/25/22 15:15*	*1*

Client Sample ID: FD-01-062422 — Lab Sample ID: 860-28537-7

Date Collected: 06/24/22 00:00 — **Matrix: Water**
Date Received: 06/24/22 15:00

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.00537		0.00100	0.000174	mg/L			06/25/22 15:36	1
1,1-Dichloroethane	0.0221		0.00100	0.000244	mg/L			06/25/22 15:36	1
1,2-Dichloroethane	0.000315	J	0.00100	0.000285	mg/L			06/25/22 15:36	1
1,1-Dichloroethene	0.0160		0.00100	0.000216	mg/L			06/25/22 15:36	1
Tetrachloroethene	0.0288		0.00100	0.000500	mg/L			06/25/22 15:36	1
Trichloroethene	0.0128		0.00500	0.000424	mg/L			06/25/22 15:36	1
Vinyl chloride	0.00387		0.00200	0.000234	mg/L			06/25/22 15:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*74 - 124*		*06/25/22 15:36*	*1*
Dibromofluoromethane (Surr)	*105*		*75 - 131*		*06/25/22 15:36*	*1*
1,2-Dichloroethane-d4 (Surr)	*113*		*63 - 144*		*06/25/22 15:36*	*1*
Toluene-d8 (Surr)	*99*		*80 - 117*		*06/25/22 15:36*	*1*

Unadjusted Detection Limits

Client: Jacobs Engineering Group, Inc. Job ID: 860-28537-1
Project/Site: STC Silber Rd Pre-Design Investigation P

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	MQL	MDL	Units
1,1-Dichloroethane	0.00100	0.000244	mg/L
1,1-Dichloroethene	0.00100	0.000216	mg/L
1,2-Dichloroethane	0.00100	0.000285	mg/L
cis-1,2-Dichloroethene	0.00100	0.000174	mg/L
Tetrachloroethene	0.00100	0.000500	mg/L
Trichloroethene	0.00500	0.000424	mg/L
Vinyl chloride	0.00200	0.000234	mg/L

Surrogate Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Investigation P

Job ID: 860-28537-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		BFB	DBFM	DCA	TOL
Lab Sample ID	Client Sample ID	(74-124)	(75-131)	(63-144)	(80-117)
560-103138-C-15 MS	Matrix Spike	100	107	108	98
860-28389-F-2 MS	Matrix Spike	99	99	97	97
860-28537-1	TB-01-062322	105	105	113	101
860-28537-2	SB39-03-062322	106	104	114	101
860-28537-3	SB39-02-062322	105	107	112	98
860-28537-3 - DL	SB39-02-062322	100	98	97	100
860-28537-4	SB35-03-062422	104	104	112	98
860-28537-5	SB35-02-062422	104	105	112	99
860-28537-6	SB35-01-062422	106	106	113	100
860-28537-7	FD-01-062422	103	105	113	99
LCS 860-58537/5	Lab Control Sample	99	108	113	99
LCS 860-58592/5	Lab Control Sample	98	102	96	98
LCSD 860-58537/6	Lab Control Sample Dup	100	107	114	98
LCSD 860-58592/6	Lab Control Sample Dup	97	99	97	98
MB 860-58537/11	Method Blank	104	105	113	100
MB 860-58592/11	Method Blank	98	99	98	98

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 860-58537/11 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 58537

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			06/25/22 11:30	1
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			06/25/22 11:30	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/25/22 11:30	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			06/25/22 11:30	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/25/22 11:30	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			06/25/22 11:30	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			06/25/22 11:30	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*74 - 124*		*06/25/22 11:30*	*1*
Dibromofluoromethane (Surr)	*105*		*75 - 131*		*06/25/22 11:30*	*1*
1,2-Dichloroethane-d4 (Surr)	*113*		*63 - 144*		*06/25/22 11:30*	*1*
Toluene-d8 (Surr)	*100*		*80 - 117*		*06/25/22 11:30*	*1*

Lab Sample ID: LCS 860-58537/5 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 58537

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
cis-1,2-Dichloroethene	0.0500	0.05228		mg/L		105	75 - 125
1,1-Dichloroethane	0.0500	0.05244		mg/L		105	72 - 125
1,2-Dichloroethane	0.0500	0.05805		mg/L		116	68 - 127
1,1-Dichloroethene	0.0500	0.05182		mg/L		104	59 - 172
Tetrachloroethene	0.0500	0.04944		mg/L		99	71 - 125
Trichloroethene	0.0500	0.05042		mg/L		101	62 - 137
Vinyl chloride	0.0500	0.05754		mg/L		115	60 - 140

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*
Dibromofluoromethane (Surr)	*108*		*75 - 131*
1,2-Dichloroethane-d4 (Surr)	*113*		*63 - 144*
Toluene-d8 (Surr)	*99*		*80 - 117*

Lab Sample ID: LCSD 860-58537/6 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 58537

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
cis-1,2-Dichloroethene	0.0500	0.04950		mg/L		99	75 - 125	5	25
1,1-Dichloroethane	0.0500	0.04921		mg/L		98	72 - 125	6	25
1,2-Dichloroethane	0.0500	0.05530		mg/L		111	68 - 127	5	25
1,1-Dichloroethene	0.0500	0.04827		mg/L		97	59 - 172	7	25
Tetrachloroethene	0.0500	0.04656		mg/L		93	71 - 125	6	25
Trichloroethene	0.0500	0.04767		mg/L		95	62 - 137	6	25
Vinyl chloride	0.0500	0.05256		mg/L		105	60 - 140	9	25

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

Lab Sample ID: LCSD 860-58537/6 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 58537

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	*100*		*74 - 124*
Dibromofluoromethane (Surr)	*107*		*75 - 131*
1,2-Dichloroethane-d4 (Surr)	*114*		*63 - 144*
Toluene-d8 (Surr)	*98*		*80 - 117*

Lab Sample ID: 560-103138-C-15 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 58537

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
cis-1,2-Dichloroethene	0.000174	U	0.0500	0.05692		mg/L		114	75 - 125
1,1-Dichloroethane	0.000244	U	0.0500	0.05560		mg/L		111	72 - 125
1,2-Dichloroethane	0.000285	U	0.0500	0.05984		mg/L		120	68 - 127
1,1-Dichloroethene	0.000216	U	0.0500	0.05814		mg/L		116	59 - 172
Tetrachloroethene	0.000500	U	0.0500	0.05451		mg/L		109	71 - 125
Trichloroethene	0.000424	U	0.0500	0.05586		mg/L		112	62 - 137
Vinyl chloride	0.000234	U	0.0500	0.06998		mg/L		140	60 - 140

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	*100*		*74 - 124*
Dibromofluoromethane (Surr)	*107*		*75 - 131*
1,2-Dichloroethane-d4 (Surr)	*108*		*63 - 144*
Toluene-d8 (Surr)	*98*		*80 - 117*

Lab Sample ID: MB 860-58592/11 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 58592

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			06/27/22 10:14	1
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			06/27/22 10:14	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/27/22 10:14	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			06/27/22 10:14	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/27/22 10:14	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			06/27/22 10:14	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			06/27/22 10:14	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*98*		*74 - 124*		*06/27/22 10:14*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 131*		*06/27/22 10:14*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*63 - 144*		*06/27/22 10:14*	*1*
Toluene-d8 (Surr)	*98*		*80 - 117*		*06/27/22 10:14*	*1*

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

Lab Sample ID: LCS 860-58592/5
Matrix: Water
Analysis Batch: 58592

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
cis-1,2-Dichloroethene			0.0500	0.04858		mg/L		97	75 - 125		
1,1-Dichloroethane			0.0500	0.04972		mg/L		99	72 - 125		
1,2-Dichloroethane			0.0500	0.05014		mg/L		100	68 - 127		
1,1-Dichloroethene			0.0500	0.05196		mg/L		104	59 - 172		
Tetrachloroethene			0.0500	0.05391		mg/L		108	71 - 125		
Trichloroethene			0.0500	0.05356		mg/L		107	62 - 137		
Vinyl chloride			0.0500	0.05092		mg/L		102	60 - 140		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*98*		*74 - 124*
Dibromofluoromethane (Surr)	*102*		*75 - 131*
1,2-Dichloroethane-d4 (Surr)	*96*		*63 - 144*
Toluene-d8 (Surr)	*98*		*80 - 117*

Lab Sample ID: LCSD 860-58592/6
Matrix: Water
Analysis Batch: 58592

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
cis-1,2-Dichloroethene			0.0500	0.04507		mg/L		90	75 - 125	8	25
1,1-Dichloroethane			0.0500	0.04580		mg/L		92	72 - 125	8	25
1,2-Dichloroethane			0.0500	0.04735		mg/L		95	68 - 127	6	25
1,1-Dichloroethene			0.0500	0.04779		mg/L		96	59 - 172	8	25
Tetrachloroethene			0.0500	0.04962		mg/L		99	71 - 125	8	25
Trichloroethene			0.0500	0.04973		mg/L		99	62 - 137	7	25
Vinyl chloride			0.0500	0.04670		mg/L		93	60 - 140	9	25

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*97*		*74 - 124*
Dibromofluoromethane (Surr)	*99*		*75 - 131*
1,2-Dichloroethane-d4 (Surr)	*97*		*63 - 144*
Toluene-d8 (Surr)	*98*		*80 - 117*

Lab Sample ID: 860-28389-F-2 MS
Matrix: Water
Analysis Batch: 58592

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
cis-1,2-Dichloroethene	0.000174	U	0.0500	0.04716		mg/L		94	75 - 125		
1,1-Dichloroethane	0.000244	U	0.0500	0.04811		mg/L		96	72 - 125		
1,2-Dichloroethane	0.000285	U	0.0500	0.04780		mg/L		96	68 - 127		
1,1-Dichloroethene	0.000216	U	0.0500	0.05383		mg/L		108	59 - 172		
Tetrachloroethene	0.000500	U	0.0500	0.05092		mg/L		102	71 - 125		
Trichloroethene	0.000424	U	0.0500	0.05184		mg/L		104	62 - 137		
Vinyl chloride	0.000234	U	0.0500	0.05508		mg/L		110	60 - 140		

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

Lab Sample ID: 860-28389-F-2 MS
Matrix: Water
Analysis Batch: 58592

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*
Dibromofluoromethane (Surr)	*99*		*75 - 131*
1,2-Dichloroethane-d4 (Surr)	*97*		*63 - 144*
Toluene-d8 (Surr)	*97*		*80 - 117*

GC/MS VOA

Analysis Batch: 58537

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-28537-1	TB-01-062322	Total/NA	Water	8260D	
860-28537-2	SB39-03-062322	Total/NA	Water	8260D	
860-28537-3	SB39-02-062322	Total/NA	Water	8260D	
860-28537-4	SB35-03-062422	Total/NA	Water	8260D	
860-28537-5	SB35-02-062422	Total/NA	Water	8260D	
860-28537-6	SB35-01-062422	Total/NA	Water	8260D	
860-28537-7	FD-01-062422	Total/NA	Water	8260D	
MB 860-58537/11	Method Blank	Total/NA	Water	8260D	
LCS 860-58537/5	Lab Control Sample	Total/NA	Water	8260D	
LCSD 860-58537/6	Lab Control Sample Dup	Total/NA	Water	8260D	
560-103138-C-15 MS	Matrix Spike	Total/NA	Water	8260D	

Analysis Batch: 58592

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-28537-3 - DL	SB39-02-062322	Total/NA	Water	8260D	
MB 860-58592/11	Method Blank	Total/NA	Water	8260D	
LCS 860-58592/5	Lab Control Sample	Total/NA	Water	8260D	
LCSD 860-58592/6	Lab Control Sample Dup	Total/NA	Water	8260D	
860-28389-F-2 MS	Matrix Spike	Total/NA	Water	8260D	

Lab Chronicle

Client: Jacobs Engineering Group, Inc. Job ID: 860-28537-1
Project/Site: STC Silber Rd Pre-Design Investigation P

Client Sample ID: TB-01-062322 Lab Sample ID: 860-28537-1

Date Collected: 06/23/22 13:00 **Matrix: Water**
Date Received: 06/24/22 15:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	58537	06/25/22 11:50	TTD	XEN STF

Client Sample ID: SB39-03-062322 Lab Sample ID: 860-28537-2

Date Collected: 06/23/22 15:20 **Matrix: Water**
Date Received: 06/24/22 15:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	58537	06/25/22 13:53	TTD	XEN STF

Client Sample ID: SB39-02-062322 Lab Sample ID: 860-28537-3

Date Collected: 06/23/22 15:40 **Matrix: Water**
Date Received: 06/24/22 15:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	58537	06/25/22 14:14	TTD	XEN STF
Total/NA	Analysis	8260D	DL	5	5 mL	5 mL	58592	06/27/22 11:15	TTD	XEN STF

Client Sample ID: SB35-03-062422 Lab Sample ID: 860-28537-4

Date Collected: 06/24/22 10:30 **Matrix: Water**
Date Received: 06/24/22 15:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	58537	06/25/22 14:34	TTD	XEN STF

Client Sample ID: SB35-02-062422 Lab Sample ID: 860-28537-5

Date Collected: 06/24/22 10:40 **Matrix: Water**
Date Received: 06/24/22 15:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	58537	06/25/22 14:55	TTD	XEN STF

Client Sample ID: SB35-01-062422 Lab Sample ID: 860-28537-6

Date Collected: 06/24/22 10:50 **Matrix: Water**
Date Received: 06/24/22 15:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	58537	06/25/22 15:15	TTD	XEN STF

Client Sample ID: FD-01-062422 Lab Sample ID: 860-28537-7

Date Collected: 06/24/22 00:00 **Matrix: Water**
Date Received: 06/24/22 15:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	58537	06/25/22 15:36	TTD	XEN STF

Lab Chronicle

Client: Jacobs Engineering Group, Inc.
Job ID: 860-28537-1
Project/Site: STC Silber Rd Pre-Design Investigation P

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Accreditation/Certification Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-28537-1
Project/Site: STC Silber Rd Pre-Design Investigation P

Laboratory: Eurofins Houston

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

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	21-038-0	08-04-22
Florida	NELAP	E871002	06-30-22
Louisiana	NELAP	03054	06-30-22
Oklahoma	State	2021-168	08-31-22
Texas	NELAP	T104704215-21-44	06-30-22
Texas	TCEQ Water Supply	T104704215	06-30-22
USDA	US Federal Programs	P330-22-00025	03-02-23

Method Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-28537-1
Project/Site: STC Silber Rd Pre-Design Investigation P

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	XEN STF
5030C	Purge and Trap	SW846	XEN STF

Protocol References:

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

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Sample Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-28537-1
Project/Site: STC Silber Rd Pre-Design Investigation P

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
860-28537-1	TB-01-062322	Water	06/23/22 13:00	06/24/22 15:00
860-28537-2	SB39-03-062322	Water	06/23/22 15:20	06/24/22 15:00
860-28537-3	SB39-02-062322	Water	06/23/22 15:40	06/24/22 15:00
860-28537-4	SB35-03-062422	Water	06/24/22 10:30	06/24/22 15:00
860-28537-5	SB35-02-062422	Water	06/24/22 10:40	06/24/22 15:00
860-28537-6	SB35-01-062422	Water	06/24/22 10:50	06/24/22 15:00
860-28537-7	FD-01-062422	Water	06/24/22 00:00	06/24/22 15:00

Appendix A

Laboratory Data Package Cover Page - Page 1 of 4

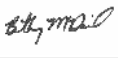
This data package is for Job No. 860-28537-1 and consists of:

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

- ☑ R1- Field chain-of-custody documentation;
- ☑ R2 - Sample identification cross-reference;
- ☑ R3 - Test reports (analytical data sheets) for each environmental sample that includes:
  a. Items consistent with NELAC Chapter 5,
  b. dilution factors,
  c. prepatation methods,
  d. cleanup methods, and
  e. if required for the project, tentatively identified coumpounds (TICs).
- ☑ R4 - Surrogate recovery data including:
  a. Calculated recovery (%R), and
  b. The laboratory's surrogate QC limits.
- ☑ R5 - Test reports/summary forms for blank samples;
- ☑ R6 - Test reports/summary forms for laboratory control samples (LCSs) including:
  a. LCS spiking amounts,
  b. Calculated %R for each analyte, and
  c. The laboratory's LCS QC limits.
- ☑ R7 - Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a. Samples associated with the MS/MSD clearly identified,
  b. MS/MSD spiking amounts,
  c. Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d. Calculated %Rs and relative percent differences (RPDs), and
  e. The laboratory's MS/MSD QC limits
- ☐ R8 - Laboratory analytical duplicate (if applicable) recovery and precision:
  a. The amount of analyte measured in the duplicate,
  b. The calculated RPD, and
  c. The laboratory's QC limits for analytical duplicates.
- ☑ R9 - List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
- ☑ R10 - Other problems or anomalies.
- ☐ Exception Report for every "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge 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.

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

Name (Printed)	Signature	Official Title (Printed)	Date
Bethany McDaniel		Senior Project Manager	06/27/2022

Laboratory Data Package Cover Page - Page 2 of 4

Laboratory Name: Eurofins Houston	LRC Date: 06/27/2022
Project Name: STC Silber Rd Pre-Design Investigation P	Laboratory Job Number: 860-28537-1
Reviewer Name: Bethany McDaniel	

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
		Were all departures from standard conditions described in an exception report?	✓				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	✓				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	✓				
		Were calculations checked by a peer or supervisor?	✓				
		Were all analyte identifications checked by a peer or supervisor?	✓				
		Were sample detection limits reported for all analytes not detected?	✓				
		Were all results for soil and sediment samples reported on a dry weight basis?			✓		
		Were % moisture (or solids) reported for all soil and sediment samples?			✓		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			✓		
		If required for the project, are TICs reported?			✓		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	✓				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	✓				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	✓				
		Were blanks analyzed at the appropriate frequency?	✓				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
		Were blank concentrations < MQL?	✓				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	✓				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
		Were LCSs analyzed at the required frequency?	✓				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	✓				
		Was the LCSD RPD within QC limits?	✓				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	✓				
		Were MS/MSD analyzed at the appropriate frequency?	✓				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	✓				
		Were MS/MSD RPDs within laboratory QC limits?			✓		
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			✓		
		Were analytical duplicates analyzed at the appropriate frequency?			✓		
		Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	✓				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	✓				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?		✓			1
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	✓				

Laboratory Data Package Cover Page - Page 3 of 4

Laboratory Name: Eurofins Houston	LRC Date: 06/27/2022
Project Name: STC Silber Rd Pre-Design Investigation P	Laboratory Job Number: 860-28537-1
Reviewer Name: Bethany McDaniel	

#[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?	✓				
		Were percent RSDs or correlation coefficient criteria met?	✓				
		Was the number of standards recommended in the method used for all analytes?	✓				
		Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
		Are ICAL data available for all instruments used?	✓				
		Has the initial calibration curve been verified using an appropriate second source standard?	✓				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?	✓				
		Were percent differences for each analyte within the method-required QC limits?	✓				
		Was the ICAL curve verified for each analyte?	✓				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			✓		
S3	O	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?	✓				
		Were ion abundance data within the method-required QC limits?	✓				
S4	O	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?	✓				
S5	OI	**Raw data (NELAC Section 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
		Were data associated with manual integrations flagged on the raw data?	✓				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			✓		
S7	O	**Tentatively identified compounds (TICs)**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
S8	I	**Interference Check Sample (ICS) results**					
		Were percent recoveries within method QC limits?			✓		
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?			✓		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	✓				
		Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
S11	OI	**Proficiency test reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	✓				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	✓				
		Is documentation of the analyst's competency up-to-date and on file?	✓				
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?	✓				
S16	OI	**Laboratory standard operating procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	✓				

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).

Laboratory Data Package Cover Page - Page 4 of 4

Laboratory Name: Eurofins Houston	LRC Date: 06/27/2022
Project Name: STC Silber Rd Pre-Design Investigation P	Laboratory Job Number: 860-28537-1
Reviewer Name: Bethany McDaniel	

ER#[1]	Description
1	Method 8260D: The following sample was diluted to bring the concentration of target analytes within the calibration range: SB39-02-062322 (860-28537-3). Elevated reporting limits (RLs) are provided.

1. ER# = Exception Report identification number (an Exception Report should be completed for an item if “NR” or “No” is checked).

Detection Check Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-28537-1
Project/Site: STC Silber Rd Pre-Design Investigation P

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**
Prep Method: 5030C-Purge and Trap
Instrument: A325 **Detector: MSD/0** **Column: DB-624**

Analyte	Spike Added	Result	Qualifier	Unit	RL	MDL	Analysis Date	Analysis Batch
Trichloroethene	0.00100	0.00503		mg/L	0.00500	0.000424	03/03/2022	860-43530
Vinyl chloride	0.00100	0.00381		mg/L	0.00200	0.000234	03/03/2022	860-43530
cis-1,2-Dichloroethene	0.00100	0.00499		mg/L	0.00100	0.000174	03/03/2022	860-43530
1,1-Dichloroethane	0.00100	0.00483		mg/L	0.00100	0.000244	03/03/2022	860-43530
1,2-Dichloroethane	0.00100	0.00498		mg/L	0.00100	0.000285	03/03/2022	860-43530
1,1-Dichloroethene	0.00100	0.00411		mg/L	0.00100	0.000216	03/03/2022	860-43530
Tetrachloroethene	0.00100	0.00463		mg/L	0.00100	0.000500	03/03/2022	860-43530

Eurofins Houston
4145 Greenbriar Dr
Stafford TX 77477
Phone (281) 240-4200

Temp: C/F: -0.0 0.8 IR ID: HOU-323
Corrected Temp: 0.8

Chain of Custody Record

860-28537 Chain of Custody

Eurofins | Environment Testing America

Client Information	Sampler	Lab PM: McDaniel, Bethany A	: 1069-3875.1
Client Contact: John Ynfante	Phone:	E-Mail: Bethany.McDaniel@et.eurofinsus.com	Page __ of __
Company: Jacobs Engineering Group, Inc.	PWSID:		Job #:
Address: 14701 St. Mary's Lane Suite 300	Due Date Requested:		
City: Houston	TAT Requested (days): 1 day RUSH		
State, Zip: TX, 77079	Compliance Project: Δ Yes Δ No		
Phone:	PO #: D3542628.C.CS.TPE.SIL.22-01-02		
Email: John.Ynfante@jacobs.com	WO #: D3542628.C.CS.TPE.SIL.22-01-02		
Project Name: STC Silber Rd Pre-Design Inv Part 2	Project #: 86002024		
Site:	SSOW#:		

Analysis Requested

Preservation Codes:
A HCL, B NaOH, C Zn Acetate, D Nitric Acid, E NaHSO4, F MeOH, G Amchlor, H Ascorbic Acid, I Ice, J DI Water, K EDTA, L EDA, M Hexane, N None, O AsNaO2, P Na2O4S, Q Na2SO3, R Na2S2O3, S H2SO4, T TSP Dodecahydrate, U Acetone, V MCAA, W pH 4-5, Y Trizma, 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)	8260C (MOD) VOCs Custom List (7)	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A		
TB-01-062322	6/23/22	1300	—	Water			X	2	
SB339-03-062322	6/23/22	1520	G	Water			X	3	
SB339-02-062322	6/23/22	1540	G	Water			X	3	
SB335-03-062422	6/24/22	1030	G	Water			X	3	
SB335-02-062422	6/24/22	1040	G	Water			X	3	
SB335-01-062422	6/24/22	1050	G	Water			X	3	
FD-01-062422	6/24/22	NG	G	Water			X	3	
				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) TRRP

Special Instructions/QC Requirements.

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

Relinquished by: David Ramos	Date/Time: 6/24/22	1557	Company	Received by: MS	Date/Time: 6/24	13:37	Company
Relinquished by: MS	Date/Time: 6/24/22	15:00	Company	Received by: Sandra Jones	Date/Time: 6/24/22	1500	Company Eurofins
Relinquished by:	Date/Time:		Company	Received by:	Date/Time:		Company

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

Ver 01/16/2019

6/27/2022

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc.

Job Number: 860-28537-1

Login Number: 28537
List Number: 1
Creator: Torres, Sandra

List Source: Eurofins Houston

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.8
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	

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ANALYTICAL REPORT

Eurofins Houston
4145 Greenbriar Dr
Stafford, TX 77477
Tel: (281)240-4200

Laboratory Job ID: 860-28568-1
Client Project/Site: STC Silber Rd Pre-Design Investigation Part 2

For:
Jacobs Engineering Group, Inc.
12750 Merit Drive
Suite 1100
Dallas, Texas 75251

Attn: John Knott

Bethany McDaniel

Authorized for release by:
6/28/2022 3:29:52 PM

Bethany McDaniel, Senior Project Manager
(713)358-2005
Bethany.McDaniel@et.eurofinsus.com

Table of Contents

Definitions/Glossary

Client: Jacobs Engineering Group, Inc. Job ID: 860-28568-1
Project/Site: STC Silber Rd Pre-Design Investigation Part 2

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the MQL but greater than or equal to the SDL and the concentration is an estimated value.
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
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Jacobs Engineering Group, Inc. Job ID: 860-28568-1
Project/Site: STC Silber Rd Pre-Design Investigation Part 2

Job ID: 860-28568-1

Laboratory: Eurofins Houston

Narrative

Job Narrative
860-28568-1

Receipt
The samples were received on 6/25/2022 9:31 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 2.3°C

Detection Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-28568-1
Project/Site: STC Silber Rd Pre-Design Investigation Part 2

Client Sample ID: TB-01-062422 Lab Sample ID: 860-28568-1

No Detections.

Client Sample ID: SB45-03-062422 Lab Sample ID: 860-28568-2

No Detections.

Client Sample ID: SB45-02-062422 Lab Sample ID: 860-28568-3

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.000547	J	0.00100	0.000244	mg/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: TB-01-062422 — Lab Sample ID: 860-28568-1

Date Collected: 06/24/22 13:30 — **Matrix: Water**
Date Received: 06/25/22 09:31

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			06/27/22 10:34	1
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			06/27/22 10:34	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/27/22 10:34	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			06/27/22 10:34	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/27/22 10:34	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			06/27/22 10:34	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			06/27/22 10:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*74 - 124*		*06/27/22 10:34*	*1*
Dibromofluoromethane (Surr)	*100*		*75 - 131*		*06/27/22 10:34*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*63 - 144*		*06/27/22 10:34*	*1*
Toluene-d8 (Surr)	*99*		*80 - 117*		*06/27/22 10:34*	*1*

Client Sample ID: SB45-03-062422 — Lab Sample ID: 860-28568-2

Date Collected: 06/24/22 15:00 — **Matrix: Water**
Date Received: 06/25/22 09:31

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			06/27/22 14:19	1
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			06/27/22 14:19	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/27/22 14:19	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			06/27/22 14:19	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/27/22 14:19	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			06/27/22 14:19	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			06/27/22 14:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*74 - 124*		*06/27/22 14:19*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 131*		*06/27/22 14:19*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*63 - 144*		*06/27/22 14:19*	*1*
Toluene-d8 (Surr)	*98*		*80 - 117*		*06/27/22 14:19*	*1*

Client Sample ID: SB45-02-062422 — Lab Sample ID: 860-28568-3

Date Collected: 06/24/22 15:30 — **Matrix: Water**
Date Received: 06/25/22 09:31

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			06/27/22 14:39	1
1,1-Dichloroethane	**0.000547**	**J**	0.00100	0.000244	mg/L			06/27/22 14:39	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/27/22 14:39	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			06/27/22 14:39	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/27/22 14:39	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			06/27/22 14:39	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			06/27/22 14:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*74 - 124*		*06/27/22 14:39*	*1*
Dibromofluoromethane (Surr)	*100*		*75 - 131*		*06/27/22 14:39*	*1*

Client: Jacobs Engineering Group, Inc.
Job ID: 860-28568-1
Project/Site: STC Silber Rd Pre-Design Investigation Part 2

Client Sample ID: SB45-02-062422
Lab Sample ID: 860-28568-3
Date Collected: 06/24/22 15:30
Matrix: Water
Date Received: 06/25/22 09:31

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		63 - 144		06/27/22 14:39	1
Toluene-d8 (Surr)	98		80 - 117		06/27/22 14:39	1

Unadjusted Detection Limits

Client: Jacobs Engineering Group, Inc. Job ID: 860-28568-1
Project/Site: STC Silber Rd Pre-Design Investigation Part 2

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	MQL	MDL	Units
1,1-Dichloroethane	0.00100	0.000244	mg/L
1,1-Dichloroethene	0.00100	0.000216	mg/L
1,2-Dichloroethane	0.00100	0.000285	mg/L
cis-1,2-Dichloroethene	0.00100	0.000174	mg/L
Tetrachloroethene	0.00100	0.000500	mg/L
Trichloroethene	0.00500	0.000424	mg/L
Vinyl chloride	0.00200	0.000234	mg/L

Surrogate Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-28568-1
Project/Site: STC Silber Rd Pre-Design Investigation Part 2

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water
Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		BFB	DBFM	DCA	TOL
Lab Sample ID	Client Sample ID	(74-124)	(75-131)	(63-144)	(80-117)
860-28389-F-2 MS	Matrix Spike	99	99	97	97
860-28568-1	TB-01-062422	101	100	98	99
860-28568-2	SB45-03-062422	97	99	100	98
860-28568-3	SB45-02-062422	101	100	98	98
LCS 860-58592/5	Lab Control Sample	98	102	96	98
LCSD 860-58592/6	Lab Control Sample Dup	97	99	97	98
MB 860-58592/11	Method Blank	98	99	98	98

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 860-58592/11
Matrix: Water
Analysis Batch: 58592

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

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			06/27/22 10:14	1
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			06/27/22 10:14	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/27/22 10:14	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			06/27/22 10:14	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/27/22 10:14	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			06/27/22 10:14	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			06/27/22 10:14	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*74 - 124*		*06/27/22 10:14*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 131*		*06/27/22 10:14*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*63 - 144*		*06/27/22 10:14*	*1*
Toluene-d8 (Surr)	*98*		*80 - 117*		*06/27/22 10:14*	*1*

Lab Sample ID: LCS 860-58592/5
Matrix: Water
Analysis Batch: 58592

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
cis-1,2-Dichloroethene	0.0500	0.04858		mg/L		97	75 - 125
1,1-Dichloroethane	0.0500	0.04972		mg/L		99	72 - 125
1,2-Dichloroethane	0.0500	0.05014		mg/L		100	68 - 127
1,1-Dichloroethene	0.0500	0.05196		mg/L		104	59 - 172
Tetrachloroethene	0.0500	0.05391		mg/L		108	71 - 125
Trichloroethene	0.0500	0.05356		mg/L		107	62 - 137
Vinyl chloride	0.0500	0.05092		mg/L		102	60 - 140

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*98*		*74 - 124*
Dibromofluoromethane (Surr)	*102*		*75 - 131*
1,2-Dichloroethane-d4 (Surr)	*96*		*63 - 144*
Toluene-d8 (Surr)	*98*		*80 - 117*

Lab Sample ID: LCSD 860-58592/6
Matrix: Water
Analysis Batch: 58592

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
cis-1,2-Dichloroethene	0.0500	0.04507		mg/L		90	75 - 125	8	25
1,1-Dichloroethane	0.0500	0.04580		mg/L		92	72 - 125	8	25
1,2-Dichloroethane	0.0500	0.04735		mg/L		95	68 - 127	6	25
1,1-Dichloroethene	0.0500	0.04779		mg/L		96	59 - 172	8	25
Tetrachloroethene	0.0500	0.04962		mg/L		99	71 - 125	8	25
Trichloroethene	0.0500	0.04973		mg/L		99	62 - 137	7	25
Vinyl chloride	0.0500	0.04670		mg/L		93	60 - 140	9	25

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

Lab Sample ID: LCSD 860-58592/6
Matrix: Water
Analysis Batch: 58592

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

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	*97*		*74 - 124*
Dibromofluoromethane (Surr)	*99*		*75 - 131*
1,2-Dichloroethane-d4 (Surr)	*97*		*63 - 144*
Toluene-d8 (Surr)	*98*		*80 - 117*

Lab Sample ID: 860-28389-F-2 MS
Matrix: Water
Analysis Batch: 58592

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
cis-1,2-Dichloroethene	0.000174	U	0.0500	0.04716		mg/L		94	75 - 125
1,1-Dichloroethane	0.000244	U	0.0500	0.04811		mg/L		96	72 - 125
1,2-Dichloroethane	0.000285	U	0.0500	0.04780		mg/L		96	68 - 127
1,1-Dichloroethene	0.000216	U	0.0500	0.05383		mg/L		108	59 - 172
Tetrachloroethene	0.000500	U	0.0500	0.05092		mg/L		102	71 - 125
Trichloroethene	0.000424	U	0.0500	0.05184		mg/L		104	62 - 137
Vinyl chloride	0.000234	U	0.0500	0.05508		mg/L		110	60 - 140

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*
Dibromofluoromethane (Surr)	*99*		*75 - 131*
1,2-Dichloroethane-d4 (Surr)	*97*		*63 - 144*
Toluene-d8 (Surr)	*97*		*80 - 117*

QC Association Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-28568-1
Project/Site: STC Silber Rd Pre-Design Investigation Part 2

GC/MS VOA

Analysis Batch: 58592

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-28568-1	TB-01-062422	Total/NA	Water	8260D	
860-28568-2	SB45-03-062422	Total/NA	Water	8260D	
860-28568-3	SB45-02-062422	Total/NA	Water	8260D	
MB 860-58592/11	Method Blank	Total/NA	Water	8260D	
LCS 860-58592/5	Lab Control Sample	Total/NA	Water	8260D	
LCSD 860-58592/6	Lab Control Sample Dup	Total/NA	Water	8260D	
860-28389-F-2 MS	Matrix Spike	Total/NA	Water	8260D	

Lab Chronicle

Client: Jacobs Engineering Group, Inc. Job ID: 860-28568-1
Project/Site: STC Silber Rd Pre-Design Investigation Part 2

Client Sample ID: TB-01-062422 — Lab Sample ID: 860-28568-1

Date Collected: 06/24/22 13:30 **Matrix: Water**
Date Received: 06/25/22 09:31

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	58592	06/27/22 10:34	TTD	XEN STF

Client Sample ID: SB45-03-062422 — Lab Sample ID: 860-28568-2

Date Collected: 06/24/22 15:00 **Matrix: Water**
Date Received: 06/25/22 09:31

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	58592	06/27/22 14:19	TTD	XEN STF

Client Sample ID: SB45-02-062422 — Lab Sample ID: 860-28568-3

Date Collected: 06/24/22 15:30 **Matrix: Water**
Date Received: 06/25/22 09:31

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	58592	06/27/22 14:39	TTD	XEN STF

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Accreditation/Certification Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-28568-1
Project/Site: STC Silber Rd Pre-Design Investigation Part 2

Laboratory: Eurofins Houston

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

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	21-038-0	08-04-22
Florida	NELAP	E871002	06-30-22
Louisiana	NELAP	03054	06-30-22
Oklahoma	State	2021-168	08-31-22
Texas	NELAP	T104704215-21-44	06-30-22
Texas	TCEQ Water Supply	T104704215	06-30-22
USDA	US Federal Programs	P330-22-00025	03-02-23

Method Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-28568-1
Project/Site: STC Silber Rd Pre-Design Investigation Part 2

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	XEN STF
5030C	Purge and Trap	SW846	XEN STF

Protocol References:

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

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Sample Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-28568-1
Project/Site: STC Silber Rd Pre-Design Investigation Part 2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
860-28568-1	TB-01-062422	Water	06/24/22 13:30	06/25/22 09:31
860-28568-2	SB45-03-062422	Water	06/24/22 15:00	06/25/22 09:31
860-28568-3	SB45-02-062422	Water	06/24/22 15:30	06/25/22 09:31

Appendix A

Laboratory Data Package Cover Page - Page 1 of 4

This data package is for Job No. 860-28568-1 and consists of:

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

- ☑ R1- Field chain-of-custody documentation;
- ☑ R2 - Sample identification cross-reference;
- ☑ R3 - Test reports (analytical data sheets) for each environmental sample that includes:
  a. Items consistent with NELAC Chapter 5,
  b. dilution factors,
  c. prepatation methods,
  d. cleanup methods, and
  e. if required for the project, tentatively identified coumpounds (TICs).
- ☑ R4 - Surrogate recovery data including:
  a. Calculated recovery (%R), and
  b. The laboratory's surrogate QC limits.
- ☑ R5 - Test reports/summary forms for blank samples;
- ☑ R6 - Test reports/summary forms for laboratory control samples (LCSs) including:
  a. LCS spiking amounts,
  b. Calculated %R for each analyte, and
  c. The laboratory's LCS QC limits.
- ☑ R7 - Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a. Samples associated with the MS/MSD clearly identified,
  b. MS/MSD spiking amounts,
  c. Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d. Calculated %Rs and relative percent differences (RPDs), and
  e. The laboratory's MS/MSD QC limits
- ☐ R8 - Laboratory analytical duplicate (if applicable) recovery and precision:
  a. The amount of analyte measured in the duplicate,
  b. The calculated RPD, and
  c. The laboratory's QC limits for analytical duplicates.
- ☑ R9 - List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
- ☑ R10 - Other problems or anomalies.
- ☐ Exception Report for every "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge 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.

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

Name (Printed)	Signature	Official Title (Printed)	Date
Bethany McDaniel	Bethany McDaniel	Senior Project Manager	06/28/2022

Laboratory Data Package Cover Page - Page 2 of 4

Laboratory Name: Eurofins Houston	LRC Date: 06/28/2022
Project Name: STC Silber Rd Pre-Design Investigation Part 2	Laboratory Job Number: 860-28568-1
Reviewer Name: Bethany McDaniel	

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
		Were all departures from standard conditions described in an exception report?	✓				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	✓				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	✓				
		Were calculations checked by a peer or supervisor?	✓				
		Were all analyte identifications checked by a peer or supervisor?	✓				
		Were sample detection limits reported for all analytes not detected?	✓				
		Were all results for soil and sediment samples reported on a dry weight basis?			✓		
		Were % moisture (or solids) reported for all soil and sediment samples?			✓		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			✓		
		If required for the project, are TICs reported?			✓		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	✓				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	✓				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	✓				
		Were blanks analyzed at the appropriate frequency?	✓				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
		Were blank concentrations < MQL?	✓				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	✓				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
		Were LCSs analyzed at the required frequency?	✓				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	✓				
		Was the LCSD RPD within QC limits?	✓				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	✓				
		Were MS/MSD analyzed at the appropriate frequency?	✓				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	✓				
		Were MS/MSD RPDs within laboratory QC limits?			✓		
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			✓		
		Were analytical duplicates analyzed at the appropriate frequency?			✓		
		Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	✓				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	✓				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	✓				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	✓				

Laboratory Data Package Cover Page - Page 3 of 4

Laboratory Name: Eurofins Houston	LRC Date: 06/28/2022
Project Name: STC Silber Rd Pre-Design Investigation Part 2	Laboratory Job Number: 860-28568-1
Reviewer Name: Bethany McDaniel	

#[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?	✓				
		Were percent RSDs or correlation coefficient criteria met?	✓				
		Was the number of standards recommended in the method used for all analytes?	✓				
		Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
		Are ICAL data available for all instruments used?	✓				
		Has the initial calibration curve been verified using an appropriate second source standard?	✓				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?	✓				
		Were percent differences for each analyte within the method-required QC limits?	✓				
		Was the ICAL curve verified for each analyte?	✓				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			✓		
S3	O	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?	✓				
		Were ion abundance data within the method-required QC limits?	✓				
S4	O	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?	✓				
S5	OI	**Raw data (NELAC Section 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
		Were data associated with manual integrations flagged on the raw data?	✓				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			✓		
S7	O	**Tentatively identified compounds (TICs)**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
S8	I	**Interference Check Sample (ICS) results**					
		Were percent recoveries within method QC limits?			✓		
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?			✓		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	✓				
		Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
S11	OI	**Proficiency test reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	✓				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	✓				
		Is documentation of the analyst's competency up-to-date and on file?	✓				
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?	✓				
S16	OI	**Laboratory standard operating procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	✓				

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).

Laboratory Data Package Cover Page - Page 4 of 4

Laboratory Name: Eurofins Houston	LRC Date: 06/28/2022
Project Name: STC Silber Rd Pre-Design Investigation Part 2	Laboratory Job Number: 860-28568-1
Reviewer Name: Bethany McDaniel	

ER#[1]	Description
	No Exceptions

1. ER# = Exception Report identification number (an Exception Report should be completed for an item if “NR” or “No” is checked).

Detection Check Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-28568-1
Project/Site: STC Silber Rd Pre-Design Investigation Part 2

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**
Prep Method: 5030C-Purge and Trap
Instrument: A325 **Detector: MSD/0** **Column: DB-624**

Analyte	Spike Added	Result	Qualifier	Unit	RL	MDL	Analysis Date	Analysis Batch
Trichloroethene	0.00100	0.00503		mg/L	0.00500	0.000424	03/03/2022	860-43530
Vinyl chloride	0.00100	0.00381		mg/L	0.00200	0.000234	03/03/2022	860-43530
cis-1,2-Dichloroethene	0.00100	0.00499		mg/L	0.00100	0.000174	03/03/2022	860-43530
1,1-Dichloroethane	0.00100	0.00483		mg/L	0.00100	0.000244	03/03/2022	860-43530
1,2-Dichloroethane	0.00100	0.00498		mg/L	0.00100	0.000285	03/03/2022	860-43530
1,1-Dichloroethene	0.00100	0.00411		mg/L	0.00100	0.000216	03/03/2022	860-43530
Tetrachloroethene	0.00100	0.00463		mg/L	0.00100	0.000500	03/03/2022	860-43530

Eurofins Houston
4145 Greenbriar Dr
Stafford TX 77477
Phone (281) 240-4200

Chain of Custody Record

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Client Information	Sampler	Lab PM: McDaniel Bethany A	Carrier Tracking No(s):	COC No: 860-11069-3875.1
Client Contact: John Ynfante	Phone:	E-Mail: Bethany.McDaniel@et.eurofinsus.com	State of Origin:	Page: Page 1 of 1
Company: Jacobs Engineering Group Inc.	PWSID:			Job #:

Address: 14701 St. Mary's Lane Suite 300	Due Date Requested:	Analysis Requested	Preservation Codes:
City: Houston	TAT Requested (days): 1 day RUSH		A HCL, B NaOH, C Zn Acetate, D Nitric Acid, E NaHSO4, F MeOH, G Amchlor, H Ascorbic Acid, I Ice, J DI Water, K EDTA, L EDA, M Hexane, N None, O AsNaO2, P Na2O4S, Q Na2SO3, R Na2S2O3, S H2SO4, T TSP Dodecahydrate, U Acetone, V MCAA, W pH 4-5, Y Trizma, Z other (specify)
State, Zip: TX, 77079	Compliance Project: Δ Yes Δ No		
Phone:	PO #: D3542628.C.CS.TPE.SIL.22-01-02		Other:
Email: John.Ynfante@jacobs.com	WO #: D3542628.C.CS.TPE.SIL.22-01-02		
Project Name: STC Silber Rd Pre-Design Inv Part 2	Project #: 86002024		
Site:	SSOW#:		

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)	8260C (MOD) VOCs Custom List (7)	Total Number of containers	Special Instructions/Note:
			Preservation Code:		X	A	X	
TB-01-062422	6/24/22	0330	—	Water		X	2	
SB345-03-062422	6/24/22	1500	G	Water		X	3	
SB345-02-062422	6/24/22	1530	G	Water		X	3	
				Water				
				Water				
				Water				
				Water				
				Water				
				Water				
				Water				

860-28568 Chain of Custody

Temp: 2.3 IR ID HOU-323
C/F: -0.0
Corrected Temp: 2.3

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I II III IV Other (specify) TRRP	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:
Relinquished by:	Date/Time: 6/25/22 0931	Company	Received by:	Date/Time: 6/25/22 0931	Company E
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

Ver 01/16/2019

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc.

Job Number: 860-28568-1

Login Number: 28568
List Number: 1
Creator: Rubio, Yuri

List Source: Eurofins Houston

Question	Answer	Comment
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 (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	

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ANALYTICAL REPORT

Eurofins Houston
4145 Greenbriar Dr
Stafford, TX 77477
Tel: (281)240-4200

Laboratory Job ID: 860-28628-1
Client Project/Site: STC Silber Rd Pre-Design Inv Part 2

For:
Jacobs Engineering Group, Inc.
12750 Merit Drive
Suite 1100
Dallas, Texas 75251

Attn: John Knott

Bethany McDaniel

Authorized for release by:
6/28/2022 4:01:38 PM

Bethany McDaniel, Senior Project Manager
(713)358-2005
Bethany.McDaniel@et.eurofinsus.com

Table of Contents

Definitions/Glossary

Client: Jacobs Engineering Group, Inc. Job ID: 860-28628-1
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the MQL but greater than or equal to the SDL and the concentration is an estimated value.
N1	MS, MSD: Spike recovery exceeds upper or lower control limits.
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
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Job ID: 860-28628-1

Job ID: 860-28628-1

Laboratory: Eurofins Houston

Narrative

Job Narrative
860-28628-1

Receipt
The samples were received on 6/27/2022 3:15 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.9°C

Detection Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Job ID: 860-28628-1

Client Sample ID: TB-01-062722 — Lab Sample ID: 860-28628-1

No Detections.

Client Sample ID: SB36-03-062722 — Lab Sample ID: 860-28628-2

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.00345	J	0.00500	0.000870	mg/L	5		8260D	Total/NA
1,1-Dichloroethane	0.193		0.00500	0.00122	mg/L	5		8260D	Total/NA
1,2-Dichloroethane	0.00218	J	0.00500	0.00143	mg/L	5		8260D	Total/NA
1,1-Dichloroethene	0.131		0.00500	0.00108	mg/L	5		8260D	Total/NA
Tetrachloroethene	0.00803		0.00500	0.00250	mg/L	5		8260D	Total/NA
Trichloroethene	0.00259	J	0.0250	0.00212	mg/L	5		8260D	Total/NA
Vinyl chloride	0.0139		0.0100	0.00117	mg/L	5		8260D	Total/NA

Client Sample ID: SB36-02-062722 — Lab Sample ID: 860-28628-3

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.00201		0.00100	0.000174	mg/L	1		8260D	Total/NA
1,1-Dichloroethane	0.117		0.00100	0.000244	mg/L	1		8260D	Total/NA
1,2-Dichloroethane	0.00146		0.00100	0.000285	mg/L	1		8260D	Total/NA
1,1-Dichloroethene	0.0691		0.00100	0.000216	mg/L	1		8260D	Total/NA
Tetrachloroethene	0.00322		0.00100	0.000500	mg/L	1		8260D	Total/NA
Trichloroethene	0.000979	J	0.00500	0.000424	mg/L	1		8260D	Total/NA
Vinyl chloride	0.00863		0.00200	0.000234	mg/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: TB-01-062722 — Lab Sample ID: 860-28628-1

Date Collected: 06/27/22 07:20 — **Matrix: Water**
Date Received: 06/27/22 15:15

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			06/28/22 12:13	1
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			06/28/22 12:13	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/28/22 12:13	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			06/28/22 12:13	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/28/22 12:13	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			06/28/22 12:13	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			06/28/22 12:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*74 - 124*		*06/28/22 12:13*	*1*
Dibromofluoromethane (Surr)	*98*		*75 - 131*		*06/28/22 12:13*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*63 - 144*		*06/28/22 12:13*	*1*
Toluene-d8 (Surr)	*99*		*80 - 117*		*06/28/22 12:13*	*1*

Client Sample ID: SB36-03-062722 — Lab Sample ID: 860-28628-2

Date Collected: 06/27/22 11:45 — **Matrix: Water**
Date Received: 06/27/22 15:15

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**0.00345**	**J**	0.00500	0.000870	mg/L			06/28/22 12:34	5
1,1-Dichloroethane	**0.193**		0.00500	0.00122	mg/L			06/28/22 12:34	5
1,2-Dichloroethane	**0.00218**	**J**	0.00500	0.00143	mg/L			06/28/22 12:34	5
1,1-Dichloroethene	**0.131**		0.00500	0.00108	mg/L			06/28/22 12:34	5
Tetrachloroethene	**0.00803**		0.00500	0.00250	mg/L			06/28/22 12:34	5
Trichloroethene	**0.00259**	**J**	0.0250	0.00212	mg/L			06/28/22 12:34	5
Vinyl chloride	**0.0139**		0.0100	0.00117	mg/L			06/28/22 12:34	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*		*06/28/22 12:34*	*5*
Dibromofluoromethane (Surr)	*98*		*75 - 131*		*06/28/22 12:34*	*5*
1,2-Dichloroethane-d4 (Surr)	*100*		*63 - 144*		*06/28/22 12:34*	*5*
Toluene-d8 (Surr)	*98*		*80 - 117*		*06/28/22 12:34*	*5*

Client Sample ID: SB36-02-062722 — Lab Sample ID: 860-28628-3

Date Collected: 06/27/22 12:55 — **Matrix: Water**
Date Received: 06/27/22 15:15

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**0.00201**		0.00100	0.000174	mg/L			06/28/22 12:54	1
1,1-Dichloroethane	**0.117**		0.00100	0.000244	mg/L			06/28/22 12:54	1
1,2-Dichloroethane	**0.00146**		0.00100	0.000285	mg/L			06/28/22 12:54	1
1,1-Dichloroethene	**0.0691**		0.00100	0.000216	mg/L			06/28/22 12:54	1
Tetrachloroethene	**0.00322**		0.00100	0.000500	mg/L			06/28/22 12:54	1
Trichloroethene	**0.000979**	**J**	0.00500	0.000424	mg/L			06/28/22 12:54	1
Vinyl chloride	**0.00863**		0.00200	0.000234	mg/L			06/28/22 12:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*74 - 124*		*06/28/22 12:54*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 131*		*06/28/22 12:54*	*1*

Client: Jacobs Engineering Group, Inc.
Job ID: 860-28628-1
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Client Sample ID: SB36-02-062722
Lab Sample ID: 860-28628-3
Date Collected: 06/27/22 12:55
Matrix: Water
Date Received: 06/27/22 15:15

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		63 - 144		06/28/22 12:54	1
Toluene-d8 (Surr)	100		80 - 117		06/28/22 12:54	1

Unadjusted Detection Limits

Client: Jacobs Engineering Group, Inc.
Job ID: 860-28628-1
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	MQL	MDL	Units
1,1-Dichloroethane	0.00100	0.000244	mg/L
1,1-Dichloroethene	0.00100	0.000216	mg/L
1,2-Dichloroethane	0.00100	0.000285	mg/L
cis-1,2-Dichloroethene	0.00100	0.000174	mg/L
Tetrachloroethene	0.00100	0.000500	mg/L
Trichloroethene	0.00500	0.000424	mg/L
Vinyl chloride	0.00200	0.000234	mg/L

Surrogate Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Job ID: 860-28628-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		BFB	DBFM	DCA	TOL
Lab Sample ID	Client Sample ID	(74-124)	(75-131)	(63-144)	(80-117)
860-28628-1	TB-01-062722	100	98	98	99
860-28628-2	SB36-03-062722	99	98	100	98
860-28628-2 MS	SB36-03-062722	98	101	97	98
860-28628-2 MSD	SB36-03-062722	99	101	95	98
860-28628-3	SB36-02-062722	101	99	99	100
LCS 860-58802/5	Lab Control Sample	99	101	96	98
LCSD 860-58802/6	Lab Control Sample Dup	97	99	93	97
MB 860-58802/12	Method Blank	100	99	97	100

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 860-58802/12
Matrix: Water
Analysis Batch: 58802

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

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			06/28/22 11:53	1
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			06/28/22 11:53	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/28/22 11:53	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			06/28/22 11:53	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/28/22 11:53	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			06/28/22 11:53	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			06/28/22 11:53	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*74 - 124*		*06/28/22 11:53*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 131*		*06/28/22 11:53*	*1*
1,2-Dichloroethane-d4 (Surr)	*97*		*63 - 144*		*06/28/22 11:53*	*1*
Toluene-d8 (Surr)	*100*		*80 - 117*		*06/28/22 11:53*	*1*

Lab Sample ID: LCS 860-58802/5
Matrix: Water
Analysis Batch: 58802

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
cis-1,2-Dichloroethene			0.0500	0.04672		mg/L		93	75 - 125		
1,1-Dichloroethane			0.0500	0.04792		mg/L		96	72 - 125		
1,2-Dichloroethane			0.0500	0.04779		mg/L		96	68 - 127		
1,1-Dichloroethene			0.0500	0.04975		mg/L		100	59 - 172		
Tetrachloroethene			0.0500	0.05188		mg/L		104	71 - 125		
Trichloroethene			0.0500	0.05098		mg/L		102	62 - 137		
Vinyl chloride			0.0500	0.04950		mg/L		99	60 - 140		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*
Dibromofluoromethane (Surr)	*101*		*75 - 131*
1,2-Dichloroethane-d4 (Surr)	*96*		*63 - 144*
Toluene-d8 (Surr)	*98*		*80 - 117*

Lab Sample ID: LCSD 860-58802/6
Matrix: Water
Analysis Batch: 58802

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
cis-1,2-Dichloroethene			0.0500	0.04322		mg/L		86	75 - 125	8	25
1,1-Dichloroethane			0.0500	0.04417		mg/L		88	72 - 125	8	25
1,2-Dichloroethane			0.0500	0.04426		mg/L		89	68 - 127	8	25
1,1-Dichloroethene			0.0500	0.04569		mg/L		91	59 - 172	9	25
Tetrachloroethene			0.0500	0.04757		mg/L		95	71 - 125	9	25
Trichloroethene			0.0500	0.04755		mg/L		95	62 - 137	7	25
Vinyl chloride			0.0500	0.04423		mg/L		88	60 - 140	11	25

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

Lab Sample ID: LCSD 860-58802/6
Matrix: Water
Analysis Batch: 58802

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

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*97*		*74 - 124*
Dibromofluoromethane (Surr)	*99*		*75 - 131*
1,2-Dichloroethane-d4 (Surr)	*93*		*63 - 144*
Toluene-d8 (Surr)	*97*		*80 - 117*

Lab Sample ID: 860-28628-2 MS
Matrix: Water
Analysis Batch: 58802

Client Sample ID: SB36-03-062722
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
cis-1,2-Dichloroethene	0.00345	J	0.250	0.2398		mg/L		95	75 - 125
1,1-Dichloroethane	0.193		0.250	0.3694	N1	mg/L		71	72 - 125
1,2-Dichloroethane	0.00218	J	0.250	0.2424		mg/L		96	68 - 127
1,1-Dichloroethene	0.131		0.250	0.3274		mg/L		79	59 - 172
Tetrachloroethene	0.00803		0.250	0.2609		mg/L		101	71 - 125
Trichloroethene	0.00259	J	0.250	0.2554		mg/L		101	62 - 137
Vinyl chloride	0.0139		0.250	0.2795		mg/L		106	60 - 140

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*98*		*74 - 124*
Dibromofluoromethane (Surr)	*101*		*75 - 131*
1,2-Dichloroethane-d4 (Surr)	*97*		*63 - 144*
Toluene-d8 (Surr)	*98*		*80 - 117*

Lab Sample ID: 860-28628-2 MSD
Matrix: Water
Analysis Batch: 58802

Client Sample ID: SB36-03-062722
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
cis-1,2-Dichloroethene	0.00345	J	0.250	0.2610		mg/L		103	75 - 125	8	25
1,1-Dichloroethane	0.193		0.250	0.4123		mg/L		88	72 - 125	11	25
1,2-Dichloroethane	0.00218	J	0.250	0.2624		mg/L		104	68 - 127	8	25
1,1-Dichloroethene	0.131		0.250	0.3669		mg/L		95	59 - 172	11	25
Tetrachloroethene	0.00803		0.250	0.2778		mg/L		108	71 - 125	6	25
Trichloroethene	0.00259	J	0.250	0.2788		mg/L		110	62 - 137	9	25
Vinyl chloride	0.0139		0.250	0.2939		mg/L		112	60 - 140	5	25

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*
Dibromofluoromethane (Surr)	*101*		*75 - 131*
1,2-Dichloroethane-d4 (Surr)	*95*		*63 - 144*
Toluene-d8 (Surr)	*98*		*80 - 117*

QC Association Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Job ID: 860-28628-1

GC/MS VOA

Analysis Batch: 58802

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-28628-1	TB-01-062722	Total/NA	Water	8260D	
860-28628-2	SB36-03-062722	Total/NA	Water	8260D	
860-28628-3	SB36-02-062722	Total/NA	Water	8260D	
MB 860-58802/12	Method Blank	Total/NA	Water	8260D	
LCS 860-58802/5	Lab Control Sample	Total/NA	Water	8260D	
LCSD 860-58802/6	Lab Control Sample Dup	Total/NA	Water	8260D	
860-28628-2 MS	SB36-03-062722	Total/NA	Water	8260D	
860-28628-2 MSD	SB36-03-062722	Total/NA	Water	8260D	

Lab Chronicle

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Job ID: 860-28628-1

Client Sample ID: TB-01-062722

Lab Sample ID: 860-28628-1

Date Collected: 06/27/22 07:20

Matrix: Water

Date Received: 06/27/22 15:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	58802	06/28/22 12:13	TTD	XEN STF

Client Sample ID: SB36-03-062722

Lab Sample ID: 860-28628-2

Date Collected: 06/27/22 11:45

Matrix: Water

Date Received: 06/27/22 15:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		5	5 mL	5 mL	58802	06/28/22 12:34	TTD	XEN STF

Client Sample ID: SB36-02-062722

Lab Sample ID: 860-28628-3

Date Collected: 06/27/22 12:55

Matrix: Water

Date Received: 06/27/22 15:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	58802	06/28/22 12:54	TTD	XEN STF

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Accreditation/Certification Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-28628-1
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Laboratory: Eurofins Houston

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

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	21-038-0	08-04-22
Florida	NELAP	E871002	06-30-22
Louisiana	NELAP	03054	06-30-22
Oklahoma	State	2021-168	08-31-22
Texas	NELAP	T104704215-21-44	06-30-22
Texas	TCEQ Water Supply	T104704215	06-30-22
USDA	US Federal Programs	P330-22-00025	03-02-23

Method Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Job ID: 860-28628-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	XEN STF
5030C	Purge and Trap	SW846	XEN STF

Protocol References:

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

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Sample Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Job ID: 860-28628-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
860-28628-1	TB-01-062722	Water	06/27/22 07:20	06/27/22 15:15
860-28628-2	SB36-03-062722	Water	06/27/22 11:45	06/27/22 15:15
860-28628-3	SB36-02-062722	Water	06/27/22 12:55	06/27/22 15:15

Appendix A

Laboratory Data Package Cover Page - Page 1 of 4

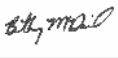
This data package is for Job No. 860-28628-1 and consists of:

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

- ☑ R1- Field chain-of-custody documentation;
- ☑ R2 - Sample identification cross-reference;
- ☑ R3 - Test reports (analytical data sheets) for each environmental sample that includes:
  a. Items consistent with NELAC Chapter 5,
  b. dilution factors,
  c. prepatation methods,
  d. cleanup methods, and
  e. if required for the project, tentatively identified coumpounds (TICs).
- ☑ R4 - Surrogate recovery data including:
  a. Calculated recovery (%R), and
  b. The laboratory's surrogate QC limits.
- ☑ R5 - Test reports/summary forms for blank samples;
- ☑ R6 - Test reports/summary forms for laboratory control samples (LCSs) including:
  a. LCS spiking amounts,
  b. Calculated %R for each analyte, and
  c. The laboratory's LCS QC limits.
- ☑ R7 - Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a. Samples associated with the MS/MSD clearly identified,
  b. MS/MSD spiking amounts,
  c. Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d. Calculated %Rs and relative percent differences (RPDs), and
  e. The laboratory's MS/MSD QC limits
- ☐ R8 - Laboratory analytical duplicate (if applicable) recovery and precision:
  a. The amount of analyte measured in the duplicate,
  b. The calculated RPD, and
  c. The laboratory's QC limits for analytical duplicates.
- ☑ R9 - List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
- ☑ R10 - Other problems or anomalies.
- ☐ Exception Report for every "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge 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.

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

Name (Printed)	Signature	Official Title (Printed)	Date
Bethany McDaniel		Senior Project Manager	06/28/2022

Laboratory Data Package Cover Page - Page 2 of 4

Laboratory Name: Eurofins Houston	LRC Date: 06/28/2022
Project Name: STC Silber Rd Pre-Design Inv Part 2	Laboratory Job Number: 860-28628-1
Reviewer Name: Bethany McDaniel	

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
		Were all departures from standard conditions described in an exception report?	✓				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	✓				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	✓				
		Were calculations checked by a peer or supervisor?	✓				
		Were all analyte identifications checked by a peer or supervisor?	✓				
		Were sample detection limits reported for all analytes not detected?	✓				
		Were all results for soil and sediment samples reported on a dry weight basis?			✓		
		Were % moisture (or solids) reported for all soil and sediment samples?			✓		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			✓		
		If required for the project, are TICs reported?			✓		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	✓				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	✓				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	✓				
		Were blanks analyzed at the appropriate frequency?	✓				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
		Were blank concentrations < MQL?	✓				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	✓				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
		Were LCSs analyzed at the required frequency?	✓				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	✓				
		Was the LCSD RPD within QC limits?	✓				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	✓				
		Were MS/MSD analyzed at the appropriate frequency?	✓				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		✓			1
		Were MS/MSD RPDs within laboratory QC limits?	✓				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			✓		
		Were analytical duplicates analyzed at the appropriate frequency?			✓		
		Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	✓				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	✓				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?		✓			2
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	✓				

Laboratory Data Package Cover Page - Page 3 of 4

Laboratory Name: Eurofins Houston	LRC Date: 06/28/2022
Project Name: STC Silber Rd Pre-Design Inv Part 2	Laboratory Job Number: 860-28628-1
Reviewer Name: Bethany McDaniel	

#[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?	✓				
		Were percent RSDs or correlation coefficient criteria met?	✓				
		Was the number of standards recommended in the method used for all analytes?	✓				
		Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
		Are ICAL data available for all instruments used?	✓				
		Has the initial calibration curve been verified using an appropriate second source standard?	✓				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?	✓				
		Were percent differences for each analyte within the method-required QC limits?	✓				
		Was the ICAL curve verified for each analyte?	✓				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			✓		
S3	O	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?	✓				
		Were ion abundance data within the method-required QC limits?	✓				
S4	O	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?	✓				
S5	OI	**Raw data (NELAC Section 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
		Were data associated with manual integrations flagged on the raw data?	✓				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			✓		
S7	O	**Tentatively identified compounds (TICs)**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
S8	I	**Interference Check Sample (ICS) results**					
		Were percent recoveries within method QC limits?			✓		
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?			✓		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	✓				
		Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
S11	OI	**Proficiency test reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	✓				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	✓				
		Is documentation of the analyst's competency up-to-date and on file?	✓				
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?	✓				
S16	OI	**Laboratory standard operating procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	✓				

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).

Laboratory Data Package Cover Page - Page 4 of 4

Laboratory Name: Eurofins Houston	LRC Date: 06/28/2022
Project Name: STC Silber Rd Pre-Design Inv Part 2	Laboratory Job Number: 860-28628-1
Reviewer Name: Bethany McDaniel	

ER#[1]	Description
1	Method 8260D: The matrix spike(MS) recoveries for analytical batch 860-58802 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS/LCSD) recovery was within acceptance limits.
2	Method 8260D: The following samples were diluted to bring the concentration of target analytes within the calibration range: SB36-03-062722 (860-28628-2), SB36-03-062722 (860-28628-2[MS]) and SB36-03-062722 (860-28628-2[MSD]). Elevated reporting limits (RLs) are provided.

1. ER# = Exception Report identification number (an Exception Report should be completed for an item if “NR” or “No” is checked).

Detection Check Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-28628-1
Project/Site: STC Silber Rd Pre-Design Inv Part 2

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**
Prep Method: 5030C-Purge and Trap
Instrument: A325 **Detector: MSD/0** **Column: DB-624**

Analyte	Spike Added	Result	Qualifier	Unit	RL	MDL	Analysis Date	Analysis Batch
Trichloroethene	0.00100	0.00503		mg/L	0.00500	0.000424	03/03/2022	860-43530
Vinyl chloride	0.00100	0.00381		mg/L	0.00200	0.000234	03/03/2022	860-43530
cis-1,2-Dichloroethene	0.00100	0.00499		mg/L	0.00100	0.000174	03/03/2022	860-43530
1,1-Dichloroethane	0.00100	0.00483		mg/L	0.00100	0.000244	03/03/2022	860-43530
1,2-Dichloroethane	0.00100	0.00498		mg/L	0.00100	0.000285	03/03/2022	860-43530
1,1-Dichloroethene	0.00100	0.00411		mg/L	0.00100	0.000216	03/03/2022	860-43530
Tetrachloroethene	0.00100	0.00463		mg/L	0.00100	0.000500	03/03/2022	860-43530

Eurofins Houston
4145 Greenbriar Dr
Stafford, TX 77477
Phone (281) 240-4200

Chain of Custody Record

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Client Information	Sampler:	Lab PM: McDaniel, Bethany A	Carrier Tracking No(s):	COC No: 860-11069-3675.1
Client Contact: John Ynfante	Phone:	E-Mail: Bethany.McDaniel@et.eurofinsus.com	State of Origin:	Page: Page 1 of __
Company: Jacobs Engineering Group, Inc.	PWSID:	Analysis Requested		Job #:
Address: 14701 St. Mary's Lane Suite 300	Due Date Requested:			Preservation Codes:
City: Houston	TAT Requested (days): 1 day RUSH			A HCL, B NaOH, C Zn Acetate, D Nitric Acid, E NaHSO4, F MeOH, G Amchlor, H Ascorbic Acid, I Ice, J DI Water, K EDTA, L EDA, M Hexane, N None, O AsNaO2, P Na2O4S, Q Na2SO3, R Na2S2O3, S H2SO4, T TSP Dodecahydrate, U Acetone, V MCAA, W pH 4-5, Y Trizma, Z other (specify)
State, Zip: TX, 77079	Compliance Project: Δ Yes Δ No			
Phone:	PO #: D3542628.C.CS.TPE.SIL.22-01-02			Other:
Email: John.Ynfante@jacobs.com	WO #: D3542628.C.CS.TPE.SIL.22-01-02			
Project Name: STC Silber Rd Pre-Design Inv Part 2	Project #: 86002024			
Site:	SSOW#:			

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)	8260C/MS/MSD (Yes or No)	8260C - (MOD) VOCs Custom List (7)	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A		
TB-01-062722	6/27/22	0720	—	Water			X	2	
SB36-03-062722	6/27/22	1145	G	Water		X	X	4	MS/MSD
SB36-02-062722	6/27/22	1255	G	Water			X	3	
				Water					
				Water					
				Water					
				Water					
				Water					
				Water					
				Water					
				Water					

860-28628 Chain of Custody

Temp. 2.1 IR ID:HOU-332
C/F -0.9
Corrected Temp: 1.9

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) TRRP

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:				
Relinquished by:	Date/Time: 6/27/22 1311	Company	Received by:	Date/Time: 6.27.22 1310	Company
Relinquished by:	Date/Time: 6.27.22 1515	Company	Received by:	Date/Time: 6/27/22 1515	Company Ex
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

Ver 01/16/2019

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc.

Job Number: 860-28628-1

Login Number: 28628
List Number: 1
Creator: Palmar, Pedro

List Source: Eurofins Houston

Question	Answer	Comment
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 (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	

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ANALYTICAL REPORT

Eurofins Houston
4145 Greenbriar Dr
Stafford, TX 77477
Tel: (281)240-4200

Laboratory Job ID: 860-28799-1
Client Project/Site: STC Silber Rd Pre-Design Investigation Part 2

For:
Jacobs Engineering Group, Inc.
12750 Merit Drive
Suite 1100
Dallas, Texas 75251

Attn: John Knott

Bethany McDaniel

Authorized for release by:
6/30/2022 4:30:12 PM

Bethany McDaniel, Senior Project Manager
(713)358-2005
Bethany.McDaniel@et.eurofinsus.com

Table of Contents

Definitions/Glossary

Client: Jacobs Engineering Group, Inc. Job ID: 860-28799-1
Project/Site: STC Silber Rd Pre-Design Investigation Part 2

Qualifiers

GC/MS 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
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 860-28799-1

Laboratory: Eurofins Houston

Narrative

Job Narrative
860-28799-1

Comments
No additional comments.

Receipt
The samples were received on 6/29/2022 3:17 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.4º C.

Detection Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-28799-1
Project/Site: STC Silber Rd Pre-Design Investigation Part 2

Client Sample ID: TB-01-062922 Lab Sample ID: 860-28799-1

No Detections.

Client Sample ID: SWD-14-062922 Lab Sample ID: 860-28799-2

No Detections.

Client Sample ID: SWD-12-062922 Lab Sample ID: 860-28799-3

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: TB-01-062922 — Lab Sample ID: 860-28799-1

Date Collected: 06/29/22 13:00 — **Matrix: Water**
Date Received: 06/29/22 15:17

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			06/30/22 10:56	1
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			06/30/22 10:56	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/30/22 10:56	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			06/30/22 10:56	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/30/22 10:56	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			06/30/22 10:56	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			06/30/22 10:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*74 - 124*		*06/30/22 10:56*	*1*
Dibromofluoromethane (Surr)	*101*		*75 - 131*		*06/30/22 10:56*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*63 - 144*		*06/30/22 10:56*	*1*
Toluene-d8 (Surr)	*100*		*80 - 117*		*06/30/22 10:56*	*1*

Client Sample ID: SWD-14-062922 — Lab Sample ID: 860-28799-2

Date Collected: 06/29/22 14:15 — **Matrix: Water**
Date Received: 06/29/22 15:17

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			06/30/22 12:18	1
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			06/30/22 12:18	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/30/22 12:18	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			06/30/22 12:18	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/30/22 12:18	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			06/30/22 12:18	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			06/30/22 12:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*74 - 124*		*06/30/22 12:18*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 131*		*06/30/22 12:18*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*63 - 144*		*06/30/22 12:18*	*1*
Toluene-d8 (Surr)	*100*		*80 - 117*		*06/30/22 12:18*	*1*

Client Sample ID: SWD-12-062922 — Lab Sample ID: 860-28799-3

Date Collected: 06/29/22 14:35 — **Matrix: Water**
Date Received: 06/29/22 15:17

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			06/30/22 12:38	1
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			06/30/22 12:38	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/30/22 12:38	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			06/30/22 12:38	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/30/22 12:38	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			06/30/22 12:38	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			06/30/22 12:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*74 - 124*		*06/30/22 12:38*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 131*		*06/30/22 12:38*	*1*

Client: Jacobs Engineering Group, Inc.
Job ID: 860-28799-1
Project/Site: STC Silber Rd Pre-Design Investigation Part 2

Client Sample ID: SWD-12-062922
Lab Sample ID: 860-28799-3
Date Collected: 06/29/22 14:35
Matrix: Water
Date Received: 06/29/22 15:17

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		63 - 144		06/30/22 12:38	1
Toluene-d8 (Surr)	99		80 - 117		06/30/22 12:38	1

Unadjusted Detection Limits

Client: Jacobs Engineering Group, Inc. Job ID: 860-28799-1
Project/Site: STC Silber Rd Pre-Design Investigation Part 2

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	MQL	MDL	Units
1,1-Dichloroethane	0.00100	0.000244	mg/L
1,1-Dichloroethene	0.00100	0.000216	mg/L
1,2-Dichloroethane	0.00100	0.000285	mg/L
cis-1,2-Dichloroethene	0.00100	0.000174	mg/L
Tetrachloroethene	0.00100	0.000500	mg/L
Trichloroethene	0.00500	0.000424	mg/L
Vinyl chloride	0.00200	0.000234	mg/L

Surrogate Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-28799-1
Project/Site: STC Silber Rd Pre-Design Investigation Part 2

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water
Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		BFB	DBFM	DCA	TOL
Lab Sample ID	Client Sample ID	(74-124)	(75-131)	(63-144)	(80-117)
860-28656-A-8 MS	Matrix Spike	99	101	97	98
860-28799-1	TB-01-062922	102	101	98	100
860-28799-2	SWD-14-062922	101	99	99	100
860-28799-3	SWD-12-062922	100	99	99	99
LCS 860-59193/5	Lab Control Sample	99	102	98	98
LCSD 860-59193/6	Lab Control Sample Dup	99	100	97	98
MB 860-59193/11	Method Blank	100	99	99	100

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 860-59193/11
Matrix: Water
Analysis Batch: 59193

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

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			06/30/22 10:15	1
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			06/30/22 10:15	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/30/22 10:15	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			06/30/22 10:15	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/30/22 10:15	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			06/30/22 10:15	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			06/30/22 10:15	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*74 - 124*		*06/30/22 10:15*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 131*		*06/30/22 10:15*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*63 - 144*		*06/30/22 10:15*	*1*
Toluene-d8 (Surr)	*100*		*80 - 117*		*06/30/22 10:15*	*1*

Lab Sample ID: LCS 860-59193/5
Matrix: Water
Analysis Batch: 59193

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
cis-1,2-Dichloroethene			0.0500	0.04904		mg/L		98	75 - 125		
1,1-Dichloroethane			0.0500	0.04960		mg/L		99	72 - 125		
1,2-Dichloroethane			0.0500	0.04979		mg/L		100	68 - 127		
1,1-Dichloroethene			0.0500	0.05170		mg/L		103	59 - 172		
Tetrachloroethene			0.0500	0.05273		mg/L		105	71 - 125		
Trichloroethene			0.0500	0.05285		mg/L		106	62 - 137		
Vinyl chloride			0.0500	0.04983		mg/L		100	60 - 140		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*
Dibromofluoromethane (Surr)	*102*		*75 - 131*
1,2-Dichloroethane-d4 (Surr)	*98*		*63 - 144*
Toluene-d8 (Surr)	*98*		*80 - 117*

Lab Sample ID: LCSD 860-59193/6
Matrix: Water
Analysis Batch: 59193

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
cis-1,2-Dichloroethene			0.0500	0.04605		mg/L		92	75 - 125	6	25
1,1-Dichloroethane			0.0500	0.04712		mg/L		94	72 - 125	5	25
1,2-Dichloroethane			0.0500	0.04890		mg/L		98	68 - 127	2	25
1,1-Dichloroethene			0.0500	0.04753		mg/L		95	59 - 172	8	25
Tetrachloroethene			0.0500	0.05045		mg/L		101	71 - 125	4	25
Trichloroethene			0.0500	0.05095		mg/L		102	62 - 137	4	25
Vinyl chloride			0.0500	0.04662		mg/L		93	60 - 140	7	25

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

Lab Sample ID: LCSD 860-59193/6
Matrix: Water
Analysis Batch: 59193

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

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*
Dibromofluoromethane (Surr)	*100*		*75 - 131*
1,2-Dichloroethane-d4 (Surr)	*97*		*63 - 144*
Toluene-d8 (Surr)	*98*		*80 - 117*

Lab Sample ID: 860-28656-A-8 MS
Matrix: Water
Analysis Batch: 59193

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
cis-1,2-Dichloroethene	0.000174	U	0.0500	0.04792		mg/L		96	75 - 125
1,1-Dichloroethane	0.000244	U	0.0500	0.04805		mg/L		96	72 - 125
1,2-Dichloroethane	0.000285	U	0.0500	0.04823		mg/L		96	68 - 127
1,1-Dichloroethene	0.000216	U	0.0500	0.05285		mg/L		106	59 - 172
Tetrachloroethene	0.000500	U	0.0500	0.05122		mg/L		102	71 - 125
Trichloroethene	0.000424	U	0.0500	0.05113		mg/L		102	62 - 137
Vinyl chloride	0.000234	U	0.0500	0.05491		mg/L		110	60 - 140

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*
Dibromofluoromethane (Surr)	*101*		*75 - 131*
1,2-Dichloroethane-d4 (Surr)	*97*		*63 - 144*
Toluene-d8 (Surr)	*98*		*80 - 117*

QC Association Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-28799-1
Project/Site: STC Silber Rd Pre-Design Investigation Part 2

GC/MS VOA

Analysis Batch: 59193

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-28799-1	TB-01-062922	Total/NA	Water	8260D	
860-28799-2	SWD-14-062922	Total/NA	Water	8260D	
860-28799-3	SWD-12-062922	Total/NA	Water	8260D	
MB 860-59193/11	Method Blank	Total/NA	Water	8260D	
LCS 860-59193/5	Lab Control Sample	Total/NA	Water	8260D	
LCSD 860-59193/6	Lab Control Sample Dup	Total/NA	Water	8260D	
860-28656-A-8 MS	Matrix Spike	Total/NA	Water	8260D	

Lab Chronicle

Client: Jacobs Engineering Group, Inc. Job ID: 860-28799-1
Project/Site: STC Silber Rd Pre-Design Investigation Part 2

Client Sample ID: TB-01-062922 Lab Sample ID: 860-28799-1

Date Collected: 06/29/22 13:00 **Matrix: Water**
Date Received: 06/29/22 15:17

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	59193	06/30/22 10:56	TTD	XEN STF

Client Sample ID: SWD-14-062922 Lab Sample ID: 860-28799-2

Date Collected: 06/29/22 14:15 **Matrix: Water**
Date Received: 06/29/22 15:17

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	59193	06/30/22 12:18	TTD	XEN STF

Client Sample ID: SWD-12-062922 Lab Sample ID: 860-28799-3

Date Collected: 06/29/22 14:35 **Matrix: Water**
Date Received: 06/29/22 15:17

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	59193	06/30/22 12:38	TTD	XEN STF

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Accreditation/Certification Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-28799-1
Project/Site: STC Silber Rd Pre-Design Investigation Part 2

Laboratory: Eurofins Houston

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

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	21-038-0	08-04-22
Florida	NELAP	E871002	06-30-22
Louisiana	NELAP	03054	06-30-22
Oklahoma	State	2021-168	08-31-22
Texas	NELAP	T104704215-22-46	06-30-22
Texas	TCEQ Water Supply	T104704215	06-30-22
USDA	US Federal Programs	P330-22-00025	03-02-23

Method Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-28799-1
Project/Site: STC Silber Rd Pre-Design Investigation Part 2

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	XEN STF
5030C	Purge and Trap	SW846	XEN STF

Protocol References:

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

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Sample Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-28799-1
Project/Site: STC Silber Rd Pre-Design Investigation Part 2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
860-28799-1	TB-01-062922	Water	06/29/22 13:00	06/29/22 15:17
860-28799-2	SWD-14-062922	Water	06/29/22 14:15	06/29/22 15:17
860-28799-3	SWD-12-062922	Water	06/29/22 14:35	06/29/22 15:17

Appendix A

Laboratory Data Package Cover Page - Page 1 of 4

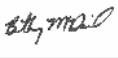
This data package is for Job No. 860-28799-1 and consists of:

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

- ☑ R1- Field chain-of-custody documentation;
- ☑ R2 - Sample identification cross-reference;
- ☑ R3 - Test reports (analytical data sheets) for each environmental sample that includes:
  a. Items consistent with NELAC Chapter 5,
  b. dilution factors,
  c. prepatation methods,
  d. cleanup methods, and
  e. if required for the project, tentatively identified coumpounds (TICs).
- ☑ R4 - Surrogate recovery data including:
  a. Calculated recovery (%R), and
  b. The laboratory's surrogate QC limits.
- ☑ R5 - Test reports/summary forms for blank samples;
- ☑ R6 - Test reports/summary forms for laboratory control samples (LCSs) including:
  a. LCS spiking amounts,
  b. Calculated %R for each analyte, and
  c. The laboratory's LCS QC limits.
- ☑ R7 - Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a. Samples associated with the MS/MSD clearly identified,
  b. MS/MSD spiking amounts,
  c. Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d. Calculated %Rs and relative percent differences (RPDs), and
  e. The laboratory's MS/MSD QC limits
- ☐ R8 - Laboratory analytical duplicate (if applicable) recovery and precision:
  a. The amount of analyte measured in the duplicate,
  b. The calculated RPD, and
  c. The laboratory's QC limits for analytical duplicates.
- ☑ R9 - List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
- ☑ R10 - Other problems or anomalies.
- ☐ Exception Report for every "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge 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.

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

Name (Printed)	Signature	Official Title (Printed)	Date
Bethany McDaniel		Senior Project Manager	06/30/2022

Laboratory Data Package Cover Page - Page 2 of 4

Laboratory Name: Eurofins Houston	LRC Date: 06/30/2022
Project Name: STC Silber Rd Pre-Design Investigation Part 2	Laboratory Job Number: 860-28799-1
Reviewer Name: Bethany McDaniel	

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
		Were all departures from standard conditions described in an exception report?	✓				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	✓				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	✓				
		Were calculations checked by a peer or supervisor?	✓				
		Were all analyte identifications checked by a peer or supervisor?	✓				
		Were sample detection limits reported for all analytes not detected?	✓				
		Were all results for soil and sediment samples reported on a dry weight basis?			✓		
		Were % moisture (or solids) reported for all soil and sediment samples?			✓		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			✓		
		If required for the project, are TICs reported?			✓		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	✓				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	✓				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	✓				
		Were blanks analyzed at the appropriate frequency?	✓				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
		Were blank concentrations < MQL?	✓				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	✓				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
		Were LCSs analyzed at the required frequency?	✓				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	✓				
		Was the LCSD RPD within QC limits?	✓				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	✓				
		Were MS/MSD analyzed at the appropriate frequency?	✓				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	✓				
		Were MS/MSD RPDs within laboratory QC limits?			✓		
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			✓		
		Were analytical duplicates analyzed at the appropriate frequency?			✓		
		Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	✓				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	✓				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	✓				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	✓				

Laboratory Data Package Cover Page - Page 3 of 4

Laboratory Name: Eurofins Houston	LRC Date: 06/30/2022
Project Name: STC Silber Rd Pre-Design Investigation Part 2	Laboratory Job Number: 860-28799-1
Reviewer Name: Bethany McDaniel	

#[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?	✓				
		Were percent RSDs or correlation coefficient criteria met?	✓				
		Was the number of standards recommended in the method used for all analytes?	✓				
		Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
		Are ICAL data available for all instruments used?	✓				
		Has the initial calibration curve been verified using an appropriate second source standard?	✓				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?	✓				
		Were percent differences for each analyte within the method-required QC limits?	✓				
		Was the ICAL curve verified for each analyte?	✓				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			✓		
S3	O	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?	✓				
		Were ion abundance data within the method-required QC limits?	✓				
S4	O	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?	✓				
S5	OI	**Raw data (NELAC Section 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
		Were data associated with manual integrations flagged on the raw data?	✓				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			✓		
S7	O	**Tentatively identified compounds (TICs)**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
S8	I	**Interference Check Sample (ICS) results**					
		Were percent recoveries within method QC limits?			✓		
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?			✓		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	✓				
		Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
S11	OI	**Proficiency test reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	✓				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	✓				
		Is documentation of the analyst's competency up-to-date and on file?	✓				
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?	✓				
S16	OI	**Laboratory standard operating procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	✓				

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).

Laboratory Data Package Cover Page - Page 4 of 4

Laboratory Name: Eurofins Houston	LRC Date: 06/30/2022
Project Name: STC Silber Rd Pre-Design Investigation Part 2	Laboratory Job Number: 860-28799-1
Reviewer Name: Bethany McDaniel	

ER#[1]	Description
	No Exceptions

1. ER# = Exception Report identification number (an Exception Report should be completed for an item if “NR” or “No” is checked).

Detection Check Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-28799-1
Project/Site: STC Silber Rd Pre-Design Investigation Part 2

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**
Prep Method: 5030C-Purge and Trap
Instrument: A325 **Detector: MSD/0** **Column: DB-624**

Analyte	Spike Added	Result	Qualifier	Unit	RL	MDL	Analysis Date	Analysis Batch
Trichloroethene	0.00100	0.00503		mg/L	0.00500	0.000424	03/03/2022	860-43530
Vinyl chloride	0.00100	0.00381		mg/L	0.00200	0.000234	03/03/2022	860-43530
cis-1,2-Dichloroethene	0.00100	0.00499		mg/L	0.00100	0.000174	03/03/2022	860-43530
1,1-Dichloroethane	0.00100	0.00483		mg/L	0.00100	0.000244	03/03/2022	860-43530
1,2-Dichloroethane	0.00100	0.00498		mg/L	0.00100	0.000285	03/03/2022	860-43530
1,1-Dichloroethene	0.00100	0.00411		mg/L	0.00100	0.000216	03/03/2022	860-43530
Tetrachloroethene	0.00100	0.00463		mg/L	0.00100	0.000500	03/03/2022	860-43530

Eurofins Houston
4145 Greenbriar Dr
Stafford, TX 77477
Phone (281) 240-4200

Temp: 3.4 IR ID:HOU-323
C/F:-0.0
Corrected Temp: 3.4

Chain of Custody Record

860-28799 Chain of Custody

Eurofins | Environment Testing America

6/30/2022

Client Information	Sampler	Lab PM: McDaniel, Bethany A	No: 11069-3875.1
Client Contact: John Ynfante	Phone:	E-Mail: Bethany.McDaniel@et.e	Page 1 of 1
Company: Jacobs Engineering Group, Inc.	PWSID:		Job #:
Address: 14701 St. Mary's Lane Suite 300	Due Date Requested:		
City: Houston	TAT Requested (days): 1 day RUSH		
State, Zip: TX, 77079	Compliance Project: Δ Yes Δ No		
Phone:	PO #: D3542628.C.CS.TPE.SIL.22-01-02		
Email: John.Ynfante@jacobs.com	WO #: D3542628.C.CS.TPE.SIL.22-01-02		
Project Name: STC Silber Rd Pre-Design Inv Part 2	Project #: 86002024		
Site:	SSOW#:		

Analysis Requested

Preservation Codes:
A HCL, B NaOH, C Zn Acetate, D Nitric Acid, E NaHSO4, F MeOH, G Amchlor, H Ascorbic Acid, I Ice, J DI Water, K EDTA, L EDA, M Hexane, N None, O AsNaO2, P Na2O4S, Q Na2SO3, R Na2S2O3, S H2SO4, T TSP Dodecahydrate, U Acetone, V MCAA, W pH 4-5, Y Trizma, 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)	8260C - (MOD) VOCs Custom List (7)	Total Number of containers	Special Instructions/Note:
			Preservation Code:		X	X	A	X	
TB-01-062922	6/29/22	1300	—	Water			X	2	
SWD-14-062922	6/29/22	1415	G	Water			X	3	
SWD-14-062922	6/29/22	1435	G	Water			X	3	
				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) TRRP

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by:	Date/Time: 6/29/22 1517	Company	Received by:	Date/Time: 6/29/22 1517	Company Eurofins
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc.

Job Number: 860-28799-1

Login Number: 28799
List Number: 1
Creator: Torres, Sandra

List Source: Eurofins Houston

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.4
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	

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ANALYTICAL REPORT

Eurofins Houston
4145 Greenbriar Dr
Stafford, TX 77477
Tel: (281)240-4200

Laboratory Job ID: 860-28800-1
Client Project/Site: STC Silber Rd Pre-Design Investigation Part 2

For:
Jacobs Engineering Group, Inc.
12750 Merit Drive
Suite 1100
Dallas, Texas 75251

Attn: John Knott

Bethany McDaniel

Authorized for release by:
6/30/2022 7:31:13 PM

Bethany McDaniel, Senior Project Manager
(713)358-2005
Bethany.McDaniel@et.eurofinsus.com

Table of Contents

Definitions/Glossary

Client: Jacobs Engineering Group, Inc. Job ID: 860-28800-1
Project/Site: STC Silber Rd Pre-Design Investigation Part 2

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the MQL but greater than or equal to the SDL and the concentration is an estimated value.
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
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 860-28800-1

Laboratory: Eurofins Houston

Narrative

Job Narrative
860-28800-1

Receipt
The samples were received on 6/29/2022 3:17 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.4°C

Detection Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-28800-1
Project/Site: STC Silber Rd Pre-Design Investigation Part 2

Client Sample ID: TB-01-062822 Lab Sample ID: 860-28800-1

No Detections.

Client Sample ID: SB34-03-062822 Lab Sample ID: 860-28800-2

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.00129		0.00100	0.000174	mg/L	1		8260D	Total/NA
1,1-Dichloroethane	0.0315		0.00100	0.000244	mg/L	1		8260D	Total/NA
1,1-Dichloroethene	0.0377		0.00100	0.000216	mg/L	1		8260D	Total/NA
Tetrachloroethene	0.00116		0.00100	0.000500	mg/L	1		8260D	Total/NA
Trichloroethene	0.000781	J	0.00500	0.000424	mg/L	1		8260D	Total/NA
Vinyl chloride	0.00553		0.00200	0.000234	mg/L	1		8260D	Total/NA

Client Sample ID: SB34-02-062822 Lab Sample ID: 860-28800-3

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.00191		0.00100	0.000174	mg/L	1		8260D	Total/NA
1,1-Dichloroethane	0.00781		0.00100	0.000244	mg/L	1		8260D	Total/NA
1,1-Dichloroethene	0.0142		0.00100	0.000216	mg/L	1		8260D	Total/NA
Tetrachloroethene	0.00423		0.00100	0.000500	mg/L	1		8260D	Total/NA
Trichloroethene	0.00189	J	0.00500	0.000424	mg/L	1		8260D	Total/NA
Vinyl chloride	0.00113	J	0.00200	0.000234	mg/L	1		8260D	Total/NA

Client Sample ID: SB34-01-062822 Lab Sample ID: 860-28800-4

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.000344	J	0.00100	0.000174	mg/L	1		8260D	Total/NA
1,1-Dichloroethane	0.00638		0.00100	0.000244	mg/L	1		8260D	Total/NA
1,1-Dichloroethene	0.00764		0.00100	0.000216	mg/L	1		8260D	Total/NA
Tetrachloroethene	0.000914	J	0.00100	0.000500	mg/L	1		8260D	Total/NA
Vinyl chloride	0.000554	J	0.00200	0.000234	mg/L	1		8260D	Total/NA

Client Sample ID: SB47-03-062822 Lab Sample ID: 860-28800-5

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.0121		0.00100	0.000174	mg/L	1		8260D	Total/NA
1,1-Dichloroethane	0.00276		0.00100	0.000244	mg/L	1		8260D	Total/NA
1,1-Dichloroethene	0.000436	J	0.00100	0.000216	mg/L	1		8260D	Total/NA
Tetrachloroethene	0.00711		0.00100	0.000500	mg/L	1		8260D	Total/NA
Trichloroethene	0.0196		0.00500	0.000424	mg/L	1		8260D	Total/NA
Vinyl chloride	0.00393		0.00200	0.000234	mg/L	1		8260D	Total/NA

Client Sample ID: SB47-02-062822 Lab Sample ID: 860-28800-6

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.00457		0.00100	0.000244	mg/L	1		8260D	Total/NA
1,1-Dichloroethene	0.00162		0.00100	0.000216	mg/L	1		8260D	Total/NA
Vinyl chloride	0.0242		0.00200	0.000234	mg/L	1		8260D	Total/NA
cis-1,2-Dichloroethene - DL	0.248		0.0200	0.00348	mg/L	20		8260D	Total/NA
Tetrachloroethene - DL	0.715		0.0200	0.0100	mg/L	20		8260D	Total/NA
Trichloroethene - DL	0.858		0.100	0.00848	mg/L	20		8260D	Total/NA

Client Sample ID: FD-01-062822 Lab Sample ID: 860-28800-7

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.0140		0.00100	0.000174	mg/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Houston

Detection Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-28800-1
Project/Site: STC Silber Rd Pre-Design Investigation Part 2

Client Sample ID: FD-01-062822 (Continued) Lab Sample ID: 860-28800-7

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.00271		0.00100	0.000244	mg/L	1		8260D	Total/NA
1,1-Dichloroethene	0.000439	J	0.00100	0.000216	mg/L	1		8260D	Total/NA
Tetrachloroethene	0.00775		0.00100	0.000500	mg/L	1		8260D	Total/NA
Trichloroethene	0.0212		0.00500	0.000424	mg/L	1		8260D	Total/NA
Vinyl chloride	0.00236		0.00200	0.000234	mg/L	1		8260D	Total/NA

Client Sample ID: SB46-03-062822 Lab Sample ID: 860-28800-8

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.00128		0.00100	0.000174	mg/L	1		8260D	Total/NA
1,1-Dichloroethane	0.00163		0.00100	0.000244	mg/L	1		8260D	Total/NA
1,1-Dichloroethene	0.000395	J	0.00100	0.000216	mg/L	1		8260D	Total/NA
Tetrachloroethene	0.00909		0.00100	0.000500	mg/L	1		8260D	Total/NA
Trichloroethene	0.0100		0.00500	0.000424	mg/L	1		8260D	Total/NA

Client Sample ID: SB46-02-062822 Lab Sample ID: 860-28800-9

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.00126		0.00100	0.000174	mg/L	1		8260D	Total/NA
1,1-Dichloroethane	0.00165		0.00100	0.000244	mg/L	1		8260D	Total/NA
1,1-Dichloroethene	0.000417	J	0.00100	0.000216	mg/L	1		8260D	Total/NA
Tetrachloroethene	0.00933		0.00100	0.000500	mg/L	1		8260D	Total/NA
Trichloroethene	0.00731		0.00500	0.000424	mg/L	1		8260D	Total/NA

Client Sample ID: SB46-01-062822 Lab Sample ID: 860-28800-10

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.000876	J	0.00100	0.000174	mg/L	1		8260D	Total/NA
1,1-Dichloroethane	0.000945	J	0.00100	0.000244	mg/L	1		8260D	Total/NA
Tetrachloroethene	0.00562		0.00100	0.000500	mg/L	1		8260D	Total/NA
Trichloroethene	0.00416	J	0.00500	0.000424	mg/L	1		8260D	Total/NA

Client Sample ID: EB-01-062922 Lab Sample ID: 860-28800-11

No Detections.

Client Sample ID: SB48-03-062922 Lab Sample ID: 860-28800-12

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.0365		0.00100	0.000174	mg/L	1		8260D	Total/NA
1,1-Dichloroethane	0.00476		0.00100	0.000244	mg/L	1		8260D	Total/NA
1,1-Dichloroethene	0.00106		0.00100	0.000216	mg/L	1		8260D	Total/NA
Tetrachloroethene	0.0315		0.00100	0.000500	mg/L	1		8260D	Total/NA
Trichloroethene	0.0778		0.00500	0.000424	mg/L	1		8260D	Total/NA
Vinyl chloride	0.00635		0.00200	0.000234	mg/L	1		8260D	Total/NA

Client Sample ID: SB48-02-062922 Lab Sample ID: 860-28800-13

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.0612		0.00100	0.000174	mg/L	1		8260D	Total/NA
1,1-Dichloroethane	0.00528		0.00100	0.000244	mg/L	1		8260D	Total/NA
1,1-Dichloroethene	0.00142		0.00100	0.000216	mg/L	1		8260D	Total/NA
Tetrachloroethene	0.0863		0.00100	0.000500	mg/L	1		8260D	Total/NA
Vinyl chloride	0.0117		0.00200	0.000234	mg/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Houston

Client Sample ID: SB48-02-062922 (Continued)
Lab Sample ID: 860-28800-13

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene - DL	0.162		0.0250	0.00212	mg/L	5		8260D	Total/NA

Client Sample ID: SB48-01-062922
Lab Sample ID: 860-28800-14

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.0300		0.00100	0.000244	mg/L	1		8260D	Total/NA
1,2-Dichloroethane	0.00176		0.00100	0.000285	mg/L	1		8260D	Total/NA
1,1-Dichloroethene	0.0203		0.00100	0.000216	mg/L	1		8260D	Total/NA
Vinyl chloride	0.0353		0.00200	0.000234	mg/L	1		8260D	Total/NA
cis-1,2-Dichloroethene - DL	0.272		0.00500	0.000870	mg/L	5		8260D	Total/NA
Tetrachloroethene - DL	0.261		0.00500	0.00250	mg/L	5		8260D	Total/NA
Trichloroethene - DL	0.266		0.0250	0.00212	mg/L	5		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: TB-01-062822 — Lab Sample ID: 860-28800-1

Date Collected: 06/28/22 07:10 — **Matrix: Water**
Date Received: 06/29/22 15:17

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			06/30/22 11:16	1
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			06/30/22 11:16	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/30/22 11:16	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			06/30/22 11:16	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/30/22 11:16	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			06/30/22 11:16	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			06/30/22 11:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*74 - 124*		*06/30/22 11:16*	*1*
Dibromofluoromethane (Surr)	*100*		*75 - 131*		*06/30/22 11:16*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*63 - 144*		*06/30/22 11:16*	*1*
Toluene-d8 (Surr)	*99*		*80 - 117*		*06/30/22 11:16*	*1*

Client Sample ID: SB34-03-062822 — Lab Sample ID: 860-28800-2

Date Collected: 06/28/22 08:00 — **Matrix: Water**
Date Received: 06/29/22 15:17

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**0.00129**		0.00100	0.000174	mg/L			06/30/22 12:59	1
1,1-Dichloroethane	**0.0315**		0.00100	0.000244	mg/L			06/30/22 12:59	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/30/22 12:59	1
1,1-Dichloroethene	**0.0377**		0.00100	0.000216	mg/L			06/30/22 12:59	1
Tetrachloroethene	**0.00116**		0.00100	0.000500	mg/L			06/30/22 12:59	1
Trichloroethene	**0.000781**	**J**	0.00500	0.000424	mg/L			06/30/22 12:59	1
Vinyl chloride	**0.00553**		0.00200	0.000234	mg/L			06/30/22 12:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*74 - 124*		*06/30/22 12:59*	*1*
Dibromofluoromethane (Surr)	*100*		*75 - 131*		*06/30/22 12:59*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*63 - 144*		*06/30/22 12:59*	*1*
Toluene-d8 (Surr)	*98*		*80 - 117*		*06/30/22 12:59*	*1*

Client Sample ID: SB34-02-062822 — Lab Sample ID: 860-28800-3

Date Collected: 06/28/22 08:10 — **Matrix: Water**
Date Received: 06/29/22 15:17

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**0.00191**		0.00100	0.000174	mg/L			06/30/22 16:02	1
1,1-Dichloroethane	**0.00781**		0.00100	0.000244	mg/L			06/30/22 16:02	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/30/22 16:02	1
1,1-Dichloroethene	**0.0142**		0.00100	0.000216	mg/L			06/30/22 16:02	1
Tetrachloroethene	**0.00423**		0.00100	0.000500	mg/L			06/30/22 16:02	1
Trichloroethene	**0.00189**	**J**	0.00500	0.000424	mg/L			06/30/22 16:02	1
Vinyl chloride	**0.00113**	**J**	0.00200	0.000234	mg/L			06/30/22 16:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*74 - 124*		*06/30/22 16:02*	*1*
Dibromofluoromethane (Surr)	*93*		*75 - 131*		*06/30/22 16:02*	*1*

Client Sample ID: SB34-02-062822 — Lab Sample ID: 860-28800-3

Date Collected: 06/28/22 08:10 — **Matrix: Water**
Date Received: 06/29/22 15:17

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*100*		*63 - 144*		*06/30/22 16:02*	*1*
Toluene-d8 (Surr)	*100*		*80 - 117*		*06/30/22 16:02*	*1*

Client Sample ID: SB34-01-062822 — Lab Sample ID: 860-28800-4

Date Collected: 06/28/22 08:30 — **Matrix: Water**
Date Received: 06/29/22 15:17

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**0.000344**	**J**	0.00100	0.000174	mg/L			06/30/22 16:21	1
1,1-Dichloroethane	**0.00638**		0.00100	0.000244	mg/L			06/30/22 16:21	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/30/22 16:21	1
1,1-Dichloroethene	**0.00764**		0.00100	0.000216	mg/L			06/30/22 16:21	1
Tetrachloroethene	**0.000914**	**J**	0.00100	0.000500	mg/L			06/30/22 16:21	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			06/30/22 16:21	1
Vinyl chloride	**0.000554**	**J**	0.00200	0.000234	mg/L			06/30/22 16:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*97*		*74 - 124*		*06/30/22 16:21*	*1*
Dibromofluoromethane (Surr)	*97*		*75 - 131*		*06/30/22 16:21*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*63 - 144*		*06/30/22 16:21*	*1*
Toluene-d8 (Surr)	*100*		*80 - 117*		*06/30/22 16:21*	*1*

Client Sample ID: SB47-03-062822 — Lab Sample ID: 860-28800-5

Date Collected: 06/28/22 11:40 — **Matrix: Water**
Date Received: 06/29/22 15:17

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**0.0121**		0.00100	0.000174	mg/L			06/30/22 14:00	1
1,1-Dichloroethane	**0.00276**		0.00100	0.000244	mg/L			06/30/22 14:00	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/30/22 14:00	1
1,1-Dichloroethene	**0.000436**	**J**	0.00100	0.000216	mg/L			06/30/22 14:00	1
Tetrachloroethene	**0.00711**		0.00100	0.000500	mg/L			06/30/22 14:00	1
Trichloroethene	**0.0196**		0.00500	0.000424	mg/L			06/30/22 14:00	1
Vinyl chloride	**0.00393**		0.00200	0.000234	mg/L			06/30/22 14:00	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*101*		*74 - 124*		*06/30/22 14:00*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 131*		*06/30/22 14:00*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*63 - 144*		*06/30/22 14:00*	*1*
Toluene-d8 (Surr)	*98*		*80 - 117*		*06/30/22 14:00*	*1*

Client Sample ID: SB47-02-062822 — Lab Sample ID: 860-28800-6

Date Collected: 06/28/22 13:20 — **Matrix: Water**
Date Received: 06/29/22 15:17

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	**0.00457**		0.00100	0.000244	mg/L			06/30/22 14:21	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/30/22 14:21	1

Client Sample ID: SB47-02-062822 — Lab Sample ID: 860-28800-6

Date Collected: 06/28/22 13:20 — **Matrix: Water**
Date Received: 06/29/22 15:17

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

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.00162		0.00100	0.000216	mg/L			06/30/22 14:21	1
Vinyl chloride	0.0242		0.00200	0.000234	mg/L			06/30/22 14:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*74 - 124*		*06/30/22 14:21*	*1*
Dibromofluoromethane (Surr)	*98*		*75 - 131*		*06/30/22 14:21*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*63 - 144*		*06/30/22 14:21*	*1*
Toluene-d8 (Surr)	*99*		*80 - 117*		*06/30/22 14:21*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS - DL

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.248		0.0200	0.00348	mg/L			06/30/22 15:01	20
Tetrachloroethene	0.715		0.0200	0.0100	mg/L			06/30/22 15:01	20
Trichloroethene	0.858		0.100	0.00848	mg/L			06/30/22 15:01	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*74 - 124*		*06/30/22 15:01*	*20*
Dibromofluoromethane (Surr)	*100*		*75 - 131*		*06/30/22 15:01*	*20*
1,2-Dichloroethane-d4 (Surr)	*99*		*63 - 144*		*06/30/22 15:01*	*20*
Toluene-d8 (Surr)	*99*		*80 - 117*		*06/30/22 15:01*	*20*

Client Sample ID: FD-01-062822 — Lab Sample ID: 860-28800-7

Date Collected: 06/28/22 00:00 — **Matrix: Water**
Date Received: 06/29/22 15:17

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.0140		0.00100	0.000174	mg/L			06/30/22 16:59	1
1,1-Dichloroethane	0.00271		0.00100	0.000244	mg/L			06/30/22 16:59	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/30/22 16:59	1
1,1-Dichloroethene	0.000439	J	0.00100	0.000216	mg/L			06/30/22 16:59	1
Tetrachloroethene	0.00775		0.00100	0.000500	mg/L			06/30/22 16:59	1
Trichloroethene	0.0212		0.00500	0.000424	mg/L			06/30/22 16:59	1
Vinyl chloride	0.00236		0.00200	0.000234	mg/L			06/30/22 16:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*74 - 124*		*06/30/22 16:59*	*1*
Dibromofluoromethane (Surr)	*97*		*75 - 131*		*06/30/22 16:59*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*63 - 144*		*06/30/22 16:59*	*1*
Toluene-d8 (Surr)	*103*		*80 - 117*		*06/30/22 16:59*	*1*

Client Sample ID: SB46-03-062822 — Lab Sample ID: 860-28800-8

Date Collected: 06/28/22 16:30 — **Matrix: Water**
Date Received: 06/29/22 15:17

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.00128		0.00100	0.000174	mg/L			06/30/22 13:19	1
1,1-Dichloroethane	0.00163		0.00100	0.000244	mg/L			06/30/22 13:19	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/30/22 13:19	1
1,1-Dichloroethene	0.000395	J	0.00100	0.000216	mg/L			06/30/22 13:19	1

Client Sample ID: SB46-03-062822 Lab Sample ID: 860-28800-8

Date Collected: 06/28/22 16:30 **Matrix: Water**
Date Received: 06/29/22 15:17

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

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	**0.00909**		0.00100	0.000500	mg/L			06/30/22 13:19	1
Trichloroethene	**0.0100**		0.00500	0.000424	mg/L			06/30/22 13:19	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			06/30/22 13:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*74 - 124*		*06/30/22 13:19*	*1*
Dibromofluoromethane (Surr)	*102*		*75 - 131*		*06/30/22 13:19*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*63 - 144*		*06/30/22 13:19*	*1*
Toluene-d8 (Surr)	*99*		*80 - 117*		*06/30/22 13:19*	*1*

Client Sample ID: SB46-02-062822 Lab Sample ID: 860-28800-9

Date Collected: 06/28/22 16:40 **Matrix: Water**
Date Received: 06/29/22 15:17

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**0.00126**		0.00100	0.000174	mg/L			06/30/22 13:40	1
1,1-Dichloroethane	**0.00165**		0.00100	0.000244	mg/L			06/30/22 13:40	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/30/22 13:40	1
1,1-Dichloroethene	**0.000417**	**J**	0.00100	0.000216	mg/L			06/30/22 13:40	1
Tetrachloroethene	**0.00933**		0.00100	0.000500	mg/L			06/30/22 13:40	1
Trichloroethene	**0.00731**		0.00500	0.000424	mg/L			06/30/22 13:40	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			06/30/22 13:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*74 - 124*		*06/30/22 13:40*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 131*		*06/30/22 13:40*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*63 - 144*		*06/30/22 13:40*	*1*
Toluene-d8 (Surr)	*98*		*80 - 117*		*06/30/22 13:40*	*1*

Client Sample ID: SB46-01-062822 Lab Sample ID: 860-28800-10

Date Collected: 06/28/22 16:50 **Matrix: Water**
Date Received: 06/29/22 15:17

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**0.000876**	**J**	0.00100	0.000174	mg/L			06/30/22 16:40	1
1,1-Dichloroethane	**0.000945**	**J**	0.00100	0.000244	mg/L			06/30/22 16:40	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/30/22 16:40	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			06/30/22 16:40	1
Tetrachloroethene	**0.00562**		0.00100	0.000500	mg/L			06/30/22 16:40	1
Trichloroethene	**0.00416**	**J**	0.00500	0.000424	mg/L			06/30/22 16:40	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			06/30/22 16:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*74 - 124*		*06/30/22 16:40*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 131*		*06/30/22 16:40*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*63 - 144*		*06/30/22 16:40*	*1*
Toluene-d8 (Surr)	*99*		*80 - 117*		*06/30/22 16:40*	*1*

Client Sample ID: EB-01-062922 — Lab Sample ID: 860-28800-11

Date Collected: 06/29/22 07:15 — **Matrix: Water**
Date Received: 06/29/22 15:17

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			06/30/22 11:37	1
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			06/30/22 11:37	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/30/22 11:37	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			06/30/22 11:37	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/30/22 11:37	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			06/30/22 11:37	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			06/30/22 11:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*74 - 124*		*06/30/22 11:37*	*1*
Dibromofluoromethane (Surr)	*100*		*75 - 131*		*06/30/22 11:37*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*63 - 144*		*06/30/22 11:37*	*1*
Toluene-d8 (Surr)	*99*		*80 - 117*		*06/30/22 11:37*	*1*

Client Sample ID: SB48-03-062922 — Lab Sample ID: 860-28800-12

Date Collected: 06/29/22 10:50 — **Matrix: Water**
Date Received: 06/29/22 15:17

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**0.0365**		0.00100	0.000174	mg/L			06/30/22 17:07	1
1,1-Dichloroethane	**0.00476**		0.00100	0.000244	mg/L			06/30/22 17:07	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/30/22 17:07	1
1,1-Dichloroethene	**0.00106**		0.00100	0.000216	mg/L			06/30/22 17:07	1
Tetrachloroethene	**0.0315**		0.00100	0.000500	mg/L			06/30/22 17:07	1
Trichloroethene	**0.0778**		0.00500	0.000424	mg/L			06/30/22 17:07	1
Vinyl chloride	**0.00635**		0.00200	0.000234	mg/L			06/30/22 17:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*74 - 124*		*06/30/22 17:07*	*1*
Dibromofluoromethane (Surr)	*100*		*75 - 131*		*06/30/22 17:07*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*63 - 144*		*06/30/22 17:07*	*1*
Toluene-d8 (Surr)	*99*		*80 - 117*		*06/30/22 17:07*	*1*

Client Sample ID: SB48-02-062922 — Lab Sample ID: 860-28800-13

Date Collected: 06/29/22 11:00 — **Matrix: Water**
Date Received: 06/29/22 15:17

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**0.0612**		0.00100	0.000174	mg/L			06/30/22 15:24	1
1,1-Dichloroethane	**0.00528**		0.00100	0.000244	mg/L			06/30/22 15:24	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/30/22 15:24	1
1,1-Dichloroethene	**0.00142**		0.00100	0.000216	mg/L			06/30/22 15:24	1
Tetrachloroethene	**0.0863**		0.00100	0.000500	mg/L			06/30/22 15:24	1
Vinyl chloride	**0.0117**		0.00200	0.000234	mg/L			06/30/22 15:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*74 - 124*		*06/30/22 15:24*	*1*
Dibromofluoromethane (Surr)	*101*		*75 - 131*		*06/30/22 15:24*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*63 - 144*		*06/30/22 15:24*	*1*

Client Sample ID: SB48-02-062922 — Lab Sample ID: 860-28800-13

Date Collected: 06/29/22 11:00 — **Matrix: Water**
Date Received: 06/29/22 15:17

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	*99*		*80 - 117*		*06/30/22 15:24*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS - DL

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	**0.162**		0.0250	0.00212	mg/L			06/30/22 16:26	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*101*		*74 - 124*		*06/30/22 16:26*	*5*
Dibromofluoromethane (Surr)	*98*		*75 - 131*		*06/30/22 16:26*	*5*
1,2-Dichloroethane-d4 (Surr)	*100*		*63 - 144*		*06/30/22 16:26*	*5*
Toluene-d8 (Surr)	*98*		*80 - 117*		*06/30/22 16:26*	*5*

Client Sample ID: SB48-01-062922 — Lab Sample ID: 860-28800-14

Date Collected: 06/29/22 11:10 — **Matrix: Water**
Date Received: 06/29/22 15:17

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	**0.0300**		0.00100	0.000244	mg/L			06/30/22 15:45	1
1,2-Dichloroethane	**0.00176**		0.00100	0.000285	mg/L			06/30/22 15:45	1
1,1-Dichloroethene	**0.0203**		0.00100	0.000216	mg/L			06/30/22 15:45	1
Vinyl chloride	**0.0353**		0.00200	0.000234	mg/L			06/30/22 15:45	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*102*		*74 - 124*		*06/30/22 15:45*	*1*
Dibromofluoromethane (Surr)	*100*		*75 - 131*		*06/30/22 15:45*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*63 - 144*		*06/30/22 15:45*	*1*
Toluene-d8 (Surr)	*98*		*80 - 117*		*06/30/22 15:45*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS - DL

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**0.272**		0.00500	0.000870	mg/L			06/30/22 16:05	5
Tetrachloroethene	**0.261**		0.00500	0.00250	mg/L			06/30/22 16:05	5
Trichloroethene	**0.266**		0.0250	0.00212	mg/L			06/30/22 16:05	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*102*		*74 - 124*		*06/30/22 16:05*	*5*
Dibromofluoromethane (Surr)	*100*		*75 - 131*		*06/30/22 16:05*	*5*
1,2-Dichloroethane-d4 (Surr)	*99*		*63 - 144*		*06/30/22 16:05*	*5*
Toluene-d8 (Surr)	*99*		*80 - 117*		*06/30/22 16:05*	*5*

Unadjusted Detection Limits

Client: Jacobs Engineering Group, Inc. Job ID: 860-28800-1
Project/Site: STC Silber Rd Pre-Design Investigation Part 2

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	MQL	MDL	Units
1,1-Dichloroethane	0.00100	0.000244	mg/L
1,1-Dichloroethene	0.00100	0.000216	mg/L
1,2-Dichloroethane	0.00100	0.000285	mg/L
cis-1,2-Dichloroethene	0.00100	0.000174	mg/L
Tetrachloroethene	0.00100	0.000500	mg/L
Trichloroethene	0.00500	0.000424	mg/L
Vinyl chloride	0.00200	0.000234	mg/L

Surrogate Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-28800-1
Project/Site: STC Silber Rd Pre-Design Investigation Part 2

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water
Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		BFB	DBFM	DCA	TOL
Lab Sample ID	Client Sample ID	(74-124)	(75-131)	(63-144)	(80-117)
860-28656-A-8 MS	Matrix Spike	99	101	97	98
860-28656-A-17 MS	Matrix Spike	98	98	91	98
860-28800-1	TB-01-062822	101	100	99	99
860-28800-2	SB34-03-062822	101	100	100	98
860-28800-3	SB34-02-062822	96	93	100	100
860-28800-4	SB34-01-062822	97	97	99	100
860-28800-5	SB47-03-062822	101	99	100	98
860-28800-6	SB47-02-062822	101	98	98	99
860-28800-6 - DL	SB47-02-062822	97	100	99	99
860-28800-7	FD-01-062822	102	97	102	103
860-28800-8	SB46-03-062822	102	102	100	99
860-28800-9	SB46-02-062822	101	99	101	98
860-28800-10	SB46-01-062822	103	99	98	99
860-28800-11	EB-01-062922	102	100	98	99
860-28800-12	SB48-03-062922	100	100	100	99
860-28800-13	SB48-02-062922	100	101	100	99
860-28800-13 - DL	SB48-02-062922	101	98	100	98
860-28800-14	SB48-01-062922	102	100	100	98
860-28800-14 - DL	SB48-01-062922	102	100	99	99
LCS 860-59193/5	Lab Control Sample	99	102	98	98
LCS 860-59284/3	Lab Control Sample	99	97	91	97
LCSD 860-59193/6	Lab Control Sample Dup	99	100	97	98
LCSD 860-59284/4	Lab Control Sample Dup	99	94	88	98
MB 860-59193/11	Method Blank	100	99	99	100
MB 860-59284/9	Method Blank	100	97	94	100

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 860-59193/11
Matrix: Water
Analysis Batch: 59193

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

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			06/30/22 10:15	1
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			06/30/22 10:15	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/30/22 10:15	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			06/30/22 10:15	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/30/22 10:15	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			06/30/22 10:15	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			06/30/22 10:15	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*74 - 124*		*06/30/22 10:15*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 131*		*06/30/22 10:15*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*63 - 144*		*06/30/22 10:15*	*1*
Toluene-d8 (Surr)	*100*		*80 - 117*		*06/30/22 10:15*	*1*

Lab Sample ID: LCS 860-59193/5
Matrix: Water
Analysis Batch: 59193

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
cis-1,2-Dichloroethene			0.0500	0.04904		mg/L		98	75 - 125		
1,1-Dichloroethane			0.0500	0.04960		mg/L		99	72 - 125		
1,2-Dichloroethane			0.0500	0.04979		mg/L		100	68 - 127		
1,1-Dichloroethene			0.0500	0.05170		mg/L		103	59 - 172		
Tetrachloroethene			0.0500	0.05273		mg/L		105	71 - 125		
Trichloroethene			0.0500	0.05285		mg/L		106	62 - 137		
Vinyl chloride			0.0500	0.04983		mg/L		100	60 - 140		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*
Dibromofluoromethane (Surr)	*102*		*75 - 131*
1,2-Dichloroethane-d4 (Surr)	*98*		*63 - 144*
Toluene-d8 (Surr)	*98*		*80 - 117*

Lab Sample ID: LCSD 860-59193/6
Matrix: Water
Analysis Batch: 59193

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
cis-1,2-Dichloroethene			0.0500	0.04605		mg/L		92	75 - 125	6	25
1,1-Dichloroethane			0.0500	0.04712		mg/L		94	72 - 125	5	25
1,2-Dichloroethane			0.0500	0.04890		mg/L		98	68 - 127	2	25
1,1-Dichloroethene			0.0500	0.04753		mg/L		95	59 - 172	8	25
Tetrachloroethene			0.0500	0.05045		mg/L		101	71 - 125	4	25
Trichloroethene			0.0500	0.05095		mg/L		102	62 - 137	4	25
Vinyl chloride			0.0500	0.04662		mg/L		93	60 - 140	7	25

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

Lab Sample ID: LCSD 860-59193/6 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 59193

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*
Dibromofluoromethane (Surr)	*100*		*75 - 131*
1,2-Dichloroethane-d4 (Surr)	*97*		*63 - 144*
Toluene-d8 (Surr)	*98*		*80 - 117*

Lab Sample ID: 860-28656-A-8 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 59193

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
cis-1,2-Dichloroethene	0.000174	U	0.0500	0.04792		mg/L		96	75 - 125
1,1-Dichloroethane	0.000244	U	0.0500	0.04805		mg/L		96	72 - 125
1,2-Dichloroethane	0.000285	U	0.0500	0.04823		mg/L		96	68 - 127
1,1-Dichloroethene	0.000216	U	0.0500	0.05285		mg/L		106	59 - 172
Tetrachloroethene	0.000500	U	0.0500	0.05122		mg/L		102	71 - 125
Trichloroethene	0.000424	U	0.0500	0.05113		mg/L		102	62 - 137
Vinyl chloride	0.000234	U	0.0500	0.05491		mg/L		110	60 - 140

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*
Dibromofluoromethane (Surr)	*101*		*75 - 131*
1,2-Dichloroethane-d4 (Surr)	*97*		*63 - 144*
Toluene-d8 (Surr)	*98*		*80 - 117*

Lab Sample ID: MB 860-59284/9 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 59284

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			06/30/22 14:38	1
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			06/30/22 14:38	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			06/30/22 14:38	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			06/30/22 14:38	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			06/30/22 14:38	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			06/30/22 14:38	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			06/30/22 14:38	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*100*		*74 - 124*		*06/30/22 14:38*	*1*
Dibromofluoromethane (Surr)	*97*		*75 - 131*		*06/30/22 14:38*	*1*
1,2-Dichloroethane-d4 (Surr)	*94*		*63 - 144*		*06/30/22 14:38*	*1*
Toluene-d8 (Surr)	*100*		*80 - 117*		*06/30/22 14:38*	*1*

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

Lab Sample ID: LCS 860-59284/3
Matrix: Water
Analysis Batch: 59284

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
cis-1,2-Dichloroethene	0.0500	0.04939		mg/L		99	75 - 125
1,1-Dichloroethane	0.0500	0.05030		mg/L		101	72 - 125
1,2-Dichloroethane	0.0500	0.04907		mg/L		98	68 - 127
1,1-Dichloroethene	0.0500	0.05066		mg/L		101	59 - 172
Tetrachloroethene	0.0500	0.05231		mg/L		105	71 - 125
Trichloroethene	0.0500	0.05287		mg/L		106	62 - 137
Vinyl chloride	0.0500	0.04594		mg/L		92	60 - 140

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*
Dibromofluoromethane (Surr)	*97*		*75 - 131*
1,2-Dichloroethane-d4 (Surr)	*91*		*63 - 144*
Toluene-d8 (Surr)	*97*		*80 - 117*

Lab Sample ID: LCSD 860-59284/4
Matrix: Water
Analysis Batch: 59284

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
cis-1,2-Dichloroethene	0.0500	0.04768		mg/L		95	75 - 125	4	25
1,1-Dichloroethane	0.0500	0.04862		mg/L		97	72 - 125	3	25
1,2-Dichloroethane	0.0500	0.04797		mg/L		96	68 - 127	2	25
1,1-Dichloroethene	0.0500	0.05135		mg/L		103	59 - 172	1	25
Tetrachloroethene	0.0500	0.05106		mg/L		102	71 - 125	2	25
Trichloroethene	0.0500	0.05121		mg/L		102	62 - 137	3	25
Vinyl chloride	0.0500	0.04411		mg/L		88	60 - 140	4	25

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*
Dibromofluoromethane (Surr)	*94*		*75 - 131*
1,2-Dichloroethane-d4 (Surr)	*88*		*63 - 144*
Toluene-d8 (Surr)	*98*		*80 - 117*

Lab Sample ID: 860-28656-A-17 MS
Matrix: Water
Analysis Batch: 59284

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
cis-1,2-Dichloroethene	0.000174	U	0.0500	0.04964		mg/L		99	75 - 125
1,1-Dichloroethane	0.000244	U	0.0500	0.04789		mg/L		96	72 - 125
1,2-Dichloroethane	0.000285	U	0.0500	0.04757		mg/L		95	68 - 127
1,1-Dichloroethene	0.000216	U	0.0500	0.05651		mg/L		113	59 - 172
Tetrachloroethene	0.000500	U	0.0500	0.05489		mg/L		110	71 - 125
Trichloroethene	0.000424	U	0.0500	0.05503		mg/L		110	62 - 137
Vinyl chloride	0.000234	U	0.0500	0.03893		mg/L		78	60 - 140

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

Lab Sample ID: 860-28656-A-17 MS
Matrix: Water
Analysis Batch: 59284

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	*98*		*74 - 124*
Dibromofluoromethane (Surr)	*98*		*75 - 131*
1,2-Dichloroethane-d4 (Surr)	*91*		*63 - 144*
Toluene-d8 (Surr)	*98*		*80 - 117*

GC/MS VOA

Analysis Batch: 59193

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-28800-1	TB-01-062822	Total/NA	Water	8260D	
860-28800-2	SB34-03-062822	Total/NA	Water	8260D	
860-28800-5	SB47-03-062822	Total/NA	Water	8260D	
860-28800-6	SB47-02-062822	Total/NA	Water	8260D	
860-28800-6 - DL	SB47-02-062822	Total/NA	Water	8260D	
860-28800-8	SB46-03-062822	Total/NA	Water	8260D	
860-28800-9	SB46-02-062822	Total/NA	Water	8260D	
860-28800-11	EB-01-062922	Total/NA	Water	8260D	
860-28800-12	SB48-03-062922	Total/NA	Water	8260D	
860-28800-13	SB48-02-062922	Total/NA	Water	8260D	
860-28800-13 - DL	SB48-02-062922	Total/NA	Water	8260D	
860-28800-14	SB48-01-062922	Total/NA	Water	8260D	
860-28800-14 - DL	SB48-01-062922	Total/NA	Water	8260D	
MB 860-59193/11	Method Blank	Total/NA	Water	8260D	
LCS 860-59193/5	Lab Control Sample	Total/NA	Water	8260D	
LCSD 860-59193/6	Lab Control Sample Dup	Total/NA	Water	8260D	
860-28656-A-8 MS	Matrix Spike	Total/NA	Water	8260D	

Analysis Batch: 59284

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-28800-3	SB34-02-062822	Total/NA	Water	8260D	
860-28800-4	SB34-01-062822	Total/NA	Water	8260D	
860-28800-7	FD-01-062822	Total/NA	Water	8260D	
860-28800-10	SB46-01-062822	Total/NA	Water	8260D	
MB 860-59284/9	Method Blank	Total/NA	Water	8260D	
LCS 860-59284/3	Lab Control Sample	Total/NA	Water	8260D	
LCSD 860-59284/4	Lab Control Sample Dup	Total/NA	Water	8260D	
860-28656-A-17 MS	Matrix Spike	Total/NA	Water	8260D	

Lab Chronicle

Client: Jacobs Engineering Group, Inc. Job ID: 860-28800-1
Project/Site: STC Silber Rd Pre-Design Investigation Part 2

Client Sample ID: TB-01-062822 — Lab Sample ID: 860-28800-1
Date Collected: 06/28/22 07:10 — **Matrix: Water**
Date Received: 06/29/22 15:17

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	59193	06/30/22 11:16	TTD	XEN STF

Client Sample ID: SB34-03-062822 — Lab Sample ID: 860-28800-2
Date Collected: 06/28/22 08:00 — **Matrix: Water**
Date Received: 06/29/22 15:17

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	59193	06/30/22 12:59	TTD	XEN STF

Client Sample ID: SB34-02-062822 — Lab Sample ID: 860-28800-3
Date Collected: 06/28/22 08:10 — **Matrix: Water**
Date Received: 06/29/22 15:17

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	59284	06/30/22 16:02	AN	XEN STF

Client Sample ID: SB34-01-062822 — Lab Sample ID: 860-28800-4
Date Collected: 06/28/22 08:30 — **Matrix: Water**
Date Received: 06/29/22 15:17

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	59284	06/30/22 16:21	AN	XEN STF

Client Sample ID: SB47-03-062822 — Lab Sample ID: 860-28800-5
Date Collected: 06/28/22 11:40 — **Matrix: Water**
Date Received: 06/29/22 15:17

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	59193	06/30/22 14:00	TTD	XEN STF

Client Sample ID: SB47-02-062822 — Lab Sample ID: 860-28800-6
Date Collected: 06/28/22 13:20 — **Matrix: Water**
Date Received: 06/29/22 15:17

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	59193	06/30/22 14:21	TTD	XEN STF
Total/NA	Analysis	8260D	DL	20	5 mL	5 mL	59193	06/30/22 15:01	TTD	XEN STF

Client Sample ID: FD-01-062822 — Lab Sample ID: 860-28800-7
Date Collected: 06/28/22 00:00 — **Matrix: Water**
Date Received: 06/29/22 15:17

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	59284	06/30/22 16:59	AN	XEN STF

Client Sample ID: SB46-03-062822 — Lab Sample ID: 860-28800-8

Date Collected: 06/28/22 16:30 — **Matrix: Water**
Date Received: 06/29/22 15:17

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	59193	06/30/22 13:19	TTD	XEN STF

Client Sample ID: SB46-02-062822 — Lab Sample ID: 860-28800-9

Date Collected: 06/28/22 16:40 — **Matrix: Water**
Date Received: 06/29/22 15:17

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	59193	06/30/22 13:40	TTD	XEN STF

Client Sample ID: SB46-01-062822 — Lab Sample ID: 860-28800-10

Date Collected: 06/28/22 16:50 — **Matrix: Water**
Date Received: 06/29/22 15:17

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	59284	06/30/22 16:40	AN	XEN STF

Client Sample ID: EB-01-062922 — Lab Sample ID: 860-28800-11

Date Collected: 06/29/22 07:15 — **Matrix: Water**
Date Received: 06/29/22 15:17

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	59193	06/30/22 11:37	TTD	XEN STF

Client Sample ID: SB48-03-062922 — Lab Sample ID: 860-28800-12

Date Collected: 06/29/22 10:50 — **Matrix: Water**
Date Received: 06/29/22 15:17

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	59193	06/30/22 17:07	TTD	XEN STF

Client Sample ID: SB48-02-062922 — Lab Sample ID: 860-28800-13

Date Collected: 06/29/22 11:00 — **Matrix: Water**
Date Received: 06/29/22 15:17

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	59193	06/30/22 15:24	TTD	XEN STF
Total/NA	Analysis	8260D	DL	5	5 mL	5 mL	59193	06/30/22 16:26	TTD	XEN STF

Client Sample ID: SB48-01-062922 — Lab Sample ID: 860-28800-14

Date Collected: 06/29/22 11:10 — **Matrix: Water**
Date Received: 06/29/22 15:17

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	59193	06/30/22 15:45	TTD	XEN STF
Total/NA	Analysis	8260D	DL	5	5 mL	5 mL	59193	06/30/22 16:05	TTD	XEN STF

Lab Chronicle

Client: Jacobs Engineering Group, Inc.
Job ID: 860-28800-1
Project/Site: STC Silber Rd Pre-Design Investigation Part 2

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Accreditation/Certification Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-28800-1
Project/Site: STC Silber Rd Pre-Design Investigation Part 2

Laboratory: Eurofins Houston

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

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	21-038-0	08-04-22
Florida	NELAP	E871002	06-30-22
Louisiana	NELAP	03054	06-30-22
Oklahoma	State	2021-168	08-31-22
Texas	NELAP	T104704215-22-46	06-30-22
Texas	TCEQ Water Supply	T104704215	06-30-22
USDA	US Federal Programs	P330-22-00025	03-02-23

Method Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-28800-1
Project/Site: STC Silber Rd Pre-Design Investigation Part 2

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	XEN STF
5030C	Purge and Trap	SW846	XEN STF

Protocol References:

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

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Sample Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-28800-1
Project/Site: STC Silber Rd Pre-Design Investigation Part 2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
860-28800-1	TB-01-062822	Water	06/28/22 07:10	06/29/22 15:17
860-28800-2	SB34-03-062822	Water	06/28/22 08:00	06/29/22 15:17
860-28800-3	SB34-02-062822	Water	06/28/22 08:10	06/29/22 15:17
860-28800-4	SB34-01-062822	Water	06/28/22 08:30	06/29/22 15:17
860-28800-5	SB47-03-062822	Water	06/28/22 11:40	06/29/22 15:17
860-28800-6	SB47-02-062822	Water	06/28/22 13:20	06/29/22 15:17
860-28800-7	FD-01-062822	Water	06/28/22 00:00	06/29/22 15:17
860-28800-8	SB46-03-062822	Water	06/28/22 16:30	06/29/22 15:17
860-28800-9	SB46-02-062822	Water	06/28/22 16:40	06/29/22 15:17
860-28800-10	SB46-01-062822	Water	06/28/22 16:50	06/29/22 15:17
860-28800-11	EB-01-062922	Water	06/29/22 07:15	06/29/22 15:17
860-28800-12	SB48-03-062922	Water	06/29/22 10:50	06/29/22 15:17
860-28800-13	SB48-02-062922	Water	06/29/22 11:00	06/29/22 15:17
860-28800-14	SB48-01-062922	Water	06/29/22 11:10	06/29/22 15:17

Appendix A

Laboratory Data Package Cover Page - Page 1 of 4

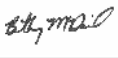
This data package is for Job No. 860-28800-1 and consists of:

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

- ☑ R1- Field chain-of-custody documentation;
- ☑ R2 - Sample identification cross-reference;
- ☑ R3 - Test reports (analytical data sheets) for each environmental sample that includes:
  a. Items consistent with NELAC Chapter 5,
  b. dilution factors,
  c. prepatation methods,
  d. cleanup methods, and
  e. if required for the project, tentatively identified coumpounds (TICs).
- ☑ R4 - Surrogate recovery data including:
  a. Calculated recovery (%R), and
  b. The laboratory's surrogate QC limits.
- ☑ R5 - Test reports/summary forms for blank samples;
- ☑ R6 - Test reports/summary forms for laboratory control samples (LCSs) including:
  a. LCS spiking amounts,
  b. Calculated %R for each analyte, and
  c. The laboratory's LCS QC limits.
- ☑ R7 - Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a. Samples associated with the MS/MSD clearly identified,
  b. MS/MSD spiking amounts,
  c. Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d. Calculated %Rs and relative percent differences (RPDs), and
  e. The laboratory's MS/MSD QC limits
- ☐ R8 - Laboratory analytical duplicate (if applicable) recovery and precision:
  a. The amount of analyte measured in the duplicate,
  b. The calculated RPD, and
  c. The laboratory's QC limits for analytical duplicates.
- ☑ R9 - List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
- ☑ R10 - Other problems or anomalies.
- ☐ Exception Report for every "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge 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.

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

Name (Printed)	Signature	Official Title (Printed)	Date
Bethany McDaniel		Senior Project Manager	06/30/2022

Laboratory Data Package Cover Page - Page 2 of 4

Laboratory Name: Eurofins Houston	LRC Date: 06/30/2022
Project Name: STC Silber Rd Pre-Design Investigation Part 2	Laboratory Job Number: 860-28800-1
Reviewer Name: Bethany McDaniel	

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
		Were all departures from standard conditions described in an exception report?	✓				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	✓				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	✓				
		Were calculations checked by a peer or supervisor?	✓				
		Were all analyte identifications checked by a peer or supervisor?	✓				
		Were sample detection limits reported for all analytes not detected?	✓				
		Were all results for soil and sediment samples reported on a dry weight basis?			✓		
		Were % moisture (or solids) reported for all soil and sediment samples?			✓		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			✓		
		If required for the project, are TICs reported?			✓		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	✓				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	✓				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	✓				
		Were blanks analyzed at the appropriate frequency?	✓				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
		Were blank concentrations < MQL?	✓				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	✓				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
		Were LCSs analyzed at the required frequency?	✓				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	✓				
		Was the LCSD RPD within QC limits?	✓				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	✓				
		Were MS/MSD analyzed at the appropriate frequency?	✓				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	✓				
		Were MS/MSD RPDs within laboratory QC limits?			✓		
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			✓		
		Were analytical duplicates analyzed at the appropriate frequency?			✓		
		Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	✓				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	✓				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?		✓			1
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	✓				

Laboratory Data Package Cover Page - Page 3 of 4

Laboratory Name: Eurofins Houston	LRC Date: 06/30/2022
Project Name: STC Silber Rd Pre-Design Investigation Part 2	Laboratory Job Number: 860-28800-1
Reviewer Name: Bethany McDaniel	

#[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?	✓				
		Were percent RSDs or correlation coefficient criteria met?	✓				
		Was the number of standards recommended in the method used for all analytes?	✓				
		Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
		Are ICAL data available for all instruments used?	✓				
		Has the initial calibration curve been verified using an appropriate second source standard?	✓				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?	✓				
		Were percent differences for each analyte within the method-required QC limits?	✓				
		Was the ICAL curve verified for each analyte?	✓				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			✓		
S3	O	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?	✓				
		Were ion abundance data within the method-required QC limits?	✓				
S4	O	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?	✓				
S5	OI	**Raw data (NELAC Section 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
		Were data associated with manual integrations flagged on the raw data?	✓				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			✓		
S7	O	**Tentatively identified compounds (TICs)**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
S8	I	**Interference Check Sample (ICS) results**					
		Were percent recoveries within method QC limits?			✓		
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?			✓		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	✓				
		Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
S11	OI	**Proficiency test reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	✓				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	✓				
		Is documentation of the analyst's competency up-to-date and on file?	✓				
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?	✓				
S16	OI	**Laboratory standard operating procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	✓				

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).

Laboratory Data Package Cover Page - Page 4 of 4

Laboratory Name: Eurofins Houston	LRC Date: 06/30/2022
Project Name: STC Silber Rd Pre-Design Investigation Part 2	Laboratory Job Number: 860-28800-1
Reviewer Name: Bethany McDaniel	

ER#[1]	Description
1	Method 8260D: The following sample was diluted to bring the concentration of target analytes within the calibration range: SB47-02-062822 (860-28800-6). Elevated reporting limits (RLs) are provided.

1. ER# = Exception Report identification number (an Exception Report should be completed for an item if “NR” or “No” is checked).

