

**Draft**

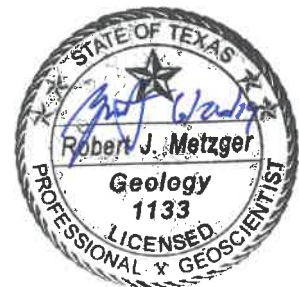
**ADDITIONAL PHASE II  
ENVIRONMENTAL SITE ASSESSMENT REPORT  
FOR MEMORIAL DRIVE RECONSTRUCTION  
WEST SAM HOUSTON PARKWAY TO  
100 FEET EAST OF TALLOWOOD ROAD  
HOUSTON, TEXAS  
TIRZ 17**

**Prepared for:  
Lockwood, Andrews & Newnam, Inc.  
2925 Briarpark Drive, Suite 400  
Houston, Texas 77042**

**Prepared by  
AVILES ENGINEERING CORPORATION  
5790 Windfern  
Houston, Texas 77041  
Phone: 713-895-7645  
Fax: 713-895-7943**

**AEC Project No. E103-19**

**June 26, 2019**



**TABLE OF CONTENTS**

---

1.0 EXECUTIVE SUMMARY .....1  
2.0 INTRODUCTION .....6  
3.0 ON-SITE INVESTIGATION .....8  
4.0 LABORATORY ANALYSES .....13  
5.0 WASTE DISPOSAL.....14  
6.0 SUMMARY .....15  
7.0 CONCLUSION AND RECOMMENDATIONS .....16  
8.0 LIMITATIONS.....19  
9.0 QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONAL .....20

**APPENDICES**

---

APPENDIX A: FIGURES, SITE INFORMATION, AND SOIL BORING SUMMARY  
TABLE  
APPENDIX B: PHOTOGRAPHS  
APPENDIX C: SOIL BORING LOGS  
APPENDIX D: SUMMARY OF LABORATORY SAMPLE ANALYSIS RESULTS  
APPENDIX E: ANALYTICAL LABORATORY REPORTS AND QUALITY  
ASSURANCE AND QUALITY CONTROL DOCUMENTATION  
APPENDIX F: RESUME

## **1.0 EXECUTIVE SUMMARY**

The Texas Department of Transportation (TxDOT) plans to reconstruct Memorial Drive from the West Sam Houston Parkway North northbound feeder road to approximately 100 feet east of Tallowood Drive in Western Harris County, Texas (referred to herein as the Subject Right-of-Way). Figure 1 (Appendix A) shows a site vicinity map with the approximate project limits. Figures 2a and 2b (Appendix A) show the location of the Subject Right-of-Way on aerial photographs.

The project began as a City of Houston Project, (TIRZ17). Aviles Engineering Corporation (AEC) performed a Phase I Environmental Site Assessment (ESA-I) of the Subject Right-of-Way (AEC ESA-I report E102-15 dated October 26, 2015) in which the following recognized environmental conditions (RECs) were identified in connection with the Subject Right-of-Way (Figures 2a and 2b in Appendix A):

- REC #1: Chevron LPST site/Wheatley Investments at 12860 Memorial Drive
- REC #2: The contaminant plume associated with leaks from Your Valet Cleaners at 614 West Bough Lane and A-1 Cleaners LPST and VCP site at 12754 Memorial Drive
- REC #3: Sprint PCS Tower IOP site at 608 West Bough Lane
- REC #4: Mobil gas station at 12802 Memorial Drive
- REC #5: The contaminant plume associated with Conoco 43059 at 12699 Memorial Drive LPST site
- REC #6: Alexan Memorial Bend Apartments IOP site at 12667 Memorial Drive
- REC #7: The contaminant plume associated with the MW Cleaners/Lantern Lane Shopping Center-Pro Cleaners VCP and IHWCA site at 12534 Memorial Drive and the Memorial Green VCP site at 12601 Memorial Drive.

The ESA-I recommended that a Limited Phase II Environmental Site Assessment (ESA-II) be conducted with the installation of soil borings and temporary groundwater sampling wells approximately every 100 feet in the Subject Right-of-Way adjacent to or near each REC.

During a meeting on February 16, 2017 between the City of Houston, Public Works, Geo-Environmental (COH); Lockwood, Andrews, & Newnam, Inc. (LAN); and AEC personnel, the COH determined that RECs #2, #3, #4, and #7 should be considered as potentially petroleum contaminated areas (PPCAs) without any further drilling or sampling since the ESA-I revealed that contamination had crossed Memorial Drive and into the area south of Memorial Drive. COH personnel also indicated that if there was evidence of contamination under Memorial Drive at REC #5, that it also should be considered a PPCA without additional drilling or sampling. After the meeting, AEC reviewed the ESA-I and determined that there were monitor wells located on the eastern side of Memorial Drive at REC #5, therefore REC #5 was identified as a PPCA without additional drilling or sampling.

The COH approved AEC proposal E16-06-03R dated February 21, 2017 for a Limited ESA-II to drill three soil borings and convert one to a temporary monitor well at each of RECs #1 and #6 (Figures 2a and 2b in Attachment A).

The Limited ESA-II was completed and summarized in a report dated May 24, 2018 (AEC ESA-II report E101-17). Groundwater contaminated with benzene, toluene, m- & p- xylenes, total xylenes, and methyl tertiary butyl ether (MTBE) was encountered in the temporary monitoring well at B-2 of REC #1. Petroleum product odor was also detected in the soil of boring B-2 from 26 to 28 feet below grade surface (bgs). Therefore, REC #1 was designated as PPCA #1. Concentrations of contaminants analyzed in soil and groundwater samples from REC #6 were below laboratory detection limits and therefore was not designated as a PPCA. The PPCAs identified by the COH prior to the ESA-II and by AEC during the ESA-II are shown in Figures 3a and 3b (Appendix A) and include:

- PPCA #1: Chevron LPST site/Wheatley Investments at 12860 Memorial Drive
- PPCA #2: The contaminant plume associated with leaks from Your Valet Cleaners at 614 West Bough Lane and A-1 Cleaners LPST and VCP site at 12754 Memorial Drive
- PPCA #3: Sprint PCS Tower IOP site at 608 West Bough Lane
- PPCA #4: Mobil gas station at 12802 Memorial Drive
- PPCA #5: The contaminant plume associated with Conoco 43059 LPST site at 12699 Memorial Drive.
- PPCA #6: The contaminant plume associated with the MW Cleaners/Lantern Lane Shopping Center-Pro Cleaners VCP and IHWCA site at 12534 Memorial Drive and the Memorial Green VCP site at 12601 Memorial Drive.

After TxDOT became involved, a meeting between LAN, TxDOT, and AEC personnel was held on April 2, 2019 to discuss the Memorial Drive reconstruction project. It was determined that the PPCAs as defined in the 2017 Limited ESA-II were inadequate to predict the amount of contaminated soil and groundwater which might be encountered during construction activities and to calculate the associated construction costs of excavating, removal, handling, and disposing of impacted soil and groundwater. An Additional ESA-II was recommend to further delineate the extent of PPCAs #2, #3, #4, #5, and #6 (refer to Figures 3a and 3b in Appendix A).

This report summarizes the activities and presents the results of the Additional ESA-II and also includes information from the 2017 Limited ESA-II in order to update the environmental assessment of the Subject Right-of-Way.

AEC has performed this Additional ESA-II investigation of the Subject Right-of-Way in general accordance with ASTM Standard Practice E1903-11 and Chapter 11 – Geotechnical and Environmental Requirements of the City of Houston Department of Public Works and Engineering Infrastructure Design Manual (July 1, 2018) to be consistent with the previously conducted Limited ESA-II.

During the Additional ESA-II, a total of 25 soil borings (borings B-7 through B-31) were drilled to depths of 12 to 26 feet below grade surface (borings B-1 through B-6 had been drilled to depths of 20 to 28 feet below grade surface during the 2017 Limited ESA-II) and a soil sample was collected from each. The soils encountered during drilling in the Additional ESA-II (as well as the previous Limited ESA-II) were mainly sandy clay. Sand and/or silt layers, seams, partings and/or pockets were observed in the soils of each of the borings (a gravel seam was encountered in 2017 in B-1). Photoionization detector (PID) readings were less than or equal to 5.8 parts per million (ppm) in

each of the soil intervals measured from soil cores from boring locations B-1 through B-31 except for at borings B-22 and B-23 which had PIDs as high as 472 and 291 ppm, respectively. Petroleum product odors of varying intensities were detected in some of the soils at boring B-2 (2017), B-22, B-23, and B-24 (near areas of former or existing gasoline stations). Some of the odors in B-22 and B-23 were very strong. An unidentified odor was detected in some of the soils from boring B-14, B-26, B-27, B-29, and B-30 (near existing dry cleaner and voluntary cleanup program, VCP, sites). Soil samples collected from borings B-1 through B-3 (2017) and B-19 through B-24 were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX), methyl tertiary butyl ether (MTBE), and total petroleum hydrocarbons (TPH) 1005. Soil samples collected from B-4 (2017) through B-6 (2017), B-7 through B-18, and B-25 through B-31 were each analyzed for volatile organic compounds (VOCs) and TPH 1005. The soil sample from B-31 was inadvertently analyzed after its holding time had expired, however this does not have much impact on the conclusions as explained later. The laboratory analysis results of the soil samples showed that the concentrations of ethylbenzene, m- & p-xylenes, total xylenes, and TPH C6-C12 and C6-C35 fractions at boring B-22, 23 to 24 feet below grade surface (bgs); and concentrations of toluene, ethylbenzene, m- & p-xylenes, o-xylenes, total xylenes, and TPH C6-C12 and C6-C35 fractions at B-23, 23 to 24 feet bgs exceeded their respective laboratory detection limits. The concentration of VOC compound cis-1, 2-dichloroethylene in the soil sample from B-30, 18 to 19 feet bgs exceeded its laboratory detection limit. Each of the remaining BTEX, MTBE, TPH 1005, and VOCs concentrations were below laboratory detection limits.

Each of soil borings B-2 (2017), B-5 (2017), and B-7 through B-31 were converted to a temporary monitoring well and a groundwater sample was collected from each that yielded groundwater. Groundwater samples collected from B-2 (2017), and B-19 through B-24 were each analyzed for BTEX, MTBE, and TPH 1005. Each groundwater sample from temporary monitoring wells B-5 (2017), B-7 through B-18 and B-25 through B-31 were analyzed for VOCs and TPH 1005. The laboratory analysis results of the samples showed that concentrations of benzene, toluene, m- & p-xylenes, total xylenes, and MTBE in B-2; benzene, toluene, ethylbenzene, m- & p-xylenes, o-xylenes, total xylenes, and TPH C6-C12 and C6-C35 fractions in B-22; benzene, toluene, ethylbenzene, m- & p-xylenes, o-xylenes, total xylenes, and TPH C6-C12 and C6-C35 fractions in B-23 were above laboratory detection limits. Each of the remaining BTEX, MTBE, TPH 1005, and all of the VOCs concentrations were below laboratory detection limits.

Disposal of the waste soil and wastewater generated during the Additional ESA-II is in progress at the time of report preparation. Waste soil from boring B-2 of the 2017 Limited ESA-II was disposed via a waste manifest in a properly licensed facility and the manifest was attached in the 2017 report. The remaining 2017 soil was disposed of as solid waste. One 5-gallon bucket of wastewater was generated during the 2017 drilling activities, but its contents leaked from a hole which developed in the bucket. The bucket was located on a concrete surface which slopes to a storm sewer drain, therefore the leaked contents of the bucket would have been confined to the concrete pavement and flowed into the storm drain. The wastewater was a mixture of contaminated and uncontaminated groundwater and decontamination water from the drilling and sampling activities so the contamination in the water would have been highly diluted when entering the storm sewer.

Based on the guidelines provided by the City of Houston (the originator of the project), the results of the AEC ESA-I report dated March 25, 2015; the results of the 2017 Limited ESA-II, and the results of this Additional ESA-II, AEC has revised the extent of the potentially petroleum contaminated areas (PPCAs) along the Subject Right-of-Way identified in the 2017 Limited ESA-II. Figures 3a and 3b in Appendix A show the approximate extents of the PPCAs in the 2017 Limited ESA-II. Figures 4a and 4b in Appendix A shows the approximate extents of the revised PPCAs. Figures 5 through 19 in Appendix A shows the revised extents of the PPCAs plotted in more detail on the latest plans and profiles provided to AEC by LAN. The boundaries of each PPCA are the first “clean” (laboratory results are below laboratory detection limits and no odors were detected in either soil or groundwater) boring location beyond the impacted soil and/or groundwater or the Subject Right-of-Way boundaries. The following is a summary of the revised PPCAs.

- **PPCA #1:** This PPCA was determined in the 2017 Limited ESA-II and extends from Station 1+95.3 to Station 3+63.7 (Figures 4a and 4b, 5 and 6 in Appendix A). Benzene, toluene, m- & p-xylenes, and methyl tertiary butyl ether contamination were detected in the groundwater and a petroleum product odor was noted in the soil of boring B-2 from 26 to 28 feet bgs near the Chevron Station at 12860 Memorial Drive. The laboratory analysis of the soil sample collected at the highest PID reading (as is standard practice) from boring B-2 did not exhibit any contaminant concentrations above laboratory detection limits, however, the highest PID measured was not at the location of the petroleum product odor. Therefore, something else (e.g. organic matter in the soil or instrument electronic drift) caused the highest PID reading. Due to the petroleum product odor in the soil, the entire soil column in the PPCA should be assumed to be contaminated in addition to the groundwater unless proven otherwise during construction activities.
- **PPCAs #2, #3, and #4:** These three PPCAs are adjacent to each other and the exact boundaries between each cannot be readily determined, and therefore are grouped together. The releases comprising these PPCAs were from dry cleaners and a former gasoline station. Soil borings/temporary monitoring wells B-7 through B-18 were drilled/installed during the Additional ESA-II. The extent of the PPCAs in the 2017 Limited ESA-II extended from Station 7+37.3 to Station 17+74.6 on the project plans and profiles (approximate extent shown on Figures 3a and 3b in Appendix A). The revised extent of the 3PPCAs is from Station 13+93.8 to Station 15+22.6 along Memorial Drive and from the end of the Subject Right-of-Way on West Bough Lane to the end of the Subject Right-of Way on Broken Bough Drive (Figures 4a and 4b, 7, 8, and 9 in Appendix A; No station numbers are shown on the plans and profiles provided for the project on Broken Bough Drive and West Bough Lane.). VOCs and TPH concentrations in each of the soil and groundwater samples collected were below laboratory detection limits. However, an unidentified odor was detected in the soils from 17 to 18 and 18.5 to 19 feet bgs at boring B-14 right above and associated with some damp soil. As in PPCA #1, the soil sample collected from the highest PID did not exhibit any odor and therefore the sample collected may have missed the contamination. Therefore as a precaution, the soil from the base of the pavement to 5 feet below the deepest proposed utility in revised PPCAs #2, 3, and 4 (Figures 4a and 4b, 7, 8, and 9 in Appendix A) should be considered as contaminated. None of the groundwater samples collected during the Additional ESA-II exhibited any VOCs or TPH concentrations above laboratory detection limits.

However, it should be noted that groundwater samples could only be collected from the temporary monitoring wells at borings B-15 at the border of the revised PPCAs and B-18 outside the revised PPCAs but inside the original PPCAs boundary, since these were the only wells to collect water; all the other temporary monitoring wells were dry one-quarter to one hour after drilling was completed. Groundwater was encountered during drilling at B-9, but no water collected in the completed boring or installed temporary monitoring well. Damp soils were observed at borings B-13 at the edge revised PPCA and B-14 in the revised PPCA, but no water collected in the completed borings or installed temporary monitoring wells. It should be noted that soils in B-13 and B-14 in the revised PPCAs, and other dry borings (B-7, B-8, B-10 through B-12, B-16 and B-17) outside the revised PPCAs, but within the original PPCA could have yielded groundwater if left open for a longer period of time. Therefore during construction, groundwater could collect in these areas in trenches and auger boreholes installed and drilled during construction activities. Or some of these boring locations could yield groundwater during construction activities if the utilities are placed deeper than that shown on the plans and profiles given to AEC by LAN. If groundwater collects in a construction trench or auger borehole in the revised PPCAs, it should be considered as contaminated. If groundwater collects in any construction trench or auger borehole in areas outside the revised PPCAs, then that groundwater should be consider as contaminated, unless proven otherwise and the extent of the revised PPCAs enlarged. The vertical extent of the revised PPCAs extends from below the pavement to 5 feet below the deepest utility to be installed during construction activities in these revised PPCAs.

- **PPCA #5:** This PPCA is associated with a gasoline leak from a former Conoco station at 12699 Memorial Drive. Soil borings/temporary monitoring wells B-19 through B-24 were drilled/installed during the Additional ESA-II. The extent of the PPCA in the 2017 Limited ESA-II extended from Station 27+06.2 to Station 31+60.6 on the project plans and profiles (approximate extent shown on Figures 3a and 3b in Appendix A). The revised extent of the PPCA is from Station 28+22.5 to Station 33+09.5 along Memorial Drive and to the end of the Subject Right-of-Way on Boheme Drive (no station numbers given on plans and profiles for Boheme Drive; Figures 4a and 4b, 10 through 15 in Appendix A). Ethylbenzene, m- & p-xylenes, total xylenes, and TPH (C6-C12 and C6-C35 fractions) concentrations exceeded laboratory detection limits in the soil sample from B-22 and toluene, ethylbenzene, m- & p-xylenes, o-xylenes, total xylenes, and TPH (C6-C12 and C6-C35 fractions) concentrations exceeded laboratory detection limits in the soil sample from B-23. Very high PID readings and slight to very strong petroleum product odors were detected in some of the soils from B-22 and B-23 and a petroleum product odor was detected in some of the soils in B-24 (Lab results were nondetected which is believed to be because the soil sample was collected at the highest PID reading which was not where the odors were detected). Benzene, toluene, ethylbenzene, m- & p-xylenes, total xylenes, and TPH (C6-C12 and C6-C35 fractions) concentrations exceeded laboratory detection limits in the groundwater sample from B-22 and benzene, toluene, ethylbenzene, m- & p-xylenes, o-xylenes, total xylenes, and TPH (C6-C12 and C6-C35 fractions) concentrations exceeded laboratory detection limits in the groundwater sample from B-23. In addition, a petroleum product odor was detected in the groundwater sample of B-22, B-23, and B-24. The vertical extent of the revised PPCA extends from

below the pavement to 5 feet below the deepest utility to be installed during construction activities in the revised PPCA.

- **PPCA #6:** This PPCA is associated with a dry cleaner leak from MW Cleaners/Pro Cleaners at 12534 Memorial Drive and a VCP site at 12601 Memorial Drive. Soil borings/temporary monitoring wells B-25 through B-31 were drilled/installed during the Additional ESA-II. The extent of the 2017 PPCA was from Station 42+40.4 to Station 49+72.8 (the eastern end of the Subject Right-of-Way) along Memorial Drive (approximate extent shown on Figures 3a and 3b in Appendix A). The revised extent of the PPCA is from Station 42+21.5 to Station 49+72.8 (the eastern end of the Subject Right-of-Way) along Memorial Drive and to the edge of the Subject Right-of-Way on Sommerset Place, Legend Lane, Tallowood Road and the driveway entrance due south of Tallowood Drive (no station numbers given on plans and profiles for Sommerset Place, Legend Lane, Tallowood Road and the driveway entrance due south of Tallowood Road; Figures 4a and 4b, 16 through 19 in Appendix A). A slight undetermined odor was detected in some of the soils from B-26, B-27, B-29, and B-30. The VOC compound cis-1, 2-dichloroethylene was detected above laboratory detection limits in the soil sample from boring B-30. The soil sample (no groundwater encountered) from boring B-31 was inadvertently analyzed after holding times had expired, however this does not have much impact on the extent of the revised PPCA. The soil in boring B-30 was contaminated with a VOC. If the soil sample from B-31 had been analyzed within its holding time and all concentrations were below laboratory detection limits, the B-31 would have been the eastern extent of the revised PPCA. If concentrations of the sample were above laboratory detection limits, then the eastern extent of the revised PPCA would have been the eastern end of the Subject Right-of-Way. According to the plans and profiles received there is only approximately 14 feet difference between the two different boundaries. Given this situation, AEC has placed the edge of the revised PPCA at the more conservative eastern end of the Subject Right-of-Way. The VOCs and TPH concentrations in the groundwater samples collected from each temporary monitoring well installed were below their respective laboratory detection limits. No odors were detected in the groundwater. The vertical extent of the revised PPCA is the soil from beneath the pavement to 5 feet below the deepest utility to be installed at the revised PPCA. Based on the laboratory analyses results, the groundwater does not appear to be contaminated to the depths the borings were drilled to (5 feet below the deepest nearest proposed utility). Contamination from dry cleaners is denser than water and sinks deeper with time, therefore, AEC believes that groundwater deeper than the proposed deepest utility may be contaminated. If during construction, the utilities are set at a depth deeper than drilled during the additional ESA-II, then the groundwater encountered should be considered as contaminated unless proven otherwise during construction activities.

For this construction project, the contractor should follow the Texas Department of Transportation (TxDOT) Specifications for 1) safety (workers and public), 2) selections of proper pipes and gaskets, and 3) legal disposal of the wastes generated.



## 2.0 INTRODUCTION

### 2.1 Project Background and Location

The Texas Department of Transportation (TxDOT) plans to reconstruct Memorial Drive from the West Sam Houston Parkway North northbound feeder road to approximately 100 feet east of Tallowood Drive in Western Harris County, Texas (referred to herein as the Subject Right-of-Way). Figure 1 (Appendix A) shows a site vicinity map with the approximate project limits. Figures 2a and 2b (Appendix A) show the location of the Subject Right-of-Way on aerial photographs.

The project began as a City of Houston Project, (TIRZ17). Aviles Engineering Corporation (AEC) performed a Phase I Environmental Site Assessment (ESA-I) of the Subject Right-of-Way (AEC ESA-I report E102-15 dated October 26, 2015) in which the following recognized environmental conditions (RECs) were identified in connection with the Subject Right-of-Way (Figures 2a and 2b in Appendix A):

- REC #1: Chevron LPST site/Wheatley Investments at 12860 Memorial Drive
- REC #2: The contaminant plume associated with leaks from Your Valet Cleaners at 614 West Bough Lane and A-1 Cleaners LPST and VCP site at 12754 Memorial Drive
- REC #3: Sprint PCS Tower IOP site at 608 West Bough Lane
- REC #4: Mobil gas station at 12802 Memorial Drive
- REC #5: The contaminant plume associated with Conoco 43059 at 12699 Memorial Drive LPST site
- REC #6: Alexan Memorial Bend Apartments IOP site at 12667 Memorial Drive
- REC #7: The contaminant plume associated with the MW Cleaners/Lantern Lane Shopping Center-Pro Cleaners VCP and IHWCA site at 12534 Memorial Drive and the Memorial Green VCP site at 12601 Memorial Drive.

The ESA-I recommended that a Limited Phase II Environmental Site Assessment (ESA-II) be conducted with the installation of soil borings and temporary groundwater sampling wells approximately every 100 feet in the Subject Right-of-Way adjacent to or near each REC.

During a meeting on February 16, 2017 between the City of Houston, Public Works, Geo-Environmental (COH); Lockwood, Andrews, & Newnam, Inc. (LAN); and AEC personnel, the COH determined that RECs #2, #3, #4, and #7 should be considered as potentially petroleum contaminated areas (PPCAs) without any further drilling or sampling since the ESA-I revealed that contamination had crossed Memorial Drive and into the area south of Memorial Drive. COH personnel also indicated that if there was evidence of contamination under Memorial Drive at REC #5, that it also should be considered a PPCA without additional drilling or sampling. After the meeting, AEC reviewed the ESA-I and determined that there were monitor wells located on the eastern side of Memorial Drive at REC #5, therefore REC #5 was identified as a PPCA without additional drilling or sampling.

The COH approved AEC proposal E16-06-03R dated February 21, 2017 for a Limited ESA-II to drill three soil borings and convert one to a temporary monitor well at each of RECs #1 and #6 (Figures 2a and 2b in Attachment A).

The Limited ESA-II was completed and summarized in a report dated May 24, 2018 (AEC ESA-II report E101-17). Groundwater contaminated with benzene, toluene, m- & p- xylenes, total xylenes, and methyl tertiary butyl ether (MTBE) was encountered in the temporary monitoring well at B-2 of REC #1. Petroleum product odor was also detected in the soil of boring B-2 from 26 to 28 feet below grade surface (bgs). Therefore, REC #1 was designated as PPCA #1. Concentrations of contaminants analyzed in soil and groundwater samples from REC #6 were below laboratory detection limits and therefore was not designated as a PPCA. The PPCAs identified by the COH prior to the ESA-II and by AEC during the ESA-II are shown in Figures 3a and 3b (Appendix A) and include:

- PPCA #1: Chevron LPST site/Wheatley Investments at 12860 Memorial Drive
- PPCA #2: The contaminant plume associated with leaks from Your Valet Cleaners at 614 West Bough Lane and A-1 Cleaners LPST and VCP site at 12754 Memorial Drive
- PPCA #3: Sprint PCS Tower IOP site at 608 West Bough Lane
- PPCA #4: Mobil gas station at 12802 Memorial Drive
- PPCA #5: The contaminant plume associated with Conoco 43059 LPST site at 12699 Memorial Drive.
- PPCA #6: The contaminant plume associated with the MW Cleaners/Lantern Lane Shopping Center-Pro Cleaners VCP and IHWCA site at 12534 Memorial Drive and the Memorial Green VCP site at 12601 Memorial Drive.

After TxDOT became involved, a meeting between LAN, TxDOT, and AEC personnel was held on April 2, 2019 to discuss the Memorial Drive reconstruction project. It was determined that the PPCAs as defined in the 2017 Limited ESA-II were inadequate to predict the amount of contaminated soil and groundwater which might be encountered during construction activities and to calculate the associated construction costs of excavating, removal, handling, and disposing of impacted soil and groundwater. An Additional ESA-II was recommend to further delineate the extent of PPCAs #2, #3, #4, #5, and #6 (refer to Figures 3a and 3b in Appendix A).

This report summarizes the activities and presents the results of the Additional ESA-II and also includes information from the 2017 Limited ESA-II in order to update the environmental assessment of the Subject Right-of-Way.

## **2.2 Authorization**

AEC submitted a proposal to LAN on April 11, 2019 for an Additional ESA-II for the Subject Right-of-Way. LAN authorized the Additional ESA-II of the Subject Right-of-Way in an email dated April 30, 2019.

## **3.0 ON-SITE INVESTIGATION**

AEC has performed this Additional ESA-II investigation of the Subject Right-of-Way in general accordance with ASTM Standard Practice E1903-11 and Chapter 11 – Geotechnical and Environmental Requirements of the City of Houston Department of Public Works and Engineering Infrastructure Design Manual (July 1, 2018) to be consistent with the previously performed Limited ESA-II.

A total of 25 boring locations (B-7 through B-31) were marked in the field prior to drilling (Borings B-1 through B-6 were drilled during the Limited ESA-II in 2017.). The soil borings were located approximately 70 to 130 feet apart from each other adjacent to or near Potentially Petroleum Contaminated Areas #2 through #6 (PPCA; COH term which includes both petroleum product and hazardous material contamination). Each soil boring was placed in the best practicable location, considering the location of utilities and other site-specific conditions (e.g. a bridge location). Figures 3a and 3b in Appendix A shows the locations of the soil borings drilled in 2017 and 2019. City of Houston maps were reviewed to determine the location of water and sewer utilities and the Texas811 utility locate service was contacted prior to drilling to mark other subsurface utilities in the Subject Right-of-Way.

The pavement at each of the 25 boring locations was cored on May 23, 2019. The pavement at each boring location was asphalt ranging in thickness from 3.5 inches in B-18 to 14 inches at B-30. Boring B-23 had 6 inches of concrete beneath the asphalt. Borings B-15, B-23, B-30, and B-31 had no base material beneath the pavement. In the remaining boring locations, base material thickness was from 3 inches at boring B-29 to 9 inches at boring B-28. The base material was primarily stabilized shell or stabilized crushed limestone. During the 2017 drilling, the pavement at borings B-1 and B-2 consisted of concrete (thickness ranging from 8.5 to 10 inches) over base (type not indicated; thickness ranging from 15 to 25.5 inches). Borings B-3 through B-6 had asphalt pavement (between 4.75 and 11 inches thick) over unidentified base material (between 3 and 25.25 inches thick) Attached Table 1 in Appendix A summarizes the pavement and base thicknesses. The measurements are also on the boring logs in Appendix C.

On May 29 and 30; and June 3, 4, and 6, 2019, a continuous direct-push soil boring machine was used to obtain a soil core to the total depth at each boring location (Photographs 1 through 6 in Appendix B). Each boring was drilled to 5 feet below the excavation depth of the deepest proposed utility near each location as determined from LAN-provided plans and profiles. The borings were drilled to depths ranging from 12 to 26 feet below grade (top of pavement) surface (bgs). The 2017 soil borings (B-1 through B-6) had been drilled to depths of 20 to 28 feet bgs. The total depth of each soil boring is listed in Table 1 of Appendix A of this report.

Soil cores were collected in 5-foot long acetate liners within the 2-inch diameter direct push corer along the entire length of each boring (Photograph 7 in Appendix B). The majority of the soils encountered during drilling in the Additional and Limited ESA-IIs were sandy clay (refer to the soil boring logs in Appendix C and summary of the borings in Table 1 in Appendix A). Sand and/or silt layers, seams, partings and/or pockets were observed in the soils of each of the borings. A gravel seam was encountered in 2017 in B-1.

A representative section of soil was cut from each 1-foot section of each 5-foot core (when available) and placed in a zip-lock type sandwich bag and set aside for head-space evaluation of volatile organic compound vapors. The remainder of each 1-foot section of each 5-foot soil core was placed in a zip-lock bag in a cooler with ice for possible laboratory analysis. After drilling of the boring was completed, the headspace concentration of volatile organic vapors from each bagged section of soil not in the cooler was analyzed by inserting the probe tip of a calibrated photoionization detector (PID) into a narrow opening of the bag seal (Photograph 8 in Appendix B).

The resulting PID readings are listed on the boring logs in Appendix C including those from borings B-1 through B-6 drilled in 2017. The maximum PID reading for each boring is:

- B-1: 0.2 parts per million (ppm) at 14 to 15 feet bgs.
- B-2: 5.8 ppm at 23 to 24 feet bgs.
- B-3: 4.3 ppm at 21 to 22 feet bgs.
- B-4: 0.8 ppm at 25 to 26 feet bgs.
- B-5: 0.0 ppm at 20 to 21 feet bgs.
- B-6: 1.5 ppm at 20 to 21 feet bgs.
- B-7: 2.5 ppm at 1 to 2 feet bgs.
- B-8: 2.5 ppm at 7 to 8 feet bgs.
- B-9: 1.7 ppm at 8 to 9 and 13 to 14 feet bgs,
- B-10: 3.3 ppm at 6 to 7 feet bgs.
- B-11: 2.5 ppm at 2 to 3, 7 to 8, and 12 to 13 feet bgs.
- B-12: 2.9 ppm at 8 to 9 feet bgs.
- B-13: 3.0 ppm at 7 to 8 feet bgs.
- B-14: 2.4 ppm at 13 to 14 feet bgs.
- B-15: 3.3 ppm at 13 to 14 feet bgs.
- B-16: 2.6 ppm at 16 to 17 feet bgs.
- B-17: 1.5 ppm at 4-5, 5-6, 7-8, and 12 to 14 feet bgs.
- B-18: 1.2 ppm at 16 to 17 and 17 to 18 feet bgs.
- B-19: 2.3 ppm at 13 to 14 feet bgs.
- B-20: 1.5 ppm at 12 to 13 and 17 to 18 feet bgs.
- B-21: 2.2 ppm at 16 to 17 feet bgs.
- B-22: **472 ppm** at 23 to 24 feet bgs (PID reading at 24 to 25 feet bgs is **408 ppm**).
- B-23: **291 ppm** at 23 to 24 feet bgs.
- B-24: 3.2 ppm at 20 to 21 feet bgs.
- B-25: 1.5 ppm at 9 to 10 feet bgs.
- B-26: 0.9 ppm at 17 to 18, 18 to 19, 22 to 23, and 25 to 26 feet bgs.
- B-27: 0.7 ppm at 5 to 6 and 6 to 7 feet bgs.
- B-28: 0.9 ppm at 16 to 17, 17-18, 18-19, 19-20, and 22 to 23 feet bgs.
- B-29: 0.9 ppm at 14 to 15, 16 to 17, and 17 to 18 feet bgs.
- B-30: 1.5 ppm at 18 to 19 feet bgs.
- B-31: 2.2 ppm at 8 to 9 feet bgs.

It should be noted that the PID readings are very high in borings B-22 and B-23.

PID readings of background air (control samples) ranged from 0.0 ppm and 0.6 ppm. PID readings of air in new empty sample bags (control samples) ranged from 0.0 ppm to 1.7 ppm.

The following odors were detected during soil drilling (including 2017 borings):

- B-2: Petroleum product odor in soil from 26 feet to the total depth of 28 feet bgs.
- B-14: Unidentified odor in soil from 17 to 19 feet bgs.
- B-22: **Strong** petroleum product odor in the soil from 17.3 to 20 feet bgs and **very strong** odor from 22.3 feet to the total depth of 26 feet bgs.

- B-23: Slight petroleum product odor in soil from 20 to 22.4 feet bgs and a **very strong** petroleum product odor in soil from 24.4 to the total depth of 26 feet.
- B-24: Petroleum product odor in soil from 16 to 20 feet bgs.
- B-26: Slight unidentified odor in soils from 1.6 to 3.5 and 5 to 15 feet bgs.
- B-27: Slight unidentified odor in soil from 16 to 18.2 feet bgs.
- B-29: Slight unidentified odor in soil from 1 to 8.8 and 16 to 20 feet bgs.
- B-30: Slight unidentified odor in soils from 4 to 10 feet bgs.

A soil sample for laboratory analysis was collected at each boring location from the intervals identified in Table 1 in Appendix A and on the boring logs of Appendix C (borings B-1 through B-6 included). The soil sample was collected from the highest PID reading in each of the borings B-7 through B-31. The same was true for borings, B-1 through B-4 and B-6 previously drilled in 2017. The soil sample was collected in B-5 (drilled 2017) above where groundwater was encountered since all the PID readings in the soils of that boring were 0.0 ppm. Each soil sample was collected and placed in a clean container. Each sample container was labeled with the date and time of sample collection, the soil boring number, and the requested analyses (Photograph 9 in Appendix B). Each of the collected soil samples were preserved on ice and transported to A&B Environmental Services, Inc. commercial analytical laboratory with a completed chain-of-custody form (refer to the analytical laboratory reports including those from B-1 to B-6 collected in 2017 in Appendix D).

Groundwater was not encountered during drilling in borings B-1(2017), B-7, B-8, B-10 through B-12, B-16, B-17, and B-31. No groundwater collected in each of these boreholes after drilling completion. Groundwater was encountered during drilling in borings B-2 (2017), B-4 and B-5 (2017), and B-18 through B-30. Groundwater was encountered during drilling in borings B-6 (2017) and B-9, but no groundwater collected in the completed borehole. There were also damp soils beneath the pavement in B-9. The groundwater appeared to be from a perched groundwater zone of limited extent. Damp soils were encountered during drilling in borings B-13 and B-14, but no groundwater collected in each completed borehole. Damp soil was encountered during drilling in boring B-15, but groundwater collected in the completed borehole. The depth of groundwater could not be determined in B-3 (2017) due to the continual infiltration of water from beneath the pavement into the borehole. The depth groundwater was encountered during drilling and measured at approximately one-quarter to one hour after drilling was completed are shown in Table 1 (Appendix A) and the borings logs (Appendix C). A summary of the presence of groundwater in each boring is as follows:

- B-1: No groundwater encountered during drilling; no groundwater collected in borehole approximately 0.25 hours after drilling completion.
- B-2: Water beneath the base of pavement; groundwater encountered during drilling at 26 feet bgs.
- B-3: Depth of groundwater could not be determined since abundant water trapped under the pavement continued entering the borehole during and after drilling completion.
- B-4: Groundwater encountered at 21.92 feet bgs.
- B-5: Groundwater encountered at 21.25 feet bgs.
- B-6: Groundwater encountered at 21.58 feet bgs, but no groundwater collected in the borehole 0.25 hours after drilling completion.

- B-7: No groundwater encountered during drilling. None collected in the borehole approximately 0.5 hours after drilling completion.
- B-8: No groundwater encountered during drilling. None collected in the borehole approximately 0.5 hours after drilling completion.
- B-9: Soil damp under pavement in upper 2 feet. Groundwater encountered at 15 feet bgs, but did not collect in borehole approximately 0.5 hours after drilling completion.
- B-10: No groundwater encountered during drilling. None collected in the borehole approximately 0.5 hours after drilling completion.
- B-11: No groundwater encountered during drilling. None collected in the borehole approximately 0.5 hours after drilling completion.
- B-12: No groundwater encountered during drilling. None collected in the borehole approximately 1.0 hour after drilling completion.
- B-13: Damp soil from 19.2 feet bgs to total depth of 20 feet bgs; No groundwater collected in borehole approximately 0.5 feet after drilling completion.
- B-14: Damp soil from 18.5 feet bgs to total depth of 19 feet bgs, but no groundwater collected in the borehole approximately 0.25 hours after drilling completion.
- B-15: Damp soil from 18.4 feet bgs to total depth of 21 feet bgs. Groundwater collected in borehole approximately 0.25 hours after drilling completion.
- B-16: No groundwater encountered during drilling. None collected in the borehole approximately 0.5 hours after drilling completion.
- B-17: No groundwater encountered during drilling. None collected in the borehole approximately 0.25 hours after drilling completion.
- B-18: Groundwater encountered during drilling at 14.3 feet bgs.
- B-19: Groundwater encountered during drilling at 17.3 feet bgs.
- B-20: Groundwater encountered during drilling at 18.4 feet bgs; damp soil from 17 to 18.4 feet bgs.
- B-21: Groundwater encountered during drilling at 17.8 feet bgs.
- B-22: Groundwater encountered during drilling at 17.3 feet bgs.
- B-23: Groundwater encountered during drilling at 22.4 feet bgs.
- B-24: Groundwater encountered during drilling at 21 feet bgs.
- B-25: Groundwater encountered during drilling at 18.5 feet bgs.
- B-26: Groundwater encountered during drilling at 25 feet bgs; damp soil from 7.7 to 25 feet bgs.
- B-27: Groundwater encountered during drilling at 18.2 feet bgs.
- B-28: Groundwater encountered during drilling at 20.3 feet bgs; damp soil from the lower portion of the 12.3 to 15 feet bgs interval and 18 to 20.3 feet bgs.
- B-29: Water beneath pavement; groundwater encountered during drilling at 22.6 feet bgs.
- B-30: Groundwater encountered during drilling at 6.2 to 6.4, 10 to 11.8, and 24.1 feet bgs. Damp soil encountered from 16.3 to 16.8 feet bgs.
- B-31: No groundwater encountered during drilling. None collected in the borehole approximately 0.25 hours after drilling completion.

A petroleum product odor was detected in the groundwater of borings B-22, B-23, and B-24. No petroleum product sheens were observed on the groundwater.

Each of the 25 soil borings of the Additional ESA-II were converted to a temporary monitoring well which consisted of new 1-inch diameter polyvinyl chloride (PVC) screen and new 1-inch diameter PVC solid-wall casing (Photograph 10 in Appendix B; temporary monitoring wells were only installed in borings B-2 and B-5 of the six borings drilled in 2017). The length of screen and solid wall casing used in each temporary monitor well are identified at the bottom of each of the boring logs in Appendix C. Once installed, each temporary monitoring well that contained groundwater was developed by removing groundwater from the well. A groundwater sample was collected from each temporary monitoring well containing groundwater. The collected groundwater sample was placed into clean, laboratory-provided sample containers, labeled with the date and time of sample collection, the well number, the requested analyses, and the initials of the sample collector (Photograph 11 in Appendix B). Each container containing groundwater was preserved on ice in a cooler and transported to A&B Environmental Services, Inc. in Houston, Texas with a completed chain-of-custody form (refer to the analytical laboratory reports, including those for 2017, in Appendix E).

Following drilling and sampling, each of the 25 borings was grouted from the total depth to up to the bottom of the pavement base material and then patched with asphalt (refer to Photograph 12 in Appendix B). The 2017 borings were grouted from the total depth up to approximately 1 foot below the pavement surface. The approximate upper foot of borings B-1 and B-2 was patched with concrete. The approximate upper foot of B-3 through B-6 was patched with asphalt. Prior to plugging, the temporary monitoring wells were removed from their boreholes.

#### **4.0 LABORATORY ANALYSES**

Each of the 25 soil and 16 groundwater samples collected during the Additional ESA-II were analyzed by A&B Environmental Services, Inc. laboratory. Laboratory analysis included:

- Benzene, toluene, ethylbenzene, and xylenes (BTEX); and methyl tertiary butyl ether (MTBE) using analytical method SW-846 8260C for soil samples from soil borings B-19 through 24; and the groundwater samples from borings B-19 through B-24 (The 2017 soil samples from borings B-1 through B-3 and the groundwater sample from B-2 were also analyzed for the same compounds using the same analytical method).
- Volatile organic compounds (VOCs) using analytical method SW-846 8260C for soil samples from soil borings B-7 through 18 and B-25 through B-31 and the groundwater samples from borings B-15, B-18, and B-25 through B-30 (The same analytical method was used for the 2017 soil samples from borings B-4 through B-6 and the groundwater sample from boring B-5.).
- Total petroleum hydrocarbons (TPH) using analytical method Texas Commission on Environmental Quality (TCEQ) Texas Method 1005 (TX 1005) for each soil and groundwater sample (including the 2017 samples).
- The % moisture content of each of the soil samples was also determined as required by the laboratory for the above analyses.

The results of the BTEX, MTBE, and TPH soil sample analyses for borings B-1 through B-3 (2017 borings) and B-19 through B-24 are summarized in Table 2 in Appendix D. Appendix E contains the laboratory analysis reports, quality control certificates, and chains-of-custody. As shown in Table 2, the following samples contained compound concentrations which exceeded their respective laboratory detection limits:

- B-22, 23 to 24 feet bgs: ethylbenzene (0.00763 milligrams per Kilogram (mg/Kg)), m- & p-xylenes (0.00655 mg/Kg), total xylenes (0.00655 mg/Kg), TPH C6-C12 fractions (42.5 mg/Kg), and TPH C6-C35 fractions (42.5 mg/Kg).
- B-23, 23 to 24 feet bgs: toluene (2.39 mg/Kg), ethylbenzene (46.0 mg/Kg), m- & p-xylenes (123 mg/Kg), o-xylenes (14.4 mg/Kg), total xylenes (137.4 mg/Kg), TPH C6-C12 fractions (490 mg/Kg), and TPH C6-C35 fractions (490 mg/Kg).

Each of the remaining concentrations of the soil samples in Table 2 is below its respective laboratory detection limit.

The results of the VOCs and TPH soil sample analyses for borings B-4 through B-6 (2017 borings) and B-7 through B-18 and B-25 through B-31 are summarized in Table 3 in Appendix D. Appendix E contains the laboratory analysis reports, quality control certificates, and chains-of-custody. As shown in Table 3, the following samples contained compound concentrations which exceeded their respective laboratory detection limits:

- B-30, 18 to 19 feet bgs: cis-1, 2-dichloroethylene (0.00585 mg/Kg).

Each of the remaining concentrations of the soil samples in Table 3 is below its respective laboratory detection limit. The soil sample from 6 to 7 feet bgs of B-31 was inadvertently analyzed after holding times had expired. This however does not have much impact on the delineation of the extent of the contamination in the area (refer to PPCA #6 in Section 7.0 for further details).

The results of the BTEX, MTBE, and TPH groundwater sample analyses for boring B-2 (2017 borings), and B-19 through B-24 are summarized in Table 4 in Appendix D. Appendix E contains the laboratory analysis reports, quality control certificates, and chains-of-custody. As shown in Table 4, the following samples contained compound concentrations which exceeded their respective laboratory detection limits:

- B-2 (2007): benzene (0.277 milligrams per Liter (mg/L)), toluene (0.014 mg/L), m- & p-xylenes (0.015 mg/L), total xylenes (0.015 mg/L), and MTBE (0.025 mg/L).
- B-22: benzene (0.0440 mg/L), toluene (0.00820 mg/L), ethylbenzene (0.269 mg/L), m- & p-xylenes (0.300 mg/L), o-xylenes (0.00532 mg/L), total xylenes (0.30532 mg/L), TPH C6-C12 fractions (2.36 mg/L), and TPH C6-C35 fractions (2.36 mg/L).
- B-23: benzene (0.0342 mg/L), toluene (0.714 mg/L), ethylbenzene (0.762 mg/L), m- & p-xylenes (2.84 mg/L), o-xylenes (1.12 mg/L), total xylenes (3.96 mg/L), TPH C6-C12 fractions (7.01 mg/L), and TPH C6-C35 fractions (7.01 mg/L).

Each of the remaining concentrations of the groundwater samples in Table 4 is below its respective laboratory detection limit.

The results of the VOCs and TPH groundwater sample analyses for borings B-5 (2017 boring), B-15, B-18, B-25 through B-30 are summarized in Table 5 in Appendix D. Appendix E contains the laboratory analysis reports, quality control certificates, and chains-of-custody. As shown in Table 5, each of the VOCs and TPH concentrations in each of the groundwater samples is below its respective laboratory detection limit.

## 5.0 WASTE DISPOSAL

Waste soil and wastewater generated during the additional ESA-II drilling were placed in 5-gallon plastic buckets and capped with a lid manufactured to fit the container. Each bucket of waste was transported to and stored at AEC's property at 5790 Windfern in Houston. Waste soil



and wastewater disposal is in progress at the time of report preparation. Once the waste soil and wastewater are disposed, a copy of the waste manifest will be submitted. Waste soil generated from borings B-1 and B-3 through B-6 during the 2007 ESA-II was disposed of as solid waste since none of the laboratory concentrations of constituents in the soil exceeded their applicable Texas Commission on Environmental Quality Texas Risk Reduction Program Protective Concentration Levels. Waste soil from boring B-2 was disposed of via a waste manifest in a properly licensed facility. A copy of the waste manifest was included in Appendix F of the 2017 ESA-II report.

One 5-gallon bucket of wastewater was generated during the 2007 drilling activities, but its contents leaked from a hole which developed in the bucket. The bucket was located on a concrete surface which slopes to a storm sewer drain. The leaked contents of the bucket would have been confined to the concrete pavement and flowed into the storm drain. The wastewater was a mixture of contaminated and uncontaminated groundwater and decontamination water from the drilling and sampling activities so the contamination in the water would have been highly diluted when entering the storm sewer.

## **6.0 SUMMARY**

AEC performed this TxDOT-requested Additional ESA-II for the potentially petroleum contaminated areas (PPCAs) #2, #3, #4, #5, and #6 that were identified in the 2017 Limited ESA-II. TxDOT determined that the PPCAs as defined in the 2017 ESA-II were inadequate to predict the amount of contaminated soil and groundwater which might be encountered during construction activities and to calculate associated construction costs for excavating, removal, handling, and disposing of impacted soil and groundwater, since the PPCAs #2 through #6 boundaries had been determined without soil and groundwater sampling as originally instructed by the City of Houston. This 2019 Additional ESA-II was performed in general accordance with ASTM Standard Practice E 1903-11 and Chapter 11- Geotechnical and Environmental Requirements of the City of Houston Department of Public Works and Engineering Infrastructure Design Manual (July 1, 2018). This report summarizes the activities and presents the results of the Additional ESA-II and also includes information from the 2017 Limited ESA-II in order to update the environmental assessment of the Subject Right-of-Way.

During the Additional ESA-II, a total of 25 soil borings (borings B-7 through B-31) were drilled to depths of 12 to 26 feet below grade surface (borings B-1 through B-6 had been drilled to depths of 20 to 28 feet below grade surface during the 2017 Limited ESA-II) and a soil sample was collected from each. The soils encountered during drilling in the Additional ESA-II (as well as the previous Limited ESA-II) were mainly sandy clay. Sand and/or silt layers, seams, partings and/or pockets were observed in the soils of each of the borings (a gravel seam was encountered in 2017 in B-1). Photoionization detector (PID) readings were less than or equal to 5.8 parts per million (ppm) in each of the soil intervals measured from soil cores from boring locations B-1 through B-31 except for at borings B-22 and B-23 which had PIDs as high as 472 and 291 ppm, respectively. Petroleum product odors of varying intensities were detected in some of the soils at boring B-2 (2017), B-22, B-23, and B-24 (near areas of former or existing gasoline stations). Some of the odors in B-22 and B-23 were very strong. An unidentified odor was detected in some of the soils from boring B-14, B-26, B-27, B-29, and B-30 (near existing dry cleaner and voluntary cleanup program, VCP, sites). Soil samples collected from borings B-1 through B-3 (2017) and B-19

through B-24 were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX), methyl tertiary butyl ether (MTBE), and total petroleum hydrocarbons (TPH) 1005. Soil samples collected from B-4 (2017) through B-6 (2017), B-7 through B-18, and B-25 through B-31 were each analyzed for volatile organic compounds (VOCs) and TPH 1005. The soil sample from B-31 was inadvertently analyzed after its holding time had expired, however this does not have much impact on the conclusions as explained later. The laboratory analysis results of the soil samples showed that the concentrations of ethylbenzene, m- & p-xylenes, total xylenes, and TPH C6-C12 and C6-C35 fractions at boring B-22, 23 to 24 feet below grade surface (bgs); and concentrations of toluene, ethylbenzene, m- & p-xylenes, o-xylenes, total xylenes, and TPH C6-C12 and C6-C35 fractions at B-23, 23 to 24 feet bgs exceeded their respective laboratory detection limits. The concentration of VOC compound cis-1, 2-dichloroethylene in the soil sample from B-30, 18 to 19 feet bgs exceeded its laboratory detection limit. Each of the remaining BTEX, MTBE, TPH 1005, and VOCs concentrations were below laboratory detection limits.

Each of soil borings B-2 (2017), B-5 (2017), and B-7 through B-31 were converted to a temporary monitoring well and a groundwater sample was collected from each that yielded groundwater. Groundwater samples collected from B-2 (2017), and B-19 through B-24 were each analyzed for BTEX, MTBE, and TPH 1005. Each groundwater sample from temporary monitoring wells B-5 (2017), B-7 through B-18 and B-25 through B-31 were analyzed for VOCs and TPH 1005. The laboratory analysis results of the samples showed that concentrations of benzene, toluene, m- & p-xylenes, total xylenes, and MTBE in B-2; benzene, toluene, ethylbenzene, m- & p-xylenes, o-xylenes, total xylenes, and TPH C6-C12 and C6-C35 fractions in B-22; benzene, toluene, ethylbenzene, m- & p-xylenes, o-xylenes, total xylenes, and TPH C6-C12 and C6-C35 fractions in B-23 were above laboratory detection limits. Each of the remaining BTEX, MTBE, TPH 1005, and all of the VOCs concentrations were below laboratory detection limits.

Disposal of the waste soil and wastewater generated during the Additional ESA-II is in progress at the time of report preparation. Waste soil from boring B-2 of the 2017 Limited ESA-II was disposed via a waste manifest in a properly licensed facility and the manifest was attached in the 2017 report. The remaining 2017 soil was disposed of as solid waste. One 5-gallon bucket of wastewater was generated during the 2017 drilling activities, but its contents leaked from a hole which developed in the bucket. The bucket was located on a concrete surface which slopes to a storm sewer drain, therefore the leaked contents of the bucket would have been confined to the concrete pavement and flowed into the storm drain. The wastewater was a mixture of contaminated and uncontaminated groundwater and decontamination water from the drilling and sampling activities so the contamination in the water would have been highly diluted when entering the storm sewer.

## **7.0 CONCLUSION AND RECOMMENDATIONS**

Based on the guidelines provided by the City of Houston (the originator of the project), the results of the AEC ESA-I report dated March 25, 2015, the results of the 2017 Limited ESA-II, and the results of this Additional ESA-II, AEC has revised the extent of the potentially petroleum contaminated areas (PPCAs) along the Subject Right-of-Way identified in the 2017 Limited ESA-II. Figures 3a and 3b in Appendix A show the approximate extents of the PPCAs in the 2017 Limited ESA-II. Figures 4a and 4b in Appendix A shows the approximate extents of the

revised PPCAs. Figures 5 through 19 in Appendix A shows the revised extents of the PPCAs plotted in more detail on the latest plans and profiles provided to AEC by LAN. The boundaries of each PPCA are the first “clean” (laboratory results are below laboratory detection limits and no odors were detected in either soil or groundwater) boring location beyond the impacted soil and/or groundwater or the Subject Right-of-Way boundaries. The following is a summary of the revised PPCAs.

- **PPCA #1:** This PPCA was determined in the 2017 Limited ESA-II and extends from Station 1+95.3 to Station 3+63.7 (Figures 4a and 4b, 5 and 6 in Appendix A). Benzene, toluene, m- & p-xylenes, and methyl tertiary butyl ether contamination were detected in the groundwater and a petroleum product odor was noted in the soil of boring B-2 from 26 to 28 feet bgs near the Chevron Station at 12860 Memorial Drive. The laboratory analysis of the soil sample collected at the highest PID reading (as is standard practice) from boring B-2 did not exhibit any contaminant concentrations above laboratory detection limits, however, the highest PID measured was not at the location of the petroleum product odor. Therefore, something else (e.g. organic matter in the soil or instrument electronic drift) caused the highest PID reading. Due to the petroleum product odor in the soil, the entire soil column in the PPCA should be assumed to be contaminated in addition to the groundwater unless proven otherwise during construction activities.
- **PPCAs #2, #3, and #4:** These three PPCAs are adjacent to each other and the exact boundaries between each cannot be readily determined, and therefore are grouped together. The releases comprising these PPCAs were from dry cleaners and a former gasoline station. Soil borings/temporary monitoring wells B-7 through B-18 were drilled/installed during the Additional ESA-II. The extent of the PPCAs in the 2017 Limited ESA-II extended from Station 7+37.3 to Station 17+74.6 on the project plans and profiles (approximate extent shown on Figures 3a and 3b in Appendix A). The revised extent of the PPCAs is from Station 13+93.8 to Station 15+22.6 along Memorial Drive and from the end of the Subject Right-of-Way on West Bough Lane to the end of the Subject Right-of-Way on Broken Bough Drive (Figures 4a and 4b, 7, 8, and 9 in Appendix A; No station numbers are shown on the plans and profiles provided for the project on Broken Bough Drive and West Bough Lane.). VOCs and TPH concentrations in each of the soil and groundwater samples collected were below laboratory detection limits. However, an unidentified odor was detected in the soils from 17 to 18 and 18.5 to 19 feet bgs at boring B-14 right above and associated with some damp soil. As in PPCA #1, the soil sample collected from the highest PID did not exhibit any odor and therefore the sample collected may have missed the contamination. Therefore as a precaution, the soil from the base of the pavement to 5 feet below the deepest proposed utility in revised PPCAs #2, 3, and 4 (Figures 4a and 4b, 7, 8, and 9 in Appendix A) should be considered as contaminated. None of the groundwater samples collected during the Additional ESA-II exhibited any VOCs or TPH concentrations above laboratory detection limits. However, it should be noted that groundwater samples could only be collected from the temporary monitoring wells at borings B-15 at the border of the revised PPCAs and B-18 outside the revised PPCAs but inside the original PPCAs boundary, since these were the only wells to collect water; all the other temporary monitoring wells were dry one-quarter to one hour after drilling was completed. Groundwater was encountered during drilling at B-9, but no water collected in the completed boring or installed temporary monitoring

well. Damp soils were observed at borings B-13 at the edge revised PPCA and B-14 in the revised PPCA, but no water collected in the completed borings or installed temporary monitoring wells. It should be noted that soils in B-13 and B-14 in the revised PPCAs, and other dry borings (B-7, B-8, B-10 through B-12, B-16 and B-17) outside the revised PPCAs, but within the original PPCA could have yielded groundwater if left open for a longer period of time. Therefore during construction, groundwater could collect in these areas in trenches and auger boreholes installed and drilled during construction activities. Or some of these boring locations could yield groundwater during construction activities if the utilities are placed deeper than that shown on the plans and profiles given to AEC by LAN. If groundwater collects in a construction trench or auger borehole in the revised PPCAs, it should be considered as contaminated. If groundwater collects in any construction trench or auger borehole in areas outside the revised PPCAs, then that groundwater should be consider as contaminated, unless proven otherwise and the extent of the revised PPCAs enlarged. The vertical extent of the revised PPCAs extends from below the pavement to 5 feet below the deepest utility to be installed during construction activities in these revised PPCAs.

- **PPCA #5:** This PPCA is associated with a gasoline leak from a former Conoco station at 12699 Memorial Drive. Soil borings/temporary monitoring wells B-19 through B-24 were drilled/installed during the Additional ESA-II. The extent of the PPCA in the 2017 Limited ESA-II extended from Station 27+06.2 to Station 31+60.6 on the project plans and profiles (approximate extent shown on Figures 3a and 3b in Appendix A). The revised extent of the PPCA is from Station 28+22.5 to Station 33+09.5 along Memorial Drive and to the end of the Subject Right-of-Way on Boheme Drive (no station numbers given on plans and profiles for Boheme Drive; Figures 4a and 4b, 10 through 15 in Appendix A). Ethylbenzene, m- & p-xylenes, total xylenes, and TPH (C6-C12 and C6-C35 fractions) concentrations exceeded laboratory detection limits in the soil sample from B-22 and toluene, ethylbenzene, m- & p-xylenes, o-xylenes, total xylenes, and TPH (C6-C12 and C6-C35 fractions) concentrations exceeded laboratory detection limits in the soil sample from B-23. Very high PID readings and slight to very strong petroleum product odors were detected in some of the soils from B-22 and B-23 and a petroleum product odor was detected in some of the soils in B-24 (Lab results were nondetected which is believed to be because the soil sample was collected at the highest PID reading which was not where the odors were detected). Benzene, toluene, ethylbenzene, m- & p-xylenes, total xylenes, and TPH (C6-C12 and C6-C35 fractions) concentrations exceeded laboratory detection limits in the groundwater sample from B-22 and benzene, toluene, ethylbenzene, m- & p-xylenes, o-xylenes, total xylenes, and TPH (C6-C12 and C6-C35 fractions) concentrations exceeded laboratory detection limits in the groundwater sample from B-23. In addition, a petroleum product odor was detected in the groundwater sample of B-22, B-23, and B-24. The vertical extent of the revised PPCA extends from below the pavement to 5 feet below the deepest utility to be installed during construction activities in the revised PPCA.
- **PPCA #6:** This PPCA is associated with a dry cleaner leak from MW Cleaners/Pro Cleaners at 12534 Memorial Drive and a VCP site at 12601 Memorial Drive. Soil borings/temporary monitoring wells B-25 through B-31 were drilled/installed during the Additional ESA-II. The extent of the 2017 PPCA was from Station 42+40.4 to Station 49+72.8 (the eastern end of the Subject Right-of-Way) along Memorial Drive

(approximate extent shown on Figures 3a and 3b in Appendix A). The revised extent of the PPCA is from Station 42+21.5 to Station 49+72.8 (the eastern end of the Subject Right-of-Way) along Memorial Drive and to the edge of the Subject Right-of-Way on Sommerset Place, Legend Lane, Tallowood Road and the driveway entrance due south of Tallowood Drive (no station numbers given on plans and profiles for Sommerset Place, Legend Lane, Tallowood Road and the driveway entrance due south of Tallowood Road; Figures 4a and 4b, 16 through 19 in Appendix A). A slight undetermined odor was detected in some of the soils from B-26, B-27, B-29, and B-30. The VOC compound cis-1, 2-dichloroethylene was detected above laboratory detection limits in the soil sample from boring B-30. The soil sample (no groundwater encountered) from boring B-31 was inadvertently analyzed after holding times had expired, however this does not have much impact on the extent of the revised PPCA. The soil in boring B-30 was contaminated with a VOC. If the soil sample from B-31 had been analyzed within its holding time and all concentrations were below laboratory detection limits, the B-31 would have been the eastern extent of the revised PPCA. If concentrations of the sample were above laboratory detection limits, then the eastern extent of the revised PPCA would have been the eastern end of the Subject Right-of-Way. According to the plans and profiles received there is only approximately 14 feet difference between the two different boundaries. Given this situation, AEC has placed the edge of the revised PPCA at the more conservative eastern end of the Subject Right-of-Way. The VOCs and TPH concentrations in the groundwater samples collected from each temporary monitoring well installed were below their respective laboratory detection limits. No odors were detected in the groundwater. The vertical extent of the revised PPCA is the soil from beneath the pavement to 5 feet below the deepest utility to be installed at the revised PPCA. Based on the laboratory analyses results, the groundwater does not appear to be contaminated to the depths the borings were drilled to (5 feet below the deepest nearest proposed utility). Contamination from dry cleaners is denser than water and sinks deeper with time, therefore, AEC believes that groundwater deeper than the proposed deepest utility may be contaminated. If during construction, the utilities are set at a depth deeper than drilled during the additional ESA-II, then the groundwater encountered should be considered as contaminated unless proven otherwise during construction activities.

For this construction project, the contractor should follow the Texas Department of Transportation (TxDOT) Specifications for 1) safety (workers and public), 2) selections of proper pipes and gaskets, and 3) legal disposal of the wastes generated.

### **8.0 LIMITATIONS**

The information and conclusions provided in this report are based on a general knowledge of the Subject Right-of-Way; information provided to AEC about this project and the results of the ESA-I (2015); Limited ESA-II assessment performed in 2017; and the Additional ESA-II assessment performed in 2019. This report documents the concentrations of petroleum products and hazardous substances detected in the respective soil and groundwater samples collected and analyzed during the ESA-II assessments. AEC cannot guarantee that not finding evidence of contamination means that contamination does not exist within the Subject Right-of-Way. There is a possibility that contaminated soil and groundwater may exist in the Subject Right-of-Way that were not detected during the limited ESA-II investigation due to the limited number and

location of the soil borings and temporary monitoring wells, samples collected, contaminants analyzed, how long the borings remained open and the temporary monitoring wells remained in place, and the cost and time constraints of the project. As a result, the goal of this investigation is to reduce, but not eliminate uncertainty regarding the presence of petroleum product and hazardous substance contamination in the Subject Right-of-Way.

This investigation was performed using the standard level of care and diligence normally practiced by recognized professional environmental and engineering firms in this area, presently performing similar services under similar circumstances.

This report has been prepared specifically to investigate and assess if petroleum products or hazardous substances present in RECs are also present in the Subject Right-of-Way. The conclusions presented in this report should not be relied upon for other sites without additional evaluation and/or investigation. This document is not intended to constitute or substitute for legal counsel or guidance in connection with contamination in the Subject Right-of-Way, nor does it constitute a toxicological report on health effects from potential exposure to contamination during construction in the Subject Right-of-Way.

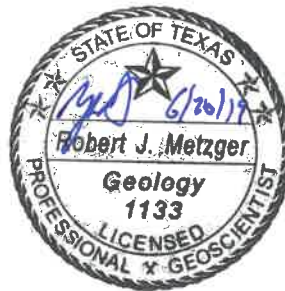
#### 9.0 QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONAL

Robert J. Metzger, CAPM, P.G., AEC Senior Geologist, conducted the additional and limited ESA-II assessments in general accordance with in general accordance with ASTM Standard Practice E1903 and Chapter 11 – Geotechnical and Environmental Requirements of the COH Department of Public Works and Engineering Design Manual (07-01-2016) for the 2017 Limited ESA-II and the COH Department of Public Works and Engineering Infrastructure Design Manual (07-01-2018) for this 2019 report. He has conducted ESA-IIs for numerous City of Houston Department of Public Works and Engineering and other engineering projects. His qualifications are further described in his resume in Appendix F.



Prepared by:

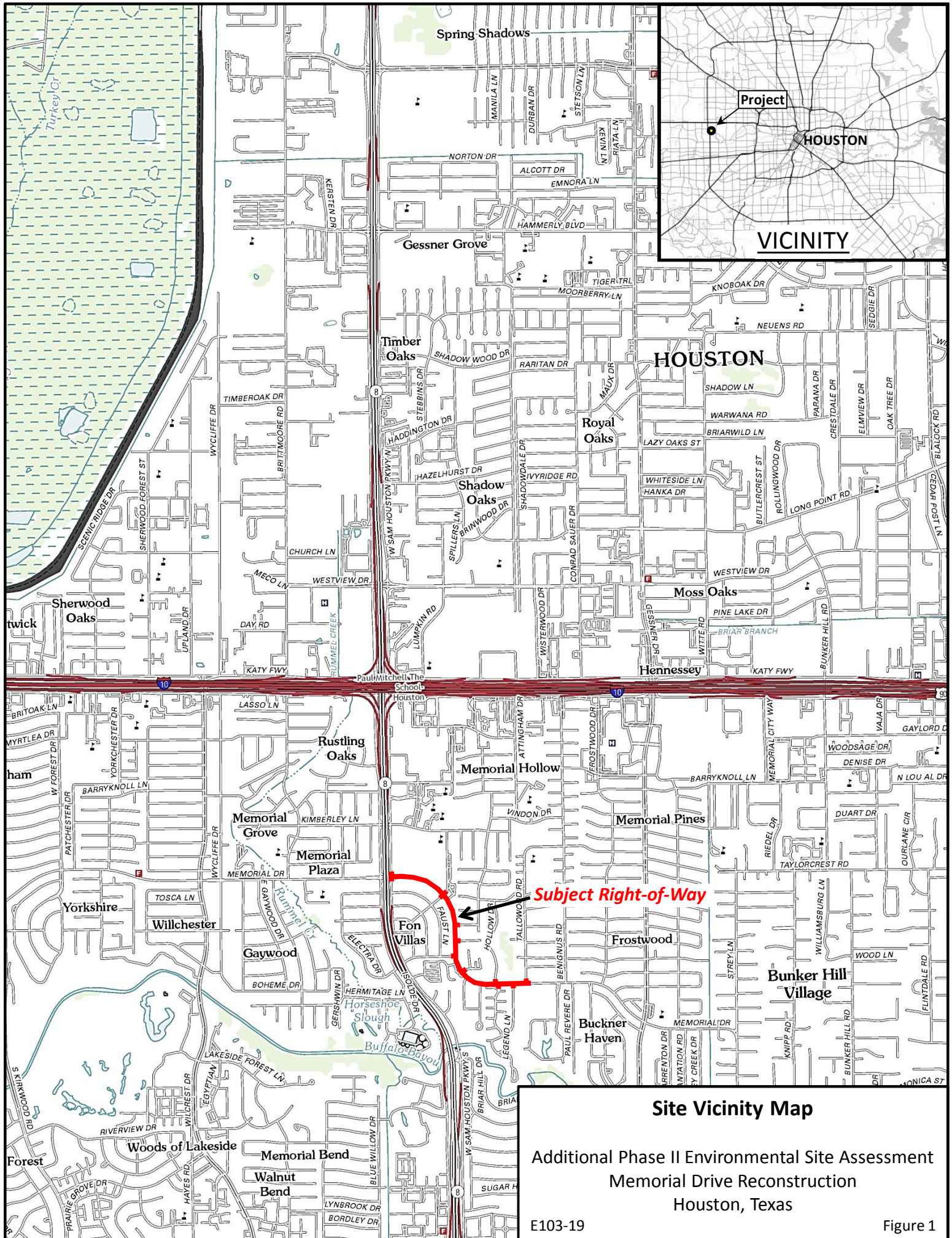
Robert J. Metzger, CAPM, P.G.



**Limited Phase II Environmental Site Assessment  
Memorial Drive Reconstruction, Houston, Texas**

**APPENDIX A**

**FIGURES, SITE INFORMATION, AND SOIL BORING SUMMARY TABLE**





**Site Vicinity Map**

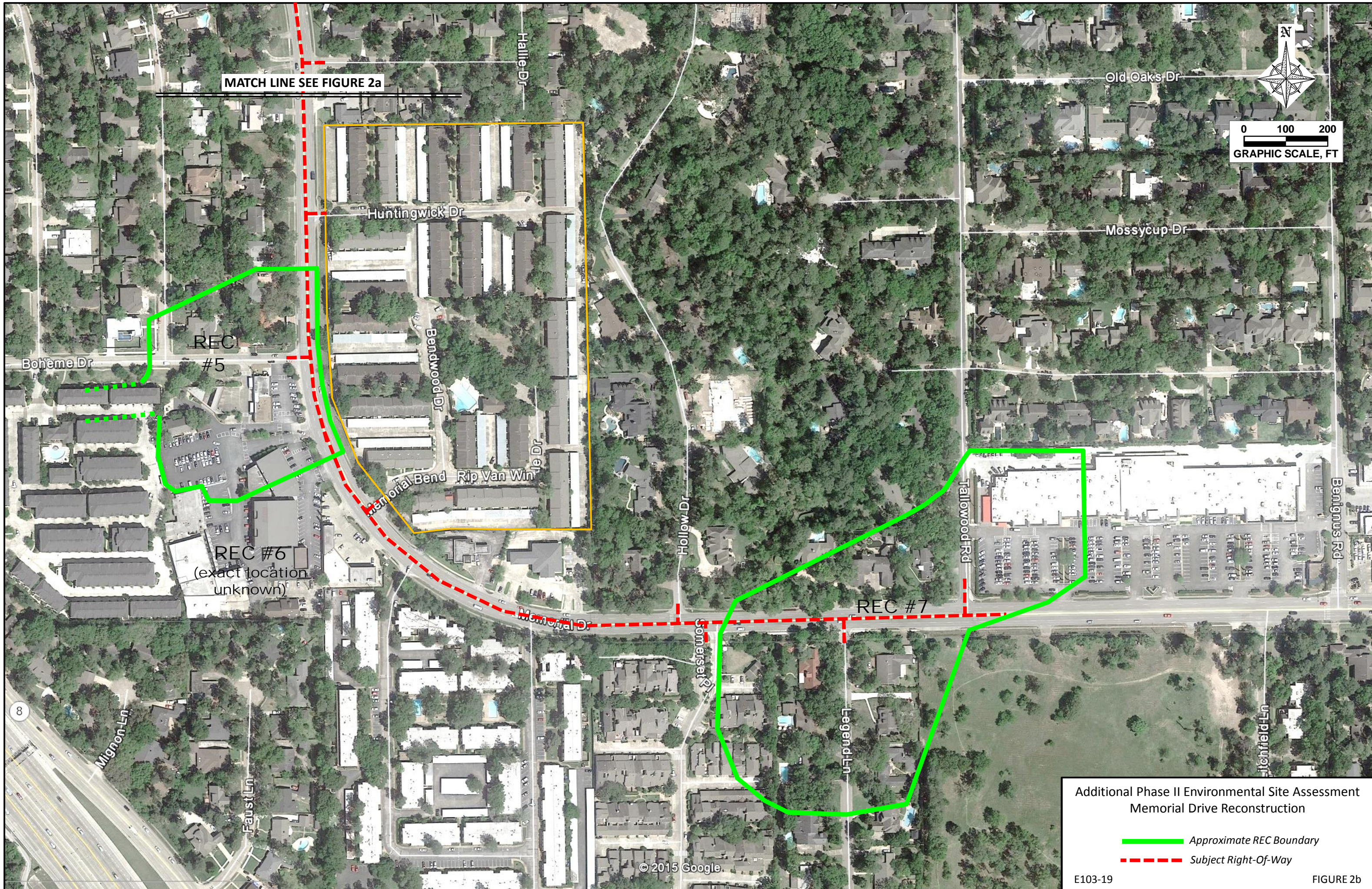
Additional Phase II Environmental Site Assessment  
 Memorial Drive Reconstruction  
 Houston, Texas





Additional Phase II Environmental Site Assessment  
Memorial Drive Reconstruction

-  Approximate REC Boundary
-  Subject Right-Of-Way



MATCH LINE SEE FIGURE 2a





0 100 200  
GRAPHIC SCALE, FT

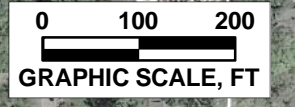
REC #5

REC #6  
(exact location unknown)

REC #7

Additional Phase II Environmental Site Assessment  
Memorial Drive Reconstruction

-  Approximate REC Boundary
-  Subject Right-Of-Way



**PPCA #1**

**PPCA #2**

**PPCA #3**

**PPCA #4**

B-1

B-2

B-3

B-7

B-8

B-9

B-10

B-11

B-12

B-13

B-14

B-15

B-16

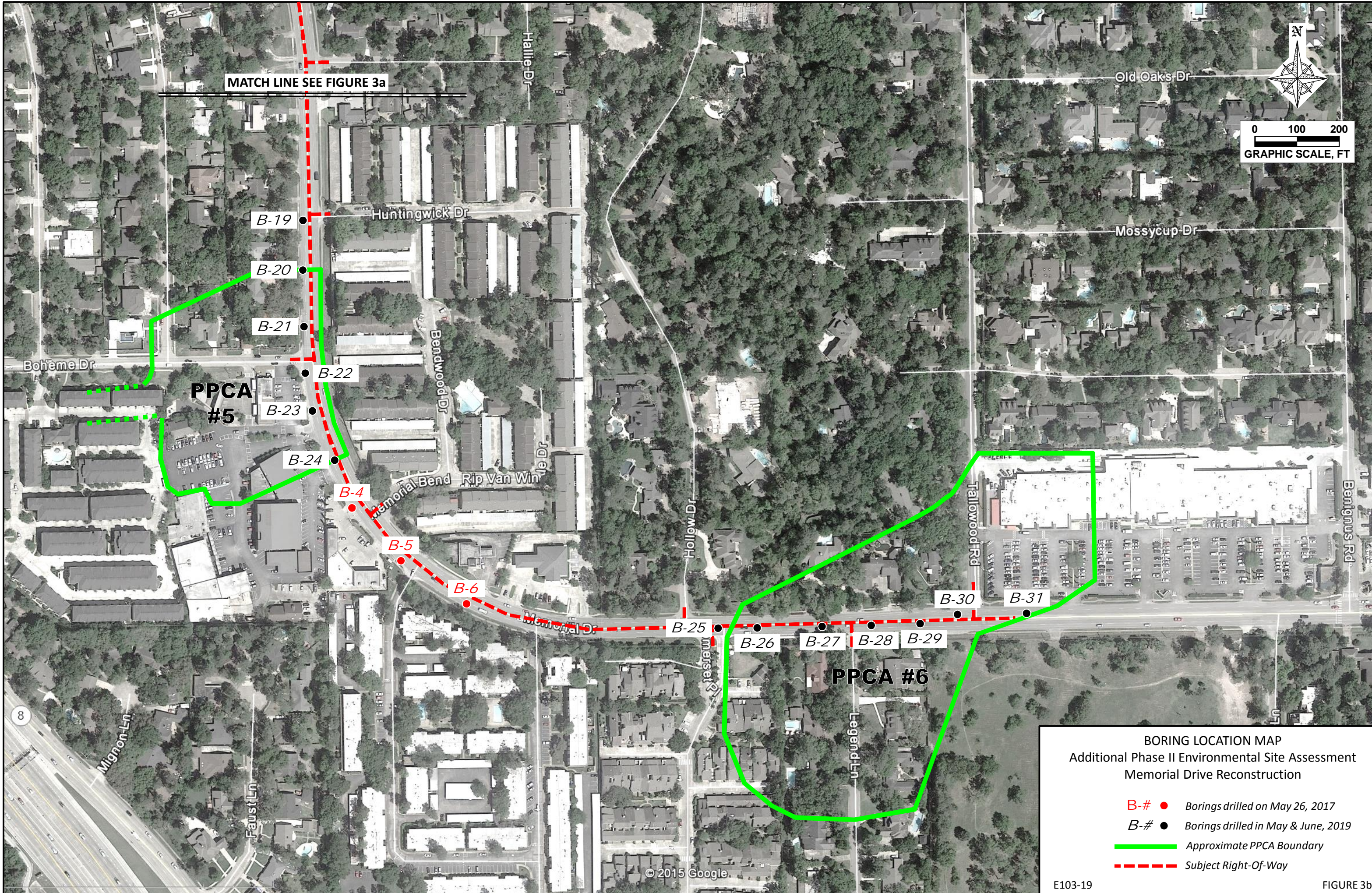
B-17

B-18

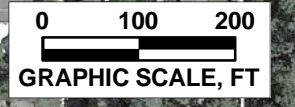
**BORING LOCATION MAP**  
 Additional Phase II Environmental Site Assessment  
 Memorial Drive Reconstruction

- B-# ●** Borings drilled on May 26, 2017
- B-# ●** Borings drilled in May & June, 2019
- Approximate PPCA Boundary
- - -** Subject Right-Of-Way

**MATCH LINE SEE FIGURE 3b**



MATCH LINE SEE FIGURE 3a



**PPCA #5**

**PPCA #6**

**BORING LOCATION MAP**  
 Additional Phase II Environmental Site Assessment  
 Memorial Drive Reconstruction

- B-# Borings drilled on May 26, 2017
- B-# Borings drilled in May & June, 2019
- Approximate PPCA Boundary
- - - Subject Right-Of-Way

TABLE 1 (p 1 of 11)

DRILLING AND SAMPLING SUMMARY TABLE

Memorial Drive Reconstruction Between West Sam Houston Parkway and Tallowood Road

Boring Number	Total Depth, feet*	Pavement and base thickness	Soil Sample Interval, feet*	Primary Soil Type	Sand and Silt Zones feet*	Groundwater Encountered During Drilling feet*	Ground-water Sampled	Comments/Analyses
B-1 (2017)	20	Concrete:10, Unspecified base: 15	14-15	Sandy Clay	10.8 to 10.9 (sand and gravel)	None encountered	No	Benzene, toluene, ethylbenzene, and xylenes (BTEX); methyl ethyl butyl ether (MTBE); and total petroleum hydrocarbons (TPH) 1005
B-2 (2017)	28	Asphalt: 8.75, Unspecified base: 25.25	23-24	Clay	23.6 to 25 and 26 to 28 (silty sand)	26; at 25.66 one-half hour after drilling.	Yes	BTEX, MTBE, and TPH 1005; petroleum product odor in soil from 26 to 28 feet bgs.
B-3 (2017)	28	Asphalt: 4.75, Unspecified base: 25.25	21-22	Clay	21.3 to 24 (sandy clay and clayey sand); 24 to 27 and 27.7 to 28 (sand)	Unknown due to infiltration of surface water trapped beneath the pavement; at 24.03 one quarter hour after drilling	No	BTEX, MTBE, and TPH 1005

\* Feet below grade

(Continued next page)

TABLE 1 (p 2 Of 11)

DRILLING AND SAMPLING SUMMARY TABLE

Memorial Drive Reconstruction Between West Sam Houston Parkway and Tallowood Road

Boring Number	Total Depth, feet*	Pavement and base thickness	Soil Sample Interval, feet*	Primary Soil Type	Sand and Silt Zones feet*	Groundwater Encountered During Drilling feet*	Ground-water Sampled	Comments/Analyses
B-4 (2017)	27	Asphalt: 7.5, Unspecified base: 7.5	25-26	Clay	17.3 to 20 and 20.9 to 26.7 (silty sand); 26.7 to 27 (sandy clay and clayey sand)	21.92; at 18.47 one quarter hour after drilling	No	Volatile organic compounds (VOC) and TPH 1005
B-5 (2017)	27	Asphalt: 6, Unspecified base: 13.5	20-21	Sandy Clay	8.4 to 10, 19.4 to 20, and 22.8 to 25 (silty sand); 21.3 to 22.8 (sandy silt); and 26.3 to 27 (sand)	21.25; at 21.31 one quarter hour after drilling	Yes	VOC and TPH 1005
B-6 (2017)	26	Asphalt: 11, Base: 3	20-22	Sandy Clay	10.6 to 11.9 (sandy clay and clayey sand); 21.2 to 21.6 (clayey sandy silt); and 21.6 to 24 (interlayered silty sand and clayey sand)	21.58; dry one quarter hour after drilling	No	VOC and TPH 1005

\* Feet below grade

(Continued next page)

**TABLE 1 (p 3 of 11)**

**DRILLING AND SAMPLING SUMMARY TABLE**

**SOUTH LOCKWOOD PAVING AND DRAINAGE FROM HARRISBURG BOULEVARD TO 1,200 FEET NORTH OF CRITES STREET**

Boring Number	Total Depth, feet*	Pavement and base thickness	Soil Sample Interval, feet*	Primary Soil Type	Sand and Silt Zones feet*	Groundwater Encountered During Drilling feet*	Ground-water Sampled	Comments/Analyses
<b>B-7</b>	17	Asphalt: 5, Stabilized shell base: 6.75	1 to 2	Clay	5 to 10 (some sand in clay) 16 to 16.2 (clayey sand) and 16.2 to 17 (silty sand)	None encountered	No	VOC and TPH 1005
<b>B-8</b>	16	Asphalt: 4.75, Stabilized shell base: 7	7 to 8	Clay	10.6 to 15 (sand partings)	None encountered	No	VOC and TPH 1005
<b>B-9</b>	16	Asphalt: 4.25, Stabilized shell base: 7	13 to 14	Clay	10.9 to 15 (sand partings)	15; borehole dry after 0.5 hours after drilling	No	VOC and TPH 1005
<b>B-10</b>	16	Asphalt: 5, Stabilized shell base: 7	6 to 7	Sandy and Silty Clay	10 to 16 (sand partings)	None encountered	No	VOC and TPH 1005
<b>B-11</b>	15	Asphalt: 6.5, Stabilized shell base: 7.5	12 to 13	Sandy and Silty Clay	2.5 to 5 (sand pockets and partings) and 10 to 15 (sand partings)	None encountered	No	VOC and TPH 1005
<b>B-12</b>	15	Asphalt: 5, Stabilized shell base: 7	8 to 9	Sandy Clay	None encountered	None encountered	No	VOC and TPH 1005

\* Feet below grade

(Continued next page)

TABLE 1 (p 4 of 11)

DRILLING AND SAMPLING SUMMARY TABLE

Memorial Drive Reconstruction Between West Sam Houston Parkway and Tallowood Road

Boring Number	Total Depth, feet*	Pavement and base thickness	Soil Sample Interval, feet*	Primary Soil Type	Sand and Silt Zones feet*	Groundwater Encountered During Drilling feet*	Ground-water Sampled	Comments/Analyses
B-13	20	Asphalt: 6, Stabilized shell base: 5.5	7 to 8	Sandy Clay	0.9 to 5 (few sand layers in clay); 7.9 to 10 (some sand in the clay); 10 to 15 (sand partings and pockets); 18.8 to 19.6 (clayey sand); and 19.6 to 20 (silty sand)	Damp at 19.2 to 20, but dry one-half hour after drilling	No	VOC and TPH 1005
B-14	19	Asphalt: 7, Stabilized shell base: 6	13 to 14	Sandy Clay	5 to 10 (sand pockets and partings); 10 to 18.5 (sand partings); and 18.5 to 20 (silt sand)	Damp at 18.5 to 19, but dry one-quarter hour after drilling	No	VOC and TPH 100; unidentified slight odor in soil from 17 to 18 and unidentified odor from 18.5 to 19
B-15	21	Asphalt: 13.75	13 to 14	Sandy Clay	18.4 to 21 (silty sand)	Damp at 18.4 to 21; water at 16.67 one-quarter hour after drilling	Yes	VOC and TPH 1005

\* Feet below grade

(Continued next page)



**TABLE 1 (p 5 of 11)**

**DRILLING AND SAMPLING SUMMARY TABLE  
Memorial Drive Reconstruction Between West Sam Houston Parkway and Tallowood Road**

Boring Number	Total Depth, feet*	Pavement and base thickness	Soil Sample Interval, feet*	Primary Soil Type	Sand and Silt Zones feet*	Wet Zones, feet*	Ground-water Sampled	Comments/Analyses
B-16	21	Asphalt: 5, Stabilized crushed limestone base: 7	16 to 17	Clay	15 to 19.3 (sand pockets and partings) and (20 to 21) some sand	None encountered	No	VOC and TPH 1005
B-17	20	Asphalt: 4, Loosely bonded crushed limestone and sand base: 7.5	13 to 14	Sandy Clay	15 to 20 (sand pockets and partings)	None encountered	No	VOC and TPH 1005
B-18	20	Asphalt: 3.5, Stabilized crushed limestone base ): 8	17 to 18	Sandy Clay	10 to 14.3 (sand partings and seams) and 14.3 to 15 (silty sand)	14.3; at 18.83 three-quarter hour after drilling	Yes	VOC and TPH 1005

\* Feet below grade

(Continued next page)

TABLE 1 (p 6 of 11)

DRILLING AND SAMPLING SUMMARY TABLE

Memorial Drive Reconstruction Between West Sam Houston Parkway and Tallowood Road

Boring Number	Total Depth, feet*	Pavement and base thickness	Soil Sample Interval, feet*	Primary Soil Type	Sand and Silt Zones feet*	Groundwater Encountered During Drilling feet*	Ground-water Sampled	Comments/Analyses
B-19	20	Asphalt: 5, Stabilized crushed limestone base: 2.5 Stabilized shell: 8	13 to 14	Sandy Clay	1.3 to 5 (sand pockets and partings) 13.4 to 14.2 (clayey sand); 14.4 to 14.6 (silty sand); 17 to 17.3 (clayey silt); and 17.3 to 20 (silty sand)	17.3; at 17.25 one-half hour after drilling	Yes	BTEX, MTBE, and TPH 1005
B-20	20	Asphalt: 10.5, Stabilized shell base: 3.5	17 to 18	Sandy Clay	1.2 to 5 (sand partings) 10 to 14.3 (sand seams); 14.4 to 15 (silty sand); 15 to 18.4 (sand seams); and 18.4 to 20 (clayey sand and silty sand)	18.4; at 18.38 three-quarter hour after drilling; damp at 17 to 18.4	Yes	BTEX, MTBE, and TPH 1005

\* Feet below grade

(Continued next page)

TABLE 1 (p 7 of 11)

DRILLING AND SAMPLING SUMMARY TABLE

Memorial Drive Reconstruction Between West Sam Houston Parkway and Tallowood Road

Boring Number	Total Depth, feet*	Pavement and base thickness	Soil Sample Interval, feet*	Primary Soil Type	Sand and Silt Zones feet*	Groundwater Encountered During Drilling feet*	Ground-water Sampled	Comments/Analyses
B-21	21	Asphalt: 7, Stabilized crushed limestone base: 8	16 to 17	Sandy Clay	1.3 to 2.3 (sand and clay) 5.5 to 7.7 (some sand); 17.5 to 17.8 (sandy clay and clayey sand); and 17.8 to 20 (silty sand)	17.8; at 19.30 one-quarter hour after drilling	Yes	BTEX, MTBE, and TPH 1005
B-22	26	Asphalt: 5, Stabilized shell base: 7	23 to 24	Silty Sand	6 to 12.3 (sand partings and seams) 12.3 to 16.3 (silty sand with clay pockets); 17.3 to 20 (silty sand); 22.3 to 26 (silty sand)	17.3; at 19.39 one-half hour after drilling	Yes	BTEX, MTBE, and TPH 1005; very high soil PIDs; strong petroleum product odor in soil from 17.3 to 20 and very strong petroleum product odor in soil from 22.3 to 26; petroleum product odor in groundwater

\* Feet below grade

(Continued next page)

TABLE 1 (p 8 of 11)

DRILLING AND SAMPLING SUMMARY TABLE

Memorial Drive Reconstruction Between West Sam Houston Parkway and Tallowood Road

Boring Number	Total Depth, feet*	Pavement and base thickness	Soil Sample Interval, feet*	Primary Soil Type	Sand and Silt Zones feet*	Groundwater Encountered During Drilling feet*	Ground-water Sampled	Comments/Analyses
B-23	26	Asphalt: 4.75, Concrete: 6	23 to 24	Sandy Clay	0.9 to 5 (sand partings) 5 to 8.5 (some sand in the clay); 10 to 15 (sand partings and seams); 17.7 to 20 (silty sand); and 22.4 to 26 (silty sand)	22.4; at 19.63 one-quarter hour after drilling	Yes	BTEX, MTBE and TPH 1005; high soil PID; slight petroleum product odor in soil from 20 to 22.4; very strong petroleum product odor in soil from 22.4 to 26; petroleum product odor in groundwater
B-24	26	Asphalt: 6, Loose shell base: 4	20 to 22	Sandy Clay	0.8 to 3.7 (some sand) 5 to 10 (sand partings); 10 to 15 (sand partings, seams, and layers); 16 to 17.2 (clayey sand); 17.2 to 20 (silty sand); and 21 to 23.3 (silty sand)	21; at 19.86 one-half hour after drilling	Yes	BTEX, MTBE, and TPH 1005; petroleum product odor in soil from 16 to 20; petroleum product odor in groundwater

\* Feet below grade

(Continued next page)

TABLE 1 (p 9 of 11)

DRILLING AND SAMPLING SUMMARY TABLE

Memorial Drive Reconstruction Between West Sam Houston Parkway and Tallowood Road

Boring Number	Total Depth, feet*	Pavement and base thickness	Soil Sample Interval, feet*	Primary Soil Type	Sand and Silt Zones feet*	Groundwater Encountered During Drilling feet*	Ground-water Sampled	Comments/Analyses
B-25	25	Asphalt: 8, Loose shell base: 8.5	9 to 10	Sandy Clay	3.4 to 5 (sand partings) 5 to 10 (some sand partings); 11 to 13.3 (silty sand with some clay); 17.8 to 20 (clayey sand and silty sand); and 21.1 to 25 (silty sand with some clay)	25; at 18.5 one- quarter hour after drilling	Yes	VOC and TPH 100;
B-26	26	Asphalt: 10.75, Loose shell base: 8.25	25 to 26	Silty Sandy Clay and Sandy Silty Clay, each with clayey silt	3.9 to 5 (silty sand) 5 to 20 (clayey silt in sandy and silty clay); 20 to 25 (sandy clay and clayey sand); 25 to 26 (silty sand)	25; at 18.88 one- quarter hour after drilling; Damp at 7.7 to 25	Yes	VOC and TPH 100; slight unidentified odor in soils from 1.6 to 3.5 and 5 to 15

\* Feet below grade

(Continued next page)

TABLE 1 (p 10 of 11)

DRILLING AND SAMPLING SUMMARY TABLE

Memorial Drive Reconstruction Between West Sam Houston Parkway and Tallowood Road

Boring Number	Total Depth, feet*	Pavement and base thickness	Soil Sample Interval, feet*	Primary Soil Type	Sand and Silt Zones feet*	Groundwater Encountered During Drilling feet*	Ground-water Sampled	Comments/Analyses
B-27	24	Asphalt: 10.5, Stabilized shell base: 7.5	6 to 7	Sandy Clay	3 to 4 (sand pockets) 10 to 15 (sand seams) 18.2 to 20 (silty sand with some clay); and 20.8 to 24 (silty sand)	18.2; at 18.29 one-quarter hour after drilling	Yes	VOC and TPH 100; slight unidentified odor in soil from 16 to 18.2
B-28	24	Asphalt: 9.5, Loose shell base: 9	18 to 20	Sandy Clay	5 to 10 (sandy clay and clayey sand) 10.6 to 12.3 (silty sand with clay); 21 to 24 (silty sand and silt)	21; at 18.08 one-quarter hour after drilling; damp at lower portion of the 12.3 to 15 foot interval	Yes	VOC and TPH 100

\* Feet below grade

(Continued next page)

TABLE 1 (p 11 of 11)

DRILLING AND SAMPLING SUMMARY TABLE

Memorial Drive Reconstruction Between West Sam Houston Parkway and Tallwood Road

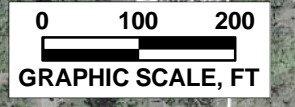
Boring Number	Total Depth, feet*	Pavement and base thickness	Soil Sample Interval, feet*	Primary Soil Type	Sand and Silt Zones feet*	Groundwater Encountered During Drilling feet*	Ground-water Sampled	Comments/Analyses
B-29	24	Asphalt: 9, Loose shell base: 3	17 to 18	Clay	1 to 8.8 (sand-lined slickenside and silt partings) 10 to 16 (sand partings); 16 to 20 (sand partings and pockets); 21.1 to 24 (silty sand)	22.6; at 17.79 one-quarter hour after drilling; also wet beneath pavement	Yes	VOC and TPH 100; slight unidentified odor in soil from 1 to 8.8 and 16 to 20
B-30	25	Asphalt: 14	18 to 19	Sandy Clay	11.8 to 12.8 (sand seams and layers) 24.1 to 25 (sand)	6.2 to 6.4, 10 to 11.75, and 24.1; at 17.83 one- quarter hour after drilling; damp soil 16.3 to 16.8	Yes	VOC and TPH 100; slight unidentified odor in soil from 4-10
B-31	12	Asphalt: 13	8 to 9	Sandy Clay	5 to 12 (sand partings)	None Encountered	No	VOC and TPH 100

\* Feet below grade



**PPCA #1**

**PPCAs #2, #3, and #4**

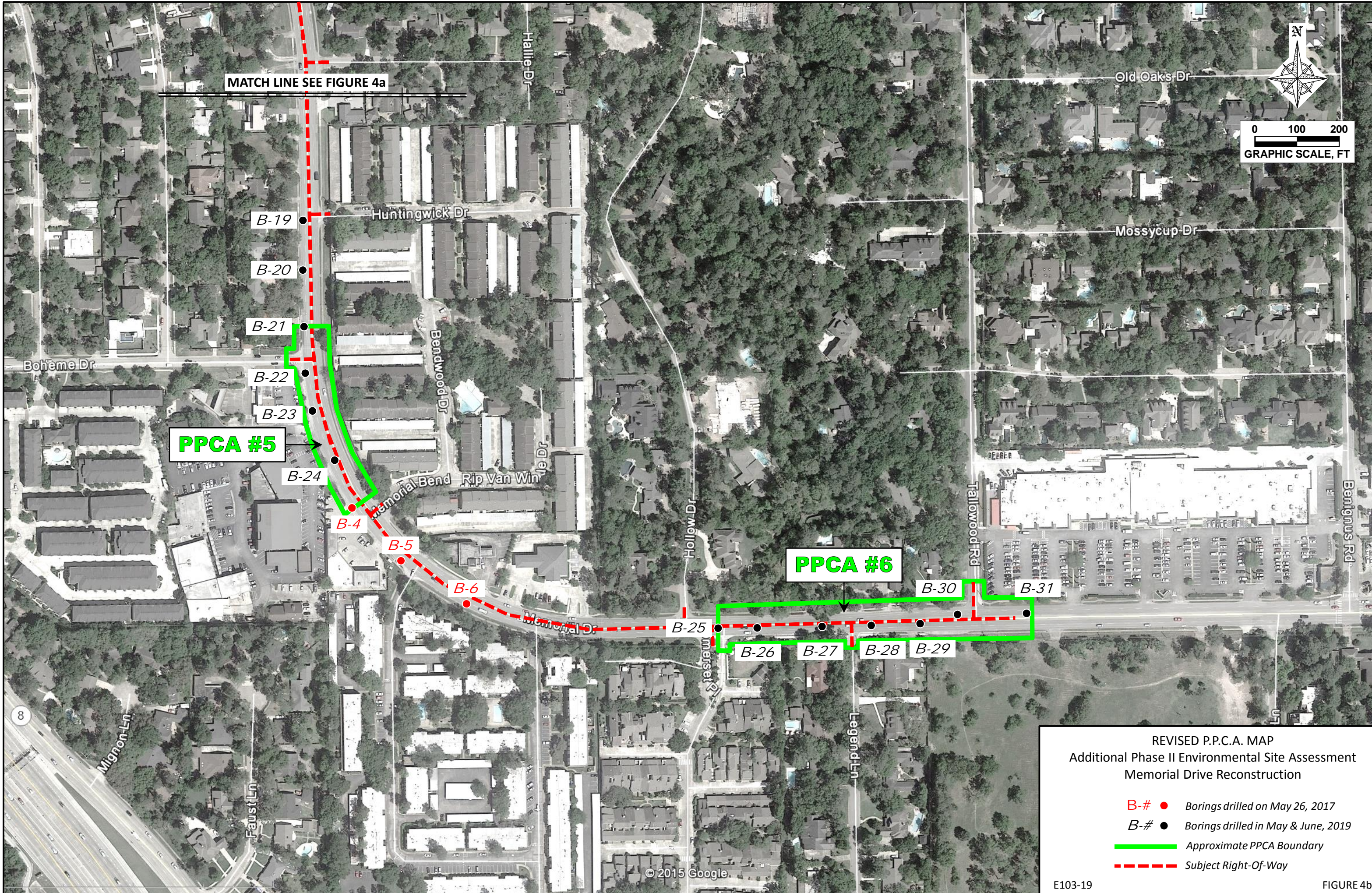


**REVISED P.P.C.A. MAP**  
 Additional Phase II Environmental Site Assessment  
 Memorial Drive Reconstruction

- B-# ●** Borings drilled on May 26, 2017
- B-# ●** Borings drilled in May & June, 2019
- Approximate PPCA Boundary
- - -** Subject Right-Of-Way

**MATCH LINE SEE FIGURE 4b**





MATCH LINE SEE FIGURE 4a



0 100 200  
GRAPHIC SCALE, FT

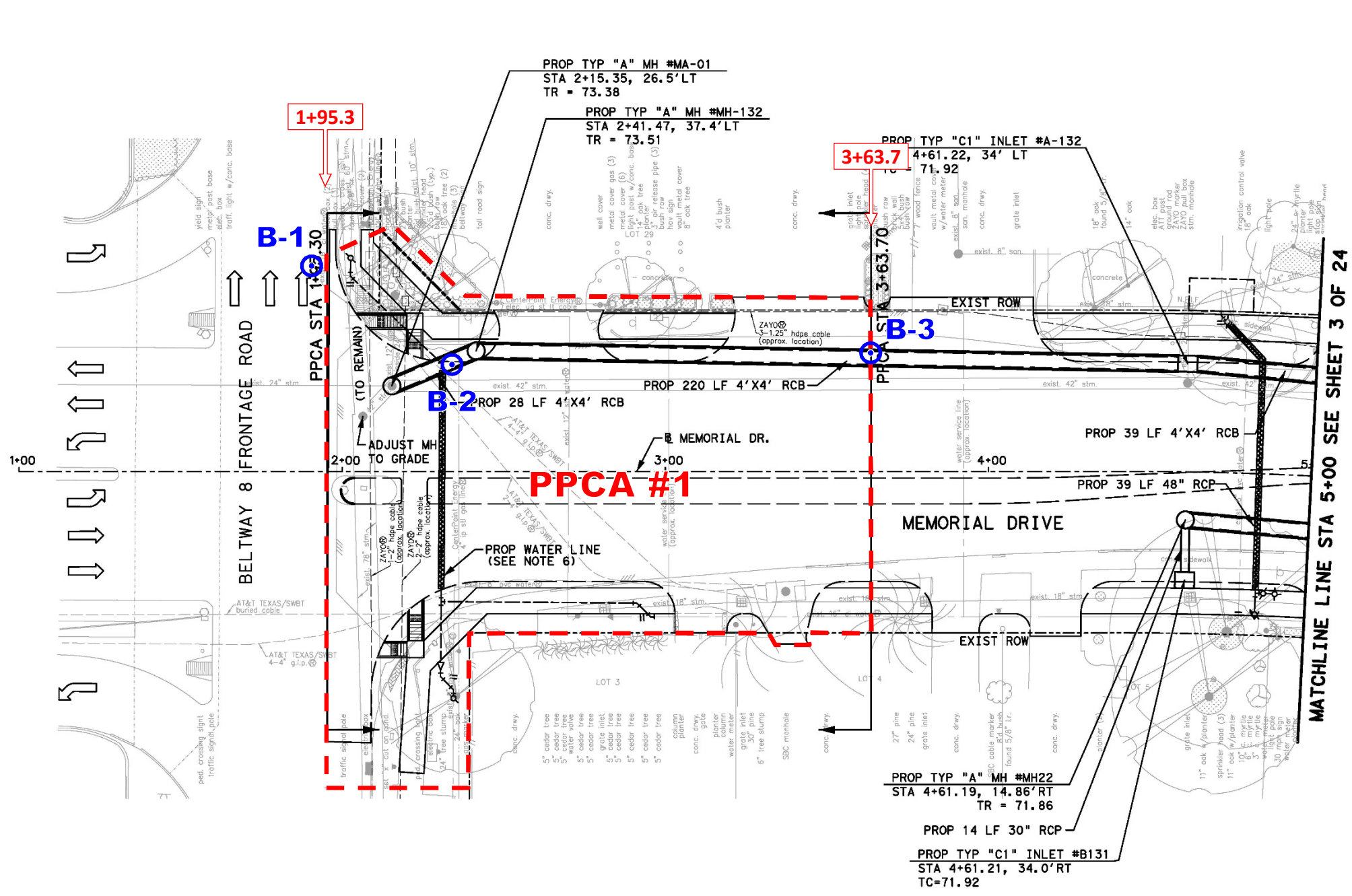
**PPCA #5**

**PPCA #6**

REVISED P.P.C.A. MAP  
Additional Phase II Environmental Site Assessment  
Memorial Drive Reconstruction

- B-# ● Borings drilled on May 26, 2017
- B-# ● Borings drilled in May & June, 2019
- Approximate PPCA Boundary
- - - Subject Right-Of-Way

NOTE: BORINGS B-1, B-2, AND B-3 WERE DRILLED IN 2017.

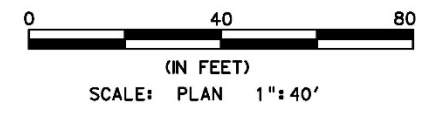


**LEGEND**

**B-#** Soil Boring Location

Proposed P.P.C.A. (location is approximate— see report text for details)

2. CONTRACTOR TO MAINTAIN POSITIVE DRAINAGE DURING CONSTRUCTION AND FIELD VERIFY FLOWLINES OF ALL TO CONNECTIONS TO EXISTING DRAINAGE STRUCTURES TO VERIFY POSITIVE DRAINAGE TO PROPOSED STORM SEWER PRIOR TO CONSTRUCTION.
3. REFER TO TXDOT HOUSTON DISTRICT BRIDGE MISCELLANEOUS SEWER DETAILS (MSD) FOR PIPE COLLAR, PIPE BEND, AND OTHER PIPE AND MANHOLE INLET CAP CONNECTION DETAILS.
4. REFER TO MODIFIED STANDARDS FOR TYPE "A/B" MANHOLES AND TYPE "C1" INLETS WHERE STRUCTURE IS NOTED "ON BOX" IN PLAN & PROFILE.
5. REFER TO TXDOT STATEWIDE STANDARD BRIDGE FOR BOX CULVERT CAST-IN-PLACE (SCP-MD & MC-MD), PRECAST JUNCTION BOX (PJB), AND PRECAST (SCP-MD) MISCELLANEOUS DETAILS FOR PROPOSED BENDS IN BOXES.
6. REFER TO PAVEMENT IMPROVEMENTS PLAN & PROFILE, WATERLINE & SAN SWR PLAN & PROFILE, SIGNING AND PAVEMENT MARKINGS PLAN SHEETS FOR MORE INFORMATION.
7. REFER TO LATERAL PROFILE SHEETS FOR PROPOSED FLOWLINES FOR STUB-INS.



**60% INTERIM REVIEW ONLY**  
 DOCUMENT INCOMPLETE; NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION

ENGINEER: BRIAN R. WHITNEY  
 P.E. SERIAL No.: 81591  
 FIRM: LOCKWOOD, ANDREWS & NEWNAM, INC.  
 FIRM No.: F-2614  
 DATE: 3/19/2019

REV. NO.	DATE	DESCRIPTION	BY

**Lockwood, Andrews & Newnam, Inc.**  
 A LEO A DALY COMPANY FIRM REGISTRATION NO. 2614

**Texas Department of Transportation**  
 © 2018

**MEMORIAL DRIVE RECONSTRUCTION AND ACCESS MANAGEMENT**

**STORM SEWER PLAN**  
 BEGIN PROJECT TO STA 5+00

SHEET 1 OF 24


DGN	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.		
CHK DGN	6	TEXAS	120-11972-000	CS		
DWG	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG	HOU	HARRIS	0912	72	391	170


Pen Table: MEMORIAL.tbl  
 Plot Driver: c:\projectwise\mjguthrie\d0531333\MEMORIAL\_DR.pltcfp  
 Plotted on: 3/19/2019 10:20:14 AM  
 M.J.Guthrie

Design Filename: pw:\adpw.ladco.int\projectwise\Documents\Projects\120-11972-000\4-0-Production-Working\4-1-BIM-CAD\Drainage\PR-DRN\_01.dgn

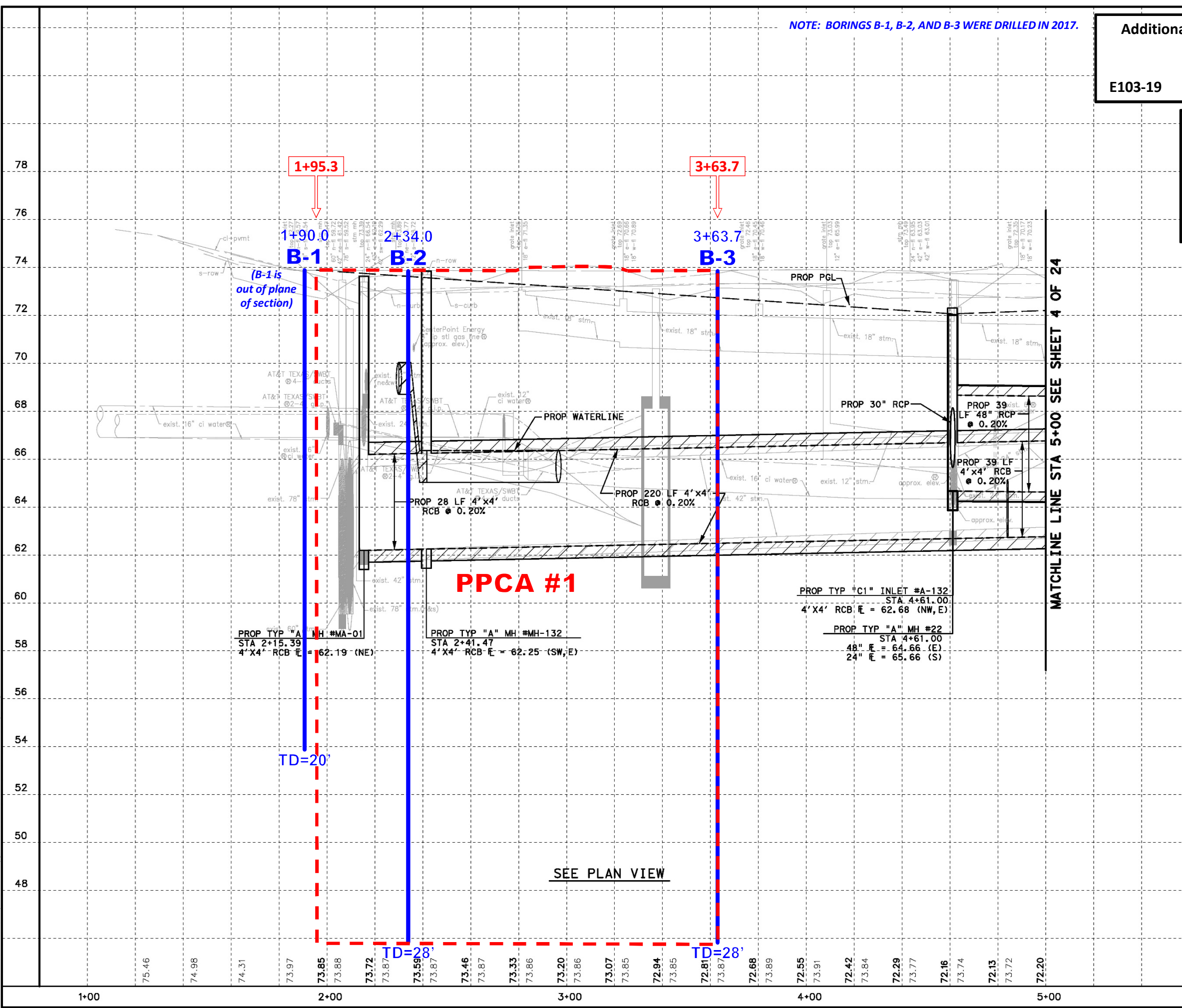
NOTE: BORINGS B-1, B-2, AND B-3 WERE DRILLED IN 2017.

**LEGEND**

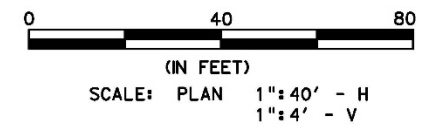
**B-#**  Soil Boring Location

 Proposed P.P.C.A.  
 (location is approximate—  
 see report text for details)

MUGuthrie  
 10:20:27 AM  
 3/19/2019  
 Plotted on:  
 Pen Table: MEMORIAL.tbl  
 Plot Driver: c:\projectwise\mjguthrie\d0531333\MEMORIAL\_DR.pltcfgr





NOTES:  
 1. REFER TO LATERAL PROFILE SHEETS FOR PROPOSED FLOWLINES FOR STUB-INS.



**60% INTERIM REVIEW ONLY**  
 DOCUMENT INCOMPLETE; NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION


ENGINEER: BRIAN R. WHITNEY  
 P.E. SERIAL No.: 81591  
 FIRM: LOCKWOOD, ANDREWS & NEWNAM, INC.  
 FIRM No.: F-2614  
 DATE: 3/19/2019


REV. NO.	DATE	DESCRIPTION	BY
 <b>Lockwood, Andrews &amp; Newnam, Inc.</b> A LEO A DALY COMPANY FIRM REGISTRATION NO. 2614			
 Texas Department of Transportation © 2018			

MEMORIAL DRIVE RECONSTRUCTION AND ACCESS MANAGEMENT						
STORM SEWER PROFILE BEGIN PROJECT TO STA 5+00						
SHEET 2 OF 24						
DWG.	REV. NO.	STATE	PROJECT NO.	HIGHWAY NO.		
CHK	6	TEXAS	120-11972-000	CS		
DWG.	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK	HOU	HARRIS	0912	72	391	171

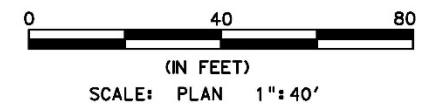
Design Filename: p:\ladpw\adco\int\projectwise\Documents\Projects\120-11972-000\4-0-Production-Working\4-1-BIM-CAD\Drainage\PR-DRN\_02.dgn

**LEGEND**

**B-#**  
 Soil Boring Location

 Proposed P.P.C.A.  
 (location is approximate—  
 see report text for details)

- CONTRACTOR TO MAINTAIN POSITIVE DRAINAGE DURING CONSTRUCTION AND FIELD VERIFY FLOWLINES OF ALL TO CONNECTIONS TO EXISTING DRAINAGE STRUCTURES TO VERIFY POSITIVE DRAINAGE TO PROPOSED STORM SEWER PRIOR TO CONSTRUCTION.
- REFER TO TXDOT HOUSTON DISTRICT BRIDGE MISCELLANEOUS SEWER DETAILS (MSD) FOR PIPE COLLAR, PIPE BEND, AND OTHER PIPE AND MANHOLE INLET CAP CONNECTION DETAILS.
- REFER TO MODIFIED STANDARDS FOR TYPE "A/B" MANHOLES AND TYPE "C1" INLETS WHERE STRUCTURE IS NOTED "ON BOX" IN PLAN & PROFILE.
- REFER TO TXDOT STATEWIDE STANDARD BRIDGE FOR BOX CULVERT CAST-IN-PLACE (SCP-MD & MC-MD), PRECAST JUNCTION BOX (PJB), AND PRECAST (SCP-MD) MISCELLANEOUS DETAILS FOR PROPOSED BENDS IN BOXES.
- REFER TO PAVEMENT IMPROVEMENTS PLAN & PROFILE, WATERLINE & SAN SWR PLAN & PROFILE, SIGNING AND PAVEMENT MARKINGS PLAN SHEETS FOR MORE INFORMATION.
- REFER TO LATERAL PROFILE SHEETS FOR PROPOSED FLOWLINES FOR STUB-INS.



**60% INTERIM REVIEW ONLY**  
 DOCUMENT INCOMPLETE; NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION

ENGINEER: BRIAN R. WHITNEY  
 P.E. SERIAL No.: 81591  
 FIRM: LOCKWOOD, ANDREWS & NEWNAM, INC.  
 FIRM No.: F-2614  
 DATE: 3/19/2019

REV. NO.	DATE	DESCRIPTION	BY

**Lockwood, Andrews & Newnam, Inc.**  
 A LEO A DALY COMPANY FIRM REGISTRATION NO. 2614

**Texas Department of Transportation**  
 © 2018

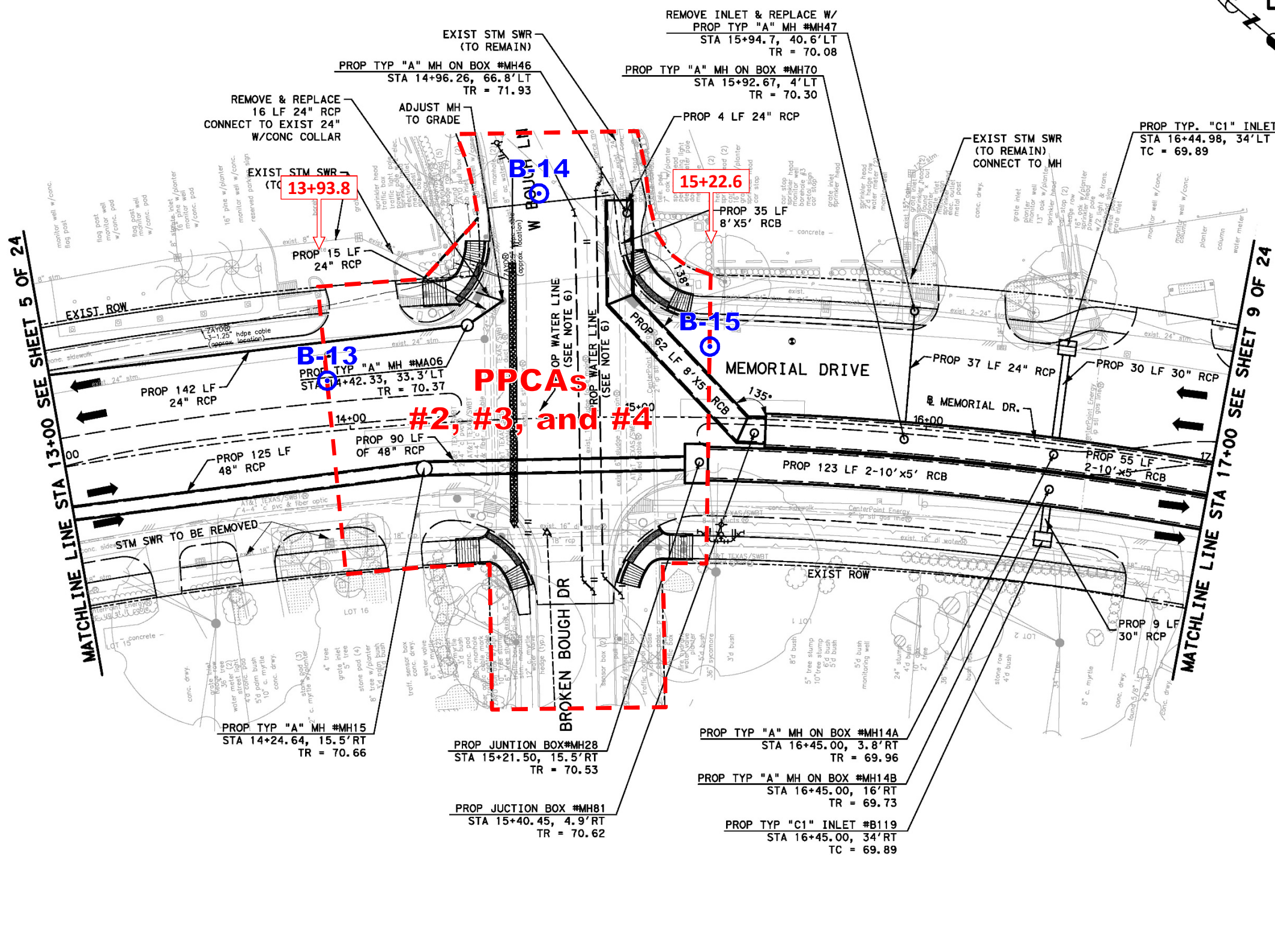
**MEMORIAL DRIVE RECONSTRUCTION AND ACCESS MANAGEMENT**

**STORM SEWER PLAN**  
 STA 13+00 TO STA 17+00

SHEET 7 OF 24


DGN.	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.		
CHK DGN	6	TEXAS	120-11972-000	CS		
DWG.	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG	HOU	HARRIS	0912	72	391	176


Pen Table: MEMORIAL.tbl Plot Driver: c:\projects\wise\mjguthrie\0531333\MEMORIAL\_DR.pltcfgr  
 Plotted on: 3/19/2019 10:21:45 AM  
 M.J.Guthrie



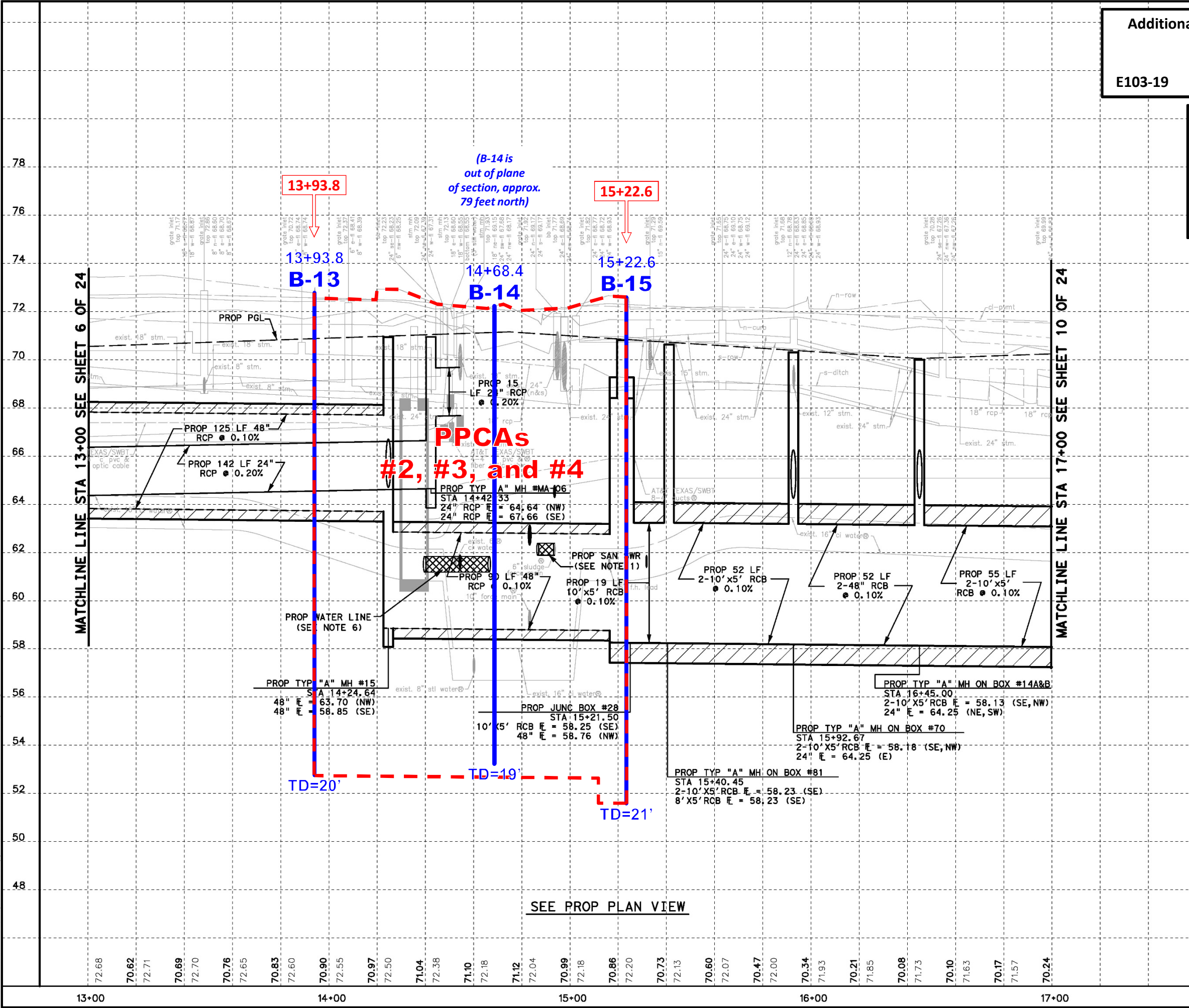
SEE PROP PROFILE VIEW

**LEGEND**

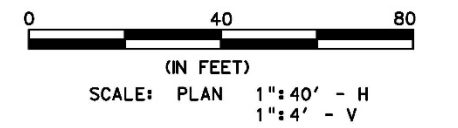
**B-#**  Soil Boring Location

 Proposed P.P.C.A.  
 (location is approximate—  
 see report text for details)

MUGuthrie  
 10:22:00 AM  
 3/19/2019  
 Plotted on:  
 Pen Table: MEMORIAL.tbl  
 Plot Driver: c:\projects\muguthrie\0531333\MEMORIAL\_DR.pltcfgr





- NOTES:**
- REFER TO PAVEMENT IMPROVEMENTS PLAN & PROFILE, WATERLINE & SAN SWR PLAN & PROFILE, SIGNING AND PAVEMENT MARKINGS PLAN SHEETS FOR MORE INFORMATION.
  - REFER TO LATERAL PROFILE SHEETS FOR PROPOSED FLOWLINES FOR STUB-INS.



**60% INTERIM REVIEW ONLY**  
 DOCUMENT INCOMPLETE: NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION

ENGINEER: BRIAN R. WHITNEY  
 P.E. SERIAL No.: 81591  
 FIRM: LOCKWOOD, ANDREWS & NEWMAN, INC.  
 FIRM No.: F-2614  
 DATE: 3/19/2019

REV. NO.	DATE	DESCRIPTION	BY
			
			

**MEMORIAL DRIVE RECONSTRUCTION AND ACCESS MANAGEMENT**

**STORM SEWER PROFILE  
 STA 13+00 TO STA 17+00**

SHEET 8 OF 24

DGN	REV. NO.	STATE	PROJECT NO.	HIGHWAY NO.
CHK	6	TEXAS	120-11972-000	CS
DWG	DIST.	COUNTY	CONT. NO.	SECT. NO.
CHK	HOU	HARRIS	0912	72
DWG			JOB NO.	SHEET NO.
			391	177

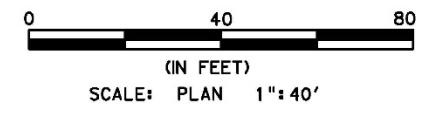
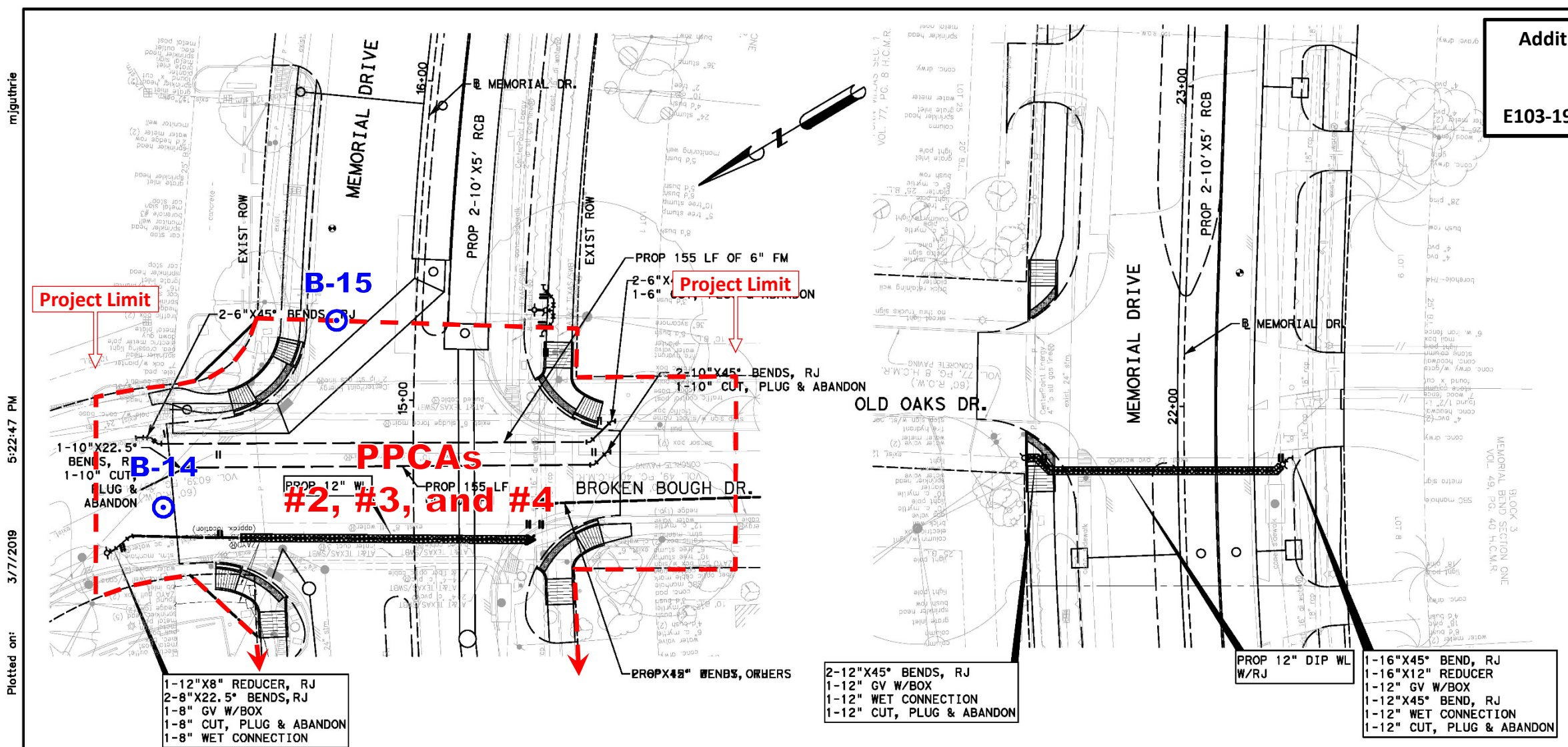
Design Filename: p:\j\adpw\adco\int\projectwise\muguthrie\0531333\MEMORIAL\_DR.pltcfgr

**LEGEND**

**B-#** Soil Boring Location

Proposed P.P.C.A. (location is approximate—see report text for details)

3. MAINTAIN WATER SERVICES TO ALL CUSTOMERS, FIRE HYDRANTS, AND INTERCONNECTIONS AS NECESSARY FOR CONSTRUCTION.
4. ABANDON EXISTING 16"/8" WL AND TRANSFER SERVICES TO PROPOSED 16"/8" WATER LINES. COORDINATE WITH PROPERTY OWNERS.
5. CONNECT TO EXIST 6" FM. USE ISOLATION FLANGES IF DISSIMILAR METALS ENCOUNTERED



**60% INTERIM REVIEW ONLY**  
 DOCUMENT INCOMPLETE: NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION

ENGINEER: MICHAEL A. SALINAS  
 P.E. SERIAL No.: 123342  
 FIRM: LOCKWOOD, ANDREWS & NEWNAM, INC.  
 FIRM No.: F 2614  
 DATE: 3/7/2019

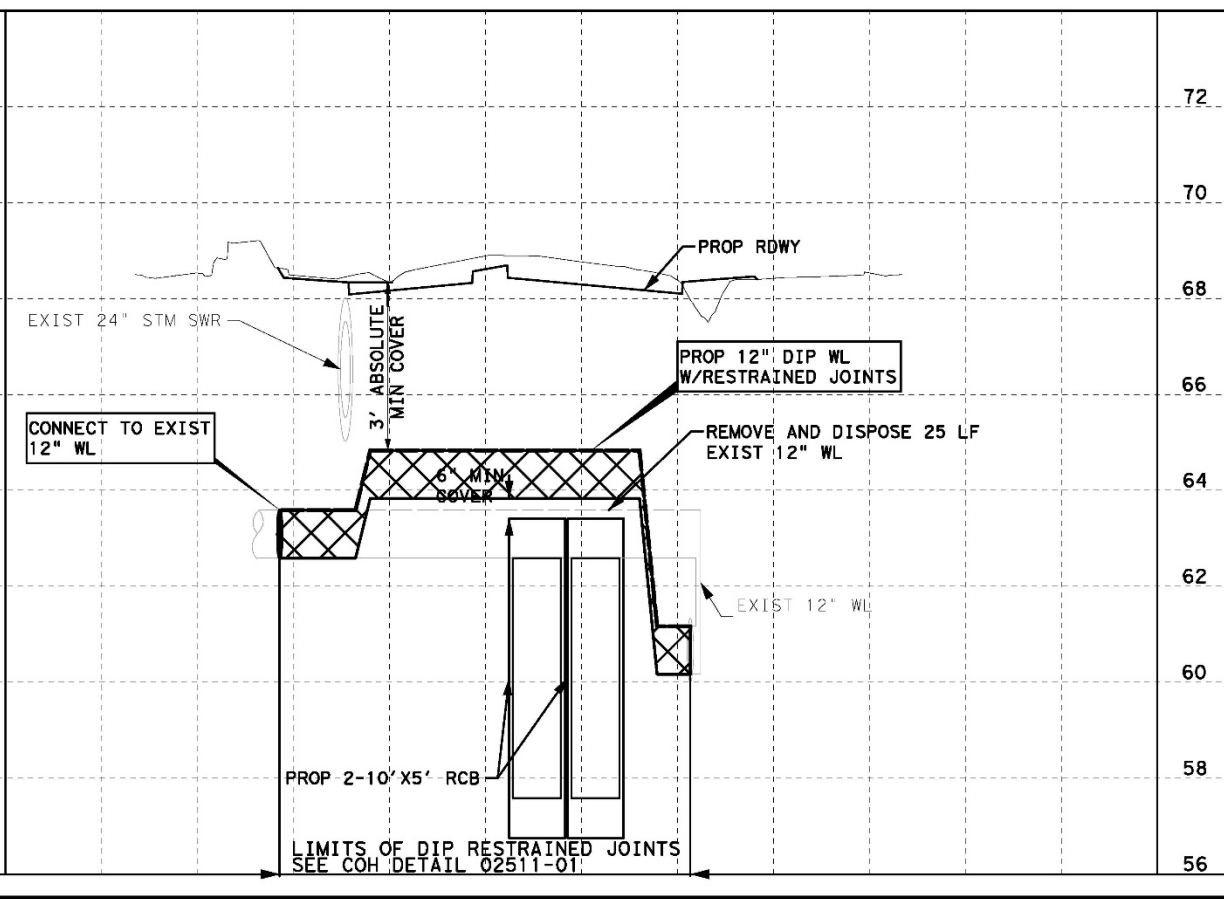
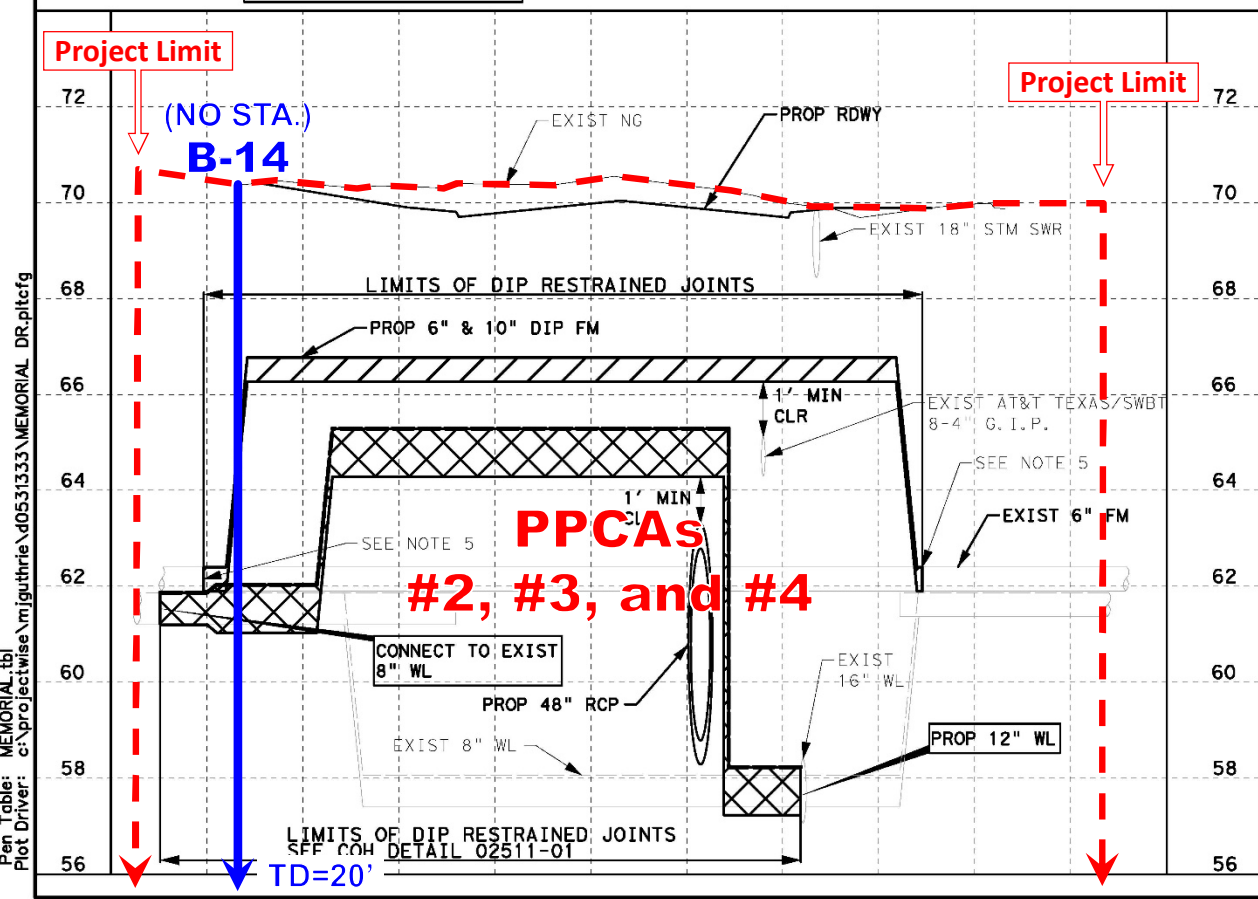
**Lockwood, Andrews & Newnam, Inc.**  
 A LEO A DALY COMPANY FIRM REGISTRATION NO. 2614

**Texas Department of Transportation**  
 © 2018

**MEMORIAL DRIVE RECONSTRUCTION AND ACCESS MANAGEMENT**  
**WATER & SAN SWR CROSSING**

SHEET 2 OF 7

DGN	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.		
CHK DGN	6	TEXAS	120-11972-000	CS		
DWG	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG	HOU	HARRIS	0912	72	391	236



Pen Table: MEMORIAL.tbl  
 Plot Driver: c:\projects\wise\mjguthrie\40531333\MEMORIAL\_DR.pltcfgr  
 Plotted on: 3/7/2019 5:22:47 PM  
 mjguthrie

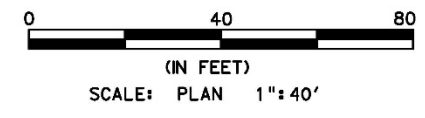
Design Filename: p:\adpw\adco\int\projectwise\mjguthrie\40531333\MEMORIAL\_DR.pltcfgr

**LEGEND**

**B-#** Soil Boring Location

Proposed P.P.C.A. (location is approximate— see report text for details)

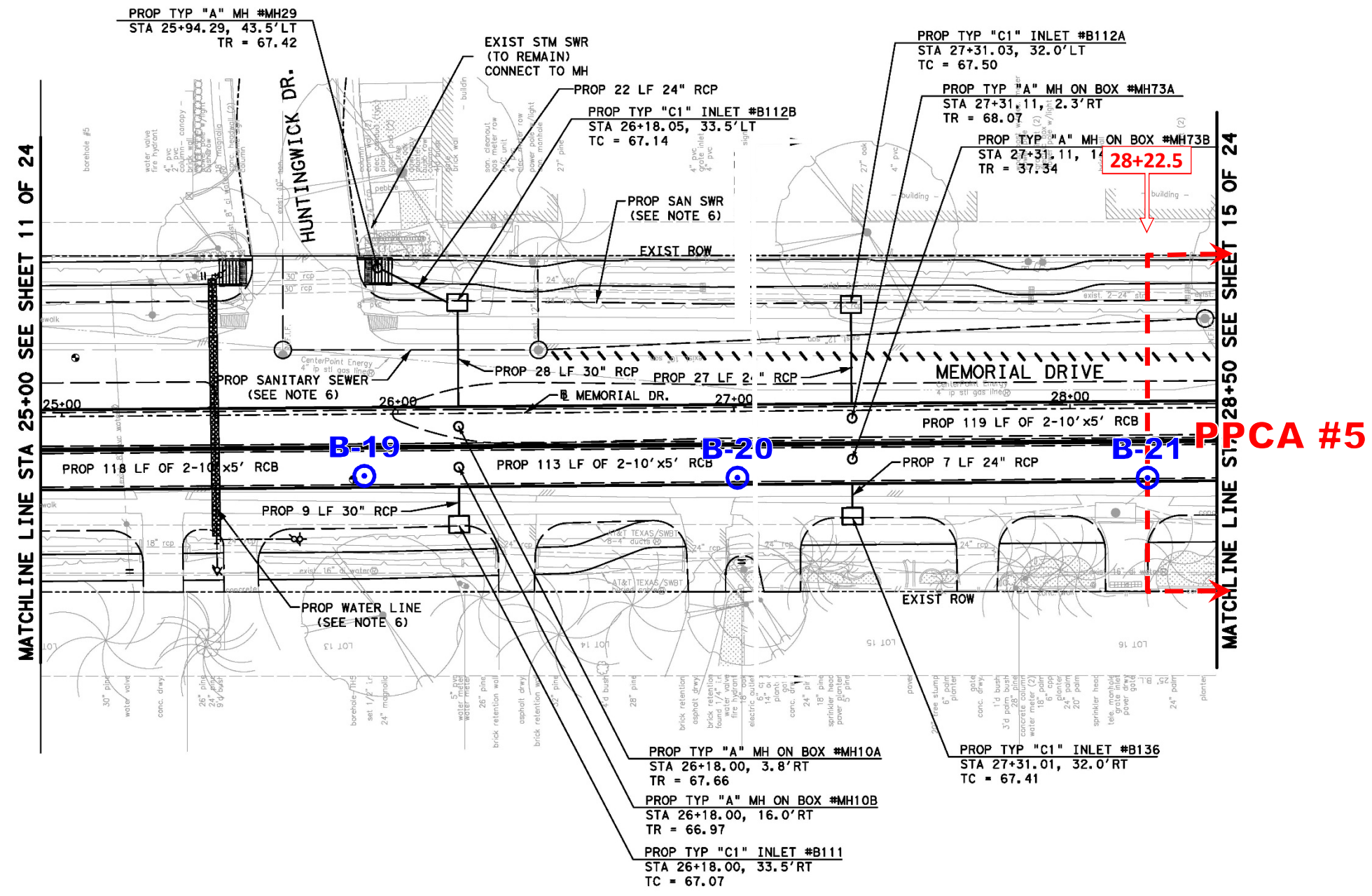
2. CONTRACTOR TO MAINTAIN POSITIVE DRAINAGE DURING CONSTRUCTION AND FIELD VERIFY FLOWLINES OF ALL TO CONNECTIONS TO EXISTING DRAINAGE STRUCTURES TO VERIFY POSITIVE DRAINAGE TO PROPOSED STORM SEWER PRIOR TO CONSTRUCTION.
3. REFER TO TXDOT HOUSTON DISTRICT BRIDGE MISCELLANEOUS SEWER DETAILS (MSD) FOR PIPE COLLAR, PIPE BEND, AND OTHER PIPE AND MANHOLE INLET CAP CONNECTION DETAILS.
4. REFER TO MODIFIED STANDARDS FOR TYPE "A/B" MANHOLES AND TYPE "C1" INLETS WHERE STRUCTURE IS NOTED "ON BOX" IN PLAN & PROFILE.
5. REFER TO TXDOT STATEWIDE STANDARD BRIDGE FOR BOX CULVERT CAST-IN-PLACE (SCP-MD & MC-MD), PRECAST JUNCTION BOX (PJB), AND PRECAST (SCP-MD) MISCELLANEOUS DETAILS FOR PROPOSED BENDS IN BOXES.
6. REFER TO PAVEMENT IMPROVEMENTS PLAN & PROFILE, WATERLINE & SAN SWR PLAN & PROFILE, SIGNING AND PAVEMENT MARKINGS PLAN SHEETS FOR MORE INFORMATION.
7. REFER TO LATERAL PROFILE SHEETS FOR PROPOSED FLOWLINES FOR STUB-INS.



**60% INTERIM REVIEW ONLY**  
 DOCUMENT INCOMPLETE; NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION

ENGINEER: BRIAN R. WHITNEY  
 P.E. SERIAL No.: 81591  
 FIRM: LOCKWOOD, ANDREWS & NEWNAM, INC.  
 FIRM No.: F-2614  
 DATE: 3/19/2019

REV. NO.	DATE	DESCRIPTION	BY						
<b>Lockwood, Andrews &amp; Newnam, Inc.</b> A LEO A DALY COMPANY <span style="float: right;">FIRM REGISTRATION NO. 2614</span>									
<b>Texas Department of Transportation</b> © 2018									
<b>MEMORIAL DRIVE RECONSTRUCTION AND ACCESS MANAGEMENT</b>  <b>STORM SEWER PLAN</b> STA 25+00 TO STA 28+50									
SHEET 13 OF 24									
DGN	FED. RD. DIV. NO.	STATE	PROJECT NO.		HIGHWAY NO.				
CHK	6	TEXAS	120-11972-000		CS				
DWG	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.			
CHK	HOU	HARRIS	0912	72	391	182			





SEE PROFILE VIEW

Pen Table: MEMORIAL.tbl  
 Plot Driver: c:\projectwise\mjguthrie\d0531333\MEMORIAL\_DR.pltcfgr  
 Plotted on: 3/19/2019 10:23:31 AM  
 MjGuthrie

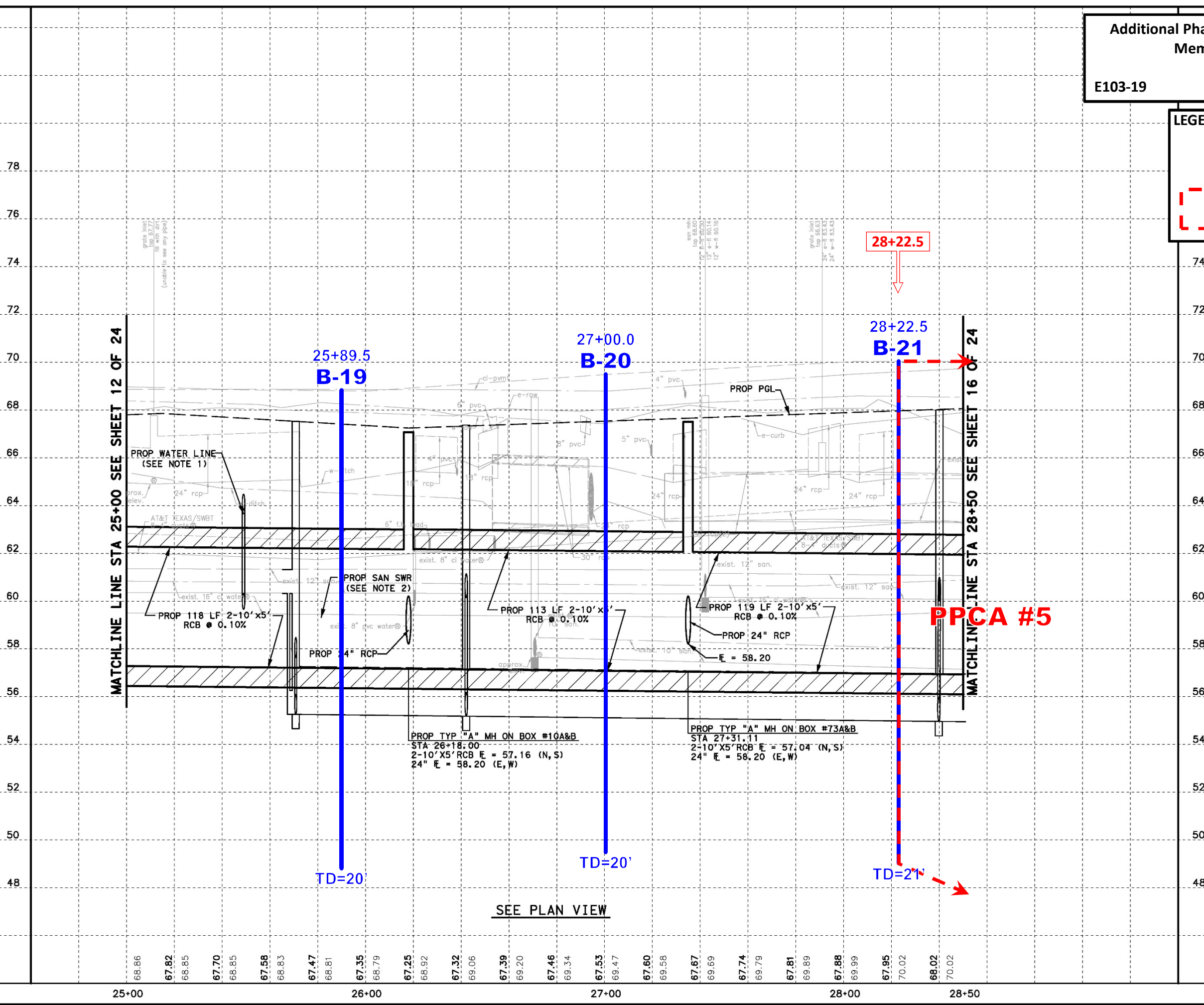
Design Filename: p:\ladpw\adco\int\projectwise\Documents\Projects\120-11972-000\4-0-Production-Working\4-1-BIM-CAD\Drainage\PR-DRN\_13.dgn

**LEGEND**

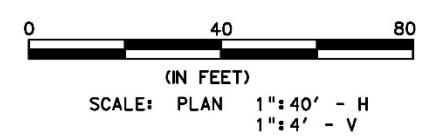
**B-#**  
 Soil Boring Location

 Proposed P.P.C.A.  
 (location is approximate—  
 see report text for details)

MUGuthrie  
 10:23:49 AM  
 3/19/2019  
 Plotted on:  
 Pen Table: MEMORIAL.tbl  
 Plot Driver: c:\projects\muguthrie\0531333\MEMORIAL\_DR.pltcfgr



- NOTES:**
- REFER TO PAVEMENT IMPROVEMENTS PLAN & PROFILE, WATERLINE & SAN SWR PLAN & PROFILE, SIGNING AND PAVEMENT MARKINGS PLAN SHEETS FOR MORE INFORMATION.
  - REFER TO LATERAL PROFILE SHEETS FOR PROPOSED FLOWLINES FOR STUB-INS.



**60% INTERIM REVIEW ONLY**  
 DOCUMENT INCOMPLETE: NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION

ENGINEER: BRIAN R. WHITNEY  
 P.E. SERIAL No.: 81591  
 FIRM: LOCKWOOD, ANDREWS & NEWMAN, INC.  
 FIRM No.: F-2614  
 DATE: 3/19/2019

**Lockwood, Andrews & Newnam, Inc.**  
 A LEO A DALY COMPANY FIRM REGISTRATION NO. 2614

**Texas Department of Transportation**  
 © 2018

**MEMORIAL DRIVE RECONSTRUCTION AND ACCESS MANAGEMENT**

**STORM SEWER PROFILE STA 25+00 TO STA 28+50**

SHEET 14 OF 24

CHK DGN	REV. NO.	DATE	DESCRIPTION	BY
CHK DGN	6			

CHK DGN	REV. NO.	STATE	PROJECT NO.	HIGHWAY NO.
DWG	DIST.	COUNTY	CONT. NO.	SECT. NO.
CHK DGN		HOU	0912	72
				JOB NO.
				391
				SHEET NO.
				183

Design Filename: p:\cad\pw\laco\int\projectwise\muguthrie\0531333\MEMORIAL\_DR.dwg

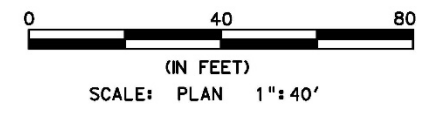


**LEGEND**

**B-#** Soil Boring Location

Proposed P.P.C.A. (location is approximate— see report text for details)

2. CONTRACTOR TO MAINTAIN POSITIVE DRAINAGE DURING CONSTRUCTION AND FIELD VERIFY FLOWLINES OF ALL TO CONNECTIONS TO EXISTING DRAINAGE STRUCTURES TO VERIFY POSITIVE DRAINAGE TO PROPOSED STORM SEWER PRIOR TO CONSTRUCTION.
3. REFER TO TXDOT HOUSTON DISTRICT BRIDGE MISCELLANEOUS SEWER DETAILS (MSD) FOR PIPE COLLAR, PIPE BEND, AND OTHER PIPE AND MANHOLE INLET CAP CONNECTION DETAILS.
4. REFER TO MODIFIED STANDARDS FOR TYPE "A/B" MANHOLES AND TYPE "C1" INLETS WHERE STRUCTURE IS NOTED "ON BOX" IN PLAN & PROFILE.
5. REFER TO TXDOT STATEWIDE STANDARD BRIDGE FOR BOX CULVERT CAST-IN-PLACE (SCP-MD & MC-MD), PRECAST JUNCTION BOX (PJB), AND PRECAST (SCP-MD) MISCELLANEOUS DETAILS FOR PROPOSED BENDS IN BOXES.
6. REFER TO PAVEMENT IMPROVEMENTS PLAN & PROFILE, WATERLINE & SAN SWR PLAN & PROFILE, SIGNING AND PAVEMENT MARKINGS PLAN SHEETS FOR MORE INFORMATION.
7. REFER TO LATERAL PROFILE SHEETS FOR PROPOSED FLOWLINES FOR STUB-INS.



**60% INTERIM REVIEW ONLY**  
 DOCUMENT INCOMPLETE; NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION

ENGINEER: BRIAN R. WHITNEY  
 P.E. SERIAL No.: 81591  
 FIRM: LOCKWOOD, ANDREWS & NEWNAM, INC.  
 FIRM No.: F-2614  
 DATE: 3/19/2019

REV. NO.	DATE	DESCRIPTION	BY

**Lockwood, Andrews & Newnam, Inc.**  
 A LEO A DALY COMPANY FIRM REGISTRATION NO. 2614

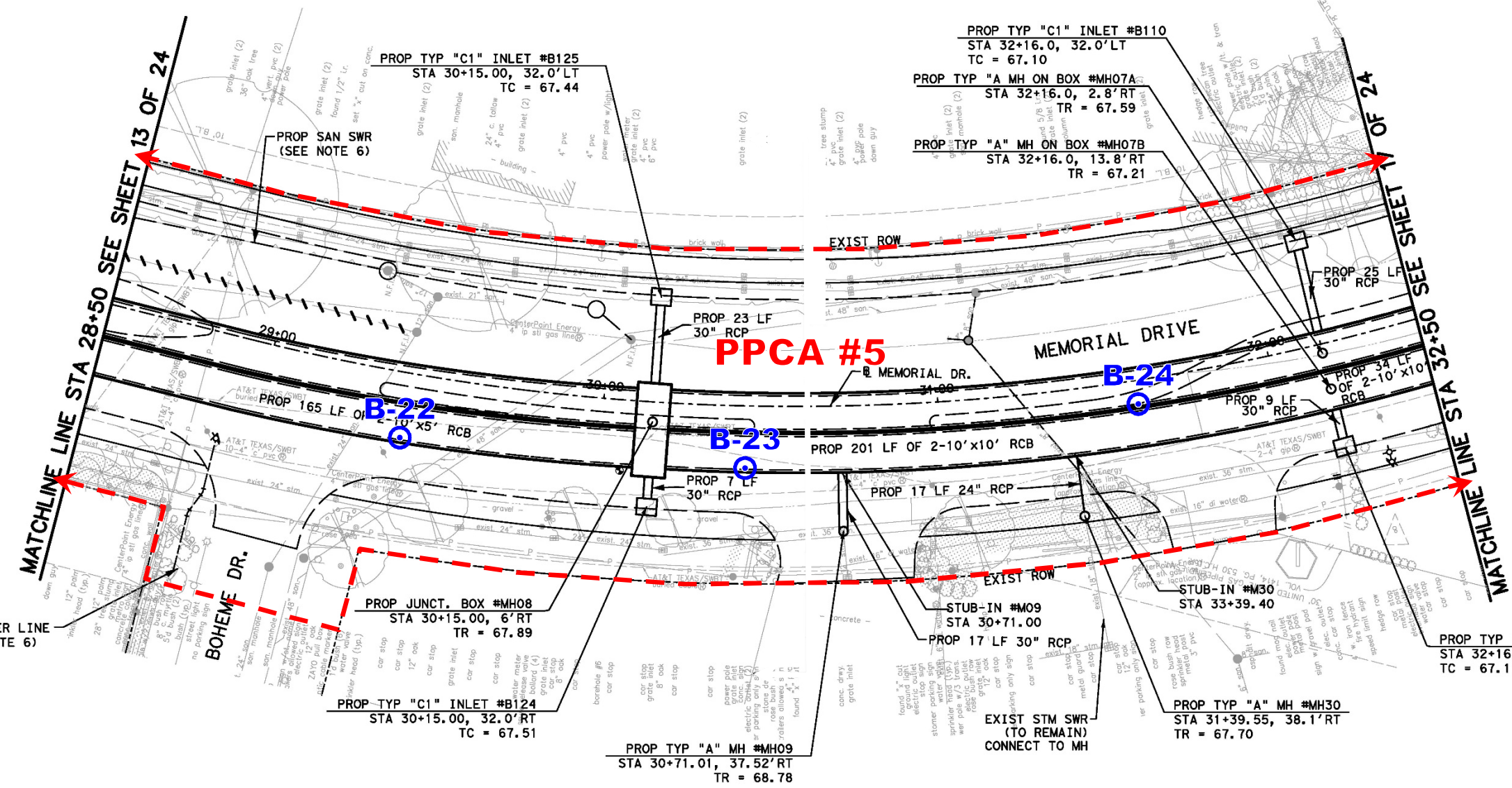
**Texas Department of Transportation**  
 © 2018

**MEMORIAL DRIVE RECONSTRUCTION AND ACCESS MANAGEMENT**

**STORM SEWER PLAN**  
 STA 28+50 TO STA 32+50

SHEET 15 OF 24

DGN	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.		
CHK DGN	6	TEXAS	120-11972-000	CS		
DWG	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG	HOU	HARRIS	0912	72	391	184



SEE PROFILE VIEW

Pen Table: MEMORIAL.tbl  
 Plot Driver: c:\projectwise\mjguthrie\d0531333\MEMORIAL\_DR.pltcfp  
 Plotted on: 3/19/2019 10:24:11 AM  
 MJGuthrie

Design Filename: p:\l\adpw\laco\int\projectwise\Documents\Projects\120-11972-000\4-0-Production-Working\4-1-BIM-CAD\Drainage\PR-DRN 15.dgn



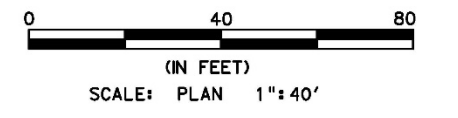
NOTE: BORINGS B-4, B-5, AND B-6 WERE DRILLED IN 2017.

**LEGEND**

**B-#** Soil Boring Location

Proposed P.P.C.A. (location is approximate— see report text for details)

2. CONTRACTOR TO MAINTAIN POSITIVE DRAINAGE DURING CONSTRUCTION AND FIELD VERIFY FLOWLINES OF ALL TO CONNECTIONS TO EXISTING DRAINAGE STRUCTURES TO VERIFY POSITIVE DRAINAGE TO PROPOSED STORM SEWER PRIOR TO CONSTRUCTION.
3. REFER TO TXDOT HOUSTON DISTRICT BRIDGE MISCELLANEOUS SEWER DETAILS (MSD) FOR PIPE COLLAR, PIPE BEND, AND OTHER PIPE AND MANHOLE INLET CAP CONNECTION DETAILS.
4. REFER TO MODIFIED STANDARDS FOR TYPE "A/B" MANHOLES AND TYPE "C1" INLETS WHERE STRUCTURE IS NOTED "ON BOX" IN PLAN & PROFILE.
5. REFER TO TXDOT STATEWIDE STANDARD BRIDGE FOR BOX CULVERT CAST-IN-PLACE (SCP-MD & MC-MD), PRECAST JUNCTION BOX (PJB), AND PRECAST (SCP-MD) MISCELLANEOUS DETAILS FOR PROPOSED BENDS IN BOXES.
6. REFER TO PAVEMENT IMPROVEMENTS PLAN & PROFILE, WATERLINE & SAN SWR PLAN & PROFILE, SIGNING AND PAVEMENT MARKINGS PLAN SHEETS FOR MORE INFORMATION.
7. REFER TO LATERAL PROFILE SHEETS FOR PROPOSED FLOWLINES FOR STUB-INS.



**60% INTERIM REVIEW ONLY**  
DOCUMENT INCOMPLETE; NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION

ENGINEER: MERRILL R. WARDING  
P.E. SERIAL No.: 183562  
FIRM: LOCKWOOD, ANDREWS & NEWMAN, INC.  
FIRM No.: F-2614  
DATE: 3/19/2019

REV. NO.	DATE	DESCRIPTION	BY

**Lockwood, Andrews & Newnam, Inc.**  
A LEO A DALY COMPANY FIRM REGISTRATION NO. 2614

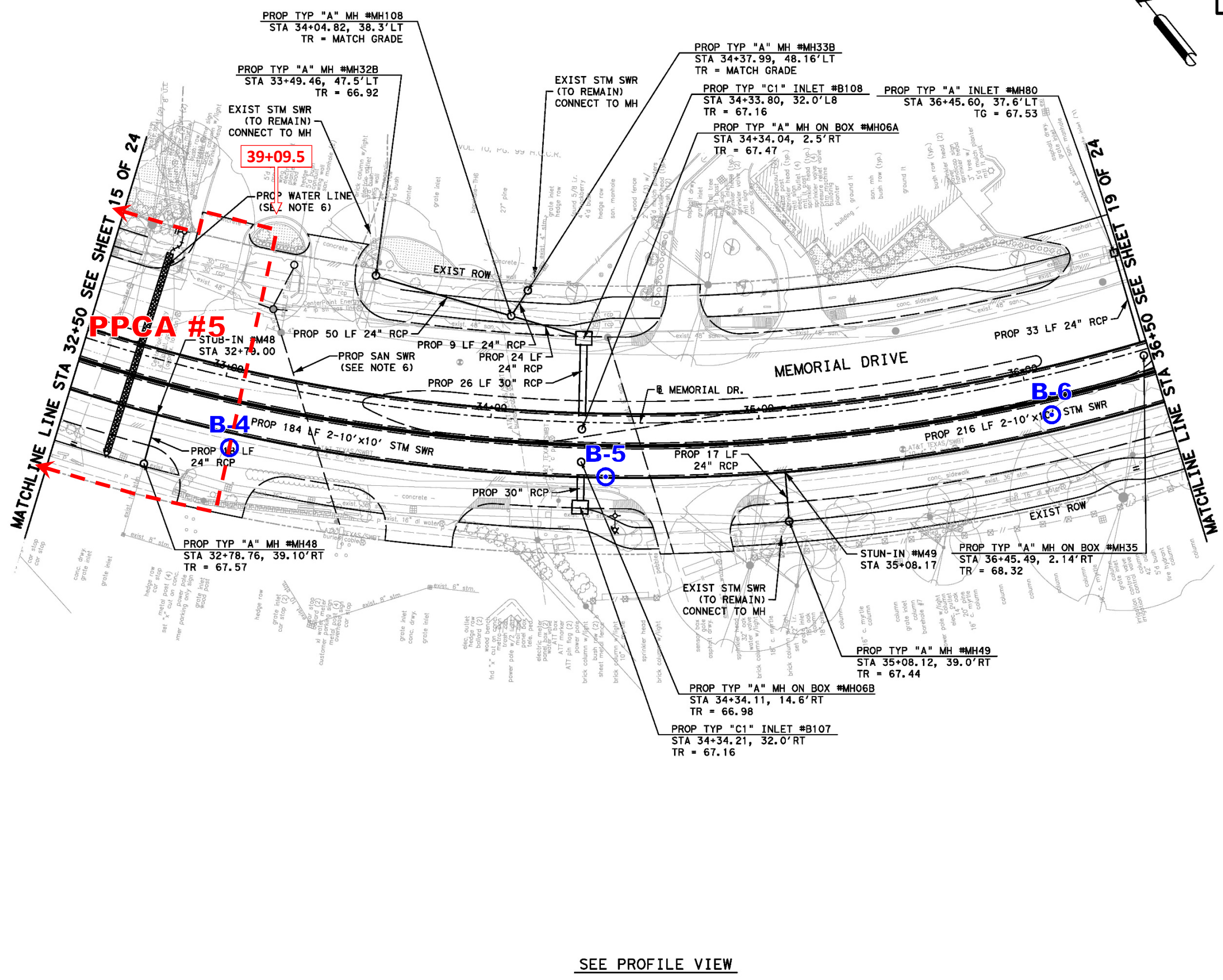
**Texas Department of Transportation**  
© 2018

**MEMORIAL DRIVE RECONSTRUCTION AND ACCESS MANAGEMENT**

**STORM SEWER PLAN**  
STA 32+50 TO STA 36+50

SHEET 17 OF 24

DGN	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.		
CHK DGN	6	TEXAS	120-11972-000	CS		
DWG	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG	HOU	HARRIS	0912	72	391	186




SEE PROFILE VIEW


Plotted on: 3/19/2019 10:24:45 AM Pen Table: MEMORIAL.tbl Plot Driver: c:\projects\wise\mjguthrie\d0531333\MEMORIAL\_DR.pltcf

Design Filename: p:\l\adpw.ladco.int\projects\120-11972-000\4-0-Production-Working\4-1-BIM-CAD\Drainage\PR-DRN 17.dgn

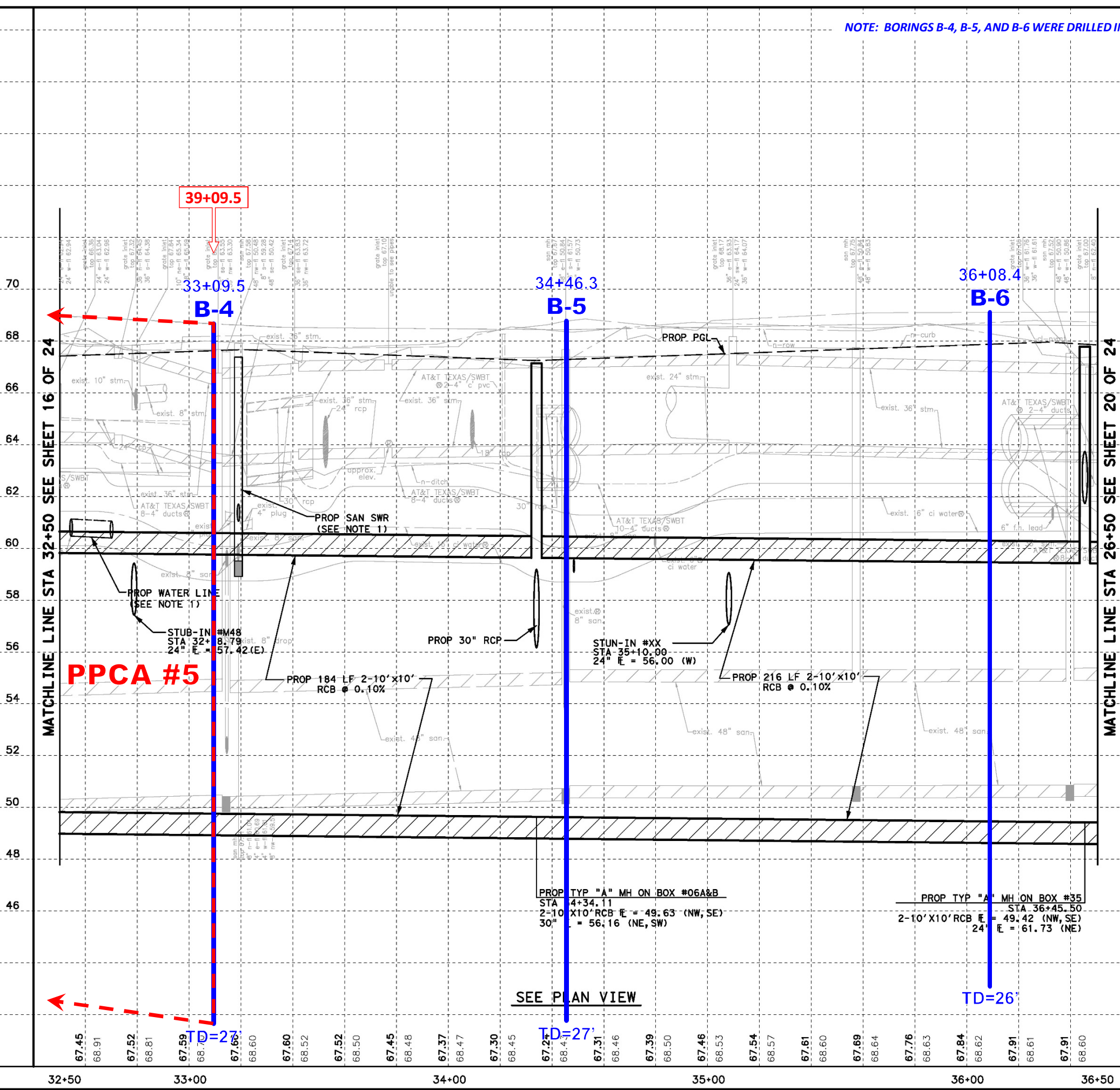
NOTE: BORINGS B-4, B-5, AND B-6 WERE DRILLED IN 2017.