Detection Check Summary

Client: Jacobs Engineering Group, Inc. Job ID: 860-28800-1
Project/Site: STC Silber Rd Pre-Design Investigation Part 2

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**
Prep Method: 5030C-Purge and Trap
Instrument: A294 **Detector: MSD/0** **Column: DB-624**

Analyte	Spike Added	Result	Qualifier	Unit	RL	MDL	Analysis Date	Analysis Batch
Trichloroethene	0.00500	0.00510		mg/L	0.00500	0.000424	02/23/2022	860-42516
Vinyl chloride	0.00500	0.00494		mg/L	0.00200	0.000234	02/23/2022	860-42516
cis-1,2-Dichloroethene	0.00500	0.00494		mg/L	0.00100	0.000174	02/23/2022	860-42516
1,1-Dichloroethane	0.00500	0.00501		mg/L	0.00100	0.000244	02/23/2022	860-42516
1,2-Dichloroethane	0.00500	0.00495		mg/L	0.00100	0.000285	02/23/2022	860-42516
1,1-Dichloroethene	0.00500	0.00478		mg/L	0.00100	0.000216	02/23/2022	860-42516
Tetrachloroethene	0.00500	0.00496		mg/L	0.00100	0.000500	02/23/2022	860-42516

Matrix: Water **Prep Type: Total/NA**
Prep Method: 5030C-Purge and Trap
Instrument: A325 **Detector: MSD/0** **Column: DB-624**

Analyte	Spike Added	Result	Qualifier	Unit	RL	MDL	Analysis Date	Analysis Batch
Trichloroethene	0.00100	0.00503		mg/L	0.00500	0.000424	03/03/2022	860-43530
Vinyl chloride	0.00100	0.00381		mg/L	0.00200	0.000234	03/03/2022	860-43530
cis-1,2-Dichloroethene	0.00100	0.00499		mg/L	0.00100	0.000174	03/03/2022	860-43530
1,1-Dichloroethane	0.00100	0.00483		mg/L	0.00100	0.000244	03/03/2022	860-43530
1,2-Dichloroethane	0.00100	0.00498		mg/L	0.00100	0.000285	03/03/2022	860-43530
1,1-Dichloroethene	0.00100	0.00411		mg/L	0.00100	0.000216	03/03/2022	860-43530
Tetrachloroethene	0.00100	0.00463		mg/L	0.00100	0.000500	03/03/2022	860-43530

Eurofins Houston
4145 Greenbriar Dr
Stafford, TX 77477
Phone (281) 240-4200

Temp: 34 IR ID HOU-323
C/F -0.0
Corrected Temp: 3.4

Chain of Custody Record

860-28800 Chain of Custody

urofins | Environment Testing America

6/30/2022

Client Information	Sampler	Lab PM: McDaniel, Bethany A	No: 11069-3875.1
Client Contact: John Ynfante	Phone:	E-Mail: Bethany.McDaniel@et.eurofinsus.com	Page 1 of 2
Company: Jacobs Engineering Group, Inc.	PWSID:		Job #:
Address: 14701 St. Mary's Lane Suite 300	Due Date Requested:		
City: Houston	TAT Requested (days): 1 day RUSH		
State, Zip: TX, 77079	Compliance Project: Δ Yes Δ No		
Phone:	PO #: D3542628.C.CS.TPE.SIL.22-01-02		
Email: John.Ynfante@jacobs.com	WO #: D3542628.C.CS.TPE.SIL.22-01-02		
Project Name: STC Silber Rd Pre-Design Inv Part 2	Project #: 86002024		
Site:	SSOW#:		

Analysis Requested

Preservation Codes:

A	HCL	M	Hexane
B	NaOH	N	None
C	Zn Acetate	O	AsNaO2
D	Nitric Acid	P	Na2O4S
E	NaHSO4	Q	Na2SO3
F	MeOH	R	Na2S2O3
G	Amchlor	S	H2SO4
H	Ascorbic Acid	T	TSP Dodecahydrate
I	Ice	U	Acetone
J	DI Water	V	MCAA
K	EDTA	W	pH 4-5
L	EDA	Y	Trizma
		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)	8260C (MOD) VOCs - Custom List (7)	Total Number of containers	Special Instructions/Note:
			Preservation Code:		X	X	A	X	
TB-01-062822	6/28/22	0710	—	Water			X	2	
SB334-03-062822	6/28/22	0800	G	Water			X	3	
SB334-02-062822	6/28/22	0810	G	Water			X	3	
SB334-01-062822	6/28/22	0830	G	Water			X	3	
SB347-03-062822	6/28/22	1140	G	Water			X	3	
SB347-02-062822	6/28/22	1320	G	Water			X	3	
~~SB347-01-062822~~	6/28/22		G	Water			X	3	DR 6-28-22
FD-01-062822	6/28/22	NG	G	Water			X	3	
SB346-03-062822	6/28/22	1630	G	Water			X	3	
SB346-02-062822	6/28/22	1640	G	Water			X	3	
SB346-01-062822	6/28/22	1650	G	Water			X	2	ONLY 2X VOA

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) TRRP

Special Instructions/QC Requirements:

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

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	6/28/22 1517		[signature]	6/29/22 1517	Eurofins
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

Ver 01/16/2019

Eurofins Houston
4145 Greenbriar Dr
Stafford, TX 77477
Phone (281) 240-4200

Chain of Custody Record

eurofins | Environment Testing America

6/30/2022

Client Information	Sampler	Lab PM: McDaniel, Bethany A	Carrier Tracking No(s):	COC No: 860-11069-3875.1
Client Contact: John Ynfante	Phone:	E-Mail: Bethany.McDaniel@et.eurofinsus.com	State of Origin:	Page: Page 2 of 2

Company: Jacobs Engineering Group, Inc.	PWSID:	Analysis Requested	Job #:
Address: 14701 St. Mary's Lane Suite 300	Due Date Requested:		Preservation Codes:
City: Houston	TAT Requested (days): 1 day RUSH		A HCL, B NaOH, C Zn Acetate, D Nitric Acid, E NaHSO4, F MeOH, G Amchlor, H Ascorbic Acid, I Ice, J DI Water, K EDTA, L EDA, M Hexane, N None, O AsNaO2, P Na2O4S, Q Na2SO3, R Na2S2O3, S H2SO4, T TSP Dodecahydrate, U Acetone, V MCAA, W pH 4-5, Y Trizma, Z other (specify)
State, Zip: TX, 77079	Compliance Project: Δ Yes Δ No		
Phone:	PO #: D3542628.C.CS.TPE.SIL.22-01-02		Other:
Email: John.Ynfante@jacobs.com	WO #: D3542628.C.CS.TPE.SIL.22-01-02		
Project Name: STC Silber Rd Pre-Design Inv Part 2	Project #: 86002024		
Site:	SSOW#:		

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)	8260C - (MOD) VOCs Custom List (7)	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A		
EB-01-062922	6/29/22	0715	G	Water			X	3	
SB348-03-062922	6/29/22	1050	G	Water			X	3	
SB348-02-062922	6/29/22	1100	G	Water			X	3	
SB348-01-062922	6/29/22	1110	G	Water			X	3	
				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) TRRP

Special Instructions/QC Requirements:

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

Relinquished by:	Date/Time: 6/29/22 1517	Company	Received by:	Date/Time: 6/29/22 1517	Company: Eurofins
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

Ver 01/16/2019

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc.

Job Number: 860-28800-1

Login Number: 28800
List Number: 1
Creator: Torres, Sandra

List Source: Eurofins Houston

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.4
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	

IDW Lab Reports

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ANALYTICAL REPORT

Eurofins Houston
4145 Greenbriar Dr
Stafford, TX 77477
Tel: (281)240-4200

Laboratory Job ID: 860-26460-1
Client Project/Site: STC Silber Rd IDW
Revision: 1

For:
Jacobs Engineering Group, Inc.
12750 Merit Drive
Suite 1100
Dallas, Texas 75251

Attn: John Knott

Bethany McDaniel

Authorized for release by:
6/24/2022 3:53:43 PM

Bethany McDaniel, Senior Project Manager
(713)358-2005
Bethany.McDaniel@et.eurofinsus.com

Table of Contents

Definitions/Glossary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd IDW

Job ID: 860-26460-1

Qualifiers

GC/MS VOA

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

GC/MS Semi VOA

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

GC Semi VOA

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

Metals

Qualifier	Qualifier Description
b	The compound was found in the blank and sample
J	Result is less than the MQL but greater than or equal to the SDL and the concentration is an estimated value.
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
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 860-26460-1

Laboratory: Eurofins Houston

Narrative

Job Narrative
860-26460-1

Receipt
The samples were received on 5/19/2022 12:37 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 4.3°C

This report was revised to add Pyridine per client request to the 8270 select list

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

GC/MS Semi VOA
Method 8270D: The surrogate recovery for the blank associated with preparation batch 860-53687 and 860-53840 and analytical batch 860-53944 was outside the control limits. The surrogate recovery for the sample passed. No target compounds were detected, data can be reported.

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

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

Metals
Method 6010C: The leachate blank for preparation batch 860-53687 and 860-53954 and analytical batch 860-54342 contained barium and antimony above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

Method 6010C: The method blank for preparation batch 860-53954 and analytical batch 860-54342 contained chromium and selenium above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

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

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

Detection Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd IDW

Job ID: 860-26460-1

Client Sample ID: IDW-WS01-051922 — Lab Sample ID: 860-26460-1

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Toluene	1.19		0.0500	0.0250	mg/L	50		8260C	TCLP
Xylenes, Total	0.0221	J	0.500	0.0165	mg/L	50		8260C	TCLP
m-Xylene & p-Xylene	0.0221	J	0.500	0.0165	mg/L	50		8260C	TCLP
Barium	1.71	b	0.0500	0.00674	mg/L	1		6010C	TCLP
Manganese	0.634		0.100	0.0158	mg/L	1		6010C	TCLP

Client Sample ID: IDW-WS02-051922 — Lab Sample ID: 860-26460-2

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.0281	J	0.0500	0.0275	mg/L	1		6010C	TCLP
Barium	1.20	b	0.0500	0.00674	mg/L	1		6010C	TCLP
Manganese	0.369		0.100	0.0158	mg/L	1		6010C	TCLP

Client Sample ID: IDW-WS03-051922 — Lab Sample ID: 860-26460-3

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.0326	J	0.0500	0.0275	mg/L	1		6010C	TCLP
Barium	1.17	b	0.0500	0.00674	mg/L	1		6010C	TCLP
Manganese	1.64		0.100	0.0158	mg/L	1		6010C	TCLP

This Detection Summary does not include radiochemical test results.

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd IDW

Job ID: 860-26460-1

Client Sample ID: IDW-WS01-051922
Date Collected: 05/19/22 11:30
Date Received: 05/19/22 12:37

Lab Sample ID: 860-26460-1
Matrix: Solid

Method: 8260C - Volatile Organic Compounds by GC/MS - TCLP

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.0252	U	0.250	0.0252	mg/L			05/23/22 22:12	50
1,1,2,2-Tetrachloroethane	0.0142	U	0.0500	0.0142	mg/L			05/23/22 22:12	50
1,1,2-Trichloro-1,2,2-trifluoroethane	0.0182	U	0.500	0.0182	mg/L			05/23/22 22:12	50
1,1,2-Trichloroethane	0.0114	U	0.0500	0.0114	mg/L			05/23/22 22:12	50
1,1-Dichloroethane	0.0122	U	0.0500	0.0122	mg/L			05/23/22 22:12	50
1,1-Dichloroethene	0.0108	U	0.0500	0.0108	mg/L			05/23/22 22:12	50
1,2,4-Trichlorobenzene	0.100	U	0.250	0.100	mg/L			05/23/22 22:12	50
1,2-Dibromo-3-Chloropropane	0.0160	U	0.250	0.0160	mg/L			05/23/22 22:12	50
1,2-Dibromoethane	0.0168	U	0.250	0.0168	mg/L			05/23/22 22:12	50
1,2-Dichlorobenzene	0.0118	U	0.0500	0.0118	mg/L			05/23/22 22:12	50
1,2-Dichloroethane	0.0143	U	0.0500	0.0143	mg/L			05/23/22 22:12	50
1,2-Dichloropropane	0.0198	U	0.250	0.0198	mg/L			05/23/22 22:12	50
1,3-Dichlorobenzene	0.00983	U	0.0500	0.00983	mg/L			05/23/22 22:12	50
1,4-Dichlorobenzene	0.00994	U	0.0500	0.00994	mg/L			05/23/22 22:12	50
2-Butanone (MEK)	0.135	U	2.50	0.135	mg/L			05/23/22 22:12	50
2-Hexanone	0.0395	U	2.50	0.0395	mg/L			05/23/22 22:12	50
4-Methyl-2-pentanone (MIBK)	0.0532	U	2.50	0.0532	mg/L			05/23/22 22:12	50
Acetone	0.616	U	5.00	0.616	mg/L			05/23/22 22:12	50
Benzene	0.0107	U	0.0500	0.0107	mg/L			05/23/22 22:12	50
Chlorobromomethane	0.0105	U	0.0500	0.0105	mg/L			05/23/22 22:12	50
Bromodichloromethane	0.0115	U	0.0500	0.0115	mg/L			05/23/22 22:12	50
Bromoform	0.0315	U	0.250	0.0315	mg/L			05/23/22 22:12	50
Bromomethane	0.0527	U	0.250	0.0527	mg/L			05/23/22 22:12	50
Carbon disulfide	0.0187	U	0.250	0.0187	mg/L			05/23/22 22:12	50
Carbon tetrachloride	0.0211	U	0.250	0.0211	mg/L			05/23/22 22:12	50
Chlorobenzene	0.00795	U	0.0500	0.00795	mg/L			05/23/22 22:12	50
Chloroethane	0.0216	U	0.500	0.0216	mg/L			05/23/22 22:12	50
Chloroform	0.0129	U	0.0500	0.0129	mg/L			05/23/22 22:12	50
Chloromethane	0.0159	U	0.500	0.0159	mg/L			05/23/22 22:12	50
Cyclohexane	0.0237	U	0.250	0.0237	mg/L			05/23/22 22:12	50
Dibromochloromethane	0.0370	U	0.250	0.0370	mg/L			05/23/22 22:12	50
Dichlorodifluoromethane	0.0158	U	0.0500	0.0158	mg/L			05/23/22 22:12	50
Ethylbenzene	0.0257	U	0.0500	0.0257	mg/L			05/23/22 22:12	50
Methyl tert-butyl ether	0.0285	U	0.250	0.0285	mg/L			05/23/22 22:12	50
Methylene Chloride	0.0956	U	0.250	0.0956	mg/L			05/23/22 22:12	50
Styrene	0.0312	U	0.0500	0.0312	mg/L			05/23/22 22:12	50
Tetrachloroethene	0.0250	U	0.0500	0.0250	mg/L			05/23/22 22:12	50
Toluene	**1.19**		0.0500	0.0250	mg/L			05/23/22 22:12	50
Trichloroethene	0.0212	U	0.250	0.0212	mg/L			05/23/22 22:12	50
Vinyl acetate	0.178	U	1.00	0.178	mg/L			05/23/22 22:12	50
Vinyl chloride	0.0117	U	0.100	0.0117	mg/L			05/23/22 22:12	50
Xylenes, Total	**0.0221**	**J**	0.500	0.0165	mg/L			05/23/22 22:12	50
cis-1,2-Dichloroethene	0.00870	U	0.0500	0.00870	mg/L			05/23/22 22:12	50
cis-1,3-Dichloropropene	0.0345	U	0.250	0.0345	mg/L			05/23/22 22:12	50
Isopropylbenzene	0.00803	U	0.0500	0.00803	mg/L			05/23/22 22:12	50
m-Xylene & p-Xylene	**0.0221**	**J**	0.500	0.0165	mg/L			05/23/22 22:12	50
o-Xylene	0.00958	U	0.0500	0.00958	mg/L			05/23/22 22:12	50
trans-1,2-Dichloroethene	0.0128	U	0.0500	0.0128	mg/L			05/23/22 22:12	50
trans-1,3-Dichloropropene	0.0376	U	0.250	0.0376	mg/L			05/23/22 22:12	50

Client Sample ID: IDW-WS01-051922
Date Collected: 05/19/22 11:30
Date Received: 05/19/22 12:37

Lab Sample ID: 860-26460-1
Matrix: Solid

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*63 - 144*		*05/23/22 22:12*	*50*
4-Bromofluorobenzene (Surr)	*98*		*74 - 124*		*05/23/22 22:12*	*50*
Dibromofluoromethane (Surr)	*100*		*75 - 131*		*05/23/22 22:12*	*50*
Toluene-d8 (Surr)	*99*		*80 - 117*		*05/23/22 22:12*	*50*

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

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1'-Biphenyl	0.0185	U	0.125	0.0185	mg/L		05/20/22 16:20	05/23/22 16:37	5
2,4,5-Trichlorophenol	0.0234	U	0.125	0.0234	mg/L		05/20/22 16:20	05/23/22 16:37	5
2,4,6-Trichlorophenol	0.0237	U	0.125	0.0237	mg/L		05/20/22 16:20	05/23/22 16:37	5
2,4-Dichlorophenol	0.0261	U	0.125	0.0261	mg/L		05/20/22 16:20	05/23/22 16:37	5
2,4-Dimethylphenol	0.0223	U	0.125	0.0223	mg/L		05/20/22 16:20	05/23/22 16:37	5
2,4-Dinitrophenol	0.0154	U	0.250	0.0154	mg/L		05/20/22 16:20	05/23/22 16:37	5
2,4-Dinitrotoluene	0.0238	U	0.125	0.0238	mg/L		05/20/22 16:20	05/23/22 16:37	5
2,6-Dinitrotoluene	0.0277	U	0.250	0.0277	mg/L		05/20/22 16:20	05/23/22 16:37	5
2-Chloronaphthalene	0.0202	U	0.125	0.0202	mg/L		05/20/22 16:20	05/23/22 16:37	5
2-Chlorophenol	0.0210	U	0.125	0.0210	mg/L		05/20/22 16:20	05/23/22 16:37	5
2-Methylnaphthalene	0.0195	U	0.125	0.0195	mg/L		05/20/22 16:20	05/23/22 16:37	5
2-Nitroaniline	0.0268	U	0.250	0.0268	mg/L		05/20/22 16:20	05/23/22 16:37	5
2-Nitrophenol	0.0242	U	0.125	0.0242	mg/L		05/20/22 16:20	05/23/22 16:37	5
2-Methylphenol	0.0229	U	0.125	0.0229	mg/L		05/20/22 16:20	05/23/22 16:37	5
3 & 4 Methylphenol	0.0261	U	0.250	0.0261	mg/L		05/20/22 16:20	05/23/22 16:37	5
3,3'-Dichlorobenzidine	0.0155	U	0.250	0.0155	mg/L		05/20/22 16:20	05/23/22 16:37	5
3-Nitroaniline	0.0197	U	0.250	0.0197	mg/L		05/20/22 16:20	05/23/22 16:37	5
4,6-Dinitro-2-methylphenol	0.0218	U	0.250	0.0218	mg/L		05/20/22 16:20	05/23/22 16:37	5
4-Bromophenyl phenyl ether	0.0237	U	0.125	0.0237	mg/L		05/20/22 16:20	05/23/22 16:37	5
4-Chloroaniline	0.0152	U	0.250	0.0152	mg/L		05/20/22 16:20	05/23/22 16:37	5
4-Chlorophenyl phenyl ether	0.0217	U	0.125	0.0217	mg/L		05/20/22 16:20	05/23/22 16:37	5
4-Nitroaniline	0.0291	U	0.250	0.0291	mg/L		05/20/22 16:20	05/23/22 16:37	5
4-Nitrophenol	0.0403	U	0.250	0.0403	mg/L		05/20/22 16:20	05/23/22 16:37	5
4-Chloro-3-methylphenol	0.0326	U	0.250	0.0326	mg/L		05/20/22 16:20	05/23/22 16:37	5
Acenaphthene	0.0219	U	0.125	0.0219	mg/L		05/20/22 16:20	05/23/22 16:37	5
Acenaphthylene	0.0222	U	0.125	0.0222	mg/L		05/20/22 16:20	05/23/22 16:37	5
Acetophenone	0.0233	U	0.125	0.0233	mg/L		05/20/22 16:20	05/23/22 16:37	5
Anthracene	0.0221	U	0.125	0.0221	mg/L		05/20/22 16:20	05/23/22 16:37	5
Benzo[a]anthracene	0.0250	U	0.125	0.0250	mg/L		05/20/22 16:20	05/23/22 16:37	5
Benzo[a]pyrene	0.0250	U	0.125	0.0250	mg/L		05/20/22 16:20	05/23/22 16:37	5
Benzo[b]fluoranthene	0.0448	U	0.125	0.0448	mg/L		05/20/22 16:20	05/23/22 16:37	5
Benzo[g,h,i]perylene	0.0314	U	0.125	0.0314	mg/L		05/20/22 16:20	05/23/22 16:37	5
Benzo[k]fluoranthene	0.0340	U	0.125	0.0340	mg/L		05/20/22 16:20	05/23/22 16:37	5
Butyl benzyl phthalate	0.0297	U	0.125	0.0297	mg/L		05/20/22 16:20	05/23/22 16:37	5
Carbazole	0.0214	U	0.125	0.0214	mg/L		05/20/22 16:20	05/23/22 16:37	5
Chrysene	0.0250	U	0.125	0.0250	mg/L		05/20/22 16:20	05/23/22 16:37	5
Dibenz(a,h)anthracene	0.0315	U	0.125	0.0315	mg/L		05/20/22 16:20	05/23/22 16:37	5
Dibenzofuran	0.0238	U	0.125	0.0238	mg/L		05/20/22 16:20	05/23/22 16:37	5
Diethyl phthalate	0.0308	U	0.125	0.0308	mg/L		05/20/22 16:20	05/23/22 16:37	5
Dimethyl phthalate	0.0293	U	0.125	0.0293	mg/L		05/20/22 16:20	05/23/22 16:37	5
Fluoranthene	0.0237	U	0.125	0.0237	mg/L		05/20/22 16:20	05/23/22 16:37	5
Fluorene	0.0235	U	0.125	0.0235	mg/L		05/20/22 16:20	05/23/22 16:37	5
Hexachlorobenzene	0.0269	U	0.125	0.0269	mg/L		05/20/22 16:20	05/23/22 16:37	5

Client Sample ID: IDW-WS01-051922
Date Collected: 05/19/22 11:30
Date Received: 05/19/22 12:37

Lab Sample ID: 860-26460-1
Matrix: Solid

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

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexachlorobutadiene	0.0177	U	0.125	0.0177	mg/L		05/20/22 16:20	05/23/22 16:37	5
Hexachlorocyclopentadiene	0.0153	U	0.125	0.0153	mg/L		05/20/22 16:20	05/23/22 16:37	5
Hexachloroethane	0.0197	U	0.125	0.0197	mg/L		05/20/22 16:20	05/23/22 16:37	5
Indeno[1,2,3-cd]pyrene	0.0274	U	0.125	0.0274	mg/L		05/20/22 16:20	05/23/22 16:37	5
Isophorone	0.0251	U	0.125	0.0251	mg/L		05/20/22 16:20	05/23/22 16:37	5
N-Nitrosodi-n-propylamine	0.0331	U	0.125	0.0331	mg/L		05/20/22 16:20	05/23/22 16:37	5
N-Nitrosodiphenylamine	0.0290	U	0.125	0.0290	mg/L		05/20/22 16:20	05/23/22 16:37	5
Naphthalene	0.0188	U	0.125	0.0188	mg/L		05/20/22 16:20	05/23/22 16:37	5
Nitrobenzene	0.0240	U	0.125	0.0240	mg/L		05/20/22 16:20	05/23/22 16:37	5
Pentachlorophenol	0.0279	U	0.250	0.0279	mg/L		05/20/22 16:20	05/23/22 16:37	5
Phenanthrene	0.0244	U	0.125	0.0244	mg/L		05/20/22 16:20	05/23/22 16:37	5
Phenol	0.0290	U	0.250	0.0290	mg/L		05/20/22 16:20	05/23/22 16:37	5
Pyrene	0.0213	U	0.125	0.0213	mg/L		05/20/22 16:20	05/23/22 16:37	5
Bis(2-chloroethoxy)methane	0.0310	U	0.125	0.0310	mg/L		05/20/22 16:20	05/23/22 16:37	5
Bis(2-chloroethyl)ether	0.0270	U	0.125	0.0270	mg/L		05/20/22 16:20	05/23/22 16:37	5
bis (2-Chloroisopropyl) ether	0.0363	U	0.125	0.0363	mg/L		05/20/22 16:20	05/23/22 16:37	5
Bis(2-ethylhexyl) phthalate	0.0470	U	0.125	0.0470	mg/L		05/20/22 16:20	05/23/22 16:37	5
Di-n-butyl phthalate	0.0283	U	0.125	0.0283	mg/L		05/20/22 16:20	05/23/22 16:37	5
Di-n-octyl phthalate	0.0370	U	0.125	0.0370	mg/L		05/20/22 16:20	05/23/22 16:37	5
Pyridine	0.0122	U *	0.250	0.0122	mg/L		05/20/22 16:20	05/23/22 16:37	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*96*		*31 - 132*	*05/20/22 16:20*	*05/23/22 16:37*	*5*
2-Fluorobiphenyl	*60*		*29 - 112*	*05/20/22 16:20*	*05/23/22 16:37*	*5*
2-Fluorophenol	*47*		*21 - 114*	*05/20/22 16:20*	*05/23/22 16:37*	*5*
Nitrobenzene-d5	*54*		*26 - 110*	*05/20/22 16:20*	*05/23/22 16:37*	*5*
p-Terphenyl-d14 (Surr)	*73*		*20 - 141*	*05/20/22 16:20*	*05/23/22 16:37*	*5*
Phenol-d5 (Surr)	*36*		*16 - 117*	*05/20/22 16:20*	*05/23/22 16:37*	*5*

Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
C6-C12	21.0	U	49.8	21.0	mg/Kg		05/20/22 12:48	05/20/22 21:19	1
>C12-C28	21.0	U	49.8	21.0	mg/Kg		05/20/22 12:48	05/20/22 21:19	1
>C28-C35	21.0	U	49.8	21.0	mg/Kg		05/20/22 12:48	05/20/22 21:19	1
Total Petroleum Hydrocarbons (C6-C35)	21.0	U	49.8	21.0	mg/Kg			05/23/22 17:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane (Surr)	*85*		*70 - 130*	*05/20/22 12:48*	*05/20/22 21:19*	*1*
o-Terphenyl (Surr)	*92*		*70 - 130*	*05/20/22 12:48*	*05/20/22 21:19*	*1*

Method: 6010C - Metals (ICP) - TCLP

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0275	U	0.0500	0.0275	mg/L		05/23/22 08:45	05/24/22 21:51	1
Barium	**1.71**	**b**	0.0500	0.00674	mg/L		05/23/22 08:45	05/24/22 21:51	1
Cadmium	0.0122	U	0.0250	0.0122	mg/L		05/23/22 08:45	05/24/22 21:51	1
Chromium	0.00405	U	0.0500	0.00405	mg/L		05/23/22 08:45	05/24/22 21:51	1
Lead	0.0118	U	0.0500	0.0118	mg/L		05/23/22 08:45	05/24/22 21:51	1
Manganese	**0.634**		0.100	0.0158	mg/L		05/23/22 08:45	05/24/22 21:51	1
Nickel	0.0154	U	0.0500	0.0154	mg/L		05/23/22 08:45	05/24/22 21:51	1
Selenium	0.0219	U	0.150	0.0219	mg/L		05/23/22 08:45	05/24/22 21:51	1

Client Sample ID: IDW-WS01-051922

Lab Sample ID: 860-26460-1

Date Collected: 05/19/22 11:30

Matrix: Solid

Date Received: 05/19/22 12:37

Method: 6010C - Metals (ICP) - TCLP (Continued)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	0.0279	U	0.100	0.0279	mg/L		05/23/22 08:45	05/24/22 21:51	1
Antimony	0.0294	U	0.100	0.0294	mg/L		05/23/22 08:45	05/24/22 21:51	1
Beryllium	0.00245	U	0.0200	0.00245	mg/L		05/23/22 08:45	05/24/22 21:51	1

Method: 7470A - Mercury (CVAA) - TCLP

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0000263	U	0.000200	0.0000263	mg/L		05/23/22 07:20	05/23/22 12:38	1

General Chemistry

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**10.1**				%			05/24/22 09:58	1

Client Sample ID: IDW-WS02-051922

Lab Sample ID: 860-26460-2

Date Collected: 05/19/22 11:50

Matrix: Solid

Date Received: 05/19/22 12:37

Method: 8260C - Volatile Organic Compounds by GC/MS - TCLP

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.0252	U	0.250	0.0252	mg/L			05/23/22 22:32	50
1,1,2,2-Tetrachloroethane	0.0142	U	0.0500	0.0142	mg/L			05/23/22 22:32	50
1,1,2-Trichloro-1,2,2-trifluoroethane	0.0182	U	0.500	0.0182	mg/L			05/23/22 22:32	50
1,1,2-Trichloroethane	0.0114	U	0.0500	0.0114	mg/L			05/23/22 22:32	50
1,1-Dichloroethane	0.0122	U	0.0500	0.0122	mg/L			05/23/22 22:32	50
1,1-Dichloroethene	0.0108	U	0.0500	0.0108	mg/L			05/23/22 22:32	50
1,2,4-Trichlorobenzene	0.100	U	0.250	0.100	mg/L			05/23/22 22:32	50
1,2-Dibromo-3-Chloropropane	0.0160	U	0.250	0.0160	mg/L			05/23/22 22:32	50
1,2-Dibromoethane	0.0168	U	0.250	0.0168	mg/L			05/23/22 22:32	50
1,2-Dichlorobenzene	0.0118	U	0.0500	0.0118	mg/L			05/23/22 22:32	50
1,2-Dichloroethane	0.0143	U	0.0500	0.0143	mg/L			05/23/22 22:32	50
1,2-Dichloropropane	0.0198	U	0.250	0.0198	mg/L			05/23/22 22:32	50
1,3-Dichlorobenzene	0.00983	U	0.0500	0.00983	mg/L			05/23/22 22:32	50
1,4-Dichlorobenzene	0.00994	U	0.0500	0.00994	mg/L			05/23/22 22:32	50
2-Butanone (MEK)	0.135	U	2.50	0.135	mg/L			05/23/22 22:32	50
2-Hexanone	0.0395	U	2.50	0.0395	mg/L			05/23/22 22:32	50
4-Methyl-2-pentanone (MIBK)	0.0532	U	2.50	0.0532	mg/L			05/23/22 22:32	50
Acetone	0.616	U	5.00	0.616	mg/L			05/23/22 22:32	50
Benzene	0.0107	U	0.0500	0.0107	mg/L			05/23/22 22:32	50
Chlorobromomethane	0.0105	U	0.0500	0.0105	mg/L			05/23/22 22:32	50
Bromodichloromethane	0.0115	U	0.0500	0.0115	mg/L			05/23/22 22:32	50
Bromoform	0.0315	U	0.250	0.0315	mg/L			05/23/22 22:32	50
Bromomethane	0.0527	U	0.250	0.0527	mg/L			05/23/22 22:32	50
Carbon disulfide	0.0187	U	0.250	0.0187	mg/L			05/23/22 22:32	50
Carbon tetrachloride	0.0211	U	0.250	0.0211	mg/L			05/23/22 22:32	50
Chlorobenzene	0.00795	U	0.0500	0.00795	mg/L			05/23/22 22:32	50
Chloroethane	0.0216	U	0.500	0.0216	mg/L			05/23/22 22:32	50
Chloroform	0.0129	U	0.0500	0.0129	mg/L			05/23/22 22:32	50
Chloromethane	0.0159	U	0.500	0.0159	mg/L			05/23/22 22:32	50
Cyclohexane	0.0237	U	0.250	0.0237	mg/L			05/23/22 22:32	50
Dibromochloromethane	0.0370	U	0.250	0.0370	mg/L			05/23/22 22:32	50
Dichlorodifluoromethane	0.0158	U	0.0500	0.0158	mg/L			05/23/22 22:32	50

Client Sample ID: IDW-WS02-051922
Date Collected: 05/19/22 11:50
Date Received: 05/19/22 12:37

Lab Sample ID: 860-26460-2
Matrix: Solid

Method: 8260C - Volatile Organic Compounds by GC/MS - TCLP (Continued)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	0.0257	U	0.0500	0.0257	mg/L			05/23/22 22:32	50
Methyl tert-butyl ether	0.0285	U	0.250	0.0285	mg/L			05/23/22 22:32	50
Methylene Chloride	0.0956	U	0.250	0.0956	mg/L			05/23/22 22:32	50
Styrene	0.0312	U	0.0500	0.0312	mg/L			05/23/22 22:32	50
Tetrachloroethene	0.0250	U	0.0500	0.0250	mg/L			05/23/22 22:32	50
Toluene	0.0250	U	0.0500	0.0250	mg/L			05/23/22 22:32	50
Trichloroethene	0.0212	U	0.250	0.0212	mg/L			05/23/22 22:32	50
Vinyl acetate	0.178	U	1.00	0.178	mg/L			05/23/22 22:32	50
Vinyl chloride	0.0117	U	0.100	0.0117	mg/L			05/23/22 22:32	50
Xylenes, Total	0.0165	U	0.500	0.0165	mg/L			05/23/22 22:32	50
cis-1,2-Dichloroethene	0.00870	U	0.0500	0.00870	mg/L			05/23/22 22:32	50
cis-1,3-Dichloropropene	0.0345	U	0.250	0.0345	mg/L			05/23/22 22:32	50
Isopropylbenzene	0.00803	U	0.0500	0.00803	mg/L			05/23/22 22:32	50
m-Xylene & p-Xylene	0.0165	U	0.500	0.0165	mg/L			05/23/22 22:32	50
o-Xylene	0.00958	U	0.0500	0.00958	mg/L			05/23/22 22:32	50
trans-1,2-Dichloroethene	0.0128	U	0.0500	0.0128	mg/L			05/23/22 22:32	50
trans-1,3-Dichloropropene	0.0376	U	0.250	0.0376	mg/L			05/23/22 22:32	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*63 - 144*		*05/23/22 22:32*	*50*
4-Bromofluorobenzene (Surr)	*97*		*74 - 124*		*05/23/22 22:32*	*50*
Dibromofluoromethane (Surr)	*98*		*75 - 131*		*05/23/22 22:32*	*50*
Toluene-d8 (Surr)	*99*		*80 - 117*		*05/23/22 22:32*	*50*

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

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1'-Biphenyl	0.0185	U	0.125	0.0185	mg/L		05/20/22 16:20	05/23/22 17:01	5
2,4,5-Trichlorophenol	0.0234	U	0.125	0.0234	mg/L		05/20/22 16:20	05/23/22 17:01	5
2,4,6-Trichlorophenol	0.0237	U	0.125	0.0237	mg/L		05/20/22 16:20	05/23/22 17:01	5
2,4-Dichlorophenol	0.0261	U	0.125	0.0261	mg/L		05/20/22 16:20	05/23/22 17:01	5
2,4-Dimethylphenol	0.0223	U	0.125	0.0223	mg/L		05/20/22 16:20	05/23/22 17:01	5
2,4-Dinitrophenol	0.0154	U	0.250	0.0154	mg/L		05/20/22 16:20	05/23/22 17:01	5
2,4-Dinitrotoluene	0.0238	U	0.125	0.0238	mg/L		05/20/22 16:20	05/23/22 17:01	5
2,6-Dinitrotoluene	0.0277	U	0.250	0.0277	mg/L		05/20/22 16:20	05/23/22 17:01	5
2-Chloronaphthalene	0.0202	U	0.125	0.0202	mg/L		05/20/22 16:20	05/23/22 17:01	5
2-Chlorophenol	0.0210	U	0.125	0.0210	mg/L		05/20/22 16:20	05/23/22 17:01	5
2-Methylnaphthalene	0.0195	U	0.125	0.0195	mg/L		05/20/22 16:20	05/23/22 17:01	5
2-Nitroaniline	0.0268	U	0.250	0.0268	mg/L		05/20/22 16:20	05/23/22 17:01	5
2-Nitrophenol	0.0242	U	0.125	0.0242	mg/L		05/20/22 16:20	05/23/22 17:01	5
2-Methylphenol	0.0229	U	0.125	0.0229	mg/L		05/20/22 16:20	05/23/22 17:01	5
3 & 4 Methylphenol	0.0261	U	0.250	0.0261	mg/L		05/20/22 16:20	05/23/22 17:01	5
3,3'-Dichlorobenzidine	0.0155	U	0.250	0.0155	mg/L		05/20/22 16:20	05/23/22 17:01	5
3-Nitroaniline	0.0197	U	0.250	0.0197	mg/L		05/20/22 16:20	05/23/22 17:01	5
4,6-Dinitro-2-methylphenol	0.0218	U	0.250	0.0218	mg/L		05/20/22 16:20	05/23/22 17:01	5
4-Bromophenyl phenyl ether	0.0237	U	0.125	0.0237	mg/L		05/20/22 16:20	05/23/22 17:01	5
4-Chloroaniline	0.0152	U	0.250	0.0152	mg/L		05/20/22 16:20	05/23/22 17:01	5
4-Chlorophenyl phenyl ether	0.0217	U	0.125	0.0217	mg/L		05/20/22 16:20	05/23/22 17:01	5
4-Nitroaniline	0.0291	U	0.250	0.0291	mg/L		05/20/22 16:20	05/23/22 17:01	5
4-Nitrophenol	0.0403	U	0.250	0.0403	mg/L		05/20/22 16:20	05/23/22 17:01	5
4-Chloro-3-methylphenol	0.0326	U	0.250	0.0326	mg/L		05/20/22 16:20	05/23/22 17:01	5

Client Sample ID: IDW-WS02-051922
Date Collected: 05/19/22 11:50
Date Received: 05/19/22 12:37

Lab Sample ID: 860-26460-2
Matrix: Solid

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

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	0.0219	U	0.125	0.0219	mg/L		05/20/22 16:20	05/23/22 17:01	5
Acenaphthylene	0.0222	U	0.125	0.0222	mg/L		05/20/22 16:20	05/23/22 17:01	5
Acetophenone	0.0233	U	0.125	0.0233	mg/L		05/20/22 16:20	05/23/22 17:01	5
Anthracene	0.0221	U	0.125	0.0221	mg/L		05/20/22 16:20	05/23/22 17:01	5
Benzo[a]anthracene	0.0250	U	0.125	0.0250	mg/L		05/20/22 16:20	05/23/22 17:01	5
Benzo[a]pyrene	0.0250	U	0.125	0.0250	mg/L		05/20/22 16:20	05/23/22 17:01	5
Benzo[b]fluoranthene	0.0448	U	0.125	0.0448	mg/L		05/20/22 16:20	05/23/22 17:01	5
Benzo[g,h,i]perylene	0.0314	U	0.125	0.0314	mg/L		05/20/22 16:20	05/23/22 17:01	5
Benzo[k]fluoranthene	0.0340	U	0.125	0.0340	mg/L		05/20/22 16:20	05/23/22 17:01	5
Butyl benzyl phthalate	0.0297	U	0.125	0.0297	mg/L		05/20/22 16:20	05/23/22 17:01	5
Carbazole	0.0214	U	0.125	0.0214	mg/L		05/20/22 16:20	05/23/22 17:01	5
Chrysene	0.0250	U	0.125	0.0250	mg/L		05/20/22 16:20	05/23/22 17:01	5
Dibenz(a,h)anthracene	0.0315	U	0.125	0.0315	mg/L		05/20/22 16:20	05/23/22 17:01	5
Dibenzofuran	0.0238	U	0.125	0.0238	mg/L		05/20/22 16:20	05/23/22 17:01	5
Diethyl phthalate	0.0308	U	0.125	0.0308	mg/L		05/20/22 16:20	05/23/22 17:01	5
Dimethyl phthalate	0.0293	U	0.125	0.0293	mg/L		05/20/22 16:20	05/23/22 17:01	5
Fluoranthene	0.0237	U	0.125	0.0237	mg/L		05/20/22 16:20	05/23/22 17:01	5
Fluorene	0.0235	U	0.125	0.0235	mg/L		05/20/22 16:20	05/23/22 17:01	5
Hexachlorobenzene	0.0269	U	0.125	0.0269	mg/L		05/20/22 16:20	05/23/22 17:01	5
Hexachlorobutadiene	0.0177	U	0.125	0.0177	mg/L		05/20/22 16:20	05/23/22 17:01	5
Hexachlorocyclopentadiene	0.0153	U	0.125	0.0153	mg/L		05/20/22 16:20	05/23/22 17:01	5
Hexachloroethane	0.0197	U	0.125	0.0197	mg/L		05/20/22 16:20	05/23/22 17:01	5
Indeno[1,2,3-cd]pyrene	0.0274	U	0.125	0.0274	mg/L		05/20/22 16:20	05/23/22 17:01	5
Isophorone	0.0251	U	0.125	0.0251	mg/L		05/20/22 16:20	05/23/22 17:01	5
N-Nitrosodi-n-propylamine	0.0331	U	0.125	0.0331	mg/L		05/20/22 16:20	05/23/22 17:01	5
N-Nitrosodiphenylamine	0.0290	U	0.125	0.0290	mg/L		05/20/22 16:20	05/23/22 17:01	5
Naphthalene	0.0188	U	0.125	0.0188	mg/L		05/20/22 16:20	05/23/22 17:01	5
Nitrobenzene	0.0240	U	0.125	0.0240	mg/L		05/20/22 16:20	05/23/22 17:01	5
Pentachlorophenol	0.0279	U	0.250	0.0279	mg/L		05/20/22 16:20	05/23/22 17:01	5
Phenanthrene	0.0244	U	0.125	0.0244	mg/L		05/20/22 16:20	05/23/22 17:01	5
Phenol	0.0290	U	0.250	0.0290	mg/L		05/20/22 16:20	05/23/22 17:01	5
Pyrene	0.0213	U	0.125	0.0213	mg/L		05/20/22 16:20	05/23/22 17:01	5
Bis(2-chloroethoxy)methane	0.0310	U	0.125	0.0310	mg/L		05/20/22 16:20	05/23/22 17:01	5
Bis(2-chloroethyl)ether	0.0270	U	0.125	0.0270	mg/L		05/20/22 16:20	05/23/22 17:01	5
bis (2-Chloroisopropyl) ether	0.0363	U	0.125	0.0363	mg/L		05/20/22 16:20	05/23/22 17:01	5
Bis(2-ethylhexyl) phthalate	0.0470	U	0.125	0.0470	mg/L		05/20/22 16:20	05/23/22 17:01	5
Di-n-butyl phthalate	0.0283	U	0.125	0.0283	mg/L		05/20/22 16:20	05/23/22 17:01	5
Di-n-octyl phthalate	0.0370	U	0.125	0.0370	mg/L		05/20/22 16:20	05/23/22 17:01	5
Pyridine	0.0122	U *	0.250	0.0122	mg/L		05/20/22 16:20	05/23/22 17:01	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*83*		*31 - 132*	*05/20/22 16:20*	*05/23/22 17:01*	*5*
2-Fluorobiphenyl	*50*		*29 - 112*	*05/20/22 16:20*	*05/23/22 17:01*	*5*
2-Fluorophenol	*48*		*21 - 114*	*05/20/22 16:20*	*05/23/22 17:01*	*5*
Nitrobenzene-d5	*41*		*26 - 110*	*05/20/22 16:20*	*05/23/22 17:01*	*5*
p-Terphenyl-d14 (Surr)	*67*		*20 - 141*	*05/20/22 16:20*	*05/23/22 17:01*	*5*
Phenol-d5 (Surr)	*37*		*16 - 117*	*05/20/22 16:20*	*05/23/22 17:01*	*5*

Client Sample ID: IDW-WS02-051922

Lab Sample ID: 860-26460-2

Date Collected: 05/19/22 11:50

Matrix: Solid

Date Received: 05/19/22 12:37

Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
C6-C12	21.1	U	50.0	21.1	mg/Kg		05/20/22 12:48	05/20/22 19:05	1
>C12-C28	21.1	U	50.0	21.1	mg/Kg		05/20/22 12:48	05/20/22 19:05	1
>C28-C35	21.1	U	50.0	21.1	mg/Kg		05/20/22 12:48	05/20/22 19:05	1
Total Petroleum Hydrocarbons (C6-C35)	21.1	U	50.0	21.1	mg/Kg			05/23/22 17:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane (Surr)	*93*		*70 - 130*	*05/20/22 12:48*	*05/20/22 19:05*	*1*
o-Terphenyl (Surr)	*103*		*70 - 130*	*05/20/22 12:48*	*05/20/22 19:05*	*1*

Method: 6010C - Metals (ICP) - TCLP

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.0281**	**J**	0.0500	0.0275	mg/L		05/23/22 08:45	05/24/22 21:54	1
Barium	**1.20**	**b**	0.0500	0.00674	mg/L		05/23/22 08:45	05/24/22 21:54	1
Cadmium	0.0122	U	0.0250	0.0122	mg/L		05/23/22 08:45	05/24/22 21:54	1
Chromium	0.00405	U	0.0500	0.00405	mg/L		05/23/22 08:45	05/24/22 21:54	1
Lead	0.0118	U	0.0500	0.0118	mg/L		05/23/22 08:45	05/24/22 21:54	1
Manganese	**0.369**		0.100	0.0158	mg/L		05/23/22 08:45	05/24/22 21:54	1
Nickel	0.0154	U	0.0500	0.0154	mg/L		05/23/22 08:45	05/24/22 21:54	1
Selenium	0.0219	U	0.150	0.0219	mg/L		05/23/22 08:45	05/24/22 21:54	1
Silver	0.0279	U	0.100	0.0279	mg/L		05/23/22 08:45	05/24/22 21:54	1
Antimony	0.0294	U	0.100	0.0294	mg/L		05/23/22 08:45	05/24/22 21:54	1
Beryllium	0.00245	U	0.0200	0.00245	mg/L		05/23/22 08:45	05/24/22 21:54	1

Method: 7470A - Mercury (CVAA) - TCLP

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0000263	U	0.000200	0.0000263	mg/L		05/23/22 07:20	05/23/22 12:39	1

General Chemistry

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**6.2**				%			05/24/22 09:58	1

Client Sample ID: IDW-WS03-051922

Lab Sample ID: 860-26460-3

Date Collected: 05/19/22 12:00

Matrix: Solid

Date Received: 05/19/22 12:37

Method: 8260C - Volatile Organic Compounds by GC/MS - TCLP

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.0252	U	0.250	0.0252	mg/L			05/23/22 22:53	50
1,1,2,2-Tetrachloroethane	0.0142	U	0.0500	0.0142	mg/L			05/23/22 22:53	50
1,1,2-Trichloro-1,2,2-trifluoroethane	0.0182	U	0.500	0.0182	mg/L			05/23/22 22:53	50
1,1,2-Trichloroethane	0.0114	U	0.0500	0.0114	mg/L			05/23/22 22:53	50
1,1-Dichloroethane	0.0122	U	0.0500	0.0122	mg/L			05/23/22 22:53	50
1,1-Dichloroethene	0.0108	U	0.0500	0.0108	mg/L			05/23/22 22:53	50
1,2,4-Trichlorobenzene	0.100	U	0.250	0.100	mg/L			05/23/22 22:53	50
1,2-Dibromo-3-Chloropropane	0.0160	U	0.250	0.0160	mg/L			05/23/22 22:53	50
1,2-Dibromoethane	0.0168	U	0.250	0.0168	mg/L			05/23/22 22:53	50
1,2-Dichlorobenzene	0.0118	U	0.0500	0.0118	mg/L			05/23/22 22:53	50
1,2-Dichloroethane	0.0143	U	0.0500	0.0143	mg/L			05/23/22 22:53	50
1,2-Dichloropropane	0.0198	U	0.250	0.0198	mg/L			05/23/22 22:53	50
1,3-Dichlorobenzene	0.00983	U	0.0500	0.00983	mg/L			05/23/22 22:53	50

Client Sample ID: IDW-WS03-051922
Date Collected: 05/19/22 12:00
Date Received: 05/19/22 12:37

Lab Sample ID: 860-26460-3
Matrix: Solid

Method: 8260C - Volatile Organic Compounds by GC/MS - TCLP (Continued)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	0.00994	U	0.0500	0.00994	mg/L			05/23/22 22:53	50
2-Butanone (MEK)	0.135	U	2.50	0.135	mg/L			05/23/22 22:53	50
2-Hexanone	0.0395	U	2.50	0.0395	mg/L			05/23/22 22:53	50
4-Methyl-2-pentanone (MIBK)	0.0532	U	2.50	0.0532	mg/L			05/23/22 22:53	50
Acetone	0.616	U	5.00	0.616	mg/L			05/23/22 22:53	50
Benzene	0.0107	U	0.0500	0.0107	mg/L			05/23/22 22:53	50
Chlorobromomethane	0.0105	U	0.0500	0.0105	mg/L			05/23/22 22:53	50
Bromodichloromethane	0.0115	U	0.0500	0.0115	mg/L			05/23/22 22:53	50
Bromoform	0.0315	U	0.250	0.0315	mg/L			05/23/22 22:53	50
Bromomethane	0.0527	U	0.250	0.0527	mg/L			05/23/22 22:53	50
Carbon disulfide	0.0187	U	0.250	0.0187	mg/L			05/23/22 22:53	50
Carbon tetrachloride	0.0211	U	0.250	0.0211	mg/L			05/23/22 22:53	50
Chlorobenzene	0.00795	U	0.0500	0.00795	mg/L			05/23/22 22:53	50
Chloroethane	0.0216	U	0.500	0.0216	mg/L			05/23/22 22:53	50
Chloroform	0.0129	U	0.0500	0.0129	mg/L			05/23/22 22:53	50
Chloromethane	0.0159	U	0.500	0.0159	mg/L			05/23/22 22:53	50
Cyclohexane	0.0237	U	0.250	0.0237	mg/L			05/23/22 22:53	50
Dibromochloromethane	0.0370	U	0.250	0.0370	mg/L			05/23/22 22:53	50
Dichlorodifluoromethane	0.0158	U	0.0500	0.0158	mg/L			05/23/22 22:53	50
Ethylbenzene	0.0257	U	0.0500	0.0257	mg/L			05/23/22 22:53	50
Methyl tert-butyl ether	0.0285	U	0.250	0.0285	mg/L			05/23/22 22:53	50
Methylene Chloride	0.0956	U	0.250	0.0956	mg/L			05/23/22 22:53	50
Styrene	0.0312	U	0.0500	0.0312	mg/L			05/23/22 22:53	50
Tetrachloroethene	0.0250	U	0.0500	0.0250	mg/L			05/23/22 22:53	50
Toluene	0.0250	U	0.0500	0.0250	mg/L			05/23/22 22:53	50
Trichloroethene	0.0212	U	0.250	0.0212	mg/L			05/23/22 22:53	50
Vinyl acetate	0.178	U	1.00	0.178	mg/L			05/23/22 22:53	50
Vinyl chloride	0.0117	U	0.100	0.0117	mg/L			05/23/22 22:53	50
Xylenes, Total	0.0165	U	0.500	0.0165	mg/L			05/23/22 22:53	50
cis-1,2-Dichloroethene	0.00870	U	0.0500	0.00870	mg/L			05/23/22 22:53	50
cis-1,3-Dichloropropene	0.0345	U	0.250	0.0345	mg/L			05/23/22 22:53	50
Isopropylbenzene	0.00803	U	0.0500	0.00803	mg/L			05/23/22 22:53	50
m-Xylene & p-Xylene	0.0165	U	0.500	0.0165	mg/L			05/23/22 22:53	50
o-Xylene	0.00958	U	0.0500	0.00958	mg/L			05/23/22 22:53	50
trans-1,2-Dichloroethene	0.0128	U	0.0500	0.0128	mg/L			05/23/22 22:53	50
trans-1,3-Dichloropropene	0.0376	U	0.250	0.0376	mg/L			05/23/22 22:53	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*63 - 144*		*05/23/22 22:53*	*50*
4-Bromofluorobenzene (Surr)	*98*		*74 - 124*		*05/23/22 22:53*	*50*
Dibromofluoromethane (Surr)	*100*		*75 - 131*		*05/23/22 22:53*	*50*
Toluene-d8 (Surr)	*98*		*80 - 117*		*05/23/22 22:53*	*50*

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

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1'-Biphenyl	0.0185	U	0.125	0.0185	mg/L		05/20/22 16:20	05/23/22 17:24	5
2,4,5-Trichlorophenol	0.0234	U	0.125	0.0234	mg/L		05/20/22 16:20	05/23/22 17:24	5
2,4,6-Trichlorophenol	0.0237	U	0.125	0.0237	mg/L		05/20/22 16:20	05/23/22 17:24	5
2,4-Dichlorophenol	0.0261	U	0.125	0.0261	mg/L		05/20/22 16:20	05/23/22 17:24	5
2,4-Dimethylphenol	0.0223	U	0.125	0.0223	mg/L		05/20/22 16:20	05/23/22 17:24	5

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd IDW

Job ID: 860-26460-1

Client Sample ID: IDW-WS03-051922
Date Collected: 05/19/22 12:00
Date Received: 05/19/22 12:37

Lab Sample ID: 860-26460-3
Matrix: Solid

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

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-Dinitrophenol	0.0154	U	0.250	0.0154	mg/L		05/20/22 16:20	05/23/22 17:24	5
2,4-Dinitrotoluene	0.0238	U	0.125	0.0238	mg/L		05/20/22 16:20	05/23/22 17:24	5
2,6-Dinitrotoluene	0.0277	U	0.250	0.0277	mg/L		05/20/22 16:20	05/23/22 17:24	5
2-Chloronaphthalene	0.0202	U	0.125	0.0202	mg/L		05/20/22 16:20	05/23/22 17:24	5
2-Chlorophenol	0.0210	U	0.125	0.0210	mg/L		05/20/22 16:20	05/23/22 17:24	5
2-Methylnaphthalene	0.0195	U	0.125	0.0195	mg/L		05/20/22 16:20	05/23/22 17:24	5
2-Nitroaniline	0.0268	U	0.250	0.0268	mg/L		05/20/22 16:20	05/23/22 17:24	5
2-Nitrophenol	0.0242	U	0.125	0.0242	mg/L		05/20/22 16:20	05/23/22 17:24	5
2-Methylphenol	0.0229	U	0.125	0.0229	mg/L		05/20/22 16:20	05/23/22 17:24	5
3 & 4 Methylphenol	0.0261	U	0.250	0.0261	mg/L		05/20/22 16:20	05/23/22 17:24	5
3,3'-Dichlorobenzidine	0.0155	U	0.250	0.0155	mg/L		05/20/22 16:20	05/23/22 17:24	5
3-Nitroaniline	0.0197	U	0.250	0.0197	mg/L		05/20/22 16:20	05/23/22 17:24	5
4,6-Dinitro-2-methylphenol	0.0218	U	0.250	0.0218	mg/L		05/20/22 16:20	05/23/22 17:24	5
4-Bromophenyl phenyl ether	0.0237	U	0.125	0.0237	mg/L		05/20/22 16:20	05/23/22 17:24	5
4-Chloroaniline	0.0152	U	0.250	0.0152	mg/L		05/20/22 16:20	05/23/22 17:24	5
4-Chlorophenyl phenyl ether	0.0217	U	0.125	0.0217	mg/L		05/20/22 16:20	05/23/22 17:24	5
4-Nitroaniline	0.0291	U	0.250	0.0291	mg/L		05/20/22 16:20	05/23/22 17:24	5
4-Nitrophenol	0.0403	U	0.250	0.0403	mg/L		05/20/22 16:20	05/23/22 17:24	5
4-Chloro-3-methylphenol	0.0326	U	0.250	0.0326	mg/L		05/20/22 16:20	05/23/22 17:24	5
Acenaphthene	0.0219	U	0.125	0.0219	mg/L		05/20/22 16:20	05/23/22 17:24	5
Acenaphthylene	0.0222	U	0.125	0.0222	mg/L		05/20/22 16:20	05/23/22 17:24	5
Acetophenone	0.0233	U	0.125	0.0233	mg/L		05/20/22 16:20	05/23/22 17:24	5
Anthracene	0.0221	U	0.125	0.0221	mg/L		05/20/22 16:20	05/23/22 17:24	5
Benzo[a]anthracene	0.0250	U	0.125	0.0250	mg/L		05/20/22 16:20	05/23/22 17:24	5
Benzo[a]pyrene	0.0250	U	0.125	0.0250	mg/L		05/20/22 16:20	05/23/22 17:24	5
Benzo[b]fluoranthene	0.0448	U	0.125	0.0448	mg/L		05/20/22 16:20	05/23/22 17:24	5
Benzo[g,h,i]perylene	0.0314	U	0.125	0.0314	mg/L		05/20/22 16:20	05/23/22 17:24	5
Benzo[k]fluoranthene	0.0340	U	0.125	0.0340	mg/L		05/20/22 16:20	05/23/22 17:24	5
Butyl benzyl phthalate	0.0297	U	0.125	0.0297	mg/L		05/20/22 16:20	05/23/22 17:24	5
Carbazole	0.0214	U	0.125	0.0214	mg/L		05/20/22 16:20	05/23/22 17:24	5
Chrysene	0.0250	U	0.125	0.0250	mg/L		05/20/22 16:20	05/23/22 17:24	5
Dibenz(a,h)anthracene	0.0315	U	0.125	0.0315	mg/L		05/20/22 16:20	05/23/22 17:24	5
Dibenzofuran	0.0238	U	0.125	0.0238	mg/L		05/20/22 16:20	05/23/22 17:24	5
Diethyl phthalate	0.0308	U	0.125	0.0308	mg/L		05/20/22 16:20	05/23/22 17:24	5
Dimethyl phthalate	0.0293	U	0.125	0.0293	mg/L		05/20/22 16:20	05/23/22 17:24	5
Fluoranthene	0.0237	U	0.125	0.0237	mg/L		05/20/22 16:20	05/23/22 17:24	5
Fluorene	0.0235	U	0.125	0.0235	mg/L		05/20/22 16:20	05/23/22 17:24	5
Hexachlorobenzene	0.0269	U	0.125	0.0269	mg/L		05/20/22 16:20	05/23/22 17:24	5
Hexachlorobutadiene	0.0177	U	0.125	0.0177	mg/L		05/20/22 16:20	05/23/22 17:24	5
Hexachlorocyclopentadiene	0.0153	U	0.125	0.0153	mg/L		05/20/22 16:20	05/23/22 17:24	5
Hexachloroethane	0.0197	U	0.125	0.0197	mg/L		05/20/22 16:20	05/23/22 17:24	5
Indeno[1,2,3-cd]pyrene	0.0274	U	0.125	0.0274	mg/L		05/20/22 16:20	05/23/22 17:24	5
Isophorone	0.0251	U	0.125	0.0251	mg/L		05/20/22 16:20	05/23/22 17:24	5
N-Nitrosodi-n-propylamine	0.0331	U	0.125	0.0331	mg/L		05/20/22 16:20	05/23/22 17:24	5
N-Nitrosodiphenylamine	0.0290	U	0.125	0.0290	mg/L		05/20/22 16:20	05/23/22 17:24	5
Naphthalene	0.0188	U	0.125	0.0188	mg/L		05/20/22 16:20	05/23/22 17:24	5
Nitrobenzene	0.0240	U	0.125	0.0240	mg/L		05/20/22 16:20	05/23/22 17:24	5
Pentachlorophenol	0.0279	U	0.250	0.0279	mg/L		05/20/22 16:20	05/23/22 17:24	5
Phenanthrene	0.0244	U	0.125	0.0244	mg/L		05/20/22 16:20	05/23/22 17:24	5

Client Sample ID: IDW-WS03-051922

Date Collected: 05/19/22 12:00
Date Received: 05/19/22 12:37

Lab Sample ID: 860-26460-3

Matrix: Solid

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

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	0.0290	U	0.250	0.0290	mg/L		05/20/22 16:20	05/23/22 17:24	5
Pyrene	0.0213	U	0.125	0.0213	mg/L		05/20/22 16:20	05/23/22 17:24	5
Bis(2-chloroethoxy)methane	0.0310	U	0.125	0.0310	mg/L		05/20/22 16:20	05/23/22 17:24	5
Bis(2-chloroethyl)ether	0.0270	U	0.125	0.0270	mg/L		05/20/22 16:20	05/23/22 17:24	5
bis (2-Chloroisopropyl) ether	0.0363	U	0.125	0.0363	mg/L		05/20/22 16:20	05/23/22 17:24	5
Bis(2-ethylhexyl) phthalate	0.0470	U	0.125	0.0470	mg/L		05/20/22 16:20	05/23/22 17:24	5
Di-n-butyl phthalate	0.0283	U	0.125	0.0283	mg/L		05/20/22 16:20	05/23/22 17:24	5
Di-n-octyl phthalate	0.0370	U	0.125	0.0370	mg/L		05/20/22 16:20	05/23/22 17:24	5
Pyridine	0.0122	U *	0.250	0.0122	mg/L		05/20/22 16:20	05/23/22 17:24	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*100*		*31 - 132*	*05/20/22 16:20*	*05/23/22 17:24*	*5*
2-Fluorobiphenyl	*67*		*29 - 112*	*05/20/22 16:20*	*05/23/22 17:24*	*5*
2-Fluorophenol	*51*		*21 - 114*	*05/20/22 16:20*	*05/23/22 17:24*	*5*
Nitrobenzene-d5	*59*		*26 - 110*	*05/20/22 16:20*	*05/23/22 17:24*	*5*
p-Terphenyl-d14 (Surr)	*80*		*20 - 141*	*05/20/22 16:20*	*05/23/22 17:24*	*5*
Phenol-d5 (Surr)	*41*		*16 - 117*	*05/20/22 16:20*	*05/23/22 17:24*	*5*

Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
C6-C12	21.1	U	50.0	21.1	mg/Kg		05/20/22 12:48	05/20/22 20:02	1
>C12-C28	21.1	U	50.0	21.1	mg/Kg		05/20/22 12:48	05/20/22 20:02	1
>C28-C35	21.1	U	50.0	21.1	mg/Kg		05/20/22 12:48	05/20/22 20:02	1
Total Petroleum Hydrocarbons (C6-C35)	21.1	U	50.0	21.1	mg/Kg			05/23/22 17:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane (Surr)	*91*		*70 - 130*	*05/20/22 12:48*	*05/20/22 20:02*	*1*
o-Terphenyl (Surr)	*101*		*70 - 130*	*05/20/22 12:48*	*05/20/22 20:02*	*1*

Method: 6010C - Metals (ICP) - TCLP

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.0326**	**J**	0.0500	0.0275	mg/L		05/23/22 08:45	05/24/22 21:58	1
Barium	**1.17**	**b**	0.0500	0.00674	mg/L		05/23/22 08:45	05/24/22 21:58	1
Cadmium	0.0122	U	0.0250	0.0122	mg/L		05/23/22 08:45	05/24/22 21:58	1
Chromium	0.00405	U	0.0500	0.00405	mg/L		05/23/22 08:45	05/24/22 21:58	1
Lead	0.0118	U	0.0500	0.0118	mg/L		05/23/22 08:45	05/24/22 21:58	1
Manganese	**1.64**		0.100	0.0158	mg/L		05/23/22 08:45	05/24/22 21:58	1
Nickel	0.0154	U	0.0500	0.0154	mg/L		05/23/22 08:45	05/24/22 21:58	1
Selenium	0.0219	U	0.150	0.0219	mg/L		05/23/22 08:45	05/24/22 21:58	1
Silver	0.0279	U	0.100	0.0279	mg/L		05/23/22 08:45	05/24/22 21:58	1
Antimony	0.0294	U	0.100	0.0294	mg/L		05/23/22 08:45	05/24/22 21:58	1
Beryllium	0.00245	U	0.0200	0.00245	mg/L		05/23/22 08:45	05/24/22 21:58	1

Method: 7470A - Mercury (CVAA) - TCLP

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0000263	U	0.000200	0.0000263	mg/L		05/23/22 07:20	05/23/22 12:40	1

General Chemistry

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**20.5**				%			05/24/22 09:58	1

Unadjusted Detection Limits

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd IDW

Job ID: 860-26460-1

Method: 8260C - Volatile Organic Compounds by GC/MS - TCLP

Leach: 1311

Analyte	MQL	MDL	Units
1,1,1-Trichloroethane	0.00500	0.000504	mg/L
1,1,2,2-Tetrachloroethane	0.00100	0.000284	mg/L
1,1,2-Trichloro-1,2,2-trifluoroethane	0.0100	0.000364	mg/L
1,1,2-Trichloroethane	0.00100	0.000228	mg/L
1,1-Dichloroethane	0.00100	0.000244	mg/L
1,1-Dichloroethene	0.00100	0.000216	mg/L
1,2,4-Trichlorobenzene	0.00500	0.00200	mg/L
1,2-Dibromo-3-Chloropropane	0.00500	0.000319	mg/L
1,2-Dibromoethane	0.00500	0.000337	mg/L
1,2-Dichlorobenzene	0.00100	0.000236	mg/L
1,2-Dichloroethane	0.00100	0.000285	mg/L
1,2-Dichloropropane	0.00500	0.000396	mg/L
1,3-Dichlorobenzene	0.00100	0.000197	mg/L
1,4-Dichlorobenzene	0.00100	0.000199	mg/L
2-Butanone (MEK)	0.0500	0.00270	mg/L
2-Hexanone	0.0500	0.000789	mg/L
4-Methyl-2-pentanone (MIBK)	0.0500	0.00106	mg/L
Acetone	0.100	0.0123	mg/L
Benzene	0.00100	0.000214	mg/L
Bromodichloromethane	0.00100	0.000231	mg/L
Bromoform	0.00500	0.000630	mg/L
Bromomethane	0.00500	0.00105	mg/L
Carbon disulfide	0.00500	0.000373	mg/L
Carbon tetrachloride	0.00500	0.000423	mg/L
Chlorobenzene	0.00100	0.000159	mg/L
Chlorobromomethane	0.00100	0.000209	mg/L
Chloroethane	0.0100	0.000433	mg/L
Chloroform	0.00100	0.000259	mg/L
Chloromethane	0.0100	0.000318	mg/L
cis-1,2-Dichloroethene	0.00100	0.000174	mg/L
cis-1,3-Dichloropropene	0.00500	0.000690	mg/L
Cyclohexane	0.00500	0.000474	mg/L
Dibromochloromethane	0.00500	0.000739	mg/L
Dichlorodifluoromethane	0.00100	0.000316	mg/L
Ethylbenzene	0.00100	0.000515	mg/L
Isopropylbenzene	0.00100	0.000161	mg/L
Methyl tert-butyl ether	0.00500	0.000571	mg/L
Methylene Chloride	0.00500	0.00191	mg/L
m-Xylene & p-Xylene	0.0100	0.000330	mg/L
o-Xylene	0.00100	0.000192	mg/L
Styrene	0.00100	0.000623	mg/L
Tetrachloroethene	0.00100	0.000500	mg/L
Toluene	0.00100	0.000500	mg/L
trans-1,2-Dichloroethene	0.00100	0.000256	mg/L
trans-1,3-Dichloropropene	0.00500	0.000752	mg/L
Trichloroethene	0.00500	0.000424	mg/L
Vinyl acetate	0.0200	0.00357	mg/L
Vinyl chloride	0.00200	0.000234	mg/L
Xylenes, Total	0.00100	0.000192	mg/L

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

Prep: 3510C

Unadjusted Detection Limits

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd IDW

Job ID: 860-26460-1

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

Prep: 3510C
Leach: 1311

Analyte	MQL	MDL	Units
1,1'-Biphenyl	0.00500	0.000741	mg/L
2,4,5-Trichlorophenol	0.00500	0.000935	mg/L
2,4,6-Trichlorophenol	0.00500	0.000946	mg/L
2,4-Dichlorophenol	0.00500	0.00104	mg/L
2,4-Dimethylphenol	0.00500	0.000891	mg/L
2,4-Dinitrophenol	0.0100	0.000616	mg/L
2,4-Dinitrotoluene	0.00500	0.000953	mg/L
2,6-Dinitrotoluene	0.0100	0.00111	mg/L
2-Chloronaphthalene	0.00500	0.000809	mg/L
2-Chlorophenol	0.00500	0.000842	mg/L
2-Methylnaphthalene	0.00500	0.000778	mg/L
2-Methylphenol	0.00500	0.000914	mg/L
2-Nitroaniline	0.0100	0.00107	mg/L
2-Nitrophenol	0.00500	0.000966	mg/L
3 & 4 Methylphenol	0.0100	0.00104	mg/L
3,3'-Dichlorobenzidine	0.0100	0.000618	mg/L
3-Nitroaniline	0.0100	0.000787	mg/L
4,6-Dinitro-2-methylphenol	0.0100	0.000870	mg/L
4-Bromophenyl phenyl ether	0.00500	0.000948	mg/L
4-Chloro-3-methylphenol	0.0100	0.00131	mg/L
4-Chloroaniline	0.0100	0.000609	mg/L
4-Chlorophenyl phenyl ether	0.00500	0.000868	mg/L
4-Nitroaniline	0.0100	0.00116	mg/L
4-Nitrophenol	0.0100	0.00161	mg/L
Acenaphthene	0.00500	0.000876	mg/L
Acenaphthylene	0.00500	0.000886	mg/L
Acetophenone	0.00500	0.000932	mg/L
Anthracene	0.00500	0.000884	mg/L
Benzo[a]anthracene	0.00500	0.00100	mg/L
Benzo[a]pyrene	0.00500	0.00100	mg/L
Benzo[b]fluoranthene	0.00500	0.00179	mg/L
Benzo[g,h,i]perylene	0.00500	0.00125	mg/L
Benzo[k]fluoranthene	0.00500	0.00136	mg/L
bis (2-Chloroisopropyl) ether	0.00500	0.00145	mg/L
Bis(2-chloroethoxy)methane	0.00500	0.00124	mg/L
Bis(2-chloroethyl)ether	0.00500	0.00108	mg/L
Bis(2-ethylhexyl) phthalate	0.00500	0.00188	mg/L
Butyl benzyl phthalate	0.00500	0.00119	mg/L
Carbazole	0.00500	0.000855	mg/L
Chrysene	0.00500	0.00100	mg/L
Dibenz(a,h)anthracene	0.00500	0.00126	mg/L
Dibenzofuran	0.00500	0.000951	mg/L
Diethyl phthalate	0.00500	0.00123	mg/L
Dimethyl phthalate	0.00500	0.00117	mg/L
Di-n-butyl phthalate	0.00500	0.00113	mg/L
Di-n-octyl phthalate	0.00500	0.00148	mg/L
Fluoranthene	0.00500	0.000948	mg/L
Fluorene	0.00500	0.000938	mg/L
Hexachlorobenzene	0.00500	0.00107	mg/L
Hexachlorobutadiene	0.00500	0.000709	mg/L
Hexachlorocyclopentadiene	0.00500	0.000614	mg/L

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

Prep: 3510C
Leach: 1311

Analyte	MQL	MDL	Units
Hexachloroethane	0.00500	0.000787	mg/L
Indeno[1,2,3-cd]pyrene	0.00500	0.00110	mg/L
Isophorone	0.00500	0.00101	mg/L
Naphthalene	0.00500	0.000751	mg/L
Nitrobenzene	0.00500	0.000961	mg/L
N-Nitrosodi-n-propylamine	0.00500	0.00133	mg/L
N-Nitrosodiphenylamine	0.00500	0.00116	mg/L
Pentachlorophenol	0.0100	0.00112	mg/L
Phenanthrene	0.00500	0.000975	mg/L
Phenol	0.0100	0.00116	mg/L
Pyrene	0.00500	0.000852	mg/L
Pyridine	0.0100	0.000487	mg/L

Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC)

Analyte	MQL	MDL	Units
Total Petroleum Hydrocarbons (C6-C35)	50.0	21.1	mg/Kg

Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC)

Prep: TX_1005_S_Prep

Analyte	MQL	MDL	Units
>C12-C28	50.0	21.1	mg/Kg
>C28-C35	50.0	21.1	mg/Kg
C6-C12	50.0	21.1	mg/Kg

Method: 6010C - Metals (ICP) - TCLP

Prep: 3010A
Leach: 1311

Analyte	MQL	MDL	Units
Antimony	0.0200	0.00589	mg/L
Arsenic	0.0100	0.00550	mg/L
Barium	0.0100	0.00135	mg/L
Beryllium	0.00400	0.000490	mg/L
Cadmium	0.00500	0.00243	mg/L
Chromium	0.0100	0.000811	mg/L
Lead	0.0100	0.00237	mg/L
Manganese	0.0200	0.00316	mg/L
Nickel	0.0100	0.00307	mg/L
Selenium	0.0300	0.00439	mg/L
Silver	0.0200	0.00559	mg/L

Method: 7470A - Mercury (CVAA) - TCLP

Prep: 7470A
Leach: 1311

Analyte	MQL	MDL	Units
Mercury	0.000200	0.0000263	mg/L

Surrogate Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd IDW

Job ID: 860-26460-1

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Solid — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	DBFM	TOL
Lab Sample ID	Client Sample ID	(63-144)	(74-124)	(75-131)	(80-117)
LCS 860-53937/3	Lab Control Sample	94	99	99	97
LCS 860-54052/3	Lab Control Sample	95	96	99	99
LCSD 860-53937/4	Lab Control Sample Dup	94	95	99	97
LCSD 860-54052/4	Lab Control Sample Dup	93	98	98	98
MB 860-53937/10	Method Blank	97	97	99	97
MB 860-54052/9	Method Blank	96	97	97	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Solid — **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	DBFM	TOL
Lab Sample ID	Client Sample ID	(63-144)	(74-124)	(75-131)	(80-117)
860-26460-1	IDW-WS01-051922	97	98	100	99
860-26460-2	IDW-WS02-051922	98	97	98	99
860-26460-3	IDW-WS03-051922	97	98	100	98
LB 860-53848/1-A	Method Blank	97	97	98	99

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

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

Matrix: Solid — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)					
		TBP	FBP	2FP	NBZ	TPHd14	PHL
Lab Sample ID	Client Sample ID	(31-132)	(29-112)	(21-114)	(26-110)	(20-141)	(16-117)
LCS 860-53840/2-A	Lab Control Sample	51	58	24	56	57	16
LCSD 860-53840/3-A	Lab Control Sample Dup	57	63	28	61	60	20
MB 860-53840/1-A	Method Blank	59	63	29	66	65	17

Surrogate Legend

TBP = 2,4,6-Tribromophenol
FBP = 2-Fluorobiphenyl
2FP = 2-Fluorophenol
NBZ = Nitrobenzene-d5
TPHd14 = p-Terphenyl-d14 (Surr)
PHL = Phenol-d5 (Surr)

Surrogate Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd IDW

Job ID: 860-26460-1

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

Matrix: Solid

Prep Type: TCLP

		Percent Surrogate Recovery (Acceptance Limits)					
		TBP	FBP	2FP	NBZ	TPHd14	PHL
Lab Sample ID	Client Sample ID	(31-132)	(29-112)	(21-114)	(26-110)	(20-141)	(16-117)
860-26460-1	IDW-WS01-051922	96	60	47	54	73	36
860-26460-2	IDW-WS02-051922	83	50	48	41	67	37
860-26460-3	IDW-WS03-051922	100	67	51	59	80	41
LB 860-53687/1-B	Method Blank	18 X	23 X	16 X	23 X	21	13 X

Surrogate Legend

TBP = 2,4,6-Tribromophenol
FBP = 2-Fluorobiphenyl
2FP = 2-Fluorophenol
NBZ = Nitrobenzene-d5
TPHd14 = p-Terphenyl-d14 (Surr)
PHL = Phenol-d5 (Surr)

Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC)

Matrix: Solid

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)	
		1CO	OTPH
Lab Sample ID	Client Sample ID	(70-130)	(70-130)
860-26460-1	IDW-WS01-051922	85	92
860-26460-2	IDW-WS02-051922	93	103
860-26460-2 MS	IDW-WS02-051922	108	99
860-26460-2 MSD	IDW-WS02-051922	105	94
860-26460-3	IDW-WS03-051922	91	101
LCS 860-53809/2-A	Lab Control Sample	106	96
LCSD 860-53809/3-A	Lab Control Sample Dup	107	98
MB 860-53809/1-A	Method Blank	92	98

Surrogate Legend

1CO = 1-Chlorooctane (Surr)
OTPH = o-Terphenyl (Surr)

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 860-53937/10
Matrix: Solid
Analysis Batch: 53937

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

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.000504	U	0.00500	0.000504	mg/L			05/23/22 09:53	1
1,1,2,2-Tetrachloroethane	0.000284	U	0.00100	0.000284	mg/L			05/23/22 09:53	1
1,1,2-Trichloro-1,2,2-trifluoroethane	0.000364	U	0.0100	0.000364	mg/L			05/23/22 09:53	1
1,1,2-Trichloroethane	0.000228	U	0.00100	0.000228	mg/L			05/23/22 09:53	1
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/23/22 09:53	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/23/22 09:53	1
1,2,4-Trichlorobenzene	0.00200	U	0.00500	0.00200	mg/L			05/23/22 09:53	1
1,2-Dibromo-3-Chloropropane	0.000319	U	0.00500	0.000319	mg/L			05/23/22 09:53	1
1,2-Dibromoethane	0.000337	U	0.00500	0.000337	mg/L			05/23/22 09:53	1
1,2-Dichlorobenzene	0.000236	U	0.00100	0.000236	mg/L			05/23/22 09:53	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/23/22 09:53	1
1,2-Dichloropropane	0.000396	U	0.00500	0.000396	mg/L			05/23/22 09:53	1
1,3-Dichlorobenzene	0.000197	U	0.00100	0.000197	mg/L			05/23/22 09:53	1
1,4-Dichlorobenzene	0.000199	U	0.00100	0.000199	mg/L			05/23/22 09:53	1
2-Butanone (MEK)	0.00270	U	0.0500	0.00270	mg/L			05/23/22 09:53	1
2-Hexanone	0.000789	U	0.0500	0.000789	mg/L			05/23/22 09:53	1
4-Methyl-2-pentanone (MIBK)	0.00106	U	0.0500	0.00106	mg/L			05/23/22 09:53	1
Acetone	0.0123	U	0.100	0.0123	mg/L			05/23/22 09:53	1
Benzene	0.000214	U	0.00100	0.000214	mg/L			05/23/22 09:53	1
Chlorobromomethane	0.000209	U	0.00100	0.000209	mg/L			05/23/22 09:53	1
Bromodichloromethane	0.000231	U	0.00100	0.000231	mg/L			05/23/22 09:53	1
Bromoform	0.000630	U	0.00500	0.000630	mg/L			05/23/22 09:53	1
Bromomethane	0.00105	U	0.00500	0.00105	mg/L			05/23/22 09:53	1
Carbon disulfide	0.000373	U	0.00500	0.000373	mg/L			05/23/22 09:53	1
Carbon tetrachloride	0.000423	U	0.00500	0.000423	mg/L			05/23/22 09:53	1
Chlorobenzene	0.000159	U	0.00100	0.000159	mg/L			05/23/22 09:53	1
Chloroethane	0.000433	U	0.0100	0.000433	mg/L			05/23/22 09:53	1
Chloroform	0.000259	U	0.00100	0.000259	mg/L			05/23/22 09:53	1
Chloromethane	0.000318	U	0.0100	0.000318	mg/L			05/23/22 09:53	1
Cyclohexane	0.000474	U	0.00500	0.000474	mg/L			05/23/22 09:53	1
Dibromochloromethane	0.000739	U	0.00500	0.000739	mg/L			05/23/22 09:53	1
Dichlorodifluoromethane	0.000316	U	0.00100	0.000316	mg/L			05/23/22 09:53	1
Ethylbenzene	0.000515	U	0.00100	0.000515	mg/L			05/23/22 09:53	1
Methyl tert-butyl ether	0.000571	U	0.00500	0.000571	mg/L			05/23/22 09:53	1
Methylene Chloride	0.00191	U	0.00500	0.00191	mg/L			05/23/22 09:53	1
Styrene	0.000623	U	0.00100	0.000623	mg/L			05/23/22 09:53	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/23/22 09:53	1
Toluene	0.000500	U	0.00100	0.000500	mg/L			05/23/22 09:53	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/23/22 09:53	1
Vinyl acetate	0.00357	U	0.0200	0.00357	mg/L			05/23/22 09:53	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/23/22 09:53	1
Xylenes, Total	0.000330	U	0.0100	0.000330	mg/L			05/23/22 09:53	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/23/22 09:53	1
cis-1,3-Dichloropropene	0.000690	U	0.00500	0.000690	mg/L			05/23/22 09:53	1
Isopropylbenzene	0.000161	U	0.00100	0.000161	mg/L			05/23/22 09:53	1
m-Xylene & p-Xylene	0.000330	U	0.0100	0.000330	mg/L			05/23/22 09:53	1
o-Xylene	0.000192	U	0.00100	0.000192	mg/L			05/23/22 09:53	1
trans-1,2-Dichloroethene	0.000256	U	0.00100	0.000256	mg/L			05/23/22 09:53	1

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

Lab Sample ID: MB 860-53937/10
Matrix: Solid
Analysis Batch: 53937

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

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
trans-1,3-Dichloropropene	0.000752	U	0.00500	0.000752	mg/L			05/23/22 09:53	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*63 - 144*		*05/23/22 09:53*	*1*
4-Bromofluorobenzene (Surr)	*97*		*74 - 124*		*05/23/22 09:53*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 131*		*05/23/22 09:53*	*1*
Toluene-d8 (Surr)	*97*		*80 - 117*		*05/23/22 09:53*	*1*

Lab Sample ID: LCS 860-53937/3
Matrix: Solid
Analysis Batch: 53937

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1-Trichloroethane	0.0500	0.05197		mg/L		104	75 - 125
1,1,2,2-Tetrachloroethane	0.0500	0.04828		mg/L		97	74 - 125
1,1,2-Trichloro-1,2,2-trifluoroethane	0.0500	0.05297		mg/L		106	60 - 140
1,1,2-Trichloroethane	0.0500	0.05049		mg/L		101	75 - 127
1,1-Dichloroethane	0.0500	0.04952		mg/L		99	72 - 125
1,1-Dichloroethene	0.0500	0.05350		mg/L		107	59 - 172
1,2,4-Trichlorobenzene	0.0500	0.05001		mg/L		100	75 - 135
1,2-Dibromo-3-Chloropropane	0.0500	0.05248		mg/L		105	59 - 125
1,2-Dibromoethane	0.0500	0.05223		mg/L		104	73 - 125
1,2-Dichlorobenzene	0.0500	0.05090		mg/L		102	75 - 125
1,2-Dichloroethane	0.0500	0.05015		mg/L		100	68 - 127
1,2-Dichloropropane	0.0500	0.05106		mg/L		102	74 - 125
1,3-Dichlorobenzene	0.0500	0.05078		mg/L		102	75 - 125
1,4-Dichlorobenzene	0.0500	0.04972		mg/L		99	75 - 125
2-Butanone (MEK)	0.250	0.2558		mg/L		102	60 - 140
2-Hexanone	0.250	0.2471		mg/L		99	60 - 140
4-Methyl-2-pentanone (MIBK)	0.250	0.2491		mg/L		100	60 - 140
Acetone	0.250	0.2250		mg/L		90	60 - 140
Benzene	0.0500	0.05211		mg/L		104	66 - 142
Chlorobromomethane	0.0500	0.05196		mg/L		104	60 - 140
Bromodichloromethane	0.0500	0.05277		mg/L		106	75 - 125
Bromoform	0.0500	0.05483		mg/L		110	75 - 125
Bromomethane	0.0500	0.05033		mg/L		101	60 - 140
Carbon disulfide	0.0500	0.04947		mg/L		99	60 - 140
Carbon tetrachloride	0.0500	0.04577		mg/L		92	62 - 125
Chlorobenzene	0.0500	0.05201		mg/L		104	60 - 133
Chloroethane	0.0500	0.05310		mg/L		106	60 - 140
Chloroform	0.0500	0.05204		mg/L		104	70 - 130
Chloromethane	0.0500	0.05236		mg/L		105	60 - 140
Cyclohexane	0.0500	0.04583		mg/L		92	70 - 130
Dibromochloromethane	0.0500	0.05346		mg/L		107	73 - 125
Dichlorodifluoromethane	0.0500	0.05713		mg/L		114	70 - 130
Ethylbenzene	0.0500	0.05218		mg/L		104	75 - 125
Methyl tert-butyl ether	0.0500	0.04985		mg/L		100	65 - 135
Methylene Chloride	0.0500	0.04968		mg/L		99	75 - 125

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

Lab Sample ID: LCS 860-53937/3
Matrix: Solid
Analysis Batch: 53937

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Styrene	0.0500	0.05316		mg/L		106	75 - 125
Tetrachloroethene	0.0500	0.05397		mg/L		108	71 - 125
Toluene	0.0500	0.05190		mg/L		104	59 - 139
Trichloroethene	0.0500	0.05326		mg/L		107	62 - 137
Vinyl acetate	0.250	0.2480		mg/L		99	60 - 140
Vinyl chloride	0.0500	0.05368		mg/L		107	60 - 140
Xylenes, Total	0.100	0.1038		mg/L		104	75 - 125
cis-1,2-Dichloroethene	0.0500	0.05169		mg/L		103	75 - 125
cis-1,3-Dichloropropene	0.0500	0.05295		mg/L		106	74 - 125
Isopropylbenzene	0.0500	0.05290		mg/L		106	75 - 125
m-Xylene & p-Xylene	0.0500	0.05212		mg/L		104	75 - 125
o-Xylene	0.0500	0.05169		mg/L		103	75 - 125
trans-1,2-Dichloroethene	0.0500	0.05110		mg/L		102	75 - 125
trans-1,3-Dichloropropene	0.0500	0.05186		mg/L		104	66 - 125

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*63 - 144*
4-Bromofluorobenzene (Surr)	*99*		*74 - 124*
Dibromofluoromethane (Surr)	*99*		*75 - 131*
Toluene-d8 (Surr)	*97*		*80 - 117*

Lab Sample ID: LCSD 860-53937/4
Matrix: Solid
Analysis Batch: 53937

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1,1-Trichloroethane	0.0500	0.05238		mg/L		105	75 - 125	1	25
1,1,2,2-Tetrachloroethane	0.0500	0.04567		mg/L		91	74 - 125	6	25
1,1,2-Trichloro-1,2,2-trifluoroethane	0.0500	0.05459		mg/L		109	60 - 140	3	25
1,1,2-Trichloroethane	0.0500	0.04948		mg/L		99	75 - 127	2	25
1,1-Dichloroethane	0.0500	0.05128		mg/L		103	72 - 125	3	25
1,1-Dichloroethene	0.0500	0.05448		mg/L		109	59 - 172	2	25
1,2,4-Trichlorobenzene	0.0500	0.04754		mg/L		95	75 - 135	5	25
1,2-Dibromo-3-Chloropropane	0.0500	0.04810		mg/L		96	59 - 125	9	25
1,2-Dibromoethane	0.0500	0.04993		mg/L		100	73 - 125	4	25
1,2-Dichlorobenzene	0.0500	0.04813		mg/L		96	75 - 125	6	25
1,2-Dichloroethane	0.0500	0.04962		mg/L		99	68 - 127	1	25
1,2-Dichloropropane	0.0500	0.05091		mg/L		102	74 - 125	0	25
1,3-Dichlorobenzene	0.0500	0.04870		mg/L		97	75 - 125	4	25
1,4-Dichlorobenzene	0.0500	0.04760		mg/L		95	75 - 125	4	25
2-Butanone (MEK)	0.250	0.2514		mg/L		101	60 - 140	2	25
2-Hexanone	0.250	0.2424		mg/L		97	60 - 140	2	25
4-Methyl-2-pentanone (MIBK)	0.250	0.2421		mg/L		97	60 - 140	3	25
Acetone	0.250	0.2255		mg/L		90	60 - 140	0	25
Benzene	0.0500	0.05145		mg/L		103	66 - 142	1	25
Chlorobromomethane	0.0500	0.05154		mg/L		103	60 - 140	1	25
Bromodichloromethane	0.0500	0.05131		mg/L		103	75 - 125	3	25
Bromoform	0.0500	0.05354		mg/L		107	75 - 125	2	25

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

Lab Sample ID: LCSD 860-53937/4
Matrix: Solid
Analysis Batch: 53937

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Bromomethane			0.0500	0.05209		mg/L		104	60 - 140	3	25
Carbon disulfide			0.0500	0.05080		mg/L		102	60 - 140	3	25
Carbon tetrachloride			0.0500	0.04671		mg/L		93	62 - 125	2	25
Chlorobenzene			0.0500	0.05112		mg/L		102	60 - 133	2	25
Chloroethane			0.0500	0.05550		mg/L		111	60 - 140	4	25
Chloroform			0.0500	0.05101		mg/L		102	70 - 130	2	25
Chloromethane			0.0500	0.05459		mg/L		109	60 - 140	4	25
Cyclohexane			0.0500	0.04697		mg/L		94	70 - 130	2	25
Dibromochloromethane			0.0500	0.05172		mg/L		103	73 - 125	3	25
Dichlorodifluoromethane			0.0500	0.05797		mg/L		116	70 - 130	1	25
Ethylbenzene			0.0500	0.05190		mg/L		104	75 - 125	1	25
Methyl tert-butyl ether			0.0500	0.04957		mg/L		99	65 - 135	1	25
Methylene Chloride			0.0500	0.04966		mg/L		99	75 - 125	0	25
Styrene			0.0500	0.05149		mg/L		103	75 - 125	3	25
Tetrachloroethene			0.0500	0.05475		mg/L		110	71 - 125	1	25
Toluene			0.0500	0.05109		mg/L		102	59 - 139	2	25
Trichloroethene			0.0500	0.05426		mg/L		109	62 - 137	2	25
Vinyl acetate			0.250	0.2445		mg/L		98	60 - 140	1	25
Vinyl chloride			0.0500	0.05617		mg/L		112	60 - 140	5	25
Xylenes, Total			0.100	0.1032		mg/L		103	75 - 125	1	25
cis-1,2-Dichloroethene			0.0500	0.05116		mg/L		102	75 - 125	1	25
cis-1,3-Dichloropropene			0.0500	0.05129		mg/L		103	74 - 125	3	25
Isopropylbenzene			0.0500	0.05338		mg/L		107	75 - 125	1	25
m-Xylene & p-Xylene			0.0500	0.05260		mg/L		105	75 - 125	1	25
o-Xylene			0.0500	0.05057		mg/L		101	75 - 125	2	25
trans-1,2-Dichloroethene			0.0500	0.05171		mg/L		103	75 - 125	1	25
trans-1,3-Dichloropropene			0.0500	0.05029		mg/L		101	66 - 125	3	25

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*63 - 144*
4-Bromofluorobenzene (Surr)	*95*		*74 - 124*
Dibromofluoromethane (Surr)	*99*		*75 - 131*
Toluene-d8 (Surr)	*97*		*80 - 117*

Lab Sample ID: MB 860-54052/9
Matrix: Solid
Analysis Batch: 54052

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

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.000504	U	0.00500	0.000504	mg/L			05/23/22 21:10	1
1,1,2,2-Tetrachloroethane	0.000284	U	0.00100	0.000284	mg/L			05/23/22 21:10	1
1,1,2-Trichloro-1,2,2-trifluoroethane	0.000364	U	0.0100	0.000364	mg/L			05/23/22 21:10	1
1,1,2-Trichloroethane	0.000228	U	0.00100	0.000228	mg/L			05/23/22 21:10	1
1,1-Dichloroethane	0.000244	U	0.00100	0.000244	mg/L			05/23/22 21:10	1
1,1-Dichloroethene	0.000216	U	0.00100	0.000216	mg/L			05/23/22 21:10	1
1,2,4-Trichlorobenzene	0.00200	U	0.00500	0.00200	mg/L			05/23/22 21:10	1
1,2-Dibromo-3-Chloropropane	0.000319	U	0.00500	0.000319	mg/L			05/23/22 21:10	1
1,2-Dibromoethane	0.000337	U	0.00500	0.000337	mg/L			05/23/22 21:10	1

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

Lab Sample ID: MB 860-54052/9
Matrix: Solid
Analysis Batch: 54052

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

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichlorobenzene	0.000236	U	0.00100	0.000236	mg/L			05/23/22 21:10	1
1,2-Dichloroethane	0.000285	U	0.00100	0.000285	mg/L			05/23/22 21:10	1
1,2-Dichloropropane	0.000396	U	0.00500	0.000396	mg/L			05/23/22 21:10	1
1,3-Dichlorobenzene	0.000197	U	0.00100	0.000197	mg/L			05/23/22 21:10	1
1,4-Dichlorobenzene	0.000199	U	0.00100	0.000199	mg/L			05/23/22 21:10	1
2-Butanone (MEK)	0.00270	U	0.0500	0.00270	mg/L			05/23/22 21:10	1
2-Hexanone	0.000789	U	0.0500	0.000789	mg/L			05/23/22 21:10	1
4-Methyl-2-pentanone (MIBK)	0.00106	U	0.0500	0.00106	mg/L			05/23/22 21:10	1
Acetone	0.0123	U	0.100	0.0123	mg/L			05/23/22 21:10	1
Benzene	0.000214	U	0.00100	0.000214	mg/L			05/23/22 21:10	1
Chlorobromomethane	0.000209	U	0.00100	0.000209	mg/L			05/23/22 21:10	1
Bromodichloromethane	0.000231	U	0.00100	0.000231	mg/L			05/23/22 21:10	1
Bromoform	0.000630	U	0.00500	0.000630	mg/L			05/23/22 21:10	1
Bromomethane	0.00105	U	0.00500	0.00105	mg/L			05/23/22 21:10	1
Carbon disulfide	0.000373	U	0.00500	0.000373	mg/L			05/23/22 21:10	1
Carbon tetrachloride	0.000423	U	0.00500	0.000423	mg/L			05/23/22 21:10	1
Chlorobenzene	0.000159	U	0.00100	0.000159	mg/L			05/23/22 21:10	1
Chloroethane	0.000433	U	0.0100	0.000433	mg/L			05/23/22 21:10	1
Chloroform	0.000259	U	0.00100	0.000259	mg/L			05/23/22 21:10	1
Chloromethane	0.000318	U	0.0100	0.000318	mg/L			05/23/22 21:10	1
Cyclohexane	0.000474	U	0.00500	0.000474	mg/L			05/23/22 21:10	1
Dibromochloromethane	0.000739	U	0.00500	0.000739	mg/L			05/23/22 21:10	1
Dichlorodifluoromethane	0.000316	U	0.00100	0.000316	mg/L			05/23/22 21:10	1
Ethylbenzene	0.000515	U	0.00100	0.000515	mg/L			05/23/22 21:10	1
Methyl tert-butyl ether	0.000571	U	0.00500	0.000571	mg/L			05/23/22 21:10	1
Methylene Chloride	0.00191	U	0.00500	0.00191	mg/L			05/23/22 21:10	1
Styrene	0.000623	U	0.00100	0.000623	mg/L			05/23/22 21:10	1
Tetrachloroethene	0.000500	U	0.00100	0.000500	mg/L			05/23/22 21:10	1
Toluene	0.000500	U	0.00100	0.000500	mg/L			05/23/22 21:10	1
Trichloroethene	0.000424	U	0.00500	0.000424	mg/L			05/23/22 21:10	1
Vinyl acetate	0.00357	U	0.0200	0.00357	mg/L			05/23/22 21:10	1
Vinyl chloride	0.000234	U	0.00200	0.000234	mg/L			05/23/22 21:10	1
Xylenes, Total	0.000330	U	0.0100	0.000330	mg/L			05/23/22 21:10	1
cis-1,2-Dichloroethene	0.000174	U	0.00100	0.000174	mg/L			05/23/22 21:10	1
cis-1,3-Dichloropropene	0.000690	U	0.00500	0.000690	mg/L			05/23/22 21:10	1
Isopropylbenzene	0.000161	U	0.00100	0.000161	mg/L			05/23/22 21:10	1
m-Xylene & p-Xylene	0.000330	U	0.0100	0.000330	mg/L			05/23/22 21:10	1
o-Xylene	0.000192	U	0.00100	0.000192	mg/L			05/23/22 21:10	1
trans-1,2-Dichloroethene	0.000256	U	0.00100	0.000256	mg/L			05/23/22 21:10	1
trans-1,3-Dichloropropene	0.000752	U	0.00500	0.000752	mg/L			05/23/22 21:10	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*63 - 144*		*05/23/22 21:10*	*1*
4-Bromofluorobenzene (Surr)	*97*		*74 - 124*		*05/23/22 21:10*	*1*
Dibromofluoromethane (Surr)	*97*		*75 - 131*		*05/23/22 21:10*	*1*
Toluene-d8 (Surr)	*98*		*80 - 117*		*05/23/22 21:10*	*1*

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

Lab Sample ID: LCS 860-54052/3
Matrix: Solid
Analysis Batch: 54052

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1-Trichloroethane	0.0500	0.05736		mg/L		115	75 - 125
1,1,2,2-Tetrachloroethane	0.0500	0.05227		mg/L		105	74 - 125
1,1,2-Trichloro-1,2,2-trifluoroethane	0.0500	0.05552		mg/L		111	60 - 140
1,1,2-Trichloroethane	0.0500	0.05543		mg/L		111	75 - 127
1,1-Dichloroethane	0.0500	0.05678		mg/L		114	72 - 125
1,1-Dichloroethene	0.0500	0.05831		mg/L		117	59 - 172
1,2,4-Trichlorobenzene	0.0500	0.05301		mg/L		106	75 - 135
1,2-Dibromo-3-Chloropropane	0.0500	0.05328		mg/L		107	59 - 125
1,2-Dibromoethane	0.0500	0.05608		mg/L		112	73 - 125
1,2-Dichlorobenzene	0.0500	0.05427		mg/L		109	75 - 125
1,2-Dichloroethane	0.0500	0.05490		mg/L		110	68 - 127
1,2-Dichloropropane	0.0500	0.05761		mg/L		115	74 - 125
1,3-Dichlorobenzene	0.0500	0.05499		mg/L		110	75 - 125
1,4-Dichlorobenzene	0.0500	0.05378		mg/L		108	75 - 125
2-Butanone (MEK)	0.250	0.2728		mg/L		109	60 - 140
2-Hexanone	0.250	0.2675		mg/L		107	60 - 140
4-Methyl-2-pentanone (MIBK)	0.250	0.2702		mg/L		108	60 - 140
Acetone	0.250	0.2411		mg/L		96	60 - 140
Benzene	0.0500	0.05742		mg/L		115	66 - 142
Chlorobromomethane	0.0500	0.05688		mg/L		114	60 - 140
Bromodichloromethane	0.0500	0.05728		mg/L		115	75 - 125
Bromoform	0.0500	0.05911		mg/L		118	75 - 125
Bromomethane	0.0500	0.05628		mg/L		113	60 - 140
Carbon disulfide	0.0500	0.05299		mg/L		106	60 - 140
Carbon tetrachloride	0.0500	0.05006		mg/L		100	62 - 125
Chlorobenzene	0.0500	0.05726		mg/L		115	60 - 133
Chloroethane	0.0500	0.05756		mg/L		115	60 - 140
Chloroform	0.0500	0.05752		mg/L		115	70 - 130
Chloromethane	0.0500	0.05676		mg/L		114	60 - 140
Cyclohexane	0.0500	0.04535		mg/L		91	70 - 130
Dibromochloromethane	0.0500	0.05804		mg/L		116	73 - 125
Dichlorodifluoromethane	0.0500	0.05233		mg/L		105	70 - 130
Ethylbenzene	0.0500	0.05806		mg/L		116	75 - 125
Methyl tert-butyl ether	0.0500	0.05449		mg/L		109	65 - 135
Methylene Chloride	0.0500	0.05564		mg/L		111	75 - 125
Styrene	0.0500	0.05854		mg/L		117	75 - 125
Tetrachloroethene	0.0500	0.05873		mg/L		117	71 - 125
Toluene	0.0500	0.05701		mg/L		114	59 - 139
Trichloroethene	0.0500	0.05881		mg/L		118	62 - 137
Vinyl acetate	0.250	0.2701		mg/L		108	60 - 140
Vinyl chloride	0.0500	0.05711		mg/L		114	60 - 140
Xylenes, Total	0.100	0.1155		mg/L		116	75 - 125
cis-1,2-Dichloroethene	0.0500	0.05688		mg/L		114	75 - 125
cis-1,3-Dichloropropene	0.0500	0.05647		mg/L		113	74 - 125
Isopropylbenzene	0.0500	0.05857		mg/L		117	75 - 125
m-Xylene & p-Xylene	0.0500	0.05781		mg/L		116	75 - 125
o-Xylene	0.0500	0.05772		mg/L		115	75 - 125
trans-1,2-Dichloroethene	0.0500	0.05660		mg/L		113	75 - 125

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

Lab Sample ID: LCS 860-54052/3
Matrix: Solid
Analysis Batch: 54052

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
trans-1,3-Dichloropropene			0.0500	0.05506		mg/L		110	66 - 125		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*63 - 144*
4-Bromofluorobenzene (Surr)	*96*		*74 - 124*
Dibromofluoromethane (Surr)	*99*		*75 - 131*
Toluene-d8 (Surr)	*99*		*80 - 117*

Lab Sample ID: LCSD 860-54052/4
Matrix: Solid
Analysis Batch: 54052

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1,1-Trichloroethane			0.0500	0.05732		mg/L		115	75 - 125	0	25
1,1,2,2-Tetrachloroethane			0.0500	0.05288		mg/L		106	74 - 125	1	25
1,1,2-Trichloro-1,2,2-trifluoroethane			0.0500	0.05428		mg/L		109	60 - 140	2	25
1,1,2-Trichloroethane			0.0500	0.05595		mg/L		112	75 - 127	1	25
1,1-Dichloroethane			0.0500	0.05701		mg/L		114	72 - 125	0	25
1,1-Dichloroethene			0.0500	0.05873		mg/L		117	59 - 172	1	25
1,2,4-Trichlorobenzene			0.0500	0.05453		mg/L		109	75 - 135	3	25
1,2-Dibromo-3-Chloropropane			0.0500	0.05534		mg/L		111	59 - 125	4	25
1,2-Dibromoethane			0.0500	0.05555		mg/L		111	73 - 125	1	25
1,2-Dichlorobenzene			0.0500	0.05503		mg/L		110	75 - 125	1	25
1,2-Dichloroethane			0.0500	0.05384		mg/L		108	68 - 127	2	25
1,2-Dichloropropane			0.0500	0.05707		mg/L		114	74 - 125	1	25
1,3-Dichlorobenzene			0.0500	0.05571		mg/L		111	75 - 125	1	25
1,4-Dichlorobenzene			0.0500	0.05471		mg/L		109	75 - 125	2	25
2-Butanone (MEK)			0.250	0.2703		mg/L		108	60 - 140	1	25
2-Hexanone			0.250	0.2651		mg/L		106	60 - 140	1	25
4-Methyl-2-pentanone (MIBK)			0.250	0.2706		mg/L		108	60 - 140	0	25
Acetone			0.250	0.2410		mg/L		96	60 - 140	0	25
Benzene			0.0500	0.05729		mg/L		115	66 - 142	0	25
Chlorobromomethane			0.0500	0.05662		mg/L		113	60 - 140	0	25
Bromodichloromethane			0.0500	0.05771		mg/L		115	75 - 125	1	25
Bromoform			0.0500	0.05881		mg/L		118	75 - 125	1	25
Bromomethane			0.0500	0.05556		mg/L		111	60 - 140	1	25
Carbon disulfide			0.0500	0.05332		mg/L		107	60 - 140	1	25
Carbon tetrachloride			0.0500	0.04941		mg/L		99	62 - 125	1	25
Chlorobenzene			0.0500	0.05734		mg/L		115	60 - 133	0	25
Chloroethane			0.0500	0.05784		mg/L		116	60 - 140	0	25
Chloroform			0.0500	0.05755		mg/L		115	70 - 130	0	25
Chloromethane			0.0500	0.05658		mg/L		113	60 - 140	0	25
Cyclohexane			0.0500	0.04635		mg/L		93	70 - 130	2	25
Dibromochloromethane			0.0500	0.05728		mg/L		115	73 - 125	1	25
Dichlorodifluoromethane			0.0500	0.05232		mg/L		105	70 - 130	0	25
Ethylbenzene			0.0500	0.05761		mg/L		115	75 - 125	1	25
Methyl tert-butyl ether			0.0500	0.05497		mg/L		110	65 - 135	1	25
Methylene Chloride			0.0500	0.05572		mg/L		111	75 - 125	0	25

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

Lab Sample ID: LCSD 860-54052/4
Matrix: Solid
Analysis Batch: 54052

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Styrene			0.0500	0.05799		mg/L		116	75 - 125	1	25
Tetrachloroethene			0.0500	0.05737		mg/L		115	71 - 125	2	25
Toluene			0.0500	0.05669		mg/L		113	59 - 139	1	25
Trichloroethene			0.0500	0.05807		mg/L		116	62 - 137	1	25
Vinyl acetate			0.250	0.2709		mg/L		108	60 - 140	0	25
Vinyl chloride			0.0500	0.05858		mg/L		117	60 - 140	3	25
Xylenes, Total			0.100	0.1147		mg/L		115	75 - 125	1	25
cis-1,2-Dichloroethene			0.0500	0.05675		mg/L		113	75 - 125	0	25
cis-1,3-Dichloropropene			0.0500	0.05708		mg/L		114	74 - 125	1	25
Isopropylbenzene			0.0500	0.05848		mg/L		117	75 - 125	0	25
m-Xylene & p-Xylene			0.0500	0.05764		mg/L		115	75 - 125	0	25
o-Xylene			0.0500	0.05710		mg/L		114	75 - 125	1	25
trans-1,2-Dichloroethene			0.0500	0.05759		mg/L		115	75 - 125	2	25
trans-1,3-Dichloropropene			0.0500	0.05518		mg/L		110	66 - 125	0	25

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*63 - 144*
4-Bromofluorobenzene (Surr)	*98*		*74 - 124*
Dibromofluoromethane (Surr)	*98*		*75 - 131*
Toluene-d8 (Surr)	*98*		*80 - 117*

Lab Sample ID: LB 860-53848/1-A
Matrix: Solid
Analysis Batch: 53937

Client Sample ID: Method Blank
Prep Type: TCLP

Analyte	LB Result	LB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.00252	U	0.0250	0.00252	mg/L			05/23/22 10:14	5
1,1,2,2-Tetrachloroethane	0.00142	U	0.00500	0.00142	mg/L			05/23/22 10:14	5
1,1,2-Trichloro-1,2,2-trifluoroethane	0.00182	U	0.0500	0.00182	mg/L			05/23/22 10:14	5
1,1,2-Trichloroethane	0.00114	U	0.00500	0.00114	mg/L			05/23/22 10:14	5
1,1-Dichloroethane	0.00122	U	0.00500	0.00122	mg/L			05/23/22 10:14	5
1,1-Dichloroethene	0.00108	U	0.00500	0.00108	mg/L			05/23/22 10:14	5
1,2,4-Trichlorobenzene	0.0100	U	0.0250	0.0100	mg/L			05/23/22 10:14	5
1,2-Dibromo-3-Chloropropane	0.00160	U	0.0250	0.00160	mg/L			05/23/22 10:14	5
1,2-Dibromoethane	0.00168	U	0.0250	0.00168	mg/L			05/23/22 10:14	5
1,2-Dichlorobenzene	0.00118	U	0.00500	0.00118	mg/L			05/23/22 10:14	5
1,2-Dichloroethane	0.00143	U	0.00500	0.00143	mg/L			05/23/22 10:14	5
1,2-Dichloropropane	0.00198	U	0.0250	0.00198	mg/L			05/23/22 10:14	5
1,3-Dichlorobenzene	0.000983	U	0.00500	0.000983	mg/L			05/23/22 10:14	5
1,4-Dichlorobenzene	0.000994	U	0.00500	0.000994	mg/L			05/23/22 10:14	5
2-Butanone (MEK)	0.0135	U	0.250	0.0135	mg/L			05/23/22 10:14	5
2-Hexanone	0.00395	U	0.250	0.00395	mg/L			05/23/22 10:14	5
4-Methyl-2-pentanone (MIBK)	0.00532	U	0.250	0.00532	mg/L			05/23/22 10:14	5
Acetone	0.0616	U	0.500	0.0616	mg/L			05/23/22 10:14	5
Benzene	0.00107	U	0.00500	0.00107	mg/L			05/23/22 10:14	5
Chlorobromomethane	0.00105	U	0.00500	0.00105	mg/L			05/23/22 10:14	5
Bromodichloromethane	0.00115	U	0.00500	0.00115	mg/L			05/23/22 10:14	5
Bromoform	0.00315	U	0.0250	0.00315	mg/L			05/23/22 10:14	5

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

Lab Sample ID: LB 860-53848/1-A
Matrix: Solid
Analysis Batch: 53937

Client Sample ID: Method Blank
Prep Type: TCLP

Analyte	LB Result	LB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	0.00527	U	0.0250	0.00527	mg/L			05/23/22 10:14	5
Carbon disulfide	0.00187	U	0.0250	0.00187	mg/L			05/23/22 10:14	5
Carbon tetrachloride	0.00211	U	0.0250	0.00211	mg/L			05/23/22 10:14	5
Chlorobenzene	0.000795	U	0.00500	0.000795	mg/L			05/23/22 10:14	5
Chloroethane	0.00216	U	0.0500	0.00216	mg/L			05/23/22 10:14	5
Chloroform	0.00129	U	0.00500	0.00129	mg/L			05/23/22 10:14	5
Chloromethane	0.00159	U	0.0500	0.00159	mg/L			05/23/22 10:14	5
Cyclohexane	0.00237	U	0.0250	0.00237	mg/L			05/23/22 10:14	5
Dibromochloromethane	0.00370	U	0.0250	0.00370	mg/L			05/23/22 10:14	5
Dichlorodifluoromethane	0.00158	U	0.00500	0.00158	mg/L			05/23/22 10:14	5
Ethylbenzene	0.00257	U	0.00500	0.00257	mg/L			05/23/22 10:14	5
Methyl tert-butyl ether	0.00285	U	0.0250	0.00285	mg/L			05/23/22 10:14	5
Methylene Chloride	0.00956	U	0.0250	0.00956	mg/L			05/23/22 10:14	5
Styrene	0.00312	U	0.00500	0.00312	mg/L			05/23/22 10:14	5
Tetrachloroethene	0.00250	U	0.00500	0.00250	mg/L			05/23/22 10:14	5
Toluene	0.00250	U	0.00500	0.00250	mg/L			05/23/22 10:14	5
Trichloroethene	0.00212	U	0.0250	0.00212	mg/L			05/23/22 10:14	5
Vinyl acetate	0.0178	U	0.100	0.0178	mg/L			05/23/22 10:14	5
Vinyl chloride	0.00117	U	0.0100	0.00117	mg/L			05/23/22 10:14	5
Xylenes, Total	0.00165	U	0.0500	0.00165	mg/L			05/23/22 10:14	5
cis-1,2-Dichloroethene	0.000870	U	0.00500	0.000870	mg/L			05/23/22 10:14	5
cis-1,3-Dichloropropene	0.00345	U	0.0250	0.00345	mg/L			05/23/22 10:14	5
Isopropylbenzene	0.000803	U	0.00500	0.000803	mg/L			05/23/22 10:14	5
m-Xylene & p-Xylene	0.00165	U	0.0500	0.00165	mg/L			05/23/22 10:14	5
o-Xylene	0.000958	U	0.00500	0.000958	mg/L			05/23/22 10:14	5
trans-1,2-Dichloroethene	0.00128	U	0.00500	0.00128	mg/L			05/23/22 10:14	5
trans-1,3-Dichloropropene	0.00376	U	0.0250	0.00376	mg/L			05/23/22 10:14	5

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*63 - 144*		*05/23/22 10:14*	*5*
4-Bromofluorobenzene (Surr)	*97*		*74 - 124*		*05/23/22 10:14*	*5*
Dibromofluoromethane (Surr)	*98*		*75 - 131*		*05/23/22 10:14*	*5*
Toluene-d8 (Surr)	*99*		*80 - 117*		*05/23/22 10:14*	*5*

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

Lab Sample ID: MB 860-53840/1-A
Matrix: Solid
Analysis Batch: 53944

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 53840

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1'-Biphenyl	0.000741	U	0.00500	0.000741	mg/L		05/20/22 15:26	05/23/22 13:36	1
2,4,5-Trichlorophenol	0.000935	U	0.00500	0.000935	mg/L		05/20/22 15:26	05/23/22 13:36	1
2,4,6-Trichlorophenol	0.000946	U	0.00500	0.000946	mg/L		05/20/22 15:26	05/23/22 13:36	1
2,4-Dichlorophenol	0.00104	U	0.00500	0.00104	mg/L		05/20/22 15:26	05/23/22 13:36	1
2,4-Dimethylphenol	0.000891	U	0.00500	0.000891	mg/L		05/20/22 15:26	05/23/22 13:36	1
2,4-Dinitrophenol	0.000616	U	0.0100	0.000616	mg/L		05/20/22 15:26	05/23/22 13:36	1
2,4-Dinitrotoluene	0.000953	U	0.00500	0.000953	mg/L		05/20/22 15:26	05/23/22 13:36	1
2,6-Dinitrotoluene	0.00111	U	0.0100	0.00111	mg/L		05/20/22 15:26	05/23/22 13:36	1

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

Lab Sample ID: MB 860-53840/1-A
Matrix: Solid
Analysis Batch: 53944

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 53840

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Chloronaphthalene	0.000809	U	0.00500	0.000809	mg/L		05/20/22 15:26	05/23/22 13:36	1
2-Chlorophenol	0.000842	U	0.00500	0.000842	mg/L		05/20/22 15:26	05/23/22 13:36	1
2-Methylnaphthalene	0.000778	U	0.00500	0.000778	mg/L		05/20/22 15:26	05/23/22 13:36	1
2-Nitroaniline	0.00107	U	0.0100	0.00107	mg/L		05/20/22 15:26	05/23/22 13:36	1
2-Nitrophenol	0.000966	U	0.00500	0.000966	mg/L		05/20/22 15:26	05/23/22 13:36	1
2-Methylphenol	0.000914	U	0.00500	0.000914	mg/L		05/20/22 15:26	05/23/22 13:36	1
3 & 4 Methylphenol	0.00104	U	0.0100	0.00104	mg/L		05/20/22 15:26	05/23/22 13:36	1
3,3'-Dichlorobenzidine	0.000618	U	0.0100	0.000618	mg/L		05/20/22 15:26	05/23/22 13:36	1
3-Nitroaniline	0.000787	U	0.0100	0.000787	mg/L		05/20/22 15:26	05/23/22 13:36	1
4,6-Dinitro-2-methylphenol	0.000870	U	0.0100	0.000870	mg/L		05/20/22 15:26	05/23/22 13:36	1
4-Bromophenyl phenyl ether	0.000948	U	0.00500	0.000948	mg/L		05/20/22 15:26	05/23/22 13:36	1
4-Chloroaniline	0.000609	U	0.0100	0.000609	mg/L		05/20/22 15:26	05/23/22 13:36	1
4-Chlorophenyl phenyl ether	0.000868	U	0.00500	0.000868	mg/L		05/20/22 15:26	05/23/22 13:36	1
4-Nitroaniline	0.00116	U	0.0100	0.00116	mg/L		05/20/22 15:26	05/23/22 13:36	1
4-Nitrophenol	0.00161	U	0.0100	0.00161	mg/L		05/20/22 15:26	05/23/22 13:36	1
4-Chloro-3-methylphenol	0.00131	U	0.0100	0.00131	mg/L		05/20/22 15:26	05/23/22 13:36	1
Acenaphthene	0.000876	U	0.00500	0.000876	mg/L		05/20/22 15:26	05/23/22 13:36	1
Acenaphthylene	0.000886	U	0.00500	0.000886	mg/L		05/20/22 15:26	05/23/22 13:36	1
Acetophenone	0.000932	U	0.00500	0.000932	mg/L		05/20/22 15:26	05/23/22 13:36	1
Anthracene	0.000884	U	0.00500	0.000884	mg/L		05/20/22 15:26	05/23/22 13:36	1
Benzo[a]anthracene	0.00100	U	0.00500	0.00100	mg/L		05/20/22 15:26	05/23/22 13:36	1
Benzo[a]pyrene	0.00100	U	0.00500	0.00100	mg/L		05/20/22 15:26	05/23/22 13:36	1
Benzo[b]fluoranthene	0.00179	U	0.00500	0.00179	mg/L		05/20/22 15:26	05/23/22 13:36	1
Benzo[g,h,i]perylene	0.00125	U	0.00500	0.00125	mg/L		05/20/22 15:26	05/23/22 13:36	1
Benzo[k]fluoranthene	0.00136	U	0.00500	0.00136	mg/L		05/20/22 15:26	05/23/22 13:36	1
Butyl benzyl phthalate	0.00119	U	0.00500	0.00119	mg/L		05/20/22 15:26	05/23/22 13:36	1
Carbazole	0.000855	U	0.00500	0.000855	mg/L		05/20/22 15:26	05/23/22 13:36	1
Chrysene	0.00100	U	0.00500	0.00100	mg/L		05/20/22 15:26	05/23/22 13:36	1
Dibenz(a,h)anthracene	0.00126	U	0.00500	0.00126	mg/L		05/20/22 15:26	05/23/22 13:36	1
Dibenzofuran	0.000951	U	0.00500	0.000951	mg/L		05/20/22 15:26	05/23/22 13:36	1
Diethyl phthalate	0.00123	U	0.00500	0.00123	mg/L		05/20/22 15:26	05/23/22 13:36	1
Dimethyl phthalate	0.00117	U	0.00500	0.00117	mg/L		05/20/22 15:26	05/23/22 13:36	1
Fluoranthene	0.000948	U	0.00500	0.000948	mg/L		05/20/22 15:26	05/23/22 13:36	1
Fluorene	0.000938	U	0.00500	0.000938	mg/L		05/20/22 15:26	05/23/22 13:36	1
Hexachlorobenzene	0.00107	U	0.00500	0.00107	mg/L		05/20/22 15:26	05/23/22 13:36	1
Hexachlorobutadiene	0.000709	U	0.00500	0.000709	mg/L		05/20/22 15:26	05/23/22 13:36	1
Hexachlorocyclopentadiene	0.000614	U	0.00500	0.000614	mg/L		05/20/22 15:26	05/23/22 13:36	1
Hexachloroethane	0.000787	U	0.00500	0.000787	mg/L		05/20/22 15:26	05/23/22 13:36	1
Indeno[1,2,3-cd]pyrene	0.00110	U	0.00500	0.00110	mg/L		05/20/22 15:26	05/23/22 13:36	1
Isophorone	0.00101	U	0.00500	0.00101	mg/L		05/20/22 15:26	05/23/22 13:36	1
N-Nitrosodi-n-propylamine	0.00133	U	0.00500	0.00133	mg/L		05/20/22 15:26	05/23/22 13:36	1
N-Nitrosodiphenylamine	0.00116	U	0.00500	0.00116	mg/L		05/20/22 15:26	05/23/22 13:36	1
Naphthalene	0.000751	U	0.00500	0.000751	mg/L		05/20/22 15:26	05/23/22 13:36	1
Nitrobenzene	0.000961	U	0.00500	0.000961	mg/L		05/20/22 15:26	05/23/22 13:36	1
Pentachlorophenol	0.00112	U	0.0100	0.00112	mg/L		05/20/22 15:26	05/23/22 13:36	1
Phenanthrene	0.000975	U	0.00500	0.000975	mg/L		05/20/22 15:26	05/23/22 13:36	1
Phenol	0.00116	U	0.0100	0.00116	mg/L		05/20/22 15:26	05/23/22 13:36	1
Pyrene	0.000852	U	0.00500	0.000852	mg/L		05/20/22 15:26	05/23/22 13:36	1
Bis(2-chloroethoxy)methane	0.00124	U	0.00500	0.00124	mg/L		05/20/22 15:26	05/23/22 13:36	1

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

Lab Sample ID: MB 860-53840/1-A
Matrix: Solid
Analysis Batch: 53944

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 53840

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-chloroethyl)ether	0.00108	U	0.00500	0.00108	mg/L		05/20/22 15:26	05/23/22 13:36	1
bis (2-Chloroisopropyl) ether	0.00145	U	0.00500	0.00145	mg/L		05/20/22 15:26	05/23/22 13:36	1
Bis(2-ethylhexyl) phthalate	0.00188	U	0.00500	0.00188	mg/L		05/20/22 15:26	05/23/22 13:36	1
Di-n-butyl phthalate	0.00113	U	0.00500	0.00113	mg/L		05/20/22 15:26	05/23/22 13:36	1
Di-n-octyl phthalate	0.00148	U	0.00500	0.00148	mg/L		05/20/22 15:26	05/23/22 13:36	1
Pyridine	0.000487	U	0.0100	0.000487	mg/L		05/20/22 15:26	05/23/22 13:36	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*59*		*31 - 132*	*05/20/22 15:26*	*05/23/22 13:36*	*1*
2-Fluorobiphenyl	*63*		*29 - 112*	*05/20/22 15:26*	*05/23/22 13:36*	*1*
2-Fluorophenol	*29*		*21 - 114*	*05/20/22 15:26*	*05/23/22 13:36*	*1*
Nitrobenzene-d5	*66*		*26 - 110*	*05/20/22 15:26*	*05/23/22 13:36*	*1*
p-Terphenyl-d14 (Surr)	*65*		*20 - 141*	*05/20/22 15:26*	*05/23/22 13:36*	*1*
Phenol-d5 (Surr)	*17*		*16 - 117*	*05/20/22 15:26*	*05/23/22 13:36*	*1*

Lab Sample ID: LCS 860-53840/2-A
Matrix: Solid
Analysis Batch: 53944

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 53840

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1'-Biphenyl	0.0400	0.02317		mg/L		58	41 - 117
2,4,5-Trichlorophenol	0.0400	0.02389		mg/L		60	39 - 125
2,4,6-Trichlorophenol	0.0400	0.02443		mg/L		61	42 - 125
2,4-Dichlorophenol	0.0400	0.02462		mg/L		62	38 - 120
2,4-Dimethylphenol	0.0400	0.02215		mg/L		55	39 - 117
2,4-Dinitrophenol	0.0400	0.01626		mg/L		41	13 - 152
2,4-Dinitrotoluene	0.0400	0.02627		mg/L		66	41 - 128
2,6-Dinitrotoluene	0.0400	0.02491		mg/L		62	42 - 127
2-Chloronaphthalene	0.0400	0.02323		mg/L		58	40 - 118
2-Chlorophenol	0.0400	0.02201		mg/L		55	41 - 108
2-Methylnaphthalene	0.0400	0.02242		mg/L		56	37 - 112
2-Nitroaniline	0.0400	0.02565		mg/L		64	34 - 121
2-Nitrophenol	0.0400	0.02309		mg/L		58	38 - 125
2-Methylphenol	0.0400	0.01852		mg/L		46	36 - 105
3 & 4 Methylphenol	0.0400	0.01683		mg/L		42	35 - 116
3,3'-Dichlorobenzidine	0.0400	0.02193		mg/L		55	29 - 141
3-Nitroaniline	0.0400	0.02033		mg/L		51	42 - 123
4,6-Dinitro-2-methylphenol	0.0400	0.02329		mg/L		58	12 - 157
4-Bromophenyl phenyl ether	0.0400	0.02419		mg/L		60	40 - 126
4-Chloroaniline	0.0400	0.02030		mg/L		51	39 - 111
4-Chlorophenyl phenyl ether	0.0400	0.02464		mg/L		62	40 - 122
4-Nitroaniline	0.0400	0.02098		mg/L		52	42 - 125
4-Nitrophenol	0.0400	0.005983	J	mg/L		15	14 - 136
4-Chloro-3-methylphenol	0.0400	0.02363		mg/L		59	40 - 119
Acenaphthene	0.0400	0.02439		mg/L		61	41 - 116
Acenaphthylene	0.0400	0.02518		mg/L		63	41 - 118
Acetophenone	0.0400	0.02452		mg/L		61	23 - 175
Anthracene	0.0400	0.02627		mg/L		66	39 - 127

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

Lab Sample ID: LCS 860-53840/2-A
Matrix: Solid
Analysis Batch: 53944

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 53840

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzo[a]anthracene	0.0400	0.02593		mg/L		65	40 - 129
Benzo[a]pyrene	0.0400	0.02702		mg/L		68	36 - 141
Benzo[b]fluoranthene	0.0400	0.02785		mg/L		70	34 - 139
Benzo[g,h,i]perylene	0.0400	0.02693		mg/L		67	32 - 141
Benzo[k]fluoranthene	0.0400	0.02689		mg/L		67	31 - 139
Butyl benzyl phthalate	0.0400	0.02891		mg/L		72	44 - 133
Carbazole	0.0400	0.02698		mg/L		67	62 - 98
Chrysene	0.0400	0.02757		mg/L		69	41 - 124
Dibenz(a,h)anthracene	0.0400	0.02818		mg/L		70	35 - 143
Dibenzofuran	0.0400	0.02525		mg/L		63	41 - 119
Diethyl phthalate	0.0400	0.02633		mg/L		66	41 - 125
Dimethyl phthalate	0.0400	0.02457		mg/L		61	42 - 123
Fluoranthene	0.0400	0.02590		mg/L		65	38 - 132
Fluorene	0.0400	0.02550		mg/L		64	41 - 121
Hexachlorobenzene	0.0400	0.02260		mg/L		57	39 - 128
Hexachlorobutadiene	0.0400	0.01682		mg/L		42	31 - 120
Hexachlorocyclopentadiene	0.0400	0.01697		mg/L		42	15 - 117
Hexachloroethane	0.0400	0.01746		mg/L		44	37 - 109
Indeno[1,2,3-cd]pyrene	0.0400	0.02791		mg/L		70	35 - 141
Isophorone	0.0400	0.02431		mg/L		61	40 - 115
N-Nitrosodi-n-propylamine	0.0400	0.02693		mg/L		67	38 - 117
N-Nitrosodiphenylamine	0.0400	0.02636		mg/L		66	40 - 127
Naphthalene	0.0400	0.02200		mg/L		55	37 - 113
Nitrobenzene	0.0400	0.02349		mg/L		59	37 - 114
Pentachlorophenol	0.0400	0.02095		mg/L		52	10 - 137
Phenanthrene	0.0400	0.02576		mg/L		64	39 - 126
Phenol	0.0400	0.008428	J	mg/L		21	15 - 125
Pyrene	0.0400	0.02758		mg/L		69	40 - 130
Bis(2-chloroethoxy)methane	0.0400	0.02455		mg/L		61	36 - 113
Bis(2-chloroethyl)ether	0.0400	0.02567		mg/L		64	38 - 111
bis (2-Chloroisopropyl) ether	0.0400	0.02966		mg/L		74	32 - 110
Bis(2-ethylhexyl) phthalate	0.0400	0.03083		mg/L		77	44 - 136
Di-n-butyl phthalate	0.0400	0.02780		mg/L		70	41 - 133
Di-n-octyl phthalate	0.0400	0.02964		mg/L		74	34 - 145
Pyridine	0.0400	0.001593	J *	mg/L		4	16 - 135

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol	*51*		*31 - 132*
2-Fluorobiphenyl	*58*		*29 - 112*
2-Fluorophenol	*24*		*21 - 114*
Nitrobenzene-d5	*56*		*26 - 110*
p-Terphenyl-d14 (Surr)	*57*		*20 - 141*
Phenol-d5 (Surr)	*16*		*16 - 117*

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

Lab Sample ID: LCSD 860-53840/3-A
Matrix: Solid
Analysis Batch: 53944

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 53840

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1'-Biphenyl			0.0400	0.02437		mg/L		61	41 - 117	5	30
2,4,5-Trichlorophenol			0.0400	0.02686		mg/L		67	39 - 125	12	30
2,4,6-Trichlorophenol			0.0400	0.02626		mg/L		66	42 - 125	7	30
2,4-Dichlorophenol			0.0400	0.02675		mg/L		67	38 - 120	8	30
2,4-Dimethylphenol			0.0400	0.02520		mg/L		63	39 - 117	13	30
2,4-Dinitrophenol			0.0400	0.01818		mg/L		45	13 - 152	11	40
2,4-Dinitrotoluene			0.0400	0.02913		mg/L		73	41 - 128	10	30
2,6-Dinitrotoluene			0.0400	0.02772		mg/L		69	42 - 127	11	30
2-Chloronaphthalene			0.0400	0.02585		mg/L		65	40 - 118	11	30
2-Chlorophenol			0.0400	0.02407		mg/L		60	41 - 108	9	30
2-Methylnaphthalene			0.0400	0.02551		mg/L		64	37 - 112	13	30
2-Nitroaniline			0.0400	0.02879		mg/L		72	34 - 121	12	40
2-Nitrophenol			0.0400	0.02599		mg/L		65	38 - 125	12	30
2-Methylphenol			0.0400	0.02149		mg/L		54	36 - 105	15	30
3 & 4 Methylphenol			0.0400	0.02062		mg/L		52	35 - 116	20	30
3,3'-Dichlorobenzidine			0.0400	0.02233		mg/L		56	29 - 141	2	40
3-Nitroaniline			0.0400	0.02337		mg/L		58	42 - 123	14	40
4,6-Dinitro-2-methylphenol			0.0400	0.02585		mg/L		65	12 - 157	10	40
4-Bromophenyl phenyl ether			0.0400	0.02564		mg/L		64	40 - 126	6	30
4-Chloroaniline			0.0400	0.02332		mg/L		58	39 - 111	14	40
4-Chlorophenyl phenyl ether			0.0400	0.02712		mg/L		68	40 - 122	10	30
4-Nitroaniline			0.0400	0.02402		mg/L		60	42 - 125	14	40
4-Nitrophenol			0.0400	0.007514	J	mg/L		19	14 - 136	23	40
4-Chloro-3-methylphenol			0.0400	0.02689		mg/L		67	40 - 119	13	30
Acenaphthene			0.0400	0.02605		mg/L		65	41 - 116	7	30
Acenaphthylene			0.0400	0.02737		mg/L		68	41 - 118	8	30
Acetophenone			0.0400	0.02841		mg/L		71	23 - 175	15	30
Anthracene			0.0400	0.02836		mg/L		71	39 - 127	8	30
Benzo[a]anthracene			0.0400	0.02636		mg/L		66	40 - 129	2	30
Benzo[a]pyrene			0.0400	0.02800		mg/L		70	36 - 141	4	30
Benzo[b]fluoranthene			0.0400	0.02788		mg/L		70	34 - 139	0	30
Benzo[g,h,i]perylene			0.0400	0.02838		mg/L		71	32 - 141	5	30
Benzo[k]fluoranthene			0.0400	0.02818		mg/L		70	31 - 139	5	30
Butyl benzyl phthalate			0.0400	0.03012		mg/L		75	44 - 133	4	30
Carbazole			0.0400	0.03026		mg/L		76	62 - 98	11	30
Chrysene			0.0400	0.02852		mg/L		71	41 - 124	3	30
Dibenz(a,h)anthracene			0.0400	0.02850		mg/L		71	35 - 143	1	30
Dibenzofuran			0.0400	0.02758		mg/L		69	41 - 119	9	30
Diethyl phthalate			0.0400	0.02891		mg/L		72	41 - 125	9	30
Dimethyl phthalate			0.0400	0.02767		mg/L		69	42 - 123	12	30
Fluoranthene			0.0400	0.02934		mg/L		73	38 - 132	12	30
Fluorene			0.0400	0.02759		mg/L		69	41 - 121	8	30
Hexachlorobenzene			0.0400	0.02397		mg/L		60	39 - 128	6	30
Hexachlorobutadiene			0.0400	0.01750		mg/L		44	31 - 120	4	30
Hexachlorocyclopentadiene			0.0400	0.01677		mg/L		42	15 - 117	1	30
Hexachloroethane			0.0400	0.01817		mg/L		45	37 - 109	4	30
Indeno[1,2,3-cd]pyrene			0.0400	0.02811		mg/L		70	35 - 141	1	30
Isophorone			0.0400	0.02729		mg/L		68	40 - 115	12	30

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

Lab Sample ID: LCSD 860-53840/3-A
Matrix: Solid
Analysis Batch: 53944

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 53840

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
N-Nitrosodi-n-propylamine			0.0400	0.03111		mg/L		78	38 - 117	14	30
N-Nitrosodiphenylamine			0.0400	0.02777		mg/L		69	40 - 127	5	30
Naphthalene			0.0400	0.02280		mg/L		57	37 - 113	4	30
Nitrobenzene			0.0400	0.02561		mg/L		64	37 - 114	9	30
Pentachlorophenol			0.0400	0.02293		mg/L		57	10 - 137	9	40
Phenanthrene			0.0400	0.02806		mg/L		70	39 - 126	9	30
Phenol			0.0400	0.01018		mg/L		25	15 - 125	19	40
Pyrene			0.0400	0.02769		mg/L		69	40 - 130	0	30
Bis(2-chloroethoxy)methane			0.0400	0.02652		mg/L		66	36 - 113	8	30
Bis(2-chloroethyl)ether			0.0400	0.02789		mg/L		70	38 - 111	8	30
bis (2-Chloroisopropyl) ether			0.0400	0.03350		mg/L		84	32 - 110	12	30
Bis(2-ethylhexyl) phthalate			0.0400	0.03229		mg/L		81	44 - 136	5	30
Di-n-butyl phthalate			0.0400	0.03056		mg/L		76	41 - 133	9	30
Di-n-octyl phthalate			0.0400	0.03109		mg/L		78	34 - 145	5	30
Pyridine			0.0400	0.0006298	J *	mg/L		2	16 - 135	87	40

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4,6-Tribromophenol	*57*		*31 - 132*
2-Fluorobiphenyl	*63*		*29 - 112*
2-Fluorophenol	*28*		*21 - 114*
Nitrobenzene-d5	*61*		*26 - 110*
p-Terphenyl-d14 (Surr)	*60*		*20 - 141*
Phenol-d5 (Surr)	*20*		*16 - 117*

Lab Sample ID: LB 860-53687/1-B
Matrix: Solid
Analysis Batch: 53944

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 53840

Analyte	LB Result	LB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1'-Biphenyl	0.00370	U	0.0250	0.00370	mg/L		05/20/22 16:20	05/23/22 13:56	1
2,4,5-Trichlorophenol	0.00468	U	0.0250	0.00468	mg/L		05/20/22 16:20	05/23/22 13:56	1
2,4,6-Trichlorophenol	0.00473	U	0.0250	0.00473	mg/L		05/20/22 16:20	05/23/22 13:56	1
2,4-Dichlorophenol	0.00521	U	0.0250	0.00521	mg/L		05/20/22 16:20	05/23/22 13:56	1
2,4-Dimethylphenol	0.00445	U	0.0250	0.00445	mg/L		05/20/22 16:20	05/23/22 13:56	1
2,4-Dinitrophenol	0.00308	U	0.0500	0.00308	mg/L		05/20/22 16:20	05/23/22 13:56	1
2,4-Dinitrotoluene	0.00477	U	0.0250	0.00477	mg/L		05/20/22 16:20	05/23/22 13:56	1
2,6-Dinitrotoluene	0.00553	U	0.0500	0.00553	mg/L		05/20/22 16:20	05/23/22 13:56	1
2-Chloronaphthalene	0.00404	U	0.0250	0.00404	mg/L		05/20/22 16:20	05/23/22 13:56	1
2-Chlorophenol	0.00421	U	0.0250	0.00421	mg/L		05/20/22 16:20	05/23/22 13:56	1
2-Methylnaphthalene	0.00389	U	0.0250	0.00389	mg/L		05/20/22 16:20	05/23/22 13:56	1
2-Nitroaniline	0.00535	U	0.0500	0.00535	mg/L		05/20/22 16:20	05/23/22 13:56	1
2-Nitrophenol	0.00483	U	0.0250	0.00483	mg/L		05/20/22 16:20	05/23/22 13:56	1
2-Methylphenol	0.00457	U	0.0250	0.00457	mg/L		05/20/22 16:20	05/23/22 13:56	1
3 & 4 Methylphenol	0.00521	U	0.0500	0.00521	mg/L		05/20/22 16:20	05/23/22 13:56	1
3,3'-Dichlorobenzidine	0.00309	U	0.0500	0.00309	mg/L		05/20/22 16:20	05/23/22 13:56	1
3-Nitroaniline	0.00394	U	0.0500	0.00394	mg/L		05/20/22 16:20	05/23/22 13:56	1
4,6-Dinitro-2-methylphenol	0.00435	U	0.0500	0.00435	mg/L		05/20/22 16:20	05/23/22 13:56	1
4-Bromophenyl phenyl ether	0.00474	U	0.0250	0.00474	mg/L		05/20/22 16:20	05/23/22 13:56	1