**LEGEND**

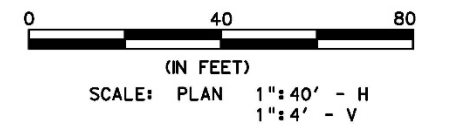
**B-#**  
 Soil Boring Location

 Proposed P.P.C.A.  
 (location is approximate—  
 see report text for details)

MUGuthrie  
 10/25/04 AM  
 3/19/2019  
 Plotted on:  
 Pen Table: MEMORIAL.tbl  
 Plot Driver: c:\projects\muguthrie\0531333\MEMORIAL\_DR.pltcfgr



- NOTES:**
- REFER TO PAVEMENT IMPROVEMENTS PLAN & PROFILE, WATERLINE & SAN SWR PLAN & PROFILE, SIGNING AND PAVEMENT MARKINGS PLAN SHEETS FOR MORE INFORMATION.
  - REFER TO LATERAL PROFILE SHEETS FOR PROPOSED FLOWLINES FOR STUB-INS.



**60% INTERIM REVIEW ONLY**  
 DOCUMENT INCOMPLETE; NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION

ENGINEER: BRIAN R. WHITNEY  
 P.E. SERIAL No.: 81591  
 FIRM: LOCKWOOD, ANDREWS & NEWNAM, INC.  
 FIRM No.: F-2614  
 DATE: 3/19/2019

REV. NO.	DATE	DESCRIPTION	BY

**Lockwood, Andrews & Newnam, Inc.**  
 A LEO A DALY COMPANY FIRM REGISTRATION NO. 2614

**Texas Department of Transportation**  
 © 2018

**MEMORIAL DRIVE RECONSTRUCTION AND ACCESS MANAGEMENT**

**STORM SEWER PROFILE**  
 STA 32+50 TO STA 36+50

SHEET 18 OF 24

DWG.	REV. NO.	STATE	PROJECT NO.	HIGHWAY NO.
CHK	6	TEXAS	120-11972-000	CS
DWG.	DIST.	COUNTY	CONT. NO.	SECT. NO.
CHK	HOU	HARRIS	0912	72
DWG.				JOB NO.
CHK				391
DWG.				SHEET NO.
CHK				187

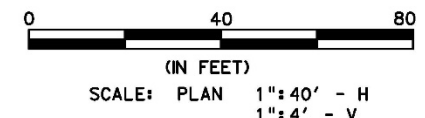
Design Filename: p:\cad\p\laco\int\projectwise\muguthrie\120-11972-000\4-0-Production-Working\4-1-BIM-CAD\Drainage\PR-DRN\_18.dgn

**LEGEND**

**B-#** Soil Boring Location

Proposed P.P.C.A. (location is approximate— see report text for details)

- CONTRACTOR TO MAINTAIN POSITIVE DRAINAGE DURING CONSTRUCTION AND FIELD VERIFY FLOWLINES OF ALL TO CONNECTIONS TO EXISTING DRAINAGE STRUCTURES TO VERIFY POSITIVE DRAINAGE TO PROPOSED STORM SEWER PRIOR TO CONSTRUCTION.
- REFER TO TXDOT HOUSTON DISTRICT BRIDGE MISCELLANEOUS SEWER DETAILS (MSD) FOR PIPE COLLAR, PIPE BEND, AND OTHER PIPE AND MANHOLE INLET CAP CONNECTION DETAILS.
- REFER TO MODIFIED STANDARDS FOR TYPE "A/B" MANHOLES AND TYPE "C1" INLETS WHERE STRUCTURE IS NOTED "ON BOX" IN PLAN & PROFILE.
- REFER TO TXDOT STATEWIDE STANDARD BRIDGE FOR BOX CULVERT CAST-IN-PLACE (SCP-MD & MC-MD), PRECAST JUNCTION BOX (PJB), AND PRECAST (SCP-MD) MISCELLANEOUS DETAILS FOR PROPOSED BENDS IN BOXES.
- REFER TO PAVEMENT IMPROVEMENTS PLAN & PROFILE, WATERLINE & SAN SWR PLAN & PROFILE, SIGNING AND PAVEMENT MARKINGS PLAN SHEETS FOR MORE INFORMATION.
- REFER TO LATERAL PROFILE SHEETS FOR PROPOSED FLOWLINES FOR STUB-INS.

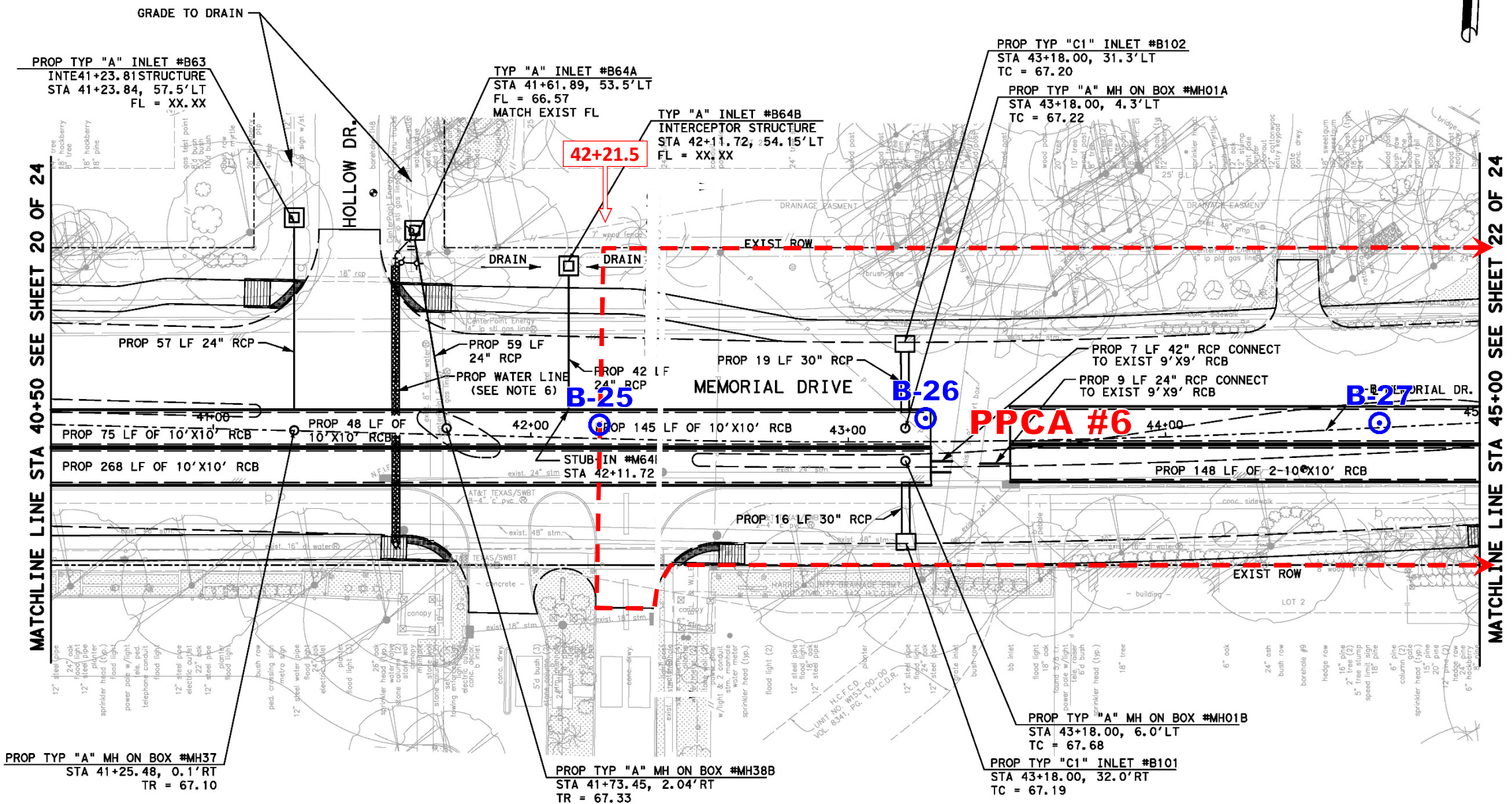


**60% INTERIM REVIEW ONLY**  
 DOCUMENT INCOMPLETE; NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION

ENGINEER: BRIAN R. WHITNEY  
 P.E. SERIAL No.: 81591  
 FIRM: LOCKWOOD, ANDREWS & NEWNAM, INC.  
 FIRM No.: F-2614  
 DATE: 3/19/2019

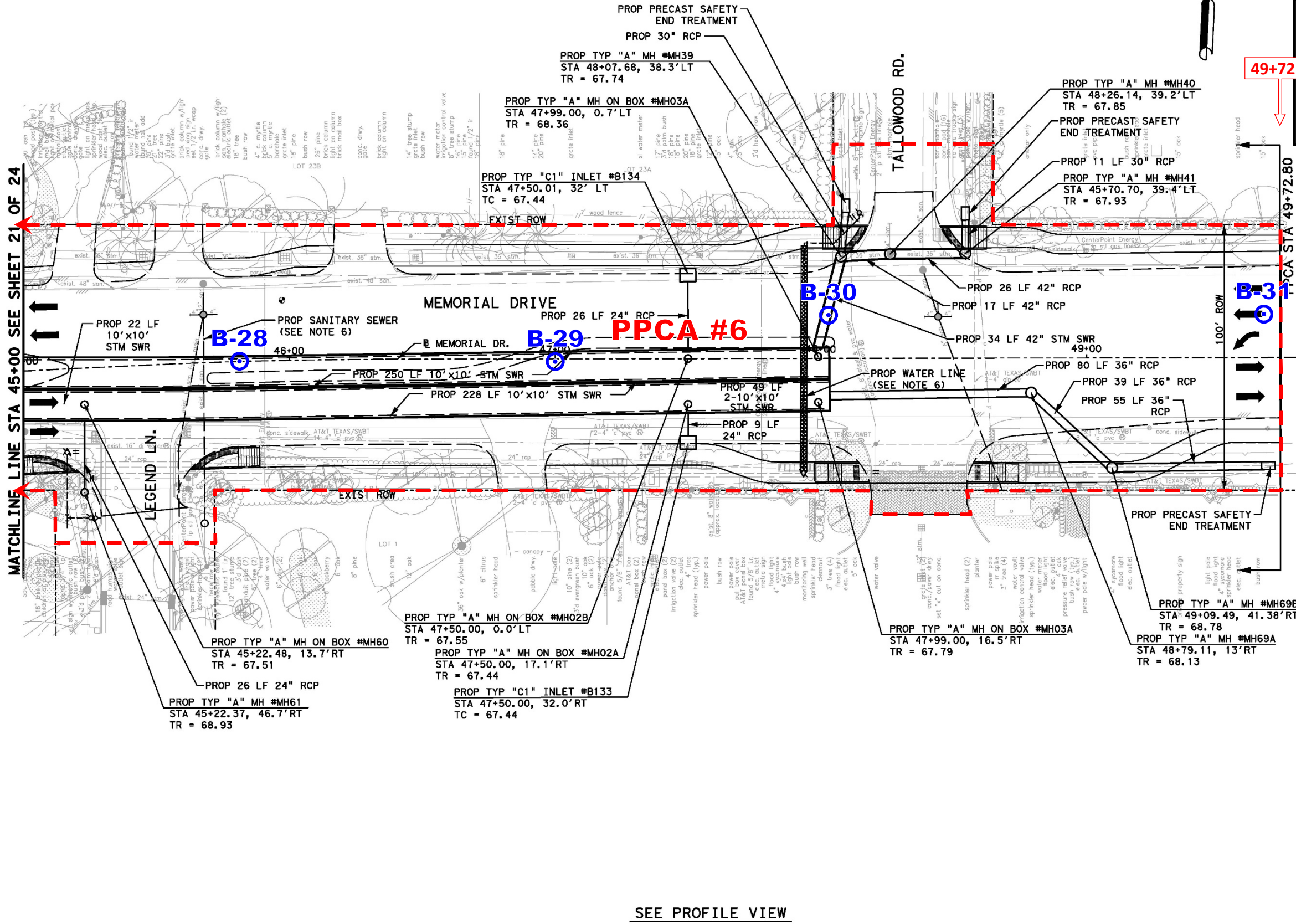
REV. NO.	DATE	DESCRIPTION	BY			
 Lockwood, Andrews & Newnam, Inc. FIRM REGISTRATION NO. 2614 A LEO A DALY COMPANY  Texas Department of Transportation © 2018 MEMORIAL DRIVE RECONSTRUCTION AND ACCESS MANAGEMENT STORM SEWER PLAN STA 40+50 TO STA 45+00 SHEET 21 OF 24						
DGN	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.		
CHK	6	TEXAS	120-11972-000	CS		
DWG	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK	HOU	HARRIS	0912	72	391	190

Pen Table: MEMORIAL.tbl  
 Plot Driver: c:\projectwise\mjguthrie\d0531333\MEMORIAL\_DR.pltcfp  
 Plotted on: 3/19/2019 10:25:59 AM  
 MjGuthrie



SEE PROFILE VIEW

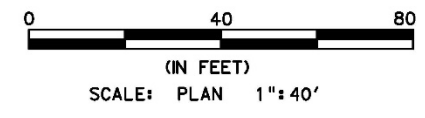




**LEGEND**

- B-#** Soil Boring Location
- Proposed P.P.C.A. (location is approximate— see report text for details)
- PROPOSED INLET OR JCT BOX

2. CONTRACTOR TO MAINTAIN POSITIVE DRAINAGE DURING CONSTRUCTION AND FIELD VERIFY FLOWLINES OF ALL TO CONNECTIONS TO EXISTING DRAINAGE STRUCTURES TO VERIFY POSITIVE DRAINAGE TO PROPOSED STORM SEWER PRIOR TO CONSTRUCTION.
3. REFER TO TXDOT HOUSTON DISTRICT BRIDGE MISCELLANEOUS SEWER DETAILS (MSD) FOR PIPE COLLAR, PIPE BEND, AND OTHER PIPE AND MANHOLE INLET CAP CONNECTION DETAILS.
4. REFER TO MODIFIED STANDARDS FOR TYPE "A/B" MANHOLES AND TYPE "C1" INLETS WHERE STRUCTURE IS NOTED "ON BOX" IN PLAN & PROFILE.
5. REFER TO TXDOT STATEWIDE STANDARD BRIDGE FOR BOX CULVERT CAST-IN-PLACE (SCP-MD & MC-MD), PRECAST JUNCTION BOX (PJB), AND PRECAST (SCP-MD) MISCELLANEOUS DETAILS FOR PROPOSED BENDS IN BOXES.
6. REFER TO PAVEMENT IMPROVEMENTS PLAN & PROFILE, WATERLINE & SAN SWR PLAN & PROFILE, SIGNING AND PAVEMENT MARKINGS PLAN SHEETS FOR MORE INFORMATION.
7. REFER TO LATERAL PROFILE SHEETS FOR PROPOSED FLOWLINES FOR STUB-INS.



**60% INTERIM REVIEW ONLY**  
 DOCUMENT INCOMPLETE; NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION

ENGINEER: BRIAN R. WHITNEY  
 P.E. SERIAL No.: 81591  
 FIRM: LOCKWOOD, ANDREWS & NEWNAM, INC.  
 FIRM No.: F-2614  
 DATE: 3/19/2019

SEE PROFILE VIEW

REV. NO.	DATE	DESCRIPTION	BY

**Lockwood, Andrews & Newnam, Inc.**  
 A LEO A DALY COMPANY FIRM REGISTRATION NO. 2614

**Texas Department of Transportation**  
 © 2018

**MEMORIAL DRIVE RECONSTRUCTION AND ACCESS MANAGEMENT**

**STORM SEWER PLAN**  
 STA 40+50 TO END PROJECT

SHEET 23 OF 24

DGN	FED. RD. DIV. NO.	STATE	PROJECT NO.	HIGHWAY NO.		
CHK DGN	6	TEXAS	120-11972-000	CS		
DWG	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG	HOU	HARRIS	0912	72	391	192





**Limited Phase II Environmental Site Assessment  
Memorial Drive Reconstruction, Houston, Texas**

**APPENDIX B  
PHOTOGRAPHS**

**Additional Phase II Environmental Site Assessment  
Memorial Drive Reconstruction**



**Photograph 1:** View to the northwest of the drilling of soil boring B-11 on Memorial Drive in PPCAs #2, 3, and 4.



**Photograph 2:** View to the north-northwest of the drilling of soil boring B-15 on Memorial Drive in PPCAs #2, 3, and 4. The source of the dry cleaner leak is right of photograph down West Bough Lane (cross street in photograph) A former leaking gasoline station was located at the current Chase Bank.

**Additional Phase II Environmental Site Assessment  
Memorial Drive Reconstruction**



**Photograph 3:** View to the north of the drilling of soil boring B-22 on Memorial Drive in PPCA #5. The cross street is Boheme Drive. A former leaking gasoline station adjoined the Subject Right-of-Way to the left of the photograph.



**Photograph 4:** View to the south of the drilling of B-24 on Memorial Drive in PPCA #5.

**Additional Phase II Environmental Site Assessment  
Memorial Drive Reconstruction**



**Photograph 5:** View to the east of the drilling of soil boring B-26 on Memorial Drive in PPCA #6.



**Photograph 6:** View to the east of the drilling of soil boring B-29 on Memorial Drive in PPCA #6. A former leaking dry cleaners was located to the left of the tall palm tree at the left side of the photograph.

**Additional Phase II Environmental Site Assessment  
Memorial Drive Reconstruction**

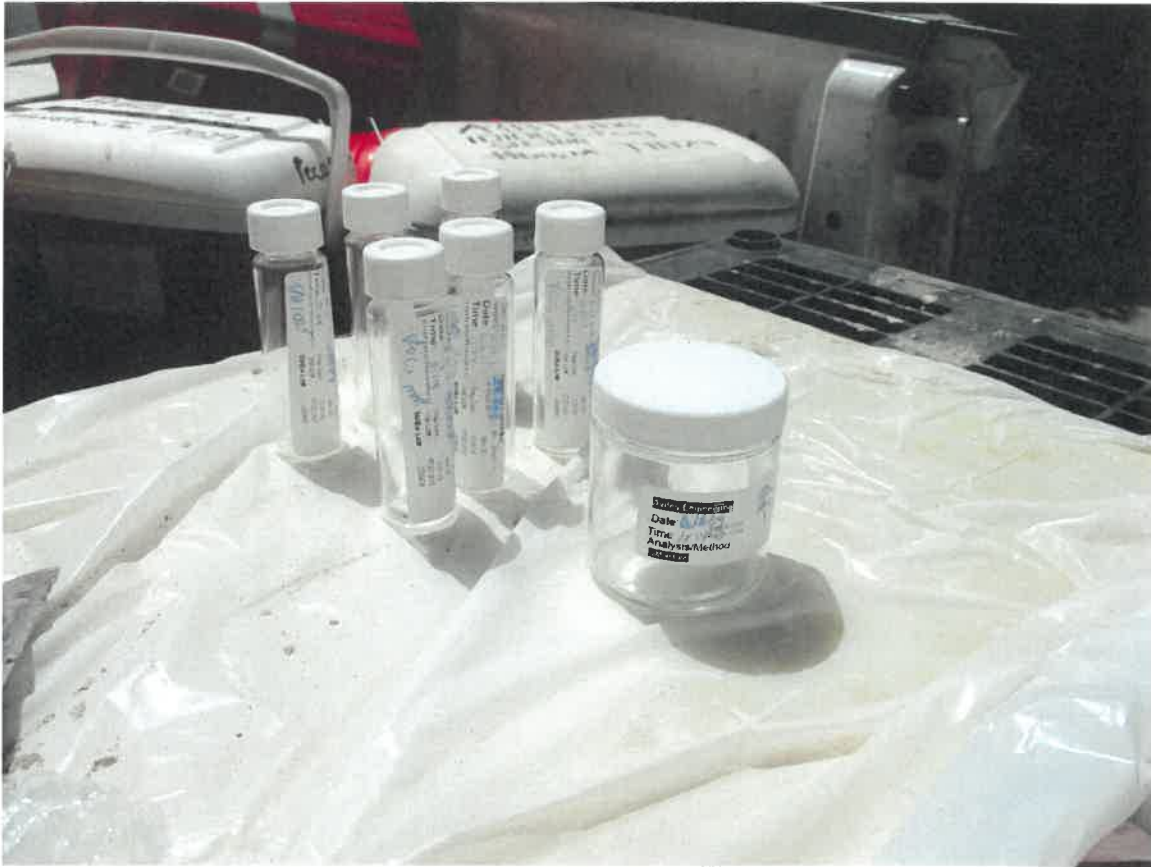


**Photograph 7:** Retrieved soil core in acetate sleeve ready for logging and sampling.



**Photograph 8:** View of bagged soil ready to be tested with the PID meter (instrument in the background).

**Additional Phase II Environmental Site Assessment  
Memorial Drive Reconstruction**



**Photograph 9:** View of labeled sample bottles for collecting soil samples.



**Photograph 10:** View to the southeast of the temporary monitoring well installed at the B-13 boring location.

**Additional Phase II Environmental Site Assessment  
Memorial Drive Reconstruction**



**Photograph 11:** View of labeled sample bottles for collecting groundwater samples.



**Photograph 12:** View of pavement patch at soil boring B-9.

**Limited Phase II Environmental Site Assessment  
Memorial Drive Reconstruction, Houston, Texas**

**APPENDIX C  
SOIL BORING LOGS**





Memorial Drive Reconstruction, ESA-II

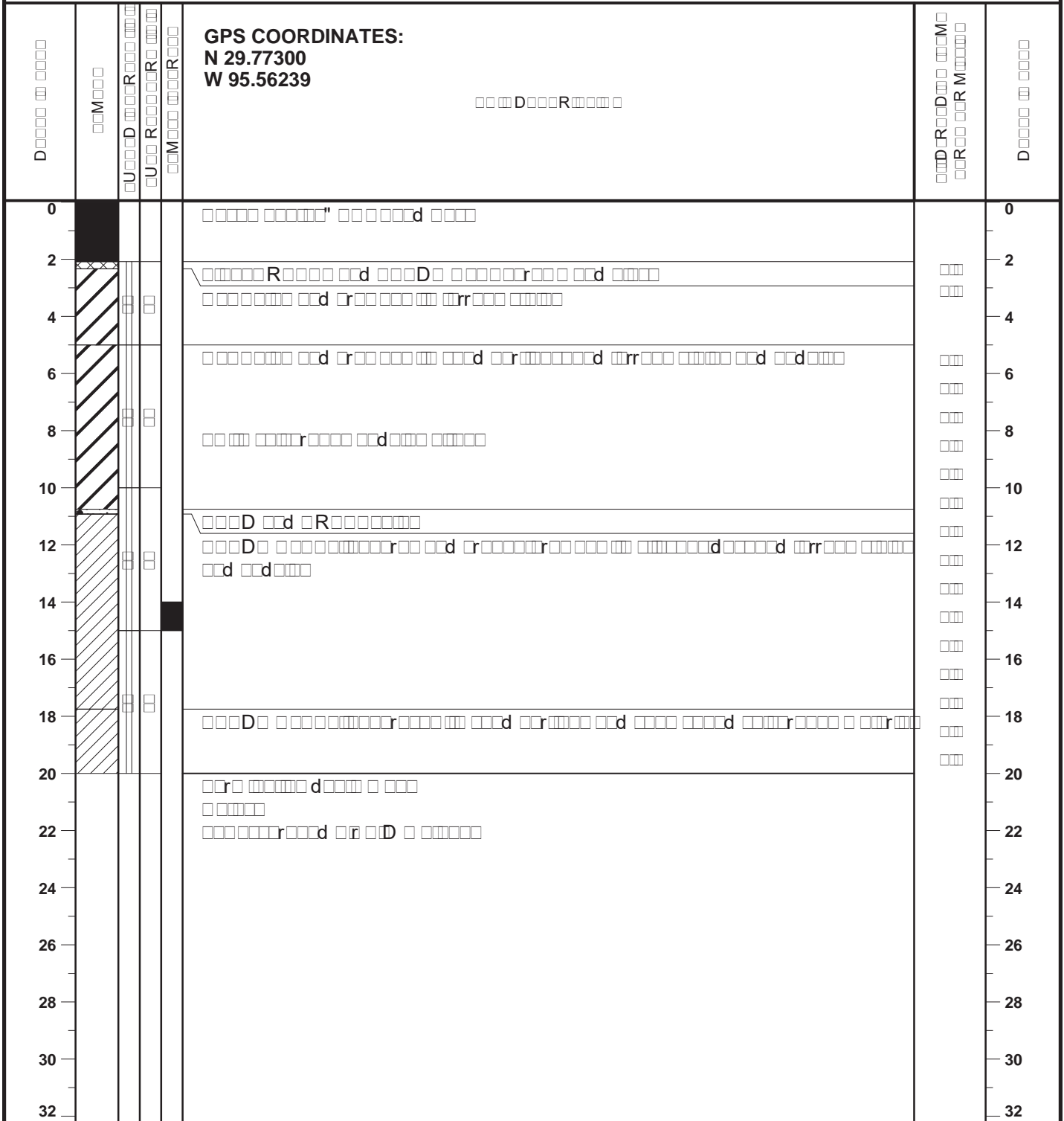
B-1

N-T17000-031B-4

Direct Push

D

5/25/17



DR 20 U DR U  
 R U R D DRY DR  
 R DRY R 1/4-HR  
 DR ENVIROTECH RJM RJM



Memorial Drive Reconstruction, ESA-II

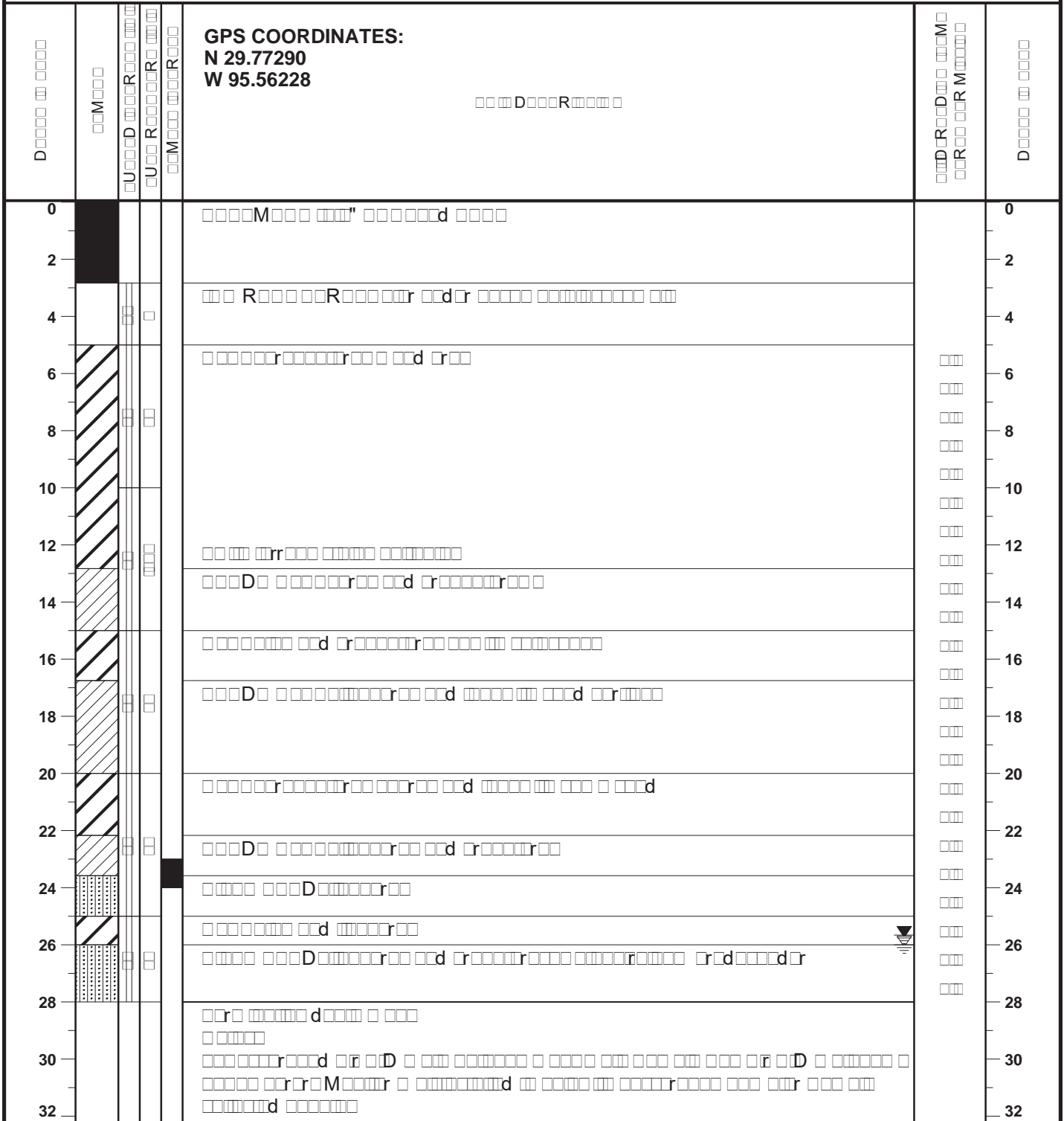
B-2

N-T17000-031B-4

Direct Push

D

5/25/17



DR 28 U DR U  
 R U R D 26 DR  
 R 25.66 R 1/2-HR  
 DR ENVIROTECH RJM RJM



Memorial Drive Reconstruction, ESA-II

DR

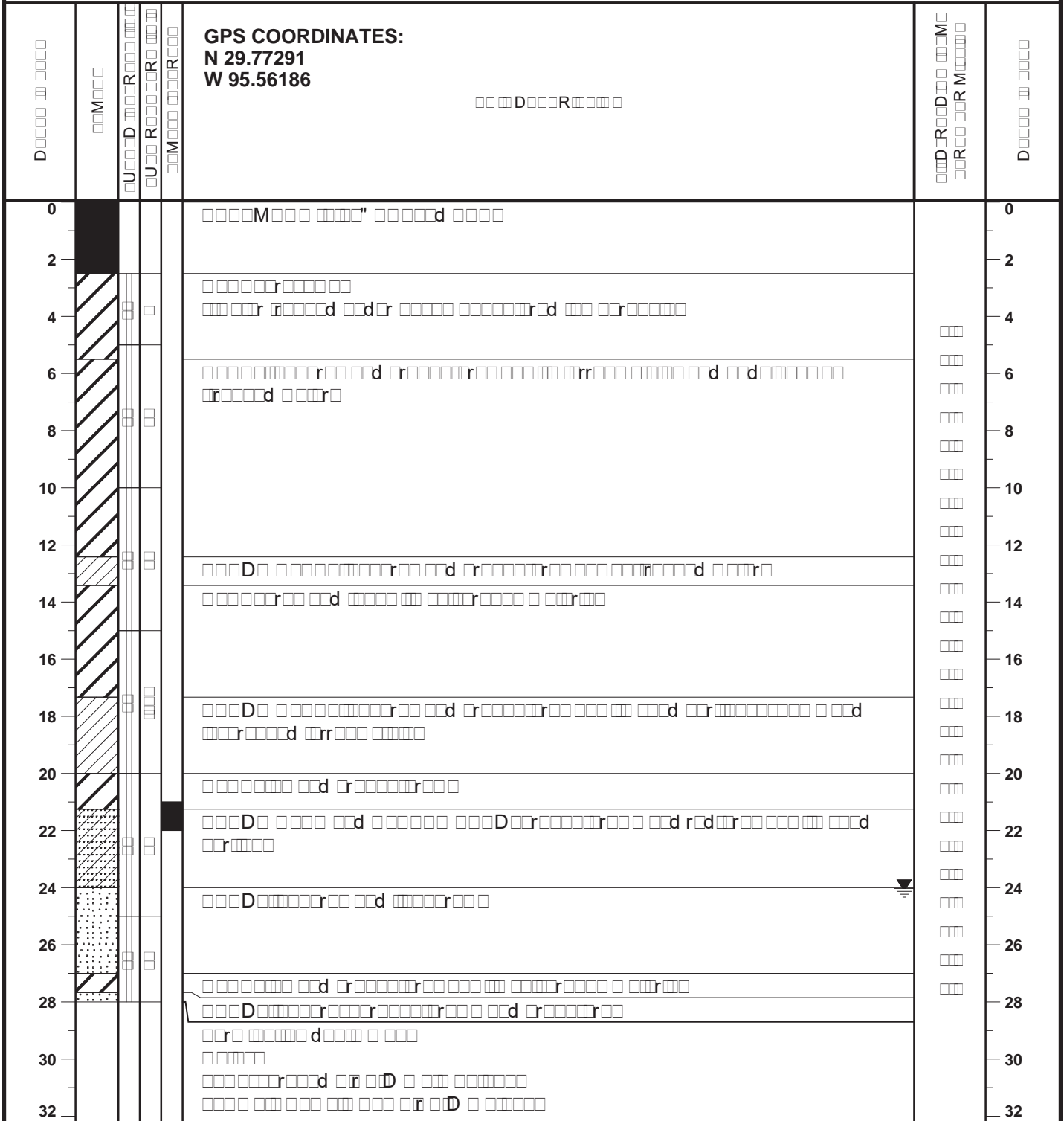
B-3

N-T17000-031B-4

DR M Direct Push

D

5/25/17



DR 28 U DR U  
 R U R unknown\* DR \* refer to report text  
 R 24.03 R 1/4-HR  
 DR ENVIROTECH RJM RJM



Memorial Drive Reconstruction, ESA-II

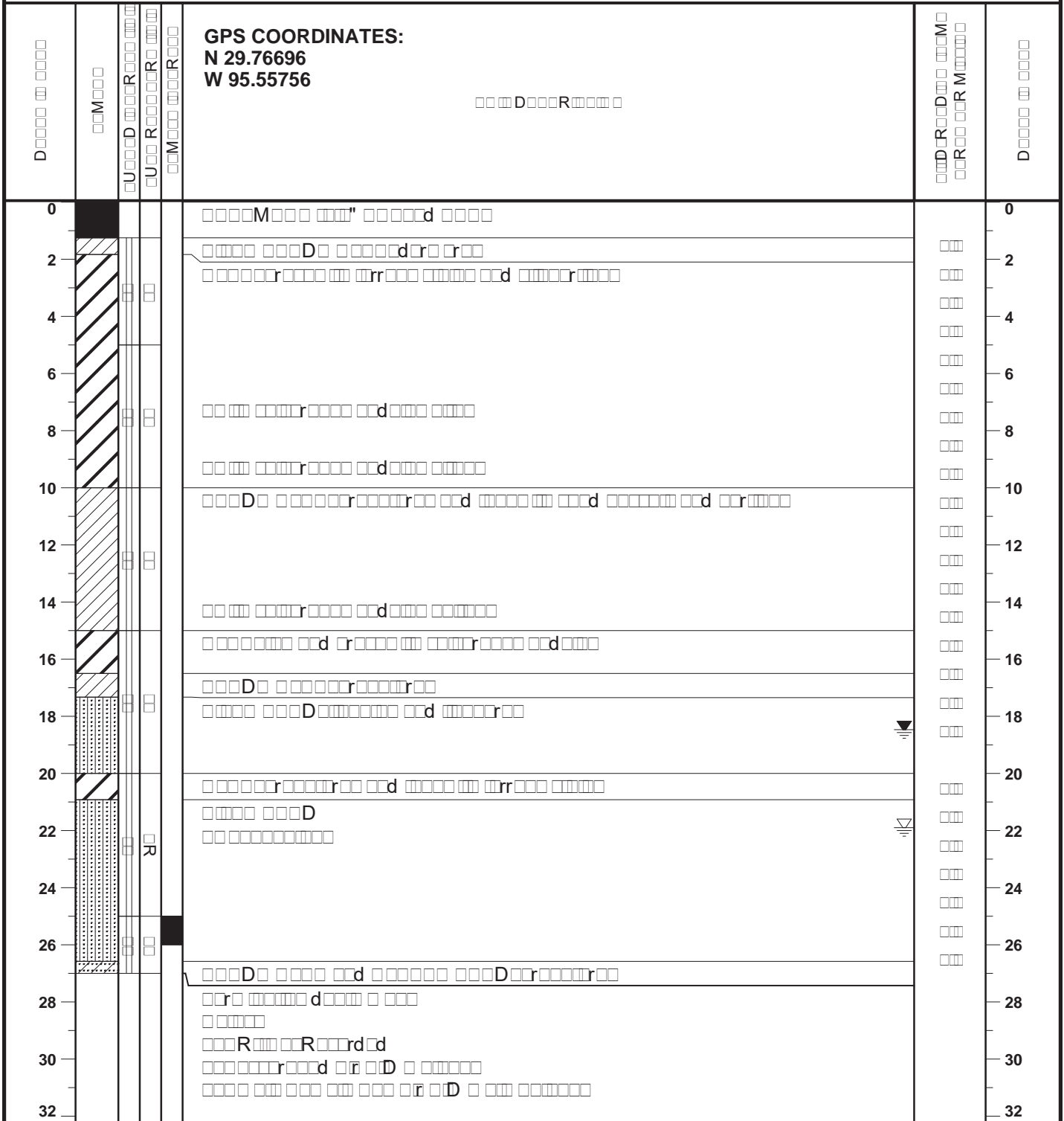
B-4

N-T17000-031B-4

Direct Push

D

5/25/17



DR 27 U DR U  
 R U R D 21.9 DR  
 R 18.47 R 1/4-HR  
 DR ENVIROTECH RJM RJM



Memorial Drive Reconstruction, ESA-II

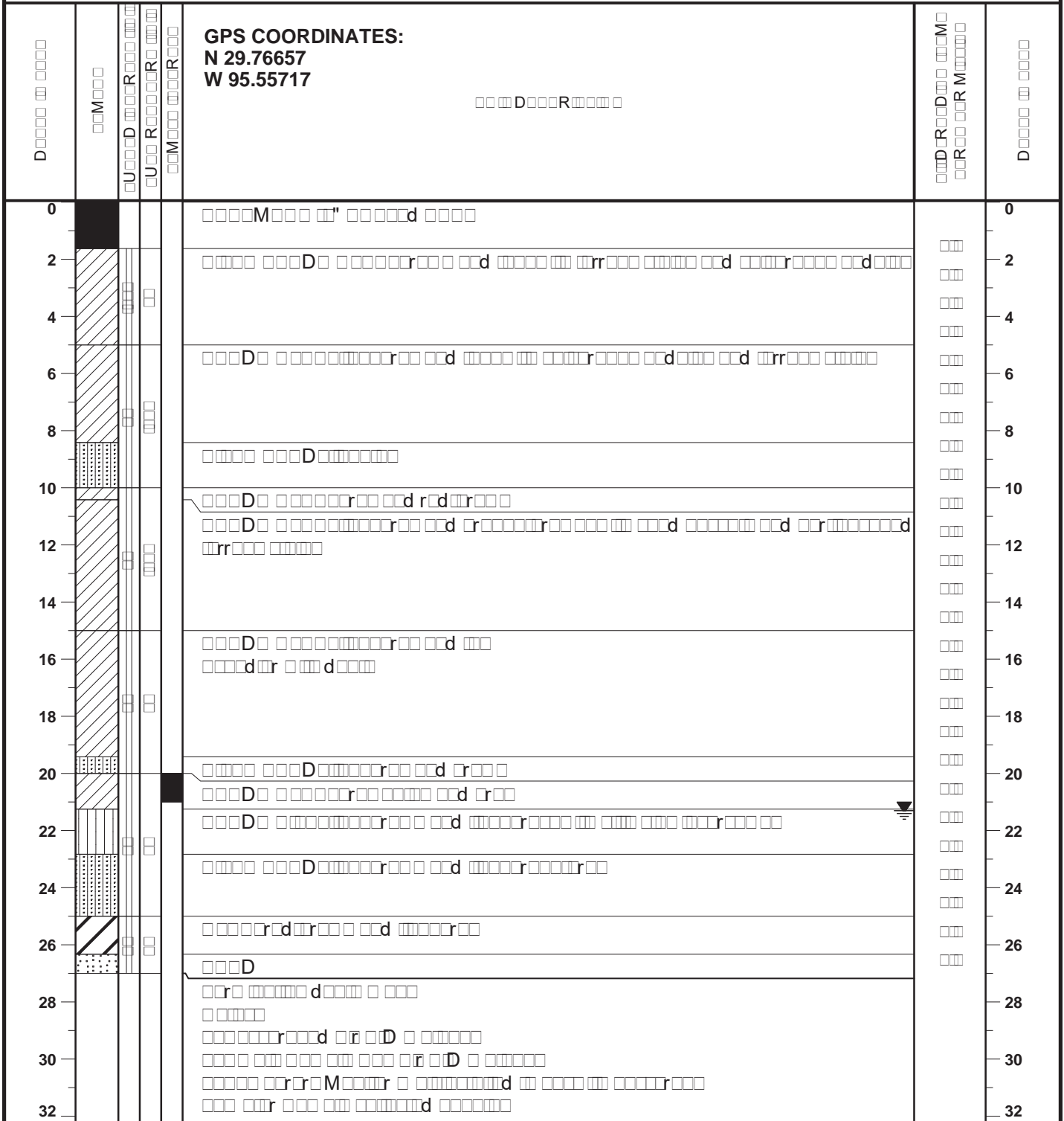
B-5

N-T17000-031B-4

DR M Direct Push

D

5/26/17



DR M 27 U DR U D  
 R U R D 21.3 DR  
 R 21.31 R 1/4-HR  
 DR ENVIROTECH DR RJM DR RJM



Memorial Drive Reconstruction, ESA-II

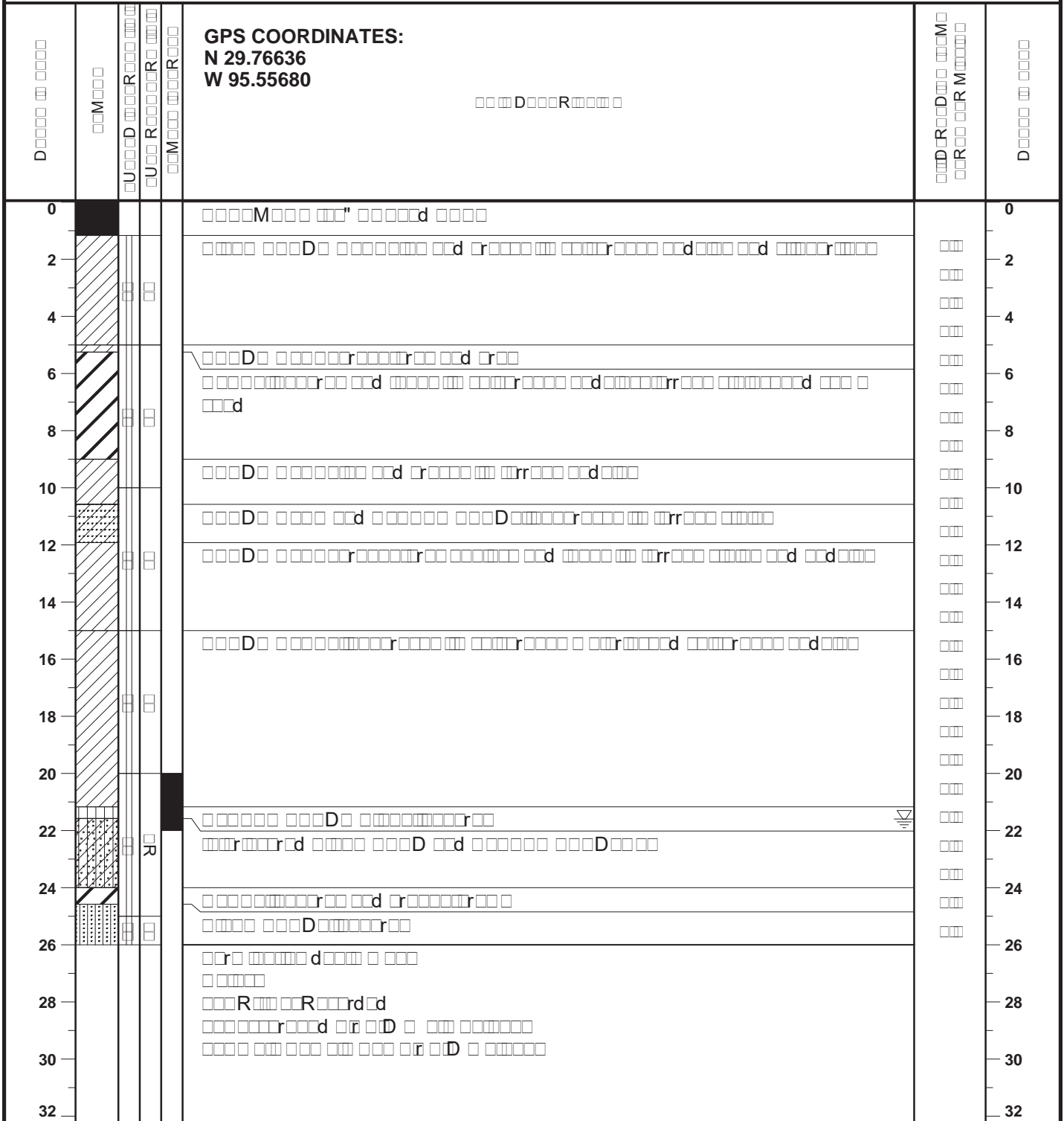
B-6

N-T17000-031B-4

DR M D Direct Push

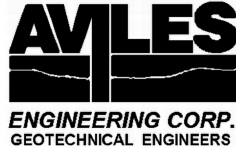
D

5/26/17



DR M D 26 U DR U D  
 R U R D 21.6 DR  
 R DRY R 1/4-HR  
 DR ENVIROTECH D RJM D RJM

PROJECT NO. E101-17



PROJECT: Memorial Dr. Additional ESA-II

BORING

B-7

COH WBS No. TIRZ17

DRILL METHOD Push Probe

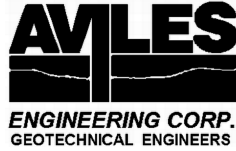
DATE

5/31/19

DEPTH IN FEET	SYMBOL	PUSHED INTERVAL (IN.)	PUSH RECOVERY (IN.)	SAMPLE INTERVAL	GPS COORDINATES: N 29.77282° W 95.56080°	SOIL DESCRIPTION	P.I.D. READING (PPM) PARTS PER MILLION	DEPTH IN FEET
0						PAVEMENT: 5" Asphalt; 6-3/4" Stabilized Shell		0
2						CLAY, brown and tan, with sand pockets and sand seams	1.3 2.5	2
4		48-25	48-25				0.9	4
6						CLAY WITH SAND, orange-brown and tan, with ferrous stains and ferrous nodules	1.7 1.9	6
8		60	58				0.7	8
10						SANDY CLAY, orange-brown and gray, with ferrous stains, ferrous nodules, and calcareous nodules	0.5 0.7	10
12		60	58				0.3	12
14							0.5	14
16		24	24			SANDY CLAY, orange-brown and tan	1.1 1.1	16
18						CLAYEY SAND, gray	1.3	18
20						SILTY SAND, gray	1.1	20
22						Termination depth = 17'		22
24						Notes: 1) Background air PID = 0.1-0.3ppm. 2) Empty sample bag air PID (not recorded) 3) Temporary monitor well installed to 17' with 10' of screen.		24
26								26
28								28
30								30
32								32

BORING DRILLED TO 17 FEET WITHOUT DRILLING FLUID  
 WATER ENCOUNTERED AT dry FEET WHILE DRILLING   
 WATER LEVEL AT dry FEET AFTER 1/2-hr   
 DRILLED BY Envirotech CHECKED BY RJM LOGGED BY RJM

PROJECT NO. E103-19



PROJECT: Memorial Dr. Additional ESA-II

BORING

B-8

COH WBS No. TIRZ17

DRILL METHOD Push Probe

DATE

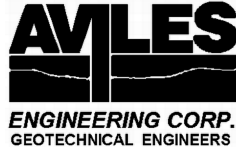
5/31/19

DEPTH IN FEET	SYMBOL	PUSHED INTERVAL (IN.)	PUSH RECOVERY (IN.)	SAMPLE INTERVAL	GPS COORDINATES:	SOIL DESCRIPTION	P.I.D. READING (PPM) PARTS PER MILLION	DEPTH IN FEET
					N 29.77271° W 95.56039°			
0						PAVEMENT: 4-3/4" Asphalt; 7" Stabilized Shell	0.3	0
2						CLAY, red-brown and brown, with ferrous stains	1.3	2
4		48-25	29				1.1	4
6						CLAY, with some sand, orange-brown and gray, with ferrous stains and ferrous nodules	0.9	6
8		60	32				1.5	8
10						CLAY, orange-brown, with ferrous stains	0.7	10
12		60	58			SANDY CLAY, dark brown and gray, with ferrous stains and sand partings	0.7	12
14							1.1	14
16		12	12			SANDY CLAY, gray and orange-brown - red-brown 15.9'-16'	0.7	16
18						Termination depth = 16'	0.5	18
20						Notes: 1) Background air PID = 0.1-0.3ppm. 2) Empty sample bag air PID = 1.3ppm. 3) Temporary monitor well installed to 16'.	1.1	20
22								22
24								24
26								26
28								28
30								30
32								32

BORING DRILLED TO 16 FEET WITHOUT DRILLING FLUID  
 WATER ENCOUNTERED AT dry FEET WHILE DRILLING   
 WATER LEVEL AT dry FEET AFTER 1/2-hr   
 DRILLED BY Envirotech CHECKED BY RJM LOGGED BY RJM

PROJECT NO. E103-19





PROJECT: Memorial Dr. Additional ESA-II

BORING

B-9

COH WBS No. TIRZ17

DRILL METHOD Push Probe

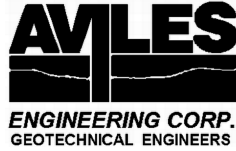
DATE

5/31/19

DEPTH IN FEET	SYMBOL	PUSHED INTERVAL (IN.)	PUSH RECOVERY (IN.)	SAMPLE INTERVAL	GPS COORDINATES: N 29.77260° W 95.56007°	SOIL DESCRIPTION	P.I.D. READING (PPM) PARTS PER MILLION	DEPTH IN FEET
0						PAVEMENT: 4-1/4" Asphalt; 7" Stabilized Shell	0.0	0
2		48-75	21.5			CLAY, tan and orange-brown, with ferrous stains and ferrous nodules - damp under pavement in upper 2"	0.1 0.9	2
4								4
6						CLAY, tan and orange-brown, with ferrous stains and ferrous nodules	0.7	6
8		60	58.25				0.7 0.9	8
10						SANDY CLAY, orange-brown and tan, with calcareous nodules, ferrous stains, and ferrous nodules	1.7	10
12		60	57.5			CLAY, brown	0.7	12
14						SANDY CLAY, gray and orange-brown, with sand partings and calcareous nodules	1.1	14
16		12	12			SANDY CLAY, gray and orange-brown	1.5 0.9	16
18						Termination depth = 16'	1.7	18
20						Notes: 1) Background air PID = 0.0-0.3ppm. 2) Empty sample bag air PID = 1.1ppm. 3) Temporary monitor well installed to 16' with 15' of screen.	1.1	20
22							0.9	22
24								24
26								26
28								28
30								30
32								32

BORING DRILLED TO 16 FEET WITHOUT DRILLING FLUID  
 WATER ENCOUNTERED AT 15 FEET WHILE DRILLING   
 WATER LEVEL AT dry FEET AFTER 1/2-hr   
 DRILLED BY Envirotech CHECKED BY RJM LOGGED BY RJM

PROJECT NO. E103-19



PROJECT: Memorial Dr. Additional ESA-II

BORING

B-10

COH WBS No. TIRZ17

DRILL METHOD Push Probe

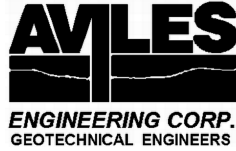
DATE

5/30/19

DEPTH IN FEET	SYMBOL	PUSHED INTERVAL (IN.)	PUSH RECOVERY (IN.)	SAMPLE INTERVAL	GPS COORDINATES: N 29.77247° W 95.55972°	SOIL DESCRIPTION	P.I.D. READING (PPM) PARTS PER MILLION	DEPTH IN FEET
0						PAVEMENT: 5" Asphalt; 7" Stabilized Shell		0
2						SANDY CLAY, tan and brown, with ferrous stains	1.4	2
4		48	36				1.6	4
6						CLAY, orange-brown and tan, with ferrous stains and ferrous nodules	1.4	6
8							1.3	8
10		60	59				3.3	10
12						SILTY SANDY CLAY, orange-brown and gray, with calcareous nodules, ferrous stains, ferrous nodules, sand seams, and sand partings - sandier with depth	3.2	12
14							1.9	14
16		45.5	60				0.8	16
18						SANDY CLAY, orange-brown and gray, with sand partings	1.4	18
20		12	12			Termination depth = 16'	1.1	20
22						Notes: 1) Background air PID = 0.5-0.6ppm. 2) Empty sample bag air PID = 0.5ppm. 3) Temporary monitor well installed to 16' with 10' of screen.	2.4	22
24								24
26								26
28								28
30								30
32								32

BORING DRILLED TO 16 FEET WITHOUT DRILLING FLUID  
 WATER ENCOUNTERED AT dry FEET WHILE DRILLING   
 WATER LEVEL AT dry FEET AFTER 1/4-hr   
 DRILLED BY Envirotech CHECKED BY RJM LOGGED BY RJM

PROJECT NO. E103-19



PROJECT: Memorial Dr. Additional ESA-II

BORING

B-11

COH WBS No. TIRZ17

DRILL METHOD Push Probe

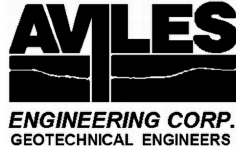
DATE

5/30/19

DEPTH IN FEET	SYMBOL	PUSHED INTERVAL (IN.)	PUSH RECOVERY (IN.)	SAMPLE INTERVAL	GPS COORDINATES: N 29.77228° W 95.55944°	SOIL DESCRIPTION	P.I.D. READING (PPM) PARTS PER MILLION	DEPTH IN FEET
0						PAVEMENT: 6-1/2" Asphalt; 7-1/2" Stabilized Shell		0
2						SANDY SILTY CLAY, gray and tan	2.1	2
4		46	46			SANDY SILTY CLAY, tan and orange-brown, with sand partings, sand pockets, and ferrous stains	2.5	2
4							1.1	4
4							2.4	4
6						SANDY SILTY CLAY, orange-brown and tan, with calcareous nodules, ferrous nodules, and ferrous stains	2.1	6
6							1.9	6
8		60	47.5				2.5	8
8							0.9	8
10						SANDY CLAY, orange-brown and gray, with ferrous nodules, calcareous nodules, and sand partings	1.4	10
12		60	56				2.1	12
12							2.5	12
14							1.7	14
14							2.1	14
16						Termination depth = 15'		16
18						Notes: 1) Background air PID = 0.5-0.6ppm. 2) Empty sample bag air PID = 0.9ppm. 3) Temporary monitor well installed to 15' with 10' of screen.		18
20								20
22								22
24								24
26								26
28								28
30								30
32								32

BORING DRILLED TO 15 FEET WITHOUT DRILLING FLUID  
 WATER ENCOUNTERED AT dry FEET WHILE DRILLING   
 WATER LEVEL AT dry FEET AFTER 1/2-hr   
 DRILLED BY Envirotech CHECKED BY RJM LOGGED BY RJM

PROJECT NO. E103-19



PROJECT: Memorial Dr. Additional ESA-II

BORING

B-12

COH WBS No. TIRZ17

DRILL METHOD Push Probe

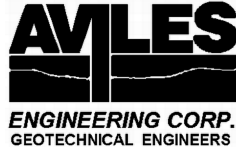
DATE

5/30/19

DEPTH IN FEET	SYMBOL	PUSHED INTERVAL (IN.)	PUSH RECOVERY (IN.)	SAMPLE INTERVAL	GPS COORDINATES: N 29.77208° W 95.55913°	SOIL DESCRIPTION	P.I.D. READING (PPM) PARTS PER MILLION	DEPTH IN FEET
0						PAVEMENT: 5" Asphalt; 7" Stabilized Shell		0
2						SANDY CLAY, dark gray and brown, with ferrous stains	1.4	2
						CLAY, tan, with ferrous stains and calcareous nodules	2.2	
4							1.3	4
							1.6	
6						CLAY, orange-brown, with ferrous stains and calcareous nodules at base	2.2	6
							1.7	
8						SANDY CLAY, orange-brown and gray, with calcareous nodules and material, ferrous stains, and ferrous nodules	2.1	8
							2.9	
10						SANDY CLAY, orange-brown and gray, with ferrous stains	2.1	10
							2.2	
12							2.1	12
							0.9	
14							1.1	14
							0.8	
16						Termination depth = 15'		16
18						Notes: 1) Background air PID = 0.3-0.5ppm. 2) Empty sample bag air PID = 0.8ppm. 3) Temporary monitor well installed to 15' with 10' of screen.		18
20								20
22								22
24								24
26								26
28								28
30								30
32								32

BORING DRILLED TO 15 FEET WITHOUT DRILLING FLUID  
 WATER ENCOUNTERED AT dry FEET WHILE DRILLING   
 WATER LEVEL AT dry FEET AFTER 1-hr   
 DRILLED BY Envirotech CHECKED BY RJM LOGGED BY RJM

PROJECT NO. E103-19



PROJECT: Memorial Dr. Additional ESA-II

BORING

B-13

COH WBS No. TIRZ17

DRILL METHOD Push Probe

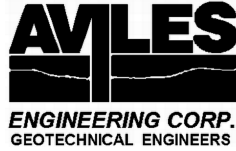
DATE

5/30/19

DEPTH IN FEET	SYMBOL	PUSHED INTERVAL (IN.)	PUSH RECOVERY (IN.)	SAMPLE INTERVAL	GPS COORDINATES: N 29.77187° W 95.55884°	SOIL DESCRIPTION	P.I.D. READING (PPM) PARTS PER MILLION	DEPTH IN FEET
0						PAVEMENT: 6" Asphalt; 5-1/2" Stabilized Shell	1.1	0
2						CLAY, dark gray, with a few sand layers, ferrous nodules, and ferrous stains	1.9	2
4		48.5	48.5				1.7	4
6						CLAY, orange-brown and gray	1.4	6
8		60	58				1.7	8
10						CLAY, tan and gray, with some sand, ferrous stains, and ferrous nodules	2.1	10
12		60	55				2.5	12
14						SANDY CLAY, with sand partings, sand pockets, ferrous stains, ferrous nodules, and calcareous nodules (abundant 10.8'-11.6')	3.0	14
16							1.3	16
18		60	58				1.9	18
20						SANDY CLAY, gray, sandier with depth, becoming clayey sand at last 5"	2.4	20
22							2.4	22
24						SANDY CLAY, gray, sandier with depth, becoming clayey sand at last 5"	1.3	24
26							2.4	26
28							1.3	28
30						SANDY CLAY, gray, sandier with depth, becoming clayey sand at last 5"	2.4	30
32							1.3	32
						SILTY SAND, gray, damp		
						Termination depth = 20'		
						Notes: 1) Background air PID = 0.3-0.5ppm. 2) Empty sample bag air PID = 1.7ppm. 3) Temporary monitor well installed to 20' with 10' of screen.		

BORING DRILLED TO 20 FEET WITHOUT DRILLING FLUID  
 WATER ENCOUNTERED AT dry FEET WHILE DRILLING   
 WATER LEVEL AT dry FEET AFTER 1/2-hr   
 DRILLED BY Envirotech CHECKED BY RJM LOGGED BY RJM

PROJECT NO. E103-19



PROJECT: Memorial Dr. Additional ESA-II

BORING

B-14

COH WBS No. TIRZ17

DRILL METHOD Push Probe

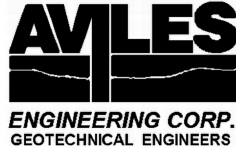
DATE

5/30/19

DEPTH IN FEET	SYMBOL	PUSHED INTERVAL (IN.)	PUSH RECOVERY (IN.)	SAMPLE INTERVAL	GPS COORDINATES: N 29.77186° W 95.55856°	SOIL DESCRIPTION	P.I.D. READING (PPM) PARTS PER MILLION	DEPTH IN FEET
0						PAVEMENT: 7" Asphalt; 6" Stabilized Shell		0
2						SANDY CLAY, dark gray	1.6	2
						CLAY, dark gray	1.9	
4							1.4	4
							0.6	
6						CLAY, orange-brown and gray, with sand pockets, sand partings, ferrous nodules, and ferrous stains	1.1	6
							1.1	
8							1.4	8
							1.9	
10						SANDY CLAY, orange-brown and gray, with sand partings	1.6	10
							1.6	
12							1.9	12
							1.6	
14							2.4	14
							2.2	
16							1.7	16
							1.4	
18						- slight unidentified odor 17'-18'	0.9	18
							1.7	
20						SILTY SAND, gray, damp - unidentified odor		20
						Termination depth = 19'		
22						Notes:		22
						1) Background air PID = 0.1-0.3ppm.		
24						2) Empty sample bag air PID = 0.8ppm.		24
						3) Temporary monitor well installed to 19' with 10' of screen.		
26								26
28								28
30								30
32								32

BORING DRILLED TO 19 FEET WITHOUT DRILLING FLUID  
 WATER ENCOUNTERED AT dry FEET WHILE DRILLING   
 WATER LEVEL AT dry FEET AFTER 1/4-hr   
 DRILLED BY Envirotech CHECKED BY RJM LOGGED BY RJM

PROJECT NO. E103-19



PROJECT: Memorial Dr. Additional ESA-II

BORING

B-15

COH WBS No. TIRZ17

DRILL METHOD Push Probe

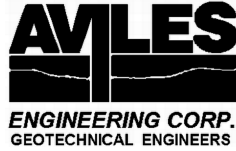
DATE

5/29/19

DEPTH IN FEET	SYMBOL	PUSHED INTERVAL (IN.)	PUSH RECOVERY (IN.)	SAMPLE INTERVAL	GPS COORDINATES: N 29.77161° W 95.55859°	SOIL DESCRIPTION	P.I.D. READING (PPM) PARTS PER MILLION	DEPTH IN FEET
0						PAVEMENT: 13-3/4" Asphalt		0
2						CLAY, gray and tan, with ferrous stains and calcareous nodules	1.0	2
4		46.25	46.25	58.5			1.9	4
6							1.4	6
8		60	60	58			2.2	8
10						SANDY CLAY, gray and orange-brown, with calcareous nodules, calcareous material, and ferrous stains	1.0	10
12		60	60	57.5			1.7	12
14							2.4	14
16						SANDY CLAY, brown and gray, with ferrous stains	1.4	16
18		60	60	8.5			1.5	18
20						SILTY SAND, gray, damp	1.9	20
22		12	12			Termination depth = 21'	2.6	22
24						Notes: 1) Background air PID = 0.0-0.2ppm. 2) Empty sample bag air PID (not recorded) 3) Temporary monitor well installed to 21' with 10' of screen. 4) Groundwater sample collected (incomplete set due to low yield of groundwater).	3.3	24
26							2.6	26
28							1.7	28
30							1.7	30
32							2.4	32

BORING DRILLED TO 21 FEET WITHOUT DRILLING FLUID  
 WATER ENCOUNTERED AT n/a FEET WHILE DRILLING   
 WATER LEVEL AT 16.67 FEET AFTER 1/4-hr   
 DRILLED BY Envirotech CHECKED BY RJM LOGGED BY RJM

PROJECT NO. E103-19



PROJECT: Memorial Dr. Additional ESA-II

BORING

B-16

COH WBS No. TIRZ17

DRILL METHOD Push Probe

DATE

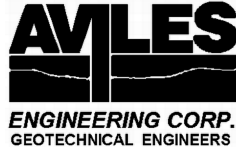
5/29/19

DEPTH IN FEET	SYMBOL	PUSHED INTERVAL (IN.)	PUSH RECOVERY (IN.)	SAMPLE INTERVAL	GPS COORDINATES: N 29.77135° W 95.55840°	SOIL DESCRIPTION	P.I.D. READING (PPM) PARTS PER MILLION	DEPTH IN FEET
0						PAVEMENT: 5" Asphalt; 7" Stabilized Crushed Limestone		0
2						CLAY, gray and tan, with ferrous stains	0.5	2
4		48	45				1.7	4
6						CLAY, gray and tan, with ferrous stains, ferrous nodules and calcareous nodules	2.1	6
8		60	54.5			SANDY CLAY, gray and orange-brown, with ferrous stains - calcareous nodules 8.2'-8.4'	1.4	8
10						SANDY CLAY, gray, tan, and orange-brown, with ferrous stains	1.4	10
12		60	58				1.5	12
14							1.0	14
16						CLAY, gray and tan, with sand pockets and sand partings	1.2	16
18		60	>48				2.6	18
20		12	12			CLAY, red-brown and gray, with calcareous nodules and calcareous material	1.5	20
22						CLAY, gray and red-brown, with some sand, calcareous nodules, and ferrous stains	0.3	22
24						Termination depth = 21'		24
26						Notes: 1) Background air PID = 0.0-0.3ppm. 2) Empty sample bag air PID = 0.5ppm. 3) Temporary monitor well installed to 21' with 10' of screen.		26
28								28
30								30
32								32

BORING DRILLED TO 21 FEET WITHOUT DRILLING FLUID  
 WATER ENCOUNTERED AT dry FEET WHILE DRILLING   
 WATER LEVEL AT dry FEET AFTER 1/2-hr   
 DRILLED BY Envirotech CHECKED BY RJM LOGGED BY RJM

PROJECT NO. E103-19





PROJECT: Memorial Dr. Additional ESA-II

BORING

B-17

COH WBS No. TIRZ17

DRILL METHOD Push Probe

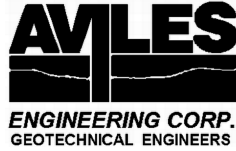
DATE

5/29/19

DEPTH IN FEET	SYMBOL	PUSHED INTERVAL (IN.)	PUSH RECOVERY (IN.)	SAMPLE INTERVAL	GPS COORDINATES: N 29.77108° W 95.55819°	SOIL DESCRIPTION	P.I.D. READING (PPM) PARTS PER MILLION	DEPTH IN FEET
0						PAVEMENT: 4" Asphalt; 7-1/2" Loosely Bonded Crushed Limestone and Sand		0
2						CLAY, brown, gray, and orange-brown	0.5 0.5	2
4		48.5	42			SANDY CLAY, orange-brown	1.2	
6						- orange-brown and gray 5'-10'	0.5 1.5	4
8							1.5	6
10		60	57.5			SANDY CLAY, orange-brown, tan, and gray, with ferrous stains	0.5 1.5	8
12							1.0	10
14							1.4	12
16		60	58			CLAY, tan and orange-brown, with slickensides, sand pockets, and sand partings - calcareous nodules 19.2'-19.3'	0.7 1.4	14
18							1.5	16
20		60	57			Termination depth = 20'	1.0	18
22						Notes: 1) Background air PID = 0.2-0.3ppm. 2) Empty sample bag air PID = 0.3ppm. 3) Temporary monitor well installed to 20' with 10' of screen.	0.9	20
24							0.9	22
26								24
28								26
30								28
32								30
								32

BORING DRILLED TO 20 FEET WITHOUT DRILLING FLUID  
 WATER ENCOUNTERED AT dry FEET WHILE DRILLING   
 WATER LEVEL AT dry FEET AFTER 1/4-hr   
 DRILLED BY Envirotech CHECKED BY RJM LOGGED BY RJM

PROJECT NO. E103-19



PROJECT: Memorial Dr. Additional ESA-II

BORING

B-18

COH WBS No. TIRZ17

DRILL METHOD Push Probe

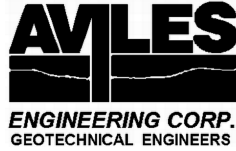
DATE

5/29/19

DEPTH IN FEET	SYMBOL	PUSHED INTERVAL (IN.)	PUSH RECOVERY (IN.)	SAMPLE INTERVAL	GPS COORDINATES: N 29.77084° W 95.55808°	SOIL DESCRIPTION	P.I.D. READING (PPM) PARTS PER MILLION	DEPTH IN FEET
0						PAVEMENT: 3-1/2" Asphalt; 8" Stabilized Crushed Limestone		0
2						SANDY CLAY, gray and brown	1.0	2
			48.5	22		SANDY CLAY, tan and gray	0.7	4
6						SANDY CLAY, tan and orange-brown, with ferrous stains, ferrous nodules, and calcareous nodules	0.9	6
8			60	57.5			0.7	8
10						SANDY CLAY, tan, with sand partings and sand seams - sandier with depth	1.0	10
12			60	58			1.0	12
14						SILTY SAND, light tan, wet	0.3	14
16						SANDY CLAY, orange-brown and gray - with calcareous nodules 15'-16'	0.7	16
18			60	56.5			1.2	18
20						Termination depth = 20'	0.7	20
22						Notes: 1) Background air PID = 0.0-0.2ppm. 2) Empty sample bag air PID = 1.0ppm. 3) Temporary monitor well installed to 20' with 15' of screen. 4) Insufficient groundwater to collect entire sample set; well went dry during sampling; only one VOC vial collected; no TPH vials collected.	0.7	22
24								24
26								26
28								28
30								30
32								32

BORING DRILLED TO 20 FEET WITHOUT DRILLING FLUID  
 WATER ENCOUNTERED AT 14.3 FEET WHILE DRILLING   
 WATER LEVEL AT 18.83 FEET AFTER 3/4-hr   
 DRILLED BY Envirotech CHECKED BY RJM LOGGED BY RJM

PROJECT NO. E103-19



PROJECT: Memorial Dr. Additional ESA-II

BORING

B-19

COH WBS No. TIRZ17

DRILL METHOD Push Probe

DATE

5/31/19

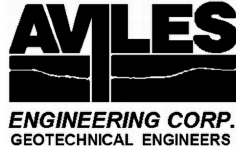
DEPTH IN FEET	SYMBOL	PUSHED INTERVAL (IN.)	PUSH RECOVERY (IN.)	SAMPLE INTERVAL	GPS COORDINATES: N 29.76879° W 95.55795°	SOIL DESCRIPTION	P.I.D. READING (PPM) PARTS PER MILLION	DEPTH IN FEET
0						PAVEMENT: 5" Asphalt; 2-1/2" Stabilized Crushed Limestone; 8" Stabilized Shell		0
2						SANDY CLAY, gray and orange-brown, with ferrous stains, ferrous nodules, sand pockets, and sand partings - sandier with depth	0.3	2
4		44.5	37.5				0.3	
4							0.1	4
4							1.1	
6						SANDY CLAY, gray, tan, and orange-brown	1.5	6
6							1.7	
8		60	58				1.5	8
8							2.1	
10							1.9	10
10							2.1	
12		60	57.5				1.9	12
12							1.1	
14						CLAYEY SAND, gray and orange-brown	2.3	14
14						SILTY SAND, gray	1.7	
16						SANDY CLAY, orange-brown and gray	2.1	16
16						SANDY CLAY, orange-brown and gray	1.5	
18		60	39.5			- becoming clayey silt 17'-17.3'	1.5	18
18						SILTY SAND, tan and red-brown, wet		
20						Termination depth = 20'		20
22						Notes:		22
22						1) Background air PID = 0.1-0.3ppm.		
24						2) Empty sample bag air PID = 0.9ppm.		24
24						3) Temporary monitor well installed to 20' with 15' of screen.		
26						4) Groundwater sample collected.		26
26								
28								28
28								
30								30
30								
32								32

BORING DRILLED TO 20 FEET WITHOUT DRILLING FLUID  
WATER ENCOUNTERED AT 17.3 FEET WHILE DRILLING

WATER LEVEL AT 17.25 FEET AFTER 1/2-hr

DRILLED BY Envirotech CHECKED BY RJM LOGGED BY RJM

PROJECT NO. E103-19



PROJECT: Memorial Dr. Additional ESA-II

BORING

B-20

COH WBS No. TIRZ17

DRILL METHOD Push Probe

DATE

6/3/19

DEPTH IN FEET	SYMBOL	PUSHED INTERVAL (IN.)	PUSH RECOVERY (IN.)	SAMPLE INTERVAL	GPS COORDINATES: N 29.76848° W 95.55792°	SOIL DESCRIPTION	P.I.D. READING (PPM) PARTS PER MILLION	DEPTH IN FEET
0						PAVEMENT: 10-1/2" Asphalt; 3-1/2" Stabilized Shell		0
2						CLAY WITH SAND, gray and orange-brown, with ferrous stains and sand partings	0.0	2
4		46	42.5				0.0	4
6						SANDY CLAY, gray and orange-brown, with calcareous nodules, ferrous stains, and ferrous nodules	0.4	6
8							0.8	8
10		60	59				0.8	10
12						SANDY CLAY, gray and orange-brown, very sandy in spots, with sand seams and ferrous stains	0.8	12
14							1.0	14
16						- bottom 3" gray silty sand	1.3	16
18						SANDY CLAY, tan, orange-brown, and gray, with sand seams	0.8	18
20						- damp 17'-18.4'	0.8	20
22						CLAYEY SAND and SILTY SAND, gray, wet	1.5	22
24						Termination depth = 20'	0.6	24
26						Notes:	0.8	26
28						1) Background air PID = 0.0-0.4ppm.		28
30						2) Empty sample bag air PID = 1.3ppm.		30
32						3) Temporary monitor well installed to 20' with 15' of screen.		32
						4) Groundwater sample collected.		

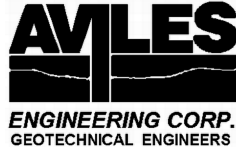
BORING DRILLED TO 20 FEET WITHOUT DRILLING FLUID

WATER ENCOUNTERED AT 18.4 FEET WHILE DRILLING

WATER LEVEL AT 18.38 FEET AFTER 3/4-hr

DRILLED BY Envirotech CHECKED BY RJM LOGGED BY RJM

PROJECT NO. E103-19



PROJECT: Memorial Dr. Additional ESA-II

BORING

B-21

COH WBS No. TIRZ17

DRILL METHOD Push Probe

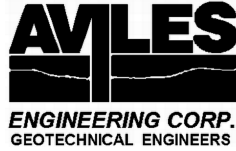
DATE

6/3/19

DEPTH IN FEET	SYMBOL	PUSHED INTERVAL (IN.)	PUSH RECOVERY (IN.)	SAMPLE INTERVAL	GPS COORDINATES: N 29.76815° W 95.55779°	SOIL DESCRIPTION	P.I.D. READING (PPM) PARTS PER MILLION	DEPTH IN FEET
0						PAVEMENT: 7" Asphalt; 8" Stabilized Crushed Limestone		0
2						SAND and CLAY, gray	0.2	2
						SANDY CLAY, gray, soft	1.0	
4		45	23				1.0	4
6						CLAY WITH SAND, gray and orange-brown, with ferrous stains	1.5	6
							1.0	
8		60	56.5			SANDY CLAY, gray and orange-brown, with ferrous stains	1.9	8
							1.3	
10						SANDY CLAY, gray and orange-brown, with ferrous stains	2.1	10
							0.9	
12		60	56.5				2.1	12
							1.7	
14						CLAY, orange-brown and gray	1.9	14
							1.0	
16						SANDY CLAY and CLAY, gray, tan, and orange-brown, with ferrous stains	2.2	16
							2.1	
18		60	39			SANDY CLAY and CLAYEY SAND, tan and orange-brown	1.3	18
						SILTY SAND, gray, wet		
20		12	12				0.6	20
22						Termination depth = 21'		22
24						Notes: 1) Background air PID = 0.0-0.4ppm. 2) Empty sample bag air PID = 0.6ppm. 3) Temporary monitor well installed to 21' with 15' of screen. 4) Groundwater sample collected.		24
26								26
28								28
30								30
32								32

BORING DRILLED TO 21 FEET WITHOUT DRILLING FLUID  
 WATER ENCOUNTERED AT 17.8 FEET WHILE DRILLING   
 WATER LEVEL AT 19.30 FEET AFTER 1/4-hr   
 DRILLED BY Envirotech CHECKED BY RJM LOGGED BY RJM

PROJECT NO. E103-19



PROJECT: Memorial Dr. Additional ESA-II

BORING

B-22

COH WBS No. TIRZ17

DRILL METHOD Push Probe

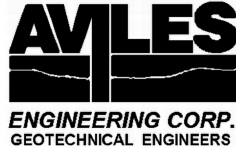
DATE

6/3/19

DEPTH IN FEET	SYMBOL	PUSHED INTERVAL (IN.)	PUSH RECOVERY (IN.)	SAMPLE INTERVAL	GPS COORDINATES: N 29.76781° W 95.55790°	SOIL DESCRIPTION	P.I.D. READING (PPM) PARTS PER MILLION	DEPTH IN FEET
0						PAVEMENT: 5" Asphalt; 7" Stabilized Shell		0
2						CLAY, dark gray and tan	0.6	2
4		48	40				0.6	4
6						SANDY CLAY, gray and green-gray, with ferrous stains, sand seams, and sand partings	0.4	6
8		60	57.5				0.4	8
10							0.2	10
12		60	44			SILTY SAND, gray and green-gray, with clay pockets	0.6	12
14							1.5	14
16		60	41			CLAY, green-gray and gray	0.4	16
18						SILTY SAND, gray, wet - strong petroleum product odor	0.8	18
20							3.1	20
22		60	56			SANDY CLAY, gray - possible cave in	0.8	22
24						SILTY SAND, gray, green-gray and red-brown - very strong petroleum product odor	0.8	24
26		12	12			Termination depth = 26'	6.2	26
28							472	28
30						Notes: 1) Background air PID = 0.0-0.4ppm. 2) Empty sample bag air PID = 0.2ppm. 3) Temporary monitor well installed to 26' with 20' of screen. 4) Groundwater sample collected; petroleum product odor.	408	30
32							11.0	32

BORING DRILLED TO 26 FEET WITHOUT DRILLING FLUID  
 WATER ENCOUNTERED AT 17.3 FEET WHILE DRILLING   
 WATER LEVEL AT 19.39 FEET AFTER 1/2-hr   
 DRILLED BY Envirotech CHECKED BY RJM LOGGED BY RJM

PROJECT NO. E103-19



PROJECT: Memorial Dr. Additional ESA-II

BORING

B-23

COH WBS No. TIRZ17

DRILL METHOD Push Probe

DATE

6/4/19

DEPTH IN FEET	SYMBOL	PUSHED INTERVAL (IN.)	PUSH RECOVERY (IN.)	SAMPLE INTERVAL	GPS COORDINATES: N 29.76752° W 95.55785°	SOIL DESCRIPTION	P.I.D. READING (PPM) PARTS PER MILLION	DEPTH IN FEET
0						PAVEMENT: 4-3/4" Asphalt; 6" Concrete	0.0	0
2		49-25	29.5			SANDY CLAY, gray, tan, and orange-brown, with ferrous stains and sand partings	0.0 0.1	2
4								4
6						CLAY WITH SAND, gray and orange-brown, with ferrous stains and ferrous nodules	0.1 0.1	6
8		60	59.5				0.0	8
10						CLAY, gray	0.1	10
12		60	58			SANDY CLAY, gray and orange-brown, with ferrous stains, sand partings, and sand seams	0.0 0.1	12
14							0.5 0.7	14
16						SANDY CLAY, brown, gray, and orange-brown - with calcareous nodules 17'-17.7'	0.1 0.1	16
18		60	33				0.3 0.5	18
20						SILTY SAND, gray		20
22		60	53			SANDY CLAY, brown and gray - slight petroleum product odor	0.5 0.9	22
24						SILTY SAND, gray, wet - very strong petroleum product odor	14.7	24
26		12	12			Termination depth = 26'	291 19	26
28							5.9	28
30						Notes: 1) Background air PID = 0.0-0.3ppm. 2) Empty sample bag air PID = 0.3ppm. 3) Temporary monitor well installed to 26' with 15' of screen. 4) Groundwater sample collected; petroleum product odor.		30
32								32

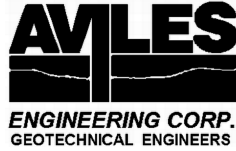
BORING DRILLED TO 26 FEET WITHOUT DRILLING FLUID

WATER ENCOUNTERED AT 22.4 FEET WHILE DRILLING

WATER LEVEL AT 19.63 FEET AFTER 1/4-hr

DRILLED BY Envirotech CHECKED BY RJM LOGGED BY RJM

PROJECT NO. E103-19



PROJECT: Memorial Dr. Additional ESA-II

BORING

B-24

COH WBS No. TIRZ17

DRILL METHOD Push Probe

DATE

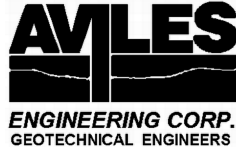
6/4/19

DEPTH IN FEET	SYMBOL	PUSHED INTERVAL (IN.)	PUSH RECOVERY (IN.)	SAMPLE INTERVAL	GPS COORDINATES: N 29.76722° W 95.55774°	SOIL DESCRIPTION	P.I.D. READING (PPM) PARTS PER MILLION	DEPTH IN FEET
0						PAVEMENT: 6" Asphalt; 4" Loose Shell	0.7	0
2						CLAY, gray and tan, with ferrous stains and some sand	1.1	2
4		43.5	60			SANDY CLAY, tan	1.1	4
6						SANDY CLAY, tan and gray, with calcareous nodules and sand partings - sandier with depth	0.9	6
8		57	60				0.7	8
10						SANDY CLAY, orange-brown and gray, with sand partings, sand seams, sand layer, and ferrous stains	1.5	10
12		54.5	60			SANDY CLAY, orange-brown and gray, with sand partings, sand seams, sand layer, and ferrous stains	0.9	12
14						SANDY CLAY, orange-brown and gray	1.1	14
16						CLAYEY SAND, tan and green-gray	1.3	16
18		50.5	60			- petroleum product odor	1.1	18
20						SANDY CLAY, gray and tan	0.7	20
22		48	60			- cave in at 20'-21'	1.5	22
24						SILTY SAND, gray, wet	0.5	22
26		12	12			CLAY, orange-brown	0.9	24
28						CLAY, red-brown, with slickensides	1.2	24
30						Termination depth = 26'	0.9	26
32						Notes: 1) Background air PID = 0.1-0.3ppm. 2) Empty sample bag air PID = 0.5ppm. 3) Temporary monitor well installed to 26' with 15' of screen. 4) Groundwater sample collected; petroleum product odor.	3.2	26

BORING DRILLED TO 26 FEET WITHOUT DRILLING FLUID  
 WATER ENCOUNTERED AT 21 FEET WHILE DRILLING   
 WATER LEVEL AT 19.86 FEET AFTER 1/2-hr   
 DRILLED BY Envirotech CHECKED BY RJM LOGGED BY RJM

PROJECT NO. E103-19





PROJECT: Memorial Dr. Additional ESA-II

BORING

B-25

COH WBS No. TIRZ17

DRILL METHOD Push Probe

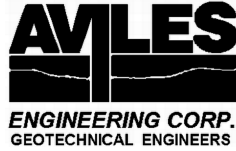
DATE

6/4/19

DEPTH IN FEET	SYMBOL	PUSHED INTERVAL (IN.)	PUSH RECOVERY (IN.)	SAMPLE INTERVAL	GPS COORDINATES: N 29.76618° W 95.55484°	SOIL DESCRIPTION	P.I.D. READING (PPM) PARTS PER MILLION	DEPTH IN FEET
0						PAVEMENT: 8" Asphalt; 8-1/2" Loose Shell		0
2						CLAY, brown and tan, with ferrous stains	0.3	2
4		43.5		34.5		SANDY CLAY, gray and tan, with some sand partings and ferrous stains	0.5 0.9	4
6						SILTY SANDY CLAY, gray and orange-brown, with sand partings - with calcareous nodules 6'-7'	1.1 0.9	6
8							1.3 0.7	8
10						SANDY CLAY, gray and orange-brown	0.7 1.5	10
12		60		47		SILTY SAND, with some clay, gray and orange-brown, dry	0.5 0.3	12
14						SANDY CLAY, gray and orange-brown	0.3	14
16						SANDY CLAY, tan and orange-brown, with calcareous nodules	0.5 0.3	16
18		60		50		SILTY SAND, gray - upper 3" clayey sand - wet at 18.5'	0.3 0.1 0.1	18
20						SANDY CLAY, gray and tan - possible cave in	0.7 0.1	20
22		60		49		SILTY SAND, gray and green-gray - somewhat clayey at the last 5"	0.1 0.1	22
24							0.1	24
26						Termination depth = 25'		26
28						Notes: 1) Background air PID = 0.0-0.5ppm. 2) Empty sample bag air PID = 0.3ppm. 3) Temporary monitor well installed to 25' with 15' of screen. 4) Groundwater sample collected.		28
30								30
32								32

BORING DRILLED TO 25 FEET WITHOUT DRILLING FLUID  
 WATER ENCOUNTERED AT 18.5 FEET WHILE DRILLING   
 WATER LEVEL AT 19.11 FEET AFTER 1/4-hr   
 DRILLED BY Envirotech CHECKED BY RJM LOGGED BY RJM

PROJECT NO. E103-19



PROJECT: Memorial Dr. Additional ESA-II

BORING

B-26

COH WBS No. TIRZ17

DRILL METHOD Push Probe

DATE

6/6/19

DEPTH IN FEET	SYMBOL	PUSHED INTERVAL (IN.)	PUSH RECOVERY (IN.)	SAMPLE INTERVAL	GPS COORDINATES: N 29.76605° W 95.55460°	SOIL DESCRIPTION	P.I.D. READING (PPM) PARTS PER MILLION	DEPTH IN FEET
0						PAVEMENT: 10-3/4" Asphalt; 8-1/4" Loose Shell		0
2						CLAY, dark gray, damp - slight unidentified odor	0.0 0.0	2
4		41		30		SILTY CLAY, dark gray SILTY SAND, gray, very fine	0.2 0.2	4
6						SANDY SILTY CLAY and CLAYEY SILT, dark gray, with roots, ferrous nodules, and ferrous stains, damp at the last 1"	0.2 0.0	6
8		60		32		- slight unidentified odor	0.0	8
10						SILTY SANDY CLAY and CLAYEY SILT, dark gray, with ferrous stains, slight unidentified odor, and sand partings, damp	0.0 0.0	10
12		60		32			0.4	12
14						SANDY SILTY CLAY and CLAYEY SILT, gray, with ferrous stains, damp	0.4 0.4	14
16							0.9	16
18		60		46.5			0.9	18
20						SANDY CLAY and CLAYEY SAND, gray, with ferrous stains, damp	0.2 0.2	20
22		60		30			0.9	22
24								24
26		12		12		SILTY SAND, gray, wet Termination depth = 26'	0.9	26
28						Notes: 1) Background air PID = 0.0-0.2ppm. 2) Empty sample bag air PID = 1.4ppm. 3) Temporary monitor well installed to 26' with 15' of screen. 4) Groundwater sample collected.		28
30								30
32								32

BORING DRILLED TO 26 FEET WITHOUT DRILLING FLUID

WATER ENCOUNTERED AT 25 FEET WHILE DRILLING

WATER LEVEL AT 18.88 FEET AFTER 1/4-hr

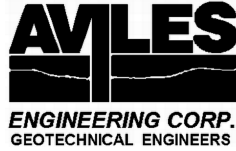
DRILLED BY Envirotech

CHECKED BY RJM

LOGGED BY

RJM

PROJECT NO. E103-19



PROJECT: Memorial Dr. Additional ESA-II

BORING

B-27

COH WBS No. TIRZ17

DRILL METHOD Push Probe

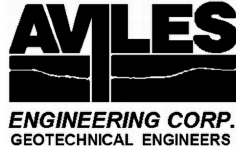
DATE

6/6/19

DEPTH IN FEET	SYMBOL	PUSHED INTERVAL (IN.)	PUSH RECOVERY (IN.)	SAMPLE INTERVAL	GPS COORDINATES: N 29.76614° W 95.55402°	SOIL DESCRIPTION	P.I.D. READING (PPM) PARTS PER MILLION	DEPTH IN FEET
0						PAVEMENT: 10-1/2" Asphalt; 7-1/2" Stabilized Shell		0
2						CLAY, gray and orange-brown - with organic material 1.5'-2' - with sand pockets 3'-4'	0.2	2
4							0.0	4
6						CLAY, tan and orange-brown, with ferrous stains and some organic material	0.7	6
8							0.7	8
10						SANDY CLAY, tan and orange-brown, with ferrous nodules and ferrous stains - sandier with depth	0.4	10
12							0.4	12
14						SANDY CLAY, gray and orange-brown, with sand seams	0.2	14
16							0.2	16
18						SANDY CLAY, tan and gray - slight unidentified odor beginning at 16'	0.0	18
20						SILTY SAND, with some clay in the upper 3", gray, wet	0.0	20
22						SANDY CLAY, gray and tan, cave in	0.2	22
24						SILTY SAND, gray, wet	0.0	24
26						Termination depth = 24	0.0	26
28						Notes: 1) Background air PID = 0.0-0.2ppm. 2) Empty sample bag air PID = 0.2. 3) Temporary monitor well installed to 24' with 15' of screen. 4) Groundwater sample collected.	0.0	28
30							0.0	30
32							0.0	32

BORING DRILLED TO 24 FEET WITHOUT DRILLING FLUID  
 WATER ENCOUNTERED AT 18.2 FEET WHILE DRILLING   
 WATER LEVEL AT 18.29 FEET AFTER 1/4-hr   
 DRILLED BY Envirotech CHECKED BY RJM LOGGED BY RJM

PROJECT NO. E103-19



PROJECT: Memorial Dr. Additional ESA-II

BORING

B-28

COH WBS No. TIRZ17

DRILL METHOD Push Probe

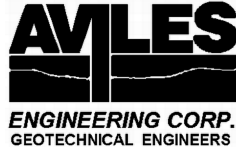
DATE

6/6/19

DEPTH IN FEET	SYMBOL	PUSHED INTERVAL (IN.)	PUSH RECOVERY (IN.)	SAMPLE INTERVAL	GPS COORDINATES:	SOIL DESCRIPTION	P.I.D. READING (PPM) PARTS PER MILLION	DEPTH IN FEET
					N 29.76616° W 95.55372°			
0						PAVEMENT: 9-1/2" Asphalt; 9" Loose Shell		0
2						CLAY, tan and orange-brown, with ferrous stains	0.2	2
4		41.5	41.5			SANDY CLAY, tan, gray, and orange-brown, with calcareous nodule seam and ferrous stains	0.2	4
6						VERY SANDY CLAY to CLAYEY SAND, gray and orange-brown, with ferrous stains and ferrous nodules	0.4	6
8		60	48.5				0.4	8
10						SANDY CLAY, gray and tan, with ferrous stains	0.2	10
12		60	39.25			SILTY SAND WITH CLAY, gray and orange-brown	0.2	12
14						SANDY CLAY, gray and orange-brown, lower part is damp	0.2	14
16						SANDY CLAY, orange-brown and gray, with some calcareous nodules	0.4	16
18		60	54.5			- damp 18'-20'	0.9	18
20							0.9	20
22		48	48			SANDY CLAY, gray and orange-brown, damp	0.7	22
24						SILTY SAND and SILT, gray and tan, wet	0.7	24
26						Termination depth = 24'	0.9	26
28						Notes:	0.7	28
30						1) Background air PID = 0.2-0.4ppm.		30
32						2) Empty sample bag air PID = 1.2ppm.		32
						3) Temporary monitor well installed to 24' with 15' of screen.		
						4) Groundwater sample collected.		

BORING DRILLED TO 24 FEET WITHOUT DRILLING FLUID  
 WATER ENCOUNTERED AT 20.3 FEET WHILE DRILLING   
 WATER LEVEL AT 18.08 FEET AFTER 1/4-hr   
 DRILLED BY Envirotech CHECKED BY RJM LOGGED BY RJM

PROJECT NO. E103-19



PROJECT: Memorial Dr. Additional ESA-II

BORING

B-29

COH WBS No. TIRZ17

DRILL METHOD Push Probe

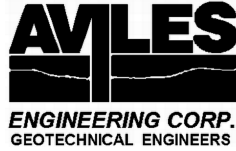
DATE

6/6/19

DEPTH IN FEET	SYMBOL	PUSHED INTERVAL (IN.)	PUSH RECOVERY (IN.)	SAMPLE INTERVAL	GPS COORDINATES: N 29.76514° W 95.55340°	SOIL DESCRIPTION	P.I.D. READING (PPM) PARTS PER MILLION	DEPTH IN FEET
0						PAVEMENT: 9" Asphalt; 3" Loose Shell		0
2						CLAY, tan, gray, and orange-brown, with ferrous stains, ferrous nodules, some silt partings, and some calcareous nodules	0.0	2
4		48	30			- wet beneath pavement - slight unidentified odor 1'-8.8'	0.3 0.0	4
6							0.0 0.2	6
8		60	60			- sand-lined slickenside at 8.6'	0.4 0.0	8
10						SANDY CLAY, tan and gray, with ferrous stains and ferrous nodules	0.2	10
12						SANDY CLAY, tan and orange-brown, with many sand partings	0.4	12
14							0.4 0.7	14
16							0.7 0.9	16
18						CLAY, gray and orange-brown, with sand pockets, sand partings, and calcareous nodules	0.9	18
20						- slight unidentified odor	0.4	20
22						SANDY CLAY, gray and tan	0.2	22
24						SILTY SAND, gray	0.0	22
26						- wet at 22.6'	0.0	22
28						Termination depth = 24'		24
30						Notes: 1) Background air PID = 0.0-0.2ppm. 2) Empty sample bag air PID = 0.2ppm. 3) Temporary monitor well installed to 24' with 10' of screen. 4) Groundwater sample collected.		26
32								28
								30
								32

BORING DRILLED TO 24 FEET WITHOUT DRILLING FLUID  
 WATER ENCOUNTERED AT 22.6 FEET WHILE DRILLING   
 WATER LEVEL AT 17.79 FEET AFTER 1/4-hr   
 DRILLED BY Envirotech CHECKED BY RJM LOGGED BY RJM

PROJECT NO. E103-19



PROJECT: Memorial Dr. Additional ESA-II

BORING

B-30

COH WBS No. TIRZ17

DRILL METHOD Push Probe

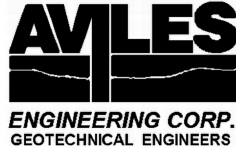
DATE

5/29/19

DEPTH IN FEET	SYMBOL	PUSHED INTERVAL (IN.)	PUSH RECOVERY (IN.)	SAMPLE INTERVAL	GPS COORDINATES: N 29.76626° W 95.55300°	SOIL DESCRIPTION	P.I.D. READING (PPM) PARTS PER MILLION	DEPTH IN FEET
0						PAVEMENT: 14" Asphalt		0
2						SANDY CLAY, tan and gray, with calcareous nodules	0.5	2
4		46	41			- slight unidentified odor 4'-4.3'	0.5	4
6						SANDY CLAY, gray and orange-brown, with calcareous nodules - slight unidentified odor	1.0	6
8		60	30.25			SILTY CLAY, gray and orange-brown, with sand partings - slight unidentified odor 5'-10' - wet and soft 6.2'-6.4'	0.3 0.2 0.2	8
10						CLAY, tan, sticky, wet	0.7	10
12		60	38			SANDY CLAY, tan and gray, with sand seams and sand layers	0.5	12
14						CLAY, red-brown and gray, with calcareous nodules		14
16						SANDY CLAY, tan	1.4	16
18		60	42			SANDY CLAY, tan, soft, damp CLAY, sandy in upper 2", gray and tan, with calcareous nodules	1.0 1.4	18
20						SANDY CLAY, orange-brown and gray, with calcareous nodules	1.5	20
22		60	54			- soft 22'-22.5'	0.7	22
24						SANDY CLAY, gray and orange-brown, with clay layers and calcareous nodules	0.9	24
26						SAND, fine-grained, gray, wet	1.2	26
28						Termination depth = 25'	1.0	28
30						Notes: 1) Background air PID = 0.0-0.2ppm. 2) Empty sample bag air PID = 1.2ppm. 3) Temporary monitor well installed to 25' with 20' of screen. 4) Groundwater sample collected.	1.0	30
32								32

BORING DRILLED TO 25 FEET WITHOUT DRILLING FLUID  
 WATER ENCOUNTERED AT 6.2 FEET WHILE DRILLING   
 WATER LEVEL AT 17.83 FEET AFTER 1/4-hr   
 DRILLED BY Envirotech CHECKED BY RJM LOGGED BY RJM

PROJECT NO. E103-19



PROJECT: Memorial Dr. Additional ESA-II

BORING

B-31

COH WBS No. TIRZ17

DRILL METHOD Push Probe

DATE

5/29/19

DEPTH IN FEET	SYMBOL	PUSHED INTERVAL (IN.)	PUSH RECOVERY (IN.)	SAMPLE INTERVAL	GPS COORDINATES: N 29.76629° W 95.55247°	SOIL DESCRIPTION	P.I.D. READING (PPM) PARTS PER MILLION	DEPTH IN FEET
0						PAVEMENT: 13" Asphalt		0
2						CLAY, gray and dark gray, with calcareous nodules, ferrous stains, and ferrous nodules	0.3	2
4		47	46.5				1.2	4
6						SANDY CLAY, gray, tan, and orange-brown, with sand partings, ferrous stains, and ferrous nodules	1.0	6
8		60	49				1.9	8
10							1.4	10
12		24	24			Termination depth = 12'	0.9	12
14						Notes: 1) Background air PID = 0.0-0.2ppm. 2) Empty sample bag air PID = 0.5ppm. 3) Temporary monitor well installed to 12' with 10' of screen.	1.9	14
16							2.2	16
18							1.9	18
20							2.2	20
22							1.9	22
24							1.0	24
26							1.2	26
28								28
30								30
32								32

BORING DRILLED TO dry FEET WITHOUT DRILLING FLUID  
 WATER ENCOUNTERED AT dry FEET WHILE DRILLING  $\nabla$   
 WATER LEVEL AT dry FEET AFTER 1/4-hr  $\nabla$   
 DRILLED BY Envirotech CHECKED BY RJM LOGGED BY RJM

PROJECT NO. E103-19

**Limited Phase II Environmental Site Assessment  
Memorial Drive Reconstruction, Houston, Texas**

**APPENDIX D**

**SUMMARY OF LABORATORY SAMPLE ANALYSIS RESULTS**



**TABLE 2**  
**Summary of Soil Laboratory Analysis Results: Benzene, Toluene, Ethylbenzene, Xylenes, Total Petroleum Hydrocarbons, and Methyl Tertiary Butyl Ether**  
**Additional Phase II Environmental Site Assessment**  
**Memorial Drive Reconstruction Between West Sam Houston Parkway and Tallowood Road**

Soil Boring	Sample Interval (feet bgs <sup>1</sup> )	Benzene (mg/Kg <sup>2</sup> )	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	m- & p-Xylenes (mg/Kg)	o-Xylenes (mg/Kg)	Total Xylenes (mg/Kg)	Methyl Tertiary Butyl Ether (mg/Kg)	TPH <sup>3</sup> C6-C12 (mg/Kg)	TPH >C12-C28 (mg/Kg)	TPH >C28-C35 (mg/Kg)	TPH C6-C35 (mg/Kg)
B-1 <sup>4</sup>	14 to 15	U <sup>5</sup> , <0.001	U, <0.001	U, <0.001	U, <0.001	U, <0.001	U, <0.001	U, <0.003	U, <27.1	U, <23.3	U, <17.7	NR <sup>6</sup>
B-2 <sup>4</sup>	23 to 24	U, <0.001	U, <0.001	U, <0.001	U, <0.001	U, <0.001	U, <0.001	U, <0.003	U, <30.7	U, <26.3	U, <22.9	NR
B-3 <sup>4</sup>	21 to 22	U, <0.0006	U, <0.001	U, <0.0006	U, <0.0006	U, <0.0006	U, <0.0006	U, <0.002	U, <27.2	U, <23.3	U, <20.3	NR
B-19	13 to 14	U, <0.00023	U, <0.00032	U, <0.00032	U, <0.00080	U, <0.00030	U, <0.00108	U, <0.00041	U, <23.54	U, <20.16	U, <17.58	U, <17.58
B-20	17 to 18	U, <0.00029	U, <0.00042	U, <0.00042	U, <0.00104	U, <0.00039	U, <0.00140	U, <0.00054	U, <24.6	U, <21.1	U, <18.4	U, <18.4
B-21	16 to 17	U, <0.00028	U, <0.00040	U, <0.00040	U, <0.00099	U, <0.00037	U, <0.00133	U, <0.00051	U, <27.4	U, <23.5	U, <20.5	U, <20.5
B-22	23 to 24	U, <0.00029	U, <0.00042	0.00763	0.00655	U, <0.00039	0.00655	U, <0.00054	42.5	U, <23.6	U, <20.6	42.5
B-23	23 to 24	U, <0.0191	2.39	46.0	123	14.4	137.4	U, <0.0351	490	U, <22.3	U, <19.5	490
B-24	20 to 22	U, <0.00029	U, <0.00041	U, <0.00041	U, <0.00102	U, <0.00038	U, <0.00138	U, <0.00053	U, <26.9	U, <23.0	U, <20.1	U, <20.1

<sup>1</sup>bgs = below grade surface.

<sup>2</sup>mg/Kg = milligrams per Kilograms.

<sup>3</sup>TPH = total petroleum hydrocarbons.

<sup>4</sup>B-1= Borings B-1 through B-3 were drilled on May 25, 2017.

<sup>5</sup>U = Undetected at laboratory detection limit shown.

<sup>6</sup>NR = Not reported on laboratory report.

0.00763 = Exceeds laboratory detection limit.

**TABLE 3**  
**Summary of Soil Laboratory Analysis Results: Volatile Organic Compounds and Total Petroleum Hydrocarbons**  
**Additional Phase II Environmental Site Assessment**  
**Memorial Drive Reconstruction Between West Sam Houston Parkway and Tallowood Road**

Soil Boring	Sample Interval (feet bgs <sup>1</sup> )	Detected Volatile Organic Compounds (mg/Kg <sup>2</sup> )	TPH C6-C12 mg/Kg	TPH >C12-C28 mg/Kg	TPH >C28-C35 mg/Kg	TPH C6-C35 mg/Kg
B-4 <sup>3</sup>	25 to 26	None detected, refer to laboratory report for detection limits.	U <sup>4</sup> , <29.2	U, <25	U, <21.8	NR <sup>5</sup>
B-5 <sup>6</sup>	11 to 12	None detected, refer to laboratory report for detection limits.	U, <27	U, <23.1	U, <20.2	NR
B-6 <sup>6</sup>	20 to 22	None detected, refer to laboratory report for detection limits.	U, <27.4	U, <23.4	U, <20.4	NR
B-7	1 to 2	None detected, refer to laboratory report for detection limits.	U, <23.27	U, <19.93	U, <17.38	U, <17.38
B-8	7 to 8	None detected, refer to laboratory report for detection limits.	U, <23.9	U, <20.5	U, <17.9	U, <17.9
B-9	13 to 14	None detected, refer to laboratory report for detection limits.	U, <26.5	U, <22.7	U, <19.8	U, <19.8
B-10	6 to 7	None detected, refer to laboratory report for detection limits.	U, <25.4	U, <21.8	U, <19.0	U, <19.0
B-11	12 to 13	None detected, refer to laboratory report for detection limits.	U, <23.35	U, <20.00	U, <17.44	U, <17.44
B-12	8 to 9	None detected, refer to laboratory report for detection limits.	U, <26.6	U, <22.7	U, <19.8	U, <19.8
B-13	7 to 8	None detected, refer to laboratory report for detection limits.	U, <24.8	U, <21.2	U, <18.5	U, <18.5
B-14	13 to 14	None detected, refer to laboratory report for detection limits.	U, <23.8	U, <20.4	U, <17.8	U, <17.8

<sup>1</sup>bgs = below grade surface.

<sup>2</sup>mg/Kg = milligrams per Kilograms.

<sup>3</sup>B-4 = Boring B-4 was drilled on May 25, 2017.

<sup>4</sup>U = Undetected at laboratory detection limit shown.

<sup>5</sup>NR = Not reported on laboratory report.

<sup>6</sup>B-5 = Borings B-5 and B-6 were drilled on May 26, 2017

**TABLE 3 (continued)**  
**Summary of Soil Laboratory Analysis Results: Volatile Organic Compounds and Total Petroleum Hydrocarbons**  
**Additional Phase II Environmental Site Assessment**  
**Memorial Drive Reconstruction Between West Sam Houston Parkway and Tallowood Road**

Soil Boring	Sample Interval (feet bgs <sup>1</sup> )	Detected Volatile Organic Compounds (mg/Kg <sup>2</sup> )	TPH C6-C12 mg/Kg	TPH >C12-C28 mg/Kg	TPH >C28-C35 mg/Kg	TPH C6-C35 mg/Kg
B-15	13 to 14	None detected, refer to laboratory report for detection limits.	U, <sup>4</sup> <24.8	U, <21.3	U, <18.5	U, <18.5
B-16	16 to 17	None detected, refer to laboratory report for detection limits.	U, <25.6	U, <22.0	U, <19.1	U, <19.1
B-17	13 to 14	None detected, refer to laboratory report for detection limits.	U, <26.0	U, <22.3	U, <19.4	U, <19.4
B-18	17 to 18	None detected, refer to laboratory report for detection limits.	U, <24.2	U, <20.7	U, <18.1	U, <18.1
B-25	9 to 10	None detected, refer to laboratory report for detection limits.	U, <25.7	U, <22.0	U, <19.2	U, <19.2
B-26	25 to 26	None detected, refer to laboratory report for detection limits.	U, <26.4	U, <22.6	U, <19.7	U, <19.7
B-27	6 to 7	None detected, refer to laboratory report for detection limits.	U, <26.0	U, <22.3	U, <19.4	U, <19.4
B-28	18 to 20	None detected, refer to laboratory report for detection limits.	U, <25.9	U, <22.2	U, <19.4	U, <19.4
B-29	17 to 18	None detected, refer to laboratory report for detection limits.	U, <26.6	U, <22.8	U, <19.8	U, <19.8

<sup>1</sup>bgs = below grade surface.

<sup>2</sup>mg/Kg = milligrams per Kilograms.

<sup>3</sup>B-4 = Boring B-4 was drilled on May 25, 2017.

<sup>4</sup>U = Undetected at laboratory detection limit shown.

<sup>5</sup>NR = Not reported on laboratory report.

<sup>6</sup>B-5 = Borings B-5 and B-6 were drilled on May 26, 2017

**TABLE 3 (continued)**  
**Summary of Soil Laboratory Analysis Results: Volatile Organic Compounds and Total Petroleum Hydrocarbons**  
**Additional Phase II Environmental Site Assessment**  
**Memorial Drive Reconstruction Between West Sam Houston Parkway and Tallowood Road**

Soil Boring	Sample Interval (feet bgs <sup>1</sup> )	Detected Volatile Organic Compounds (mg/Kg <sup>2</sup> )	TPH C6-C12 mg/Kg	TPH >C12-C28 mg/Kg	TPH >C28-C35 mg/Kg	TPH C6-C35 mg/Kg
B-30	18 to 19	<b>cis-1,2-Dichloroethylene: 0.00585 mg/Kg</b> ; remaining compounds not detected, refer to laboratory report for detection limits.	U <sup>4</sup> , <27.5	U, <23.5	U, <20.5	U, <20.5
B-31	6 to 7	None detected, refer to laboratory report for detection limits.	U, <27.6	U, <23.6	U, <20.6	U, <20.6

<sup>1</sup>bgs = below grade surface.

<sup>2</sup>mg/Kg = milligrams per Kilograms.

<sup>3</sup>B-4 = Boring B-4 was drilled on May 25, 2017.

<sup>4</sup>U = Undetected at laboratory detection limit shown.

<sup>5</sup>NR = Not reported on laboratory report.

<sup>6</sup>B-5 = Borings B-5 and B-6 were drilled on May 26, 2017

**0.00585** = Exceeds laboratory detection limit.

**TABLE 4**  
**Summary of Groundwater Laboratory Analysis Results: Benzene, Toluene, Ethylbenzene, Xylenes, Total Petroleum Hydrocarbons, and Methyl Tertiary Butyl Ether**  
**Additional Phase II Environmental Site Assessment**  
**Memorial Drive Reconstruction Between West Sam Houston Parkway and Tallowood Road**

Temp-orary Well	Depth Ground-water Encoun-tered (feet bgs <sup>1</sup> )	Benzene (mg/L <sup>2</sup> )	Toluene (mg/L)	Ethyl-benzene (mg/L)	m- & p- Xylenes (mg/L)	o- Xylenes (mg/L)	Total Xylenes (mg/L)	MTBE (mg/L)	TPH C6-C12 (mg/L)	TPH >C12-C28 (mg/L)	TPH >C28-C35 (mg/L)	TPH C6-C35 (mg/L)
B-2 <sup>3</sup>	Dry, but at 25.66 one half hour after drilling	0.277	0.014	U <sup>4</sup> , <0.001	0.015	U, <0.001	0.015	0.025	U, <0.601	U, <0.783	U, <0.683	NR <sup>5</sup>
B-19	17.25	U, <0.00035	U, <0.00028	U, <0.00035	U, <0.00060	U, <0.00250	U, <0.00820	U, <0.00066	U, <0.60	U, <0.78	U, <0.68	U, <0.78
B-20	18.42	U, <0.00035	U, <0.00028	U, <0.00035	U, <0.00060	U, <0.00250	U, <0.00820	U, <0.00066	U, <0.60	U, <0.78	U, <0.68	U, <0.78
B-21	17.75	U, <0.00035	U, <0.00028	U, <0.00035	U, <0.00060	U, <0.00250	U, <0.00820	U, <0.00066	U, <0.60	U, <0.78	U, <0.68	U, <0.78
B-22	17.33	0.0440	0.00820	0.269	0.300	0.00532	0.30532	U, <0.00066	2.36	U, <0.78	U, <0.68	2.36

<sup>1</sup>bgs = below grade surface.

<sup>2</sup>mg/L = milligrams per Liter.

<sup>3</sup>B-2 = Temporary monitoring well was installed at B-2 on May 25, 2017.

<sup>4</sup>U = Undetected at laboratory detection limit shown.

<sup>5</sup>NR = Not reported on laboratory report.

0.277 = Exceeds laboratory detection limit.

**TABLE 4 (Continued)**  
**Summary of Groundwater Laboratory Analysis Results: Benzene, Toluene, Ethylbenzene, Xylenes, Total Petroleum Hydrocarbons, and Methyl Tertiary Butyl Ether**  
**Additional Phase II Environmental Site Assessment**  
**Memorial Drive Reconstruction Between West Sam Houston Parkway and Tallowood Road**

Temp-orary Well	Depth Ground-water Encoun-tered (feet bgs <sup>1</sup> )	Benzene (mg/L <sup>2</sup> )	Toluene (mg/L)	Ethyl-benzene (mg/L)	m- & p- Xylenes (mg/L)	o- Xylenes (mg/L)	Total Xylenes (mg/L)	MTBE (mg/L)	TPH C6-C12 (mg/L)	TPH >C12-C28 (mg/L)	TPH >C28-C35 (mg/L)	TPH C6-C35 (mg/L)
B-23	18.42	0.0342	0.714	0.762	2.84	1.12	3.96	U <sup>4</sup> , <0.00330	7.01	U, <0.78	U, <0.68	7.01
B-24	20.00	U, <0.00035	U, <0.00028	U, <0.00035	U, <0.00060	U, <0.00250	U, <0.00820	U, <0.00066	U, <0.60	U, <0.78	U, <0.68	U, <0.78

<sup>1</sup>bgs = below grade surface.

<sup>2</sup>mg/L = milligrams per Liter.

<sup>3</sup>B-2 = Temporary monitoring well was installed at B-2 on May 25, 2017.

<sup>4</sup>U = Undetected at laboratory detection limit shown.

<sup>5</sup>NR = Not reported on laboratory report.

0.0342 = Exceeds laboratory detection limit.

**TABLE 5**  
**Summary of Groundwater Laboratory Analysis Results: Volatile Organic Compounds and Total Petroleum Hydrocarbons**  
**Additional Phase II Environmental Site Assessment**  
**Memorial Drive Reconstruction Between West Sam Houston Parkway and Tallowood Road**

Temp-orary Well	Depth Ground-water Encountered (feet bgs <sup>1</sup> )	Detected Volatile Organic Compounds (mg/L <sup>2</sup> )	TPH C6-C12 mg/L	TPH >C12-C28 mg/L	TPH >C28-C35 mg/L	TPH C6-C35 mg/L
<b>B-5<sup>3</sup></b>	21.3	None detected, refer to laboratory report for detection limits.	U <sup>4</sup> , <0.618	U, <0.805	U, <0.702	NR <sup>5</sup>
<b>B-15</b>	dry <sup>6</sup>	None detected, refer to laboratory report for detection limits.	U, <1.10	U, <1.44	U, <1.25	U, <1.44
<b>B-18</b>	14.3	None detected, refer to laboratory report for detection limits.	U, <0.944	U, <1.23	U, <1.07	U, <1.23
<b>B-25</b>	18.5	None detected, refer to laboratory report for detection limits.	U, <0.60	U, <0.78	U, <0.68	U, <0.78
<b>B-26</b>	25.0	None detected, refer to laboratory report for detection limits.	U, <0.60	U, <0.78	U, <0.68	U, <0.78
<b>B-27</b>	18.2	None detected, refer to laboratory report for detection limits.	U, <0.60	U, <0.78	U, <0.68	U, <0.78
<b>B-28</b>	21.0	None detected, refer to laboratory report for detection limits.	U, <0.60	U, <0.78	U, <0.68	U, <0.78
<b>B-29</b>	22.6	None detected, refer to laboratory report for detection limits.	U, <0.60	U, <0.78	U, <0.68	U, <0.78
<b>B-30</b>	6.2	None detected, refer to laboratory report for detection limits.	U, <0.60	U, <0.78	U, <0.68	U, <0.78

<sup>1</sup>bgs = below grade surface.

<sup>2</sup>mg/L = milligrams per Liter.

<sup>3</sup>B-5 = Temporary monitoring well was installed at B-5 on May 26, 2017

<sup>4</sup>U = Undetected at laboratory detection limit shown.

<sup>5</sup>NR = Not recorded in laboratory report.

<sup>6</sup>Dry = Groundwater was not encountered during drilling; soil was damp at 18.29; water collected in temporary monitoring well.

**Limited Phase II Environmental Site Assessment  
Memorial Drive Reconstruction, Houston, Texas**

**APPENDIX E**

**ANALYTICAL LABORATORY REPORTS AND QUALITY ASSURANCE AND  
QUALITY CONTROL DOCUMENTATION**



# Laboratory Analysis Report

Total Number of Pages: 34

Job ID : 17051752



10100 East Freeway, Suite 100, Houston, TX 77029 tel: 713-453-6060, fax: 713-453-6091, <http://www.ablabs.com>

---

## Client Project Name : Memorial Reconstruction, Houston

**Report To :** Client Name: Aviles Engineering  
Attn: Robert J. Metzger  
Client Address: 5790 Windfern  
City, State, Zip: Houston, Texas, 77041

P.O.#.:  
Sample Collected By: Robert J. Metzger  
Date Collected: 05/25/17

---

### A&B Labs has analyzed the following samples...

Client Sample ID	Matrix	A&B Sample ID
B-1 14-15	Soil	17051752.01
B-2 23-24	Soil	17051752.02
B-2 Water	Water	17051752.03
B-3 21-22	Soil	17051752.04
B-4 25-26	Soil	17051752.05

*Shantall Carpenter*

Released By: Shantall Carpenter  
Title: Senior Project Manager  
Date: 6/5/2017



This Laboratory is NELAP ( T104704213-17-16) accredited. Effective: 4/1/2017; Expires: 3/31/2018

Scope: Non-Potable Water, Drinking Water, Air, Solid, Biological Tissue, Hazardous Waste

I am the laboratory manager, or his/her designee, and I am responsible for the release of this data package. This laboratory data package has been reviewed and is complete and technically compliant with the requirements of the methods used, except where noted in the attached exception reports. I affirm, to the best of my knowledge that all problems/anomalies observed by this laboratory (and if applicable, any and all laboratories subcontracted through this laboratory) that might affect the quality of the data, have been identified in the Laboratory Review Checklist, and that no information or data have been knowingly withheld that would affect the quality of the data.

This report cannot be reproduced, except in full, without prior written permission of A&B Labs. Results shown relate only to the items tested. Samples are assumed to be in acceptable condition unless otherwise noted. Blank correction is not made unless otherwise noted. Air concentrations reported are based on field sampling information provided by client. Soil samples are reported on a wet weight basis unless otherwise noted. Uncertainty estimates are available on request.

Date Received : 05/26/2017 12:45



LABORATORY TEST RESULTS

Client Sample ID: B-1 14-15
A&B Job Sample ID: 17051752.01

Date: 6/5/2017

Client Name: Aviles Engineering
Project Name: Memorial Reconstruction, Houston

Attn: Robert J. Metzger

Test Description: % Moisture
Analytical Method: SM 2540G
QC Batch ID: Qb17060177
Prep Method: SM 2540G
Prepared By: SRGade
Prep Batch ID: PB17060156

Sample Matrix: Soil
Date Collected: 05/25/2017 10:10
Date Received: 05/26/2017 12:45
Date Prepared: 06/01/2017 11:45

Analyst Initial: AJ

% Moisture: 12.7

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Row 1: % Moisture^1, 12.7, ----, ----, %, 1, 06/01/17 11:50



**LABORATORY TEST RESULTS**

Client Sample ID: B-1 14-15  
 A&B Job Sample ID: 17051752.01

Date: 6/5/2017

Client Name: Aviles Engineering  
 Project Name: Memorial Reconstruction, Houston

Attn: Robert J. Metzger

Test Description:  
 Analytical Method: SW-846 8260C  
 QC Batch ID: Qb17052904  
 Prep Method: SW-846 5035A  
 Prepared By: Jdongre  
 Prep Batch ID: PB17052910  
 Analyst Initial: JKD

Sample Matrix: Soil  
 Date Collected: 05/25/2017 10:10  
 Date Received: 05/26/2017 12:45  
 Date Prepared: 05/26/2017 15:30

% Moisture: 12.7

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
71-43-2	Benzene	< 0.001	U	0.001	0.006	0.001	0.005	0.05	mg/Kg	0.97	05/26/17 16:47
100-41-4	Ethylbenzene	< 0.001	U	0.001	0.006	0.001	0.005	0.05	mg/Kg	0.97	05/26/17 16:47
108-38-3&106-4	m- & p-Xylenes	< 0.001	U	0.001	0.011	0.001	0.01	0.1	mg/Kg	0.97	05/26/17 16:47
1634-04-4	MTBE	< 0.003	U	0.003	0.006	0.003	0.005	0.05	mg/Kg	0.97	05/26/17 16:47
95-47-6	o-Xylene	< 0.001	U	0.001	0.006	0.001	0.005	0.05	mg/Kg	0.97	05/26/17 16:47
108-88-3	Toluene	< 0.001	U	0.001	0.006	0.001	0.005	0.05	mg/Kg	0.97	05/26/17 16:47
1330-20-7	Xylenes	< 0.001	U	0.001	0.006	0.001	0.005	0.15	mg/Kg	0.97	05/26/17 16:47
17060-07-0	1,2-Dichloroethane-d4	105					70	130	%	0.97	05/26/17 16:47
1868-53-7	Dibromofluoromethan	97.6					70	130	%	0.97	05/26/17 16:47
2037-26-5	Toluene-d8(surr)	97.9					70	130	%	0.97	05/26/17 16:47
460-00-4	p-Bromofluorobenzen	98.8					70	130	%	0.97	05/26/17 16:47

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-1 14-15  
 A&B Job Sample ID: 17051752.01

Date: 6/5/2017

Client Name: Aviles Engineering  
 Project Name: Memorial Reconstruction, Houston

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**  
 Analytical Method: TX 1005  
 QC Batch ID: Qb17053109  
 Prep Method: TX 1005  
 Prepared By: VNair  
 Prep Batch ID: PB17053110  
 Analyst Initial: VMN

Sample Matrix: Soil  
 Date Collected: 05/25/2017 10:10  
 Date Received: 05/26/2017 12:45  
 Date Prepared: 05/27/2017 08:00

% Moisture: 12.7

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12 <sup>1</sup>	< 27.1	U	27.1	28.6	23.7	25	1000	mg/Kg	1	05/27/17 19:49
TPH-1005-2	>C12-C28 <sup>1</sup>	< 23.3	U	23.3	28.6	20.3	25	1000	mg/Kg	1	05/27/17 19:49
TPH-1005-4	>C28-C35 <sup>1</sup>	< 20.3	U	20.3	28.6	17.7	25	1000	mg/Kg	1	05/27/17 19:49
	Total C6-C35	<					----	----	mg/Kg	1	05/27/17 19:49
111-85-3	1-Chlorooctane(surr)	106					60	143	%	1	05/27/17 19:49
3386-33-2	Chlorooctadecane(sur)	105					60	150	%	1	05/27/17 19:49

Soil results reported on dry weight basis



LABORATORY TEST RESULTS

Client Sample ID: B-2 23-24
A&B Job Sample ID: 17051752.02

Date: 6/5/2017

Client Name: Aviles Engineering
Project Name: Memorial Reconstruction, Houston

Attn: Robert J. Metzger

Test Description: % Moisture
Analytical Method: SM 2540G
QC Batch ID: Qb17060177
Prep Method: SM 2540G
Prepared By: SRGade
Prep Batch ID: PB17060156

Sample Matrix: Soil
Date Collected: 05/25/2017 13:45
Date Received: 05/26/2017 12:45
Date Prepared: 06/01/2017 11:45

Analyst Initial: AJ

% Moisture: 22.7

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Row 1: % Moisture^1, 22.7, ----, ----, %, 1, 06/01/17 11:50



**LABORATORY TEST RESULTS**

Client Sample ID: B-2 23-24  
 A&B Job Sample ID: 17051752.02

Date: 6/5/2017

Client Name: Aviles Engineering  
 Project Name: Memorial Reconstruction, Houston

Attn: Robert J. Metzger

Test Description:  
 Analytical Method: SW-846 8260C  
 QC Batch ID: Qb17052904  
 Prep Method: SW-846 5035A  
 Prepared By: Jdongre  
 Prep Batch ID: PB17052910  
 Analyst Initial: JKD

Sample Matrix: Soil  
 Date Collected: 05/25/2017 13:45  
 Date Received: 05/26/2017 12:45  
 Date Prepared: 05/26/2017 15:30

% Moisture: 22.7

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
71-43-2	Benzene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.82	05/26/17 17:20
100-41-4	Ethylbenzene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.82	05/26/17 17:20
108-38-3&106-4	m- & p-Xylenes	< 0.001	U	0.001	0.011	0.001	0.01	0.1	mg/Kg	0.82	05/26/17 17:20
1634-04-4	MTBE	< 0.003	U	0.003	0.005	0.003	0.005	0.05	mg/Kg	0.82	05/26/17 17:20
95-47-6	o-Xylene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.82	05/26/17 17:20
108-88-3	Toluene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.82	05/26/17 17:20
1330-20-7	Xylenes	< 0.001	U	0.001	0.005	0.001	0.005	0.15	mg/Kg	0.82	05/26/17 17:20
17060-07-0	1,2-Dichloroethane-d4	108					70	130	%	0.82	05/26/17 17:20
1868-53-7	Dibromofluoromethan	99.7					70	130	%	0.82	05/26/17 17:20
2037-26-5	Toluene-d8(surr)	96.8					70	130	%	0.82	05/26/17 17:20
460-00-4	p-Bromofluorobenzen	98.4					70	130	%	0.82	05/26/17 17:20

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-2 23-24  
 A&B Job Sample ID: 17051752.02

Date: 6/5/2017

Client Name: Aviles Engineering  
 Project Name: Memorial Reconstruction, Houston

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**  
 Analytical Method: TX 1005  
 QC Batch ID: Qb17053109  
 Prep Method: TX 1005  
 Prepared By: VNair  
 Prep Batch ID: PB17053110  
 Analyst Initial: VMN

Sample Matrix: Soil  
 Date Collected: 05/25/2017 13:45  
 Date Received: 05/26/2017 12:45  
 Date Prepared: 05/27/2017 08:00

% Moisture: 22.7

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12 <sup>1</sup>	< 30.7	U	30.7	32.3	23.7	25	1000	mg/Kg	1	05/27/17 22:45
TPH-1005-2	>C12-C28 <sup>1</sup>	< 26.3	U	26.3	32.3	20.3	25	1000	mg/Kg	1	05/27/17 22:45
TPH-1005-4	>C28-C35 <sup>1</sup>	< 22.9	U	22.9	32.3	17.7	25	1000	mg/Kg	1	05/27/17 22:45
	Total C6-C35	<					----	----	mg/Kg	1	05/27/17 22:45
111-85-3	1-Chlorooctane(surr)	111					60	143	%	1	05/27/17 22:45
3386-33-2	Chlorooctadecane(sur)	110					60	150	%	1	05/27/17 22:45

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-2 Water  
 A&B Job Sample ID: 17051752.03

Date: 6/5/2017

Client Name: Aviles Engineering  
 Project Name: Memorial Reconstruction, Houston

Attn: Robert J. Metzger

Test Description: **Volatile Organic Compounds**

Sample Matrix: Water

Analytical Method: SW-846 8260C

Date Collected: 05/25/2017 14:00

QC Batch ID: Qb17053157

Date Received: 05/26/2017 12:45

Prep Method: SW-846 5030C

Date Prepared: 05/26/2017 16:00

Prepared By: Jdongre

Prep Batch ID: PB17053147

Analyst Initial: JKD

% Moisture

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
71-43-2	Benzene	0.277		0.01	0.05	0.001	0.005	0.05	mg/L	10	05/31/17 18:16
100-41-4	Ethylbenzene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/27/17 06:34
108-38-3&106-4	m- & p-Xylenes	0.015		0.002	0.01	0.002	0.01	0.1	mg/L	1	05/27/17 06:34
1634-04-4	MTBE	0.025		0.001	0.005	0.001	0.005	0.05	mg/L	1	05/27/17 06:34
95-47-6	o-Xylene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/27/17 06:34
108-88-3	Toluene	0.014		0.001	0.005	0.001	0.005	0.05	mg/L	1	05/27/17 06:34
1330-20-7	Xylenes	0.015		0.002	0.015	0.002	0.015	0.15	mg/L	1	05/27/17 06:34
17060-07-0	1,2-Dichloroethane-d4	106					70	130	%	1	05/27/17 06:34
1868-53-7	Dibromofluoromethan	99.1					70	130	%	1	05/27/17 06:34
2037-26-5	Toluene-d8(surr)	99.3					70	130	%	1	05/27/17 06:34
460-00-4	p-Bromofluorobenzen	101					70	130	%	1	05/27/17 06:34

Soil results reported on dry weight basis





**LABORATORY TEST RESULTS**

Client Sample ID: B-2 Water  
 A&B Job Sample ID: 17051752.03

Date: 6/5/2017

Client Name: Aviles Engineering  
 Project Name: Memorial Reconstruction, Houston

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**  
 Analytical Method: TX 1005  
 QC Batch ID: Qb17053056  
 Prep Method: TX 1005  
 Prepared By: VNair  
 Prep Batch ID: PB17053066  
 Analyst Initial: VMN

Sample Matrix: Water  
 Date Collected: 05/25/2017 14:00  
 Date Received: 05/26/2017 12:45  
 Date Prepared: 05/26/2017 14:00

% Moisture

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12 <sup>1</sup>	< 0.601	U	0.601	1.37	0.66	1.5	60	mg/L	0.91	05/27/17 23:11
TPH-1005-2	>C12-C28 <sup>1</sup>	< 0.783	U	0.783	1.37	0.86	1.5	60	mg/L	0.91	05/27/17 23:11
TPH-1005-4	>C28-C35 <sup>1</sup>	< 0.683	U	0.683	1.37	0.75	1.5	60	mg/L	0.91	05/27/17 23:11
	Total C6-C35	<					----	----	mg/L	0.91	05/27/17 23:11
111-85-3	1-Chlorooctane(surr)	80.3					59	122	%	0.91	05/27/17 23:11
3386-33-2	Chlorooctadecane(sur	106					48	123	%	0.91	05/27/17 23:11

Soil results reported on dry weight basis



LABORATORY TEST RESULTS

Client Sample ID: B-3 21-22
A&B Job Sample ID: 17051752.04

Date: 6/5/2017

Client Name: Aviles Engineering
Project Name: Memorial Reconstruction, Houston

Attn: Robert J. Metzger

Test Description: % Moisture
Analytical Method: SM 2540G
QC Batch ID: Qb17060177
Prep Method: SM 2540G
Prepared By: SRGade
Prep Batch ID: PB17060156

Sample Matrix: Soil
Date Collected: 05/25/2017 12:04
Date Received: 05/26/2017 12:45
Date Prepared: 06/01/2017 11:45

Analyst Initial: AJ

% Moisture: 12.8

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Row 1: % Moisture^1, 12.8, ----, ----, %, 1, 06/01/17 11:50



**LABORATORY TEST RESULTS**

Client Sample ID: B-3 21-22  
 A&B Job Sample ID: 17051752.04

Date: 6/5/2017

Client Name: Aviles Engineering  
 Project Name: Memorial Reconstruction, Houston

Attn: Robert J. Metzger

Test Description:  
 Analytical Method: SW-846 8260C  
 QC Batch ID: Qb17052904  
 Prep Method: SW-846 5035A  
 Prepared By: Jdongre  
 Prep Batch ID: PB17052910

Sample Matrix: Soil  
 Date Collected: 05/25/2017 12:04  
 Date Received: 05/26/2017 12:45  
 Date Prepared: 05/26/2017 15:30

Analyst Initial: JKD

% Moisture: 12.8

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
71-43-2	Benzene	< 0.0006	U	0.0006	0.003	0.001	0.005	0.05	mg/Kg	0.52	05/26/17 17:53
100-41-4	Ethylbenzene	< 0.0006	U	0.0006	0.003	0.001	0.005	0.05	mg/Kg	0.52	05/26/17 17:53
108-38-3&106-4	m- & p-Xylenes	< 0.0006	U	0.0006	0.006	0.001	0.01	0.1	mg/Kg	0.52	05/26/17 17:53
1634-04-4	MTBE	< 0.002	U	0.002	0.003	0.003	0.005	0.05	mg/Kg	0.52	05/26/17 17:53
95-47-6	o-Xylene	< 0.0006	U	0.0006	0.003	0.001	0.005	0.05	mg/Kg	0.52	05/26/17 17:53
108-88-3	Toluene	< 0.0006	U	0.0006	0.003	0.001	0.005	0.05	mg/Kg	0.52	05/26/17 17:53
1330-20-7	Xylenes	< 0.0006	U	0.0006	0.003	0.001	0.005	0.15	mg/Kg	0.52	05/26/17 17:53
17060-07-0	1,2-Dichloroethane-d4	111					70	130	%	0.52	05/26/17 17:53
1868-53-7	Dibromofluoromethan	102					70	130	%	0.52	05/26/17 17:53
2037-26-5	Toluene-d8(surr)	96.8					70	130	%	0.52	05/26/17 17:53
460-00-4	p-Bromofluorobenzen	98.9					70	130	%	0.52	05/26/17 17:53

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-3 21-22  
 A&B Job Sample ID: 17051752.04

Date: 6/5/2017

Client Name: Aviles Engineering  
 Project Name: Memorial Reconstruction, Houston

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**  
 Analytical Method: TX 1005  
 QC Batch ID: Qb17053109  
 Prep Method: TX 1005  
 Prepared By: VNair  
 Prep Batch ID: PB17053110  
 Analyst Initial: VMN

Sample Matrix: Soil  
 Date Collected: 05/25/2017 12:04  
 Date Received: 05/26/2017 12:45  
 Date Prepared: 05/27/2017 08:00

% Moisture: 12.8

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12 <sup>1</sup>	< 27.2	U	27.2	28.7	23.7	25	1000	mg/Kg	1	05/27/17 23:20
TPH-1005-2	>C12-C28 <sup>1</sup>	< 23.3	U	23.3	28.7	20.3	25	1000	mg/Kg	1	05/27/17 23:20
TPH-1005-4	>C28-C35 <sup>1</sup>	< 20.3	U	20.3	28.7	17.7	25	1000	mg/Kg	1	05/27/17 23:20
	Total C6-C35	<					----	----	mg/Kg	1	05/27/17 23:20
111-85-3	1-Chlorooctane(surr)	110					60	143	%	1	05/27/17 23:20
3386-33-2	Chlorooctadecane(sur)	107					60	150	%	1	05/27/17 23:20

Soil results reported on dry weight basis



LABORATORY TEST RESULTS

Client Sample ID: B-4 25-26
A&B Job Sample ID: 17051752.05

Date: 6/5/2017

Client Name: Aviles Engineering
Project Name: Memorial Reconstruction, Houston

Attn: Robert J. Metzger

Test Description: % Moisture
Analytical Method: SM 2540G
QC Batch ID: Qb17060177
Prep Method: SM 2540G
Prepared By: SRGade
Prep Batch ID: PB17060156

Sample Matrix: Soil
Date Collected: 05/25/2017 16:00
Date Received: 05/26/2017 12:45
Date Prepared: 06/01/2017 11:45

Analyst Initial: AJ

% Moisture: 18.8

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Row 1: % Moisture^1, 18.8, ----, ----, %, 1, 06/01/17 11:50



**LABORATORY TEST RESULTS**

Client Sample ID: B-4 25-26  
 A&B Job Sample ID: 17051752.05

Date: 6/5/2017

Client Name: Aviles Engineering  
 Project Name: Memorial Reconstruction, Houston

Attn: Robert J. Metzger

Test Description:  
 Analytical Method: SW-846 8260C  
 QC Batch ID: Qb17052904  
 Prep Method: SW-846 5035A  
 Prepared By: Jdongre  
 Prep Batch ID: PB17052910

Sample Matrix: Soil  
 Date Collected: 05/25/2017 16:00  
 Date Received: 05/26/2017 12:45  
 Date Prepared: 05/26/2017 15:30

Analyst Initial: JKD

% Moisture: 18.8

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
630-20-6	1,1,1,2-Tetrachloroet	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
71-55-6	1,1,1-Trichloroethane	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
79-34-5	1,1,2,2-Tetrachloroet	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
79-00-5	1,1,2-Trichloroethane	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
75-34-3	1,1-Dichloroethane	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
75-35-4	1,1-Dichloroethylene	< 0.001	U,V11	0.001	0.003	0.002	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
563-58-6	1,1-Dichloropropene	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
87-61-6	1,2,3-trichlorobenzen	< 0.001	U	0.001	0.003	0.002	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
96-18-4	1,2,3-Trichloropropan	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
120-82-1	1,2,4-Trichlorobenzen	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
95-63-6	1,2,4-Trimethylbenze	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
96-12-8	1,2-Dibromo-3-chloro	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
106-93-4	1,2-Dibromoethane	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
95-50-1	1,2-Dichlorobenzene	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
107-06-2	1,2-Dichloroethane	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
78-87-5	1,2-Dichloropropane	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
108-67-8	1,3,5-Trimethylbenze	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
541-73-1	1,3-Dichlorobenzene	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
142-28-9	1,3-Dichloropropane	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
106-46-7	1,4-Dichlorobenzene	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
123-91-1	1,4-Dioxane	< 0.052	U	0.052	0.221	0.075	0.32	1.6	mg/Kg	0.56	05/26/17 18:26
594-20-7	2,2-Dichloropropane	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
95-49-8	2-Chlorotoluene	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
106-43-4	4-Chlorotoluene	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
99-87-6	4-Isopropyltoluene	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
71-43-2	Benzene	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
108-86-1	Bromobenzene	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
74-97-5	Bromochloromethane	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
75-27-4	Bromodichloromethan	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
75-25-2	Bromoform	< 0.00034	U	0.00034	0.003	0.0005	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
74-83-9	Bromomethane	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
75-15-0	Carbon disulfide	< 0.001	U,V11	0.001	0.003	0.002	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
56-23-5	Carbon tetrachloride	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
108-90-7	Chlorobenzene	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
75-00-3	Chloroethane	< 0.002	U	0.002	0.003	0.003	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
67-66-3	Chloroform	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-4 25-26  
 A&B Job Sample ID: 17051752.05

Date: 6/5/2017

Client Name: Aviles Engineering  
 Project Name: Memorial Reconstruction, Houston

Attn: Robert J. Metzger

Test Description:  
 Analytical Method: SW-846 8260C  
 QC Batch ID: Qb17052904  
 Prep Method: SW-846 5035A  
 Prepared By: Jdongre  
 Prep Batch ID: PB17052910  
 Analyst Initial: JKD

Sample Matrix: Soil  
 Date Collected: 05/25/2017 16:00  
 Date Received: 05/26/2017 12:45  
 Date Prepared: 05/26/2017 15:30

% Moisture: 18.8

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
74-87-3	Chloromethane	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
156-59-2	cis-1,2-Dichloroethyle	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
10061-01-5	cis-1,3-Dichloroprope	< 0.00028	U	0.00028	0.003	0.0004	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
124-48-1	Dibromochloromethan	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
74-95-3	Dibromomethane	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
75-71-8	Dichlorodifluorometha	< 0.001	U	0.001	0.003	0.002	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
100-41-4	Ethylbenzene	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
98-82-8	Isopropylbenzene	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
108-38-3&106-4	m- & p-Xylenes	< 0.00069	U	0.00069	0.007	0.001	0.01	0.1	mg/Kg	0.56	05/26/17 18:26
78-93-3	MEK	< 0.001	U	0.001	0.003	0.002	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
75-09-2	Methylene chloride	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
1634-04-4	MTBE	< 0.002	U	0.002	0.003	0.003	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
91-20-3	Naphthalene	< 0.00028	U	0.00028	0.003	0.0004	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
104-51-8	n-Butylbenzene	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
103-65-1	n-Propylbenzene	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
95-47-6	o-Xylene	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
135-98-8	sec-Butylbenzene	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
100-42-5	Styrene	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
98-06-6	t-butylbenzene	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
127-18-4	Tetrachloroethylene	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
108-88-3	Toluene	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
156-60-5	trans-1,2-Dichloroethy	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
10061-02-6	trans-1,3-Dichloropro	< 0.00028	U	0.00028	0.003	0.0004	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
79-01-6	Trichloroethylene	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
75-69-4	Trichlorofluoromethan	< 0.00069	U,V11	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
75-01-4	Vinyl Chloride	< 0.00069	U	0.00069	0.003	0.001	0.005	0.05	mg/Kg	0.56	05/26/17 18:26
1330-20-7	Xylenes	< 0.00069	U	0.00069	0.003	0.001	0.005	0.15	mg/Kg	0.56	05/26/17 18:26
17060-07-0	1,2-Dichloroethane-d4	112					70	130	%	0.56	05/26/17 18:26
1868-53-7	Dibromofluoromethan	102					70	130	%	0.56	05/26/17 18:26
2037-26-5	Toluene-d8(surr)	95.8					70	130	%	0.56	05/26/17 18:26
460-00-4	p-Bromofluorobenzen	100					70	130	%	0.56	05/26/17 18:26

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-4 25-26  
 A&B Job Sample ID: 17051752.05

Date: 6/5/2017

Client Name: Aviles Engineering  
 Project Name: Memorial Reconstruction, Houston

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**  
 Analytical Method: TX 1005  
 QC Batch ID: Qb17053109  
 Prep Method: TX 1005  
 Prepared By: VNair  
 Prep Batch ID: PB17053110  
 Analyst Initial: VMN

Sample Matrix: Soil  
 Date Collected: 05/25/2017 16:00  
 Date Received: 05/26/2017 12:45  
 Date Prepared: 05/27/2017 08:00

% Moisture: 18.8

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12 <sup>1</sup>	< 29.2	U	29.2	30.8	23.7	25	1000	mg/Kg	1	05/27/17 23:55
TPH-1005-2	>C12-C28 <sup>1</sup>	< 25	U	25	30.8	20.3	25	1000	mg/Kg	1	05/27/17 23:55
TPH-1005-4	>C28-C35 <sup>1</sup>	< 21.8	U	21.8	30.8	17.7	25	1000	mg/Kg	1	05/27/17 23:55
	Total C6-C35	<					----	----	mg/Kg	1	05/27/17 23:55
111-85-3	1-Chlorooctane(surr)	108					60	143	%	1	05/27/17 23:55
3386-33-2	Chlorooctadecane(sur)	106					60	150	%	1	05/27/17 23:55

Soil results reported on dry weight basis  
<sup>1</sup>-Parameter not available for accreditation



**QUALITY CONTROL CERTIFICATE**



**Job ID :** 17051752

**Date :** 6/5/2017

**Analysis :** Volatile Organic Compounds      **Method :** SW-846 8260C      **Reporting Units :** mg/Kg

**QC Batch ID :** Qb17052904      **Created Date :** 05/26/17      **Created By :** Jdongre

**Samples in This QC Batch :** 17051752.01,02,04,05

**Sample Preparation :** PB17052910      **Prep Method :** SW-846 5035A      **Prep Date :** 05/26/17 15:30      **Prep By :** Jdongre

<b>QC Type: Method Blank</b>							
Parameter	CAS #	Result	Units	D.F.	MQL	MDL	Qual
1,1,1,2-Tetrachloroethane	630-20-6	< MDL	mg/Kg	1	0.005	0.001	
1,1,1-Trichloroethane	71-55-6	< MDL	mg/Kg	1	0.005	0.001	
1,1,2,2-Tetrachloroethane	79-34-5	< MDL	mg/Kg	1	0.005	0.001	
1,1,2-Trichloroethane	79-00-5	< MDL	mg/Kg	1	0.005	0.001	
1,1-Dichloroethane	75-34-3	< MDL	mg/Kg	1	0.005	0.001	
1,1-Dichloroethylene	75-35-4	< MDL	mg/Kg	1	0.005	0.002	
1,1-Dichloropropene	563-58-6	< MDL	mg/Kg	1	0.005	0.001	
1,2,3-trichlorobenzene	87-61-6	< MDL	mg/Kg	1	0.005	0.002	
1,2,3-Trichloropropane	96-18-4	< MDL	mg/Kg	1	0.005	0.001	
1,2,4-Trichlorobenzene	120-82-1	< MDL	mg/Kg	1	0.005	0.001	
1,2,4-Trimethylbenzene	95-63-6	< MDL	mg/Kg	1	0.005	0.001	
1,2-Dibromo-3-chloropropa	96-12-8	< MDL	mg/Kg	1	0.005	0.001	
1,2-Dibromoethane	106-93-4	< MDL	mg/Kg	1	0.005	0.001	
1,2-Dichlorobenzene	95-50-1	< MDL	mg/Kg	1	0.005	0.001	
1,2-Dichloroethane	107-06-2	< MDL	mg/Kg	1	0.005	0.001	
1,2-Dichloropropane	78-87-5	< MDL	mg/Kg	1	0.005	0.001	
1,3,5-Trimethylbenzene	108-67-8	< MDL	mg/Kg	1	0.005	0.001	
1,3-Dichlorobenzene	541-73-1	< MDL	mg/Kg	1	0.005	0.001	
1,3-Dichloropropane	142-28-9	< MDL	mg/Kg	1	0.005	0.001	
1,4-Dichlorobenzene	106-46-7	< MDL	mg/Kg	1	0.005	0.001	
1,4-Dioxane	123-91-1	< MDL	mg/Kg	1	0.32	0.075	
2,2-Dichloropropane	594-20-7	< MDL	mg/Kg	1	0.005	0.001	
2-Chlorotoluene	95-49-8	< MDL	mg/Kg	1	0.005	0.001	
4-Chlorotoluene	106-43-4	< MDL	mg/Kg	1	0.005	0.001	
4-Isopropyltoluene	99-87-6	< MDL	mg/Kg	1	0.005	0.001	
Benzene	71-43-2	< MDL	mg/Kg	1	0.005	0.001	
Bromobenzene	108-86-1	< MDL	mg/Kg	1	0.005	0.001	
Bromochloromethane	74-97-5	< MDL	mg/Kg	1	0.005	0.001	
Bromodichloromethane	75-27-4	< MDL	mg/Kg	1	0.005	0.001	
Bromoform	75-25-2	< MDL	mg/Kg	1	0.005	0.0005	
Bromomethane	74-83-9	< MDL	mg/Kg	1	0.005	0.001	
Carbon disulfide	75-15-0	< MDL	mg/Kg	1	0.005	0.002	
Carbon tetrachloride	56-23-5	< MDL	mg/Kg	1	0.005	0.001	
Chlorobenzene	108-90-7	< MDL	mg/Kg	1	0.005	0.001	
Chloroethane	75-00-3	< MDL	mg/Kg	1	0.005	0.003	
Chloroform	67-66-3	< MDL	mg/Kg	1	0.005	0.001	
Chloromethane	74-87-3	< MDL	mg/Kg	1	0.005	0.001	
cis-1,2-Dichloroethylene	156-59-2	< MDL	mg/Kg	1	0.005	0.001	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 17051752

**Date :** 6/5/2017

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb17052904

**Created Date :** 05/26/17

**Created By :** Jdongre

**Samples in This QC Batch :** 17051752.01,02,04,05

<b>QC Type: Method Blank</b>									
Parameter	CAS #	Result	Units	D.F.	MLQ	MDL			Qual
cis-1,3-Dichloropropene	10061-01-5	< MDL	mg/Kg	1	0.005	0.0004			
Dibromochloromethane	124-48-1	< MDL	mg/Kg	1	0.005	0.001			
Dibromomethane	74-95-3	< MDL	mg/Kg	1	0.005	0.001			
Dichlorodifluoromethane	75-71-8	< MDL	mg/Kg	1	0.005	0.002			
Ethylbenzene	100-41-4	< MDL	mg/Kg	1	0.005	0.001			
Isopropylbenzene	98-82-8	< MDL	mg/Kg	1	0.005	0.001			
m- & p-Xylenes	108-38-3&106-42-3	< MDL	mg/Kg	1	0.01	0.001			
MEK	78-93-3	< MDL	mg/Kg	1	0.005	0.002			
Methylene chloride	75-09-2	< MDL	mg/Kg	1	0.005	0.001			
MTBE	1634-04-4	< MDL	mg/Kg	1	0.005	0.003			
Naphthalene	91-20-3	< MDL	mg/Kg	1	0.005	0.0004			
n-Butylbenzene	104-51-8	< MDL	mg/Kg	1	0.005	0.001			
n-Propylbenzene	103-65-1	< MDL	mg/Kg	1	0.005	0.001			
o-Xylene	95-47-6	< MDL	mg/Kg	1	0.005	0.001			
sec-Butylbenzene	135-98-8	< MDL	mg/Kg	1	0.005	0.001			
Styrene	100-42-5	< MDL	mg/Kg	1	0.005	0.001			
t-butylbenzene	98-06-6	< MDL	mg/Kg	1	0.005	0.001			
Tetrachloroethylene	127-18-4	< MDL	mg/Kg	1	0.005	0.001			
Toluene	108-88-3	< MDL	mg/Kg	1	0.005	0.001			
trans-1,2-Dichloroethylene	156-60-5	< MDL	mg/Kg	1	0.005	0.001			
trans-1,3-Dichloropropene	10061-02-6	< MDL	mg/Kg	1	0.005	0.0004			
Trichloroethylene	79-01-6	< MDL	mg/Kg	1	0.005	0.001			
Trichlorofluoromethane	75-69-4	< MDL	mg/Kg	1	0.005	0.001			
Vinyl Chloride	75-01-4	< MDL	mg/Kg	1	0.005	0.001			
Xylenes	1330-20-7	< MDL	mg/Kg	1	0.005	0.001			
Dibromofluoromethane(surr)	1868-53-7	97.6	%	1					
1,2-Dichloroethane-d4(surr)	17060-07-0	103	%	1					
Toluene-d8(surr)	2037-26-5	97.5	%	1					
p-Bromofluorobenzene(surr)	460-00-4	98.9	%	1					

<b>QC Type: LCS and LCSD</b>										
Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
1,1,1,2-Tetrachloroethane	0.02	0.021	105	0.02	0.022	110	4.7	30	71.4-131	
1,1,1-Trichloroethane	0.02	0.021	105	0.02	0.021	105	0.0	30	69.6-140	
1,1,2,2-Tetrachloroethane	0.02	0.021	105	0.02	0.021	105	0.0	30	66.6-128	
1,1,2-Trichloroethane	0.02	0.021	105	0.02	0.021	105	0.0	30	72.8-125	
1,1-Dichloroethane	0.02	0.02	100	0.02	0.021	105	4.9	30	72.7-129	
1,1-Dichloroethylene	0.02	0.014	70	0.02	0.014	70	0.0	30	71.4-131	L2

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 17051752

**Date :** 6/5/2017

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb17052904    **Created Date :** 05/26/17

**Created By :** Jdongre

**Samples in This QC Batch :** 17051752.01,02,04,05

<b>QC Type: LCS and LCSD</b>										
Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
1,1-Dichloropropene	0.02	0.02	100	0.02	0.02	100	0.0	30	75.9-132	
1,2,3-trichlorobenzene	0.02	0.023	115	0.02	0.023	115	0.0	30	56.7-153	
1,2,3-Trichloropropane	0.02	0.02	100	0.02	0.02	100	0.0	30	61.6-138	
1,2,4-Trichlorobenzene	0.02	0.023	115	0.02	0.023	115	0.0	30	55.9-150	
1,2,4-Trimethylbenzene	0.02	0.021	105	0.02	0.021	105	0.0	30	71.1-131	
1,2-Dibromo-3-chloropropa	0.02	0.022	110	0.02	0.022	110	0.0	30	52.4-150	
1,2-Dibromoethane	0.02	0.022	110	0.02	0.022	110	0.0	30	72.9-125	
1,2-Dichlorobenzene	0.02	0.022	110	0.02	0.022	110	0.0	30	76.1-126	
1,2-Dichloroethane	0.02	0.022	110	0.02	0.021	105	4.7	30	66.4-134	
1,2-Dichloropropane	0.02	0.021	105	0.02	0.021	105	0.0	30	70.2-128	
1,3,5-Trimethylbenzene	0.02	0.021	105	0.02	0.021	105	0.0	30	75.1-127	
1,3-Dichlorobenzene	0.02	0.021	105	0.02	0.021	105	0.0	30	73.9-126	
1,3-Dichloropropane	0.02	0.02	100	0.02	0.021	105	4.9	30	68.3-124	
1,4-Dichlorobenzene	0.02	0.021	105	0.02	0.021	105	0.0	30	72.3-127	
1,4-Dioxane	0.64	0.705	110	0.64	0.695	109	1.4	30	80-120	
2,2-Dichloropropane	0.02	0.022	110	0.02	0.022	110	0.0	30	68.5-138	
2-Chlorotoluene	0.02	0.02	100	0.02	0.02	100	0.0	30	71.7-128	
4-Chlorotoluene	0.02	0.021	105	0.02	0.021	105	0.0	30	72.2-126	
4-Isopropyltoluene	0.02	0.022	110	0.02	0.022	110	0.0	30	77.5-125	
Benzene	0.02	0.021	105	0.02	0.02	100	4.9	30	74-126	
Bromobenzene	0.02	0.021	105	0.02	0.021	105	0.0	30	73.3-129	
Bromochloromethane	0.02	0.02	100	0.02	0.02	100	0.0	30	68.8-131	
Bromodichloromethane	0.02	0.021	105	0.02	0.022	110	4.7	30	69-135	
Bromoform	0.02	0.022	110	0.02	0.022	110	0.0	30	62-146	
Bromomethane	0.02	0.02	100	0.02	0.02	100	0.0	30	58.7-139	
Carbon disulfide	0.02	0.013	65	0.02	0.013	65	0.0	30	80-120	L2
Carbon tetrachloride	0.02	0.021	105	0.02	0.021	105	0.0	30	68.7-135	
Chlorobenzene	0.02	0.021	105	0.02	0.021	105	0.0	30	73.3-129	
Chloroethane	0.02	0.019	95	0.02	0.02	100	5.1	30	66.2-129	
Chloroform	0.02	0.021	105	0.02	0.021	105	0.0	30	73.7-134	
Chloromethane	0.02	0.017	85	0.02	0.018	90	5.7	30	51.4-135	
cis-1,2-Dichloroethylene	0.02	0.02	100	0.02	0.02	100	0.0	30	72.4-132	
cis-1,3-Dichloropropene	0.02	0.022	110	0.02	0.022	110	0.0	30	67.7-134	
Dibromochloromethane	0.02	0.021	105	0.02	0.022	110	4.7	30	73.2-126	
Dibromomethane	0.02	0.022	110	0.02	0.022	110	0.0	30	69.9-134	
Dichlorodifluoromethane	0.02	0.019	95	0.02	0.019	95	0.0	30	36.8-144	
Ethylbenzene	0.02	0.021	105	0.02	0.021	105	0.0	30	72.2-128	
Isopropylbenzene	0.02	0.021	105	0.02	0.021	105	0.0	30	71.2-131	
m- & p-Xylenes	0.04	0.042	105	0.04	0.042	105	0.0	30	70.7-131	
MEK	0.02	0.02	100	0.02	0.021	105	4.9	30	52.5-152	
Methylene chloride	0.02	0.019	95	0.02	0.02	100	5.1	30	70.6-129	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 17051752

**Date :** 6/5/2017

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb17052904    **Created Date :** 05/26/17

**Created By :** Jdongre

**Samples in This QC Batch :** 17051752.01,02,04,05

**QC Type: LCS and LCSD**

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
MTBE	0.02	0.021	105	0.02	0.022	110	4.7	30	80-120	
Naphthalene	0.02	0.022	110	0.02	0.023	115	4.4	30	60.7-145	
n-Butylbenzene	0.02	0.021	105	0.02	0.02	100	4.9	30	66.5-136	
n-Propylbenzene	0.02	0.02	100	0.02	0.02	100	0.0	30	73.3-126	
o-Xylene	0.02	0.021	105	0.02	0.021	105	0.0	30	71.6-130	
sec-Butylbenzene	0.02	0.021	105	0.02	0.02	100	4.9	30	77.9-124	
Styrene	0.02	0.022	110	0.02	0.022	110	0.0	30	71.1-131	
t-butylbenzene	0.02	0.021	105	0.02	0.021	105	0.0	30	74.4-130	
Tetrachloroethylene	0.02	0.022	110	0.02	0.022	110	0.0	30	62.6-157	
Toluene	0.02	0.021	105	0.02	0.021	105	0.0	30	73.3-127	
trans-1,2-Dichloroethylene	0.02	0.02	100	0.02	0.02	100	0.0	30	80-120	
trans-1,3-Dichloropropene	0.02	0.022	110	0.02	0.022	110	0.0	30	71.5-124	
Trichloroethylene	0.02	0.022	110	0.02	0.022	110	0.0	30	69.2-133	
Trichlorofluoromethane	0.02	0.013	65	0.02	0.014	70	7.4	30	63.9-140	
Vinyl Chloride	0.02	0.019	95	0.02	0.019	95	0.0	30	40.9-159	
Xylenes	0.06	0.063	105	0.06	0.063	105	0.0	30	69.2-133	

**QC Type: MS and MSD**

**QC Sample ID: 17051699.01**

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
1,1,1,2-Tetrachloroethane	BRL	0.019	0.021	111						71.4-131	
1,1,1-Trichloroethane	BRL	0.019	0.021	111						69.6-140	
1,1,2,2-Tetrachloroethane	BRL	0.019	0.02	105						66.6-128	
1,1,2-Trichloroethane	BRL	0.019	0.02	105						72.8-125	
1,1-Dichloroethane	BRL	0.019	0.02	105						72.7-129	
1,1-Dichloroethylene	BRL	0.019	0.014	73.7						71.4-131	
1,1-Dichloropropene	BRL	0.019	0.019	100						75.9-132	
1,2,3-trichlorobenzene	BRL	0.019	0.019	100						56.7-153	
1,2,3-Trichloropropane	BRL	0.019	0.02	105						61.6-138	
1,2,4-Trichlorobenzene	BRL	0.019	0.018	94.7						55.9-150	
1,2,4-Trimethylbenzene	BRL	0.019	0.018	94.7						71.1-131	
1,2-Dibromo-3-chloropropa	BRL	0.019	0.021	111						52.4-150	
1,2-Dibromoethane	BRL	0.019	0.02	105						72.9-125	
1,2-Dichlorobenzene	BRL	0.019	0.019	100						76.1-126	
1,2-Dichloroethane	BRL	0.019	0.023	121						66.4-134	
1,2-Dichloropropane	BRL	0.019	0.02	105						70.2-128	
1,3,5-Trimethylbenzene	BRL	0.019	0.018	94.7						75.1-127	
1,3-Dichlorobenzene	BRL	0.019	0.018	94.7						73.9-126	
1,3-Dichloropropane	BRL	0.019	0.021	111						68.3-124	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 17051752

**Date :** 6/5/2017

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb17052904    **Created Date :** 05/26/17

**Created By :** Jdongre

**Samples in This QC Batch :** 17051752.01,02,04,05

<b>QC Type: MS and MSD</b>											
<b>QC Sample ID: 17051699.01</b>											
Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
1,4-Dichlorobenzene	BRL	0.019	0.018	94.7						72.3-127	
1,4-Dioxane	BRL	0.60	0.771	129						70-130	
2,2-Dichloropropane	BRL	0.019	0.016	84.2						68.5-138	
2-Chlorotoluene	BRL	0.019	0.018	94.7						71.7-128	
4-Chlorotoluene	BRL	0.019	0.018	94.7						72.2-126	
4-Isopropyltoluene	BRL	0.019	0.018	94.7						77.5-125	
Benzene	BRL	0.019	0.019	100						74-126	
Bromobenzene	BRL	0.019	0.019	100						73.3-129	
Bromochloromethane	BRL	0.019	0.02	105						68.8-131	
Bromodichloromethane	BRL	0.019	0.022	116						69-135	
Bromoform	BRL	0.019	0.023	121						62-146	
Bromomethane	BRL	0.019	0.017	89.5						58.7-139	
Carbon disulfide	BRL	0.019	0.013	68.4						70-130	M9
Carbon tetrachloride	BRL	0.019	0.022	116						68.7-135	
Chlorobenzene	BRL	0.019	0.019	100						73.3-129	
Chloroethane	BRL	0.019	0.02	105						66.2-129	
Chloroform	BRL	0.019	0.021	111						73.7-134	
Chloromethane	BRL	0.019	0.015	78.9						51.4-135	
cis-1,2-Dichloroethylene	BRL	0.019	0.019	100						72.4-132	
cis-1,3-Dichloropropene	BRL	0.019	0.018	94.7						67.7-134	
Dibromochloromethane	BRL	0.019	0.021	111						73.2-126	
Dibromomethane	BRL	0.019	0.022	116						69.9-134	
Dichlorodifluoromethane	BRL	0.019	0.019	100						36.8-144	
Ethylbenzene	BRL	0.019	0.019	100						72.2-128	
Isopropylbenzene	BRL	0.019	0.019	100						71.2-131	
m- & p-Xylenes	BRL	0.037	0.039	105						70.7-131	
MEK	BRL	0.019	0.02	105						52.5-152	
Methylene chloride	BRL	0.019	0.019	100						70.6-129	
MTBE	BRL	0.019	0.021	111						70-130	
Naphthalene	BRL	0.019	0.02	105						60.7-145	
n-Butylbenzene	BRL	0.019	0.017	89.5						66.5-136	
n-Propylbenzene	BRL	0.019	0.018	94.7						73.3-126	
o-Xylene	BRL	0.019	0.02	105						71.6-130	
sec-Butylbenzene	BRL	0.019	0.018	94.7						77.9-124	
Styrene	BRL	0.019	0.019	100						71.1-131	
t-butylbenzene	BRL	0.019	0.018	94.7						74.4-130	
Tetrachloroethylene	BRL	0.019	0.024	126						62.6-157	
Toluene	BRL	0.019	0.019	91.6						73.3-127	
trans-1,2-Dichloroethylene	BRL	0.019	0.019	100						70-130	
trans-1,3-Dichloropropene	BRL	0.019	0.017	89.5						71.5-124	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 17051752

**Date :** 6/5/2017

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb17052904

**Created Date :** 05/26/17

**Created By :** Jdongre

**Samples in This QC Batch :** 17051752.01,02,04,05

<b>QC Type: MS and MSD</b>											
<b>QC Sample ID: 17051699.01</b>											
Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
Trichloroethylene	BRL	0.019	0.02	105						69.2-133	
Trichlorofluoromethane	BRL	0.019	0.011	57.9						63.9-140	M9
Vinyl Chloride	BRL	0.019	0.018	94.7						40.9-159	
Xylenes	BRL	0.056	0.059	105						69.2-133	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 17051752

**Date :** 6/5/2017

**Analysis :** Total Petroleum Hydrocarbons

**Method :** TX 1005

**Reporting Units :** mg/L

**QC Batch ID :** Qb17053056    **Created Date :** 05/26/17

**Created By :** VNair

**Samples in This QC Batch :** 17051752.03

**Sample Preparation :** PB17053066    **Prep Method :** TX 1005    **Prep Date :** 05/26/17 14:00    **Prep By :** VNair

**QC Type: Method Blank**

Parameter	CAS #	Result	Units	D.F.	MQL	MDL	Qual
C6-C12	TPH-1005-1	< MDL	mg/L	1	1.5	0.66	
>C12-C28	TPH-1005-2	< MDL	mg/L	1	1.5	0.86	
>C28-C35	TPH-1005-4	< MDL	mg/L	1	1.5	0.75	
Total C6-C35		< MDL	mg/L	1	---		
1-Chlorooctane(surr)	111-85-3	68.4	%	1			
Chlorooctadecane(surr)	3386-33-2	75.8	%	1			

**QC Type: Duplicate**

**QC Sample ID: 17051602.03**

Parameter	QCSample Result	Sample Result	Units	RPD	RPD CtrlLimit	Qual
>C12-C28	BRL	BRL	mg/L		30	
>C28-C35	BRL	BRL	mg/L		30	
C6-C12	BRL	BRL	mg/L		30	
Total C6-C35	BRL	BRL	mg/L		30	

**QC Type: LCS and LCSD**

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
C6-C12	30	32.3	108	30	35.6	119	9.7	20	75-125	
>C12-C28	30	32.7	109	30	34	113	3.9	20	75-125	
>C28-C35	30	34.9	116	30	34.9	116	0	20	75-125	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 17051752

**Date :** 6/5/2017

**Analysis :** Total Petroleum Hydrocarbons      **Method :** TX 1005      **Reporting Units :** mg/Kg

**QC Batch ID :** Qb17053109      **Created Date :** 05/27/17      **Created By :** VNair

**Samples in This QC Batch :** 17051752.01,02,04,05

**Sample Preparation :** PB17053110      **Prep Method :** TX 1005      **Prep Date :** 05/27/17 08:00      **Prep By :** VNair

**QC Type: Method Blank**

Parameter	CAS #	Result	Units	D.F.	MQL	MDL	Qual
C6-C12	TPH-1005-1	< MDL	mg/Kg	1	25	23.7	
>C12-C28	TPH-1005-2	< MDL	mg/Kg	1	25	20.3	
>C28-C35	TPH-1005-4	< MDL	mg/Kg	1	25	17.7	
Total C6-C35		< MDL	mg/Kg	1	---		
Chlorooctadecane(surr)	3386-33-2	105	%	1			
1-Chlorooctane(surr)	111-85-3	106	%	1			

**QC Type: LCS and LCSD**

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
C6-C12	500	606	121	500	623	125	2.8	20	75-125	
>C12-C28	500	584	117	500	585	117	0.2	20	75-125	
>C28-C35	500	575	115	500	579	116	0.7	20	75-125	

**QC Type: MS and MSD**

**QC Sample ID: 17051692.01**

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
C6-C12	BRL	500	604	121	500	579	116	4.2	20	75-125	
>C12-C28	BRL	500	593	119	500	598	120	0.8	20	75-125	
>C28-C35	BRL	500	569	114	500	552	110	3	20	75-125	

Refer to the Definition page for terms.