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

Lab Sample ID: LB 860-53687/1-B
Matrix: Solid
Analysis Batch: 53944

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 53840

Analyte	LB Result	LB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Chloroaniline	0.00304	U	0.0500	0.00304	mg/L		05/20/22 16:20	05/23/22 13:56	1
4-Chlorophenyl phenyl ether	0.00434	U	0.0250	0.00434	mg/L		05/20/22 16:20	05/23/22 13:56	1
4-Nitroaniline	0.00582	U	0.0500	0.00582	mg/L		05/20/22 16:20	05/23/22 13:56	1
4-Nitrophenol	0.00806	U	0.0500	0.00806	mg/L		05/20/22 16:20	05/23/22 13:56	1
4-Chloro-3-methylphenol	0.00653	U	0.0500	0.00653	mg/L		05/20/22 16:20	05/23/22 13:56	1
Acenaphthene	0.00438	U	0.0250	0.00438	mg/L		05/20/22 16:20	05/23/22 13:56	1
Acenaphthylene	0.00443	U	0.0250	0.00443	mg/L		05/20/22 16:20	05/23/22 13:56	1
Acetophenone	0.00466	U	0.0250	0.00466	mg/L		05/20/22 16:20	05/23/22 13:56	1
Anthracene	0.00442	U	0.0250	0.00442	mg/L		05/20/22 16:20	05/23/22 13:56	1
Benzo[a]anthracene	0.00500	U	0.0250	0.00500	mg/L		05/20/22 16:20	05/23/22 13:56	1
Benzo[a]pyrene	0.00500	U	0.0250	0.00500	mg/L		05/20/22 16:20	05/23/22 13:56	1
Benzo[b]fluoranthene	0.00896	U	0.0250	0.00896	mg/L		05/20/22 16:20	05/23/22 13:56	1
Benzo[g,h,i]perylene	0.00627	U	0.0250	0.00627	mg/L		05/20/22 16:20	05/23/22 13:56	1
Benzo[k]fluoranthene	0.00680	U	0.0250	0.00680	mg/L		05/20/22 16:20	05/23/22 13:56	1
Butyl benzyl phthalate	0.00594	U	0.0250	0.00594	mg/L		05/20/22 16:20	05/23/22 13:56	1
Carbazole	0.00427	U	0.0250	0.00427	mg/L		05/20/22 16:20	05/23/22 13:56	1
Chrysene	0.00500	U	0.0250	0.00500	mg/L		05/20/22 16:20	05/23/22 13:56	1
Dibenz(a,h)anthracene	0.00630	U	0.0250	0.00630	mg/L		05/20/22 16:20	05/23/22 13:56	1
Dibenzofuran	0.00476	U	0.0250	0.00476	mg/L		05/20/22 16:20	05/23/22 13:56	1
Diethyl phthalate	0.00616	U	0.0250	0.00616	mg/L		05/20/22 16:20	05/23/22 13:56	1
Dimethyl phthalate	0.00586	U	0.0250	0.00586	mg/L		05/20/22 16:20	05/23/22 13:56	1
Fluoranthene	0.00474	U	0.0250	0.00474	mg/L		05/20/22 16:20	05/23/22 13:56	1
Fluorene	0.00469	U	0.0250	0.00469	mg/L		05/20/22 16:20	05/23/22 13:56	1
Hexachlorobenzene	0.00537	U	0.0250	0.00537	mg/L		05/20/22 16:20	05/23/22 13:56	1
Hexachlorobutadiene	0.00355	U	0.0250	0.00355	mg/L		05/20/22 16:20	05/23/22 13:56	1
Hexachlorocyclopentadiene	0.00307	U	0.0250	0.00307	mg/L		05/20/22 16:20	05/23/22 13:56	1
Hexachloroethane	0.00393	U	0.0250	0.00393	mg/L		05/20/22 16:20	05/23/22 13:56	1
Indeno[1,2,3-cd]pyrene	0.00549	U	0.0250	0.00549	mg/L		05/20/22 16:20	05/23/22 13:56	1
Isophorone	0.00503	U	0.0250	0.00503	mg/L		05/20/22 16:20	05/23/22 13:56	1
N-Nitrosodi-n-propylamine	0.00663	U	0.0250	0.00663	mg/L		05/20/22 16:20	05/23/22 13:56	1
N-Nitrosodiphenylamine	0.00580	U	0.0250	0.00580	mg/L		05/20/22 16:20	05/23/22 13:56	1
Naphthalene	0.00376	U	0.0250	0.00376	mg/L		05/20/22 16:20	05/23/22 13:56	1
Nitrobenzene	0.00480	U	0.0250	0.00480	mg/L		05/20/22 16:20	05/23/22 13:56	1
Pentachlorophenol	0.00558	U	0.0500	0.00558	mg/L		05/20/22 16:20	05/23/22 13:56	1
Phenanthrene	0.00487	U	0.0250	0.00487	mg/L		05/20/22 16:20	05/23/22 13:56	1
Phenol	0.00580	U	0.0500	0.00580	mg/L		05/20/22 16:20	05/23/22 13:56	1
Pyrene	0.00426	U	0.0250	0.00426	mg/L		05/20/22 16:20	05/23/22 13:56	1
Bis(2-chloroethoxy)methane	0.00620	U	0.0250	0.00620	mg/L		05/20/22 16:20	05/23/22 13:56	1
Bis(2-chloroethyl)ether	0.00539	U	0.0250	0.00539	mg/L		05/20/22 16:20	05/23/22 13:56	1
bis (2-Chloroisopropyl) ether	0.00725	U	0.0250	0.00725	mg/L		05/20/22 16:20	05/23/22 13:56	1
Bis(2-ethylhexyl) phthalate	0.00941	U	0.0250	0.00941	mg/L		05/20/22 16:20	05/23/22 13:56	1
Di-n-butyl phthalate	0.00565	U	0.0250	0.00565	mg/L		05/20/22 16:20	05/23/22 13:56	1
Di-n-octyl phthalate	0.00739	U	0.0250	0.00739	mg/L		05/20/22 16:20	05/23/22 13:56	1
Pyridine	0.00244	U	0.0500	0.00244	mg/L		05/20/22 16:20	05/23/22 13:56	1

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*18*	*X*	*31 - 132*	*05/20/22 16:20*	*05/23/22 13:56*	*1*
2-Fluorobiphenyl	*23*	*X*	*29 - 112*	*05/20/22 16:20*	*05/23/22 13:56*	*1*

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

Lab Sample ID: LB 860-53687/1-B
Matrix: Solid
Analysis Batch: 53944

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 53840

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorophenol	*16*	*X*	*21 - 114*	*05/20/22 16:20*	*05/23/22 13:56*	*1*
Nitrobenzene-d5	*23*	*X*	*26 - 110*	*05/20/22 16:20*	*05/23/22 13:56*	*1*
p-Terphenyl-d14 (Surr)	*21*		*20 - 141*	*05/20/22 16:20*	*05/23/22 13:56*	*1*
Phenol-d5 (Surr)	*13*	*X*	*16 - 117*	*05/20/22 16:20*	*05/23/22 13:56*	*1*

Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC)

Lab Sample ID: MB 860-53809/1-A
Matrix: Solid
Analysis Batch: 53754

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 53809

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
C6-C12	21.1	U	50.0	21.1	mg/Kg		05/20/22 12:48	05/20/22 18:26	1
>C12-C28	21.1	U	50.0	21.1	mg/Kg		05/20/22 12:48	05/20/22 18:26	1
>C28-C35	21.1	U	50.0	21.1	mg/Kg		05/20/22 12:48	05/20/22 18:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane (Surr)	*92*		*70 - 130*	*05/20/22 12:48*	*05/20/22 18:26*	*1*
o-Terphenyl (Surr)	*98*		*70 - 130*	*05/20/22 12:48*	*05/20/22 18:26*	*1*

Lab Sample ID: LCS 860-53809/2-A
Matrix: Solid
Analysis Batch: 53754

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 53809

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
C6-C12			1000	861.5		mg/Kg		86	75 - 125		
>C12-C28			1000	996.2		mg/Kg		100	75 - 125		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1-Chlorooctane (Surr)	*106*		*70 - 130*
o-Terphenyl (Surr)	*96*		*70 - 130*

Lab Sample ID: LCSD 860-53809/3-A
Matrix: Solid
Analysis Batch: 53754

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 53809

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
C6-C12			1000	943.0		mg/Kg		94	75 - 125	9	20
>C12-C28			1000	1093		mg/Kg		109	75 - 125	9	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1-Chlorooctane (Surr)	*107*		*70 - 130*
o-Terphenyl (Surr)	*98*		*70 - 130*

Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC) (Continued)

Lab Sample ID: 860-26460-2 MS
Matrix: Solid
Analysis Batch: 53754

Client Sample ID: IDW-WS02-051922
Prep Type: Total/NA
Prep Batch: 53809

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
C6-C12	21.1	U	998	959.2		mg/Kg		96	75 - 125
>C12-C28	21.1	U	998	1104		mg/Kg		111	75 - 125

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1-Chlorooctane (Surr)	*108*		*70 - 130*
o-Terphenyl (Surr)	*99*		*70 - 130*

Lab Sample ID: 860-26460-2 MSD
Matrix: Solid
Analysis Batch: 53754

Client Sample ID: IDW-WS02-051922
Prep Type: Total/NA
Prep Batch: 53809

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
C6-C12	21.1	U	1000	933.1		mg/Kg		93	75 - 125	3	20
>C12-C28	21.1	U	1000	1088		mg/Kg		109	75 - 125	1	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1-Chlorooctane (Surr)	*105*		*70 - 130*
o-Terphenyl (Surr)	*94*		*70 - 130*

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 860-53954/1-A
Matrix: Solid
Analysis Batch: 54342

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 53954

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00550	U	0.0100	0.00550	mg/L		05/23/22 08:45	05/24/22 20:56	1
Barium	0.00135	U	0.0100	0.00135	mg/L		05/23/22 08:45	05/24/22 20:56	1
Cadmium	0.00243	U	0.00500	0.00243	mg/L		05/23/22 08:45	05/24/22 20:56	1
Chromium	0.001293	J	0.0100	0.000811	mg/L		05/23/22 08:45	05/24/22 20:56	1
Lead	0.00237	U	0.0100	0.00237	mg/L		05/23/22 08:45	05/24/22 20:56	1
Manganese	0.00316	U	0.0200	0.00316	mg/L		05/23/22 08:45	05/24/22 20:56	1
Nickel	0.00307	U	0.0100	0.00307	mg/L		05/23/22 08:45	05/24/22 20:56	1
Selenium	0.004872	J	0.0300	0.00439	mg/L		05/23/22 08:45	05/24/22 20:56	1
Silver	0.00559	U	0.0200	0.00559	mg/L		05/23/22 08:45	05/24/22 20:56	1
Antimony	0.00589	U	0.0200	0.00589	mg/L		05/23/22 08:45	05/24/22 20:56	1
Beryllium	0.000490	U	0.00400	0.000490	mg/L		05/23/22 08:45	05/24/22 20:56	1

Lab Sample ID: LCS 860-53954/2-A
Matrix: Solid
Analysis Batch: 54342

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 53954

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	1.00	1.020		mg/L		102	80 - 120
Barium	1.00	0.9999		mg/L		100	80 - 120
Cadmium	1.00	1.016		mg/L		102	80 - 120
Chromium	1.00	1.044		mg/L		104	80 - 120
Lead	1.00	1.026		mg/L		103	80 - 120

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: LCS 860-53954/2-A
Matrix: Solid
Analysis Batch: 54342

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 53954

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Manganese	1.00	1.004		mg/L		100	80 - 120
Nickel	1.00	1.032		mg/L		103	80 - 120
Selenium	1.00	1.025		mg/L		102	80 - 120
Silver	0.500	0.4920		mg/L		98	80 - 120
Antimony	1.00	1.004		mg/L		100	80 - 120
Beryllium	1.00	1.005		mg/L		100	80 - 120

Lab Sample ID: LCSD 860-53954/3-A
Matrix: Solid
Analysis Batch: 54342

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 53954

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	1.00	1.012		mg/L		101	80 - 120	1	20
Barium	1.00	0.9994		mg/L		100	80 - 120	0	20
Cadmium	1.00	1.016		mg/L		102	80 - 120	0	20
Chromium	1.00	1.042		mg/L		104	80 - 120	0	20
Lead	1.00	1.022		mg/L		102	80 - 120	0	20
Manganese	1.00	1.003		mg/L		100	80 - 120	0	20
Nickel	1.00	1.030		mg/L		103	80 - 120	0	20
Selenium	1.00	1.024		mg/L		102	80 - 120	0	20
Silver	0.500	0.4902		mg/L		98	80 - 120	0	20
Antimony	1.00	1.015		mg/L		102	80 - 120	1	20
Beryllium	1.00	1.006		mg/L		101	80 - 120	0	20

Lab Sample ID: LB 860-53687/1-E
Matrix: Solid
Analysis Batch: 54342

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 53954

Analyte	LB Result	LB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0275	U	0.0500	0.0275	mg/L		05/23/22 08:45	05/24/22 21:07	1
Barium	0.03102	J	0.0500	0.00674	mg/L		05/23/22 08:45	05/24/22 21:07	1
Cadmium	0.0122	U	0.0250	0.0122	mg/L		05/23/22 08:45	05/24/22 21:07	1
Chromium	0.00405	U	0.0500	0.00405	mg/L		05/23/22 08:45	05/24/22 21:07	1
Lead	0.0118	U	0.0500	0.0118	mg/L		05/23/22 08:45	05/24/22 21:07	1
Manganese	0.0158	U	0.100	0.0158	mg/L		05/23/22 08:45	05/24/22 21:07	1
Nickel	0.0154	U	0.0500	0.0154	mg/L		05/23/22 08:45	05/24/22 21:07	1
Selenium	0.04120	J	0.150	0.0219	mg/L		05/23/22 08:45	05/24/22 21:07	1
Silver	0.0279	U	0.100	0.0279	mg/L		05/23/22 08:45	05/24/22 21:07	1
Antimony	0.0294	U	0.100	0.0294	mg/L		05/23/22 08:45	05/24/22 21:07	1
Beryllium	0.00245	U	0.0200	0.00245	mg/L		05/23/22 08:45	05/24/22 21:07	1

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 860-53939/10-A
Matrix: Solid
Analysis Batch: 54073

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 53939

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0000263	U	0.000200	0.0000263	mg/L		05/23/22 07:20	05/23/22 12:17	1

Method: 7470A - Mercury (CVAA) (Continued)

Lab Sample ID: LCS 860-53939/11-A
Matrix: Solid
Analysis Batch: 54073

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 53939

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Mercury			0.00200	0.002076		mg/L		104	80 - 120		

Lab Sample ID: LCSD 860-53939/12-A
Matrix: Solid
Analysis Batch: 54073

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 53939

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury			0.00200	0.001947		mg/L		97	80 - 120	6	20

Lab Sample ID: LB 860-53687/1-D
Matrix: Solid
Analysis Batch: 54073

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 53939

Analyte	LB Result	LB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0000263	U	0.000200	0.0000263	mg/L		05/23/22 07:20	05/23/22 12:21	1

Method: Moisture - Percent Moisture

Lab Sample ID: MB 860-54209/1
Matrix: Solid
Analysis Batch: 54209

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

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	0.03				%			05/24/22 09:58	1

GC/MS VOA

Leach Batch: 53848

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-26460-1	IDW-WS01-051922	TCLP	Solid	1311	
860-26460-2	IDW-WS02-051922	TCLP	Solid	1311	
860-26460-3	IDW-WS03-051922	TCLP	Solid	1311	
LB 860-53848/1-A	Method Blank	TCLP	Solid	1311	

Analysis Batch: 53937

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LB 860-53848/1-A	Method Blank	TCLP	Solid	8260C	53848
MB 860-53937/10	Method Blank	Total/NA	Solid	8260C	
LCS 860-53937/3	Lab Control Sample	Total/NA	Solid	8260C	
LCSD 860-53937/4	Lab Control Sample Dup	Total/NA	Solid	8260C	

Analysis Batch: 54052

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-26460-1	IDW-WS01-051922	TCLP	Solid	8260C	53848
860-26460-2	IDW-WS02-051922	TCLP	Solid	8260C	53848
860-26460-3	IDW-WS03-051922	TCLP	Solid	8260C	53848
MB 860-54052/9	Method Blank	Total/NA	Solid	8260C	
LCS 860-54052/3	Lab Control Sample	Total/NA	Solid	8260C	
LCSD 860-54052/4	Lab Control Sample Dup	Total/NA	Solid	8260C	

GC/MS Semi VOA

Leach Batch: 53687

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-26460-1	IDW-WS01-051922	TCLP	Solid	1311	
860-26460-2	IDW-WS02-051922	TCLP	Solid	1311	
860-26460-3	IDW-WS03-051922	TCLP	Solid	1311	
LB 860-53687/1-B	Method Blank	TCLP	Solid	1311	

Prep Batch: 53840

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-26460-1	IDW-WS01-051922	TCLP	Solid	3510C	53687
860-26460-2	IDW-WS02-051922	TCLP	Solid	3510C	53687
860-26460-3	IDW-WS03-051922	TCLP	Solid	3510C	53687
LB 860-53687/1-B	Method Blank	TCLP	Solid	3510C	53687
MB 860-53840/1-A	Method Blank	Total/NA	Solid	3510C	
LCS 860-53840/2-A	Lab Control Sample	Total/NA	Solid	3510C	
LCSD 860-53840/3-A	Lab Control Sample Dup	Total/NA	Solid	3510C	

Analysis Batch: 53944

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LB 860-53687/1-B	Method Blank	TCLP	Solid	8270D	53840
MB 860-53840/1-A	Method Blank	Total/NA	Solid	8270D	53840
LCS 860-53840/2-A	Lab Control Sample	Total/NA	Solid	8270D	53840
LCSD 860-53840/3-A	Lab Control Sample Dup	Total/NA	Solid	8270D	53840

Analysis Batch: 53946

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-26460-1	IDW-WS01-051922	TCLP	Solid	8270D	53840
860-26460-2	IDW-WS02-051922	TCLP	Solid	8270D	53840

GC/MS Semi VOA (Continued)

Analysis Batch: 53946 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-26460-3	IDW-WS03-051922	TCLP	Solid	8270D	53840

GC Semi VOA

Analysis Batch: 53754

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-26460-1	IDW-WS01-051922	Total/NA	Solid	TX 1005	53809
860-26460-2	IDW-WS02-051922	Total/NA	Solid	TX 1005	53809
860-26460-3	IDW-WS03-051922	Total/NA	Solid	TX 1005	53809
MB 860-53809/1-A	Method Blank	Total/NA	Solid	TX 1005	53809
LCS 860-53809/2-A	Lab Control Sample	Total/NA	Solid	TX 1005	53809
LCSD 860-53809/3-A	Lab Control Sample Dup	Total/NA	Solid	TX 1005	53809
860-26460-2 MS	IDW-WS02-051922	Total/NA	Solid	TX 1005	53809
860-26460-2 MSD	IDW-WS02-051922	Total/NA	Solid	TX 1005	53809

Prep Batch: 53809

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-26460-1	IDW-WS01-051922	Total/NA	Solid	TX_1005_S_Prep	
860-26460-2	IDW-WS02-051922	Total/NA	Solid	TX_1005_S_Prep	
860-26460-3	IDW-WS03-051922	Total/NA	Solid	TX_1005_S_Prep	
MB 860-53809/1-A	Method Blank	Total/NA	Solid	TX_1005_S_Prep	
LCS 860-53809/2-A	Lab Control Sample	Total/NA	Solid	TX_1005_S_Prep	
LCSD 860-53809/3-A	Lab Control Sample Dup	Total/NA	Solid	TX_1005_S_Prep	
860-26460-2 MS	IDW-WS02-051922	Total/NA	Solid	TX_1005_S_Prep	
860-26460-2 MSD	IDW-WS02-051922	Total/NA	Solid	TX_1005_S_Prep	

Analysis Batch: 54092

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-26460-1	IDW-WS01-051922	Total/NA	Solid	TX 1005	
860-26460-2	IDW-WS02-051922	Total/NA	Solid	TX 1005	
860-26460-3	IDW-WS03-051922	Total/NA	Solid	TX 1005	

Metals

Leach Batch: 53687

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-26460-1	IDW-WS01-051922	TCLP	Solid	1311	
860-26460-2	IDW-WS02-051922	TCLP	Solid	1311	
860-26460-3	IDW-WS03-051922	TCLP	Solid	1311	
LB 860-53687/1-D	Method Blank	TCLP	Solid	1311	
LB 860-53687/1-E	Method Blank	TCLP	Solid	1311	

Prep Batch: 53939

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-26460-1	IDW-WS01-051922	TCLP	Solid	7470A	53687
860-26460-2	IDW-WS02-051922	TCLP	Solid	7470A	53687

Metals (Continued)

Prep Batch: 53939 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-26460-3	IDW-WS03-051922	TCLP	Solid	7470A	53687
LB 860-53687/1-D	Method Blank	TCLP	Solid	7470A	53687
MB 860-53939/10-A	Method Blank	Total/NA	Solid	7470A	
LCS 860-53939/11-A	Lab Control Sample	Total/NA	Solid	7470A	
LCSD 860-53939/12-A	Lab Control Sample Dup	Total/NA	Solid	7470A	

Prep Batch: 53954

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-26460-1	IDW-WS01-051922	TCLP	Solid	3010A	53687
860-26460-2	IDW-WS02-051922	TCLP	Solid	3010A	53687
860-26460-3	IDW-WS03-051922	TCLP	Solid	3010A	53687
LB 860-53687/1-E	Method Blank	TCLP	Solid	3010A	53687
MB 860-53954/1-A	Method Blank	Total/NA	Solid	3010A	
LCS 860-53954/2-A	Lab Control Sample	Total/NA	Solid	3010A	
LCSD 860-53954/3-A	Lab Control Sample Dup	Total/NA	Solid	3010A	

Analysis Batch: 54073

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-26460-1	IDW-WS01-051922	TCLP	Solid	7470A	53939
860-26460-2	IDW-WS02-051922	TCLP	Solid	7470A	53939
860-26460-3	IDW-WS03-051922	TCLP	Solid	7470A	53939
LB 860-53687/1-D	Method Blank	TCLP	Solid	7470A	53939
MB 860-53939/10-A	Method Blank	Total/NA	Solid	7470A	53939
LCS 860-53939/11-A	Lab Control Sample	Total/NA	Solid	7470A	53939
LCSD 860-53939/12-A	Lab Control Sample Dup	Total/NA	Solid	7470A	53939

Analysis Batch: 54342

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-26460-1	IDW-WS01-051922	TCLP	Solid	6010C	53954
860-26460-2	IDW-WS02-051922	TCLP	Solid	6010C	53954
860-26460-3	IDW-WS03-051922	TCLP	Solid	6010C	53954
LB 860-53687/1-E	Method Blank	TCLP	Solid	6010C	53954
MB 860-53954/1-A	Method Blank	Total/NA	Solid	6010C	53954
LCS 860-53954/2-A	Lab Control Sample	Total/NA	Solid	6010C	53954
LCSD 860-53954/3-A	Lab Control Sample Dup	Total/NA	Solid	6010C	53954

General Chemistry

Analysis Batch: 54209

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
860-26460-1	IDW-WS01-051922	Total/NA	Solid	Moisture	
860-26460-2	IDW-WS02-051922	Total/NA	Solid	Moisture	
860-26460-3	IDW-WS03-051922	Total/NA	Solid	Moisture	
MB 860-54209/1	Method Blank	Total/NA	Solid	Moisture	

Lab Chronicle

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd IDW

Job ID: 860-26460-1

Client Sample ID: IDW-WS01-051922

Lab Sample ID: 860-26460-1

Date Collected: 05/19/22 11:30
Matrix: Solid
Date Received: 05/19/22 12:37

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			1.0 g	1.0 mL	53848	05/20/22 16:00	JRB	XEN STF
TCLP	Analysis	8260C		50	5 mL	5 mL	54052	05/23/22 22:12	A1S	XEN STF
TCLP	Leach	1311			1.0 g	1.0 mL	53687	05/19/22 16:00	EMC	XEN STF
TCLP	Prep	3510C			200 mL	1.0 mL	53840	05/20/22 16:20	DR	XEN STF
TCLP	Analysis	8270D		5	1 mL	1.0 mL	53946	05/23/22 16:37	LPL	XEN STF
Total/NA	Prep	TX_1005_S_Prep			10.05 g	10 mL	53809	05/20/22 12:48	SYH	XEN STF
Total/NA	Analysis	TX 1005		1			53754	05/20/22 21:19	SAR	XEN STF
Total/NA	Analysis	TX 1005		1			54092	05/23/22 17:46	SAR	XEN STF
TCLP	Leach	1311			1.0 g	1.0 mL	53687	05/19/22 16:00	EMC	XEN STF
TCLP	Prep	3010A			10 mL	50 mL	53954	05/23/22 08:45	MD	XEN STF
TCLP	Analysis	6010C		1			54342	05/24/22 21:51	AV	XEN STF
TCLP	Leach	1311			1.0 g	1.0 mL	53687	05/19/22 16:00	EMC	XEN STF
TCLP	Prep	7470A			50 mL	50 mL	53939	05/23/22 07:20	AGR	XEN STF
TCLP	Analysis	7470A		1			54073	05/23/22 12:38	SHZ	XEN STF
Total/NA	Analysis	Moisture		1			54209	05/24/22 09:58	JM	XEN STF

Client Sample ID: IDW-WS02-051922

Lab Sample ID: 860-26460-2

Date Collected: 05/19/22 11:50
Matrix: Solid
Date Received: 05/19/22 12:37

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			1.0 g	1.0 mL	53848	05/20/22 16:00	JRB	XEN STF
TCLP	Analysis	8260C		50	5 mL	5 mL	54052	05/23/22 22:32	A1S	XEN STF
TCLP	Leach	1311			1.0 g	1.0 mL	53687	05/19/22 16:00	EMC	XEN STF
TCLP	Prep	3510C			200 mL	1.0 mL	53840	05/20/22 16:20	DR	XEN STF
TCLP	Analysis	8270D		5	1 mL	1.0 mL	53946	05/23/22 17:01	LPL	XEN STF
Total/NA	Prep	TX_1005_S_Prep			10 g	10 mL	53809	05/20/22 12:48	SYH	XEN STF
Total/NA	Analysis	TX 1005		1			53754	05/20/22 19:05	SAR	XEN STF
Total/NA	Analysis	TX 1005		1			54092	05/23/22 17:46	SAR	XEN STF
TCLP	Leach	1311			1.0 g	1.0 mL	53687	05/19/22 16:00	EMC	XEN STF
TCLP	Prep	3010A			10 mL	50 mL	53954	05/23/22 08:45	MD	XEN STF
TCLP	Analysis	6010C		1			54342	05/24/22 21:54	AV	XEN STF
TCLP	Leach	1311			1.0 g	1.0 mL	53687	05/19/22 16:00	EMC	XEN STF
TCLP	Prep	7470A			50 mL	50 mL	53939	05/23/22 07:20	AGR	XEN STF
TCLP	Analysis	7470A		1			54073	05/23/22 12:39	SHZ	XEN STF
Total/NA	Analysis	Moisture		1			54209	05/24/22 09:58	JM	XEN STF

Client Sample ID: IDW-WS03-051922

Lab Sample ID: 860-26460-3

Date Collected: 05/19/22 12:00
Matrix: Solid
Date Received: 05/19/22 12:37

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			1.0 g	1.0 mL	53848	05/20/22 16:00	JRB	XEN STF
TCLP	Analysis	8260C		50	5 mL	5 mL	54052	05/23/22 22:53	A1S	XEN STF

Lab Chronicle

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd IDW

Job ID: 860-26460-1

Client Sample ID: IDW-WS03-051922

Date Collected: 05/19/22 12:00
Date Received: 05/19/22 12:37

Lab Sample ID: 860-26460-3

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			1.0 g	1.0 mL	53687	05/19/22 16:00	EMC	XEN STF
TCLP	Prep	3510C			200 mL	1.0 mL	53840	05/20/22 16:20	DR	XEN STF
TCLP	Analysis	8270D		5	1 mL	1.0 mL	53946	05/23/22 17:24	LPL	XEN STF
Total/NA	Prep	TX_1005_S_Prep			10 g	10 mL	53809	05/20/22 12:48	SYH	XEN STF
Total/NA	Analysis	TX 1005		1			53754	05/20/22 20:02	SAR	XEN STF
Total/NA	Analysis	TX 1005		1			54092	05/23/22 17:46	SAR	XEN STF
TCLP	Leach	1311			1.0 g	1.0 mL	53687	05/19/22 16:00	EMC	XEN STF
TCLP	Prep	3010A			10 mL	50 mL	53954	05/23/22 08:45	MD	XEN STF
TCLP	Analysis	6010C		1			54342	05/24/22 21:58	AV	XEN STF
TCLP	Leach	1311			1.0 g	1.0 mL	53687	05/19/22 16:00	EMC	XEN STF
TCLP	Prep	7470A			50 mL	50 mL	53939	05/23/22 07:20	AGR	XEN STF
TCLP	Analysis	7470A		1			54073	05/23/22 12:40	SHZ	XEN STF
Total/NA	Analysis	Moisture		1			54209	05/24/22 09:58	JM	XEN STF

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Accreditation/Certification Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 860-26460-1
Project/Site: STC Silber Rd IDW

Laboratory: Eurofins Houston

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

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	21-038-0	08-04-22
Florida	NELAP	E871002	06-30-22
Louisiana	NELAP	03054	06-30-22
Oklahoma	State	2021-168	08-31-22
Texas	NELAP	T104704215-21-44	06-30-22
Texas	TCEQ Water Supply	T104704215	06-30-22
USDA	US Federal Programs	P330-22-00025	03-02-23

Method Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd IDW

Job ID: 860-26460-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	XEN STF
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	XEN STF
TX 1005	Texas - Total Petroleum Hydrocarbon (GC)	TCEQ	XEN STF
6010C	Metals (ICP)	SW846	XEN STF
7470A	Mercury (CVAA)	SW846	XEN STF
Moisture	Percent Moisture	EPA	XEN STF
1311	TCLP Extraction	SW846	XEN STF
3010A	Preparation, Total Metals	SW846	XEN STF
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	XEN STF
5030C	Purge and Trap	SW846	XEN STF
7470A	Preparation, Mercury	SW846	XEN STF
TX_1005_S_Prep	Extraction - Texas Total petroleum Hyrdocarbons	TCEQ	XEN STF

Protocol References:

EPA = US Environmental Protection Agency

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

TCEQ = Texas Commission of Environmental Quality

Laboratory References:

XEN STF = Eurofins Houston, 4145 Greenbriar Dr, Stafford, TX 77477, TEL (281)240-4200

Sample Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd IDW

Job ID: 860-26460-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
860-26460-1	IDW-WS01-051922	Solid	05/19/22 11:30	05/19/22 12:37
860-26460-2	IDW-WS02-051922	Solid	05/19/22 11:50	05/19/22 12:37
860-26460-3	IDW-WS03-051922	Solid	05/19/22 12:00	05/19/22 12:37

Appendix A

Laboratory Data Package Cover Page - Page 1 of 4

This data package is for Job No. 860-26460-1 and consists of:

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

- ☑ R1- Field chain-of-custody documentation;
- ☑ R2 - Sample identification cross-reference;
- ☑ R3 - Test reports (analytical data sheets) for each environmental sample that includes:
  a. Items consistent with NELAC Chapter 5,
  b. dilution factors,
  c. prepatation methods,
  d. cleanup methods, and
  e. if required for the project, tentatively identified coumpounds (TICs).
- ☑ R4 - Surrogate recovery data including:
  a. Calculated recovery (%R), and
  b. The laboratory's surrogate QC limits.
- ☑ R5 - Test reports/summary forms for blank samples;
- ☑ R6 - Test reports/summary forms for laboratory control samples (LCSs) including:
  a. LCS spiking amounts,
  b. Calculated %R for each analyte, and
  c. The laboratory's LCS QC limits.
- ☑ R7 - Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a. Samples associated with the MS/MSD clearly identified,
  b. MS/MSD spiking amounts,
  c. Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d. Calculated %Rs and relative percent differences (RPDs), and
  e. The laboratory's MS/MSD QC limits
- ☑ R8 - Laboratory analytical duplicate (if applicable) recovery and precision:
  a. The amount of analyte measured in the duplicate,
  b. The calculated RPD, and
  c. The laboratory's QC limits for analytical duplicates.
- ☑ R9 - List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
- ☑ R10 - Other problems or anomalies.
- ☐ Exception Report for every "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge 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.

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

Name (Printed)	Signature	Official Title (Printed)	Date

Laboratory Data Package Cover Page - Page 2 of 4

Laboratory Name: Eurofins Houston	LRC Date: 06/24/2022
Project Name: STC Silber Rd IDW	Laboratory Job Number: 860-26460-1
Reviewer Name:	

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
		Were all departures from standard conditions described in an exception report?	✓				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	✓				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	✓				
		Were calculations checked by a peer or supervisor?	✓				
		Were all analyte identifications checked by a peer or supervisor?	✓				
		Were sample detection limits reported for all analytes not detected?	✓				
		Were all results for soil and sediment samples reported on a dry weight basis?	✓				
		Were % moisture (or solids) reported for all soil and sediment samples?	✓				
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			✓		
		If required for the project, are TICs reported?			✓		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	✓				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?		✓			1
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	✓				
		Were blanks analyzed at the appropriate frequency?	✓				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
		Were blank concentrations < MQL?		✓			2
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	✓				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
		Were LCSs analyzed at the required frequency?	✓				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	✓				
		Was the LCSD RPD within QC limits?	✓				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	✓				
		Were MS/MSD analyzed at the appropriate frequency?	✓				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		✓			3
		Were MS/MSD RPDs within laboratory QC limits?	✓				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	✓				
		Were analytical duplicates analyzed at the appropriate frequency?	✓				
		Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	✓				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	✓				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	✓				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	✓				

Laboratory Data Package Cover Page - Page 3 of 4

Laboratory Name: Eurofins Houston	LRC Date: 06/24/2022
Project Name: STC Silber Rd IDW	Laboratory Job Number: 860-26460-1
Reviewer Name:	

#[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?	✓				
		Were percent RSDs or correlation coefficient criteria met?	✓				
		Was the number of standards recommended in the method used for all analytes?	✓				
		Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
		Are ICAL data available for all instruments used?	✓				
		Has the initial calibration curve been verified using an appropriate second source standard?	✓				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?	✓				
		Were percent differences for each analyte within the method-required QC limits?	✓				
		Was the ICAL curve verified for each analyte?	✓				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	✓				
S3	O	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?	✓				
		Were ion abundance data within the method-required QC limits?	✓				
S4	O	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?	✓				
S5	OI	**Raw data (NELAC Section 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
		Were data associated with manual integrations flagged on the raw data?	✓				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			✓		
S7	O	**Tentatively identified compounds (TICs)**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
S8	I	**Interference Check Sample (ICS) results**					
		Were percent recoveries within method QC limits?	✓				
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?	✓				
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	✓				
		Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
S11	OI	**Proficiency test reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	✓				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	✓				
		Is documentation of the analyst's competency up-to-date and on file?	✓				
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?	✓				
S16	OI	**Laboratory standard operating procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	✓				

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).

Laboratory Data Package Cover Page - Page 4 of 4

Laboratory Name: Eurofins Houston	LRC Date: 06/24/2022
Project Name: STC Silber Rd IDW	Laboratory Job Number: 860-26460-1
Reviewer Name:	

ER#[1]	Description
1	Method 8270D: The surrogate recovery for the blank associated with preparation batch 860-53687 and 860-53840 and analytical batch 860-53944 was outside the control limits. The surrogate recovery for the sample passed. Non-target compounds were detected, data can be reported.
2	Method 6010C: The leachate blank for preparation batch 860-53687 and 860-53954 and analytical batch 860-54342 contained barium and antimony above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed. Method 6010C: The method blank for preparation batch 860-53954 and analytical batch 860-54342 contained chromium and selenium above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.
3	Method 8260C: The matrix spike (MS) recoveries for preparation batch 860-53848 and analytical batch 860-53937 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

1. ER# = Exception Report identification number (an Exception Report should be completed for an item if “NR” or “No” is checked).

Detection Check Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: STC Silber Rd IDW

Job ID: 860-26460-1

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Solid
Prep Method: 5030C-Purge and Trap
Instrument: A292 **Detector: MSD/0**

Prep Type: TCLP
Column: DB-624

Analyte	Spike Added	Result	Qualifier	Unit	RL	MDL	Analysis Date	Analysis Batch
1,1,1-Trichloroethane	0.00500	0.00498	J	mg/L	0.00500	0.000504	01/07/2022	860-36806
1,2-Dichlorobenzene	0.00500	0.00514		mg/L	0.00100	0.000236	01/07/2022	860-36806
1,2-Dichloroethane	0.00500	0.00493		mg/L	0.00100	0.000285	01/07/2022	860-36806
1,2-Dichloropropane	0.00500	0.00491	J	mg/L	0.00500	0.000396	01/07/2022	860-36806
1,3-Dichlorobenzene	0.00500	0.00497		mg/L	0.00100	0.000197	01/07/2022	860-36806
1,4-Dichlorobenzene	0.00500	0.00516		mg/L	0.00100	0.000199	01/07/2022	860-36806
2-Butanone (MEK)	0.0250	0.0259	J	mg/L	0.0500	0.00270	01/07/2022	860-36806
2-Hexanone	0.0250	0.0259	J	mg/L	0.0500	0.000789	01/07/2022	860-36806
4-Methyl-2-pentanone (MIBK)	0.0250	0.0250	J	mg/L	0.0500	0.00106	01/07/2022	860-36806
Acetone	0.0250	0.0254	J	mg/L	0.100	0.0123	01/07/2022	860-36806
Benzene	0.00500	0.00492		mg/L	0.00100	0.000214	01/07/2022	860-36806
1,1,2,2-Tetrachloroethane	0.00500	0.00527		mg/L	0.00100	0.000284	01/07/2022	860-36806
Chlorobromomethane	0.00500	0.00472		mg/L	0.00100	0.000209	01/07/2022	860-36806
Bromodichloromethane	0.00500	0.00476		mg/L	0.00100	0.000231	01/07/2022	860-36806
Bromoform	0.00500	0.00490	J	mg/L	0.00500	0.000630	01/07/2022	860-36806
Bromomethane	0.00500	0.00564		mg/L	0.00500	0.00105	01/07/2022	860-36806
Carbon disulfide	0.00500	0.00487	J	mg/L	0.00500	0.000373	01/07/2022	860-36806
Carbon tetrachloride	0.00500	0.00477	J	mg/L	0.00500	0.000423	01/07/2022	860-36806
Chlorobenzene	0.00500	0.00507		mg/L	0.00100	0.000159	01/07/2022	860-36806
Chloroethane	0.00500	0.00477	J	mg/L	0.0100	0.000433	01/07/2022	860-36806
Chloroform	0.00500	0.00495		mg/L	0.00100	0.000259	01/07/2022	860-36806
Chloromethane	0.00500	0.00483	J	mg/L	0.0100	0.000318	01/07/2022	860-36806
1,1,2-Trichloro-1,2,2-trifluoroethane	0.00500	0.00412	J	mg/L	0.0100	0.000364	01/07/2022	860-36806
Cyclohexane	0.00500	0.00596		mg/L	0.00500	0.000474	01/07/2022	860-36806
Dibromochloromethane	0.00500	0.00501		mg/L	0.00500	0.000739	01/07/2022	860-36806
Dichlorodifluoromethane	0.00500	0.00446		mg/L	0.00100	0.000316	01/07/2022	860-36806
Ethylbenzene	0.00500	0.00487		mg/L	0.00100	0.000515	01/07/2022	860-36806
Methyl tert-butyl ether	0.00500	0.00517		mg/L	0.00500	0.000571	01/07/2022	860-36806
Methylene Chloride	0.00500	0.00509		mg/L	0.00500	0.00191	01/07/2022	860-36806
Styrene	0.00500	0.00472		mg/L	0.00100	0.000623	01/07/2022	860-36806
Tetrachloroethene	0.00500	0.00523		mg/L	0.00100	0.000500	01/07/2022	860-36806
Toluene	0.00500	0.00509		mg/L	0.00100	0.000500	01/07/2022	860-36806
Trichloroethene	0.00500	0.00484	J	mg/L	0.00500	0.000424	01/07/2022	860-36806
1,1,2-Trichloroethane	0.00500	0.00493		mg/L	0.00100	0.000228	01/07/2022	860-36806
Vinyl acetate	0.0250	0.0240		mg/L	0.0200	0.00357	01/07/2022	860-36806
Vinyl chloride	0.00500	0.00496		mg/L	0.00200	0.000234	01/07/2022	860-36806
Xylenes, Total	0.0100	0.00941	J	mg/L	0.0100	0.000330	01/07/2022	860-36806
cis-1,2-Dichloroethene	0.00500	0.00502		mg/L	0.00100	0.000174	01/07/2022	860-36806
cis-1,3-Dichloropropene	0.00500	0.00457	J	mg/L	0.00500	0.000690	01/07/2022	860-36806
Isopropylbenzene	0.00500	0.00469		mg/L	0.00100	0.000161	01/07/2022	860-36806
m-Xylene & p-Xylene	0.00500	0.00466	J	mg/L	0.0100	0.000330	01/07/2022	860-36806
o-Xylene	0.00500	0.00475		mg/L	0.00100	0.000192	01/07/2022	860-36806
trans-1,2-Dichloroethene	0.00500	0.00504		mg/L	0.00100	0.000256	01/07/2022	860-36806
trans-1,3-Dichloropropene	0.00500	0.00486	J	mg/L	0.00500	0.000752	01/07/2022	860-36806
1,1-Dichloroethane	0.00500	0.00501		mg/L	0.00100	0.000244	01/07/2022	860-36806
1,1-Dichloroethene	0.00500	0.00500		mg/L	0.00100	0.000216	01/07/2022	860-36806
1,2,4-Trichlorobenzene	0.00500	0.00517		mg/L	0.00500	0.00200	01/07/2022	860-36806
1,2-Dibromo-3-Chloropropane	0.00500	0.00568		mg/L	0.00500	0.000319	01/07/2022	860-36806

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

Matrix: Solid **Prep Type: TCLP**
Prep Method: 5030C-Purge and Trap
Instrument: A292 **Detector: MSD/0** **Column: DB-624**

Analyte	Spike Added	Result	Qualifier	Unit	RL	MDL	Analysis Date	Analysis Batch
1,2-Dibromoethane	0.00500	0.00500		mg/L	0.00500	0.000337	01/07/2022	860-36806

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

Matrix: Solid **Prep Type: TCLP**
Prep Method: 3510C-Liquid-Liquid Extraction (Separatory Funnel)
Instrument: A101 **Detector: MSD/0** **Column: Rxi 5Sil MS**

Analyte	Spike Added	Result	Qualifier	Unit	RL	MDL	Analysis Date	Analysis Batch
1,1'-Biphenyl	0.00400	0.00386	J	mg/L	0.00500	0.000741	01/26/2022	860-38920
2-Chlorophenol	0.00400	0.00322	J	mg/L	0.00500	0.000842	01/26/2022	860-38920
2-Methylnaphthalene	0.00400	0.00351	J	mg/L	0.00500	0.000778	01/26/2022	860-38920
Pyridine	0.00400	0.00114	J	mg/L	0.0100	0.000487	01/26/2022	860-38920
2-Nitroaniline	0.00400	0.00260	J	mg/L	0.0100	0.00107	01/26/2022	860-38920
2-Nitrophenol	0.00400	0.00372	J	mg/L	0.00500	0.000966	01/26/2022	860-38920
2-Methylphenol	0.00400	0.00271	J	mg/L	0.00500	0.000914	01/26/2022	860-38920
3 & 4 Methylphenol	0.00400	0.00221	J	mg/L	0.00500	0.00104	01/26/2022	860-38920
3,3'-Dichlorobenzidine	0.00400	0.00287	J	mg/L	0.0100	0.000618	01/26/2022	860-38920
3-Nitroaniline	0.00400	0.00270	J	mg/L	0.0100	0.000787	01/26/2022	860-38920
4,6-Dinitro-2-methylphenol	0.00400	0.00512	J	mg/L	0.0100	0.000870	01/26/2022	860-38920
4-Bromophenyl phenyl ether	0.00400	0.00416	J	mg/L	0.00500	0.000948	01/26/2022	860-38920
2,4,5-Trichlorophenol	0.00400	0.00333	J	mg/L	0.00500	0.000935	01/26/2022	860-38920
4-Chloroaniline	0.00400	0.00305	J	mg/L	0.0100	0.000609	01/26/2022	860-38920
4-Chlorophenyl phenyl ether	0.00400	0.00398	J	mg/L	0.00500	0.000868	01/26/2022	860-38920
4-Nitroaniline	0.00400	0.00266	J	mg/L	0.0100	0.00116	01/26/2022	860-38920
4-Nitrophenol	0.00400	<0.0100	U	mg/L	0.0100	0.00161	01/26/2022	860-38920
4-Chloro-3-methylphenol	0.00400	0.00306	J	mg/L	0.00500	0.00131	01/26/2022	860-38920
Acenaphthene	0.00400	0.00371	J	mg/L	0.00500	0.000876	01/26/2022	860-38920
Acenaphthylene	0.00400	0.00379	J	mg/L	0.00500	0.000886	01/26/2022	860-38920
Acetophenone	0.00400	0.00373	J	mg/L	0.00500	0.000932	01/26/2022	860-38920
Anthracene	0.00400	0.00389	J	mg/L	0.00500	0.000884	01/26/2022	860-38920
Benzo[a]anthracene	0.00400	0.00373	J	mg/L	0.00500	0.00100	01/26/2022	860-38920
2,4,6-Trichlorophenol	0.00400	0.00343	J	mg/L	0.00500	0.000946	01/26/2022	860-38920
Benzo[a]pyrene	0.00400	0.00367	J	mg/L	0.00500	0.00100	01/26/2022	860-38920
Benzo[b]fluoranthene	0.00400	0.00370	J	mg/L	0.00500	0.00179	01/26/2022	860-38920
Benzo[g,h,i]perylene	0.00400	0.00382	J	mg/L	0.00500	0.00125	01/26/2022	860-38920
Benzo[k]fluoranthene	0.00400	0.00426	J	mg/L	0.00500	0.00136	01/26/2022	860-38920
Butyl benzyl phthalate	0.00400	0.00307	J	mg/L	0.00500	0.00119	01/26/2022	860-38920
Carbazole	0.00400	0.00393	J	mg/L	0.00500	0.000855	01/26/2022	860-38920
Chrysene	0.00400	0.00400	J	mg/L	0.00500	0.00100	01/26/2022	860-38920
Dibenz(a,h)anthracene	0.00400	0.00378	J	mg/L	0.00500	0.00126	01/26/2022	860-38920
Dibenzofuran	0.00400	0.00395	J	mg/L	0.00500	0.000951	01/26/2022	860-38920
Diethyl phthalate	0.00400	0.00398	J	mg/L	0.00500	0.00123	01/26/2022	860-38920
2,4-Dichlorophenol	0.00400	0.00310	J	mg/L	0.00500	0.00104	01/26/2022	860-38920
Dimethyl phthalate	0.00400	0.00415	J	mg/L	0.00500	0.00117	01/26/2022	860-38920
Fluoranthene	0.00400	0.00399	J	mg/L	0.00500	0.000948	01/26/2022	860-38920
Fluorene	0.00400	0.00395	J	mg/L	0.00500	0.000938	01/26/2022	860-38920
Hexachlorobenzene	0.00400	0.00417	J	mg/L	0.00500	0.00107	01/26/2022	860-38920
Hexachlorobutadiene	0.00400	0.00338	J	mg/L	0.00500	0.000709	01/26/2022	860-38920

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

Matrix: Solid **Prep Type: TCLP**
Prep Method: 3510C-Liquid-Liquid Extraction (Separatory Funnel)
Instrument: A101 **Detector: MSD/0** **Column: Rxi 5Sil MS**

Analyte	Spike Added	Result	Qualifier	Unit	RL	MDL	Analysis Date	Analysis Batch
Hexachlorocyclopentadiene	0.00400	0.00828		mg/L	0.00500	0.000614	01/26/2022	860-38920
Hexachloroethane	0.00400	0.00300	J	mg/L	0.00500	0.000787	01/26/2022	860-38920
Indeno[1,2,3-cd]pyrene	0.00400	0.00367	J	mg/L	0.00500	0.00110	01/26/2022	860-38920
Isophorone	0.00400	0.00360	J	mg/L	0.00500	0.00101	01/26/2022	860-38920
N-Nitrosodi-n-propylamine	0.00400	0.00337	J	mg/L	0.00500	0.00133	01/26/2022	860-38920
2,4-Dimethylphenol	0.00400	0.00344	J	mg/L	0.00500	0.000891	01/26/2022	860-38920
N-Nitrosodiphenylamine	0.00400	0.00399	J	mg/L	0.00500	0.00116	01/26/2022	860-38920
Naphthalene	0.00400	0.00362	J	mg/L	0.00500	0.000751	01/26/2022	860-38920
Nitrobenzene	0.00400	0.00397	J	mg/L	0.00500	0.000961	01/26/2022	860-38920
Pentachlorophenol	0.00400	0.00787	J	mg/L	0.0100	0.00112	01/26/2022	860-38920
Phenanthrene	0.00400	0.00406	J	mg/L	0.00500	0.000975	01/26/2022	860-38920
Phenol	0.00400	0.00137	J	mg/L	0.0100	0.00116	01/26/2022	860-38920
Pyrene	0.00400	0.00370	J	mg/L	0.00500	0.000852	01/26/2022	860-38920
Bis(2-chloroethoxy)methane	0.00400	0.00373	J	mg/L	0.00500	0.00124	01/26/2022	860-38920
Bis(2-chloroethyl)ether	0.00400	0.00367	J	mg/L	0.00500	0.00108	01/26/2022	860-38920
bis (2-Chloroisopropyl) ether	0.00400	0.00332	J	mg/L	0.00500	0.00145	01/26/2022	860-38920
2,4-Dinitrophenol	0.00400	<0.0100	U	mg/L	0.0100	0.000616	01/26/2022	860-38920
Bis(2-ethylhexyl) phthalate	0.00400	0.00331	J	mg/L	0.00500	0.00188	01/26/2022	860-38920
Di-n-butyl phthalate	0.00400	0.00367	J	mg/L	0.00500	0.00113	01/26/2022	860-38920
Di-n-octyl phthalate	0.00400	0.00341	J	mg/L	0.00500	0.00148	01/26/2022	860-38920
2,4-Dinitrotoluene	0.00400	0.00309	J	mg/L	0.00500	0.000953	01/26/2022	860-38920
2,6-Dinitrotoluene	0.00400	0.00384	J	mg/L	0.00500	0.00111	01/26/2022	860-38920
2-Chloronaphthalene	0.00400	0.00332	J	mg/L	0.00500	0.000809	01/26/2022	860-38920

Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC)

Matrix: Solid **Prep Type: Total/NA**
Prep Method: TX_1005_S_Prep-Extraction - Texas Total petroleum Hyrdocarbons
Instrument: A331_B **Detector: FID/0** **Column: RXI-5MS**

Analyte	Spike Added	Result	Qualifier	Unit	RL	MDL	Analysis Date	Analysis Batch
C6-C12	29.9	37.0	J	mg/Kg	50.0	21.1	01/11/2022	860-37147
>C12-C28	29.9	32.9	J	mg/Kg	50.0	21.1	01/11/2022	860-37147

Method: 6010C - Metals (ICP)

Matrix: Solid **Prep Type: TCLP**
Prep Method: 3010A-Preparation, Total Metals
Instrument: A261 **Detector: AES/0**

Analyte	Spike Added	Result	Qualifier	Unit	RL	MDL	Analysis Date	Analysis Batch
Arsenic	0.0100	<0.0100	U	mg/L	0.0100	0.00550	03/26/2022	860-46543
Antimony	0.0200	0.0199	J	mg/L	0.0200	0.00589	03/28/2022	860-46573
Beryllium	0.00400	0.00373	J	mg/L	0.00400	0.000490	03/28/2022	860-46573
Barium	0.0100	0.00944	J	mg/L	0.0100	0.00135	03/28/2022	860-46573
Cadmium	0.00500	0.00505		mg/L	0.00500	0.00243	03/28/2022	860-46573
Chromium	0.0100	0.0124		mg/L	0.0100	0.000811	03/28/2022	860-46573
Lead	0.0100	0.00918	J	mg/L	0.0100	0.00237	03/28/2022	860-46573

Method: 6010C - Metals (ICP) (Continued)

Matrix: Solid **Prep Type: TCLP**
Prep Method: 3010A-Preparation, Total Metals
Instrument: A261 **Detector: AES/0**

Analyte	Spike Added	Result	Qualifier	Unit	RL	MDL	Analysis Date	Analysis Batch
Manganese	0.0200	0.0406		mg/L	0.0200	0.00316	03/28/2022	860-46573
Nickel	0.0100	0.00962	J	mg/L	0.0100	0.00307	03/28/2022	860-46573
Selenium	0.0300	0.0261	J	mg/L	0.0300	0.00439	03/28/2022	860-46573
Silver	0.0200	0.0121	J	mg/L	0.0200	0.00559	03/28/2022	860-46573

Method: 7470A - Mercury (CVAA)

Matrix: Solid **Prep Type: TCLP**
Prep Method: 7470A-Preparation, Mercury
Instrument: A336 **Detector: AA/0**

Analyte	Spike Added	Result	Qualifier	Unit	RL	MDL	Analysis Date	Analysis Batch
Mercury	0.000200	0.000217		mg/L	0.000200	0.0000263	02/01/2022	860-39871

Eurofins Houston
4145 Greenbriar Dr
Stafford, TX 77477
Phone (281) 240-4200

Temp: 5.2 IR ID:HOU-323
C/F:-0 9
Corrected Temp: 4.7

Chain of Custody Record

eurofins | Environment Testing America

Client Information	Sampler	Lab PM: McDaniel Bethany A	Carrier Tracking No(s):	COC No: 860-9879-3479.1
Client Contact: John Ynfante	Phone:	E-Mail: Bethany McDaniel@et.eurofinsus.com	State of Origin:	Page: Page 1 of 1
Company: Jacobs Engineering Group, Inc.	PWSID:			Job #:
Address: 14701 St. Mary's Lane Suite 300	Due Date Requested:			
City: Houston	TAT Requested (days): 5 day RUSH			
State, Zip: TX, 77079	Compliance Project: Δ Yes Δ No			
Phone:	PO #:			
Email: John Ynfante@jacobs.com	WO #: D3542628.C.CS.TPE.SIL.22-01-02			
Project Name: STC Silber Rd, TX IDW Solid	Project #: 86002024			
Site:	SSOW#:			

Analysis Requested

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

Sample Identification	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)	TCLP 6010C, 7470A-RCRA 11 TCLP 8270D-TCL List	TCLP 8260C- TCL List	TX_1006 TPH, Moisture	Total Number of containers	Special Instructions/Note:
			Preservation Code:		X	X	N	N	N	X	
IDW-WS01-051922	5/19/22	1130	G/C	Solid			X	X	X	3	
IDW-WS02-051922	5/19/22	1150	G/C	Solid			X	X	X	3	
IDW-WS03-051922	5/19/22	1200	G/C	Solid			X	X	X	3	

860-26460 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 longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I II III IV Other (specify) Level 2

Special Instructions/QC Requirements:

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

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	5/19/22 1237		[signature]	5/19/22 1237	Xenco
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc.

Job Number: 860-26460-1

Login Number: 26460
List Number: 1
Creator: Rubio, Yuri

List Source: Eurofins Houston

Question	Answer	Comment
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 (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	

NOD Lab Reports

1204 Springdale Street
Mount Horeb, WI 53572
(608) 437-7413

May 24, 2022

Mr. John Ynfante
Jacobs
501 N Broadway Ave
St. Louis, MO 63102

Subject: Alkaline Persulfate and Permanganate TOD Testing Report for the Siber Road Houston Site (Former Cameron Iron Works).

Mr. Ynfante:

Ursus Remediation Testing & Technologies, LLC (Ursus) is pleased to provide Jacobs this report for Natural Oxidant Demand (TOD) testing for the Siber Road Houston Site (Former Cameron Iron Works).

OBJECTIVE

The objective of the study was to determine the amount of sodium persulfate and permanganate required to overcome the oxidant demand in site soil and groundwater.

BACKGROUND

Alkaline activated persulfate (in the form of sodium persulfate) and permanganate (in the form of potassium permanganate) were evaluated in the TOD study. Ursus performed persulfate analytical procedures as described in Peroxychem/FMC's Klozur™ Treatability Protocol Template and Haselow et. al 2003. Permanganate TOD testing followed methodologies similar to those outlined by Haselow et. al 2003 and the USEPA.

Two soil samples and two groundwater samples were received by Ursus. Soils were received on ice and were refrigerated until testing. Soils were collected in 16 oz soil jars and groundwater in 1-liter bottles. Soil/groundwater slurries were prepared as described in Table 1.

Table 1.
Samples Received for TOD Testing

Sample	Sample Date	Date Received	Sample Matrix	Sample Comments
SB14-3035-050322	5/3/2022	5/5/2022	Soil	Minimal headspace in sample
SB14-3035-050322	5/3/2022	5/5/2022	Groundwater	Groundwater sample SB14-3035-050322 was slurried with soil sample SB14-3035-050322 for testing
SB07-1823-051022	5/10/2022	5/11/2022	Soil	Minimal headspace in sample
SB07-1823-051022	5/10/2022	5/11/2022	Groundwater	Groundwater sample SB07-1823-051022 was slurried with soil sample SB07-1823-051022 for testing

MATERIALS AND METHODOLOGY

Materials

Sodium Persulfate – $Na_2S_2O_8$. Fisher reagent grade.

Sodium Hydroxide – NaOH. JT Baker reagent grade.

Potassium Permanganate – $KMnO_4$. JT Baker reagent grade.

Methodology

Soil was mixed with the DI at a 1:1 ratio (50 g soil/50 mls solution). The soil slurry samples were prepared immediately prior to TOD testing. Samples were exposed to ambient laboratory conditions in tightly capped reaction jars. Sample were shaken once per day during the study. Original soils were refrigerated when not in use.

Acidity, Persulfate TOD, and Permanganate TOD Testing

Acidity testing was conducted on soil to determine the amount of sodium hydroxide required for alkaline activated persulfate. The acidity of the slurry was determined prior to TOD testing. The slurry sample was titrated with a known amount of sodium hydroxide to determine the amount of alkalinity required to maintain the pH above 10.5 for effective alkaline activation. Permanganate does not require an activator.

Samples were tested for persulfate TOD 48 hours and 96 hours post treatment. Sodium persulfate dosages of 4.0, 8.0, and 10.0 g/kg were tested for slurry sample SB14-3035-050322 and 1.0, 2.5, and 5.0 g/kg for slurry sample SB07-1823-051022.

Samples were tested for permanganate TOD 48 hours and 96 hours post treatment. Permanganate dosages of 5.0, 10.0, and 15.0 g/kg were tested for slurry sample SB14-3035-050322 and 1.0, 2.5, and 5.0 g/kg for slurry sample SB07-1823-051022.

RESULTS

Acidity

The amount of sodium hydroxide needed to adjust the sample for alkaline activation includes the mass needed to maintain the pH above 10.5 and the mass needed to compensate for the decomposition of sodium persulfate and formation of sulfuric acid. The baseline acidity for the soil samples was 0.4g NaOH/kg. The required amount of sodium hydroxide for each dosage is shown in Table 2.

Table 2.
Grams of NaOH Added at Each Dosage for Alkaline Persulfate Activation.

Persulfate Dosage (g/kg)	Acidity (g NaOH/kg soil)	Acidity (g 25% NaOH/kg soil)
1.0	0.8	3.2
2.5	1.3	5.2
4.0	1.8	7.2
5.0	2.2	8.8
8.0	3.2	12.8
10.0	3.9	15.6

Persulfate and Permanganate TOD Testing

Persulfate and permanganate TOD were set up on May 9, 2022, for sample SB14-3035-050322. The 48 hour persulfate and permanganate TOD (TOD_{48Hr}) was measured on May 11, 2022 and the 96 hour (TOD_{96Hr}) on May 13, 2022.

Persulfate and permanganate TOD were set up on May 16, 2022, for sample SB07-1823-051022. The 48 hour persulfate and permanganate TOD (TOD_{48Hr}) was measured on May 18, 2022 and the 96 hour (TOD_{96Hr}) on May 20, 2022.

At each test date, the soil slurry was allowed to settle, and an aliquot of the liquid fraction was decanted and analyzed for residual persulfate and permanganate. The data for the TOD is shown in Tables 3 and 4.

TOD results are discussed below.

1. The higher the persulfate or permanganate dosage, the higher the TOD.

2. The goal of achieving a pH greater than 10.5 for alkaline activated persulfate test was achieved for all dosages.

3. Permanganate TOD can be converted to potassium permanganate or sodium permanganate TOD by multiplying the permanganate TOD by 1.33 and 1.19, respectively.

Table 3.
Alkaline Activated Persulfate TOD_{48Hr} and TOD_{96Hr} Results

		TOD_{48Hr}		TOD_{96Hr}	
Sample	**Sodium Persulfate Dosage (g/kg)**	**pH**	**TOD g/kg at TOD_{48Hr}**	**pH**	**TOD g/kg at TOD_{96Hr}**
SB14-3035-050322	4.0	13.09	0.4	13.01	0.5
	8.0	13.38	0.8	13.29	1.2
	10.0	13.49	1.4	13.32	1.7
SB07-1823-051022	1.0	11.96	0.1	11.04	0.1
	2.5	12.52	0.1	12.22	0.4
	5.0	12.93	0.4	12.64	0.6

Table 4.
Permanganate TOD_{48Hr} and TOD_{96Hr} Results

Sample	**Permanganate Dosage (g/kg)**	**TOD g/kg at TOD_{48Hr}**	**TOD g/kg at TOD_{96Hr}**
SB14-3035-050322	5.0	0.6	0.5
	10.0	1.1	1.1
	15.0	1.7	1.6
SB07-1823-051022	1.0	0.2	0.4
	2.5	0.5	1.0
	5.0	0.9	1.5

REFERENCES

Evonik/Peroxychem. Klozur™ Activated Persulfate Treatability Protocol Template.

Haselow, J, S., Siegrist, R, L., Crimi, M., and Jarosch, T. 2003. Estimating the Total Oxidant Demand for In Situ Chemical Oxidation Design. Remediation Autumn 2003.

US EPA. Standard Test Method for Determining the Permanganate Soil Oxidant Demand (Screening Phase, PSOD-1)

Sincerely,

Andrew Wenzel
Principal

Acronyms and Abbreviations

CH2M	CH2M HILL Engineers, Inc.
CL	clay
CME	Central Mine Equipment Co.
bgs	below ground surface
DPT	direct-push technology
Fe	iron
ft	feet
G	gravel
GW	groundwater
HA	hand auger
HSA	hollow stem auger
MW	monitoring well
PID	photoionization detector
PPM	parts per million
S	sand
SB	soil boring
SI	silt
SS	split spoon
tr.	trace
USCS	Unified Soil Classification System

Soil Boring Logs

	PROJECT NUMBER	BORING NUMBER	
ch2m.	D3542628	SB-01	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design | LOCATION : Houston Texas

ELEVATION : | DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS : 23' | START : 5/13/2022 0930 | END : 5/12/2022 1134 | LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
	0 to 5	5/5	HA-1	0.0	0.0 - 0.5 CONCRETE 0.5 - 3.0 Lean CLAY with silt (CL). Dark brown, moist, medium, medium plasticity, gravel throughout, little silt. 3.0 - 4.0 SILT (ML). Black, soft to very soft, non-plastic, loss of gravel, dry	G/S/SI/CL 0/<5/90/<5
5	5 to 8	3/3	DPT-1	0.0	4.0 - 23.0 Fat CLAY (CH). Brown, moist, medium, medium to high plastic, trace orange Fe oxidation, few silt, trace fine sand. 6.0 Color change to light gray, increase in tan mottling and Fe oxidation.	0/<5/5/90
10	8 to 12	4/4	DPT-2	0.0	10.5 Increase in tan and red mottling, trace black nodules.	
15	12 to 16	4/4	DPT-3	0.0		
	16 to 20	4/4	DPT-4	0.0		
20	20 to 24	4/4	DPT-5	0.0		
25	24 to 28	4/4	DPT-6	0.0	23.0 - 31.5 Poorly graded SAND with silt (SP). Ver light gray/white, few orangish tan mottling, trace clay, fine grained, subrounded to subangular, slightly cohesive, loose, saturated.	0/80/15/5 27.0 - 25.0 Starting to be hard drilling.
30	28 to 32	4/4	DPT-7	0.0		
35	32 to 36	2/4	DPT-8	0.0	31.5 - 34.0 Well graded SAND with silt (SW). Orangish tan, loose to very loose, saturated, fine to medium grained, trace pebbles, slightly cohesive. Refusal at 34.0 ft bgs	<5/75/15/5 32.0 Very hard drilling
40						
45						
50						

	PROJECT NUMBER	BORING NUMBER	
ch2m. SM	D3542628	SB-02	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design | LOCATION : Houston Texas

ELEVATION : | DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS : 13.8' | START : 5/12/2022 0830 | END : 5/12/2022 1020 | LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
	0 to 5	5/5	HA-1	0.0	0.0 - 0.6" CONCRETE 0.6 - 1.0 FILL with gravel 1.0 - 7.0 Fat CLAY (CH). Light gray with dark orangish tan mottling, moist, soft, high plasticity, little silt, less gravel, mottling increases with depth.	G/S/SI/CL 0/0/10/90
5	5 to 8	3/3	DPT-1	0.0	6.0 Few black organic nodules	
	8 to 12	4/4	DPT-2	0.0	7.0 - 9.0 Silty Lean CLAY (CL). Very light gray with orangish tan mottling, soft to very soft, moist, low to medium plasticity. 9.0 - 14.0 Fat CLAY with silt (CH). Very light gray, almost white with ligth tan mottling (less than above) stiff, high plasticity, dry.	0/0/45/55 0/0/20/80
10	12 to 16	4/4	DPT-3	0.0	14.0 - 24.0 Silty clayey SAND (SC). Very light gray/ white, with few gray mottling, dense to medium dense, fine sand, cohesive with low to non-plastic, dry, near moist, loss of secondary color.	0/40/30/30
15	16 to 20	4/4	DPT-4	0.0	17.5 Saturated, less silt. Increase in clay.	
20	20 to 24	4/4	DPT-5	0.0	23.0 Color change to orangish tan/reddish brown.	22.0 - Hard drilling
25	24 to 28	4/4	DPT-6	0.0	24.0 - 43.0 SAND with silt (SP-SW). Light tan, wet to near saturated, loose to very loose, mostly fine grained to medium, slightly cohesive, trace clay.	0/80/15/25
30	28 to 32	4/4	DPT-7	0.0	29.0 Saturated	29.0 Some slow advancement
35	32 to 36	4/4	DPT-8	0.0		33.0 Some slow advancement
40	36 tp 40	4/4	DPT-9	0.0	38.0 Some dark gray/ laminations.	
	40 to 44	3/4	DPT-10	0.0		
45					Refusal at 43' bgs	
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PROJECT NUMBER	BORING NUMBER	
D3542628	SB-03	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design — LOCATION : Houston Texas

ELEVATION : — DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS : 18 - 20' — START : 5/12/2022 1420 — END : 5/12/2022 1615 — LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
	0 to 5	5/5	HA-1	0.0	0.0 - 0.9 CONCRETE 0.9 - 1.0 GRAVEL. Concrete base 1.0 - 3.5 Non-Native Material. Black and gray plastics, oyster shells, plastic sheeting in dark brown clay. 3.5 - 4.5 Well graded SAND (SW). Non-native appears to be 20/40 foundation base sand with some small gravel	G/S/SI/CL
5					4.5 - 5.5 Fat CLAY (CH). Gray with dark brown and tan mottling, soft, moist, high plastic, few sand, little silt	0/5/10/85
	5 to 8	3/3	DPT-1	0.0	5.5 - 19.0 Silty CLAY (CH/CL). Light gray with tan and red mottling, dry, stiff, low plasticity, less sand, orangish tan oxidation laminations throughout, increase with depth	0/0/35/65 Chemical odor
10	8 to 12	4/4	DPT-2	0.0	10.0 Becomes fat clay with high plasticity	
15	12 to 16	4/4	DPT-3	0.0		
	16 to 20	4/4	DPT-4	0.0		
20	20 to 24	4/4	DPT-5	0.0	19.0 - 35.5 Silty poorly graded SAND (SP). Light gray to white, same dark tan mottling, medium dense to loose, wet to saturated, slightly cohesive.	
25	24 to 28	4/4	DPT-6	0.0		Loss of chemical odor
30	28 to 32	4/4	DPT-7	0.0		
35	32 to 36	4/4	DPT-8	0.0	35.5 - 36.5 Fat CLAY with sand (CH). Reddish brown, stiff to very stiff, moist, high plasticity, fine to medium sand.	
	36 to 40	4/4	DPT-9	0.0	36.5 - 38.5 Well graded SAND (SW). Tannish brown, wet, loose, fine to medium 38.5 - 39.5 Fat CLAY (CH). Reddish bown, stiff to very stiff, moist, high plasticity, fine to medium sand.	38.0 Hard, slow advance
40					39.5 - 41.5 Well graded SAND (SW). Tannish brown, wet, loose, fine to medium	
	40 to 44	2/4	DPT-10	0.0	41.5 - 42.0 Fat CLAY with sand (CH). Reddish brown, stiff to very stiff, moist, high plasticity, fine to medium sand. Refusal at 42 ft bgs	
45						
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PROJECT NUMBER	BORING NUMBER	
D3542628	SB-04	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design — LOCATION : Houston Texas

ELEVATION : — DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS : 17' — START : 5/11/2022 0930 — END : 5/11/2022 1108 — LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
0	0 to 5	5/5	HA-1	0.0	0.0 - 0.4 CONCRETE 0.4 - 1.0 FILL clay 1.0 - 3.0 Sandy lean CLAY (CL). Very dark gray and tan, dry, medium to low plasticity, medium sand, trace reddish orange mottling, graduational with below 3.0 - 6.0 Silty fat CLAY (CH). Black and light gray with tan mottling througout, moist, medium, trace fine sand, medium to high plasticity, trace roots, few black organic nodules and laminations.	G/S/SI/CL 0/30/10/60 0/<5/35/60 Slight chemical odor
5	5 to 8	3/3	DPT-1	0.0	6.0 - 18.5 Silty lean CLAY (CL). Light gray with brownish tan mottling, few gray beds, stiff to very stiff, moist, trace roots, few fine sand, gradational with above, stiffness increases with depth.	0/5/40/55 Much less odor but still present
10	8 to 12	4/4	DPT-2	0.0		
15	12 to 16	4/4	DPT-3	0.0	14.0 - 14.5 Very white clay, looks like calcite but is soft and plyable like a fat clay 16.0 Stange orange oxidation, loss of plasticity	
20	16 to 20	4/4	DPT-4	0.0	18.5 - 19.5 SILT (ML). Light gray to gray, few reddish tan mottling, saturated, very soft, non plastic, gradiational with above, few very fine sand, abrupt with below. 19.5 - 24.0 Silty CLAY (CL). Gray with heavy, dark reddish orange oxidation and similar white clay as 14.0 - 14.5, stiff, low to medium plasticity, trace hard calcite nodules.	0/5/90/5 Faint odor
25	20 to 24	4/4	DPT-5	0.0		22.0 Becoming hard drilling
30	24 to 28	4/4	DPT-6	0.0	24.0 - 36.0 Silty SAND (SM). Orangish tan to light tan, loose to very loose, saturated to wet, few fat clay lenses, slightly cohesive, fine, trace medium grained sand, near flowing.	0/65/30/5 24.0 - 28.0 Rods came up wet
35	28 to 32	3/4	DPT-7	0.0		
40	32 to 36	4/4	DPT-8	0.0		36.0 Hard drilling
45	36 to 40	0/4	DPT-9	0.0	Refusal at 36 ft bgs	
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PROJECT NUMBER	BORING NUMBER	
D3542628	SB-05	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design — LOCATION : Houston Texas

ELEVATION : — DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS : — START : 5/16/2022 1025 — END : 5/16/2022 1125 — LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
					0.0 - 0.7 CONCRETE	G/S/SI/CL
	0 to 5	5/5	HA-1	0.0	0.7 - 2.0 Gravelly Fat CLAY with Silt (CH). Very dark brown, moist, medium, medium/high plasticity, 0.25 to 0.50 inch gravel, assumed fill	30/<5/15/50
5					2.0 - 4.0 SILT (ML). Dark and light gray, very soft, dry to moist, non-plastic, loss of gravel, trace sand	0/<5/90/5
	5 to 8	3/3	DPT-1	0.0	4.0 - 6.0 Silty Lean CLAY (CL). Brown and dark brown moist, soft, low/medium plasticity, trace snd	0/5/35/60
10	8 to 12	4/4	DPT-2	0.0	6.0 - 9.0 Lean CLAY with Silt (CL). Light gray with heavy tan and reddish brown mottle, dry, firm, low plasticity.	0/15/35/50
					9.0 - 13.5 Silty Fat CLAY (CH). Light gray with less tan/reddish brown mottle, slightly moist, soft/medium,	0/15/35/50
15	12 to 16	4/4	DPT-3	0.0	medium/high plasticity, very fine to fine grain sand, gradational contact with above	
	16 to 20	4/4	DPT-4	0.0	13.5 - 19.8 Silty SAND with Clay (SM). Very light gray near white, few light tan mottle, little dark orangish tan Fe oxidation laminations, very fine to fine grain sand, medium dense, cohesive, moist, gradational contact with above	0/50/35/15
20	20 to 24	4/4	DPT-5	0.0	17.5' - becomes wet 19.0' - saturated 19.5' - less mottle	
25	24 to 28	4/4	DPT-6	0.0	19.8 - 25.5 Poorly Graded SAND with Silt (SP). White, wet, loose to very loose, trace tan mottle, slightly cohesive, very fine and fine grain sand, subrounded to subangular, gradational contact with above,abrupt contact with below	0/80/15/<5 27.0' - near flowing sands
30	28 to 32	4/4	DPT-7	0.0	25.5 - 40.0 Well Graded SAND with Silt (SW). Orangish tan with few gray/light gray laminations, wet, loose, fine to medium grain, subrounded to subangular, slightly cohesive	0/75/15/10
35	32 to 36	4/4	DPT-8	0	26.5' - 0.50 inch of Fat Clay 34.0' - 0.75 inch of very stiff Fat Clay	
40	36 to 40	4/4	DPT-9	0		38.0' - hard, slow drilling
45					Refusal at 40' in hard pack sand	
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PROJECT NUMBER	BORING NUMBER	
D3542628	SB-06	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design — LOCATION : Houston Texas

ELEVATION : — DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS : 17' — START : 5/11/2022 1410 — END : 5/11/2022 1505 — LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
	0 to 5	5/5	HA-1	0.0	0.0 - 1.5 CONCRETE and crushed rock 1.5 - 2.0 FILL, gravelly clay 2.0 - 15.5 Fat CLAY (CH). Dark gray to near black with dark brownish tan and orangish red mottling, moist to near wet, soft, high plasticity, trace fine pebbles, some silt, mottling increasing with depth.	G/S/SI/CL <5/0/10/85
5	5 to 8	3/3	DPT-1	0.0	6.0 Color change to light gray.	
10	8 to 12	4/4	DPT-2	0.0	9.0 Increase in stiffness to medium stiff.	
15	12 to 16	4/4	DPT-3	0.0	15.5 - 22.8 Silty SAND with clay (SM). Very light gray to white with orangish tan mottling, dry, medium dense, very fine to fine sand, slightly cohesive.	0/55/30/15
20	16 to 20	4/4	DPT-4	0.0	19.0 Near saturated. 19.0 - 19.5 Heavy orangish tan oxidation.	18.0 - 23.0 Collect GW sample
	20 to 24	4/4	DPT-5	0.0	22.25 - 22.5 Gravel 22.8 Saturated 23.0 - 29.0 Well graded SAND (SW). Tanish white and pink with orangish tan mottling, loose to very loose, slightly cohesive, fine to medium grained, little silt.	22.0 - 23.0 Harder drilling 5/90/10/0
25	24 to 28	4/4	DPT-6	0.0	27.5 Gravel	23.0 - 27.0 Collect GW sample 27.0 Hard drilling 27.0 - 32.0 Collect GW sample
30	28 to 32	1/4	DPT-7	0.0	Refusal in gravelly sand at 29 ft bgs	
35						
40						
45						
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	PROJECT NUMBER	BORING NUMBER	
ch2m. SM	D3542628	SB-07	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design — LOCATION : Houston Texas

ELEVATION : — DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS : — START : 5/10/2022 1010 — END : 5/11/2022 1505 — LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
					0.0 - 0.5 CONCRETE	G/S/SI/CL
	0 to 5	5/5	HA-1	0.0	0.5 - 1.5 Sandy SILT (ML). Tan, dry, very soft, not very cohesive, non plastic, very fine sand, roots. 1.5 - 7.0 lean CLAY with silt (CL). Dark brown to gray with orangish red mottling, roots, dry, low plasticity medium.	0/<5/20/75
5	5 to 8	3/3	DPT-1	0.0		
	8 to 12	4/4	DPT-2	0.0	7.0 - 14.0 Fat CLAY with silt (CH). Gray with some dark brown orange/red and maroon mottling, stiff high plasticity, moist to near dry, trace very fine sand. 10.0 Color change to light gray slight tan, from stiff to medium. Trace black organic nodules.	0/<5/15/80
10						
15	12 to 16	4/4	DPT-3	0.0	14.0 - 22.5 Silty SAND (SM). Very light gray and white, dry, medium dense, thin beds and lamination of very dark orange, non cohesive, very fine and fine sand.	0/65/30/5
	16 to 20	4/4	DPT-4	0.0		
20	20 to 24	4/4	DPT-5	0.0	22.5 - 25.0 Lean CLAY with gravel (CL). Light gray with maroon mottling, dry to moist, stiff, low to non plastic, 0.15 to 0.25 inch gravel throughout, trace white mottling at bottom.	22.0 Slower drilling
25	24 to 28	1/4	DPT-6	0.0	Refusal at 25 ft bgs	
30						
35						
40						
45						
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	PROJECT NUMBER	BORING NUMBER	
ch2m.	D3542628	SB-08	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design | LOCATION : Houston Texas

ELEVATION : | DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS : 18' | START : 5/10/2022 1445 | END : 5/10/2022 1120 | LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
0	0 to 5	5/5	HA-1	0.0	0.0 - 0.5 CONCRETE 0.5 - 1.0 FILL 1.0 - 4.0 Lean CLAY (CL). Dark brown and gray, dry medium, low to medium plasticity, some gravel throughout , abrupt contact with the below	G/S/SI/CL
5	5 to 8	3/3	DPT-1	0.0	4.0 - 18.0 Fat CLAY (CH). Black with ligth gray laminations (gray laminations almost looks to be bentonite), moist medium to soft, high plasticity, trace sand and pea gravel, few tan mottling, appears non-native.	Slight odor (akin to asphalt)
10	8 to 12	4/4	DPT-2	0.0	10.0 Wood chips. Looks like a pallet	Begin strong chemical odor
15	12 to 16	4/4	DPT-3	0.0	12.0 Color change to olive gray, orange mottling. still appears non-native.	
	16 to 20	4/4	DPT-4	0.0		
20	20 to 24	4/4	DPT-5	0.0	18.0 - 24.0 Silty SAND with clay (SM). Olive glay/green with orangish copper mottling, wet, loose, fine grained, cohesive 18.0 - 18.5 Medoium grained, brownish copper color 20.0 Saturated 23.0 Color change to mainly tan.	
25	24 to 28	4/4	DPT-6	0.0	24.0 - 37.0 Silty SAND (SM). Tanish brown, loose, wet, cohesive, fine to near medium sand, trace light gray sand nodules, travel gravel at bottom	24.0 Beginning hard drilling Odor noted from chemical to burnt.
30	28 to 32	4/4	DPT-7			
35	32 to 36	4/4	DPT-8			Relative loss of odor. Occasional burnt smell.
40	36 to 40	1/4	DPT-9		Refusal at 37 ft bgs	
45						
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PROJECT NUMBER	BORING NUMBER	
D3542628	SB-10	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design — LOCATION : Houston Texas

ELEVATION : — DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS : — START : 5/13/2022 1340 — END : 5/13/2022 1500 — LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
	0 to 5	5/5	HA-1	0.0	0.0 - 0.4 CONCRETE 0.4 - 0.8 Crushed Caliche Road Base 0.8 - 1.2 SILT (ML). Very dark brown near black very soft, non-plastic, dry, possible fill for parking lot	G/S/SI/CL 100/0/0/0 0/0/100/0
5	5 to 8	3/3	DPT-1	0.0	1.2 - 4.0 Fat CLAY (CH). Dark brown/brown, soft, moist, high plasticity 4.0 - 18.0 Fat CLAY (CH). Light gray with strong red and orangish tan mottle, stiff, moist, little silt, high plasticity, some Fe oxidation, red mottling decrease with depth, silt increases with depth, abrupt contact with above.	0/0/5/95 0/0/10/90 slight odor
10	8 to 12	4/4	DPT-2	0.0		
15	12 to 16	4/4	DPT-3	0.0		loss of odor
20	16 to 20	4/4	DPT-4	0.0	18.0 - 22.0 Silty Fat CLAY (CH). Light gray, loss of mottle, medium/high plasticity, few sand, medium/ stiff, moist 19.0' - 0.50 inch lamination of heavy orange color	0/5/35/60
25	20 to 24	4/4	DPT-5	0.0	22.0 - 24.0 Silty Poorly Graded SAND (SP-SM). Very light gray to white with few orangish red mottle and laminations, medium dense/loose, wet, very fine and fine grain sand, cohesive, few clay, trace yellowish green laminations	0/60/35/5
30	24 to 28	4/4	DPT-6	0.0	24.0-38.0 Poorly Graded SAND with Silt (SP). Light tan, loose, wet, fine grained sand, slightly cohesive	0/75/20/5
	28 to 32	4/4	DPT-7	0.0		30.0' - hard drilling
35	32 to 36	4/4	DPT-8	0	34.0' - color change to reddish maroon	36.0' - hard drilling
40	36 to 40	2/4	DPT-9	0	Refusal at 38.0'	
45						
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PROJECT NUMBER	BORING NUMBER	
D3542628	SB-11	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design — LOCATION : Houston Texas

ELEVATION : — DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS : 22' — START : 5/5/2022 1330 — END : 5/5/2022 1455 — LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
					0.0 - 1.0 TOPSOIL (CL/ML)	G/S/SI/CL
	0 to 5	5/5	HA-1	0.0	1.0 - 2.0 Poorly graded SAND (SP). White, fine grainded, assumed to be fill.	0/100/0/0
5					2.0 - 8.0 Fat CLAY with silt (CH). Light gray with tan and reddish brown mottling, stiff to medium damp medium plasticity, some orangish red Fe oxidation increasing with depth	0/0/15/85
	5 to 8	3/3	DPT-1	0.0		
10	8 to 12	4/4	DPT-2	0.0	8.0 - 14.5 Sand SILT with Clay (SM). Light gray with tannish orangish mottling, dry, hard, fine grained sand, orangish Fe oxidation at bottom.	0/35/45/20
	12 to 16	4/4	DPT-3	0.0		
15					14.5 - 25.0 Poorly graded SAND (SP). Tannish white dry, loose to very loose, fine to very fine sand, trace orangish laminations, slightly cohesive.	0/85/10/<5
	16 to 20	4/4	DPT-4	0.0	Orange oxidation increasing with depth	
20	20 to 24	4/4	DPT-5	0.0	22.0 Becoming wet	
25	24 to 28	4/4	DPT-6	0.0	25.0 - 34.5 Well graded SAND (SW). Tan and brown wet, loose to very loose, fine to medium, slightly cohesive.	0/90/10/0
30	28 to 32	2/4	DPT-7	0.0		
	32 to 36	4/4	DPT-8	0.0		
35					34.5 - 35.5 Fat CLAY with Sand (CH). Maroonish red, firm, moist, high plasticity, fine sand.	0/20/10/70
	36 to 40	2/4	DPT-9	0.0	35.5 - 37.5 SAND (SW). Tan and brown, wet , loose to very loose, fine to medium, slightly cohesive	0/90/5/5
40					37.5 - 38.0 Fat CLAY (CH). Maroonish red, firm, moist, high plasticity.	0/20/10/70
					Refusal at 38.0 ft bgs	
45						
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	PROJECT NUMBER	BORING NUMBER	
ch2m.	D3542628	SB-12	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design — LOCATION : Houston Texas

ELEVATION : — DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS : — START : 5/6/2022 1230 — END : 5/6/2022 1400 — LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
					0.0 - 0.5 TOPSOIL (CL/ML)	G/S/SI/CL
	0 to 5	5/5	HA-1	0.0	0.5 - 2.5 Sandy SILT. Light gray and light tan, roots, soft to very soft, dry, orangish tan oxidation	0/30/60/10
5					2.5 - 13.0 Fat CLAY (CH). Gray and tan, orangish red oxidation, moist, firm to soft, medium to high plasticity, few silt (silt increases with depth).	
	5 to 8	3/3	DPT-1	0.0		
10	8 to 12	4/4	DPT-2	0.0		
	12 to 16	4/4	DPT-3	0.0	13.0 - 34.0 Sandy SILT (ML). Light gray and light tan, roots, soft to very soft, dry, trace orangish tan oxidation.	0/30/60/0 Very dry for sand
15						
	16 to 20	4/4	DPT-4	0.0		
20						
	20 to 24	4/4	DPT-5	0.0		
					23.0 - 0.5 inch lamination of orange oxidation	
25	24 to 28	4/4	DPT-6	0.0		
					27.0 - 27.5 Maroon fat clay	
30	28 to 32	4/4	DPT-7	0.0		
	32 to 36	4/4	DPT-8	0.0	34.0 - 36.0 Sandy CLAY (CL). Maroonish tan, moist to near wet, stiff to soft, medium plasticity, fine to medium sand, sand concentrations varies with depth	0/30/10/60 Drilling becoming harder
35						
	36 to 40	4/4	DPT-9	0.0	36.0 - 38.0 Well graded SAND with clay (SW-SC). Tan and maroon, loose, wet to saturated, fine to medium grained, slightly cohesive, interbedded fat clay.	
					38.0 - 40.0 Sandy CLAY (CL). Maroonish tan, moist, to near wet, stiff to soft, medium plasticity, fine to medium sand.	
40						
	40 to 44	4/4	DPT-10	0.0	40.0 - 43.5 Well graded SAND (SW). Tan and maroon, loose, wet to saturated, fine to medium grained, slightly cohesive, interbedded fat clay.	
45					Refusal at 44.0 ft bgs	
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PROJECT NUMBER	BORING NUMBER	
D3542628	SB-13	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design — LOCATION : Houston Texas

ELEVATION : — DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS : 27.8' — START : 5/4/2022 1345 — END : 5/4/2022 1537 — LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
					0 - 1.0 TOPSOIL	G/S/SI/CL
	0 to 5	5/5	HA-1	0.0	1.0 - 3.0 Road base sand FILL	0/95/05/0
5					3.0 - 13.0 Fat CLAY (CH) Light gray and tan. Trace reddish mottling. Stiff, damp, high plasticity.	0/0/<5/95
	5 to 8	3/3	DPT-1	0.0		
10	8 to 12	4/4	DPT-2	0.0		
	12 to 16	4/4	DPT-3	0.0	13.0 - 17.0 Silty CLAY (CL) Light gray and tan. Trace reddish mottling. Stff, damp, low plasticity.	0/<5/30/65
15						
	16 to 20	4/4	DPT-4	0.0	17.0 - 28.0 Poorly graded SAND (SP). White, loose to very loose, damp, fine to very fine grained, slightly cohesive. Some tan mottling.	0/95/<5/0
20						
	20 to 24	4/4	DPT-5	0.0		
25						
	24 to 28	4/4	DPT-6	0.0		
	28 to 32	2/4	DPT-7	0.0	28.0 - 48.0 Well graded SAND (SW). Orangish tan, fine to medium grained, medium dense to loose wet to near saturated	
30					31.5 - 32 Fat maroon clay	32.0 Beginning hard and slow drilling
	32 to 36	4/4	DPT-8	0.0		
35						
	36 to 40	4/4	DPT-9	0.0	36.0 - 36.5 Fat maroon clay	
40						
	40 to 44	4/4	DPT-10	0.0		
45						
	44 to 48	4/4	DPT-11	0.0		
	48 to 50	1/2	DPT-12	0.0	48.0 - 49.0 Fat CLAY (CH). Dark maroon, stiff to very stiff, moist, high plasticity.	
50						
					Refusal at 49.0 ft bgs in clay.	

	PROJECT NUMBER	BORING NUMBER	
ch2m. SM	D3542628	SB-14	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design — LOCATION : Houston Texas

ELEVATION : — DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS : 25.0' — START : 5/3/2022 1000 — END : 5/3/2022 1215 — LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
					0-11.5" - Concrete	G/S/SI/CL
	0 to 5	5/5	HA-1	0.0	11.5" - 2.0 ft Sandy SILT (SM) Looks like FILL, tan 2.0 - 5.0 Silty fat CLAY (CH) Light and dark gray with tan mottling throughout	<5/60/30/<5
5					medium, plasticity. Some orange Fe oxidation throughout with increased red mottling toward bottom	
	5 to 8	1/4	DPT-1	0.0	5.0 - 7.0 NO RECOVERY 7.0 - 11.0 Sandy CLAY with silt (SC)	0/30/10/60
10	8 to 12	4/4	DPT-2	0.0	Light gray and tan with black and orange mottling. Damp with medium to low plasticity 11.0 - 45.0 SAND with SILT (SW-SP)	0/90/10/0
15	12 to 16	4/4	DPT-3	0.0	Light tan to white, loose, damp to dry, fine grained well graded to poorly graded with depth, few orange and tan oxidation laminations, slightly cohesive	
20	16 to 20	4/4	DPT-4	0.0		
	20 to 24	4/4	DPT-5	0.0	22.0 - Color shift to pinkish tan	
25	24 to 28	4/4	DPT-6	0.0	26.0 - Some dark orange laminations as well as grain size increase to fine with medium (SW)	28.0 - 30.0 Very slow drilling
30	28 to 32	2/4	DPT-7	0.0	29.0 - 30.0 Hard cemented sandstone 32.0 - Near wet	30.0 Refusal in sandstone
35	32 to 36	4/4	DPT-8	0.0		
40	36 to 40	4/4	DPT-9	0.0	38.0 - Start seeing some interbeded dark maroon/red clay	
	40 to 44	4/4	DPT-10	0.0		
45	44 to 46	2/2	DPT-11	0.0	45.0 - 46.0 Fat CLAY with sand (CH) Maroon, stiff, damp, med to high plasticity	
50					Total depth at 46.0' bgs	

	PROJECT NUMBER	BORING NUMBER	
ch2m: SM	D3542628	SB-15	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design — LOCATION : Houston Texas

ELEVATION : — DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS : 27.1' — START : 5/4/2022 0900 — END : 5/4/2022 1200 — LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
					0 - 1.0 TOPSOIL	G/S/SI/CL
	0 to 5	5/5	HA-1	0.0	1.0 - 14.0 Fat CLAY (CH). Light gray and tan with reddish maroon mottling, few Fe oxidation staining, stiff to soft, high plasticity, moist, few silt and tree roots	0/0/5/95
5						
	5 to 8	3/3	DPT-1	0.0	6.0 Less tan and reddish maroon mottling but still present	
10	8 to 12	4/4	DPT-2	0.0		
	12 to 16	4/4	DPT-3	0.0		
15					14.0 - 18.0 Silty SAND (SP-SM). Very light gray to white, medium dense to loose, damp, fine to very fine grained, slightly cohesive. Trace orangish tan laminations. Trace clay	0/65/30/<5
	16 to 20	4/4	DPT-4	0.0	18.0 - 35.0 Poorly graded SAND (SP). Very light gray to near white, moist, loose to very loose, fine to very fine grained, trace light tan laminations, subrounded,	0/90/<5/<5
20						
	20 to 24	4/4	DPT-5	0.0	trace silt 23.0 - 23.5 Layer of gray fat clay	
25						
	24 to 28	4/4	DPT-6	0.0	28.0 Becoming wet. Some slight orangish, tan staining 28.5 Change to tan to slight pinkish red	
30	28 to 32	4/4	DPT-7	0.0	29.0 - 30.0 Maroon fat clay 31.0 Change to whiteish gray	
	32 to 36	4/4	DPT-8	0.0		
35					35.0 - 47.0 Well graded SAND (SW). Orangish tan saturated, loose to very loose, fine to med graded, trace gray mottling	0/95/0/<5
	36 to 40	4/4	DPT-9	0.0		
40						
	40 to 44	4/4	DPT-10	0.0	42.5 0.5 inch red fat clay	
45	44 to 48	3.5/4	DPT-11	0.0		
					47.0 - 47.5 Fat CLAY (CH). Dark maroon	
50					Refusal at 47.5' bgs	

PROJECT NUMBER	BORING NUMBER	
D3542628	SB-16	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design — LOCATION : Houston Texas

ELEVATION : — DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS : 27.1' — START : 5/2/2022 1000 — END : 5/2/2022 1200 — LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
	0 to 5	5/5	HA-1	0.0	0 - 2.0 FILL Topsoil 2.0 - 16.0 Fat CLAY with silt (CH). Gray to light gray with orange Fe staining and mottling, moist, firm to stiff, medium to high plasticity	G/S/SI/CL 0/<5/15/80
5	5 to 8	3/3	DPT-1	0.0		
10	8 to 12	4/4	DPT-2	0.0	9.0 Color change to lighter gray with increase in light tan mottling.	
15	12 to 16	4/4	DPT-3	0.0		
20	16 to 20	4/4	DPT-4	0.0	16.0 - 24.0 SILT with clay (SM). Light gray with tan mottling, damp, trace sand, non plastic, stiff to soft, moisture increase with depth	0/<5/80/15
	20 to 24	4/4	DPT-5	0.0		
25	24 to 28	4/4	DPT-6	0.0	24.0 - 26.0 SILT with sand and clay. Light gray, less mottling, med stiff, non plastic, fine to very fine sand, damp to near moist, stiff to loose. 26.0 - 47.5 SAND with silt (SP-SM). Whitish gray, no mottling, medium dense to loose, damp, fine grained slightly cohesive, poorly graded.	0/15/70/15
30	28 to 32	4/4	DPT-7	0.0	30.0 Moisture increasing to near saturated wet	
35	32 to 36	4/4	DPT-8	0.0		
40	36 to 40	4/4	DPT-9	0.0		
	40 to 44	4/4	DPT-10	0.0		
45	44 to 48	3.5-4	DPT-11	0.0	47.5 - 48.0 Fat CLAY with sand (CH). Maroonish tan with mottling of gray, moist, stiff to hard, medium to high plasticity.	0/15/10/75
50					Refusal at 48 ft bgs	

	PROJECT NUMBER	BORING NUMBER	
ch2m: SM	D3542628	SB-17	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design — LOCATION : Houston Texas

ELEVATION : — DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS : — START : 5/18/2022 1140 — END : 5/18/2022 1310 — LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
					0.0 - 0.6 TOPSOIL (ML/CL).	G/S/SI/CL
					0.6 - 1.0 SAND with GRAVEL (SW). Tan, fine to coarse grained sand with gravel, assumed to be road construction fill	10/80/10/0
	0 to 5	5/5	HA-1	0.0	1.0 - 12.0 Silty fat CLAY (CH). Gray with tan and orangish red mottling, moist,firm to soft, medium to high plasticity, few Fe oxidation, trace fine sand, trace roots.	0/<5/35/60
5	5 to 8	3/3	DPT-1	0.0		
10	8 to 12	4/4	DPT-2	0.0	11.5 Becomes lighter gray in color.	
15	12 to 16	4/4	DPT-3	0.0	12.0 - 17.5 Silty lean CLAY with SAND (CL). Very light gray, few tan mottling, lots of orangish red laminations throughout, Fe oxidation, dry, stiff low to non-plastic, very fine to fine sand, gradational with above.	0/15/40/45
20	16 to 20	4/4	DPT-4	0.0	17.65 - 25.5 Poorly graded silty SAND (SP/SM). Very light gray to white with tan and pinkish red mottling, loose, moist, fine grained, subrounded, gradational with above, non-cohesive.	0/65/35/0
	20 to 24	4/4	DPT-5	0.0	21.0 Loss of mottling to 23 ft bgs	
25	24 to 28	4/4	DPT-6	0.0	25.5 - 36.0 Well graded sitly SAND (SW/SM). Tanish, orange, very loose to loose, fine to medium grained, moist, subrounded to subangular, non-cohesive	0/65/35/0
30	28 to 32	4/4	DPT-7	0.0	29.0 Becomes wet 31.0 0.5 inches fat sandy clay	
35	32 to 36	4/4	DPT-8	0.0	32.0 0.5 inches sandstone	32.0 Hard drilling
					36.0 - 37.0 Fat sandy CLAY (CH). Maroon, medium, dry, high plasticity, fine sand , abrupt contact with above and below.	
40	36 to 40	4/4	DPT-9	0.0	37.0 - 44.0 Well graded silty SAND (SW/SM). Tanish orange, very loose to loose, fine to medium grained, moist, subrounded to subangular, non-cohesive	
	40 to 44	4/4	DPT-10	0.0	39.0 0.5 inch clay	
45					Refusal at 44 ft bgs	
50						

	PROJECT NUMBER	BORING NUMBER	
ch2m: SM	D3542628	SB-18	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design — LOCATION : Houston Texas

ELEVATION : — DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS : 22.9' — START : 5/9/2022 1520 — END : 5/9/2022 1620 — LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
	0 to 5	5/5	HA-1	0.0	0 - 0.3 ASPHALT 0.3 - 2.5 ROAD BASE 2.5 - 7.0 Fat CLAY with silt (CH). Gray with orange and red oxidation, dry, medium, medium to high plasticity.	G/S/SI/CL <5/<5/15/75
5	5 to 8	3/3	DPT-1	0.0	7.0 - 10.0 Silty CLAY (CL). Light gray, dry, stiff, low plasticity, relative loss of mottling, trace sand.	0/5/35/60
10	8 to 12	4/4	DPT-2	0.0	10.0 - 13.0 Silty SAND with clay (SM). Light gray and white, medium dense to loose, few orangish tan mottling, dry, fine sand, cohesive with low to none-plasticity.	
15	12 to 16	4/4	DPT-3	0.0	13.0 - 27.0 Poorly graded SAND (SP). White, loss of mottling/secondary color, dry, medium dense to loose, very fine to fine sand, non-cohesive, trace silt.	0/95/5/0
20	16 to 20	4/4	DPT-4	0.0		
	20 to 24	4/4	DPT-5	0.0	20.0 Becoming moist 23.0/23.5 Becoming wet	
25	24 to 28	4/4	DPT-6	0.0	25.5 Becoming saturated 27.0 - 29.0 Clayey SAND with gravel (SC). Very dark brown to maroon, saturated, soft/medium dense, fine to medium sand, trace gravelly fat clay, abrupt contact with above, medium plasticity.	10/50/5/35
30	28 to 32	4/4	DPT-7	0.0	29.0 - 34.0 Well graded SAND (SW). Reddish tan, moist to wet, loose, fine to medium sand, non-cohesive less gravel, gradual with the above.	
35	32 to 36	2/4	DPT-8	0.0	32.5 0.5 inches of fat clay. 33.5 0.5 inches of fat clay. Refusal at 34 ft bgs	33.0 Very hard drilling
40						
45						
50						

PROJECT NUMBER	BORING NUMBER	
D3542628	SB-19	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design — LOCATION : Houston Texas

ELEVATION : — DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS : 29.8' — START : 5/5/2022 0900 — END : 5/5/2022 1045 — LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
	0 to 5	5/5	HA-1	0.0	0 - 0.5 FILL Topsoil (ML/CL) 0.5 - 14.0 Fat CLAY (CH). Gray to light gray and tan with some near black and orangish tan mottling, damp stiff to soft, high plasticity, trace roots and silt.	G/S/SI/CL 0/0/5/95
5	5 to 8	3/3	DPT-1	0.0	6.5 Start seeing some caliche/chert nodules	
10	8 to 12	4/4	DPT-2	0.0	10.0 Start seeing some color change with increase of maroonish red mottling.	
	12 to 16	4/4	DPT-3	0.0	14.0 - 22.0 Silty lean CLAY (CL). Gray to reddish pink/maroon, dry to damp, very stiff, low plasticity, increase in calcite/chert nodules. 15.5 - 16.0 Calcite/caliche layer	5/<5/20/70
15	16 to 20	4/4	DPT-4	0.0	18.0 - 18.5 Caliche 19.0 - 19.5 Caliche	
20	20 to 24	4/4	DPT-5	0.0	22.0 - 22.5 Poorly graded SAND (SP). Tan, loose, moist, fine grained, non cohesive. 22.5 - 24.5 Sandy CLAY with Silt (CL). Dark maroon and orangish tan, damp, very stiff to stiff, low to mediium plasticity, fine sand, some calcite nudules, few light gray lamintations.	0/90/10/0 65/5/20/70
25	24 to 28	4/4	DPT-6	0.0	24.5 - 25.5 Fat CLAY with Silt (CH). Light gray and soft, medium to high plasticity, moist, trace calcite and orangish tan mottling.	
30	28 to 32	4/4	DPT-7	0.0	25.5 - 39.5 Poorly Graded SAND (SP). Orangish tan, dry to damp, loose to very loose, fine to very fine grained, non-cohesive	
35	32 to 36	4/4	DPT-8	0.0	30.0 Increasing silt composition 31.0 - 32.0 Saturated 34.0 - 34.5 Satured but higher silt, dense	
40	36 to 40	4/4	DPT-9	0.0	39.5 - 40.0 Fat CLAY (CH). Dark maroonish red, very stif damp to near dry, medium to high plasticity, trace sand and silt.	
45					Refusal at 40 ft bgs	
50						

	PROJECT NUMBER	BORING NUMBER	
ch2m: SM	D3542628	SB-31	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design — LOCATION : Houston Texas

ELEVATION : — DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS : — START : 5/6/2022 1545 — END : 5/6/2022 1650 — LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
					0 - 0.5 Topsoil and gravel (ML/CL)	G/S/Sl/CL
	0 to 5	5/5	HA-1	0.0	0.5 - 1.5 Sandy SILT (ML). Tanish brown. Presumed to be fill. 1.5 - 13.0 Fat CLAY with silt (CL). Gray and tan with orangish red mottling, few Fe oxidation, medium to soft high plasticity, trace sand, dry.	0/35/65/<5
5	5 to 8	3/3	DPT-1	0.0		
10	8 to 12	4/4	DPT-2	0.0		
	12 to 16	4/4	DPT-3	0.0	13.0 - 17.0 Clayey SILT with sand (ML). White, few orangish tan laminations, firm to soft, dry, slightly cohesive but not plastic, very fine sand.	0/15/55/30
20	16 to 20	4/4	DPT-4	0.0	17.0 - 26.0 Silty Poorly graded SAND (SP-SM) Whitish tan, loose, fine grained, wet, slightly cohesive, loss of secondary color.	0/70/30/0
25	20 to 24	4/4	DPT-5	0.0	22.0 Becoming saturated	
	24 to 28	4/4	DPT-6	0.0	26.0 - 31.5 Well graded SAND (SW). Dark tan to to brown, saturated, fine to medium grained, loose to very loose, slight cohesion.	0/95/5/0
30	28 to 32	4/4	DPT-7	0.0		30.0 Very hard drilling
35					Refusal at 32 ft bgs	
40						
45						
50						

	PROJECT NUMBER	BORING NUMBER	
ch2m. SM	D3542628	SB-32	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design — LOCATION : Houston Texas

ELEVATION : — DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS : — START : 5/9/2022 1035 — END : 5/9/2022 1210 — LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
	0 to 5	5/5	HA-1	0.0	0.0 - 0.6 CONCRETE 0.6 - 1.0 FILL material 1.0 - 18.0 Fat CLAY with silt (CH). Gray with tan and orangish red mottling, firm, medium to high plasticity, moist to dry, trace roots, trace orangish Fe staining	G/S/SI/CL 0/0/15/85
5	5 to 8	3/3	DPT-1	0.0		
10	8 to 12	4/4	DPT-2	0.0		
15	12 to 16	4/4	DPT-3	0.0		
	16 to 20	4/4	DPT-4	0.0	18.0 - 21.0 Silty fat CLAY (CL). Very light gray, less mottling, reddish maroon laminations at depth of 0.15 to 0.25 inch thick, wet to near saturated, very soft, trace very find sand, abrupt contact with the below.	0/<5/35/60
20	20 to 24	4/4	DPT-5	0.0	21.0 - 27.5 Silty poorly graded SAND (SM/SP). Light tan with trace orange mottling, saturated, loose to very loose, slightly cohesive, fine to very fine grained sand, subangular.	0/65/30/<5
25	24 to 28	4/4	DPT-6	0.0	27.5 - 41.0 Silty well graded SAND (SM/SW). Orangish tan, wet to saturated, loose to very loose, fine to medium grained, slightly cohesive, subangular to subrounded, gradational contact with the above.	0/65/30/<5
30	28 to 32	4/4	DPT-7	0.0	30.0 0.25 inch of fat maroon clay	
35	32 to 36	4/4	DPT-8	0.0	32.0 0.25 inch fat maroon clay	
40	36 to 40	4/4	DPT-9	0.0		
	40 to 44	2/4	DPT-10	0.0	41.0 - 42.0 Fat CLAY with sand and silt (CH). Light and dark maroonish red, moist, near dry, very stiff to hard fine sand, medium to high plasticity. Refusal at 42.0 ft bgs in clay.	40.0 - Hard drilling
45						
50						

	PROJECT NUMBER	BORING NUMBER	
ch2m.	D3542628	SB-33	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design — LOCATION : Houston Texas

ELEVATION : — DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS : 27' — START : 5/6/2022 0800 — END : 5/6/2022 0920 — LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
0	0 to 5	5/5	HA-1	0.0	0.0 - 0.5 TOPSOIL (CL/ML) 0.5 - 1.5 SAND (SP). White, looks like roadbase fill. 1.5 - 3.0 SILT with clay (ML). Gray, moist, soft, low to medium plasticity 3.0 - 14.0 Fat CLAY with silt (CH). Tan and gray with reddish maroon mottling, firm , medium to high plasticity, trace sand, little orangish, Fe oxidation, trace roots, few black organic nodules, trace fine sand.	G/S/SI/CL 0/15/85/10 0/<5/15/80
5	5 to 8	3/3	DPT-1	0.0		
10	8 to 12	4/4	DPT-2	0.0		
15	12 to 16	4/4	DPT-3	0.0	14.0 - 18.0 SILT with sand and clay (ML). Light gray with dark tan and maroon mottling, soft, low plasticity, dry, very fine to fine sand, cohesive.	0/15/70/15
20	16 to 20	4/4	DPT-4	0.0	18.0 - 27.0 Poorly graded SAND (SP). Very light gray to white, loss of mottling, loose to very loose, dry to damp, very fine and fine grained sand, non cohesive, trace to few silt, less clay.	0/95/5/0
25	20 to 24	4/4	DPT-5	0.0		
30	24 to 28	4/4	DPT-6	0.0	27.0 - 30.0 Well graded SAND (SW). Maroonish tan with gray, loose, wet to near saturated, fine to medium grained sand, non cohesive, slight increase in fines.	0/95/5/0
35	28 to 32	4/4	DPT-7	0.0	30.0 - 31.0 Fat CLAY (CH). Dark maroon, stiff, dry, medium to high plasticity, trace sand, few silt. 31.0 - 40.5 Well graded SAND (SW). Maroonish tan with gray, loose, wet to near saturated, fine to medium grained sand, non cohesive, slight increase in fines. 35.5 - 36.0 Maroon fat clay	0/<5/5/90 0/80/10/10
40	32 to 36	4/4	DPT-8	0.0		
45	36 to 40	4/4	DPT-9	0.0		
50	40 to 44	1/4	DPT-10	0.0	40.0 - 41.0 Fat CLAY (CH). Very stiff to hard Refusal at 41 ft bgs	

PROJECT NUMBER	BORING NUMBER	
D3542628	SB-34	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design — LOCATION : Houston Texas

ELEVATION : — DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS : — START : 6/27/2022 1345 — END : 6/27/2022 1447 — LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
0	0 to 5	5/5	HA-1	0.0	0.0 - 0.6 Concrete 0.6 - 6.5 Lean CLAY with Silt (CL). Black, gray and dark brown, dry, shift to medium, low to medium plasticity, to pebble, to orange FE stain, few silt.	G/S/SI/CL 5/0/10/85 Slight odor
5	5 to 10	5/5	DPT-1	0.0	6.5 - 18.0 Fat CLAY (CH). Light gray with tan and orangish red mottling, dry, stiff, high plasticity, loss gravel, some Fe staining and laminations, little silt, gradiational with above and below.	0/0/10/90 Loss of odor
10	10 to 15	5/5	DPT-2	0.0		
15	15 to 20	5/5	DPT-3	0.0		
20	20 to 25	5/5	DPT-4	0.0	18.0 - 28.0 Silty SAND (SM). Light gray with tan and reddish mottling, dry to slightly moist, very fine to fine sand, slightly cohesive, to clay 23.0 Becomes wet and saturated	0/65/30/5
25	25 to 30	5/5	DPT-5	0.0		
30	30 to 35	3/5	DPT-6	0.0	28.0 - 38.0 Silty Well Graded SAND (SW-SM). Tan with gray mottling, loose, wet, fine, to medium grain, gradational with above, non cohesive.	0/70/30/0
35	35 to 40	3/5	DPT-7	0.0		
40					Refusal at 38 ft bgs in hard sand	
45						
50						

	PROJECT NUMBER	BORING NUMBER	
ch2m.	D3542628	SB-35	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design — LOCATION : Houston Texas

ELEVATION : — DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS 20 — START : 6/24/2022 0820 — END : 6/24/2022 0925 — LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
	0 to 5	5/5	HA-1	0.0	0.0 - 0.55 Concrete 0.55 - 4.0 Gravelly SILT (GM). Light tan, dry, very loose 0.15-0.70" gravel, road base fill, abrupt with below.	G/S/SI/CL 40/5/55/0
5					4.0 - 18.0 Fat CLAY with Silt (CH). Dark brown and gray with some orangish tan mottling, slightly moist, firm, high plasticity, lose gravel.	0/0/20/80
	5 to 10	5/5	DPT-1	0.0		
10						
	10 to 15	5/5	DPT-2	0.0		
15						
	15 to 20	5/5	DPT-3	0.0	15.0 Color change to light grey with heavy reddish orange and tan mottling to black organic nodules. 17.0 0.3" calcite gravel layer. 17.5 0.25" heavy reddish orange oxidation layer. 18.0 - 27.5 Silty SAND (SM). Very light gray with dark orangish tan and tan mottling. Moist, loose, very fine to fine sand, slightly cohesive, few clay.	0/60/35/5
20						
	20 to 25	5/5	DPT-4	0.0	23.0 Becomes wet	
25						
	25 to 30	5/5	DPT-5	0.0		
30					27.5 - 37.0 Silty Well Graded SAND (SW-SM). Tanish orange, wet, very loose, fine to medium grain, non cohesive, lose secondary color, abrupt with above, coarsening down.	0/70/30/0
	30 to 35	3/5	DPT-6	0.0		
35						
	35 to 40	2/5	DPT-7	0.0	37.0 Refusal in sand.	
40						
45						
50						

	PROJECT NUMBER	BORING NUMBER	
ch2m.	D3542628	SB-36	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design — LOCATION : Houston Texas

ELEVATION : — DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS 20 — START : 6/27/2022 0910 — END : 6/27/2022 1020 — LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
	0 to 5	5/5	HA-1	0.0	0.0 - 0.5 Concrete 0.5 - 3.5 Gravelly sandy silt (SM-ML). Tan and brown with some gray, dry, hard, find to coarse sand, presumed fill	G/S/SI/CL 30/30/40/0
5					3.5 - 17.0 Fat clay with silt (CH). Tan and brown with gray and orangish tan mottling, soft, moist, high plasticity, few orange Fe stains, gradational with below. 6.0 Main color change to light gray, become stiff.	0/0/15/85
	5 to 10	5/5	DPT-1	0.0		
10						
	10 to 15	5/5	DPT-2	0.0		
15						
	15 to 20	5/5	DPT-3	0.0	17.0 - 27.0 Silty sand (SM). Very light gray with tanish orange and reddish maroon mottling, loose, moist, very fine grain, slightly cohesive, few clay (fat), laminations of heavy orange Fe oxidation. 22.0 Becomes wet and saturated.	0/60/35/5
20						
	20 to 25	5/5	DPT-4	0.0		
25						
	25 to 30	5/5	DPT-5	0.0	27.0 - 39.0 Silty Well Graded Sand (SW-SM). Tan, Loose to very loose, wet, fine to medium grain, non cohesive, loss of second color, gradational with above.	0/70/30/0 28.0 Hard drilling
30						
	30 to 35	3/5	DPT-6	0.0		
35						
	35 to 40	4/5	DPT-7	0.0		37.0 Hard
40					Refusal at 39.0 ft bgs in sand.	
45						
50						

	PROJECT NUMBER	BORING NUMBER	
ch2m.	D3542628	SB-37	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design — LOCATION : Houston Texas

ELEVATION : — DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS 20' — START : 6/22/2022 1305 — END : 6/22/2022 1405 — LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
	0 to 5	5/5	HA-1	0.0	0 - 0.6 Concrete 0.6 - 4.0 Gravelly Silty Sand (SM). Presumed fill and road base mix, color varies browns and tans, dry, hard, 0.25" to 0.75" gravel, loose. 3.75' Looks like filler pack sand, abrupt with below.	G/S/SI/CL 35/45/20/0
5	5 to 10	5/5	DPT-1	0.0	4.0 - 14.5 Fat Clay (CH). Very dark brown, moist, medium to stiff, high plasticity, some silt, loss gravel, trace black mottling, trace black organic nodules. 6.0 Color change to light gray with orangish red and tan mottling.	0/0/10/90 Slight chemical odor 6.0 Lose odor
10	10 to 15	5/5	DPT-2	0.0	13.0 Color change to olivish glay, soft, with white laminations.	
15	15 to 20	5/5	DPT-3	0.0	14.5 - 22 Clayey Silty Sand (SM). Olive glay with some orangish tan mottling, moist to wet, medium dense, cohesive (low plasticity), fine to very fine sand.	0/45/30/25 23.0 Harder drilling
20	20 to 25	5/5	DPT-4	0.0	22.0 to 28.0 Silty Poorly Graded Sand (SP-SM). Light orangish tan with light gray near white motling, medium density, wet, fine sand, cohesive, little clay, gradational with above.	0/60/30/10
25	25 to 30	3/5	DPT-5	0.0	26.0 Started to see trace small gravel.	26.0 Very hard
30					Refusal at 28.0 ft bgs in sand.	
35						
40						
45						
50						

	PROJECT NUMBER	BORING NUMBER	
ch2m. SM	D3542628	SB-38	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design | LOCATION : Houston Texas

ELEVATION : | DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS : 25 | START : 6/23/2022 0845 | END : 6/23/2022 1005 | LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
					0 - 0.6 Concrete	G/S/SI/CL
	0 to 5	5/5	HA-1	0.0	0.6 - 13.0 Silt with Sand (ML). Brown with some reddish orange mottling, hard, dry, little clay, trace gravel, non cohesive, trace laminations of Fe oxidation.	<5/15/80/0
5						
	5 to 10	5/5	DPT-1	0.0	7.0 Color change to light gray 8.0 Start seeing trace black organic nodules	
10						
	10 to 15	5/5	DPT-2	0.0		
15						0/<5/20/75
	15 to 20	5/5	DPT-3	0.0	13.0 - 17.0 Fat Clay with Silt (CH). Gradational contact with above, light gray with light and dark tan and reddish maroon mottling, few orangish red Fe oxidation, stiff, medium to high plasticity, less gravel, trace fine sand, dry. 17.0 - 24.0 Sandy Silt (ML). Gradational with above light gray and orangish tan, medium to soft, cohesive, slightly moist, trace fat clay laminations, fine to very fine sand. 19.0 0.25" white calcite laminations	0/40/55/5
20						
	20 to 25	5/5	DPT-4	0.0	21.0 Becomes wet	22.0 Hard drilling
25					24.0 - 39.0 Silty Poorly Graded Sand (SP-SM).	0/70/30/0
	25 to 30	5/5	DPT-5	0.0	Gradational with above, tan with light gray mottling, loose, wet, fine sand, slightly cohesive.	
30						
	30 to 35	5/5	DPT-6	0.0		32.0 Hard drilling
35						
	35 to 40	4/5	DPT-7	0.0		
40					Refusal at 39.0 ft bgs in sand.	
45						
50						

	PROJECT NUMBER	BORING NUMBER	
ch2m. SM	D3542628	SB-39	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design | LOCATION : Houston Texas

ELEVATION : | DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS : 25 | START : 6/23/2022 1230 | END : 6/23/2022 1400 | LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
	0 to 5	5/5	HA-1	0.0	0 - 0.6 Concrete 0.6 - 3.0 Silt with Sand and Gravel (ML). Light brown and tan, dry, very stiff to hard, calcite gravel throughout, non cohesive, fine sand.	G/S/SI/CL 20/20/60/0
5	5 to 10	5/5	DPT-1	0.0	3.0 - 7.0 Silty Lean Clay (CL). Dark brown with reddish orange mottling, medium to soft, moist, little sand, trace gravel, low to medium plasticity.	<5/10/35/50
10	10 to 15	5/5	DPT-2	0.0	7.0 - 19.0 Fat clay (CH). Light gray with tan and reddish orange mottling, very stiff to hard, high plasticity, slightly moist, some dark orangish brown Fe laminations and nodules throughout.	0/0/5/95 13.0 Hard
15	15 to 20	5/5	DPT-3	0.0		
20	20 to 25	5/5	DPT-4	0.0	19.0 - 40.0 Silty Poorly Graded Sand (SP-SM). Light gray with light tan mottling, beds (laminations) of dark tanish orange, moist to wet, medium density to loose, fine sand, slightly cohesive, trace clay. 24.0 0.5" bed fat clay and calcite	0/65/30/<5 23.0 Hard
25	25 to 30	5/5	DPT-5	0.0		28.0 Hard
30	30 to 35	5/5	DPT-6	0.0		
35	35 to 40	5/5	DPT-7	0.0		
40					Refusal at 40.0 ft bgs in sand.	
45						
50						

	PROJECT NUMBER	BORING NUMBER	
ch2m.	D3542628	SB-40	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design | LOCATION : Houston Texas

ELEVATION : | DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS 22 | START : 6/22/2022 0930 | END : 6/22/2022 1045 | LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
					0 - 0.5 Concrete	G/S/SI/CL
					0.5 - 2.0 Silty Sand (SM). Filler material, very light tan, dry, very loose, very fine grain, non cohesive, abrupt with below.	<5/65/30/0
	0 to 5	5/5	HA-1	0.0	2.0 - 8.5 Fat Clay with Silt CH). Very dark gray near black and dark brown with trace reddish maroon mottling, slightly moist, soft, trace gravel, color grades to brown with depth, gradational with below.	Slight chemical odor <5/<5/15/75
5						
	5 to 10	5/5	DPT-1	0.0		
10					8.5 - 18.5 Fat Clay (CH). Light gray with reddish maroon and tan mottling, heavy Fe oxidation throughout, dry, stiff, little silt, trace black organic nodules throughout.	0/5/10/85 12.0 Loss of odor
	10 to 15	5/5	DPT-2	0.0		
15						
	15 to 20	5/5	DPT-3	0.0	18.0 Heavy bed of orangish red Fe oxidation	
20					18.5 - 24.5 Silty Sand with Clay (SM). Light gray and olive gray (glay) with maroonish brown and tan mottling, moist near wet, medium density, cohesive, clay is fat clay, fine to very fine sand, Fe oxidation laminations, clay decreases with depth.	0/55/30/15
	20 to 25	5/5	DPT-4	0.0	22.0 Becomes wet 23.0 Increase in reddish maroon coloring	
25						
					24.5 - 25.5 Silty Lean Clay (CL). Glay olive with white and reddish orange mottling, very stiff to stiff, slightly moist to dry.	0/10/30/60 25.0 Harder drilling
	25 to 30	5/5	DPT-5	0.0	25.5 - 39 Silty Poorly Graded sand (SP-SM). Tan with light gray mottling, loose, wet, fine grain, slightly cohesive, trace to few fat clay laminations throughout.	0/65/30/5
30						
	30 to 35	5/5	DPT-6	0.0		
35						
	35 to 40	4/5	DPT-7	0.0		
40					Refusal at 39.0 ft bgs in sand.	
45						
50						

	PROJECT NUMBER	BORING NUMBER	
ch2m.	D3542628	SB-41	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design — LOCATION : Houston Texas

ELEVATION : — DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS : — START : 6/21/2022 1430 — END : 6/21/2022 1600 — LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
	0 to 5	5/5	HA-1	0.0	0 - 0.5 Concrete 0.6 - 10.0 Fat Clay with Silt (CH). Very dark gray near black and brown with tan and orangish red mottling, stiff ot soft (at 6'), moist, few gravel, little Fe oxidation throughout, gradational with below.	G/S/SI/CL 5/<5/15/75 Slight chemical odor
5	5 to 10	5/5	DPT-1	0.0		
10	10 to 15	5/5	DPT-2	0.0	10.0 - 12.5 Fat Clay (CH). Light gray and light tan with maroonish red mottling, medium, moist, high plasticity. 12.5 - 14.0 Clayey Silt (ML). Tan with light gray mottling, very moist, soft, cohesive with low plasticity.	0/<5/10/85 12.5 Lose odor 0/5/65/30
15	15 to 20	5/5	DPT-3	0.0	14.0 - 18.0 Silty Lean Clay (CL). Blueish gray olive with tan mottling, hard, low ot no plasticity, dry, few white calcite nodules, abrupt with above and gradational below 14.5 - 15.0 Calcite bed	<5/5/35/55
20	20 to 25	5/5	DPT-4	0.0	18.0 - 29.0 Silty Sand (SM). Blueish oliveish gray with dark tan and white mottling, medium density, moist, slightly cohesive, fine sand. 19.0 0.25" Calcite	5/60/30/<5
25	25 to 30	5/5	DPT-5	0.0	21.0 Becomes wet	
30	30 to 35	5/5	DPT-6	0.0	29.0 - 31.0 Fat Clay with Silt (CH). Light gray and tan with orangish red mottling, dry, stiff, high plasticity, some white laminations 31.0 - 41.0 Silty Sand with Gravel (SM). Tan with gray mottling, medium density to loose fine grain, wet, non-cohesive, gravel throughout from 0.05" to 0.5".	<5/5/15/75 15/45/30/10
35	35 to 40	5/5	DPT-7	0.0		
40	40 to 45	1/5	DPT-8	0.0	Refusal at 41.0 ft bgs in sand.	
45						
50						

	PROJECT NUMBER	BORING NUMBER	
ch2m.	D3542628	SB-42	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design — LOCATION : Houston Texas

ELEVATION : — DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS : 16 — START : 6/21/2022 0930 — END : 6/21/2022 1115 — LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
					0 - 0.45 Concrete	G/S/SI/CL
	0 to 5	5/5	HA-1	0.0	0.45 - 7.0 Clayey Silt with Gravel (ML). Dark brown, stiff, moist, low plasticity, trace fine sand.	10/<5/55/30 0.1 - 7.0 Chemical odor
5						
	5 to 10	5/5	DPT-1	0.0	6.0 Trace Fe Oxidation (orange) 7.0 - 16.0 Silty Fat Clay (CH). Light gray with tan and maroonish red mottling, stiff, dry, few black organic nodules, few orange Fe oxidation, medium to high plasticity, increase silt and loss gravel with depth.	0/<5/35/60 7.0 Lose odor
10						
	10 to 15	5/5	DPT-2	0.0	12.0 Color lightens.	
15						
	15 to 20	5/5	DPT-3	0.0	16.0 - 24.5 Silty Poorly Graded Sand (SP-SM). Very light gray to white, moist, medium density to loose, fine grained, slightly cohesive. 17.2 0.25" Bed of heavy orange oxidation. 18.5 Becomes wet 21.0 Begin seeing intermittent gravel and maroonish red laminations	5/65/30/0
20						
	20 to 25	5/5	DPT-4	0.0		23.0 Some hard drilling begins
25						
	25 to 30	5/5	DPT-5	0.0	24.5 - 26.0 Sandy Gravel. Large to small gravel (2.0" to 0.25") interbedded within fine sand, wet. 26.0 - 38.0 Poorly Graded Sand with Silt (SP). Tannish orange with pinkish red and few light gray mottling, loose, wet, fine grained, lose gravel, slightly cohesive.	60/30/10/0 0/80/20/0
30						
	30 to 35	5/5	DPT-6	0.0		
35						
	35 to 40	3/5	DPT-7	0.0		
40					Refusal at 38.0 ft bgs in sand.	
45						
50						

	PROJECT NUMBER	BORING NUMBER	
ch2m. SM	D3542628	SB-43	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design | LOCATION : Houston Texas

ELEVATION : | DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS : | START : 6/20/2022 1505 | END : 6/20/2022 1630 | LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
	0 to 5	5/5	HA-1	0.0	0 - 5" Concrete 5" - 6.5' Clayey Silt (ML). Gray and black with tan and dark brown mottling, slightly moist, soft, medium plasticity, trace sand, trace gravel, gradational with below.	G/S/SI/CL <5/<5/60/30 Odor - chemical and petroleum.
5	5 to 8	3/3	DPT-1	0.0	6.5 - 17.0 Fat Clay with Silt (CH). Light and dark gray with tan and maroonish mottling, medium to soft, slightly moist to dry, high plasticity, loss sand and gravel.	0/0/15/85 Loss of odor
10	8 to 12	4/4	DPT-2	0.0		
15	12 to 16	4/4	DPT-3	0.0		
	16 to 20	4/4	DPT-4	0.0	17.0 - 25.0 Sandy Silt (ML). Very light gray and white with orangish tan and dark gray mottling, dry to near wet, medium density to very loose, non cohesive, very fine to fine sand, gradational with above, trace clay.	0/40/55/5
20	20 to 24	4/4	DPT-5	0.0		
25	24 to 28	4/4	DPT-6	0.0	24.0 0.25" Calcite bed 25.0 - 40.0 Well Graded Sand (SW). Tan with light gray mottling, medium density, wet, fine to medium sand, trace maroon clay, few silt.	0/85/10/5 26.0 Hard drilling, near refusal
30	28 to 32	4/4	DPT-7	0.0		
35	32 to 36	4/4	DPT-8	0.0		35.0 Tough tripping back down hole
40	36 to 40	4/4	DPT-9	0.0		
45					Refusal at 40.0 ft bgs in sand.	
50						

PROJECT NUMBER	BORING NUMBER	
D3542628	SB-44	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design | LOCATION : Houston Texas

ELEVATION : | DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS : 15 | START : 6/20/2022 1000 | END : 6/20/2022 1140 | LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
					0 - 4.5" Concrete	G/S/SI/CL
	0 to 5	5/5	HA-1	0.0	4.5" - 2' Silty Sand (SM). Tan and brown, dry, loose to medium dense, few gravel, fine sand, non cohesive.	5/50/40/5
					2.0 - 4.5 Silt with Sand and Clay (ML). Light gray with tan mottling, dry, firm, slightly cohesive but non plastic, fine sand, trace gravel.	<5/15/75/5
5						3.5 Slight petroleum odor
	5 to 8	3/3	DPT-1	0.0	4.5 - 7.0 Silty Fat Clay (CH). Gray with olive glay and tan mottling, slightly moist, trace sand, fir, to soft, medium to high plasticity. Trace orange Fe oxidation stain, gradational with below.	<5/5/25/65
						6.5 Loss of odor
					7.0 - 19.5 Silty Lean Clay with Sand (CL). Dark brown and gray with trace light brown mottling, firm, medium to low plasticity, fine sand, slightly moist to dry, trace pebbles, sand and silt increase with depth, abrupt with below.	<5/15/30/50
10	8 to 12	4/4	DPT-2	0.0		
	12 to 16	4/4	DPT-3	0.0		
15						
	16 to 20	4/4	DPT-4	0.0	19.5 - 20.0 Fat Clay (CH). Glay to olive glay and maroonish orange with white modules, moist, soft, high plasticity, heavy oxidation, trace sand, silt, abrupt with below.	<5/<5/<5/85
20						
	20 to 24	4/4	DPT-5	0.0	20.0 - 21.0 Silty Lean Clay with Sand (CL). Same as 7.0 to 19.5 interval.	<5/20/35/40
					21.0 - 24.5 Fat Clay (CH). Maroonish red and light gray, stiff to firm, slightly moist to dry, medium to high plasticity, trace pebbles.	<5/5/10/80
25	24 to 28	4/4	DPT-6	0.0	24.5 - 26.0 Calcite /Caliche. Hard white and gray calcite bed, dry and stiff.	0/70/25/<5
					26.0 - 32.5 Silty Poorly Graded Sand (SP-SM). Light tan and light gray, wet, medium dense to loose, fine grain.	
30	28 to 32	4/4	DPT-7	0.0		
	32 to 36	4/4	DPT-8	0.0	32.5 - 41.5 Poorly Graded Sand with Silt (SP). Tan, wet, medium dense to loose, fine to medium grain, gradational contact with above, loss clay, non cohesive.	0/85/10/<5
35						
	36 to 40	4/4	DPT-9	0.0		
40						
	40 to 44	1.5/4	DPT-10	0.0	40.0 0.25" Layer fat clay.	
					Refusal at 41.5 ft bgs in sand.	
45						
50						

	PROJECT NUMBER	BORING NUMBER	
ch2m. SM	D3542628	SB-45	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design — LOCATION : Houston Texas

ELEVATION : — DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS : 26 — START : 6/24/2022 1250 — END : 6/24/2022 1405 — LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
					0 - 0.4 Concrete	G/S/SI/CL
					0.4 - 2.0 Gravelly Silty Sand (SM). Light tan, dense, dry, fine sand, presumed fill.	
	0 to 5	5/5	HA-1	0.0	2.0 - 12.0 Silty Lean Clay (CL). Light gray with tan and maroonish red mottling, very stiff, non to low plasticity, dry, little orange Fe staining, loss gravel, trace sand.	0/<5/40/55
5						
	5 to 10	5/5	DPT-1	0.0		
10						
	10 to 15	5/5	DPT-2	0.0	12.0 - 28.0 Fat Clay with Silt (CH). Light gray with tan and dark maroonish red mottling, slightly moist, medium to stiff, high plasticity, mottling increased with depth, gradational contact with above.	0/0/15/85
15						
	15 to 20	5/5	DPT-3	0.0	19.2 Caliche gravel. 19.5 Becomes wet, very soft.	
20						
	20 to 25	5/5	DPT-4	0.0	20.0 Moist, heavy maroon mottling.	
25						
	25 to 30	5/5	DPT-5	0.0		
30					28.0 - 38.5 Silty Well Graded Sand (SW-SM). Light and dark tan with few light gray mottling, wet, loose, fine to medium sand, non cohesive, abrupt with above.	0/65/35/0
	30 to 35	5/5	DPT-6	0.0		
35						
	35 to 40	3.5/5	DPT-7	0.0		
40					Refusal at 38.5 ft bgs in sand.	
45						
50						

	PROJECT NUMBER	BORING NUMBER	
ch2m. SM	D3542628	SB-46	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design | LOCATION : Houston Texas

ELEVATION : | DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS : 20 | START : 6/28/2022 1435 | END : 6/28/2022 1550 | LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
	0 to 5	5/5	HA-1	0.0	0 - 0.4 Concrete 0.4 - 4.0 Gravelly Silt (ML). Fill / road base.	G/S/SI/CL
5					4.0 - 6.0 Sand (SP). Fill / road base sand, very fine.	
	5 to 10	5/5	DPT-1	0.0	6.0 - 14.0 Fat Clay with Silt (CH). Light gray with tan mottling, medium to high plasticity, slightly moist, little orangish red Fe oxidation laminations.	0/0/15/85
10						
	10 to 15	5/5	DPT-2	0.0		
15					14.0 - 23.0 Sandy Silt with Clay (ML). Light gray with tan and orangish tan mottling, medium to soft, slightly moist, low to no plasticity, fine sand, gradational with above.	0/30/50/20
	15 to 20	5/5	DPT-3	0.0		
20						
	20 to 25	5/5	DPT-4	0.0		
25					23.0 - 37.0 Silty Sand (SM). Orangish tan and light gray, wet, loose, fine grain, slightly cohesive.	0/60/35/5
	25 to 30	5/5	DPT-5	0.0		
30						
	30 to 35	5/5	DPT-6	0.0		
35						
	35 to 40	2/5	DPT-7	0.0	36.0 See gravel. Refusal at 37.0 ft bgs in gravelly sand.	
40						
45						
50						

	PROJECT NUMBER	BORING NUMBER	
ch2m.	D3542628	SB-47	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design — LOCATION : Houston Texas

ELEVATION : — DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS : 20 — START : 6/28/2022 0945 — END : 6/28/2022 1058 — LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
					0 - 0.4 Concrete	G/S/SI/CL
	0 to 5	5/5	HA-1	0.0	0.4 - 7.0 Sandy Silt (ML). Dark and light gray with some dark brown mottling, dry, firm to soft, non cohesive, fine sand, few orangish red Fe oxidation laminations, gradational with below.	0/35/65/0
5						
	5 to 10	5/5	DPT-1	0.0	7.0 - 17.0 Silty Clay with Sand (CL). Dark and light gray with brownish tan mottling, slightly moist, firm to soft, low plasticity, fine sand, some white laminations throughout, few Fe oxidation.	0/15/35/50
10						
	10 to 15	5/5	DPT-2	0.0		
15						
	15 to 20	5/5	DPT-3	0.0	17.0 - 19.5 Fat Clay (CH). Light gray with tan and maroonish red mottling, firm, high plasticity, moist, few silt, few sand, gradational with above and below.	0/5/5/90
20						20.0 very faint chemical odor
	20 to 25	5/5	DPT-4	0.0	19.5 - 24.0 Silty Sand (SM). Very light gray, loose, very moist near wet, fine sand, slightly cohesive, loss second color, abrupt with below.	10/50/40/0
					22.0 Some gravel.	22.0 Chemical odor
25					24.0 - 37.0 Silty Well Graded Sand (SW-SM). Tanish orange with light gray mottling, loose, wet, fine to medium sand, non cohesive, trace pebble.	0/70/30/0
	25 to 30	5/5	DPT-5	0.0		25.0 Chemical odor 25.5 Lose odor
30						
	30 to 35	5/5	DPT-6	0.0		31.0 Hard
35						
	35 to 40	2/5	DPT-7	0.0	Refusal at 37.0 ft bgs in sand.	
40						
45						
50						

	PROJECT NUMBER	BORING NUMBER	
ch2m. SM	D3542628	SB-48	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design | LOCATION : Houston Texas

ELEVATION : | DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS : 23 | START : 6/28/2022 0945 | END : 6/28/2022 1058 | LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
0	0 to 5	5/5	HA-1	0.0	0 - 0.4 Concrete 0.4 - 16.5 Silty Fat Clay (CH). Dark gray and dark brown, medium, very moist near wet, high plasticity. 3.0 0.5" bed caliche / calcite gravel	G/S/SI/CL 5/0/35/60 Chemical odor
5	5 to 10	5/5	DPT-1	0.0	8.0 Color change - light gray with tan mottling	8.0 Lose odor
10	10 to 15	5/5	DPT-2	0.0	12.0 Begin to see reddish orange laminations and balck organic nodules and orange Fe oxidation.	
15	15 to 20	5/5	DPT-3	0.0	16.5 - 26.0 Sandy Silt (ML). Light gray and light tan with heavy dark orangish red laminations, soft, moist (near wet at 19.5), fine to very fine sand, cohesive, trace clay, abrupt with below.	0/40/55/5
20	20 to 25	5/5	DPT-4	0.0	23.0 Becomes wet / saturated.	
25	25 to 30	5/5	DPT-5	0.0	26.0 - 37.0 Silty Well Graded Sand (SW-SM). Light and dark tan with light gray laminations, few new white laminations, loose, wet, fine to medium, trace pebbles and gravel, trace clay.	5/55/35/<5 27.0 Little bit slower drilling
30	30 to 35	5/5	DPT-6	0.0		
35	35 to 40	2/5	DPT-7	0.0	Refusal at 37.0 ft bgs in sand.	
40						
45						
50						

	PROJECT NUMBER	BORING NUMBER	
ch2m.	D3542628	MW-181	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design — LOCATION : Houston Texas

ELEVATION : — DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : DPT Geoprobe 7822DT

WATER LEVELS : — START : 5/16/2022 1415 — END : 5/16/2022 1610 — LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
					0.0 - 2.0 TOPSOIL (ML/CL). Roots, light tan, dry.	G/S/SI/CL
	0 to 5	5/5	HA-1	0.0	2.0 - 5.0 Silty lean CLAY (CL). Brown with black mottling, trace white laminations, few gravel, stiff, low to medium plasticity, dry, trace roots, few Fe oxidation staining.	<5/5/40/50
5						
	5 to 10	5/5	SS-1	0.0	5.0 - 11.0 Silty lean CLAY (CL). Light gray with light tan and orangish red mottling, moist, low to medium plasticity, firm, laminations of dark brown and dark orangish red Fe staining, trace black organic nodules, few fine sand.	0/5/45/50
10						
	10 to 15	5/5	SS-2	0.0	11.0 - 15.0 Fat CLAY with silt (CH). Light gray with reddish maroon mottling, few orangish tan Fe oxidation laminations, moist, stiff to firm, high plastic, few black nodules, trace pebble, trace white laminations.	<5/25/20/70
15						
	15 to 20	3/5	SS-3	0.0	15.0 - 18.0 Poorly graded SAND with silt (SP). Very light gray with reddish maroon mottling, few orangish tan Fe oxidation laminations, moist, stiff to medium, high plastic, few black nodules, trace pebbles, trace white laminations.	
20					18.0 - 20.0 No Recovery	
	20 to 25	3/5	SS-4	0.0	20.0 - 23.0 Silty well graded SAND (SW-SM). Tan, loose to very loose, wet, non cohesive, fine to medium grained, appears to be gradational with above.	0/70/30/0
25					23.0 - 25.0 No Recovery	
	25 to 30	5/5	SS-5	0.0	25.0 - 33.0 Silty well graded SAND (SW-SM). Tan, loose to very loose, fine to medium grained, subrounded, moist to near wet, non cohesive, trace light gray laminations.	<5/65/30/25
30						
	30 to 35	3/5	SS-6	0.0		
35					33.0 - 35.0 No Recovery	35.0 Began to encounter heaving sands
	35 to 40	4/5	SS-7	0.0	35.0 - 40.0 Silty well graded SAND (SW-SM). Tan, loose to very loose, fine to medium grained, subrounded, wet, non cohesive, tracde light gray lamination and trace gravel.	<5/65/30/25
40						
	40 to 45	0/5	SS-8	0.0	40.0 - 50.0 No Recovery	40.0 Had to start flooding augers with water to prevent flowing sand from flowing up into auger string
45						
	45 to 50	0/5	SS-9	0.0		
50						
					Refusal at 50 ft bgs	50.0 Sampler got locked in boring

	PROJECT NUMBER	BORING NUMBER	
ch2m.	D3542628	MW-182	1 of 1

SOIL BORING LOG

PROJECT : Silber Road Pre-Design — LOCATION : Houston Texas

ELEVATION : — DRILLING CONTRACTOR : Best

DRILLING METHOD AND EQUIPMENT USED : HSA CME

WATER LEVELS : — START : 5/17/2022 0750 — END : 5/17/2022 0900 — LOGGER : D. Rowan

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	#/TYPE	PID READINGS PPM	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
					0.0 - 0.6 CONCRETE	G/S/SI/CL
	0 to 5	5/5	HA-1	0.0	0.6 - 2.0 Sandy SILT (SM). Light tan, light brown, dry, soft to very soft, fine sand, few gravel, possible fill, trace clay. 2.0 - 10.0 Clayey SILT (ML). Light and dark gray with orangish red Fe oxidation, moist, soft, non-plastic, to low plasticity, trace pebble, few sand.	5/35/55/25 <5/10/50/35
5						
	5 to 10	5/5	SS-1	0.0	6.0 Color change to light brown and light gray, increase in mottling	
10						
	10 to 15	5/5	SS-2	0.0	10.0 - 16.0 Silty fat CLAY with sand (CH). Light gray with tan mottling, nodules of black and orangish red, medium to high plasticity, oxidation throughout, stiff, dry, abrupt with above.	0/20/35/45
15						
	15 to 20	2/5	SS-3	0.0	16.0 - 17.0 Silty poorly graded SAND (SP-SM). Very light gray to white, loose, dry to moist, fine grained, cohesive, slightly subrounded, trace clay. 17.0 - 20.0 No Recovery	
20						
	20 to 25	3/5	SS-4	0.0	20.0 - 23.0 Silty poorly graded SAND (SP-SM). Very light gray to white, loose, dry to moist, fine grained, cohesive, slightly subrounded, trace clay. 23.0 - 25.0 No Recovery	0/65/30/5
25						
	25 to 30	4/5	SS-5	0.0	25.0 - 29.0 Poorly graded SAND with silt (SP). Very light gray to white, loose, wet, fine grained, cohesive, slightly subrounded, trace clay. 29.0 - 30.0 No Recovery	0/85/15/0
30						
	30 to 35	1/5	SS-6	0.0	30.0 - 31.0 Poorly graded SAND with silt (SP-SM). Very light gray to white, loose, wet, fine grained, cohesive, slightly subrounded, trace clay. 31.0 - 35.0 No Recovery	0/85/15/0
35						
	35 to 40	0/5	SS-7	0.0	35.0 - 40.0 No Recovery due to sampler getting stuck auger and sample being lost during retrieval. Clay noted on cutting shoe.	39.0 Hard drilling noted. Moving rig
40						
45					Refusal at 40 ft bgs	
50						

GEOLOGIC BORING LOG

PROJECT: CAMERON IRON WORKS OFFSITE INVESTIGATION		DATE: 1/3/95	SHEET: 1 OF 2
		DRILL CONTRACTOR: CCI ENVIRO DRILLING INC.	
BORING NO.: MW-15	HOLE DIAMETER: 4 3/4"	DRILLER: DARREN ROBINSON	CDM LOGGER: DAPHNE HALL
WATER DEPTH: 23'	TOTAL DEPTH: 40'	DRILLING METHOD: HOLLOW-STEM AUGER	DRILLING FLUID: N/A

SAMPLINGS			DEPTH	LITHOLOGY	
SAMPLE NUMBER	% RECOVERY	SAMPLE TYPE		STRATUM DEPTH	DESCRIPTION
					SILTY CLAY, GRAY,(FILL) - STIFF - WITH GRASS AND ROOTS - SILT 0-1' DEPTH (CL)
1	90	SS	5		
				6.0'	
2	90	SS	10		CLAY, GRAY - STIFF - MOTTLED RED-BROWN & GRAY (CL)
3	60	SS	15		
				17.0'	
4	70	SS	20		SILTY FINE SAND, LIGHT GRAY - VERY FINE TO MEDIUM GRAINED - LOOSE - DRY 17'-23' - SATURATED @ 23' DEPTH - FLOWING SANDS BELOW 23' DEPTH - NO ODOR (SM/SP)
5	80	SS	25		
6	50	SS	30		

GEOLOGIC BORING LOG

PROJECT: CAMERON IRON WORKS OFFSITE INVESTIGATION		DATE: 1/3/95	SHEET: 2 OF 2
		DRILL CONTRACTOR: CCI ENVIRO DRILLING INC.	
BORING NO.: MW-15	HOLE DIAMETER: 4 3/4"	DRILLER: DARREN ROBINSON	CDM LOGGER: DAPHNE HALL
WATER DEPTH: 23'	TOTAL DEPTH: 40'	DRILLING METHOD: HOLLOW-STEM AUGER	DRILLING FLUID: N/A

SAMPLINGS			DEPTH	LITHOLOGY	
SAMPLE NUMBER	% RECOVERY	SAMPLE TYPE		STRATUM DEPTH	DESCRIPTION
					SILTY SAND, LIGHT GRAY - VERY FINE TO MEDIUM GRAINED - LOOSE - SATURATED BELOW 23' DEPTH (SM/SP)
7	0	SS	35		
8	0	SS	40	40.0'	
			45		BORING TERMINATED @ 40'
			50		
			55		
			60		

Ernest Conyers, CDM

02/06/95 0:06:27

MWBL002

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GEOLOGIC BORING LOG

PROJECT: CAMERON IRON WORKS OFFSITE INVESTIGATION		DATE: 1/9/95	SHEET: 1 OF 1
		DRILL CONTRACTOR: CCI ENVIRO DRILLING INC.	
BORING NO.: MW-17	HOLE DIAMETER: 4 3/4"	DRILLER: DARREN ROBINSON	CDM LOGGER: JAY KLEIN
WATER DEPTH: 23'	TOTAL DEPTH: 27'	DRILLING METHOD: HOLLOW-STEM AUGER	DRILLING FLUID: N/A

SAMPLINGS			DEPTH	LITHOLOGY	
SAMPLE NUMBER	% RECOVERY	SAMPLE TYPE		STRATUM DEPTH	DESCRIPTION
				6.0'	SILTY CLAY, DARK GRAY,(FILL) – VERY STIFF – WITH OYSTER SHELLS
1	100	SS	5		
2	100	SS	10	17.5'	SILTY CLAY, GRAY & RED-BROWN – STIFF – GRAY BELOW 13'
3	100	SS	15		
4	90	SS	20	21.5'	SANDY SILT, LIGHT GRAY – MOIST 18'-20' – LOOSE
5	50	SS	25	27.0'	SILTY SAND, LIGHT GRAY – SATURATED – NO ODOR
			30		BORING TERMINATED @ 27'

Ernest Conyers, CDM 02/06/95 0.07.39 MWITLOG1 C:\ACAD\PROJECTS\COOPER\

ERM-Southwest, Inc.