**QUALITY CONTROL CERTIFICATE**



**Job ID :** 17051752

**Date :** 6/5/2017

**Analysis :** Volatile Organic Compounds      **Method :** SW-846 8260C      **Reporting Units :** mg/L

**QC Batch ID :** Qb17053157      **Created Date :** 05/26/17      **Created By :** Jdongre

**Samples in This QC Batch :** 17051752.03

**Sample Preparation :** PB17053147      **Prep Method :** SW-846 5030C      **Prep Date :** 05/26/17 16:00      **Prep By :** Jdongre

**QC Type: Method Blank**

Parameter	CAS #	Result	Units	D.F.	MQL	MDL	Qual
1,1,1,2-Tetrachloroethane	630-20-6	< MDL	mg/L	1	0.005	0.001	
1,1,1-Trichloroethane	71-55-6	< MDL	mg/L	1	0.005	0.001	
1,1,2,2-Tetrachloroethane	79-34-5	< MDL	mg/L	1	0.005	0.001	
1,1,2-Trichloroethane	79-00-5	< MDL	mg/L	1	0.005	0.001	
1,1-Dichloroethane	75-34-3	< MDL	mg/L	1	0.005	0.001	
1,1-Dichloroethylene	75-35-4	< MDL	mg/L	1	0.005	0.001	
1,1-Dichloropropene	563-58-6	< MDL	mg/L	1	0.005	0.001	
1,2,3-trichlorobenzene	87-61-6	< MDL	mg/L	1	0.005	0.001	
1,2,3-Trichloropropane	96-18-4	< MDL	mg/L	1	0.005	0.001	
1,2,4-Trichlorobenzene	120-82-1	< MDL	mg/L	1	0.005	0.001	
1,2,4-Trimethylbenzene	95-63-6	< MDL	mg/L	1	0.005	0.001	
1,2-Dibromo-3-chloropropa	96-12-8	< MDL	mg/L	1	0.005	0.001	
1,2-Dibromoethane	106-93-4	< MDL	mg/L	1	0.005	0.001	
1,2-Dichlorobenzene	95-50-1	< MDL	mg/L	1	0.005	0.001	
1,2-Dichloroethane	107-06-2	< MDL	mg/L	1	0.005	0.001	
1,2-Dichloropropane	78-87-5	< MDL	mg/L	1	0.005	0.001	
1,3,5-Trimethylbenzene	108-67-8	< MDL	mg/L	1	0.005	0.001	
1,3-Dichlorobenzene	541-73-1	< MDL	mg/L	1	0.005	0.001	
1,3-Dichloropropane	142-28-9	< MDL	mg/L	1	0.005	0.001	
1,4-Dichlorobenzene	106-46-7	< MDL	mg/L	1	0.005	0.001	
1,4-Dioxane	123-91-1	< MDL	mg/L	1	0.32	0.084	
2,2-Dichloropropane	594-20-7	< MDL	mg/L	1	0.005	0.001	
2-Chlorotoluene	95-49-8	< MDL	mg/L	1	0.005	0.001	
4-Chlorotoluene	106-43-4	< MDL	mg/L	1	0.005	0.001	
4-Isopropyltoluene	99-87-6	< MDL	mg/L	1	0.005	0.003	
Benzene	71-43-2	< MDL	mg/L	1	0.005	0.001	
Bromobenzene	108-86-1	< MDL	mg/L	1	0.005	0.001	
Bromochloromethane	74-97-5	< MDL	mg/L	1	0.005	0.001	
Bromodichloromethane	75-27-4	< MDL	mg/L	1	0.005	0.001	
Bromoform	75-25-2	< MDL	mg/L	1	0.005	0.001	
Bromomethane	74-83-9	< MDL	mg/L	1	0.005	0.002	
Carbon disulfide	75-15-0	< MDL	mg/L	1	0.005	0.001	
Carbon tetrachloride	56-23-5	< MDL	mg/L	1	0.005	0.001	
Chlorobenzene	108-90-7	< MDL	mg/L	1	0.005	0.001	
Chloroethane	75-00-3	< MDL	mg/L	1	0.005	0.001	
Chloroform	67-66-3	< MDL	mg/L	1	0.005	0.001	
Chloromethane	74-87-3	< MDL	mg/L	1	0.005	0.001	
cis-1,2-Dichloroethylene	156-59-2	< MDL	mg/L	1	0.005	0.001	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 17051752

**Date :** 6/5/2017

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb17053157

**Created Date :** 05/26/17

**Created By :** Jdongre

**Samples in This QC Batch :** 17051752.03

<b>QC Type: Method Blank</b>								
Parameter	CAS #	Result	Units	D.F.	MLQ	MDL		Qual
cis-1,3-Dichloropropene	10061-01-5	< MDL	mg/L	1	0.005	0.001		
Dibromochloromethane	124-48-1	< MDL	mg/L	1	0.005	0.001		
Dibromomethane	74-95-3	< MDL	mg/L	1	0.005	0.001		
Dichlorodifluoromethane	75-71-8	< MDL	mg/L	1	0.005	0.003		
Ethylbenzene	100-41-4	< MDL	mg/L	1	0.005	0.001		
Isopropylbenzene	98-82-8	< MDL	mg/L	1	0.005	0.001		
m- & p-Xylenes	108-38-3&106-42-3	< MDL	mg/L	1	0.01	0.002		
MEK	78-93-3	< MDL	mg/L	1	0.005	0.001		
Methylene chloride	75-09-2	< MDL	mg/L	1	0.005	0.001		
MTBE	1634-04-4	< MDL	mg/L	1	0.005	0.001		
Naphthalene	91-20-3	< MDL	mg/L	1	0.005	0.002		
n-Butylbenzene	104-51-8	< MDL	mg/L	1	0.005	0.001		
n-Propylbenzene	103-65-1	< MDL	mg/L	1	0.005	0.001		
o-Xylene	95-47-6	< MDL	mg/L	1	0.005	0.001		
sec-Butylbenzene	135-98-8	< MDL	mg/L	1	0.005	0.001		
Styrene	100-42-5	< MDL	mg/L	1	0.005	0.001		
t-butylbenzene	98-06-6	< MDL	mg/L	1	0.005	0.001		
Tetrachloroethylene	127-18-4	< MDL	mg/L	1	0.005	0.001		
Toluene	108-88-3	< MDL	mg/L	1	0.005	0.001		
trans-1,2-Dichloroethylene	156-60-5	< MDL	mg/L	1	0.005	0.001		
trans-1,3-Dichloropropene	10061-02-6	< MDL	mg/L	1	0.005	0.001		
Trichloroethylene	79-01-6	< MDL	mg/L	1	0.005	0.001		
Trichlorofluoromethane	75-69-4	< MDL	mg/L	1	0.005	0.001		
Vinyl Chloride	75-01-4	< MDL	mg/L	1	0.005	0.001		
Xylenes	1330-20-7	< MDL	mg/L	1	0.015	0.002		
Dibromofluoromethane(surr)	1868-53-7	122	%	1				
1,2-Dichloroethane-d4(surr)	17060-07-0	110	%	1				
Toluene-d8(surr)	2037-26-5	98.3	%	1				
p-Bromofluorobenzene(surr)	460-00-4	106	%	1				

<b>QC Type: LCS and LCSD</b>										
Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
1,1,1,2-Tetrachloroethane	0.02	0.022	110	0.02	0.019	95	14.6	12	82.6-121	R1
1,1,1-Trichloroethane	0.02	0.023	115	0.02	0.02	100	14	13	82.8-123	R1
1,1,2,2-Tetrachloroethane	0.02	0.022	110	0.02	0.02	100	9.5	20	77.5-122	
1,1,2-Trichloroethane	0.02	0.021	105	0.02	0.02	100	4.9	14	81.1-119	
1,1-Dichloroethane	0.02	0.022	110	0.02	0.019	95	14.6	12	74.5-125	R1
1,1-Dichloroethylene	0.02	0.028	140	0.02	0.02	100	33.3	12	75.4-124	L1,R1

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 17051752

**Date :** 6/5/2017

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb17053157

**Created Date :** 05/26/17

**Created By :** Jdongre

**Samples in This QC Batch :** 17051752.03

<b>QC Type: LCS and LCSD</b>										
Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
1,1-Dichloropropene	0.02	0.022	110	0.02	0.019	95	14.6	12	76.9-125	R1
1,2,3-trichlorobenzene	0.02	0.023	115	0.02	0.021	105	9.1	20	70.8-125	
1,2,3-Trichloropropane	0.02	0.023	115	0.02	0.02	100	14	22	69.6-126	
1,2,4-Trichlorobenzene	0.02	0.024	120	0.02	0.02	100	18.2	16	74.8-121	R1
1,2,4-Trimethylbenzene	0.02	0.024	120	0.02	0.02	100	18.2	12	80.4-114	L1,R1
1,2-Dibromo-3-chloropropa	0.02	0.021	105	0.02	0.02	100	4.9	27	61.7-140	
1,2-Dibromoethane	0.02	0.022	110	0.02	0.02	100	9.5	15	80.6-118	
1,2-Dichlorobenzene	0.02	0.023	115	0.02	0.02	100	14	11	82.6-113	L1,R1
1,2-Dichloroethane	0.02	0.023	115	0.02	0.019	95	19	14	72.8-126	R1
1,2-Dichloropropane	0.02	0.023	115	0.02	0.019	95	19	13	82.4-120	R1
1,3,5-Trimethylbenzene	0.02	0.023	115	0.02	0.02	100	14	10	81.3-114	L1,R1
1,3-Dichlorobenzene	0.02	0.022	110	0.02	0.02	100	9.5	11	83.4-113	
1,3-Dichloropropane	0.02	0.021	105	0.02	0.019	95	10	16	79.8-115	
1,4-Dichlorobenzene	0.02	0.022	110	0.02	0.02	100	9.5	11	82.6-113	
1,4-Dioxane	0.64	0.606	94.7	0.64	0.562	87.8	7.5	30	70-130	
2,2-Dichloropropane	0.02	0.022	110	0.02	0.019	95	14.6	15	69.4-131	R1
2-Chlorotoluene	0.02	0.023	115	0.02	0.02	100	14	17	77.8-118	
4-Chlorotoluene	0.02	0.022	110	0.02	0.02	100	9.5	15	78.8-117	
4-Isopropyltoluene	0.02	0.023	115	0.02	0.02	100	14	11	80.9-114	L1,R1
Benzene	0.02	0.023	115	0.02	0.019	95	19	11	84.1-118	R1
Bromobenzene	0.02	0.022	110	0.02	0.02	100	9.5	12	82.8-116	
Bromochloromethane	0.02	0.022	110	0.02	0.02	100	9.5	15	70.7-131	
Bromodichloromethane	0.02	0.024	120	0.02	0.02	100	18.2	12	83.1-119	L1,R1
Bromoform	0.02	0.021	105	0.02	0.018	90	15.4	20	70.3-136	
Bromomethane	0.02	0.027	135	0.02	0.022	110	20.4	23	59-134	L1
Carbon disulfide	0.02	0.023	115	0.02	0.021	105	9.1	30	70-130	
Carbon tetrachloride	0.02	0.024	120	0.02	0.02	100	18.2	13	74.6-129	R1
Chlorobenzene	0.02	0.021	105	0.02	0.019	95	10	11	87.8-110	R1
Chloroethane	0.02	0.024	120	0.02	0.019	95	23.3	13	73.7-124	R1
Chloroform	0.02	0.022	110	0.02	0.02	100	9.5	10	76.4-124	
Chloromethane	0.02	0.023	115	0.02	0.019	95	19	15	59.4-138	R1
cis-1,2-Dichloroethylene	0.02	0.022	110	0.02	0.019	95	14.6	15	74.3-124	
cis-1,3-Dichloropropene	0.02	0.023	115	0.02	0.019	95	19	11	84.6-117	R
Dibromochloromethane	0.02	0.023	115	0.02	0.02	100	14	13	80.3-122	R1
Dibromomethane	0.02	0.022	110	0.02	0.019	95	14.6	16	75.8-126	R1
Dichlorodifluoromethane	0.02	0.025	125	0.02	0.021	105	17.4	15	44.4-149	R1
Ethylbenzene	0.02	0.021	105	0.02	0.019	95	10	12	82.8-114	
Isopropylbenzene	0.02	0.022	110	0.02	0.02	100	9.5	11	86.8-113	
m- & p-Xylenes	0.04	0.043	108	0.04	0.038	95	12.3	10	76.9-122	R1
MEK	0.02	0.022	110	0.02	0.017	85	25.6	42	44.9-154	
Methylene chloride	0.02	0.019	95	0.02	0.016	80	17.1	13	67.3-130	R1

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 17051752

**Date :** 6/5/2017

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb17053157    **Created Date :** 05/26/17

**Created By :** Jdongre

**Samples in This QC Batch :** 17051752.03

<b>QC Type: LCS and LCSD</b>										
Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
MTBE	0.02	0.018	90	0.02	0.017	85	5.7	30	70-130	
Naphthalene	0.02	0.021	105	0.02	0.021	105	0.0	27	55.8-136	
n-Butylbenzene	0.02	0.024	120	0.02	0.02	100	18.2	20	74.1-120	R1
n-Propylbenzene	0.02	0.022	110	0.02	0.02	100	9.5	12	78.9-115	
o-Xylene	0.02	0.022	110	0.02	0.019	95	14.6	11	86-111	R1
sec-Butylbenzene	0.02	0.023	115	0.02	0.02	100	14	12	80.2-115	R1
Styrene	0.02	0.021	105	0.02	0.019	95	10	12	86.7-111	
t-butylbenzene	0.02	0.023	115	0.02	0.021	105	9.1	14	80.7-116	
Tetrachloroethylene	0.02	0.021	105	0.02	0.019	95	10	27	64.2-140	
Toluene	0.02	0.021	105	0.02	0.019	95	10	12	85.9-110	
trans-1,2-Dichloroethylene	0.02	0.022	110	0.02	0.02	100	9.5	12	73.7-124	
trans-1,3-Dichloropropene	0.02	0.019	95	0.02	0.017	85	11.1	14	83-114	
Trichloroethylene	0.02	0.024	120	0.02	0.02	100	18.2	12	85.4-114	L1,R1
Trichlorofluoromethane	0.02	0.024	120	0.02	0.02	100	18.2	12	74.3-126	R1
Vinyl Chloride	0.02	0.024	120	0.02	0.02	100	18.2	17	61.8-142	R1
Xylenes	0.06	0.065	108	0.06	0.057	95	13.1	9	81.2-117	R1

<b>QC Type: MS and MSD</b>											
<b>QC Sample ID: 17051761.02</b>											
Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
1,1,1,2-Tetrachloroethane	BRL	0.02	0.018	90						72-139	
1,1,1-Trichloroethane	BRL	0.02	0.018	90						70.6-135	
1,1,2,2-Tetrachloroethane	BRL	0.02	0.02	100						55-149	
1,1,2-Trichloroethane	BRL	0.02	0.019	95						68-139	
1,1-Dichloroethane	BRL	0.02	0.018	90						78-134	
1,1-Dichloroethylene	BRL	0.02	0.018	90						65-141	
1,1-Dichloropropene	BRL	0.02	0.017	85						79-136	
1,2,3-trichlorobenzene	BRL	0.02	0.017	85						54-144	
1,2,3-Trichloropropane	BRL	0.02	0.019	95						58-156	
1,2,4-Trichlorobenzene	BRL	0.02	0.015	75						69-127	
1,2,4-Trimethylbenzene	BRL	0.02	0.016	80						80-131	
1,2-Dibromo-3-chloropropa	BRL	0.02	0.019	95						61-145	
1,2-Dibromoethane	BRL	0.02	0.019	95						68-140	
1,2-Dichlorobenzene	BRL	0.02	0.018	90						70-138	
1,2-Dichloroethane	BRL	0.02	0.018	90						67-152	
1,2-Dichloropropane	BRL	0.02	0.018	90						79-135	
1,3,5-Trimethylbenzene	BRL	0.02	0.016	80						79-133	
1,3-Dichlorobenzene	BRL	0.02	0.016	80						79-128	
1,3-Dichloropropane	BRL	0.02	0.018	90						70-147	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 17051752

**Date :** 6/5/2017

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb17053157    **Created Date :** 05/26/17

**Created By :** Jdongre

**Samples in This QC Batch :** 17051752.03

<b>QC Type: MS and MSD</b>											
<b>QC Sample ID: 17051761.02</b>											
Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
1,4-Dichlorobenzene	BRL	0.02	0.016	80						76-127	
1,4-Dioxane	BRL	0.64	0.61	95.3						70-125	
2,2-Dichloropropane	BRL	0.02	0.013	65						60-129	
2-Chlorotoluene	BRL	0.02	0.016	80						83-130	M9
4-Chlorotoluene	BRL	0.02	0.016	80						82-129	M9
4-Isopropyltoluene	BRL	0.02	0.016	80						78-129	
Benzene	BRL	0.02	0.017	85						73-129	
Bromobenzene	BRL	0.02	0.017	85						76-132	
Bromochloromethane	BRL	0.02	0.02	100						76-135	
Bromodichloromethane	BRL	0.02	0.018	90						80-136	
Bromoform	BRL	0.02	0.018	90						65-139	
Bromomethane	BRL	0.02	0.019	95						65-150	
Carbon disulfide	BRL	0.02	0.019	95						70-125	
Carbon tetrachloride	BRL	0.02	0.016	80						70-136	
Chlorobenzene	BRL	0.02	0.017	85						69-123	
Chloroethane	BRL	0.02	0.019	95						74-145	
Chloroform	BRL	0.02	0.019	95						41.8-164	
Chloromethane	BRL	0.02	0.02	100						42.2-160	
cis-1,2-Dichloroethylene	BRL	0.02	0.018	90						71-134	
cis-1,3-Dichloropropene	BRL	0.02	0.015	75						74-128	
Dibromochloromethane	BRL	0.02	0.018	90						67-141	
Dibromomethane	BRL	0.02	0.02	100						63.1-135	
Dichlorodifluoromethane	BRL	0.02	0.02	100						62-146	
Ethylbenzene	BRL	0.02	0.016	80						80-132	
Isopropylbenzene	BRL	0.02	0.016	80						78-137	
m- & p-Xylenes	BRL	0.04	0.033	82.5						74-127	
MEK	BRL	0.02	0.018	90						52-148	
Methylene chloride	BRL	0.02	0.019	95						68-131	
MTBE	BRL	0.02	0.018	90						70-130	
Naphthalene	BRL	0.02	0.019	95						61-116	
n-Butylbenzene	BRL	0.02	0.015	75						73-140	
n-Propylbenzene	BRL	0.02	0.016	80						75-127	
o-Xylene	BRL	0.02	0.017	85						74-126	
sec-Butylbenzene	BRL	0.02	0.016	80						75-129	
Styrene	BRL	0.02	0.017	85						77-123	
t-butylbenzene	BRL	0.02	0.016	80						75-126	
Tetrachloroethylene	BRL	0.02	0.018	90						27.6-194	
Toluene	BRL	0.02	0.017	85						72-121	
trans-1,2-Dichloroethylene	BRL	0.02	0.018	90						73-138	
trans-1,3-Dichloropropene	BRL	0.02	0.014	70						66-131	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 17051752

**Date :** 6/5/2017

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb17053157

**Created Date :** 05/26/17

**Created By :** Jdongre

**Samples in This QC Batch :** 17051752.03

**QC Type:** MS and MSD

**QC Sample ID:** 17051761.02

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
Trichloroethylene	BRL	0.02	0.017	85						6-138	
Trichlorofluoromethane	BRL	0.02	0.019	95						67-148	
Vinyl Chloride	BRL	0.02	0.021	105						59.4-140	
Xylenes	BRL	0.06	0.05	83.3						73-127	

Refer to the Definition page for terms.

QUALITY CONTROL CERTIFICATE



Job ID : 17051752

Date : 6/5/2017

<b>Analysis :</b> % Moisture	<b>Method :</b> SM 2540G	<b>Reporting Units :</b> %
<b>QC Batch ID :</b> Qb17060177	<b>Created Date :</b> 06/01/17	<b>Created By :</b> SRGade
<b>Samples in This QC Batch :</b> 17051752.01,02,04,05		
<b>Sample Preparation :</b> PB17060156	<b>Prep Method :</b> SM 2540G	<b>Prep Date :</b> 06/01/17 11:45 <b>Prep By :</b> SRGade

QC Type: Method Blank							
Parameter	CAS #	Result	Units	D.F.	MQL	MDL	Qual
% Moisture		< MDL	%	1	----		

QC Type: Duplicate							
QC Sample ID: 17051720.02							
Parameter	QCSample Result	Sample Result	Units	RPD	RPD CtrLimit		Qual
% Moisture	BRL	BRL	%		20		

Refer to the Definition page for terms.

**LABORATORY TERM AND QUALIFIER DEFINITION REPORT**



Job ID : 17051752

Date: 6/5/2017

**General Term Definition**

Back-Wt	Back Weight	Post-Wt	Post Weight
BRL	Below Reporting Limit	ppm	parts per million
cfu	colony-forming units	Pre-Wt	Previous Weight
Conc.	Concentration	Q	Qualifier
D.F.	Dilution Factor	RegLimit	Regulatory Limit
Front-Wt	Front Weight	RPD	Relative Percent Difference
LCS	Laboratory Check Standard	RptLimit	Reporting Limit
LCSD	Laboratory Check Standard Duplicate	SDL	Sample Detection Limit
MS	Matrix Spike	surr	Surrogate
MSD	Matrix Spike Duplicate	T	Time
MW	Molecular Weight	TNTC	Too numerous to count
J	Estimation. Below calibration range but above MDL		

**Qualifier Definition**

J	Estimation. Below calibration range but above MDL.
L1	Associated LCS and/or LCSD recovery is above acceptance limits for flagged analyte. Bias may be high.
L2	Associated LCS and/or LCSD recovery is below acceptance limits for flagged analyte. Bias may be low.
M9	Matrix Spike and/or Matrix Spike Duplicate recovery is below laboratory control limits.
R1	RPD exceeds control limits.
S1	Surrogate recovery is above control limit. Results may be biased high.
S2	Surrogate recovery is below control limit. Results may be biased low.
U	Undetected at SDL (Sample Detection Limit).
V11	CCV recovery is below acceptance limits.



**1. REPORT TO: (AEC)**  
 Company: Avies Engineering Corp  
 Address: 5790 W.inden  
Houston, TX 77041  
 Contact: Robert J Metzger  
 Phone: 281-793-8332  
 Fax: \_\_\_\_\_  
 E-mail:  Rmetzger@avieseng.com

**2. INVOICE TO:**  
 Company: AS in Box 1  
 Address: \_\_\_\_\_  
 Contact: \_\_\_\_\_  
 Phone: \_\_\_\_\_  
 Fax:  \_\_\_\_\_  
 E-mail:  \_\_\_\_\_

**3. PO #**  
**3a. A&B Quote #**  
**4. Turnaround Time (Business Days)**  
 1 Day\*  Other:  
 2 Days\*  
 3 Days\* \*Surcharge applies  
 7 Days - Standard

**5. Project #**  
E101-17

**6. Project Name/Location**  
Merical Reconstruction, Houston

**7. Reporting Requirement:**  
 TRRP Limits only  TRRP Rpt. Package  See Attached  Standard Level II  PST  MDL  EDD

**8. Sampler's Name & Company (PLEASE PRINT)**  
Robert J Metzger AEC

LAB USE ONLY	9. Sample ID and Description	10. Sampling		11. 12. Matrix						13. 14. Containers*	15. Preservatives**	16. PH-Lab Only	17. Analyses/Methods	18. REMARKS	
		Date	Time 24hr	Comp.	Grab	Water	Soil	Sludge	Oil						Drinking Water
	01A-GS-1 14-15	5/25/17	10:10	✓	✓	✓	✓	✓	✓	✓	✓	VOA VOA VOA dix dix dix	403		
	02A-GS-2 21-22	5/25/17	12:04	✓	✓	✓	✓	✓	✓	✓	✓	VOA + MTGC DEF VOCs + MTGC DEF ole n.o.s. tric G			
	02A-GS-2 23-24	5/25/17	13:45	✓	✓	✓	✓	✓	✓	✓	✓				
	03A-GS-2 Water	5/25/17	14:00	✓	✓	✓	✓	✓	✓	✓	✓				
	04A-GS-3 21-22	5/25/17	12:34	✓	✓	✓	✓	✓	✓	✓	✓				
	05A-GS-4 25-26	5/25/17	16:00	✓	✓	✓	✓	✓	✓	✓	✓				

**9. Sample ID and Description**  
01A-GS-1 14-15  
02A-GS-2 21-22  
02A-GS-2 23-24  
03A-GS-2 Water  
04A-GS-3 21-22  
05A-GS-4 25-26

**10. Sampling**  
 Date: 5/25/17 Time: 10:10  
5/25/17 12:04  
5/25/17 13:45  
5/25/17 14:00  
5/25/17 12:34  
5/25/17 16:00

19. RELINQUISHED BY	DATE	TIME	20. RECEIVED BY	DATE	TIME	21. KNOWN HAZARDS/COMMENTS
<u>[Signature]</u>	5/26/17	11:40	<u>[Signature]</u>	5/26/17	11:40	
<u>[Signature]</u>	5/26/17	12:45	<u>[Signature]</u>	5/26/17	12:45	

**19. RELINQUISHED BY**  
 DATE: 5/26/17 TIME: 11:40  
5/26/17 12:45

**20. RECEIVED BY**  
 DATE: 5/26/17 TIME: 11:40  
5/26/17 12:45

**21. KNOWN HAZARDS/COMMENTS**  
 Temperature: 28.5-28.3 °C  
 Thermometer ID: 14053963  
 Initials: [Signature]

**METHOD OF SHIPMENT**  
 \*Containers: VOA - 40 ml vial  
 4 oz/8 oz - glass wide mouth  
 P/O - Plastic/other

**BILL OF LADING/TRACKING #**  
 \*\*Preservatives: C - Cool H - HCl S - H<sub>2</sub>SO<sub>4</sub>  
 OH - NaOH T - Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> X - Other

**LAB USE ONLY**    **SAMPLING**    **RENTAL**    **P/U**    **Supplies**    **Field Work**

A&B cannot accept verbal changes  
 Please FAX written changes to 713-453-6091  
 Samples will be disposed of after 30 days



# Sample Condition Checklist

A&B JobID : <b>17051752</b>	Date Received : <b>05/26/2017</b>	Time Received : <b>12:45PM</b>
Client Name : <b>Aviles Engineering</b>		
Temperature : <b>2.8-0.5cf=2.3°C</b>	Sample pH : <b>NA</b>	
Thermometer ID : <b>140539631</b>	pH Paper ID : <b>NA</b>	

	Check Points	Yes	No	N/A																								
1.	Cooler seal present and signed.		X																									
2.	Sample(s) in a cooler.	X																										
3.	If yes, ice in cooler.	X																										
4.	Sample(s) received with chain-of-custody.	X																										
5.	C-O-C signed and dated.	X																										
6.	Sample(s) received with signed sample custody seal.		X																									
7.	Sample containers arrived intact. (If no comment).	X																										
8.	<table style="width: 100%; border: none;"> <tr> <td style="width: 10%;">Matrix</td> <td style="width: 10%;">Water</td> <td style="width: 10%;">Soil</td> <td style="width: 10%;">Liquid</td> <td style="width: 10%;">Sludge</td> <td style="width: 10%;">Solid</td> <td style="width: 10%;">Cassette</td> <td style="width: 10%;">Tube</td> <td style="width: 10%;">Bulk</td> <td style="width: 10%;">Badge</td> <td style="width: 10%;">Food</td> <td style="width: 10%;">Other</td> </tr> <tr> <td>:</td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </table>	Matrix	Water	Soil	Liquid	Sludge	Solid	Cassette	Tube	Bulk	Badge	Food	Other	:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Matrix	Water	Soil	Liquid	Sludge	Solid	Cassette	Tube	Bulk	Badge	Food	Other																	
:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																	
9.	Sample(s) were received in appropriate container(s).	X																										
10.	Sample(s) were received with proper preservative	X																										
11.	All samples were logged or labeled.	X																										
12.	Sample ID labels match C-O-C ID's	X																										
13.	Bottle count on C-O-C matches bottles found.	X																										
14.	Sample volume is sufficient for analyses requested.	X																										
15.	Samples were received within the hold time.	X																										
16.	VOA vials completely filled.	X																										
17.	Sample accepted.	X																										
18.	Has client been contacted about sub-out			X																								

**Comments : Include actions taken to resolve discrepancies/problem:**  
 Samples 01, 02, 04, 05 are Soils. Sample 03 is Water. All soil samples were received with two sets of pre-weighed vials and a 4oz bulk. The water sample was received with three 40mL vials and three 60mL vials. AS 5/26/17

Received by : Ashute

Check in by/date : Ashute / 05/26/2017

# Laboratory Analysis Report

Total Number of Pages: 30

Job ID : 17051761



10100 East Freeway, Suite 100, Houston, TX 77029 tel: 713-453-6060, fax: 713-453-6091, <http://www.ablabs.com>

## Client Project Name :

**E101-17 / Memorial Drive Reconstruction, Houston, TX**

**Report To :** Client Name: Aviles Engineering P.O.#.:  
Attn: Bob Metzger Sample Collected By: Robert J. Metzger  
Client Address: 5790 Windfern Date Collected: 05/26/17  
City, State, Zip: Houston, Texas, 77041

## A&B Labs has analyzed the following samples...

Client Sample ID	Matrix	A&B Sample ID
B-5 20-21	Soil	17051761.01
B-5 Water	Water	17051761.02
B-6 20-22	Soil	17051761.03

*Shantall Carpenter*

Released By: Shantall Carpenter  
Title: Senior Project Manager  
Date: 6/5/2017



This Laboratory is NELAP ( T104704213-17-16) accredited. Effective: 4/1/2017; Expires: 3/31/2018

Scope: Non-Potable Water, Drinking Water, Air, Solid, Biological Tissue, Hazardous Waste

I am the laboratory manager, or his/her designee, and I am responsible for the release of this data package. This laboratory data package has been reviewed and is complete and technically compliant with the requirements of the methods used, except where noted in the attached exception reports. I affirm, to the best of my knowledge that all problems/anomalies observed by this laboratory (and if applicable, any and all laboratories subcontracted through this laboratory) that might affect the quality of the data, have been identified in the Laboratory Review Checklist, and that no information or data have been knowingly withheld that would affect the quality of the data.

This report cannot be reproduced, except in full, without prior written permission of A&B Labs. Results shown relate only to the items tested. Samples are assumed to be in acceptable condition unless otherwise noted. Blank correction is not made unless otherwise noted. Air concentrations reported are based on field sampling information provided by client. Soil samples are reported on a wet weight basis unless otherwise noted. Uncertainty estimates are available on request.

Date Received : 05/26/2017 13:43



LABORATORY TEST RESULTS

Client Sample ID: B-5 20-21
A&B Job Sample ID: 17051761.01

Date: 6/5/2017

Client Name: Aviles Engineering
Project Name: E101-17 / Memorial Drive Reconstruction, Houston, TX

Attn: Bob Metzger

Test Description: % Moisture
Analytical Method: SM 2540G
QC Batch ID: Qb17060180
Prep Method: SM 2540G
Prepared By: SRGade
Prep Batch ID: PB17060156
Analyst Initial: SRG

Sample Matrix: Soil
Date Collected: 05/26/2017 10:10
Date Received: 05/26/2017 13:43
Date Prepared: 06/01/2017 11:45

% Moisture: 12.2

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Row 1: % Moisture^1, 12.2, ----, ----, %, 1, 06/01/17 11:50



**LABORATORY TEST RESULTS**

Client Sample ID: B-5 20-21  
 A&B Job Sample ID: 17051761.01

Date: 6/5/2017

Client Name: Aviles Engineering  
 Project Name: E101-17 / Memorial Drive Reconstruction, Houston, TX

Attn: Bob Metzger

Test Description:  
 Analytical Method: SW-846 8260C  
 QC Batch ID: Qb17052904  
 Prep Method: SW-846 5035A  
 Prepared By: Jdongre  
 Prep Batch ID: PB17052910

Sample Matrix: Soil  
 Date Collected: 05/26/2017 10:10  
 Date Received: 05/26/2017 13:43  
 Date Prepared: 05/26/2017 15:30

Analyst Initial: JKD

% Moisture: 12.2

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
630-20-6	1,1,1,2-Tetrachloroet	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
71-55-6	1,1,1-Trichloroethane	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
79-34-5	1,1,2,2-Tetrachloroet	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
79-00-5	1,1,2-Trichloroethane	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
75-34-3	1,1-Dichloroethane	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
75-35-4	1,1-Dichloroethylene	< 0.002	U,V11	0.002	0.004	0.002	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
563-58-6	1,1-Dichloropropene	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
87-61-6	1,2,3-trichlorobenzen	< 0.002	U	0.002	0.004	0.002	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
96-18-4	1,2,3-Trichloropropan	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
120-82-1	1,2,4-Trichlorobenzen	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
95-63-6	1,2,4-Trimethylbenze	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
96-12-8	1,2-Dibromo-3-chloro	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
106-93-4	1,2-Dibromoethane	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
95-50-1	1,2-Dichlorobenzene	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
107-06-2	1,2-Dichloroethane	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
78-87-5	1,2-Dichloropropane	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
108-67-8	1,3,5-Trimethylbenze	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
541-73-1	1,3-Dichlorobenzene	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
142-28-9	1,3-Dichloropropane	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
106-46-7	1,4-Dichlorobenzene	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
123-91-1	1,4-Dioxane	< 0.067	U	0.067	0.288	0.075	0.32	1.6	mg/Kg	0.79	05/27/17 03:24
594-20-7	2,2-Dichloropropane	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
95-49-8	2-Chlorotoluene	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
106-43-4	4-Chlorotoluene	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
99-87-6	4-Isopropyltoluene	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
71-43-2	Benzene	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
108-86-1	Bromobenzene	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
74-97-5	Bromochloromethane	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
75-27-4	Bromodichloromethan	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
75-25-2	Bromoform	< 0.00045	U	0.00045	0.004	0.0005	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
74-83-9	Bromomethane	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
75-15-0	Carbon disulfide	< 0.002	U,V11	0.002	0.004	0.002	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
56-23-5	Carbon tetrachloride	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
108-90-7	Chlorobenzene	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
75-00-3	Chloroethane	< 0.003	U	0.003	0.004	0.003	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
67-66-3	Chloroform	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-5 20-21  
 A&B Job Sample ID: 17051761.01

Date: 6/5/2017

Client Name: Aviles Engineering  
 Project Name: E101-17 / Memorial Drive Reconstruction, Houston, TX

Attn: Bob Metzger

Test Description:  
 Analytical Method: SW-846 8260C  
 QC Batch ID: Qb17052904  
 Prep Method: SW-846 5035A  
 Prepared By: Jdongre  
 Prep Batch ID: PB17052910  
 Analyst Initial: JKD

Sample Matrix: Soil  
 Date Collected: 05/26/2017 10:10  
 Date Received: 05/26/2017 13:43  
 Date Prepared: 05/26/2017 15:30

% Moisture: 12.2

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
74-87-3	Chloromethane	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
156-59-2	cis-1,2-Dichloroethyle	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
10061-01-5	cis-1,3-Dichloroprope	< 0.00036	U	0.00036	0.004	0.0004	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
124-48-1	Dibromochloromethan	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
74-95-3	Dibromomethane	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
75-71-8	Dichlorodifluorometha	< 0.002	U	0.002	0.004	0.002	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
100-41-4	Ethylbenzene	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
98-82-8	Isopropylbenzene	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
108-38-3&106-4	m- & p-Xylenes	< 0.0009	U	0.0009	0.009	0.001	0.01	0.1	mg/Kg	0.79	05/27/17 03:24
78-93-3	MEK	< 0.002	U	0.002	0.004	0.002	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
75-09-2	Methylene chloride	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
1634-04-4	MTBE	< 0.003	U	0.003	0.004	0.003	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
91-20-3	Naphthalene	< 0.00036	U	0.00036	0.004	0.0004	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
104-51-8	n-Butylbenzene	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
103-65-1	n-Propylbenzene	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
95-47-6	o-Xylene	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
135-98-8	sec-Butylbenzene	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
100-42-5	Styrene	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
98-06-6	t-butylbenzene	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
127-18-4	Tetrachloroethylene	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
108-88-3	Toluene	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
156-60-5	trans-1,2-Dichloroethy	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
10061-02-6	trans-1,3-Dichloropro	< 0.00036	U	0.00036	0.004	0.0004	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
79-01-6	Trichloroethylene	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
75-69-4	Trichlorofluoromethan	< 0.0009	U,V11	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
75-01-4	Vinyl Chloride	< 0.0009	U	0.0009	0.004	0.001	0.005	0.05	mg/Kg	0.79	05/27/17 03:24
1330-20-7	Xylenes	< 0.0009	U	0.0009	0.004	0.001	0.005	0.15	mg/Kg	0.79	05/27/17 03:24
17060-07-0	1,2-Dichloroethane-d4	128					70	130	%	0.79	05/27/17 03:24
1868-53-7	Dibromofluoromethan	105					70	130	%	0.79	05/27/17 03:24
2037-26-5	Toluene-d8(surr)	96					70	130	%	0.79	05/27/17 03:24
460-00-4	p-Bromofluorobenzen	102					70	130	%	0.79	05/27/17 03:24

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-5 20-21  
 A&B Job Sample ID: 17051761.01

Date: 6/5/2017

Client Name: Aviles Engineering  
 Project Name: E101-17 / Memorial Drive Reconstruction, Houston, TX

Attn: Bob Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb17060139  
 Prep Method: TX 1005  
 Prepared By: VNair  
 Prep Batch ID: PB17060129

Sample Matrix: Soil  
 Date Collected: 05/26/2017 10:10  
 Date Received: 05/26/2017 13:43  
 Date Prepared: 05/31/2017 14:00

Analyst Initial: VMN

% Moisture: 12.2

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12 <sup>1</sup>	< 27	U	27	28.5	23.7	25	1000	mg/Kg	1	05/31/17 19:01
TPH-1005-2	>C12-C28 <sup>1</sup>	< 23.1	U	23.1	28.5	20.3	25	1000	mg/Kg	1	05/31/17 19:01
TPH-1005-4	>C28-C35 <sup>1</sup>	< 20.2	U	20.2	28.5	17.7	25	1000	mg/Kg	1	05/31/17 19:01
	Total C6-C35	<					----	----	mg/Kg	1	05/31/17 19:01
111-85-3	1-Chlorooctane(surr)	130					60	143	%	1	05/31/17 19:01
3386-33-2	Chlorooctadecane(sur	127					60	150	%	1	05/31/17 19:01

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-5 Water  
 A&B Job Sample ID: 17051761.02

Date: 6/5/2017

Client Name: Aviles Engineering  
 Project Name: E101-17 / Memorial Drive Reconstruction, Houston, TX

Attn: Bob Metzger

Test Description: **Volatile Organic Compounds**

Sample Matrix: Water

Analytical Method: SW-846 8260C

Date Collected: 05/26/2017 10:45

QC Batch ID: Qb17053157

Date Received: 05/26/2017 13:43

Prep Method: SW-846 5030C

Date Prepared: 05/26/2017 15:00

Prepared By: Jdongre

Prep Batch ID: PB17053143

Analyst Initial: JKD

% Moisture

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
630-20-6	1,1,1,2-Tetrachloroet	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
71-55-6	1,1,1-Trichloroethane	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
79-34-5	1,1,2,2-Tetrachloroet	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
79-00-5	1,1,2-Trichloroethane	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
75-34-3	1,1-Dichloroethane	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
75-35-4	1,1-Dichloroethylene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
563-58-6	1,1-Dichloropropene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
87-61-6	1,2,3-trichlorobenzen	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
96-18-4	1,2,3-Trichloropropan	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
120-82-1	1,2,4-Trichlorobenzen	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
95-63-6	1,2,4-Trimethylbenze	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
96-12-8	1,2-Dibromo-3-chloro	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
106-93-4	1,2-Dibromoethane	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
95-50-1	1,2-Dichlorobenzene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
107-06-2	1,2-Dichloroethane	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
78-87-5	1,2-Dichloropropane	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
108-67-8	1,3,5-Trimethylbenze	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
541-73-1	1,3-Dichlorobenzene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
142-28-9	1,3-Dichloropropane	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
106-46-7	1,4-Dichlorobenzene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
123-91-1	1,4-Dioxane	< 0.084	U	0.084	0.320	0.084	0.32	1.6	mg/L	1	05/26/17 23:30
594-20-7	2,2-Dichloropropane	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
95-49-8	2-Chlorotoluene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
106-43-4	4-Chlorotoluene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
99-87-6	4-Isopropyltoluene	< 0.003	U	0.003	0.005	0.003	0.005	0.05	mg/L	1	05/26/17 23:30
71-43-2	Benzene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
108-86-1	Bromobenzene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
74-97-5	Bromochloromethane	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
75-27-4	Bromodichloromethan	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
75-25-2	Bromoform	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
74-83-9	Bromomethane	< 0.002	U	0.002	0.005	0.002	0.005	0.05	mg/L	1	05/26/17 23:30
75-15-0	Carbon disulfide	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
56-23-5	Carbon tetrachloride	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
108-90-7	Chlorobenzene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
75-00-3	Chloroethane	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
67-66-3	Chloroform	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30

Soil results reported on dry weight basis





**LABORATORY TEST RESULTS**

Client Sample ID: B-5 Water  
 A&B Job Sample ID: 17051761.02

Date: 6/5/2017

Client Name: Aviles Engineering  
 Project Name: E101-17 / Memorial Drive Reconstruction, Houston, TX

Attn: Bob Metzger

Test Description: **Volatile Organic Compounds**

Analytical Method: SW-846 8260C  
 QC Batch ID: Qb17053157  
 Prep Method: SW-846 5030C  
 Prepared By: Jdongre  
 Prep Batch ID: PB17053143

Sample Matrix: Water  
 Date Collected: 05/26/2017 10:45  
 Date Received: 05/26/2017 13:43  
 Date Prepared: 05/26/2017 15:00

Analyst Initial: JKD

% Moisture

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
74-87-3	Chloromethane	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
156-59-2	cis-1,2-Dichloroethyle	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
10061-01-5	cis-1,3-Dichloroprope	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
124-48-1	Dibromochloromethan	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
74-95-3	Dibromomethane	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
75-71-8	Dichlorodifluorometha	< 0.003	U	0.003	0.005	0.003	0.005	0.05	mg/L	1	05/26/17 23:30
100-41-4	Ethylbenzene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
98-82-8	Isopropylbenzene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
108-38-3&106-4	m- & p-Xylenes	< 0.002	U	0.002	0.01	0.002	0.01	0.1	mg/L	1	05/26/17 23:30
78-93-3	MEK	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
75-09-2	Methylene chloride	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
1634-04-4	MTBE	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
91-20-3	Naphthalene	< 0.002	U	0.002	0.005	0.002	0.005	0.05	mg/L	1	05/26/17 23:30
104-51-8	n-Butylbenzene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
103-65-1	n-Propylbenzene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
95-47-6	o-Xylene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
135-98-8	sec-Butylbenzene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
100-42-5	Styrene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
98-06-6	t-butylbenzene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
127-18-4	Tetrachloroethylene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
108-88-3	Toluene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
156-60-5	trans-1,2-Dichloroethy	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
10061-02-6	trans-1,3-Dichloropro	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
79-01-6	Trichloroethylene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
75-69-4	Trichlorofluoromethan	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
75-01-4	Vinyl Chloride	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/L	1	05/26/17 23:30
1330-20-7	Xylenes	< 0.002	U	0.002	0.015	0.002	0.015	0.15	mg/L	1	05/26/17 23:30
17060-07-0	1,2-Dichloroethane-d4	99.6					70	130	%	1	05/26/17 23:30
1868-53-7	Dibromofluoromethan	111					70	130	%	1	05/26/17 23:30
2037-26-5	Toluene-d8(surr)	96.8					70	130	%	1	05/26/17 23:30
460-00-4	p-Bromofluorobenzen	102					70	130	%	1	05/26/17 23:30

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-5 Water  
 A&B Job Sample ID: 17051761.02

Date: 6/5/2017

Client Name: Aviles Engineering  
 Project Name: E101-17 / Memorial Drive Reconstruction, Houston, TX

Attn: Bob Metzger

Test Description: **Total Petroleum Hydrocarbons**

Sample Matrix: Water

Analytical Method: TX 1005

Date Collected: 05/26/2017 10:45

QC Batch ID: Qb17053042

Date Received: 05/26/2017 13:43

Prep Method: TX 1005

Date Prepared: 05/26/2017 16:00

Prepared By: VNair

Prep Batch ID: PB17053048

Analyst Initial: VMN

% Moisture

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12 <sup>1</sup>	< 0.618	U	0.618	1.40	0.66	1.5	60	mg/L	0.936	05/27/17 01:32
TPH-1005-2	>C12-C28 <sup>1</sup>	< 0.805	U	0.805	1.40	0.86	1.5	60	mg/L	0.936	05/27/17 01:32
TPH-1005-4	>C28-C35 <sup>1</sup>	< 0.702	U	0.702	1.40	0.75	1.5	60	mg/L	0.936	05/27/17 01:32
	Total C6-C35	<					----	----	mg/L	0.936	05/27/17 01:32
111-85-3	1-Chlorooctane(surr)	94.6					59	122	%	0.936	05/27/17 01:32
3386-33-2	Chlorooctadecane(sur	114					48	123	%	0.936	05/27/17 01:32

Soil results reported on dry weight basis



LABORATORY TEST RESULTS

Client Sample ID: B-6 20-22
A&B Job Sample ID: 17051761.03

Date: 6/5/2017

Client Name: Aviles Engineering
Project Name: E101-17 / Memorial Drive Reconstruction, Houston, TX

Attn: Bob Metzger

Test Description: % Moisture
Analytical Method: SM 2540G
QC Batch ID: Qb17060180
Prep Method: SM 2540G
Prepared By: SRGade
Prep Batch ID: PB17060156
Analyst Initial: SRG

Sample Matrix: Soil
Date Collected: 05/26/2017 12:25
Date Received: 05/26/2017 13:43
Date Prepared: 06/01/2017 11:45

% Moisture: 13.4

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Row 1: % Moisture^1, 13.4, ----, ----, %, 1, 06/01/17 11:50



**LABORATORY TEST RESULTS**

Client Sample ID: B-6 20-22  
 A&B Job Sample ID: 17051761.03

Date: 6/5/2017

Client Name: Aviles Engineering  
 Project Name: E101-17 / Memorial Drive Reconstruction, Houston, TX

Attn: Bob Metzger

Test Description:  
 Analytical Method: SW-846 8260C  
 QC Batch ID: Qb17052904  
 Prep Method: SW-846 5035A  
 Prepared By: Jdongre  
 Prep Batch ID: PB17052910

Sample Matrix: Soil  
 Date Collected: 05/26/2017 12:25  
 Date Received: 05/26/2017 13:43  
 Date Prepared: 05/26/2017 15:30

Analyst Initial: JKD

% Moisture: 13.4

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
630-20-6	1,1,1,2-Tetrachloroet	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
71-55-6	1,1,1-Trichloroethane	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
79-34-5	1,1,2,2-Tetrachloroet	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
79-00-5	1,1,2-Trichloroethane	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
75-34-3	1,1-Dichloroethane	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
75-35-4	1,1-Dichloroethylene	< 0.002	U,V11	0.002	0.005	0.002	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
563-58-6	1,1-Dichloropropene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
87-61-6	1,2,3-trichlorobenzen	< 0.002	U	0.002	0.005	0.002	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
96-18-4	1,2,3-Trichloropropan	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
120-82-1	1,2,4-Trichlorobenzen	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
95-63-6	1,2,4-Trimethylbenze	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
96-12-8	1,2-Dibromo-3-chloro	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
106-93-4	1,2-Dibromoethane	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
95-50-1	1,2-Dichlorobenzene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
107-06-2	1,2-Dichloroethane	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
78-87-5	1,2-Dichloropropane	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
108-67-8	1,3,5-Trimethylbenze	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
541-73-1	1,3-Dichlorobenzene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
142-28-9	1,3-Dichloropropane	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
106-46-7	1,4-Dichlorobenzene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
123-91-1	1,4-Dioxane	< 0.081	U	0.081	0.344	0.075	0.32	1.6	mg/Kg	0.93	05/27/17 03:58
594-20-7	2,2-Dichloropropane	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
95-49-8	2-Chlorotoluene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
106-43-4	4-Chlorotoluene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
99-87-6	4-Isopropyltoluene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
71-43-2	Benzene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
108-86-1	Bromobenzene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
74-97-5	Bromochloromethane	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
75-27-4	Bromodichloromethan	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
75-25-2	Bromoform	< 0.00054	U	0.00054	0.005	0.0005	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
74-83-9	Bromomethane	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
75-15-0	Carbon disulfide	< 0.002	U,V11	0.002	0.005	0.002	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
56-23-5	Carbon tetrachloride	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
108-90-7	Chlorobenzene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
75-00-3	Chloroethane	< 0.003	U	0.003	0.005	0.003	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
67-66-3	Chloroform	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-6 20-22  
 A&B Job Sample ID: 17051761.03

Date: 6/5/2017

Client Name: Aviles Engineering  
 Project Name: E101-17 / Memorial Drive Reconstruction, Houston, TX

Attn: Bob Metzger

Test Description:  
 Analytical Method: SW-846 8260C  
 QC Batch ID: Qb17052904  
 Prep Method: SW-846 5035A  
 Prepared By: Jdongre  
 Prep Batch ID: PB17052910

Sample Matrix: Soil  
 Date Collected: 05/26/2017 12:25  
 Date Received: 05/26/2017 13:43  
 Date Prepared: 05/26/2017 15:30

Analyst Initial: JKD

% Moisture: 13.4

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
74-87-3	Chloromethane	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
156-59-2	cis-1,2-Dichloroethyle	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
10061-01-5	cis-1,3-Dichloroprope	< 0.00043	U	0.00043	0.005	0.0004	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
124-48-1	Dibromochloromethan	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
74-95-3	Dibromomethane	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
75-71-8	Dichlorodifluorometha	< 0.002	U	0.002	0.005	0.002	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
100-41-4	Ethylbenzene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
98-82-8	Isopropylbenzene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
108-38-3&106-4	m- & p-Xylenes	< 0.001	U	0.001	0.011	0.001	0.01	0.1	mg/Kg	0.93	05/27/17 03:58
78-93-3	MEK	< 0.002	U	0.002	0.005	0.002	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
75-09-2	Methylene chloride	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
1634-04-4	MTBE	< 0.003	U	0.003	0.005	0.003	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
91-20-3	Naphthalene	< 0.00043	U	0.00043	0.005	0.0004	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
104-51-8	n-Butylbenzene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
103-65-1	n-Propylbenzene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
95-47-6	o-Xylene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
135-98-8	sec-Butylbenzene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
100-42-5	Styrene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
98-06-6	t-butylbenzene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
127-18-4	Tetrachloroethylene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
108-88-3	Toluene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
156-60-5	trans-1,2-Dichloroethy	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
10061-02-6	trans-1,3-Dichloropro	< 0.00043	U	0.00043	0.005	0.0004	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
79-01-6	Trichloroethylene	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
75-69-4	Trichlorofluoromethan	< 0.001	U,V11	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
75-01-4	Vinyl Chloride	< 0.001	U	0.001	0.005	0.001	0.005	0.05	mg/Kg	0.93	05/27/17 03:58
1330-20-7	Xylenes	< 0.001	U	0.001	0.005	0.001	0.005	0.15	mg/Kg	0.93	05/27/17 03:58
17060-07-0	1,2-Dichloroethane-d4	127					70	130	%	0.93	05/27/17 03:58
1868-53-7	Dibromofluoromethan	108					70	130	%	0.93	05/27/17 03:58
2037-26-5	Toluene-d8(surr)	96.4					70	130	%	0.93	05/27/17 03:58
460-00-4	p-Bromofluorobenzen	102					70	130	%	0.93	05/27/17 03:58

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-6 20-22  
 A&B Job Sample ID: 17051761.03

Date: 6/5/2017

Client Name: Aviles Engineering  
 Project Name: E101-17 / Memorial Drive Reconstruction, Houston, TX

Attn: Bob Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb17060139  
 Prep Method: TX 1005  
 Prepared By: VNair  
 Prep Batch ID: PB17060129

Sample Matrix: Soil  
 Date Collected: 05/26/2017 12:25  
 Date Received: 05/26/2017 13:43  
 Date Prepared: 05/31/2017 14:00

Analyst Initial: VMN

% Moisture: 13.4

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12 <sup>1</sup>	< 27.4	U	27.4	28.9	23.7	25	1000	mg/Kg	1	05/31/17 19:33
TPH-1005-2	>C12-C28 <sup>1</sup>	< 23.4	U	23.4	28.9	20.3	25	1000	mg/Kg	1	05/31/17 19:33
TPH-1005-4	>C28-C35 <sup>1</sup>	< 20.4	U	20.4	28.9	17.7	25	1000	mg/Kg	1	05/31/17 19:33
	Total C6-C35	<					----	----	mg/Kg	1	05/31/17 19:33
111-85-3	1-Chlorooctane(surr)	105					60	143	%	1	05/31/17 19:33
3386-33-2	Chlorooctadecane(sur)	102					60	150	%	1	05/31/17 19:33

Soil results reported on dry weight basis  
<sup>1</sup>-Parameter not available for accreditation

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 17051761

**Date :** 6/5/2017

**Analysis :** Volatile Organic Compounds      **Method :** SW-846 8260C      **Reporting Units :** mg/Kg

**QC Batch ID :** Qb17052904      **Created Date :** 05/26/17      **Created By :** Jdongre

**Samples in This QC Batch :** 17051761.01,03

**Sample Preparation :** PB17052910      **Prep Method :** SW-846 5035A      **Prep Date :** 05/26/17 15:30      **Prep By :** Jdongre

<b>QC Type: Method Blank</b>							
Parameter	CAS #	Result	Units	D.F.	MQL	MDL	Qual
1,1,1,2-Tetrachloroethane	630-20-6	< MDL	mg/Kg	1	0.005	0.001	
1,1,1-Trichloroethane	71-55-6	< MDL	mg/Kg	1	0.005	0.001	
1,1,2,2-Tetrachloroethane	79-34-5	< MDL	mg/Kg	1	0.005	0.001	
1,1,2-Trichloroethane	79-00-5	< MDL	mg/Kg	1	0.005	0.001	
1,1-Dichloroethane	75-34-3	< MDL	mg/Kg	1	0.005	0.001	
1,1-Dichloroethylene	75-35-4	< MDL	mg/Kg	1	0.005	0.002	
1,1-Dichloropropene	563-58-6	< MDL	mg/Kg	1	0.005	0.001	
1,2,3-trichlorobenzene	87-61-6	< MDL	mg/Kg	1	0.005	0.002	
1,2,3-Trichloropropane	96-18-4	< MDL	mg/Kg	1	0.005	0.001	
1,2,4-Trichlorobenzene	120-82-1	< MDL	mg/Kg	1	0.005	0.001	
1,2,4-Trimethylbenzene	95-63-6	< MDL	mg/Kg	1	0.005	0.001	
1,2-Dibromo-3-chloropropa	96-12-8	< MDL	mg/Kg	1	0.005	0.001	
1,2-Dibromoethane	106-93-4	< MDL	mg/Kg	1	0.005	0.001	
1,2-Dichlorobenzene	95-50-1	< MDL	mg/Kg	1	0.005	0.001	
1,2-Dichloroethane	107-06-2	< MDL	mg/Kg	1	0.005	0.001	
1,2-Dichloropropane	78-87-5	< MDL	mg/Kg	1	0.005	0.001	
1,3,5-Trimethylbenzene	108-67-8	< MDL	mg/Kg	1	0.005	0.001	
1,3-Dichlorobenzene	541-73-1	< MDL	mg/Kg	1	0.005	0.001	
1,3-Dichloropropane	142-28-9	< MDL	mg/Kg	1	0.005	0.001	
1,4-Dichlorobenzene	106-46-7	< MDL	mg/Kg	1	0.005	0.001	
1,4-Dioxane	123-91-1	< MDL	mg/Kg	1	0.32	0.075	
2,2-Dichloropropane	594-20-7	< MDL	mg/Kg	1	0.005	0.001	
2-Chlorotoluene	95-49-8	< MDL	mg/Kg	1	0.005	0.001	
4-Chlorotoluene	106-43-4	< MDL	mg/Kg	1	0.005	0.001	
4-Isopropyltoluene	99-87-6	< MDL	mg/Kg	1	0.005	0.001	
Benzene	71-43-2	< MDL	mg/Kg	1	0.005	0.001	
Bromobenzene	108-86-1	< MDL	mg/Kg	1	0.005	0.001	
Bromochloromethane	74-97-5	< MDL	mg/Kg	1	0.005	0.001	
Bromodichloromethane	75-27-4	< MDL	mg/Kg	1	0.005	0.001	
Bromoform	75-25-2	< MDL	mg/Kg	1	0.005	0.0005	
Bromomethane	74-83-9	< MDL	mg/Kg	1	0.005	0.001	
Carbon disulfide	75-15-0	< MDL	mg/Kg	1	0.005	0.002	
Carbon tetrachloride	56-23-5	< MDL	mg/Kg	1	0.005	0.001	
Chlorobenzene	108-90-7	< MDL	mg/Kg	1	0.005	0.001	
Chloroethane	75-00-3	< MDL	mg/Kg	1	0.005	0.003	
Chloroform	67-66-3	< MDL	mg/Kg	1	0.005	0.001	
Chloromethane	74-87-3	< MDL	mg/Kg	1	0.005	0.001	
cis-1,2-Dichloroethylene	156-59-2	< MDL	mg/Kg	1	0.005	0.001	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 17051761

**Date :** 6/5/2017

**Analysis :** Volatile Organic Compounds      **Method :** SW-846 8260C      **Reporting Units :** mg/Kg

**QC Batch ID :** Qb17052904      **Created Date :** 05/26/17      **Created By :** Jdongre

**Samples in This QC Batch :** 17051761.01,03

<b>QC Type: Method Blank</b>									
Parameter	CAS #	Result	Units	D.F.	MLQ	MDL			Qual
cis-1,3-Dichloropropene	10061-01-5	< MDL	mg/Kg	1	0.005	0.0004			
Dibromochloromethane	124-48-1	< MDL	mg/Kg	1	0.005	0.001			
Dibromomethane	74-95-3	< MDL	mg/Kg	1	0.005	0.001			
Dichlorodifluoromethane	75-71-8	< MDL	mg/Kg	1	0.005	0.002			
Ethylbenzene	100-41-4	< MDL	mg/Kg	1	0.005	0.001			
Isopropylbenzene	98-82-8	< MDL	mg/Kg	1	0.005	0.001			
m- & p-Xylenes	108-38-3&106-42-3	< MDL	mg/Kg	1	0.01	0.001			
MEK	78-93-3	< MDL	mg/Kg	1	0.005	0.002			
Methylene chloride	75-09-2	< MDL	mg/Kg	1	0.005	0.001			
MTBE	1634-04-4	< MDL	mg/Kg	1	0.005	0.003			
Naphthalene	91-20-3	< MDL	mg/Kg	1	0.005	0.0004			
n-Butylbenzene	104-51-8	< MDL	mg/Kg	1	0.005	0.001			
n-Propylbenzene	103-65-1	< MDL	mg/Kg	1	0.005	0.001			
o-Xylene	95-47-6	< MDL	mg/Kg	1	0.005	0.001			
sec-Butylbenzene	135-98-8	< MDL	mg/Kg	1	0.005	0.001			
Styrene	100-42-5	< MDL	mg/Kg	1	0.005	0.001			
t-butylbenzene	98-06-6	< MDL	mg/Kg	1	0.005	0.001			
Tetrachloroethylene	127-18-4	< MDL	mg/Kg	1	0.005	0.001			
Toluene	108-88-3	< MDL	mg/Kg	1	0.005	0.001			
trans-1,2-Dichloroethylene	156-60-5	< MDL	mg/Kg	1	0.005	0.001			
trans-1,3-Dichloropropene	10061-02-6	< MDL	mg/Kg	1	0.005	0.0004			
Trichloroethylene	79-01-6	< MDL	mg/Kg	1	0.005	0.001			
Trichlorofluoromethane	75-69-4	< MDL	mg/Kg	1	0.005	0.001			
Vinyl Chloride	75-01-4	< MDL	mg/Kg	1	0.005	0.001			
Xylenes	1330-20-7	< MDL	mg/Kg	1	0.005	0.001			
Dibromofluoromethane(surr)	1868-53-7	97.6	%	1					
1,2-Dichloroethane-d4(surr)	17060-07-0	103	%	1					
Toluene-d8(surr)	2037-26-5	97.5	%	1					
p-Bromofluorobenzene(surr)	460-00-4	98.9	%	1					

<b>QC Type: LCS and LCSD</b>										
Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
1,1,1,2-Tetrachloroethane	0.02	0.021	105	0.02	0.022	110	4.7	30	71.4-131	
1,1,1-Trichloroethane	0.02	0.021	105	0.02	0.021	105	0.0	30	69.6-140	
1,1,2,2-Tetrachloroethane	0.02	0.021	105	0.02	0.021	105	0.0	30	66.6-128	
1,1,2-Trichloroethane	0.02	0.021	105	0.02	0.021	105	0.0	30	72.8-125	
1,1-Dichloroethane	0.02	0.02	100	0.02	0.021	105	4.9	30	72.7-129	
1,1-Dichloroethylene	0.02	0.014	70	0.02	0.014	70	0.0	30	71.4-131	L2

Refer to the Definition page for terms.



**QUALITY CONTROL CERTIFICATE**



**Job ID :** 17051761

**Date :** 6/5/2017

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb17052904    **Created Date :** 05/26/17

**Created By :** Jdongre

**Samples in This QC Batch :** 17051761.01,03

<b>QC Type: LCS and LCSD</b>										
Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
1,1-Dichloropropene	0.02	0.02	100	0.02	0.02	100	0.0	30	75.9-132	
1,2,3-trichlorobenzene	0.02	0.023	115	0.02	0.023	115	0.0	30	56.7-153	
1,2,3-Trichloropropane	0.02	0.02	100	0.02	0.02	100	0.0	30	61.6-138	
1,2,4-Trichlorobenzene	0.02	0.023	115	0.02	0.023	115	0.0	30	55.9-150	
1,2,4-Trimethylbenzene	0.02	0.021	105	0.02	0.021	105	0.0	30	71.1-131	
1,2-Dibromo-3-chloropropa	0.02	0.022	110	0.02	0.022	110	0.0	30	52.4-150	
1,2-Dibromoethane	0.02	0.022	110	0.02	0.022	110	0.0	30	72.9-125	
1,2-Dichlorobenzene	0.02	0.022	110	0.02	0.022	110	0.0	30	76.1-126	
1,2-Dichloroethane	0.02	0.022	110	0.02	0.021	105	4.7	30	66.4-134	
1,2-Dichloropropane	0.02	0.021	105	0.02	0.021	105	0.0	30	70.2-128	
1,3,5-Trimethylbenzene	0.02	0.021	105	0.02	0.021	105	0.0	30	75.1-127	
1,3-Dichlorobenzene	0.02	0.021	105	0.02	0.021	105	0.0	30	73.9-126	
1,3-Dichloropropane	0.02	0.02	100	0.02	0.021	105	4.9	30	68.3-124	
1,4-Dichlorobenzene	0.02	0.021	105	0.02	0.021	105	0.0	30	72.3-127	
1,4-Dioxane	0.64	0.705	110	0.64	0.695	109	1.4	30	80-120	
2,2-Dichloropropane	0.02	0.022	110	0.02	0.022	110	0.0	30	68.5-138	
2-Chlorotoluene	0.02	0.02	100	0.02	0.02	100	0.0	30	71.7-128	
4-Chlorotoluene	0.02	0.021	105	0.02	0.021	105	0.0	30	72.2-126	
4-Isopropyltoluene	0.02	0.022	110	0.02	0.022	110	0.0	30	77.5-125	
Benzene	0.02	0.021	105	0.02	0.02	100	4.9	30	74-126	
Bromobenzene	0.02	0.021	105	0.02	0.021	105	0.0	30	73.3-129	
Bromochloromethane	0.02	0.02	100	0.02	0.02	100	0.0	30	68.8-131	
Bromodichloromethane	0.02	0.021	105	0.02	0.022	110	4.7	30	69-135	
Bromoform	0.02	0.022	110	0.02	0.022	110	0.0	30	62-146	
Bromomethane	0.02	0.02	100	0.02	0.02	100	0.0	30	58.7-139	
Carbon disulfide	0.02	0.013	65	0.02	0.013	65	0.0	30	80-120	L2
Carbon tetrachloride	0.02	0.021	105	0.02	0.021	105	0.0	30	68.7-135	
Chlorobenzene	0.02	0.021	105	0.02	0.021	105	0.0	30	73.3-129	
Chloroethane	0.02	0.019	95	0.02	0.02	100	5.1	30	66.2-129	
Chloroform	0.02	0.021	105	0.02	0.021	105	0.0	30	73.7-134	
Chloromethane	0.02	0.017	85	0.02	0.018	90	5.7	30	51.4-135	
cis-1,2-Dichloroethylene	0.02	0.02	100	0.02	0.02	100	0.0	30	72.4-132	
cis-1,3-Dichloropropene	0.02	0.022	110	0.02	0.022	110	0.0	30	67.7-134	
Dibromochloromethane	0.02	0.021	105	0.02	0.022	110	4.7	30	73.2-126	
Dibromomethane	0.02	0.022	110	0.02	0.022	110	0.0	30	69.9-134	
Dichlorodifluoromethane	0.02	0.019	95	0.02	0.019	95	0.0	30	36.8-144	
Ethylbenzene	0.02	0.021	105	0.02	0.021	105	0.0	30	72.2-128	
Isopropylbenzene	0.02	0.021	105	0.02	0.021	105	0.0	30	71.2-131	
m- & p-Xylenes	0.04	0.042	105	0.04	0.042	105	0.0	30	70.7-131	
MEK	0.02	0.02	100	0.02	0.021	105	4.9	30	52.5-152	
Methylene chloride	0.02	0.019	95	0.02	0.02	100	5.1	30	70.6-129	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 17051761

**Date :** 6/5/2017

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb17052904    **Created Date :** 05/26/17

**Created By :** Jdongre

**Samples in This QC Batch :** 17051761.01,03

<b>QC Type: LCS and LCSD</b>										
Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
MTBE	0.02	0.021	105	0.02	0.022	110	4.7	30	80-120	
Naphthalene	0.02	0.022	110	0.02	0.023	115	4.4	30	60.7-145	
n-Butylbenzene	0.02	0.021	105	0.02	0.02	100	4.9	30	66.5-136	
n-Propylbenzene	0.02	0.02	100	0.02	0.02	100	0.0	30	73.3-126	
o-Xylene	0.02	0.021	105	0.02	0.021	105	0.0	30	71.6-130	
sec-Butylbenzene	0.02	0.021	105	0.02	0.02	100	4.9	30	77.9-124	
Styrene	0.02	0.022	110	0.02	0.022	110	0.0	30	71.1-131	
t-butylbenzene	0.02	0.021	105	0.02	0.021	105	0.0	30	74.4-130	
Tetrachloroethylene	0.02	0.022	110	0.02	0.022	110	0.0	30	62.6-157	
Toluene	0.02	0.021	105	0.02	0.021	105	0.0	30	73.3-127	
trans-1,2-Dichloroethylene	0.02	0.02	100	0.02	0.02	100	0.0	30	80-120	
trans-1,3-Dichloropropene	0.02	0.022	110	0.02	0.022	110	0.0	30	71.5-124	
Trichloroethylene	0.02	0.022	110	0.02	0.022	110	0.0	30	69.2-133	
Trichlorofluoromethane	0.02	0.013	65	0.02	0.014	70	7.4	30	63.9-140	
Vinyl Chloride	0.02	0.019	95	0.02	0.019	95	0.0	30	40.9-159	
Xylenes	0.06	0.063	105	0.06	0.063	105	0.0	30	69.2-133	

<b>QC Type: MS and MSD</b>											
<b>QC Sample ID: 17051699.01</b>											
Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
1,1,1,2-Tetrachloroethane	BRL	0.019	0.021	111						71.4-131	
1,1,1-Trichloroethane	BRL	0.019	0.021	111						69.6-140	
1,1,2,2-Tetrachloroethane	BRL	0.019	0.02	105						66.6-128	
1,1,2-Trichloroethane	BRL	0.019	0.02	105						72.8-125	
1,1-Dichloroethane	BRL	0.019	0.02	105						72.7-129	
1,1-Dichloroethylene	BRL	0.019	0.014	73.7						71.4-131	
1,1-Dichloropropene	BRL	0.019	0.019	100						75.9-132	
1,2,3-trichlorobenzene	BRL	0.019	0.019	100						56.7-153	
1,2,3-Trichloropropane	BRL	0.019	0.02	105						61.6-138	
1,2,4-Trichlorobenzene	BRL	0.019	0.018	94.7						55.9-150	
1,2,4-Trimethylbenzene	BRL	0.019	0.018	94.7						71.1-131	
1,2-Dibromo-3-chloropropa	BRL	0.019	0.021	111						52.4-150	
1,2-Dibromoethane	BRL	0.019	0.02	105						72.9-125	
1,2-Dichlorobenzene	BRL	0.019	0.019	100						76.1-126	
1,2-Dichloroethane	BRL	0.019	0.023	121						66.4-134	
1,2-Dichloropropane	BRL	0.019	0.02	105						70.2-128	
1,3,5-Trimethylbenzene	BRL	0.019	0.018	94.7						75.1-127	
1,3-Dichlorobenzene	BRL	0.019	0.018	94.7						73.9-126	
1,3-Dichloropropane	BRL	0.019	0.021	111						68.3-124	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 17051761

**Date :** 6/5/2017

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb17052904

**Created Date :** 05/26/17

**Created By :** Jdongre

**Samples in This QC Batch :** 17051761.01,03

<b>QC Type: MS and MSD</b>											
<b>QC Sample ID: 17051699.01</b>											
Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
1,4-Dichlorobenzene	BRL	0.019	0.018	94.7						72.3-127	
1,4-Dioxane	BRL	0.60	0.771	129						70-130	
2,2-Dichloropropane	BRL	0.019	0.016	84.2						68.5-138	
2-Chlorotoluene	BRL	0.019	0.018	94.7						71.7-128	
4-Chlorotoluene	BRL	0.019	0.018	94.7						72.2-126	
4-Isopropyltoluene	BRL	0.019	0.018	94.7						77.5-125	
Benzene	BRL	0.019	0.019	100						74-126	
Bromobenzene	BRL	0.019	0.019	100						73.3-129	
Bromochloromethane	BRL	0.019	0.02	105						68.8-131	
Bromodichloromethane	BRL	0.019	0.022	116						69-135	
Bromoform	BRL	0.019	0.023	121						62-146	
Bromomethane	BRL	0.019	0.017	89.5						58.7-139	
Carbon disulfide	BRL	0.019	0.013	68.4						70-130	M9
Carbon tetrachloride	BRL	0.019	0.022	116						68.7-135	
Chlorobenzene	BRL	0.019	0.019	100						73.3-129	
Chloroethane	BRL	0.019	0.02	105						66.2-129	
Chloroform	BRL	0.019	0.021	111						73.7-134	
Chloromethane	BRL	0.019	0.015	78.9						51.4-135	
cis-1,2-Dichloroethylene	BRL	0.019	0.019	100						72.4-132	
cis-1,3-Dichloropropene	BRL	0.019	0.018	94.7						67.7-134	
Dibromochloromethane	BRL	0.019	0.021	111						73.2-126	
Dibromomethane	BRL	0.019	0.022	116						69.9-134	
Dichlorodifluoromethane	BRL	0.019	0.019	100						36.8-144	
Ethylbenzene	BRL	0.019	0.019	100						72.2-128	
Isopropylbenzene	BRL	0.019	0.019	100						71.2-131	
m- & p-Xylenes	BRL	0.037	0.039	105						70.7-131	
MEK	BRL	0.019	0.02	105						52.5-152	
Methylene chloride	BRL	0.019	0.019	100						70.6-129	
MTBE	BRL	0.019	0.021	111						70-130	
Naphthalene	BRL	0.019	0.02	105						60.7-145	
n-Butylbenzene	BRL	0.019	0.017	89.5						66.5-136	
n-Propylbenzene	BRL	0.019	0.018	94.7						73.3-126	
o-Xylene	BRL	0.019	0.02	105						71.6-130	
sec-Butylbenzene	BRL	0.019	0.018	94.7						77.9-124	
Styrene	BRL	0.019	0.019	100						71.1-131	
t-butylbenzene	BRL	0.019	0.018	94.7						74.4-130	
Tetrachloroethylene	BRL	0.019	0.024	126						62.6-157	
Toluene	BRL	0.019	0.019	91.6						73.3-127	
trans-1,2-Dichloroethylene	BRL	0.019	0.019	100						70-130	
trans-1,3-Dichloropropene	BRL	0.019	0.017	89.5						71.5-124	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 17051761

**Date :** 6/5/2017

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb17052904

**Created Date :** 05/26/17

**Created By :** Jdongre

**Samples in This QC Batch :** 17051761.01,03

**QC Type:** MS and MSD

**QC Sample ID:** 17051699.01

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
Trichloroethylene	BRL	0.019	0.02	105						69.2-133	
Trichlorofluoromethane	BRL	0.019	0.011	57.9						63.9-140	M9
Vinyl Chloride	BRL	0.019	0.018	94.7						40.9-159	
Xylenes	BRL	0.056	0.059	105						69.2-133	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 17051761

**Date :** 6/5/2017

**Analysis :** Total Petroleum Hydrocarbons

**Method :** TX 1005

**Reporting Units :** mg/L

**QC Batch ID :** Qb17053042    **Created Date :** 05/26/17

**Created By :** VNair

**Samples in This QC Batch :** 17051761.02

**Sample Preparation :** PB17053048    **Prep Method :** TX 1005    **Prep Date :** 05/26/17 16:00    **Prep By :** VNair

**QC Type: Method Blank**

Parameter	CAS #	Result	Units	D.F.	ML	MDL		Qual
C6-C12	TPH-1005-1	< MDL	mg/L	1	1.5	0.66		
>C12-C28	TPH-1005-2	< MDL	mg/L	1	1.5	0.86		
>C28-C35	TPH-1005-4	< MDL	mg/L	1	1.5	0.75		
Total C6-C35		< MDL	mg/L	1	---			
1-Chlorooctane(surr)	111-85-3	97.4	%	1				
Chlorooctadecane(surr)	3386-33-2	98.7	%	1				

**QC Type: Duplicate**

**QC Sample ID: 17051761.02**

Parameter	QCSample Result	Sample Result	Units	RPD	RPD CtrlLimit		Qual
>C12-C28	BRL	BRL	mg/L		30		
>C28-C35	BRL	BRL	mg/L		30		
C6-C12	BRL	BRL	mg/L		30		
Total C6-C35	BRL	BRL	mg/L		30		

**QC Type: LCS and LCSD**

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
C6-C12	30	35.9	120	30	36	120	0.3	20	75-125	
>C12-C28	30	33.4	111	30	34.1	114	2.1	20	75-125	
>C28-C35	30	33.8	113	30	35.3	118	4.3	20	75-125	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 17051761

**Date :** 6/5/2017

**Analysis :** Volatile Organic Compounds      **Method :** SW-846 8260C      **Reporting Units :** mg/L

**QC Batch ID :** Qb17053157      **Created Date :** 05/26/17      **Created By :** Jdongre

**Samples in This QC Batch :** 17051761.02

**Sample Preparation :** PB17053143      **Prep Method :** SW-846 5030C      **Prep Date :** 05/26/17 15:00      **Prep By :** Jdongre

QC Type: Method Blank							
Parameter	CAS #	Result	Units	D.F.	MQL	MDL	Qual
1,1,1,2-Tetrachloroethane	630-20-6	< MDL	mg/L	1	0.005	0.001	
1,1,1-Trichloroethane	71-55-6	< MDL	mg/L	1	0.005	0.001	
1,1,2,2-Tetrachloroethane	79-34-5	< MDL	mg/L	1	0.005	0.001	
1,1,2-Trichloroethane	79-00-5	< MDL	mg/L	1	0.005	0.001	
1,1-Dichloroethane	75-34-3	< MDL	mg/L	1	0.005	0.001	
1,1-Dichloroethylene	75-35-4	< MDL	mg/L	1	0.005	0.001	
1,1-Dichloropropene	563-58-6	< MDL	mg/L	1	0.005	0.001	
1,2,3-trichlorobenzene	87-61-6	< MDL	mg/L	1	0.005	0.001	
1,2,3-Trichloropropane	96-18-4	< MDL	mg/L	1	0.005	0.001	
1,2,4-Trichlorobenzene	120-82-1	< MDL	mg/L	1	0.005	0.001	
1,2,4-Trimethylbenzene	95-63-6	< MDL	mg/L	1	0.005	0.001	
1,2-Dibromo-3-chloropropa	96-12-8	< MDL	mg/L	1	0.005	0.001	
1,2-Dibromoethane	106-93-4	< MDL	mg/L	1	0.005	0.001	
1,2-Dichlorobenzene	95-50-1	< MDL	mg/L	1	0.005	0.001	
1,2-Dichloroethane	107-06-2	< MDL	mg/L	1	0.005	0.001	
1,2-Dichloropropane	78-87-5	< MDL	mg/L	1	0.005	0.001	
1,3,5-Trimethylbenzene	108-67-8	< MDL	mg/L	1	0.005	0.001	
1,3-Dichlorobenzene	541-73-1	< MDL	mg/L	1	0.005	0.001	
1,3-Dichloropropane	142-28-9	< MDL	mg/L	1	0.005	0.001	
1,4-Dichlorobenzene	106-46-7	< MDL	mg/L	1	0.005	0.001	
1,4-Dioxane	123-91-1	< MDL	mg/L	1	0.32	0.084	
2,2-Dichloropropane	594-20-7	< MDL	mg/L	1	0.005	0.001	
2-Chlorotoluene	95-49-8	< MDL	mg/L	1	0.005	0.001	
4-Chlorotoluene	106-43-4	< MDL	mg/L	1	0.005	0.001	
4-Isopropyltoluene	99-87-6	< MDL	mg/L	1	0.005	0.003	
Benzene	71-43-2	< MDL	mg/L	1	0.005	0.001	
Bromobenzene	108-86-1	< MDL	mg/L	1	0.005	0.001	
Bromochloromethane	74-97-5	< MDL	mg/L	1	0.005	0.001	
Bromodichloromethane	75-27-4	< MDL	mg/L	1	0.005	0.001	
Bromoform	75-25-2	< MDL	mg/L	1	0.005	0.001	
Bromomethane	74-83-9	< MDL	mg/L	1	0.005	0.002	
Carbon disulfide	75-15-0	< MDL	mg/L	1	0.005	0.001	
Carbon tetrachloride	56-23-5	< MDL	mg/L	1	0.005	0.001	
Chlorobenzene	108-90-7	< MDL	mg/L	1	0.005	0.001	
Chloroethane	75-00-3	< MDL	mg/L	1	0.005	0.001	
Chloroform	67-66-3	< MDL	mg/L	1	0.005	0.001	
Chloromethane	74-87-3	< MDL	mg/L	1	0.005	0.001	
cis-1,2-Dichloroethylene	156-59-2	< MDL	mg/L	1	0.005	0.001	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 17051761

**Date :** 6/5/2017

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb17053157    **Created Date :** 05/26/17

**Created By :** Jdongre

**Samples in This QC Batch :** 17051761.02

<b>QC Type: Method Blank</b>								
Parameter	CAS #	Result	Units	D.F.	MLQ	MDL		Qual
cis-1,3-Dichloropropene	10061-01-5	< MDL	mg/L	1	0.005	0.001		
Dibromochloromethane	124-48-1	< MDL	mg/L	1	0.005	0.001		
Dibromomethane	74-95-3	< MDL	mg/L	1	0.005	0.001		
Dichlorodifluoromethane	75-71-8	< MDL	mg/L	1	0.005	0.003		
Ethylbenzene	100-41-4	< MDL	mg/L	1	0.005	0.001		
Isopropylbenzene	98-82-8	< MDL	mg/L	1	0.005	0.001		
m- & p-Xylenes	108-38-3&106-42-3	< MDL	mg/L	1	0.01	0.002		
MEK	78-93-3	< MDL	mg/L	1	0.005	0.001		
Methylene chloride	75-09-2	< MDL	mg/L	1	0.005	0.001		
MTBE	1634-04-4	< MDL	mg/L	1	0.005	0.001		
Naphthalene	91-20-3	< MDL	mg/L	1	0.005	0.002		
n-Butylbenzene	104-51-8	< MDL	mg/L	1	0.005	0.001		
n-Propylbenzene	103-65-1	< MDL	mg/L	1	0.005	0.001		
o-Xylene	95-47-6	< MDL	mg/L	1	0.005	0.001		
sec-Butylbenzene	135-98-8	< MDL	mg/L	1	0.005	0.001		
Styrene	100-42-5	< MDL	mg/L	1	0.005	0.001		
t-butylbenzene	98-06-6	< MDL	mg/L	1	0.005	0.001		
Tetrachloroethylene	127-18-4	< MDL	mg/L	1	0.005	0.001		
Toluene	108-88-3	< MDL	mg/L	1	0.005	0.001		
trans-1,2-Dichloroethylene	156-60-5	< MDL	mg/L	1	0.005	0.001		
trans-1,3-Dichloropropene	10061-02-6	< MDL	mg/L	1	0.005	0.001		
Trichloroethylene	79-01-6	< MDL	mg/L	1	0.005	0.001		
Trichlorofluoromethane	75-69-4	< MDL	mg/L	1	0.005	0.001		
Vinyl Chloride	75-01-4	< MDL	mg/L	1	0.005	0.001		
Xylenes	1330-20-7	< MDL	mg/L	1	0.015	0.002		
Dibromofluoromethane(surr)	1868-53-7	122	%	1				
1,2-Dichloroethane-d4(surr)	17060-07-0	110	%	1				
Toluene-d8(surr)	2037-26-5	98.3	%	1				
p-Bromofluorobenzene(surr)	460-00-4	106	%	1				

<b>QC Type: LCS and LCSD</b>										
Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
1,1,1,2-Tetrachloroethane	0.02	0.022	110	0.02	0.019	95	14.6	12	82.6-121	R1
1,1,1-Trichloroethane	0.02	0.023	115	0.02	0.02	100	14	13	82.8-123	R1
1,1,2,2-Tetrachloroethane	0.02	0.022	110	0.02	0.02	100	9.5	20	77.5-122	
1,1,2-Trichloroethane	0.02	0.021	105	0.02	0.02	100	4.9	14	81.1-119	
1,1-Dichloroethane	0.02	0.022	110	0.02	0.019	95	14.6	12	74.5-125	R1
1,1-Dichloroethylene	0.02	0.028	140	0.02	0.02	100	33.3	12	75.4-124	L1,R1

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 17051761

**Date :** 6/5/2017

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb17053157

**Created Date :** 05/26/17

**Created By :** Jdongre

**Samples in This QC Batch :** 17051761.02

<b>QC Type: LCS and LCSD</b>										
Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
1,1-Dichloropropene	0.02	0.022	110	0.02	0.019	95	14.6	12	76.9-125	R1
1,2,3-trichlorobenzene	0.02	0.023	115	0.02	0.021	105	9.1	20	70.8-125	
1,2,3-Trichloropropane	0.02	0.023	115	0.02	0.02	100	14	22	69.6-126	
1,2,4-Trichlorobenzene	0.02	0.024	120	0.02	0.02	100	18.2	16	74.8-121	R1
1,2,4-Trimethylbenzene	0.02	0.024	120	0.02	0.02	100	18.2	12	80.4-114	L1,R1
1,2-Dibromo-3-chloropropa	0.02	0.021	105	0.02	0.02	100	4.9	27	61.7-140	
1,2-Dibromoethane	0.02	0.022	110	0.02	0.02	100	9.5	15	80.6-118	
1,2-Dichlorobenzene	0.02	0.023	115	0.02	0.02	100	14	11	82.6-113	L1,R1
1,2-Dichloroethane	0.02	0.023	115	0.02	0.019	95	19	14	72.8-126	R1
1,2-Dichloropropane	0.02	0.023	115	0.02	0.019	95	19	13	82.4-120	R1
1,3,5-Trimethylbenzene	0.02	0.023	115	0.02	0.02	100	14	10	81.3-114	L1,R1
1,3-Dichlorobenzene	0.02	0.022	110	0.02	0.02	100	9.5	11	83.4-113	
1,3-Dichloropropane	0.02	0.021	105	0.02	0.019	95	10	16	79.8-115	
1,4-Dichlorobenzene	0.02	0.022	110	0.02	0.02	100	9.5	11	82.6-113	
1,4-Dioxane	0.64	0.606	94.7	0.64	0.562	87.8	7.5	30	70-130	
2,2-Dichloropropane	0.02	0.022	110	0.02	0.019	95	14.6	15	69.4-131	R1
2-Chlorotoluene	0.02	0.023	115	0.02	0.02	100	14	17	77.8-118	
4-Chlorotoluene	0.02	0.022	110	0.02	0.02	100	9.5	15	78.8-117	
4-Isopropyltoluene	0.02	0.023	115	0.02	0.02	100	14	11	80.9-114	L1,R1
Benzene	0.02	0.023	115	0.02	0.019	95	19	11	84.1-118	R1
Bromobenzene	0.02	0.022	110	0.02	0.02	100	9.5	12	82.8-116	
Bromochloromethane	0.02	0.022	110	0.02	0.02	100	9.5	15	70.7-131	
Bromodichloromethane	0.02	0.024	120	0.02	0.02	100	18.2	12	83.1-119	L1,R1
Bromoform	0.02	0.021	105	0.02	0.018	90	15.4	20	70.3-136	
Bromomethane	0.02	0.027	135	0.02	0.022	110	20.4	23	59-134	L1
Carbon disulfide	0.02	0.023	115	0.02	0.021	105	9.1	30	70-130	
Carbon tetrachloride	0.02	0.024	120	0.02	0.02	100	18.2	13	74.6-129	R1
Chlorobenzene	0.02	0.021	105	0.02	0.019	95	10	11	87.8-110	R1
Chloroethane	0.02	0.024	120	0.02	0.019	95	23.3	13	73.7-124	R1
Chloroform	0.02	0.022	110	0.02	0.02	100	9.5	10	76.4-124	
Chloromethane	0.02	0.023	115	0.02	0.019	95	19	15	59.4-138	R1
cis-1,2-Dichloroethylene	0.02	0.022	110	0.02	0.019	95	14.6	15	74.3-124	
cis-1,3-Dichloropropene	0.02	0.023	115	0.02	0.019	95	19	11	84.6-117	R
Dibromochloromethane	0.02	0.023	115	0.02	0.02	100	14	13	80.3-122	R1
Dibromomethane	0.02	0.022	110	0.02	0.019	95	14.6	16	75.8-126	R1
Dichlorodifluoromethane	0.02	0.025	125	0.02	0.021	105	17.4	15	44.4-149	R1
Ethylbenzene	0.02	0.021	105	0.02	0.019	95	10	12	82.8-114	
Isopropylbenzene	0.02	0.022	110	0.02	0.02	100	9.5	11	86.8-113	
m- & p-Xylenes	0.04	0.043	108	0.04	0.038	95	12.3	10	76.9-122	R1
MEK	0.02	0.022	110	0.02	0.017	85	25.6	42	44.9-154	
Methylene chloride	0.02	0.019	95	0.02	0.016	80	17.1	13	67.3-130	R1

Refer to the Definition page for terms.



**QUALITY CONTROL CERTIFICATE**



**Job ID :** 17051761

**Date :** 6/5/2017

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb17053157

**Created Date :** 05/26/17

**Created By :** Jdongre

**Samples in This QC Batch :** 17051761.02

<b>QC Type: LCS and LCSD</b>										
Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
MTBE	0.02	0.018	90	0.02	0.017	85	5.7	30	70-130	
Naphthalene	0.02	0.021	105	0.02	0.021	105	0.0	27	55.8-136	
n-Butylbenzene	0.02	0.024	120	0.02	0.02	100	18.2	20	74.1-120	R1
n-Propylbenzene	0.02	0.022	110	0.02	0.02	100	9.5	12	78.9-115	
o-Xylene	0.02	0.022	110	0.02	0.019	95	14.6	11	86-111	R1
sec-Butylbenzene	0.02	0.023	115	0.02	0.02	100	14	12	80.2-115	R1
Styrene	0.02	0.021	105	0.02	0.019	95	10	12	86.7-111	
t-butylbenzene	0.02	0.023	115	0.02	0.021	105	9.1	14	80.7-116	
Tetrachloroethylene	0.02	0.021	105	0.02	0.019	95	10	27	64.2-140	
Toluene	0.02	0.021	105	0.02	0.019	95	10	12	85.9-110	
trans-1,2-Dichloroethylene	0.02	0.022	110	0.02	0.02	100	9.5	12	73.7-124	
trans-1,3-Dichloropropene	0.02	0.019	95	0.02	0.017	85	11.1	14	83-114	
Trichloroethylene	0.02	0.024	120	0.02	0.02	100	18.2	12	85.4-114	L1,R1
Trichlorofluoromethane	0.02	0.024	120	0.02	0.02	100	18.2	12	74.3-126	R1
Vinyl Chloride	0.02	0.024	120	0.02	0.02	100	18.2	17	61.8-142	R1
Xylenes	0.06	0.065	108	0.06	0.057	95	13.1	9	81.2-117	R1

<b>QC Type: MS and MSD</b>											
<b>QC Sample ID: 17051761.02</b>											
Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
1,1,1,2-Tetrachloroethane	BRL	0.02	0.018	90						72-139	
1,1,1-Trichloroethane	BRL	0.02	0.018	90						70.6-135	
1,1,2,2-Tetrachloroethane	BRL	0.02	0.02	100						55-149	
1,1,2-Trichloroethane	BRL	0.02	0.019	95						68-139	
1,1-Dichloroethane	BRL	0.02	0.018	90						78-134	
1,1-Dichloroethylene	BRL	0.02	0.018	90						65-141	
1,1-Dichloropropene	BRL	0.02	0.017	85						79-136	
1,2,3-trichlorobenzene	BRL	0.02	0.017	85						54-144	
1,2,3-Trichloropropane	BRL	0.02	0.019	95						58-156	
1,2,4-Trichlorobenzene	BRL	0.02	0.015	75						69-127	
1,2,4-Trimethylbenzene	BRL	0.02	0.016	80						80-131	
1,2-Dibromo-3-chloropropa	BRL	0.02	0.019	95						61-145	
1,2-Dibromoethane	BRL	0.02	0.019	95						68-140	
1,2-Dichlorobenzene	BRL	0.02	0.018	90						70-138	
1,2-Dichloroethane	BRL	0.02	0.018	90						67-152	
1,2-Dichloropropane	BRL	0.02	0.018	90						79-135	
1,3,5-Trimethylbenzene	BRL	0.02	0.016	80						79-133	
1,3-Dichlorobenzene	BRL	0.02	0.016	80						79-128	
1,3-Dichloropropane	BRL	0.02	0.018	90						70-147	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 17051761

**Date :** 6/5/2017

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb17053157

**Created Date :** 05/26/17

**Created By :** Jdongre

**Samples in This QC Batch :** 17051761.02

**QC Type: MS and MSD**

**QC Sample ID: 17051761.02**

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
1,4-Dichlorobenzene	BRL	0.02	0.016	80						76-127	
1,4-Dioxane	BRL	0.64	0.61	95.3						70-125	
2,2-Dichloropropane	BRL	0.02	0.013	65						60-129	
2-Chlorotoluene	BRL	0.02	0.016	80						83-130	M9
4-Chlorotoluene	BRL	0.02	0.016	80						82-129	M9
4-Isopropyltoluene	BRL	0.02	0.016	80						78-129	
Benzene	BRL	0.02	0.017	85						73-129	
Bromobenzene	BRL	0.02	0.017	85						76-132	
Bromochloromethane	BRL	0.02	0.02	100						76-135	
Bromodichloromethane	BRL	0.02	0.018	90						80-136	
Bromoform	BRL	0.02	0.018	90						65-139	
Bromomethane	BRL	0.02	0.019	95						65-150	
Carbon disulfide	BRL	0.02	0.019	95						70-125	
Carbon tetrachloride	BRL	0.02	0.016	80						70-136	
Chlorobenzene	BRL	0.02	0.017	85						69-123	
Chloroethane	BRL	0.02	0.019	95						74-145	
Chloroform	BRL	0.02	0.019	95						41.8-164	
Chloromethane	BRL	0.02	0.02	100						42.2-160	
cis-1,2-Dichloroethylene	BRL	0.02	0.018	90						71-134	
cis-1,3-Dichloropropene	BRL	0.02	0.015	75						74-128	
Dibromochloromethane	BRL	0.02	0.018	90						67-141	
Dibromomethane	BRL	0.02	0.02	100						63.1-135	
Dichlorodifluoromethane	BRL	0.02	0.02	100						62-146	
Ethylbenzene	BRL	0.02	0.016	80						80-132	
Isopropylbenzene	BRL	0.02	0.016	80						78-137	
m- & p-Xylenes	BRL	0.04	0.033	82.5						74-127	
MEK	BRL	0.02	0.018	90						52-148	
Methylene chloride	BRL	0.02	0.019	95						68-131	
MTBE	BRL	0.02	0.018	90						70-130	
Naphthalene	BRL	0.02	0.019	95						61-116	
n-Butylbenzene	BRL	0.02	0.015	75						73-140	
n-Propylbenzene	BRL	0.02	0.016	80						75-127	
o-Xylene	BRL	0.02	0.017	85						74-126	
sec-Butylbenzene	BRL	0.02	0.016	80						75-129	
Styrene	BRL	0.02	0.017	85						77-123	
t-butylbenzene	BRL	0.02	0.016	80						75-126	
Tetrachloroethylene	BRL	0.02	0.018	90						27.6-194	
Toluene	BRL	0.02	0.017	85						72-121	
trans-1,2-Dichloroethylene	BRL	0.02	0.018	90						73-138	
trans-1,3-Dichloropropene	BRL	0.02	0.014	70						66-131	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 17051761

**Date :** 6/5/2017

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb17053157

**Created Date :** 05/26/17

**Created By :** Jdongre

**Samples in This QC Batch :** 17051761.02

**QC Type:** MS and MSD

**QC Sample ID:** 17051761.02

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
Trichloroethylene	BRL	0.02	0.017	85						6-138	
Trichlorofluoromethane	BRL	0.02	0.019	95						67-148	
Vinyl Chloride	BRL	0.02	0.021	105						59.4-140	
Xylenes	BRL	0.06	0.05	83.3						73-127	

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 17051761

**Date :** 6/5/2017

**Analysis :** Total Petroleum Hydrocarbons      **Method :** TX 1005      **Reporting Units :** mg/Kg

**QC Batch ID :** Qb17060139      **Created Date :** 05/31/17      **Created By :** VNair

**Samples in This QC Batch :** 17051761.01,03

**Sample Preparation :** PB17060129      **Prep Method :** TX 1005      **Prep Date :** 05/31/17 14:00      **Prep By :** VNair

**QC Type: Method Blank**

Parameter	CAS #	Result	Units	D.F.	MQL	MDL	Qual
C6-C12	TPH-1005-1	< MDL	mg/Kg	1	25	23.7	
>C12-C28	TPH-1005-2	< MDL	mg/Kg	1	25	20.3	
>C28-C35	TPH-1005-4	< MDL	mg/Kg	1	25	17.7	
Total C6-C35		< MDL	mg/Kg	1	---		
Chlorooctadecane(surr)	3386-33-2	87	%	1			
1-Chlorooctane(surr)	111-85-3	82.4	%	1			

**QC Type: LCS and LCSD**

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
C6-C12	500	573	115	500	618	124	7.6	20	75-125	
>C12-C28	500	600	120	500	591	118	1.5	20	75-125	
>C28-C35	500	568	114	500	545	109	4.1	20	75-125	

**QC Type: MS and MSD**

**QC Sample ID: 17051832.02**

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
C6-C12	BRL	500	503	101	500	515	103	2.4	20	75-125	
>C12-C28	BRL	500	543	109	500	560	112	3.1	20	75-125	
>C28-C35	BRL	500	512	102	500	525	105	2.5	20	75-125	

Refer to the Definition page for terms.

QUALITY CONTROL CERTIFICATE



Job ID : 17051761

Date : 6/5/2017

**Analysis :** % Moisture                              **Method :** SM 2540G                              **Reporting Units :** %

**QC Batch ID :** Qb17060180      **Created Date :** 06/01/17                              **Created By :** SRGade

**Samples in This QC Batch :** 17051761.01,03

**Sample Preparation :** PB17060156      **Prep Method :** SM 2540G                              **Prep Date :** 06/01/17 11:45      **Prep By :** SRGade

QC Type: Method Blank							
Parameter	CAS #	Result	Units	D.F.	ML	MDL	Qual
% Moisture		0.174	%	1	----		B3

QC Type: Duplicate							
QC Sample ID: 17051761.01							
Parameter	QCSample Result	Sample Result	Units	RPD	RPD CtrLimit		Qual
% Moisture	12.7	12.2	%	4	20		

Refer to the Definition page for terms.

**LABORATORY TERM AND QUALIFIER DEFINITION REPORT**



Job ID : 17051761

Date: 6/5/2017

**General Term Definition**

Back-Wt	Back Weight	Post-Wt	Post Weight
BRL	Below Reporting Limit	ppm	parts per million
cfu	colony-forming units	Pre-Wt	Previous Weight
Conc.	Concentration	Q	Qualifier
D.F.	Dilution Factor	RegLimit	Regulatory Limit
Front-Wt	Front Weight	RPD	Relative Percent Difference
LCS	Laboratory Check Standard	RptLimit	Reporting Limit
LCSD	Laboratory Check Standard Duplicate	SDL	Sample Detection Limit
MS	Matrix Spike	surr	Surrogate
MSD	Matrix Spike Duplicate	T	Time
MW	Molecular Weight	TNTC	Too numerous to count
J	Estimation. Below calibration range but above MDL		

**Qualifier Definition**

B3	Target analyte detected in method blank at or above the MDL or reporting limit. However, concentration found in the sample was $\geq$ 10 times the concentration found in the blank.
L1	Associated LCS and/or LCSD recovery is above acceptance limits for flagged analyte. Bias may be high.
L2	Associated LCS and/or LCSD recovery is below acceptance limits for flagged analyte. Bias may be low.
M9	Matrix Spike and/or Matrix Spike Duplicate recovery is below laboratory control limits.
R1	RPD exceeds control limits.
U	Undetected at SDL (Sample Detection Limit).
V11	CCV recovery is below acceptance limits.

3. PO #  
 3a. A&B Quote #  
 4. Turnaround Time (Business Days)  
 1 Day\*  Other:  
 2 Days\*  
 3 Days\* \*Surcharge applies  
 7 Days - Standard

INVOICE TO:  
 As in Expo 1

2. COMPANY: Ailes Engineering Corp (AEC)  
 ADDRESS: 5790 Wilshire  
 Houston, TX 77041  
 CONTACT: Bob Metzger  
 PHONE: 281-793-8352  
 FAX: [ ]  
 E-MAIL: Rmetzger@aileseng.com

1. REPORT TO:  
 COMPANY: Ailes Engineering Corp (AEC)  
 ADDRESS: 5790 Wilshire  
 Houston, TX 77041  
 CONTACT: Bob Metzger  
 PHONE: 281-793-8352  
 FAX: [ ]  
 E-MAIL: Rmetzger@aileseng.com

13. Containers\* V V 403  
 15. Preservatives\*\* C/H e/A C  
 16. PH-Lab Only

17. Analyses/Methods  
 VOCs + Metals  
 Total PCBs  
 % Moisture

10. Sampling Matrix  
 Date, Time 24hr  
 5/26/17 10:10 ✓  
 5/26/17 10:45 ✓  
 5/26/17 12:25 ✓

LAB USE ONLY	9. Sample ID and Description	10. Sampling	11. Matrix	12. Date, Time 24hr	13. Containers*	14. Preservatives**	15. PH-Lab Only	16. PH-Lab Only	17. Analyses/Methods	18. REMARKS
	UAF B-5 20-21	5/26/17 10:10	Water	✓	7	✓			VOCs + Metals	
	UAF B-5 water	5/26/17 10:45	Water	✓	6	✓			Total PCBs	
	UAF B-5 20-22	5/26/17 12:25	Water	✓	7	✓			% Moisture	

19. RELINQUISHED BY	DATE	TIME	20. RECEIVED BY	DATE	TIME	21. KNOWN HAZARDS/COMMENTS
[Signature]	5/26/17	13:43	[Signature]	5/26	13:43	Temperature: 3.2 - 2.5 = 2.7 Thermometer ID: 140539631 Intact: Y or N Initials: [Signature]

7. Reporting Requirement:  
 TRRP Limits only  TRRP Rpt. Package  See Attached  Standard Level II  PST  MDL  EDD  
 8. Sampler's Name & Company (PLEASE PRINT): Robert J Metzger AEC  
 9. Containers: V V 403  
 10. Preservatives: C/H e/A C  
 11. PH-Lab Only  
 12. Analyses/Methods: VOCs + Metals, Total PCBs, % Moisture  
 13. REMARKS: [Blank]

19. CONTAINERS: VOA - 40 ml vial  
 4 oz/8 oz - glass wide mouth  
 P/O - Plastic/other

20. PRESERVATIVES: C - Cool  
 OH - NaOH  
 H - HCl  
 T - Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>  
 N - HNO<sub>3</sub>  
 X - Other  
 S - H<sub>2</sub>SO<sub>4</sub>

METHOD OF SHIPMENT  
 LAB USE ONLY SAMPLING RENTAL P/U Supplies Field Work  
 BILL OF LADING/TRACKING #  
 \*Containers: VOA - 40 ml vial  
 4 oz/8 oz - glass wide mouth  
 P/O - Plastic/other  
 \*\*Preservatives: C - Cool  
 OH - NaOH  
 H - HCl  
 T - Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>  
 N - HNO<sub>3</sub>  
 X - Other  
 S - H<sub>2</sub>SO<sub>4</sub>  
 Samples will be disposed of after 30 day  
 A&B reserves the right to return sample  
 Please FAX written changes to 713-453-6091



# Sample Condition Checklist

A&B JobID : <b>17051761</b>	Date Received : <b>05/26/2017</b>	Time Received : <b>1:43PM</b>																										
Client Name : <b>Aviles Engineering</b>																												
Temperature : <b>3.2-0.5CF=2.7°C</b>	Sample pH : <b>N/A</b>																											
Thermometer ID : <b>140539631</b>	pH Paper ID : <b>N/A</b>																											
<b>Check Points</b>																												
<b>1.</b>	<b>Cooler seal present and signed.</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>																								
<b>2.</b>	<b>Sample(s) in a cooler.</b>	X																										
<b>3.</b>	<b>If yes, ice in cooler.</b>	X																										
<b>4.</b>	<b>Sample(s) received with chain-of-custody.</b>	X																										
<b>5.</b>	<b>C-O-C signed and dated.</b>	X																										
<b>6.</b>	<b>Sample(s) received with signed sample custody seal.</b>		X																									
<b>7.</b>	<b>Sample containers arrived intact. (If no comment).</b>	X																										
<b>8.</b>	<table style="width: 100%; border: none;"> <tr> <td style="width: 10%;"><b>Matrix</b></td> <td style="width: 10%;"><b>Water</b></td> <td style="width: 10%;"><b>Soil</b></td> <td style="width: 10%;"><b>Liquid</b></td> <td style="width: 10%;"><b>Sludge</b></td> <td style="width: 10%;"><b>Solid</b></td> <td style="width: 10%;"><b>Cassette</b></td> <td style="width: 10%;"><b>Tube</b></td> <td style="width: 10%;"><b>Bulk</b></td> <td style="width: 10%;"><b>Badge</b></td> <td style="width: 10%;"><b>Food</b></td> <td style="width: 10%;"><b>Other</b></td> </tr> <tr> <td>:</td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </table>	<b>Matrix</b>	<b>Water</b>	<b>Soil</b>	<b>Liquid</b>	<b>Sludge</b>	<b>Solid</b>	<b>Cassette</b>	<b>Tube</b>	<b>Bulk</b>	<b>Badge</b>	<b>Food</b>	<b>Other</b>	:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
<b>Matrix</b>	<b>Water</b>	<b>Soil</b>	<b>Liquid</b>	<b>Sludge</b>	<b>Solid</b>	<b>Cassette</b>	<b>Tube</b>	<b>Bulk</b>	<b>Badge</b>	<b>Food</b>	<b>Other</b>																	
:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																	
<b>9.</b>	<b>Sample(s) were received in appropriate container(s).</b>	X																										
<b>10.</b>	<b>Sample(s) were received with proper preservative</b>	X																										
<b>11.</b>	<b>All samples were logged or labeled.</b>	X																										
<b>12.</b>	<b>Sample ID labels match C-O-C ID's</b>	X																										
<b>13.</b>	<b>Bottle count on C-O-C matches bottles found.</b>	X																										
<b>14.</b>	<b>Sample volume is sufficient for analyses requested.</b>	X																										
<b>15.</b>	<b>Samples were received within the hold time.</b>	X																										
<b>16.</b>	<b>VOA vials completely filled.</b>			X																								
<b>17.</b>	<b>Sample accepted.</b>	X																										
<b>18.</b>	<b>Has client been contacted about sub-out</b>			X																								
<b>Comments : Include actions taken to resolve discrepancies/problem:</b>																												
Soi: 01&03. Water: 02. Received 6 pre-weighed vials and 1 bulk jar for each soil sample. TPH in 60mL. -ANH 5-26-17. Per email from Robert Metzger, Sample 03 / Boring S-6 should be labeled "B-6". AS 5/31/17																												

Received by : AHall

Check in by/date : AHall / 05/26/2017



# Laboratory Analysis Report

Total Number of Pages: 41

Job ID : 19052174



10100 East Freeway, Suite 100, Houston, TX 77029 tel: 713-453-6060, fax: 713-453-6091, <http://www.ablabs.com>

---

## Client Project Name : E103-19 / Memorial Dr. Reconstruction

**Report To :** Client Name: Aviles Engineering  
Attn: Bob Metzger  
Client Address: 5790 Windfern  
City, State, Zip: Houston, Texas, 77041

P.O.#.:  
Sample Collected By: Robert J. Metzger  
Date Collected: 05/31/19

---

### A&B Labs has analyzed the following samples...

Client Sample ID	Matrix	A&B Sample ID
B-7 1-2	Soil	19052174.01
B-8 7-8	Soil	19052174.02
B-9 13-14	Soil	19052174.03
B-19 13-14	Soil	19052174.04
B-19 Water	Water	19052174.05

*Shantall Carpenter*

Released By: Shantall Carpenter  
Title: Senior Project Manager  
Date: 6/7/2019



This Laboratory is NELAP ( T104704213-19-20) accredited. Effective: 04/01/2019; Expires: 3/31/2020

Scope: Non-Potable Water, Drinking Water, Air, Solid, Biological Tissue, Hazardous Waste

I am the laboratory manager, or his/her designee, and I am responsible for the release of this data package. This laboratory data package has been reviewed and is complete and technically compliant with the requirements of the methods used, except where noted in the attached exception reports. I affirm, to the best of my knowledge that all problems/anomalies observed by this laboratory (and if applicable, any and all laboratories subcontracted through this laboratory) that might affect the quality of the data, have been identified in the Laboratory Review Checklist, and that no information or data have been knowingly withheld that would affect the quality of the data.

This report cannot be reproduced, except in full, without prior written permission of A&B Labs. Results shown relate only to the items tested. Samples are assumed to be in acceptable condition unless otherwise noted. Blank correction is not made unless otherwise noted. Air concentrations reported are based on field sampling information provided by client. Soil samples are reported on a wet weight basis unless otherwise noted. Uncertainty estimates are available on request.

Date Received : 05/31/2019 16:59



**LABORATORY TEST RESULTS**

Client Sample ID: B-7 1-2  
 A&B Job Sample ID: 19052174.01

Date: 6/7/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Dr. Reconstruction

Attn: Bob Metzger

Test Description: **% Moisture**  
 Analytical Method: SM 2540G  
 QC Batch ID: Qb19060432  
 Prep Method: SM 2540G  
 Prepared By: KRSaranya  
 Prep Batch ID: PB19060425  
 Analyst Initial: KRS

Sample Matrix: Soil  
 Date Collected: 05/31/2019 13:50  
 Date Received: 05/31/2019 16:59  
 Date Prepared: 06/03/2019 17:00

% Moisture: 12.4

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
	% Moisture	12.4					----	----	%	1	06/03/19 17:10

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-7 1-2  
 A&B Job Sample ID: 19052174.01

Date: 6/7/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Dr. Reconstruction

Attn: Bob Metzger

Test Description: **Volatile Organic Compounds by GC/MS**

Analytical Method: SW-846 8260C  
 QC Batch ID: Qb19060425  
 Prep Method: SW-846 5035A  
 Prepared By: Rajeev  
 Prep Batch ID: PB19060421

Sample Matrix: Soil  
 Date Collected: 05/31/2019 13:50  
 Date Received: 05/31/2019 16:59  
 Date Prepared: 06/03/2019 10:00

Analyst Initial: RT

% Moisture: 12.4

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
630-20-6	1,1,1,2-Tetrachloroet	<0.00065	U	0.00065	0.0038	0.00085	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
71-55-6	1,1,1-Trichloroethane	<0.00113	U	0.00113	0.0038	0.00148	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
79-34-5	1,1,2,2-Tetrachloroet	<0.00101	U	0.00101	0.0038	0.00132	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
79-00-5	1,1,2-Trichloroethane	<0.00135	U	0.00135	0.0038	0.00176	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
75-34-3	1,1-Dichloroethane	<0.00120	U	0.00120	0.0038	0.00157	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
75-35-4	1,1-Dichloroethylene	<0.00132	U	0.00132	0.0038	0.00173	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
563-58-6	1,1-Dichloropropene	<0.00110	U	0.00110	0.0038	0.00144	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
87-61-6	1,2,3-trichlorobenzen	<0.00127	U	0.00127	0.0038	0.00166	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
96-18-4	1,2,3-Trichloropropan	<0.00115	U	0.00115	0.0038	0.00151	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
120-82-1	1,2,4-Trichlorobenzen	<0.00106	U	0.00106	0.0038	0.00138	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
95-63-6	1,2,4-Trimethylbenze	<0.00093	U	0.00093	0.0038	0.00122	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
96-12-8	1,2-Dibromo-3-chloro	<0.00238	U	0.00238	0.0038	0.00311	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
106-93-4	1,2-Dibromoethane	<0.00086	U	0.00086	0.0038	0.00113	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
95-50-1	1,2-Dichlorobenzene	<0.00076	U	0.00076	0.0038	0.00100	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
107-06-2	1,2-Dichloroethane	<0.00101	U	0.00101	0.0038	0.00132	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
78-87-5	1,2-Dichloropropane	<0.00086	U	0.00086	0.0038	0.00113	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
108-67-8	1,3,5-Trimethylbenze	<0.00115	U	0.00115	0.0038	0.00151	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
541-73-1	1,3-Dichlorobenzene	<0.00108	U	0.00108	0.0038	0.00141	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
142-28-9	1,3-Dichloropropane	<0.00108	U	0.00108	0.0038	0.00141	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
106-46-7	1,4-Dichlorobenzene	<0.00110	U	0.00110	0.0038	0.00144	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
123-91-1	1,4-Dioxane	<0.06136	U	0.06136	0.245	0.08023	0.32	1.6	mg/Kg	0.67	06/03/19 18:42
594-20-7	2,2-Dichloropropane	<0.00168	U	0.00168	0.0038	0.00220	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
95-49-8	2-Chlorotoluene	<0.00110	U	0.00110	0.0038	0.00144	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
106-43-4	4-Chlorotoluene	<0.00106	U	0.00106	0.0038	0.00138	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
99-87-6	4-Isopropyltoluene	<0.00108	U	0.00108	0.0038	0.00141	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
71-43-2	Benzene	<0.00082	U	0.00082	0.0038	0.00107	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
108-86-1	Bromobenzene	<0.00086	U	0.00086	0.0038	0.00113	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
74-97-5	Bromochloromethane	<0.00096	U	0.00096	0.0038	0.00126	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
75-27-4	Bromodichloromethan	<0.00067	U	0.00067	0.0038	0.00088	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
75-25-2	Bromoform	<0.00055	U	0.00055	0.0038	0.00072	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
74-83-9	Bromomethane	<0.00130	U	0.00130	0.0038	0.00170	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
75-15-0	Carbon disulfide	<0.00106	U	0.00106	0.0038	0.00138	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
56-23-5	Carbon tetrachloride	<0.00115	U	0.00115	0.0038	0.00151	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
108-90-7	Chlorobenzene	<0.00113	U	0.00113	0.0038	0.00148	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
75-00-3	Chloroethane	<0.00185	R1,U	0.00185	0.0038	0.00242	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
67-66-3	Chloroform	<0.00091	U	0.00091	0.0038	0.00119	0.005	0.05	mg/Kg	0.67	06/03/19 18:42

Soil results reported on dry weight basis



### LABORATORY TEST RESULTS

Client Sample ID: B-7 1-2  
A&B Job Sample ID: 19052174.01

Date: 6/7/2019

Client Name: Aviles Engineering  
Project Name: E103-19 / Memorial Dr. Reconstruction

Attn: Bob Metzger

Test Description: **Volatile Organic Compounds by GC/MS**  
Analytical Method: SW-846 8260C  
QC Batch ID: Qb19060425  
Prep Method: SW-846 5035A  
Prepared By: Rajeev  
Prep Batch ID: PB19060421  
Analyst Initial: RT

Sample Matrix: Soil  
Date Collected: 05/31/2019 13:50  
Date Received: 05/31/2019 16:59  
Date Prepared: 06/03/2019 10:00

% Moisture: 12.4

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
74-87-3	Chloromethane	<0.00173	U	0.00173	0.0038	0.00226	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
156-59-2	cis-1,2-Dichloroethyle	<0.00091	U	0.00091	0.0038	0.00119	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
10061-01-5	cis-1,3-Dichloroprope	<0.00086	U	0.00086	0.0038	0.00113	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
124-48-1	Dibromochloromethan	<0.00084	U	0.00084	0.0038	0.00110	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
74-95-3	Dibromomethane	<0.00106	U	0.00106	0.0038	0.00138	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
75-71-8	Dichlorodifluorometha	<0.00103	U	0.00103	0.0038	0.00135	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
100-41-4	Ethylbenzene	<0.00106	U	0.00106	0.0038	0.00138	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
98-82-8	Isopropylbenzene	<0.00096	U	0.00096	0.0038	0.00126	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
108-38-3&106-4	m- & p-Xylenes	<0.00209	U	0.00209	0.0076	0.00273	0.01	0.1	mg/Kg	0.67	06/03/19 18:42
78-93-3	MEK	<0.00204	U	0.00204	0.0038	0.00267	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
75-09-2	Methylene chloride	<0.00118	U	0.00118	0.0038	0.00154	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
1634-04-4	MTBE	<0.00082	U	0.00082	0.0038	0.00107	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
91-20-3	Naphthalene	<0.00144	U	0.00144	0.0038	0.00188	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
104-51-8	n-Butylbenzene	<0.00137	U	0.00137	0.0038	0.00179	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
103-65-1	n-Propylbenzene	<0.00106	U	0.00106	0.0038	0.00138	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
95-47-6	o-Xylene	<0.00096	U	0.00096	0.0038	0.00126	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
135-98-8	sec-Butylbenzene	<0.00122	U	0.00122	0.0038	0.00160	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
100-42-5	Styrene	<0.00096	U	0.00096	0.0038	0.00126	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
98-06-6	t-butylbenzene	<0.00108	U	0.00108	0.0038	0.00141	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
127-18-4	Tetrachloroethylene	<0.00106	U	0.00106	0.0038	0.00138	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
108-88-3	Toluene	<0.00091	U	0.00091	0.0038	0.00119	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
156-60-5	trans-1,2-Dichloroethy	<0.00110	U	0.00110	0.0038	0.00144	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
10061-02-6	trans-1,3-Dichloropro	<0.00071	U	0.00071	0.0038	0.00094	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
79-01-6	Trichloroethylene	<0.00080	U	0.00080	0.0038	0.00104	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
75-69-4	Trichlorofluoromethan	<0.00151	U	0.00151	0.0038	0.00198	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
75-01-4	Vinyl Chloride	<0.00141	U	0.00141	0.0038	0.00185	0.005	0.05	mg/Kg	0.67	06/03/19 18:42
1330-20-7	Xylenes	<0.00076	U	0.00076	0.0038	0.001	0.005	0.15	mg/Kg	0.67	06/03/19 18:42
17060-07-0	1,2-Dichloroethane-d4	99.7					70	130	%	0.67	06/03/19 18:42
1868-53-7	Dibromofluoromethan	93.5					70	130	%	0.67	06/03/19 18:42
2037-26-5	Toluene-d8(surr)	98.1					70	130	%	0.67	06/03/19 18:42
460-00-4	p-Bromofluorobenzen	94.6					70	130	%	0.67	06/03/19 18:42

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-7 1-2  
 A&B Job Sample ID: 19052174.01

Date: 6/7/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Dr. Reconstruction

Attn: Bob Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb19060424  
 Prep Method: TX 1005  
 Prepared By: Jdongre  
 Prep Batch ID: PB19060417

Sample Matrix: Soil  
 Date Collected: 05/31/2019 13:50  
 Date Received: 05/31/2019 16:59  
 Date Prepared: 06/03/2019 10:45

Analyst Initial: JKD

% Moisture: 12.4

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12	<23.27	U	23.27	24.5	23.7	25	1000	mg/Kg	0.86	06/03/19 18:31
TPH-1005-2	>C12-C28	<19.93	U	19.93	24.5	20.3	25	1000	mg/Kg	0.86	06/03/19 18:31
TPH-1005-4	>C28-C35	<17.38	U	17.38	24.5	17.7	25	1000	mg/Kg	0.86	06/03/19 18:31
	Total C6-C35	< 17.38	U	17.38		17.7	----	----	mg/Kg	0.86	06/03/19 18:31
111-85-3	1-Chlorooctane(surr)	99.2					60	143	%	0.86	06/03/19 18:31
3386-33-2	Chlorooctadecane(sur	87.1					60	150	%	0.86	06/03/19 18:31

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-8 7-8  
 A&B Job Sample ID: 19052174.02

Date: 6/7/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Dr. Reconstruction

Attn: Bob Metzger

Test Description: **% Moisture**  
 Analytical Method: SM 2540G  
 QC Batch ID: Qb19060432  
 Prep Method: SM 2540G  
 Prepared By: KRSaranya  
 Prep Batch ID: PB19060425  
 Analyst Initial: KRS

Sample Matrix: Soil  
 Date Collected: 05/31/2019 12:44  
 Date Received: 05/31/2019 16:59  
 Date Prepared: 06/03/2019 17:00

% Moisture: 12.8

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
	% Moisture	12.8					----	----	%	1	06/03/19 17:10

Soil results reported on dry weight basis



LABORATORY TEST RESULTS

Client Sample ID: B-8 7-8
A&B Job Sample ID: 19052174.02

Date: 6/7/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Dr. Reconstruction

Attn: Bob Metzger

Test Description: Volatile Organic Compounds by GC/MS

Analytical Method: SW-846 8260C
QC Batch ID: Qb19060425
Prep Method: SW-846 5035A
Prepared By: Rajeev
Prep Batch ID: PB19060421

Sample Matrix: Soil
Date Collected: 05/31/2019 12:44
Date Received: 05/31/2019 16:59
Date Prepared: 06/03/2019 10:00

Analyst Initial: RT

% Moisture: 12.8

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Rows list various chemical compounds and their test results.

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-8 7-8  
 A&B Job Sample ID: 19052174.02

Date: 6/7/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Dr. Reconstruction

Attn: Bob Metzger

Test Description: **Volatile Organic Compounds by GC/MS**

Analytical Method: SW-846 8260C  
 QC Batch ID: Qb19060425  
 Prep Method: SW-846 5035A  
 Prepared By: Rajeev  
 Prep Batch ID: PB19060421

Sample Matrix: Soil  
 Date Collected: 05/31/2019 12:44  
 Date Received: 05/31/2019 16:59  
 Date Prepared: 06/03/2019 10:00

Analyst Initial: RT

% Moisture: 12.8

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
74-87-3	Chloromethane	<0.00210	U	0.00210	0.0046	0.00226	0.005	0.05	mg/Kg	0.81	06/03/19 19:19
156-59-2	cis-1,2-Dichloroethyle	<0.00111	U	0.00111	0.0046	0.00119	0.005	0.05	mg/Kg	0.81	06/03/19 19:19
10061-01-5	cis-1,3-Dichloroprope	<0.00105	U	0.00105	0.0046	0.00113	0.005	0.05	mg/Kg	0.81	06/03/19 19:19
124-48-1	Dibromochloromethan	<0.00102	U	0.00102	0.0046	0.00110	0.005	0.05	mg/Kg	0.81	06/03/19 19:19
74-95-3	Dibromomethane	<0.00128	U	0.00128	0.0046	0.00138	0.005	0.05	mg/Kg	0.81	06/03/19 19:19
75-71-8	Dichlorodifluorometha	<0.00125	U	0.00125	0.0046	0.00135	0.005	0.05	mg/Kg	0.81	06/03/19 19:19
100-41-4	Ethylbenzene	<0.00128	U	0.00128	0.0046	0.00138	0.005	0.05	mg/Kg	0.81	06/03/19 19:19
98-82-8	Isopropylbenzene	<0.00117	U	0.00117	0.0046	0.00126	0.005	0.05	mg/Kg	0.81	06/03/19 19:19
108-38-3&106-4	m- & p-Xylenes	<0.00254	U	0.00254	0.0093	0.00273	0.01	0.1	mg/Kg	0.81	06/03/19 19:19
78-93-3	MEK	<0.00248	U	0.00248	0.0046	0.00267	0.005	0.05	mg/Kg	0.81	06/03/19 19:19
75-09-2	Methylene chloride	<0.00143	U	0.00143	0.0046	0.00154	0.005	0.05	mg/Kg	0.81	06/03/19 19:19
1634-04-4	MTBE	<0.00099	U	0.00099	0.0046	0.00107	0.005	0.05	mg/Kg	0.81	06/03/19 19:19
91-20-3	Naphthalene	<0.00175	U	0.00175	0.0046	0.00188	0.005	0.05	mg/Kg	0.81	06/03/19 19:19
104-51-8	n-Butylbenzene	<0.00166	U	0.00166	0.0046	0.00179	0.005	0.05	mg/Kg	0.81	06/03/19 19:19
103-65-1	n-Propylbenzene	<0.00128	U	0.00128	0.0046	0.00138	0.005	0.05	mg/Kg	0.81	06/03/19 19:19
95-47-6	o-Xylene	<0.00117	U	0.00117	0.0046	0.00126	0.005	0.05	mg/Kg	0.81	06/03/19 19:19
135-98-8	sec-Butylbenzene	<0.00149	U	0.00149	0.0046	0.00160	0.005	0.05	mg/Kg	0.81	06/03/19 19:19
100-42-5	Styrene	<0.00117	U	0.00117	0.0046	0.00126	0.005	0.05	mg/Kg	0.81	06/03/19 19:19
98-06-6	t-butylbenzene	<0.00131	U	0.00131	0.0046	0.00141	0.005	0.05	mg/Kg	0.81	06/03/19 19:19
127-18-4	Tetrachloroethylene	<0.00128	U	0.00128	0.0046	0.00138	0.005	0.05	mg/Kg	0.81	06/03/19 19:19
108-88-3	Toluene	<0.00111	U	0.00111	0.0046	0.00119	0.005	0.05	mg/Kg	0.81	06/03/19 19:19
156-60-5	trans-1,2-Dichloroethy	<0.00134	U	0.00134	0.0046	0.00144	0.005	0.05	mg/Kg	0.81	06/03/19 19:19
10061-02-6	trans-1,3-Dichloropro	<0.00087	U	0.00087	0.0046	0.00094	0.005	0.05	mg/Kg	0.81	06/03/19 19:19
79-01-6	Trichloroethylene	<0.00097	U	0.00097	0.0046	0.00104	0.005	0.05	mg/Kg	0.81	06/03/19 19:19
75-69-4	Trichlorofluoromethan	<0.00184	U	0.00184	0.0046	0.00198	0.005	0.05	mg/Kg	0.81	06/03/19 19:19
75-01-4	Vinyl Chloride	<0.00172	U	0.00172	0.0046	0.00185	0.005	0.05	mg/Kg	0.81	06/03/19 19:19
1330-20-7	Xylenes	<0.00093	U	0.00093	0.0046	0.001	0.005	0.15	mg/Kg	0.81	06/03/19 19:19
17060-07-0	1,2-Dichloroethane-d4	99					70	130	%	0.81	06/03/19 19:19
1868-53-7	Dibromofluoromethan	92.7					70	130	%	0.81	06/03/19 19:19
2037-26-5	Toluene-d8(surr)	98.8					70	130	%	0.81	06/03/19 19:19
460-00-4	p-Bromofluorobenzen	96.9					70	130	%	0.81	06/03/19 19:19

Soil results reported on dry weight basis





**LABORATORY TEST RESULTS**

Client Sample ID: B-8 7-8  
 A&B Job Sample ID: 19052174.02

Date: 6/7/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Dr. Reconstruction

Attn: Bob Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb19060424  
 Prep Method: TX 1005  
 Prepared By: Jdongre  
 Prep Batch ID: PB19060417

Sample Matrix: Soil  
 Date Collected: 05/31/2019 12:44  
 Date Received: 05/31/2019 16:59  
 Date Prepared: 06/03/2019 10:45

Analyst Initial: JKD

% Moisture: 12.8

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12	<23.9	U	23.9	25.2	23.7	25	1000	mg/Kg	0.88	06/03/19 19:01
TPH-1005-2	>C12-C28	<20.5	U	20.5	25.2	20.3	25	1000	mg/Kg	0.88	06/03/19 19:01
TPH-1005-4	>C28-C35	<17.9	U	17.9	25.2	17.7	25	1000	mg/Kg	0.88	06/03/19 19:01
	Total C6-C35	< 17.9	U	17.9		17.7	----	----	mg/Kg	0.88	06/03/19 19:01
111-85-3	1-Chlorooctane(surr)	91.8					60	143	%	0.88	06/03/19 19:01
3386-33-2	Chlorooctadecane(sur	85.7					60	150	%	0.88	06/03/19 19:01

Soil results reported on dry weight basis



LABORATORY TEST RESULTS

Client Sample ID: B-9 13-14
A&B Job Sample ID: 19052174.03

Date: 6/7/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Dr. Reconstruction

Attn: Bob Metzger

Test Description: % Moisture
Analytical Method: SM 2540G
QC Batch ID: Qb19060432
Prep Method: SM 2540G
Prepared By: KRSaranya
Prep Batch ID: PB19060425
Analyst Initial: KRS

Sample Matrix: Soil
Date Collected: 05/31/2019 11:40
Date Received: 05/31/2019 16:59
Date Prepared: 06/03/2019 17:00

% Moisture: 22.1

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Row 1: % Moisture, 22.1, ----, ----, %, 1, 06/03/19 17:10



LABORATORY TEST RESULTS

Client Sample ID: B-9 13-14
A&B Job Sample ID: 19052174.03

Date: 6/7/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Dr. Reconstruction

Attn: Bob Metzger

Test Description: Volatile Organic Compounds by GC/MS

Analytical Method: SW-846 8260C
QC Batch ID: Qb19060425
Prep Method: SW-846 5035A
Prepared By: Rajeev
Prep Batch ID: PB19060421

Sample Matrix: Soil
Date Collected: 05/31/2019 11:40
Date Received: 05/31/2019 16:59
Date Prepared: 06/03/2019 10:00

Analyst Initial: RT

% Moisture: 22.1

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Contains 40 rows of chemical analysis data.

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-9 13-14  
 A&B Job Sample ID: 19052174.03

Date: 6/7/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Dr. Reconstruction

Attn: Bob Metzger

Test Description: **Volatile Organic Compounds by GC/MS**

Analytical Method: SW-846 8260C  
 QC Batch ID: Qb19060425  
 Prep Method: SW-846 5035A  
 Prepared By: Rajeev  
 Prep Batch ID: PB19060421

Sample Matrix: Soil  
 Date Collected: 05/31/2019 11:40  
 Date Received: 05/31/2019 16:59  
 Date Prepared: 06/03/2019 10:00

Analyst Initial: RT

% Moisture: 22.1

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
74-87-3	Chloromethane	<0.00206	U	0.00206	0.0046	0.00226	0.005	0.05	mg/Kg	0.71	06/03/19 19:56
156-59-2	cis-1,2-Dichloroethyle	<0.00108	U	0.00108	0.0046	0.00119	0.005	0.05	mg/Kg	0.71	06/03/19 19:56
10061-01-5	cis-1,3-Dichloroprope	<0.00103	U	0.00103	0.0046	0.00113	0.005	0.05	mg/Kg	0.71	06/03/19 19:56
124-48-1	Dibromochloromethan	<0.00100	U	0.00100	0.0046	0.00110	0.005	0.05	mg/Kg	0.71	06/03/19 19:56
74-95-3	Dibromomethane	<0.00126	U	0.00126	0.0046	0.00138	0.005	0.05	mg/Kg	0.71	06/03/19 19:56
75-71-8	Dichlorodifluorometha	<0.00123	U	0.00123	0.0046	0.00135	0.005	0.05	mg/Kg	0.71	06/03/19 19:56
100-41-4	Ethylbenzene	<0.00126	U	0.00126	0.0046	0.00138	0.005	0.05	mg/Kg	0.71	06/03/19 19:56
98-82-8	Isopropylbenzene	<0.00115	U	0.00115	0.0046	0.00126	0.005	0.05	mg/Kg	0.71	06/03/19 19:56
108-38-3&106-4	m- & p-Xylenes	<0.00249	U	0.00249	0.0091	0.00273	0.01	0.1	mg/Kg	0.71	06/03/19 19:56
78-93-3	MEK	<0.00243	U	0.00243	0.0046	0.00267	0.005	0.05	mg/Kg	0.71	06/03/19 19:56
75-09-2	Methylene chloride	<0.00140	U	0.00140	0.0046	0.00154	0.005	0.05	mg/Kg	0.71	06/03/19 19:56
1634-04-4	MTBE	<0.00098	U	0.00098	0.0046	0.00107	0.005	0.05	mg/Kg	0.71	06/03/19 19:56
91-20-3	Naphthalene	<0.00171	U	0.00171	0.0046	0.00188	0.005	0.05	mg/Kg	0.71	06/03/19 19:56
104-51-8	n-Butylbenzene	<0.00163	U	0.00163	0.0046	0.00179	0.005	0.05	mg/Kg	0.71	06/03/19 19:56
103-65-1	n-Propylbenzene	<0.00126	U	0.00126	0.0046	0.00138	0.005	0.05	mg/Kg	0.71	06/03/19 19:56
95-47-6	o-Xylene	<0.00115	U	0.00115	0.0046	0.00126	0.005	0.05	mg/Kg	0.71	06/03/19 19:56
135-98-8	sec-Butylbenzene	<0.00146	U	0.00146	0.0046	0.00160	0.005	0.05	mg/Kg	0.71	06/03/19 19:56
100-42-5	Styrene	<0.00115	U	0.00115	0.0046	0.00126	0.005	0.05	mg/Kg	0.71	06/03/19 19:56
98-06-6	t-butylbenzene	<0.00129	U	0.00129	0.0046	0.00141	0.005	0.05	mg/Kg	0.71	06/03/19 19:56
127-18-4	Tetrachloroethylene	<0.00126	U	0.00126	0.0046	0.00138	0.005	0.05	mg/Kg	0.71	06/03/19 19:56
108-88-3	Toluene	<0.00108	U	0.00108	0.0046	0.00119	0.005	0.05	mg/Kg	0.71	06/03/19 19:56
156-60-5	trans-1,2-Dichloroethy	<0.00131	U	0.00131	0.0046	0.00144	0.005	0.05	mg/Kg	0.71	06/03/19 19:56
10061-02-6	trans-1,3-Dichloropro	<0.00085	U	0.00085	0.0046	0.00094	0.005	0.05	mg/Kg	0.71	06/03/19 19:56
79-01-6	Trichloroethylene	<0.00095	U	0.00095	0.0046	0.00104	0.005	0.05	mg/Kg	0.71	06/03/19 19:56
75-69-4	Trichlorofluoromethan	<0.00180	U	0.00180	0.0046	0.00198	0.005	0.05	mg/Kg	0.71	06/03/19 19:56
75-01-4	Vinyl Chloride	<0.00169	U	0.00169	0.0046	0.00185	0.005	0.05	mg/Kg	0.71	06/03/19 19:56
1330-20-7	Xylenes	<0.00091	U	0.00091	0.0046	0.001	0.005	0.15	mg/Kg	0.71	06/03/19 19:56
17060-07-0	1,2-Dichloroethane-d4	103					70	130	%	0.71	06/03/19 19:56
1868-53-7	Dibromofluoromethan	94.8					70	130	%	0.71	06/03/19 19:56
2037-26-5	Toluene-d8(surr)	97.6					70	130	%	0.71	06/03/19 19:56
460-00-4	p-Bromofluorobenzen	95					70	130	%	0.71	06/03/19 19:56

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-9 13-14  
 A&B Job Sample ID: 19052174.03

Date: 6/7/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Dr. Reconstruction

Attn: Bob Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb19060424  
 Prep Method: TX 1005  
 Prepared By: Jdongre  
 Prep Batch ID: PB19060417

Sample Matrix: Soil  
 Date Collected: 05/31/2019 11:40  
 Date Received: 05/31/2019 16:59  
 Date Prepared: 06/03/2019 10:45

Analyst Initial: JKD

% Moisture: 22.1

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12	<26.5	U	26.5	27.9	23.7	25	1000	mg/Kg	0.87	06/03/19 19:31
TPH-1005-2	>C12-C28	<22.7	U	22.7	27.9	20.3	25	1000	mg/Kg	0.87	06/03/19 19:31
TPH-1005-4	>C28-C35	<19.8	U	19.8	27.9	17.7	25	1000	mg/Kg	0.87	06/03/19 19:31
	Total C6-C35	< 19.8	U	19.8		17.7	----	----	mg/Kg	0.87	06/03/19 19:31
111-85-3	1-Chlorooctane(surr)	93.7					60	143	%	0.87	06/03/19 19:31
3386-33-2	Chlorooctadecane(sur	84.4					60	150	%	0.87	06/03/19 19:31

Soil results reported on dry weight basis



LABORATORY TEST RESULTS

Client Sample ID: B-19 13-14
A&B Job Sample ID: 19052174.04

Date: 6/7/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Dr. Reconstruction

Attn: Bob Metzger

Test Description: % Moisture
Analytical Method: SM 2540G
QC Batch ID: Qb19060432
Prep Method: SM 2540G
Prepared By: KRSaranya
Prep Batch ID: PB19060425
Analyst Initial: KRS

Sample Matrix: Soil
Date Collected: 05/31/2019 15:15
Date Received: 05/31/2019 16:59
Date Prepared: 06/03/2019 17:00

% Moisture: 13.4

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Row 1: % Moisture, 13.4, ----, ----, %, 1, 06/03/19 17:10



**LABORATORY TEST RESULTS**

Client Sample ID: B-19 13-14  
 A&B Job Sample ID: 19052174.04

Date: 6/7/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Dr. Reconstruction

Attn: Bob Metzger

Test Description: **Purgeable Aromatics**

Analytical Method: SW-846 8260C  
 QC Batch ID: Qb19060425  
 Prep Method: SW-846 5035A  
 Prepared By: Rajeev  
 Prep Batch ID: PB19060421

Sample Matrix: Soil  
 Date Collected: 05/31/2019 15:15  
 Date Received: 05/31/2019 16:59  
 Date Prepared: 06/03/2019 10:00

Analyst Initial: RT

% Moisture: 13.4

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
1634-04-4	MTBE	<0.00041	U	0.00041	0.0036	0.00057	0.005	0.05	mg/Kg	0.63	06/03/19 20:33
71-43-2	Benzene	<0.00023	U	0.00023	0.0036	0.00031	0.005	0.05	mg/Kg	0.63	06/03/19 20:33
108-88-3	Toluene	<0.00032	U	0.00032	0.0036	0.00044	0.005	0.05	mg/Kg	0.63	06/03/19 20:33
100-41-4	Ethylbenzene	<0.00032	U	0.00032	0.0036	0.00044	0.005	0.05	mg/Kg	0.63	06/03/19 20:33
108-38-3&106-4	m- & p-Xylenes	<0.00080	U	0.00080	0.0073	0.0011	0.010	0.10	mg/Kg	0.63	06/03/19 20:33
95-47-6	o-Xylene	<0.00030	U	0.00030	0.0036	0.00041	0.005	0.05	mg/Kg	0.63	06/03/19 20:33
1330-20-7	Xylenes	<0.00108	U	0.00108	0.011	0.00148	0.015	0.15	mg/Kg	0.63	06/03/19 20:33
17060-07-0	1,2-Dichloroethane-d4	102					70	130	%	0.63	06/03/19 20:33
1868-53-7	Dibromofluoromethan	93.6					70	130	%	0.63	06/03/19 20:33
2037-26-5	Toluene-d8(surr)	99					70	130	%	0.63	06/03/19 20:33
460-00-4	p-Bromofluorobenzen	95.5					70	130	%	0.63	06/03/19 20:33

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-19 13-14  
 A&B Job Sample ID: 19052174.04

Date: 6/7/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Dr. Reconstruction

Attn: Bob Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb19060424  
 Prep Method: TX 1005  
 Prepared By: Jdongre  
 Prep Batch ID: PB19060417

Sample Matrix: Soil  
 Date Collected: 05/31/2019 15:15  
 Date Received: 05/31/2019 16:59  
 Date Prepared: 06/03/2019 10:45

Analyst Initial: JKD

% Moisture: 13.4

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12	<23.54	U	23.54	24.8	23.7	25	1000	mg/Kg	0.86	06/03/19 20:01
TPH-1005-2	>C12-C28	<20.16	U	20.16	24.8	20.3	25	1000	mg/Kg	0.86	06/03/19 20:01
TPH-1005-4	>C28-C35	<17.58	U	17.58	24.8	17.7	25	1000	mg/Kg	0.86	06/03/19 20:01
	Total C6-C35	< 17.58	U	17.58		17.7	----	----	mg/Kg	0.86	06/03/19 20:01
111-85-3	1-Chlorooctane(surr)	90.5					60	143	%	0.86	06/03/19 20:01
3386-33-2	Chlorooctadecane(sur	80.1					60	150	%	0.86	06/03/19 20:01

Soil results reported on dry weight basis





**LABORATORY TEST RESULTS**

Client Sample ID: B-19 Water  
 A&B Job Sample ID: 19052174.05

Date: 6/7/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Dr. Reconstruction

Attn: Bob Metzger

Test Description: **Purgeable Aromatics**

Analytical Method: SW-846 8260C  
 QC Batch ID: Qb19060412  
 Prep Method: SW-846 5030C  
 Prepared By: Rajeev  
 Prep Batch ID: PB19060410

Sample Matrix: Water  
 Date Collected: 05/31/2019 15:25  
 Date Received: 05/31/2019 16:59  
 Date Prepared: 06/03/2019 10:00

Analyst Initial: RT

% Moisture

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
1634-04-4	MTBE	<0.00066	U	0.00066	0.005	0.00066	0.005	0.05	mg/L	1	06/04/19 04:54
71-43-2	Benzene	<0.00035	U	0.00035	0.005	0.00035	0.005	0.05	mg/L	1	06/04/19 04:54
108-88-3	Toluene	<0.00028	U	0.00028	0.005	0.00028	0.005	0.05	mg/L	1	06/04/19 04:54
100-41-4	Ethylbenzene	<0.00035	U	0.00035	0.005	0.00035	0.005	0.05	mg/L	1	06/04/19 04:54
108-38-3&106-4	m- & p-Xylenes	<0.00060	U	0.00060	0.01	0.0006	0.010	0.10	mg/L	1	06/04/19 04:54
95-47-6	o-Xylene	<0.00250	U	0.00250	0.005	0.0025	0.005	0.05	mg/L	1	06/04/19 04:54
1330-20-7	Xylenes	<0.00820	U	0.00820	0.015	0.0082	0.015	0.15	mg/L	1	06/04/19 04:54
17060-07-0	1,2-Dichloroethane-d4	97.2						70 130	%	1	06/04/19 04:54
1868-53-7	Dibromofluoromethan	111						70 130	%	1	06/04/19 04:54
2037-26-5	Toluene-d8(surr)	98.3						70 130	%	1	06/04/19 04:54
460-00-4	p-Bromofluorobenzen	112						70 130	%	1	06/04/19 04:54

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-19 Water  
 A&B Job Sample ID: 19052174.05

Date: 6/7/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Dr. Reconstruction

Attn: Bob Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb19060411  
 Prep Method: TX 1005  
 Prepared By: Jdongre  
 Prep Batch ID: PB19060408

Sample Matrix: Water  
 Date Collected: 05/31/2019 15:25  
 Date Received: 05/31/2019 16:59  
 Date Prepared: 06/03/2019 10:30

Analyst Initial: JKD

% Moisture

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12 <sup>1</sup>	<0.60	U	0.60	1.37	0.66	1.5	60	mg/L	0.91	06/03/19 19:14
TPH-1005-2	>C12-C28 <sup>1</sup>	<0.78	U	0.78	1.37	0.86	1.5	60	mg/L	0.91	06/03/19 19:14
TPH-1005-4	>C28-C35 <sup>1</sup>	<0.68	U	0.68	1.37	0.75	1.5	60	mg/L	0.91	06/03/19 19:14
	Total C6-C35	< 0.78	U	0.78		0.86	----	----	mg/L	0.91	06/03/19 19:14
111-85-3	1-Chlorooctane(surr)	103					59	122	%	0.91	06/03/19 19:14
3386-33-2	Chlorooctadecane(sur)	112					48	123	%	0.91	06/03/19 19:14

Soil results reported on dry weight basis  
<sup>1</sup>-Parameter not available for accreditation

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052174

**Date :** 6/7/2019

**Analysis :** Total Petroleum Hydrocarbons      **Method :** TX 1005      **Reporting Units :** mg/L

**QC Batch ID :** Qb19060411      **Created Date :** 06/03/19      **Created By :** Jdongre

**Samples in This QC Batch :** 19052174.05

**Sample Preparation :** PB19060408      **Prep Method :** TX 1005      **Prep Date :** 06/03/19 10:30      **Prep By :** Jdongre

**QC Type: Method Blank**

Parameter	CAS #	Result	Units	D.F.	MQL	MDL	Qual
C6-C12	TPH-1005-1	< MDL	mg/L	1	1.5	0.66	
>C12-C28	TPH-1005-2	< MDL	mg/L	1	1.5	0.86	
>C28-C35	TPH-1005-4	< MDL	mg/L	1	1.5	0.75	
Total C6-C35		< MDL	mg/L	1	----	0.86	
1-Chlorooctane(surr)	111-85-3	102	%	1			
Chlorooctadecane(surr)	3386-33-2	108	%	1			

**QC Type: Duplicate**

**QC Sample ID: 19052151.01**

Parameter	QCSample Result	Sample Result	Units	RPD	RPD CtrlLimit	Qual
>C12-C28	BRL	BRL	mg/L	0	30	
>C28-C35	BRL	BRL	mg/L	0	30	
C6-C12	BRL	BRL	mg/L	0	30	
Total C6-C35	BRL	BRL	mg/L	0	30	

**QC Type: LCS and LCSD**

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
C6-C12	30	31.1	104	30	31.9	106	2.5	20	75-125	
>C12-C28	30	26.8	89.5	30	27.2	90.8	1.3	20	75-125	
>C28-C35	30	29.1	97	30	30.5	102	4.7	20	75-125	

Refer to the Definition page for terms.

QUALITY CONTROL CERTIFICATE



Job ID : 19052174

Date : 6/7/2019

Analysis : Purgeable Aromatics Method : SW-846 8260C Reporting Units : mg/L

QC Batch ID : Qb19060412 Created Date : 06/03/19 Created By : Rajeev

Samples in This QC Batch : 19052174.05

Sample Preparation : PB19060410 Prep Method : SW-846 5030C Prep Date : 06/03/19 10:00 Prep By : Rajeev

QC Type: Method Blank							
Parameter	CAS #	Result	Units	D.F.	MQL	MDL	Qual
1,1,1,2-Tetrachloroethane	630-20-6	< MDL	mg/L	1	0.005	0.00082	
1,1,1-Trichloroethane	71-55-6	< MDL	mg/L	1	0.005	0.00072	
1,1,2,2-Tetrachloroethane	79-34-5	< MDL	mg/L	1	0.005	0.00210	
1,1,2-Trichloroethane	79-00-5	< MDL	mg/L	1	0.005	0.00144	
1,1-Dichloroethane	75-34-3	< MDL	mg/L	1	0.005	0.00119	
1,1-Dichloroethylene	75-35-4	< MDL	mg/L	1	0.005	0.00066	
1,1-Dichloropropene	563-58-6	< MDL	mg/L	1	0.005	0.001	
1,2,3-trichlorobenzene	87-61-6	< MDL	mg/L	1	0.005	0.00085	
1,2,3-Trichloropropane	96-18-4	< MDL	mg/L	1	0.005	0.00170	
1,2,4-Trichlorobenzene	120-82-1	< MDL	mg/L	1	0.005	0.00053	
1,2,4-Trimethylbenzene	95-63-6	< MDL	mg/L	1	0.005	0.00100	
1,2-Dibromo-3-chloropropa	96-12-8	< MDL	mg/L	1	0.005	0.00236	
1,2-Dibromoethane	106-93-4	< MDL	mg/L	1	0.005	0.00129	
1,2-Dichlorobenzene	95-50-1	< MDL	mg/L	1	0.005	0.00060	
1,2-Dichloroethane	107-06-2	< MDL	mg/L	1	0.005	0.00104	
1,2-Dichloropropane	78-87-5	< MDL	mg/L	1	0.005	0.00075	
1,3,5-Trimethylbenzene	108-67-8	< MDL	mg/L	1	0.005	0.00110	
1,3-Dichlorobenzene	541-73-1	< MDL	mg/L	1	0.005	0.00075	
1,3-Dichloropropane	142-28-9	< MDL	mg/L	1	0.005	0.001	
1,4-Dichlorobenzene	106-46-7	< MDL	mg/L	1	0.005	0.00072	
1,4-Dioxane	123-91-1	< MDL	mg/L	1	0.32	0.08177	
2,2-Dichloropropane	594-20-7	< MDL	mg/L	1	0.005	0.001	
2-Chlorotoluene	95-49-8	< MDL	mg/L	1	0.005	0.00082	
4-Chlorotoluene	106-43-4	< MDL	mg/L	1	0.005	0.00082	
4-Isopropyltoluene	99-87-6	< MDL	mg/L	1	0.005	0.00091	
Benzene	71-43-2	< MDL	mg/L	1	0.005	0.00063	
Bromobenzene	108-86-1	< MDL	mg/L	1	0.005	0.001	
Bromochloromethane	74-97-5	< MDL	mg/L	1	0.005	0.00097	
Bromodichloromethane	75-27-4	< MDL	mg/L	1	0.005	0.00069	
Bromoform	75-25-2	< MDL	mg/L	1	0.005	0.00170	
Bromomethane	74-83-9	< MDL	mg/L	1	0.005	0.00079	
Carbon disulfide	75-15-0	< MDL	mg/L	1	0.005	0.00113	
Carbon tetrachloride	56-23-5	< MDL	mg/L	1	0.005	0.00173	
Chlorobenzene	108-90-7	< MDL	mg/L	1	0.005	0.00069	
Chloroethane	75-00-3	< MDL	mg/L	1	0.005	0.00144	
Chloroform	67-66-3	< MDL	mg/L	1	0.005	0.00072	
Chloromethane	74-87-3	< MDL	mg/L	1	0.005	0.00066	
cis-1,2-Dichloroethylene	156-59-2	< MDL	mg/L	1	0.005	0.00053	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052174

**Date :** 6/7/2019

**Analysis :** Purgeable Aromatics

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb19060412

**Created Date :** 06/03/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19052174.05

**QC Type: Method Blank**

Parameter	CAS #	Result	Units	D.F.	MLQ	MDL	Qual
cis-1,3-Dichloropropene	10061-01-5	< MDL	mg/L	1	0.005	0.00072	
Dibromochloromethane	124-48-1	< MDL	mg/L	1	0.005	0.00122	
Dibromomethane	74-95-3	< MDL	mg/L	1	0.005	0.00126	
Dichlorodifluoromethane	75-71-8	< MDL	mg/L	1	0.005	0.00085	
Ethylbenzene	100-41-4	< MDL	mg/L	1	0.005	0.00100	
Isopropylbenzene	98-82-8	< MDL	mg/L	1	0.005	0.00082	
m- & p-Xylenes	108-38-3&106-42-3	< MDL	mg/L	1	0.01	0.00151	
MEK	78-93-3	< MDL	mg/L	1	0.005	0.00286	
Methylene chloride	75-09-2	< MDL	mg/L	1	0.005	0.00487	
MTBE	1634-04-4	< MDL	mg/L	1	0.005	0.00082	
Naphthalene	91-20-3	< MDL	mg/L	1	0.005	0.00270	
n-Butylbenzene	104-51-8	< MDL	mg/L	1	0.005	0.00119	
n-Propylbenzene	103-65-1	< MDL	mg/L	1	0.005	0.00135	
o-Xylene	95-47-6	< MDL	mg/L	1	0.005	0.00066	
sec-Butylbenzene	135-98-8	< MDL	mg/L	1	0.005	0.00082	
Styrene	100-42-5	< MDL	mg/L	1	0.005	0.00069	
t-butylbenzene	98-06-6	< MDL	mg/L	1	0.005	0.00100	
Tetrachloroethylene	127-18-4	< MDL	mg/L	1	0.005	0.00066	
Toluene	108-88-3	< MDL	mg/L	1	0.005	0.00075	
trans-1,2-Dichloroethylene	156-60-5	< MDL	mg/L	1	0.005	0.00066	
trans-1,3-Dichloropropene	10061-02-6	< MDL	mg/L	1	0.005	0.00097	
Trichloroethylene	79-01-6	< MDL	mg/L	1	0.005	0.00079	
Trichlorofluoromethane	75-69-4	< MDL	mg/L	1	0.005	0.00094	
Vinyl Chloride	75-01-4	< MDL	mg/L	1	0.005	0.00082	
Xylenes	1330-20-7	< MDL	mg/L	1	0.005	0.00204	
Dibromofluoromethane(surr)	1868-53-7	103	%	1			
1,2-Dichloroethane-d4(surr)	17060-07-0	87.4	%	1			
Toluene-d8(surr)	2037-26-5	100	%	1			
p-Bromofluorobenzene(surr)	460-00-4	105	%	1			

**QC Type: LCS and LCSD**

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
1,1,1,2-Tetrachloroethane	0.02	0.0201	100	0.02	0.0188	93.8	6.5	20	78-120	
1,1,1-Trichloroethane	0.02	0.0197	98.4	0.02	0.0176	88	11.1	20	74-126	
1,1,2,2-Tetrachloroethane	0.02	0.0226	113	0.02	0.0225	113	0.3	20	71-121	
1,1,2-Trichloroethane	0.02	0.0215	107	0.02	0.0209	104	2.7	20	80-120	
1,1-Dichloroethane	0.02	0.0208	104	0.02	0.0189	94.4	9.6	20	77-120	
1,1-Dichloroethylene	0.02	0.0193	96.6	0.02	0.0177	88.3	8.8	20	71-130	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052174

**Date :** 6/7/2019

**Analysis :** Purgeable Aromatics

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb19060412    **Created Date :** 06/03/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19052174.05

**QC Type: LCS and LCSD**

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
1,1-Dichloropropene	0.02	0.0204	102	0.02	0.0184	92.2	10.1	20	79-125	
1,2,3-trichlorobenzene	0.02	0.0202	101	0.02	0.0199	99.4	1.5	20	69-121	
1,2,3-Trichloropropane	0.02	0.0215	108	0.02	0.0219	109	1.7	20	73-122	
1,2,4-Trichlorobenzene	0.02	0.0211	105	0.02	0.0198	98.8	6.3	20	69-130	
1,2,4-Trimethylbenzene	0.02	0.0201	101	0.02	0.0193	96.5	4.2	20	76-119	
1,2-Dibromo-3-chloropropa	0.02	0.0210	105	0.02	0.0220	110	4.4	20	62-135	
1,2-Dibromoethane	0.02	0.0207	103	0.02	0.0199	99.3	3.8	20	77-121	
1,2-Dichlorobenzene	0.02	0.0200	99.9	0.02	0.0196	98	1.9	20	80-113	
1,2-Dichloroethane	0.02	0.0169	84.5	0.02	0.0160	79.8	5.5	20	70-125	
1,2-Dichloropropane	0.02	0.0232	116	0.02	0.0211	106	9.4	20	78-122	
1,3,5-Trimethylbenzene	0.02	0.0204	102	0.02	0.0195	97.6	4.4	20	75-117	
1,3-Dichlorobenzene	0.02	0.0202	101	0.02	0.0200	99.9	1	20	80-115	
1,3-Dichloropropane	0.02	0.0191	95.6	0.02	0.0187	93.3	2.3	20	80-119	
1,4-Dichlorobenzene	0.02	0.0203	101	0.02	0.0199	99.3	1.9	20	79-118	
1,4-Dioxane	0.64	0.657	103	0.64	0.652	102	0.8	20	59-139	
2,2-Dichloropropane	0.02	0.0199	99.4	0.02	0.0183	91.7	8.2	20	65-135	
2-Chlorotoluene	0.02	0.0198	98.9	0.02	0.0190	95.1	4	20	79-118	
4-Chlorotoluene	0.02	0.0197	98.4	0.02	0.0192	95.8	2.5	20	78-118	
4-Isopropyltoluene	0.02	0.0200	100	0.02	0.0193	96.3	3.7	20	77-116	
Benzene	0.02	0.0219	109	0.02	0.0199	99.6	9.4	20	79-118	
Bromobenzene	0.02	0.0197	98.4	0.02	0.0194	97.2	1.4	20	80-116	
Bromochloromethane	0.02	0.0197	98.5	0.02	0.0189	94.3	4.1	20	78-123	
Bromodichloromethane	0.02	0.0192	96.2	0.02	0.0179	89.3	7.2	20	79-125	
Bromoform	0.02	0.0190	95.2	0.02	0.0192	95.8	0.9	20	71-130	
Bromomethane	0.02	0.0150	75	0.02	0.0143	71.4	4.8	20	62-141	
Carbon disulfide	0.02	0.0217	109	0.02	0.0198	98.9	9.2	20	70-125	
Carbon tetrachloride	0.02	0.0180	89.9	0.02	0.0163	81.5	9.8	20	72-132	
Chlorobenzene	0.02	0.0207	104	0.02	0.0194	97.3	6.7	20	82-116	
Chloroethane	0.02	0.0162	81.2	0.02	0.0147	73.5	10	20	60-138	
Chloroform	0.02	0.0194	96.8	0.02	0.0179	89.7	7.9	20	79-124	
Chloromethane	0.02	0.0217	108	0.02	0.0197	98.4	9.6	20	61-139	
cis-1,2-Dichloroethylene	0.02	0.0200	100	0.02	0.0187	93.7	6.8	20	78-121	
cis-1,3-Dichloropropene	0.02	0.0209	105	0.02	0.0193	96.4	8	20	81-122	
Dibromochloromethane	0.02	0.0193	96.5	0.02	0.0181	90.4	6.5	20	77-120	
Dibromomethane	0.02	0.0192	96.2	0.02	0.0192	96	0.2	20	79-124	
Dichlorodifluoromethane	0.02	0.0172	86	0.02	0.0156	77.9	9.7	20	51-135	
Ethylbenzene	0.02	0.0200	100	0.02	0.0186	92.9	7.4	20	84-117	
Isopropylbenzene	0.02	0.0198	99	0.02	0.0183	91.5	7.9	20	80-117	
m- & p-Xylenes	0.04	0.0394	98.5	0.04	0.0365	91.2	7.6	20	80-118	
MEK	0.02	0.0204	102	0.02	0.0189	94.3	7.7	20	60-136	
Methylene chloride	0.02	0.0251	126	0.02	0.0250	125	0.5	20	74-124	L1

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052174

**Date :** 6/7/2019

**Analysis :** Purgeable Aromatics

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb19060412    **Created Date :** 06/03/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19052174.05

<b>QC Type: LCS and LCSD</b>										
Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
MTBE	0.02	0.0220	110	0.02	0.0211	106	4.1	20	71-124	
Naphthalene	0.02	0.0210	105	0.02	0.0221	111	5.1	20	66-128	
n-Butylbenzene	0.02	0.0208	104	0.02	0.0198	98.8	4.8	20	75-120	
n-Propylbenzene	0.02	0.0202	101	0.02	0.0196	97.8	3	20	78-120	
o-Xylene	0.02	0.0197	98.6	0.02	0.0185	92.5	6.3	20	84-117	
sec-Butylbenzene	0.02	0.0200	100	0.02	0.0193	96.3	3.7	20	77-120	
Styrene	0.02	0.0206	103	0.02	0.0195	97.6	5.6	20	85-120	
t-butylbenzene	0.02	0.0198	98.8	0.02	0.0190	94.8	4	20	78-120	
Tetrachloroethylene	0.02	0.0197	98.6	0.02	0.0178	88.8	10.3	20	78-129	
Toluene	0.02	0.0207	104	0.02	0.0191	95.7	8.1	20	84-117	
trans-1,2-Dichloroethylene	0.02	0.0202	101	0.02	0.0188	93.9	7.1	20	75-124	
trans-1,3-Dichloropropene	0.02	0.0196	98	0.02	0.0185	92.5	5.8	20	80-121	
Trichloroethylene	0.02	0.0198	98.9	0.02	0.0178	89	10.6	20	80-122	
Trichlorofluoromethane	0.02	0.0166	83.2	0.02	0.0151	75.3	9.7	20	57-141	
Vinyl Chloride	0.02	0.0211	106	0.02	0.0192	96	9.6	20	59-130	
Xylenes	0.06	0.0591	98.5	0.06	0.055	91.7	7.2	20	83-118	

<b>QC Type: MS and MSD</b>											
<b>QC Sample ID: 19060022.08</b>											
Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
1,1,1,2-Tetrachloroethane	BRL	0.02	0.0208	104						72-139	
1,1,1-Trichloroethane	BRL	0.02	0.0194	97						70.6-135	
1,1,2,2-Tetrachloroethane	BRL	0.02	0.0265	133						55-149	
1,1,2-Trichloroethane	BRL	0.02	0.0222	111						68-139	
1,1-Dichloroethane	BRL	0.02	0.0199	99.4						78-134	
1,1-Dichloroethylene	BRL	0.02	0.0194	96.8						65-141	
1,1-Dichloropropene	BRL	0.02	0.0202	101						79-136	
1,2,3-trichlorobenzene	BRL	0.02	0.0225	112						54-144	
1,2,3-Trichloropropane	BRL	0.02	0.0263	131						58-156	
1,2,4-Trichlorobenzene	BRL	0.02	0.0216	108						69-127	
1,2,4-Trimethylbenzene	BRL	0.02	0.0198	98.9						80-131	
1,2-Dibromo-3-chloropropa	BRL	0.02	0.0266	133						61-145	
1,2-Dibromoethane	BRL	0.02	0.0217	109						68-140	
1,2-Dichlorobenzene	BRL	0.02	0.0204	102						70-138	
1,2-Dichloroethane	BRL	0.02	0.0175	87.5						67-152	
1,2-Dichloropropane	BRL	0.02	0.0225	112						79-135	
1,3,5-Trimethylbenzene	BRL	0.02	0.0200	100						79-133	
1,3-Dichlorobenzene	BRL	0.02	0.0202	101						79-128	
1,3-Dichloropropane	BRL	0.02	0.0204	102						70-147	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052174

**Date :** 6/7/2019

**Analysis :** Purgeable Aromatics

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb19060412    **Created Date :** 06/03/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19052174.05

<b>QC Type: MS and MSD</b>											
<b>QC Sample ID: 19060022.08</b>											
Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
1,4-Dichlorobenzene	BRL	0.02	0.0202	101						76-127	
1,4-Dioxane	BRL	0.64	0.937	146						70-125	M8
2,2-Dichloropropane	BRL	0.02	0.0199	99.4						60-129	
2-Chlorotoluene	BRL	0.02	0.0196	97.9						83-130	
4-Chlorotoluene	BRL	0.02	0.0196	97.9						82-129	
4-Isopropyltoluene	BRL	0.02	0.0198	99.1						78-129	
Benzene	BRL	0.02	0.0209	105						73-129	
Bromobenzene	BRL	0.02	0.0203	101						76-132	
Bromochloromethane	BRL	0.02	0.0195	97.3						76-135	
Bromodichloromethane	BRL	0.02	0.0190	95						80-136	
Bromoform	BRL	0.02	0.0215	108						65-139	
Bromomethane	BRL	0.02	0.0147	73.4						65-150	
Carbon disulfide	BRL	0.02	0.0211	105						70-125	
Carbon tetrachloride	BRL	0.02	0.0182	91.1						70-136	
Chlorobenzene	BRL	0.02	0.0209	104						69-123	
Chloroethane	BRL	0.02	0.00902	45.1						74-145	M9
Chloroform	BRL	0.02	0.0188	94.2						41.8-164	
Chloromethane	BRL	0.02	0.0209	105						42.2-160	
cis-1,2-Dichloroethylene	BRL	0.02	0.0197	98.4						71-134	
cis-1,3-Dichloropropene	BRL	0.02	0.0204	102						74-128	
Dibromochloromethane	BRL	0.02	0.0201	100						67-141	
Dibromomethane	BRL	0.02	0.0207	104						63.1-135	
Dichlorodifluoromethane	BRL	0.02	0.0178	89.1						62-146	
Ethylbenzene	BRL	0.02	0.0195	97.7						80-132	
Isopropylbenzene	BRL	0.02	0.0193	96.4						78-137	
m- & p-Xylenes	BRL	0.04	0.0382	95.5						74-127	
MEK	BRL	0.02	0.0233	116						52-148	
Methylene chloride	BRL	0.02	0.0240	120						68-131	
MTBE	BRL	0.02	0.0238	119						70-130	
Naphthalene	BRL	0.02	0.0264	132						61-116	M8
n-Butylbenzene	BRL	0.02	0.0207	104						73-140	
n-Propylbenzene	BRL	0.02	0.0200	100						75-127	
o-Xylene	BRL	0.02	0.0193	96.5						74-126	
sec-Butylbenzene	BRL	0.02	0.0201	101						75-129	
Styrene	BRL	0.02	0.0202	101						77-123	
t-butylbenzene	BRL	0.02	0.0196	98.1						75-126	
Tetrachloroethylene	BRL	0.02	0.0189	94.5						27.6-194	
Toluene	BRL	0.02	0.0204	102						72-121	
trans-1,2-Dichloroethylene	BRL	0.02	0.0199	99.3						73-138	
trans-1,3-Dichloropropene	BRL	0.02	0.0201	101						66-131	

Refer to the Definition page for terms.