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ERM

MW-74 DRILLING LOG

W.O. NO. 389-35 Boring/Well ID MW-74 Date Drilled 6/04/01

Project Former Cameron Iron Works Owner Cameron

Location 1000 N Silber Rd Boring T.D. 34 ' Boring Diam. 8.25 "

N. Coord. 2203.40 ' E. Coord. 6260.68 ' Surface Elevation 66.7 ' MSL Datum

Screen: Type Schedule 40 PVC Diam. 2 " Length 10 ' Slot Size 0.01 "

Casing: Type Schedule 40 PVC Diam. 2 " Length 22 ' Sump Length 2 '

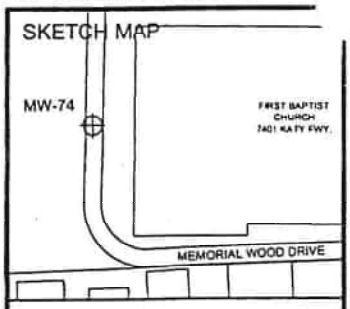
Top of Casing Elevation 66.35 ' Stickup 0 '

Depth to Water: 1. Ft. 19.49 (6/8/01) 2. Ft. _____ (_____)

Drilling Company Fugro Geosciences, Inc. Driller Mario Moya

Drilling Method Hollow Stem Auger Log By Marcel G. St. Marie

SKETCH MAP



NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM (PPM)	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
66.7	0					0-5	0-2	OTHER: asphalt and shell base, gravel.
65					0.0		2-3.5	CLAY: black to dark gray, very soft, saturated, 60 % recovery.
					0.0		3.5-14.5	SILTY CLAY: tan, light to dark gray mottling, iron staining, traces of sand, plastic, moist, firm, 80 % recovery.
	5				0.0	5-10		At 3.5-5': increase in silt, wet.
60					0.0			At 8-10': increase in iron staining.
	10				0.0	10-15		At 10-14.5': increase sand content.
55								
	15				0.0		14.5-25	SILTY SAND: tan, moderately sorted, iron staining, cohesive, wet, 53 % recovery.
					0.0	15-20		
50								
	20				0.0	20-25		At 20-22': traces of silty clay.
45					0.0			At 22-25': saturated sands.
	25							

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ERM.

MW-74 DRILLING LOG

W.O. NO. 389-35 Boring/Well ID MW-74 Date Drilled 6/04/01

Project Former Cameron Iron Works Owner Cameron

Location 1000 N Silber Rd Boring T.D. 34 ' Boring Diam. 8.25 "

N. Coord. 2203.40 ' E. Coord. 6260.68 ' Surface Elevation 66.7 ' MSL Datum

Screen: Type Schedule 40 PVC Diam. 2 " Length 10 ' Slot Size 0.01 "

Casing: Type Schedule 40 PVC Diam. 2 " Length 22 ' Sump Length 2 '

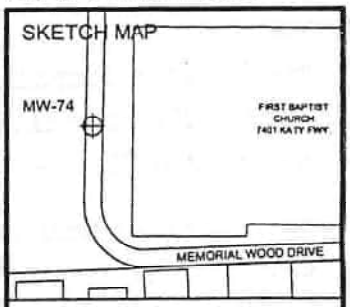
Top of Casing Elevation 66.35 ' Stickup 0 '

Depth to Water: 1. Ft. 19.49 (6/8/01) 2. Ft. _____ (_____)

Drilling Company Fugro Geosciences, Inc. Driller Mario Moya

Drilling Method Hollow Stem Auger Log By Marcel G. St. Marie

SKETCH MAP



NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM (PPM)	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
40	25				0.0		25-34	NOT SAMPLED: flowing sands.
35	30							
30	35							T.D. = 34 '
25	40							
20	45							
	50							

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ERM-Southwest, Inc.

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MW-83 DRILLING LOG

W.O. NO. 389-035 Boring/Well ID MW-83 Date Drilled 5/29/01

Project Former Cameron Iron Works Owner Cameron

Location 1000 N Silber Rd Boring T.D. 37' Boring Diam. 8.25"

N. Coord. 140.87' E. Coord. 6104.24' Surface Elevation 64.0' MSL Datum

Screen: Type Schedule 40 PVC Diam. 2" Length 10' Slot Size 0.01"

Casing: Type Schedule 40 PVC Diam. 2" Length 25' Sump Length 2'

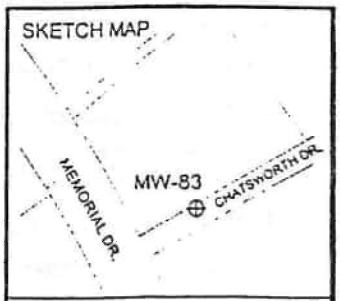
Top of Casing Elevation 64.12' Stickup 0'

Depth to Water: 1. Ft. 24.88 (5/29/01) 2. Ft. _____ (_____)

Drilling Company Fugro Geosciences, Inc. Driller Mario Moya

Drilling Method Hollow Stem Auger Log By Marcel G. St. Marie

SKETCH MAP



NOTES

BASED ON DRILLING LOG MW-79, WHICH IS LOCATED APPROXIMATELY 700 FEET NORTH-NORTHEAST OF MW-83.

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM (PPM)	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
64.0	0						0-2	COARSE SAND: medium-rain, brown, roots, soft, moist, 100 % recovery.
						2-4	2-23	SILTY CLAY: dark brown, tan and light to dark gray mottling, traces of sand, iron staining, rootlets, gravel, plastic, soft, moist, 80 % recovery.
60	5				0.0	4-6		At 3-4': increase in iron staining.
					0.0	6-8		
					0.0	8-10		At 7-21': black nodules.
55	10				0.0	10-12		
					0.0	12-14		At 10.8'-17': white nodules.
50	15				0.0	14-16		
					0.0	16-18		
					0.0			At 17-19': wet.
					0.0	18-20		
45	20				0.0	20-22		
					0.0	22-24		
							23-25	SILTY SAND: tan to gray, moderate sorting, medium grain, cohesive, wet, 50% recovery.
40	25				0.0	24-26		

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MW-83
DRILLING LOG

W.O. NO. 389-035 Boring/Well ID MW-83 Date Drilled 5/29/01

Project Former Cameron Iron Works Owner Cameron

Location 1000 N Silber Rd Boring T.D. 37' Boring Diam. 8.25"

N. Coord. 140.87' E. Coord. 5104.24' Surface Elevation 64.0' MSL Datum

Screen: Type Schedule 40 PVC Diam. 2" Length 10' Slot Size 0.01"

Casing: Type Schedule 40 PVC Diam. 2" Length 25' Sump Length 2'

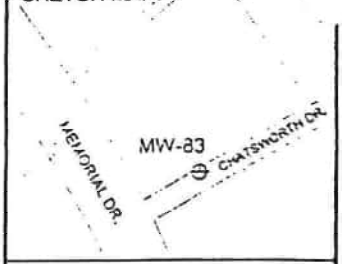
Top of Casing Elevation 64.12' Stickup 0'

Depth to Water: 1. Ft. 24.88 (5/29/01) 2. Ft. ____ (____)

Drilling Company Fugro Geosciences, Inc. Driller Mario Moya

Drilling Method Hollow Stem Auger Log By Marcel G. St. Marie

SKETCH MAP



NOTES

BASED ON DRILLING LOG MW-79, WHICH IS LOCATED APPROXIMATELY 700 FEET NORTH-NORTHEAST OF MW-83.

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM (PPM)	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
35	25						25-37	NOT SAMPLED: Flowing sands.
30	30							
25	35							T.D. = 37'
20	40							
15	45							
	50							

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MW-88
DRILLING LOG

W.O. NO. 389-035 Boring/Well ID MW-88 Date Drilled 5/22/01

Project Former Cameron Iron Works Owner Cameron

Location 1000 N Silber Rd Boring T.D. 45' Boring Diam. 8.25"

N. Coord. -816.72' E. Coord. 5,331.33' Surface Elevation 65.3' MSL Datum

Screen: Type Schedule 40 PVC Diam. 2" Length 10' Slot Size 0.01"

Casing: Type Schedule 40 PVC Diam. 2" Length 33' Sump Length 2'

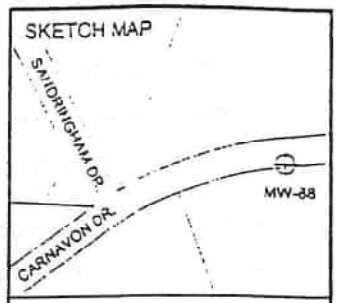
Top of Casing Elevation 65.02' Stickup 0'

Depth to Water: 1. Ft. 28.31 (6/18/01) 2. Ft. ( )

Drilling Company Fugro Geosciences, Inc. Driller Mario Moya

Drilling Method Hollow Stem Auger Log By Marcel G. St. Marie

SKETCH MAP



NOTES

BASED ON DRILLING LOG MW-89, WHICH IS LOCATED APPROXIMATELY 1,380 FEET WEST OF MW-88.

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM (PPM)	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
65.3	0					0-5	0-2.5	COARSE SAND: medium grain, brown, roots, gravels, soft, moist, 100% recovery.
					0.0		2.5-15	SILTY CLAY: mottled, moist, traces of sand, 90 % recovery.
60	5				0.0	5-10		At 5-15': increase in sand concentration.
55	10				0.0	10-15		
					0.0			At 13.5-15': inter-layering of silty clay.
50	15				0.0	15-20	15-35	SILTY SAND: moist, 58 % recovery.
45	20				0.0	20-25		
	25							

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MW-88
DRILLING LOG

W.O. NO. 389-035 Boring/Well ID MW-88 Date Drilled 5/22/01

Project Former Cameron Iron Works Owner Cameron

Location 1000 N Silber Rd Boring T.D. 45' Boring Diam. 8.25"

N. Coord. -816.72' E. Coord. 5,831.83' Surface Elevation 65.3' MSL Datum

Screen: Type Schedule 40 PVC Diam. 2" Length 10' Slot Size 0.01"

Casing: Type Schedule 40 PVC Diam. 2" Length 33' Sump Length 2'

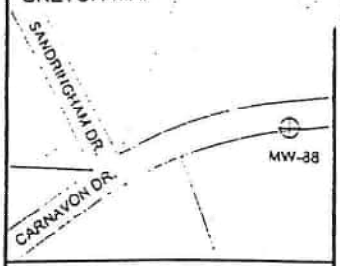
Top of Casing Elevation 65.02' Stickup 0'

Depth to Water: 1. Ft. 28.31 (6/18/01) 2. Ft. ( )

Drilling Company Fugro Geosciences, Inc. Driller Mario Moya

Drilling Method Hollow Stem Auger Log By Marcel G. St. Marie

SKETCH MAP



NOTES

BASED ON DRILLING LOG MW-89, WHICH IS LOCATED APPROXIMATELY 1,380 FEET WEST OF MW-88.

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM (PPM)	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
40	25				0.0	25-30		
					0.0			At 27-30': silty caly inter-layered.
35	30				0.0	30-35		At 30-35': not recovered.
30	35						35-45	NOT SAMPLED: flowing sands.
25	40							
20	45							T.D. = 45'
	50							

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MW-89
DRILLING LOG

W.O. NO. 389-35 Boring/Well ID MW-89 Date Drilled 5/31/01

Project Former Cameron Iron Works Owner Cameron

Location 1000 N Silber Rd Boring T.D. 44 ' Boring Diam. 8.25 "

N. Coord. - 779.81 ' E. Coord. 4,444.08 ' Surface Elevation 65.6 ' MSL Datum

Screen: Type Schedule 40 PVC Diam. 2 " Length 10 ' Slot Size 0.01 "

Casing: Type Schedule 40 PVC Diam. 2 " Length 32 ' Sump Length 2 '

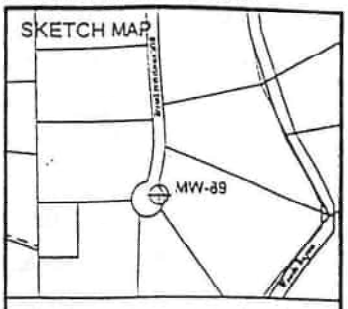
Top of Casing Elevation 65.33 ' Stickup 0 '

Depth to Water: 1. Ft. 30.08 (5/31/01) 2. Ft. _____ (_____)

Drilling Company Fugro Geosciences, Inc. Driller Mario Moya

Drilling Method Hollow Stem Auger Log By Marcel G. St. Marie

SKETCH MAP



NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM (PPM)	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
65.6	0					0-5	0-2.5	COARSE SAND: medium grain, brown, roots, gravel, soft, moist, 100 % recovery.
65					0.0		2.5-15	SILTY CLAY: mottled, moist, traces of sand, 90 % recovery.
60	5				0.0	5-10		At 5-15': increase in sand content.
55	10				0.0	10-15		
					0.0			At 13.5-15': inter-layering of silty clay.
50	15				0.0	15-20	15-35	SILTY SAND: moist, 58 % recovery.
45	20				0.0	20-25		
	25							

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MW-89 DRILLING LOG

W.O. NO. 389-35 Boring/Well ID MW-89 Date Drilled 5/31/01

Project Former Cameron Iron Works Owner Cameron

Location 1000 N Silber Rd Boring T.D. 44 ' Boring Diam. 8.25 "

N. Coord. - 779.31 ' E. Coord. 4,444.08 ' Surface Elevation 65.6 ' MSL Datum

Screen: Type Schedule 40 PVC Diam. 2 " Length 10 ' Slot Size 0.01 "

Casing: Type Schedule 40 PVC Diam. 2 " Length 32 ' Sump Length 2 '

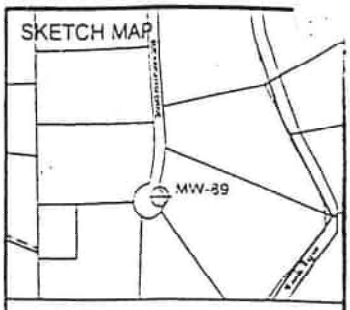
Top of Casing Elevation 65.33 ' Stickup 0 '

Depth to Water: 1. Ft. 30.08 (5/31/01) 2. Ft. _____ (_____)

Drilling Company Fugro Geosciences, Inc. Driller Mario Moya

Drilling Method Hollow Stem Auger Log By Marcel G. St. Marie

SKETCH MAP



NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM (PPM)	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
40	25				0.0	25-30		
					0.0			At 27-30': silty clay inter-layered. 30/-35': not recovered.
35	30				0.0	30-35		
30	35						35-44	NOT SAMPLED: flowing sands.
25	40							
20	45							T.D. = 44 '
	50							

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MW-91 DRILLING LOG

W.O. NO. 389-035 Boring/Well ID MW-91 Date Drilled 5/23/01

Project Former Cameron Iron Works Owner Cameron

Location 1000 N Silber Rd Boring T.D. 44 ' Boring Diam. 8.25 "

N. Coord. -1358.51 E. Coord. 5067.52 ' Surface Elevation 64.8 ' MSL Datum

Screen: Type Schedule 40 PVC Diam. 2 " Length 10 ' Slot Size 0.01 "

Casing: Type Schedule 40 PVC Diam. 2 " Length 32 ' Sump Length 2 '

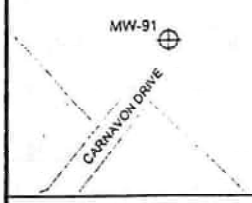
Top of Casing Elevation 64.61 ' Stickup 0 '

Depth to Water: 1. Ft. 30.75 (5/23/01) 2. Ft. _____ (_____)

Drilling Company Fugro Geosciences, Inc. Driller Mario Moya

Drilling Method Hollow Stem Auger Log By Marcel G. St. Marie

SKETCH MAP



NOTES

BASED ON DRILLING LOG MW-90, WHICH IS LOCATED APPROXIMATELY 315 FT. NORTHEAST OF MW-91.

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM (PPM)	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
64.8	0						0-2	COARSE SAND: medium grained, brown, roots, soft, moist, 100 % recovery.
					0.0	2-4	2-18	SILTY CLAY: ray. brown and tan mottling, some rootlets, plastic, stiff, moist, 56% recovery.
60	5				0.0	4-6		At 2-4': iron staining. At 2.5-3': some gravel. At 2.5-8': pea-size nodules.
					0.0	6-8		At 6-8': no recovery. At 6-12': traces of sand.
					0.0	8-10		At 8-9': partly cemented sand.
55	10				0.0	10-12		At 10-12': some iron staining, traces of cemented sand.
					0.0	12-14		At 12-18': small, black nodules, soft. At 14/-18': increased sand content.
50	15				0.0	14-16		
					0.0	16-18		
					0.0	18-20	18-32	SILTY SAND: light tan to gray, moderately sorted, moist, trace brown clay, 58% recovery.
45	20				0.0	20-22		At 20-22': slightly moist.
					0.0	22-24		At 22-26': dry.
40	25				0.0	24-26		

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MW-91 DRILLING LOG

W.O. NO. 389-035 Boring/Well ID MW-91 Date Drilled 5/23/01

Project Former Cameron Iron Works Owner Cameron

Location 1000 N Silber Rd Boring T.D. 44 ' Boring Diam. 8.25 "

N. Coord. -1358.51 E. Coord. 5067.52 ' Surface Elevation 64.8 ' MSL Datum

Screen: Type Schedule 40 PVC Diam. 2 " Length 10 ' Slot Size 0.01 "

Casing: Type Schedule 40 PVC Diam. 2 " Length 32 ' Sump Length 2 '

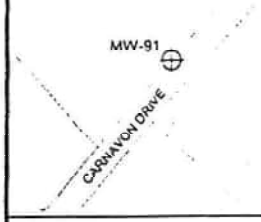
Top of Casing Elevation 64.61 ' Stickup 0 '

Depth to Water: 1. Ft. 30.75 (5/23/01) 2. Ft. _____ (_____)

Drilling Company Fugro Geosciences, Inc. Driller Mario Moya

Drilling Method Hollow Stem Auger Log By Marcel G. St. Marie

SKETCH MAP



NOTES

BASED ON DRILLING LOG MW-90, WHICH IS LOCATED APPROXIMATELY 315 FT. NORTHEAST OF MW-91.

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM (PPM)	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
35	25				0.0	26-28		At 26-28: no recovery.
					0.0	28-30		
					0.0			
	30				0.0		30-44	NOT SAMPLED: flowing sand.
30	35							
25	40							
20	45							T.D. = 44 '
15	50							

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MW-92 DRILLING LOG

W.O. NO. 389-035 Boring/Well ID MW-92 Date Drilled 5/24/01

Project Former Cameron Iron Works Owner Cameron

Location 1000 N Silber Rd Boring T.D. 50' Boring Diam. 8.25"

N. Coord. -1635.83' E. Coord. 4571.55' Surface Elevation 65.9' MSL Datum

Screen: Type Schedule 40 PVC Diam. 2" Length 10' Slot Size 0.01"

Casing: Type Schedule 40 PVC Diam. 2" Length 38' Sump Length 2'

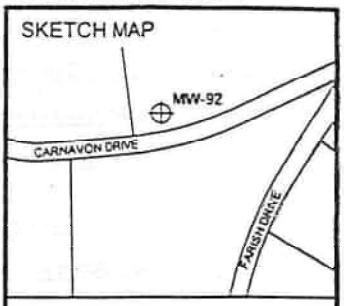
Top of Casing Elevation 65.46' Stickup 0'

Depth to Water: 1. Ft. 34.67 (6/18/01) 2. Ft. _____ (_____)

Drilling Company Fugro Geosciences, Inc. Driller Ray Reed

Drilling Method Hollow Stem Auger Log By Marcel G. St. Marie

SKETCH MAP



NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM (PPM)	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
65.9	0					0-2	0-2	GRAVELLY SAND: medium-grain, brown, roots, soft, moist, 100 % recovery.
65					0.0	2-4	2-24	SILTY CLAY: dark brown, light to dark gray and tan mottling, traces of sand, some iron staining increasing with depth, rootlets, inter-layering of large, white concretions, increasing with depth, moist, stiff, plastic, 60 % recovery.
					0.0	4-6		
	5							
60					0.0	6-8		At 6-8': black nodules. At 6.5-8': marble to pea-size, white concretions.
					0.0	8-10		
	10				0.0	10-12		
55					0.0			At 11-12': firm
					0.0	12-14		At 12-14': No recovery.
						14-16		
	15							
50					0.0	16-18		
					0.0			At 17-18': layer of silty sand, fine grain, tan to light gray, damp, loose.
					0.0	18-20		At 18-18.5': clay contains some cemented sands, light gray.
					0.0			At 18.5-19.5': layer of silty sand, fine grain, tan to light gray, damp, loose.
	20				0.0	20-22		At 21.5-22': layer of silty sand, fine grain, tan to light gray, moist, medium dense, with pockets of cemented sands.
45					0.0			At 22-22.5': layer of silty sands, red, dry, loose.
					0.0	22-24		At 22.5-23': silty clay is stiff and plastic.
					0.0			At 23-23.5': layering of partly cemented sand, gray, dense.
					0.0			
					0.0	24-26	24-38	SILTY SAND: red, brown, fine grain, moderately sorted, moist, loose. 68 % recovery.
	25							

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MW-92
DRILLING LOG

W.O. NO. 389-035 Boring/Well ID MW-92 Date Drilled 5/24/01

Project Former Cameron Iron Works Owner Cameron

Location 1000 N Silber Rd Boring T.D. 50 ' Boring Diam. 8.25 "

N. Coord. -1635.83 ' E. Coord. 4571.55 ' Surface Elevation 65.9 ' MSL Datum

Screen: Type Schedule 40 PVC Diam. 2 " Length 10 ' Slot Size 0.01 "

Casing: Type Schedule 40 PVC Diam. 2 " Length 38 ' Sump Length 2 '

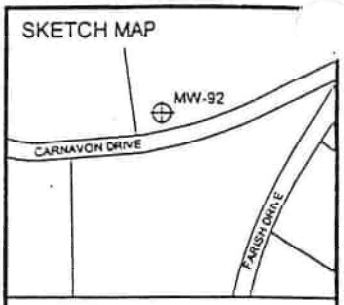
Top of Casing Elevation 65.46 ' Stickup 0 '

Depth to Water: 1. Ft. 34.67 (6/18/01) 2. Ft. _____ (_____)

Drilling Company Fugro Geosciences, Inc. Driller Ray Reed

Drilling Method Hollow Stem Auger Log By Marcel G. St. Marie

SKETCH MAP



NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM (PPM)	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
40	25				0.0			At 23.5-24': no nodules or roots in clay.
					0.0	26-28		At 25-26': silty clay, red to brown, gray and tan mottling, firm, very plastic.
						28-30		At 26-30': damp.
35	30					30-32		At 30-34': moist.
						32-34		
						34-36		At 34-38': wet.
30	35					36-38		
						38-40	38-50	At 37.5-38': silty clay, red to brown, very soft, saturated. NOT SAMPLED: Flowing sands.
25	40							
20	45							
	50							T.D. = 50 '

ch2m	PROJECT NUMBER 684444.17.05.02	BORING NUMBER MW-93R	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : **Silber Rd. Well Installation** LOCATION : Houston, TX DATE: 4-10-2017

WEATHER: 79° F, Cloudy DRILLING CONTRACTOR Best Drilling

DRILLING METHOD AND EQUIPMENT USED : Continuous Sampling/Hollow Stem Auger

WATER LEVELS : 33.5' START : 0835 END : 1030 LOGGER : Shannon Boesch

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (%)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Above Hole
5	5.0	100%			**Silty Clay (CL):** orangish tan brown, moderate plasticity, very hard, rootlets, slightly moist, iron oxide staining, trace organic matter throughout, no odor.	PID: 0-3' = 2.1 ppm PID: 3-5' = 1.0 ppm
10	10.0	70%			**Silty Clay (CL):** orange tan to olive grey, low to moderate plasticity, abundant clacareous nodules, very compacted, hard, dry, no odor.	PID: 5-7' = 1.5 ppm PID: 7-9' = 1.9 ppm
15	15.0	40%			**Silty Clay to Lean Clay (CL):** olive grey with iron oxide red staining, very crumbly, abundant calcareous nodules, dry, no odor, low to moderate plasticity, trace black organic staining.	PID: 9-11' = 0.0 ppm PID: 11-13' = 0.0 ppm PID: 13-15' = No recovery
20	20.0	20%			**Clayey Sand (SC):** tan with iron oxide staining, low plasicity, fine to coarse,well graded, dry. **Sand (SP):** tan, coarse grain, poorly graded, dry, no odor, loose.	PID: 15-17' = 0.0 ppm PID: 17-19' = No recovery
25	25.0	20%			**Clayey Sand to Silty Sand (SC-SM):** tan with red iron oxide staining, loose, medium to very fine grain, well graded, friable.	PID: 19-21' = 0.8 ppm PID: 21-23' = 2.7 ppm PID: 23-25' = No recovery
30	30.0	50%			**Sand (SW):** red orange brown, slightly compacted, very fine grain graded to coarse grain with depth, moist to damp with depth, well graded, no odor.	PID: 25-27' = 2.5 ppm PID: 27-29' = No recovery

Sampler Signature: _____ Date: _____

ch2m	PROJECT NUMBER 684444.17.05.02	BORING NUMBER MW-93R	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : **Silber Rd. Well Installation** LOCATION : Houston, TX DATE: 4-10-2017

WEATHER: 79° F, Cloudy DRILLING CONTRACTOR: Best Drilling

DRILLING METHOD AND EQUIPMENT USED : Continuous Sampling/Hollow Stem Auger

WATER LEVELS 33.5' START : 0835 END : 1030 LOGGER : Shannon Boesch

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (%)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Above Hole
		40%			**Sand (SW):** red orange brown, saturated, slightly compacted, red clay nodules at 30.5' bgs, fine to coarse grain, well graded, no odor.	PID: 29-31' = 2.7 ppm PID: 31-33' = 2.7 ppm
35	35.0					PID: 33-35' = No recovery
		40%			**Sand (SW):** tan to white, damp to moist with depth, slightly compacted, medium to coarse grain, well graded, becomes very compacted and hard at 36.5' bgs, almost like a sandstone.	PID: 35-37' = 2.9 ppm PID: 37-39' = 2.9 ppm
40	40.0					
	42.0				**Sand (SW):** Same as above.	PID: 39-41' = 1.6 ppm
					Clay (CH): reddish brown, very compact, hard, iron oxide staining, high plasticity, slightly moist to dry with depth, no odor.	PID: 41-43' = 0.3 ppm
45	45.0					PID: 41-43' = 0.8 ppm
					Bottom of boring at 45' bgs on 4/10/2017	

Sampler Signature: _____ Date: _____

ERM-Southwest, Inc.

HOUSTON · NEW ORLEANS · AUSTIN · DALLAS · BEAUMONT

ERM

MW-98 DRILLING LOG

W.O. NO. 389-043 Boring/Well ID MW-98 Date Drilled 2/6/02

Project Former Cameron Iron Works Owner Cameron

Location 1000 N. Silber Rd Boring T.D. 43' Boring Diam. 8.25"

N. Coord. -2613.45 E. Coord. 5320.71' Surface Elevation 63.1' MSL Datum

Screen: Type Schedule 40 PVC Diam. 2" Length 10' Slot Size 0.01"

Casing: Type Schedule 40 PVC Diam. 2" Length 31' Sump Length 2'

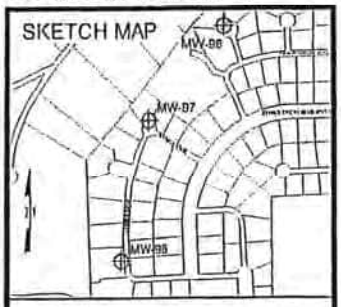
Top of Casing Elevation 62.93' Stickup 0'

Depth to Water: 1. Ft. 33.73 (2/6/02) 2. Ft. _____ (_____)

Drilling Company Master Monitoring Driller Alfred Arrambide

Drilling Method Hollow Stem Auger Log By Gregory Wheeler, Geologist

SKETCH MAP



NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM (PPM)	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
63.1	0				0.0	0-5	0-7.4	SILTY SANDY CLAY: yellowish gray, mottled, organic matter, black staining, rootlets, soft, moist, 100% recovery.
60								At 3.5-5': white nodules.
	5				0.0	5-10		
					0.0		7.4-8.4	SANDY CLAY: medium-grained sand, mottled, white nodules, moist, 100% recovery.
55					0.0		8.4-12.3	SANDY SILTY CLAY: yellowish with gray and black mottling, white nodules to 11.6 ft, rootlets, moist, 80% recovery.
	10				0.0	10-15		
					0.0			
					0.0		12.3-17.8	SILTY CLAYEY SAND: yellowish with tan and black mottling, medium-grained sand, moist, 60% recovery.
50								
	15				0.0	15-20		
					0.0		17.8-30.8	SILTY SAND: yellowish with tan and black mottling, medium-grained sand, traces of clay, moist, 58% recovery.
45								
	20				0.0	20-25		
					0.0			At 21.5-30.8': gray.
40								
	25							

ERM-Southwest, Inc.
HOUSTON · NEW ORLEANS · AUSTIN · DALLAS · BEAUMONT

ERM

MW-98 DRILLING LOG

W.O. NO. 389-043 Boring/Well ID MW-98 Date Drilled 2/6/02

Project Former Cameron Iron Works Owner Cameron

Location 1000 N. Silber Rd Boring T.D. 43 ' Boring Diam. 8.25 "

N. Coord. -2613.45 E. Coord. 5320.71 ' Surface Elevation 63.1 ' MSL Datum

Screen: Type Schedule 40 PVC Diam. 2 " Length 10 ' Slot Size 0.01 "

Casing: Type Schedule 40 PVC Diam. 2 " Length 31 ' Sump Length 2 '

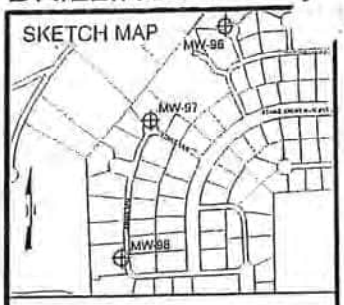
Top of Casing Elevation 62.93 ' Stickup 0 '

Depth to Water: 1. Ft. 33.73 (2/6/02) 2. Ft. _____ (_____)

Drilling Company Master Monitoring Driller Alfred Arrambide

Drilling Method Hollow Stem Auger Log By Gregory Wheeler, Geologist

SKETCH MAP



NOTES

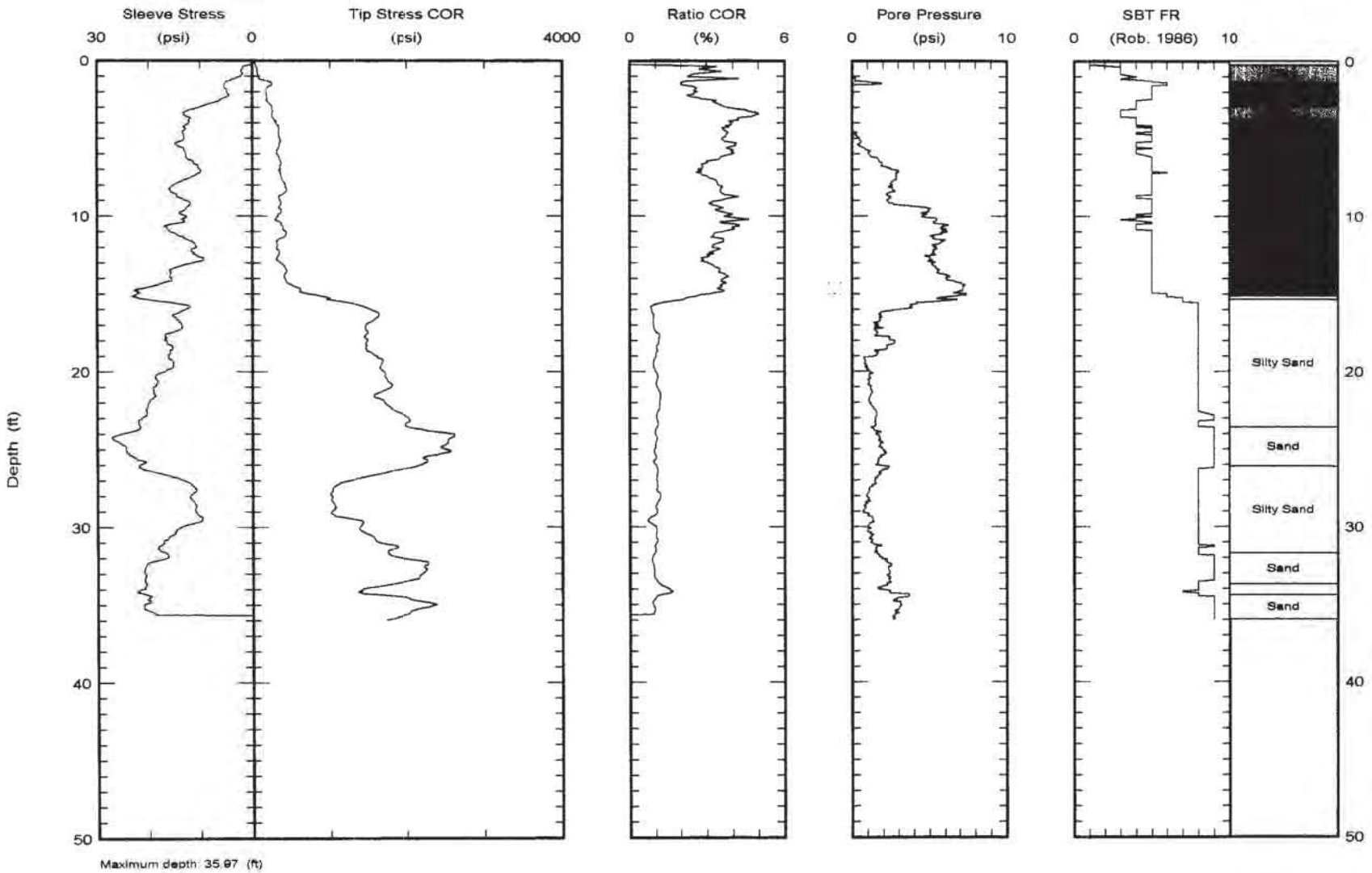
Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	OVM (PPM)	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
35	25				0.0	25-30		
30	30				0.0	30-35		
					0.0		30.8-32.8	SILTY CLAY: gray and brown mottling, white nodules, soft, moist, 50% recovery.
					0.0		32.8-40.3	NOT SAMPLED: Flowing sands.
25	35				0.0	35-40		
20	40				0.0	40-43	40.3-43	SILTY CLAY: gray and brown mottling, soft, moist, 100% recovery.
					0.0			
					0.0			T.D. = 43 '
15	45							
	50							

Applied Research Associates, Inc.
South Royalton, VT 05068
802-763-8348
cpt@ned.ara.com
www.ara.com

Northing:
Easting:
Elevation:

Date: 02/Aug/2007
Test ID: MW-161
Project: CAMERON IRON

Client: ERM
Job Site: HOUSTON



Maximum depth: 35.97 (ft)

Test ID: MW-161
Estimated Phreatic File: R02G0703C.ECP

Attention Owner:
Confidentiality Privilege Notice on reverse side of owner's copy.

Texas Department of Licensing and Regulation

Water Well Driller/Pump Installer Program
P.O. Box 12157 Austin, Texas 78711 (512) 463-7880 FAX (512) 463-8616
Toll free (800) 803-9202
Email address: water.well@license.state.tx.us

This form must be completed and filed with the department and owner **within 60 days** upon completion of the well.

WELL REPORT

1) OWNER — A. WELL IDENTIFICATION AND LOCATION DATA

Name	Address	City	State	Zip
Cameron International Corporation	1333 West Loop South, Suite 1700	Houston	TX	77027

2) WELL LOCATION

County	Physical Address	City	State	Zip
Harris	1000 Silber Road	Houston	TX	77055

Lat. 29° 46' 25.30" **Long.** 95° 27' 34.40" **Grid #**

3) Type of Work
☒ New Well ☐ Reconditioning ☐ Replacement ☐ Deepening

4) Proposed Use (check) ☒ Monitor ☐ Environmental Soil Boring ☐ Domestic ☐ Industrial ☐ Irrigation ☐ Injection ☐ Public Supply ☐ De-watering ☐ Testwell ☐ Rig Supply ☐ Stock or Livestock
If Public Supply, were plans approved? ☐ Yes ☐ No

5) N↑

6) Drilling Date
Started 8/2/7
Completed 8/2/7

Diameter of Hole

Dia. (in)	From (ft)	To (ft)
3	Surface 0	36.02

7) Drilling Method (check)
☐ Driven ☐ Air Rotary ☐ Mud Rotary ☐ Bored ☐ Air Hammer ☐ Cable Tool ☐ Jetted ☐ Hollow Stem Auger ☐ Reverse Circulation ☒ Other **CPT**

From (ft)	To (ft)	Description and color of formation material
		SEE ATTACHED LOG

(Use reverse side of Well Owner's copy, If necessary)

8) Borehole Completion ☐ Open Hole ☐ Straight Wall ☐ Under-reamed ☐ Gravel Packed ☒ Other **Pre-Packed**
Gravel Packed interval from ft. to ft. Size:

Casing, Blank Pipe, and Well Screen Data

Dia. (in.)	New Or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft) From	Setting (ft) To	Gage Casing Screen
1	New	PVC	26.02	36.02	0.10

9) Annular Seal Data: i.e. *(from 0 ft to 100 ft #sacks & material 13 cement)*
from 1 ft. to 26.02 ft. #sacks & material 3 Bent/Grout
from ____ ft. to ____ ft. #sacks & material ____
from ____ ft. to ____ ft. #sacks & material ____

13) Plugged ☐ Well plugged within 48 hours
Casing left in well: Cement/Bentonite placed in well:

From (ft)	To (ft)	From (ft)	To (ft)	Material used & # Sacks

Method Used **Tremmi**
Distance to septic field or other concentrated contamination **NA** ft.
Distance to Property Line **NA** ft Method **Consultant**
Verified: **Consultant**

10) Surface Completion (If steel cased, leave blank)
☐ Surface Slab Installed ☐ Surface Sleeve Installed ☐ Pitless Adapter Used ☒ Alternative Procedure Used

14) Type Pump
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder ☐ Other **NA**
Depth to pump bowls, cylinder, jet, etc., ft.

11) Water Level
Static level **17.50** ft. Date **08/02/2007**
Artesian Flow ____ gpm

15) Water Test
Type test ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: **NA** gpm with ____ ft. drawdown after ____ hrs.

12) Packers

Type	Depth	Type	Depth

16) Water Quality
Type of water: ____ Depth of Strata: ____ Was a chemical analysis made? ☐ Yes ☒ No
Did you knowingly penetrate a strata which contains undesirable constituents? ☐ Yes ☒ No If yes, Continue:
Check One: ☐ Naturally poor-quality groundwater – type ____ ☐ Hydrocarbons (i.e. gas, oil, etc.)
☐ Hazardous material/waste contamination encountered ☐ Other (describe) ____

☐ *I certify that while drilling, deepening, or otherwise altering the above described well, undesirable water or constituents was encountered and the landowner was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.*

Company or Individual's Name (type or print)		Lic. No.
Ray Reed Applied Research Associates, Inc.		2255 A K P
Address P.O. Box 1164	City Tomball	State TX Zip 77377

Signature	Date	Signature	Date
Licensed Driller/Pump Installer	08/22/2007	Apprentice	/ /

TDLR FORM 001WWD / 9-03 Copies to TDLR - Owner - Driller/Pump Installer Form provided by Forms On-A-Disk · (214) 340-9429 · FormsOnADisk.com

Additional information or comments:

MW-161

WELL REPORT CONFIDENTIALITY NOTICE

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

From (ft)	To (ft)	Description and color of formation material

Attention Owner: Confidentiality Privilege Notice on reverse side of owner's copy

Texas Department of Licensing and Regulation

Water Well Driller/Pump Installer Program
P.O. Box 12157 Austin, Texas 78711 (512) 463-7880 FAX (512) 463-8616
Toll free (800) 803-9202
Email address: water well @license.state.tx.us

This form must be completed and filed with the department and owner within 60 days upon completion of the well

WELL REPORT

1) OWNER — A. WELL IDENTIFICATION AND LOCATION DATA

Name	Address	City	State	Zip
Cameron International Corporation	1333 West Loop South, Suite 1700	Houston	TX	77027

2) WELL LOCATION

County	Physical Address	City	State	Zip
Harris	1000 Silber Road	Houston	TX	77055

3) Type of Work: ☒ New Well ☐ Reconditioning ☐ Replacement ☐ Deepening

Lat. 29° 46' 20.51" Long. 95° 27' 41.7" Grid #

4) Proposed Use (check): ☒ Monitor ☐ Environmental Soil Boring ☐ Domestic ☐ Industrial ☐ Irrigation ☐ Injection ☐ Public Supply ☐ De-watering ☐ Testwell ☐ Rig Supply ☐ Stock or Livestock If Public Supply, were plans approved? ☐ Yes ☐ No

5) N↑

6) Drilling Date: Started 12/3/2007 Completed 12/3/2007

Diameter of Hole

Dia (in)	From (ft)	To (ft)
3	Surface 0	40

7) Drilling Method (check): ☐ Driven ☐ Air Rotary ☐ Mud Rotary ☐ Bored ☐ Air Hammer ☐ Cable Tool ☐ Jetted ☐ Hollow Stem Auger ☐ Reverse Circulation ☒ Other: CPT

From (ft)	To (ft)	Description and color of formation material
0	18	Silty Clay - Yellowish Tan
18	40	Silty Sand - Tan
		MW-168

(Use reverse side of Well Owner's copy, if necessary)

8) Borehole Completion: ☐ Open Hole ☐ Straight Wall ☐ Under-reamed ☐ Gravel Packed ☒ Other: Pre-Packed

Gravel Packed interval from ft to ft Size

Casing, Blank Pipe, and Well Screen Data

Dia (in.)	New Or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft) From	Setting (ft) To	Gage Casing Screen
1	New	PVC	30	40	0.10

9) Annular Seal Data: i.e. (from 0 ft to 100 ft #sacks & material 15 cement)

from 1 ft to 30 ft #sacks & material 3 Bent/Grout
from ft to ft #sacks & material
from ft to ft #sacks & material

Method Used Tremmi
Distance to septic field or other concentrated contamination NA ft
Distance to Property Line NA ft Method Consultant
Verified Consultant

13) Plugged ☐ Well plugged within 48 hours

Casing left in well: Cement/Bentonite placed in well:

From (ft)	To (ft)	From (ft)	To (ft)	Material used & # Sacks

10) Surface Completion (If steel cased, leave blank)
☐ Surface Slab Installed ☐ Surface Sleeve Installed ☐ Pitless Adapter Used ☒ Alternative Procedure Used

14) Type Pump: ☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder ☐ Other: NA

Depth to pump bowls, cylinder, jet, etc. ft

11) Water Level
Static level 28.30 ft Date 12/03/2007
Artesian Flow gpm

15) Water Test
Type test ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield NA gpm with ft drawdown after hrs

12) Packers

Type	Depth	Type	Depth

16) Water Quality
Type of water Depth of Strata Was a chemical analysis made? ☐ Yes ☒ No
Did you knowingly penetrate a strata which contains undesirable constituents? ☐ Yes ☒ No If yes, Continue
Check One: ☐ Naturally poor-quality groundwater - type ☐ Hydrocarbons (i.e. gas, oil, etc.) ☐ Hazardous material/waste contamination encountered ☐ Other (describe)

☐ *I certify that while drilling, deepening, or otherwise altering the above described well, undesirable water or constituents was encountered and the landowner was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.*

Company or Individual's Name (type or print)	Lic. No.
Ray Reed Applied Research Associates, Inc.	2255 A K P

Address	City	State	Zip
P.O. Box 1164	Tomball	TX	77377

Signature (Licensed Driller/Pump Installer)	Date	Signature (Apprentice)	Date
	12/27/2007		/ /

TDLR FORM 001WWD / 9-03 Copies to TDLR - Owner - Driller/Pump Installer Form provided by Forms On-A-Disk · (214) 340-9429 · FormsOnADisk.com

Additional information or comments:

MW-168

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From (ft)	To (ft)	Description and color of formation material

ERM Environmental Resources Management

MW-173
DRILLING LOG

Proj. No. 0096401 Boring/Well ID MW-173 Date Drilled 3/4/2009

Project Former Cameron Iron Works Owner Elkins

Location Stablewood Boring T.D. 39.35 ' Boring Diam. 8 "

N. Coord. _____ E. Coord. _____ Surface Elevation 0 ' ft. MSL Datum

Screen: Type Schedule 40 PVC Diam. 2 " Length 10 ' Slot Size 0.01 "

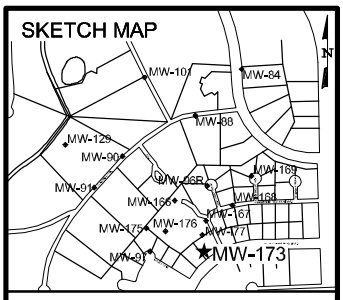
Casing: Type Schedule 40 PVC Riser Diam. 2 " Length 29.15 ' Sump Length 0 '

Top of Casing Elevation 0 ' Stickup -0.2

Depth to Water: 1. Ft. 30.57 (3-4-2009/1250) 2. Ft. 30.61 (3-5-2009/1015)

Drilling Company Best Drilling Driller _____

Drilling Method Hollow Stem Auger Log By Stephen Saller



NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	Sample Recovery (%)	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
0	0					0-5	0-1	GRAVEL: Shell road base, light brownish gray (10YR 6/2), moist, loose
							1-3	SILTY CLAY: Drak gray (10YR 4/1), moist, (pp=.5 tsf)
							3-5	CLAY: Dark grayish brown (10YR 4/2) mottled with yellowish brown (10YR 5/4), moist, stiff (pp=2 tsf)
-5	5				100%	5-10	5-8	CLAY: Gray (10YR 6/1) mottled with brownish yellow (10YR 6/6), moist, very stiff (pp=2.5 tsf)
							8-10	SANDY CLAY: Light gray (10YR 7/1) heavily mottled with brownish yellow (10YR 6/6) and black (10YR 2/1), moist, very stiff (pp=3.5 tsf)
-10	10				100%	10-15	10-15	SANDY SILTY CLAY: Light gray (10YR 7/1) heavily mottled with brownish yellow (10YR 6/6) and black (10YR 2/1), moist, very stiff (pp=2.5 tsf), fines upward, black nodules
-15	15							

ERM Environmental Resources Management

MW-173
DRILLING LOG

Proj. No. 0096401 Boring/Well ID MW-173 Date Drilled 3/4/2009

Project Former Cameron Iron Works Owner Elkins

Location Stablewood Boring T.D. 39.35 ' Boring Diam. 8 "

N. Coord. _____ E. Coord. _____ Surface Elevation 0 ' ft. MSL Datum

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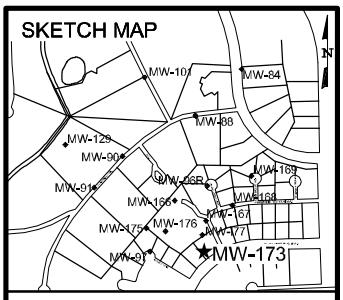
Casing: Type Schedule 40 PVC Riser Diam. 2 " Length 29.15 ' Sump Length 0 '

Top of Casing Elevation 0 ' Stickup -0.2

Depth to Water: 1. Ft. 30.57 (3-4-2009/1250) 2. Ft. 30.61 (3-5-2009/1015)

Drilling Company Best Drilling Driller _____

Drilling Method Hollow Stem Auger Log By Stephen Saller



NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	Sample Recovery (%)	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
-15	15				100%	15-20	15-20	CLAYEY SAND: Light gray (10YR 7/1) mottled with yellow (10YR 7/8), moist, weak (pp=0.5 tsf)
-20	20				50%	20-25	20-25	SAND: Light gray (10YR 7/1) mottled with yellow (10YR 7/8), moist, loose, thick mottling patterns
-25	25				60%	25-30	25-28	SAND: Brownish yellow (10YR 6/6) mottled with light gray (10YR 7/1), moist, loose
							28-30	SAND: Dark brown (10YR 3/3) mottled with brownish yellow (10YR 6/6), moist, loose
-30	30							

ERM Environmental Resources Management

MW-173
DRILLING LOG

Proj. No. 0096401 Boring/Well ID MW-173 Date Drilled 3/4/2009

Project Former Cameron Iron Works Owner Elkins

Location Stablewood Boring T.D. 39.35 ' Boring Diam. 8 "

N. Coord. _____ E. Coord. _____ Surface Elevation 0 ' ft. MSL Datum

Screen: Type Schedule 40 PVC Diam. 2 " Length 10 ' Slot Size 0.01 "

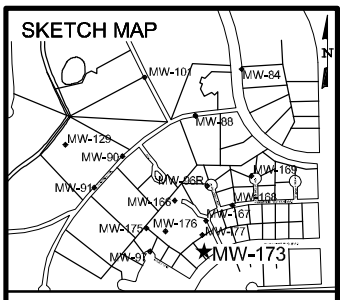
Casing: Type Schedule 40 PVC Riser Diam. 2 " Length 29.15 ' Sump Length 0 '

Top of Casing Elevation 0 ' Stickup -0.2

Depth to Water: 1. Ft. 30.57 (3-4-2009/1250) 2. Ft. 30.61 (3-5-2009/1015)

Drilling Company Best Drilling Driller _____

Drilling Method Hollow Stem Auger Log By Stephen Saller



NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	Sample Recovery (%)	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
-30	30				40%	30-35	30-34	SAND: Yellowish red (5YR 5/8), moist (saturated at 32.5' and below), loose, small light gray and black patches
							34-35	CLAYEY SAND: Yellowish red (5YR 5/8), saturated, stiff (pp=1.5 tsf), small light gray and black patches
-35	35				60%	35-39.35	35-39.35	SAND: Yellowish brown (10YR 5/6), wet, loose, medium grained
					40%			T.D. = 39.35 '
-40	40							
-45	45							

STATE OF TEXAS WELL REPORT for Tracking #170532

Owner:	**Cameron International Corporation**	Owner Well #:	**MW-173**
Address:	**1333 W. Loop S., Suite 1700** **Houston , TX**	Grid #:	**65-13-7**
Well Location:	**8725 Memorial Dr.** **Houston , TX 77027**	Latitude:	**29° 46' 17" N**
Well County:	**Harris**	Longitude:	**095° 27' 44" W**
Elevation:	**No Data**	GPS Brand Used:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Date: Started: **3/4/2009**
Completed: **3/4/2009**

Diameter of Hole: Diameter: **8 in From Surface To 40 ft**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: Gravel Packed From: **28 ft to 40 ft**
Gravel Pack Size: **20/40**

Annular Seal Data: 1st Interval: **From 0 ft to 26 ft with 15 bentonite gr (#sacks and material)**
2nd Interval: **No Data**
3rd Interval: **No Data**
Method Used: **Tremie**
Cemented By: **Best Drilling Services, Inc.**
Distance to Septic Field or other Concentrated Contamination: **No Data**
Distance to Property Line: **No Data**
Method of Verification: **No Data**
Approved by Variance: **No Data**

Surface Completion: **Surface Slab Installed**

Water Level: Static level: **No Data**
Artesian flow: **No Data**

Packers: **Bentonite 26' - 28'**

Plugging Info: Casing or Cement/Bentonite left in well: **No Data**

Type Of Pump: **No Data**

Well Tests: **No Data**

Water Quality: Type of Water: **No Data**
Depth of Strata: **No Data**
Chemical Analysis Made: **No Data**
Did the driller knowingly penetrate any strata which contained undesirable constituents: **No Data**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.

Company Information: **Best Drilling Services, Inc.**
P.O. Box 845

	Friendswood , TX 77549
Driller License Number:	**5036**
Licensed Well Driller Signature:	**Alfredo Palacios**
Registered Driller Apprentice Signature:	**No Data**
Apprentice Registration Number:	**No Data**
Comments:	**No Data**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Please include the report's Tracking number (Tracking #**170532**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

DESC. & COLOR OF FORMATION MATERIAL

From (ft) To (ft) Description
0-3 SILTY CLAY
5-8 CLAY
8-15 SANDY CLAY
15-20 CLAYEY SAND
20-40 SAND

CASING, BLANK PIPE & WELL SCREEN DATA

Dia. New/Used Type Setting From/To
2 N SCH 40 PVC RISER 0/30
2 N SCH 40 PVC SCREEN 30/40 0.010

ERM Environmental Resources Management

MW-173
DRILLING LOG

Proj. No. 0096401 Boring/Well ID MW-173 Date Drilled 3/4/2009

Project Former Cameron Iron Works Owner Elkins

Location Stablewood Boring T.D. 39.35 ' Boring Diam. 8 "

N. Coord. _____ E. Coord. _____ Surface Elevation 0 ' ft. MSL Datum

Screen: Type Schedule 40 PVC Diam. 2 " Length 10 ' Slot Size 0.01 "

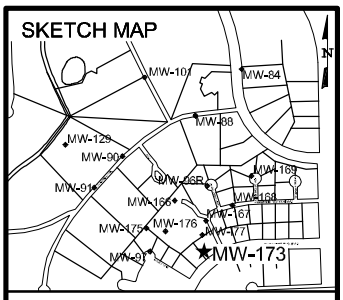
Casing: Type Schedule 40 PVC Riser Diam. 2 " Length 29.15 ' Sump Length 0 '

Top of Casing Elevation 0 ' Stickup -0.2

Depth to Water: 1. Ft. 30.57 (3-4-2009/1250) 2. Ft. 30.61 (3-5-2009/1015)

Drilling Company Best Drilling Driller _____

Drilling Method Hollow Stem Auger Log By Stephen Saller



NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	Sample Recovery (%)	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
0	0					0-5	0-1	GRAVEL: Shell road base, light brownish gray (10YR 6/2), moist, loose
							1-3	SILTY CLAY: Drak gray (10YR 4/1), moist, (pp=.5 tsf)
							3-5	CLAY: Dark grayish brown (10YR 4/2) mottled with yellowish brown (10YR 5/4), moist, stiff (pp=2 tsf)
-5	5				100%	5-10	5-8	CLAY: Gray (10YR 6/1) mottled with brownish yellow (10YR 6/6), moist, very stiff (pp=2.5 tsf)
							8-10	SANDY CLAY: Light gray (10YR 7/1) heavily mottled with brownish yellow (10YR 6/6) and black (10YR 2/1), moist, very stiff (pp=3.5 tsf)
-10	10				100%	10-15	10-15	SANDY SILTY CLAY: Light gray (10YR 7/1) heavily mottled with brownish yellow (10YR 6/6) and black (10YR 2/1), moist, very stiff (pp=2.5 tsf), fines upward, black nodules
-15	15							

ERM Environmental Resources Management

MW-173
DRILLING LOG

Proj. No. 0096401 Boring/Well ID MW-173 Date Drilled 3/4/2009

Project Former Cameron Iron Works Owner Elkins

Location Stablewood Boring T.D. 39.35 ' Boring Diam. 8 "

N. Coord. _____ E. Coord. _____ Surface Elevation 0 ' ft. MSL Datum

Screen: Type Schedule 40 PVC Diam. 2 " Length 10 ' Slot Size 0.01 "

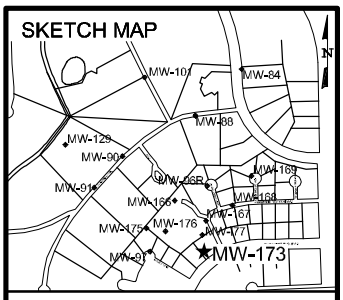
Casing: Type Schedule 40 PVC Riser Diam. 2 " Length 29.15 ' Sump Length 0 '

Top of Casing Elevation 0 ' Stickup -0.2

Depth to Water: 1. Ft. 30.57 (3-4-2009/1250) 2. Ft. 30.61 (3-5-2009/1015)

Drilling Company Best Drilling Driller _____

Drilling Method Hollow Stem Auger Log By Stephen Saller



NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	Sample Recovery (%)	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
-15	15				100%	15-20	15-20	CLAYEY SAND: Light gray (10YR 7/1) mottled with yellow (10YR 7/8), moist, weak (pp=0.5 tsf)
-20	20				50%	20-25	20-25	SAND: Light gray (10YR 7/1) mottled with yellow (10YR 7/8), moist, loose, thick mottling patterns
-25	25				60%	25-30	25-28	SAND: Brownish yellow (10YR 6/6) mottled with light gray (10YR 7/1), moist, loose
							28-30	SAND: Dark brown (10YR 3/3) mottled with brownish yellow (10YR 6/6), moist, loose
-30	30							

ERM Environmental Resources Management

MW-173
DRILLING LOG

Proj. No. 0096401 Boring/Well ID MW-173 Date Drilled 3/4/2009

Project Former Cameron Iron Works Owner Elkins

Location Stablewood Boring T.D. 39.35 ' Boring Diam. 8 "

N. Coord. _____ E. Coord. _____ Surface Elevation 0 ' ft. MSL Datum

Screen: Type Schedule 40 PVC Diam. 2 " Length 10 ' Slot Size 0.01 "

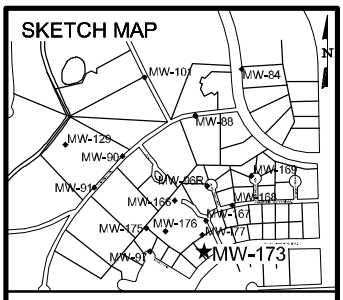
Casing: Type Schedule 40 PVC Riser Diam. 2 " Length 29.15 ' Sump Length 0 '

Top of Casing Elevation 0 ' Stickup -0.2

Depth to Water: 1. Ft. 30.57 (3-4-2009/1250) 2. Ft. 30.61 (3-5-2009/1015)

Drilling Company Best Drilling Driller _____

Drilling Method Hollow Stem Auger Log By Stephen Saller



NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	Sample Recovery (%)	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
-30	30				40%	30-35	30-34	SAND: Yellowish red (5YR 5/8), moist (saturated at 32.5' and below), loose, small light gray and black patches
							34-35	CLAYEY SAND: Yellowish red (5YR 5/8), saturated, stiff (pp=1.5 tsf), small light gray and black patches
-35	35				60%	35-39.35	35-39.35	SAND: Yellowish brown (10YR 5/6), wet, loose, medium grained
					40%			T.D. = 39.35 '
-40	40							
-45	45							

STATE OF TEXAS WELL REPORT for Tracking #170532

Owner:	**Cameron International Corporation**	Owner Well #:	**MW-173**
Address:	**1333 W. Loop S., Suite 1700** **Houston , TX**	Grid #:	**65-13-7**
Well Location:	**8725 Memorial Dr.** **Houston , TX 77027**	Latitude:	**29° 46' 17" N**
Well County:	**Harris**	Longitude:	**095° 27' 44" W**
Elevation:	**No Data**	GPS Brand Used:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Date: Started: **3/4/2009**
Completed: **3/4/2009**

Diameter of Hole: Diameter: **8 in From Surface To 40 ft**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: Gravel Packed From: **28 ft to 40 ft**
Gravel Pack Size: **20/40**

Annular Seal Data: 1st Interval: **From 0 ft to 26 ft with 15 bentonite gr (#sacks and material)**
2nd Interval: **No Data**
3rd Interval: **No Data**
Method Used: **Tremie**
Cemented By: **Best Drilling Services, Inc.**
Distance to Septic Field or other Concentrated Contamination: **No Data**
Distance to Property Line: **No Data**
Method of Verification: **No Data**
Approved by Variance: **No Data**

Surface Completion: **Surface Slab Installed**

Water Level: Static level: **No Data**
Artesian flow: **No Data**

Packers: **Bentonite 26' - 28'**

Plugging Info: Casing or Cement/Bentonite left in well: **No Data**

Type Of Pump: **No Data**

Well Tests: **No Data**

Water Quality: Type of Water: **No Data**
Depth of Strata: **No Data**
Chemical Analysis Made: **No Data**
Did the driller knowingly penetrate any strata which contained undesirable constituents: **No Data**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.

Company Information: **Best Drilling Services, Inc.**
P.O. Box 845

	Friendswood , TX 77549
Driller License Number:	**5036**
Licensed Well Driller Signature:	**Alfredo Palacios**
Registered Driller Apprentice Signature:	**No Data**
Apprentice Registration Number:	**No Data**
Comments:	**No Data**

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DESC. & COLOR OF FORMATION MATERIAL

From (ft) To (ft) Description
0-3 SILTY CLAY
5-8 CLAY
8-15 SANDY CLAY
15-20 CLAYEY SAND
20-40 SAND

CASING, BLANK PIPE & WELL SCREEN DATA

Dia. New/Used Type Setting From/To
2 N SCH 40 PVC RISER 0/30
2 N SCH 40 PVC SCREEN 30/40 0.010

ERM Environmental Resources Management

MW-175 DRILLING LOG

Proj. No. 0101257 Boring/Well ID MW-175 Date Drilled 9/2/2009

Project Stablewood Remediation Owner Paraffin Group

Location Houston Boring T.D. 36 ' Boring Diam. 2 "

N. Coord. -1665.713 E. Coord. 5462.906 ' Surface Elevation 64.43 ' ft. MSL Datum

Screen: Type Sch 40 Diam. 1 " Length 10 ' Slot Size 0.01 "

Casing: Type Sch 40 Diam. 1 " Length 26 ' Sump Length 0 '

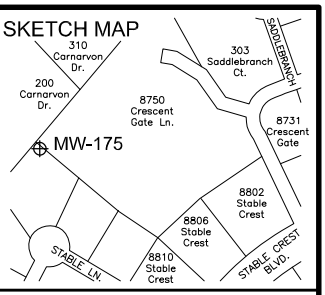
Top of Casing Elevation 0 ' Stickup 0 '

Depth to Water: 1. Ft. 30.81 (9.2.2009/1130/BTOC) 2. Ft. 0 ( )

Drilling Company Best Drilling Driller Alfredo Palacios

Drilling Method Direct Push Log By Scott Himes

SKETCH MAP



NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type		Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
64.43	0					0-4	0-4	SILTY CLAY: Very dark yellowish brown (10YR 3/2), dense, damp, friable, pp= (>4.5 tsf), rootlets.
60	5					4-8	4-7.8	SILTY CLAY: Very pale brown (10YR 7/3) with brownish yellow (10YR 6/8) mottling, dense,plastic, moist, pp= (4.0 tsf).
55	10					8-12	7.8-8 8-12	GRAVELLY CLAY: Very pale brown (10YR 8/2) with white (10YR 8/1) nodules, moist, crumbly, slightly plastic, white nodules are hard (pp > 4.5 tsf). GRAVELLY CLAY: Light gray (10YR 7/2) with (10YR 5/8) mottling increasing with depth, white nodules throughout (~10%), moist, dense, slightly plastic, pp= (>4.5 tsf).
50	15					12-16	12-18	SILTY CLAY: Light gray (10YR 7/1) with (7.5YR 5/8) strong brown mottling, moist, dense, plastic, pp= (2.5 tsf), few white nodules.
						16-20		
45	20						18-36	SAND: Very pale brown (10YR 8/2), moist, loose, fine grained, rounded, sorted.

ERM Environmental Resources Management

MW-175 DRILLING LOG

Proj. No. 0101257 Boring/Well ID MW-175 Date Drilled 9/2/2009

Project Stablewood Remediation Owner Paraffin Group

Location Houston Boring T.D. 36 ' Boring Diam. 2 "

N. Coord. -1665.713 E. Coord. 5462.906 ' Surface Elevation 64.43 ' ft. MSL Datum

Screen: Type Sch 40 Diam. 1 " Length 10 ' Slot Size 0.01 "

Casing: Type Sch 40 Diam. 1 " Length 26 ' Sump Length 0 '

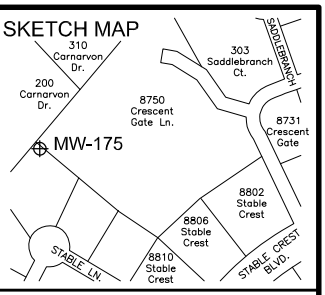
Top of Casing Elevation 0 ' Stickup 0 '

Depth to Water: 1. Ft. 30.81 (9.2.2009/1130/BTOC) 2. Ft. 0 ( )

Drilling Company Best Drilling Driller Alfredo Palacios

Drilling Method Direct Push Log By Scott Himes

SKETCH MAP



NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type		Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
	20					20-24		At 20.5' - 5" clay seam, light gray(10YR 7/1) with (10YR 6/8) mottling, moist, plastic, dense, pp= (2.5 tsf).
40	25					24-28		At 26' - Becomes yellow (10YR 7/8).
						28-32		At 28' - Becomes strong brown (7.5YR 5/8).
35	30							
						32-36		
30	35							At 36' - Hit refusal. T.D. = 36 '
25	40							

STATE OF TEXAS WELL REPORT for Tracking #196088

Owner:	**Cameron International Corp.**	Owner Well #:	**MW-175**
Address:	**1333 W. Loop S., Ste. 1700 Houston , TX 77027**	Grid #:	**65-13-7**
Well Location:	**8802 Stable Crest Blvd. Houston , TX 77024**	Latitude:	**29° 46' 15" N**
Well County:	**Harris**	Longitude:	**095° 27' 46" W**
Elevation:	**No Data**	GPS Brand Used:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Test Well**

Drilling Date: Started: **9/2/2009**
Completed: **9/2/2009**

Diameter of Hole: Diameter: **8 in From Surface To 36 ft**

Drilling Method: Other: **Direct Push**

Borehole Completion: Other: **PLUGGED**

Annular Seal Data:
1st Interval: **From 0 ft to 36 ft with 5 cement benton (#sacks and material)**
2nd Interval: **No Data**
3rd Interval: **No Data**
Method Used: **Tremie**
Cemented By: **Best Drilling Services, Inc.**
Distance to Septic Field or other Concentrated Contamination: **No Data**
Distance to Property Line: **No Data**
Method of Verification: **No Data**
Approved by Variance: **No Data**

Surface Completion: **No Data**

Water Level: Static level: **No Data**
Artesian flow: **No Data**

Packers: **No Data**

Plugging Info: Casing or Cement/Bentonite left in well: **No Data**

Type Of Pump: **No Data**

Well Tests: **No Data**

Water Quality:
Type of Water: **No Data**
Depth of Strata: **No Data**
Chemical Analysis Made: **No Data**
Did the driller knowingly penetrate any strata which contained undesirable constituents: **No Data**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.

Company Information: **Best Drilling Services, Inc.**
P.O. Box 845

	Friendswood , TX 77549
Driller License Number:	**5036**
Licensed Well Driller Signature:	**Alfredo Palacios**
Registered Driller Apprentice Signature:	**No Data**
Apprentice Registration Number:	**No Data**
Comments:	**No Data**

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Please include the report's Tracking number (Tracking #**196088**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

DESC. & COLOR OF FORMATION MATERIAL

From (ft)	To (ft)	Description
0	**18**	**CLAY**
18	**36**	**SAND**

CASING, BLANK PIPE & WELL SCREEN DATA

Dia.	New/Used	Type	Setting From/To
2	**N**	**SCH 40 PVC**	**RISER 0/26**
2	**N**	**SCH 40 PVC**	**SCREEN 26/36 0.010**

ERM Environmental Resources Management

MW-177
DRILLING LOG

Proj. No. 0101257 Boring/Well ID MW-177 Date Drilled 8/31/2009

Project Stablewood Remediation Owner Paraffin Group

Location Houston Boring T.D. 40 ' Boring Diam. 2 "

N. Coord. -1717.188 E. Coord. 5885 ' Surface Elevation 63.69 ' ft. MSL Datum

Screen: Type Sch 40 Diam. 2 " Length 10 ' Slot Size 0.01 "

Casing: Type Sch 40 Diam. 2 " Length 30 ' Sump Length 0 '

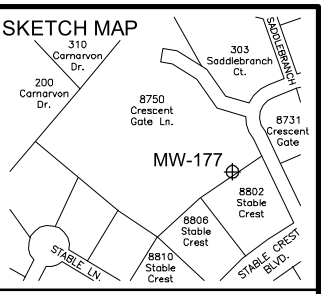
Top of Casing Elevation 0 ' Stickup 0 '

Depth to Water: 1. Ft. 0 ( ) 2. Ft. 0 ( )

Drilling Company Best Drilling Driller Alfredo Palacios

Drilling Method Hollow Stem Augur Log By Scott Himes

SKETCH MAP



NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type		Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
63.69	0					0-5	0-6	SILTY CLAY: Pale brown (10YR 6/3) with yellowish brown (10YR 5/8) mottling, moist, dense, plastic, pp= (2.5 tsf).
60	5					5-10	6-12.5	SILTY CLAY: Pale brown (10YR 6/3) mixed with white (10YR 8/1) sandy gravel, moist, dense, plastic, pp= (1.5 tsf), gravel decreases with depth.
55	10					10-15	12.5-14	SANDY CLAY: Pale brown (10YR 6/3) with yellowish brown (10YR 5/8) mottling, moist, slightly dense, plastic, pp= (1.5 tsf), sparse gravel.
50							14-15	SAND: Very pale brown (10R 7/3), moist, loose, fine grained.
45	15					15-20	15-20	SAND: Light gray (10YR 7/1) mottled with brownish yellow (10YR 6/8), loose, moist, fine to medium grained.
	20							

ERM Environmental Resources Management

MW-177 DRILLING LOG

Proj. No. 0101257 Boring/Well ID MW-177 Date Drilled 8/31/2009

Project Stablewood Remediation Owner Paraffin Group

Location Houston Boring T.D. 40 ' Boring Diam. 2 "

N. Coord. -1717.188 E. Coord. 5885 ' Surface Elevation 63.69 ' ft. MSL Datum

Screen: Type Sch 40 Diam. 2 " Length 10 ' Slot Size 0.01 "

Casing: Type Sch 40 Diam. 2 " Length 30 ' Sump Length 0 '

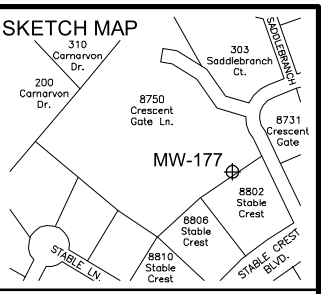
Top of Casing Elevation 0 ' Stickup 0 '

Depth to Water: 1. Ft. 0 ( ) 2. Ft. 0 ( )

Drilling Company Best Drilling Driller Alfredo Palacios

Drilling Method Hollow Stem Augur Log By Scott Himes

SKETCH MAP



NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type		Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
	20					20-25	20-27	SAND: Pink (5YR 7/3), slightly mottled with brownish yellow (10YR 6/8), loose, moist, fine grained, uniform.
40								
	25					25-30		
							27-30	SAND: Yellowish brown (10YR 5/8), moist, loose, fine grained, uniform.
35								
	30					30-35	30-40	SAND: Yellowish red (5YR 5/8), saturated, loose, fine grained, uniform.
30								
	35					35-40		At 35' - wet.
25								
	40							T.D. = 40 '

STATE OF TEXAS WELL REPORT for Tracking #196081

Owner:	**Cameron International Corp.**	Owner Well #:	**P-177**
Address:	**1333 W. Loop S., Ste. 1700 Houston , TX 77027**	Grid #:	**65-13-7**
Well Location:	**8802 Stable Crest Blvd. Houston , TX 77024**	Latitude:	**29° 46' 15" N**
Well County:	**Harris**	Longitude:	**095° 27' 46" W**
Elevation:	**No Data**	GPS Brand Used:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Date: Started: **8/31/2009**
Completed: **8/31/2009**

Diameter of Hole: Diameter: **8 in From Surface To 40 ft**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: Gravel Packed From: **28 ft to 40 ft**
Gravel Pack Size: **20/40**

Annular Seal Data: 1st Interval: **From 0 ft to 26 ft with 5 cement benton (#sacks and material)**
2nd Interval: **No Data**
3rd Interval: **No Data**
Method Used: **Tremie**
Cemented By: **Best Drilling Services, Inc.**
Distance to Septic Field or other Concentrated Contamination: **No Data**
Distance to Property Line: **No Data**
Method of Verification: **No Data**
Approved by Variance: **No Data**

Surface Completion: **Surface Slab Installed**

Water Level: Static level: **No Data**
Artesian flow: **No Data**

Packers: **Bentonite 26' - 28'**

Plugging Info: Casing or Cement/Bentonite left in well: **No Data**

Type Of Pump: **No Data**

Well Tests: **No Data**

Water Quality: Type of Water: **No Data**
Depth of Strata: **No Data**
Chemical Analysis Made: **No Data**
Did the driller knowingly penetrate any strata which contained undesirable constituents: **No Data**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.

Company Information: **Best Drilling Services, Inc.**
P.O. Box 845

	Friendswood , TX 77549
Driller License Number:	**5036**
Licensed Well Driller Signature:	**Alfredo Palacios**
Registered Driller Apprentice Signature:	**No Data**
Apprentice Registration Number:	**No Data**
Comments:	**No Data**

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Please include the report's Tracking number (Tracking #**196081**) on your written request.

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DESC. & COLOR OF FORMATION MATERIAL

From (ft)	To (ft)	Description
0	**14**	**CLAY**
14	**40**	**SAND**

CASING, BLANK PIPE & WELL SCREEN DATA

Dia.	New/Used	Type	Setting From/To
2	**N**	**SCH 40 PVC**	**RISER 0/30**
2	**N**	**SCH 40 PVC**	**SCREEN 30/40 0.010**

ch2m	PROJECT NUMBER 684444.17.05.02	BORING NUMBER MW-178	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : **Silber Rd. Well Installation** LOCATION : Houston, TX DATE: 4-10-2017

WEATHER: 79° F, Cloudy DRILLING CONTRACTOR Best Drilling

DRILLING METHOD AND EQUIPMENT USED : Continuous Sampling/Hollow Stem Auger

WATER LEVELS : 26.11' START : 1330 on 4-10-2017 END : 0805 on 4-11-2017 LOGGER : Shannon Boesch

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (%)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Above Hole
		100%			**Silty to Sandy Clay (CL):** dark brown with iron oxide staining, very fine grain, moderate plasticity, hard to very hard, no odor, dry.	PID: 0-3' = 0.9 ppm
5	5.0					PID: 3-5' = 0.9 ppm
		60%			**Sandy Clay to Clayey Sand (CL-SC):** light tan with red orange iron oxide staining, low ot moderate plasticity, hard to very hard, dry, no odor, very fine grain.	PID: 5-7' = 1.2 ppm
10	10.0					PID: 7-9' = 1.0 ppm
		70%			**Clayey Sand (SC):** tan to white with red iron oxide staining, low plasticity, dry, very fine to fine grain, moderately compacted.	PID: 9-11' = 1.8 ppm
15	15.0					PID: 11-13' = 1.8 ppm
		10%			**Sand (SP):** white to light tan, loose, poorly graded, dry, fine to medium grain, no odor, some iron oxide staining.	PID: 13-15' = 1.8 ppm
20	20.0					PID: 15-17' = 1.0 ppm
		10%			**Sand (SP):** same as above, but coarse to very coarse grain, poorly graded, no odor.	PID: 17-19' = No recovery
25	25.0					PID: 19-21' = 0.0 ppm
		10%			**Sand (SP):** tan, saturated, coarse to very coarse grain, poorly graded, no odor.	PID: 21-23' = No recovery
30	30.0					PID: 23-25' = No recovery
						PID: 25-27' = 1.1 ppm
						PID: 27-29' = No recovery

Sampler Signature: _____ Date: _____

ch2m	PROJECT NUMBER 684444.17.05.02	BORING NUMBER MW-178	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : **Silber Rd. Well Installation** LOCATION : Houston, TX DATE: 4-10-2017

WEATHER: 79° F, Cloudy DRILLING CONTRACTOR Best Drilling

DRILLING METHOD AND EQUIPMENT USED : Continuous Sampling/Hollow Stem Auger

WATER LEVELS 26.11' START : 1330 on 4-10-2017 END : 0805 on 4-11-2017 LOGGER : Shannon Boesch

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (%)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	CORE DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone / Above Hole
35	35.0	60%			**Sand (SW):** tan, saturated to ~31' bgs then becomes wet to damp with depth, medium to very coarse grain, well graded, loose to slightly compacted, no odor.	PID: 29-31' = 0.9 ppm PID: 31-33' = 1.2 ppm PID: 33-35' = No recovery
40	40.0	0%			**Sand (SW):** No Recovery, flowing sands.	PID: 35-37' = No recovery PID: 37-39' = No recovery
45	45.0	0%			**Sand (SW):** No Recovery, flowing sands.	PID: 39-41' = No recovery PID: 41-43' = No recovery PID: 43-45' = No recovery
					Bottom of boring at 45' bgs on 4/11/2017	

Sampler Signature: _____ Date: _____

PROJECT NUMBER:	BORING NUMBER:	
684444	MW-179	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : SIlber Road, Houston TX LOCATION :

ELEVATION : DRILLING CONTRACTOR : Best Drilling Services

DRILLING METHOD AND EQUIPMENT : Hollow Stem Auger

WATER LEVELS : 34.0 ft bgs START : 11/27/17 12:10 END : 11/27/17 13:40 LOGGER : Gavin Wagoner

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	SAMPLE ID	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLLIC LOG	PID (ppm)	COMMENTS	WELL DIAGRAM
0	0.0	1.0		**Well Graded Gravel (GW)** gravel fill, dry, max 0.5 inch diameter clasts		N/A		2'x2' well pad with flush mount
				Silt (ML) yellowish brown, (10YR 5/4), stiff, dry, no odor		N/A		
5	5.0	5.0		**Lean Clay (CL)** very pale brown, (10YR 7/4), very stiff, dry, minor calcarous noduals and ferrous staining, minor silt and sand		0.0 0.0 0.0		
10	10.0	5.0				0.0 0.0		
15	15.0	4.0		**Silty Sand (SM)** very pale brown, (10YR 7/3), dense, dry, no odor, calcarous noduals, minor ferrous staining. Over 20 to 25 feet drilling very difficult with steam coming off drill string.		0.0 0.0 0.0		Schedule 40 PVC riser pipe
20	20.0	1.0				0.0 0.0		
25	25.0	3.0		**Well Graded Sand (SW)** very pale brown, (10YR 7/4), loose, dry, minor clay, no odor. Water at 34'. Flowing sand below water line. Very hard sandstone section at 38'		0.0 0.0 0.0		
30								

PROJECT NUMBER:	BORING NUMBER:	
684444	MW-179	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : SIlber Road, Houston TX LOCATION :

ELEVATION : DRILLING CONTRACTOR : Best Drilling Services

DRILLING METHOD AND EQUIPMENT : Hollow Stem Auger

WATER LEVELS : 34.0 ft bgs START : 11/27/17 12:10 END : 11/27/17 13:40 LOGGER : Gavin Wagoner

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	SAMPLE ID	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLLIC LOG	PID (ppm)	COMMENTS	WELL DIAGRAM
	30.0			**Well Graded Sand (SW)**				
		3.5		Same as 25-30		0.0		Bentonite Seal
▽						0.0		Silica filter pack
35	35.0					0.0		
		5.0				0.0		
40	40.0					0.0		0.010 slotted screen with endcap
		4.0				0.0		
45	45.0			Bottom of Boring at 45.0 ft bgs on 11/27/2017		0.0		

PROJECT NUMBER:	BORING NUMBER:	
684444	MW-180	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : SIlber Road, Houston TX LOCATION :

ELEVATION : DRILLING CONTRACTOR : Best Drilling Services

DRILLING METHOD AND EQUIPMENT : Hollow Stem Auger

WATER LEVELS : 27.0 ft bgs START : 11/27/17 07:45 END : 11/27/17 09:00 LOGGER : Gavin Wagoner

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	SAMPLE ID	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLLIC LOG	PID (ppm)	COMMENTS	WELL DIAGRAM
0.0				**Lean Clay (CL)** brown, (10YR 5/3), very stiff, dry, non plastic, minor sandy units and minor woody debre. Top 6" fill metal pieces.		0.0		4'x4' cement well pad with flush mount
	5.0					0.0		
5 5.0						0.0		
	3.0					0.1		
10 10.0						0.1		
				Lean Clay (CL) light gray, (10YR 7/2), medium stiff, dry, bedding, moderate sand, minor roots		0.0		
	2.0					0.0		Schedule 40 PVC riser pipe
15 15.0						0.1		
				Poorly Graded Sand (SP) very pale brown, (10YR 7/4), loose, dry, no odor		0.1		
	2.0					0.1		
20 20.0						0.0		
						0.1		
	2.0					0.0		
25 25.0						0.1		
				Clayey Sand (SC) yellowish brown, (10YR 5/6), medium dense, wet. Water at 27'		0.0		
▽	3.0					0.0		Bentonite seal
30						0.1		

PROJECT NUMBER:	BORING NUMBER:	
684444	MW-180	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : SIlber Road, Houston TX LOCATION :

ELEVATION : DRILLING CONTRACTOR : Best Drilling Services

DRILLING METHOD AND EQUIPMENT : Hollow Stem Auger

WATER LEVELS : 27.0 ft bgs START : 11/27/17 07:45 END : 11/27/17 09:00 LOGGER : Gavin Wagoner

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	SAMPLE ID	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLLIC LOG	PID (ppm)	COMMENTS	WELL DIAGRAM
30.0				**Well Graded Sand (SW)** very pale brown, (10YR 6/4), medium dense, wet, flowing sand		0.0		
	5.0					0.0		
35 35.0						0.1		0.010 slotted screen with endcap
	5.0					0.0		
40 40.0						0.0		
				Bottom of Boring at 40.0 ft bgs on 11/27/2017				

Well Completion Diagrams

PROJECT NUMBER	WELL NUMBER	
D3542628	MW-181	SHEET 1 OF 1

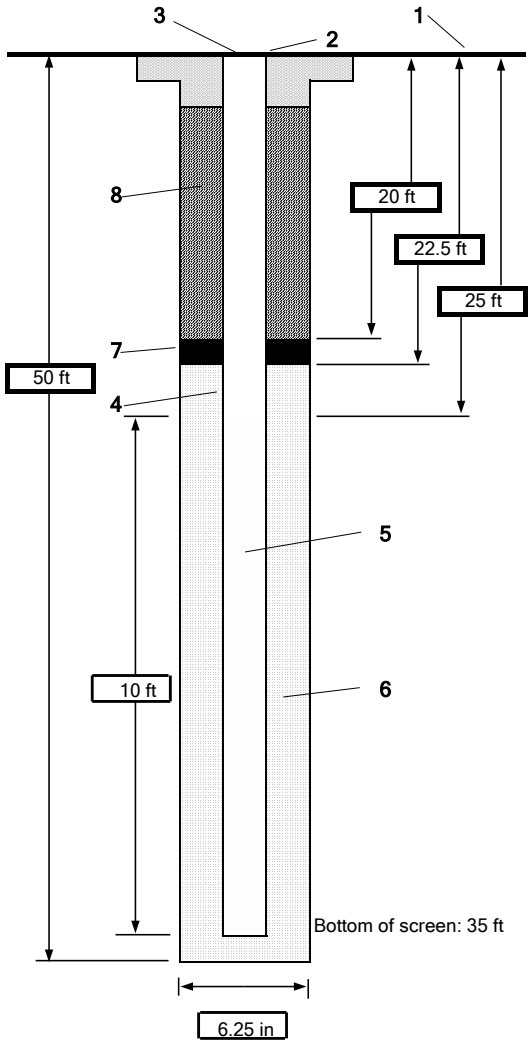
WELL COMPLETION DIAGRAM

PROJECT : Silber Rd Pre-Design LOCATION : Houston, Texas

DRILLING CONTRACTOR : Best Drilling

DRILLING METHOD AND EQUIPMENT USED : CME Hollow Stem Auger

WATER LEVELS : 17.10 START : 05/16/2022 1610 END : 05/16/2022 1740 LOGGER : D. Rowan



1-	Ground elevation at well	TBD
2-	Top of casing elevation	TBD
	a) vent hole?	N/A
3-	Wellhead protection cover type	Traffic rated 6-inch steel manway
	a) weep hole?	N/A
	b) concrete pad dimensions	2 ft x 2 ft x 6 in
4-	Dia./type of well riser	2-inch Schedule 40 PVC
5-	Type/slot size of screen	2-inch Schedule 40 PVC 10 ft 0.010-inch factory slot
6-	Type screen filter	20/40 Silica Sand
	a) Quantity used	3.5 x 50lb bags (175 lb)
7-	Type of seal	3/8" Bentonite Chip Hole Plug
	a) Quantity used	1.5 x 50lb bags (75 lb)
8-	Grout	
	a) Grout mix used	High Solids Bentonite Portland Cement Grout
	b) Method of placement	Tremie
	c) Vol. of well casing grout	85 gallons
	Development method	Pump and Surge
	Development time	1 hour
	Estimated purge volume	55 gallons

Comments

Boring advanced to 50 ft bgs with natural collapse and filter pack sand to 35 ft bgs

Legend:

bgs - below ground surface	MW - monitoring well
Dia. - diameter	N/A - not applicable
ft - feet	PVC - polyvinyl chloride
in - inch	TBD - to be determined
lb - pound	Vol. - volume

PROJECT NUMBER	WELL NUMBER	
D3542628	MW-182	SHEET 1 OF 1

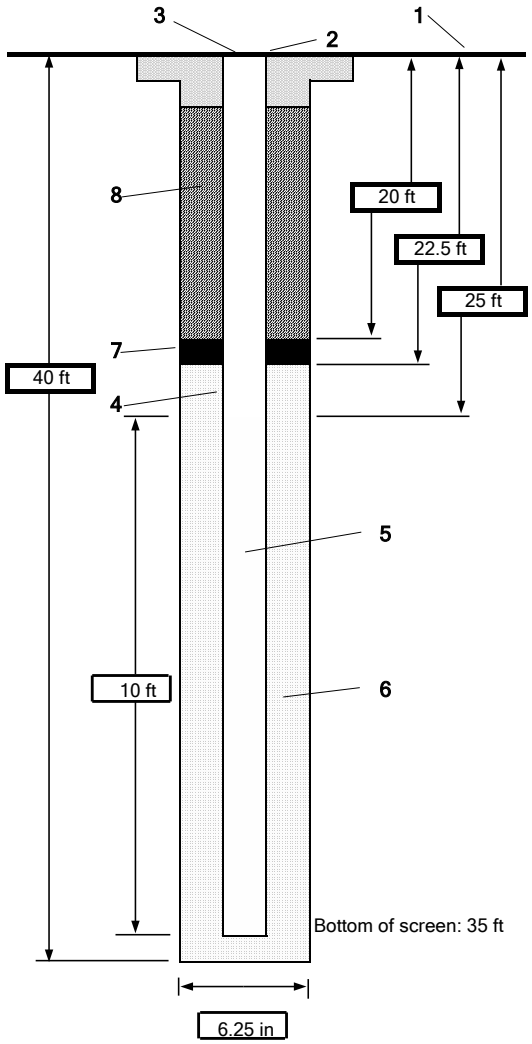
WELL COMPLETION DIAGRAM

PROJECT : Silber Rd Pre-Design LOCATION : Houston, Texas

DRILLING CONTRACTOR : Best Drilling

DRILLING METHOD AND EQUIPMENT USED : CME Hollow Stem Auger

WATER LEVELS : 18.25 START : 05/17/2022 0930 END : 05/17/2022 1100 LOGGER : D. Rowan



1-	Ground elevation at well	TBD
2-	Top of casing elevation	TBD
	a) vent hole?	N/A
3-	Wellhead protection cover type	Traffic rated 6-inch steel manway
	a) weep hole?	N/A
	b) concrete pad dimensions	2 ft x 2 ft x 6 in
4-	Dia./type of well riser	2-inch Schedule 40 PVC
5-	Type/slot size of screen	2-inch Schedule 40 PVC 10 ft 0.010-inch factory slot
6-	Type screen filter	20/40 Silica Sand
	a) Quantity used	3.5 x 50lb bags (175 lb)
7-	Type of seal	3/8" Bentonite Chip Hole Plug
	a) Quantity used	1.5 x 50lb bags (75 lb)
8-	Grout	
	a) Grout mix used	High Solids Bentonite Portland Cement Grout
	b) Method of placement	Tremie
	c) Vol. of well casing grout	80 gallons
	Development method	Pump and Surge
	Development time	1 hour
	Estimated purge volume	55 gallons

Comments

Boring advanced to 40 ft bgs with natural collapse to 35 ft bgs

Legend:

bgs - below ground surface	MW - monitoring well
Dia. - diameter	N/A - not applicable
ft - feet	PVC - polyvinyl chloride
in - inch	TBD - to be determined
lb - pound	Vol. - volume

Appendix 3
Studies and Tests Documentation

TECHNICAL MEMORANDUM

2022 Groundwater Modeling, Former Cameron Iron Works Facility, Houston, Texas

PREPARED FOR	Cameron International Corporation
PREPARED BY:	CH2M HILL Engineers, Inc. (CH2M)
DATE:	September 20, 2022

1.0 Introduction

This groundwater modeling technical memorandum presents the results of the updated groundwater flow and transport modeling performed for the Former Cameron Iron Works facility (site) located on Silber Road, northwest of the highway interchange of the Interstate (I-) 10 and I-610 in Houston, Texas (Figure 1-1). The technical memorandum is prepared in response to the Texas Commission on Environmental Quality (TCEQ) comment letter dated August 31, 2021 (TCEQ 2021), to update the 2017 groundwater model by including chemicals of concerns (COCs), such as tetrachloroethene (PCE), trichloroethene (TCE), 1,1-dichloroethene (1,1-DCE), and vinyl chloride.

1.1 Background

Constructed in the 1940s, the facility operated through the 1980s included metal forging and product manufacturing for the oilfield industry. The site features were demolished in 1999. An entertainment and shopping complex was constructed on most of the site property. Past operations led to the release of chlorinated volatile organic compounds into shallow groundwater. In 2001, routine groundwater monitoring to the south of I-10 indicated that the plume had migrated beyond the former site boundary. Between 2003 and 2016, site groundwater response actions were conducted, which included in situ chemical oxidation using permanganate at multiple areas, operation of the North and South Treatment Systems, and monitored natural attenuation.

In 2017, CH2M developed groundwater flow and transport models to evaluate the benefit of continued operation of the North and South Treatment Systems to reduce the remediation timeframe for groundwater and mitigate possible environmental impacts on surface water bodies (CH2M 2017). The two groundwater treatment systems located onsite and offsite were shut off to begin a rebound study in November 2016. The 2017 groundwater modeling evaluation focused on 1,1-DCE, the primary risk driver with the greatest concentrations and largest plume extent. Results of the 2017 modeling indicated that continued operation of the North and South Treatment Systems did not provide a significant advantage over natural attenuation alone. In 2021, the South Treatment System was decommissioned as requested by the property owner and with TCEQ's approval, leaving only the North Treatment System in place.

To address TCEQ's comments dated January 24, 2022 (TCEQ 2022), the groundwater models originally prepared in 2017 have been updated to include the analysis of additional COCs, including, PCE, TCE, 1,1-DCE, and vinyl chloride.

1.2 Modeling Objectives

The modeling objectives are as follows:

- Estimate the remediation timeframe for the site under monitored natural attenuation (MNA) only (that is, decommissioning the North Treatment System); and MNA with continued operation of the North Treatment System.
- Evaluate the possible benefit of operating the North Treatment System to reduce the remediation timeframe.
- Evaluate possible future COC concentrations that might enter nearby surface water bodies.
- Evaluate increased risk to surface water bodies that might arise from ceasing operations at the North Treatment System.

1.3 Model Function

The numerical groundwater model was developed and updated with consideration of the availability and reliability of input data to fulfill the modeling objectives. This three-dimensional (3D) model was set up to simulate steady-state groundwater flow, along with the transport of 1,1-DCE, vinyl chloride, PCE, and TCE through the steady-state groundwater flow field. The groundwater flow regime in the study area has remained relatively stable. Hydraulic boundary conditions and hydraulic calibration targets were based on site monitoring data collected in 2021.

Transport simulations included advection, adsorption, mechanical dispersion, matrix diffusion, and degradation processes. The transport formulation conceptualizes the subsurface with a mobile domain (where advection is the dominant transport process) and an immobile domain that serves as a mass storage zone (where slow advection and diffusion are the more dominant transport processes).
A 10-year transport simulation period was implemented for quasi-calibration, and a 100-year transport simulation period was implemented for the projection simulations to help achieve the modeling objectives (Section 1.2).

The model is georeferenced horizontally to the North American Datum of 1983 State Plane Texas South Central system and vertically to the North American Vertical Datum of 1988 (NAVD88).

1.4 Model Assumptions and Limitations

The numerical groundwater models described herein include the following assumptions and limitations:

- Modeling the subsurface in the study area as an equivalent porous medium is valid.
- Modeling groundwater in the study area as a single-density fluid is valid.
- Changes in COC concentrations do not affect groundwater flow in the study area.
- Conceptual errors associated with boundary conditions assigned along the model perimeter and bottom are negligible.
- It is possible that specific subsurface features that act as barriers or conduits to groundwater flow have not been explicitly represented.

Numerical groundwater models can only approximate subsurface processes, despite their high degree of precision. A major cause of uncertainty in these types of models is the discrepancy between the coverage of measurements needed to fully understand subsurface conditions and the coverage of measurements generally made under the constraints of limited time and budget (Rojstaczer 1994).

This technical memorandum contains forward-looking information, also known as projections. Forward-looking information includes statements related to activities, events, or conditions that could potentially occur in the future. Forward-looking information is based on several factors and assumptions that were

considered reasonable at the time this technical memorandum was written. Decisions made using forward-looking information are subject to known and unknown risks associated with uncertainties. Actual future conditions could be different from those projected or implied by the forward-looking information presented herein.

Given these assumptions and limitations, although useful to support site decisions, numerical groundwater models should be considered insight tools and qualitative predictors of future conditions. Therefore, important planning decisions that are informed by output from the groundwater model must be made with an understanding of the uncertainty in, and sensitivity to, model input parameters and should consider other site data, professional judgment, and inclusion of safety factors. Additionally, decisions made based on output from this model should be reevaluated as site conditions change, as new data become available, and as the knowledge of subsurface conditions evolves.

2.0 Conceptual Model Overview

2.1 Site Information

The site is a historical manufacturing facility. Past operations conducted at the site included machining metals, degreasing, and lubricating parts. The manufacturing facility was decommissioned in the 1980s. The site is currently used as a commercial area for shopping, dining, and entertainment. Surrounding land use is mixed commercial and residential (CH2M 2022).

The Response Action Plan (RAP) (Environmental Resources Management [ERM] 2003a) established an onsite plume management zone in conjunction with the operation of a groundwater pump-and-treat system known as the North Treatment System in September 2003 (Figure 2-1). The North Treatment System consists of six extraction wells and nine injection wells.

After the 2009 RAP Addendum was approved (ERM 2009), the South Treatment System was installed to establish hydraulic control of the offsite leading-edge plume south of I-10 (Figure 2-1). The South Treatment System consisted of five extraction wells.

The North and South Treatment Systems were shut off in 2016, as approved by TCEQ in 2016. The South Treatment System and associated extraction wells were decommissioned in November 2021 (CH2M 2022).

2.2 Climate

The climate of the Gulf Coast region is subtropical and influenced primarily by the Gulf of Mexico. Winters are mild and summers are hot, with high humidity in the northeast and semi-arid to arid conditions in the southwest. Average annual precipitation ranges from 28 inches in the southwest to 58 inches in the northeast. In the Houston area where the site is located, the average annual precipitation is 50 to 55 inches, whereas the annual evaporation is approximately 45 to 55 inches (Texas Water Development Board [TWDB] 2006). Annual precipitation for Houston, Texas, from 1991 through 2020 averages 51.8 inches per year (in/yr).[1]

2.3 Regional Hydrogeology

The site is located within the Western Gulf geomorphic province of the Gulf Coast Aquifer. The Gulf Coast Aquifer has been divided into four units as follows from bottom to top: (1) the Catahoula confining system, (2) the Jasper aquifer, (3) the Evangeline aquifer, and (4) the Chicot aquifer. The Chicot aquifer is made up of the Willis Sand, the Bentley and Montgomery formations, the Beaumont Clay, and alluvial deposits at the surface (TWDB 2006). Affected groundwater beneath the site occurs within the

[1] https://www.weather.gov/hgx/climate_iah_normals_summary (Accessed April 28, 2022)

Beaumont Clay, which consists of thinly interbedded clays and silts with local lenses of fine-grained sand originating from the late Pleistocene Epoch interdistributary fluvial delta deposit (ERM 2003a).

2.4 Local Hydrogeology

The stratigraphy of the affected aquifer in the study area has been characterized into three strata: Stratum I, II, and III. These are displayed on the cross sections from the RAP (ERM 2003a) provided as Figures 2-2a through 2-2d. Stratum I is a firm to hard, cohesive, moist, clay and sandy silty clay unit. Stratum II is the uppermost water-bearing zone where COCs are present. It consists of sand, clayey sand, and silty sand with a saturated thickness up to 30 feet. Stratum III consists of clays with silty sand layers. Stratum III serves as a barrier to the vertical migration of affected groundwater with a thickness of at least 50 feet (ERM 2003b).

Groundwater elevation data collected at the site since 1991 have consistently suggested that groundwater flow is generally from north to south within the study area.

Aquifer testing conducted at 15 site monitor wells in the central and southern portions of the site included both long-term, constant-rate pumping and short-term step-drawdown tests. Hydraulic conductivity values calculated from the testing averaged approximately 22 feet per day (7.8×10-3 centimeters per second [cm/s]) with a maximum value of approximately 70 feet per day (2.5×10-2 cm/s) (ERM 2001). Groundwater seepage velocity was estimated to range from 45 feet to 150 feet per year (ERM 2001).

2.5 Hydrology

There are several surface water bodies in the study area interacting with the affected aquifer. Buffalo Bayou is located at the southern boundary of the study area (Figure 2-1). It is primarily a gaining stream that intersects the uppermost water-bearing zone (Stratum II) and has incised several feet into the underlying clay (Stratum III). The Harris County Flood Control Ditch (HCFCD) is oriented in a north-south direction and also gains water along portions of its path (Figure 2-1). HCFCD transects the uppermost water-bearing zone (Stratum II) within the southern 1,300 feet before the confluence with Buffalo Bayou (ERM 2003b).

In addition, the Texas Department of Transportation (TxDOT) operates several dewatering systems, including one located near the I-610/I-10 interchange. These dewatering systems serve as groundwater sinks and may have influenced the distribution of site-related COCs (ERM 2016).

2.6 Groundwater Quality

As previously mentioned, COCs for this modeling effort include 1,1-DCE, PCE, TCE, and vinyl chloride. Although anerobic degradation products, such as vinyl chloride and cis-1,2-dichloroethene (cis-1,2-DCE), are also detected, their associated plumes are smaller with generally lower concentrations, indicating degradation is occurring at the site. However, the site condition is aerobic, as evidenced by the high dissolved oxygen (minimum value of 2.12 milligrams per liter with an average of 2.93 milligrams per liter) and oxidation-reduction potential values (minimum value of 23.6 millivolts with average of 157 millivolts) (CH2M 2022). The latter suggests that substantial anaerobic degradation is not likely occurring.

3.0 Groundwater Flow Model Construction

The following subsections describe the methodology used to construct and update the groundwater flow model.

3.1 Code Selection

The MODFLOW-SURFACT code (HydroGeoLogic Inc. [HGL] 2011) was selected for this effort in conjunction with the Groundwater Vistas Version 8 (Environmental Simulations Incorporated 2021) pre-

and post-processing software package. MODFLOW-SURFACT is a powerful, 3D, finite-difference flow and transport modeling code for analyzing subsurface systems. It offers advanced features over public-domain versions of MODFLOW, addressing issues such as drained cell rewetting, pumping wells handling, and numerical dispersion and oscillations often encountered during transport simulations.

3.2 Model Domain

The model domain remained unchanged from the 2017 modeling. The active model domain is a rectangular area with dimensions of 11,000 feet by 15,000 feet, considerably larger than the site (Figure 3-1). The model has four model layers, with Model Layer 1 including the unsaturated Stratum I and the water-bearing Stratum II, and Model Layers 2 and 3 representing Stratum III. The regional Chicot aquifer is represented by Model Layer 4.

The model bottom elevations were assigned based on examination of the available lithologic logs and cross sections (Figures 2-2a to 2-2d). Model Layer 1 has a thickness of approximately 45 feet with top elevations based on U.S. Geological Survey (USGS) digital elevation model data for the study area. Model Layer 2 has a thickness of 60 to 80 feet, and Model Layer 3 has a uniform thickness of 80 feet. Model Layers 2 and 3 have a combined thickness of 140 feet to 160 feet. Model Layer 4, representing the regional Chicot aquifer, has a uniform thickness of 470 feet estimated from the numerical flow model for the Gulf Coast Aquifer System developed by USGS (Kasmarek 2012). The model domain is laterally discretized into uniform grid cells of 50 feet by 50 feet, resulting in 220 by 330 (that is, 66,000) cells per model layer.

3.3 Subsurface Hydraulic Properties

The subsurface flow parameters required by steady-state 3D groundwater flow models include horizontal hydraulic conductivity (K_h) and vertical hydraulic conductivity (K_v). Model Layer 1 was initially assigned a constant K_h of 21.8 feet per day (7.7 × 10-3 cm/s), which is the previously reported average K_h value estimated from aquifer testing. The final distribution of K_h in Model Layer 1 was determined through model calibration, as described in Section 4.

Model Layers 2 and 3 represent aquitard materials with a constant K_h of 0.001 foot per day (3.5 × 10-7 cm/s), which was also determined through model calibration to match the observed groundwater level at DW-02, the only deep monitoring well at the site with historical water level measurements (Figure 2-2a). Model Layer 4 had a constant K_h of 25 feet per day (8.8 × 10-3 cm/s) calculated from the transmissivity values used in the USGS model (Kasmarek 2012). The K_v values were computed based on an initially assumed vertical anisotropy (that is, ratio of K_h to K_v) of 100 to 1.

3.4 Boundary Conditions for Groundwater Flow

The boundary conditions for the groundwater flow model were chosen based on the understanding of available hydrologic data and groundwater flow conditions at the site. The eastern and western model boundaries were oriented parallel to the general groundwater flow direction and were implemented as no-flow boundaries. The upgradient (northern) and downgradient (southern) boundaries were aligned perpendicular to the general groundwater flow direction and were implemented as specified-head boundaries. The model bottom is also implemented as a no-flow boundary. The initial head values associated with these specified-head boundaries were established by extrapolating the 2015 groundwater-level contours as part of the 2017 modeling effort. The final specified-head values were determined through model calibration, as described in Section 4.

Buffalo Bayou is implemented as a river boundary, which is a two-way, head-dependent flux boundary condition. The gaining portion of the HCFCD was implemented as a drain boundary. The TxDOT dewatering systems were also implemented as drains. The bayou stage and drain-bottom elevations were estimated by using the USGS digital elevation model, which has a 2-foot resolution.

A specified-flux boundary representing areal groundwater recharge was assigned at each cell in Model Layer 1 not already assigned a different boundary condition. The model uses 20 recharge zones with constant recharge rates ranging from 1 to 2 in/yr, based on a study published by TWDB (TWDB 2011). The recharge values were finalized through model calibration, as described in Section 4.

3.5 Time Discretization for Groundwater Flow

Numerical models describe the field problem at discrete time intervals. This flow model was designed to simulate a steady-state flow condition. As such, the hydraulics associated with the modeled groundwater flow system do not change through time. To complete the simulations as efficiently as possible, the adaptive time-stepping and output control (ATO) package of MODFLOW-SURFACT was employed. The ATO package allows input of minimum and maximum time-step durations and automatically selects a time-step duration between these values to efficiently achieve a mass-conserved mathematical solution while minimizing model run times.

4.0 Groundwater Flow Model Calibration

4.1 Calibration Targets

The groundwater flow model was calibrated under steady-state flow condition by using the measured heads at 39 site monitoring wells in December 2021 (Figure 4-1) as quantitative calibration targets. Calibration summary statistics were computed to provide a quantitative measure of the flow model's ability to replicate target head values. Head calibration was evaluated by using the following summary statistics:

- Residual, computed as the simulated head value minus the target head value
- Mean residual (MR), computed as the sum of all residuals divided by the number of observations
- Coefficient of determination (R2), computed as the square of the correlation coefficient
- Root mean squared residual (RMSR), computed as the square root of the mean of all squared residuals
- RMSR divided by the range of target head values (RMSR/Range)

During the quantitative calibration, CH2M implemented the following goals:

- Minimize spatial bias of residual errors in key areas of the domain.
- Minimize residual, MR, RMSR, and RMSR/Range values.
- Maintain R2 values as close to 1 as possible.

Figure 4-1 depicts the locations of the calibration targets selected for this effort.

4.2 Calibration Process

CH2M implemented an approach that combined both manual and autocalibration techniques to achieve sufficient, effective calibration. Calibration model parameters included K_h, groundwater recharge, and specified heads along the northern and southern boundaries. The K_v values were "tied" to the K_h values by using a vertical anisotropy (that is, K_h to K_v ratio) of 100 to 1 during calibration.

Calibration was facilitated by using the automated parameter estimation package, PEST, a widely used, model-independent parameter optimizer (Doherty 2021a, 2021b). The pilot point approach provided by PEST was used to facilitate the calibration of a heterogeneous K_h field for Model Layer 1. Additionally, the K_h values for Model Layer 1 were constrained to 0.1 to 100 feet per day (3.5×10^{-5} to 3.5×10^{-2} cm/s) during calibration, which is a range established based on the hydraulic conductivity values derived from aquifer testing (ERM 2001).

Groundwater recharge rates for the 20 recharge zones were allowed to vary from 1 to 2 in/yr, and the specified heads were allowed to vary from 48 to 60 feet North American Vertical Datum 88 (NAVD88) along the northern boundary and from 15 to 35 feet NAVD88 along the southern boundary. Both the groundwater recharge and the specified heads were ultimately estimated through PEST calibration.

4.3 Calibration Results

Figure 4-1 shows the target well locations. Table 4-1 and Figures 4-2 and 4-3 provide summary statistics and plots characterizing the match between modeled and target heads. Data presented on Figure 4-2 indicate good agreement between modeled and target heads. Because the points fall above, below, and close to the 1:1 correlation line, global bias in modeled heads is not evident from Figure 4-2. The summary statistics associated with the residuals are as follows:

- MR = 0.12 foot
- RMSR = 0.45 foot
- Range = 24.77 feet
- RMSR/Range = 1.82 percent
- R2 = 1.00
- Number of measurements = 39

Table 4-1 summarizes the residuals for the flow model calibration. The RMSR/Range of 1.8 percent is much less than the “industry standard” of 10 percent for an acceptable calibration (Spitz and Moreno 1996).

Figure 4-3 presents a map of head residuals. This map aids in identifying whether spatial bias is present in the head residual. Such bias would be revealed by clusters of wells in which larger residuals occur. As Figure 4-3 shows, there is no obvious spatial bias in the modeled heads, and most residuals are within ±0.5 foot.

Figure 4-4 shows the distributions of calibrated K_h in Model Layer 1, ranging from 0.1 to 93.2 feet per day (3.5 × 10-5 to 3.3 × 10-2 cm/s) with an arithmetic mean value of 26.6 feet per day (9.4×10^{-3} cm/s), comparable to K_h values derived from pumping tests. The calibrated K_h value for Model Layers 2 and 3 was 0.001 foot per day (3.5×10^{-7} cm/s). The K_h value for Model Layer 4 was held at a constant of 25 feet per day (8.8×10^{-3} cm/s) during calibration. The vertical anisotropy of 100 to 1 was maintained during model calibration.

Figure 4-5 shows the calibrated groundwater recharge values, which had a narrow range of 1 to 1.57 in/yr with an average value of 1.39 in/yr, representing about 2 to 3 percent of the average annual precipitation (Section 2.2). The distribution of the calibrated recharge values is consistent with the land uses, with smaller recharges in the residential and commercial areas and larger values in the vegetated area in the southeastern corner of the study area.

Table 4-2 summarizes the groundwater balance for Model Layer 1 (Stratum I and Stratum II) simulated by the calibrated model. The groundwater balance focuses on these strata because they are the relevant strata for the modeling objectives (Section 1.2).

The largest groundwater inflow and outflow components in Model Layer 1 are the recharge from precipitation and groundwater discharge to Buffalo Bayou, respectively. The magnitudes of flows for the groundwater balance components in Table 4-2 seem reasonable (that is, dozens to low hundreds of gallons per minute [gpm]) for the subsurface materials present beneath the urban landscape near the site.

5.0 Solute Transport Modeling Setup

This section describes the development of solute transport models and the evaluation of transport parameters.

5.1 Solute Transport Modeling Approach

The solute transport modeling included four COCs: 1,1-DCE, PCE, TCE, and vinyl chloride. Modeling excluded cis-1,2-DCE because it is currently less than the critical protective concentration level (cPCL) of 70 micrograms per liter (μg/L) throughout the site (CH2M 2022). For each of the four COCs, a solute transport model was constructed by expanding the calibrated groundwater flow model to include key transport processes, including advection, adsorption, mechanical dispersion, matrix diffusion, and degradation. Because of the limited degree of anerobic degradation, it was difficult to quantify the relationships among the different COCs via a reactive degradation pathway. As such, chemical reactions among the COCs were not simulated, and degradation of each COC was evaluated independently.

The transport models were first quasi-calibrated using COC concentration data collected between May 2013 and December 2021. For this application, *quasi-calibrated* means that the transport models did not undergo a rigorous exercise comparing COC concentrations at individual wells against modeled results over time. However, adjustments to transport parameters were made to improve consistency between the modeled and detected COC concentration trends since 2013. The K_h and K_v values from flow calibration remained unchanged. The purpose of the quasi-calibration was to arrive at a set of transport parameters that are reasonable for site conditions. Unlike the flow model calibration, which was quantitatively evaluated using a set of calibration criteria, quasi-calibration of the transport models was qualitatively evaluated by visual inspection of the matches between the measured and modeled COC chemographs, starting in 2013.

The first-order degradation half-lives were further evaluated as part of the projection simulations (refer to Section 6). This is because the short duration of the quasi-calibration period does not permit full assessment of the influence of degradation half-lives on modeled COC concentrations since 2013.

5.2 Subsurface Transport Modeling Properties

The transport modeling employed a dual-porosity formulation to simulate the matrix-diffusion process. The dual-porosity model uses several transport properties or parameters to mathematically describe matrix diffusion, including total porosity, fraction of mobile porosity, and mass transfer coefficient between the mobile and immobile domains. Other transport parameters included dispersivity, sorption coefficient, and first-order degradation half-life.

5.2.1 Porosity

Total porosity (θ_t) is the ratio of the entire pore space in a transport medium to its bulk volume. In a dual-porosity model, the total flow domain is partitioned into a mobile and an immobile domain, with a mobile porosity (θ_m) for the mobile domain and an immobile porosity (θ_{im}) for the immobile domain. Advection occurs only in the mobile domain while chemicals enter and exit the immobile domain by matrix diffusion. θ_m and θ_{im} are related to θ_t through the fraction of mobile porosity (Φ) as follows:

$$\theta_m = \theta_t \times \Phi \quad (1)$$

$$\theta_{im} = \theta_t \times (1 - \Phi) \quad (2)$$

The initial values used for the porosity terms were 0.40 for θ_t, 0.25 for Φ, 0.10 for θ_m, and 0.30 for θ_{im}, based on professional judgment for literature values (Freeze and Cherry 1979).

5.2.2 Mass Transfer Coefficient

The mass transfer coefficient (γ) quantifies the rate of diffusive flux between the mobile and the immobile domains at each model cell at each time step. When an advecting solute undergoes first-order mass transfer between the mobile and immobile domains, the reciprocal of the mass transfer coefficient provides an approximation of the mean residence time of the solute in the immobile storage zone. Assuming the COC plumes were created prior to the 1980s, at least 40 years or on the order of 15,000 days ago, a rough estimate for the mass transfer coefficient is 7.0×10^{-5} per day (d^{-1}) (that is,

1 ÷ 15,000). The initial value for the mass transfer coefficient was set at 1.0 x 10^{-5} d^{-1} and was allowed to go as high as 1.0 x 10^{-4} d^{-1} during quasi-calibration.

5.2.3 Dispersivity

Dispersivity is a transport parameter used to quantify the mechanical dispersion process during transport. The mechanical dispersion is a measure of the spread and mixing of chemical mass as it moves through the tortuous subsurface pathways. MODFLOW-SURFACT incorporates longitudinal (D_L), transverse (D_T), and vertical dispersivity (D_V) to describe the mechanical dispersion. D_L was chosen based on the length of the 1,1-DCE plume of approximately 8,000 feet, or 2,438 meters, using the following formula (Xu and Eckstein 1995; Al-Suwaiyan 1996):

$$D_L = 0.82 \times (\log_{10} [L])^{2.446} \quad (3)$$

Where L is the plume length in meters.

D_L value of approximately 15.24 meters (or 50 feet) was estimated using Equation (3), which was regarded as a maximum value for a dual-porosity transport model. The initial value D_L value was set at 10 feet; initial D_T was set at 1 foot, according to a ratio of D_L: D_T = 10:1; initial D_V was set at 0.1 foot, according to a ratio of D_L: D_V = 100:1. A D_L value of 10 feet, as opposed to 50 feet, was assigned based on experience applying dual-porosity transport models at other sites. This experience has shown that including the mass transfer process with the dual-porosity transport formulation does not require as high of a D_L value as indicated by the earlier work of Xu and Eckstein (1995) and Al-Suwaiyan (1996).

5.2.4 Sorption Coefficient

Several isotherms are available for describing the sorption process; however, a linear isotherm was selected for this effort because it was adequate for achieving the modeling objectives (Section 1.2). The sorption coefficient (K_d) in a linear isotherm model measures the tendency of a chemical to bind to sediment surfaces during transport. Unlike the other transport parameters, which are common to all COCs, K_d is chemical specific. For organic chemicals, K_d is often obtained by multiplying the organic carbon-water partitioning coefficient (K_{oc}) by the fraction of organic carbon content (f_{OC}) in the sediments.

The initial K_d values were calculated using the K_{oc} values published by the United States Environmental Protection Agency (USEPA)[2], assuming an f_{OC} value of 0.2 percent (Table 5-1).

5.2.5 Degradation Rate

The degradation rate constant quantifies the rate of chemical mass reduction during transport. The causes for mass reduction can be biotic, abiotic, or result from other chemical reactions. Many organic chemicals are subject to the influence of biological degradation in the subsurface. For convenience, the degradation process is often described using degradation half-life (DHL). The DHL is defined as the duration required for concentrations to decrease to one-half of the initial value, solely from degradation processes. The degradation rate constant (DRC) and DHL are related as follows:

$$DHL = \frac{\ln(2)}{DRC} \text{ or } DRC = \frac{\ln(2)}{DHL} \quad (4)$$

Another transport parameter closely related to DHL is attenuation half-life (AHL), which is also defined as the duration required for the concentration to decrease to one-half of the initial value. However, unlike DHL where concentration reduction is solely attributed to degradation, the AHL accounts for all transport attenuation processes, with degradation only being one of them. The AHL can readily be estimated by conducting trend analyses of site monitoring data, and it can provide a sense of the lower

[2] https://semspub.epa.gov/work/HQ/175223.pdf.

limit for DHL. Thus, the DHL value in a solute transport model should always be greater (that is, slower) than the AHL value.

The AHLs for the four COCs have been estimated for the site by using site concentration monitoring data (CH2M 2022). These data were used as the basis for estimating the initial DHL values for the transport modeling. The initial DHL values used for transport modeling were as follows: 10 years for PCE, 30 years for TCE, 30 years for 1,1-DCE, and 20 years for vinyl chloride.

5.3 Modified Boundary Conditions

For the projection transport simulations, it was necessary to modify the model boundary conditions (Figure 5-1). These scenario simulations incorporate the operation rates of the North Treatment System in 2015, the latest operation rates recorded prior to the system's shut down in November 2016.

5.4 Time Discretization for Solute Transport

The transport modeling quasi-calibration period included 3,650 days (10 years using uniform 365-day years) to cover the period from May 2013 through December 2021. The projection had simulation periods of 36,500 days (100 years) to simulate the potential COC plume transport and fate over the next 100 years.

All transport simulations employed adaptative time-stepping using the ATO package, with an initial time-step size of 0.1 day, a minimum time step of 1.0×10^{-4} day, a maximum time step of 10 days, a time-step multiplier of 1.2, and a time-step dividing factor of 2.

5.5 Quasi-calibration Transport Set Up and Results

Quasi-calibration of the transport model was set up as follows:

- The quasi-calibration simulations had a simulation period of 10 years.
- All four COCs were included in the quasi-calibration. Interactions among the different COCs were not simulated.
- The measured COC concentrations in May 2013 were spatially distributed via kriging to establish the initial transport conditions in both the mobile and immobile domains (set equal in both domains). Figures 5-2a through 5-2d show the initial COC concentrations.
- The quasi-calibration assumed instantaneous concentration equilibrium between the solid and the liquid phases.
- The quasi-calibration assumed no external sources other than the chemical mass trapped in the immobile domain and sorbed to the sediments at the beginning.

θ_t was held at a constant value of 0.4 in all transport modeling, a typical value for porous media. All other transport parameters were evaluated with D_L, D_T, D_V, Φ, γ, and K_d for all four COCs finalized during quasi-calibration. D_T and D_V were tied to D_L at ratios of D_L: D_T =10:1 and D_L: D_V =100:1, respectively. Table 5-2 summarizes the initial values, the minimum and maximum values allowed during calibration, and the calibrated values.

The DHL was included in the quasi-calibration involving 1,1-DCE where three different DHL values (DHL = 10 years, 20 years, and 50 years, respectively) were evaluated. It was discovered, however, that the short duration of the quasi-calibration period did not allow for a reasonable assessment of the influence of the DHL on the simulation results. As such, DHL was not included in the quasi-calibration effort involving the other three COCs. DHL values were further evaluated as part of the projection simulation (Section 5.6).

The modeled versus measured chemographs are included in Attachment A. For all four COCs, the model was capable of adequately matching the measured concentration ranges and trends to achieve the

modeling objectives (Section 1.2). The quasi-calibration was achieved through autocalibration by using PEST followed by manual adjustments. The quality of the quasi-calibration was assessed through visual inspection of the modeled and measured COC chemographs (Attachment A).

5.6 Further Evaluation of Degradation

DHL values were further evaluated using projection simulations with longer simulation periods of 100 years.

The initial transport conditions for the projection simulations were established by using the most current 2021 annual groundwater sampling event data in combination with results from the predesign investigation conducted in May and June 2022. Annual groundwater sampling was conducted in December 2021 where the 40 existing site monitoring wells were sampled. The predesign investigation used direct-push technology to collect discrete grab groundwater samples from 36 soil boring locations, with up to three samples at different depth intervals collected at each boring. For these soil boring samples, the maximum COC concentrations detected at each boring were used to establish the initial conditions for the project simulations.

Other than longer simulation periods and different initial conditions, the projection simulations had the same assumptions as the quasi-calibration runs (for example, instantaneous equilibrium between the liquid and the solid phases, no external COC sources, and no interactions among the different COCs during transport).

Two sets of DHL values were evaluated, both of which were converted from the site-specific AHLs using a conversion factor and rounding to the nearest 5 years (Table 5-3). The first DHL value (DHL1) was obtained using a conversion factor of 1.33, assuming that degradation alone contributed to 75 percent (1 ÷ 1.33) of the site-specific AHL. The second DHL value (DHL2) was obtained using a conversion factor of 2, assuming that degradation accounts for 50 percent of the site-specific AHL.

To evaluate the projection simulation results, the simulated concentrations for each COC were plotted alongside the measured concentrations at three selected monitoring wells (Figures 5-3a to 5-3d). The selection of monitoring wells focused on the wells located within or near the plume cores. The trends of the measured concentrations at the selected wells were established by fitting the post-2011 concentrations with decreasing trends and projecting the fits forward in time using the exponential trendlines.

The chemographs shown on Figures 5-3a to 5-3d indicate that the decreasing trends of the exponential fits to recent concentration data are generally steeper than the projected modeled trends. It is important to keep in mind that the portions of the exponential fits that are projected into the future do not consider “tailing,” which often occurs at environmental sites. Tailing is when the concentration trends through time slow down and persist for longer periods at a given concentration. The modeled projections include transport processes that can result in tailing, which is why the projected trendlines are not as steep as the extrapolated exponential fits. Regardless, the projected DHL1 concentration trends are more consistent than the DHL2 trends relative to the measured data trends. DHL1 values were therefore retained in the subsequent projection simulations.

6.0 Projection Transport Scenario Simulation Results

In order to assess the benefit of operating the North Treatment System in accelerating the restoration of the affected aquifer and in preventing COC migration into surface water bodies, comparative transport scenario simulations were conducted assuming the operation of the North Treatment System. The projection simulations were set up as follows:

- The four COCs were included in the evaluation, assuming no interactions among the different COCs.
- The projection simulations had simulation periods of 100 years.

- The measured COC concentrations in the December 2021 sampling and during the predesign investigation conducted in May and June 2022 were spatially distributed via kriging to establish the initial transport conditions in both the mobile and immobile domains.
- The projection simulations assume instantaneous equilibrium between the solid and the liquid phases.
- The projection simulations assume no external sources other than the chemicals trapped in the immobile domain and sorbed to the sediments at the beginning of the projection.
- The transport parameters were held at the values finalized through the evaluations discussed in Section 5 shown in Tables 5-2 and 5-3.
- Projection simulations assume the operation of the North Treatment System at 2015 pumping rates, the latest rates recorded before the North Treatment System was shut down.

Figures 6-1a through 6-1d show the initial COC distributions for the projection simulations.

For each projection simulation, the modeled plume area, defined as the two-dimensional, planar plume area with modeled concentrations exceeding the cPCL, was calculated. For each COC, the plume areas over time projected under MNA (no pumping) conditions were plotted alongside those projected assuming the operation of the North Treatment System.

Figure 6-2 show the model projected plume areas for the four COCs. The projected plume sizes decrease over time for all scenarios. For 1,1-DCE and vinyl chloride, the reduction in projected plume sizes is slightly faster with the operation of the North Treatment System than under MNA alone. For PCE and TCE, the reduction rates in projected plume sizes are identical with or without the operation of the North Treatment System.

Table 6-1 summarizes the projected remediation timeframes, defined as the time required to reduce the plume size to zero, for all projection simulations, starting from 2022. TCE dominates the projected remediation timeframe, requiring 70 years under MNA and 63 years assuming the operation of the North Treatment System to restore the aquifer to less than the cPCL of 5 µg/L. For 1,1-DCE, the projected remediation timeframe is 47 years with and without the operation of the North Treatment System. The projected remediation timeframes for vinyl chloride and PCE are less than 30 years with or without the operation of the North Treatment System.

Impacts on the surface water bodies by the COC plumes were evaluated by examining the modeled COC concentrations in groundwater at seven selected locations adjacent to the surface water bodies: one for the TxDOT Silber Tunnel, two for HCFCD, three for Buffalo Bayou, and one for Incised Drain 3 (Figures 6-3a to 6-3d). For each COC, the projected concentrations under MNA and assuming the operation of the North Treatment System were plotted on the same graph for comparison.

As shown on Figures 6-3a through 6-3d, the simulations projected that concentrations of the four COCs in groundwater discharging to the surface water bodies would generally decrease over time. The rate of reduction in modeled concentrations would generally be the same with or without the operation of the North Treatment System. The simulations further suggest that COC discharge concentrations would remain less than their respective groundwater cPCLs at all selected locations throughout the entire simulation period.

7.0 Conclusions

Section 1.2 describes the modeling objectives, which have been achieved. Groundwater flow and transport modeling were conducted to estimate the remediation timeframes at the site located on Silber Road in Houston, Texas. Quasi-calibration of the solute transport models was performed to estimate the transport parameter values that are suitable for the site conditions. Comparative

projection simulations were conducted under MNA assumptions with and without the operation of the North Treatment System. The results of the projection simulations indicate the following:

- TCE has the longest remediation timeframe, with estimated remediation timeframes of 70 years under MNA only and 63 years assuming the operation of the North Treatment System. 1,1-DCE has the second-longest estimated remediation timeframe of 47 years under MNA with or without the operation of the North Treatment System. The estimated remediation timeframes for vinyl chloride and PCE are shorter and would not exceed 30 years with or without the operation of the North Treatment System, according to the model.
- Continuous operation of the North Treatment System at 2015 rates might shorten the remediation timeframe of TCE from 70 years to 63 years, and for vinyl chloride from 29 years to 26 years. Operation of the North Treatment System would not accelerate the remediation of the PCE and 1,1-DCE plumes, according to the model.
- HCFCD, Buffalo Bayou, and the Silber Tunnel dewatering systems would not be affected by groundwater with COC concentrations exceeding the protective concentration levels, with or without the operation of the North Treatment system.

8.0 References

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Tables

Table 4-1. Comparison of Modeled and Target Heads

2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility, Houston, Texas

Well	Target Head (feet NAVD88)	Modeled Head (feet NAVD88)	Residual [a] (feet)
MW-01	48.73	48.66	-0.07
MW-15R	46.14	46.29	0.15
MW-16R	45.80	45.81	0.01
MW-17R	44.44	44.52	0.08
MW-50R	49.22	49.24	0.02
MW-65	46.72	46.73	0.01
MW-70	45.79	45.78	-0.01
MW-71	44.27	44.49	0.22
MW-74	43.14	43.39	0.25
MW-76	40.83	40.89	0.06
MW-77	43.75	43.92	0.17
MW-83	37.27	37.49	0.22
MW-88	34.28	34.51	0.23
MW-89	31.47	31.73	0.26
MW-90	32.98	32.92	-0.06
MW-92	28.41	29.23	0.82
MW-93R	28.88	28.45	-0.43
MW-97	30.71	31.07	0.36
MW-98	27.42	27.29	-0.13
MW-100	44.43	44.37	-0.06
MW-106	24.45	25.15	0.70
MW-108	47.30	47.52	0.22
MW-109	48.08	47.46	-0.62
MW-110	46.82	47.06	0.24
MW-111	46.43	46.57	0.14
MW-112	46.05	46.25	0.20
MW-113	45.82	45.81	-0.01
MW-121	40.39	40.64	0.25
MW-122	39.28	39.49	0.21
MW-145	39.69	39.87	0.18
MW-146	38.79	38.61	-0.18

Table 4-1. Comparison of Modeled and Target Heads

2022 Groundwater Modeling Technical Memorandum

Former Cameron Iron Works Facility, Houston, Texas

Well	Target Head (feet NAVD88)	Modeled Head (feet NAVD88)	Residual [a] (feet)
MW-147	37.87	37.67	-0.20
MW-160	35.60	35.19	-0.41
MW-161	33.78	33.17	-0.61
MW-162	31.63	33.58	1.95
MW-163	37.73	38.57	0.84
MW-168	32.32	32.21	-0.11
MW-178	39.36	39.07	-0.29
MW-179	27.45	27.57	0.12

[a] Residual was computed as the modeled head value minus the target head value.

Note:

NAVD88 = North American Vertical Datum of 1988

Table 4-2. Modeled Model Layer 1 Groundwater Balance

2022 Groundwater Modeling Technical Memorandum

Former Cameron Iron Works Facility, Houston, Texas

	Groundwater Balance Term	Volumetric Rate (gpm)
Inflows	Groundwater Recharge from Precipitation	271.1
	Subsurface Inflow Along Northern Boundary	10.2
	Groundwater Recharge from Buffalo Bayou	0.2
	Total Groundwater Inflows	***281.5***
Outflows	Groundwater Discharge to Buffalo Bayou	155.8
	Groundwater Discharge to Silber Tunnel	50.2
	Subsurface Outflow Along Southern Boundary	26.8
	Downward Vertical Flow through Aquitard	20.2
	Groundwater Discharge to HCFCD	11.8
	Groundwater Discharge to Incised Drain 3	12.0
	Groundwater Discharge to Incised Drain 2	4.7
	Total Groundwater Outflows	***281.5***

Notes:

gpm = gallon(s) per minute

HCFCD = Harris County Flood Control Ditch

Table 5-1. Estimated Sorption Coefficients

2022 Groundwater Modeling Technical Memorandum

Former Cameron Iron Works Facility, Houston, Texas

Constituent	K_{oc} (cm^3/g)	K_d (cm^3/g)
1,1-DCE	65	1.30×10^{-1}
Vinyl Chloride	18.6	3.72×10^{-2}
PCE	155	3.10×10^{-1}
TCE	166	3.32×10^{-1}

Notes:

cm^3/g= cubic centimeter(s) per gram

1,1-DCE = 1,1-dichloroethene

Koc = organic carbon-water partitioning coefficient

Kd = sorption coefficient

PCE = tetrachloroethene

TCE = trichloroethene

Table 5-2. Transport Parameters Evaluated During Quasi-calibration

2022 Groundwater Modeling Technical Memorandum

Former Cameron Iron Works Facility, Houston, Texas

Transport Parameter	Initial Value	Minimum	Maximum	Calibrated
D_L (feet)	10	1	50	50
D_T (feet)	1	0.1	5	5
D_V (feet)	0.1	0.01	0.5	0.5
Φ	0.25	0.025	1	0.27
γ (d^{-1})	1.00×10^{-5}	1.00×10^{-6}	1.00×10^{-4}	2.74×10^{-5}
K_d for 1,1-DCE (cm^3/g)	1.30×10^{-1}	1.30×10^{-2}	1.30×10^{0}	1.30×10^{-1}
K_d for Vinyl Chloride (cm^3/g)	3.72×10^{-2}	3.72×10^{-3}	3.72×10^{-1}	3.72×10^{-2}
K_d for PCE (cm^3/g)	3.10×10^{-1}	3.10×10^{-2}	3.10×10^{0}	3.10×10^{-1}
K_d for TCE (cm^3/g)	3.32×10^{-1}	3.32×10^{-2}	3.32×10^{0}	3.32×10^{-1}

Notes:

γ = mass transfer coefficient

Φ = fraction of mobile porosity

cm^3/g = cubic centimeters per gram

d^{-1}= 1/day

D_L = longitudinal dispersivity

D_T = transverse dispersivity

D_V = vertical dispersivity

K_d = sorption coefficient

1,1-DCE = 1,1-dichloroethene

Maximum = maximum value allowed during quasi-calibration

Minimum = minimum value allowed during quasi-calibration

PCE = tetrachloroethene

TCE = trichloroethene

Table 5-3. DHLs Evaluated in Projection Simulations

2022 Groundwater Modeling Technical Memorandum

Former Cameron Iron Works Facility, Houston, Texas

Constituent	ARC (year^{-1})	AHL (years)	DHL1 (years)	DHL2 (years)
1,1-DCE	0.046	15.1	20	30
Vinyl Chloride	0.086	8.1	10	15
PCE	0.154	4.5	5	10
TCE	0.050	13.9	20	30

Notes:

ARC = attenuation rate constant

AHL = attenuation half-life

1,1-DCE = 1,1-dichloroethene

DHL1 = degradation half-life converted from the AHL using a conversion factor of 1.33 and rounding to the nearest 5 years

DHL2 = degradation half-life converted from the AHL using a conversion factor of 2 and rounded to the nearest 5 years

PCE = tetrachloroethene

TCE = trichloroethene

Table 6-1. Projected Remediation Timeframes

2022 Groundwater Modeling Technical Memorandum

Former Cameron Iron Works Facility, Houston, Texas

Constituent	cPCL (µg/L)	Projected Remediation Timeframe (Years) [a]	
		MNA Only	With Remedy Operation
1,1-DCE	7	47	47
Vinyl Chloride	2	29	26
PCE	5	22	22
TCE	5	70	63

[a] The remediation time is projected from year 2022.

Notes:

µg/L = micrograms per liter

cPCL = critical protective concentration level

1,1-DCE = 1,1-dichloroethene

MNA = monitored natural attenuation

PCE = tetrachloroethene

TCE = trichloroethene

Figures

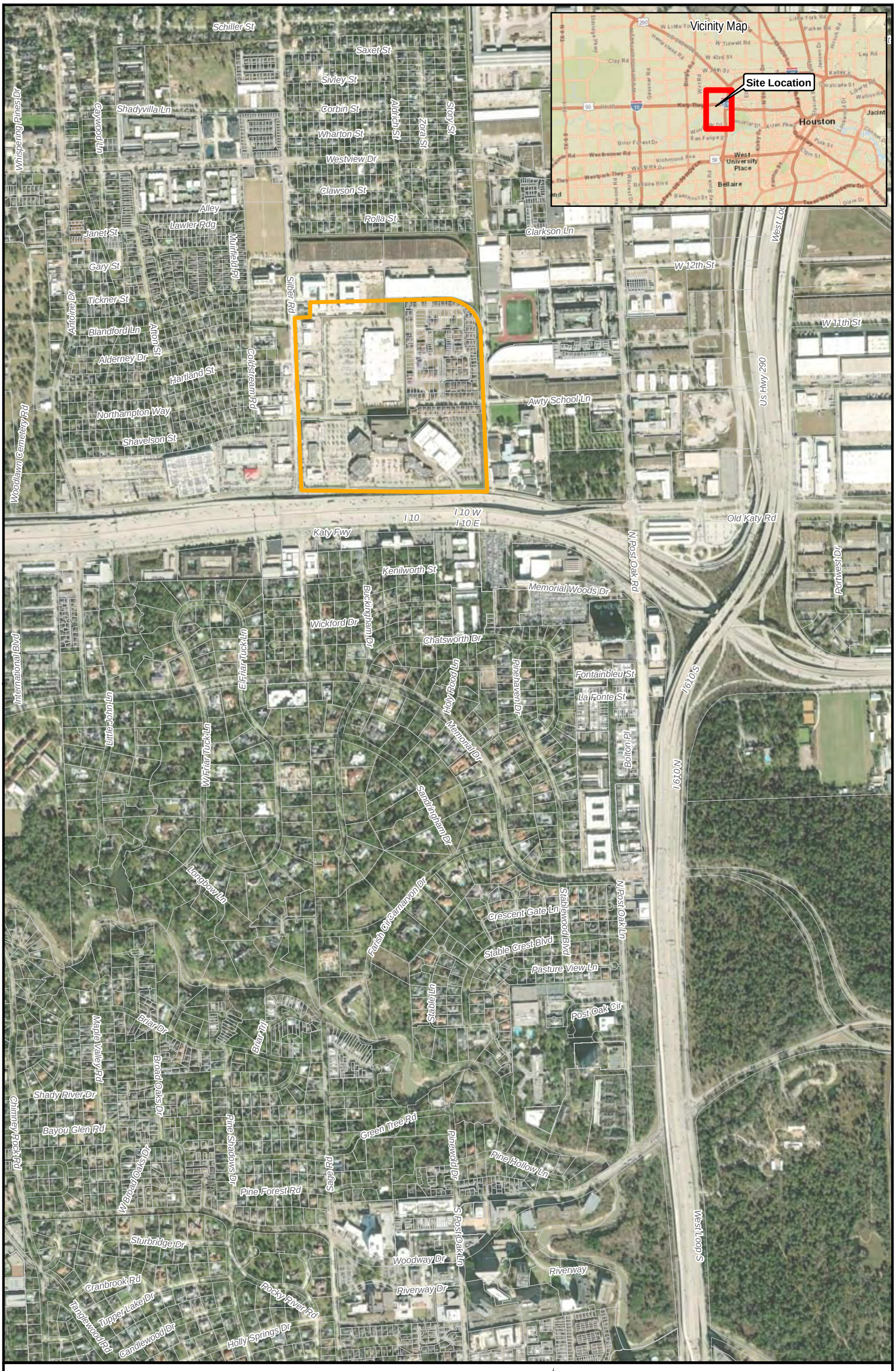

Figure 1-1.
Site Location
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility, Houston, TX

CH2M HILL Engineers, Inc.

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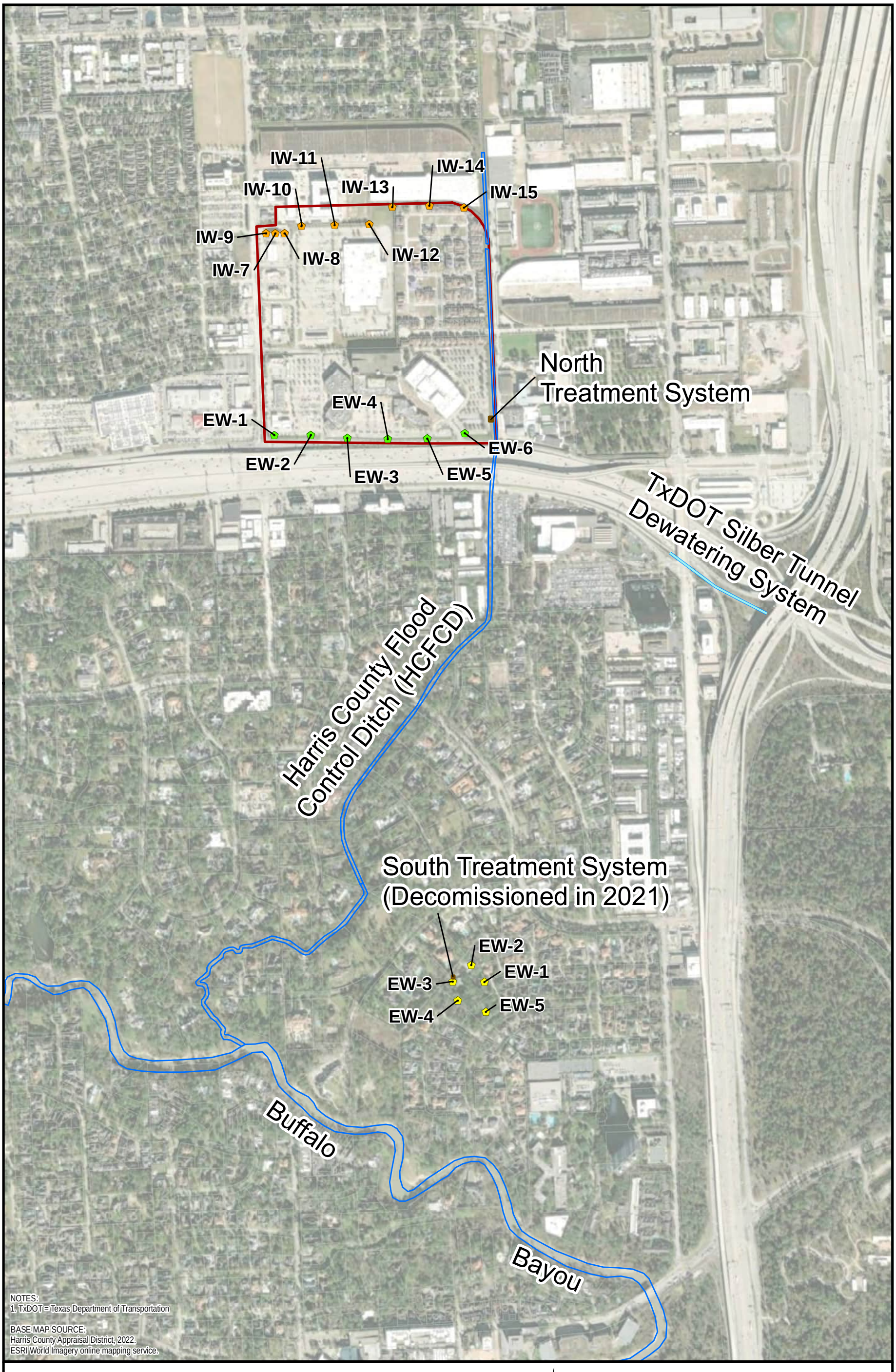

Figure 2-1.
Site Layout
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility, Houston, TX

CH2M HILL Engineers, Inc.

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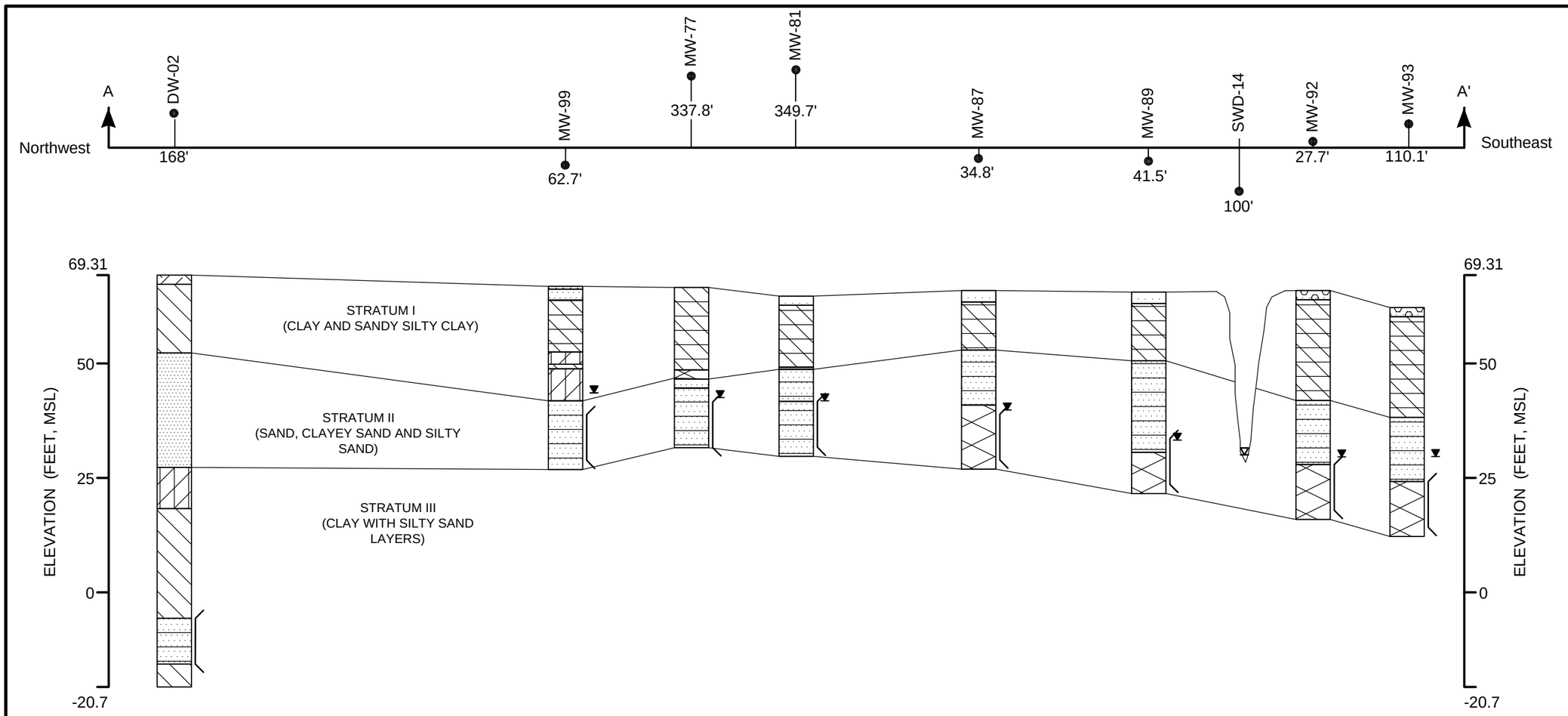
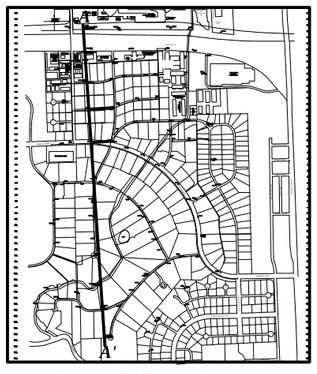
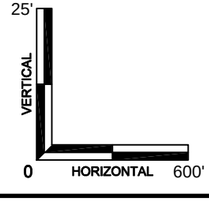




CROSS-SECTION LOCATION
SCALE : 1"=2497'

LEGEND

- CLAY
- SILT
- SAND
- SILTY CLAY
- CLAYEY SILT
- SILTY SAND
- FILL
- CONCRETE
- NO RECOVERY
- HARRIS COUNTY FLOOD CONTROL DITCH
- GROUND WATER ELEVATION FOR DECEMBER 9, 2002
- DITCH SURFACE WATER ELEVATION WAS ESTIMATED USING SURVEYED DATA.
- SCREENED INTERVAL

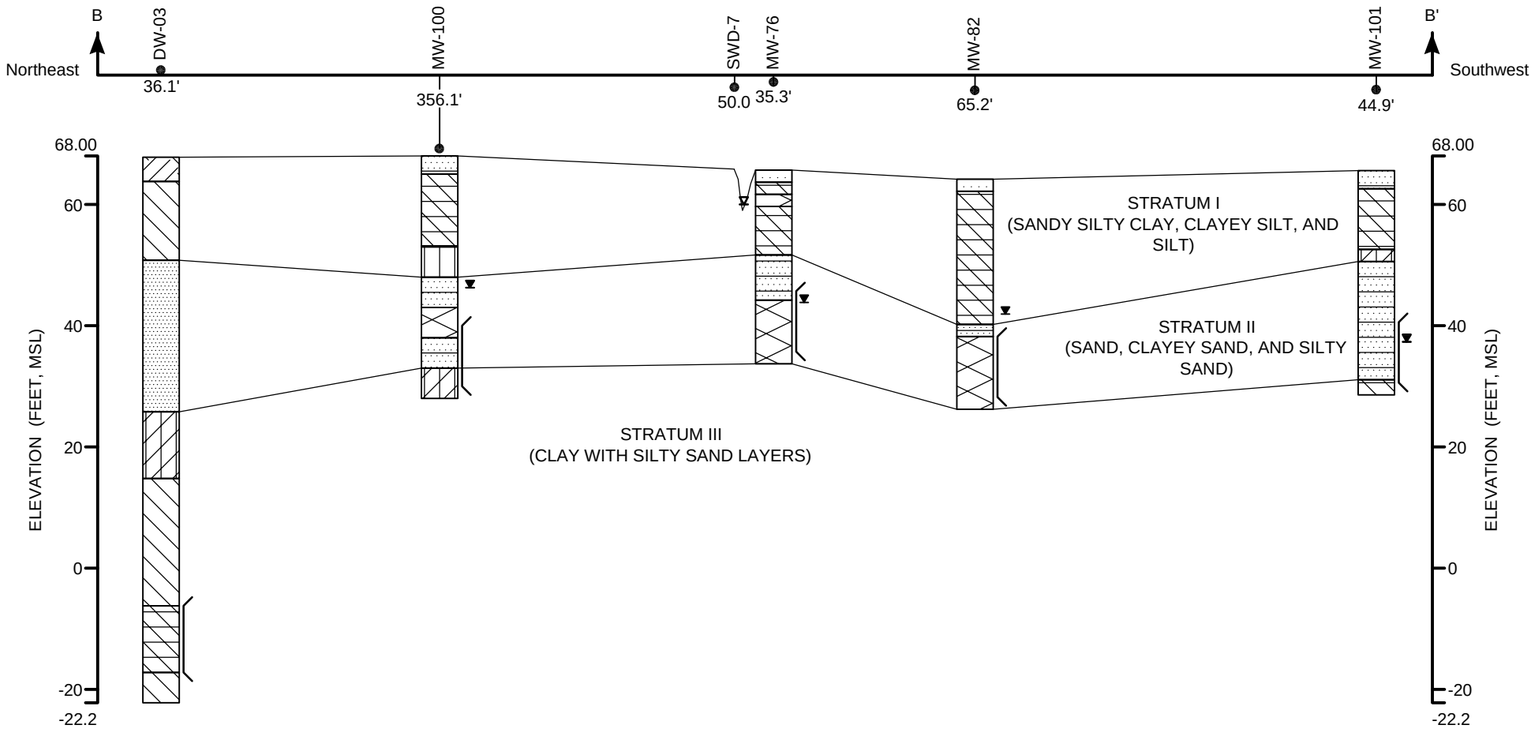


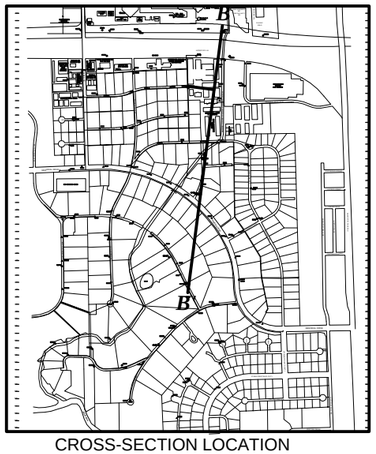
NOTES:

1. THE SIDE SLOPES OF THE HARRIS COUNTY FLOOD CONTROL DITCH WERE ESTIMATED. THE BOTTOM ELEVATION OF THE DITCH WAS SURVEYED.
2. 168' = 168 FEET
3. MSL = (ABOVE) MEAN SEA LEVEL

Figure 2-2a.
Cross Section A-A'
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility
Houston, Texas
CH2M HILL Engineers, Inc.

origin: EMR, 2003





CROSS-SECTION LOCATION
SCALE: 1"=2043'

LEGEND

- CLAY
- SILT
- SAND
- SILTY CLAY
- CLAYEY SILT
- SILTY SAND
- FILL
- CONCRETE
- NO RECOVERY
- HARRIS COUNTY FLOOD CONTROL DITCH
- GROUND WATER ELEVATION FOR DECEMBER 9, 2002
- DITCH SURFACE WATER ELEVATION WAS ESTIMATED USING SURVEYED DATA.
- SCREENED INTERVAL

NOTES:

1. THE SIDE SLOPES OF THE HARRIS COUNTY FLOOD CONTROL DITCH WERE ESTIMATED. THE BOTTOM ELEVATION OF THE DITCH WAS SURVEYED.
2. 168' = 168 FEET
3. MSL = (ABOVE) MEAN SEA LEVEL

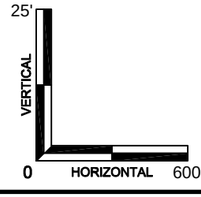
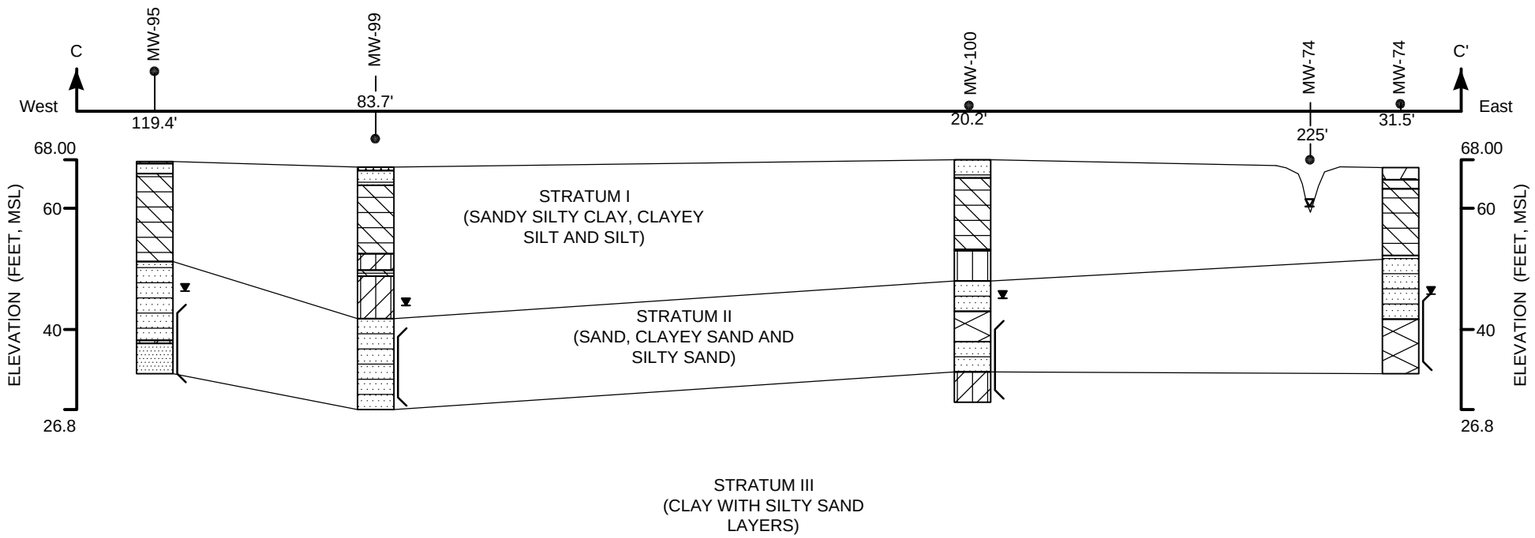
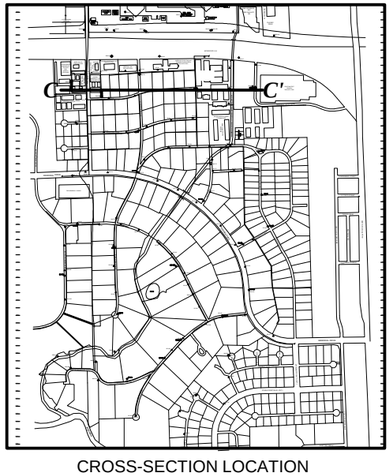


Figure 2-2b.
Cross Section B-B'
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility
Houston, Texas
CH2M HILL Engineers, Inc.

origin: EMR, 2003

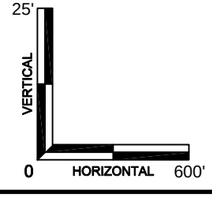




CROSS-SECTION LOCATION
SCALE: 1" =2030'

LEGEND

- CLAY
- SILT
- SAND
- SILTY CLAY
- CLAYEY SILT
- SILTY SAND
- FILL
- CONCRETE
- NO RECOVERY
- HARRIS COUNTY FLOOD CONTROL DITCH
- GROUND WATER ELEVATION FOR DECEMBER 9, 2002
- DITCH SURFACE WATER ELEVATION WAS ESTIMATED USING SURVEYED DATA.
- SCREENED INTERVAL

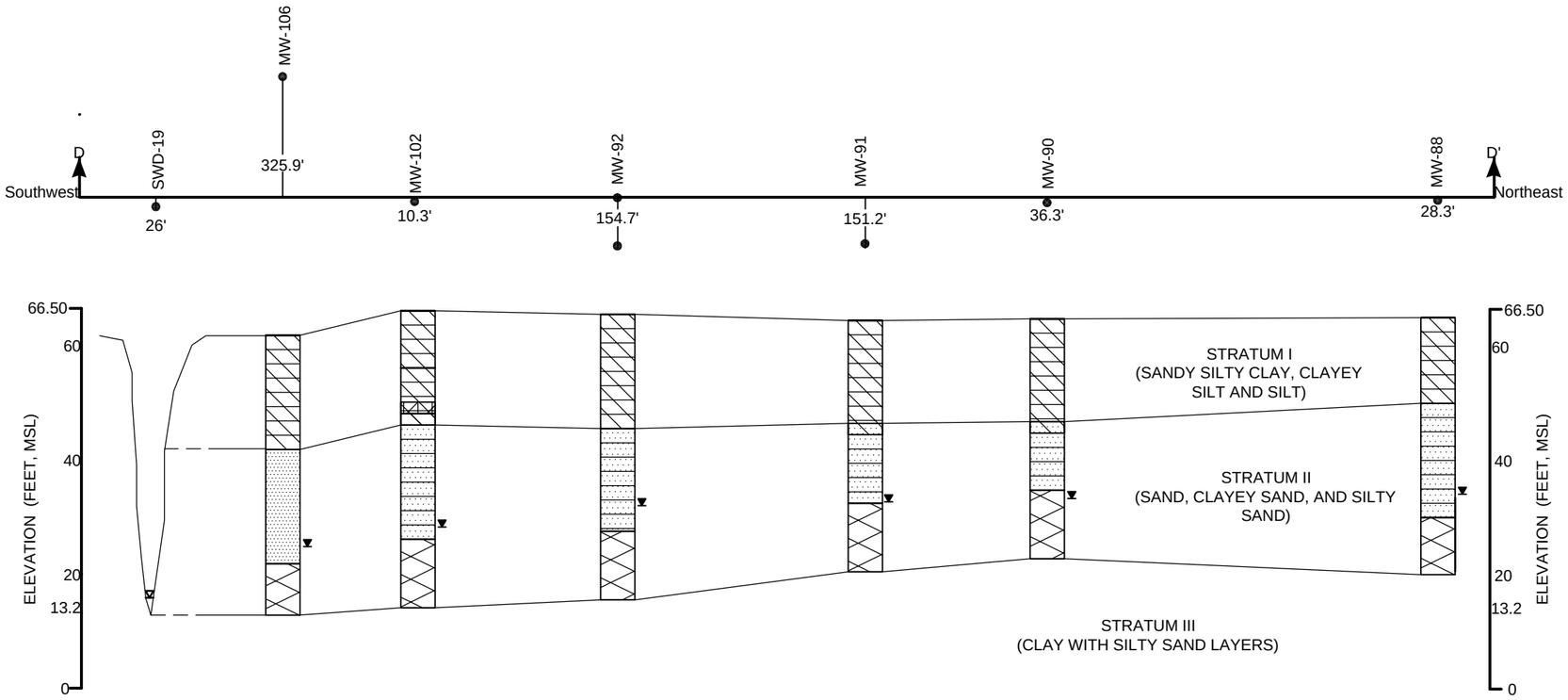


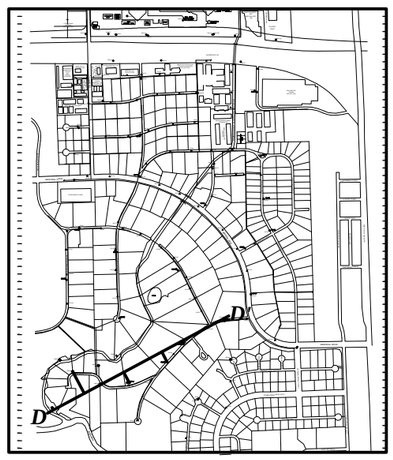
NOTES:

1. THE SIDE SLOPES OF THE HARRIS COUNTY FLOOD CONTROL DITCH WERE ESTIMATED. THE BOTTOM ELEVATION OF THE DITCH WAS SURVEYED.
2. 168' = 168 FEET
3. MSL = (ABOVE) MEAN SEA LEVEL

Figure 2-2c.
Cross Section C-C'
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility
Houston, Texas
CH2M HILL Engineers, Inc.

origin: EMR, 2003

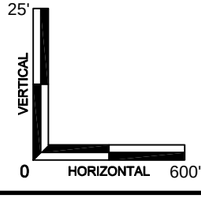




CROSS-SECTION LOCATION
SCALE: 1" =1962'

LEGEND

- CLAY
- SILT
- SAND
- SILTY CLAY
- CLAYEY SILT
- SILTY SAND
- FILL
- CONCRETE
- NO RECOVERY
- HARRIS COUNTY FLOOD CONTROL DITCH
- GROUND WATER ELEVATION FOR DECEMBER 9, 2002
- DITCH SURFACE WATER ELEVATION WAS ESTIMATED USING SURVEYED DATA.
- SCREENED INTERVAL



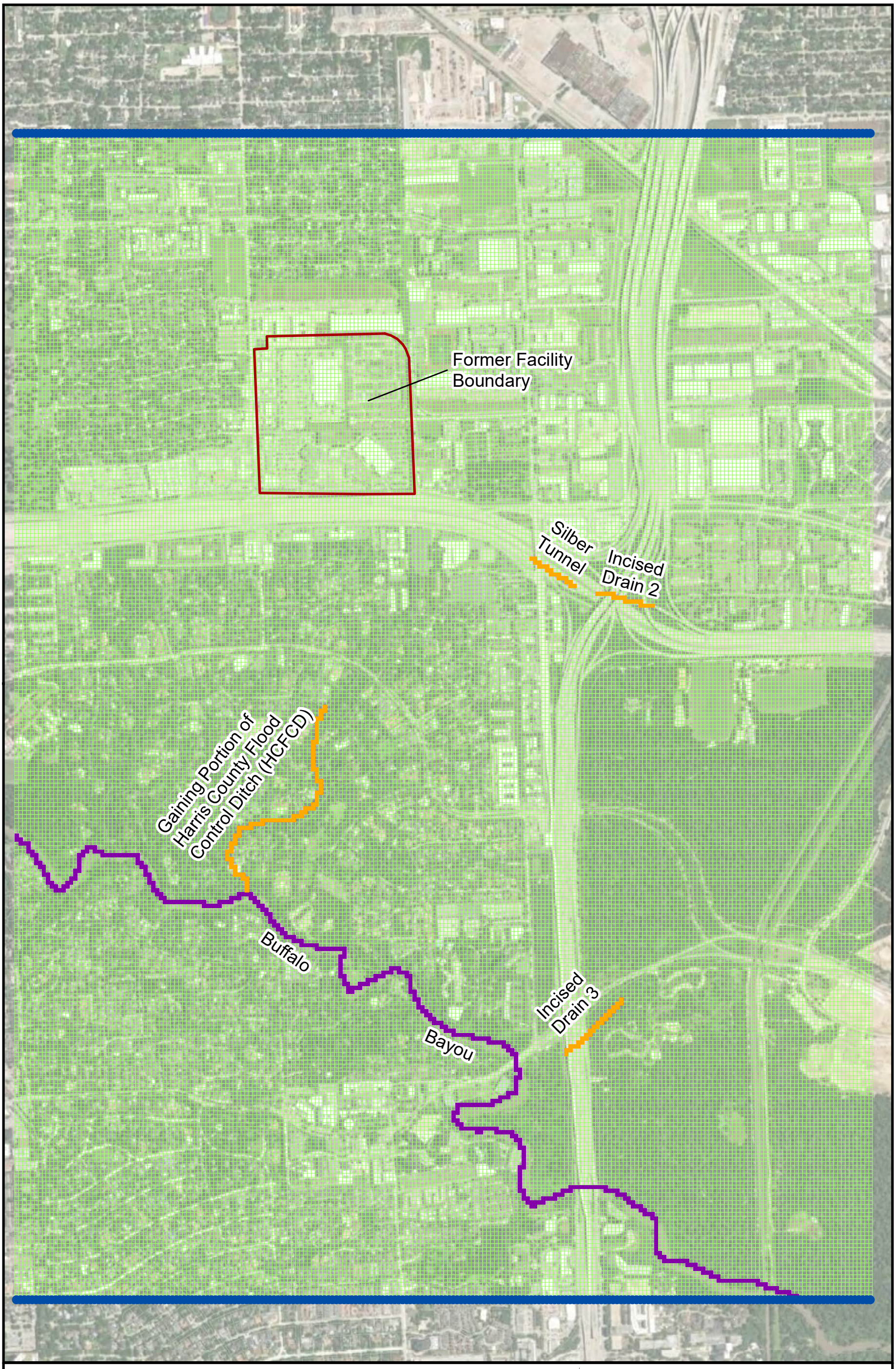
NOTES:

1. THE SIDE SLOPES OF THE HARRIS COUNTY FLOOD CONTROL DITCH WERE ESTIMATED. THE BOTTOM ELEVATION OF THE DITCH WAS SURVEYED.
2. 168' = 168 FEET
3. MSL = (ABOVE) MEAN SEA LEVEL

Figure 2-2d.
Cross Section D-D'
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility
Houston, Texas

CH2M HILL Engineers, Inc.

origin: EMR, 2003



Legend

- Specified Head
- Former Facility Boundary
- Drain
- River
- Model Grid
- Parcel

NOTES:
1. A specified-flux boundary representing areal groundwater recharge is assigned at each Model Layer 1 cell not already assigned a different boundary condition.
2. Neither head nor flux is assigned to the eastern and western boundaries. They effectively serve as no-flow boundaries.

BASE MAP SOURCE:
Harris County Appraisal District, 2022.
ESRI World Imagery online mapping service.

N

0 600 1,200

Approximate scale in feet

Figure 3-1.
Model Grid and Flow Boundary Conditions
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility, Houston, TX

CH2M HILL Engineers, Inc.

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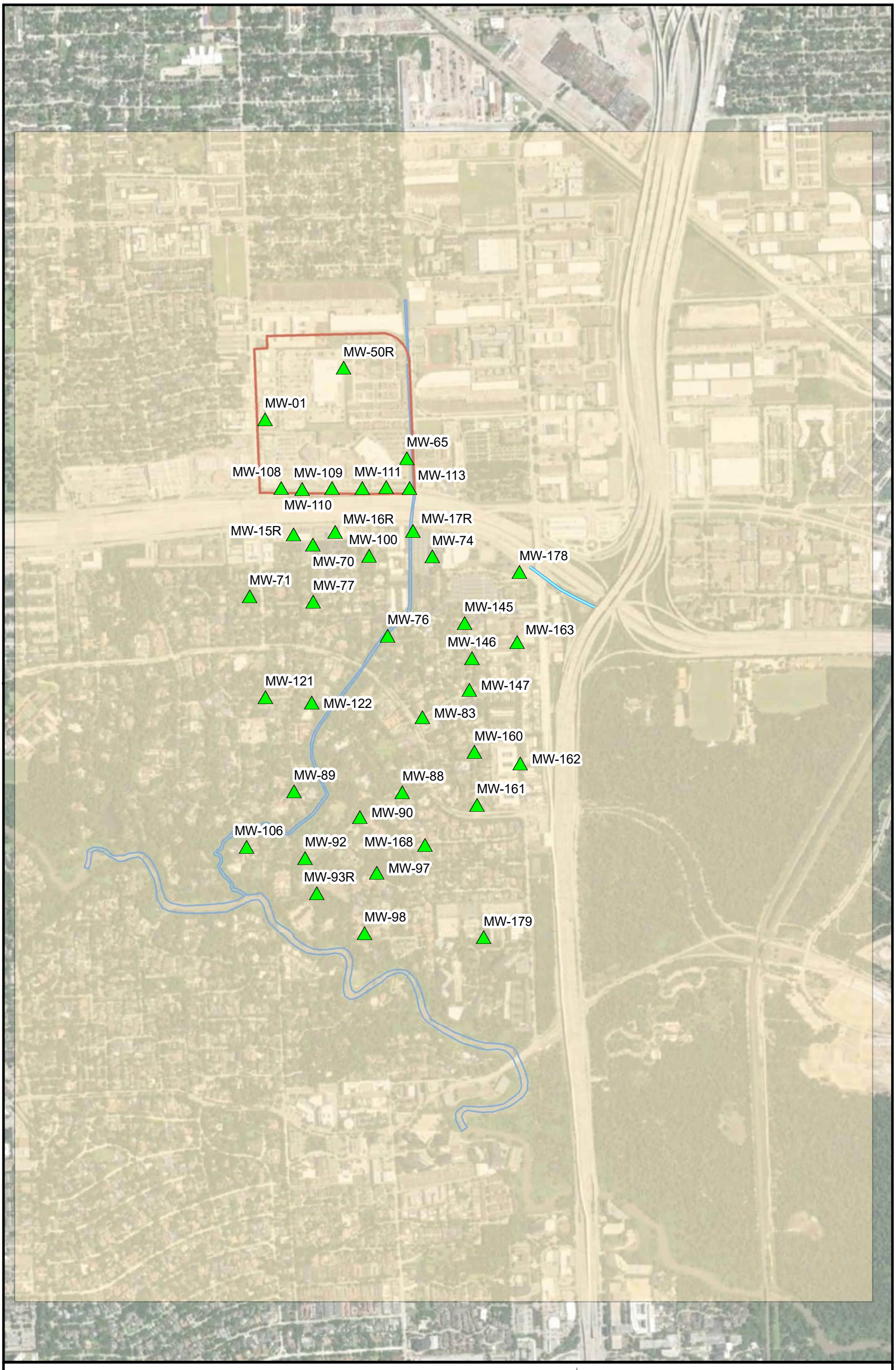

Legend

- Calibration Target
- TxDOT Silber Tunnel Dewatering System
- Model Domain
- Former Facility Boundary
- Flood Control

NOTES:
1. TxDOT = Texas Department of Transportation

BASE MAP SOURCE:
ESRI World Imagery online mapping service.

N

0 600 1,200

Approximate scale in feet

Figure 4-1.
Calibration Target Locations
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility, Houston, TX

CH2M HILL Engineers, Inc.

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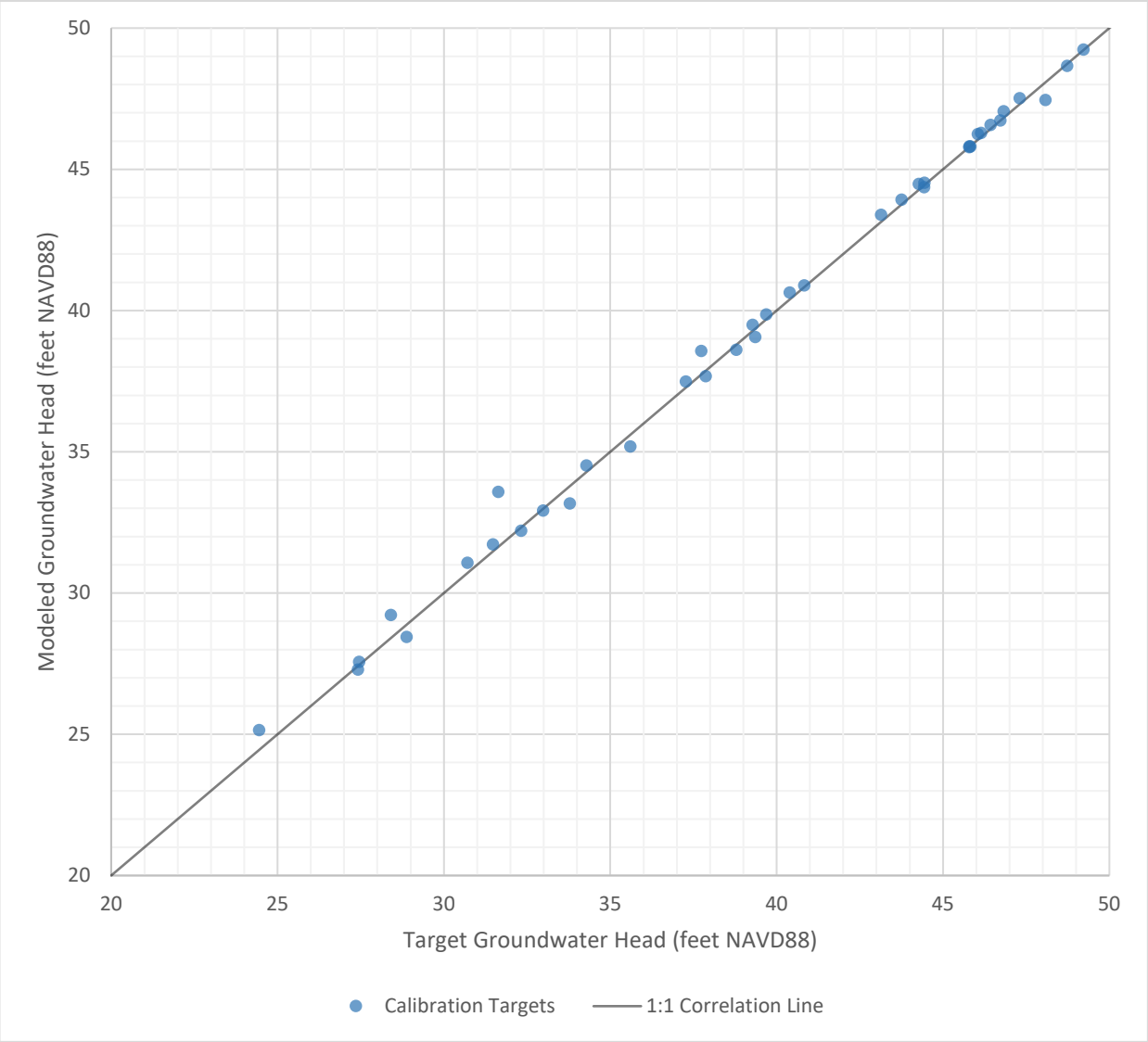

Note:
NAVD88 = North American Vertical Datum of 1988

Figure 4-2.
Modeled versus Target Heads
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility
Houston, Texas
CH2M HILL Engineers, Inc.

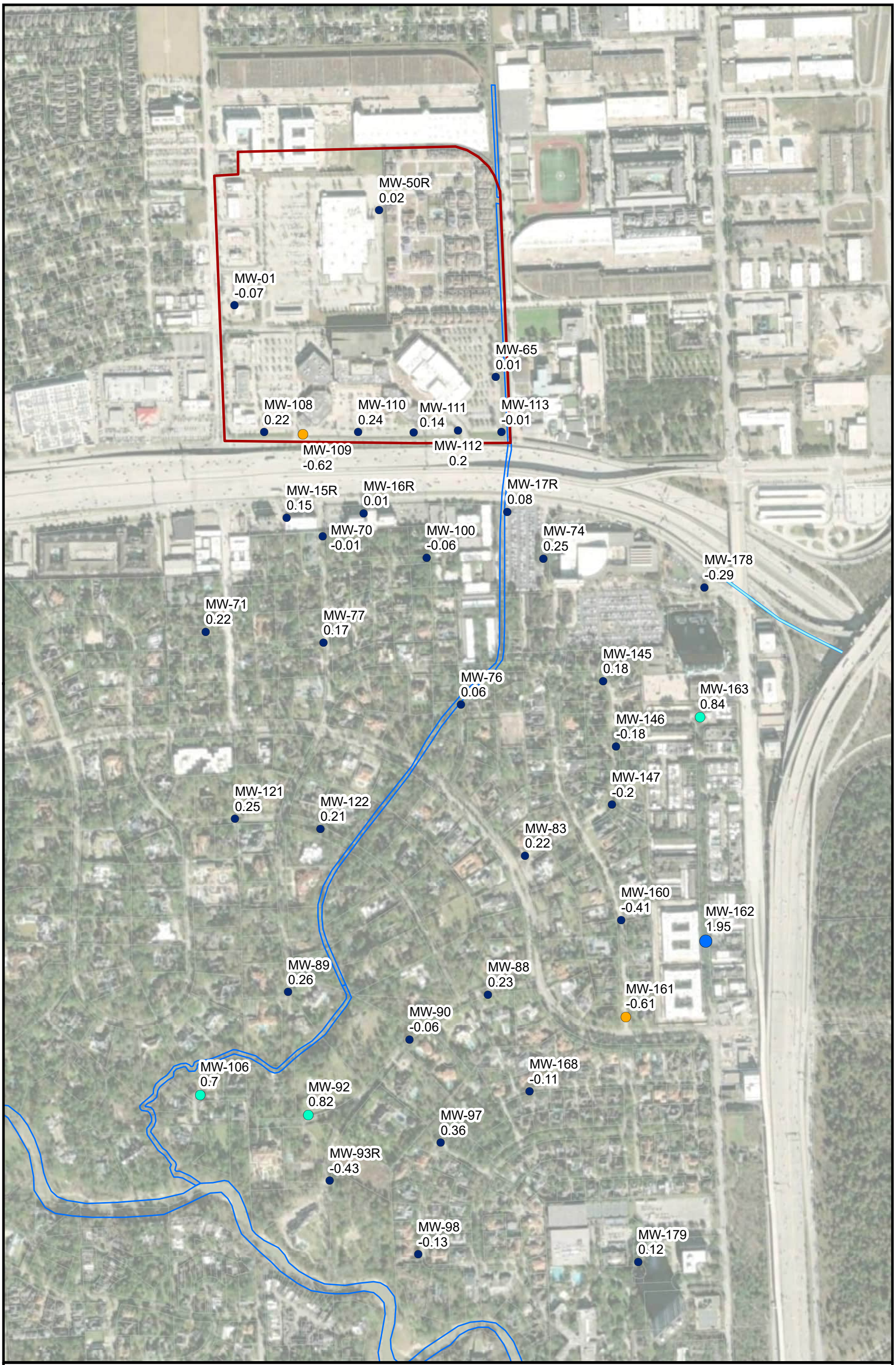

Figure 4-3.
Calibration Head Residuals
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility, Houston, TX

CH2M HILL Engineers, Inc.

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MW-50R
MW-01
MW-65
MW-108
MW-112
MW-113
MW-109
MW-110
MW-111
MW-16R
MW-17R
MW-15R
MW-74
MW-70
MW-100
MW-178
MW-71
MW-77
MW-145
MW-76
MW-163
MW-146
MW-147
MW-121
MW-122
MW-83
MW-160
MW-162
MW-89
MW-88
MW-161
MW-90
MW-106
MW-168
MW-92
MW-97
MW-93R
MW-98
MW-179

BASE MAP SOURCE:
ESRI World Imagery online mapping service.

NOTES:
1. Summary statistics of calibrated horizontal hydraulic conductivity (feet per day):
Min = 0.1; Max = 93.2; Mean = 26.6; Standarded deviation = 25.0
2. ft = feet
3. TxDOT = Texas Department of Transportation

Legend

- Calibration Target
- TxDOT Silber Tunnel Dewatering System
- Former Facility Boundary
- Flood Control

Horizontal Hydraulic Conductivity (ft/day)

- 0.1 - 1
- 1 - 5
- 5 - 10
- 10 - 25
- 25 - 50
- 50 - 100

N

0 600 1,200

Approximate scale in feet

Figure 4-4.
Calibrated Horizontal Hydraulic Conductivity
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility, Houston, TX

CH2M HILL Engineers, Inc.

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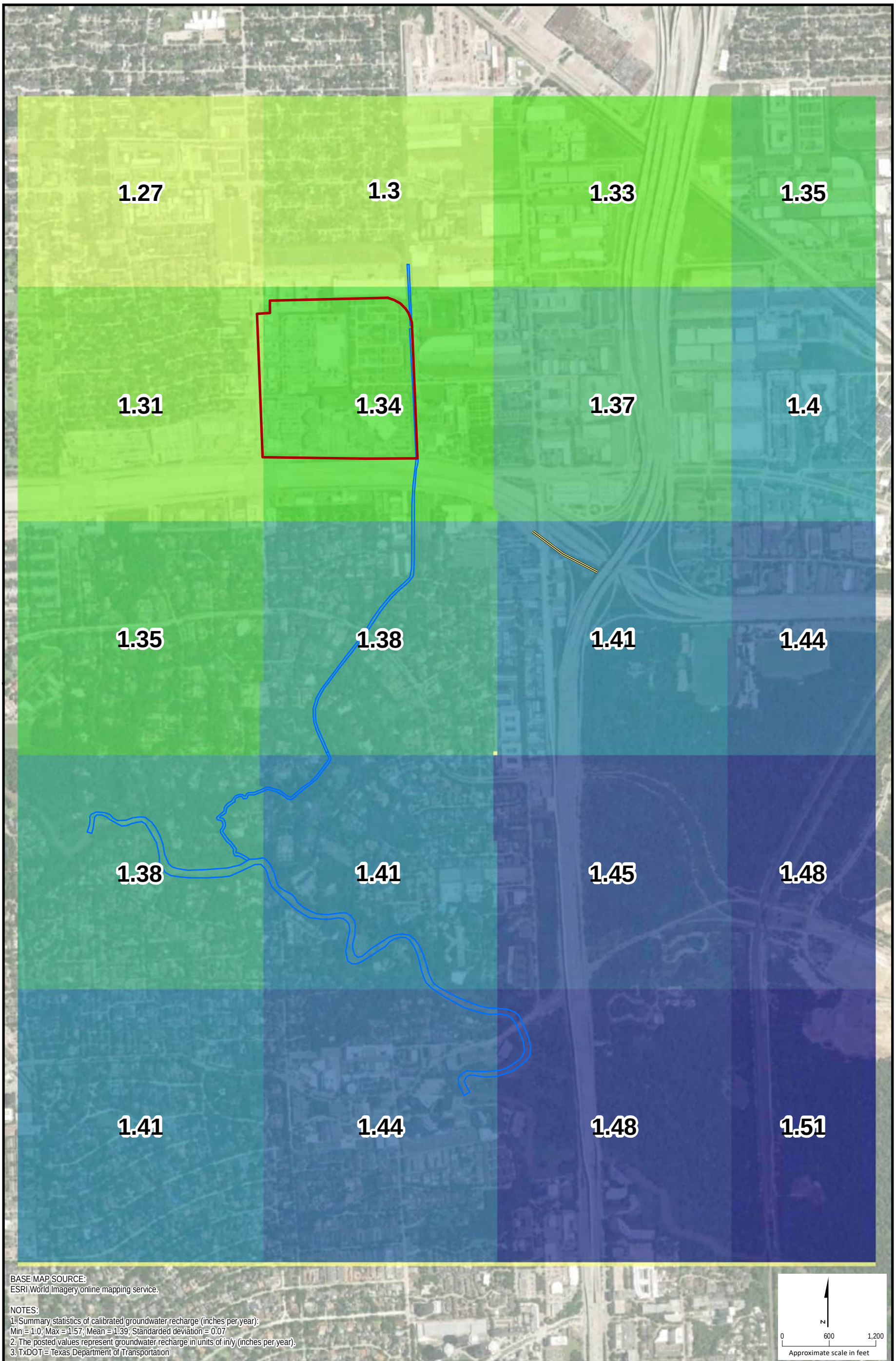

Figure 4-5.
Calibrated Groundwater Recharge
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility, Houston, TX

CH2M HILL Engineers, Inc.

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Silber Tunnel

Incised Drain 2

Gaining Portion of Harris County Flood Control Ditch (HCFCD)

Buffalo Bayou

Incised Drain 3

N

0 600 1,200

Approximate scale in feet

Legend

- North Treatment System Extraction Well
- Injection Wells
- Specified Head
- Former Facility Boundary
- Drain
- River
- Model Grid
- Parcel

NOTES:
1. A specified-flux boundary representing areal groundwater recharge is assigned at each Model Layer 1 cell not already assigned a different boundary condition.
2. Neither head nor flux is assigned to the eastern and western boundaries. They effectively serve as no-flow boundaries.

BASE MAP SOURCE:
Harris County Appraisal District, 2022.
ESRI World Imagery online mapping service.

Figure 5-1.
Updated Boundary Conditions for Transport Projection Simulations
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility, Houston, TX

CH2M HILL Engineers, Inc.

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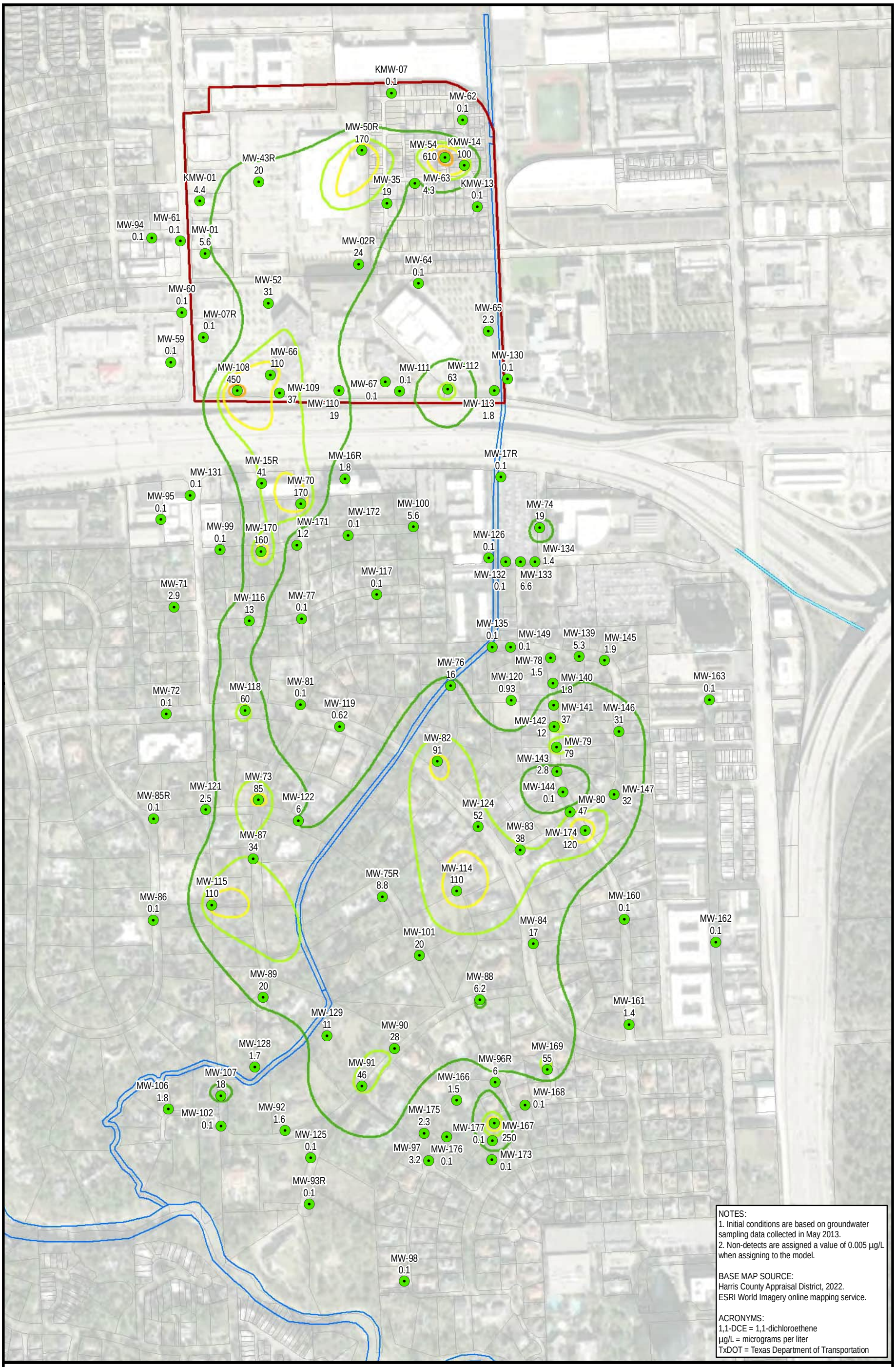

NOTES:
1. Initial conditions are based on groundwater sampling data collected in May 2013.
2. Non-detects are assigned a value of 0.005 µg/L when assigning to the model.

BASE MAP SOURCE:
Harris County Appraisal District, 2022.
ESRI World Imagery online mapping service.

ACRONYMS:
1,1-DCE = 1,1-dichloroethene
µg/L = micrograms per liter
TxDOT = Texas Department of Transportation

Legend

- 1,1-DCE Concentration (µg/L), May 2013
- TxDOT Silber Tunnel Dewatering System
- Former Facility Boundary
- Flood Control
- Parcel

1,1-DCE Plume Contours (µg/L), May 2013

- 7
- 35
- 70
- 350

N

0 300 600

Approximate scale in feet

Figure 5-2a.
1,1-DCE Plume Initial Conditions for Quasi-calibration
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility, Houston, TX

CH2M HILL Engineers, Inc.

\\brookside\GIS_SHARE - \\dc1vs01\gisproj\C\Cameron\Kerang\Silber_RD\MapFiles\TM_Figures\Figure5-2a_DCE_May2013.mxd gtwigg 9/15/2022 11:33:58 AM

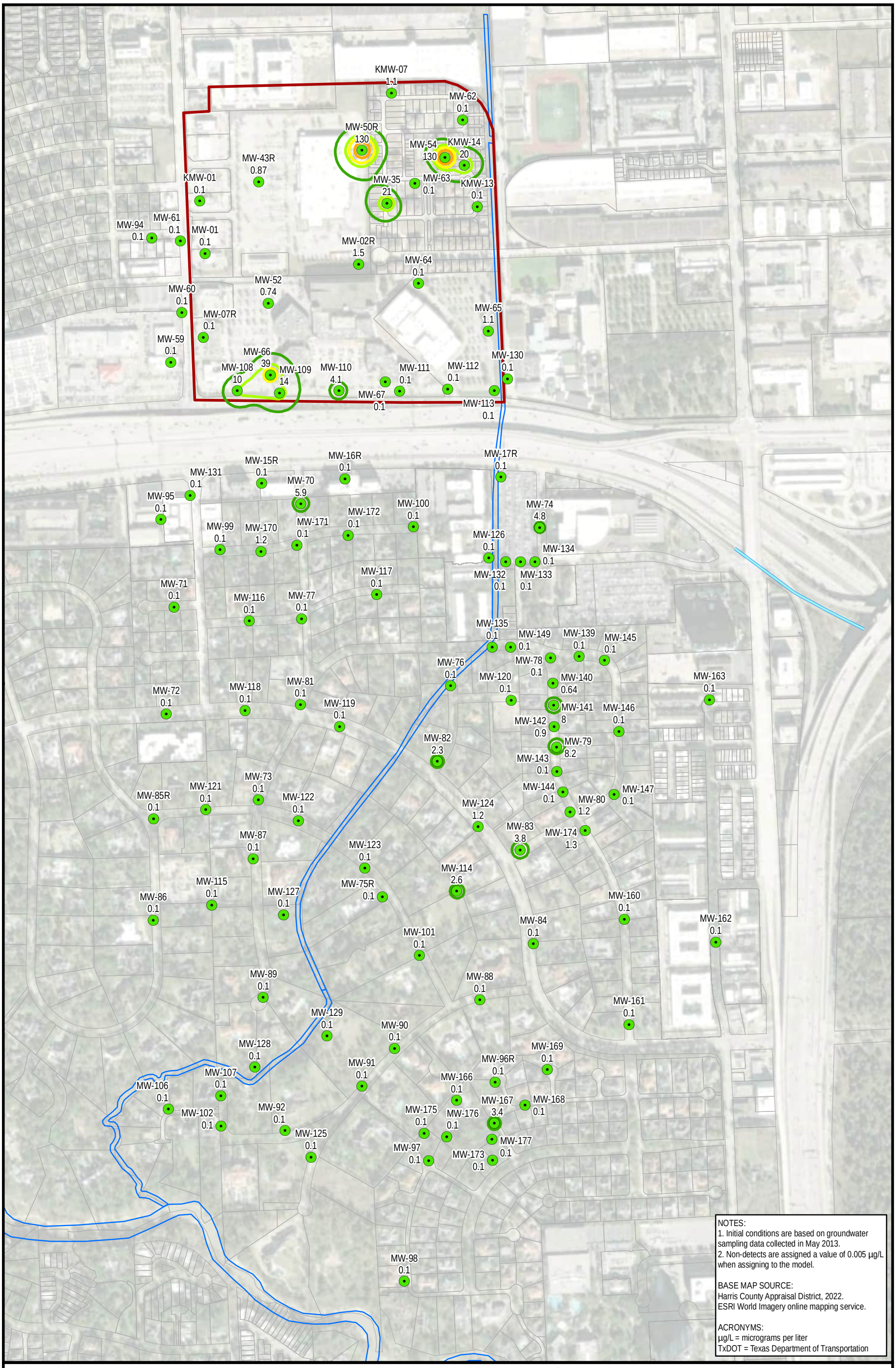

Figure 5-2b.
Vinyl Chloride Plume Initial Conditions for Quasi-calibration
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility, Houston, TX

CH2M HILL Engineers, Inc.

\\brookside\GIS_SHARE - \\dc1vs01\gisproj\C\Cameron\Kerang\Silber_RD\MapFiles\TM_Figures\Figure5-2b_VC_May2013.mxd gtwigg 9/15/2022 11:36:24 AM

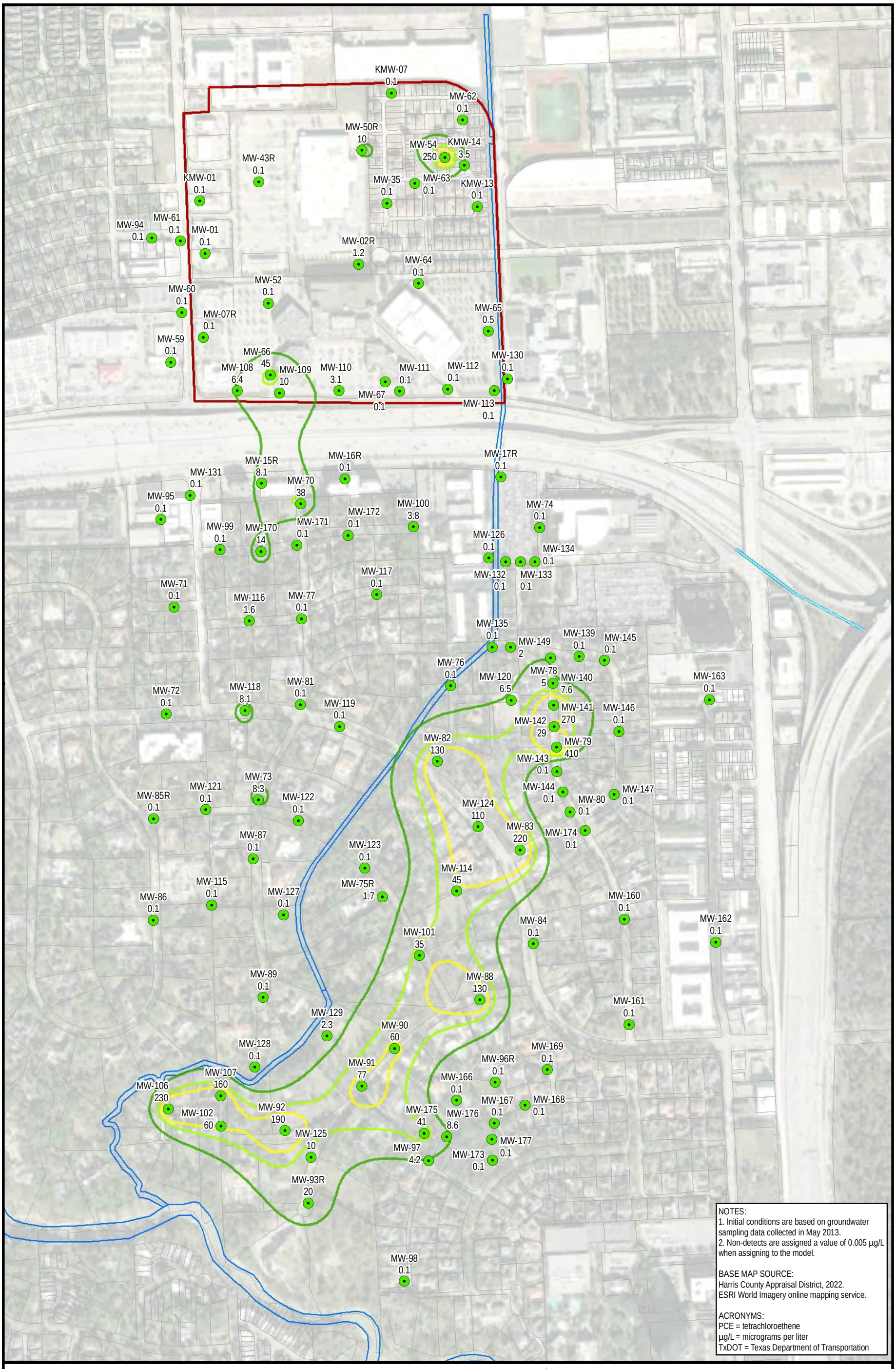

Figure 5-2c.
PCE Plume Initial Conditions for Quasi-calibration
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility, Houston, TX

CH2M HILL Engineers, Inc.

\\brookside\GIS_SHARE - \\dc1vs01\gisproj\C\Cameron\Kerang\Silber_RD\MapFiles\TM_Figures\Figure5-2c_PCE_May2013.mxd gtwigg 9/15/2022 11:39:27 AM

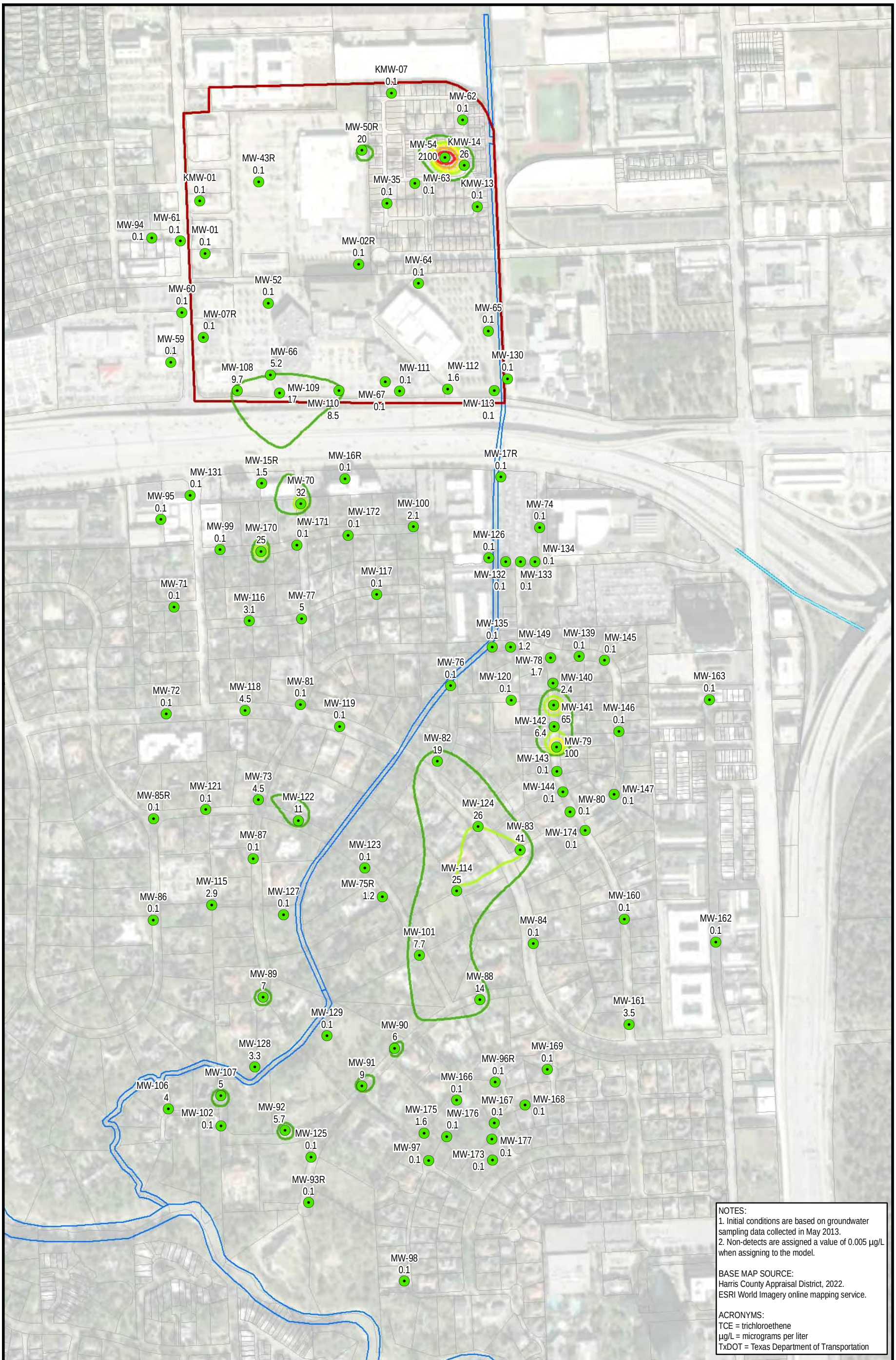

Figure 5-2d.
TCE Plume Initial Conditions for Quasi-calibration
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility, Houston, TX

CH2M HILL Engineers, Inc.

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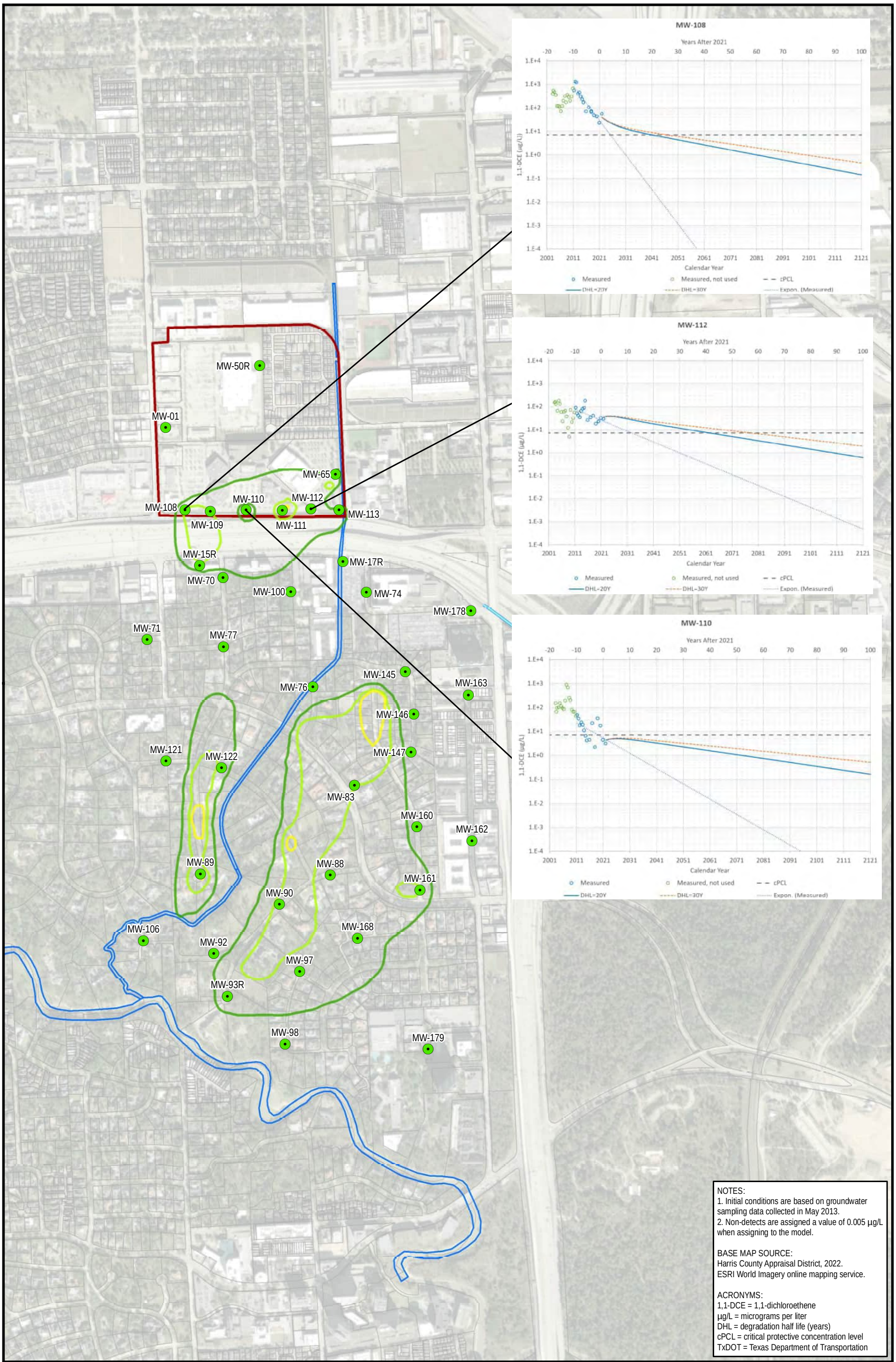

Figure 5-3a.
1,1-DCE Concentration Trends
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility, Houston, TX

CH2M HILL Engineers, Inc.

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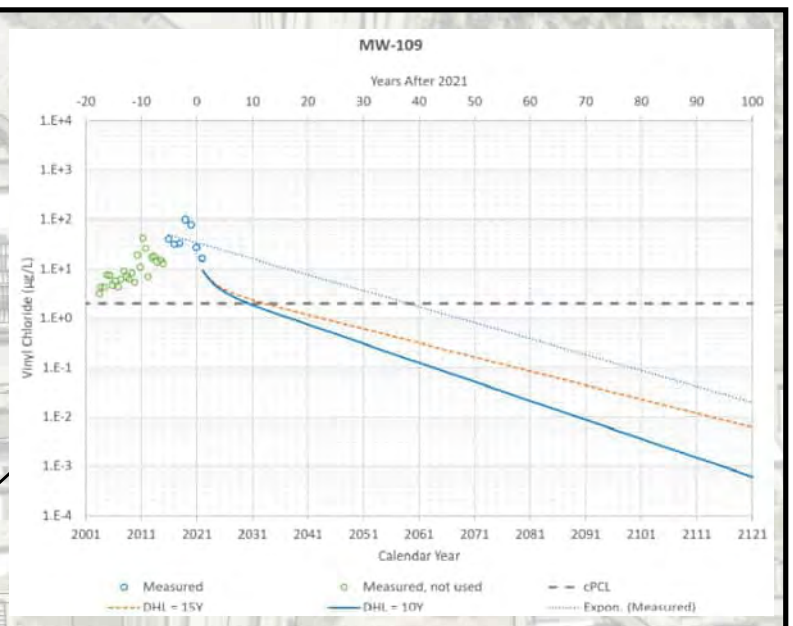

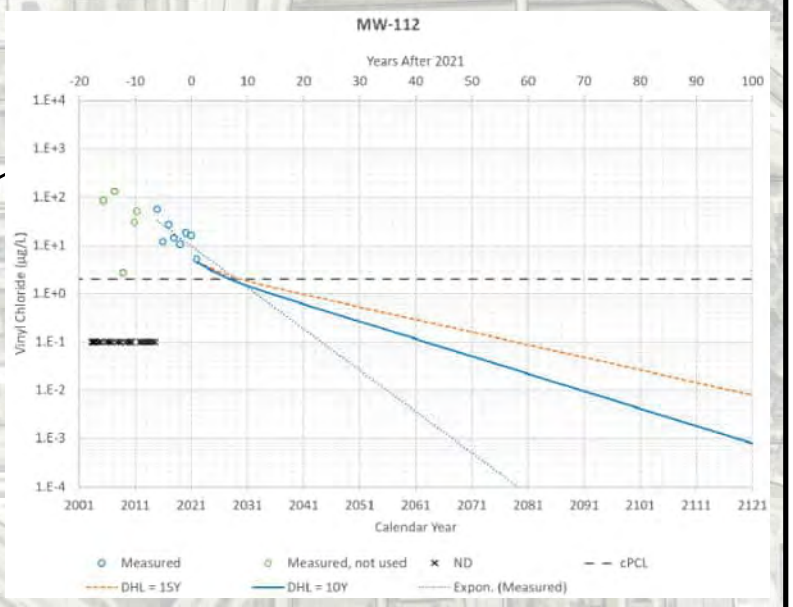

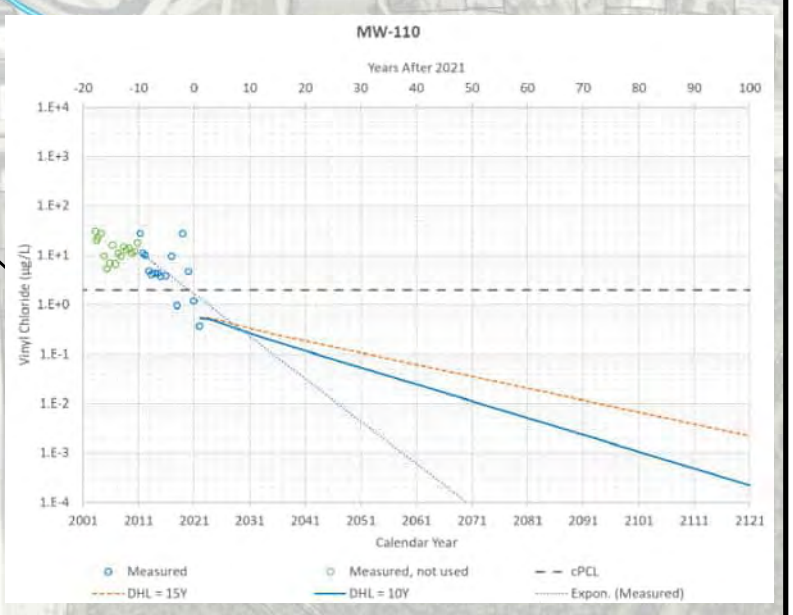

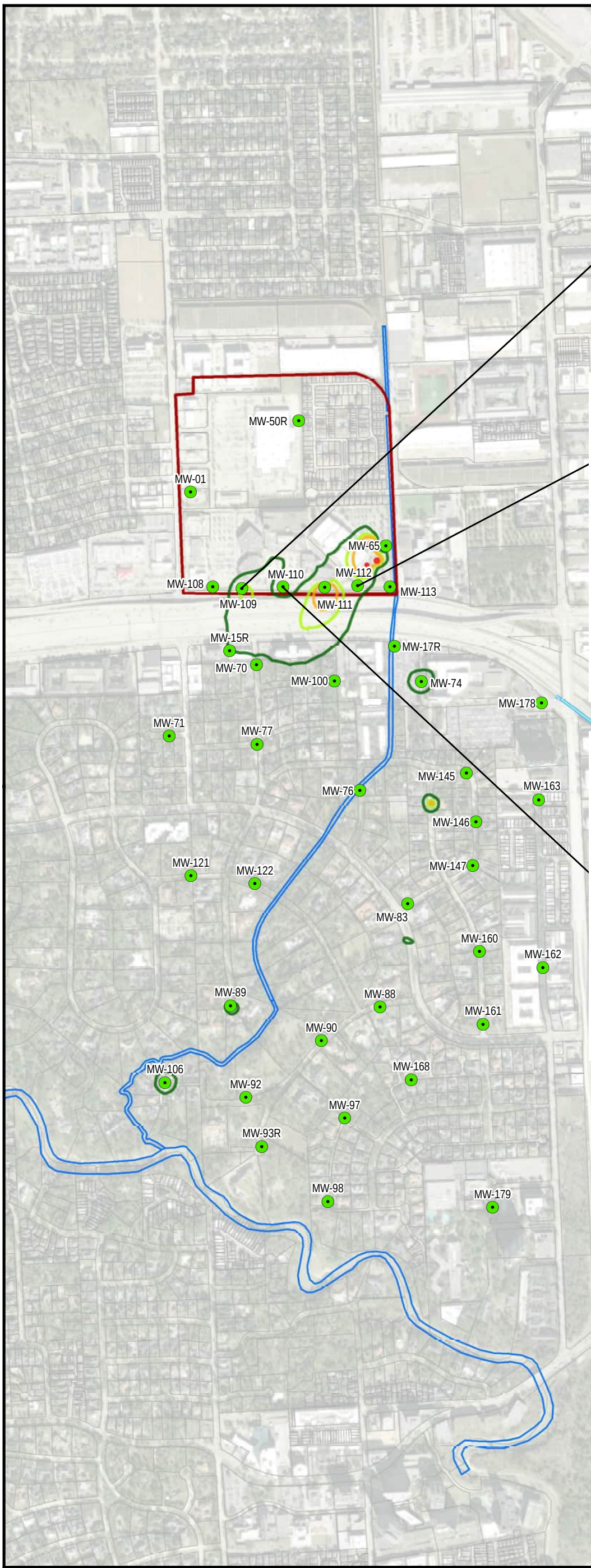

NOTES:
1. Initial conditions are based on groundwater sampling data collected in May 2013.
2. Non-detects are assigned a value of 0.005 µg/L when assigning to the model.

BASE MAP SOURCE:
Harris County Appraisal District, 2022.
ESRI World Imagery online mapping service.

ACRONYMS:
µg/L = micrograms per liter
DHL = degradation half life (years)
cPCL = critical protective concentration level
TxDOT = Texas Department of Transportation

Legend
- Monitoring Wells
- TxDOT Silber Tunnel Dewatering System
- Former Facility Boundary
- Flood Control
- Parcel

Vinyl Chloride Plume Contours (µg/L)
- 2
- 10
- 20
- 100

N
0 500 1,000
Approximate scale in feet

Figure 5-3b.
Vinyl Chloride Concentration Trends
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility, Houston, TX

CH2M HILL Engineers, Inc.

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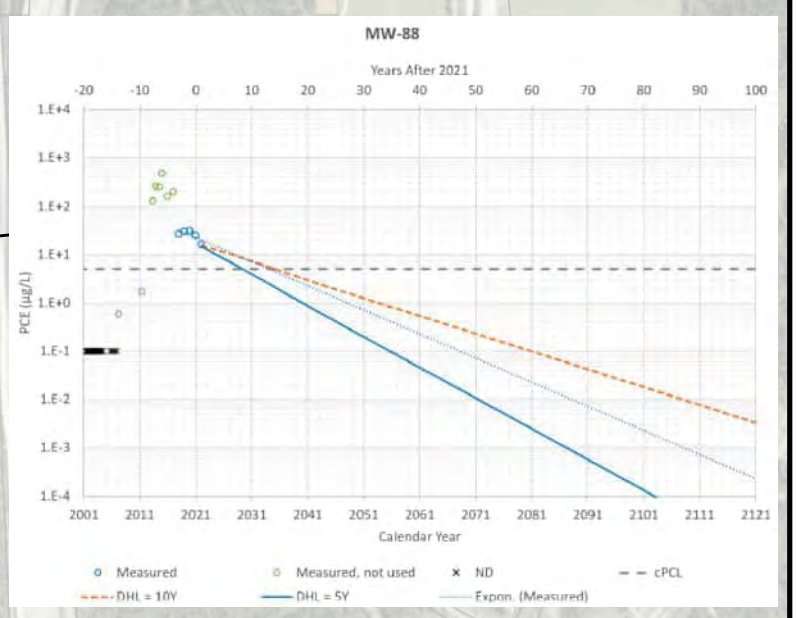
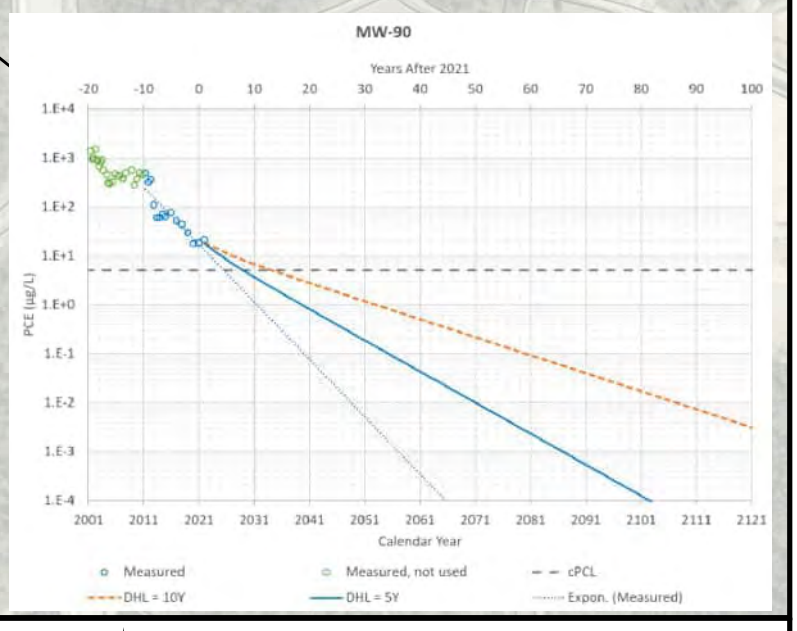
MW-01
MW-50R
MW-65
MW-108
MW-110
MW-112
MW-113
MW-109
MW-111
MW-15R
MW-17R
MW-70
MW-100
MW-74
MW-178
MW-71
MW-77
MW-145
MW-76
MW-146
MW-163
MW-121
MW-122
MW-147
MW-83
MW-160
MW-162
MW-89
MW-88
MW-161
MW-90
MW-106
MW-168
MW-92
MW-97
MW-93R
MW-98
MW-179





NOTES:
1. Initial conditions are based on groundwater sampling data collected in May 2013.
2. Non-detects are assigned a value of 0.005 µg/L when assigning to the model.

BASE MAP SOURCE:
Harris County Appraisal District, 2022.
ESRI World Imagery online mapping service.

ACRONYMS:
PCE = tetrachloroethene
µg/L = micrograms per liter
DHL = degradation half life (years)
cPCL = critical protective concentration level
TxDOT = Texas Department of Transportation

Legend
- Monitoring Wells
- TxDOT Silber Tunnel Dewatering System
- Former Facility Boundary
- Flood Control
- Parcel

PCE Plume Contours (µg/L)
- 5
- 25
- 50
- 100
- 500

N
0 500 1,000
Approximate scale in feet

Figure 5-3c.
PCE Concentration Trends
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility, Houston, TX

CH2M HILL Engineers, Inc.

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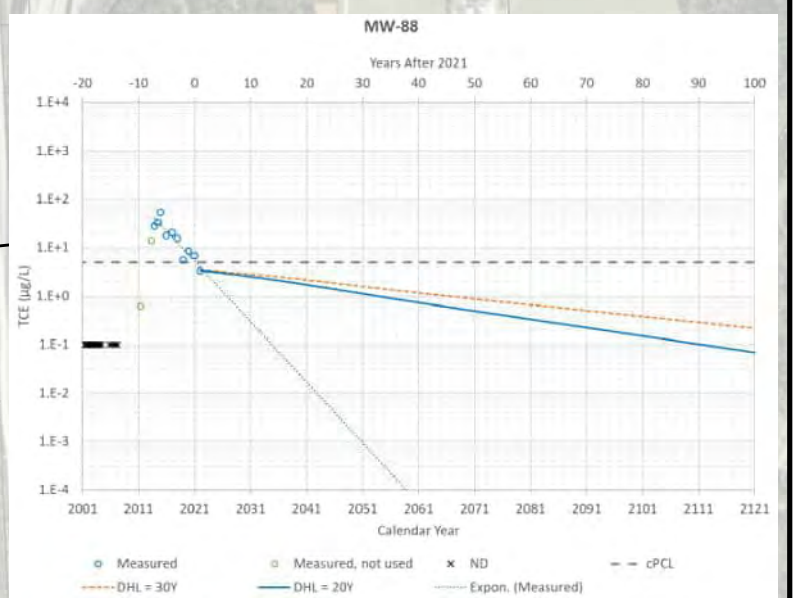
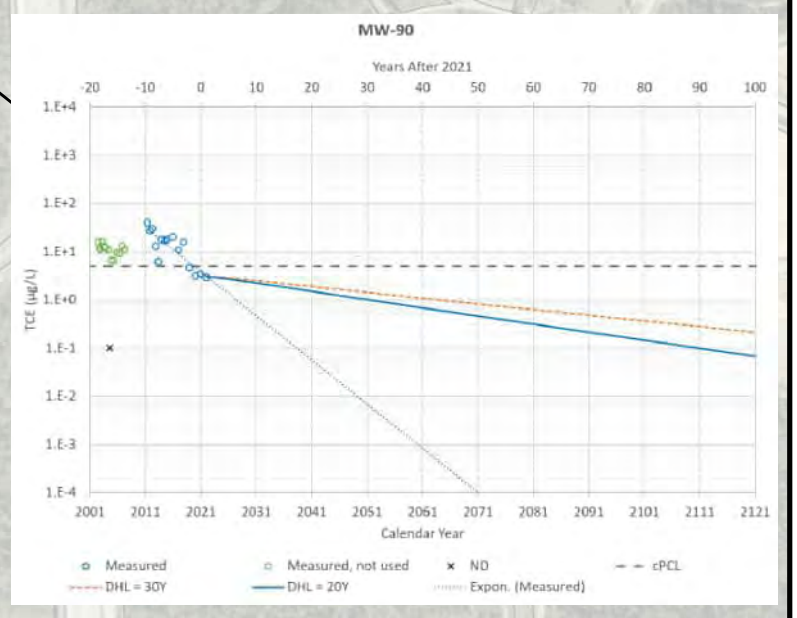
MW-01
MW-50R
MW-65
MW-108
MW-109
MW-110
MW-111
MW-112
MW-113
MW-15R
MW-17R
MW-70
MW-100
MW-74
MW-178
MW-71
MW-77
MW-145
MW-76
MW-146
MW-163
MW-121
MW-122
MW-147
MW-83
MW-160
MW-162
MW-89
MW-88
MW-161
MW-90
MW-106
MW-168
MW-92
MW-97
MW-93R
MW-98
MW-179





NOTES:
1. Initial conditions are based on groundwater sampling data collected in May 2013.
2. Non-detects are assigned a value of 0.005 µg/L when assigning to the model.

BASE MAP SOURCE:
Harris County Appraisal District, 2022.
ESRI World Imagery online mapping service.

ACRONYMS:
TCE = trichloroethene
µg/L = micrograms per liter
DHL = degradation half life (years)
cPCL = critical protective concentration level
TxDOT = Texas Department of Transportation

Legend
- Monitoring Wells
- TxDOT Silber Tunnel Dewatering System
- Former Facility Boundary
- Flood Control
- Parcel

TCE Plume Contours (µg/L)
- 5
- 25
- 50
- 100
- 500
- 1000

N
0 500 1,000
Approximate scale in feet

Figure 5-3d.
TCE Concentration Trends
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility, Houston, TX

CH2M HILL Engineers, Inc.

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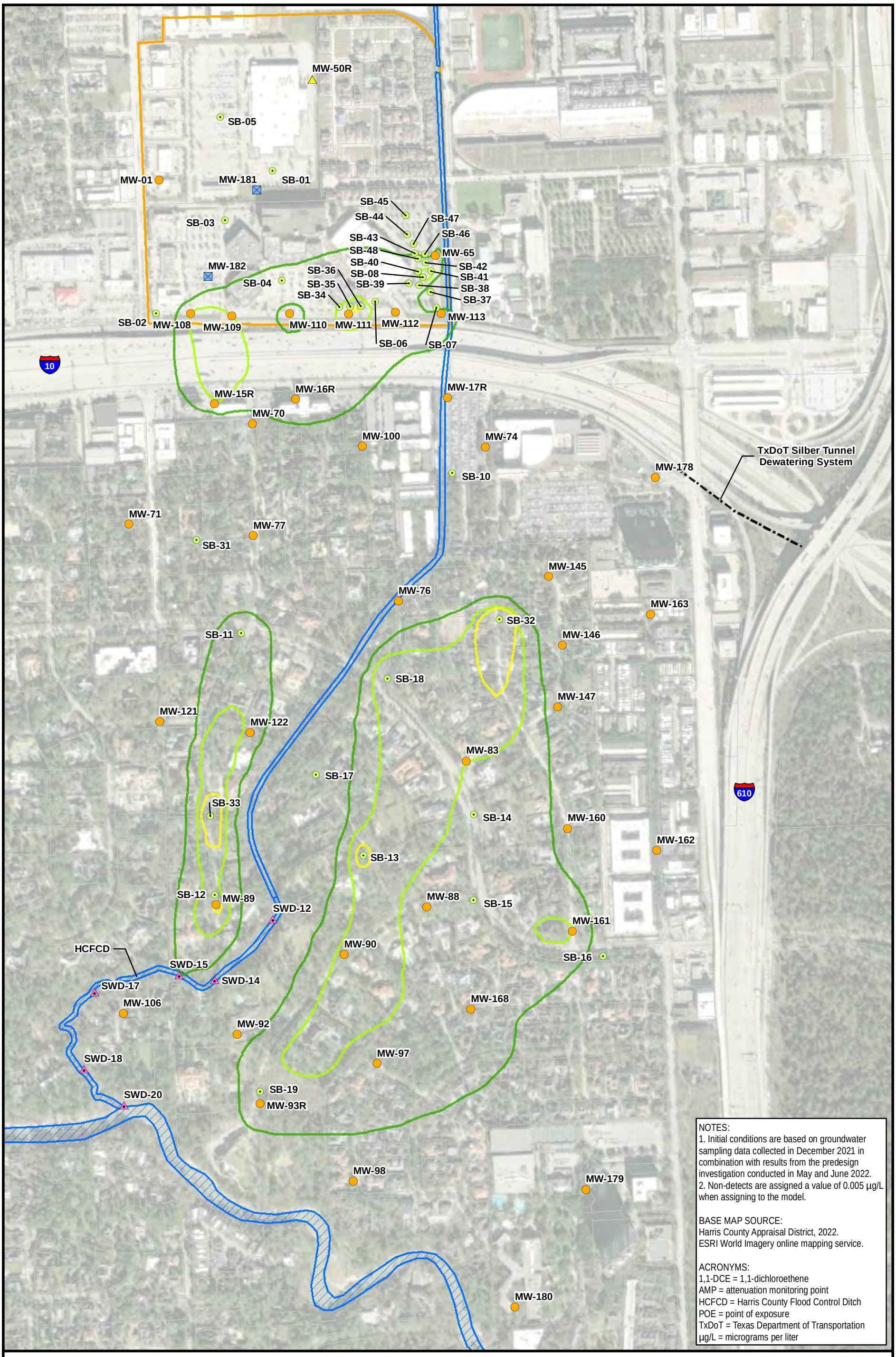

NOTES:
1. Initial conditions are based on groundwater sampling data collected in December 2021 in combination with results from the predesign investigation conducted in May and June 2022.
2. Non-detects are assigned a value of 0.005 µg/L when assigning to the model.

BASE MAP SOURCE:
Harris County Appraisal District, 2022.
ESRI World Imagery online mapping service.

ACRONYMS:
1,1-DCE = 1,1-dichloroethene
AMP = attenuation monitoring point
HCFCD = Harris County Flood Control Ditch
POE = point of exposure
TxDoT = Texas Department of Transportation
µg/L = micrograms per liter

Legend

- AMP Well
- POE Well
- Surface Water Sample Locations
- Monitor Well (2022)
- 2022 Soil Boring
- Former Facility Boundary
- TxDoT Dewatering System
- Parcel
- HCFCD
- Gaining Portion of Stream

1,1-DCE Plume Contours (µg/L)

- 7
- 35
- 70

N

0 280 560

Approximate scale in feet

Figure 6-1a.
1,1-DCE Plume Initial Conditions for Projection Simulations
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility, Houston, TX

CH2M HILL Engineers, Inc.

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MW-50R
SB-05
MW-01
MW-181
SB-01
SB-03
SB-45
SB-44
SB-47
SB-43
SB-46
SB-48
MW-65
SB-40
SB-42
MW-182
SB-36
SB-08
SB-41
SB-04
SB-35
SB-39
SB-38
SB-34
SB-37
SB-02
MW-108
MW-109
MW-110
MW-111
MW-112
MW-113
SB-06
SB-07
10
MW-15R
MW-16R
MW-17R
MW-70
MW-100
MW-74
TxDoT Silber Tunnel Dewatering System
SB-10
MW-178
MW-71
MW-77
SB-31
MW-145
MW-76
MW-163
SB-32
SB-11
MW-146
SB-18
MW-147
MW-121
MW-122
MW-83
SB-17
610
SB-33
SB-14
MW-160
MW-162
SB-13
SB-12
MW-89
MW-88
SB-15
SWD-12
MW-161
HCFCD
MW-90
SB-16
SWD-15
SWD-14
SWD-17
MW-168
MW-106
MW-92
MW-97
SWD-18
SB-19
SWD-20
MW-93R
MW-98
MW-179
MW-180

NOTES:
1. Initial conditions are based on groundwater sampling data collected in December 2021 in combination with results from the predesign investigation conducted in May and June 2022.
2. Non-detects are assigned a value of 0.005 µg/L when assigning to the model.

BASE MAP SOURCE:
Harris County Appraisal District, 2022.
ESRI World Imagery online mapping service.

ACRONYMS:
AMP = attenuation monitoring point
HCFCD = Harris County Flood Control Ditch
POE = point of exposure
TxDoT = Texas Department of Transportation
µg/L = micrograms per liter

Legend

- AMP Well
- POE Well
- Surface Water Sample Locations
- Monitor Well (2022)
- 2022 Soil Boring
- Former Facility Boundary
- TxDoT Dewatering System
- Parcel
- HCFCD
- Gaining Portion of Stream

Vinyl Chloride Plume Contours (µg/L)

- 2
- 10
- 20
- 100

N

0 280 560

Approximate scale in feet

Figure 6-1b.
Vinyl Chloride Plume Initial Conditions for Projection Simulations
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility, Houston, TX

CH2M HILL Engineers, Inc.

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MW-50R
SB-05
MW-01
MW-181
SB-01
SB-03
SB-45
SB-44
SB-47
SB-43
SB-46
SB-48
MW-65
SB-40
SB-42
MW-182
SB-08
SB-41
SB-36
SB-04
SB-39
SB-35
SB-38
SB-34
SB-37
SB-02
MW-108
MW-109
MW-110
MW-111
MW-112
MW-113
SB-06
SB-07
10
MW-15R
MW-16R
MW-17R
MW-70
MW-100
MW-74
TxDoT Silber Tunnel Dewatering System
MW-178
SB-10
MW-71
MW-77
SB-31
MW-145
MW-76
MW-163
SB-32
SB-11
MW-146
SB-18
MW-147
MW-121
MW-122
MW-83
SB-17
610
SB-33
SB-14
MW-160
MW-162
SB-13
SB-12
MW-89
MW-88
SB-15
SWD-12
MW-161
HCFCD
MW-90
SB-16
SWD-15
SWD-14
SWD-17
MW-168
MW-106
MW-92
MW-97
SWD-18
SB-19
SWD-20
MW-93R
MW-98
MW-179
MW-180

NOTES:
1. Initial conditions are based on groundwater sampling data collected in December 2021 in combination with results from the predesign investigation conducted in May and June 2022.
2. Non-detects are assigned a value of 0.005 µg/L when assigning to the model.

BASE MAP SOURCE:
Harris County Appraisal District, 2022.
ESRI World Imagery online mapping service.

ACRONYMS:
AMP = attenuation monitoring point
HCFCD = Harris County Flood Control Ditch
PCE = tetrachloroethene
POE = point of exposure
TxDoT = Texas Department of Transportation
µg/L = micrograms per liter

Legend

- AMP Well
- POE Well
- Surface Water Sample Locations
- Monitor Well (2022)
- 2022 Soil Boring
- Former Facility Boundary
- TxDoT Dewatering System
- Parcel
- HCFCD
- Gaining Portion of Stream

PCE Plume Contours (µg/L)

- 5
- 25
- 50
- 100
- 500

N

0 280 560

Approximate scale in feet

Figure 6-1c.
PCE Plume Initial Conditions
for Projection Simulations
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility, Houston, TX

CH2M HILL Engineers, Inc.

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Figure 6-1d.
TCE Plume Initial Conditions
for Projection Simulations
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility, Houston, TX

CH2M HILL Engineers, Inc.

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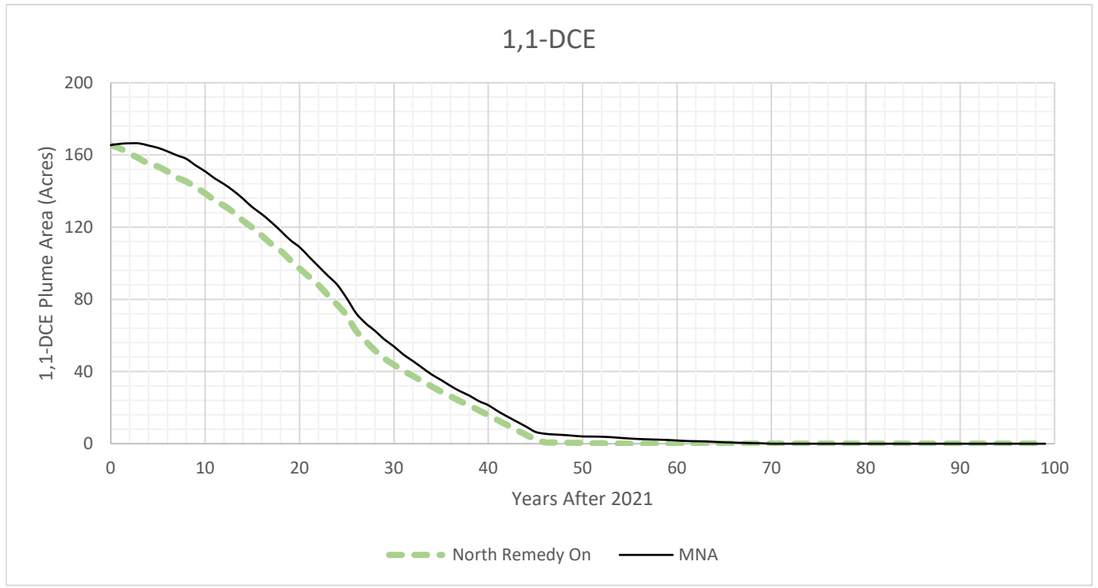
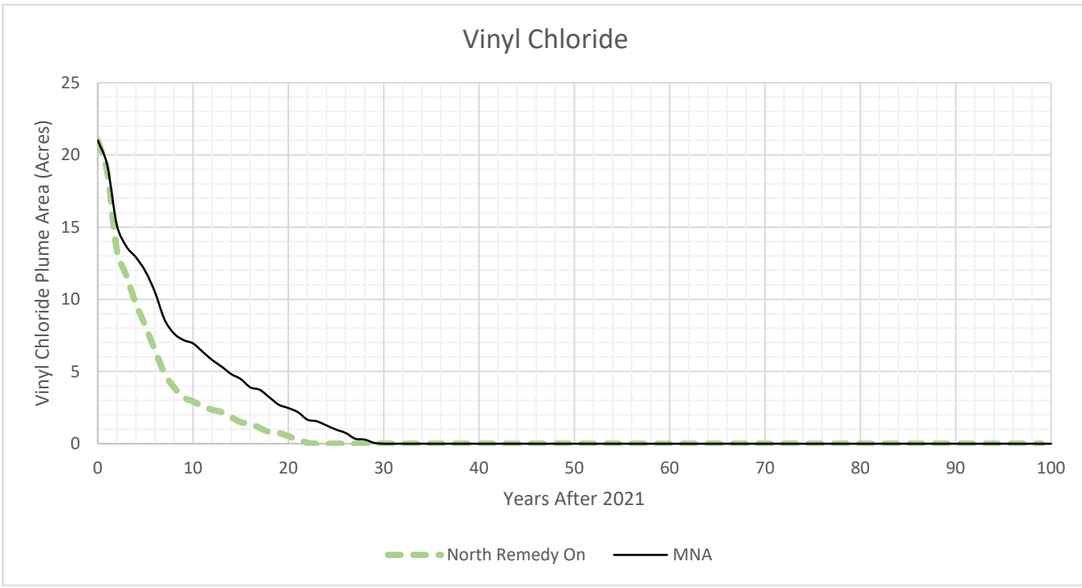
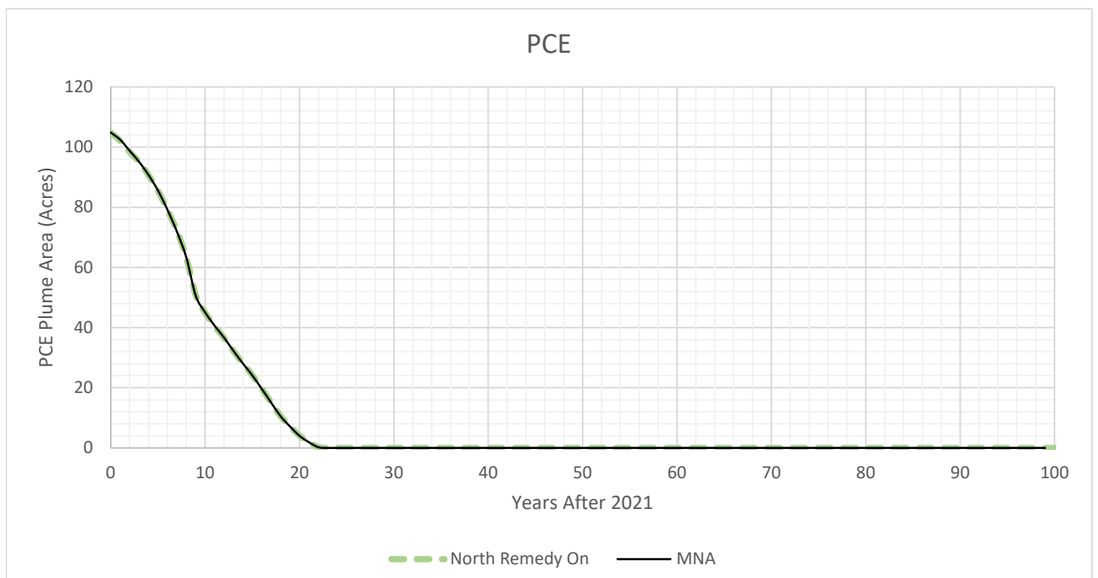
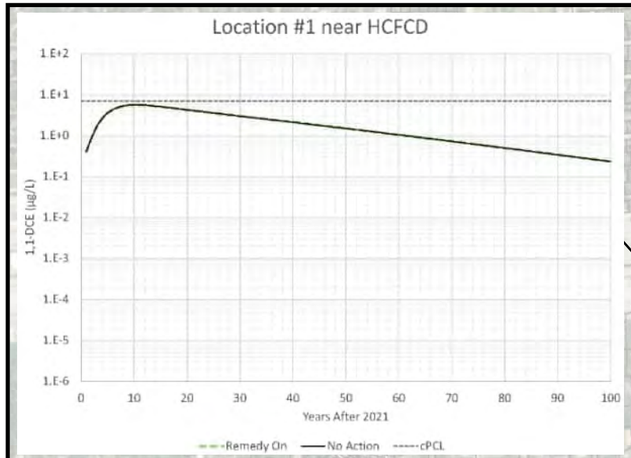


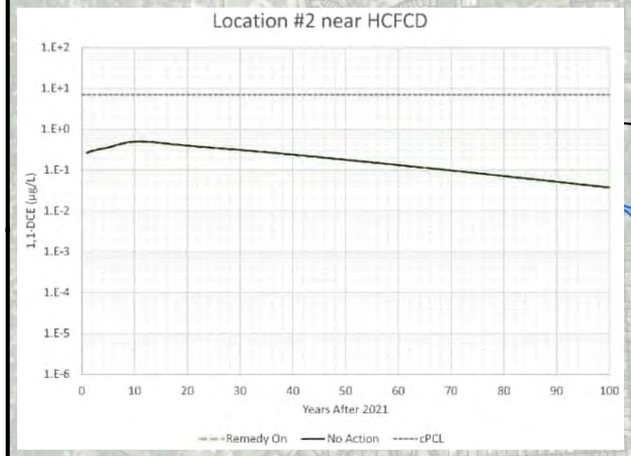


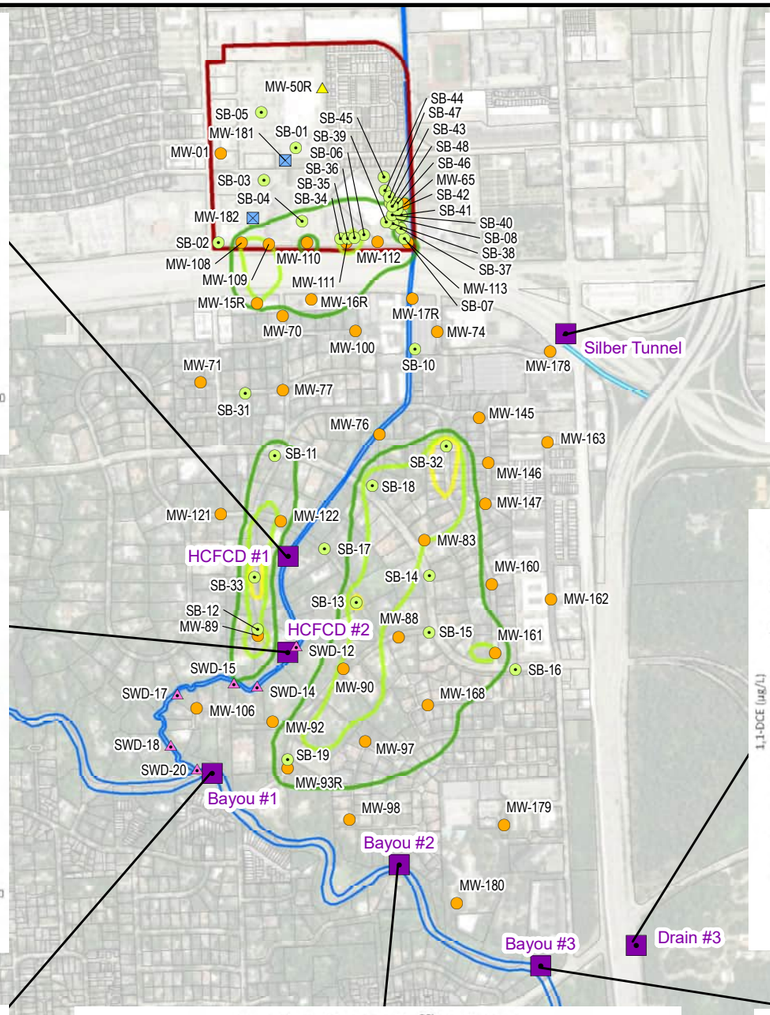


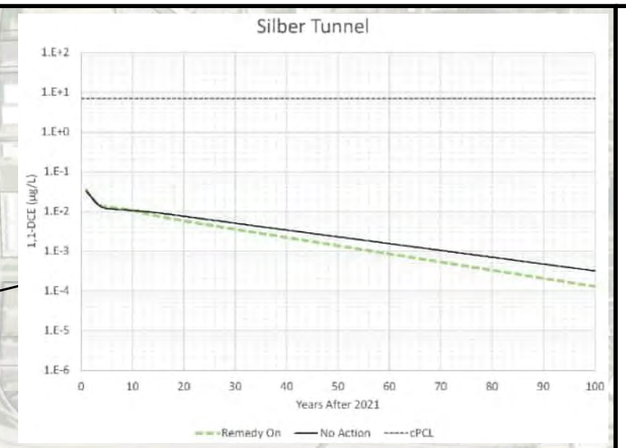
ACRONYMS:
1,1-DCE = 1,1-dichloroethene
PCE = tetrachloroethene
TCE = trichloroethene

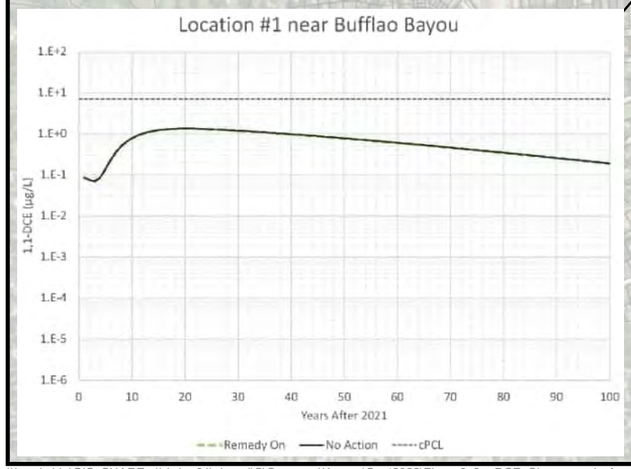
Figure 6-2.
Projected Plume Areas Through Time
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility
Houston, Texas
CH2M HILL Engineers, Inc.

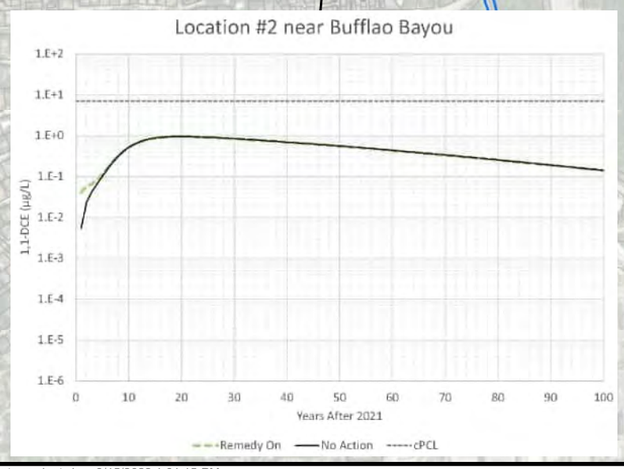


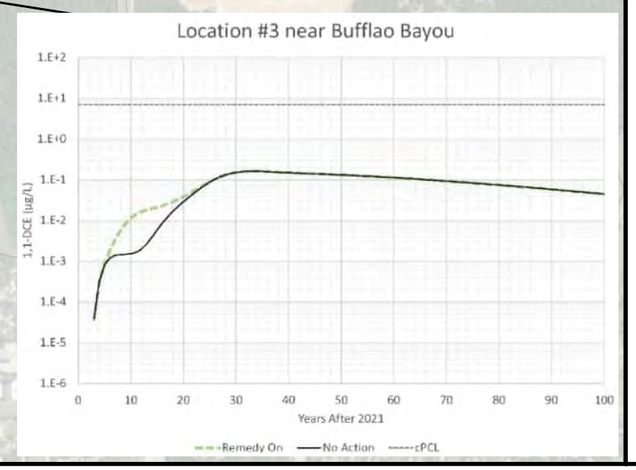












Legend

- Locations near Surface Water Bodies
- AMP Well
- POE Well
- Surface Water Sample Locations
- Monitor Well (2022)
- 2022 Soil Boring
- TxDOT Silber Tunnel Dewatering System
- Former Facility Boundary
- Flood Control
- Parcel

Initial 1,1-DCE Plume Contours (µg/L) in Groundwater

- 7
- 35
- 70

N

0 750 1,500

Approximate scale in feet

NOTES:
1. Initial conditions are based on groundwater sampling data collected in December 2021 in combination with results from the predesign investigation conducted in May and June 2022.

BASE MAP SOURCE:
Harris County Appraisal District, 2022.
ESRI World Imagery online mapping service.

ACRONYMS:
1,1-DCE = 1,1-dichloroethene
cPCL = critical protective concentration level
HCFCD = Harris County Flood Control Ditch
µg/L = micrograms per liter
TxDOT = Texas Department of Transportation

Figure 6-3a.
Projected 1,1-DCE Chemographs Near Surface Water Bodies
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility
Houston, TX

CH2M HILL Engineers, Inc.

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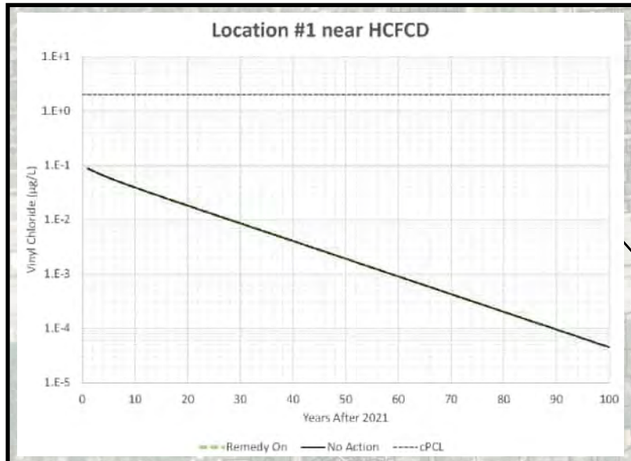

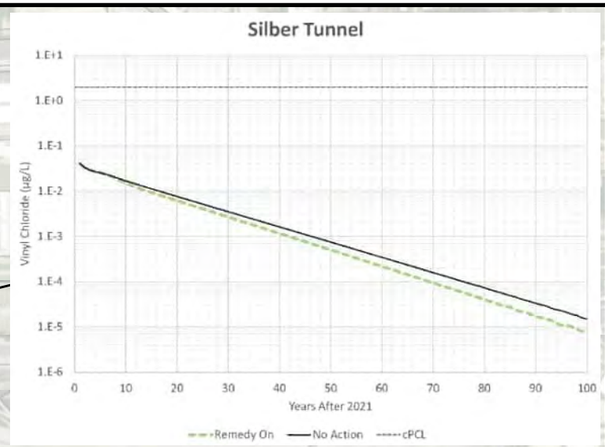

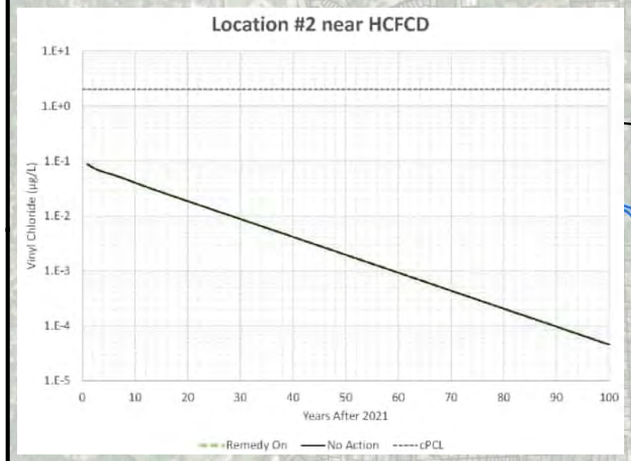

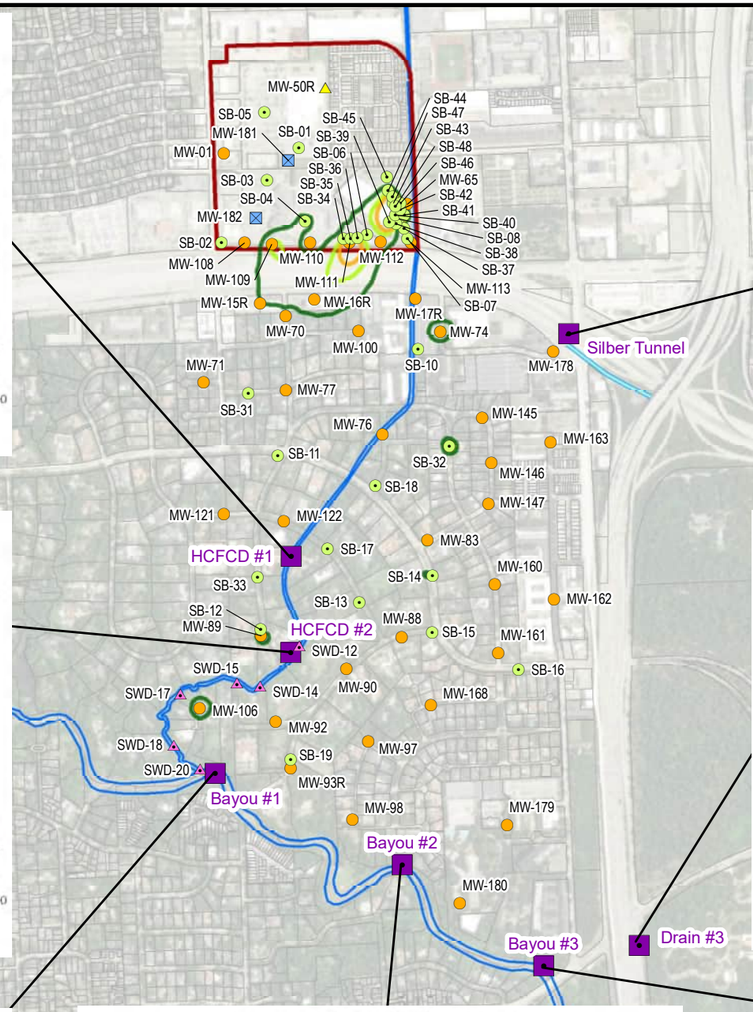

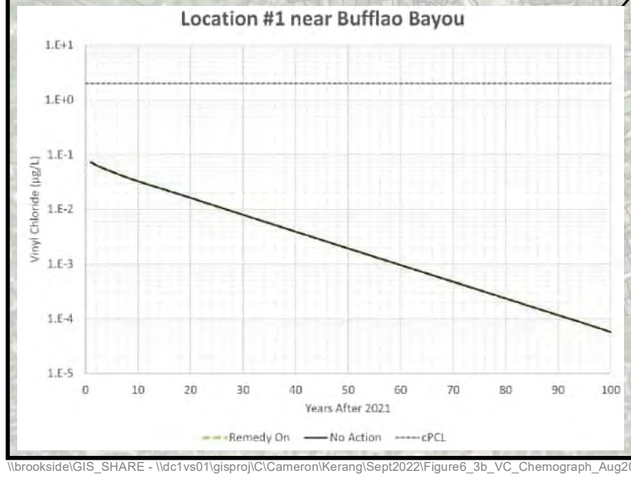

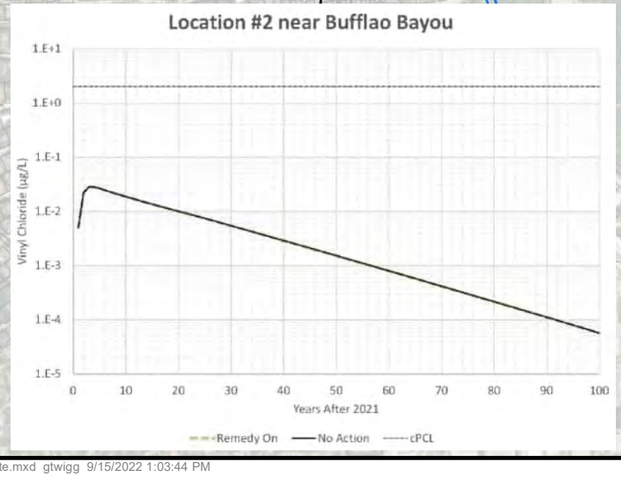

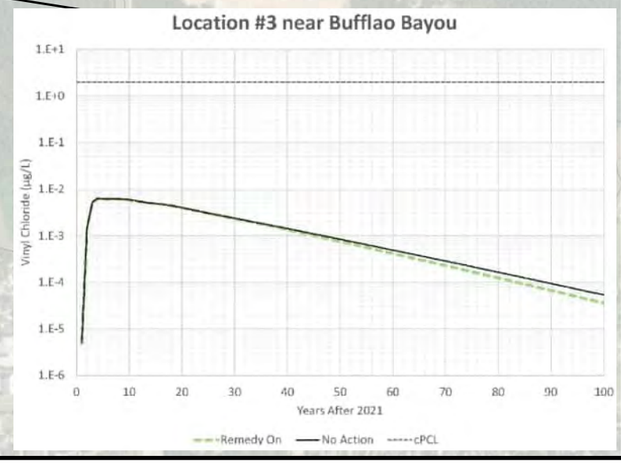

Legend

- Locations near Surface Water Bodies
- AMP Well
- POE Well
- Surface Water Sample Locations
- Monitor Well (2022)
- 2022 Soil Boring
- TxDOT Silber Tunnel Dewatering System
- Former Facility Boundary
- Flood Control
- Parcel

Initial Vinyl Chloride Plume Contours (µg/L) in Groundwater

- 2
- 10
- 20
- 100

N

0 750 1,500

Approximate scale in feet

NOTES:
1. Initial conditions are based on groundwater sampling data collected in December 2021 in combination with results from the predesign investigation conducted in May and June 2022.

BASE MAP SOURCE:
Harris County Appraisal District, 2022.
ESRI World Imagery online mapping service.

ACRONYMS:
cPCL = critical protective concentration level
HCFCD = Harris County Flood Control Ditch
µg/L = micrograms per liter
TxDOT = Texas Department of Transportation

Figure 6-3b.
Projected Vinyl Chloride Chemographs Near Surface Water Bodies
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility
Houston, TX

CH2M HILL Engineers, Inc.

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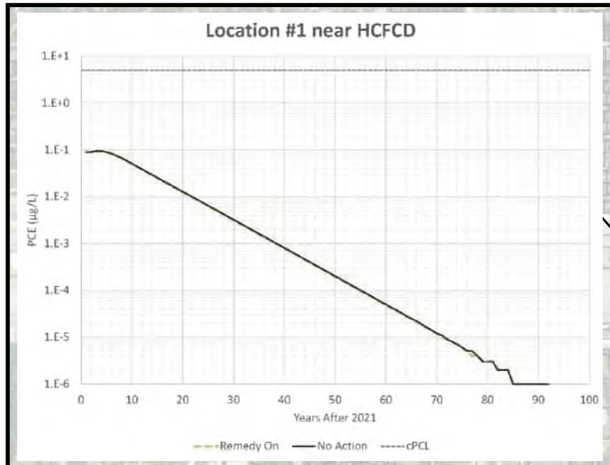

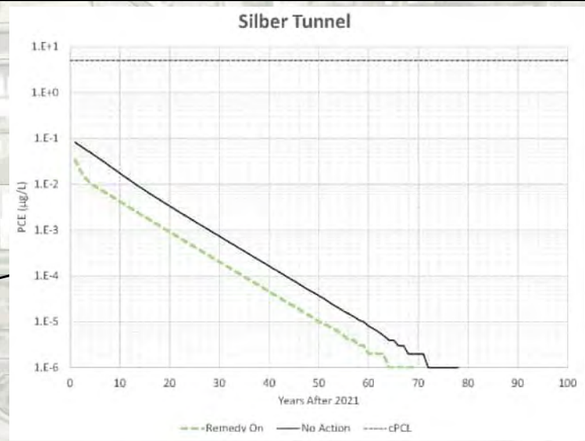

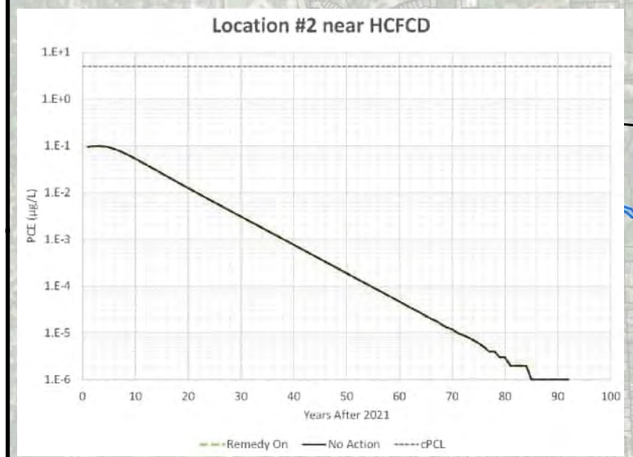

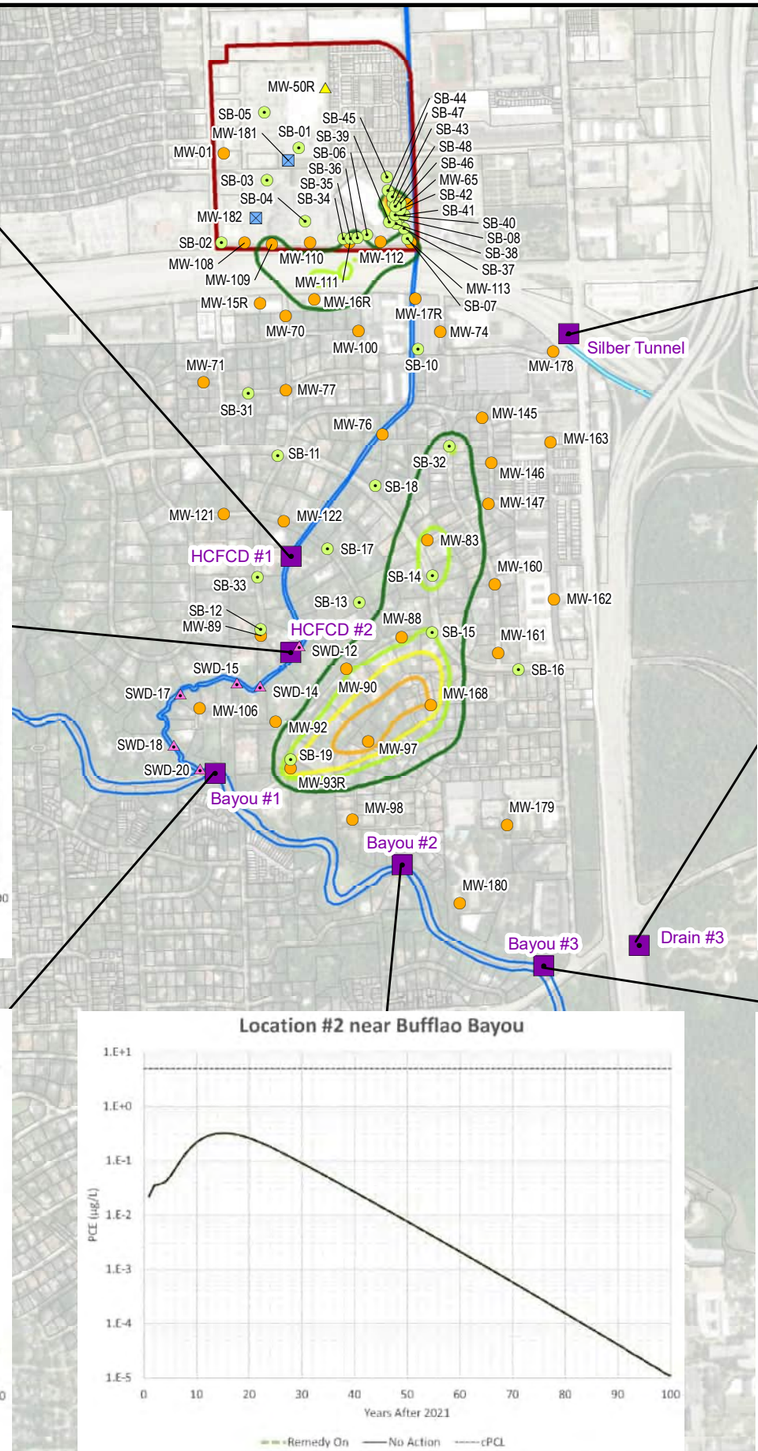

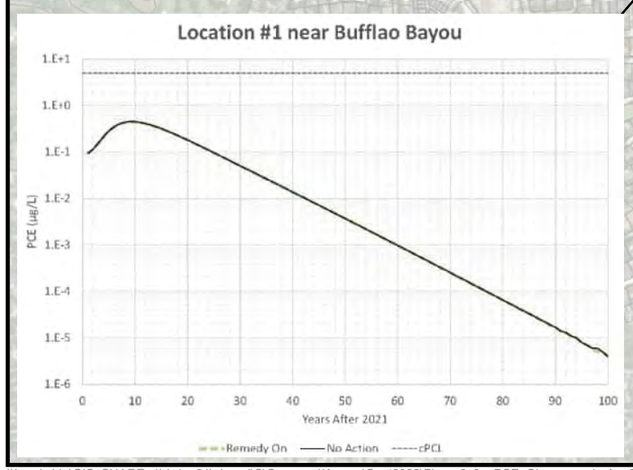

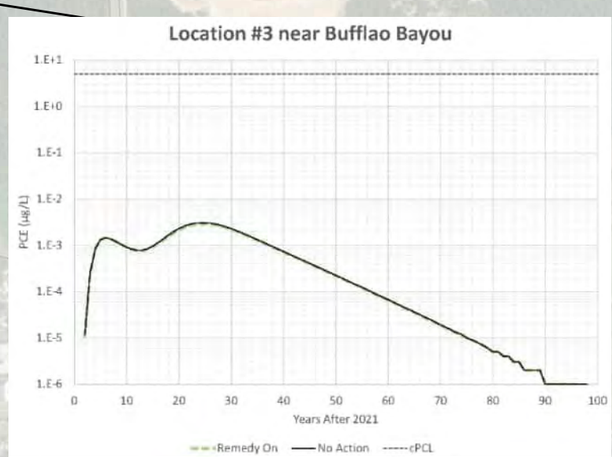

Legend

- Locations near Surface Water Bodies
- AMP Well
- POE Well
- Surface Water Sample Locations
- Monitor Well (2022)
- 2022 Soil Boring
- TxDOT Silber Tunnel Dewatering System
- Former Facility Boundary
- Flood Control
- Parcel

Initial PCE Plume Contours (µg/L) in Groundwater

- 5
- 25
- 50
- 100
- 500

N

0 750 1,500

Approximate scale in feet

NOTES:
1. Initial conditions are based on groundwater sampling data collected in December 2021 in combination with results from the predesign investigation conducted in May and June 2022.

BASE MAP SOURCE:
Harris County Appraisal District, 2022.
ESRI World Imagery online mapping service.