**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052174

**Date :** 6/7/2019

**Analysis :** Purgeable Aromatics

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb19060412

**Created Date :** 06/03/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19052174.05

**QC Type:** MS and MSD

**QC Sample ID:** 19060022.08

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
Trichloroethylene	BRL	0.02	0.0190	94.9						6-138	
Trichlorofluoromethane	BRL	0.02	0.0174	86.9						67-148	
Vinyl Chloride	BRL	0.02	0.0210	105						59.4-140	
Xylenes	BRL	0.06	0.0575	95.8						73-127	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052174

**Date :** 6/7/2019

**Analysis :** Total Petroleum Hydrocarbons      **Method :** TX 1005      **Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060424      **Created Date :** 06/03/19      **Created By :** Jdongre

**Samples in This QC Batch :** 19052174.01,02,03,04

**Sample Preparation :** PB19060417      **Prep Method :** TX 1005      **Prep Date :** 06/03/19 10:45      **Prep By :** Jdongre

**QC Type: Method Blank**

Parameter	CAS #	Result	Units	D.F.	MQL	MDL	Qual
C6-C12	TPH-1005-1	< MDL	mg/Kg	1	25	23.7	
>C12-C28	TPH-1005-2	< MDL	mg/Kg	1	25	20.3	
>C28-C35	TPH-1005-4	< MDL	mg/Kg	1	25	17.7	
Total C6-C35		< MDL	mg/Kg	1	----	17.7	
Chlorooctadecane(surr)	3386-33-2	95.1	%	1			
1-Chlorooctane(surr)	111-85-3	123	%	1			

**QC Type: LCS and LCSD**

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
C6-C12	500	500	100	500	497	99.4	0.7	20	75-125	
>C12-C28	500	481	96.3	500	498	99.7	3.4	20	75-125	
>C28-C35	500	503	101	500	508	102	1	20	75-125	

**QC Type: MS and MSD**

**QC Sample ID: 19052165.01**

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
C6-C12	BRL	500	552	110	500	541	108	2.2	20	75-125	
>C12-C28	BRL	500	550	110	500	538	108	2.2	20	75-125	
>C28-C35	BRL	500	553	108	500	586	115	5.8	20	75-125	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052174

**Date :** 6/7/2019

**Analysis :** Purgeable Aromatics      **Method :** SW-846 8260C      **Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060425      **Created Date :** 06/03/19      **Created By :** Rajeev

**Samples in This QC Batch :** 19052174.01,02,03,04

**Sample Preparation :** PB19060421      **Prep Method :** SW-846 5035A      **Prep Date :** 06/03/19 10:00      **Prep By :** Rajeev

QC Type: Method Blank							
Parameter	CAS #	Result	Units	D.F.	MQL	MDL	Qual
1,1,1,2-Tetrachloroethane	630-20-6	< MDL	mg/Kg	1	0.005	0.00085	
1,1,1-Trichloroethane	71-55-6	< MDL	mg/Kg	1	0.005	0.00148	
1,1,2,2-Tetrachloroethane	79-34-5	< MDL	mg/Kg	1	0.005	0.00132	
1,1,2-Trichloroethane	79-00-5	< MDL	mg/Kg	1	0.005	0.00176	
1,1-Dichloroethane	75-34-3	< MDL	mg/Kg	1	0.005	0.00157	
1,1-Dichloroethylene	75-35-4	< MDL	mg/Kg	1	0.005	0.00173	
1,1-Dichloropropene	563-58-6	< MDL	mg/Kg	1	0.005	0.00144	
1,2,3-trichlorobenzene	87-61-6	< MDL	mg/Kg	1	0.005	0.00166	
1,2,3-Trichloropropane	96-18-4	< MDL	mg/Kg	1	0.005	0.00151	
1,2,4-Trichlorobenzene	120-82-1	< MDL	mg/Kg	1	0.005	0.00138	
1,2,4-Trimethylbenzene	95-63-6	< MDL	mg/Kg	1	0.005	0.00122	
1,2-Dibromo-3-chloropropa	96-12-8	< MDL	mg/Kg	1	0.005	0.00311	
1,2-Dibromoethane	106-93-4	< MDL	mg/Kg	1	0.005	0.00113	
1,2-Dichlorobenzene	95-50-1	< MDL	mg/Kg	1	0.005	0.00100	
1,2-Dichloroethane	107-06-2	< MDL	mg/Kg	1	0.005	0.00132	
1,2-Dichloropropane	78-87-5	< MDL	mg/Kg	1	0.005	0.00113	
1,3,5-Trimethylbenzene	108-67-8	< MDL	mg/Kg	1	0.005	0.00151	
1,3-Dichlorobenzene	541-73-1	< MDL	mg/Kg	1	0.005	0.00141	
1,3-Dichloropropane	142-28-9	< MDL	mg/Kg	1	0.005	0.00141	
1,4-Dichlorobenzene	106-46-7	< MDL	mg/Kg	1	0.005	0.00144	
1,4-Dioxane	123-91-1	< MDL	mg/Kg	1	0.32	0.08023	
2,2-Dichloropropane	594-20-7	< MDL	mg/Kg	1	0.005	0.00220	
2-Chlorotoluene	95-49-8	< MDL	mg/Kg	1	0.005	0.00144	
4-Chlorotoluene	106-43-4	< MDL	mg/Kg	1	0.005	0.00138	
4-Isopropyltoluene	99-87-6	< MDL	mg/Kg	1	0.005	0.00141	
Benzene	71-43-2	< MDL	mg/Kg	1	0.005	0.00107	
Bromobenzene	108-86-1	< MDL	mg/Kg	1	0.005	0.00113	
Bromochloromethane	74-97-5	< MDL	mg/Kg	1	0.005	0.00126	
Bromodichloromethane	75-27-4	< MDL	mg/Kg	1	0.005	0.00088	
Bromoform	75-25-2	< MDL	mg/Kg	1	0.005	0.00072	
Bromomethane	74-83-9	< MDL	mg/Kg	1	0.005	0.00170	
Carbon disulfide	75-15-0	< MDL	mg/Kg	1	0.005	0.00138	
Carbon tetrachloride	56-23-5	< MDL	mg/Kg	1	0.005	0.00151	
Chlorobenzene	108-90-7	< MDL	mg/Kg	1	0.005	0.00148	
Chloroethane	75-00-3	< MDL	mg/Kg	1	0.005	0.00242	
Chloroform	67-66-3	< MDL	mg/Kg	1	0.005	0.00119	
Chloromethane	74-87-3	< MDL	mg/Kg	1	0.005	0.00226	
cis-1,2-Dichloroethylene	156-59-2	< MDL	mg/Kg	1	0.005	0.00119	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052174

**Date :** 6/7/2019

**Analysis :** Purgeable Aromatics      **Method :** SW-846 8260C      **Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060425      **Created Date :** 06/03/19      **Created By :** Rajeev

**Samples in This QC Batch :** 19052174.01,02,03,04

<b>QC Type: Method Blank</b>									
Parameter	CAS #	Result	Units	D.F.	MLQ	MDL			Qual
cis-1,3-Dichloropropene	10061-01-5	< MDL	mg/Kg	1	0.005	0.00113			
Dibromochloromethane	124-48-1	< MDL	mg/Kg	1	0.005	0.00110			
Dibromomethane	74-95-3	< MDL	mg/Kg	1	0.005	0.00138			
Dichlorodifluoromethane	75-71-8	< MDL	mg/Kg	1	0.005	0.00135			
Ethylbenzene	100-41-4	< MDL	mg/Kg	1	0.005	0.00138			
Isopropylbenzene	98-82-8	< MDL	mg/Kg	1	0.005	0.00126			
m- & p-Xylenes	108-38-3&106-42-3	< MDL	mg/Kg	1	0.01	0.00273			
MEK	78-93-3	< MDL	mg/Kg	1	0.005	0.00267			
Methylene chloride	75-09-2	< MDL	mg/Kg	1	0.005	0.00154			
MTBE	1634-04-4	< MDL	mg/Kg	1	0.005	0.00107			
Naphthalene	91-20-3	< MDL	mg/Kg	1	0.005	0.00188			
n-Butylbenzene	104-51-8	< MDL	mg/Kg	1	0.005	0.00179			
n-Propylbenzene	103-65-1	< MDL	mg/Kg	1	0.005	0.00138			
o-Xylene	95-47-6	< MDL	mg/Kg	1	0.005	0.00126			
sec-Butylbenzene	135-98-8	< MDL	mg/Kg	1	0.005	0.00160			
Styrene	100-42-5	< MDL	mg/Kg	1	0.005	0.00126			
t-butylbenzene	98-06-6	< MDL	mg/Kg	1	0.005	0.00141			
Tetrachloroethylene	127-18-4	< MDL	mg/Kg	1	0.005	0.00138			
Toluene	108-88-3	< MDL	mg/Kg	1	0.005	0.00119			
trans-1,2-Dichloroethylene	156-60-5	< MDL	mg/Kg	1	0.005	0.00144			
trans-1,3-Dichloropropene	10061-02-6	< MDL	mg/Kg	1	0.005	0.00094			
Trichloroethylene	79-01-6	< MDL	mg/Kg	1	0.005	0.00104			
Trichlorofluoromethane	75-69-4	< MDL	mg/Kg	1	0.005	0.00198			
Vinyl Chloride	75-01-4	< MDL	mg/Kg	1	0.005	0.00185			
Xylenes	1330-20-7	< MDL	mg/Kg	1	0.005	0.001			
Dibromofluoromethane(surr)	1868-53-7	96	%	1					
1,2-Dichloroethane-d4(surr)	17060-07-0	95.4	%	1					
Toluene-d8(surr)	2037-26-5	97.9	%	1					
p-Bromofluorobenzene(surr)	460-00-4	95.2	%	1					

<b>QC Type: LCS and LCSD</b>										
Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
1,1,1,2-Tetrachloroethane	0.02	0.0202	101	0.02	0.0218	109	7.7	30	78-125	
1,1,1-Trichloroethane	0.02	0.0185	92.4	0.02	0.0211	105	13.3	30	70-130	
1,1,2,2-Tetrachloroethane	0.02	0.0185	92.6	0.02	0.0195	97.6	5.1	30	70-124	
1,1,2-Trichloroethane	0.02	0.0192	95.8	0.02	0.0206	103	7.2	30	78-121	
1,1-Dichloroethane	0.02	0.0183	91.7	0.02	0.0204	102	10.7	30	76-125	
1,1-Dichloroethylene	0.02	0.0191	95.4	0.02	0.0216	108	12.4	30	70-131	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052174

**Date :** 6/7/2019

**Analysis :** Purgeable Aromatics

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060425    **Created Date :** 06/03/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19052174.01,02,03,04

<b>QC Type: LCS and LCSD</b>										
Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
1,1-Dichloropropene	0.02	0.0174	87	0.02	0.0201	100	14.4	30	76-125	
1,2,3-trichlorobenzene	0.02	0.0157	78.7	0.02	0.0150	75.2	4.8	30	66-130	
1,2,3-Trichloropropane	0.02	0.0185	92.4	0.02	0.0194	97.2	4.8	30	73-125	
1,2,4-Trichlorobenzene	0.02	0.0181	90.6	0.02	0.0188	94	3.7	30	66-129	
1,2,4-Trimethylbenzene	0.02	0.0199	99.3	0.02	0.0217	108	8.8	30	75-123	
1,2-Dibromo-3-chloropropa	0.02	0.0171	85.3	0.02	0.0171	85.5	0.2	30	61-132	
1,2-Dibromoethane	0.02	0.0194	96.8	0.02	0.0204	102	5.3	30	78-122	
1,2-Dichlorobenzene	0.02	0.0199	99.5	0.02	0.0213	107	6.8	30	78-121	
1,2-Dichloroethane	0.02	0.0196	98.1	0.02	0.0207	103	5.4	30	71-128	
1,2-Dichloropropane	0.02	0.0192	95.9	0.02	0.0204	102	6.2	30	76-123	
1,3,5-Trimethylbenzene	0.02	0.0201	100	0.02	0.0218	109	8.3	30	73-124	
1,3-Dichlorobenzene	0.02	0.0201	100	0.02	0.0221	111	9.6	30	77-121	
1,3-Dichloropropane	0.02	0.0186	93.1	0.02	0.0197	98.6	5.7	30	77-121	
1,4-Dichlorobenzene	0.02	0.0201	101	0.02	0.0219	110	8.4	30	75-120	
1,4-Dioxane	0.64	0.565	88.4	0.64	0.562	87.9	0.6	30	55-138	
2,2-Dichloropropane	0.02	0.0176	88.1	0.02	0.0216	108	20.3	30	67-133	
2-Chlorotoluene	0.02	0.0197	98.5	0.02	0.0214	107	8.3	30	75-122	
4-Chlorotoluene	0.02	0.0194	97	0.02	0.0214	107	9.8	30	72-124	
4-Isopropyltoluene	0.02	0.0200	100	0.02	0.0220	110	9.4	30	73-127	
Benzene	0.02	0.0198	98.9	0.02	0.0217	108	9.3	30	77-121	
Bromobenzene	0.02	0.0203	102	0.02	0.0217	108	6.5	30	78-121	
Bromochloromethane	0.02	0.0179	89.6	0.02	0.0197	98.4	9.5	30	75-125	
Bromodichloromethane	0.02	0.0199	99.4	0.02	0.0213	106	6.9	30	71-127	
Bromoform	0.02	0.0195	97.5	0.02	0.0199	99.3	2	30	67-132	
Bromomethane	0.02	0.0166	83.1	0.02	0.0176	88.2	5.7	30	55-140	
Carbon disulfide	0.02	0.0178	89	0.02	0.0203	101	13.1	30	63-132	
Carbon tetrachloride	0.02	0.0209	104	0.02	0.0234	117	11.5	30	69-135	
Chlorobenzene	0.02	0.0202	101	0.02	0.0219	110	8.2	30	79-120	
Chloroethane	0.02	0.0153	76.6	0.02	0.0220	110	35.8	30	59-139	R1
Chloroform	0.02	0.0187	93.6	0.02	0.0208	104	10.6	30	78-123	
Chloromethane	0.02	0.0167	83.6	0.02	0.0194	96.9	14.9	30	50-136	
cis-1,2-Dichloroethylene	0.02	0.0183	91.5	0.02	0.0202	101	9.9	30	77-123	
cis-1,3-Dichloropropene	0.02	0.0195	97.3	0.02	0.0210	105	7.6	30	74-126	
Dibromochloromethane	0.02	0.0197	98.3	0.02	0.0208	104	5.6	30	74-126	
Dibromomethane	0.02	0.0198	98.9	0.02	0.0211	105	6.5	30	78-125	
Dichlorodifluoromethane	0.02	0.0174	87	0.02	0.0209	104	18.3	30	29-149	
Ethylbenzene	0.02	0.0196	97.8	0.02	0.0217	109	10.4	30	76-122	
Isopropylbenzene	0.02	0.0198	99.1	0.02	0.0220	110	10.4	30	68-134	
m- & p-Xylenes	0.04	0.0396	99.1	0.04	0.0440	110	10.4	30	77-124	
MEK	0.02	0.0141	70.4	0.02	0.0187	93.6	28.2	30	51-148	
Methylene chloride	0.02	0.0187	93.6	0.02	0.0242	121	25.5	30	70-128	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052174

**Date :** 6/7/2019

**Analysis :** Purgeable Aromatics

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060425

**Created Date :** 06/03/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19052174.01,02,03,04

<b>QC Type: LCS and LCSD</b>										
Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
MTBE	0.02	0.0166	82.8	0.02	0.0173	86.5	4.4	30	73-125	
Naphthalene	0.02	0.0154	77.1	0.02	0.0151	75.7	2	30	62-129	
n-Butylbenzene	0.02	0.0190	94.9	0.02	0.0212	106	11.1	30	70-128	
n-Propylbenzene	0.02	0.0196	98	0.02	0.0217	109	10.1	30	73-125	
o-Xylene	0.02	0.0195	97.3	0.02	0.0212	106	8.5	30	77-123	
sec-Butylbenzene	0.02	0.0197	98.7	0.02	0.0218	109	9.9	30	73-126	
Styrene	0.02	0.0199	99.4	0.02	0.0215	108	7.9	30	76-124	
t-butylbenzene	0.02	0.0191	95.5	0.02	0.0209	105	9	30	73-125	
Tetrachloroethylene	0.02	0.0196	97.9	0.02	0.0215	108	9.3	30	73-128	
Toluene	0.02	0.0197	98.6	0.02	0.0216	108	9.1	30	77-121	
trans-1,2-Dichloroethylene	0.02	0.0183	91.5	0.02	0.0207	104	12.4	30	74-125	
trans-1,3-Dichloropropene	0.02	0.0190	95.2	0.02	0.0202	101	5.9	30	71-130	
Trichloroethylene	0.02	0.0204	102	0.02	0.0227	113	10.8	30	77-123	
Trichlorofluoromethane	0.02	0.0177	88.7	0.02	0.0213	107	18.2	30	62-140	
Vinyl Chloride	0.02	0.0168	84	0.02	0.0199	99.4	16.9	30	56-135	
Xylenes	0.06	0.0591	98.5	0.06	0.0652	109	9.8	30	78-124	

<b>QC Type: MS and MSD</b>											
<b>QC Sample ID: 19060023.07</b>											
Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
1,1,1,2-Tetrachloroethane	BRL	0.019	0.0212	112						71.4-131	
1,1,1-Trichloroethane	BRL	0.019	0.0191	101						69.6-140	
1,1,2,2-Tetrachloroethane	BRL	0.019	0.0215	113						66.6-128	
1,1,2-Trichloroethane	BRL	0.019	0.0211	111						72.8-125	
1,1-Dichloroethane	BRL	0.019	0.0193	102						72.7-129	
1,1-Dichloroethylene	BRL	0.019	0.0128	67.4						71.4-131	M9
1,1-Dichloropropene	BRL	0.019	0.0156	82.1						75.9-132	
1,2,3-trichlorobenzene	BRL	0.019	0.0207	109						56.7-153	
1,2,3-Trichloropropane	BRL	0.019	0.0211	111						61.6-138	
1,2,4-Trichlorobenzene	BRL	0.019	0.0194	102						55.9-150	
1,2,4-Trimethylbenzene	BRL	0.019	0.0198	104						71.1-131	
1,2-Dibromo-3-chloropropa	BRL	0.019	0.0207	109						52.4-150	
1,2-Dibromoethane	BRL	0.019	0.0219	115						72.9-125	
1,2-Dichlorobenzene	BRL	0.019	0.0209	110						76.1-126	
1,2-Dichloroethane	BRL	0.019	0.0214	113						66.4-134	
1,2-Dichloropropane	BRL	0.019	0.0205	108						70.2-128	
1,3,5-Trimethylbenzene	BRL	0.019	0.0200	105						75.1-127	
1,3-Dichlorobenzene	BRL	0.019	0.0206	108						73.9-126	
1,3-Dichloropropane	BRL	0.019	0.0203	107						68.3-124	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052174

**Date :** 6/7/2019

**Analysis :** Purgeable Aromatics

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060425

**Created Date :** 06/03/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19052174.01,02,03,04

<b>QC Type: MS and MSD</b>											
<b>QC Sample ID: 19060023.07</b>											
Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
1,4-Dichlorobenzene	BRL	0.019	0.0204	107						72.3-127	
1,4-Dioxane	BRL	0.617	0.709	115						70-130	
2,2-Dichloropropane	BRL	0.019	0.0146	76.8						68.5-138	
2-Chlorotoluene	BRL	0.019	0.0198	104						71.7-128	
4-Chlorotoluene	BRL	0.019	0.0197	104						72.2-126	
4-Isopropyltoluene	BRL	0.019	0.0200	105						77.5-125	
Benzene	BRL	0.019	0.0207	109						74-126	
Bromobenzene	BRL	0.019	0.0212	112						73.3-129	
Bromochloromethane	BRL	0.019	0.0197	104						68.8-131	
Bromodichloromethane	BRL	0.019	0.0209	110						69-135	
Bromoform	BRL	0.019	0.0211	111						62-146	
Bromomethane	BRL	0.019	0.0167	87.9						58.7-139	
Carbon disulfide	BRL	0.019	0.0104	54.7						70-130	M9
Carbon tetrachloride	BRL	0.019	0.0197	104						68.7-135	
Chlorobenzene	BRL	0.019	0.0209	110						73.3-129	
Chloroethane	BRL	0.019	0.0203	107						66.2-129	
Chloroform	BRL	0.019	0.0201	106						73.7-134	
Chloromethane	BRL	0.019	0.0164	86.3						51.4-135	
cis-1,2-Dichloroethylene	BRL	0.019	0.0195	103						72.4-132	
cis-1,3-Dichloropropene	BRL	0.019	0.0192	101						67.7-134	
Dibromochloromethane	BRL	0.019	0.0209	110						73.2-126	
Dibromomethane	BRL	0.019	0.0219	115						69.9-134	
Dichlorodifluoromethane	BRL	0.019	0.0155	81.6						36.8-144	
Ethylbenzene	BRL	0.019	0.0203	107						72.2-128	
Isopropylbenzene	BRL	0.019	0.0204	107						71.2-131	
m- & p-Xylenes	BRL	0.039	0.0408	105						70.7-131	
MEK	BRL	0.019	0.0152	80						52.5-152	
Methylene chloride	BRL	0.019	0.0232	122						70.6-129	
MTBE	BRL	0.019	0.0179	94.2						70-130	
Naphthalene	BRL	0.019	0.0198	104						60.7-145	
n-Butylbenzene	BRL	0.019	0.0186	97.9						66.5-136	
n-Propylbenzene	BRL	0.019	0.0195	103						73.3-126	
o-Xylene	BRL	0.019	0.0202	106						71.6-130	
sec-Butylbenzene	BRL	0.019	0.0199	105						77.9-124	
Styrene	BRL	0.019	0.0209	110						71.1-131	
t-butylbenzene	BRL	0.019	0.0191	101						74.4-130	
Tetrachloroethylene	BRL	0.019	0.0241	127						62.6-157	
Toluene	BRL	0.019	0.0203	107						73.3-127	
trans-1,2-Dichloroethylene	BRL	0.019	0.0191	101						70-130	
trans-1,3-Dichloropropene	BRL	0.019	0.0186	97.9						71.5-124	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052174

**Date :** 6/7/2019

**Analysis :** Purgeable Aromatics      **Method :** SW-846 8260C      **Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060425      **Created Date :** 06/03/19      **Created By :** Rajeev

**Samples in This QC Batch :** 19052174.01,02,03,04

<b>QC Type: MS and MSD</b>											
<b>QC Sample ID: 19060023.07</b>											
Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
Trichloroethylene	BRL	0.019	0.0214	113						69.2-133	
Trichlorofluoromethane	BRL	0.019	0.0166	87.4						63.9-140	
Vinyl Chloride	BRL	0.019	0.0168	88.4						40.9-159	
Xylenes	BRL	0.058	0.061	105						69.2-133	

**Sample Preparation :** PB19060421      **Prep Method :** SW-846 5035A      **Prep Date :** 06/03/19 10:00      **Prep By :** Rajeev

<b>QC Type: Method Blank</b>							
Parameter	CAS #	Result	Units	D.F.	MQL	MDL	Qual
1,1,1,2-Tetrachloroethane	630-20-6	< MDL	mg/Kg	1	0.005	0.00085	
1,1,1-Trichloroethane	71-55-6	< MDL	mg/Kg	1	0.005	0.00148	
1,1,2,2-Tetrachloroethane	79-34-5	< MDL	mg/Kg	1	0.005	0.00132	
1,1,2-Trichloroethane	79-00-5	< MDL	mg/Kg	1	0.005	0.00176	
1,1-Dichloroethane	75-34-3	< MDL	mg/Kg	1	0.005	0.00157	
1,1-Dichloroethylene	75-35-4	< MDL	mg/Kg	1	0.005	0.00173	
1,1-Dichloropropene	563-58-6	< MDL	mg/Kg	1	0.005	0.00144	
1,2,3-trichlorobenzene	87-61-6	< MDL	mg/Kg	1	0.005	0.00166	
1,2,3-Trichloropropane	96-18-4	< MDL	mg/Kg	1	0.005	0.00151	
1,2,4-Trichlorobenzene	120-82-1	< MDL	mg/Kg	1	0.005	0.00138	
1,2,4-Trimethylbenzene	95-63-6	< MDL	mg/Kg	1	0.005	0.00122	
1,2-Dibromo-3-chloropropa	96-12-8	< MDL	mg/Kg	1	0.005	0.00311	
1,2-Dibromoethane	106-93-4	< MDL	mg/Kg	1	0.005	0.00113	
1,2-Dichlorobenzene	95-50-1	< MDL	mg/Kg	1	0.005	0.00100	
1,2-Dichloroethane	107-06-2	< MDL	mg/Kg	1	0.005	0.00132	
1,2-Dichloropropane	78-87-5	< MDL	mg/Kg	1	0.005	0.00113	
1,3,5-Trimethylbenzene	108-67-8	< MDL	mg/Kg	1	0.005	0.00151	
1,3-Dichlorobenzene	541-73-1	< MDL	mg/Kg	1	0.005	0.00141	
1,3-Dichloropropane	142-28-9	< MDL	mg/Kg	1	0.005	0.00141	
1,4-Dichlorobenzene	106-46-7	< MDL	mg/Kg	1	0.005	0.00144	
1,4-Dioxane	123-91-1	< MDL	mg/Kg	1	0.32	0.08023	
2,2-Dichloropropane	594-20-7	< MDL	mg/Kg	1	0.005	0.00220	
2-Chlorotoluene	95-49-8	< MDL	mg/Kg	1	0.005	0.00144	
4-Chlorotoluene	106-43-4	< MDL	mg/Kg	1	0.005	0.00138	
4-Isopropyltoluene	99-87-6	< MDL	mg/Kg	1	0.005	0.00141	
Benzene	71-43-2	< MDL	mg/Kg	1	0.005	0.00107	
Bromobenzene	108-86-1	< MDL	mg/Kg	1	0.005	0.00113	
Bromochloromethane	74-97-5	< MDL	mg/Kg	1	0.005	0.00126	
Bromodichloromethane	75-27-4	< MDL	mg/Kg	1	0.005	0.00088	

Refer to the Definition page for terms.



**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052174

**Date :** 6/7/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060425

**Created Date :** 06/03/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19052174.01,02,03,04

<b>QC Type: Method Blank</b>							
Parameter	CAS #	Result	Units	D.F.	MLQ	MDL	Qual
Bromoform	75-25-2	< MDL	mg/Kg	1	0.005	0.00072	
Bromomethane	74-83-9	< MDL	mg/Kg	1	0.005	0.00170	
Carbon disulfide	75-15-0	< MDL	mg/Kg	1	0.005	0.00138	
Carbon tetrachloride	56-23-5	< MDL	mg/Kg	1	0.005	0.00151	
Chlorobenzene	108-90-7	< MDL	mg/Kg	1	0.005	0.00148	
Chloroethane	75-00-3	< MDL	mg/Kg	1	0.005	0.00242	
Chloroform	67-66-3	< MDL	mg/Kg	1	0.005	0.00119	
Chloromethane	74-87-3	< MDL	mg/Kg	1	0.005	0.00226	
cis-1,2-Dichloroethylene	156-59-2	< MDL	mg/Kg	1	0.005	0.00119	
cis-1,3-Dichloropropene	10061-01-5	< MDL	mg/Kg	1	0.005	0.00113	
Dibromochloromethane	124-48-1	< MDL	mg/Kg	1	0.005	0.00110	
Dibromomethane	74-95-3	< MDL	mg/Kg	1	0.005	0.00138	
Dichlorodifluoromethane	75-71-8	< MDL	mg/Kg	1	0.005	0.00135	
Ethylbenzene	100-41-4	< MDL	mg/Kg	1	0.005	0.00138	
Isopropylbenzene	98-82-8	< MDL	mg/Kg	1	0.005	0.00126	
m- & p-Xylenes	108-38-3&106-42-3	< MDL	mg/Kg	1	0.01	0.00273	
MEK	78-93-3	< MDL	mg/Kg	1	0.005	0.00267	
Methylene chloride	75-09-2	< MDL	mg/Kg	1	0.005	0.00154	
MTBE	1634-04-4	< MDL	mg/Kg	1	0.005	0.00107	
Naphthalene	91-20-3	< MDL	mg/Kg	1	0.005	0.00188	
n-Butylbenzene	104-51-8	< MDL	mg/Kg	1	0.005	0.00179	
n-Propylbenzene	103-65-1	< MDL	mg/Kg	1	0.005	0.00138	
o-Xylene	95-47-6	< MDL	mg/Kg	1	0.005	0.00126	
sec-Butylbenzene	135-98-8	< MDL	mg/Kg	1	0.005	0.00160	
Styrene	100-42-5	< MDL	mg/Kg	1	0.005	0.00126	
t-butylbenzene	98-06-6	< MDL	mg/Kg	1	0.005	0.00141	
Tetrachloroethylene	127-18-4	< MDL	mg/Kg	1	0.005	0.00138	
Toluene	108-88-3	< MDL	mg/Kg	1	0.005	0.00119	
trans-1,2-Dichloroethylene	156-60-5	< MDL	mg/Kg	1	0.005	0.00144	
trans-1,3-Dichloropropene	10061-02-6	< MDL	mg/Kg	1	0.005	0.00094	
Trichloroethylene	79-01-6	< MDL	mg/Kg	1	0.005	0.00104	
Trichlorofluoromethane	75-69-4	< MDL	mg/Kg	1	0.005	0.00198	
Vinyl Chloride	75-01-4	< MDL	mg/Kg	1	0.005	0.00185	
Xylenes	1330-20-7	< MDL	mg/Kg	1	0.005	0.001	
Dibromofluoromethane(surr)	1868-53-7	96	%	1			
1,2-Dichloroethane-d4(surr)	17060-07-0	95.4	%	1			
Toluene-d8(surr)	2037-26-5	97.9	%	1			
p-Bromofluorobenzene(surr)	460-00-4	95.2	%	1			

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052174

**Date :** 6/7/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060425

**Created Date :** 06/03/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19052174.01,02,03,04

<b>QC Type: LCS and LCSD</b>										
Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
1,1,1,2-Tetrachloroethane	0.02	0.0202	101	0.02	0.0218	109	7.7	30	78-125	
1,1,1-Trichloroethane	0.02	0.0185	92.4	0.02	0.0211	105	13.3	30	70-130	
1,1,2,2-Tetrachloroethane	0.02	0.0185	92.6	0.02	0.0195	97.6	5.1	30	70-124	
1,1,2-Trichloroethane	0.02	0.0192	95.8	0.02	0.0206	103	7.2	30	78-121	
1,1-Dichloroethane	0.02	0.0183	91.7	0.02	0.0204	102	10.7	30	76-125	
1,1-Dichloroethylene	0.02	0.0191	95.4	0.02	0.0216	108	12.4	30	70-131	
1,1-Dichloropropene	0.02	0.0174	87	0.02	0.0201	100	14.4	30	76-125	
1,2,3-trichlorobenzene	0.02	0.0157	78.7	0.02	0.0150	75.2	4.8	30	66-130	
1,2,3-Trichloropropane	0.02	0.0185	92.4	0.02	0.0194	97.2	4.8	30	73-125	
1,2,4-Trichlorobenzene	0.02	0.0181	90.6	0.02	0.0188	94	3.7	30	66-129	
1,2,4-Trimethylbenzene	0.02	0.0199	99.3	0.02	0.0217	108	8.8	30	75-123	
1,2-Dibromo-3-chloropropa	0.02	0.0171	85.3	0.02	0.0171	85.5	0.2	30	61-132	
1,2-Dibromoethane	0.02	0.0194	96.8	0.02	0.0204	102	5.3	30	78-122	
1,2-Dichlorobenzene	0.02	0.0199	99.5	0.02	0.0213	107	6.8	30	78-121	
1,2-Dichloroethane	0.02	0.0196	98.1	0.02	0.0207	103	5.4	30	71-128	
1,2-Dichloropropane	0.02	0.0192	95.9	0.02	0.0204	102	6.2	30	76-123	
1,3,5-Trimethylbenzene	0.02	0.0201	100	0.02	0.0218	109	8.3	30	73-124	
1,3-Dichlorobenzene	0.02	0.0201	100	0.02	0.0221	111	9.6	30	77-121	
1,3-Dichloropropane	0.02	0.0186	93.1	0.02	0.0197	98.6	5.7	30	77-121	
1,4-Dichlorobenzene	0.02	0.0201	101	0.02	0.0219	110	8.4	30	75-120	
1,4-Dioxane	0.64	0.565	88.4	0.64	0.562	87.9	0.6	30	55-138	
2,2-Dichloropropane	0.02	0.0176	88.1	0.02	0.0216	108	20.3	30	67-133	
2-Chlorotoluene	0.02	0.0197	98.5	0.02	0.0214	107	8.3	30	75-122	
4-Chlorotoluene	0.02	0.0194	97	0.02	0.0214	107	9.8	30	72-124	
4-Isopropyltoluene	0.02	0.0200	100	0.02	0.0220	110	9.4	30	73-127	
Benzene	0.02	0.0198	98.9	0.02	0.0217	108	9.3	30	77-121	
Bromobenzene	0.02	0.0203	102	0.02	0.0217	108	6.5	30	78-121	
Bromochloromethane	0.02	0.0179	89.6	0.02	0.0197	98.4	9.5	30	75-125	
Bromodichloromethane	0.02	0.0199	99.4	0.02	0.0213	106	6.9	30	71-127	
Bromoform	0.02	0.0195	97.5	0.02	0.0199	99.3	2	30	67-132	
Bromomethane	0.02	0.0166	83.1	0.02	0.0176	88.2	5.7	30	55-140	
Carbon disulfide	0.02	0.0178	89	0.02	0.0203	101	13.1	30	63-132	
Carbon tetrachloride	0.02	0.0209	104	0.02	0.0234	117	11.5	30	69-135	
Chlorobenzene	0.02	0.0202	101	0.02	0.0219	110	8.2	30	79-120	
Chloroethane	0.02	0.0153	76.6	0.02	0.0220	110	35.8	30	59-139	R1
Chloroform	0.02	0.0187	93.6	0.02	0.0208	104	10.6	30	78-123	
Chloromethane	0.02	0.0167	83.6	0.02	0.0194	96.9	14.9	30	50-136	
cis-1,2-Dichloroethylene	0.02	0.0183	91.5	0.02	0.0202	101	9.9	30	77-123	
cis-1,3-Dichloropropene	0.02	0.0195	97.3	0.02	0.0210	105	7.6	30	74-126	
Dibromochloromethane	0.02	0.0197	98.3	0.02	0.0208	104	5.6	30	74-126	
Dibromomethane	0.02	0.0198	98.9	0.02	0.0211	105	6.5	30	78-125	
Dichlorodifluoromethane	0.02	0.0174	87	0.02	0.0209	104	18.3	30	29-149	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052174

**Date :** 6/7/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060425    **Created Date :** 06/03/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19052174.01,02,03,04

<b>QC Type: LCS and LCSD</b>										
Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
Ethylbenzene	0.02	0.0196	97.8	0.02	0.0217	109	10.4	30	76-122	
Isopropylbenzene	0.02	0.0198	99.1	0.02	0.0220	110	10.4	30	68-134	
m- & p-Xylenes	0.04	0.0396	99.1	0.04	0.0440	110	10.4	30	77-124	
MEK	0.02	0.0141	70.4	0.02	0.0187	93.6	28.2	30	51-148	
Methylene chloride	0.02	0.0187	93.6	0.02	0.0242	121	25.5	30	70-128	
MTBE	0.02	0.0166	82.8	0.02	0.0173	86.5	4.4	30	73-125	
Naphthalene	0.02	0.0154	77.1	0.02	0.0151	75.7	2	30	62-129	
n-Butylbenzene	0.02	0.0190	94.9	0.02	0.0212	106	11.1	30	70-128	
n-Propylbenzene	0.02	0.0196	98	0.02	0.0217	109	10.1	30	73-125	
o-Xylene	0.02	0.0195	97.3	0.02	0.0212	106	8.5	30	77-123	
sec-Butylbenzene	0.02	0.0197	98.7	0.02	0.0218	109	9.9	30	73-126	
Styrene	0.02	0.0199	99.4	0.02	0.0215	108	7.9	30	76-124	
t-butylbenzene	0.02	0.0191	95.5	0.02	0.0209	105	9	30	73-125	
Tetrachloroethylene	0.02	0.0196	97.9	0.02	0.0215	108	9.3	30	73-128	
Toluene	0.02	0.0197	98.6	0.02	0.0216	108	9.1	30	77-121	
trans-1,2-Dichloroethylene	0.02	0.0183	91.5	0.02	0.0207	104	12.4	30	74-125	
trans-1,3-Dichloropropene	0.02	0.0190	95.2	0.02	0.0202	101	5.9	30	71-130	
Trichloroethylene	0.02	0.0204	102	0.02	0.0227	113	10.8	30	77-123	
Trichlorofluoromethane	0.02	0.0177	88.7	0.02	0.0213	107	18.2	30	62-140	
Vinyl Chloride	0.02	0.0168	84	0.02	0.0199	99.4	16.9	30	56-135	
Xylenes	0.06	0.0591	98.5	0.06	0.0652	109	9.8	30	78-124	

<b>QC Type: MS and MSD</b>											
<b>QC Sample ID: 19060023.07</b>											
Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
1,1,1,2-Tetrachloroethane	BRL	0.019	0.0212	112						71.4-131	
1,1,1-Trichloroethane	BRL	0.019	0.0191	101						69.6-140	
1,1,2,2-Tetrachloroethane	BRL	0.019	0.0215	113						66.6-128	
1,1,2-Trichloroethane	BRL	0.019	0.0211	111						72.8-125	
1,1-Dichloroethane	BRL	0.019	0.0193	102						72.7-129	
1,1-Dichloroethylene	BRL	0.019	0.0128	67.4						71.4-131	M9
1,1-Dichloropropene	BRL	0.019	0.0156	82.1						75.9-132	
1,2,3-trichlorobenzene	BRL	0.019	0.0207	109						56.7-153	
1,2,3-Trichloropropane	BRL	0.019	0.0211	111						61.6-138	
1,2,4-Trichlorobenzene	BRL	0.019	0.0194	102						55.9-150	
1,2,4-Trimethylbenzene	BRL	0.019	0.0198	104						71.1-131	
1,2-Dibromo-3-chloropropane	BRL	0.019	0.0207	109						52.4-150	
1,2-Dibromoethane	BRL	0.019	0.0219	115						72.9-125	
1,2-Dichlorobenzene	BRL	0.019	0.0209	110						76.1-126	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052174

**Date :** 6/7/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060425

**Created Date :** 06/03/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19052174.01,02,03,04

<b>QC Type: MS and MSD</b>											
<b>QC Sample ID: 19060023.07</b>											
Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
1,2-Dichloroethane	BRL	0.019	0.0214	113						66.4-134	
1,2-Dichloropropane	BRL	0.019	0.0205	108						70.2-128	
1,3,5-Trimethylbenzene	BRL	0.019	0.0200	105						75.1-127	
1,3-Dichlorobenzene	BRL	0.019	0.0206	108						73.9-126	
1,3-Dichloropropane	BRL	0.019	0.0203	107						68.3-124	
1,4-Dichlorobenzene	BRL	0.019	0.0204	107						72.3-127	
1,4-Dioxane	BRL	0.617	0.709	115						70-130	
2,2-Dichloropropane	BRL	0.019	0.0146	76.8						68.5-138	
2-Chlorotoluene	BRL	0.019	0.0198	104						71.7-128	
4-Chlorotoluene	BRL	0.019	0.0197	104						72.2-126	
4-Isopropyltoluene	BRL	0.019	0.0200	105						77.5-125	
Benzene	BRL	0.019	0.0207	109						74-126	
Bromobenzene	BRL	0.019	0.0212	112						73.3-129	
Bromochloromethane	BRL	0.019	0.0197	104						68.8-131	
Bromodichloromethane	BRL	0.019	0.0209	110						69-135	
Bromoform	BRL	0.019	0.0211	111						62-146	
Bromomethane	BRL	0.019	0.0167	87.9						58.7-139	
Carbon disulfide	BRL	0.019	0.0104	54.7						70-130	M9
Carbon tetrachloride	BRL	0.019	0.0197	104						68.7-135	
Chlorobenzene	BRL	0.019	0.0209	110						73.3-129	
Chloroethane	BRL	0.019	0.0203	107						66.2-129	
Chloroform	BRL	0.019	0.0201	106						73.7-134	
Chloromethane	BRL	0.019	0.0164	86.3						51.4-135	
cis-1,2-Dichloroethylene	BRL	0.019	0.0195	103						72.4-132	
cis-1,3-Dichloropropene	BRL	0.019	0.0192	101						67.7-134	
Dibromochloromethane	BRL	0.019	0.0209	110						73.2-126	
Dibromomethane	BRL	0.019	0.0219	115						69.9-134	
Dichlorodifluoromethane	BRL	0.019	0.0155	81.6						36.8-144	
Ethylbenzene	BRL	0.019	0.0203	107						72.2-128	
Isopropylbenzene	BRL	0.019	0.0204	107						71.2-131	
m- & p-Xylenes	BRL	0.039	0.0408	105						70.7-131	
MEK	BRL	0.019	0.0152	80						52.5-152	
Methylene chloride	BRL	0.019	0.0232	122						70.6-129	
MTBE	BRL	0.019	0.0179	94.2						70-130	
Naphthalene	BRL	0.019	0.0198	104						60.7-145	
n-Butylbenzene	BRL	0.019	0.0186	97.9						66.5-136	
n-Propylbenzene	BRL	0.019	0.0195	103						73.3-126	
o-Xylene	BRL	0.019	0.0202	106						71.6-130	
sec-Butylbenzene	BRL	0.019	0.0199	105						77.9-124	
Styrene	BRL	0.019	0.0209	110						71.1-131	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052174

**Date :** 6/7/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060425

**Created Date :** 06/03/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19052174.01,02,03,04

**QC Type:** MS and MSD

**QC Sample ID:** 19060023.07

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
t-butylbenzene	BRL	0.019	0.0191	101						74.4-130	
Tetrachloroethylene	BRL	0.019	0.0241	127						62.6-157	
Toluene	BRL	0.019	0.0203	107						73.3-127	
trans-1,2-Dichloroethylene	BRL	0.019	0.0191	101						70-130	
trans-1,3-Dichloropropene	BRL	0.019	0.0186	97.9						71.5-124	
Trichloroethylene	BRL	0.019	0.0214	113						69.2-133	
Trichlorofluoromethane	BRL	0.019	0.0166	87.4						63.9-140	
Vinyl Chloride	BRL	0.019	0.0168	88.4						40.9-159	
Xylenes	BRL	0.058	0.061	105						69.2-133	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052174

**Date :** 6/7/2019

<b>Analysis :</b> % Moisture	<b>Method :</b> SM 2540G	<b>Reporting Units :</b> %
<b>QC Batch ID :</b> Qb19060432	<b>Created Date :</b> 06/03/19	<b>Created By :</b> KRSaranya
<b>Samples in This QC Batch :</b> 19052174.01,02,03,04		
<b>Sample Preparation :</b> PB19060425	<b>Prep Method :</b> SM 2540G	<b>Prep Date :</b> 06/03/19 17:00 <b>Prep By :</b> KRSaranya

QC Type: Method Blank								
Parameter	CAS #	Result	Units	D.F.	ML	MDL		Qual
% Moisture		< MDL	%	1	----			

QC Type: Duplicate							
QC Sample ID: 19052122.01							
Parameter	QCSample Result	Sample Result	Units	RPD	RPD CtrLimit		Qual
% Moisture	15.3	15.3	%	0	20		

**LABORATORY TERM AND QUALIFIER DEFINITION REPORT**



Job ID : 19052174

Date: 6/7/2019

**General Term Definition**

Back-Wt	Back Weight	Post-Wt	Post Weight
BRL	Below Reporting Limit	ppm	parts per million
cfu	colony-forming units	Pre-Wt	Previous Weight
Conc.	Concentration	Q	Qualifier
D.F.	Dilution Factor	RegLimit	Regulatory Limit
Front-Wt	Front Weight	RPD	Relative Percent Difference
LCS	Laboratory Check Standard	RptLimit	Reporting Limit
LCSD	Laboratory Check Standard Duplicate	SDL	Sample Detection Limit
MS	Matrix Spike	surr	Surrogate
MSD	Matrix Spike Duplicate	T	Time
MW	Molecular Weight	TNTC	Too numerous to count
J	Estimation. Below calibration range but above MDL		

**Qualifier Definition**

L1	Associated LCS and/or LCSD recovery is above acceptance limits for flagged analyte. Bias may be high.
M8	Matrix Spike and/or Matrix Spike Duplicate recovery is above laboratory control limits.
M9	Matrix Spike and/or Matrix Spike Duplicate recovery is below laboratory control limits.
R1	RPD exceeds control limits.
U	Undetected at SDL (Sample Detection Limit).



10100 East Fwy (I-10)  
Suite 100  
Houston, TX 77029  
713-453-6060  
1-877-478-6060 Toll Free  
713-453-6091 Fax  
ablabs.com

1. REPORT TO: Ag2  
Company: Aviles Eng Corp  
Address: 5790 Woodstream  
Houston TX 77041  
Contact: Bob Metzger  
Phone: 281-793-8332  
Fax:   
E-mail:  BMetzger@AvilesEng.com

INVOICE TO:  
Company: Aviles Eng Corp  
Address: \_\_\_\_\_  
Contact: \_\_\_\_\_  
Phone: \_\_\_\_\_  
Fax:   
E-mail:

3. PO # \_\_\_\_\_  
3a. A&B Quote # \_\_\_\_\_  
4. Turnaround Time (Business Days)  
 1 Day\*       Other:  
 2 Days\*  
 3 Days\*      \*Surcharge applies  
 7 Days - Standard

A&B JOB ID # 19052174

5. Project # E103-19

6. Project Name/Location  
Marshall Dr. Reconstruction

7. Reporting Requirement:  
 TRRP Limits only     TRRP Rpt. Package     See Attached     Standard Level II     PST     MDL     EDD

8. Sampler's Name & Company (PLEASE PRINT)      Sampler's Signature & Date  
Robert J Metzger (A&B)      [Signature] 5/31/19

9. Sample ID and Description      10. Sampling      11.      12. Matrix

LAB USE ONLY	Sample ID	Description	Date	Time 24hr	Matrix													
					Comp.	Grab	Water	Soil	Sludge	Oil	Drinking Water	Air	Other					
	<u>O1AG</u>	<u>B-7 1-2</u>	<u>5/31/19</u>	<u>13:50</u>														
	<u>O2AG</u>	<u>B-8 7-8</u>	<u>5/31/19</u>	<u>12:44</u>														
	<u>O3AG</u>	<u>B-9 13-14</u>	<u>5/31/19</u>	<u>11:46</u>														
	<u>O4AG</u>	<u>B-19 13-14</u>	<u>5/31/19</u>	<u>15:15</u>														
	<u>O5AF</u>	<u>B-19 Water</u>	<u>5/31/19</u>	<u>15:25</u>														

No. of Containers	Analyses/Methods	13. 14. Containers*				15. Preservatives**				16. PH-Lab Only			
		VOA	VIA	VQA	YOG	CH	CH	CH	CH				
7	VOCS MTRBE	✓	✓	✓	✓	CH	CH	CH	CH				
7	TPH LABS	✓	✓	✓	✓								
7	BTEX MTRBE	✓	✓	✓	✓								
7	o/p no. stream	✓	✓	✓	✓								
6													

19. RELINQUISHED BY: [Signature]      DATE: 5/31/19      TIME: 1659      20. RECEIVED BY: [Signature]      DATE: 5/31/19      TIME: 1659

21. KNOWN HAZARDS/COMMENTS  
Temperature: 91.5-5 = 91.0°C  
Thermometer ID: 1707629  
Intact  or N      Initials: AB

\*Containers: VOA - 40 ml vial      A/G - Amber/Glass 1 Liter      \*\*Preservatives: C - Cool      H - HCl      N - HNO<sub>3</sub>      S - H<sub>2</sub>SO<sub>4</sub>  
4 oz/8 oz - glass wide mouth      P/O - Plastic/other \_\_\_\_\_      OH - NaOH      T - Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>      X - Other

METHOD OF SHIPMENT \_\_\_\_\_      BILL OF LADING/TRACKING # \_\_\_\_\_

LAB USE ONLY    SAMPLING \_\_\_\_\_    RENTAL \_\_\_\_\_    P/U \_\_\_\_\_    Supplies \_\_\_\_\_    Field Work \_\_\_\_\_

A&B cannot accept verbal changes  
Please FAX written changes to 713-453-6091  
Samples will be disposed of after 30 days  
A&B reserves the right to return samples





# Sample Condition Checklist

A&B JobID : <b>19052174</b>	Date Received : <b>05/31/2019</b>	Time Received : <b>4:59PM</b>																										
Client Name : <b>Aviles Engineering</b>																												
Temperature : <b>4.5-0.5cf=4.0°C</b>	Sample pH : <b>N/A</b>																											
Thermometer ID : <b>1707629</b>	pH Paper ID : <b>N/A</b>																											
<b>Check Points</b>																												
<b>1.</b>	<b>Cooler seal present and signed.</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>																								
<b>2.</b>	<b>Sample(s) in a cooler.</b>	X																										
<b>3.</b>	<b>If yes, ice in cooler.</b>	X																										
<b>4.</b>	<b>Sample(s) received with chain-of-custody.</b>	X																										
<b>5.</b>	<b>C-O-C signed and dated.</b>	X																										
<b>6.</b>	<b>Sample(s) received with signed sample custody seal.</b>		X																									
<b>7.</b>	<b>Sample containers arrived intact. (If no comment).</b>	X																										
<b>8.</b>	<table style="width: 100%; border: none;"> <tr> <td style="width: 10%;"><b>Matrix</b></td> <td style="width: 10%;"><b>Water</b></td> <td style="width: 10%;"><b>Soil</b></td> <td style="width: 10%;"><b>Liquid</b></td> <td style="width: 10%;"><b>Sludge</b></td> <td style="width: 10%;"><b>Solid</b></td> <td style="width: 10%;"><b>Cassette</b></td> <td style="width: 10%;"><b>Tube</b></td> <td style="width: 10%;"><b>Bulk</b></td> <td style="width: 10%;"><b>Badge</b></td> <td style="width: 10%;"><b>Food</b></td> <td style="width: 10%;"><b>Other</b></td> </tr> <tr> <td>:</td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </table>	<b>Matrix</b>	<b>Water</b>	<b>Soil</b>	<b>Liquid</b>	<b>Sludge</b>	<b>Solid</b>	<b>Cassette</b>	<b>Tube</b>	<b>Bulk</b>	<b>Badge</b>	<b>Food</b>	<b>Other</b>	:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
<b>Matrix</b>	<b>Water</b>	<b>Soil</b>	<b>Liquid</b>	<b>Sludge</b>	<b>Solid</b>	<b>Cassette</b>	<b>Tube</b>	<b>Bulk</b>	<b>Badge</b>	<b>Food</b>	<b>Other</b>																	
:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																	
<b>9.</b>	<b>Sample(s) were received in appropriate container(s).</b>	X																										
<b>10.</b>	<b>Sample(s) were received with proper preservative</b>	X																										
<b>11.</b>	<b>All samples were logged or labeled.</b>	X																										
<b>12.</b>	<b>Sample ID labels match C-O-C ID's</b>	X																										
<b>13.</b>	<b>Bottle count on C-O-C matches bottles found.</b>	X																										
<b>14.</b>	<b>Sample volume is sufficient for analyses requested.</b>	X																										
<b>15.</b>	<b>Samples were received within the hold time.</b>	X																										
<b>16.</b>	<b>VOA vials completely filled.</b>			X																								
<b>17.</b>	<b>Sample accepted.</b>	X																										
<b>18</b>	<b>Has client been contacted about sub-out</b>			X																								
<b>Comments : Include actions taken to resolve discrepancies/problem:</b>																												
Sample 01-04: Soil. 05: Water																												

Received by : ABarrera

Check in by/date : ABarrera / 05/31/2019

# Laboratory Analysis Report

Total Number of Pages: 32

Job ID : 19052069



10100 East Freeway, Suite 100, Houston, TX 77029 tel: 713-453-6060, fax: 713-453-6091, <http://www.ablabs.com>

---

**Client Project Name :**  
**E103-19 / Memorial Drive Rd Construction , Houston**

**Report To :** Client Name: Aviles Engineering  
Attn: Robert J. Metzger  
Client Address: 5790 Windfern  
City, State, Zip: Houston, Texas, 77041

P.O.#.:  
Sample Collected By: Robert J Metzger  
Date Collected: 05/30/19

---

**A&B Labs has analyzed the following samples...**

Client Sample ID	Matrix	A&B Sample ID
B-10 6-7	Soil	19052069.01
B-11 12-13	Soil	19052069.02
B-12 8-9	Soil	19052069.03
B-13 7-8	Soil	19052069.04
B-14 13-14	Soil	19052069.05

*Shantall Carpenter*

Released By: Shantall Carpenter  
Title: Senior Project Manager  
Date: 6/6/2019



This Laboratory is NELAP ( T104704213-19-20) accredited. Effective: 04/01/2019; Expires: 3/31/2020

Scope: Non-Potable Water, Drinking Water, Air, Solid, Biological Tissue, Hazardous Waste

I am the laboratory manager, or his/her designee, and I am responsible for the release of this data package. This laboratory data package has been reviewed and is complete and technically compliant with the requirements of the methods used, except where noted in the attached exception reports. I affirm, to the best of my knowledge that all problems/anomalies observed by this laboratory (and if applicable, any and all laboratories subcontracted through this laboratory) that might affect the quality of the data, have been identified in the Laboratory Review Checklist, and that no information or data have been knowingly withheld that would affect the quality of the data.

This report cannot be reproduced, except in full, without prior written permission of A&B Labs. Results shown relate only to the items tested. Samples are assumed to be in acceptable condition unless otherwise noted. Blank correction is not made unless otherwise noted. Air concentrations reported are based on field sampling information provided by client. Soil samples are reported on a wet weight basis unless otherwise noted. Uncertainty estimates are available on request.

Date Received : 05/30/2019 16:02



LABORATORY TEST RESULTS

Client Sample ID: B-10 6-7

Date: 6/6/2019

A&B Job Sample ID: 19052069.01

Client Name: Aviles Engineering

Attn: Robert J. Metzger

Project Name: E103-19 / Memorial Drive Rd Construction , Houston

Test Description: % Moisture

Analytical Method: SM 2540G

QC Batch ID: Qb19060430

Prep Method: SM 2540G

Prepared By: KRSaranya

Prep Batch ID: PB19060425

Analyst Initial: KRS

Sample Matrix: Soil

Date Collected: 05/30/2019 14:38

Date Received: 05/30/2019 16:02

Date Prepared: 06/03/2019 17:00

% Moisture: 16.0

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
	% Moisture	16.0					----	----	%	1	06/03/19 17:05



LABORATORY TEST RESULTS

Client Sample ID: B-10 6-7
A&B Job Sample ID: 19052069.01

Date: 6/6/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Drive Rd Construction , Houston

Attn: Robert J. Metzger

Test Description: Volatile Organic Compounds by GC/MS

Analytical Method: SW-846 8260C

QC Batch ID: Qb19060104

Prep Method: SW-846 5035A

Prepared By: Rajeev

Prep Batch ID: PB19060104

Analyst Initial: RT

Sample Matrix: Soil

Date Collected: 05/30/2019 14:38

Date Received: 05/30/2019 16:02

Date Prepared: 05/31/2019 10:00

% Moisture: 16.0

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Rows include various chemical compounds like 1,1,1,2-Tetrachloroet, 1,1,1-Trichloroethane, etc.

Soil results reported on dry weight basis



LABORATORY TEST RESULTS

Client Sample ID: B-10 6-7
A&B Job Sample ID: 19052069.01

Date: 6/6/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Drive Rd Construction , Houston

Attn: Robert J. Metzger

Test Description: Volatile Organic Compounds by GC/MS

Sample Matrix: Soil

Analytical Method: SW-846 8260C

Date Collected: 05/30/2019 14:38

QC Batch ID: Qb19060104

Date Received: 05/30/2019 16:02

Prep Method: SW-846 5035A

Date Prepared: 05/31/2019 10:00

Prepared By: Rajeev

Prep Batch ID: PB19060104

Analyst Initial: RT

% Moisture: 16.0

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Rows list various chemical compounds like Chloroform, Chloromethane, etc., with their respective test results and flags.

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-10 6-7  
 A&B Job Sample ID: 19052069.01

Date: 6/6/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Rd Construction , Houston

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb19060321  
 Prep Method: TX 1005  
 Prepared By: Jdongre  
 Prep Batch ID: PB19060316

Sample Matrix: Soil  
 Date Collected: 05/30/2019 14:38  
 Date Received: 05/30/2019 16:02  
 Date Prepared: 05/31/2019 10:00

Analyst Initial: JKD

% Moisture: 16.0

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12	<25.4	U	25.4	26.8	23.7	25	1000	mg/Kg	0.90	05/31/19 13:38
TPH-1005-2	>C12-C28	<21.8	U	21.8	26.8	20.3	25	1000	mg/Kg	0.90	05/31/19 13:38
TPH-1005-4	>C28-C35	<19.0	U	19.0	26.8	17.7	25	1000	mg/Kg	0.90	05/31/19 13:38
	Total C6-C35	< 19.0	U	19.0		17.7	----	----	mg/Kg	0.90	05/31/19 13:38
111-85-3	1-Chlorooctane(surr)	87.9					60	143	%	0.90	05/31/19 13:38
3386-33-2	Chlorooctadecane(sur	80.1					60	150	%	0.90	05/31/19 13:38

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-11 12-13  
 A&B Job Sample ID: 19052069.02

Date: 6/6/2019

Client Name: Aviles Engineering Attn: Robert J. Metzger  
 Project Name: E103-19 / Memorial Drive Rd Construction , Houston

Test Description:	<b>% Moisture</b>	Sample Matrix	Soil
Analytical Method:	SM 2540G	Date Collected	05/30/2019 13:47
QC Batch ID:	Qb19060430	Date Received	05/30/2019 16:02
Prep Method:	SM 2540G	Date Prepared	06/03/2019 17:00
Prepared By:	KRSaranya		
Prep Batch ID	PB19060425		
Analyst Initial	KRS	% Moisture	11.7

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
	% Moisture	11.7					----	----	%	1	06/03/19 17:05

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-11 12-13  
 A&B Job Sample ID: 19052069.02

Date: 6/6/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Rd Construction , Houston

Attn: Robert J. Metzger

Test Description: **Volatile Organic Compounds by GC/MS**

Sample Matrix: Soil

Analytical Method: SW-846 8260C

Date Collected: 05/30/2019 13:47

QC Batch ID: Qb19060104

Date Received: 05/30/2019 16:02

Prep Method: SW-846 5035A

Date Prepared: 05/31/2019 10:00

Prepared By: Rajeev

Prep Batch ID: PB19060104

Analyst Initial: RT

% Moisture: 11.7

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
630-20-6	1,1,1,2-Tetrachloroet	<0.00084	U	0.00084	0.0049	0.00085	0.005	0.05	mg/Kg	0.87	05/31/19 15:10
71-55-6	1,1,1-Trichloroethane	<0.00146	U	0.00146	0.0049	0.00148	0.005	0.05	mg/Kg	0.87	05/31/19 15:10
79-34-5	1,1,2,2-Tetrachloroet	<0.00130	U	0.00130	0.0049	0.00132	0.005	0.05	mg/Kg	0.87	05/31/19 15:10
79-00-5	1,1,2-Trichloroethane	<0.00173	U	0.00173	0.0049	0.00176	0.005	0.05	mg/Kg	0.87	05/31/19 15:10
75-34-3	1,1-Dichloroethane	<0.00155	U	0.00155	0.0049	0.00157	0.005	0.05	mg/Kg	0.87	05/31/19 15:10
75-35-4	1,1-Dichloroethylene	<0.00170	L2, U,V11	0.00170	0.0049	0.00173	0.005	0.05	mg/Kg	0.87	05/31/19 15:10
563-58-6	1,1-Dichloropropene	<0.00142	U	0.00142	0.0049	0.00144	0.005	0.05	mg/Kg	0.87	05/31/19 15:10
87-61-6	1,2,3-trichlorobenzen	<0.00164	U	0.00164	0.0049	0.00166	0.005	0.05	mg/Kg	0.87	05/31/19 15:10
96-18-4	1,2,3-Trichloropropan	<0.00149	U	0.00149	0.0049	0.00151	0.005	0.05	mg/Kg	0.87	05/31/19 15:10
120-82-1	1,2,4-Trichlorobenzen	<0.00136	U	0.00136	0.0049	0.00138	0.005	0.05	mg/Kg	0.87	05/31/19 15:10
95-63-6	1,2,4-Trimethylbenze	<0.00120	U	0.00120	0.0049	0.00122	0.005	0.05	mg/Kg	0.87	05/31/19 15:10
96-12-8	1,2-Dibromo-3-chloro	<0.00306	U	0.00306	0.0049	0.00311	0.005	0.05	mg/Kg	0.87	05/31/19 15:10
106-93-4	1,2-Dibromoethane	<0.00111	U	0.00111	0.0049	0.00113	0.005	0.05	mg/Kg	0.87	05/31/19 15:10
95-50-1	1,2-Dichlorobenzene	<0.00099	U	0.00099	0.0049	0.00100	0.005	0.05	mg/Kg	0.87	05/31/19 15:10
107-06-2	1,2-Dichloroethane	<0.00130	U	0.00130	0.0049	0.00132	0.005	0.05	mg/Kg	0.87	05/31/19 15:10
78-87-5	1,2-Dichloropropane	<0.00111	U	0.00111	0.0049	0.00113	0.005	0.05	mg/Kg	0.87	05/31/19 15:10
108-67-8	1,3,5-Trimethylbenze	<0.00149	U	0.00149	0.0049	0.00151	0.005	0.05	mg/Kg	0.87	05/31/19 15:10
541-73-1	1,3-Dichlorobenzene	<0.00139	U	0.00139	0.0049	0.00141	0.005	0.05	mg/Kg	0.87	05/31/19 15:10
142-28-9	1,3-Dichloropropane	<0.00139	U	0.00139	0.0049	0.00141	0.005	0.05	mg/Kg	0.87	05/31/19 15:10
106-46-7	1,4-Dichlorobenzene	<0.00142	U	0.00142	0.0049	0.00144	0.005	0.05	mg/Kg	0.87	05/31/19 15:10
123-91-1	1,4-Dioxane	<0.0790	U	0.0790	0.315	0.08023	0.32	1.6	mg/Kg	0.87	05/31/19 15:10
594-20-7	2,2-Dichloropropane	<0.00217	R1,U	0.00217	0.0049	0.00220	0.005	0.05	mg/Kg	0.87	05/31/19 15:10
95-49-8	2-Chlorotoluene	<0.00142	U	0.00142	0.0049	0.00144	0.005	0.05	mg/Kg	0.87	05/31/19 15:10
106-43-4	4-Chlorotoluene	<0.00136	U	0.00136	0.0049	0.00138	0.005	0.05	mg/Kg	0.87	05/31/19 15:10
99-87-6	4-Isopropyltoluene	<0.00139	U	0.00139	0.0049	0.00141	0.005	0.05	mg/Kg	0.87	05/31/19 15:10
71-43-2	Benzene	<0.00105	U	0.00105	0.0049	0.00107	0.005	0.05	mg/Kg	0.87	05/31/19 15:10
108-86-1	Bromobenzene	<0.00111	U	0.00111	0.0049	0.00113	0.005	0.05	mg/Kg	0.87	05/31/19 15:10
74-97-5	Bromochloromethane	<0.00124	U	0.00124	0.0049	0.00126	0.005	0.05	mg/Kg	0.87	05/31/19 15:10
75-27-4	Bromodichloromethan	<0.00087	U	0.00087	0.0049	0.00088	0.005	0.05	mg/Kg	0.87	05/31/19 15:10
75-25-2	Bromoform	<0.00070	U	0.00070	0.0049	0.00072	0.005	0.05	mg/Kg	0.87	05/31/19 15:10
74-83-9	Bromomethane	<0.00167	U	0.00167	0.0049	0.00170	0.005	0.05	mg/Kg	0.87	05/31/19 15:10
75-15-0	Carbon disulfide	<0.00136	L2,U,V11	0.00136	0.0049	0.00138	0.005	0.05	mg/Kg	0.87	05/31/19 15:10
56-23-5	Carbon tetrachloride	<0.00149	U	0.00149	0.0049	0.00151	0.005	0.05	mg/Kg	0.87	05/31/19 15:10
108-90-7	Chlorobenzene	<0.00146	U	0.00146	0.0049	0.00148	0.005	0.05	mg/Kg	0.87	05/31/19 15:10
75-00-3	Chloroethane	<0.00238	U	0.00238	0.0049	0.00242	0.005	0.05	mg/Kg	0.87	05/31/19 15:10

Soil results reported on dry weight basis





LABORATORY TEST RESULTS

Client Sample ID: B-11 12-13
A&B Job Sample ID: 19052069.02

Date: 6/6/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Drive Rd Construction , Houston

Attn: Robert J. Metzger

Test Description: Volatile Organic Compounds by GC/MS

Sample Matrix: Soil
Date Collected: 05/30/2019 13:47
Date Received: 05/30/2019 16:02
Date Prepared: 05/31/2019 10:00

Analytical Method: SW-846 8260C
QC Batch ID: Qb19060104
Prep Method: SW-846 5035A
Prepared By: Rajeev
Prep Batch ID: PB19060104

Analyst Initial: RT % Moisture: 11.7

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Rows list various chemical compounds like Chloroform, Chloromethane, etc., with their respective test results.



**LABORATORY TEST RESULTS**

Client Sample ID: B-11 12-13  
 A&B Job Sample ID: 19052069.02

Date: 6/6/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Rd Construction , Houston

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb19060321  
 Prep Method: TX 1005  
 Prepared By: Jdongre  
 Prep Batch ID: PB19060316

Sample Matrix: Soil  
 Date Collected: 05/30/2019 13:47  
 Date Received: 05/30/2019 16:02  
 Date Prepared: 05/31/2019 10:00

Analyst Initial: JKD

% Moisture: 11.7

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12	<23.35	U	23.35	24.6	23.7	25	1000	mg/Kg	0.87	05/31/19 14:07
TPH-1005-2	>C12-C28	<20.00	U	20.00	24.6	20.3	25	1000	mg/Kg	0.87	05/31/19 14:07
TPH-1005-4	>C28-C35	<17.44	U	17.44	24.6	17.7	25	1000	mg/Kg	0.87	05/31/19 14:07
	Total C6-C35	< 17.44	U	17.44		17.7	----	----	mg/Kg	0.87	05/31/19 14:07
111-85-3	1-Chlorooctane(surr)	84.4					60	143	%	0.87	05/31/19 14:07
3386-33-2	Chlorooctadecane(sur	76.3					60	150	%	0.87	05/31/19 14:07

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-12 8-9  
 A&B Job Sample ID: 19052069.03

Date: 6/6/2019

Client Name: Aviles Engineering Attn: Robert J. Metzger  
 Project Name: E103-19 / Memorial Drive Rd Construction , Houston

Test Description:	<b>% Moisture</b>	Sample Matrix	Soil
Analytical Method:	SM 2540G	Date Collected	05/30/2019 12:10
QC Batch ID:	Qb19060430	Date Received	05/30/2019 16:02
Prep Method:	SM 2540G	Date Prepared	06/03/2019 17:00
Prepared By:	KRSaranya		
Prep Batch ID	PB19060425		
Analyst Initial	KRS	% Moisture	17.0

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
	% Moisture	17.0					----	----	%	1	06/03/19 17:05

Soil results reported on dry weight basis



LABORATORY TEST RESULTS

Client Sample ID: B-12 8-9
A&B Job Sample ID: 19052069.03

Date: 6/6/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Drive Rd Construction , Houston

Attn: Robert J. Metzger

Test Description: Volatile Organic Compounds by GC/MS
Analytical Method: SW-846 8260C
QC Batch ID: Qb19060104
Prep Method: SW-846 5035A
Prepared By: Rajeev
Prep Batch ID: PB19060104
Analyst Initial: RT

Sample Matrix: Soil
Date Collected: 05/30/2019 12:10
Date Received: 05/30/2019 16:02
Date Prepared: 05/31/2019 10:00

% Moisture: 17.0

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Contains 45 rows of test results for various compounds like 1,1,1,2-Tetrachloroet, 1,1,1-Trichloroethane, etc.

Soil results reported on dry weight basis



LABORATORY TEST RESULTS

Client Sample ID: B-12 8-9
A&B Job Sample ID: 19052069.03

Date: 6/6/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Drive Rd Construction , Houston

Attn: Robert J. Metzger

Test Description: Volatile Organic Compounds by GC/MS

Analytical Method: SW-846 8260C

QC Batch ID: Qb19060104

Prep Method: SW-846 5035A

Prepared By: Rajeev

Prep Batch ID: PB19060104

Analyst Initial: RT

Sample Matrix: Soil

Date Collected: 05/30/2019 12:10

Date Received: 05/30/2019 16:02

Date Prepared: 05/31/2019 10:00

% Moisture: 17.0

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Rows list various chemical compounds like Chloroform, Chloromethane, etc., with their respective test results and flags.

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-12 8-9  
 A&B Job Sample ID: 19052069.03

Date: 6/6/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Rd Construction , Houston

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**

Sample Matrix: Soil

Analytical Method: TX 1005

Date Collected: 05/30/2019 12:10

QC Batch ID: Qb19060321

Date Received: 05/30/2019 16:02

Prep Method: TX 1005

Date Prepared: 05/31/2019 10:00

Prepared By: Jdongre

Prep Batch ID: PB19060316

Analyst Initial: JKD

% Moisture: 17.0

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12	<26.6	U	26.6	28	23.7	25	1000	mg/Kg	0.93	05/31/19 14:37
TPH-1005-2	>C12-C28	<22.7	U	22.7	28	20.3	25	1000	mg/Kg	0.93	05/31/19 14:37
TPH-1005-4	>C28-C35	<19.8	U	19.8	28	17.7	25	1000	mg/Kg	0.93	05/31/19 14:37
	Total C6-C35	< 19.8	U	19.8		17.7	----	----	mg/Kg	0.93	05/31/19 14:37
111-85-3	1-Chlorooctane(surr)	90.4					60	143	%	0.93	05/31/19 14:37
3386-33-2	Chlorooctadecane(sur	81.1					60	150	%	0.93	05/31/19 14:37

Soil results reported on dry weight basis



LABORATORY TEST RESULTS

Client Sample ID: B-13 7-8
A&B Job Sample ID: 19052069.04

Date: 6/6/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Drive Rd Construction , Houston

Attn: Robert J. Metzger

Test Description: % Moisture
Analytical Method: SM 2540G
QC Batch ID: Qb19060430
Prep Method: SM 2540G
Prepared By: KRSaranya
Prep Batch ID: PB19060425
Analyst Initial: KRS

Sample Matrix: Soil
Date Collected: 05/30/2019 11:00
Date Received: 05/30/2019 16:02
Date Prepared: 06/03/2019 17:00

% Moisture: 14.9

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Row 1: % Moisture, 14.9, ----, ----, %, 1, 06/03/19 17:05



**LABORATORY TEST RESULTS**

Client Sample ID: B-13 7-8  
 A&B Job Sample ID: 19052069.04

Date: 6/6/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Rd Construction , Houston

Attn: Robert J. Metzger

Test Description: **Volatile Organic Compounds by GC/MS**

Analytical Method: SW-846 8260C  
 QC Batch ID: Qb19060104  
 Prep Method: SW-846 5035A  
 Prepared By: Rajeev  
 Prep Batch ID: PB19060104

Sample Matrix: Soil  
 Date Collected: 05/30/2019 11:00  
 Date Received: 05/30/2019 16:02  
 Date Prepared: 05/31/2019 10:00

Analyst Initial: RT

% Moisture: 14.9

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
630-20-6	1,1,1,2-Tetrachloroet	<0.00079	U	0.00079	0.0046	0.00085	0.005	0.05	mg/Kg	0.79	05/31/19 16:23
71-55-6	1,1,1-Trichloroethane	<0.00137	U	0.00137	0.0046	0.00148	0.005	0.05	mg/Kg	0.79	05/31/19 16:23
79-34-5	1,1,2,2-Tetrachloroet	<0.00123	U	0.00123	0.0046	0.00132	0.005	0.05	mg/Kg	0.79	05/31/19 16:23
79-00-5	1,1,2-Trichloroethane	<0.00163	U	0.00163	0.0046	0.00176	0.005	0.05	mg/Kg	0.79	05/31/19 16:23
75-34-3	1,1-Dichloroethane	<0.00146	U	0.00146	0.0046	0.00157	0.005	0.05	mg/Kg	0.79	05/31/19 16:23
75-35-4	1,1-Dichloroethylene	<0.00161	L2, U,V11	0.00161	0.0046	0.00173	0.005	0.05	mg/Kg	0.79	05/31/19 16:23
563-58-6	1,1-Dichloropropene	<0.00134	U	0.00134	0.0046	0.00144	0.005	0.05	mg/Kg	0.79	05/31/19 16:23
87-61-6	1,2,3-trichlorobenzen	<0.00154	U	0.00154	0.0046	0.00166	0.005	0.05	mg/Kg	0.79	05/31/19 16:23
96-18-4	1,2,3-Trichloropropan	<0.00140	U	0.00140	0.0046	0.00151	0.005	0.05	mg/Kg	0.79	05/31/19 16:23
120-82-1	1,2,4-Trichlorobenzen	<0.00128	U	0.00128	0.0046	0.00138	0.005	0.05	mg/Kg	0.79	05/31/19 16:23
95-63-6	1,2,4-Trimethylbenze	<0.00113	U	0.00113	0.0046	0.00122	0.005	0.05	mg/Kg	0.79	05/31/19 16:23
96-12-8	1,2-Dibromo-3-chloro	<0.00289	U	0.00289	0.0046	0.00311	0.005	0.05	mg/Kg	0.79	05/31/19 16:23
106-93-4	1,2-Dibromoethane	<0.00105	U	0.00105	0.0046	0.00113	0.005	0.05	mg/Kg	0.79	05/31/19 16:23
95-50-1	1,2-Dichlorobenzene	<0.00093	U	0.00093	0.0046	0.00100	0.005	0.05	mg/Kg	0.79	05/31/19 16:23
107-06-2	1,2-Dichloroethane	<0.00123	U	0.00123	0.0046	0.00132	0.005	0.05	mg/Kg	0.79	05/31/19 16:23
78-87-5	1,2-Dichloropropane	<0.00105	U	0.00105	0.0046	0.00113	0.005	0.05	mg/Kg	0.79	05/31/19 16:23
108-67-8	1,3,5-Trimethylbenze	<0.00140	U	0.00140	0.0046	0.00151	0.005	0.05	mg/Kg	0.79	05/31/19 16:23
541-73-1	1,3-Dichlorobenzene	<0.00131	U	0.00131	0.0046	0.00141	0.005	0.05	mg/Kg	0.79	05/31/19 16:23
142-28-9	1,3-Dichloropropane	<0.00131	U	0.00131	0.0046	0.00141	0.005	0.05	mg/Kg	0.79	05/31/19 16:23
106-46-7	1,4-Dichlorobenzene	<0.00134	U	0.00134	0.0046	0.00144	0.005	0.05	mg/Kg	0.79	05/31/19 16:23
123-91-1	1,4-Dioxane	<0.07448	U	0.07448	0.297	0.08023	0.32	1.6	mg/Kg	0.79	05/31/19 16:23
594-20-7	2,2-Dichloropropane	<0.00204	R1,U	0.00204	0.0046	0.00220	0.005	0.05	mg/Kg	0.79	05/31/19 16:23
95-49-8	2-Chlorotoluene	<0.00134	U	0.00134	0.0046	0.00144	0.005	0.05	mg/Kg	0.79	05/31/19 16:23
106-43-4	4-Chlorotoluene	<0.00128	U	0.00128	0.0046	0.00138	0.005	0.05	mg/Kg	0.79	05/31/19 16:23
99-87-6	4-Isopropyltoluene	<0.00131	U	0.00131	0.0046	0.00141	0.005	0.05	mg/Kg	0.79	05/31/19 16:23
71-43-2	Benzene	<0.00099	U	0.00099	0.0046	0.00107	0.005	0.05	mg/Kg	0.79	05/31/19 16:23
108-86-1	Bromobenzene	<0.00105	U	0.00105	0.0046	0.00113	0.005	0.05	mg/Kg	0.79	05/31/19 16:23
74-97-5	Bromochloromethane	<0.00117	U	0.00117	0.0046	0.00126	0.005	0.05	mg/Kg	0.79	05/31/19 16:23
75-27-4	Bromodichloromethan	<0.00082	U	0.00082	0.0046	0.00088	0.005	0.05	mg/Kg	0.79	05/31/19 16:23
75-25-2	Bromoform	<0.00066	U	0.00066	0.0046	0.00072	0.005	0.05	mg/Kg	0.79	05/31/19 16:23
74-83-9	Bromomethane	<0.00158	U	0.00158	0.0046	0.00170	0.005	0.05	mg/Kg	0.79	05/31/19 16:23
75-15-0	Carbon disulfide	<0.00128	L2,U,V11	0.00128	0.0046	0.00138	0.005	0.05	mg/Kg	0.79	05/31/19 16:23
56-23-5	Carbon tetrachloride	<0.00140	U	0.00140	0.0046	0.00151	0.005	0.05	mg/Kg	0.79	05/31/19 16:23
108-90-7	Chlorobenzene	<0.00137	U	0.00137	0.0046	0.00148	0.005	0.05	mg/Kg	0.79	05/31/19 16:23
75-00-3	Chloroethane	<0.00225	U	0.00225	0.0046	0.00242	0.005	0.05	mg/Kg	0.79	05/31/19 16:23

Soil results reported on dry weight basis





LABORATORY TEST RESULTS

Client Sample ID: B-13 7-8
A&B Job Sample ID: 19052069.04

Date: 6/6/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Drive Rd Construction , Houston

Attn: Robert J. Metzger

Test Description: Volatile Organic Compounds by GC/MS
Analytical Method: SW-846 8260C
QC Batch ID: Qb19060104
Prep Method: SW-846 5035A
Prepared By: Rajeev
Prep Batch ID: PB19060104
Analyst Initial: RT

Sample Matrix: Soil
Date Collected: 05/30/2019 11:00
Date Received: 05/30/2019 16:02
Date Prepared: 05/31/2019 10:00

% Moisture: 14.9

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Contains 34 rows of chemical analysis data.

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-13 7-8  
 A&B Job Sample ID: 19052069.04

Date: 6/6/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Rd Construction , Houston

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb19060321  
 Prep Method: TX 1005  
 Prepared By: Jdongre  
 Prep Batch ID: PB19060316

Sample Matrix: Soil  
 Date Collected: 05/30/2019 11:00  
 Date Received: 05/30/2019 16:02  
 Date Prepared: 05/31/2019 10:00

Analyst Initial: JKD

% Moisture: 14.9

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12	<24.8	U	24.8	26.1	23.7	25	1000	mg/Kg	0.89	05/31/19 15:06
TPH-1005-2	>C12-C28	<21.2	U	21.2	26.1	20.3	25	1000	mg/Kg	0.89	05/31/19 15:06
TPH-1005-4	>C28-C35	<18.5	U	18.5	26.1	17.7	25	1000	mg/Kg	0.89	05/31/19 15:06
	Total C6-C35	< 18.5	U	18.5		17.7	----	----	mg/Kg	0.89	05/31/19 15:06
111-85-3	1-Chlorooctane(surr)	86.7					60	143	%	0.89	05/31/19 15:06
3386-33-2	Chlorooctadecane(sur	77.6					60	150	%	0.89	05/31/19 15:06

Soil results reported on dry weight basis



LABORATORY TEST RESULTS

Client Sample ID: B-14 13-14
A&B Job Sample ID: 19052069.05

Date: 6/6/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Drive Rd Construction , Houston
Attn: Robert J. Metzger

Test Description: % Moisture
Analytical Method: SM 2540G
QC Batch ID: Qb19060430
Prep Method: SM 2540G
Prepared By: KRSaranya
Prep Batch ID: PB19060425
Analyst Initial: KRS
Sample Matrix: Soil
Date Collected: 05/30/2019 09:30
Date Received: 05/30/2019 16:02
Date Prepared: 06/03/2019 17:00
% Moisture: 13.5

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Row 1: % Moisture, 13.5, ----, ----, %, 1, 06/03/19 17:05



LABORATORY TEST RESULTS

Client Sample ID: B-14 13-14
A&B Job Sample ID: 19052069.05

Date: 6/6/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Drive Rd Construction , Houston

Attn: Robert J. Metzger

Test Description: Volatile Organic Compounds by GC/MS

Analytical Method: SW-846 8260C
QC Batch ID: Qb19060104
Prep Method: SW-846 5035A
Prepared By: Rajeev
Prep Batch ID: PB19060104

Sample Matrix: Soil
Date Collected: 05/30/2019 09:30
Date Received: 05/30/2019 16:02
Date Prepared: 05/31/2019 10:00

Analyst Initial: RT

% Moisture: 13.5

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Contains multiple rows of chemical analysis data.

Soil results reported on dry weight basis



LABORATORY TEST RESULTS

Client Sample ID: B-14 13-14
A&B Job Sample ID: 19052069.05

Date: 6/6/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Drive Rd Construction , Houston

Attn: Robert J. Metzger

Test Description: Volatile Organic Compounds by GC/MS
Analytical Method: SW-846 8260C
QC Batch ID: Qb19060104
Prep Method: SW-846 5035A
Prepared By: Rajeev
Prep Batch ID: PB19060104
Analyst Initial: RT

Sample Matrix: Soil
Date Collected: 05/30/2019 09:30
Date Received: 05/30/2019 16:02
Date Prepared: 05/31/2019 10:00

% Moisture: 13.5

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Rows list various chemical compounds like Chloroform, Chloromethane, etc., with their respective test results and flags.