ACRONYMS:
cPCL = critical protective concentration level
HCFCD = Harris County Flood Control Ditch
PCE = tetrachloroethene
µg/L = micrograms per liter
TxDOT = Texas Department of Transportation

Figure 6-3c.
Projected PCE Chemographs Near Surface Water Bodies
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Former Cameron Iron Works Facility
Houston, TX

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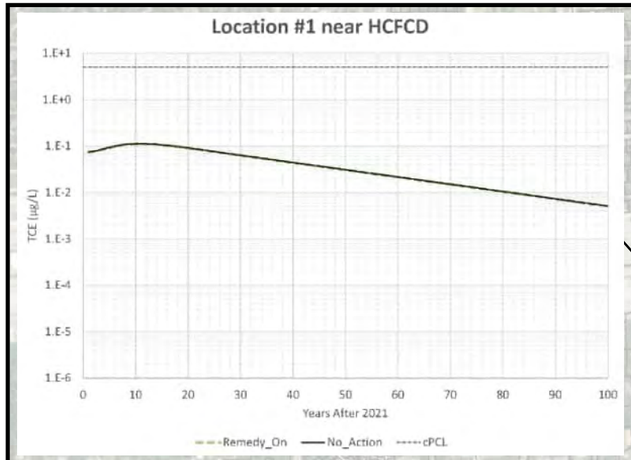
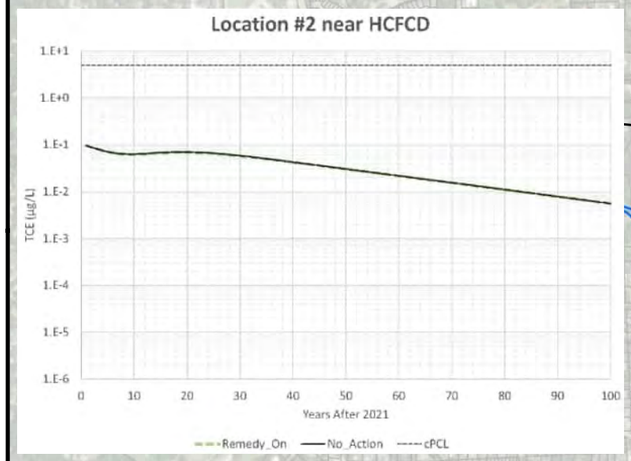
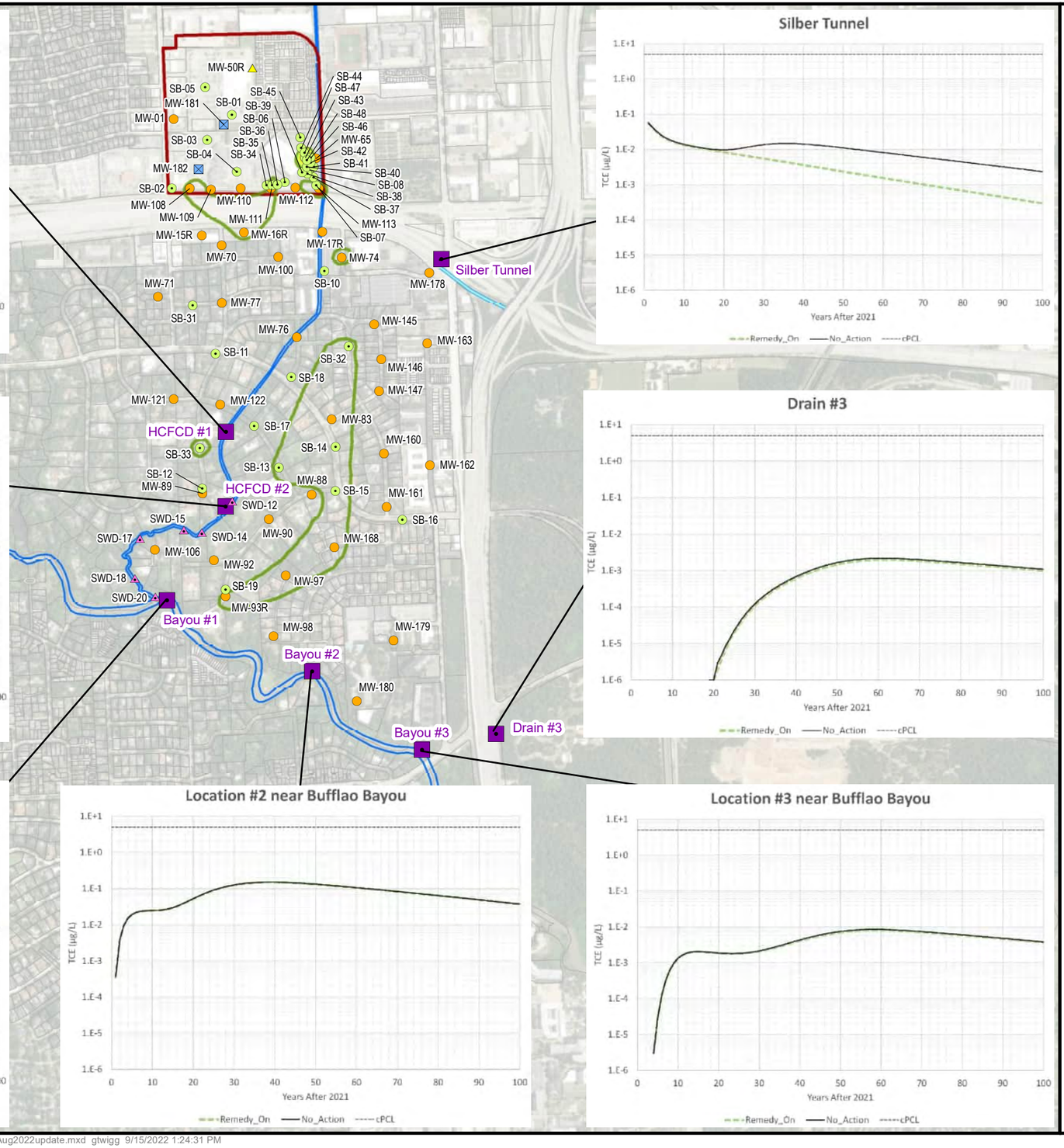
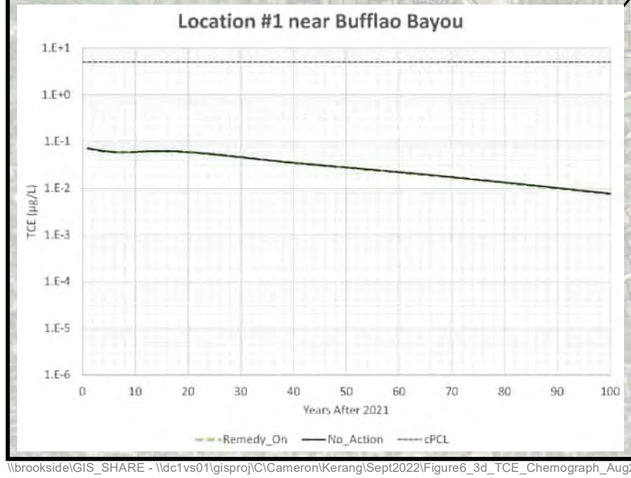
\\brookside\GIS_SHARE - \\dc1vs01\gisproj\C\Cameron\Kerang\Sept2022\Figure6_3c_PCE_Chemograph_Aug2022update.mxd gtwigg 9/15/2022 1:20:57 PM









Legend

- Locations near Surface Water Bodies
- AMP Well
- POE Well
- Surface Water Sample Locations
- Monitor Well (2022)
- 2022 Soil Boring
- TxDOT Silber Tunnel Dewatering System
- Former Facility Boundary
- Flood Control
- Parcel

Initial TCE Plume Contours (µg/L) in Groundwater

- 5
- 25
- 50
- 100
- 500
- 1000

N

0 750 1,500

Approximate scale in feet

NOTES:
1. Initial conditions are based on groundwater sampling data collected in December 2021 in combination with results from the predesign investigation conducted in May and June 2022.

BASE MAP SOURCE:
Harris County Appraisal District, 2022.
ESRI World Imagery online mapping service.

ACRONYMS:
cPCL = critical protective concentration level
HCFCD = Harris County Flood Control Ditch
TCE = trichloroethene
µg/L = micrograms per liter
TxDOT = Texas Department of Transportation

Figure 6-3d.
Projected TCE Chemographs Near Surface Water Bodies
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility
Houston, TX

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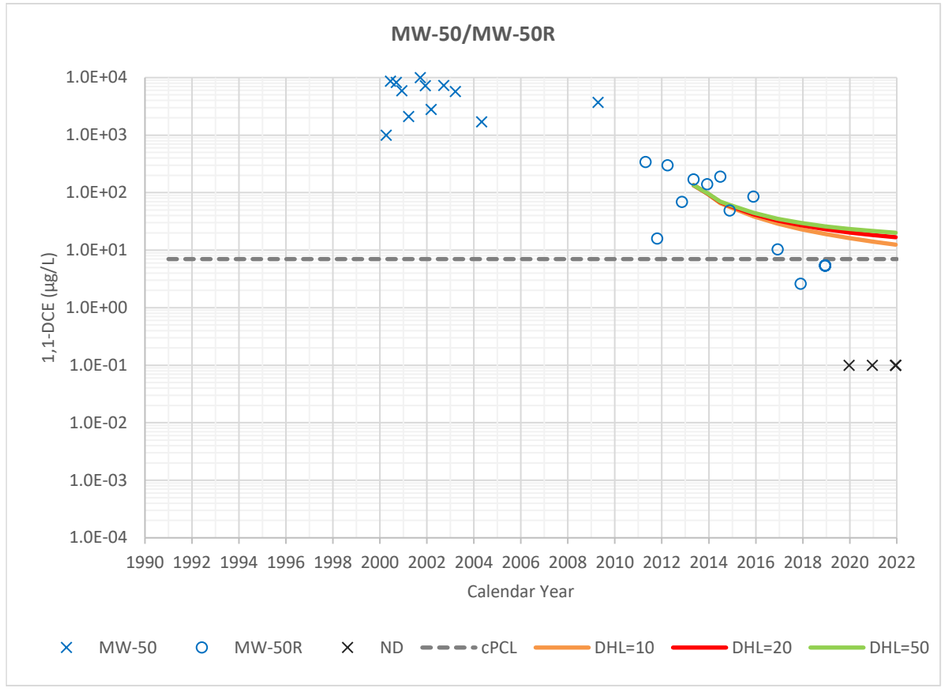
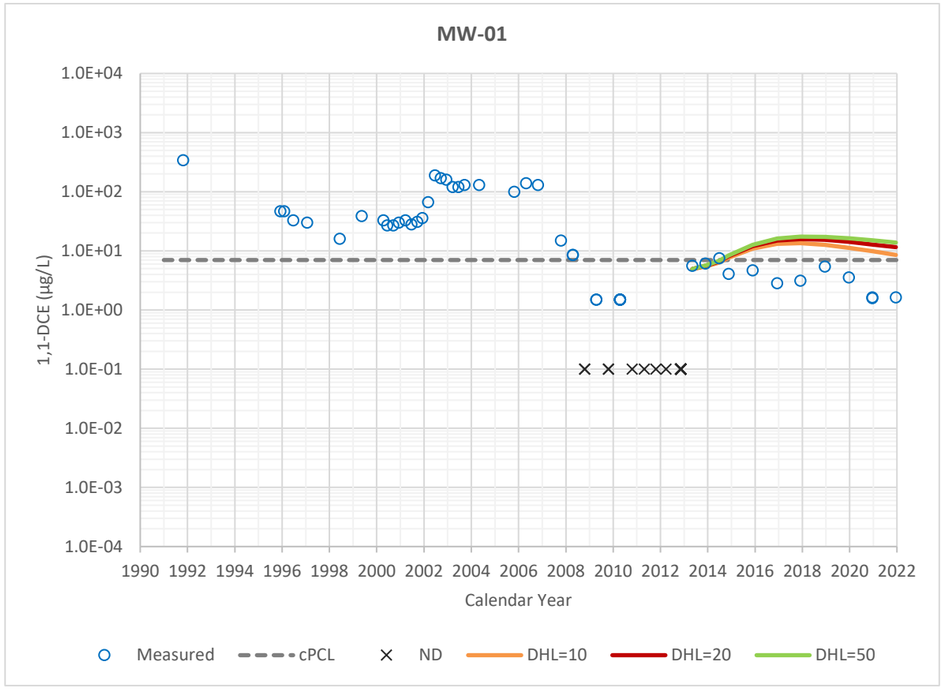
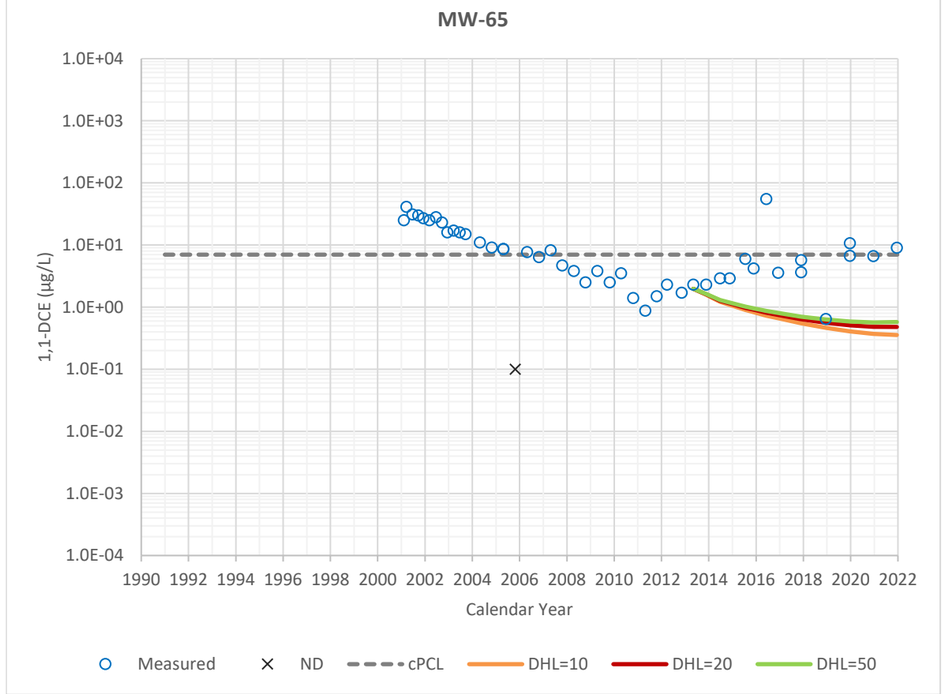
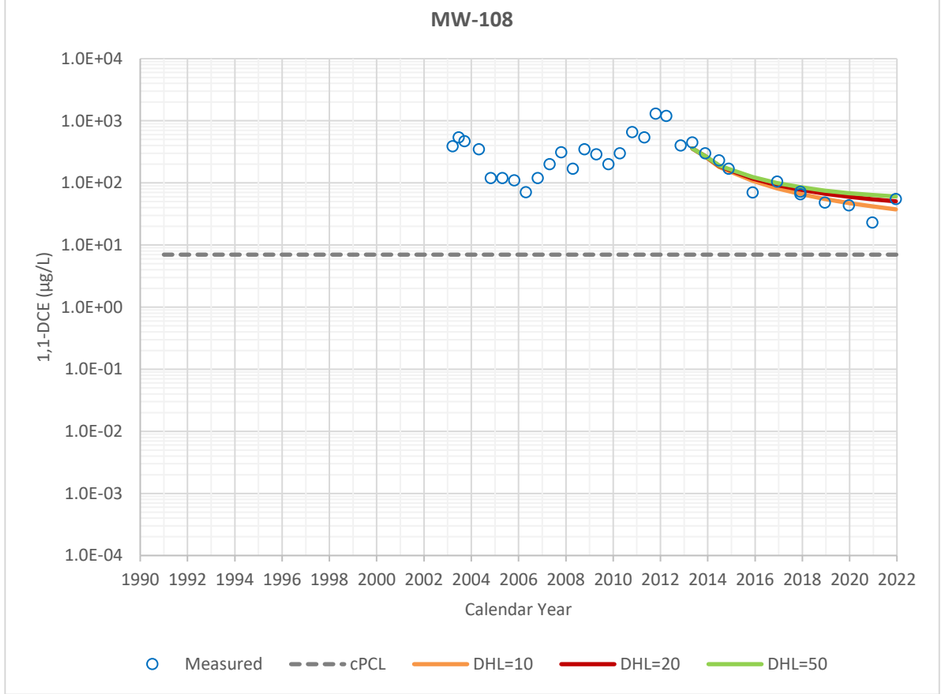
Attachment A-1
Modeled and Measured 1,1-DCE Chemographs









Notes:

1,1-DCE = 1,1-dichloroethene

cPCL = critical protective concentration level

DHL = degradation half life in years

µg/L = microgram per liter

ND = not detected

Attachment A-1.
Modeled and Measured
1,1-DCE Chemographs
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility
Houston, Texas
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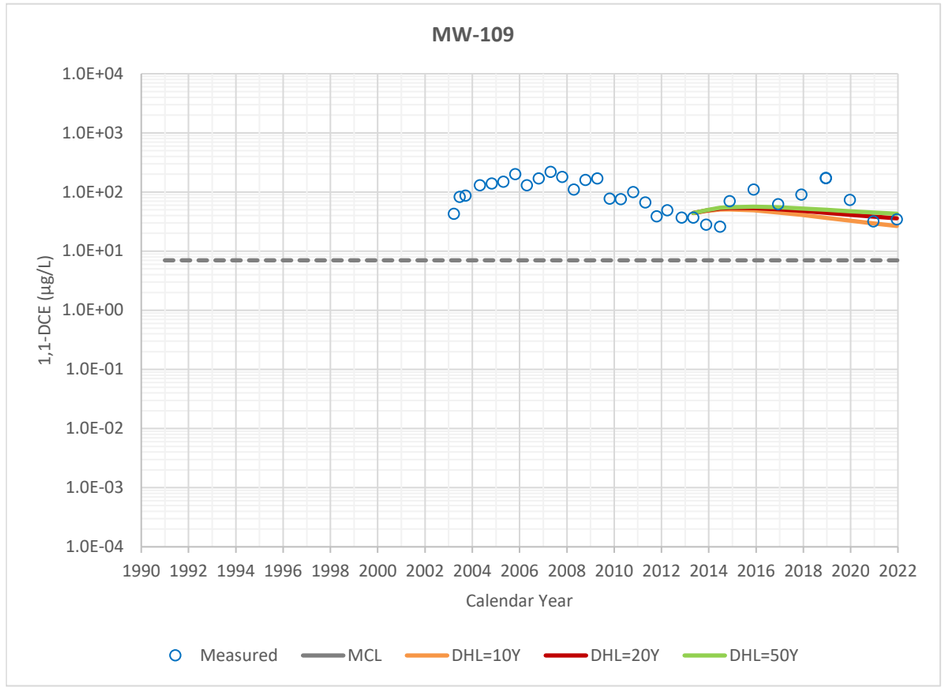

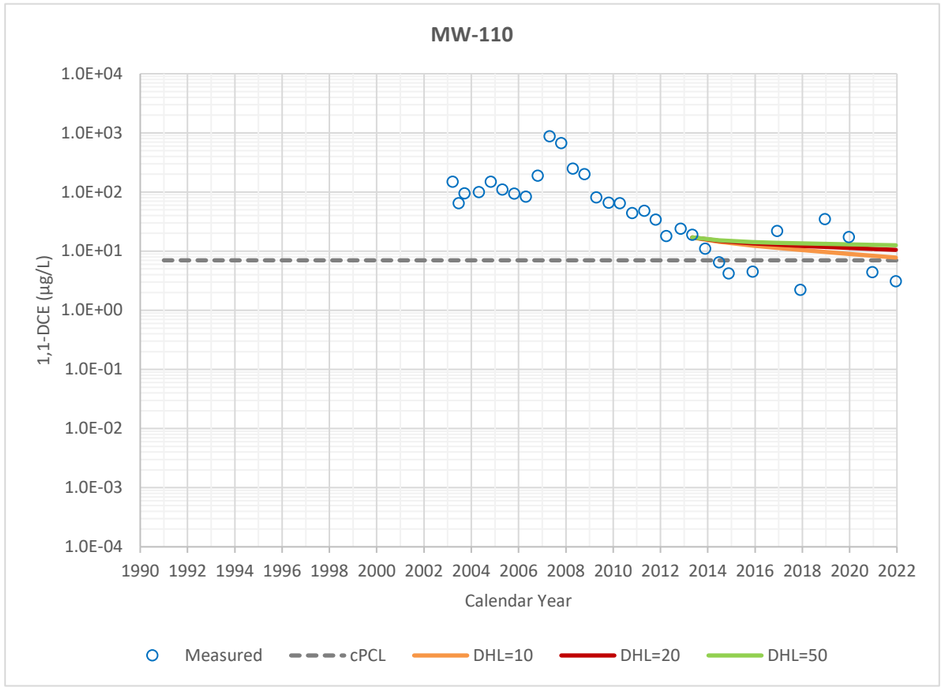

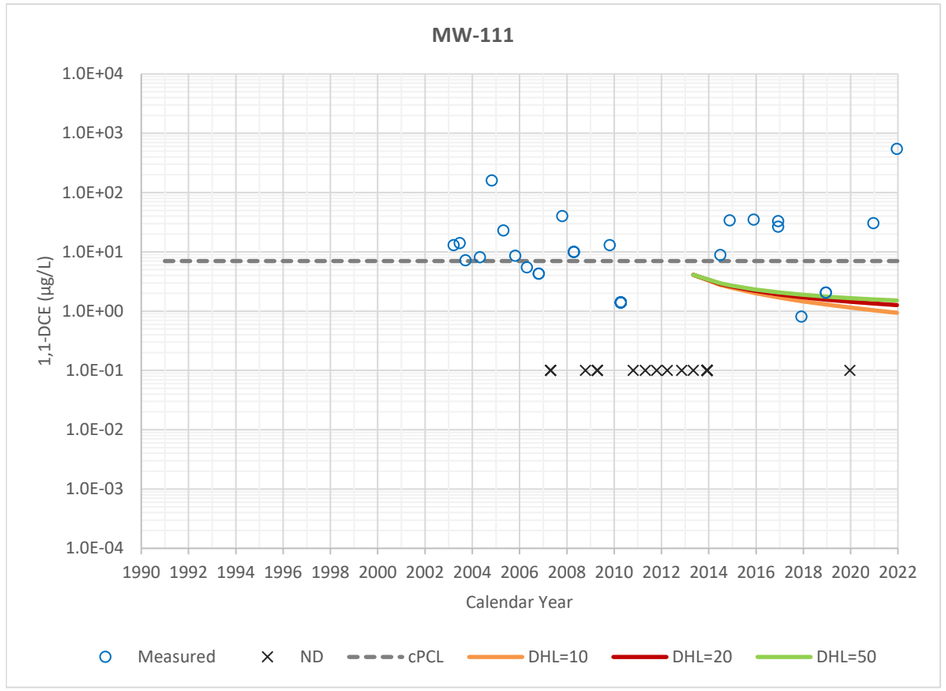

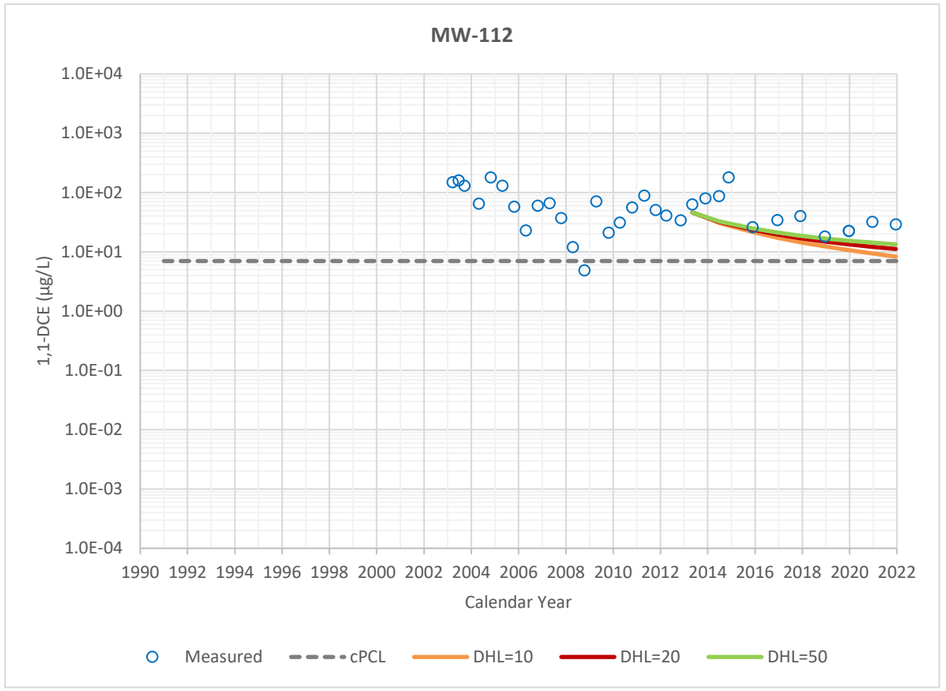

Notes:

1,1-DCE = 1,1-dichloroethene

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Attachment A-1.
Modeled and Measured
1,1-DCE Chemographs
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility
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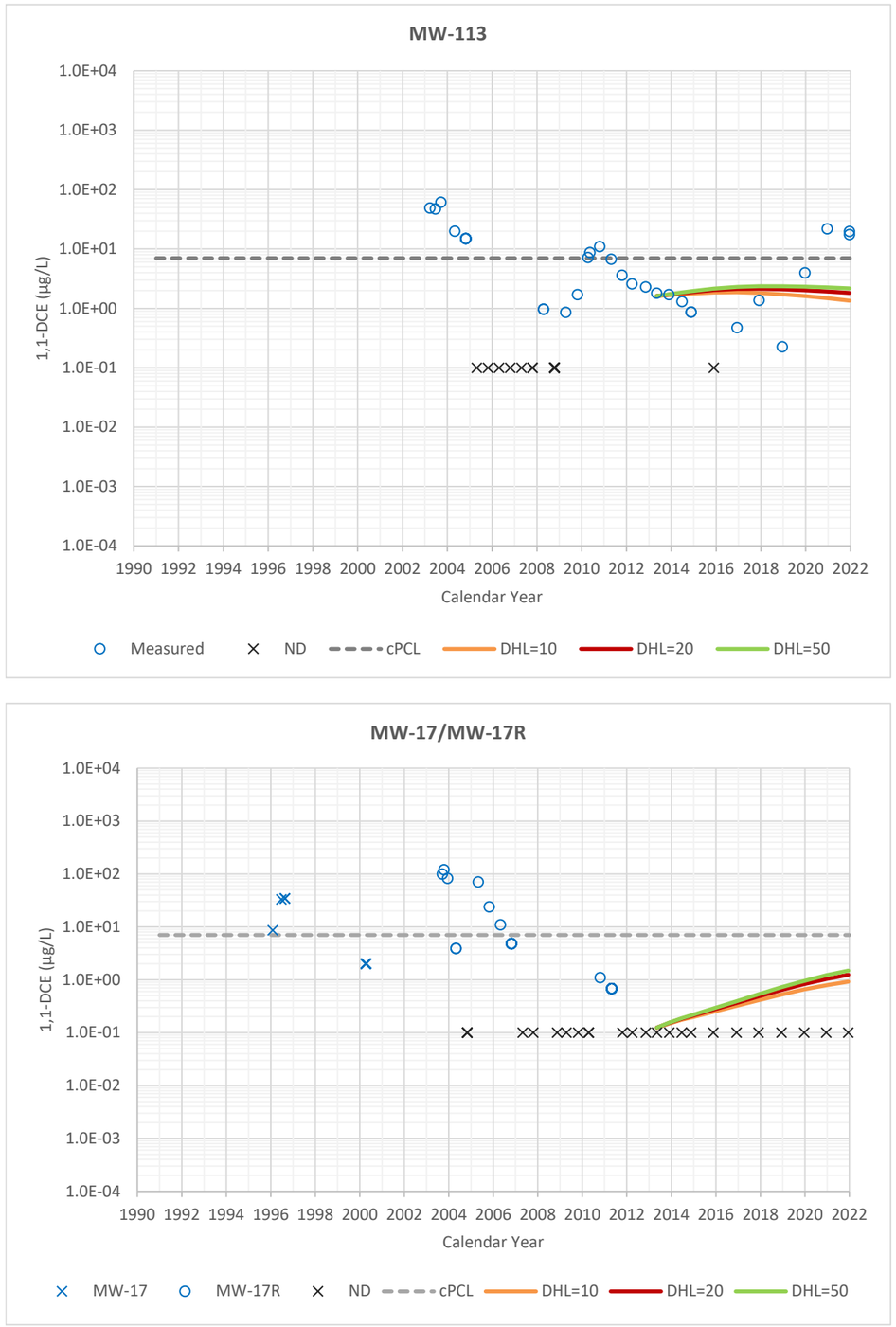

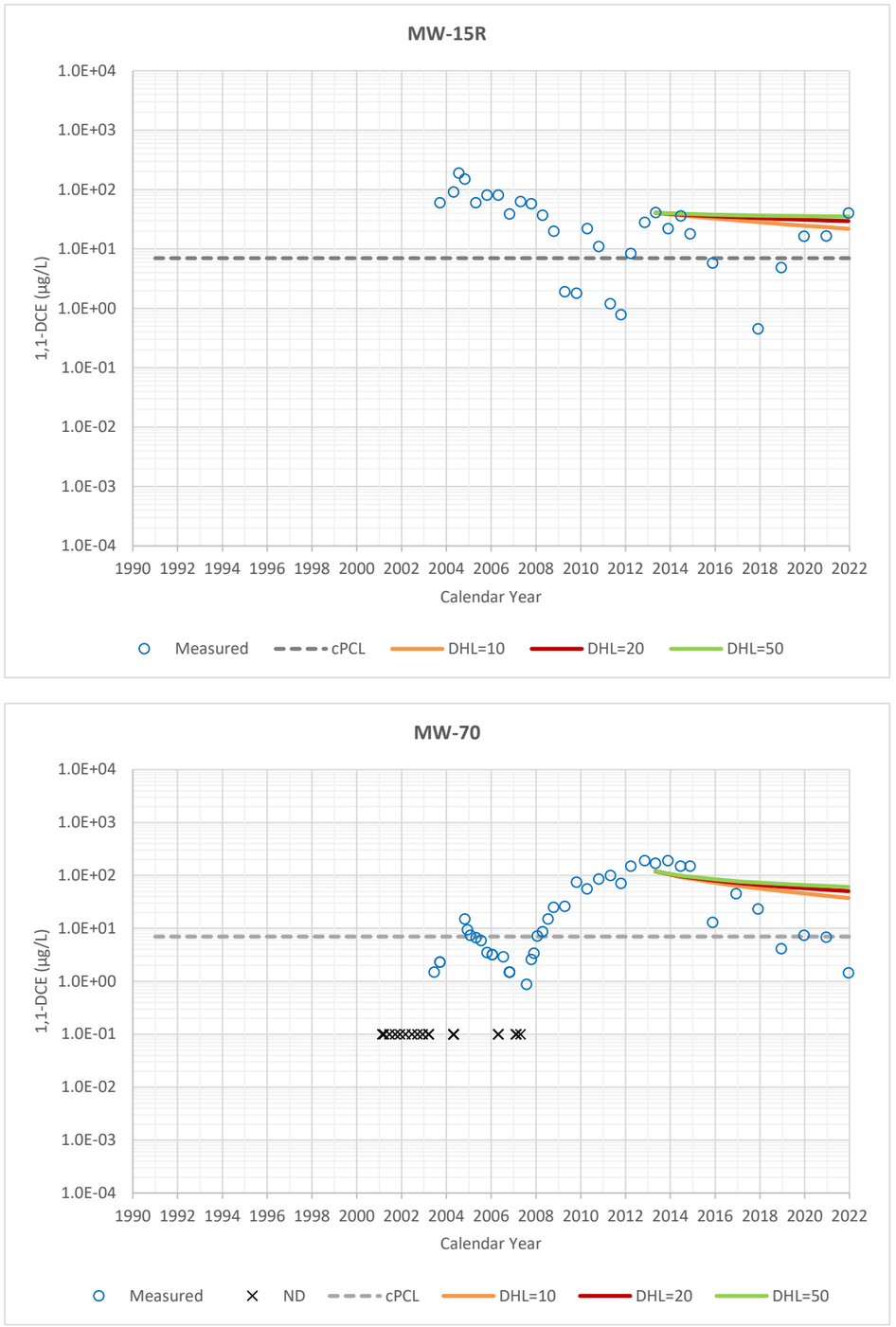

Notes:

1,1-DCE = 1,1-dichloroethene

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Attachment A-1.
Modeled and Measured
1,1-DCE Chemographs
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility
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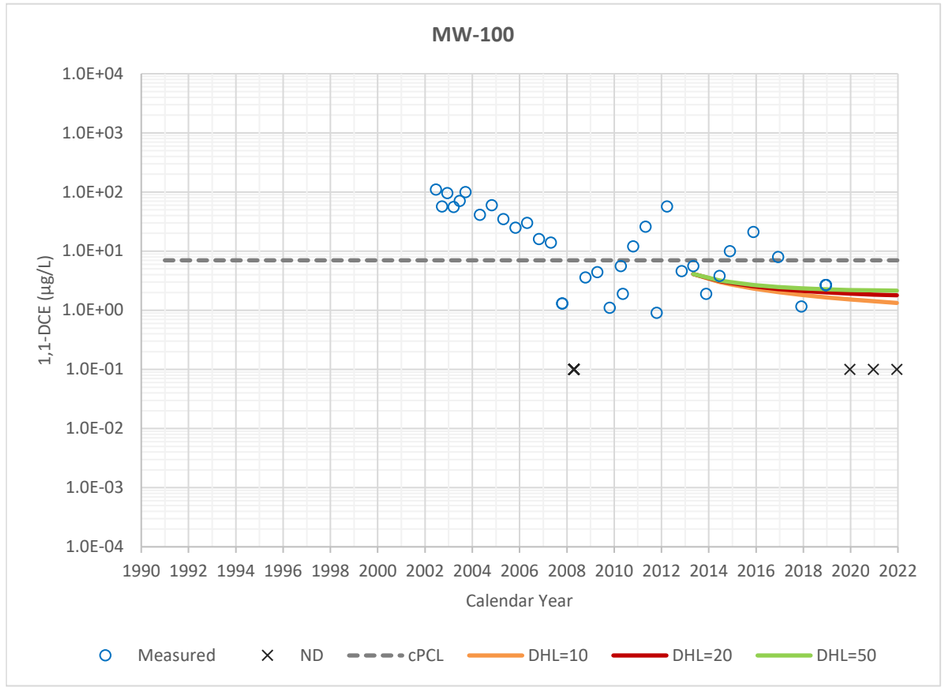

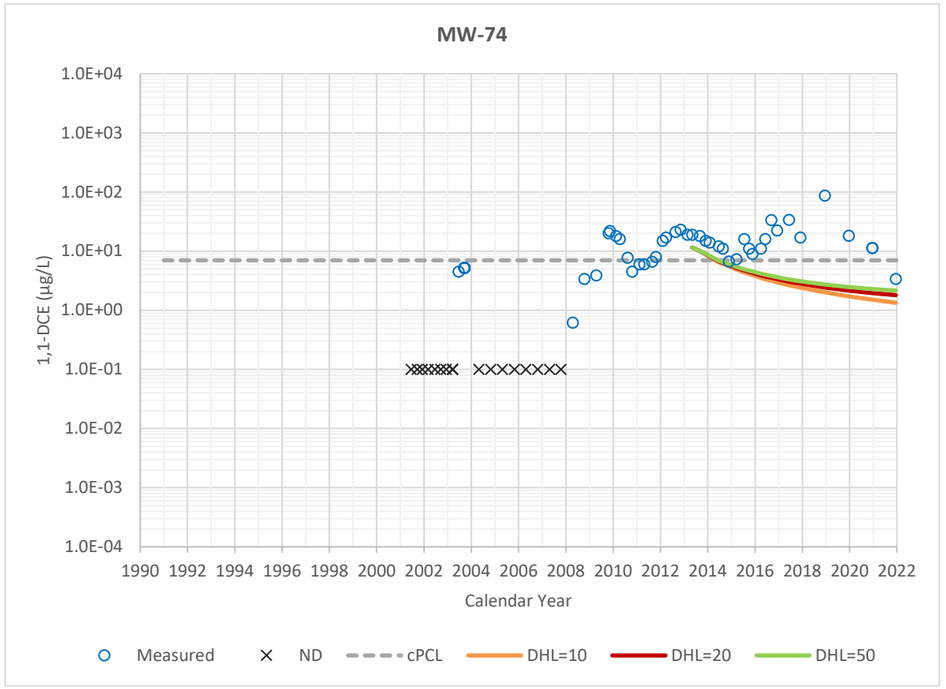

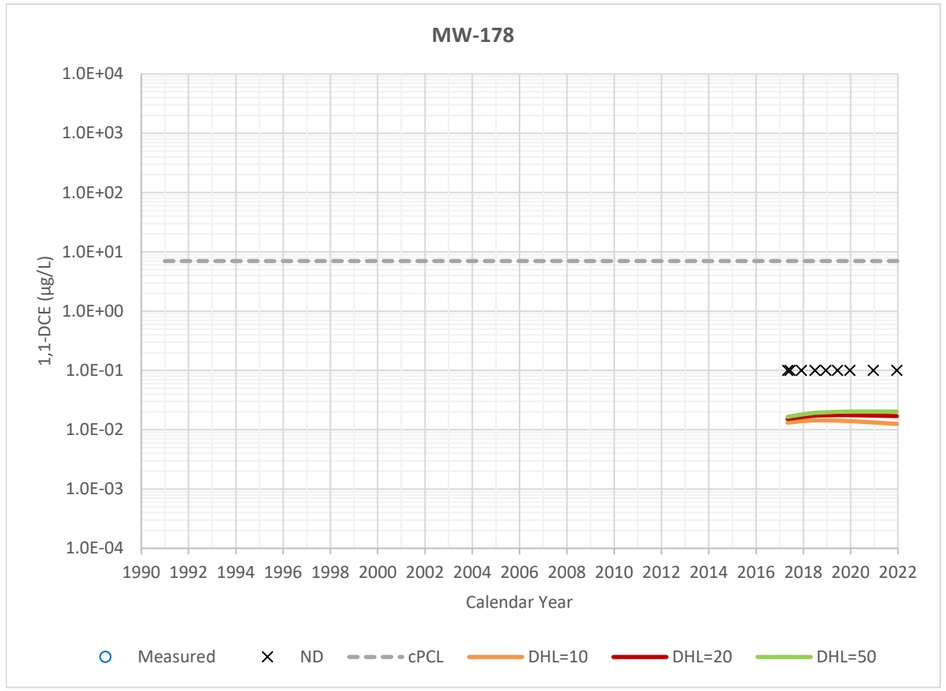

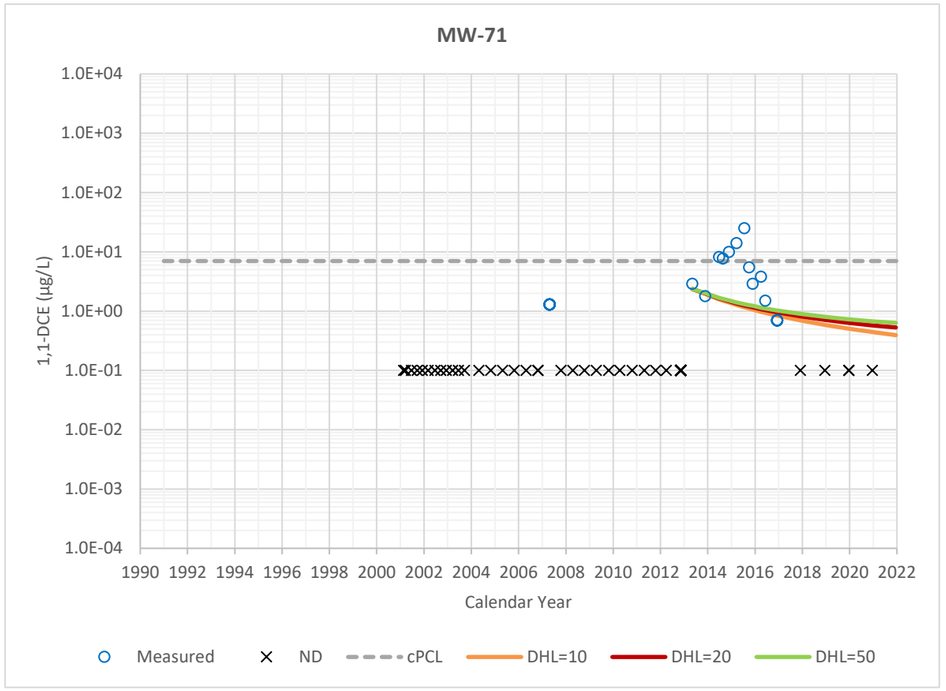

Notes:

1,1-DCE = 1,1-dichloroethene

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Attachment A-1.
Modeled and Measured
1,1-DCE Chemographs
2022 Groundwater Modeling Technical Memorandum
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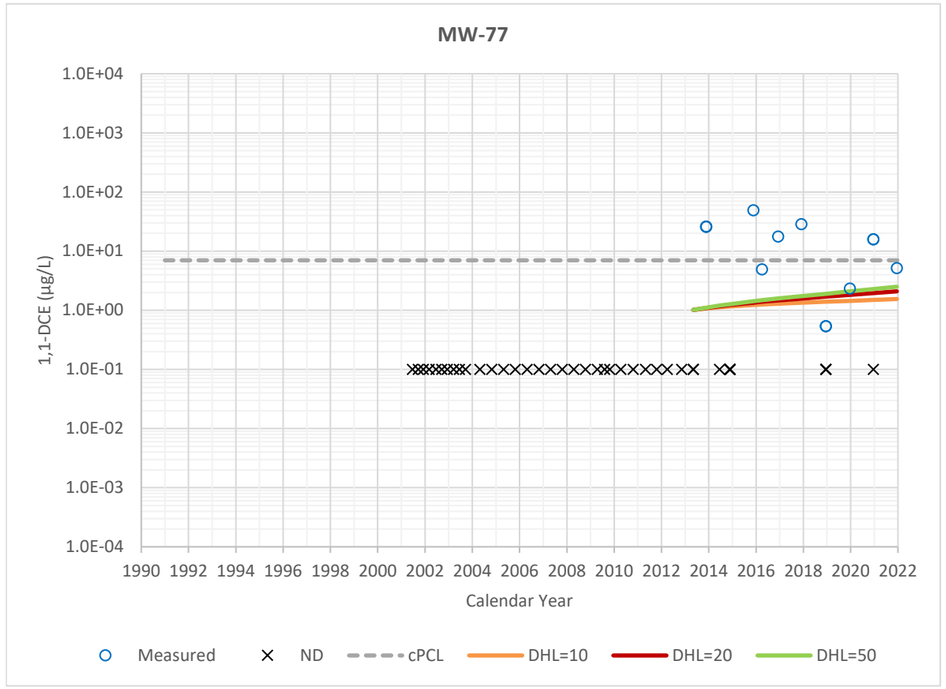

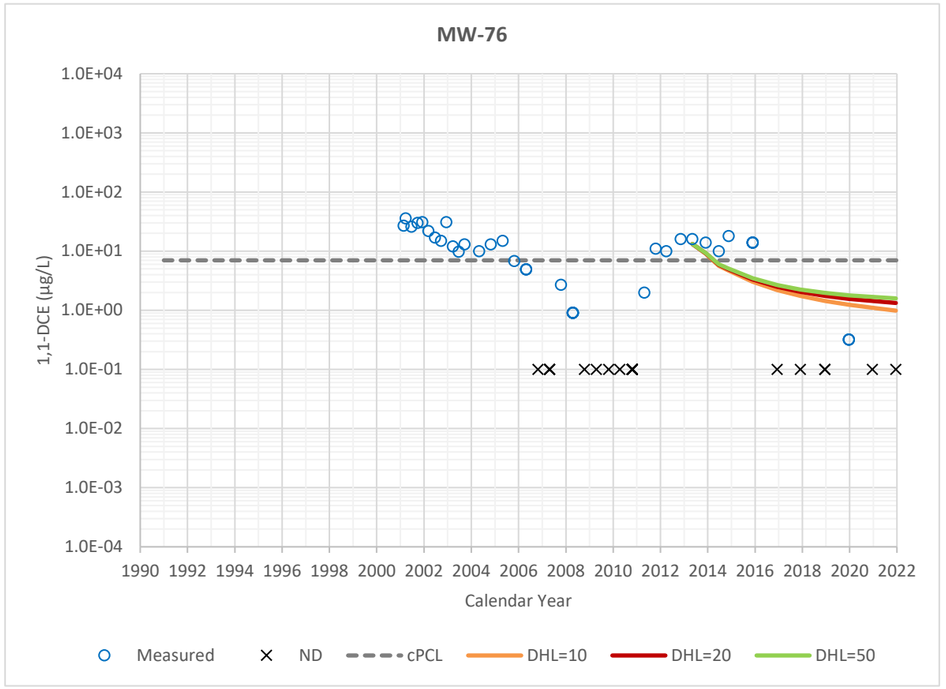

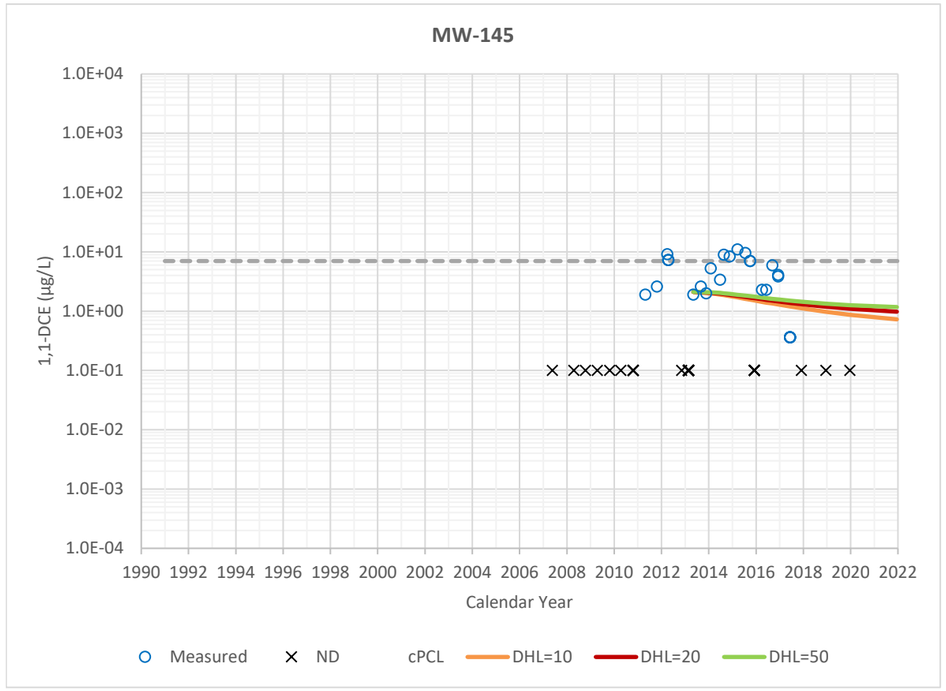

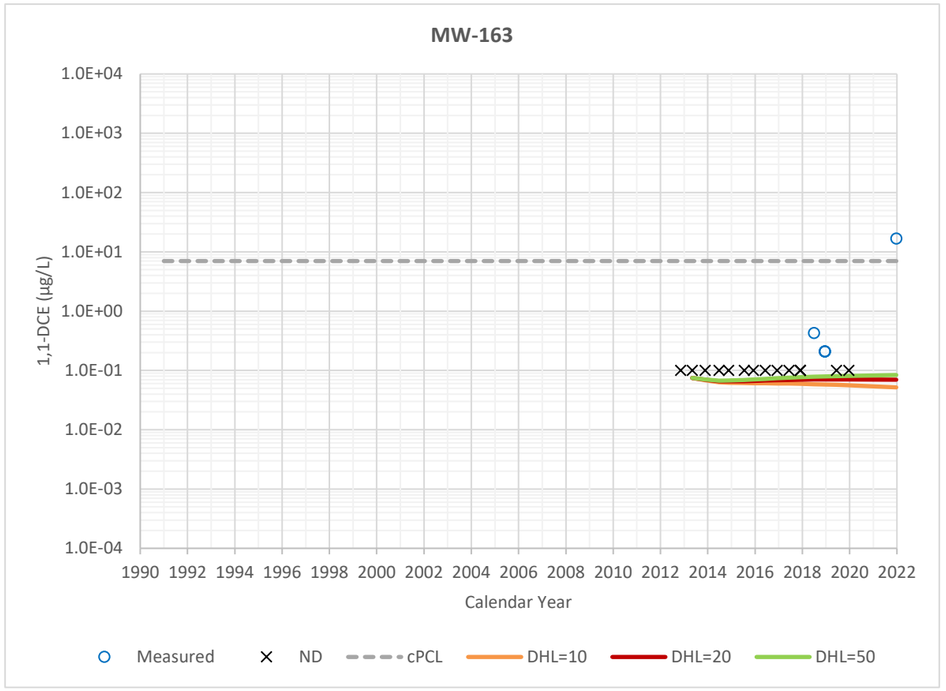

Notes:

1,1-DCE = 1,1-dichloroethene

cPCL = critical protective concentration level

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µg/L = microgram per liter

ND = not detected

Attachment A-1.
Modeled and Measured
1,1-DCE Chemographs
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility
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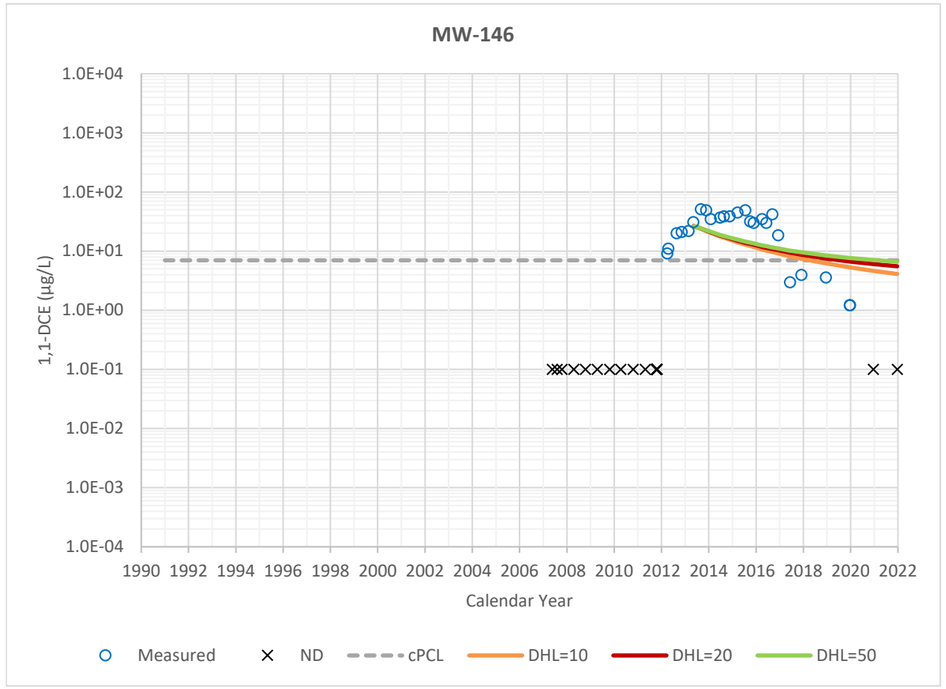
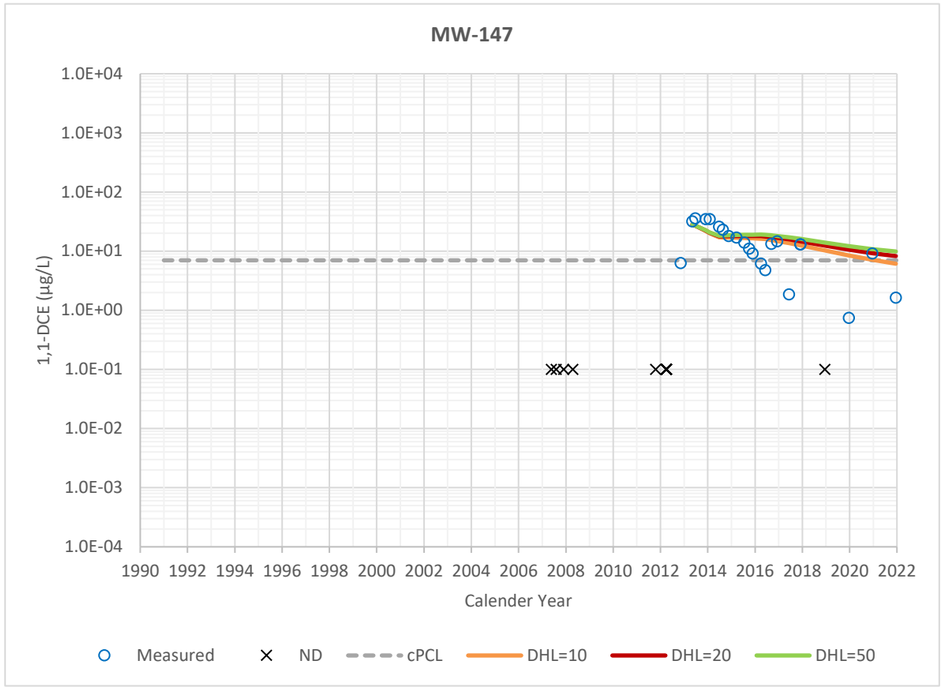
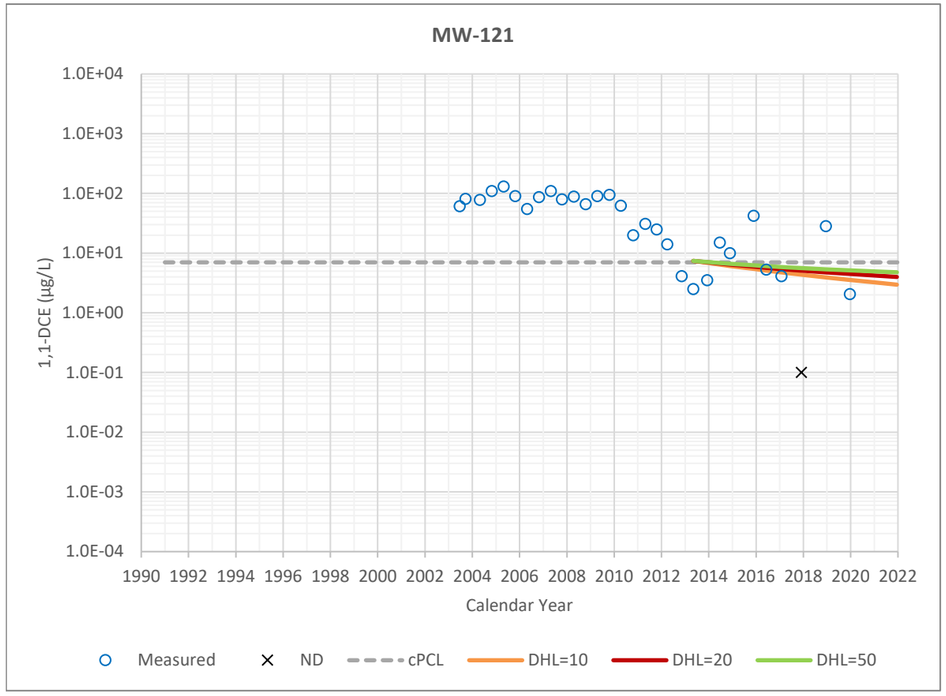
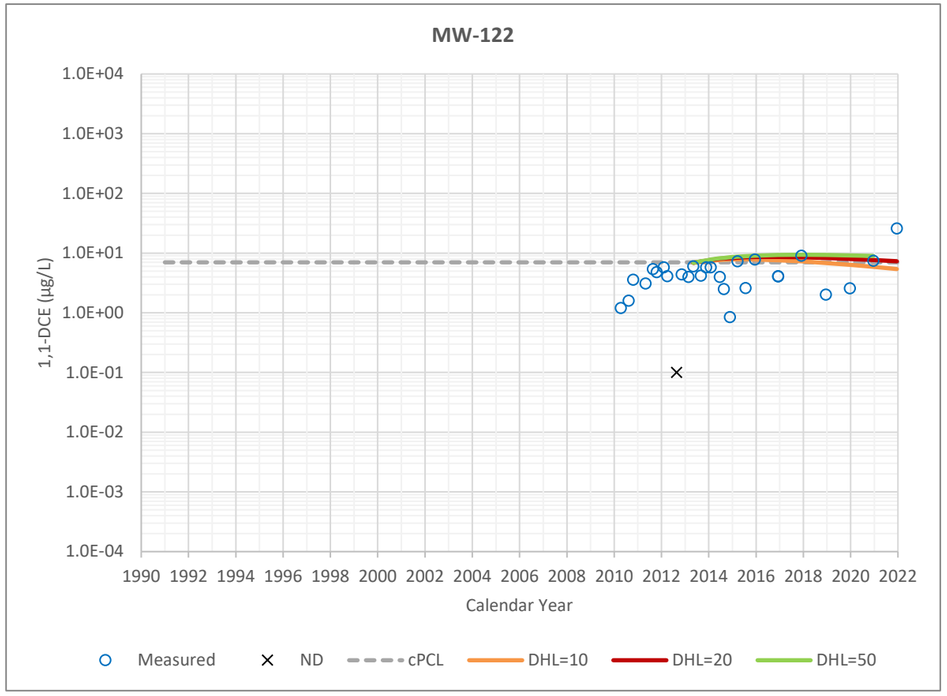
CH2M HILL Engineers, Inc.









Notes:

1,1-DCE = 1,1-dichloroethene

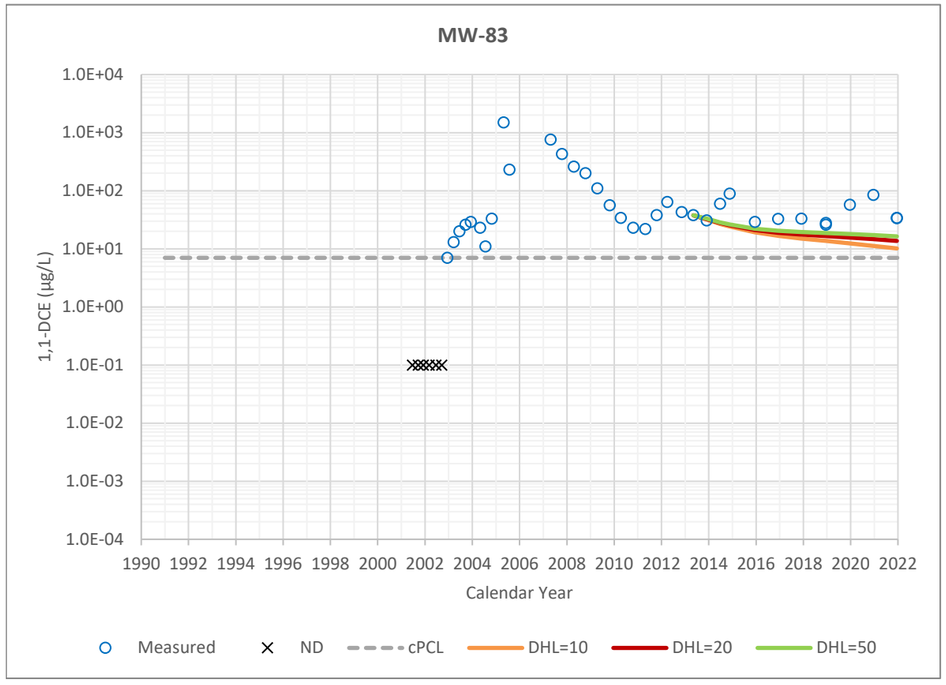
cPCL = critical protective concentration level

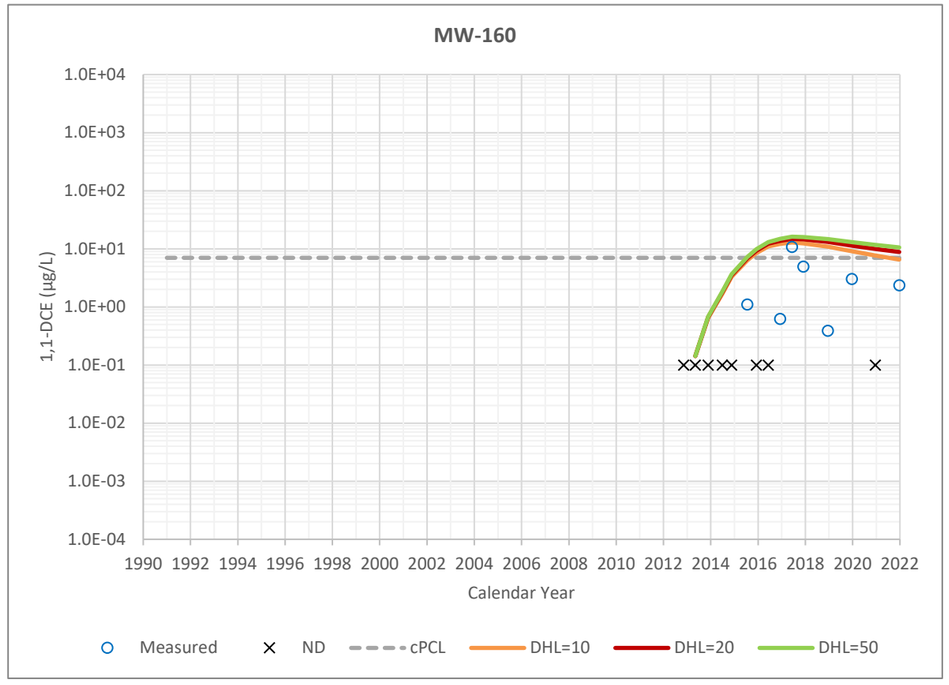
DHL = degradation half life in years

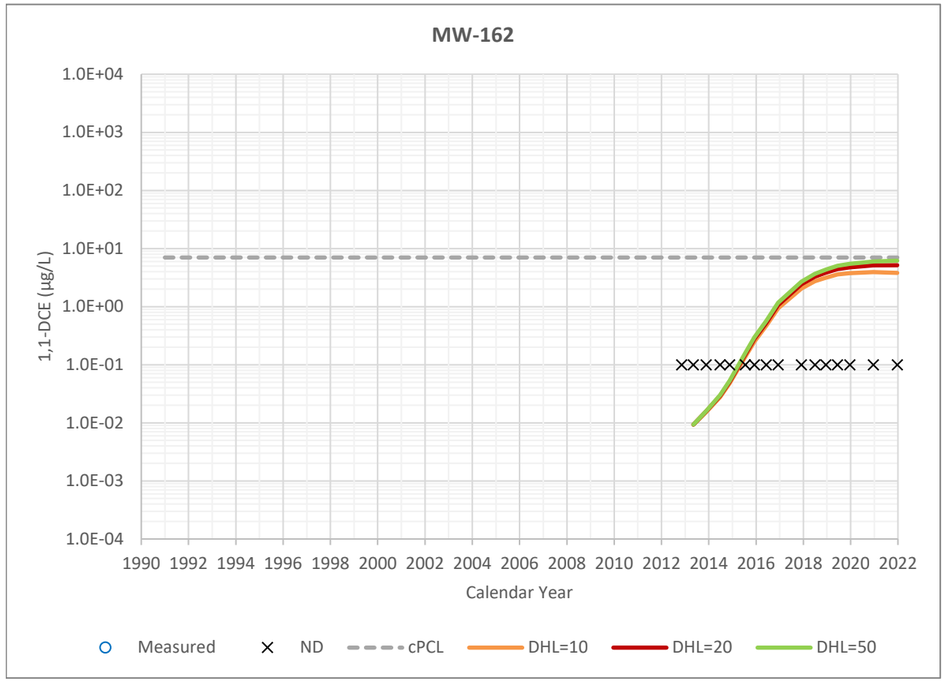
µg/L = microgram per liter

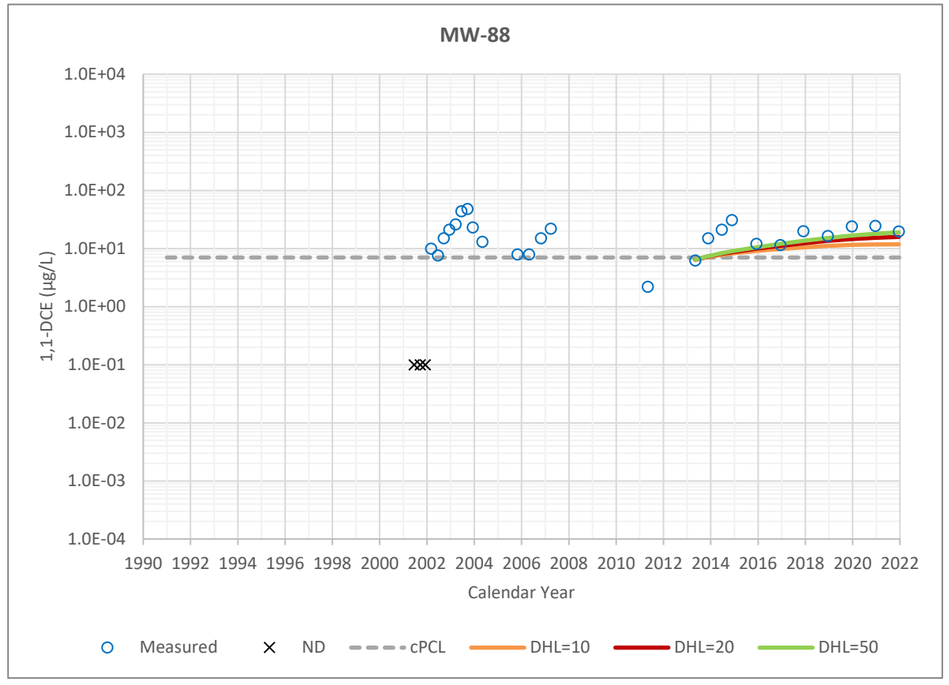
ND = not detected

Attachment A-1.
Modeled and Measured
1,1-DCE Chemographs
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility
Houston, Texas
CH2M HILL Engineers, Inc.









Notes:

1,1-DCE = 1,1-dichloroethene

cPCL = critical protective concentration level

DHL = degradation half life in years

µg/L = microgram per liter

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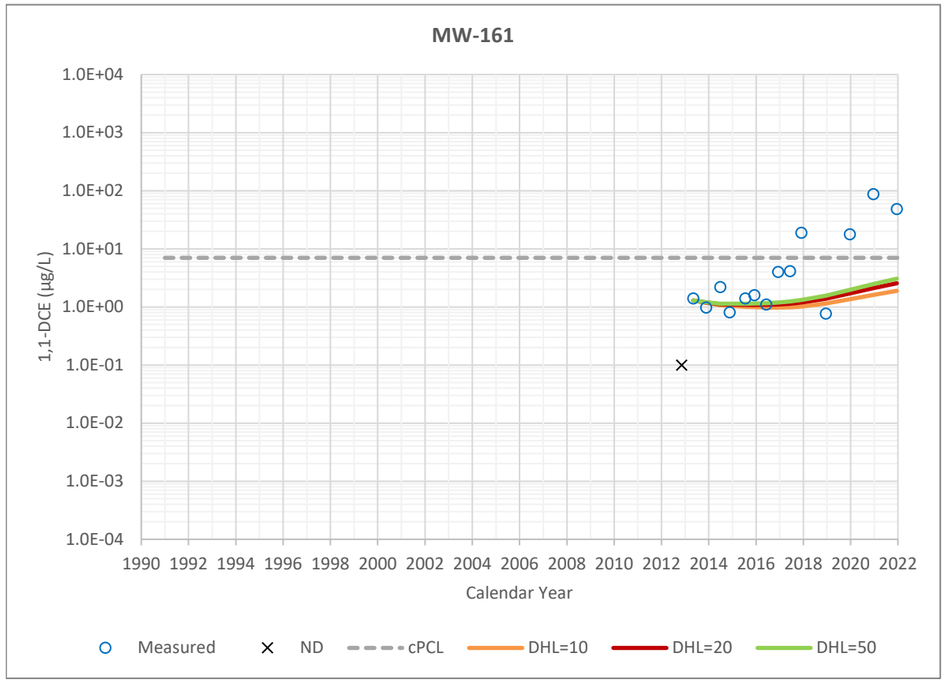
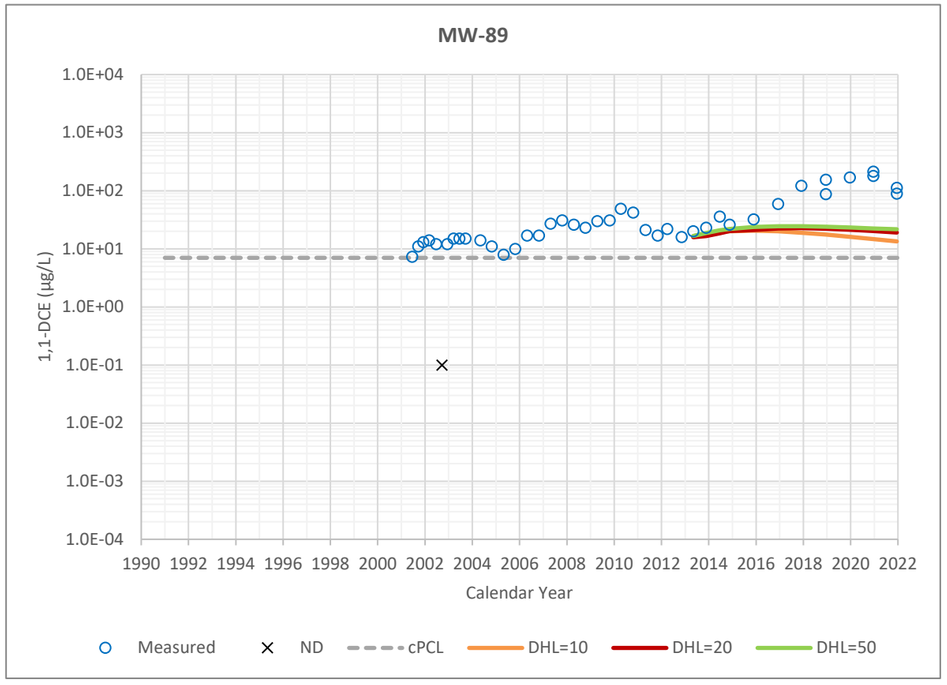
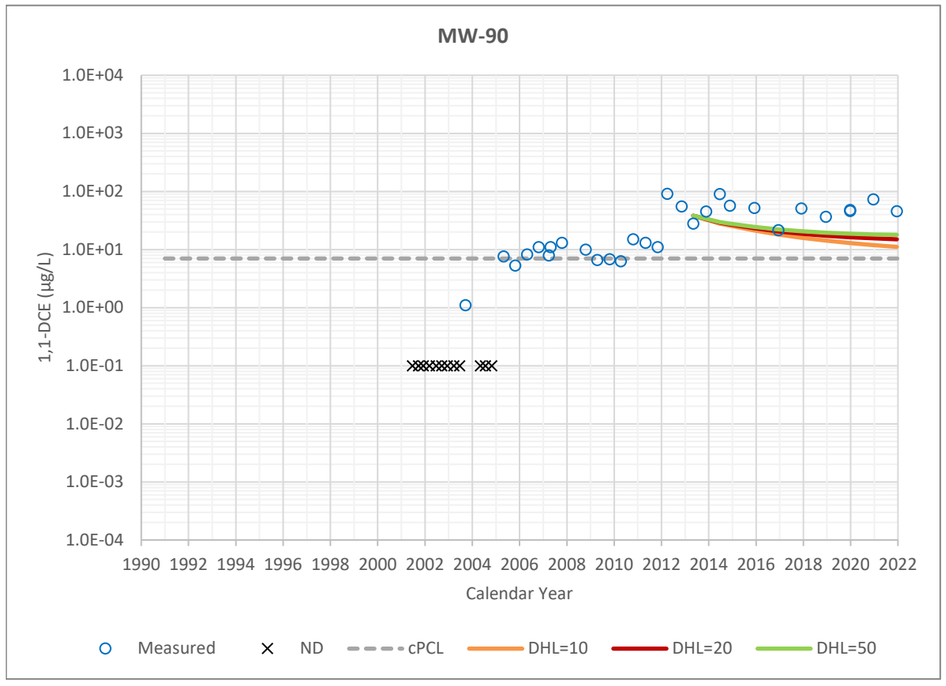
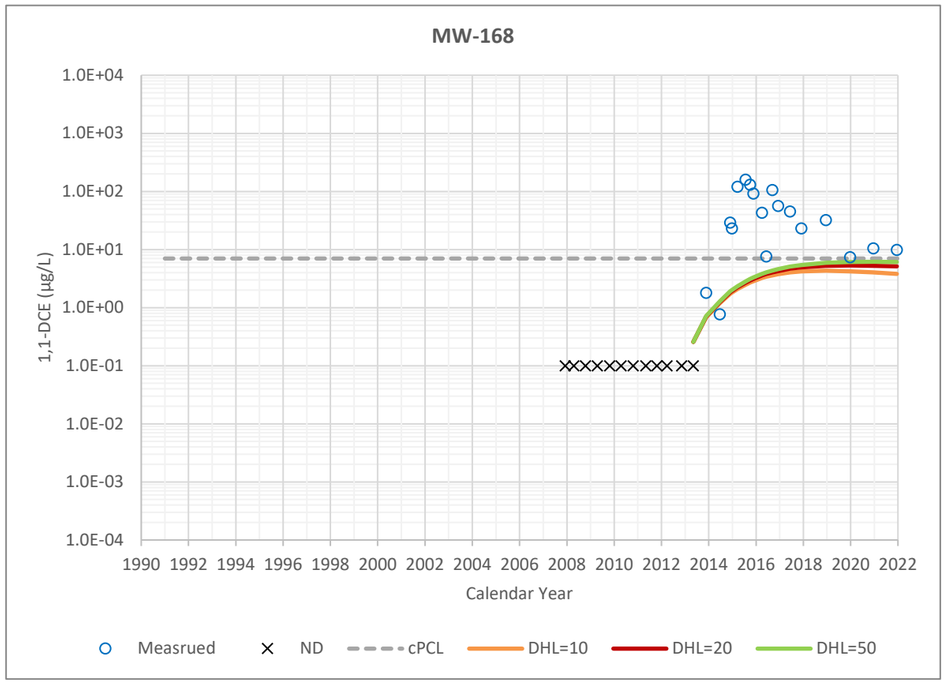
Attachment A-1.
Modeled and Measured
1,1-DCE Chemographs
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility
Houston, Texas
CH2M HILL Engineers, Inc.









Notes:

1,1-DCE = 1,1-dichloroethene

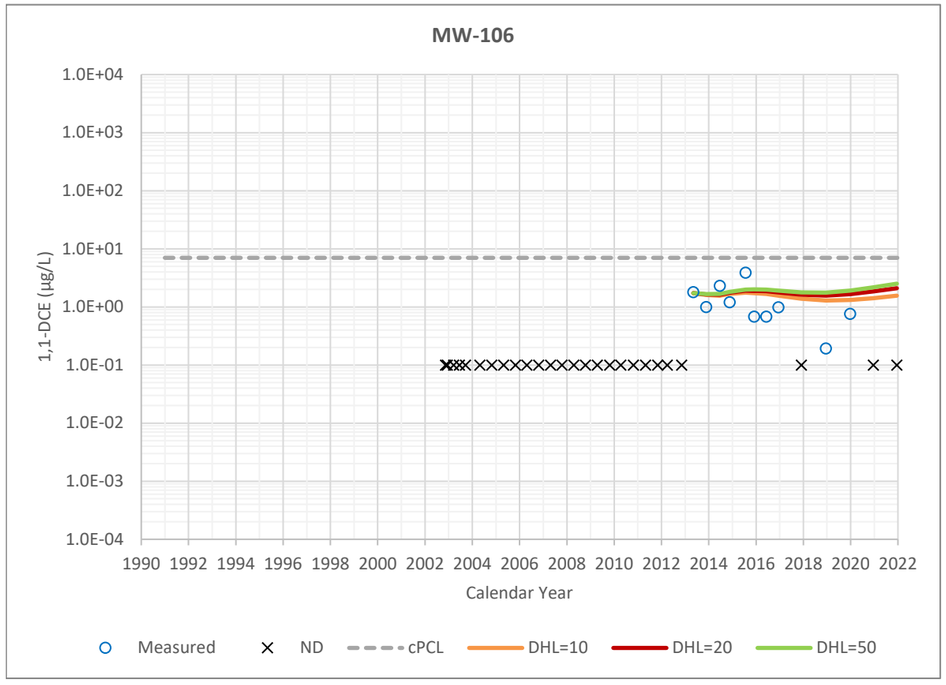
cPCL = critical protective concentration level

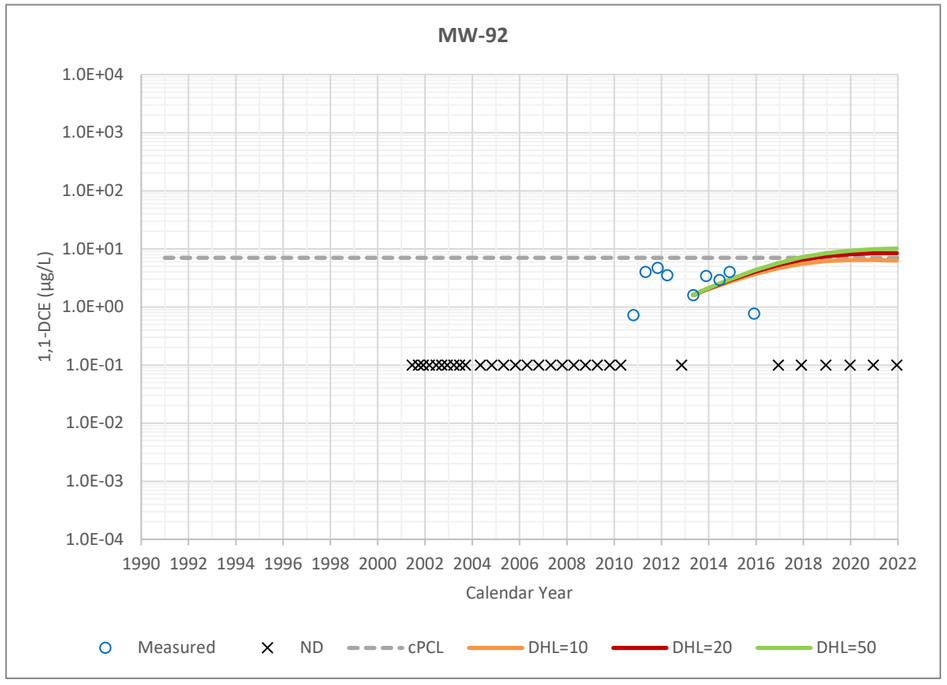
DHL = degradation half life in years

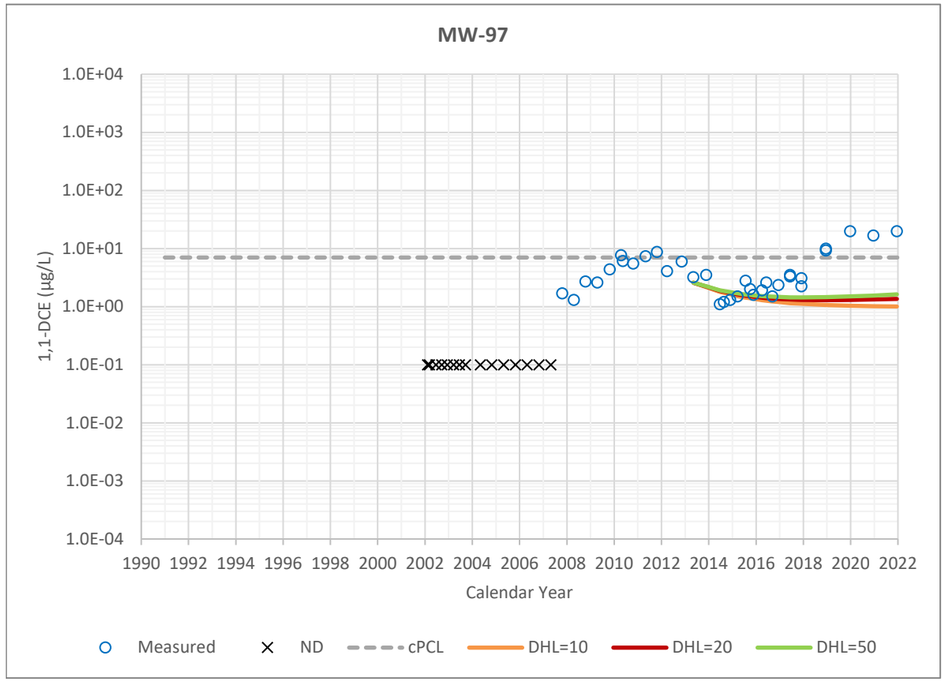
µg/L = microgram per liter

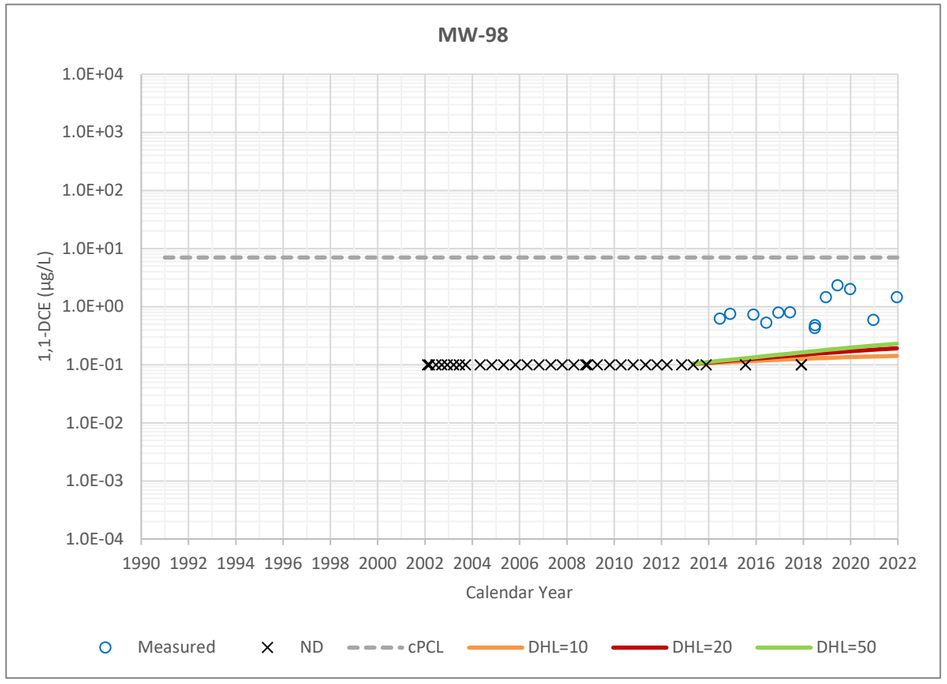
ND = not detected

Attachment A-1.
Modeled and Measured
1,1-DCE Chemographs
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility
Houston, Texas
CH2M HILL Engineers, Inc.









Notes:

1,1-DCE = 1,1-dichloroethene

cPCL = critical protective concentration level

DHL = degradation half life in years

µg/L = microgram per liter

ND = not detected

Attachment A-1.

Modeled and Measured

1,1-DCE Chemographs

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Houston, Texas

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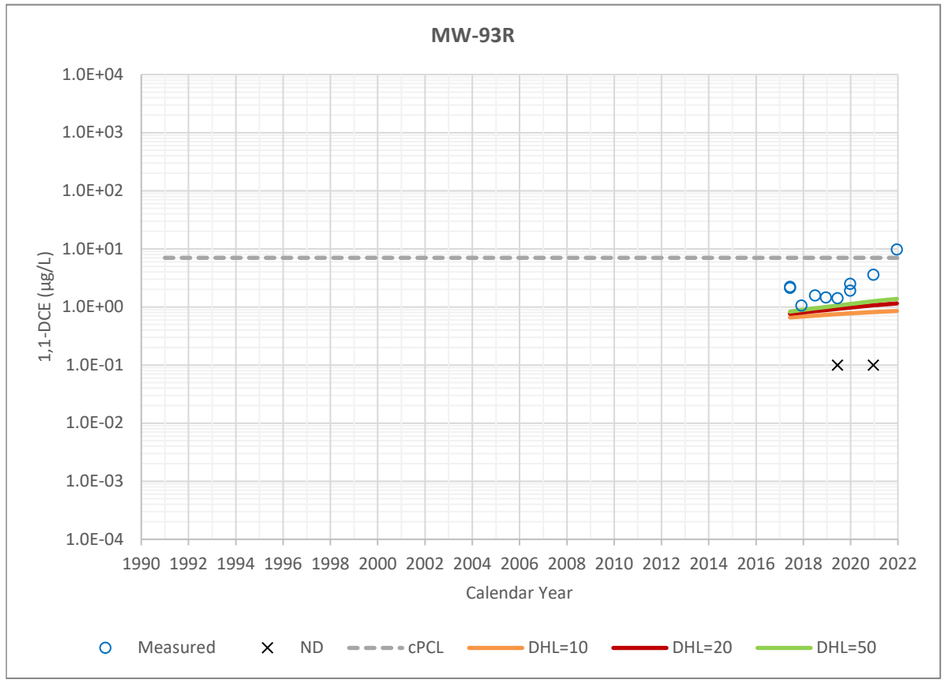

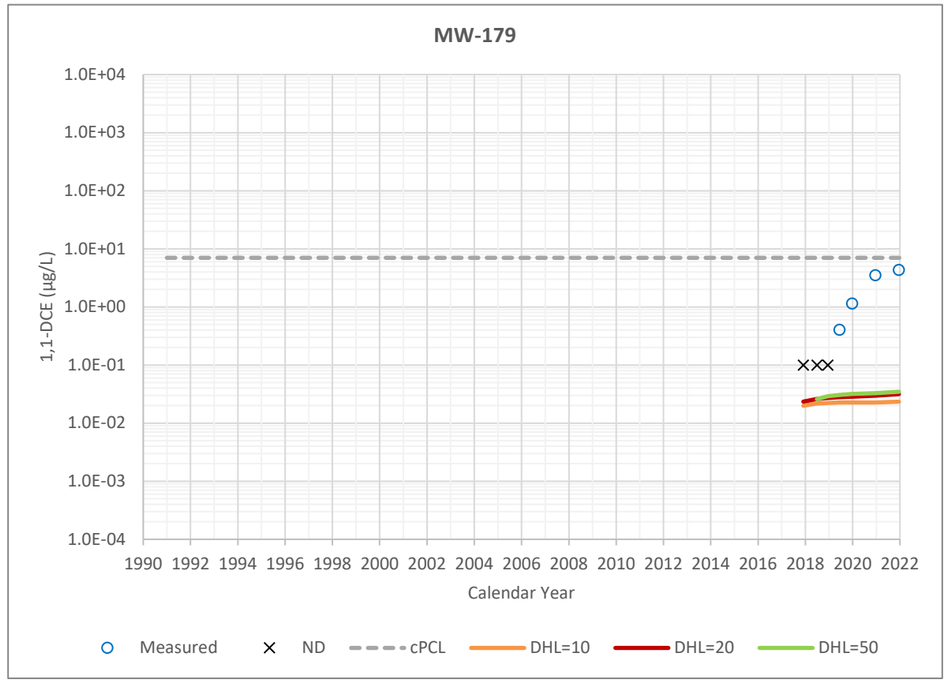

Notes:

1,1-DCE = 1,1-dichloroethene

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Attachment A-1.
Modeled and Measured
1,1-DCE Chemographs
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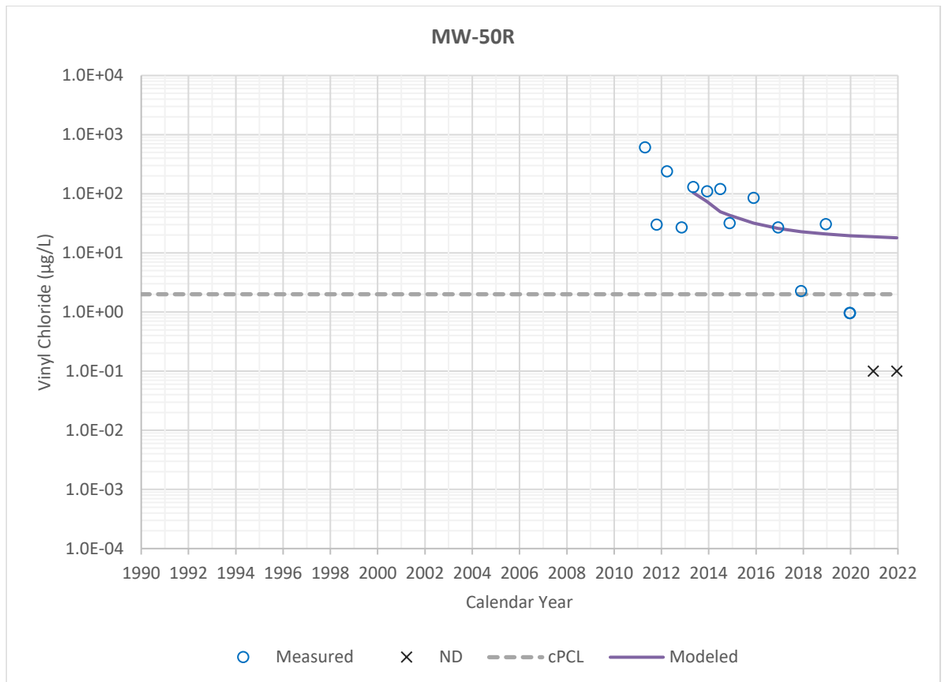
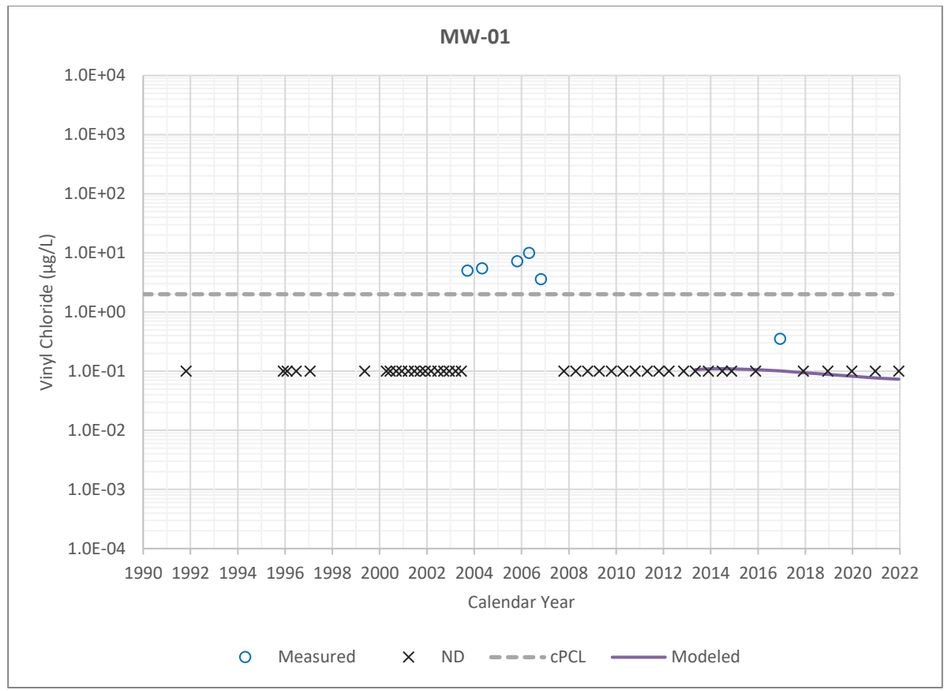
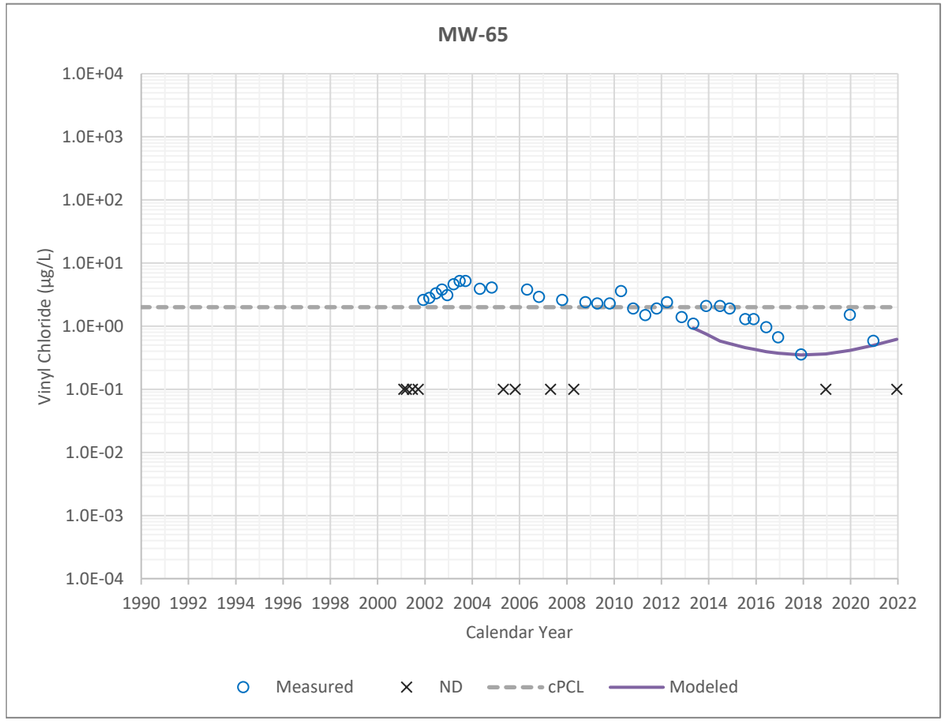
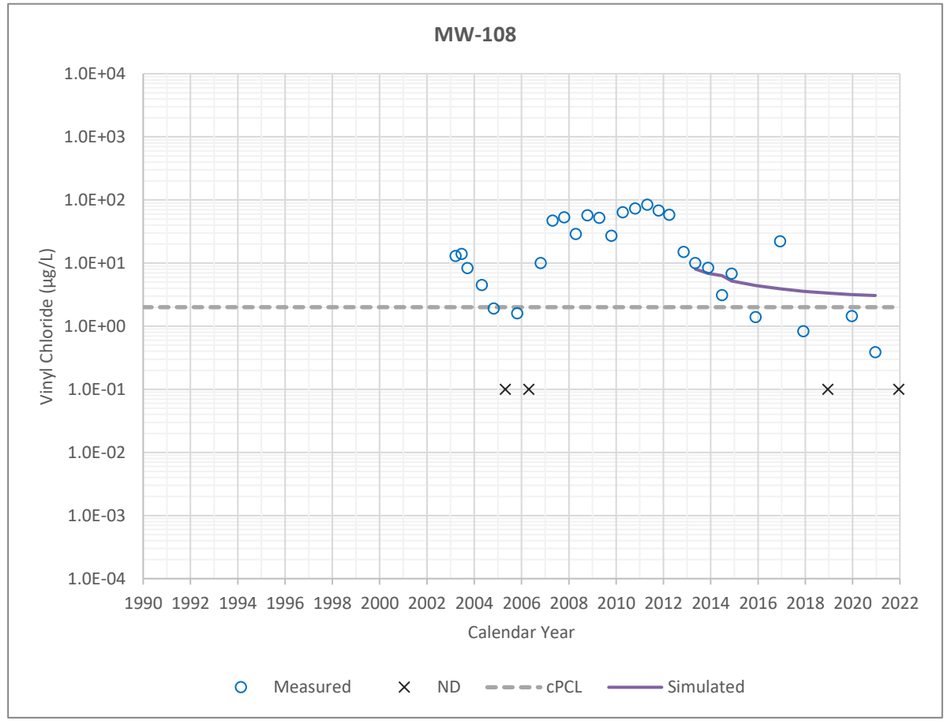
Attachment A-2
Modeled and Measured Vinyl Chloride Chemographs









Notes:

cPCL = critical protective concentration level

DHL = degradation half life in years

µg/L = microgram per liter

ND = not detected

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Vinyl Chloride Chemographs
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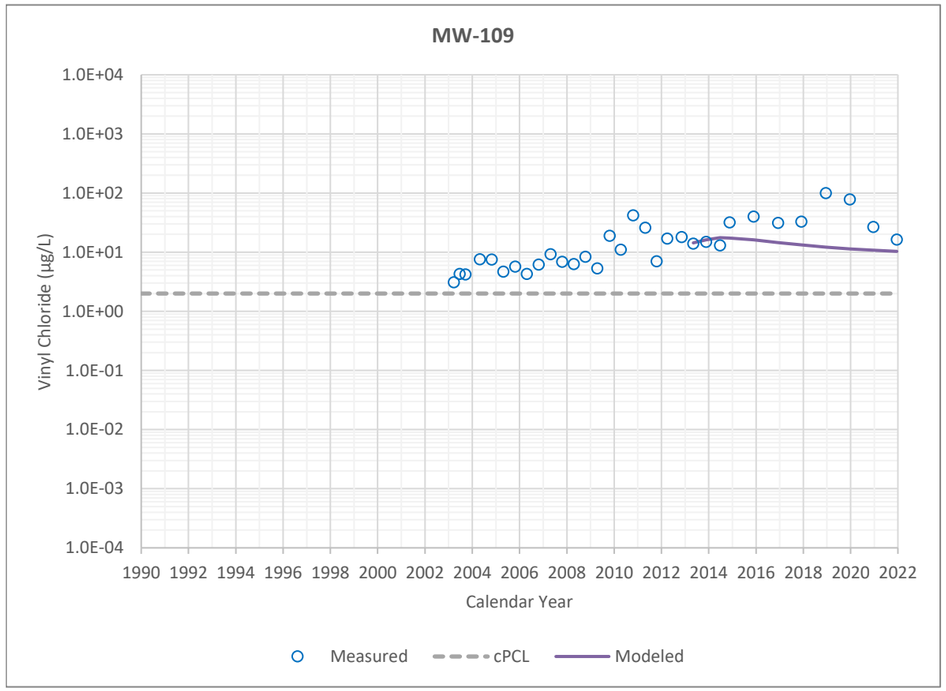

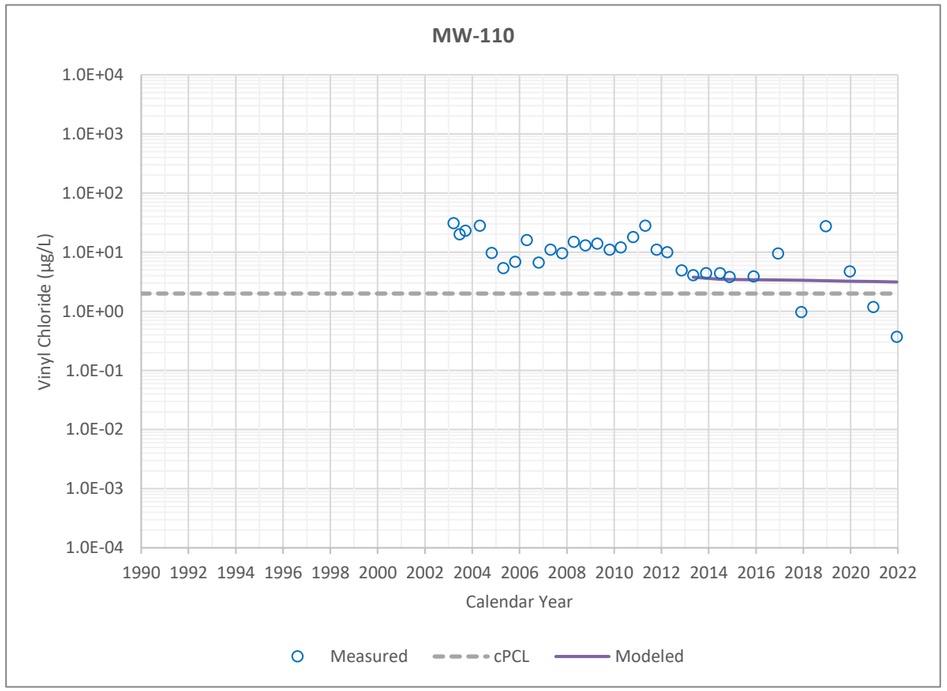

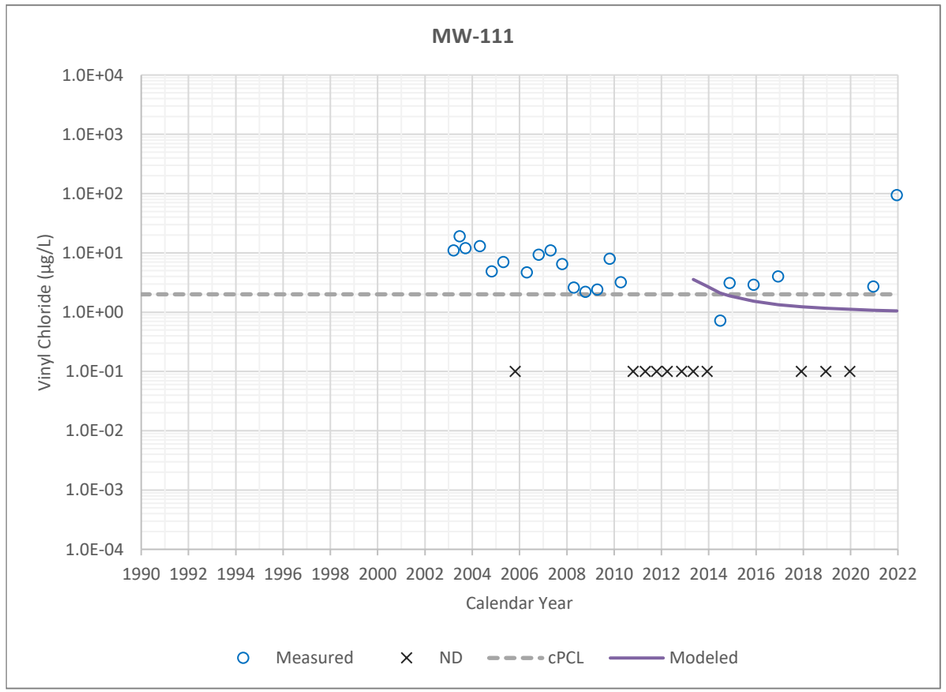

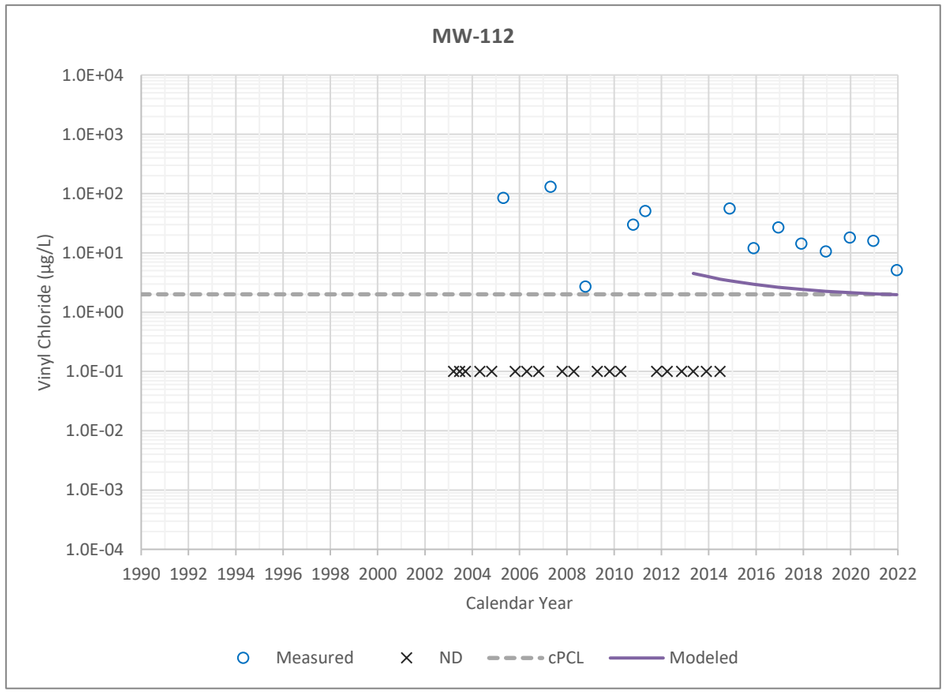

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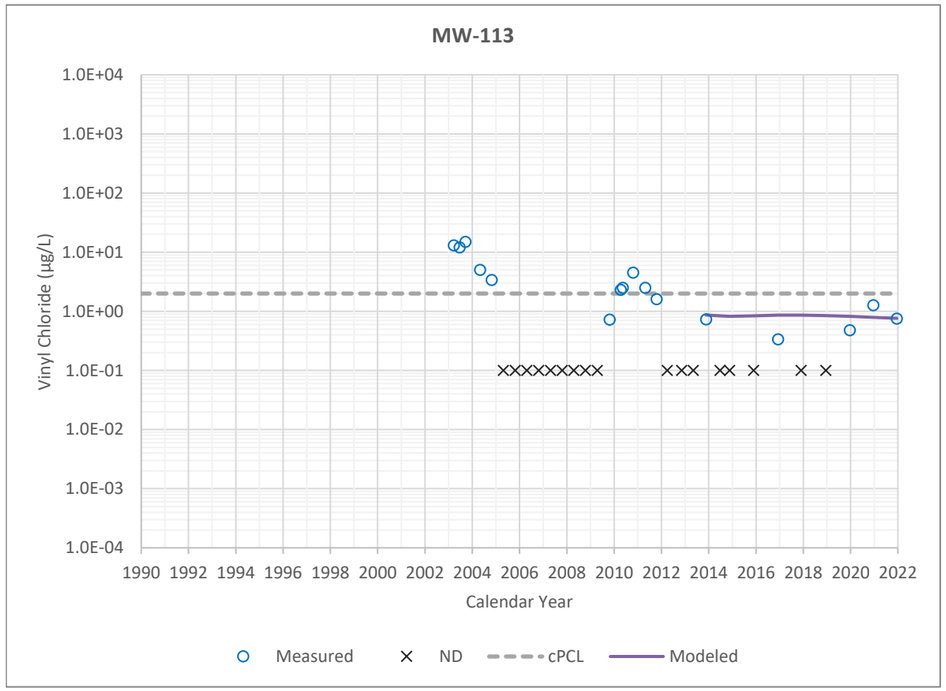

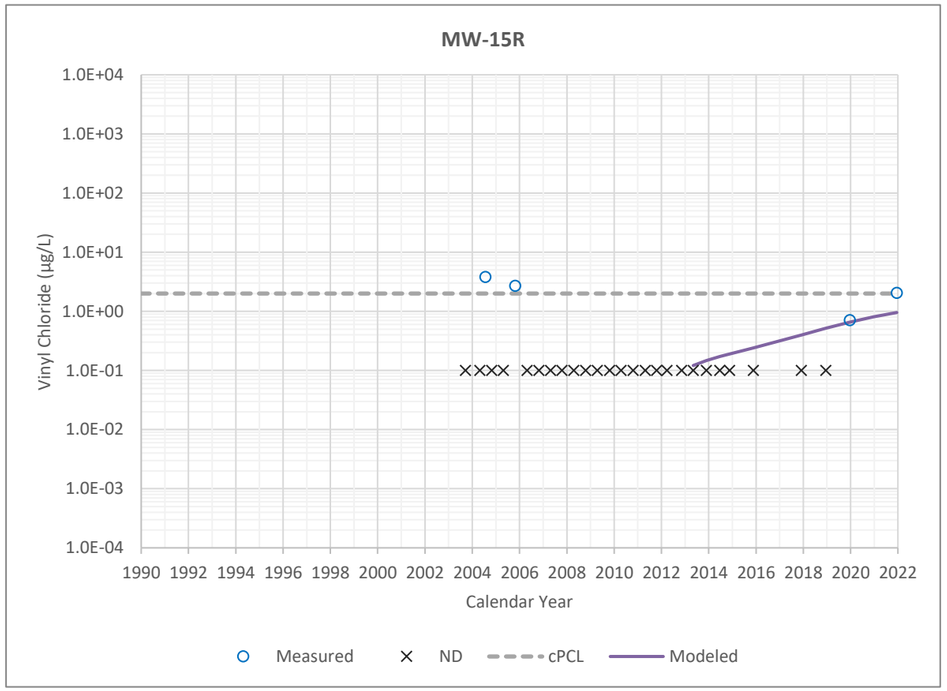

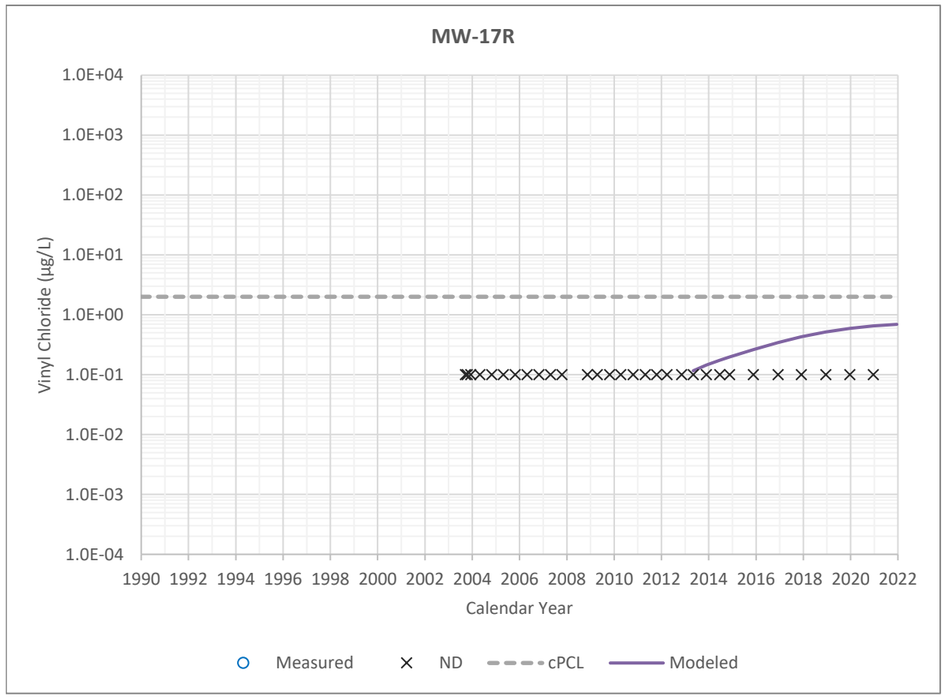

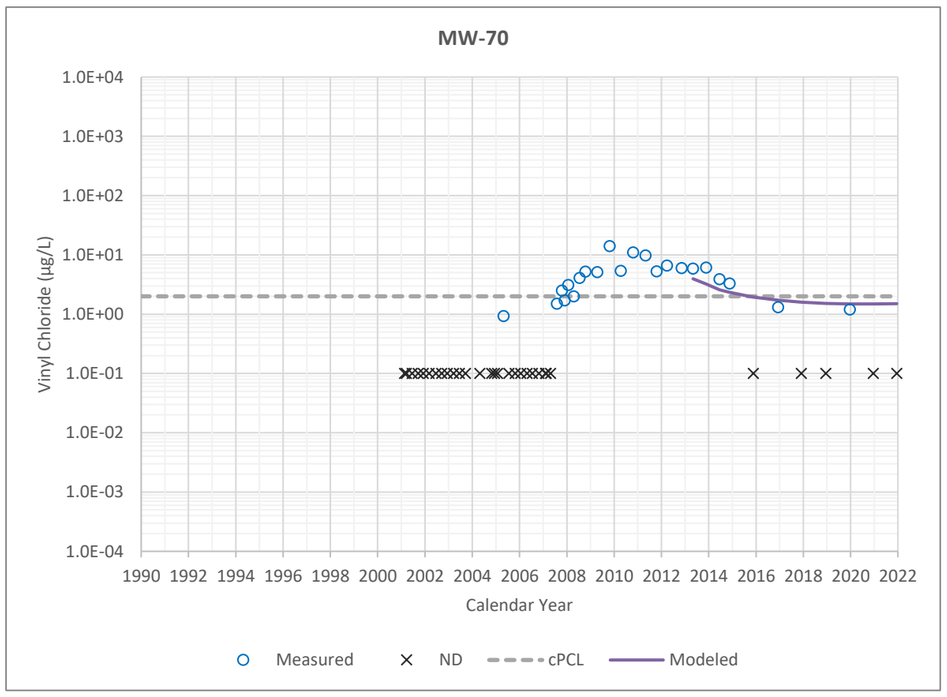

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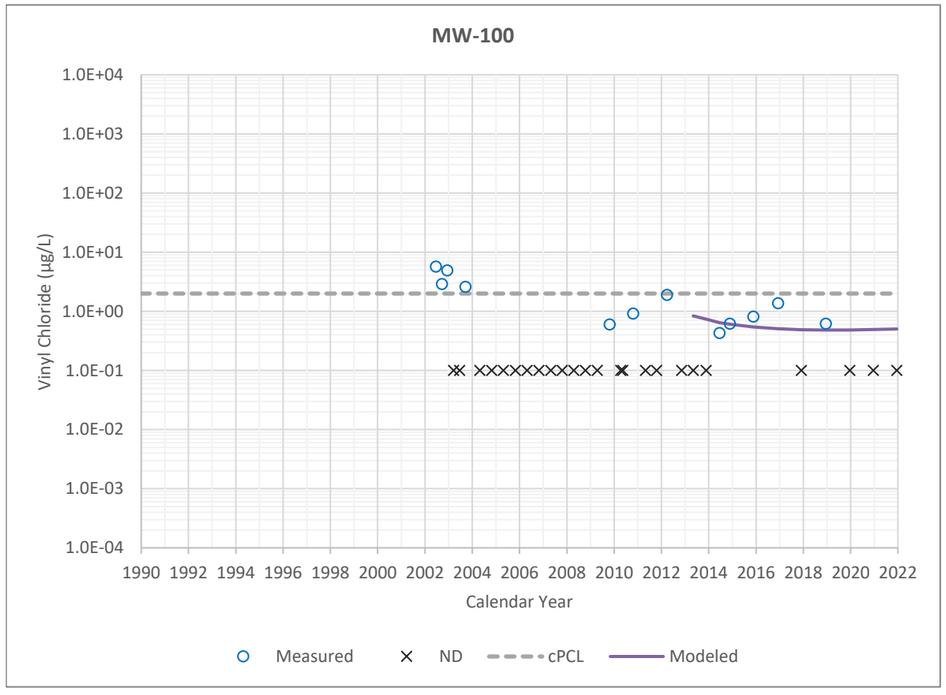

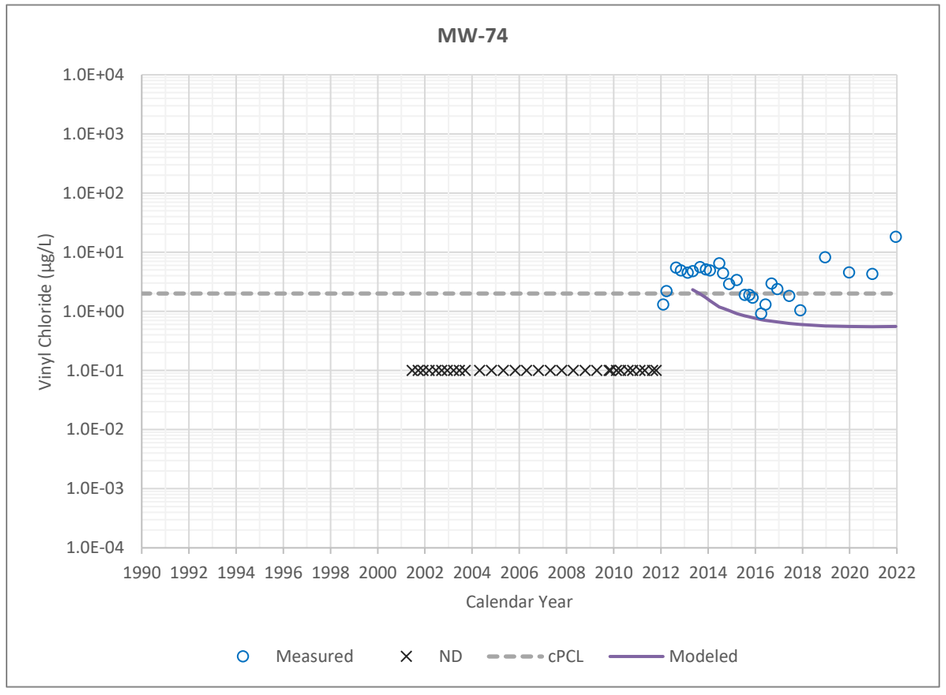

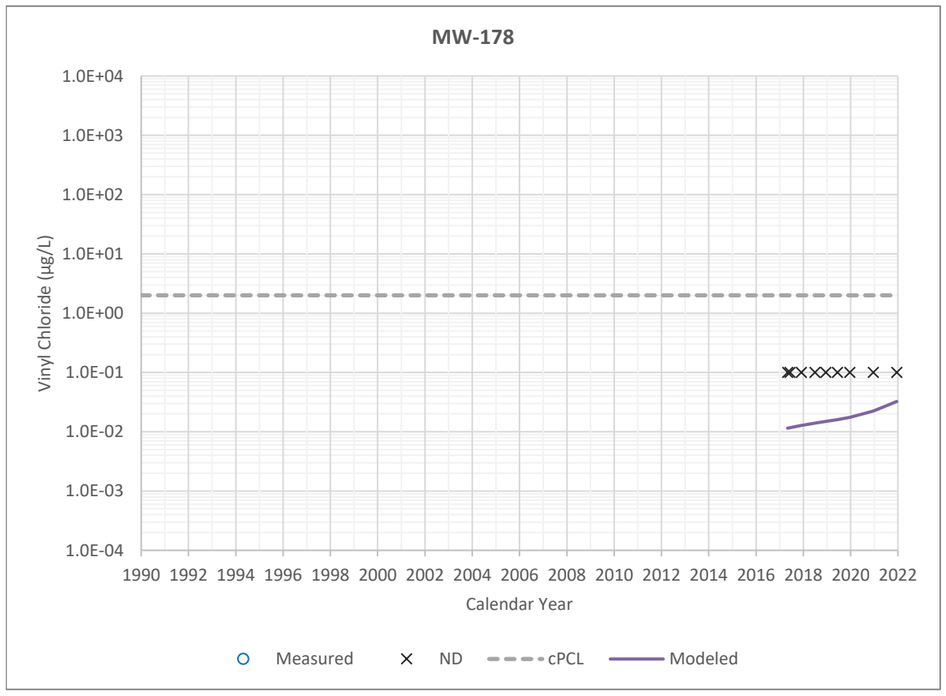

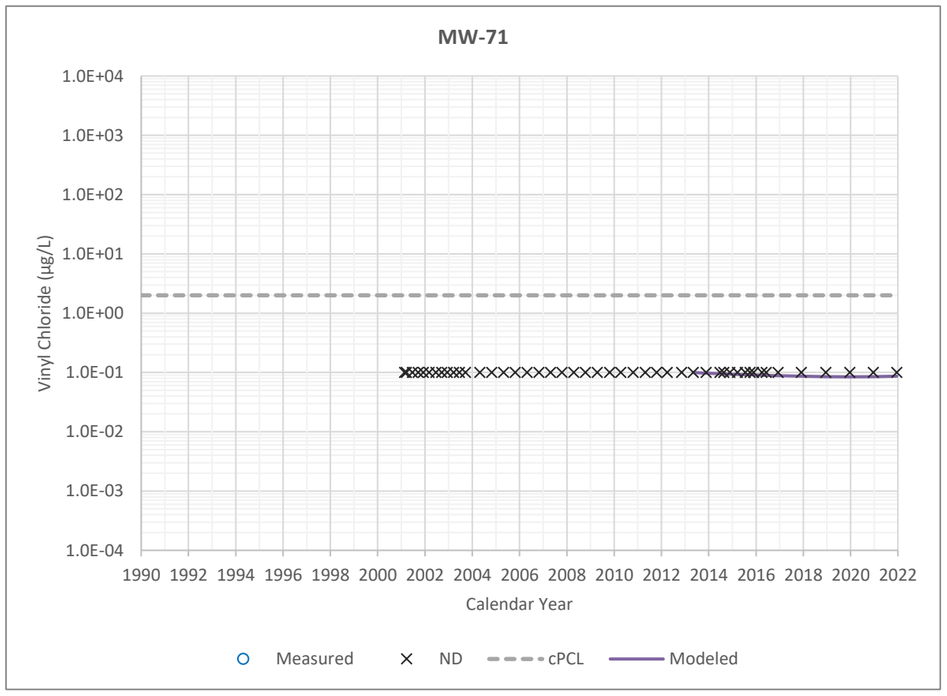

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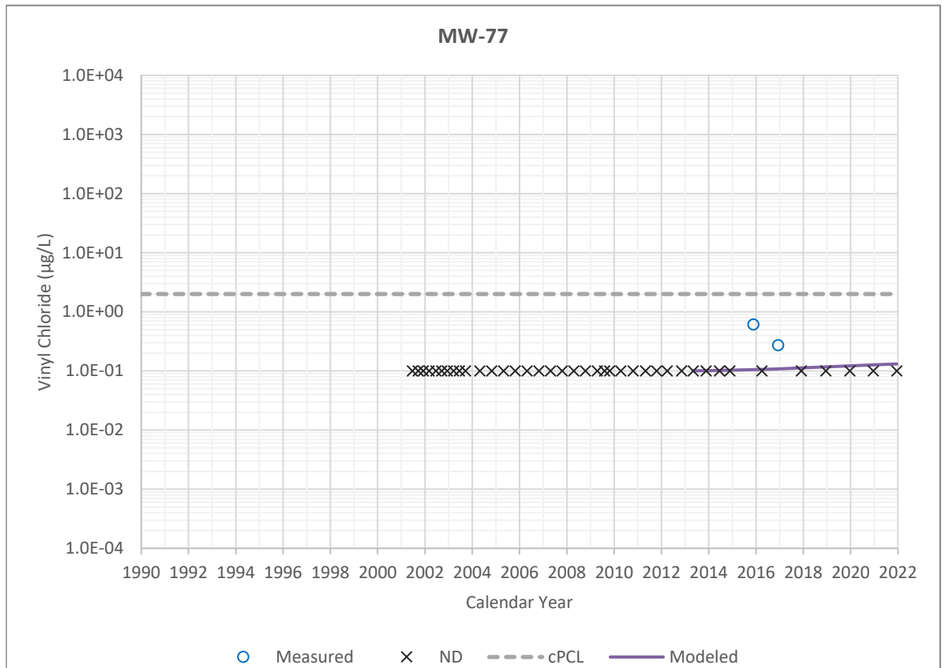

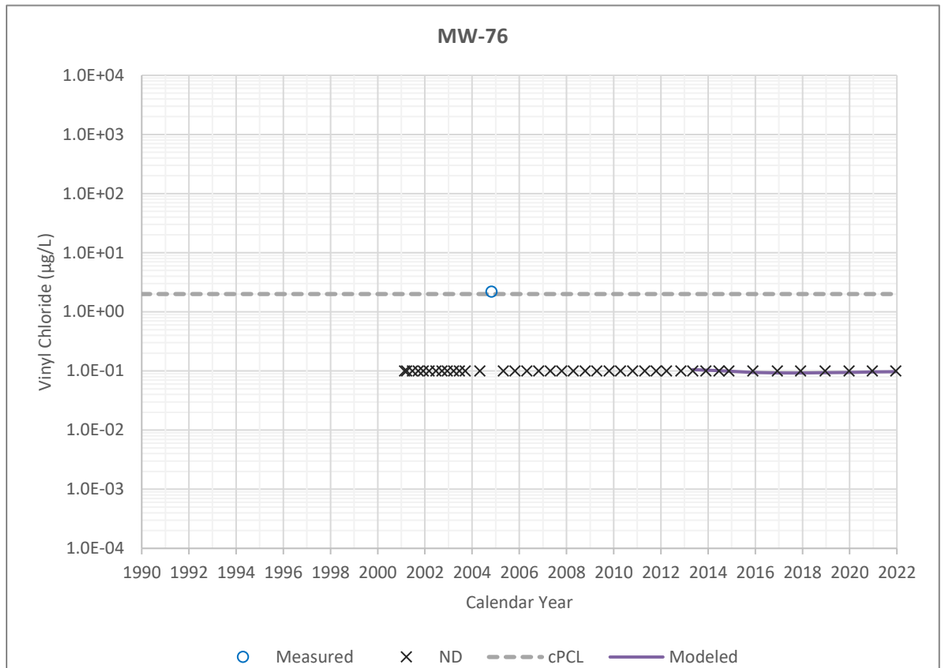

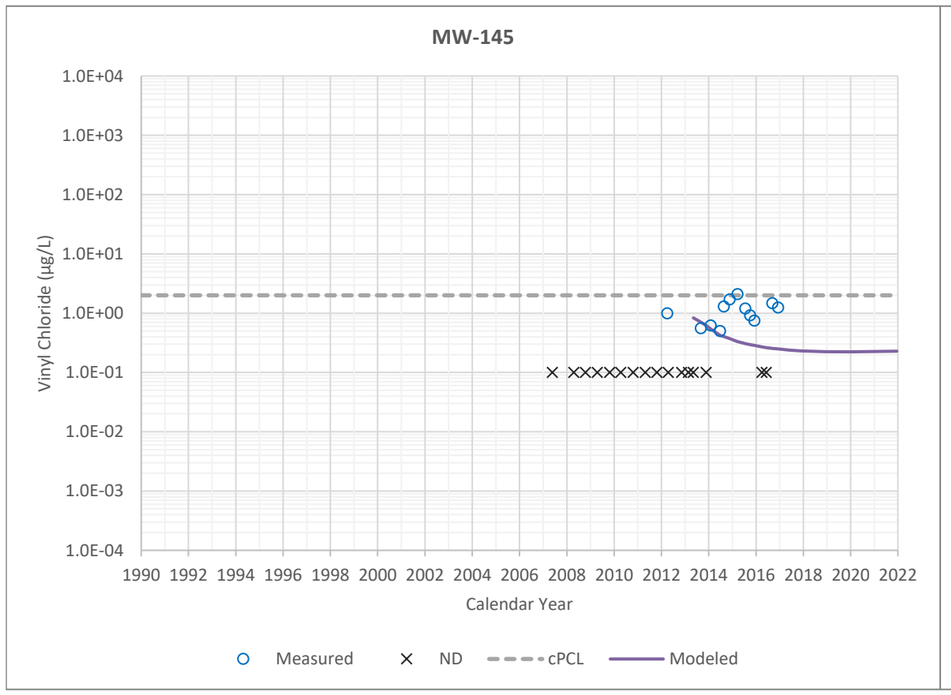

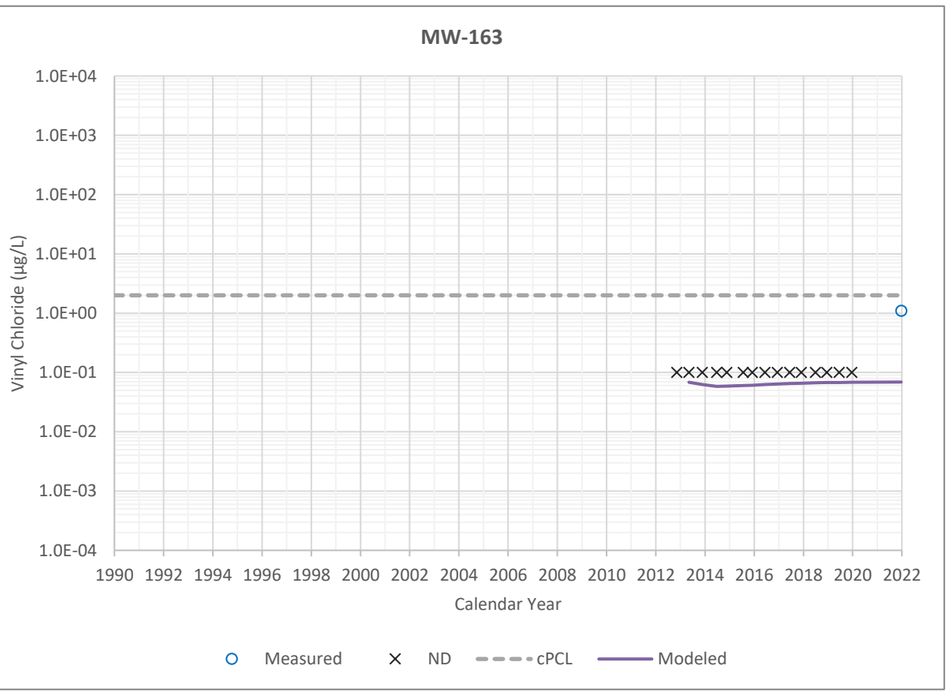

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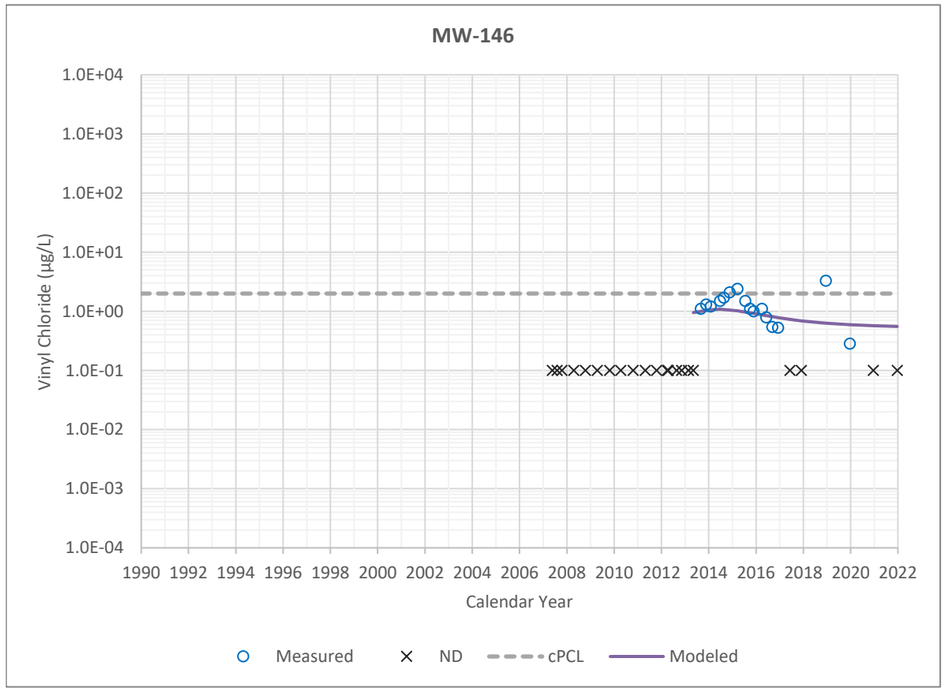

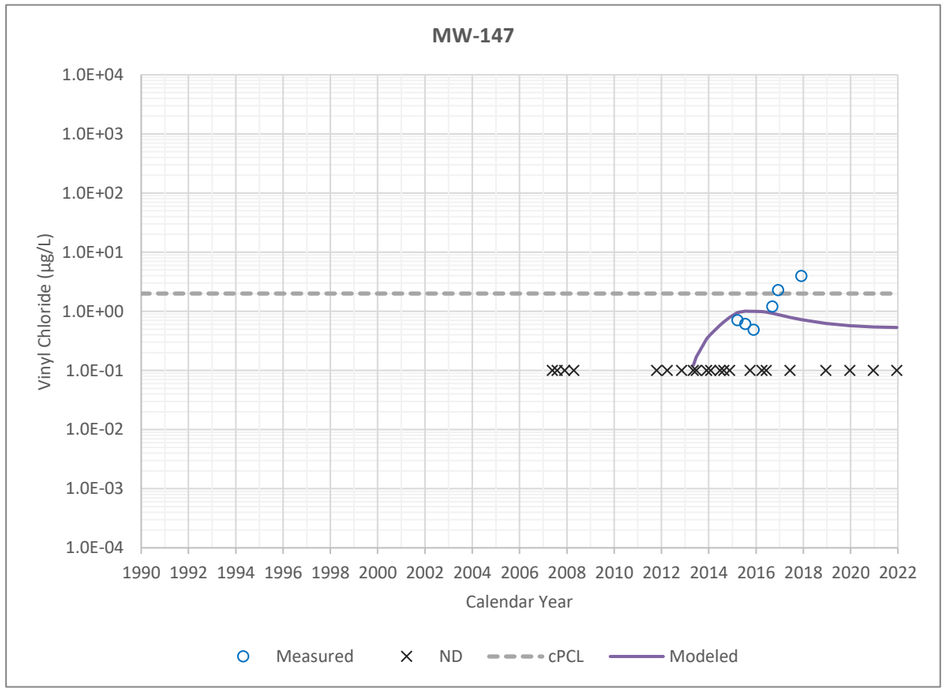

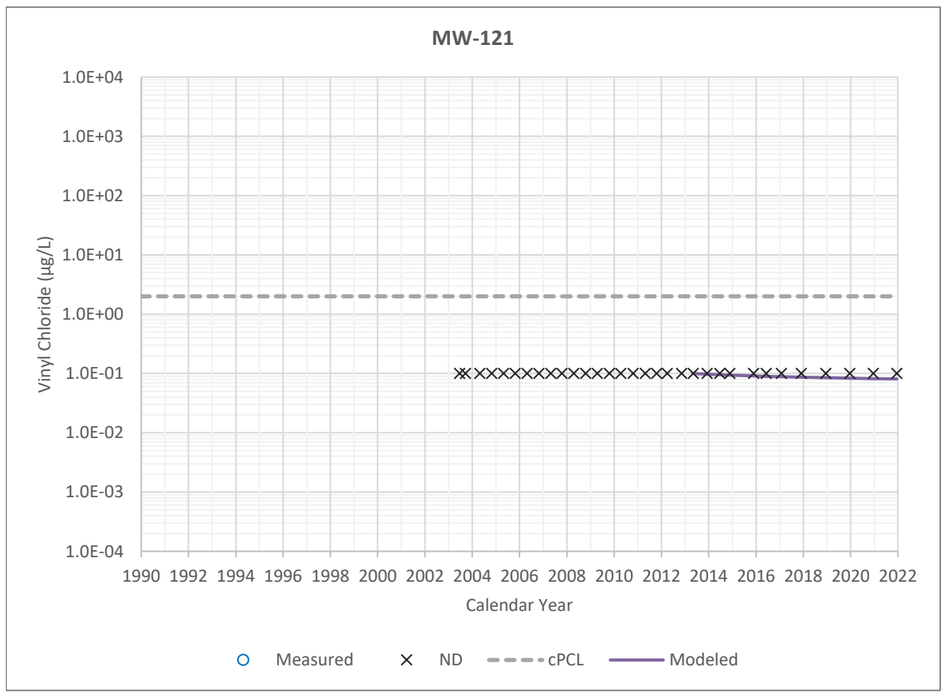

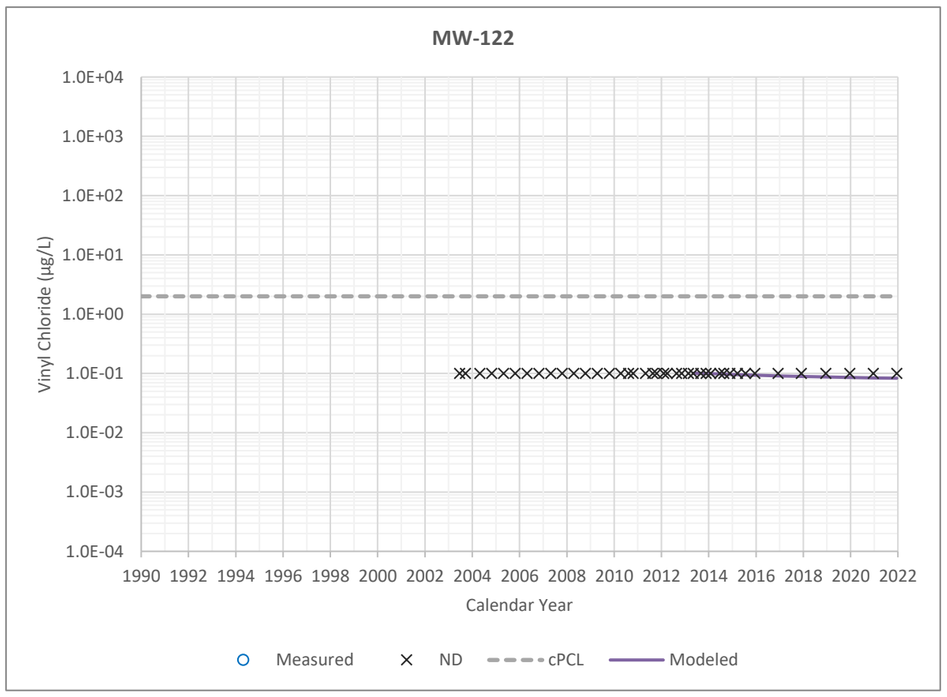

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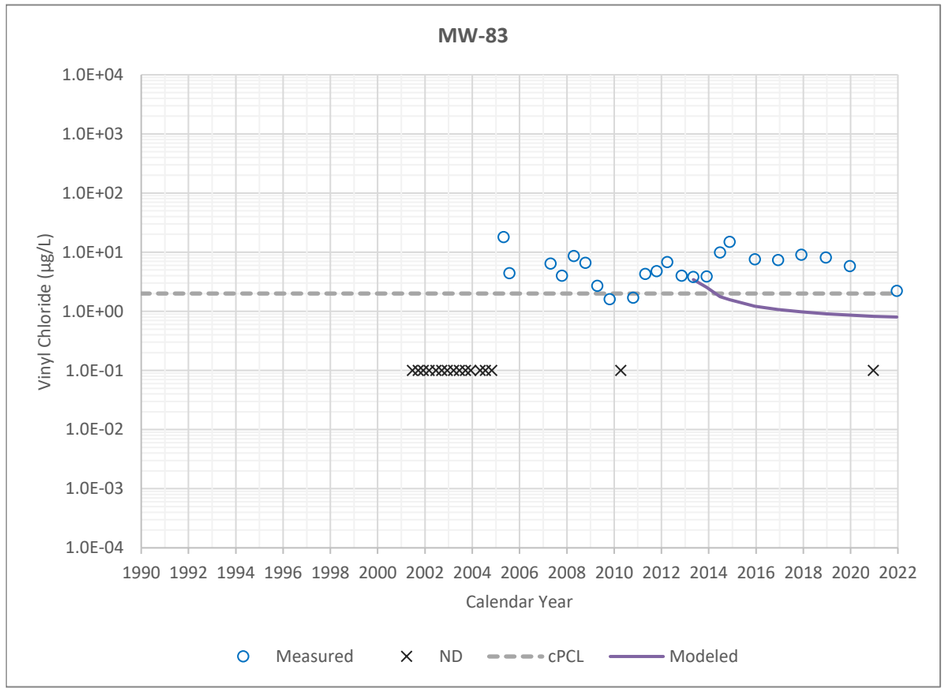

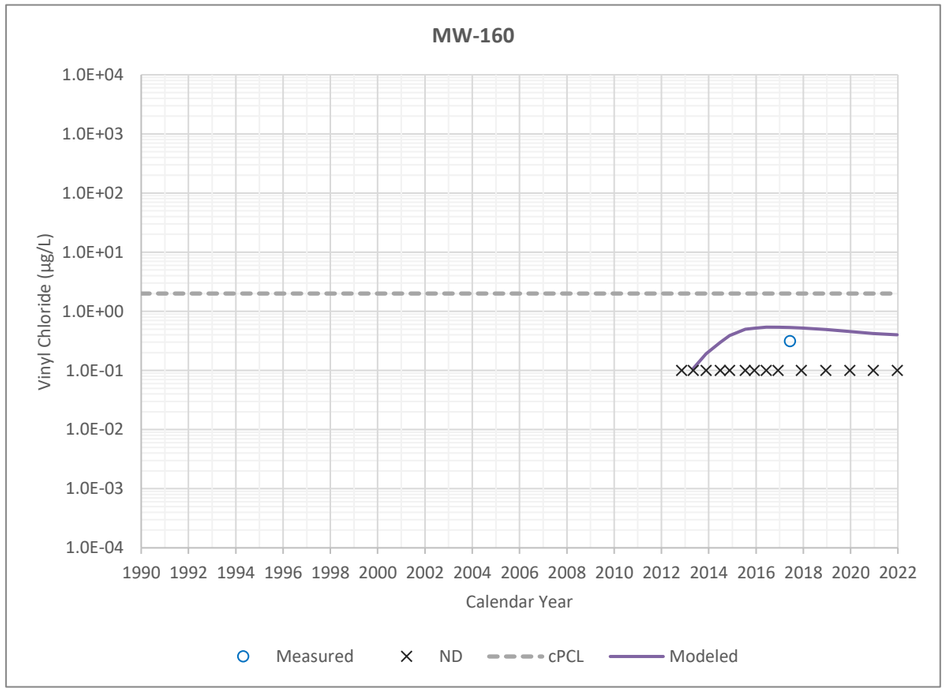

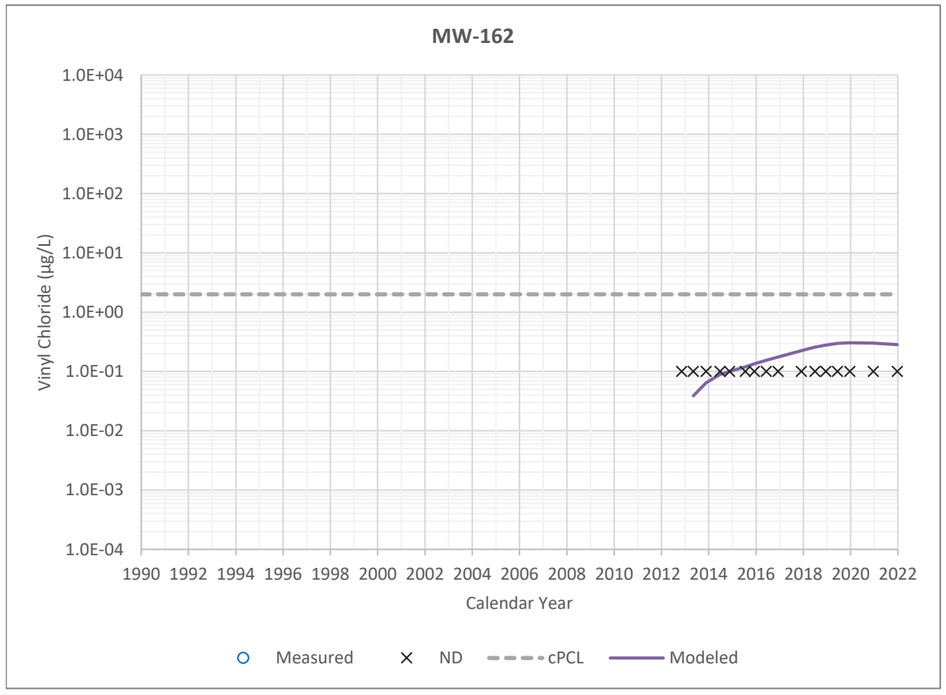

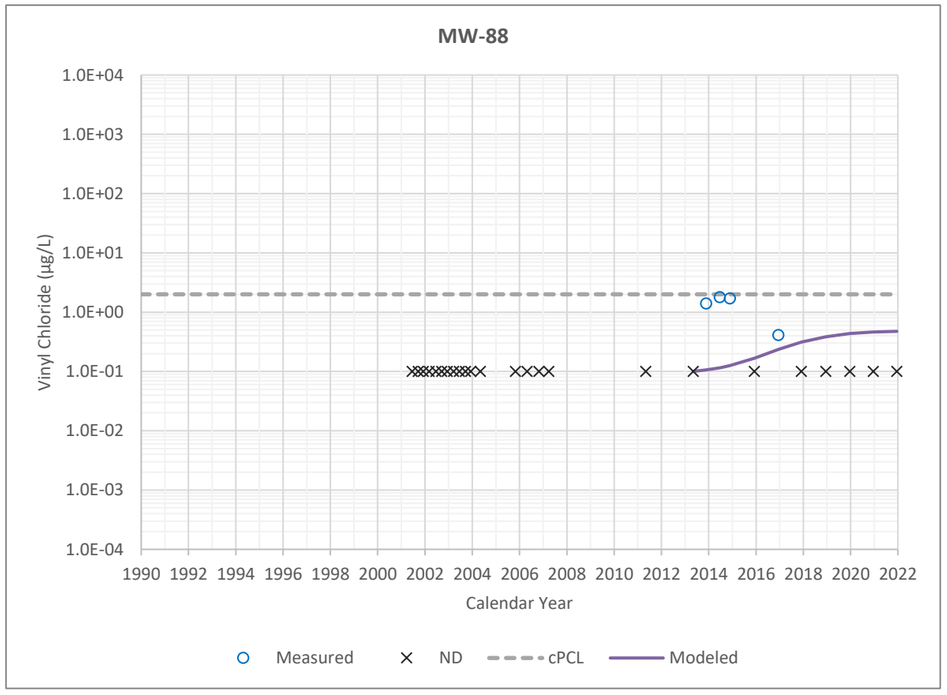

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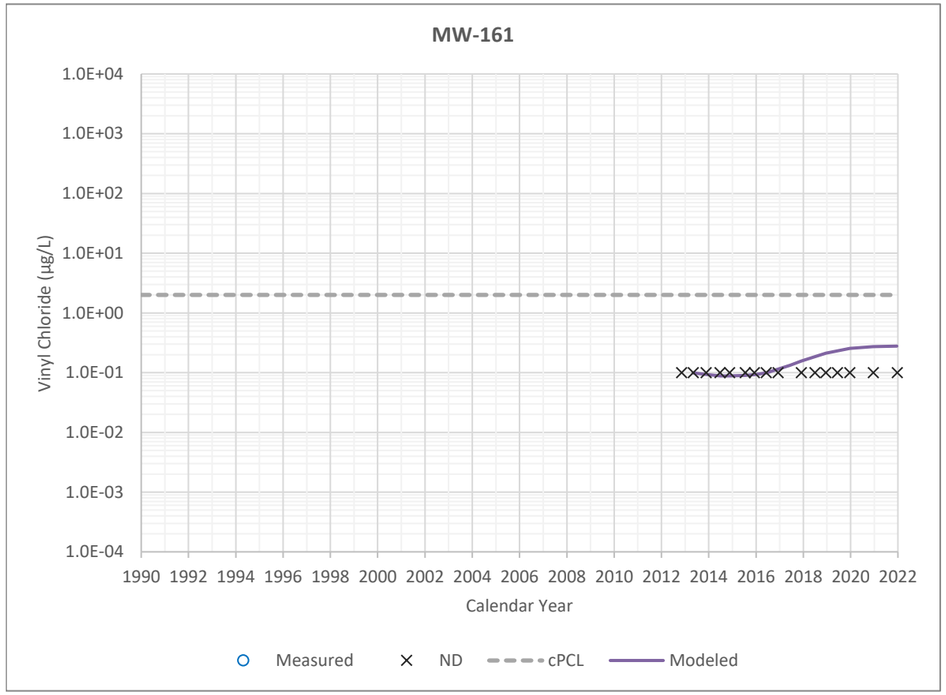

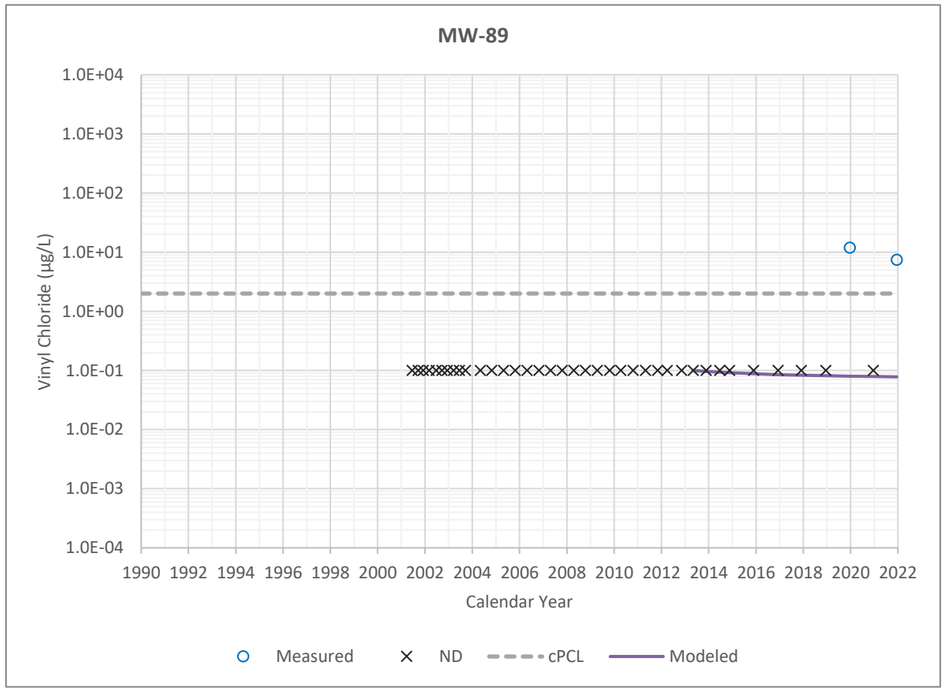

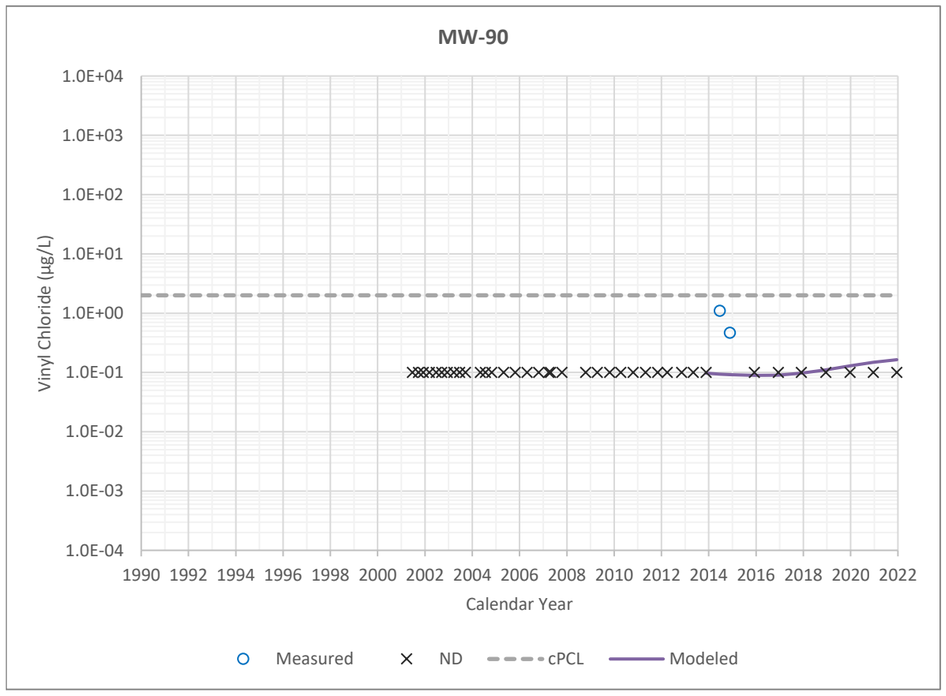

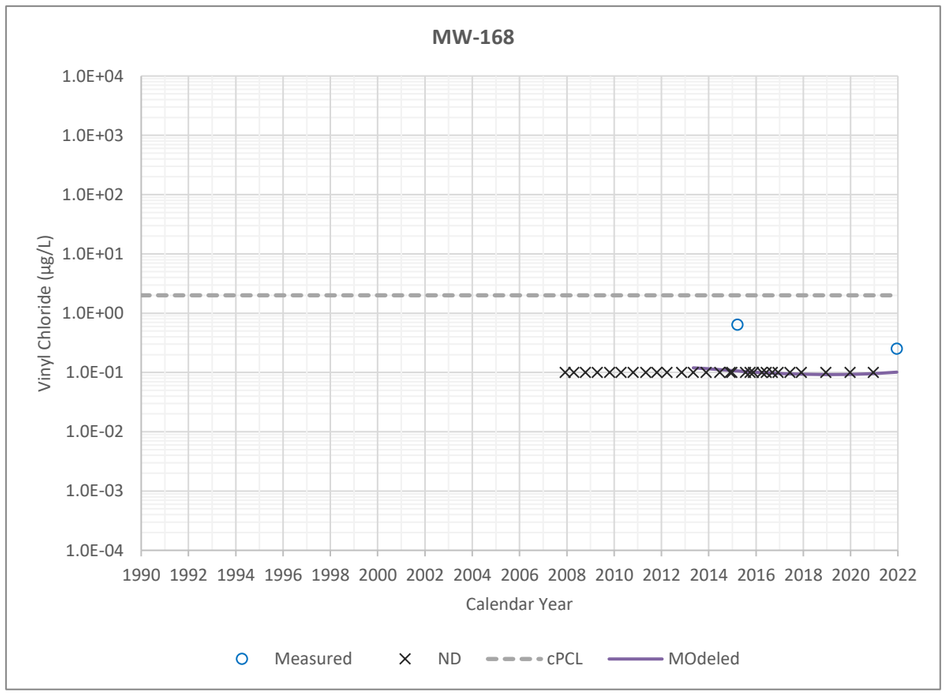

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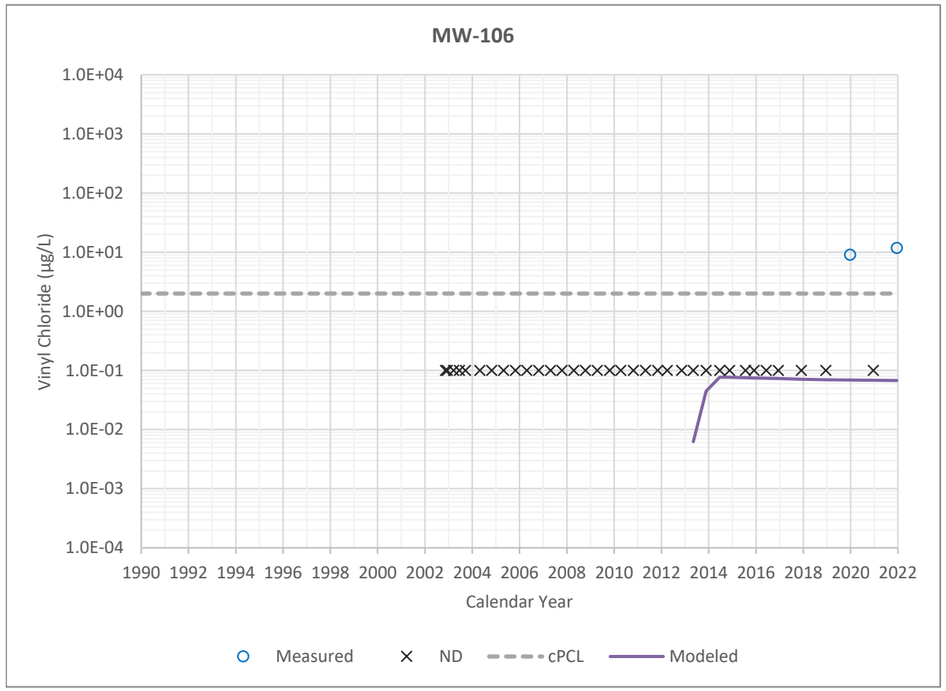

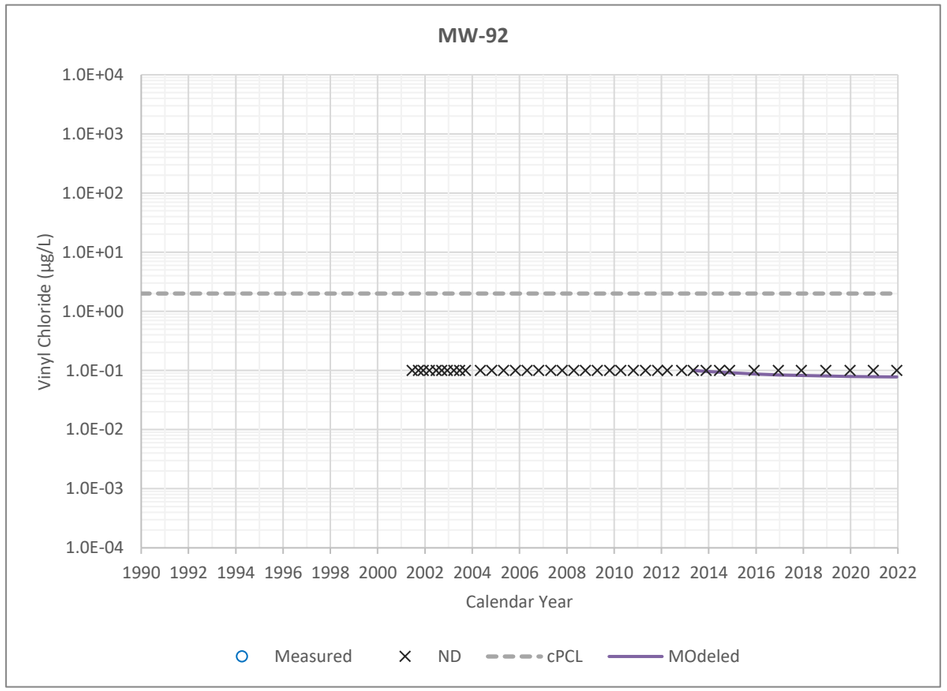

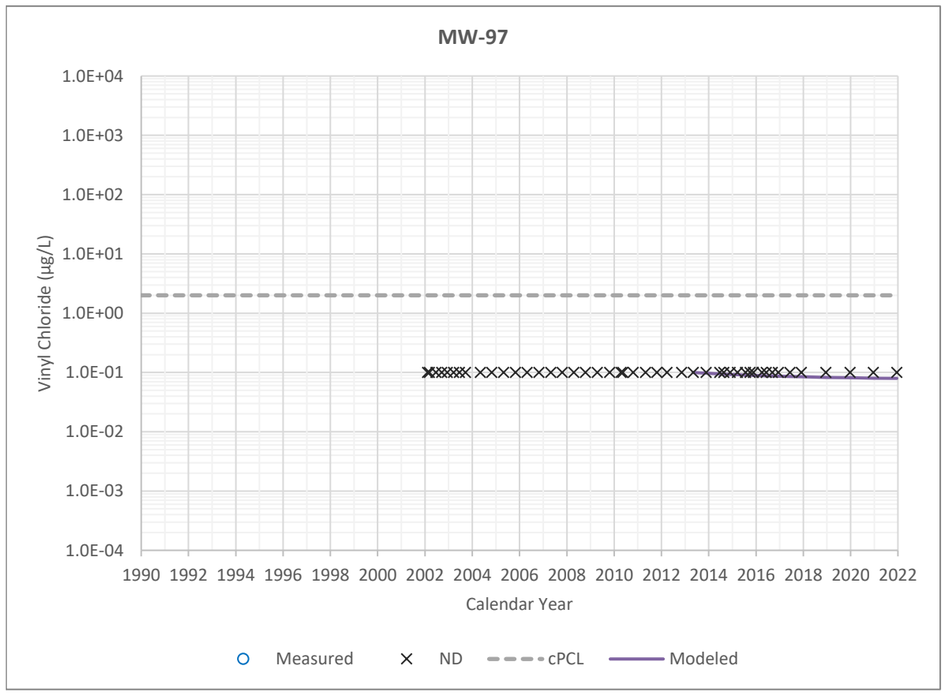

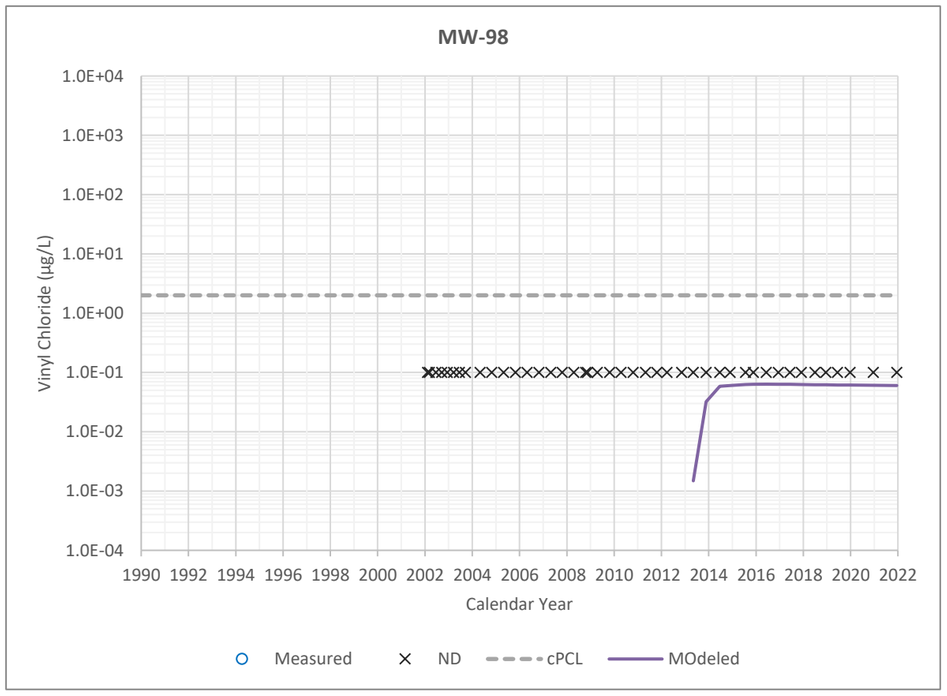

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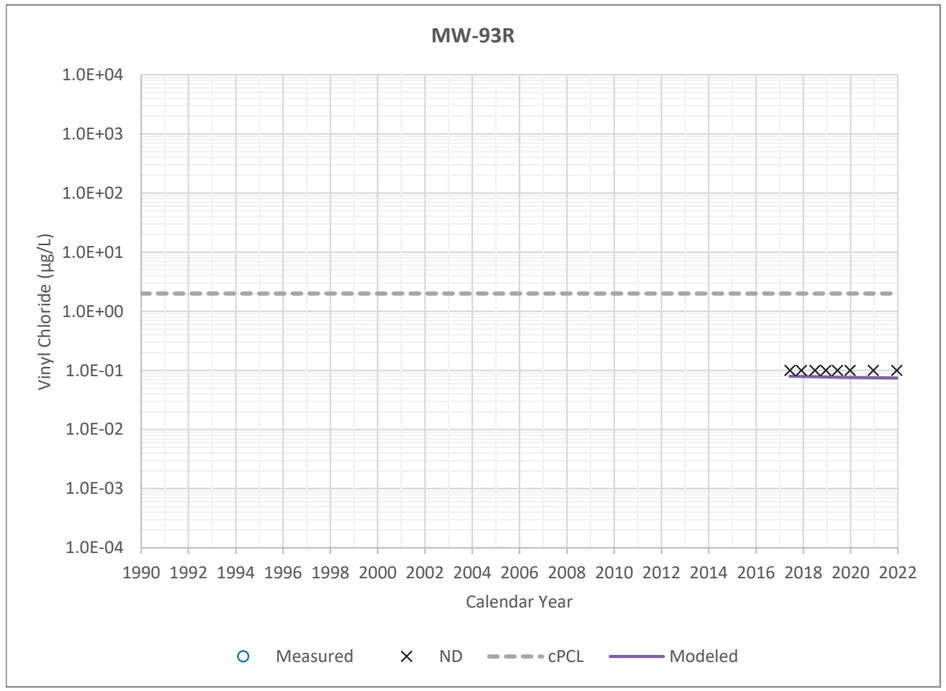

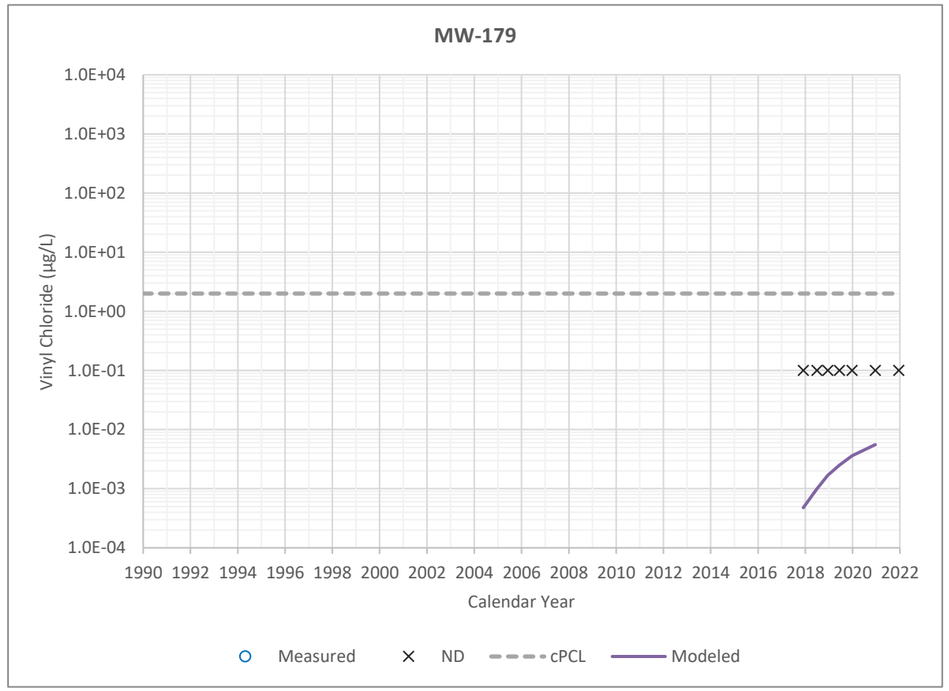

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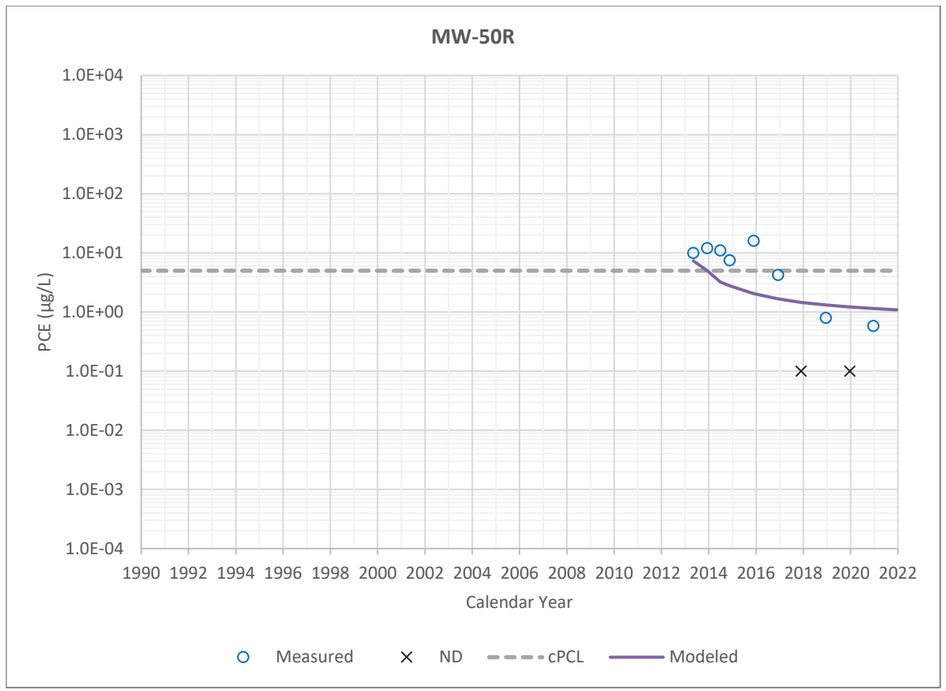
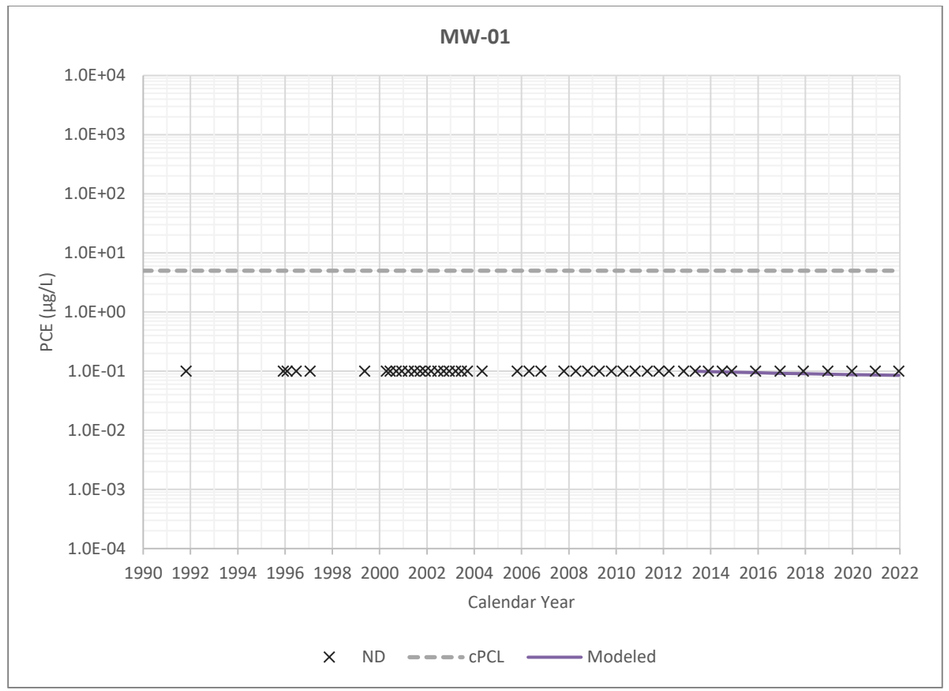
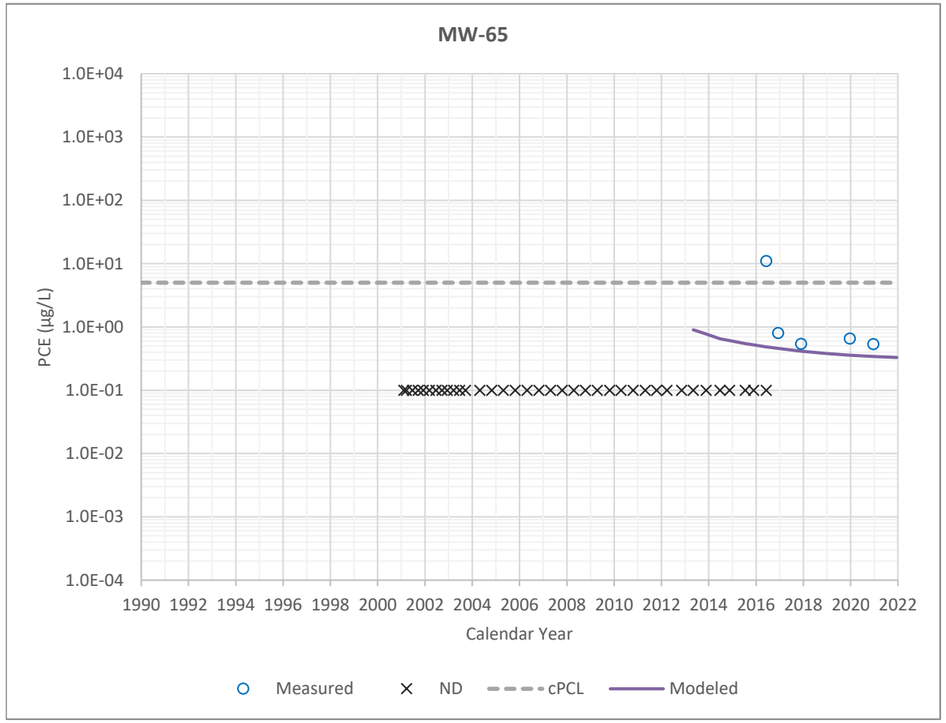
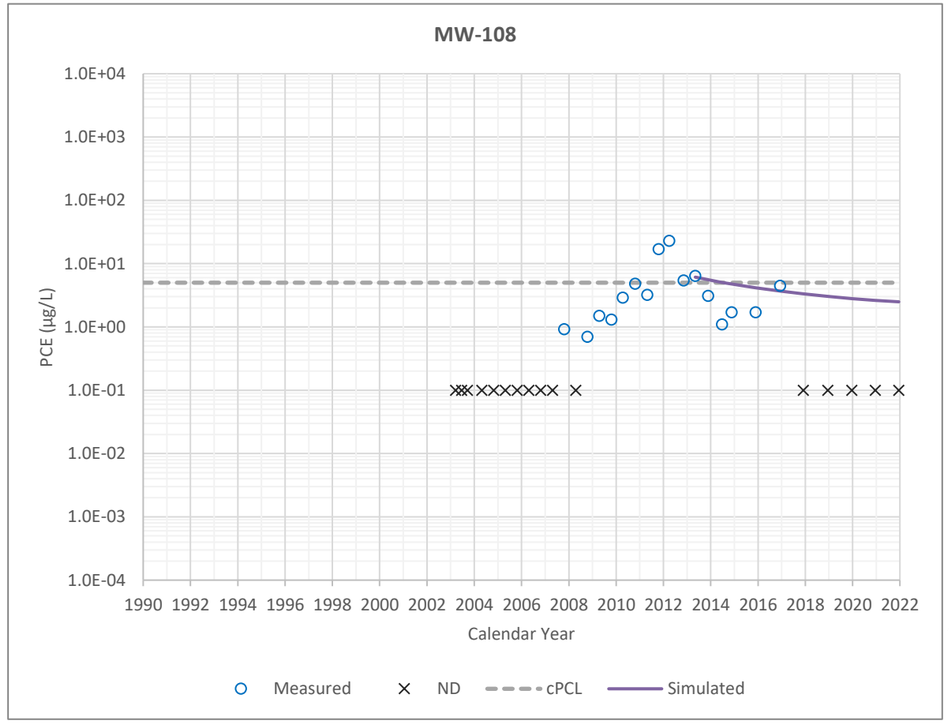
Attachment A-3
Modeled and Measured PCE Chemographs









Notes:

cPCL = critical protective concentration level

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PCE = tetrachloroethene

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Modeled and Measured
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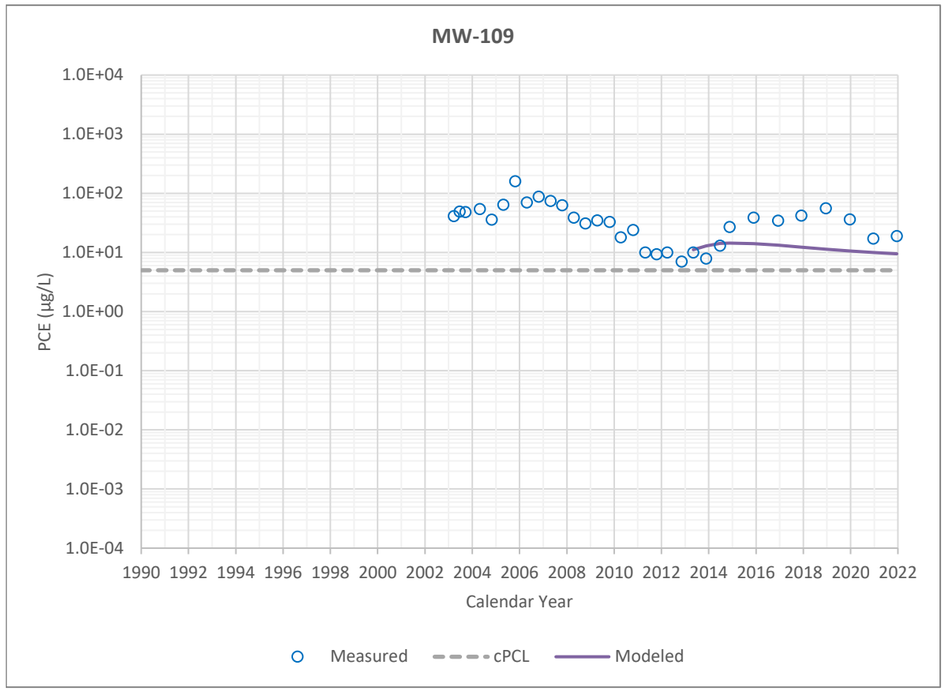

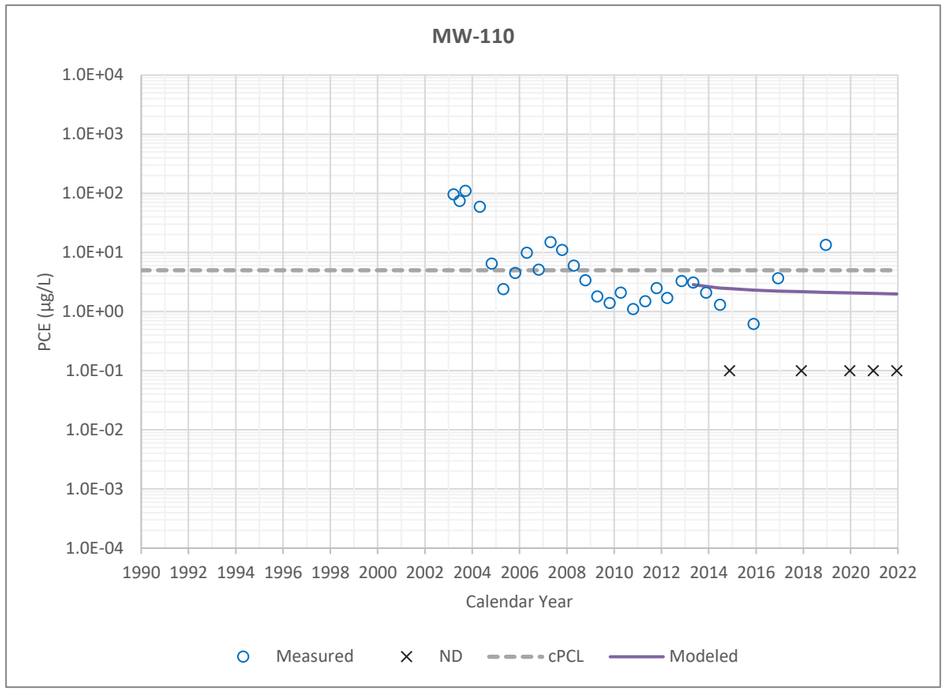

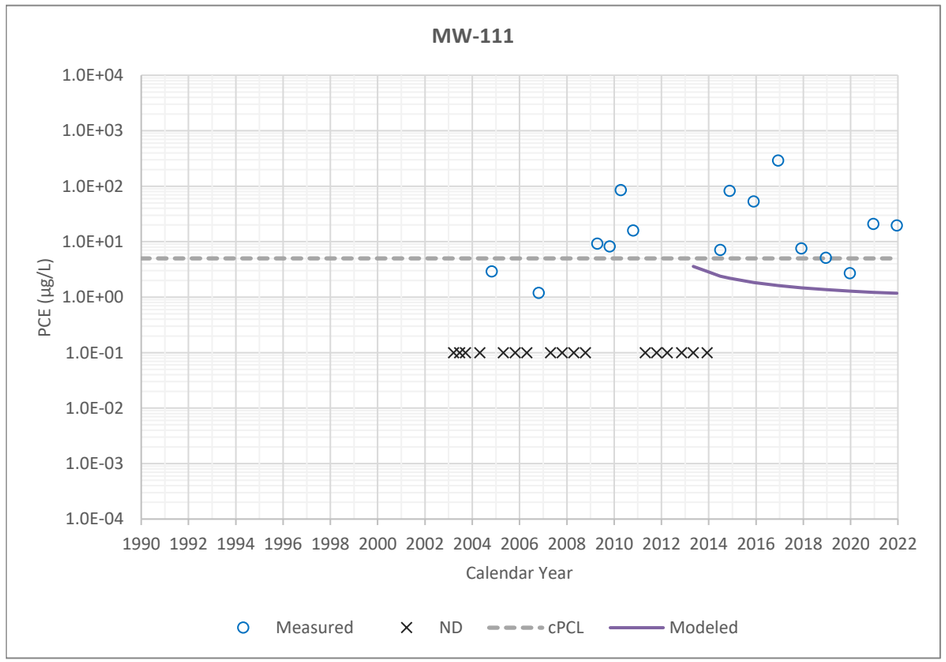

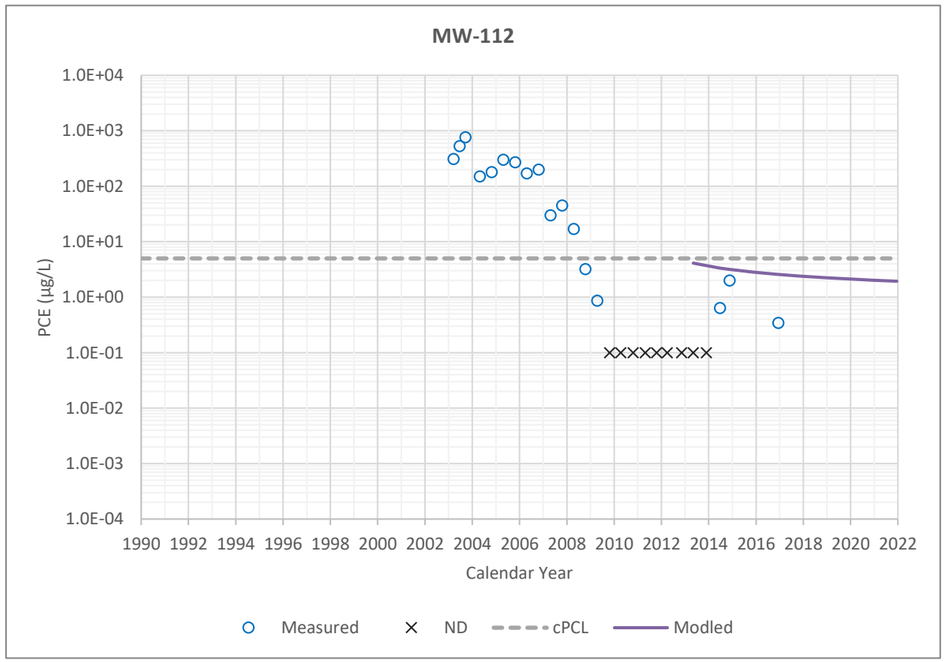

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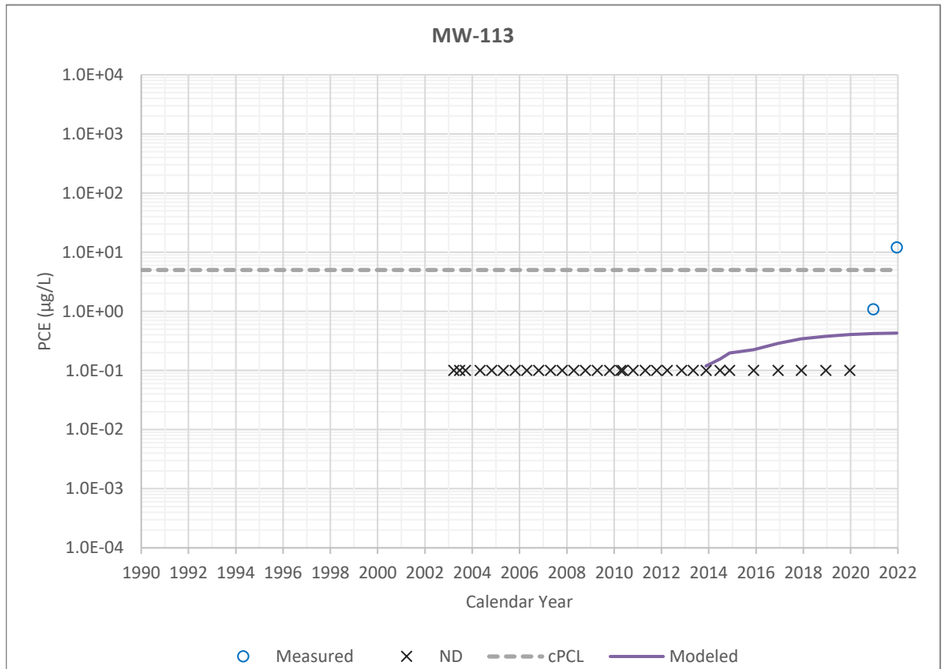

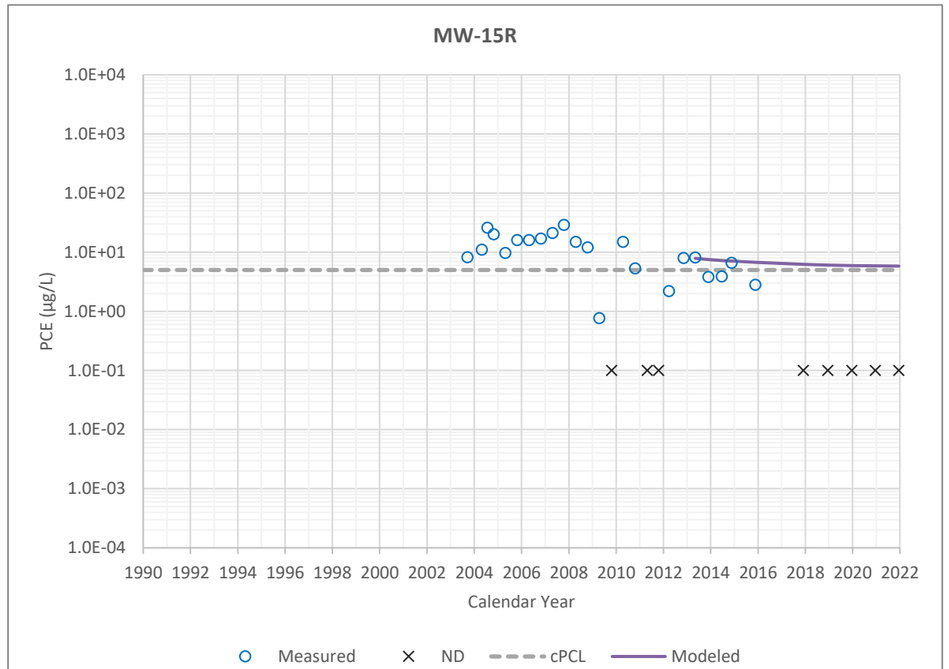

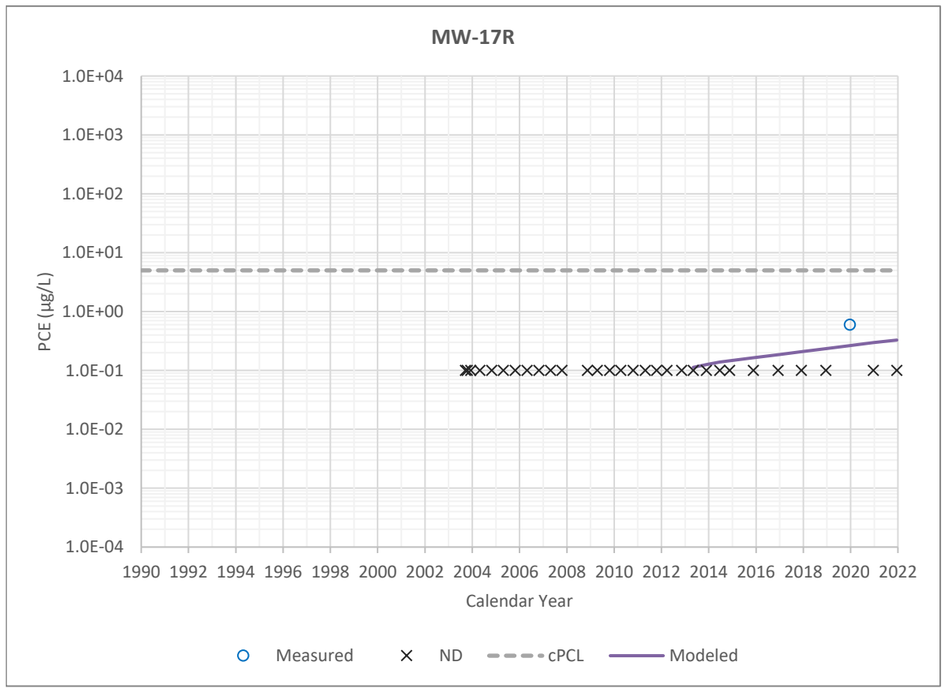

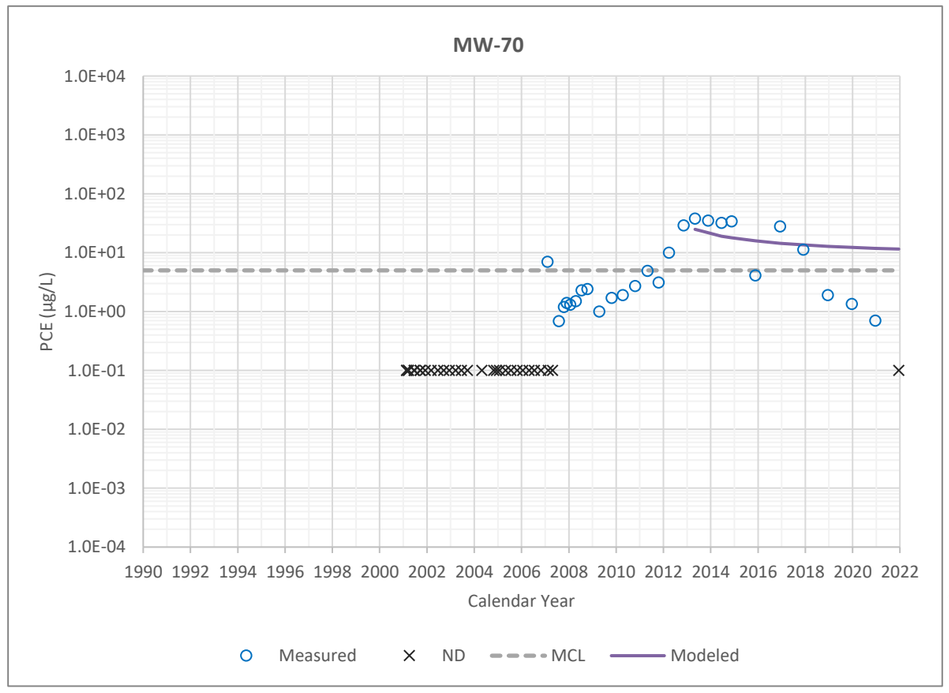

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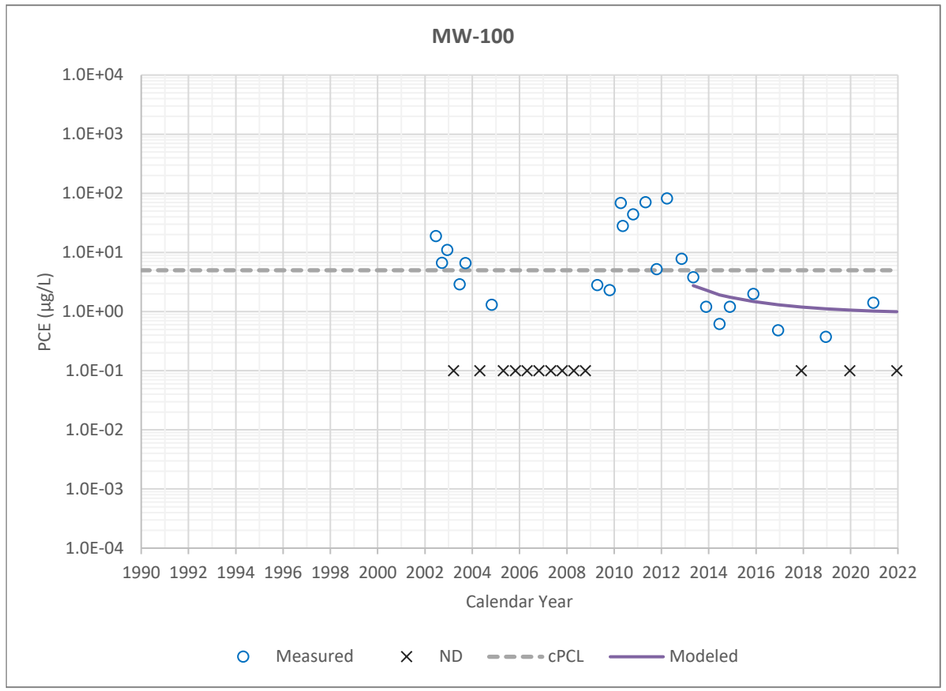

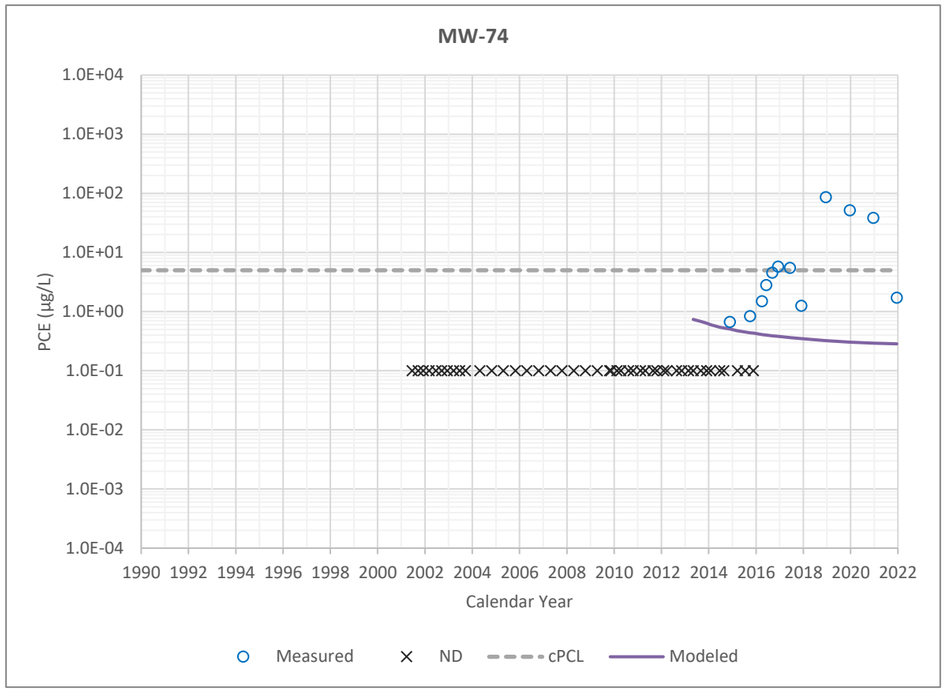

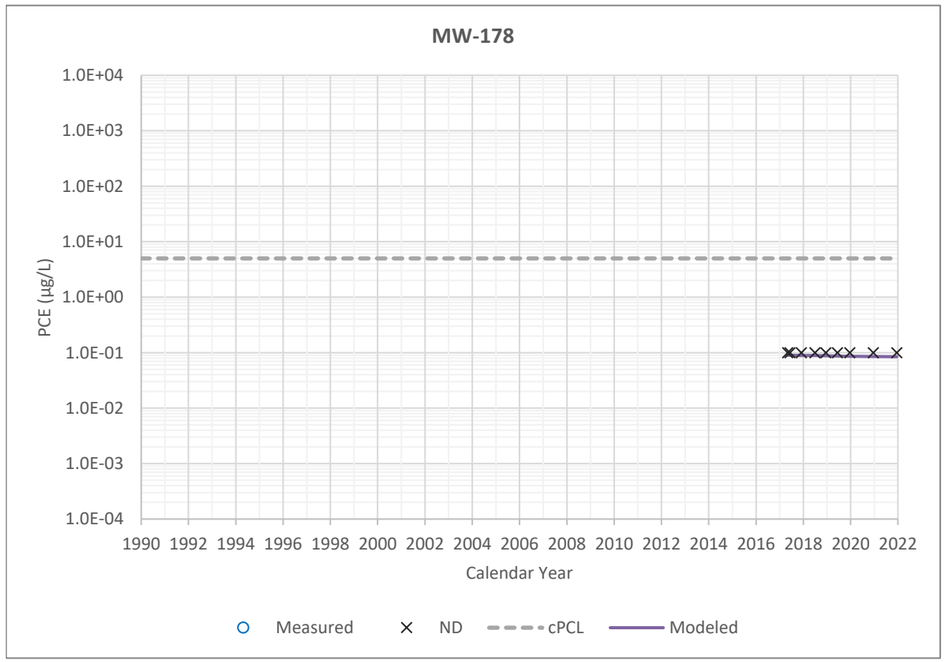

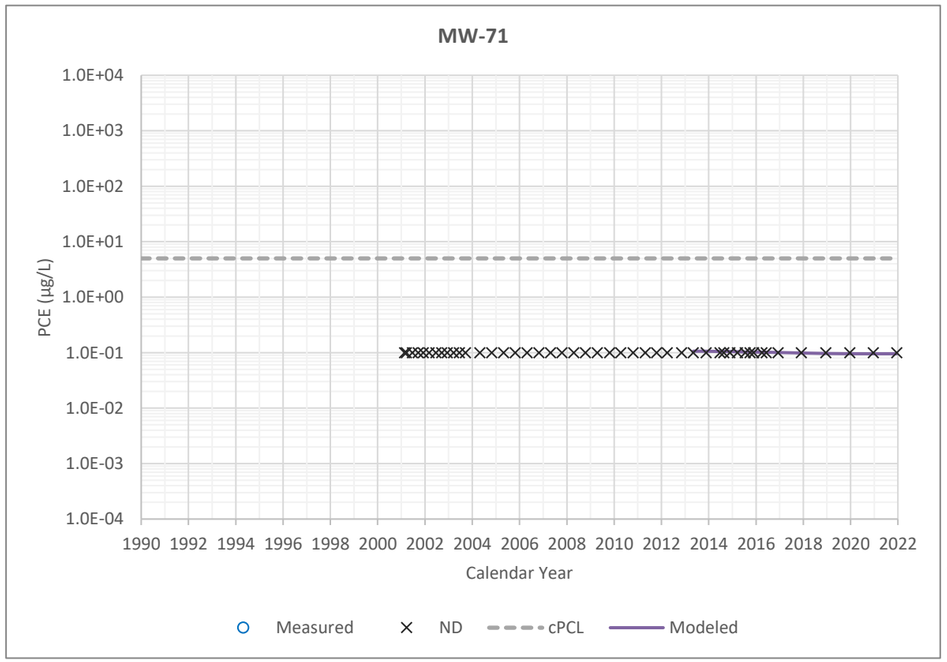

Notes:

cPCL = critical protective concentration level

DHL = degradation half life in years

µg/L = microgram per liter

ND = not detected

PCE = tetrachloroethene

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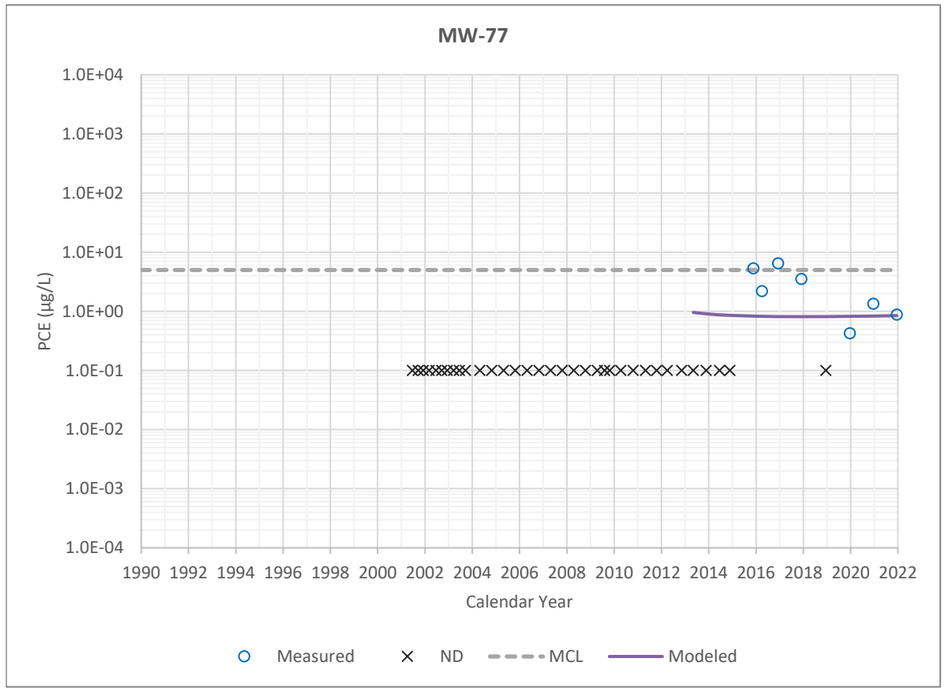

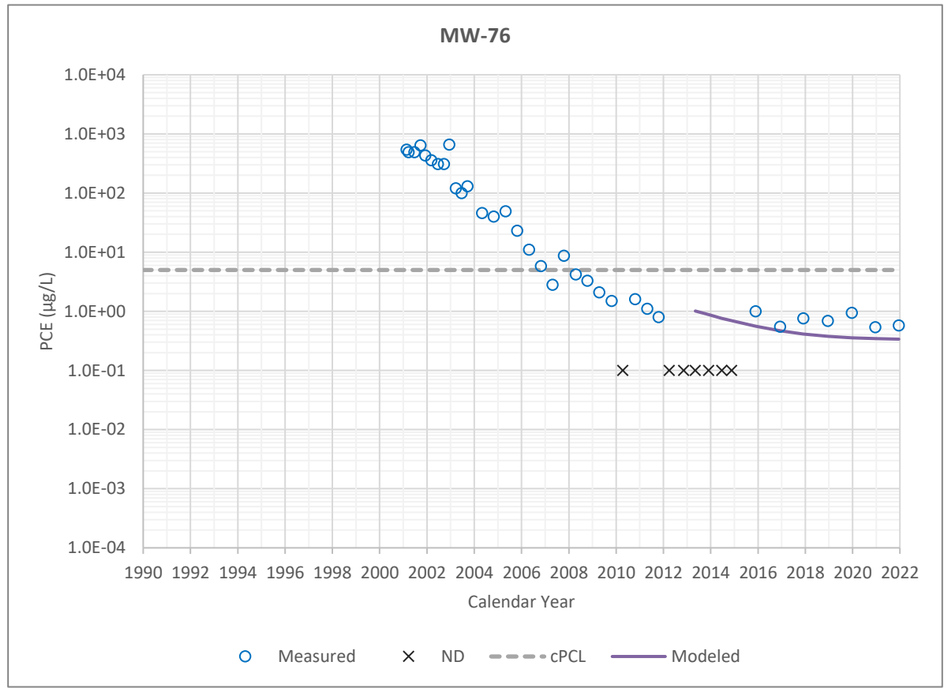

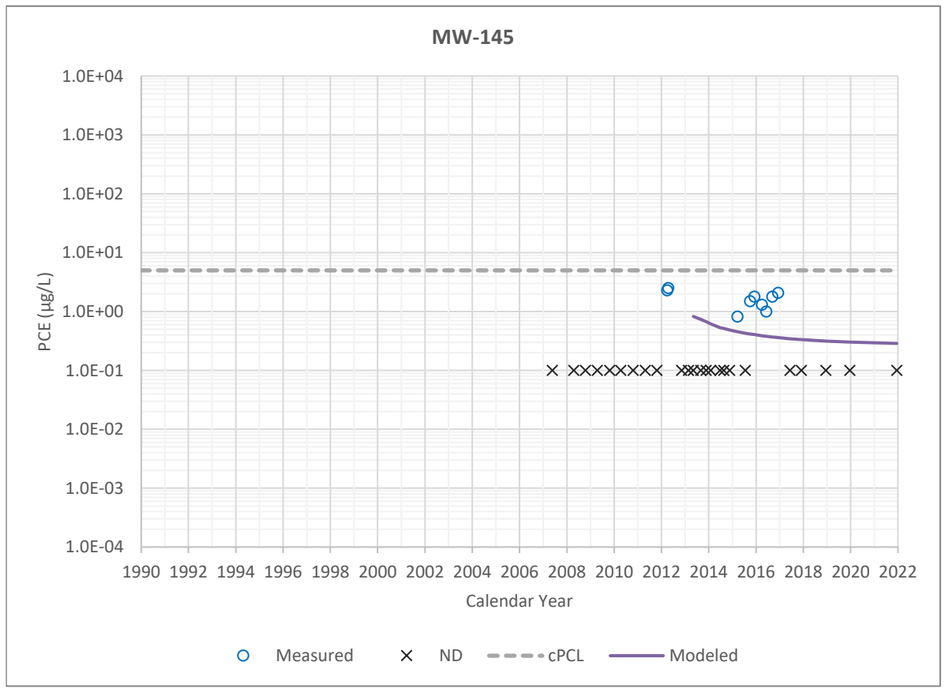

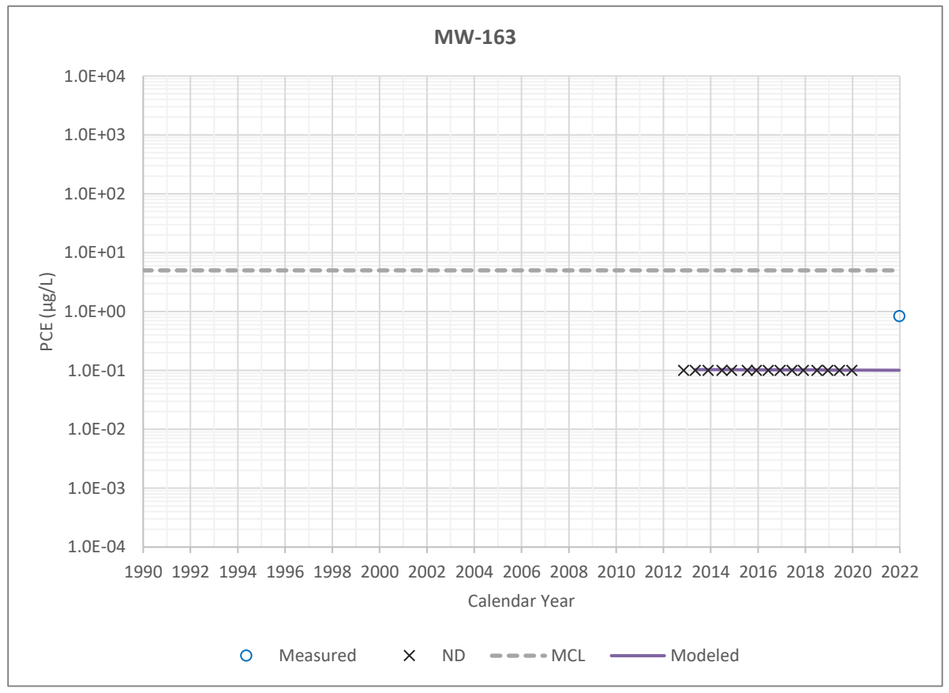

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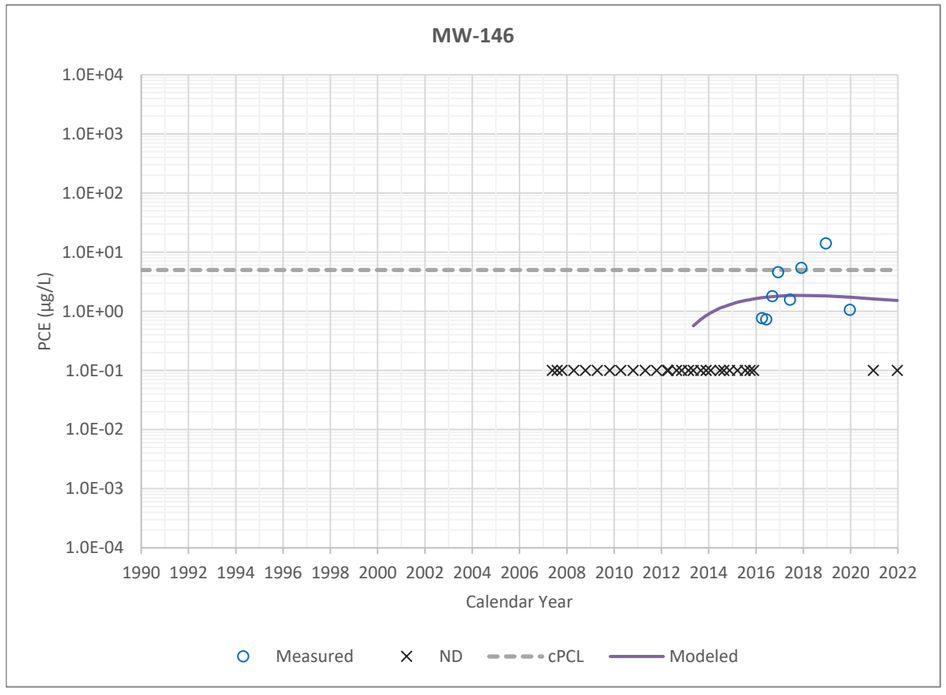

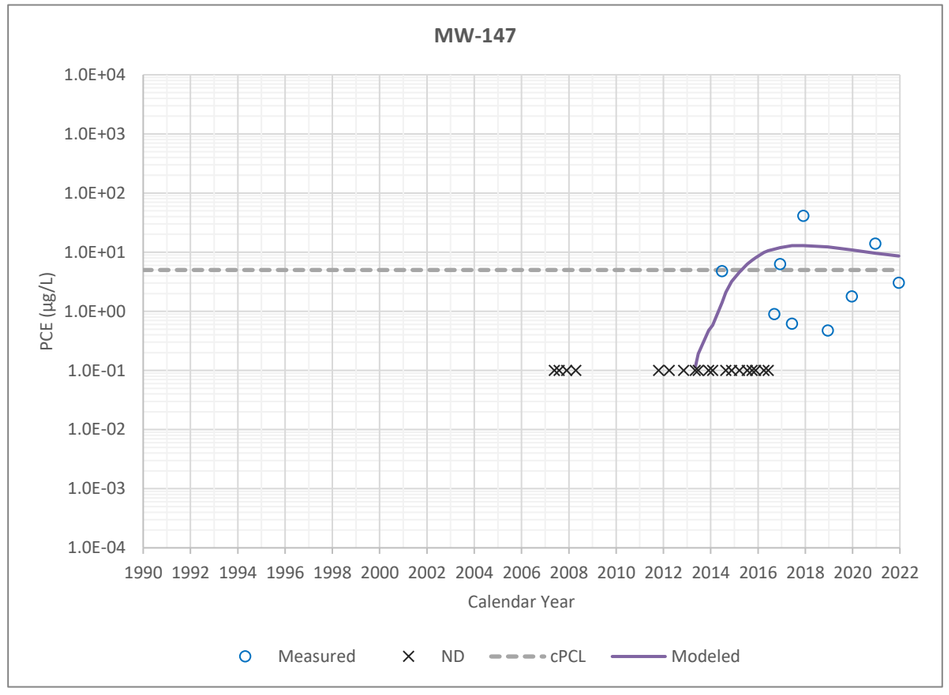

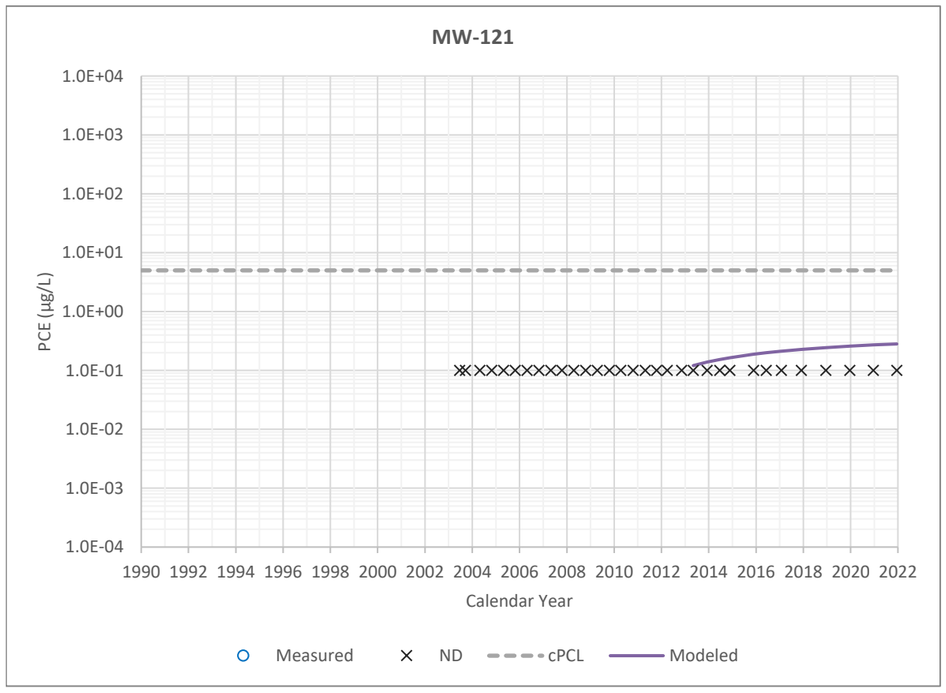

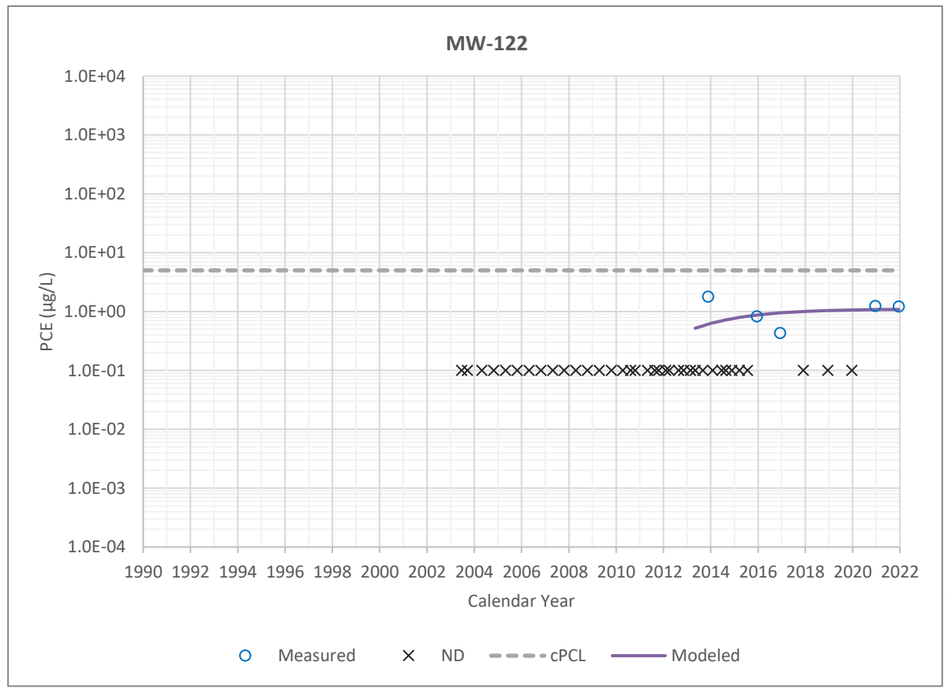

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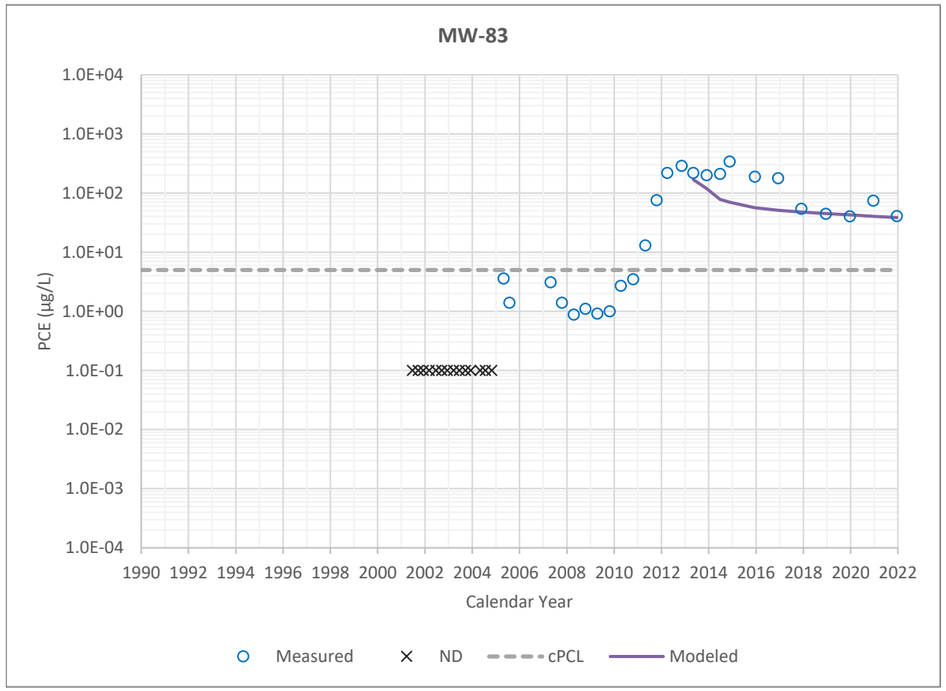

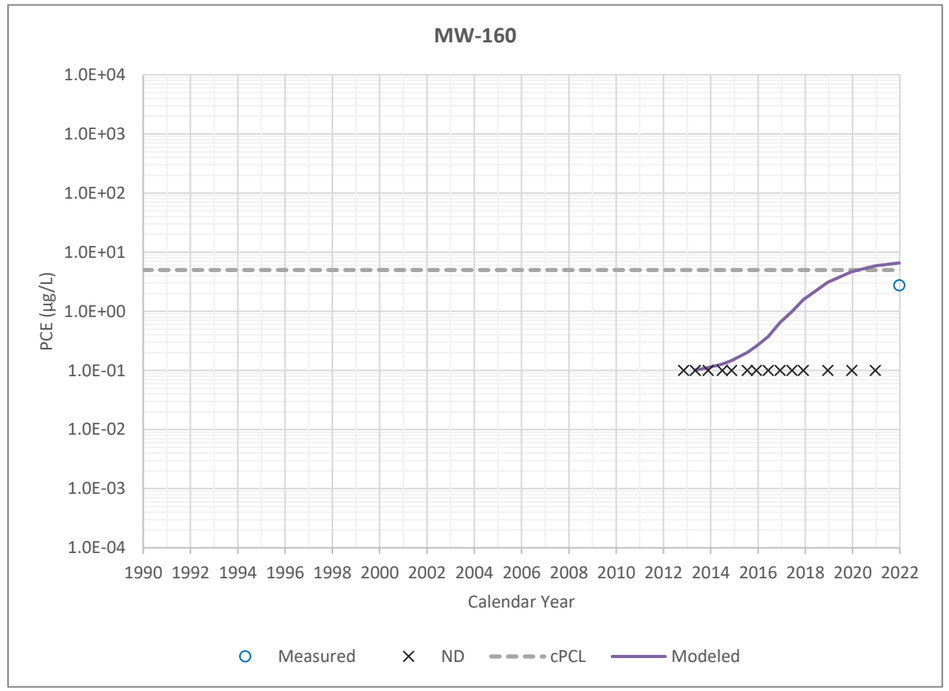

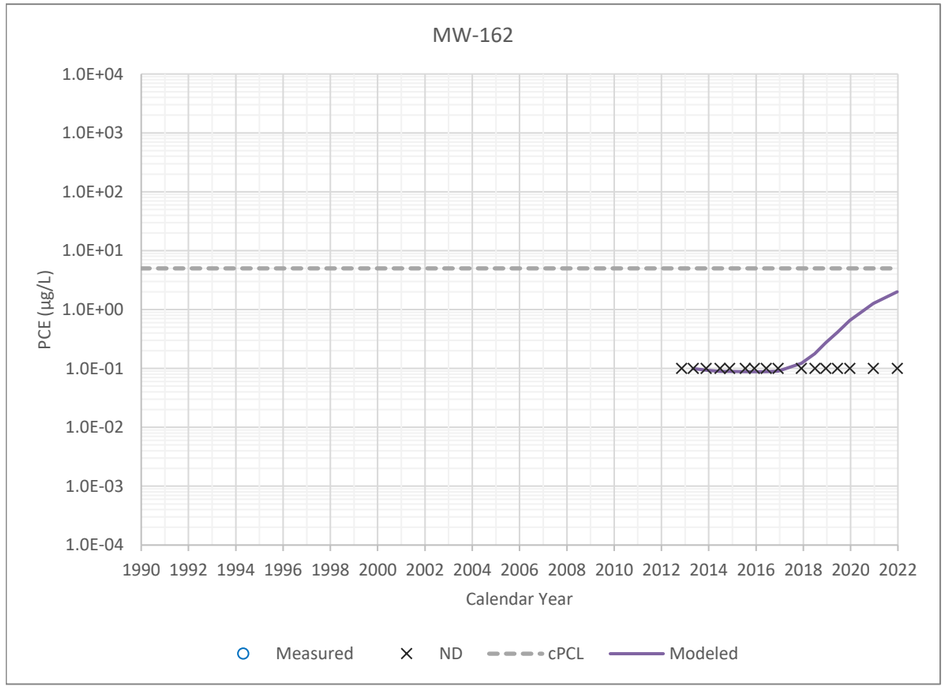

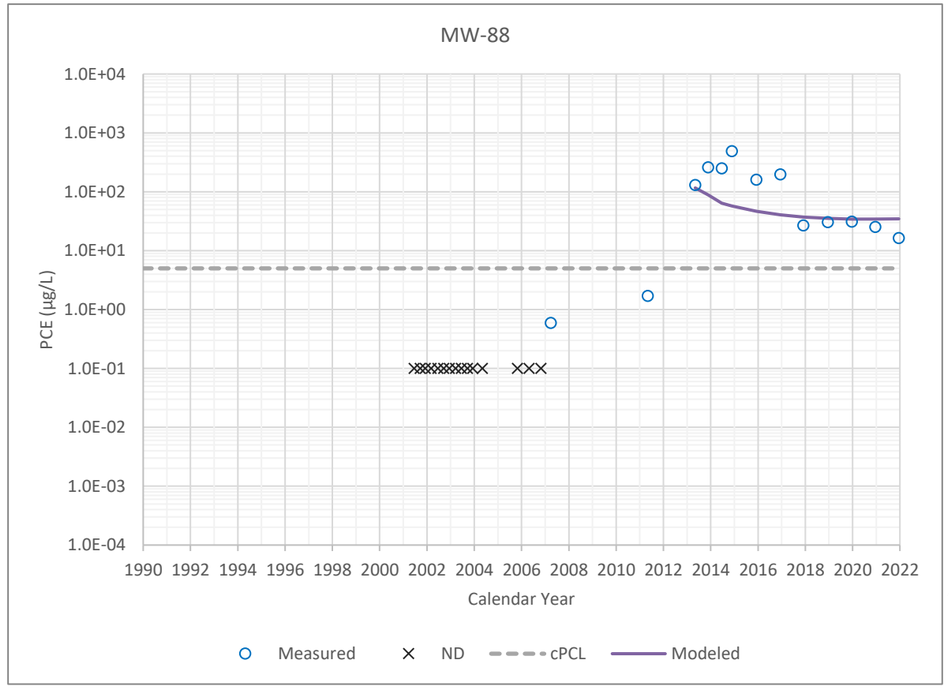

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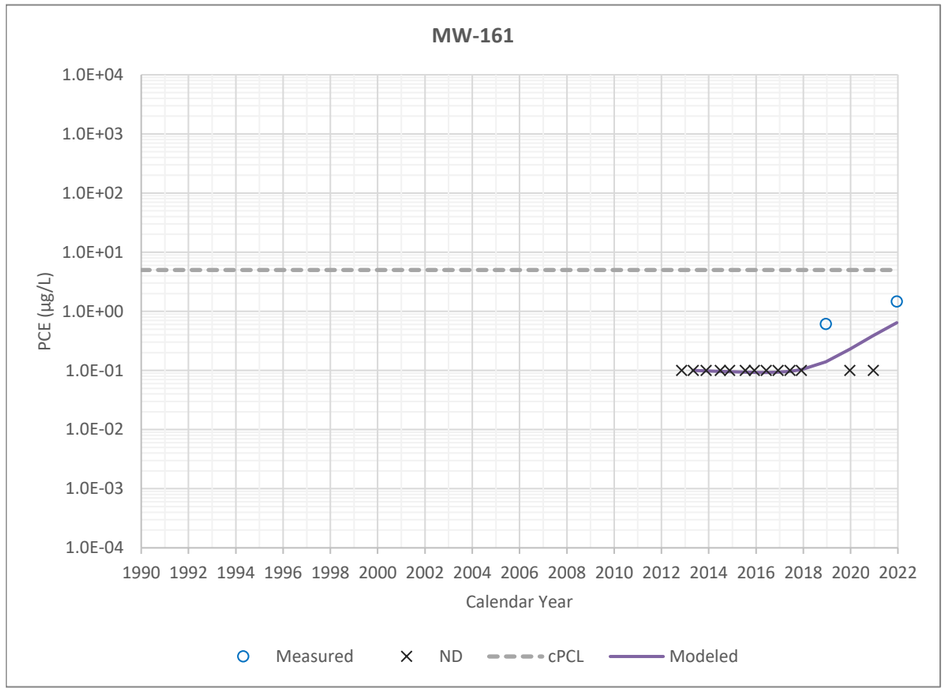

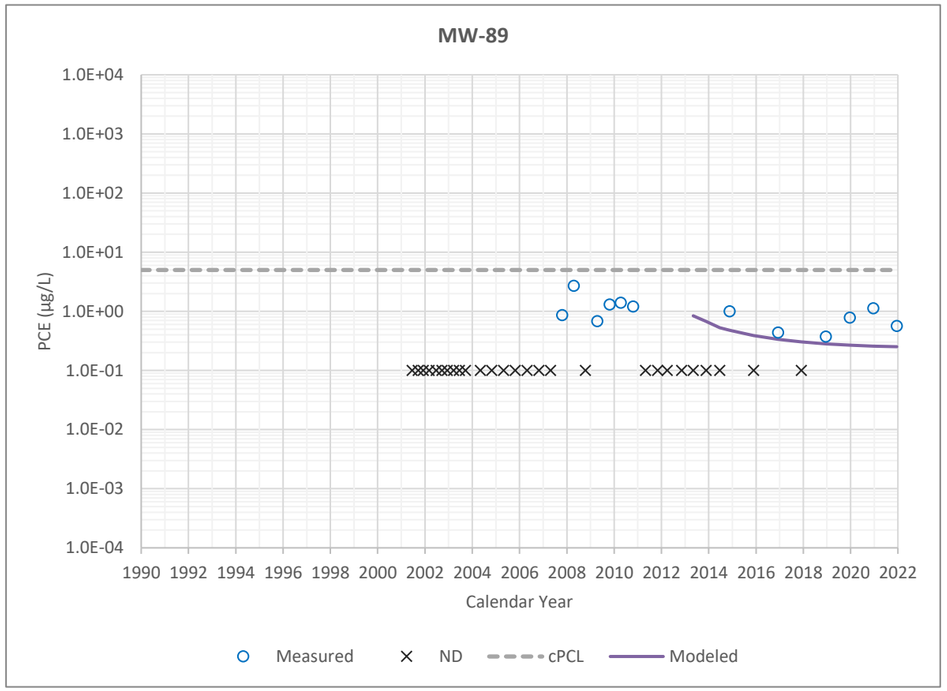

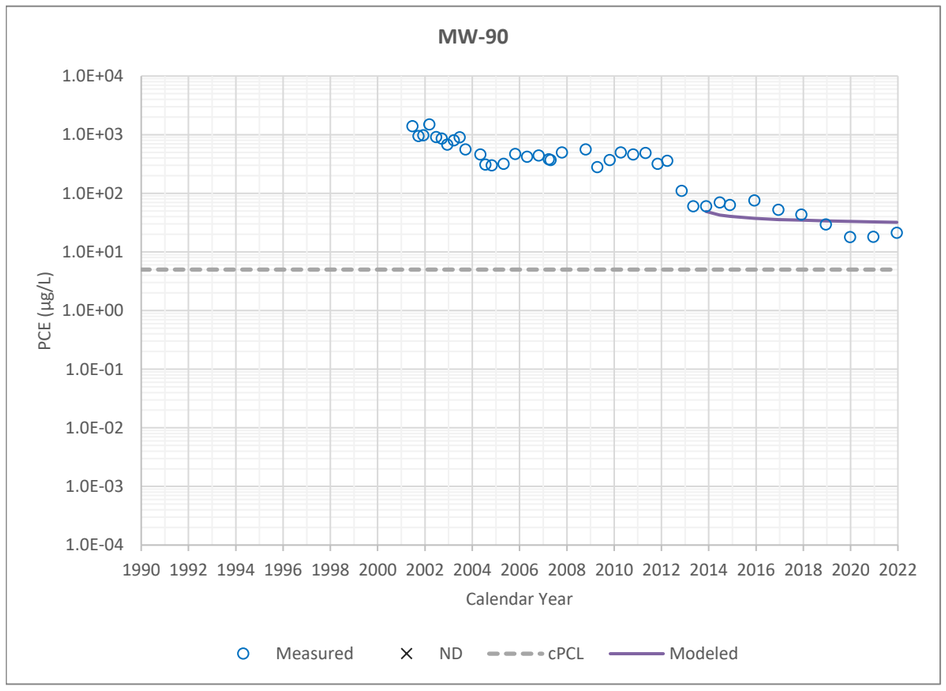

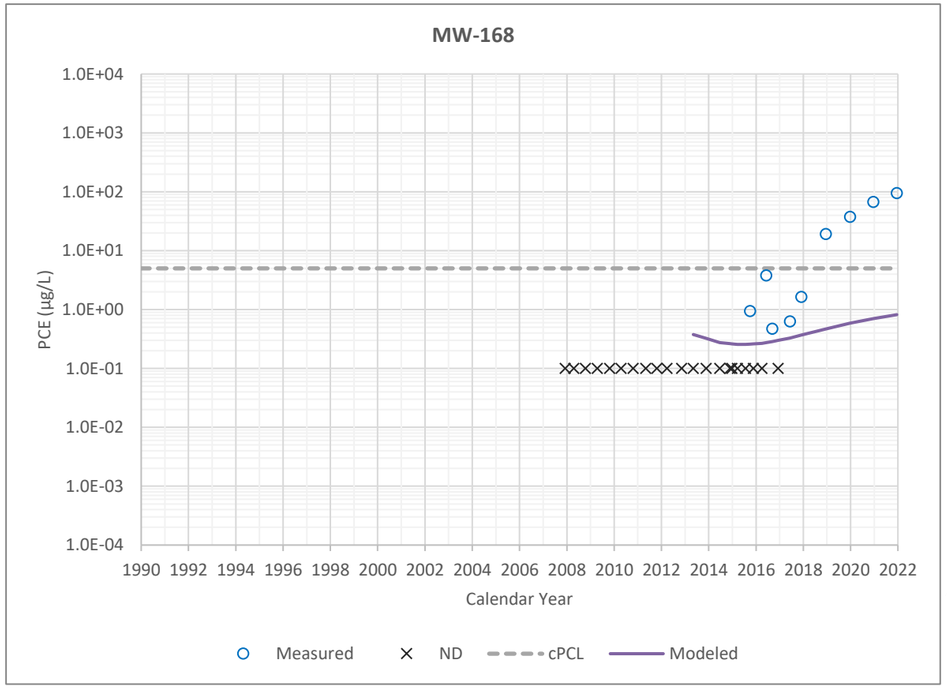

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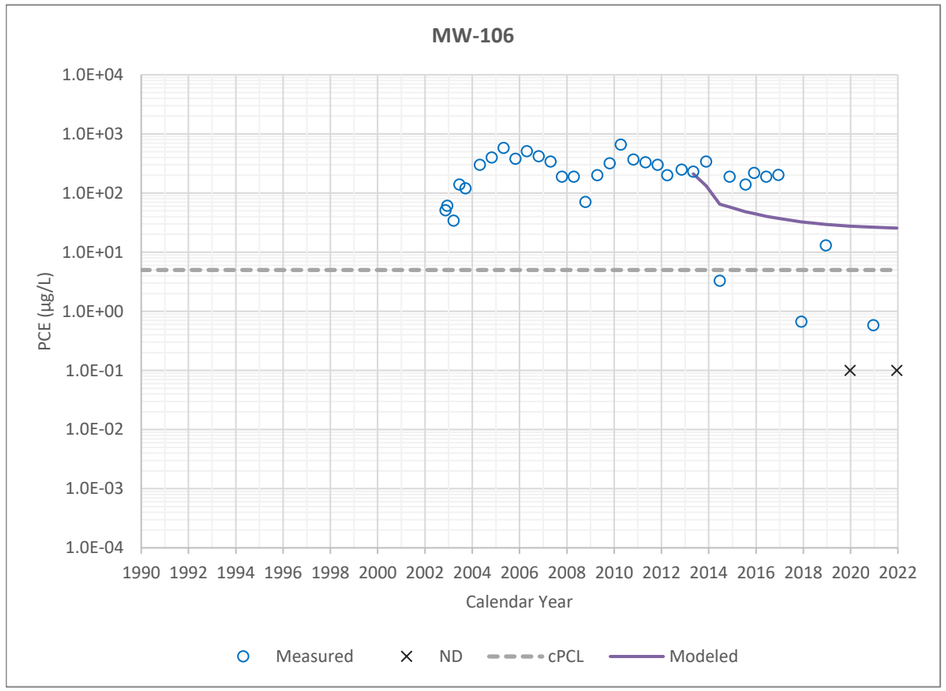

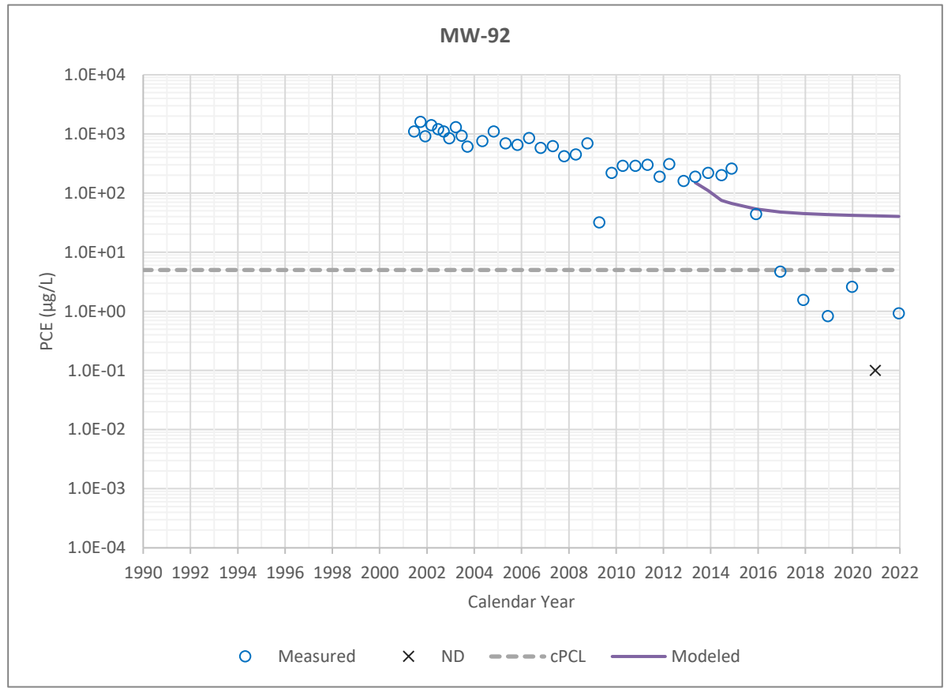

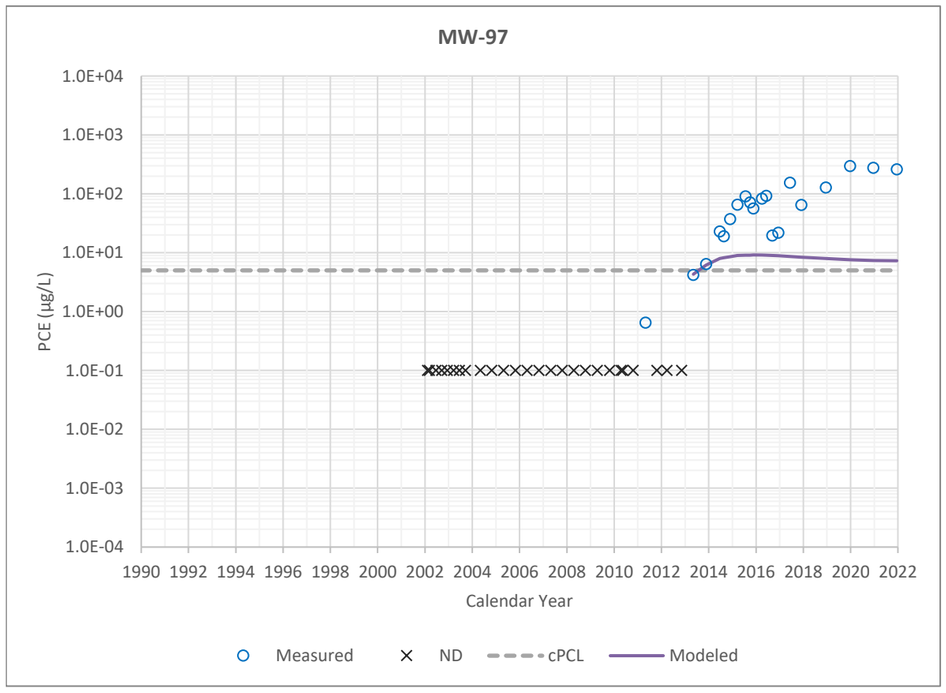

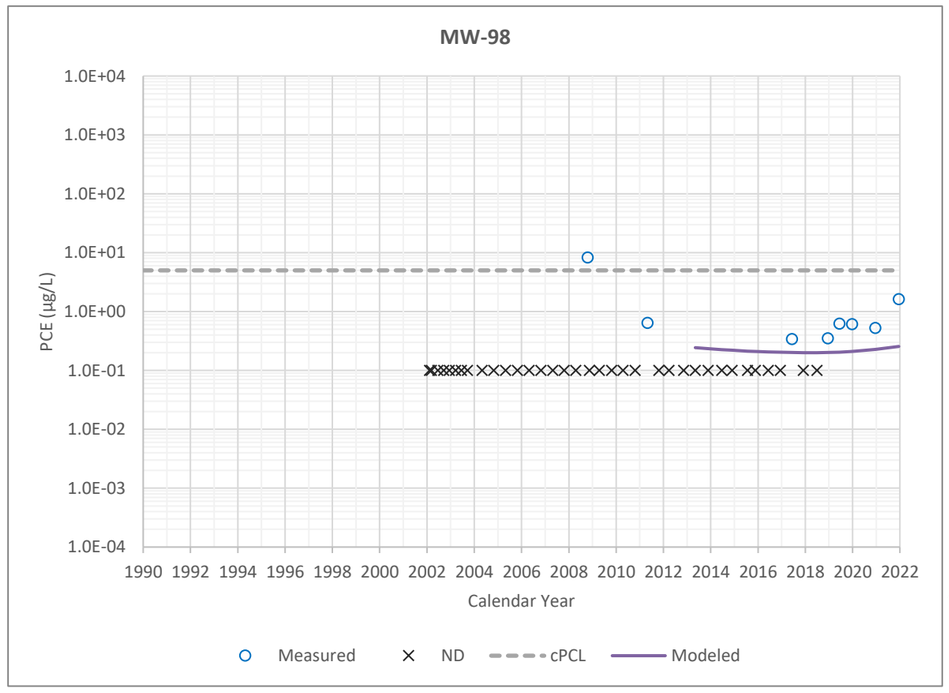

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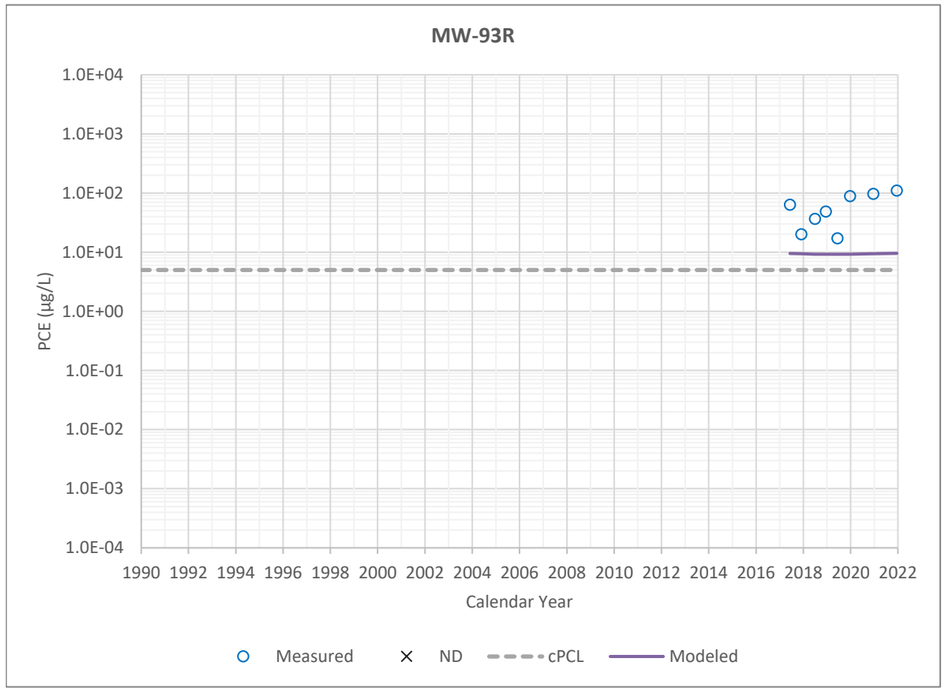

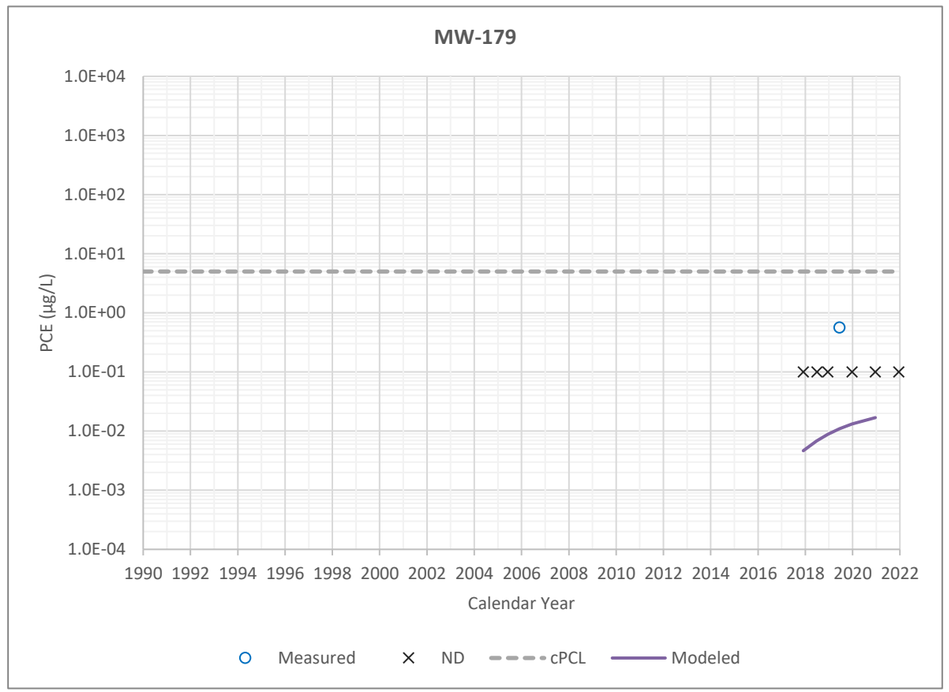

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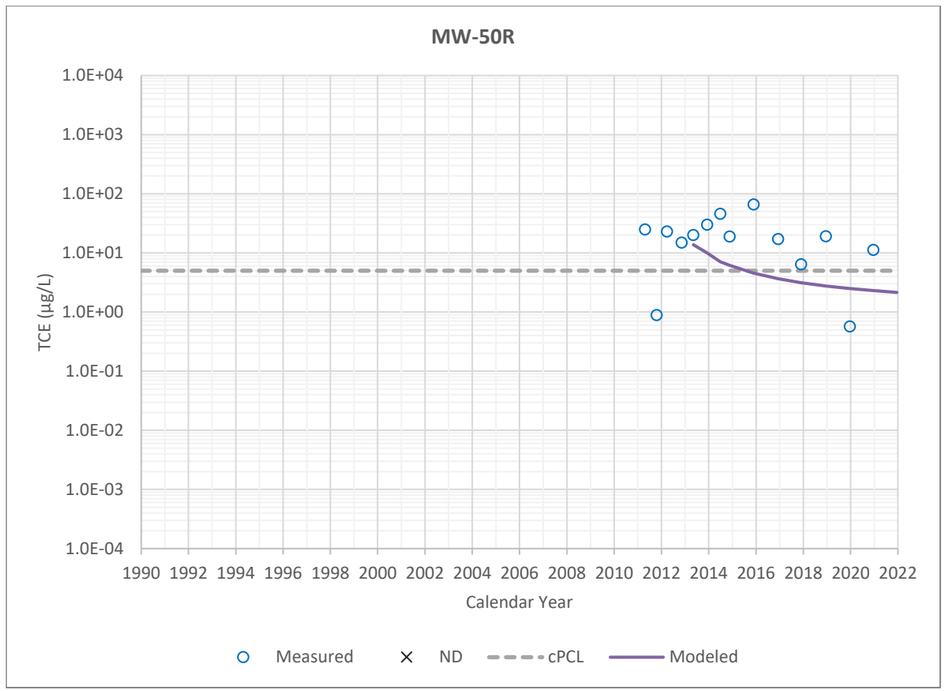
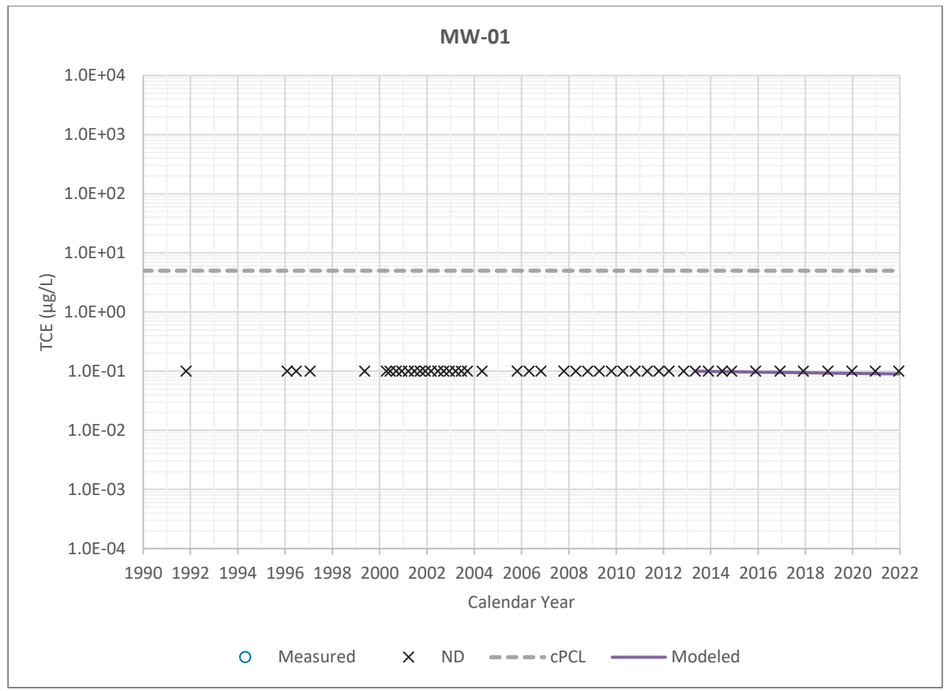
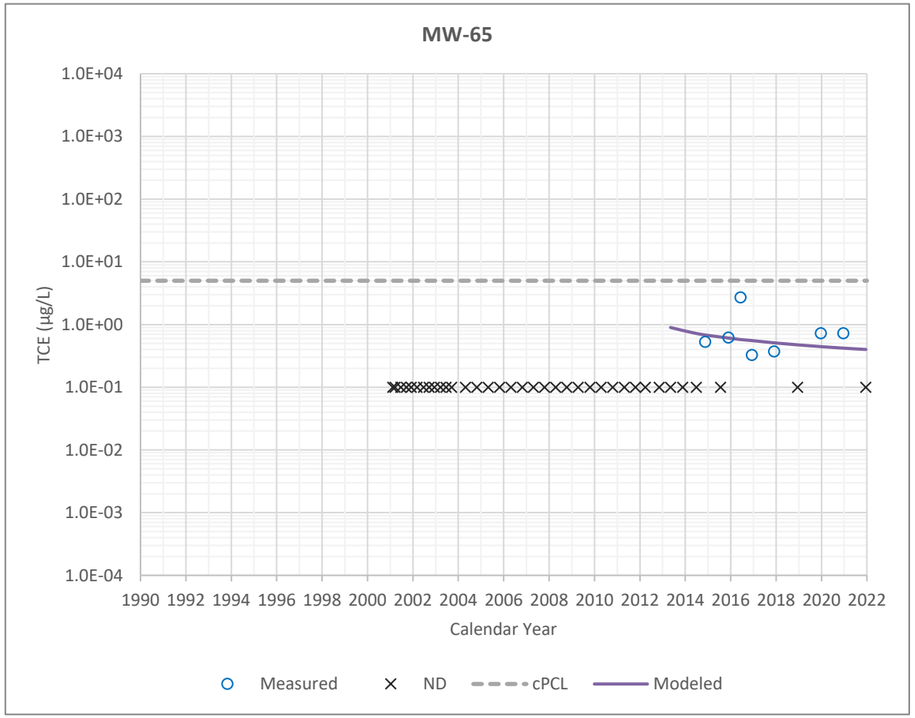
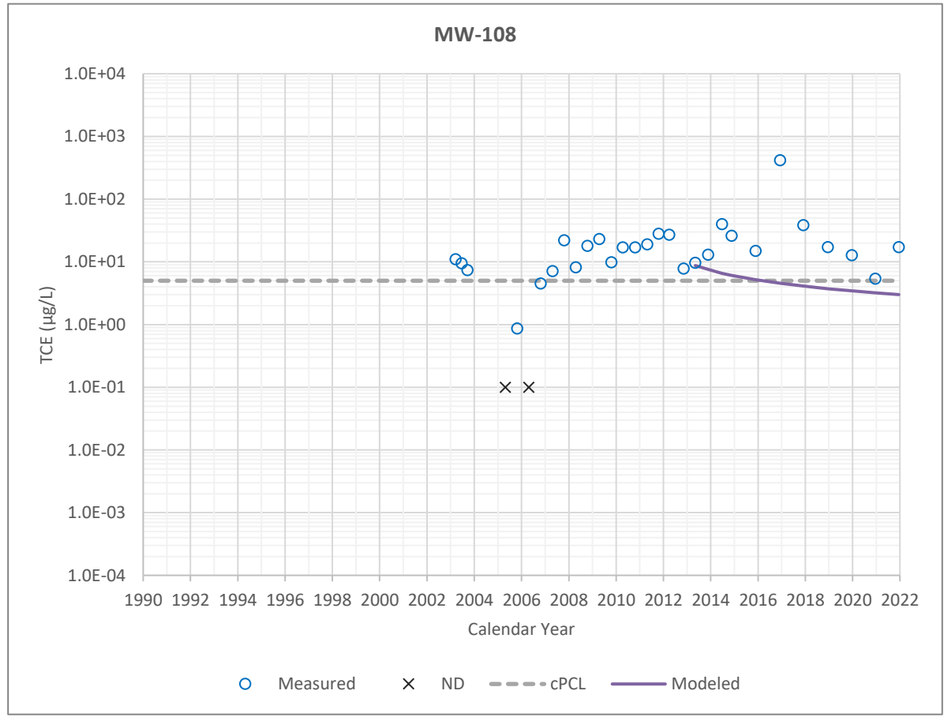
Attachment A-4
Modeled and Measured TCE Chemographs









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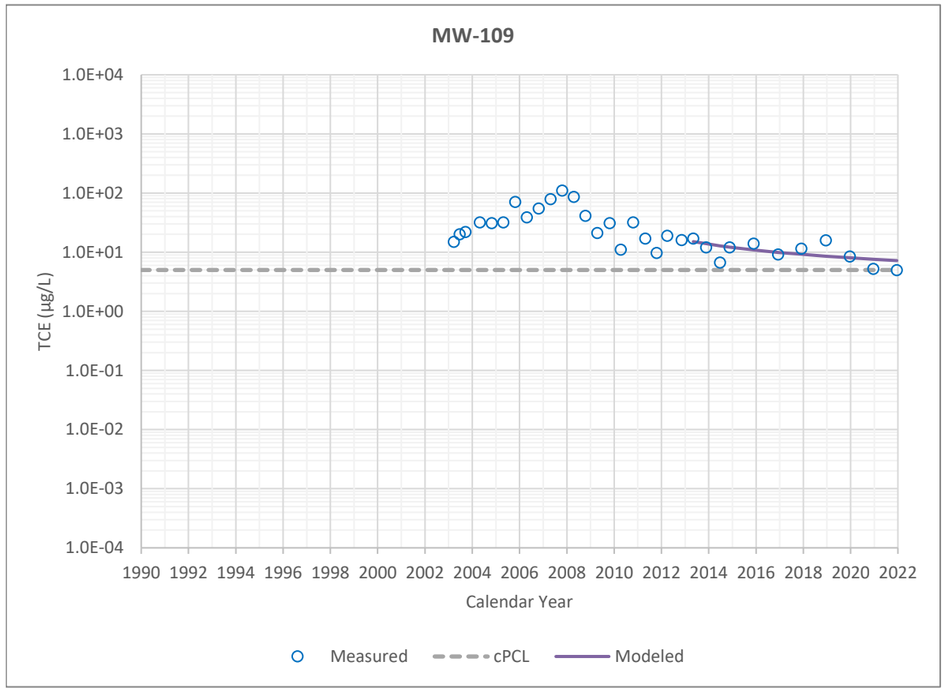

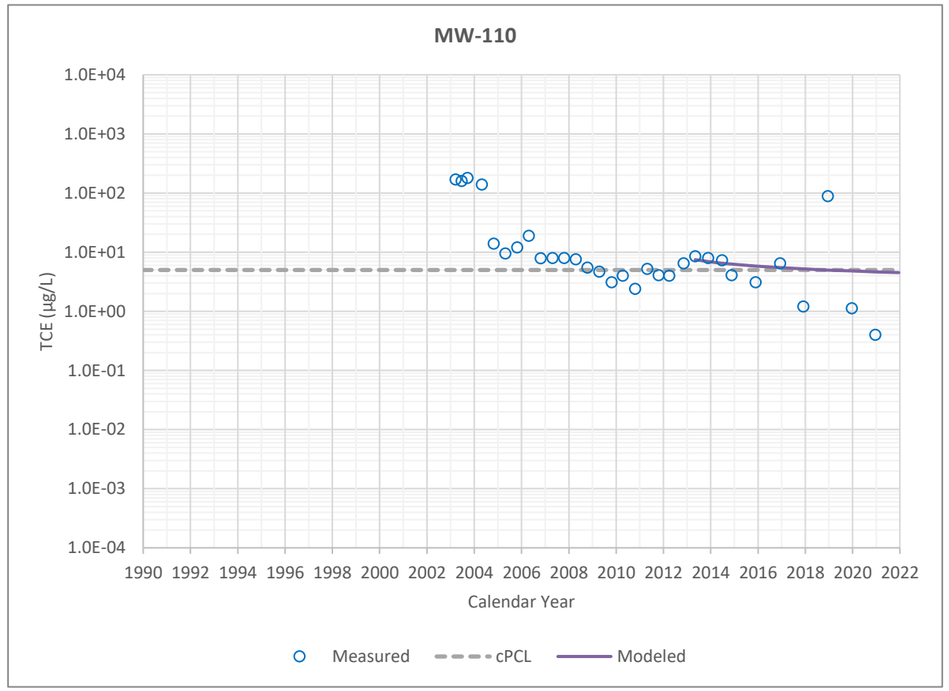

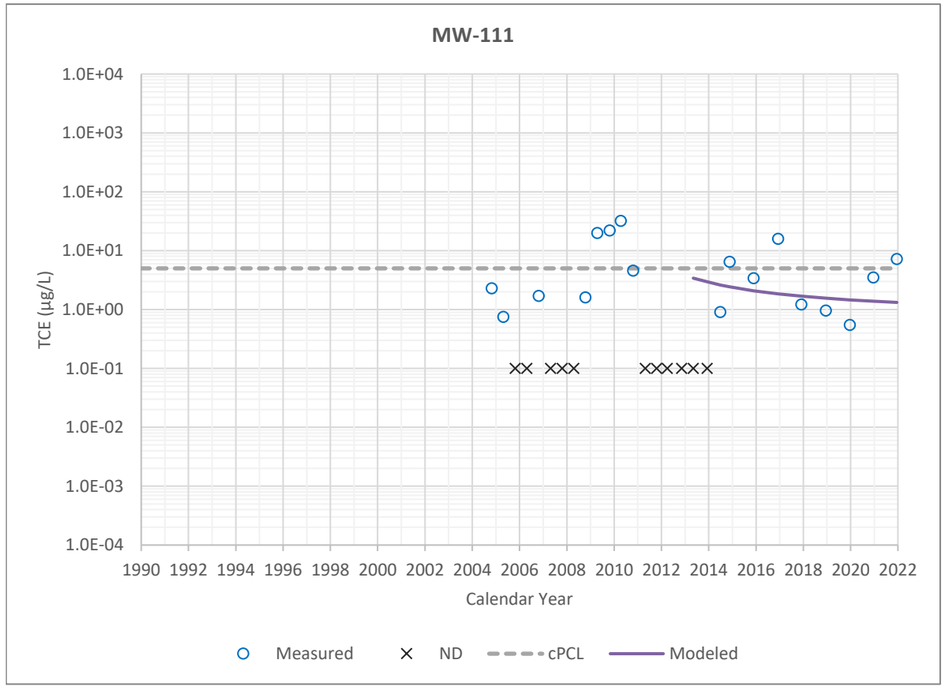

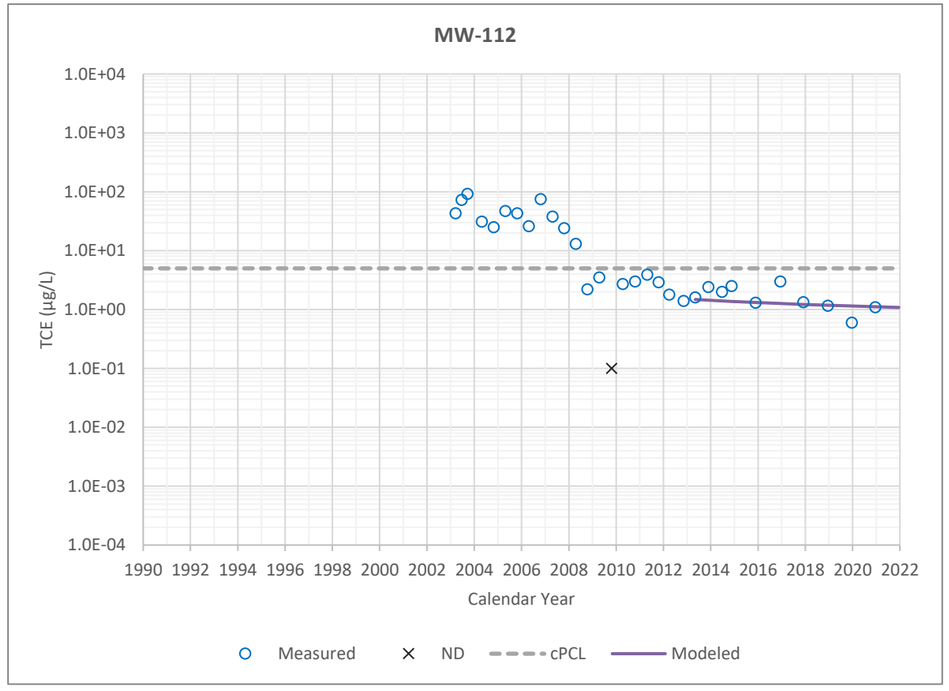

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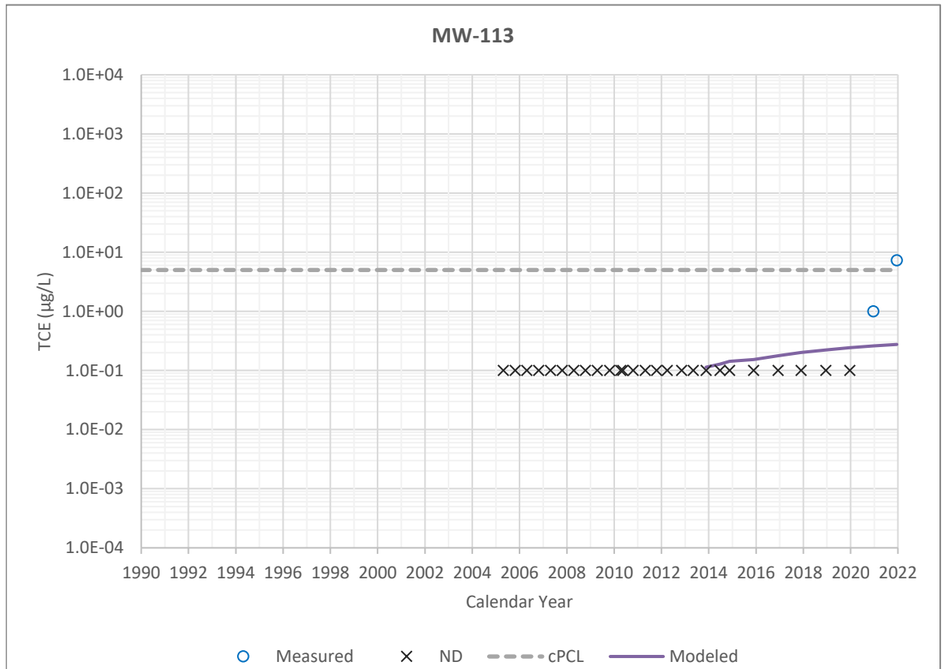

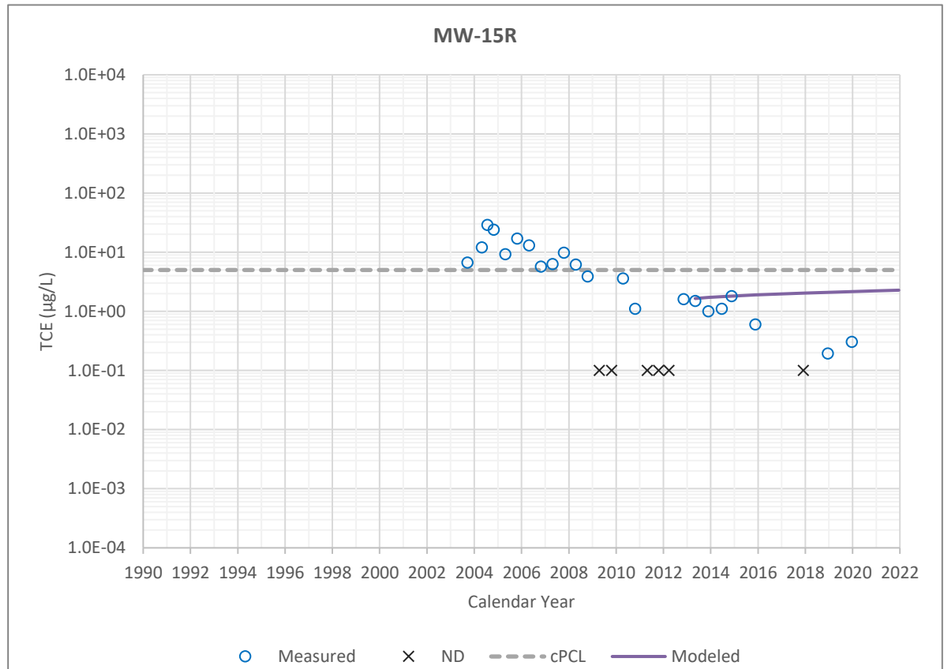

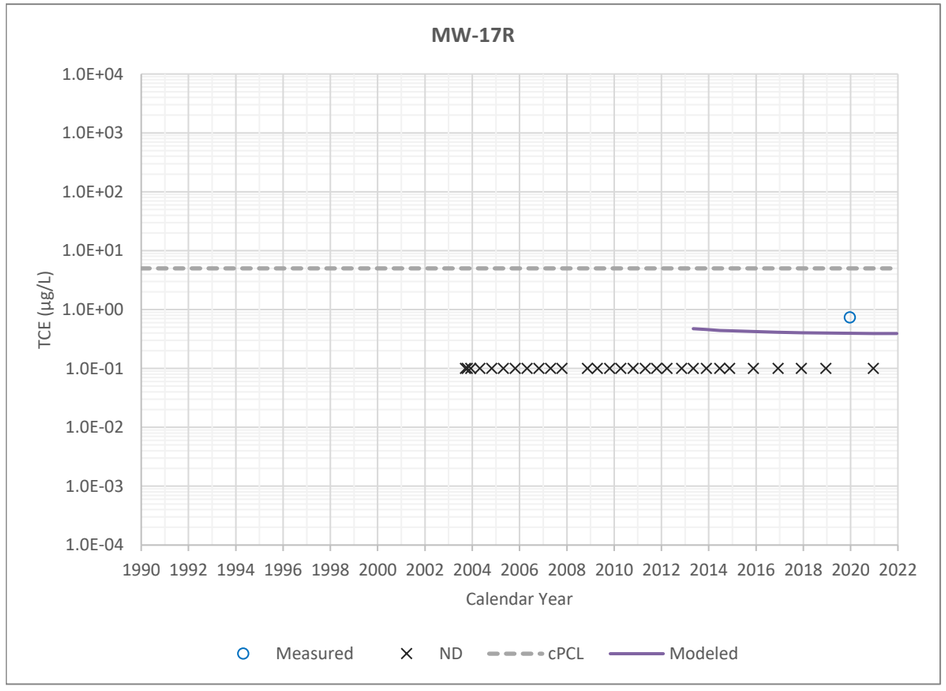

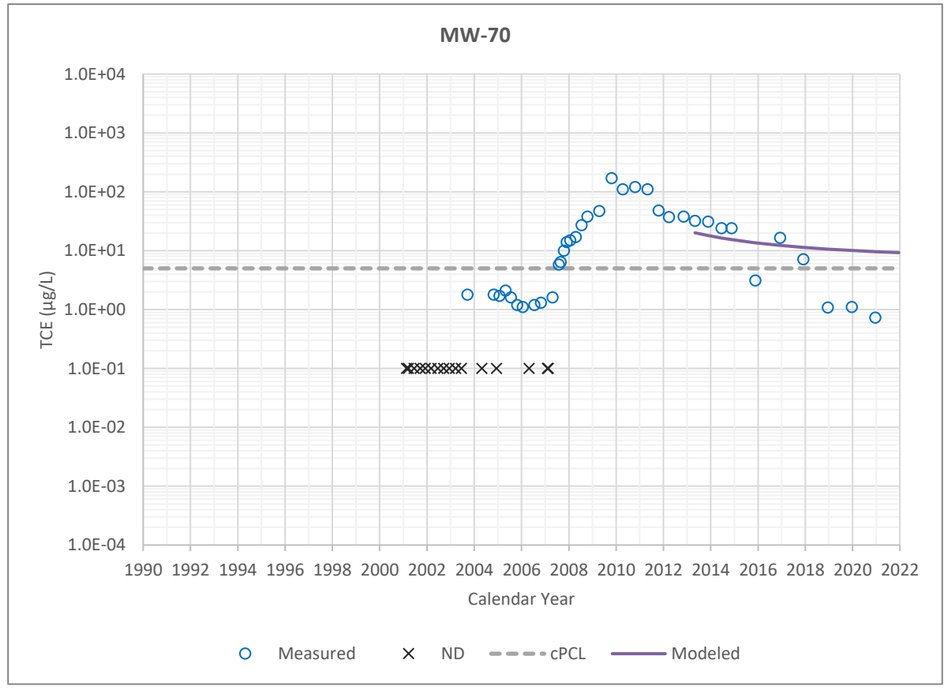

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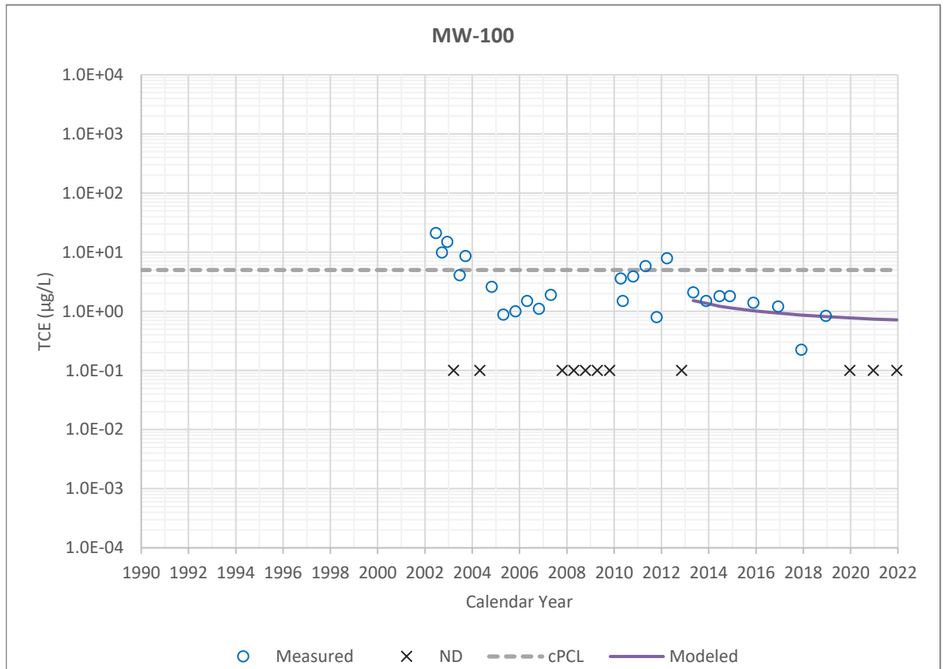

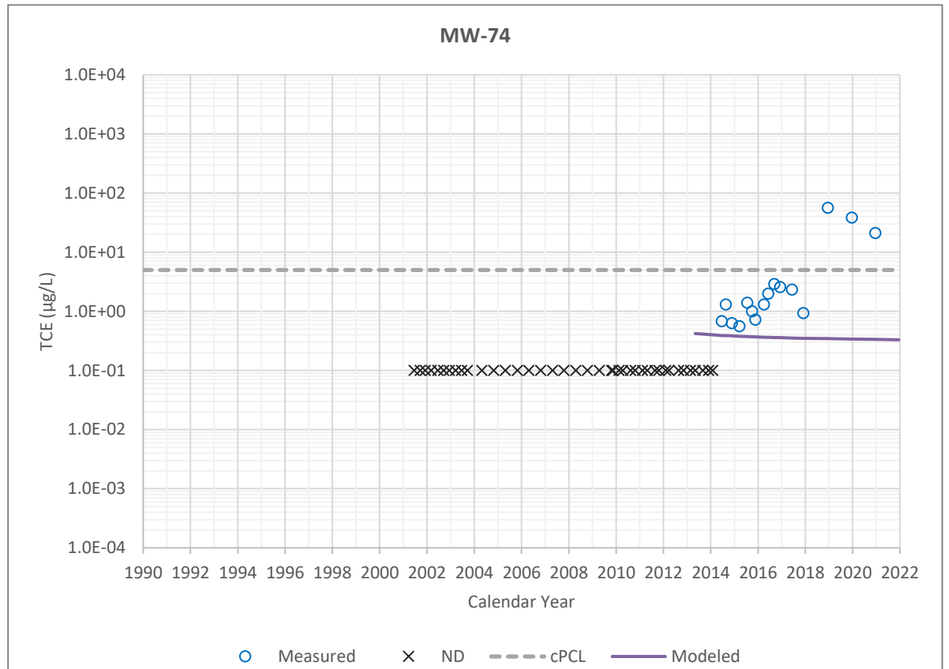

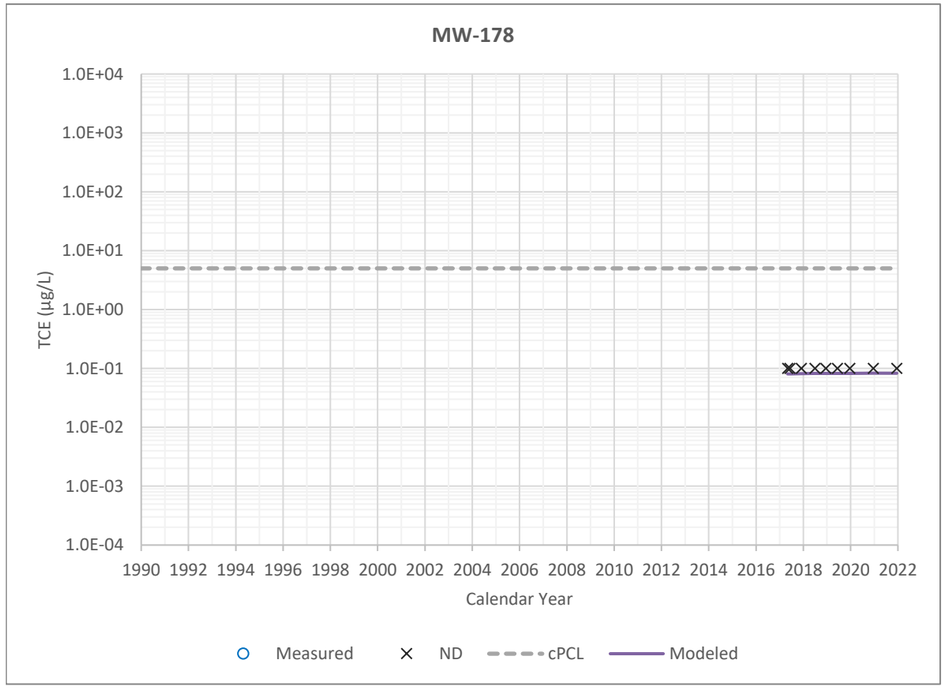

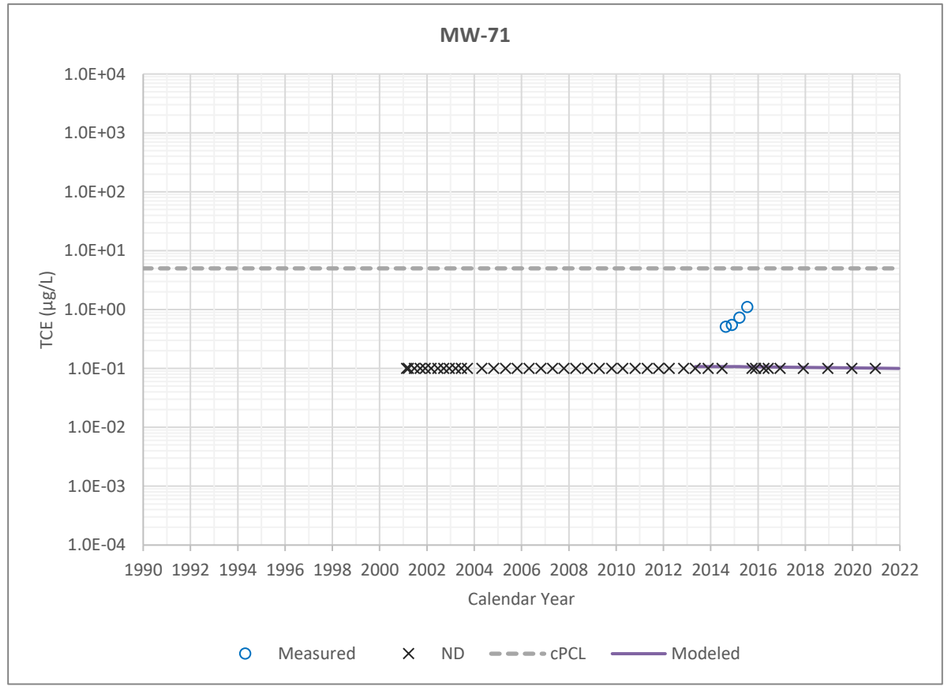

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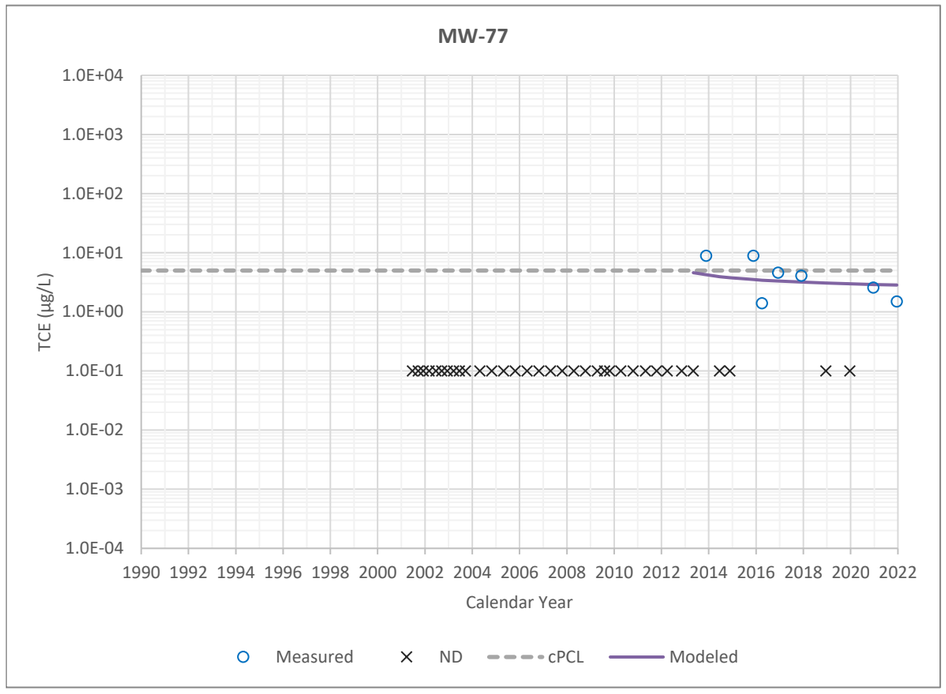

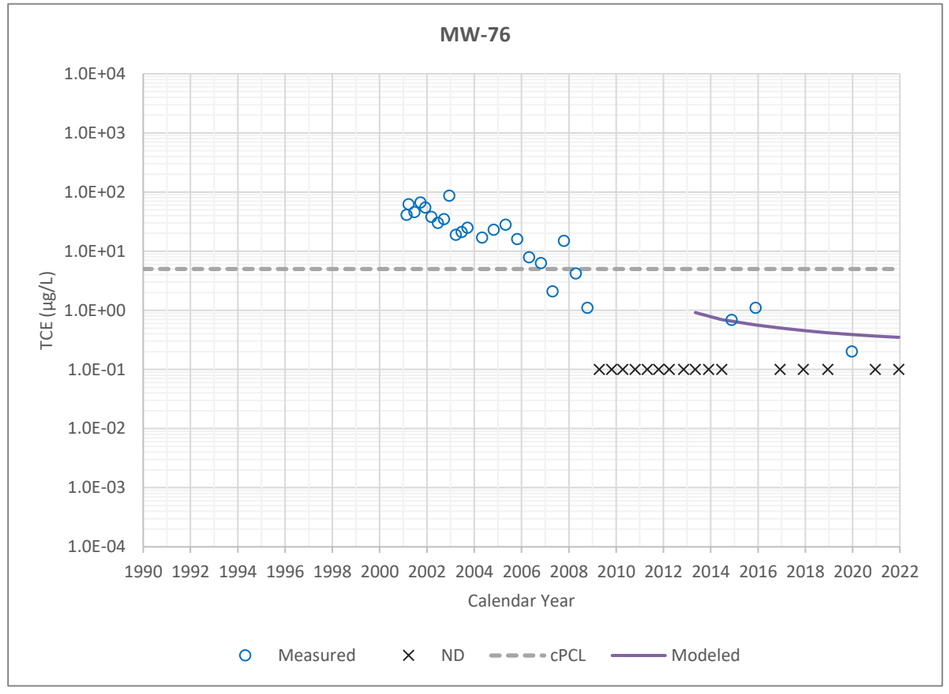

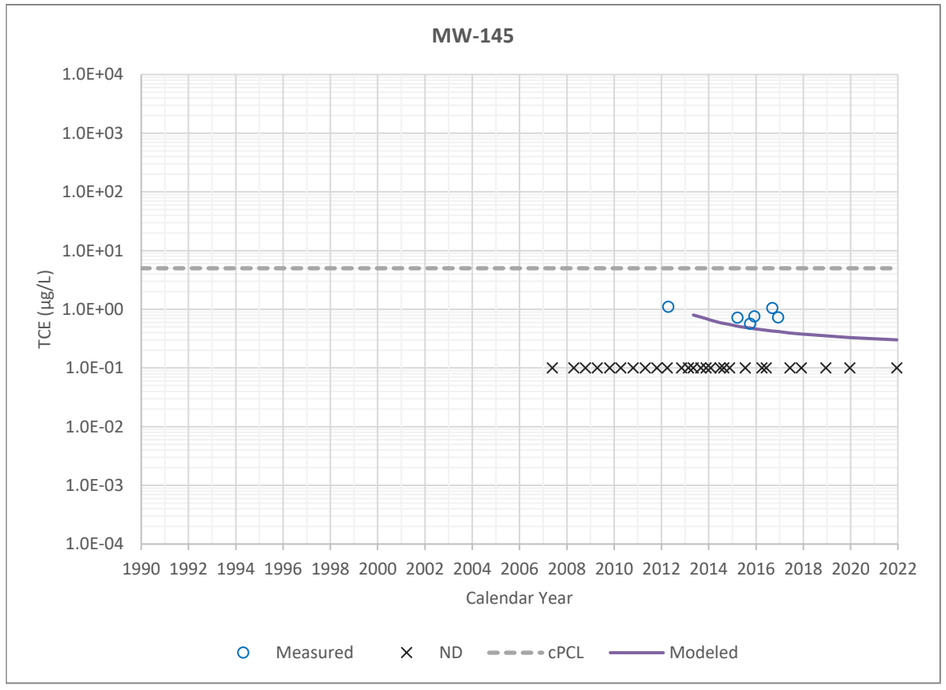

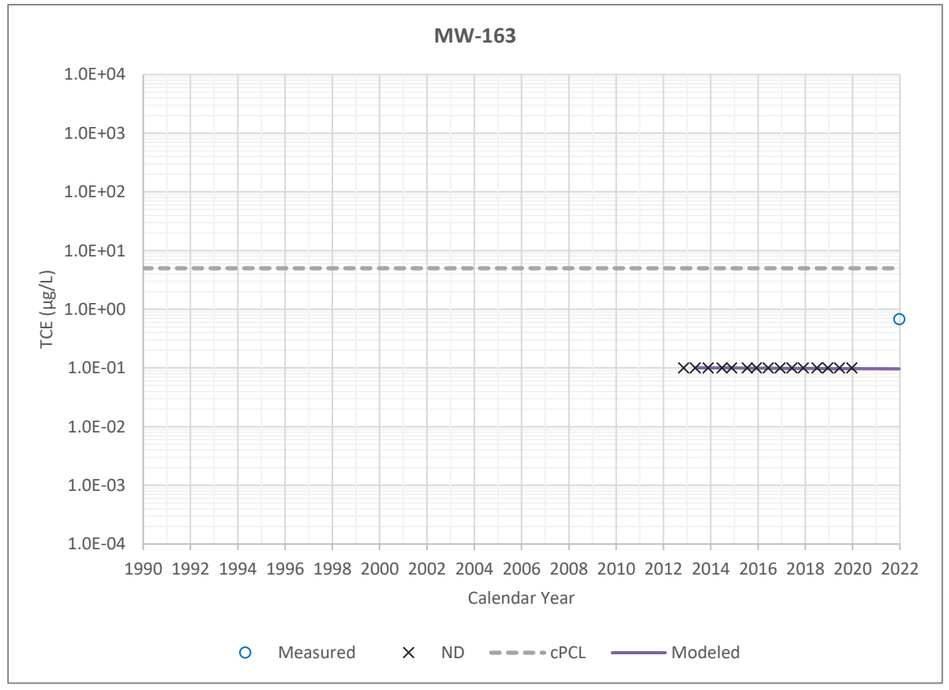

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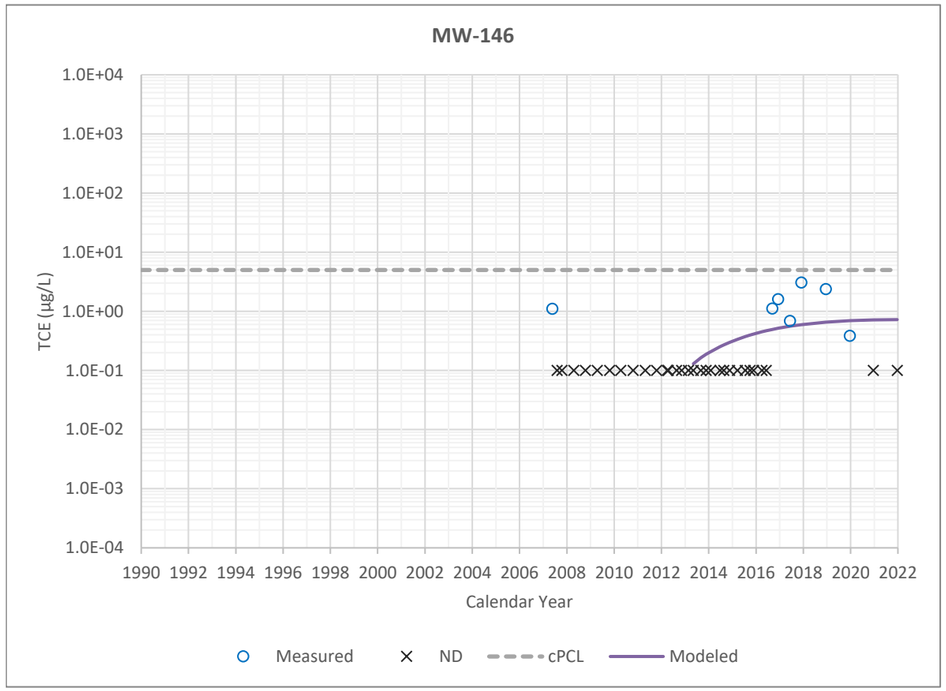

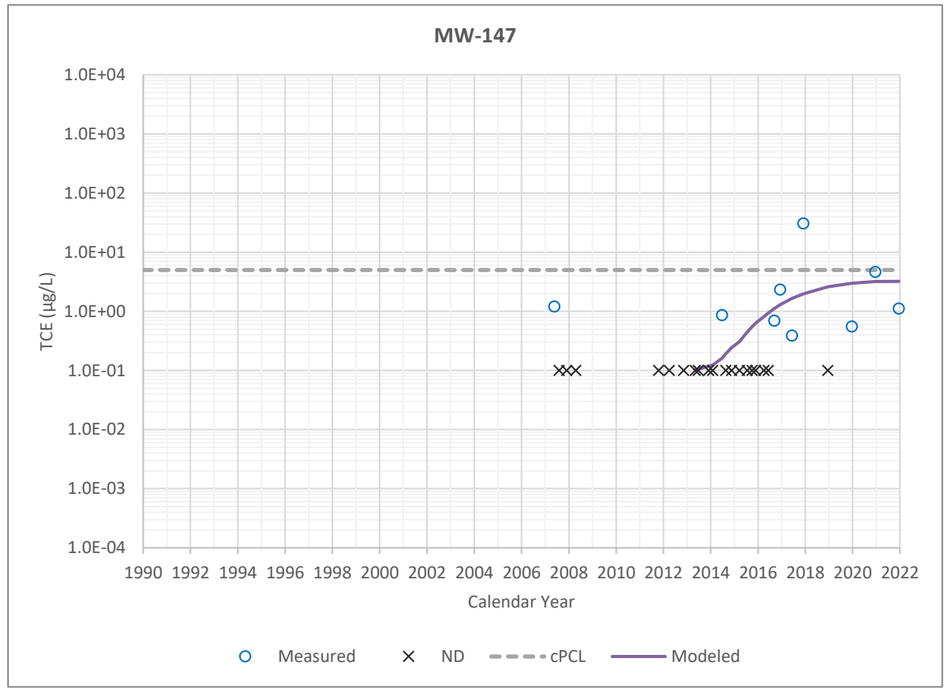

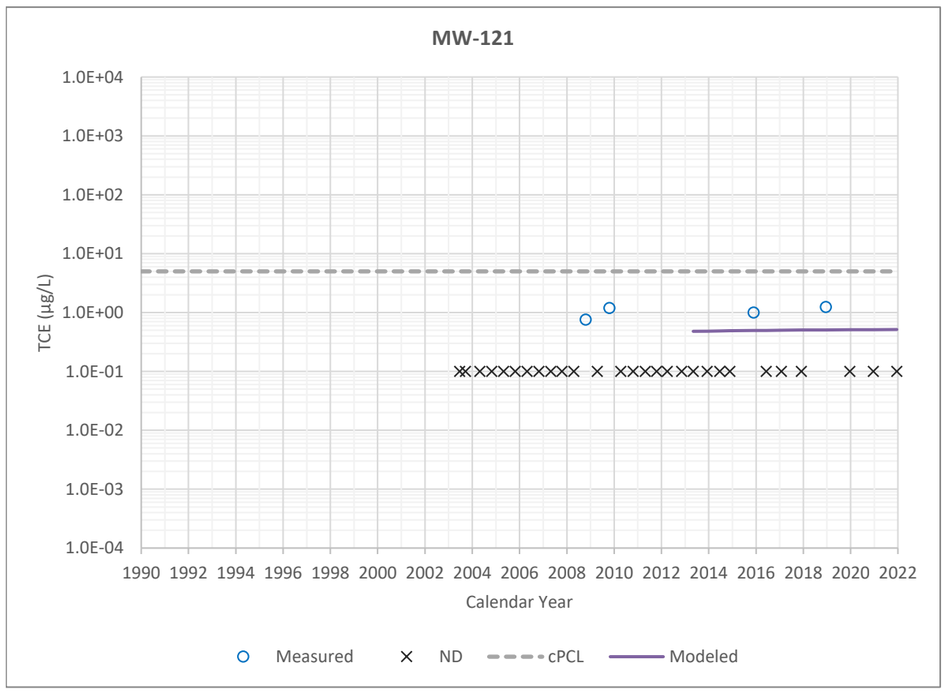

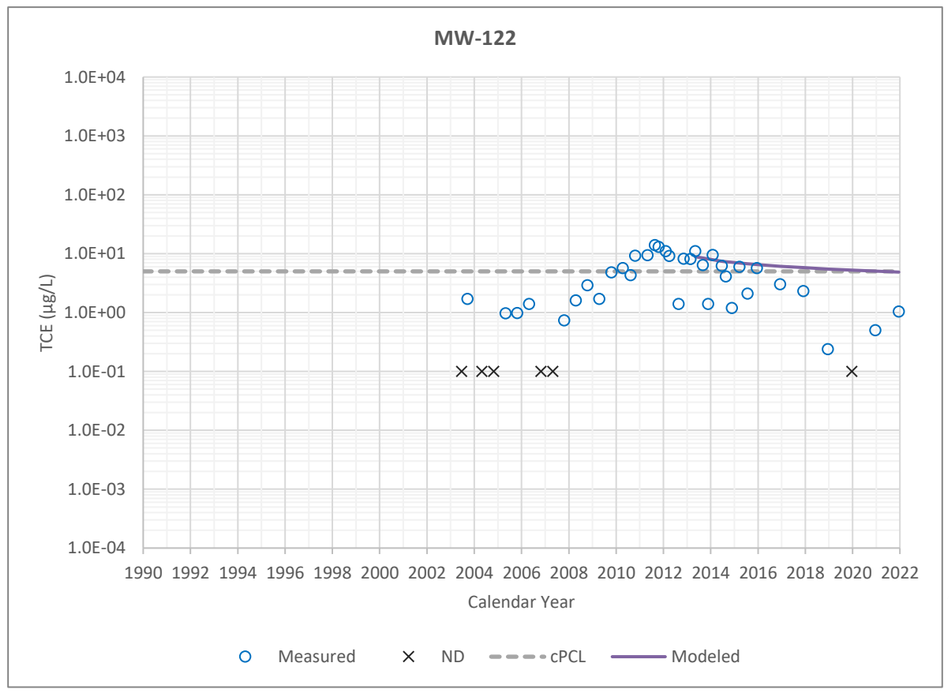

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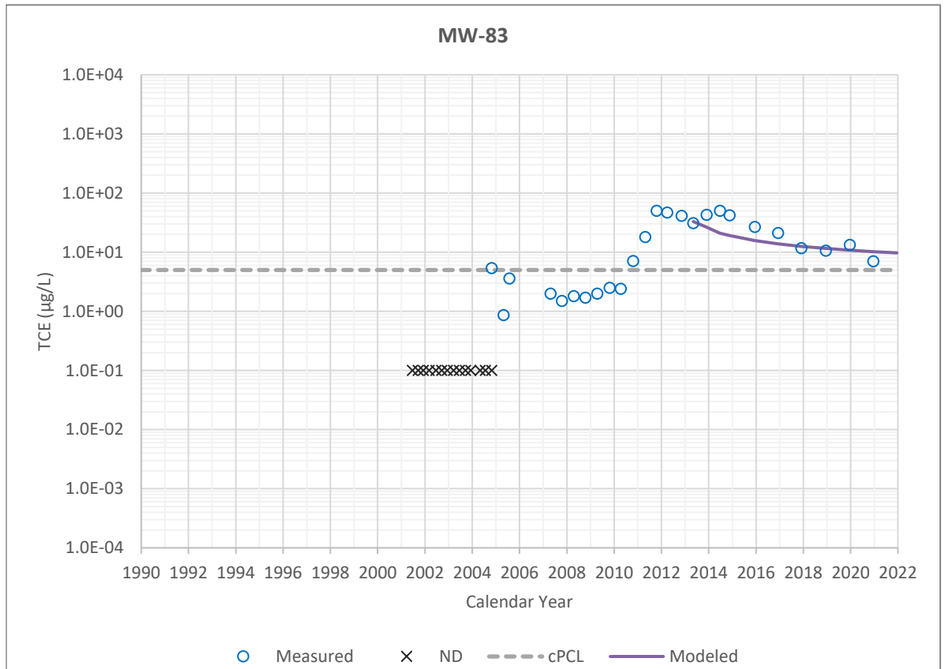
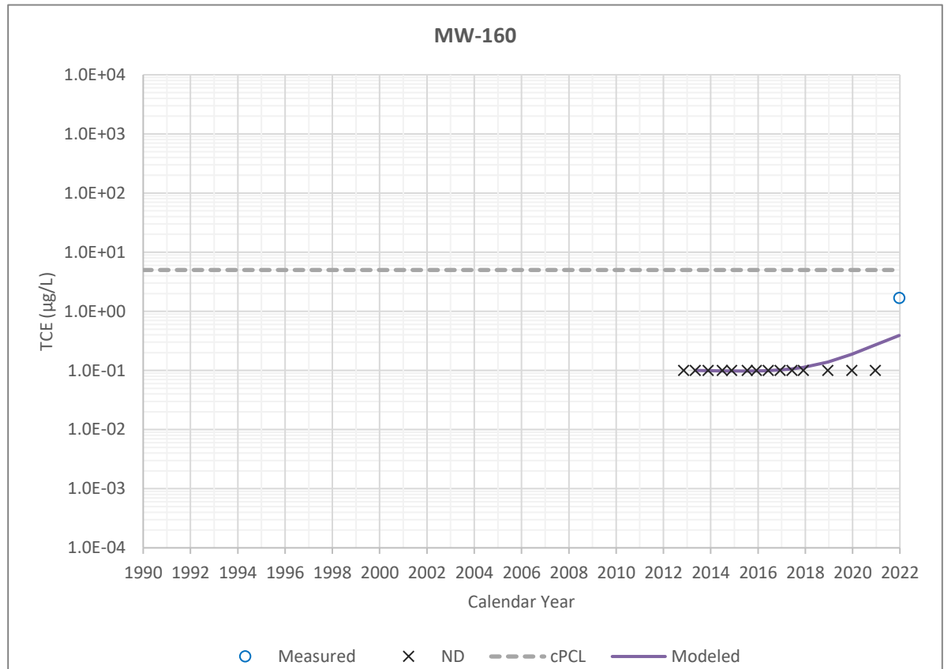
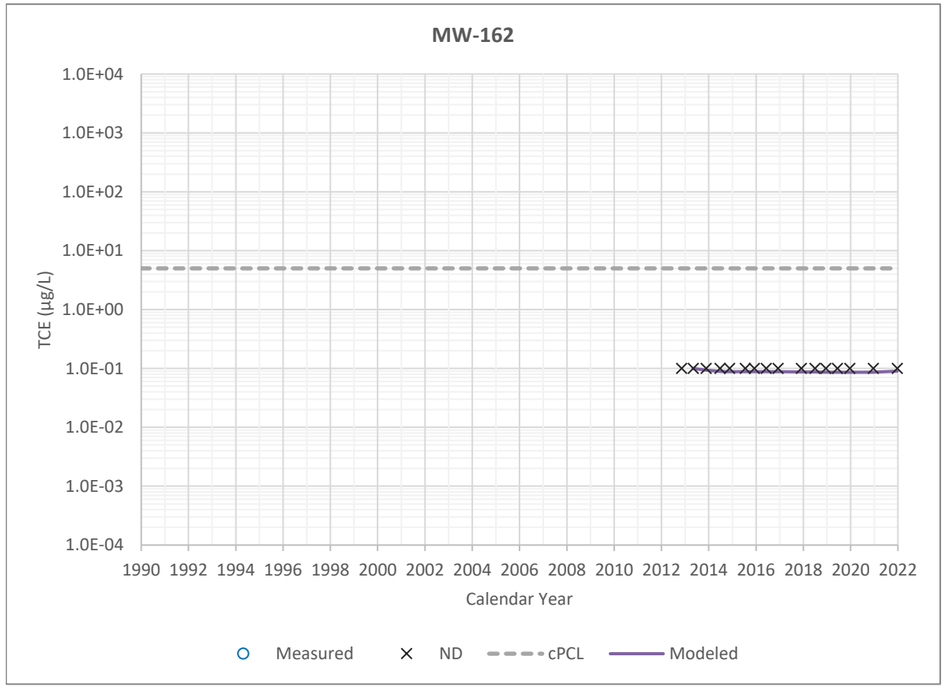
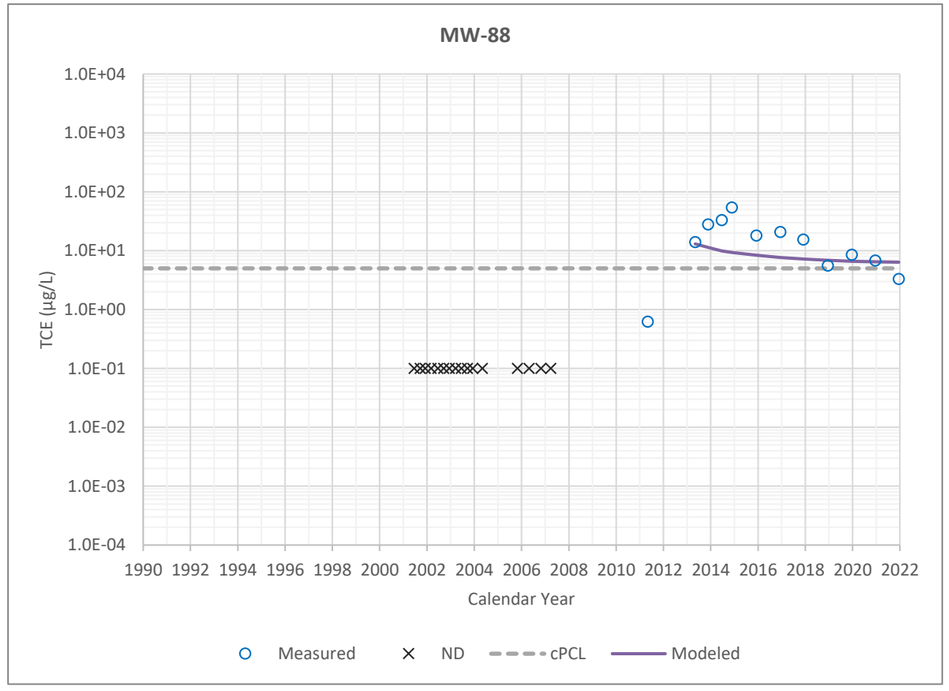








Notes:

cPCL = critical protective concentration level

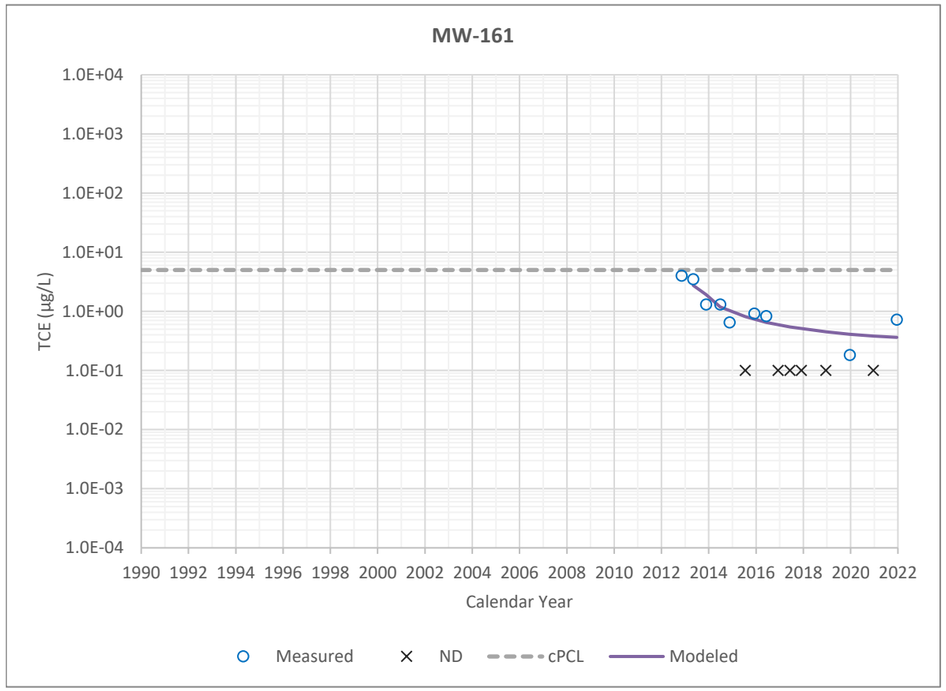
DHL = degradation half life in years

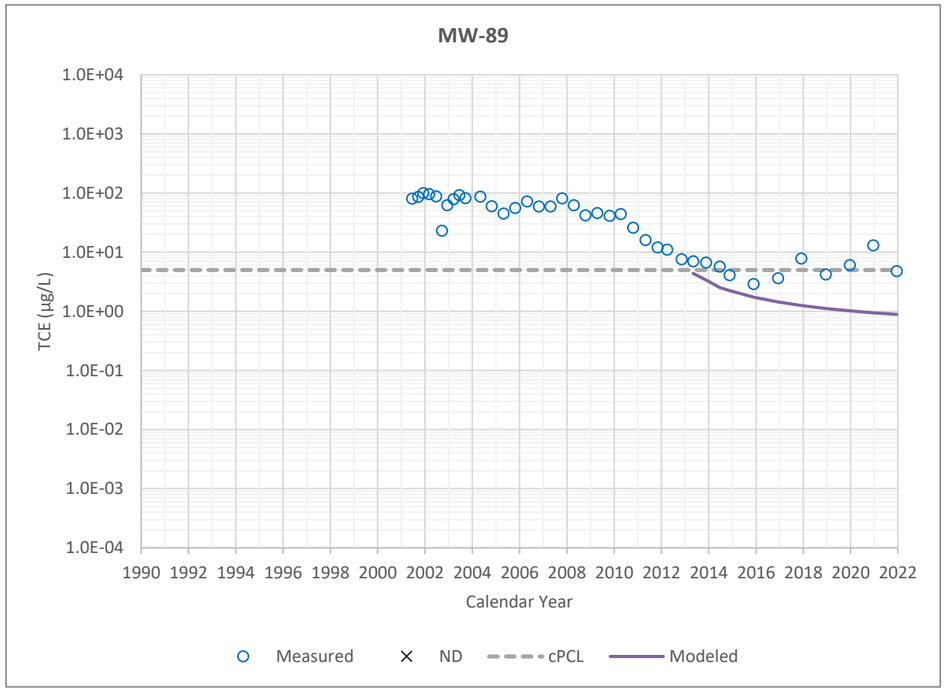
µg/L = microgram per liter

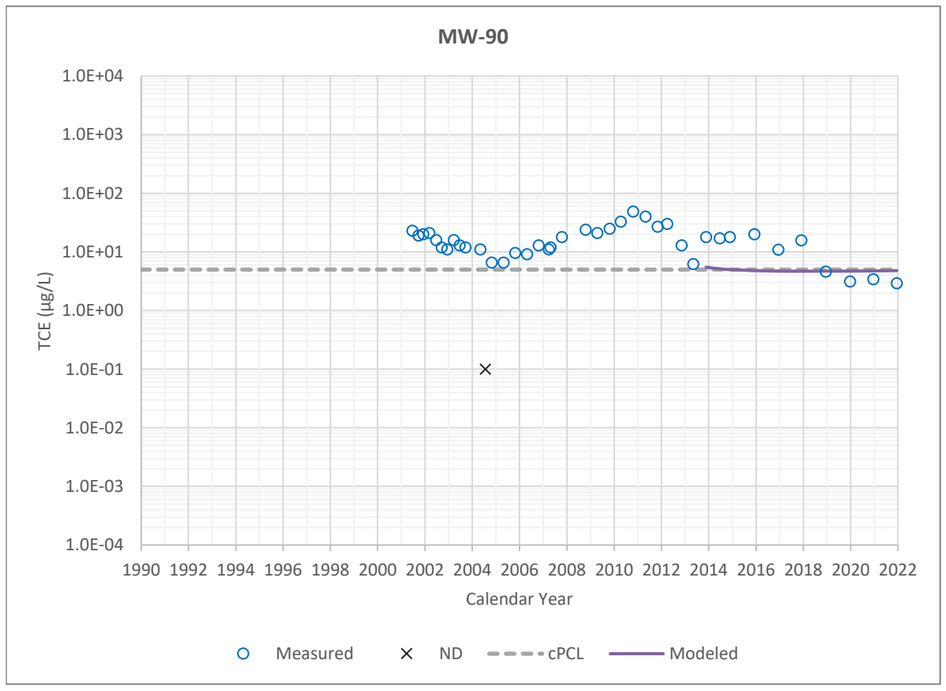
ND = not detected

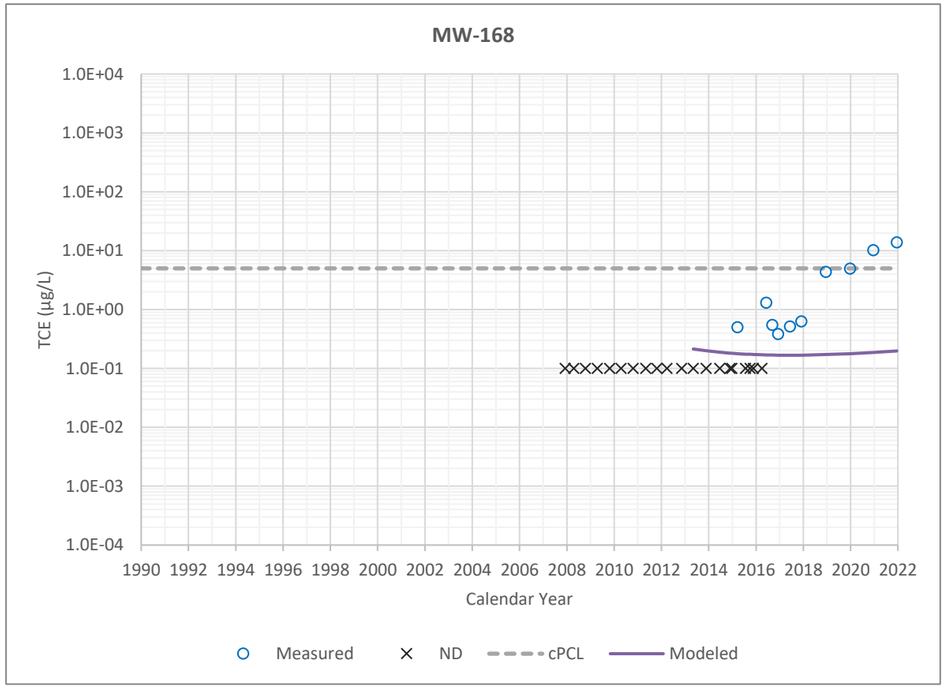
TCE = trichloroethene

Attachment A-4.
Modeled and Measured
TCE Chemographs
2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility
Houston, Texas
CH2M HILL Engineers, Inc.









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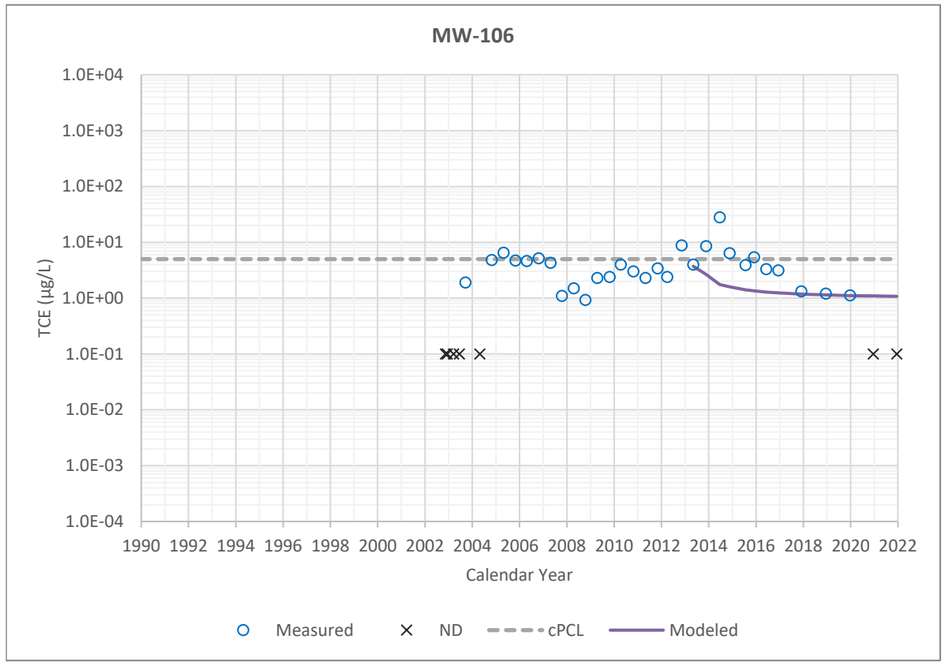

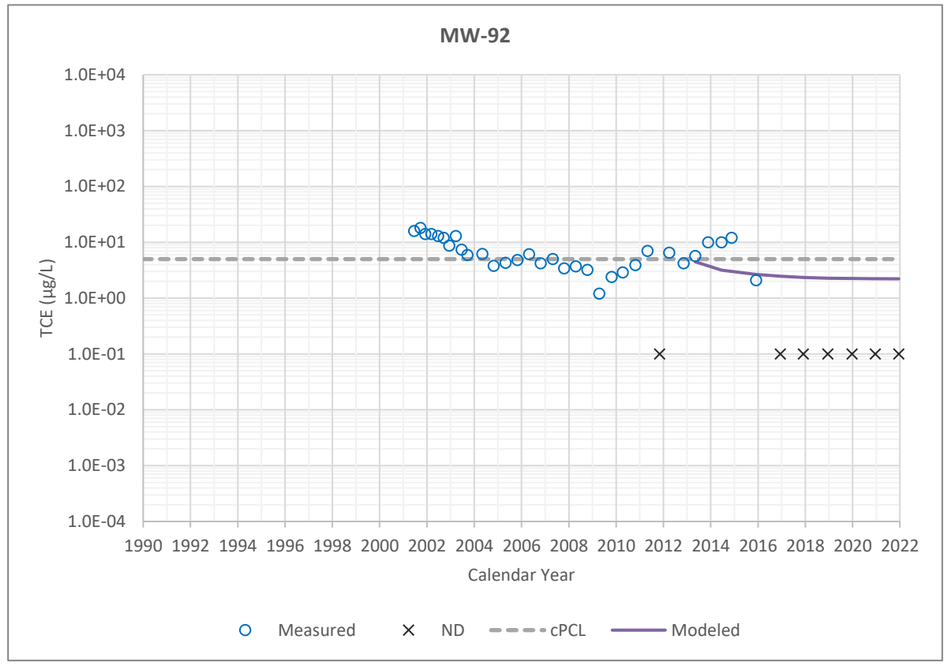

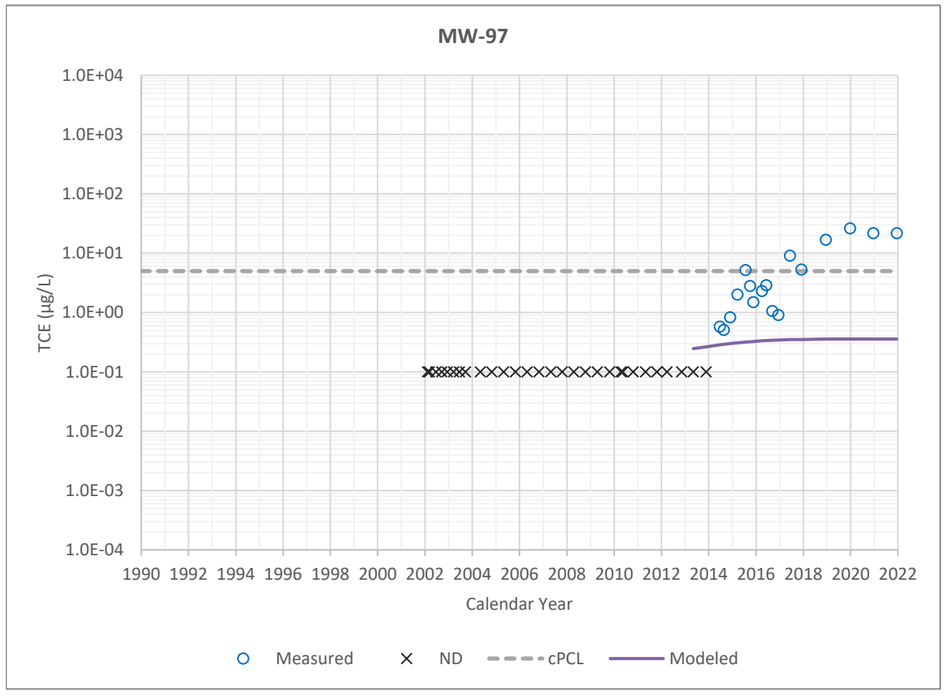

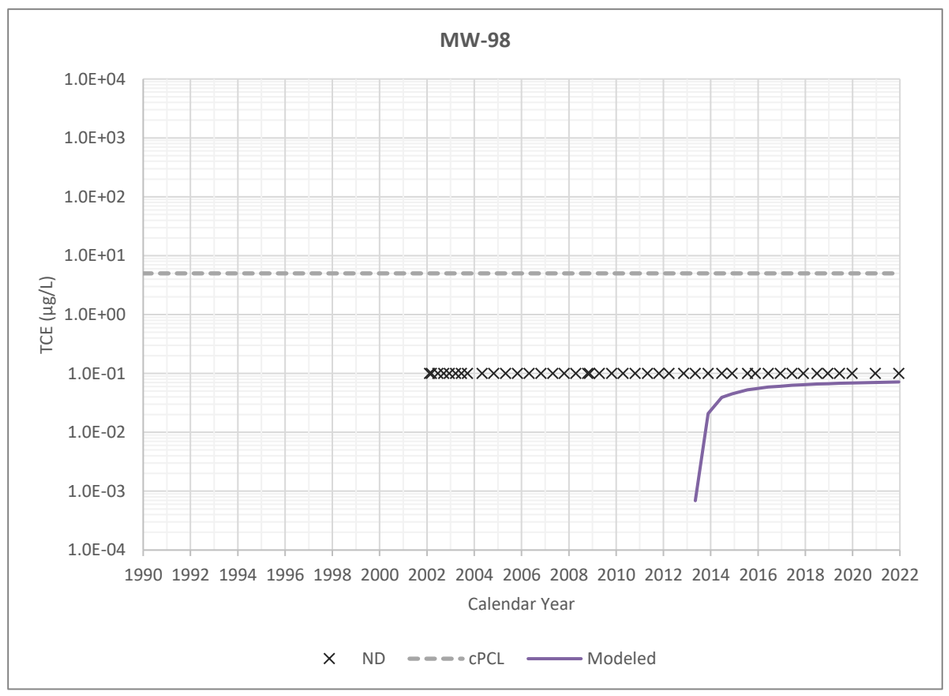

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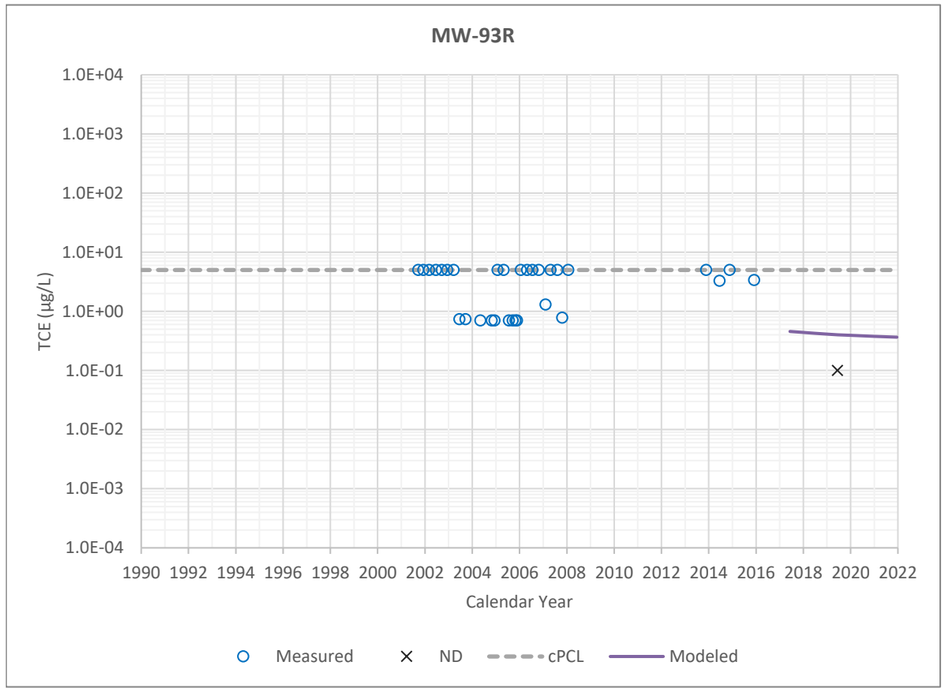

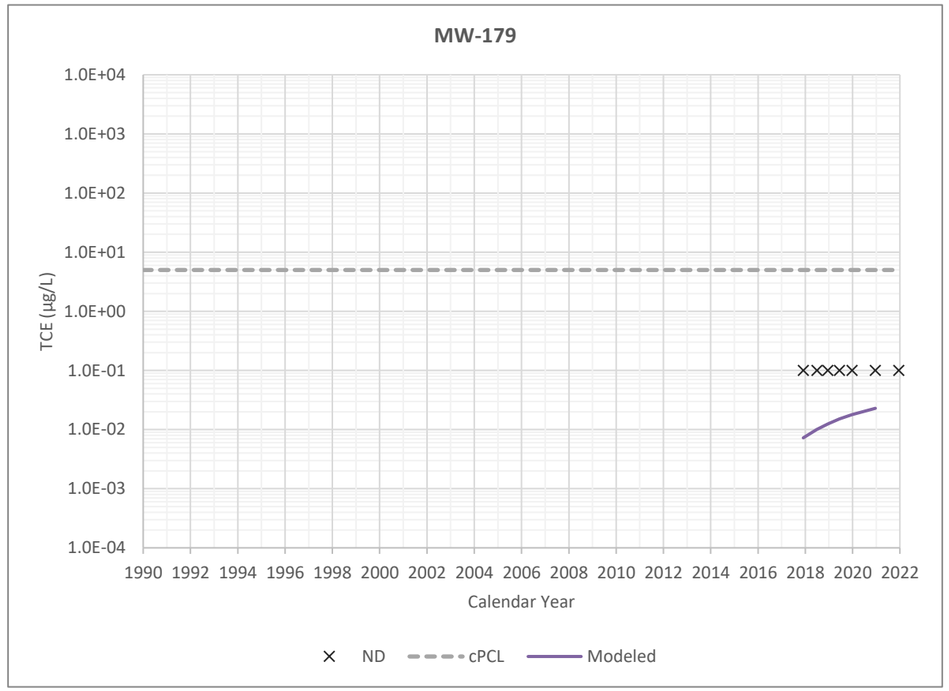

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2022 Groundwater Modeling Technical Memorandum
Former Cameron Iron Works Facility
Houston, Texas
CH2M HILL Engineers, Inc.

Appendix 4
Proposed Institutional Controls

VCP Phased Conditional Certificate of Completion – 35.7-acre Land

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Voluntary Cleanup Program
Phased Conditional Certificate of Completion

The Phased Conditional Certificate of Completion (Certificate) applies to the tract of land described in Exhibit "A'", attached hereto and incorporated herein by reference. The continued effectiveness of this Certificate is dependent upon compliance with the conditions set forth in Exhibit "B", attached hereto and incorporated herein by reference. If there is not satisfactory compliance with these conditions, this Certificate is voidable by the Texas Commission of Environmental Quality (TCEQ). This Certificate shall be a covenant that runs with the land.

As provided in Section 361.609 of the Texas Health and Safety Code:

I, _____, Director of the Remediation Division, TCEQ, certify as follows:

Certain response actions have been implemented for VCP No. 221 as of September 29, 2022 for the tract of land described in Exhibit "A "so that the tract is acceptable for residential land use.

This certification is based on Affidavit of Implementation of Response Actions (Exhibit "D"), attached hereto and incorporated herein by reference) and on additional site information maintained in TCEQ files.

The following persons are qualified to obtain the protection from liability described in §361.610 of the Texas Health and Safety Code, provided the applicant or future owners are satisfactorily achieving and maintaining the conditions described in Exhibit "B":

1) An applicant who on the date of submittal of an application to the Voluntary Cleanup Program was not a responsible party under Sections 361.271 or 361.275(g) of the Texas Health and Safety Code; and

2) All persons (e.g. future owners, future lessees, future operators and lenders) who on the date of issuance of this Certificate were not responsible parties under Sections 361.271 or 361.275(g) of the Texas Health and Safety Code.

Further information concerning this matter may be found at the TCEQ Central File Room in Building E, Room 103, 12100 Park 35 Circle, Austin, Texas 78753 under Voluntary Cleanup Program No. 221:

Executed this the _____ day of _____, _____.

_____

Director,
Remediation Division

STATE OF TEXAS
TRAVIS COUNTY

BEFORE ME, on this the _____day of_____,____, personally appeared [***name***] _____, [***title***] _____, of the Texas Commission on Environmental Quality, known to me to be the person whose name is subscribed to the foregoing instrument, and they acknowledged to me that they executed the same for the purposes and in the capacity therein expressed.
GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the _____ day of _____, ____.

_____

Notary Public in and for the State of Texas

Exhibit A
Property Legal Description and Metes and Bounds Survey Map[1]

[1] Note: The Exhibit A property legal description and metes and bounds survey map will be replaced after TCEQ approval of the institutional control language and boundary.

EXHIBIT "A"

A tract of land containing 35.69 acres (1,554,656 square feet), more or less, being out of part of Restricted Reserve "A", in Block One (1), of IH-10 AT SILBER ROAD, S ONE (1), an addition to the City of Houston, Harris County, Texas, according to the dedication thereof recorded under Film Code No. 354058, of the Map Reco County, Texas; said tract being more particularly described by metes and bo "A", attached hereto and incorporated herein for all purposes.

EXHIBIT "A"

All of that certain 35.69 acres of land, out of the residue of the 40.059 acre tract described in the deed from PLC Houston Complex, L.P. to ORIX PLC Houston Venture, recorded under File No. T797879, in the Official Public Records of Real Property of Harris County, Texas, and out of Restricted Reserve "A", of IH-10 AT SILBER ROAD, SECTION ONE, according to the plat thereof recorded under Film Code No. 354058, in the Map Records of Harris County, Texas, and more particularly described by metes and bounds as follows: (All bearings based on record bearings of the west line of said IH-10 AT SILBER ROAD, SECTION ONE)

BEGINNING at a drill hole found for the northwest corner of said Restricted Reserve "A", common to the northwest corner of said 40.059 acre tract, the southwest corner of Restricted Reserve "B", of said IH-10 AT SILBER ROAD, SECTION ONE, and the northwest corner and **POINT OF BEGINNING** of the herein described tract, in the east right-of-way line of Silber Road (60' R.O.W.);

THENCE North 88° 44' 27" East – 1987.13', along the north line of said 40.059 acre tract, common to the north line of said Restricted Reserve "A", the south line of said Restricted Reserve "B", and the south line of the 45.6290 acre tract described in the deed from Cooper Cameron Corporation to Silber Road Reserve, L.P., recorded under File No. W270870, in the Official Public Records of Real Property of Harris County, Texas, to a 5/8" iron rod found for the northeast corner of said 40.059 acre tract, common to the northeast corner of said Restricted Reserve "A", and the southeast corner of said 45.6290 acre tract, in the west line of the 12.4163 acre tract described in the deed from PMI Industries, Inc. to Awty High School, recorded under File No. F694096, in the Official Public Records of Real Property of Harris County, Texas, at 268.83' passing a 5/8" iron rod found for the southeast corner of said Restricted Reserve "B", common to the southwest corner of said 45.6290 acre tract;

THENCE South 02° 29' 07" East – 816.60', along the east line of said 40.059 acre tract, common to the east line of said Restricted Reserve "A", the west line of said 12.4163 acre tract, and the west line of the 2.5942 acre tract described in the deed from E & K Holdings, Inc. to 7502 Old Katy Road Company, recorded under File No. V873922, in the Official Public Records of Real Property of Harris County, Texas, to a 5/8" iron rod set for the southeast corner of the herein described tract, in the north right-of-way line of Interstate Highway 10 (width varies), common to the north line of the 4.378 acre tract described in the deed from ORIX PLC Houston Venture to State of Texas, recorded under File No. W327357, in the Official Public Records of Real Property of Harris County, Texas, common to a point on a curve to the left, having a central angle of 05° 47' 26", a radius of 2889.79', and from which point the center of the circle of said curve bears South 05° 20' 35" West ;

THENCE along said curve to the left, along said common line, in a westerly direction, an arc distance of 292.06', to a 5/8" iron rod set for the end of curve;

RP 026-49-0458

EXHIBIT "A"

THENCE South 89° 33' 09" West – 771.44', continuing along said common line, to a 5/8" iron rod set for an angle corner of the herein described tract, common to an angle corner of aforesaid 4.378 acre tract;

THENCE North 85° 54' 13" West -- 151.51', continuing along said common line, to a 5/8" iron rod set for a point on a curve to the left, having a central angle of 01° 02' 55", a radius of 17380.15', and from which point the center of the circle of said curve bears South 00° 26' 49" East;

THENCE along said curve to the left, continuing along said common line, in a westerly direction, an arc distance of 318.07', to an "X" cut in concrete for the end of curve;

THENCE North 87° 10' 15" West – 150.54', continuing along said common line, to an "X" cut in concrete for a point on a curve to the left, having a central angle of 00° 25' 35", a radius of 17392.15', and from which point the center of the circle of said curve bears South 01° 59' 24" East;

THENCE along said curve to the left, continuing along said common line, in a westerly direction, an arc length of 129.41', to an "X" cut in concrete for the end of curve;

THENCE South 87° 35' 01" West – 132.67', continuing along said common line, to 5/8" iron rod set for the east end of the northeast right-of-way cutback line at the intersection of aforesaid Interstate Highway 10 and aforesaid Silber Road (width varies);

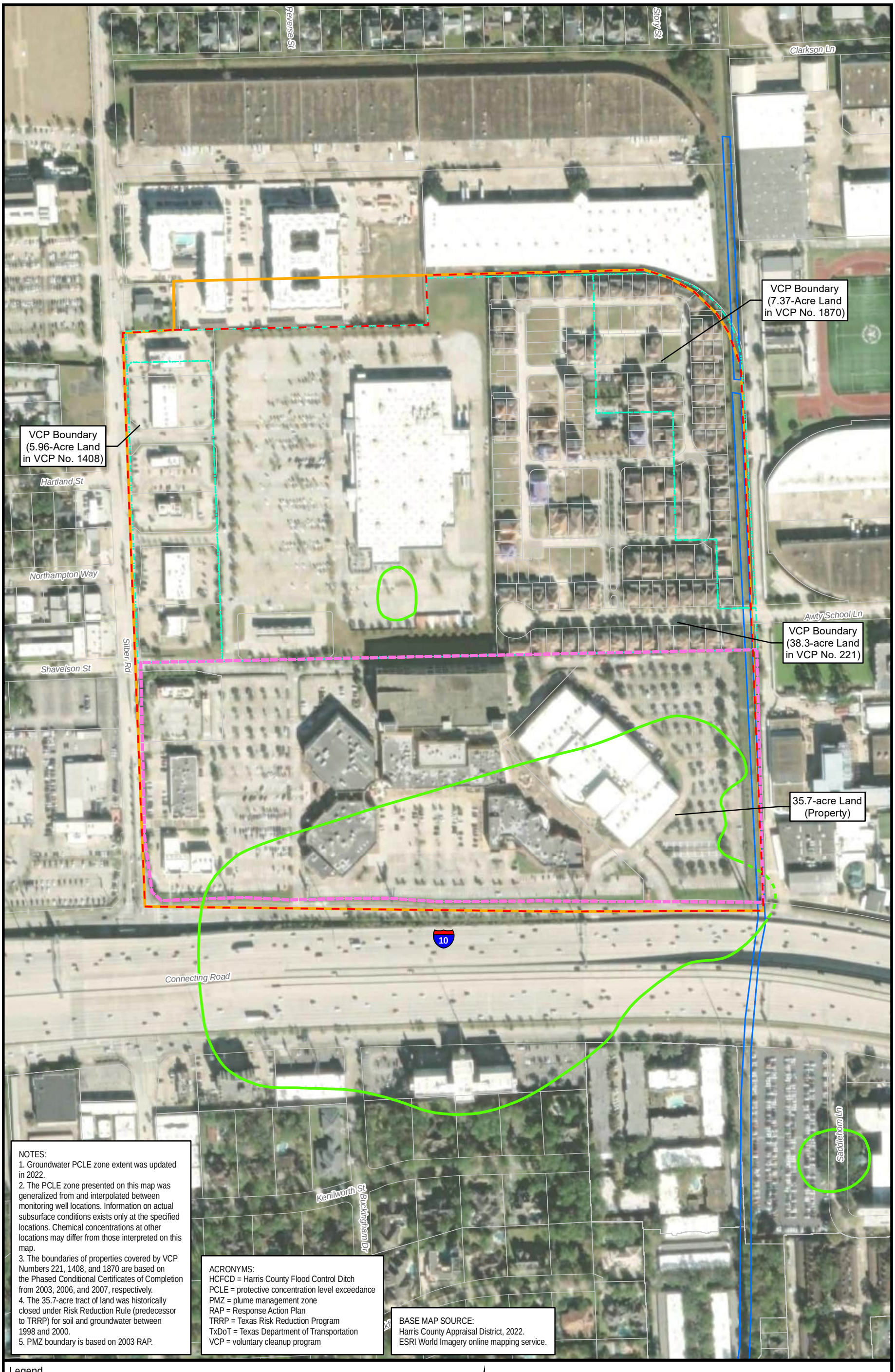
THENCE North 47° 24' 02" West – 41.27', along said northeast right-of-way cutback line, to a 5/8" iron rod set for the north end of said cutback, in the east right-of-way line of said Silber Road, common to a point on a curve to the left, having a central angle of 09° 50' 31", a radius of 510.00', and from which point the center of the circle of said curve bears South 87° 09' 12" West;

THENCE along said curve to the left, along the east right-of-way line of said Silber Road, common to an east line of aforesaid 4.378 acre tract, in a northerly direction, an arc distance of 87.60', to a 5/8" iron rod set for the Point of Reverse Curvature of a curve to the right, having a central angle of 06° 18' 40", and a radius of 490.00';

THENCE along said curve to the right, continuing along said common line, in a northerly direction, an arc distance of 53.97', to a 5/8" iron rod set for the end of curve;

THENCE North 06° 22' 39" West – 35.73', continuing along said common line, to the north corner of said 4.378 acre tract, in the west line of aforesaid Restricted Reserve "A";

THENCE North 02° 18' 02" West – 560.54', continuing along the east right-of-way line of aforesaid Silber Road, common to the west line of said Restricted Reserve "A", to the **POINT OF BEGINNING** of the herein described tract and containing 35.69 acres of land.



NOTES:
1. Groundwater PCLE zone extent was updated in 2022.
2. The PCLE zone presented on this map was generalized from and interpolated between monitoring well locations. Information on actual subsurface conditions exists only at the specified locations. Chemical concentrations at other locations may differ from those interpreted on this map.
3. The boundaries of properties covered by VCP Numbers 221, 1408, and 1870 are based on the Phased Conditional Certificates of Completion from 2003, 2006, and 2007, respectively.
4. The 35.7-acre tract of land was historically closed under Risk Reduction Rule (predecessor to TRRP) for soil and groundwater between 1998 and 2000.
5. PMZ boundary is based on 2003 RAP.

ACRONYMS:
HCFCD = Harris County Flood Control Ditch
PCLE = protective concentration level exceedance
PMZ = plume management zone
RAP = Response Action Plan
TRRP = Texas Risk Reduction Program
TxDoT = Texas Department of Transportation
VCP = voluntary cleanup program

BASE MAP SOURCE:
Harris County Appraisal District, 2022.
ESRI World Imagery online mapping service.

Legend
- HCFCD
- Gaining Portion of Stream
- Former Facility Boundary
- PMZ Boundary in 2003 RAP
- TxDoT Dewatering System
- Parcel
- 2022 PCLE Zone
- (Dashed Where Inferred)
- VCP Boundary
- Proposed VCP Certificate Filing Property Boundary

N

0 150 300

Approximate scale in feet

Exhibit A.
Proposed VCP Filing Property Map
2022 Response Action Plan Addendum
Former Cameron Iron Works Facility, Houston, TX

CH2M HILL Engineers, Inc.

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Exhibit B
Conditions for Certification

EXHIBIT B
Conditions for Certification
VCP No. 221

The following conditions apply to the tract of land described in Exhibit A (Site) and to all off-site areas where contamination has migrated from the Cooper Cameron Iron Works Silber Road Facility.

Site Conditions

1. Perform any necessary groundwater response action and any necessary groundwater monitoring, at the tract of land described in Exhibit "A" to meet the requirements of Remedy Standard B pursuant to 30 Texas Administrative Code (TAC) 350.33, relating to a plume management zone (PMZ). Site activities should be conducted according to the Response Action Plan (RAP) dated August 28, 2003, RAP Addendum dated September 29, 2022, or subsequently approved reports or other TCEQ written correspondence. Where TCEQ correspondence and other reports conflict, TCEQ correspondence prevails over the reports.

2. No groundwater well, other than monitoring wells, may be installed in the affected shallow water-bearing zone for any residential or non-residential use, with the exception of pumping or extraction wells and/or remediation injection wells in order to achieve remedial goals. In addition, groundwater wells completed in the underlying formation should be completed in such a manner to prevent downward migration of contaminants from the shallow water-bearing zone.

3. Groundwater shall not be used for residential, agricultural, recreational, industrial or commercial purposes unless authorized by the TCEQ.

Off-Site Conditions

4. Perform any necessary remedial action or groundwater monitoring for all off-site contamination or other contamination outside the PMZ, to meet the requirements of Remedy Standard A pursuant to 30 TAC 350.32 in a reasonable time frame in accordance with the schedule in the Voluntary Cleanup Agreement pursuant to 30 TAC 333.10(a).

5. Notify property owners or easement holders/franchisees pursuant to 30 TAC 350.55 when groundwater sampling data confirms chemicals of concern above the Tier 1 human health protective concentration levels on any off-site property.

General Conditions

6. The Certificate, including Exhibits "A", "B" and "C", shall be disclosed to the next subsequent owner prior to transfer of control of the Site or any part of the Site. Any such failure to disclose shall only affect that portion of the Site for which the disclosure is not accomplished.

7. The Certificate must be properly recorded in the land records of Harris County.

8. TCEQ oversight costs for review of any work plans or reports necessary to implement the conditions of the Certificate shall be paid in a timely manner.

9. The Texas Risk Reduction Program rules pursuant to 30 TAC 350 (or any subsequently applicable similar rules), must be complied with in addressing the Site and off-site areas.

Exhibit C
Restrictive Covenant

EXHIBIT C
Restrictive Covenant
VCP No. 221

HCL Marqe LLC (Owner), is the owner of the tract of land described in Exhibit "A" to this certificate that pertains to (Site), VCP No. 221, located at 1000 Silber Road, Houston, Texas. In consideration of the Response Actions by Cameron International Corporation (Cameron; a Schlumberger Company) (VCP Applicant) and issuance of this Conditional Certificate of Completion, the Owner has agreed to place the restrictions listed below on the Site at the areas described in the attached exhibit(s) and in favor of the Texas Commission on Environmental Quality (TCEQ) and the State of Texas. This Restrictive Covenant is filed to provide information concerning certain environmental conditions and use limitations.

Portions of the groundwater of the Property contain certain identified chemicals of concern causing those portions of the Property to be considered an Affected Property as that term is defined in the TRRP. The portion considered to be Affected Property is described as follows:

> *The Affected Property is affected by releases of chemicals of concern from historical operations at the former Cameron facility (Exhibit A). Shallow groundwater underneath the Affected Property is affected by tetrachloroethene (PCE), trichloroethene (TCE), 1,1-dichloroethene (1,1-DCE), cis-1,2-dichloroethene (cis 1,2-DCE), 1,2-dichloroethane (1,2-DCA), and vinyl chloride (VC). The concentrations of these chemicals of concern exceed the TCEQ-approved groundwater protective concentration levels for residential land use.*

This Restrictive Covenant is required for the following reasons:

Plume Management Zone

> *The Affected Property is subject to the TRRP requirements for properties with an area overlying a TCEQ-approved plume management zone. A plume management zone is defined as an area of groundwater containing concentrations of chemicals of concern exceeding the TCEQ-approved protective concentration levels, plus any additional area allowed by the TCEQ in accordance with 30 TAC §350.33(f)(4). A plume management zone was established so that the chemicals of concern in the groundwater are managed such that human exposure is prevented and other groundwater resources are protected. The Exhibit A provides the location and extent of the plume management zone.*

As of the date of this Restrictive Covenant, the record owner of fee title to the Property is HCL Marqe LLC (Owner), with an address of _____.
In consideration of the Response Actions by *Cameron International Corporation* (Responder), approval of the Response Action Plan, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Owner has agreed to place the following restrictions on the Property in favor of TCEQ and the State of Texas, to-wit:

1. *Exposure to the groundwater underlying the Affected Property for any purpose is prohibited until such time when all the chemicals of concern no longer exceed their respective protective concentration levels. Any modification of this restrictive covenant is prohibited without the prior approval of TCEQ.*
2. *The restrictions shall be a covenant running with the land.*

For additional information, contact:

TCEQ
Central Records
12100 Park 35 Circle, Building E
Austin, Texas 78753

Mail: TCEQ - MC 199
P O Box 13087
Austin, Texas 78711-3087

TCEQ Program and Identifier No.: VCP No. 221

This Restrictive Covenant may be rendered of no further force or effect only by a release executed by the TCEQ or its successor agencies and filed in the same Real Property Records as those in which this Restrictive Covenant is filed.

Executed this _____ day of _____, _____.

[OWNER]

By: **HCL Marqe LLC**

Name: _____

Title: _____

Executed this _____ day of _____, _____.

[RESPONDER]

By: **Cameron International Corporation**

Name: _____

Title: _____

Accepted as Third-Party Beneficiary this _____ day of _____, _____.

By: **Texas Commission on Environmental Quality**

Name: _____

Title: _____

STATE OF TEXAS

(_____) COUNTY

BEFORE ME, on this the _____day of_____, personally appeared [***name***] _____, [***title***] _____, of [***owner***] Mark Harrell__, known to me to be the person whose name is subscribed to the foregoing instrument, and they acknowledged to me that they executed the same for the purposes and consideration therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the _____ day of _____, _____.

Notary Public in and for the State of Texas,

County of _____

My Commission Expires: _____

STATE OF TEXAS

(_____) COUNTY

BEFORE ME, on this the _____day of_____,_____, personally appeared [***name***] _____, [***title***] _____, of [***responder company***] Schlumberger Technology Corporation, known to me to be the person whose name is subscribed to the foregoing instrument, and they acknowledged to me that they executed the same for the purposes and consideration therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the _____ day of _____, ____.

Notary Public in and for the State of Texas,

County of _____

My Commission Expires:_____

STATE OF TEXAS

(_____) COUNTY

BEFORE ME, on this the _____day of_____,____, personally appeared [***name***] _____, [***title***] _____, of the Texas Commission on Environmental Quality, known to me to be the person whose name is subscribed to the foregoing instrument, and they acknowledged to me that they executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the _____ day of _____, ____.

Notary Public in and for the State of Texas,

County of _____

My Commission Expires: _____

Exhibit D
Affidavit of Implementation of Response Actions

EXHIBIT D
Affidavit of Implementation of Response Actions
VCP No. 221

BEFORE ME, the undersigned authority, on this day personally appeared, Dawn Greening, an authorized representative of Cameron International Corporation (Cameron; a Schlumberger Company) (Applicant), known to me personally to be the person whose name is subscribed below who being by me first duly sworn, upon their oath, stated as follows:

I am over the age of 18 and legally competent to make this affidavit. I have personal knowledge of the facts stated herein.

Cameron (Applicant), has implemented response actions pursuant to Chapter 361, Subchapter S, Texas Health and Safety Code, at the tract of land described in Exhibit "A" to this certificate that pertains to the Cooper Cameron Iron Works -Silber Road Facility (Site), VCP No. 221 located at 1000 Silber Road, Houston, Harris County, Texas. The Site was owned by Cooper Cameron Corporation at the time the application to participate in the Voluntary Cleanup Program was filed. The Applicant has submitted and received approval from the Texas Commission on Environmental Quality (TCEQ) Voluntary Cleanup Section on all plans and reports required by the Voluntary Cleanup Agreement for onsite contamination including meeting Texas Risk Reduction Program Tier I Residential Protective Concentration Levels for dermal contact, inhalation of particulates and vapors and soil ingestion necessary for receipt of a Phased Conditional Certificate of Completion (Certificate) for the tract of land in Exhibit "A". The plans and reports were prepared using a prudent degree of inquiry of the Site consistent with accepted industry standards to identify all hazardous substances, waste and contaminated media of regulatory concern.

The response actions for the Site have achieved response action levels acceptable for residential land use as determined by the standards of TCEQ. The response action will eliminate or reduce to the maximum extent practicable, substantial present or future risk to public health and safety and the environment from releases and threatened releases of hazardous substances and/or contaminants at or from the Site. The Applicant has not acquired this Certificate by fraud, misrepresentation or knowing failure to disclose material information.

The preceding is true and correct to the best of my knowledge and belief.

Applicant

_____
(Signature)

_____
(Printed Name) Dawn Greening

_____
(Title)

STATE OF TEXAS

(_____ _____) COUNTY

SUBSCRIBED AND SWORN before me on this the _____ day of _____, ____ to which witness my hand and seal of office.

_____
Notary Public in and for the State of Texas

Appendix 6
Sampling Procedures

HYDRASleeve

Simple by Design

US Patents No. 6,481,300; No. 6,837,120; others pending

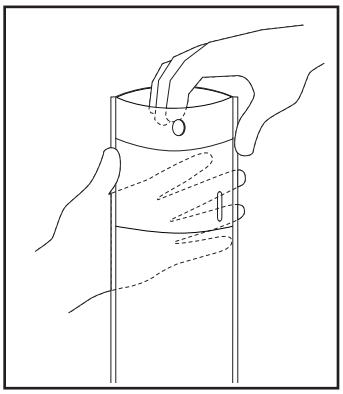
Field Manual

Introduction

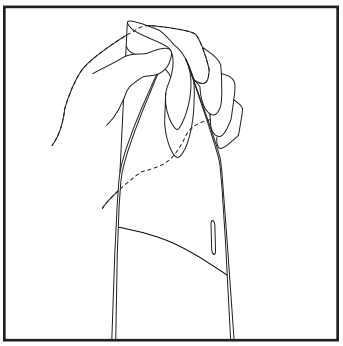
The HydraSleeve groundwater sampler can be used to collect a representative sample for most physical and chemical parameters without purging the well. It collects a whole water sample from a user-defined interval (typically within the well screen), without mixing fluid from other intervals. One or more HydraSleeves are placed within the screened interval of the monitoring well, and a period of time is allocated for the well to re-equilibrate. Hours to months later, the sealed HydraSleeve can be activated for sample collection. When activated, HydraSleeve collects a sample with no drawdown and minimal agitation or displacement of the water column. Once the sampler is full, the one-way reed valve collapses, preventing mixing of extraneous, non-representative fluid during recovery.

Assembly

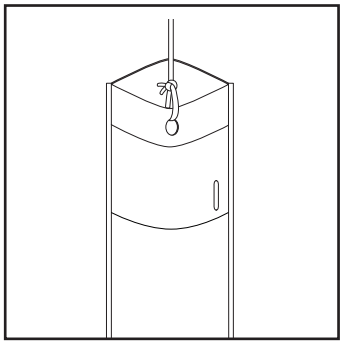
Assembling the HydraSleeve is simple, and can be done by one person in the field, taking only a minute or two.



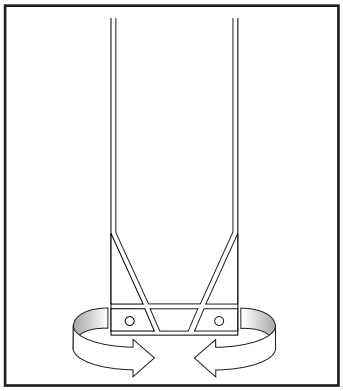
1 Remove HydraSleeve from package and grasp top to "pop" open.



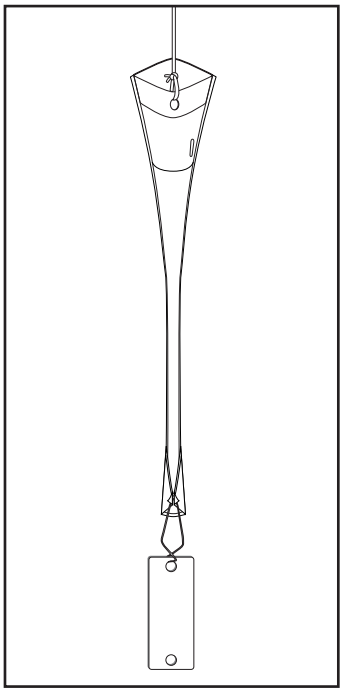
2 Squeeze side fins together at top to bend reinforcing strips outward.



3 Attach line to hole at top of HydraSleeve.



4 Fold the two holes at bottom of HydraSleeve together and attach weight



5 Sampler is ready to insert into the well.

Placing the HydraSleeve(s)

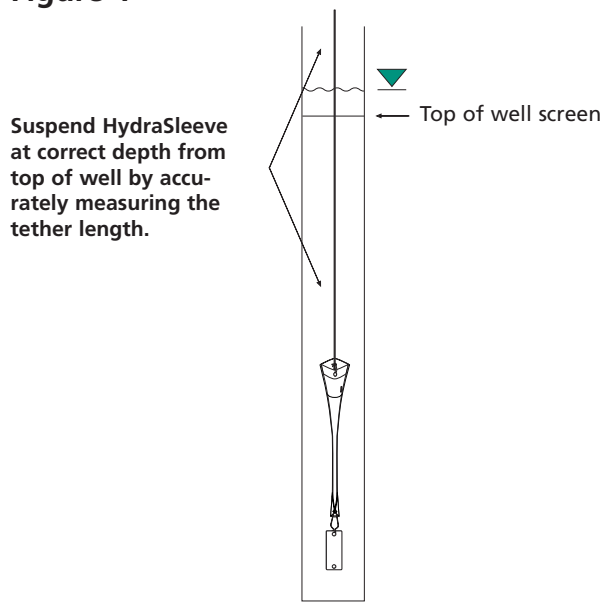
To collect a representative groundwater sample without purging, the well must be allowed time to re-equilibrate after placement of the sampler. When any device is lowered into a well, some mixing of the water column occurs. The diameter of the device and its shape greatly affect the degree of mixing. The flat cross-section of the empty HydraSleeve minimizes the disturbance to the water column as the sampler is lowered into position, reducing the time needed for the well to return to equilibrium.

There are three basic methods for holding a HydraSleeve in position as the well equilibrates.

TOP DOWN DEPLOYMENT (Figure 1)
Measure the correct amount of suspension line needed to "hang" the top of the HydraSleeve(s) at the desired sampling depth (in most cases, this will be at the bottom of the sampling zone). The upper end of the tether can be connected to the well cap to suspend the HydraSleeve at the correct depth until activated for sampling.

Note: For deep settings, it may be difficult to accurately measure long segments of suspension line in the field. Factory prepared, custom suspension line and attachment points can be provided.

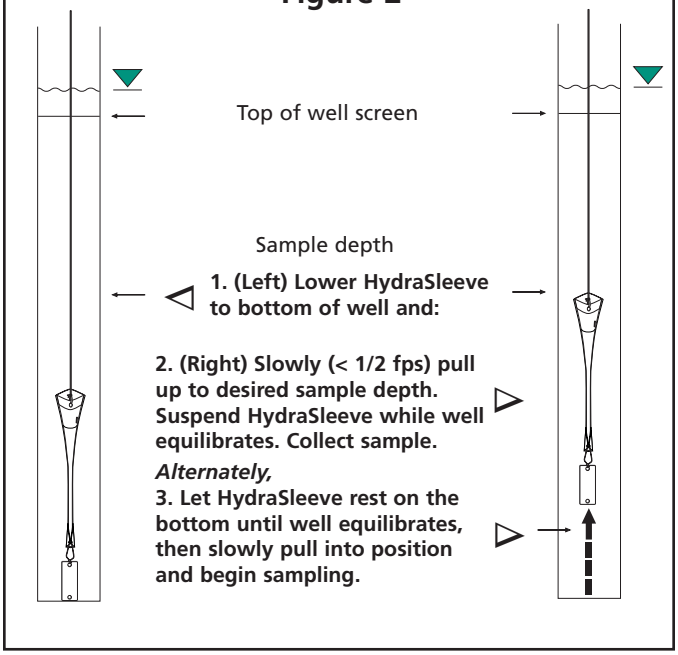
Figure 1



BOTTOM DEPLOYMENT (Figure 2)
Sound the well to determine the exact depth. Lower the weighted HydraSleeve into the well and let it touch the bottom. Very slowly (less than 1/2 foot per second) raise the sampler to the point where the check valve is at the depth the sample is to be collected. Attach the suspension line to the top of the well to suspend it at this depth. (It is often easier to measure a few feet from the bottom of the well up to the sample point, than it is to measure many feet from the top of the well down.)

Alternately, the sampler can be left on the bottom until the well re-equilibrates. For sampling, it can be very slowly pulled (< 1/2 fps) to sampling depth, then activated (see "Sample Collection," p. 6) to collect the sample, and retrieved to the surface.

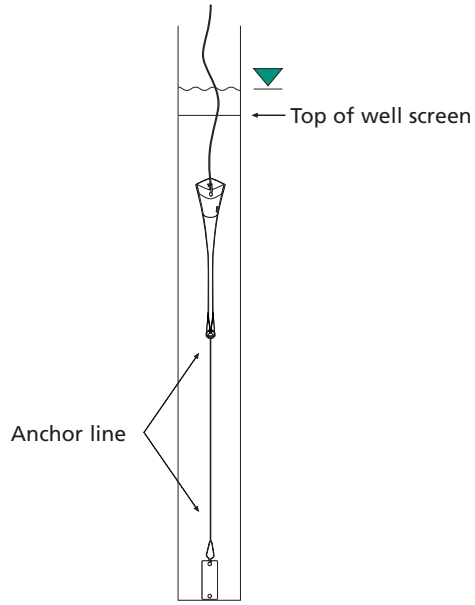
Figure 2



BOTTOM ANCHOR (Figure 3)

Determine the exact depth of the well. Calculate the distance from the bottom of the well to the desired sampling depth. Attach an appropriate length anchor line between the weight and the bottom of the sampler and lower the assembly until the weight rests on the bottom of the well, allowing the top of the sampler to float at the correct sampling depth.

Figure 3



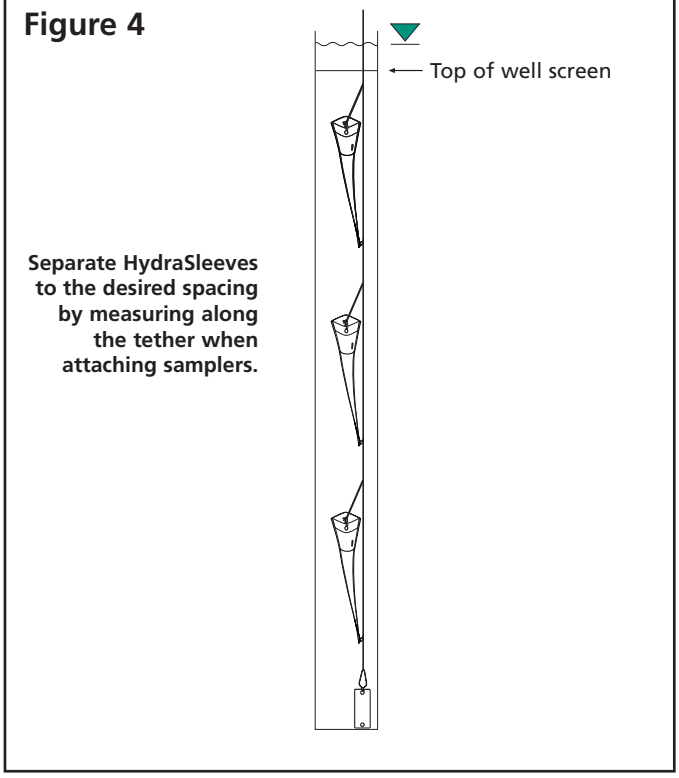
Multiple Interval Deployment

There are two basic methods for placing multiple HydraSleeves in a well to collect samples from different levels simultaneously.

ATTACHED TO A SINGLE TETHER (Figure 4)

To use 3 or more samplers simultaneously, we recommend attaching them all to a tether for support to prevent the sampling string from pulling apart. The weight is attached to a single length of suspension line and allowed to rest on the bottom of the well. The top and bottom of each HydraSleeve are attached to the tether at the desired sample intervals. Cable tie or stainless steel clips (supplied) work well for attaching the HydraSleeves to the line. Simply push one end of the clip between strands of the rope at the desired point before attaching the clip to the HydraSleeve.

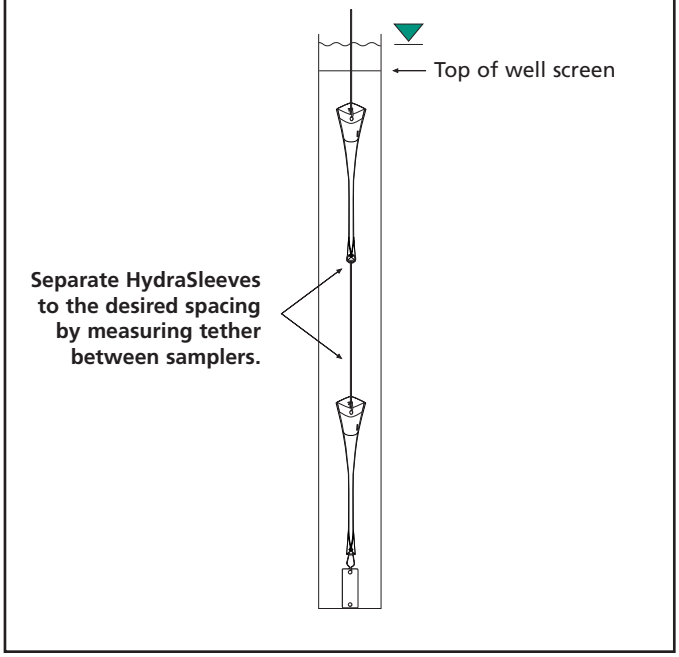
Figure 4



ATTACHED END TO END (Figure 5)

To place 2 or 3 stacked HydraSleeves for vertical profiling, use one of the methods described above to locate the bottom sampler. Attach the bottom of the top sampler to the top of the following HydraSleeve(s) with a carefully measured length of suspension cable. Connect the weight to the bottom sampler. Note: if many HydraSleeves are attached to a tether, more weight may be required than with a single sampler.

Figure 5



Sample Collection

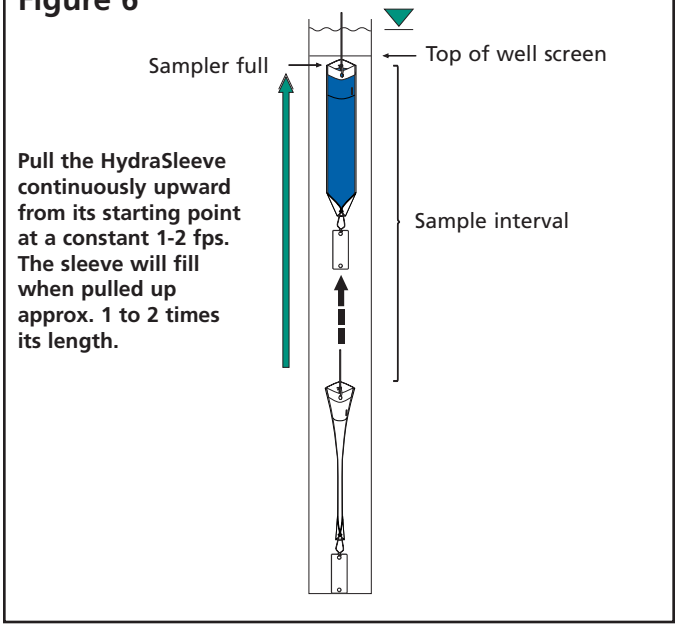
The HydraSleeve must move upward at a rate of one foot per second or faster (about the speed a bailer is usually pulled upward) for water to pass through the check valve into the sample sleeve. The total upward distance the check valve must travel to fill the sample sleeve is about 1 to 2 times the length of the sampler. For example, a 24-inch HydraSleeve needs a total upward movement of 24 to no more than 48 inches to fill. The upward motion can be accomplished using one long continuous pull, several short strokes, or any combination that moves the check valve the required distance in the open position. A special technique is used for sampling low-yield wells.

CONTINUOUS PULL (Figure 6)

Pull the HydraSleeve continuously upward from its starting point at a constant 1 to 2 feet per second until full. This method usually provides the least turbid samples and is analogous to coring the water column from the bottom up.

Note: When using this method, the screen interval should be long enough so the sampler fills before exiting the top of the screen.

Figure 6

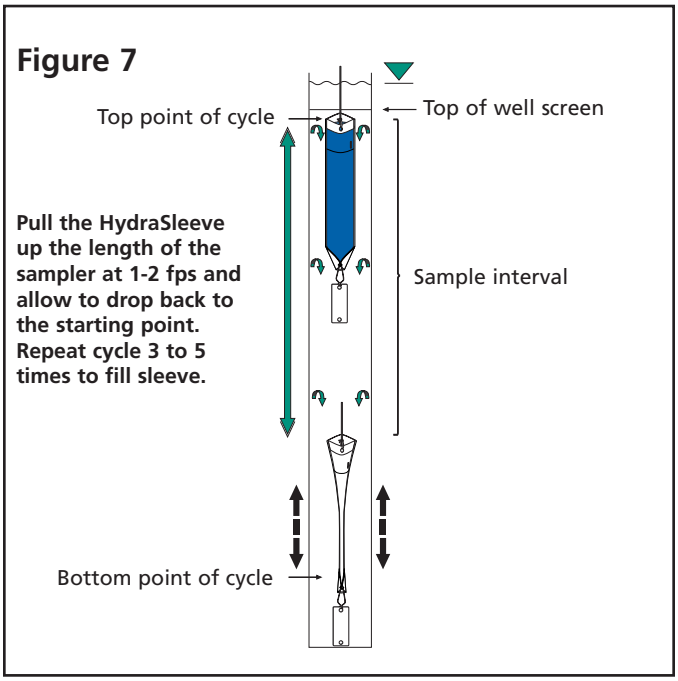


SHORT STROKES (Figure 7)

Pull the sampler upward at about 1 to 2 feet per second for the length of the sampler and let it drop back to the starting point. Repeat the cycle 3 to 5 times.

This method provides a shorter sampling interval than the continuous pull method (above), and usually reduces the turbidity levels of the sample below that of numerous rapid, short cycles (below). The sample comes from between the top of the cycle and the bottom of the sampler at its lowest point.

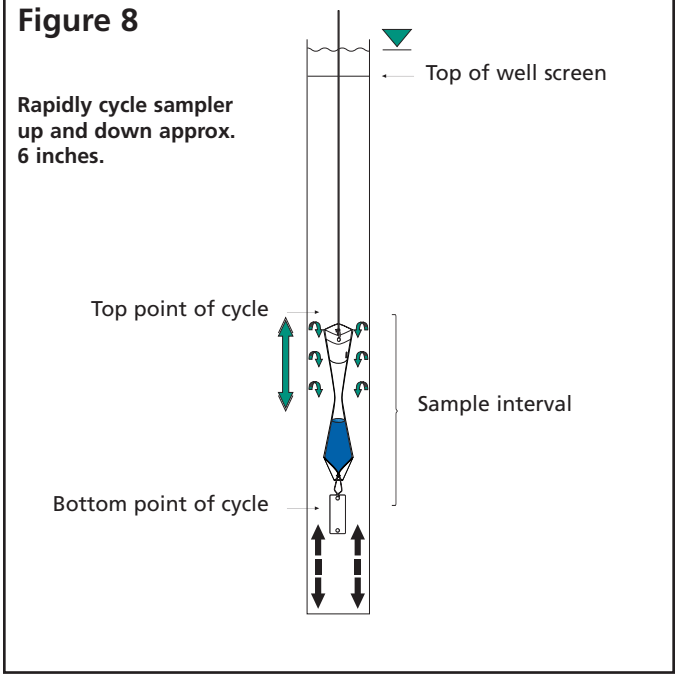
Figure 7



RAPID, SHORT CYCLES (Figure 8)

Cycle the HydraSleeve up and down using rapid, short strokes (6-inch cycle at a minimum of 1 cycle per second) 5 to 8 times. This method provides the shortest sampling interval. Dye studies have shown that when using this method the sample flows into the check valve from along the length of the sampler and immediately above the check valve. The sample interval is from the bottom the sampler at its lowest point in the cycle to the top of the check valve at the peak of the cycle.

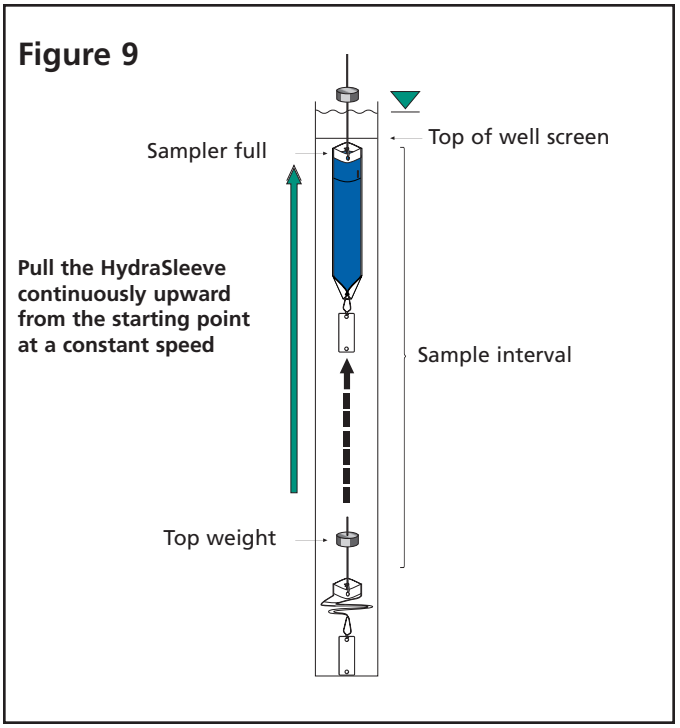
Figure 8



SAMPLING LOW-YIELD WELLS (Figure 9)

HydraSleeve provides the best available technology for sampling low yield wells. When pulled upward after the well re-equilibrates, the HydraSleeve will collect a water core from the top of the sampler to about its own length above that point. The sample is collected with no drawdown in the well and minimal sample agitation. An optional top weight can be attached to compress the sampler in the bottom of the well if needed for an extremely short water column. With a top weight, the check valve is pushed down to within a foot of the bottom of the well.

Figure 9



Sample Discharge

The best way to remove a sample from the HydraSleeve with the least amount of aeration and agitation is with the short plastic discharge tube (included).

First, squeeze the full sampler just below the top to expel water resting above the flexible check valve. (Photo 1, top left)

Then, push the pointed discharge tube through the outer polyethylene sleeve about 3-4 inches below the white reinforcing strips. (Photo 2, middle left)

Discharge the sample into the desired container. (Photo 3, bottom left)

Raising and lowering the bottom of the sampler or pinching the sample sleeve just below the discharge tube will control the flow of the sample. The sample sleeve can also be squeezed, forcing fluid up through the discharge tube, similar to squeezing a tube of toothpaste. With a little practice, and using a flat surface to set the sample containers on, HydraSleeve sampling becomes a one-person operation.

GeoInsight

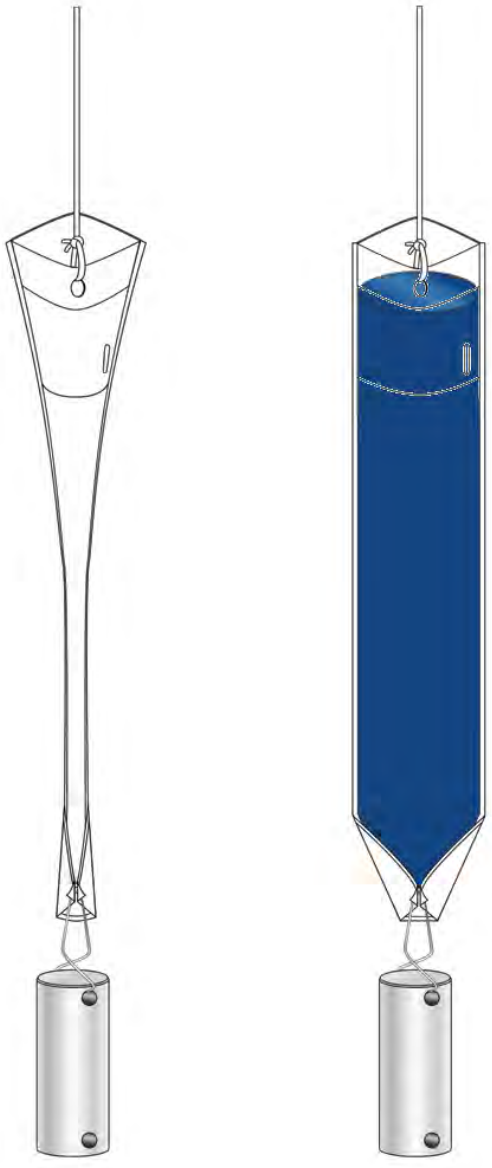
1680 Hickory Loop, Suite B • Las Cruces, NM 88005
Phone: 1.800.996.2225 • 1.505.523.5799 • Fax: 1.505.523.0789
www.geoinsightonline.com • KentCordry@aol.com

HYDRASleeve™

Simple by Design

US Patent No. 6,481,300; No. 6,837,120 others pending

Standard Operating Procedure: Sampling Ground Water with a HydraSleeve



This Guide should be used in addition to field manuals appropriate to sampling device (i.e., HydraSleeve or Super Sleeve).

Find the appropriate field manual on the HydraSleeve website at http://www.hydrasleeve.com.

For more information about the HydraSleeve, or if you have questions, contact: GeoInsight, 2007 Glass Road, Las Cruces, NM 88005, 1-800-996-2225, info@hydrasleeve.com.

Table of Contents

Introduction

The HydraSleeve is classified as a no-purge (passive) grab sampling device, meaning that it is used to collect ground-water samples directly from the screened interval of a well without having to purge the well prior to sample collection. When it is used as described in this Standard Operating Procedure (SOP), the HydraSleeve causes no drawdown in the well (until the sample is withdrawn from the water column) and only minimal disturbance of the water column, because it has a very thin cross section and it displaces very little water (<100 ml) during deployment in the well. The HydraSleeve collects a sample from within the screen only, and it excludes water from any other part of the water column in the well through the use of a self-sealing check valve at the top of the sampler. It is a single-use (disposable) sampler that is not intended for reuse, so there are no decontamination requirements for the sampler itself.

The use of no-purge sampling as a means of collecting representative ground-water samples depends on the natural movement of ground water (under ambient hydraulic head) from the formation adjacent to the well screen through the screen. Robin and Gillham (1987) demonstrated the existence of a dynamic equilibrium between the water in a formation and the water in a well screen installed in that formation, which results in formation-quality water being available in the well screen for sampling at all times. No-purge sampling devices like the HydraSleeve collect this formation-quality water as the sample, under undisturbed (non-pumping) natural flow conditions. Samples collected in this manner generally provide more conservative (i.e., higher concentration) values than samples collected using well-volume purging, and values equivalent to samples collected using low-flow purging and sampling (Parsons, 2005).

Applications of the HydraSleeve

The HydraSleeve can be used to collect representative samples of ground water for all analytes (volatile organic compounds [VOCs], semi-volatile organic compounds [SVOCs], common metals, trace metals, major cations and anions, dissolved gases, total dissolved solids, radionuclides, pesticides, PCBs, explosive compounds, and all other analytical parameters). Designs are available to collect samples from wells from 1" inside diameter and larger. The HydraSleeve can collect samples from wells of any yield, but it is especially well-suited to collecting samples from low-yield wells, where other sampling methods can't be used reliably because their use results in dewatering of the well screen and alteration of sample chemistry (McAlary and Barker, 1987).

The HydraSleeve can collect samples from wells of any depth, and it can be used for single-event sampling or long-term ground-water monitoring programs. Because of its thin cross section and flexible construction, it can be used in narrow, constricted or damaged wells where rigid sampling devices may not fit. Using multiple HydraSleeves deployed in series along a single suspension line or tether, it is also possible to conduct in-well vertical profiling in wells in which contaminant concentrations are thought to be stratified.

As with all groundwater sampling devices, HydraSleeves should not be used to collect groundwater samples from wells in which separate (non-aqueous) phase hydrocarbons (i.e., gasoline, diesel fuel or jet fuel) are present because of the possibility of incorporating some of the separate-phase hydrocarbon into the sample.

Description of the HydraSleeve

The HydraSleeve (Figure 1) consists of the following basic components:

- A suspension line or tether (A.), attached to the spring clip or directly to the top of the sleeve to deploy the device into and recover the device from the well. Tethers with depth indicators marked in 1-foot intervals are available from the manufacturer.
- A long, flexible, 4-mil thick lay-flat polyethylene sample sleeve (C.) sealed at the bottom (this is the sample chamber), which comes in different sizes, as discussed below with a self-sealing reed-type flexible polyethylene check valve built into the top of the sleeve (B.) to prevent water from entering or exiting the sampler except during sample acquisition.
- A reusable stainless-steel weight with clip (D.), which is attached to the bottom of the sleeve to carry it down the well to its intended depth in the water column. Bottom weights available from the manufacturer are 0.75" OD and are available in three sizes: 5 oz. (2.5" long); 8 oz. (4" long); and 16 oz. (8" long). In lieu of a bottom weight, an optional top weight may be attached to the top of the HydraSleeve to carry it to depth and to compress it at the bottom of the well (not shown in Figure 1);
- A discharge tube that is used to puncture the HydraSleeve after it is recovered from the well so the sample can be decanted into sample bottles (not shown).
- Just above the self-sealing check valve at the top of the sleeve are two holes which provide attachment points for the spring clip and/or suspension line or tether. At the bottom of the sample sleeve are two holes which provide attachment points for the weight clip and weight.

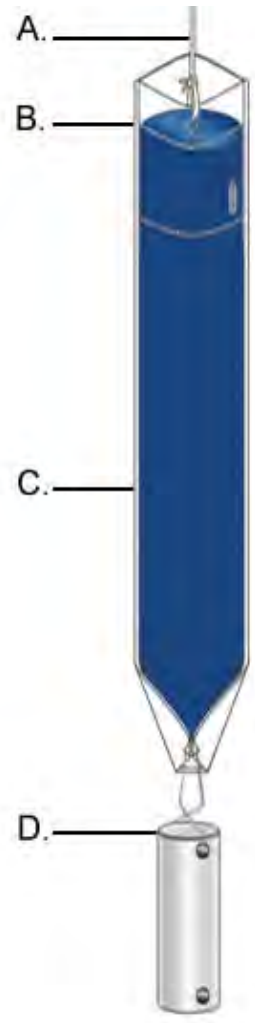


Figure 1. HydraSleeve components.

Note: The sample sleeve and the discharge tube are designed for one-time use and are disposable. The spring clip, weight and weight clip may be reused after thorough cleaning. Suspension cord is generally disposed after one use although, if it is dedicated to the well, it may be reused at the discretion of the sampling personnel.

Selecting the HydraSleeve Size to Meet Site-Specific Sampling Objectives

It is important to understand that each HydraSleeve is able to collect a finite volume of sample because, after the HydraSleeve is deployed, you only get one chance to collect an undisturbed sample. Thus, the volume of sample required to meet your site-specific sampling and analytical requirements will dictate the size of HydraSleeve you need to meet these requirements.

The volume of sample collected by the HydraSleeve varies with the diameter and length of the HydraSleeve. Dimensions and volumes of available HydraSleeve models are detailed in Table 1.

Table 1. Dimensions and volumes of HydraSleeve models.

Diameter	Volume	Length	Lay-Flat Width	Filled Dia.
2-Inch HydraSleeves				
Standard 625-ml HydraSleeve	625 ml	< 30”	2.5”	1.4”
Standard 1-Liter HydraSleeve	1 Liter	38”	3”	1.9”
1-Liter HydraSleeve SS	1 Liter	36”	3”	1.9”
2-Liter HydraSleeve SS	2 Liters	60”	3”	1.9”
4-Inch HydraSleeves				
Standard 1.6-Liter HydraSleeve	1.6 Liters	30”	3.8”	2.3”
Custom 2-Liter HydraSleeve	2 Liters	36”	4”	2.7”

HydraSleeves can be custom-fabricated by the manufacturer in varying diameters and lengths to meet specific volume requirements. HydraSleeves can also be deployed in series (i.e., multiple HydraSleeves attached to one tether) to collect additional sample to meet specific volume requirements, as described below.

If you have questions regarding the availability of sufficient volume of sample to satisfy laboratory requirements for analysis, it is recommended that you contact the laboratory to discuss the minimum volumes needed for each suite of analytes. Laboratories often require only 10% to 25% of the volume they specify to complete analysis for specific suites of analytes, so they can often work with much smaller sample volumes that can easily be supplied by a HydraSleeve.

HydraSleeve Deployment

Information Required Before Deploying a HydraSleeve

Before installing a HydraSleeve in any well, you will need to know the following:

- The inside diameter of the well
- The length of the well screen
- The water level in the well
- The position of the well screen in the well
- The total depth of the well

The inside diameter of the well is used to determine the appropriate HydraSleeve diameter for use in the well. The other information is used to determine the proper placement of the HydraSleeve in the well to collect a representative sample from the screen (see HydraSleeve Placement, below), and to determine the appropriate length of tether to attach to the HydraSleeve to deploy it at the appropriate position in the well.

Most of this information (with the exception of the water level) should be available from the well log; if not, it will have to be collected by some other means. The inside diameter of the well can be measured at the top of the well casing, and the total depth of the well can be measured by sounding the bottom of the well with a weighted tape. The position and length of the well screen may have to be determined using a down-hole camera if a well log is not available. The water level in the well can be measured using any commonly available water-level gauge.

HydraSleeve Placement

The HydraSleeve is designed to collect a sample directly from the well screen, and it fills by pulling it up through the screen a distance equivalent to 1 to 1.5 times its length. This upward motion causes the top check valve to open, which allows the device to fill. To optimize sample recovery, it is recommended that the HydraSleeve be placed in the well so that the bottom weight rests on the bottom of the well and the top of the HydraSleeve is as close to the bottom of the well screen as possible. This should allow the sampler to fill before the top of the device reaches the top of the screen as it is pulled up through the water column, and ensure that only water from the screen is collected as the sample. In short-screen wells, or wells with a short water column, it may be necessary to use a top-weight on the HydraSleeve to compress it in the bottom of the well so that, when it is recovered, it has room to fill before it reaches the top of the screen.

Example

2" ID PVC well, 50' total depth, 10' screen at the bottom of the well, with water level above the screen (the entire screen contains water).

Correct Placement (figure 2): Using a standard HydraSleeve for a 2" well (2.6" flat width/1.5" filled OD x 30" long, 650 ml volume), deploy the sampler so the weight (an 8 oz., 4"-long weight with a 2"-long clip) rests at the bottom of the well. The top of the sleeve is thus set at about 36" above the bottom of the well. When the sampler is recovered, it will be pulled upward approximately 30" to 45" before it is filled; therefore, it is full (and the top check valve closes) at approximately 66" (5 ½ feet) to 81" (6 ¾ feet) above the bottom of the well, which is well before the sampler reaches the top of the screen. In this example, only water from the screen is collected as a sample.

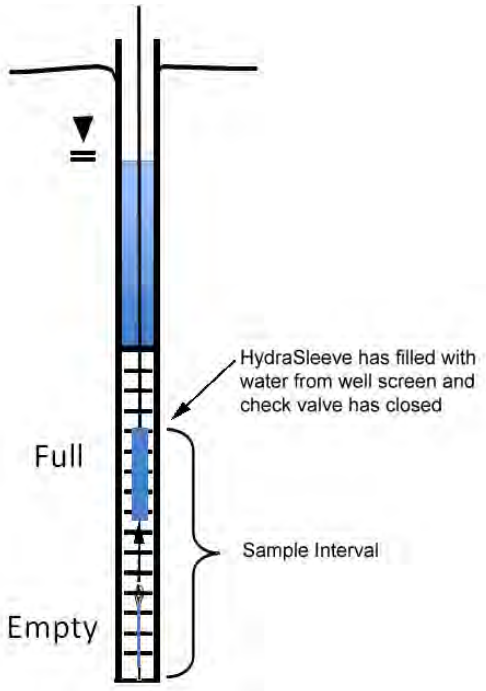


Figure 2. Correct placement of HydraSleeve.

Incorrect Placement (figure 3): If the well screen in this example was only 5' long, and the HydraSleeve was placed as above, it would not fill before the top of the device reached the top of the well screen, so the sample would include water from above the screen, which may not have the same chemistry.

The solution? Deploy the HydraSleeve with a top weight, so that it is collapsed to within 6" to 9" of the bottom of the well. When the HydraSleeve is recovered, it will fill within 39" (3 ¼ feet) to 54" (4 ½ feet) above the bottom of the well, or just before the sampler reaches the top of the screen, so it collects only water from the screen as the sample.

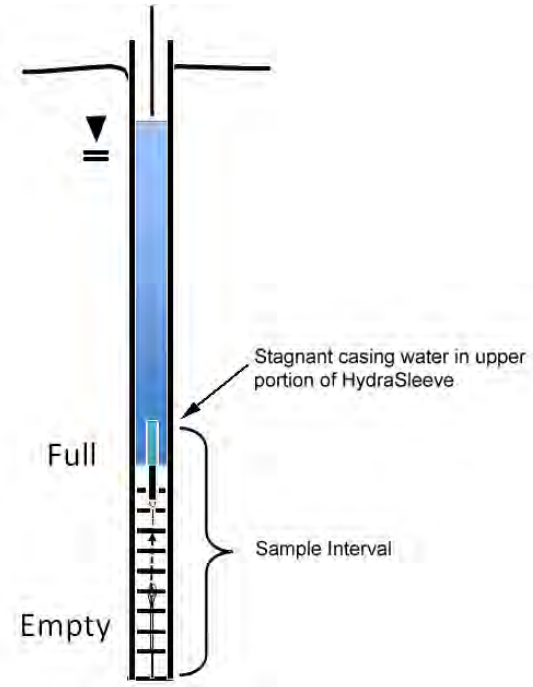


Figure 3. Incorrect placement of HydraSleeve.

This example illustrates one of many types of HydraSleeve placements. More complex placements are discussed in a later section.

Procedures for Sampling with the HydraSleeve

Collecting a ground-water sample with a HydraSleeve is a simple one-person operation.

Note: Before deploying the HydraSleeve in the well, collect the depth-to-water measurement that you will use to determine the preferred position of the HydraSleeve in the well. This measurement may also be used with measurements from other wells to create a ground-water contour map. If necessary, also measure the depth to the bottom of the well to verify actual well depth to confirm your decision on placement of the HydraSleeve in the water column.

Measure the correct amount of tether needed to suspend the HydraSleeve in the well so that the weight will rest on the bottom of the well (or at your preferred position in the well). Make sure to account for the need to leave a few feet of tether at the top of the well to allow recovery of the sleeve

Note: Always wear sterile gloves when handling and discharging the HydraSleeve.

I. Assembling the HydraSleeve

1. Remove the HydraSleeve from its packaging, unfold it, and hold it by its top.

2. Crimp the top of the HydraSleeve by folding the hard polyethylene reinforcing strips at the holes.

3. Attach the spring clip to the holes to ensure that the top will remain open until the sampler is retrieved.

4. Attach the tether to the spring clip by tying a knot in the tether.

Note: Alternatively, attach the tether to one (NOT both) of the holes at the top of the Hydrasleeve by tying a knot in the tether.

5. Fold the flaps with the two holes at the bottom of the HydraSleeve together and slide the weight clip through the holes.

6. Attach a weight to the bottom of the weight clip to ensure that the HydraSleeve will descend to the bottom of the well.

II. Deploying the HydraSleeve

1. Using the tether, carefully lower the HydraSleeve to the bottom of the well, or to your preferred depth in the water column

   During installation, hydrostatic pressure in the water column will keep the self-sealing check valve at the top of the HydraSleeve closed, and ensure that it retains its flat, empty profile for an indefinite period prior to recovery.

Note: Make sure that it is not pulled upward at any time during its descent. If the HydraSleeve is pulled upward at a rate greater than 0.5'/second at any time prior to recovery, the top check valve will open and water will enter the HydraSleeve prematurely.

2. Secure the tether at the top of the well by placing the well cap on the top of the well casing and over the tether.

Note: Alternatively, you can tie the tether to a hook on the bottom of the well cap (you will need to leave a few inches of slack in the line to avoid pulling the sampler up as the cap is removed at the next sampling event).

III. Equilibrating the Well

The equilibration time is the time it takes for conditions in the water column (primarily flow dynamics and contaminant distribution) to restabilize after vertical mixing occurs (caused by installation of a sampling device in the well).

- Situation: The HydraSleeve is deployed for the first time or for only one time in a well

  The HydraSleeve is very thin in cross section and displaces very little water (<100 ml) during deployment so, unlike most other sampling devices, it does not disturb the water column to the point at which long equilibration times are necessary to ensure recovery of a representative sample.

  In most cases, the HydraSleeve can be recovered immediately (with no equilibration time) or within a few hours. In regulatory jurisdictions that impose specific requirements for equilibration times prior to recovery of no-purge sampling devices, these requirements should be followed.

- Situation: The HydraSleeve is being deployed for recovery during a future sampling event

  In periodic (i.e., quarterly or semi-annual) sampling programs, the sampler for the current sampling event can be recovered and a new sampler (for the next sampling event)

deployed immediately thereafter, so the new sampler remains in the well until the next sampling event.

Thus, a long equilibration time is ensured and, at the next sampling event, the sampler can be recovered immediately. This means that separate mobilizations, to deploy and then to recover the sampler, are not required. HydraSleeves can be left in a well for an indefinite period of time without concern.

IV. HydraSleeve Recovery and Sample Collection

1. Hold on to the tether while removing the well cap.

2. Secure the tether at the top of the well while maintaining tension on the tether (but without pulling the tether upwards)

3. Measure the water level in the well.

4. In one smooth motion, pull the tether up between 30" to 45" (36" to 54" for the longer HydraSleeve) at a rate of about 1' per second (or faster).

   The motion will open the top check valve and allow the HydraSleeve to fill (it should fill in about 1 to 1.5 times the length of the HydraSleeve). This is analogous to coring the water column in the well from the bottom up.

   When the HydraSleeve is full, the top check valve will close. You should begin to feel the weight of the HydraSleeve on the tether and it will begin to displace water. The closed check valve prevents loss of sample and entry of water from zones above the well screen as the HydraSleeve is recovered.

5. Continue pulling the tether upward until the HydraSleeve is at the top of the well.

6. Decant and discard the small volume of water trapped in the Hydrasleeve above the check valve by turning the sleeve over.

V. Sample Collection

Note: Sample collection should be done immediately after the HydraSleeve has been brought to the surface to preserve sample integrity.

1. Remove the discharge tube from its sleeve.

2. Hold the HydraSleeve at the check valve.

3. Puncture the HydraSleeve just below the check valve with the pointed end of the discharge tube

4. Discharge water from the HydraSleeve into your sample containers.

Control the discharge from the HydraSleeve by either raising the bottom of the sleeve, by squeezing it like a tube of toothpaste, or both.

5. Continue filling sample containers until all are full.

Measurement of Field Indicator Parameters

Field indicator parameter measurement is generally done during well purging and sampling to confirm when parameters are stable and sampling can begin. Because no-purge sampling does not require purging, field indicator parameter measurement is not necessary for the purpose of confirming when purging is complete.

If field indicator parameter measurement is required to meet a specific non-purging regulatory requirement, it can be done by taking measurements from water within a HydraSleeve that is not used for collecting a sample to submit for laboratory analysis (i.e., a second HydraSleeve installed in conjunction with the primary sample collection HydraSleeve [see Multiple Sampler Deployment below]).

Alternate Deployment Strategies

Deployment in Wells with Limited Water Columns

For wells in which only a limited water column exists to be sampled, the HydraSleeve can be deployed with an optional top weight instead of a bottom weight, which collapses the HydraSleeve to a very short (approximately 6” to 9”) length, and allows the HydraSleeve to fill in a water column only 36” to 45” in height.

Multiple Sampler Deployment

Multiple sampler deployment in a single well screen can accomplish two purposes:

- It can collect additional sample volume to satisfy site or laboratory-specific sample volume requirements.
- It can accommodate the need for collecting field indicator parameter measurements.
- It can be used to collect samples from multiple intervals in the screen to allow identification of possible contaminant stratification.

It is possible to use up to 3 standard 30" HydraSleeves deployed in series along a single tether to collect samples from a 10' long well screen without collecting water from the interval above the screen.

The samplers must be attached to the tether at both the top and bottom of the sleeve. Attach the tether at the top with a stainless-steel clip (available from the manufacturer). Attach the tether at the bottom using a cable tie. The samplers must be attached as follows (figure 4):

- The first (attached to the tether as described above, with the weight at the bottom) at the bottom of the screen
- The second attached immediately above the first
- The third (attached the same as the second) immediately above the second

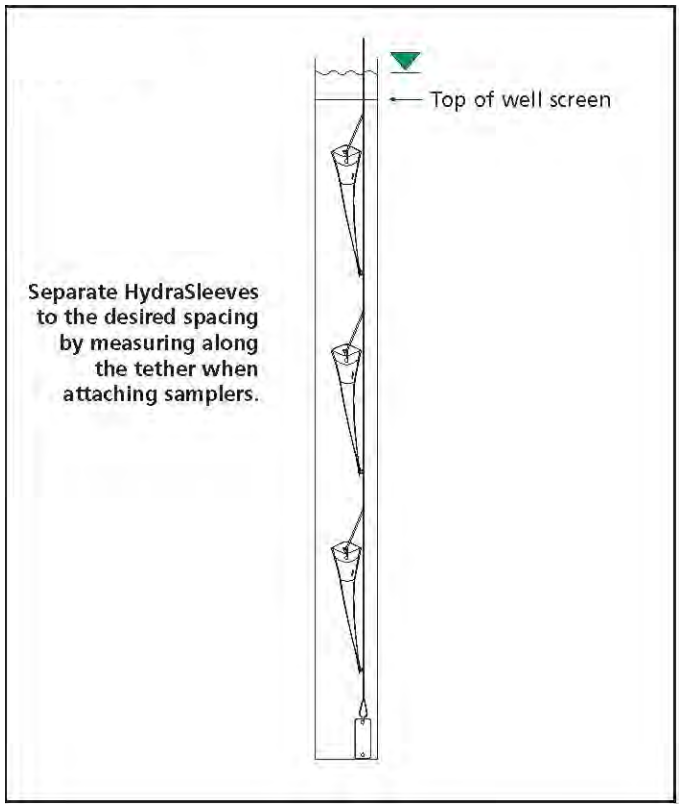


Figure 4. Multiple HydraSleeve deployment.

Alternately, the first sampler can be attached to the tether as described above, a second attached to the bottom of the first using a short length of tether (in place of the weight), and the third attached to the bottom of the second in the same manner, with the weight attached to the bottom of the third sampler (figure 5).

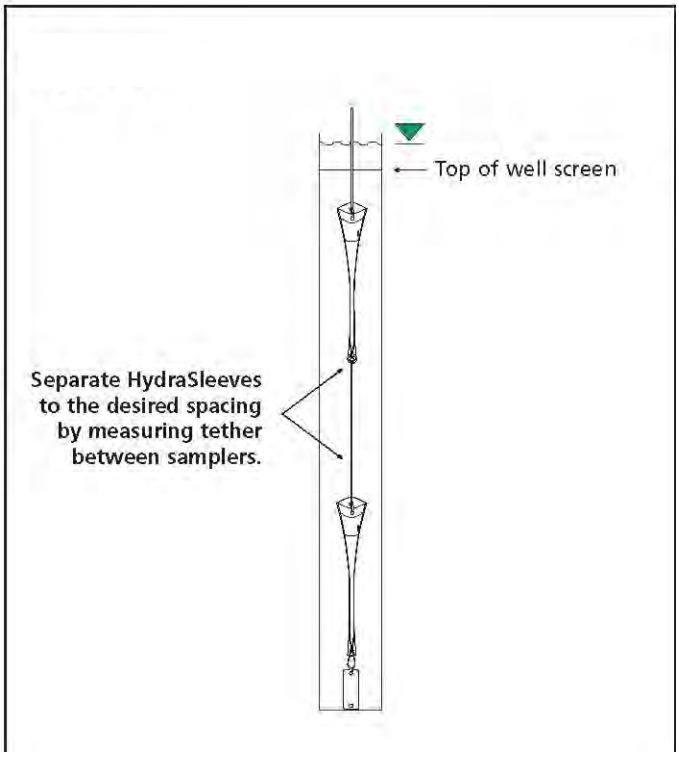


Figure 5. Alternative method for deploying multiple HydraSleeves.

In either case, when attaching multiple HydraSleeves in series, more weight may be required to hold the samplers in place in the well than would be required with a single sampler. Recovery of multiple samplers and collection of samples is done in the same manner as for single sampler deployments.

Post-Sampling Activities

The recovered HydraSleeve and the sample discharge tubing should be disposed as per the solid waste management plan for the site. To prepare for the next sampling event, a new HydraSleeve can be deployed in the well (as described previously) and left in the well until the next sampling event, at which time it can be recovered.

The weight and weight clip can be reused on this sampler after they have been thoroughly cleaned as per the site equipment decontamination plan. The tether may be dedicated to the well and reused or discarded at the discretion of sampling personnel.

References

McAlary, T. A. and J. F. Barker, 1987, Volatilization Losses of Organics During Ground-Water Sampling From Low-Permeability Materials, Ground-Water Monitoring Review, Vol. 7, No. 4, pp. 63-68

Parsons, 2005, Results Report for the Demonstration of No-Purge Ground-Water Sampling Devices at Former McClellan Air Force Base, California; Contract F44650-99-D-0005, Delivery Order DKO1, U.S. Army Corps of Engineers (Omaha District), U.S. Air Force Center for Environmental Excellence, and U.S. Air Force Real Property Agency

Robin, M. J. L. and R. W. Gillham, 1987, Field Evaluation of Well Purging Procedures, Ground-Water Monitoring Review, Vol. 7, No. 4, pp. 85-93

STANDARD OPERATING PROCEDURE

Direct-Push Technology Groundwater Sampling

Purpose

This technical practice provides guidance for collection of groundwater samples through direct-push technology methods.

Scope and Applicability

This technical practice provides guidance on equipment, materials, and procedures for collection of grab groundwater samples using direct-push technology (DPT) (e.g., Geoprobe®) sampling methods. Grab samples are collected from an aquifer for screening purposes only and are not designed to be used for risk assessment. Refer to the specific requirements of the project Workplan when using this SOP during field activities.

Equipment / Materials

- Truck or track-mounted hydraulic percussion hammer, licensed New Jersey driller, and associated equipment
- Direct-push (e.g., Geoprobe□) sampling rods and lead rod with retractable slotted screen sampler (e.g., Geoprobe SP15/16 sampler)
- Polyethylene sampling tubing and stainless steel foot/check valve
- Bucket(s) for purge water
- 55-gallon drum(s) for purge and decontamination water
- Peristaltic pump (if needed)
- Pre-cleaned laboratory supplied sample containers
- Personal Protective Equipment as specified in the project specific health and safety plan
- Photoionization detector
- Field Documentation

Field Preparation

Prior to the start of intrusive activities, the Field Team Leader (FTL) shall ensure that the following activities have been completed:

- Verify proposed sample locations and sample depths per the project specific planning documents (Work Plan and Quality Assurance Project Plan).
- Locate and mark planned sampling locations and verify utility clearance prior to intrusive subsurface drilling. Verify that the independent utility clearance service, along with entities associated with the New Jersey One Call, have marked utilities at all drilling locations. Confirm with the Project Manager that clearance and access-agreements and/or

Permission to enter each drill location have been obtained.

- Pre-identify any potential site access logistical issues. Note any slope stability, overhead obstruction, car parking or other physical constraints that could hinder or preclude drilling activities.
- Establish the decontamination area away from (and preferably up wind of) potentially contaminated areas where possible.
- Decontaminate non-disposable equipment and downhole tools that may come in contact with contaminants prior to use in accordance with SOP-08 (Equipment Decontamination). In accordance with the New Jersey Department of Environmental Protection Field Sampling Procedures Manual (NJDEP, August 2005), all downhole equipment must be decontaminated between each use and sample collection tubing must not be reused.
- Verify permitting requirements (if needed) are in place.

Procedures / Guidelines

1. An expendable drive point should be attached to the bottom of the groundwater sampler rod. The driller will use the drill rig hydraulic percussion hammer to drive the rod assembly to the appropriate depth. Once the desired depth is reached, the driller will pull up on the drill rods to expose the discrete sampler slotted screen. The discrete sampler is typically 4 feet in length. Record the actual depth of the drill rods and discrete sampler.
2. Insert the stainless steel foot or check valve (or "Waterra pump") into the bottom end of the polyethylene tubing and insert tubing through the rods so that the end of the tubing is approximately at the mid-point of the screen. Alternatively, if using a peristaltic pump, insert polyethylene tubing connected to the peristaltic pump through the rods. Record the depth of the screened interval and depth of the tubing.
3. When using a foot/check valve method, move the tubing up and down in a smooth fluid motion so that the end of the tubing does not exceed the length of the screened interval. You can purge the water more quickly to clear up the turbidity, but reduce the flow when collecting the sample. When using a peristaltic pump, you can also increase flow during purging and reduce during sampling.
4. Purge groundwater from the screened interval prior to sampling. Amount of groundwater purged will vary dependent on the amount of fine material in the sampling interval and will be determined in the field on a case-by-case basis. Purging should be performed until turbidity has visually cleared; however, purging requirements should be checked with your Project Manager during planning (e.g. 1-3 well volumes, turbidity <100 NTU, timed interval, etc). A plan should also be made for when you purge a location dry.
5. Purge the water into a bucket or drum and collect field parameters (e.g. turbidity, DO, temp, etc.) from the effluent stream.

6. Fill all sample containers, beginning with the containers for VOC analysis, if applicable. Whether using the foot/check valve or peristaltic pump, be sure to minimize cavitation or air bubbles in the poly tubing during pumping that could impact VOC analysis.
7. Remove polyethylene sampling tubing from the rods. Remove the foot valve and discard polyethylene tubing per the site-specific waste management plan.
8. IDW will be containerized and managed in 55-gallon drums and characterized in accordance with SOP-11 (Sampling of Investigation Derived Waste).
9. The subcontractor will abandon the borehole in accordance with SOP-15 (Monitoring Well and Borehole Abandonment).

Key Checks / Items

- All fluids and cuttings must be containerized at the borehole. It is unacceptable for basins, diverter heads or any apparatus to leak or spray materials. Corrective actions must be implemented immediately by the drilling subcontractor. Unsatisfactory containment is cause for a stop work order.
- Refer to the Health and Safety Plan for appropriate health and safety precautions.

References

NJDEP, August 2005. Field Sampling Procedures Manual, Section 5.2.1.12 Direct Push Technology. Available at < http://www.nj.gov/dep/srp/guidance/fspm/>. Accessed July 10, 2013.

N.J.A.C. 7:26E, November, 2009. "Technical Requirements for Site Remediation". Available at < http://www.nj.gov/dep/rules/nj_env_law.html> Accessed July 10, 2013.

STANDARD OPERATING PROCEDURE

Low-Flow Groundwater Sampling Procedures

Purpose

The following describes the procedures for the collection of groundwater samples using the low-stress (low-flow) method. Methods were developed in accordance with procedures presented in USEPA publications.

Scope and Applicability

This procedure is applicable for monitoring wells that are 1 inch in diameter or greater, and is considered to be appropriate for collections of VOCs, SVOCs, PCBs, and metals. This procedure is not appropriate for the collection of LNAPLs or DNAPLs. Operations manuals should be consulted for specific calibration and operating procedures.

Equipment/Materials

The following list presents the equipment needed for low-flow groundwater sampling of organic site-related constituents, as specified in the FSP.

- Electronic water level indicator with an accuracy of 0.01 foot.
- Electronic oil/water interface probe with an accuracy of 0.01 foot.
- Sampling pump with adjustable flow rate. Must be either gear driven, helical driven, air-activated piston, or low-flow centrifugal. An adjustable-rate peristaltic pump can be used when the depth to water is 20 feet or less if the other pump types are not readily available.
- Teflon® or Teflon®-lined polyethylene tubing.
- An appropriate power source for the sampling pump being used.
- A graduated container to determine volume and a watch to monitor flow rate and time.
- YSI Model 6920 (or comparable) multi-parameter meter with flow-through cell. At a minimum, the meter must be capable of measuring pH, ORP, DO, turbidity, specific conductance, and temperature.
- Calibration solutions for the multi-parameter meter.
- Decontamination supplies including 10 percent methanol rinse, non-phosphate soap, and distilled water, paper towels, and plastic sheeting.
- Sample bottles and coolers for submittal to the laboratory

- Peristaltic pump, disposable Teflon® tubing, and 0.45µ cellulose acetate filters for filtering dissolved metals samples
- Field notebook, sample data sheets, chain-of-custody forms, and custody seals.
- Ice for sample coolers.
- Appropriate PPE.
- PID, explosimeter, and oxygen meter (LEL/O2) and calibration gases, as appropriate.
- Tool box.
- 55-gallon drum or 5-gallon buckets, with covers, to contain purge water.

During the preparation for the field event, the list should be reviewed and modified, as appropriate, to accommodate sample collection of additional analytes or other site-related activities.

Procedures/Guidelines

The following activities shall be completed before the start of purging and sampling:

1. Calibrate the multi-parameter meter, PID, and LEL/O2 meter. Record all calibration information in the field notebook.
2. Begin sampling at the monitoring well with the lowest concentrations of site-related constituents based on the results of the previous sampling event. Exceptions may be necessary to accommodate site-specific conditions. If no previous groundwater data are available, results of a MIP investigation may be used to determine areas of higher VOCs.
3. Inspect the protective well cover, concrete pad, inner well casing, and locking cap of the monitoring well and record observations in the field notebook. Polyethylene sheeting should be placed on the ground to minimize the potential for sampling equipment to contact the soil. Monitoring, purging, and sampling equipment should be placed on the sheeting.
4. Monitor the headspace of the well with the PID and LEL/O2 meters immediately after removing the inner casing cap. Readings should be noted in the field notebook. Refer to the site-specific HSP for required actions based on PID and LEL/O2 readings.
5. Measure the depth to water in the well. Also check the well for nonaqueous-phase liquids using the oil/water interface probe. Total well depth measurement using the oil/water interface probe should not be collected until all samples have been collected to minimize turbidity generated in the well. Measurements will be recorded on sample data sheets and in the field notebook.

Purging and Sampling Activities

Procedures for purging and sampling are as follows:

1. Slowly lower the pump and tubing into the monitoring well until the pump intake is set near the midpoint of the screened interval. Record the depth of the pump intake (feet below top of inner well casing) in the field notebook.
2. Re-measure the depth to water and record the information on the sample data sheets. Leave the water level indicator in the well.
3. Place the multi-parameter meter into the flow-through cell. Connect the discharge end of the tubing from the pump to the flow-through cell of the multi-parameter probe. Place the flow-through cell discharge tubing into the 55-gallon drum or a 5-gallon bucket for collection of purge water.
4. Set the flow rate on the pump to the lowest setting, turn the pump on, and slowly increase the flow rate until water begins to flow. Using a graduated cylinder to monitor the flow rate, adjust the pump until a rate of 50 to 500 mL per minute is reached. Maintain a steady flow rate while keeping drawdown to less than 0.33 foot. If drawdown is greater than 0.33 foot, reduce the pumping rate. If a drawdown of less than 0.33 foot cannot be achieved, continue purging and record the groundwater levels and flow rate every 5 minutes.
5. Provided the drawdown does not exceed 0.33 foot (see above), record the discharge rates and drawdown on the sampling data sheets every 5 minutes, and continue purging at a flow rate to minimize drawdown. A minimum of one tubing volume must be purged before recording water quality parameters.
6. After a minimum of one tubing volume has been purged, record the values of the water quality parameters. After the initial measurement, record the water quality parameter readings concurrently with the discharge rate and drawdown measurements.
7. Continue purging until three successive readings of the water quality field parameters stabilize, following the criteria in Table 1, below. When the water quality parameters stabilize, collect the samples.

TABLE 1
Stabilization Criteria with References for Water-Quality-Indicator Parameters*

Parameter	Stabilization Criteria
pH	± 0.1
Specific Electrical Conductance (SEC)	± 3%
Oxidation-Reduction Potential (ORP)	± 10 millivolts
Turbidity	± 10% (when turbidity is greater than 10 nephelometric turbidity units)
Dissolved Oxygen (DO)	± 0.3 milligrams per liter

*USEPA, 2002.

8. If a stabilized drawdown in the well cannot be maintained at less than 0.33 foot and the water level is approaching the top of the well screen, reduce the flow rate or turn the pump off for 15 minutes and allow for recovery. The pump should not be turned off if it does not have a check valve installed inline with the tubing to prevent water flowing out of the tubing into the well. If the pump must be turned off and no check valve is present, the discharge end of the tubing should be clamped to minimize the potential for water to flow back into the well. After 15 minutes, resume pumping, at a lower rate, if possible. If water levels again approach the top of the well screen, turn the pump off and allow another 15 minutes for recovery. If two tubing volumes have been removed (including the volume in the flow-through cell and tubing), collect a sample when the pump is turned on. Record this information in the field notebook so that adjustments can be made for the next sampling event.

9. For collection of samples, pumping rates should be maintained to minimize disturbance of the water column. The discharge tubing should be disconnected from the input of the flow-through cell and samples collected directly from the pump discharge tubing. Samples shall be collected in the following order: VOCs, dissolved gases, anions and alkalinity, ammonia, sulfide, TOC, total metals and dissolved metals last. Sample bottles for VOCs and/or dissolved gasses should always be filled first to ensure minimal release of volatiles and dissolved gasses. The dissolved metals require a filter to be attached to the discharge tubing and therefore should be the last sample collected as to avoid spreading any contamination that may have occurred during filter use.

   9a. **Collection of VOCs and dissolved gasses**. Slowly fill one 40mL VOA vial to the top without overflowing (creating a convex meniscus on the top) and cap. Turn the vial upside down and tap to ensure the absence of air bubbles. Repeat this procedure for all the vials.

10. Upon completion of sample collection, remove the pump from the well, decontaminate the pump, and dispose of the tubing, if it is not dedicated.

Key Checks/Items

None.

STANDARD OPERATING PROCEDURE

Surface Water Volatile Organic Compound Sampling

Purpose

This technical practice provides guidance for sampling volatile organic compounds (VOCs) in surface water.

Scope and Applicability

This technical practice provides guidance on equipment, materials, and procedures for collecting representative VOC samples from surface water. Refer to the specific requirements of the project Workplan when using this SOP during field activities.

Example Equipment / Materials

- Sample vials, clean latex or surgical gloves, pH meter
- Hydrochloric acid (HCl) for preservation (not needed if sample bottles come pre-preserved from the laboratory)
- A pH meter or pH indicating paper (not needed if sample bottles come pre-preserved from the laboratory)
- Surgical or latex gloves

Procedures / Guidelines

1. Sample VOCs before sampling other analyte groups.
2. When sampling for VOCs, evaluate the area around each sampling point for possible sources of air contamination by VOCs. Products that may give off VOCs or could possibly contaminate a sample include perfumes and cosmetics, skin applied pharmaceuticals, automotive products (e.g., gasoline, starting fluid, windshield deicers, carburetor cleaners) and household paint products (e.g., paint strippers, thinners, turpentine). If possible, either remove the source from sampling area during the sample transfer or move upwind of the potential source. If neither is possible, then document the potential source of air contamination in the field log.
3. When collecting surface water samples, always start from the downstream location and move upstream. If sampling from a boat equipped with a motor, avoid collecting samples from the rear of the boat where exhaust is introduced into the water.

4. (This step is not needed if the bottles come pre-preserved from the laboratory.) To determine the amount of hydrochloric acid needed to properly preserve each sample at each location, fill a 40-mL test vial with the sample, add one drop of hydrochloric acid, mix gently, and check pH. Repeat cycle (if necessary) until a pH of 2 or less is achieved, counting the number of drops of required. Discard the test vial and add an equal number of drops of hydrochloric acid to each sample vial.
5. Leave sample vials uncapped for as short a time as possible.
6. Wear clean latex or surgical gloves.
7. Fill the VOC sample vial immediately. Gently transfer water from sampling apparatus into sample vials allowing water stream to strike inner wall of vial to minimize turbulence and formation of air bubbles. Do not rinse sample vials before filling.
8. Fill sample vial with a minimum of turbulence until the water forms a visible convex, positive meniscus at the vial brim.
9. Replace cap by gently setting it on the water meniscus. Take care to not entrap air bubbles in vial. Tighten firmly, but do not overtighten.
10. Invert the vial and tap it lightly. If you see air bubbles in sample, do not add more sample. Use another vial to collect another sample. Repeat if necessary until a proper sample (one without air bubbles) is obtained.
11. When sampling multiple points with a common sampling device, thoroughly decontaminate between uses. Whenever possible, move from areas with the least contamination to areas with the highest contamination.

Key Checks / Items

- Check for possible sources of contamination (e.g., engine exhaust) and remove them, if possible.
- Fill the vial slowly, with as little turbulence as possible.
- Check for air bubbles.