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-14 13-14  
 A&B Job Sample ID: 19052069.05

Date: 6/6/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Rd Construction , Houston

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb19060321  
 Prep Method: TX 1005  
 Prepared By: Jdongre  
 Prep Batch ID: PB19060316

Sample Matrix: Soil  
 Date Collected: 05/30/2019 09:30  
 Date Received: 05/30/2019 16:02  
 Date Prepared: 05/31/2019 10:00

Analyst Initial: JKD

% Moisture: 13.5

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12	<23.8	U	23.8	25.1	23.7	25	1000	mg/Kg	0.87	05/31/19 15:36
TPH-1005-2	>C12-C28	<20.4	U	20.4	25.1	20.3	25	1000	mg/Kg	0.87	05/31/19 15:36
TPH-1005-4	>C28-C35	<17.8	U	17.8	25.1	17.7	25	1000	mg/Kg	0.87	05/31/19 15:36
	Total C6-C35	< 17.8	U	17.8		17.7	----	----	mg/Kg	0.87	05/31/19 15:36
111-85-3	1-Chlorooctane(surr)	84					60	143	%	0.87	05/31/19 15:36
3386-33-2	Chlorooctadecane(sur	76.2					60	150	%	0.87	05/31/19 15:36

Soil results reported on dry weight basis

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052069

**Date :** 6/6/2019

**Analysis :** Volatile Organic Compounds      **Method :** SW-846 8260C      **Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060104      **Created Date :** 05/31/19      **Created By :** Rajeev

**Samples in This QC Batch :** 19052069.01,02,03,04,05

**Sample Preparation :** PB19060104      **Prep Method :** SW-846 5035A      **Prep Date :** 05/31/19 10:00      **Prep By :** Rajeev

QC Type: Method Blank							
Parameter	CAS #	Result	Units	D.F.	MQL	MDL	Qual
1,1,1,2-Tetrachloroethane	630-20-6	< MDL	mg/Kg	1	0.005	0.00085	
1,1,1-Trichloroethane	71-55-6	< MDL	mg/Kg	1	0.005	0.00148	
1,1,2,2-Tetrachloroethane	79-34-5	< MDL	mg/Kg	1	0.005	0.00132	
1,1,2-Trichloroethane	79-00-5	< MDL	mg/Kg	1	0.005	0.00176	
1,1-Dichloroethane	75-34-3	< MDL	mg/Kg	1	0.005	0.00157	
1,1-Dichloroethylene	75-35-4	< MDL	mg/Kg	1	0.005	0.00173	
1,1-Dichloropropene	563-58-6	< MDL	mg/Kg	1	0.005	0.00144	
1,2,3-trichlorobenzene	87-61-6	< MDL	mg/Kg	1	0.005	0.00166	
1,2,3-Trichloropropane	96-18-4	< MDL	mg/Kg	1	0.005	0.00151	
1,2,4-Trichlorobenzene	120-82-1	< MDL	mg/Kg	1	0.005	0.00138	
1,2,4-Trimethylbenzene	95-63-6	< MDL	mg/Kg	1	0.005	0.00122	
1,2-Dibromo-3-chloropropa	96-12-8	< MDL	mg/Kg	1	0.005	0.00311	
1,2-Dibromoethane	106-93-4	< MDL	mg/Kg	1	0.005	0.00113	
1,2-Dichlorobenzene	95-50-1	< MDL	mg/Kg	1	0.005	0.00100	
1,2-Dichloroethane	107-06-2	< MDL	mg/Kg	1	0.005	0.00132	
1,2-Dichloropropane	78-87-5	< MDL	mg/Kg	1	0.005	0.00113	
1,3,5-Trimethylbenzene	108-67-8	< MDL	mg/Kg	1	0.005	0.00151	
1,3-Dichlorobenzene	541-73-1	< MDL	mg/Kg	1	0.005	0.00141	
1,3-Dichloropropane	142-28-9	< MDL	mg/Kg	1	0.005	0.00141	
1,4-Dichlorobenzene	106-46-7	< MDL	mg/Kg	1	0.005	0.00144	
1,4-Dioxane	123-91-1	< MDL	mg/Kg	1	0.32	0.08023	
2,2-Dichloropropane	594-20-7	< MDL	mg/Kg	1	0.005	0.00220	
2-Chlorotoluene	95-49-8	< MDL	mg/Kg	1	0.005	0.00144	
4-Chlorotoluene	106-43-4	< MDL	mg/Kg	1	0.005	0.00138	
4-Isopropyltoluene	99-87-6	< MDL	mg/Kg	1	0.005	0.00141	
Benzene	71-43-2	< MDL	mg/Kg	1	0.005	0.00107	
Bromobenzene	108-86-1	< MDL	mg/Kg	1	0.005	0.00113	
Bromochloromethane	74-97-5	< MDL	mg/Kg	1	0.005	0.00126	
Bromodichloromethane	75-27-4	< MDL	mg/Kg	1	0.005	0.00088	
Bromoform	75-25-2	< MDL	mg/Kg	1	0.005	0.00072	
Bromomethane	74-83-9	< MDL	mg/Kg	1	0.005	0.00170	
Carbon disulfide	75-15-0	< MDL	mg/Kg	1	0.005	0.00138	
Carbon tetrachloride	56-23-5	< MDL	mg/Kg	1	0.005	0.00151	
Chlorobenzene	108-90-7	< MDL	mg/Kg	1	0.005	0.00148	
Chloroethane	75-00-3	< MDL	mg/Kg	1	0.005	0.00242	
Chloroform	67-66-3	< MDL	mg/Kg	1	0.005	0.00119	
Chloromethane	74-87-3	< MDL	mg/Kg	1	0.005	0.00226	
cis-1,2-Dichloroethylene	156-59-2	< MDL	mg/Kg	1	0.005	0.00119	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052069

**Date :** 6/6/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060104

**Created Date :** 05/31/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19052069.01,02,03,04,05

<b>QC Type: Method Blank</b>									
Parameter	CAS #	Result	Units	D.F.	MLQ	MDL			Qual
cis-1,3-Dichloropropene	10061-01-5	< MDL	mg/Kg	1	0.005	0.00113			
Dibromochloromethane	124-48-1	< MDL	mg/Kg	1	0.005	0.00110			
Dibromomethane	74-95-3	< MDL	mg/Kg	1	0.005	0.00138			
Dichlorodifluoromethane	75-71-8	< MDL	mg/Kg	1	0.005	0.00135			
Ethylbenzene	100-41-4	< MDL	mg/Kg	1	0.005	0.00138			
Isopropylbenzene	98-82-8	< MDL	mg/Kg	1	0.005	0.00126			
m- & p-Xylenes	108-38-3&106-42-3	< MDL	mg/Kg	1	0.01	0.00273			
MEK	78-93-3	< MDL	mg/Kg	1	0.005	0.00267			
Methylene chloride	75-09-2	< MDL	mg/Kg	1	0.005	0.00154			
Naphthalene	91-20-3	< MDL	mg/Kg	1	0.005	0.00188			
n-Butylbenzene	104-51-8	< MDL	mg/Kg	1	0.005	0.00179			
n-Propylbenzene	103-65-1	< MDL	mg/Kg	1	0.005	0.00138			
o-Xylene	95-47-6	< MDL	mg/Kg	1	0.005	0.00126			
sec-Butylbenzene	135-98-8	< MDL	mg/Kg	1	0.005	0.00160			
Styrene	100-42-5	< MDL	mg/Kg	1	0.005	0.00126			
t-butylbenzene	98-06-6	< MDL	mg/Kg	1	0.005	0.00141			
Tetrachloroethylene	127-18-4	< MDL	mg/Kg	1	0.005	0.00138			
Toluene	108-88-3	< MDL	mg/Kg	1	0.005	0.00119			
trans-1,2-Dichloroethylene	156-60-5	< MDL	mg/Kg	1	0.005	0.00144			
trans-1,3-Dichloropropene	10061-02-6	< MDL	mg/Kg	1	0.005	0.00094			
Trichloroethylene	79-01-6	< MDL	mg/Kg	1	0.005	0.00104			
Trichlorofluoromethane	75-69-4	< MDL	mg/Kg	1	0.005	0.00198			
Vinyl Chloride	75-01-4	< MDL	mg/Kg	1	0.005	0.00185			
Xylenes	1330-20-7	< MDL	mg/Kg	1	0.005	0.001			
Dibromofluoromethane(surr)	1868-53-7	89.3	%	1					
1,2-Dichloroethane-d4(surr)	17060-07-0	88.3	%	1					
Toluene-d8(surr)	2037-26-5	101	%	1					
p-Bromofluorobenzene(surr)	460-00-4	97.3	%	1					

<b>QC Type: LCS and LCSD</b>										
Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
1,1,1,2-Tetrachloroethane	0.02	0.0181	90.4	0.02	0.0208	104	14	30	78-125	
1,1,1-Trichloroethane	0.02	0.0155	77.7	0.02	0.0199	99.6	24.6	30	70-130	
1,1,2,2-Tetrachloroethane	0.02	0.0190	95.1	0.02	0.0190	94.8	0.1	30	70-124	
1,1,2-Trichloroethane	0.02	0.0188	93.8	0.02	0.0203	101	7.8	30	78-121	
1,1-Dichloroethane	0.02	0.0163	81.7	0.02	0.0199	99.3	19.7	30	76-125	
1,1-Dichloroethylene	0.02	0.00980	49	0.02	0.0128	63.9	26.6	30	70-131	L2
1,1-Dichloropropene	0.02	0.0161	80.6	0.02	0.0197	98.6	19.9	30	76-125	

Refer to the Definition page for terms.



**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052069

**Date :** 6/6/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060104

**Created Date :** 05/31/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19052069.01,02,03,04,05

<b>QC Type: LCS and LCSD</b>										
Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
1,2,3-trichlorobenzene	0.02	0.0175	87.7	0.02	0.0201	100	13.6	30	66-130	
1,2,3-Trichloropropane	0.02	0.0188	94.1	0.02	0.0186	92.8	1.2	30	73-125	
1,2,4-Trichlorobenzene	0.02	0.0193	96.4	0.02	0.0212	106	9.5	30	66-129	
1,2,4-Trimethylbenzene	0.02	0.0185	92.4	0.02	0.0216	108	15.6	30	75-123	
1,2-Dibromo-3-chloropropa	0.02	0.0183	91.7	0.02	0.0169	84.5	8.2	30	61-132	
1,2-Dibromoethane	0.02	0.0189	94.4	0.02	0.0197	98.4	4.2	30	78-122	
1,2-Dichlorobenzene	0.02	0.0195	97.5	0.02	0.0214	107	9.3	30	78-121	
1,2-Dichloroethane	0.02	0.0179	89.3	0.02	0.0195	97.4	8.8	30	71-128	
1,2-Dichloropropane	0.02	0.0179	89.3	0.02	0.0208	104	15.2	30	76-123	
1,3,5-Trimethylbenzene	0.02	0.0183	91.7	0.02	0.0219	110	17.7	30	73-124	
1,3-Dichlorobenzene	0.02	0.0191	95.7	0.02	0.0218	109	13	30	77-121	
1,3-Dichloropropane	0.02	0.0176	88.2	0.02	0.0190	94.8	7.4	30	77-121	
1,4-Dichlorobenzene	0.02	0.0192	96.3	0.02	0.0218	109	12.4	30	75-120	
1,4-Dioxane	0.64	0.592	92.5	0.64	0.550	85.9	7.3	30	55-138	
2,2-Dichloropropane	0.02	0.0144	72.2	0.02	0.0208	104	36	30	67-133	R1
2-Chlorotoluene	0.02	0.0181	90.3	0.02	0.0213	107	16.5	30	75-122	
4-Chlorotoluene	0.02	0.0181	90.4	0.02	0.0214	107	16.8	30	72-124	
4-Isopropyltoluene	0.02	0.0182	90.9	0.02	0.0221	111	19.4	30	73-127	
Benzene	0.02	0.0178	88.9	0.02	0.0215	108	18.9	30	77-121	
Bromobenzene	0.02	0.0194	96.9	0.02	0.0219	109	12.2	30	78-121	
Bromochloromethane	0.02	0.0167	83.4	0.02	0.0187	93.4	11.4	30	75-125	
Bromodichloromethane	0.02	0.0173	86.7	0.02	0.0200	99.9	14.3	30	71-127	
Bromoform	0.02	0.0175	87.5	0.02	0.0189	94.3	7.8	30	67-132	
Bromomethane	0.02	0.0143	71.5	0.02	0.0166	83.2	15	30	55-140	
Carbon disulfide	0.02	0.00979	49	0.02	0.0130	64.9	28.1	30	63-132	L2
Carbon tetrachloride	0.02	0.0161	80.3	0.02	0.0214	107	28.5	30	69-135	
Chlorobenzene	0.02	0.0185	92.6	0.02	0.0219	110	16.7	30	79-120	
Chloroethane	0.02	0.0138	68.8	0.02	0.0179	89.7	26.2	30	59-139	
Chloroform	0.02	0.0167	83.5	0.02	0.0197	98.5	16.5	30	78-123	
Chloromethane	0.02	0.0145	72.7	0.02	0.0184	92	23.5	30	50-136	
cis-1,2-Dichloroethylene	0.02	0.0166	83	0.02	0.0198	99.1	17.6	30	77-123	
cis-1,3-Dichloropropene	0.02	0.0180	90.2	0.02	0.0206	103	13.3	30	74-126	
Dibromochloromethane	0.02	0.0175	87.7	0.02	0.0194	97	10.1	30	74-126	
Dibromomethane	0.02	0.0187	93.5	0.02	0.0199	99.4	6.2	30	78-125	
Dichlorodifluoromethane	0.02	0.0149	74.6	0.02	0.0193	96.6	25.6	30	29-149	
Ethylbenzene	0.02	0.0177	88.6	0.02	0.0218	109	20.7	30	76-122	
Isopropylbenzene	0.02	0.0177	88.5	0.02	0.0219	110	21.3	30	68-134	
m- & p-Xylenes	0.04	0.0358	89.6	0.04	0.0441	110	20.7	30	77-124	
MEK	0.02	0.0190	95.1	0.02	0.0200	100	5	30	51-148	
Methylene chloride	0.02	0.0200	99.8	0.02	0.0215	107	7.4	30	70-128	
Naphthalene	0.02	0.0190	94.8	0.02	0.0192	95.9	1.2	30	62-129	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052069

**Date :** 6/6/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060104    **Created Date :** 05/31/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19052069.01,02,03,04,05

**QC Type: LCS and LCSD**

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
n-Butylbenzene	0.02	0.0173	86.7	0.02	0.0209	105	18.6	30	70-128	
n-Propylbenzene	0.02	0.0178	89.2	0.02	0.0218	109	19.9	30	73-125	
o-Xylene	0.02	0.0181	90.3	0.02	0.0216	108	17.8	30	77-123	
sec-Butylbenzene	0.02	0.0179	89.3	0.02	0.0218	109	19.9	30	73-126	
Styrene	0.02	0.0187	93.7	0.02	0.0218	109	15.1	30	76-124	
t-butylbenzene	0.02	0.0174	87	0.02	0.0212	106	19.7	30	73-125	
Tetrachloroethylene	0.02	0.0211	106	0.02	0.0218	109	3.1	30	73-128	
Toluene	0.02	0.0180	90.2	0.02	0.0221	110	20.3	30	77-121	
trans-1,2-Dichloroethylene	0.02	0.0161	80.3	0.02	0.0201	100	22.3	30	74-125	
trans-1,3-Dichloropropene	0.02	0.0180	90.1	0.02	0.0202	101	11.4	30	71-130	
Trichloroethylene	0.02	0.0182	91	0.02	0.0224	112	20.7	30	77-123	
Trichlorofluoromethane	0.02	0.0134	66.9	0.02	0.0176	88.1	27.3	30	62-140	
Vinyl Chloride	0.02	0.0148	74.1	0.02	0.0192	96	25.9	30	56-135	
Xylenes	0.06	0.0539	89.8	0.06	0.0657	110	19.7	30	78-124	

**QC Type: MS and MSD**

**QC Sample ID: 19051983.01**

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
1,1,1,2-Tetrachloroethane	BRL	0.019	0.0193	102						71.4-131	
1,1,1-Trichloroethane	BRL	0.019	0.0171	90						69.6-140	
1,1,2,2-Tetrachloroethane	BRL	0.019	0.0186	97.9						66.6-128	
1,1,2-Trichloroethane	BRL	0.019	0.0190	100						72.8-125	
1,1-Dichloroethane	BRL	0.019	0.0175	92.1						72.7-129	
1,1-Dichloroethylene	BRL	0.019	0.0111	58.4						71.4-131	M9
1,1-Dichloropropene	BRL	0.019	0.0167	87.9						75.9-132	
1,2,3-trichlorobenzene	BRL	0.019	0.0180	94.7						56.7-153	
1,2,3-Trichloropropane	BRL	0.019	0.0188	98.9						61.6-138	
1,2,4-Trichlorobenzene	BRL	0.019	0.0188	98.9						55.9-150	
1,2,4-Trimethylbenzene	BRL	0.019	0.0192	101						71.1-131	
1,2-Dibromo-3-chloropropa	BRL	0.019	0.0174	91.6						52.4-150	
1,2-Dibromoethane	BRL	0.019	0.0192	101						72.9-125	
1,2-Dichlorobenzene	BRL	0.019	0.0198	104						76.1-126	
1,2-Dichloroethane	BRL	0.019	0.0188	98.9						66.4-134	
1,2-Dichloropropane	BRL	0.019	0.0189	99.5						70.2-128	
1,3,5-Trimethylbenzene	BRL	0.019	0.0194	102						75.1-127	
1,3-Dichlorobenzene	BRL	0.019	0.0194	102						73.9-126	
1,3-Dichloropropane	BRL	0.019	0.0184	96.8						68.3-124	
1,4-Dichlorobenzene	BRL	0.019	0.0193	102						72.3-127	
1,4-Dioxane	BRL	0.608	0.599	98.5						70-130	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052069

**Date :** 6/6/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060104    **Created Date :** 05/31/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19052069.01,02,03,04,05

<b>QC Type: MS and MSD</b>											
<b>QC Sample ID: 19051983.01</b>											
Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
2,2-Dichloropropane	BRL	0.019	0.0143	75.3						68.5-138	
2-Chlorotoluene	BRL	0.019	0.0189	99.5						71.7-128	
4-Chlorotoluene	BRL	0.019	0.0188	98.9						72.2-126	
4-Isopropyltoluene	BRL	0.019	0.0194	102						77.5-125	
Benzene	BRL	0.019	0.0189	99.5						74-126	
Bromobenzene	BRL	0.019	0.0199	105						73.3-129	
Bromochloromethane	BRL	0.019	0.0175	92.1						68.8-131	
Bromodichloromethane	BRL	0.019	0.0186	97.9						69-135	
Bromoform	BRL	0.019	0.0181	95.3						62-146	
Bromomethane	BRL	0.019	0.0152	80						58.7-139	
Carbon disulfide	BRL	0.019	0.0108	56.8						70-130	M9
Carbon tetrachloride	BRL	0.019	0.0176	92.6						68.7-135	
Chlorobenzene	BRL	0.019	0.0196	103						73.3-129	
Chloroethane	BRL	0.019	0.0159	83.7						66.2-129	
Chloroform	BRL	0.019	0.0177	93.2						73.7-134	
Chloromethane	BRL	0.019	0.0155	81.6						51.4-135	
cis-1,2-Dichloroethylene	BRL	0.019	0.0175	92.1						72.4-132	
cis-1,3-Dichloropropene	BRL	0.019	0.0181	95.3						67.7-134	
Dibromochloromethane	BRL	0.019	0.0183	96.3						73.2-126	
Dibromomethane	BRL	0.019	0.0195	103						69.9-134	
Dichlorodifluoromethane	BRL	0.019	0.0162	85.3						36.8-144	
Ethylbenzene	BRL	0.019	0.0189	99.6						72.2-128	
Isopropylbenzene	BRL	0.019	0.0194	102						71.2-131	
m- & p-Xylenes	BRL	0.038	0.0383	101						70.7-131	
MEK	BRL	0.019	0.0155	81.6						52.5-152	
Methylene chloride	BRL	0.019	0.0187	98.4						70.6-129	
Naphthalene	BRL	0.019	0.0176	92.6						60.7-145	
n-Butylbenzene	BRL	0.019	0.0183	96.3						66.5-136	
n-Propylbenzene	BRL	0.019	0.0190	100						73.3-126	
o-Xylene	BRL	0.019	0.0190	100						71.6-130	
sec-Butylbenzene	BRL	0.019	0.0193	102						77.9-124	
Styrene	BRL	0.019	0.0195	103						71.1-131	
t-butylbenzene	BRL	0.019	0.0181	95.3						74.4-130	
Tetrachloroethylene	BRL	0.019	0.0261	137						62.6-157	
Toluene	BRL	0.019	0.0189	99.5						73.3-127	
trans-1,2-Dichloroethylene	BRL	0.019	0.0174	91.6						70-130	
trans-1,3-Dichloropropene	BRL	0.019	0.0176	92.6						71.5-124	
Trichloroethylene	BRL	0.019	0.0196	103						69.2-133	
Trichlorofluoromethane	BRL	0.019	0.0153	80.5						63.9-140	
Vinyl Chloride	BRL	0.019	0.0162	85.3						40.9-159	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052069

**Date :** 6/6/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060104

**Created Date :** 05/31/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19052069.01,02,03,04,05

**QC Type:** MS and MSD

**QC Sample ID:** 19051983.01

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
Xylenes	BRL	0.057	0.0573	101						69.2-133	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052069

**Date :** 6/6/2019

**Analysis :** Total Petroleum Hydrocarbons      **Method :** TX 1005      **Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060321      **Created Date :** 05/31/19      **Created By :** Jdongre

**Samples in This QC Batch :** 19052069.01,02,03,04,05

**Sample Preparation :** PB19060316      **Prep Method :** TX 1005      **Prep Date :** 05/31/19 10:00      **Prep By :** Jdongre

**QC Type: Method Blank**

Parameter	CAS #	Result	Units	D.F.	MQL	MDL	Qual
C6-C12	TPH-1005-1	< MDL	mg/Kg	1	25	23.7	
>C12-C28	TPH-1005-2	< MDL	mg/Kg	1	25	20.3	
>C28-C35	TPH-1005-4	< MDL	mg/Kg	1	25	17.7	
Total C6-C35		< MDL	mg/Kg	1	----	17.7	
Chlorooctadecane(surr)	3386-33-2	95	%	1			
1-Chlorooctane(surr)	111-85-3	108	%	1			

**QC Type: LCS and LCSD**

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
C6-C12	500	504	101	500	525	105	4.1	20	75-125	
>C12-C28	500	490	98	500	507	101	3.4	20	75-125	
>C28-C35	500	489	97.8	500	553	111	12.3	20	75-125	

**QC Type: MS and MSD**

**QC Sample ID: 19052090.01**

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
C6-C12	BRL	500	530	106	500	519	104	2.1	20	75-125	
>C12-C28	BRL	500	439	87.8	500	441	88.2	0.5	20	75-125	
>C28-C35	BRL	500	523	105	500	510	102	2.5	20	75-125	

Refer to the Definition page for terms.



**LABORATORY TERM AND QUALIFIER DEFINITION REPORT**



Job ID : 19052069

Date: 6/6/2019

**General Term Definition**

Back-Wt	Back Weight	Post-Wt	Post Weight
BRL	Below Reporting Limit	ppm	parts per million
cfu	colony-forming units	Pre-Wt	Previous Weight
Conc.	Concentration	Q	Qualifier
D.F.	Dilution Factor	RegLimit	Regulatory Limit
Front-Wt	Front Weight	RPD	Relative Percent Difference
LCS	Laboratory Check Standard	RptLimit	Reporting Limit
LCSD	Laboratory Check Standard Duplicate	SDL	Sample Detection Limit
MS	Matrix Spike	surr	Surrogate
MSD	Matrix Spike Duplicate	T	Time
MW	Molecular Weight	TNTC	Too numerous to count
J	Estimation. Below calibration range but above MDL		

**Qualifier Definition**

L2	Associated LCS and/or LCSD recovery is below acceptance limits for flagged analyte. Bias may be low.
M9	Matrix Spike and/or Matrix Spike Duplicate recovery is below laboratory control limits.
R1	RPD exceeds control limits.
U	Undetected at SDL (Sample Detection Limit).
V11	CCV recovery is below acceptance limits.



10100 East Fwy (I-10) Suite 100 Houston, TX 77029 713-453-6060 1-877-478-6060 Toll Free 713-453-6091 Fax ablabs.com

1. REPORT TO: (REC) Company: Aviles Engineering Corp Address: 5796 Windfern Houston, TX 77041 Contact: Robert J Metzger Phone: 281-793-8352 Fax: E-mail: rmetzger@avilesengineering.com

2. INVOICE TO: Company: ASIA Boral Address: Contact: Phone: Fax: E-mail:

3. PO # 3a. A&B Quote # 4. Turnaround Time (Business Days) [ ] 1 Day\* [ ] Other: [ ] 2 Days\* [ ] 3 Days\* [x] 7 Days - Standard \*Surcharge applies

A&B JOB ID # 19052069

5. Project # E103-19

6. Project Name/Location Memorial Drive Reconstruction, Houston

7. Reporting Requirement: [x] TRRP Limits only [ ] TRRP Rpt. Package [ ] See Attached [ ] Standard Level II [ ] PST [ ] MDL [ ] EDD

8. Sampler's Name & Company (PLEASE PRINT) Robert J Metzger AR Sampler's Signature & Date [Signature] 5/30/19

9. Sample ID and Description 10. Sampling 11. 12. Matrix

Table with columns for Sample ID, Description, Date, Time, and Matrix components (Comp, Grab, Water, Soil, Sludge, Oil, Drinking Water, Air, Other). Rows include samples 01A6 through 05A6.

Table for 13. Containers, 14. Preservatives, 15. PH-Lab Only, 16. PH-Lab Only, 17. Analyses/Methods, 18. REMARKS. Includes handwritten notes and 'Note: please check if stir bars need to be taken out or added see Amanda for details. Also check samples on other 5/30/19 coc from earlier in day 3-15 to 3-18'

19. RELINQUISHED BY [Signature] DATE 5/30/19 TIME 16:02

20. RECEIVED BY [Signature] DATE 5.20.19 TIME 16:02

21. KNOWN HAZARDS/COMMENTS B-31 B-30 Temperature: 11.1, 10.6 Thermometer ID 170262P Intact: [x] Y or N Initials RL

\*Containers: VOA - 40 ml vial 4 oz/8 oz - glass wide mouth A/G - Amber/Glass 1 Liter P/O - Plastic/other

\*\*Preservatives: C - Cool H - HCl N - HNO3 S - H2SO4 OH - NaOH T - Na2S2O3 X - Other

METHOD OF SHIPMENT

BILL OF LADING/TRACKING #

LAB USE ONLY SAMPLING RENTAL P/U Supplies Field Work

A&B cannot accept verbal changes Please FAX written changes to 713-453-6091 Samples will be disposed of after 30 days A&B reserves the right to return samples





# Sample Condition Checklist

A&B JobID : <b>19052069</b>		Date Received : <b>05/30/2019</b>		Time Received : <b>4:02PM</b>								
Client Name : <b>Aviles Engineering</b>												
Temperature : <b>2.5-0.5cf=2.0°C</b>		Sample pH : <b>N/A</b>										
Thermometer ID : <b>1707629</b>		pH Paper ID : <b>N/A</b>										
	<b>Check Points</b>				<b>Yes</b>	<b>No</b>	<b>N/A</b>					
<b>1.</b>	<b>Cooler seal present and signed.</b>					X						
<b>2.</b>	<b>Sample(s) in a cooler.</b>				X							
<b>3.</b>	<b>If yes, ice in cooler.</b>				X							
<b>4.</b>	<b>Sample(s) received with chain-of-custody.</b>				X							
<b>5.</b>	<b>C-O-C signed and dated.</b>				X							
<b>6.</b>	<b>Sample(s) received with signed sample custody seal.</b>					X						
<b>7.</b>	<b>Sample containers arrived intact. (If no comment).</b>				X							
<b>8.</b>	<b>Matrix</b>	<b>Water</b>	<b>Soil</b>	<b>Liquid</b>	<b>Sludge</b>	<b>Solid</b>	<b>Cassette</b>	<b>Tube</b>	<b>Bulk</b>	<b>Badge</b>	<b>Food</b>	<b>Other</b>
:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>9.</b>	<b>Sample(s) were received in appropriate container(s).</b>				X							
<b>10.</b>	<b>Sample(s) were received with proper preservative</b>						X					
<b>11.</b>	<b>All samples were logged or labeled.</b>				X							
<b>12.</b>	<b>Sample ID labels match C-O-C ID's</b>				X							
<b>13.</b>	<b>Bottle count on C-O-C matches bottles found.</b>				X							
<b>14.</b>	<b>Sample volume is sufficient for analyses requested.</b>				X							
<b>15.</b>	<b>Samples were received within the hold time.</b>				X							
<b>16.</b>	<b>VOA vials completely filled.</b>						X					
<b>17.</b>	<b>Sample accepted.</b>				X							
<b>18.</b>	<b>Has client been contacted about sub-out</b>						X					
<b>Comments : Include actions taken to resolve discrepancies/problem:</b>												
Other=Paint Chips.												

Received by : RCini

Check in by/date : JMontemayor / 05/30/2019

# Laboratory Analysis Report

Total Number of Pages: 48

Job ID : 19052093



10100 East Freeway, Suite 100, Houston, TX 77029 tel: 713-453-6060, fax: 713-453-6091, <http://www.ablabs.com>

---

**Client Project Name :**  
**E103-19 / Memorial Dr Reconstruction**

**Report To :** Client Name: Aviles Engineering  
Attn: Robert J. Metzger  
Client Address: 5790 Windfern  
City, State, Zip: Houston, Texas, 77041

P.O.#.:  
Sample Collected By: Robert J. Metzger  
Date Collected: 05/29/19

---

**A&B Labs has analyzed the following samples...**

Client Sample ID	Matrix	A&B Sample ID
B-15 13-14	Soil	19052093.01
B-15 Water	Water	19052093.02
B-16 16-17	Soil	19052093.03
B-17 13-14	Soil	19052093.04
B-18 17-18	Soil	19052093.05
B-18 Water	Water	19052093.06
B-30 18-19	Soil	19052093.07
B-30 Water	Water	19052093.08

*Shantall Carpenter*

Released By: Shantall Carpenter  
Title: Senior Project Manager  
Date: 6/6/2019



This Laboratory is NELAP ( T104704213-19-20) accredited. Effective: 04/01/2019; Expires: 3/31/2020

Scope: Non-Potable Water, Drinking Water, Air, Solid, Biological Tissue, Hazardous Waste

I am the laboratory manager, or his/her designee, and I am responsible for the release of this data package. This laboratory data package has been reviewed and is complete and technically compliant with the requirements of the methods used, except where noted in the attached exception reports. I affirm, to the best of my knowledge that all problems/anomalies observed by this laboratory (and if applicable, any and all laboratories subcontracted through this laboratory) that might affect the quality of the data, have been identified in the Laboratory Review Checklist, and that no information or data have been knowingly withheld that would affect the quality of the data.

This report cannot be reproduced, except in full, without prior written permission of A&B Labs. Results shown relate only to the items tested. Samples are assumed to be in acceptable condition unless otherwise noted. Blank correction is not made unless otherwise noted. Air concentrations reported are based on field sampling information provided by client. Soil samples are reported on a wet weight basis unless otherwise noted. Uncertainty estimates are available on request.

Date Received : 05/30/2019 15:30



LABORATORY TEST RESULTS

Client Sample ID: B-15 13-14
A&B Job Sample ID: 19052093.01

Date: 6/6/2019

Client Name: Aviles Engineering Attn: Robert J. Metzger
Project Name: E103-19 / Memorial Dr Reconstruction

Test Description: % Moisture
Analytical Method: SM 2540G
QC Batch ID: Qb19060431
Prep Method: SM 2540G
Prepared By: KRSaranya
Prep Batch ID: PB19060425
Analyst Initial: KRS
Sample Matrix: Soil
Date Collected: 05/29/2019 16:50
Date Received: 05/30/2019 15:30
Date Prepared: 06/03/2019 17:00
% Moisture: 11.2

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Row 1: % Moisture, 11.2, ----, ----, %, 1, 06/03/19 17:05

Soil results reported on dry weight basis



LABORATORY TEST RESULTS

Client Sample ID: B-15 13-14
A&B Job Sample ID: 19052093.01

Date: 6/6/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Dr Reconstruction

Attn: Robert J. Metzger

Test Description: Volatile Organic Compounds by GC/MS
Analytical Method: SW-846 8260C
QC Batch ID: Qb19060104
Prep Method: SW-846 5035A
Prepared By: Rajeev
Prep Batch ID: PB19060104
Analyst Initial: RT

Sample Matrix: Soil
Date Collected: 05/29/2019 16:50
Date Received: 05/30/2019 15:30
Date Prepared: 05/31/2019 10:00

% Moisture: 11.2

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Rows list various chemical compounds and their test results.

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-15 13-14  
 A&B Job Sample ID: 19052093.01

Date: 6/6/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Dr Reconstruction

Attn: Robert J. Metzger

Test Description: **Volatile Organic Compounds by GC/MS**

Sample Matrix: Soil

Analytical Method: SW-846 8260C

Date Collected: 05/29/2019 16:50

QC Batch ID: Qb19060104

Date Received: 05/30/2019 15:30

Prep Method: SW-846 5035A

Date Prepared: 05/31/2019 10:00

Prepared By: Rajeev

Prep Batch ID: PB19060104

Analyst Initial: RT

% Moisture: 11.2

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
67-66-3	Chloroform	<0.00084	U	0.00084	0.0035	0.00119	0.005	0.05	mg/Kg	0.63	05/31/19 18:12
74-87-3	Chloromethane	<0.00160	U	0.00160	0.0035	0.00226	0.005	0.05	mg/Kg	0.63	05/31/19 18:12
156-59-2	cis-1,2-Dichloroethyle	<0.00084	U	0.00084	0.0035	0.00119	0.005	0.05	mg/Kg	0.63	05/31/19 18:12
10061-01-5	cis-1,3-Dichloroprope	<0.00080	U	0.00080	0.0035	0.00113	0.005	0.05	mg/Kg	0.63	05/31/19 18:12
124-48-1	Dibromochloromethan	<0.00078	U	0.00078	0.0035	0.00110	0.005	0.05	mg/Kg	0.63	05/31/19 18:12
74-95-3	Dibromomethane	<0.00098	U	0.00098	0.0035	0.00138	0.005	0.05	mg/Kg	0.63	05/31/19 18:12
75-71-8	Dichlorodifluorometha	<0.00096	U	0.00096	0.0035	0.00135	0.005	0.05	mg/Kg	0.63	05/31/19 18:12
100-41-4	Ethylbenzene	<0.00098	U	0.00098	0.0035	0.00138	0.005	0.05	mg/Kg	0.63	05/31/19 18:12
98-82-8	Isopropylbenzene	<0.00089	U	0.00089	0.0035	0.00126	0.005	0.05	mg/Kg	0.63	05/31/19 18:12
108-38-3&106-4	m- & p-Xylenes	<0.00194	U	0.00194	0.0071	0.00273	0.01	0.1	mg/Kg	0.63	05/31/19 18:12
78-93-3	MEK	<0.00189	U	0.00189	0.0035	0.00267	0.005	0.05	mg/Kg	0.63	05/31/19 18:12
75-09-2	Methylene chloride	<0.00109	U	0.00109	0.0035	0.00154	0.005	0.05	mg/Kg	0.63	05/31/19 18:12
1634-04-4	MTBE	<0.00076	U	0.00076	0.0035	0.00107	0.005	0.05	mg/Kg	0.63	05/31/19 18:12
91-20-3	Naphthalene	<0.00133	U	0.00133	0.0035	0.00188	0.005	0.05	mg/Kg	0.63	05/31/19 18:12
104-51-8	n-Butylbenzene	<0.00127	U	0.00127	0.0035	0.00179	0.005	0.05	mg/Kg	0.63	05/31/19 18:12
103-65-1	n-Propylbenzene	<0.00098	U	0.00098	0.0035	0.00138	0.005	0.05	mg/Kg	0.63	05/31/19 18:12
95-47-6	o-Xylene	<0.00089	U	0.00089	0.0035	0.00126	0.005	0.05	mg/Kg	0.63	05/31/19 18:12
135-98-8	sec-Butylbenzene	<0.00114	U	0.00114	0.0035	0.00160	0.005	0.05	mg/Kg	0.63	05/31/19 18:12
100-42-5	Styrene	<0.00089	U	0.00089	0.0035	0.00126	0.005	0.05	mg/Kg	0.63	05/31/19 18:12
98-06-6	t-butylbenzene	<0.00100	U	0.00100	0.0035	0.00141	0.005	0.05	mg/Kg	0.63	05/31/19 18:12
127-18-4	Tetrachloroethylene	<0.00098	U	0.00098	0.0035	0.00138	0.005	0.05	mg/Kg	0.63	05/31/19 18:12
108-88-3	Toluene	<0.00084	U	0.00084	0.0035	0.00119	0.005	0.05	mg/Kg	0.63	05/31/19 18:12
156-60-5	trans-1,2-Dichloroethy	<0.00102	U	0.00102	0.0035	0.00144	0.005	0.05	mg/Kg	0.63	05/31/19 18:12
10061-02-6	trans-1,3-Dichloropro	<0.00066	U	0.00066	0.0035	0.00094	0.005	0.05	mg/Kg	0.63	05/31/19 18:12
79-01-6	Trichloroethylene	<0.00074	U	0.00074	0.0035	0.00104	0.005	0.05	mg/Kg	0.63	05/31/19 18:12
75-69-4	Trichlorofluoromethan	<0.00140	U	0.00140	0.0035	0.00198	0.005	0.05	mg/Kg	0.63	05/31/19 18:12
75-01-4	Vinyl Chloride	<0.00131	U	0.00131	0.0035	0.00185	0.005	0.05	mg/Kg	0.63	05/31/19 18:12
1330-20-7	Xylenes	<0.00071	U	0.00071	0.0035	0.001	0.005	0.15	mg/Kg	0.63	05/31/19 18:12
17060-07-0	1,2-Dichloroethane-d4	101					70	130	%	0.63	05/31/19 18:12
1868-53-7	Dibromofluoromethan	91.8					70	130	%	0.63	05/31/19 18:12
2037-26-5	Toluene-d8(surr)	98.9					70	130	%	0.63	05/31/19 18:12
460-00-4	p-Bromofluorobenzen	95.3					70	130	%	0.63	05/31/19 18:12

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-15 13-14  
 A&B Job Sample ID: 19052093.01

Date: 6/6/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Dr Reconstruction

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb19060321  
 Prep Method: TX 1005  
 Prepared By: Jdongre  
 Prep Batch ID: PB19060316

Sample Matrix: Soil  
 Date Collected: 05/29/2019 16:50  
 Date Received: 05/30/2019 15:30  
 Date Prepared: 05/31/2019 10:00

Analyst Initial: JKD

% Moisture: 11.2

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12	<24.8	U	24.8	26.2	23.7	25	1000	mg/Kg	0.93	05/31/19 16:35
TPH-1005-2	>C12-C28	<21.3	U	21.3	26.2	20.3	25	1000	mg/Kg	0.93	05/31/19 16:35
TPH-1005-4	>C28-C35	<18.5	U	18.5	26.2	17.7	25	1000	mg/Kg	0.93	05/31/19 16:35
	Total C6-C35	< 18.5	U	18.5		17.7	----	----	mg/Kg	0.93	05/31/19 16:35
111-85-3	1-Chlorooctane(surr)	99.5					60	143	%	0.93	05/31/19 16:35
3386-33-2	Chlorooctadecane(sur	93.2					60	150	%	0.93	05/31/19 16:35

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-15 Water  
 A&B Job Sample ID: 19052093.02

Date: 6/6/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Dr Reconstruction

Attn: Robert J. Metzger

Test Description: **Volatile Organic Compounds**

Sample Matrix: Water

Analytical Method: SW-846 8260C

Date Collected: 05/29/2019 17:10

QC Batch ID: Qb19060328

Date Received: 05/30/2019 15:30

Prep Method: SW-846 5030C

Date Prepared: 05/31/2019 12:00

Prepared By: Rajeev

Prep Batch ID: PB19060323

Analyst Initial: RT

% Moisture

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
630-20-6	1,1,1,2-Tetrachloroet	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	05/31/19 21:23
71-55-6	1,1,1-Trichloroethane	<0.00072	U	0.00072	0.005	0.00072	0.005	0.05	mg/L	1	05/31/19 21:23
79-34-5	1,1,2,2-Tetrachloroet	<0.00210	U	0.00210	0.005	0.00210	0.005	0.05	mg/L	1	05/31/19 21:23
79-00-5	1,1,2-Trichloroethane	<0.00144	U	0.00144	0.005	0.00144	0.005	0.05	mg/L	1	05/31/19 21:23
75-34-3	1,1-Dichloroethane	<0.00119	U	0.00119	0.005	0.00119	0.005	0.05	mg/L	1	05/31/19 21:23
75-35-4	1,1-Dichloroethylene	<0.00066	U	0.00066	0.005	0.00066	0.005	0.05	mg/L	1	05/31/19 21:23
563-58-6	1,1-Dichloropropene	<0.00100	U	0.00100	0.005	0.001	0.005	0.05	mg/L	1	05/31/19 21:23
87-61-6	1,2,3-trichlorobenzen	<0.00085	U,V1	0.00085	0.005	0.00085	0.005	0.05	mg/L	1	05/31/19 21:23
96-18-4	1,2,3-Trichloropropan	<0.00170	U	0.00170	0.005	0.00170	0.005	0.05	mg/L	1	05/31/19 21:23
120-82-1	1,2,4-Trichlorobenzen	<0.00053	U	0.00053	0.005	0.00053	0.005	0.05	mg/L	1	05/31/19 21:23
95-63-6	1,2,4-Trimethylbenze	<0.00100	U	0.00100	0.005	0.00100	0.005	0.05	mg/L	1	05/31/19 21:23
96-12-8	1,2-Dibromo-3-chloro	<0.00236	U	0.00236	0.005	0.00236	0.005	0.05	mg/L	1	05/31/19 21:23
106-93-4	1,2-Dibromoethane	<0.00129	U	0.00129	0.005	0.00129	0.005	0.05	mg/L	1	05/31/19 21:23
95-50-1	1,2-Dichlorobenzene	<0.00060	U	0.00060	0.005	0.00060	0.005	0.05	mg/L	1	05/31/19 21:23
107-06-2	1,2-Dichloroethane	<0.00104	U	0.00104	0.005	0.00104	0.005	0.05	mg/L	1	05/31/19 21:23
78-87-5	1,2-Dichloropropane	<0.00075	U	0.00075	0.005	0.00075	0.005	0.05	mg/L	1	05/31/19 21:23
108-67-8	1,3,5-Trimethylbenze	<0.00110	U	0.00110	0.005	0.00110	0.005	0.05	mg/L	1	05/31/19 21:23
541-73-1	1,3-Dichlorobenzene	<0.00075	U	0.00075	0.005	0.00075	0.005	0.05	mg/L	1	05/31/19 21:23
142-28-9	1,3-Dichloropropane	<0.00100	U	0.00100	0.005	0.001	0.005	0.05	mg/L	1	05/31/19 21:23
106-46-7	1,4-Dichlorobenzene	<0.00072	U	0.00072	0.005	0.00072	0.005	0.05	mg/L	1	05/31/19 21:23
123-91-1	1,4-Dioxane	<0.08177	U	0.08177	0.32	0.08177	0.32	1.6	mg/L	1	05/31/19 21:23
594-20-7	2,2-Dichloropropane	<0.00100	U	0.00100	0.005	0.001	0.005	0.05	mg/L	1	05/31/19 21:23
95-49-8	2-Chlorotoluene	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	05/31/19 21:23
106-43-4	4-Chlorotoluene	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	05/31/19 21:23
99-87-6	4-Isopropyltoluene	<0.00091	U	0.00091	0.005	0.00091	0.005	0.05	mg/L	1	05/31/19 21:23
71-43-2	Benzene	<0.00063	U	0.00063	0.005	0.00063	0.005	0.05	mg/L	1	05/31/19 21:23
108-86-1	Bromobenzene	<0.00100	U	0.00100	0.005	0.001	0.005	0.05	mg/L	1	05/31/19 21:23
74-97-5	Bromochloromethane	<0.00097	U	0.00097	0.005	0.00097	0.005	0.05	mg/L	1	05/31/19 21:23
75-27-4	Bromodichloromethan	<0.00069	U	0.00069	0.005	0.00069	0.005	0.05	mg/L	1	05/31/19 21:23
75-25-2	Bromoform	<0.00170	U	0.00170	0.005	0.00170	0.005	0.05	mg/L	1	05/31/19 21:23
74-83-9	Bromomethane	<0.00079	U	0.00079	0.005	0.00079	0.005	0.05	mg/L	1	05/31/19 21:23
75-15-0	Carbon disulfide	<0.00113	U	0.00113	0.005	0.00113	0.005	0.05	mg/L	1	05/31/19 21:23
56-23-5	Carbon tetrachloride	<0.00173	U	0.00173	0.005	0.00173	0.005	0.05	mg/L	1	05/31/19 21:23
108-90-7	Chlorobenzene	<0.00069	U	0.00069	0.005	0.00069	0.005	0.05	mg/L	1	05/31/19 21:23
75-00-3	Chloroethane	<0.00144	U	0.00144	0.005	0.00144	0.005	0.05	mg/L	1	05/31/19 21:23
67-66-3	Chloroform	<0.00072	U	0.00072	0.005	0.00072	0.005	0.05	mg/L	1	05/31/19 21:23

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-15 Water  
 A&B Job Sample ID: 19052093.02

Date: 6/6/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Dr Reconstruction

Attn: Robert J. Metzger

Test Description: **Volatile Organic Compounds**

Sample Matrix: Water

Analytical Method: SW-846 8260C

Date Collected: 05/29/2019 17:10

QC Batch ID: Qb19060328

Date Received: 05/30/2019 15:30

Prep Method: SW-846 5030C

Date Prepared: 05/31/2019 12:00

Prepared By: Rajeev

Prep Batch ID: PB19060323

Analyst Initial: RT

% Moisture

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
74-87-3	Chloromethane	<0.00066	U	0.00066	0.005	0.00066	0.005	0.05	mg/L	1	05/31/19 21:23
156-59-2	cis-1,2-Dichloroethyle	<0.00053	U	0.00053	0.005	0.00053	0.005	0.05	mg/L	1	05/31/19 21:23
10061-01-5	cis-1,3-Dichloroprope	<0.00072	U	0.00072	0.005	0.00072	0.005	0.05	mg/L	1	05/31/19 21:23
124-48-1	Dibromochloromethan	<0.00122	U	0.00122	0.005	0.00122	0.005	0.05	mg/L	1	05/31/19 21:23
74-95-3	Dibromomethane	<0.00126	U	0.00126	0.005	0.00126	0.005	0.05	mg/L	1	05/31/19 21:23
75-71-8	Dichlorodifluorometha	<0.00085	U	0.00085	0.005	0.00085	0.005	0.05	mg/L	1	05/31/19 21:23
100-41-4	Ethylbenzene	<0.00100	U	0.00100	0.005	0.00100	0.005	0.05	mg/L	1	05/31/19 21:23
98-82-8	Isopropylbenzene	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	05/31/19 21:23
108-38-3&106-4	m- & p-Xylenes	<0.00151	U	0.00151	0.01	0.00151	0.01	0.1	mg/L	1	05/31/19 21:23
78-93-3	MEK	<0.00286	U	0.00286	0.005	0.00286	0.005	0.05	mg/L	1	05/31/19 21:23
75-09-2	Methylene chloride	<0.00487	U	0.00487	0.005	0.00487	0.005	0.05	mg/L	1	05/31/19 21:23
1634-04-4	MTBE	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	05/31/19 21:23
91-20-3	Naphthalene	<0.00270	U	0.00270	0.005	0.00270	0.005	0.05	mg/L	1	05/31/19 21:23
104-51-8	n-Butylbenzene	<0.00119	U	0.00119	0.005	0.00119	0.005	0.05	mg/L	1	05/31/19 21:23
103-65-1	n-Propylbenzene	<0.00135	U	0.00135	0.005	0.00135	0.005	0.05	mg/L	1	05/31/19 21:23
95-47-6	o-Xylene	<0.00066	U	0.00066	0.005	0.00066	0.005	0.05	mg/L	1	05/31/19 21:23
135-98-8	sec-Butylbenzene	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	05/31/19 21:23
100-42-5	Styrene	<0.00069	U	0.00069	0.005	0.00069	0.005	0.05	mg/L	1	05/31/19 21:23
98-06-6	t-butylbenzene	<0.00100	U	0.00100	0.005	0.00100	0.005	0.05	mg/L	1	05/31/19 21:23
127-18-4	Tetrachloroethylene	<0.00066	U	0.00066	0.005	0.00066	0.005	0.05	mg/L	1	05/31/19 21:23
108-88-3	Toluene	<0.00075	U	0.00075	0.005	0.00075	0.005	0.05	mg/L	1	05/31/19 21:23
156-60-5	trans-1,2-Dichloroethy	<0.00066	U	0.00066	0.005	0.00066	0.005	0.05	mg/L	1	05/31/19 21:23
10061-02-6	trans-1,3-Dichloropro	<0.00097	U	0.00097	0.005	0.00097	0.005	0.05	mg/L	1	05/31/19 21:23
79-01-6	Trichloroethylene	<0.00079	U	0.00079	0.005	0.00079	0.005	0.05	mg/L	1	05/31/19 21:23
75-69-4	Trichlorofluoromethan	<0.00094	U	0.00094	0.005	0.00094	0.005	0.05	mg/L	1	05/31/19 21:23
75-01-4	Vinyl Chloride	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	05/31/19 21:23
1330-20-7	Xylenes	<0.00204	U	0.00204	0.005	0.00204	0.005	0.15	mg/L	1	05/31/19 21:23
17060-07-0	1,2-Dichloroethane-d4	112						70 130	%	1	05/31/19 21:23
1868-53-7	Dibromofluoromethan	105						70 130	%	1	05/31/19 21:23
2037-26-5	Toluene-d8(surr)	102						70 130	%	1	05/31/19 21:23
460-00-4	p-Bromofluorobenzen	105						70 130	%	1	05/31/19 21:23

Soil results reported on dry weight basis





**LABORATORY TEST RESULTS**

Client Sample ID: B-15 Water  
 A&B Job Sample ID: 19052093.02

Date: 6/6/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Dr Reconstruction

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb19060329  
 Prep Method: TX 1005  
 Prepared By: Jdongre  
 Prep Batch ID: PB19060324

Sample Matrix: Water  
 Date Collected: 05/29/2019 17:10  
 Date Received: 05/30/2019 15:30  
 Date Prepared: 05/31/2019 10:30

Analyst Initial: JKD

% Moisture

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12 <sup>1</sup>	<1.10	D3,U	1.10	2.51	0.66	1.5	60	mg/L	1.67	05/31/19 18:52
TPH-1005-2	>C12-C28 <sup>1</sup>	<1.44	D3,U	1.44	2.51	0.86	1.5	60	mg/L	1.67	05/31/19 18:52
TPH-1005-4	>C28-C35 <sup>1</sup>	<1.25	D3,U	1.25	2.51	0.75	1.5	60	mg/L	1.67	05/31/19 18:52
	Total C6-C35	< 1.44	D3,U	1.44		0.86	----	----	mg/L	1.67	05/31/19 18:52
111-85-3	1-Chlorooctane(surr)	93.4					59	122	%	1.67	05/31/19 18:52
3386-33-2	Chlorooctadecane(sur	124	S1				48	123	%	1.67	05/31/19 18:52

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-16 16-17  
 A&B Job Sample ID: 19052093.03

Date: 6/6/2019

Client Name: Aviles Engineering Attn: Robert J. Metzger  
 Project Name: E103-19 / Memorial Dr Reconstruction

Test Description:	<b>% Moisture</b>	Sample Matrix	Soil
Analytical Method:	SM 2540G	Date Collected	05/29/2019 15:35
QC Batch ID:	Qb19060431	Date Received	05/30/2019 15:30
Prep Method:	SM 2540G	Date Prepared	06/03/2019 17:00
Prepared By:	KRSaranya		
Prep Batch ID	PB19060425		
Analyst Initial	KRS	% Moisture	16.8

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
	% Moisture	16.8					----	----	%	1	06/03/19 17:05

Soil results reported on dry weight basis



LABORATORY TEST RESULTS

Client Sample ID: B-16 16-17
A&B Job Sample ID: 19052093.03

Date: 6/6/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Dr Reconstruction

Attn: Robert J. Metzger

Test Description: Volatile Organic Compounds by GC/MS

Analytical Method: SW-846 8260C
QC Batch ID: Qb19060104
Prep Method: SW-846 5035A
Prepared By: Rajeev
Prep Batch ID: PB19060104

Sample Matrix: Soil
Date Collected: 05/29/2019 15:35
Date Received: 05/30/2019 15:30
Date Prepared: 05/31/2019 10:00

Analyst Initial: RT

% Moisture: 16.8

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Contains multiple rows of chemical test results.

Soil results reported on dry weight basis



LABORATORY TEST RESULTS

Client Sample ID: B-16 16-17
A&B Job Sample ID: 19052093.03

Date: 6/6/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Dr Reconstruction

Attn: Robert J. Metzger

Test Description: Volatile Organic Compounds by GC/MS

Sample Matrix: Soil

Analytical Method: SW-846 8260C

Date Collected: 05/29/2019 15:35

QC Batch ID: Qb19060104

Date Received: 05/30/2019 15:30

Prep Method: SW-846 5035A

Date Prepared: 05/31/2019 10:00

Prepared By: Rajeev

Prep Batch ID: PB19060104

Analyst Initial: RT

% Moisture: 16.8

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Rows include various chemical compounds like Chloroform, Chloromethane, etc., with their respective test results and flags.

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-16 16-17  
 A&B Job Sample ID: 19052093.03

Date: 6/6/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Dr Reconstruction

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb19060321  
 Prep Method: TX 1005  
 Prepared By: Jdongre  
 Prep Batch ID: PB19060316

Sample Matrix: Soil  
 Date Collected: 05/29/2019 15:35  
 Date Received: 05/30/2019 15:30  
 Date Prepared: 05/31/2019 10:00

Analyst Initial: JKD

% Moisture: 16.8

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12	<25.6	U	25.6	27	23.7	25	1000	mg/Kg	0.90	05/31/19 17:04
TPH-1005-2	>C12-C28	<22.0	U	22.0	27	20.3	25	1000	mg/Kg	0.90	05/31/19 17:04
TPH-1005-4	>C28-C35	<19.1	U	19.1	27	17.7	25	1000	mg/Kg	0.90	05/31/19 17:04
	Total C6-C35	< 19.1	U	19.1		17.7	----	----	mg/Kg	0.90	05/31/19 17:04
111-85-3	1-Chlorooctane(surr)	92.3					60	143	%	0.90	05/31/19 17:04
3386-33-2	Chlorooctadecane(sur	85.4					60	150	%	0.90	05/31/19 17:04

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-17 13-14  
 A&B Job Sample ID: 19052093.04

Date: 6/6/2019

Client Name: Aviles Engineering Attn: Robert J. Metzger  
 Project Name: E103-19 / Memorial Dr Reconstruction

Test Description:	<b>% Moisture</b>	Sample Matrix	Soil
Analytical Method:	SM 2540G	Date Collected	05/29/2019 14:28
QC Batch ID:	Qb19060431	Date Received	05/30/2019 15:30
Prep Method:	SM 2540G	Date Prepared	06/03/2019 17:00
Prepared By:	KRSaranya		
Prep Batch ID	PB19060425		
Analyst Initial	KRS	% Moisture	12.6

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
	% Moisture	12.6					----	----	%	1	06/03/19 17:05

Soil results reported on dry weight basis



LABORATORY TEST RESULTS

Client Sample ID: B-17 13-14
A&B Job Sample ID: 19052093.04

Date: 6/6/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Dr Reconstruction

Attn: Robert J. Metzger

Test Description: Volatile Organic Compounds by GC/MS

Analytical Method: SW-846 8260C
QC Batch ID: Qb19060104
Prep Method: SW-846 5035A
Prepared By: Rajeev
Prep Batch ID: PB19060104

Sample Matrix: Soil
Date Collected: 05/29/2019 14:28
Date Received: 05/30/2019 15:30
Date Prepared: 05/31/2019 10:00

Analyst Initial: RT

% Moisture: 12.6

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Rows list various chemical compounds and their test results.

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-17 13-14  
 A&B Job Sample ID: 19052093.04

Date: 6/6/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Dr Reconstruction

Attn: Robert J. Metzger

Test Description: **Volatile Organic Compounds by GC/MS**

Sample Matrix: Soil

Analytical Method: SW-846 8260C

Date Collected: 05/29/2019 14:28

QC Batch ID: Qb19060104

Date Received: 05/30/2019 15:30

Prep Method: SW-846 5035A

Date Prepared: 05/31/2019 10:00

Prepared By: Rajeev

Prep Batch ID: PB19060104

Analyst Initial: RT

% Moisture: 12.6

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
67-66-3	Chloroform	<0.00084	U	0.00084	0.0035	0.00119	0.005	0.05	mg/Kg	0.62	05/31/19 19:24
74-87-3	Chloromethane	<0.00160	U	0.00160	0.0035	0.00226	0.005	0.05	mg/Kg	0.62	05/31/19 19:24
156-59-2	cis-1,2-Dichloroethyle	<0.00084	U	0.00084	0.0035	0.00119	0.005	0.05	mg/Kg	0.62	05/31/19 19:24
10061-01-5	cis-1,3-Dichloroprope	<0.00080	U	0.00080	0.0035	0.00113	0.005	0.05	mg/Kg	0.62	05/31/19 19:24
124-48-1	Dibromochloromethan	<0.00078	U	0.00078	0.0035	0.00110	0.005	0.05	mg/Kg	0.62	05/31/19 19:24
74-95-3	Dibromomethane	<0.00098	U	0.00098	0.0035	0.00138	0.005	0.05	mg/Kg	0.62	05/31/19 19:24
75-71-8	Dichlorodifluorometha	<0.00096	U	0.00096	0.0035	0.00135	0.005	0.05	mg/Kg	0.62	05/31/19 19:24
100-41-4	Ethylbenzene	<0.00098	U	0.00098	0.0035	0.00138	0.005	0.05	mg/Kg	0.62	05/31/19 19:24
98-82-8	Isopropylbenzene	<0.00089	U	0.00089	0.0035	0.00126	0.005	0.05	mg/Kg	0.62	05/31/19 19:24
108-38-3&106-4	m- & p-Xylenes	<0.00194	U	0.00194	0.0071	0.00273	0.01	0.1	mg/Kg	0.62	05/31/19 19:24
78-93-3	MEK	<0.00189	U	0.00189	0.0035	0.00267	0.005	0.05	mg/Kg	0.62	05/31/19 19:24
75-09-2	Methylene chloride	<0.00109	U	0.00109	0.0035	0.00154	0.005	0.05	mg/Kg	0.62	05/31/19 19:24
1634-04-4	MTBE	<0.00076	U	0.00076	0.0035	0.00107	0.005	0.05	mg/Kg	0.62	05/31/19 19:24
91-20-3	Naphthalene	<0.00133	U	0.00133	0.0035	0.00188	0.005	0.05	mg/Kg	0.62	05/31/19 19:24
104-51-8	n-Butylbenzene	<0.00127	U	0.00127	0.0035	0.00179	0.005	0.05	mg/Kg	0.62	05/31/19 19:24
103-65-1	n-Propylbenzene	<0.00098	U	0.00098	0.0035	0.00138	0.005	0.05	mg/Kg	0.62	05/31/19 19:24
95-47-6	o-Xylene	<0.00089	U	0.00089	0.0035	0.00126	0.005	0.05	mg/Kg	0.62	05/31/19 19:24
135-98-8	sec-Butylbenzene	<0.00114	U	0.00114	0.0035	0.00160	0.005	0.05	mg/Kg	0.62	05/31/19 19:24
100-42-5	Styrene	<0.00089	U	0.00089	0.0035	0.00126	0.005	0.05	mg/Kg	0.62	05/31/19 19:24
98-06-6	t-butylbenzene	<0.00100	U	0.00100	0.0035	0.00141	0.005	0.05	mg/Kg	0.62	05/31/19 19:24
127-18-4	Tetrachloroethylene	<0.00098	U	0.00098	0.0035	0.00138	0.005	0.05	mg/Kg	0.62	05/31/19 19:24
108-88-3	Toluene	<0.00084	U	0.00084	0.0035	0.00119	0.005	0.05	mg/Kg	0.62	05/31/19 19:24
156-60-5	trans-1,2-Dichloroethy	<0.00102	U	0.00102	0.0035	0.00144	0.005	0.05	mg/Kg	0.62	05/31/19 19:24
10061-02-6	trans-1,3-Dichloropro	<0.00066	U	0.00066	0.0035	0.00094	0.005	0.05	mg/Kg	0.62	05/31/19 19:24
79-01-6	Trichloroethylene	<0.00074	U	0.00074	0.0035	0.00104	0.005	0.05	mg/Kg	0.62	05/31/19 19:24
75-69-4	Trichlorofluoromethan	<0.00140	U	0.00140	0.0035	0.00198	0.005	0.05	mg/Kg	0.62	05/31/19 19:24
75-01-4	Vinyl Chloride	<0.00131	U	0.00131	0.0035	0.00185	0.005	0.05	mg/Kg	0.62	05/31/19 19:24
1330-20-7	Xylenes	<0.00071	U	0.00071	0.0035	0.001	0.005	0.15	mg/Kg	0.62	05/31/19 19:24
17060-07-0	1,2-Dichloroethane-d4	105					70	130	%	0.62	05/31/19 19:24
1868-53-7	Dibromofluoromethan	93					70	130	%	0.62	05/31/19 19:24
2037-26-5	Toluene-d8(surr)	97.4					70	130	%	0.62	05/31/19 19:24
460-00-4	p-Bromofluorobenzen	93.6					70	130	%	0.62	05/31/19 19:24

Soil results reported on dry weight basis





**LABORATORY TEST RESULTS**

Client Sample ID: B-17 13-14  
 A&B Job Sample ID: 19052093.04

Date: 6/6/2019

Client Name: Aviles Engineering Attn: Robert J. Metzger  
 Project Name: E103-19 / Memorial Dr Reconstruction

Test Description: **Total Petroleum Hydrocarbons**

Sample Matrix: Soil  
 Date Collected: 05/29/2019 14:28  
 Date Received: 05/30/2019 15:30  
 Date Prepared: 05/31/2019 10:00

Analytical Method: TX 1005  
 QC Batch ID: Qb19060321  
 Prep Method: TX 1005  
 Prepared By: Jdongre  
 Prep Batch ID: PB19060316

Analyst Initial: JKD % Moisture: 12.6

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12	<26.0	U	26.0	27.5	23.7	25	1000	mg/Kg	0.96	05/31/19 17:33
TPH-1005-2	>C12-C28	<22.3	U	22.3	27.5	20.3	25	1000	mg/Kg	0.96	05/31/19 17:33
TPH-1005-4	>C28-C35	<19.4	U	19.4	27.5	17.7	25	1000	mg/Kg	0.96	05/31/19 17:33
	Total C6-C35	< 19.4	U	19.4		17.7	----	----	mg/Kg	0.96	05/31/19 17:33
111-85-3	1-Chlorooctane(surr)	95.7					60	143	%	0.96	05/31/19 17:33
3386-33-2	Chlorooctadecane(sur	89.2					60	150	%	0.96	05/31/19 17:33

Soil results reported on dry weight basis



LABORATORY TEST RESULTS

Client Sample ID: B-18 17-18
A&B Job Sample ID: 19052093.05

Date: 6/6/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Dr Reconstruction
Attn: Robert J. Metzger

Test Description: % Moisture
Analytical Method: SM 2540G
QC Batch ID: Qb19060431
Prep Method: SM 2540G
Prepared By: KRSaranya
Prep Batch ID: PB19060425
Analyst Initial: KRS
Sample Matrix: Soil
Date Collected: 05/29/2019 12:35
Date Received: 05/30/2019 15:30
Date Prepared: 06/03/2019 17:00
% Moisture: 11.9

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Row 1: % Moisture, 11.9, ----, ----, %, 1, 06/03/19 17:05



LABORATORY TEST RESULTS

Client Sample ID: B-18 17-18
A&B Job Sample ID: 19052093.05

Date: 6/6/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Dr Reconstruction

Attn: Robert J. Metzger

Test Description: Volatile Organic Compounds by GC/MS

Sample Matrix: Soil

Analytical Method: SW-846 8260C

Date Collected: 05/29/2019 12:35

QC Batch ID: Qb19060104

Date Received: 05/30/2019 15:30

Prep Method: SW-846 5035A

Date Prepared: 05/31/2019 10:00

Prepared By: Rajeev

Prep Batch ID: PB19060104

Analyst Initial: RT

% Moisture: 11.9

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Rows list various chemical compounds and their test results.

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-18 17-18  
 A&B Job Sample ID: 19052093.05

Date: 6/6/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Dr Reconstruction

Attn: Robert J. Metzger

Test Description: **Volatile Organic Compounds by GC/MS**

Sample Matrix: Soil  
 Date Collected: 05/29/2019 12:35  
 Date Received: 05/30/2019 15:30  
 Date Prepared: 05/31/2019 10:00

Analytical Method: SW-846 8260C  
 QC Batch ID: Qb19060104  
 Prep Method: SW-846 5035A  
 Prepared By: Rajeev  
 Prep Batch ID: PB19060104

Analyst Initial: RT

% Moisture: 11.9

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
67-66-3	Chloroform	<0.00096	U	0.00096	0.004	0.00119	0.005	0.05	mg/Kg	0.71	05/31/19 20:00
74-87-3	Chloromethane	<0.00182	U	0.00182	0.004	0.00226	0.005	0.05	mg/Kg	0.71	05/31/19 20:00
156-59-2	cis-1,2-Dichloroethyle	<0.00096	U	0.00096	0.004	0.00119	0.005	0.05	mg/Kg	0.71	05/31/19 20:00
10061-01-5	cis-1,3-Dichloroprope	<0.00091	U	0.00091	0.004	0.00113	0.005	0.05	mg/Kg	0.71	05/31/19 20:00
124-48-1	Dibromochloromethan	<0.00089	U	0.00089	0.004	0.00110	0.005	0.05	mg/Kg	0.71	05/31/19 20:00
74-95-3	Dibromomethane	<0.00111	U	0.00111	0.004	0.00138	0.005	0.05	mg/Kg	0.71	05/31/19 20:00
75-71-8	Dichlorodifluorometha	<0.00109	U	0.00109	0.004	0.00135	0.005	0.05	mg/Kg	0.71	05/31/19 20:00
100-41-4	Ethylbenzene	<0.00111	U	0.00111	0.004	0.00138	0.005	0.05	mg/Kg	0.71	05/31/19 20:00
98-82-8	Isopropylbenzene	<0.00102	U	0.00102	0.004	0.00126	0.005	0.05	mg/Kg	0.71	05/31/19 20:00
108-38-3&106-4	m- & p-Xylenes	<0.00220	U	0.00220	0.0081	0.00273	0.01	0.1	mg/Kg	0.71	05/31/19 20:00
78-93-3	MEK	<0.00215	U	0.00215	0.004	0.00267	0.005	0.05	mg/Kg	0.71	05/31/19 20:00
75-09-2	Methylene chloride	<0.00124	U	0.00124	0.004	0.00154	0.005	0.05	mg/Kg	0.71	05/31/19 20:00
1634-04-4	MTBE	<0.00086	U	0.00086	0.004	0.00107	0.005	0.05	mg/Kg	0.71	05/31/19 20:00
91-20-3	Naphthalene	<0.00152	U	0.00152	0.004	0.00188	0.005	0.05	mg/Kg	0.71	05/31/19 20:00
104-51-8	n-Butylbenzene	<0.00144	U	0.00144	0.004	0.00179	0.005	0.05	mg/Kg	0.71	05/31/19 20:00
103-65-1	n-Propylbenzene	<0.00111	U	0.00111	0.004	0.00138	0.005	0.05	mg/Kg	0.71	05/31/19 20:00
95-47-6	o-Xylene	<0.00102	U	0.00102	0.004	0.00126	0.005	0.05	mg/Kg	0.71	05/31/19 20:00
135-98-8	sec-Butylbenzene	<0.00129	U	0.00129	0.004	0.00160	0.005	0.05	mg/Kg	0.71	05/31/19 20:00
100-42-5	Styrene	<0.00102	U	0.00102	0.004	0.00126	0.005	0.05	mg/Kg	0.71	05/31/19 20:00
98-06-6	t-butylbenzene	<0.00114	U	0.00114	0.004	0.00141	0.005	0.05	mg/Kg	0.71	05/31/19 20:00
127-18-4	Tetrachloroethylene	<0.00111	U	0.00111	0.004	0.00138	0.005	0.05	mg/Kg	0.71	05/31/19 20:00
108-88-3	Toluene	<0.00096	U	0.00096	0.004	0.00119	0.005	0.05	mg/Kg	0.71	05/31/19 20:00
156-60-5	trans-1,2-Dichloroethy	<0.00116	U	0.00116	0.004	0.00144	0.005	0.05	mg/Kg	0.71	05/31/19 20:00
10061-02-6	trans-1,3-Dichloropro	<0.00075	U	0.00075	0.004	0.00094	0.005	0.05	mg/Kg	0.71	05/31/19 20:00
79-01-6	Trichloroethylene	<0.00084	U	0.00084	0.004	0.00104	0.005	0.05	mg/Kg	0.71	05/31/19 20:00
75-69-4	Trichlorofluoromethan	<0.00160	U	0.00160	0.004	0.00198	0.005	0.05	mg/Kg	0.71	05/31/19 20:00
75-01-4	Vinyl Chloride	<0.00149	U	0.00149	0.004	0.00185	0.005	0.05	mg/Kg	0.71	05/31/19 20:00
1330-20-7	Xylenes	<0.00081	U	0.00081	0.004	0.001	0.005	0.15	mg/Kg	0.71	05/31/19 20:00
17060-07-0	1,2-Dichloroethane-d4	105					70	130	%	0.71	05/31/19 20:00
1868-53-7	Dibromofluoromethan	92.7					70	130	%	0.71	05/31/19 20:00
2037-26-5	Toluene-d8(surr)	97.1					70	130	%	0.71	05/31/19 20:00
460-00-4	p-Bromofluorobenzen	94.8					70	130	%	0.71	05/31/19 20:00

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-18 17-18  
 A&B Job Sample ID: 19052093.05

Date: 6/6/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Dr Reconstruction

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb19060321  
 Prep Method: TX 1005  
 Prepared By: Jdongre  
 Prep Batch ID: PB19060316

Sample Matrix: Soil  
 Date Collected: 05/29/2019 12:35  
 Date Received: 05/30/2019 15:30  
 Date Prepared: 05/31/2019 10:00

Analyst Initial: JKD

% Moisture: 11.9

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12	<24.2	U	24.2	25.5	23.7	25	1000	mg/Kg	0.90	05/31/19 18:02
TPH-1005-2	>C12-C28	<20.7	U	20.7	25.5	20.3	25	1000	mg/Kg	0.90	05/31/19 18:02
TPH-1005-4	>C28-C35	<18.1	U	18.1	25.5	17.7	25	1000	mg/Kg	0.90	05/31/19 18:02
	Total C6-C35	< 18.1	U	18.1		17.7	----	----	mg/Kg	0.90	05/31/19 18:02
111-85-3	1-Chlorooctane(surr)	98.8					60	143	%	0.90	05/31/19 18:02
3386-33-2	Chlorooctadecane(sur)	88.8					60	150	%	0.90	05/31/19 18:02

Soil results reported on dry weight basis



LABORATORY TEST RESULTS

Client Sample ID: B-18 Water
A&B Job Sample ID: 19052093.06

Date: 6/6/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Dr Reconstruction

Attn: Robert J. Metzger

Test Description: Volatile Organic Compounds

Analytical Method: SW-846 8260C
QC Batch ID: Qb19060328
Prep Method: SW-846 5030C
Prepared By: Rajeev
Prep Batch ID: PB19060323

Sample Matrix: Water
Date Collected: 05/29/2019 13:00
Date Received: 05/30/2019 15:30
Date Prepared: 05/31/2019 12:00

Analyst Initial: RT

% Moisture

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Rows list various chemical compounds and their test results.

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-18 Water  
 A&B Job Sample ID: 19052093.06

Date: 6/6/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Dr Reconstruction

Attn: Robert J. Metzger

Test Description: **Volatile Organic Compounds**

Sample Matrix: Water

Analytical Method: SW-846 8260C

Date Collected: 05/29/2019 13:00

QC Batch ID: Qb19060328

Date Received: 05/30/2019 15:30

Prep Method: SW-846 5030C

Date Prepared: 05/31/2019 12:00

Prepared By: Rajeev

Prep Batch ID: PB19060323

Analyst Initial: RT

% Moisture

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time	
74-87-3	Chloromethane	<0.00066	U	0.00066	0.005	0.00066	0.005	0.05	mg/L	1	06/01/19 00:45	
156-59-2	cis-1,2-Dichloroethyle	<0.00053	U	0.00053	0.005	0.00053	0.005	0.05	mg/L	1	06/01/19 00:45	
10061-01-5	cis-1,3-Dichloroprope	<0.00072	U	0.00072	0.005	0.00072	0.005	0.05	mg/L	1	06/01/19 00:45	
124-48-1	Dibromochloromethan	<0.00122	U	0.00122	0.005	0.00122	0.005	0.05	mg/L	1	06/01/19 00:45	
74-95-3	Dibromomethane	<0.00126	U	0.00126	0.005	0.00126	0.005	0.05	mg/L	1	06/01/19 00:45	
75-71-8	Dichlorodifluorometha	<0.00085	U	0.00085	0.005	0.00085	0.005	0.05	mg/L	1	06/01/19 00:45	
100-41-4	Ethylbenzene	<0.00100	U	0.00100	0.005	0.00100	0.005	0.05	mg/L	1	06/01/19 00:45	
98-82-8	Isopropylbenzene	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	06/01/19 00:45	
108-38-3&106-4	m- & p-Xylenes	<0.00151	U	0.00151	0.01	0.00151	0.01	0.1	mg/L	1	06/01/19 00:45	
78-93-3	MEK	<0.00286	U	0.00286	0.005	0.00286	0.005	0.05	mg/L	1	06/01/19 00:45	
75-09-2	Methylene chloride	<0.00487	U	0.00487	0.005	0.00487	0.005	0.05	mg/L	1	06/01/19 00:45	
1634-04-4	MTBE	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	06/01/19 00:45	
91-20-3	Naphthalene	<0.00270	U	0.00270	0.005	0.00270	0.005	0.05	mg/L	1	06/01/19 00:45	
104-51-8	n-Butylbenzene	<0.00119	U	0.00119	0.005	0.00119	0.005	0.05	mg/L	1	06/01/19 00:45	
103-65-1	n-Propylbenzene	<0.00135	U	0.00135	0.005	0.00135	0.005	0.05	mg/L	1	06/01/19 00:45	
95-47-6	o-Xylene	<0.00066	U	0.00066	0.005	0.00066	0.005	0.05	mg/L	1	06/01/19 00:45	
135-98-8	sec-Butylbenzene	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	06/01/19 00:45	
100-42-5	Styrene	<0.00069	U	0.00069	0.005	0.00069	0.005	0.05	mg/L	1	06/01/19 00:45	
98-06-6	t-butylbenzene	<0.00100	U	0.00100	0.005	0.00100	0.005	0.05	mg/L	1	06/01/19 00:45	
127-18-4	Tetrachloroethylene	<0.00066	U	0.00066	0.005	0.00066	0.005	0.05	mg/L	1	06/01/19 00:45	
108-88-3	Toluene	<0.00075	U	0.00075	0.005	0.00075	0.005	0.05	mg/L	1	06/01/19 00:45	
156-60-5	trans-1,2-Dichloroethy	<0.00066	U	0.00066	0.005	0.00066	0.005	0.05	mg/L	1	06/01/19 00:45	
10061-02-6	trans-1,3-Dichloropro	<0.00097	U	0.00097	0.005	0.00097	0.005	0.05	mg/L	1	06/01/19 00:45	
79-01-6	Trichloroethylene	<0.00079	U	0.00079	0.005	0.00079	0.005	0.05	mg/L	1	06/01/19 00:45	
75-69-4	Trichlorofluoromethan	<0.00094	U	0.00094	0.005	0.00094	0.005	0.05	mg/L	1	06/01/19 00:45	
75-01-4	Vinyl Chloride	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	06/01/19 00:45	
1330-20-7	Xylenes	<0.00204	U	0.00204	0.005	0.00204	0.005	0.15	mg/L	1	06/01/19 00:45	
17060-07-0	1,2-Dichloroethane-d4	128						70	130	%	1	06/01/19 00:45
1868-53-7	Dibromofluoromethan	105						70	130	%	1	06/01/19 00:45
2037-26-5	Toluene-d8(surr)	99.5						70	130	%	1	06/01/19 00:45
460-00-4	p-Bromofluorobenzen	103						70	130	%	1	06/01/19 00:45

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-18 Water  
 A&B Job Sample ID: 19052093.06

Date: 6/6/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Dr Reconstruction

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb19060329  
 Prep Method: TX 1005  
 Prepared By: Jdongre  
 Prep Batch ID: PB19060324

Sample Matrix: Water  
 Date Collected: 05/29/2019 13:00  
 Date Received: 05/30/2019 15:30  
 Date Prepared: 05/31/2019 10:30

Analyst Initial: JKD

% Moisture

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12 <sup>1</sup>	<0.944	D3,U	0.944	2.15	0.66	1.5	60	mg/L	1.43	05/31/19 18:31
TPH-1005-2	>C12-C28 <sup>1</sup>	<1.23	D3,U	1.23	2.15	0.86	1.5	60	mg/L	1.43	05/31/19 18:31
TPH-1005-4	>C28-C35 <sup>1</sup>	<1.07	D3,U	1.07	2.15	0.75	1.5	60	mg/L	1.43	05/31/19 18:31
	Total C6-C35	< 1.23	D3,U	1.23		0.86	----	----	mg/L	1.43	05/31/19 18:31
111-85-3	1-Chlorooctane(surr)	98.3					59	122	%	1.43	05/31/19 18:31
3386-33-2	Chlorooctadecane(sur	90.8					48	123	%	1.43	05/31/19 18:31

Soil results reported on dry weight basis





LABORATORY TEST RESULTS

Client Sample ID: B-30 18-19
A&B Job Sample ID: 19052093.07

Date: 6/6/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Dr Reconstruction

Attn: Robert J. Metzger

Test Description: % Moisture
Analytical Method: SM 2540G
QC Batch ID: Qb19060431
Prep Method: SM 2540G
Prepared By: KRSaranya
Prep Batch ID: PB19060425
Analyst Initial: KRS

Sample Matrix: Soil
Date Collected: 05/29/2019 10:30
Date Received: 05/30/2019 15:30
Date Prepared: 06/03/2019 17:00

% Moisture: 14.6

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Row 1: % Moisture, 14.6, ----, ----, %, 1, 06/03/19 17:05



LABORATORY TEST RESULTS

Client Sample ID: B-30 18-19
A&B Job Sample ID: 19052093.07

Date: 6/6/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Dr Reconstruction

Attn: Robert J. Metzger

Test Description: Volatile Organic Compounds by GC/MS

Analytical Method: SW-846 8260C

QC Batch ID: Qb19060104

Prep Method: SW-846 5035A

Prepared By: Rajeev

Prep Batch ID: PB19060104

Analyst Initial: RT

Sample Matrix: Soil

Date Collected: 05/29/2019 10:30

Date Received: 05/30/2019 15:30

Date Prepared: 05/31/2019 10:00

% Moisture: 14.6

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Rows include various chemical compounds like 1,1,1,2-Tetrachloroet, 1,1,1-Trichloroethane, etc.

Soil results reported on dry weight basis



LABORATORY TEST RESULTS

Client Sample ID: B-30 18-19
A&B Job Sample ID: 19052093.07

Date: 6/6/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Dr Reconstruction

Attn: Robert J. Metzger

Test Description: Volatile Organic Compounds by GC/MS

Sample Matrix: Soil

Analytical Method: SW-846 8260C

Date Collected: 05/29/2019 10:30

QC Batch ID: Qb19060104

Date Received: 05/30/2019 15:30

Prep Method: SW-846 5035A

Date Prepared: 05/31/2019 10:00

Prepared By: Rajeev

Prep Batch ID: PB19060104

Analyst Initial: RT

% Moisture: 14.6

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Rows include various chemical compounds like Chloroform, Chloromethane, etc.

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-30 18-19  
 A&B Job Sample ID: 19052093.07

Date: 6/6/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Dr Reconstruction

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb19060321  
 Prep Method: TX 1005  
 Prepared By: Jdongre  
 Prep Batch ID: PB19060316

Sample Matrix: Soil  
 Date Collected: 05/29/2019 10:30  
 Date Received: 05/30/2019 15:30  
 Date Prepared: 05/31/2019 10:00

Analyst Initial: JKD

% Moisture: 14.6

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12	<27.5	U	27.5	29	23.7	25	1000	mg/Kg	0.99	05/31/19 19:00
TPH-1005-2	>C12-C28	<23.5	U	23.5	29	20.3	25	1000	mg/Kg	0.99	05/31/19 19:00
TPH-1005-4	>C28-C35	<20.5	U	20.5	29	17.7	25	1000	mg/Kg	0.99	05/31/19 19:00
	Total C6-C35	< 20.5	U	20.5		17.7	----	----	mg/Kg	0.99	05/31/19 19:00
111-85-3	1-Chlorooctane(surr)	100					60	143	%	0.99	05/31/19 19:00
3386-33-2	Chlorooctadecane(sur	92					60	150	%	0.99	05/31/19 19:00

Soil results reported on dry weight basis



LABORATORY TEST RESULTS

Client Sample ID: B-30 Water
A&B Job Sample ID: 19052093.08

Date: 6/6/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Dr Reconstruction

Attn: Robert J. Metzger

Test Description: Volatile Organic Compounds

Sample Matrix: Water

Analytical Method: SW-846 8260C

Date Collected: 05/29/2019 10:40

QC Batch ID: Qb19060328

Date Received: 05/30/2019 15:30

Prep Method: SW-846 5030C

Date Prepared: 05/31/2019 12:00

Prepared By: Rajeev

Prep Batch ID: PB19060323

Analyst Initial: RT

% Moisture

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Contains 40 rows of test data for various organic compounds.

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-30 Water  
 A&B Job Sample ID: 19052093.08

Date: 6/6/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Dr Reconstruction

Attn: Robert J. Metzger

Test Description: **Volatile Organic Compounds**

Sample Matrix: Water

Analytical Method: SW-846 8260C

Date Collected: 05/29/2019 10:40

QC Batch ID: Qb19060328

Date Received: 05/30/2019 15:30

Prep Method: SW-846 5030C

Date Prepared: 05/31/2019 12:00

Prepared By: Rajeev

Prep Batch ID: PB19060323

Analyst Initial: RT

% Moisture

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time	
74-87-3	Chloromethane	<0.00066	U	0.00066	0.005	0.00066	0.005	0.05	mg/L	1	05/31/19 21:56	
156-59-2	cis-1,2-Dichloroethyle	<0.00053	U	0.00053	0.005	0.00053	0.005	0.05	mg/L	1	05/31/19 21:56	
10061-01-5	cis-1,3-Dichloroprope	<0.00072	U	0.00072	0.005	0.00072	0.005	0.05	mg/L	1	05/31/19 21:56	
124-48-1	Dibromochloromethan	<0.00122	U	0.00122	0.005	0.00122	0.005	0.05	mg/L	1	05/31/19 21:56	
74-95-3	Dibromomethane	<0.00126	U	0.00126	0.005	0.00126	0.005	0.05	mg/L	1	05/31/19 21:56	
75-71-8	Dichlorodifluorometha	<0.00085	U	0.00085	0.005	0.00085	0.005	0.05	mg/L	1	05/31/19 21:56	
100-41-4	Ethylbenzene	<0.00100	U	0.00100	0.005	0.00100	0.005	0.05	mg/L	1	05/31/19 21:56	
98-82-8	Isopropylbenzene	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	05/31/19 21:56	
108-38-3&106-4	m- & p-Xylenes	<0.00151	U	0.00151	0.01	0.00151	0.01	0.1	mg/L	1	05/31/19 21:56	
78-93-3	MEK	<0.00286	U	0.00286	0.005	0.00286	0.005	0.05	mg/L	1	05/31/19 21:56	
75-09-2	Methylene chloride	<0.00487	U	0.00487	0.005	0.00487	0.005	0.05	mg/L	1	05/31/19 21:56	
1634-04-4	MTBE	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	05/31/19 21:56	
91-20-3	Naphthalene	<0.00270	U	0.00270	0.005	0.00270	0.005	0.05	mg/L	1	05/31/19 21:56	
104-51-8	n-Butylbenzene	<0.00119	U	0.00119	0.005	0.00119	0.005	0.05	mg/L	1	05/31/19 21:56	
103-65-1	n-Propylbenzene	<0.00135	U	0.00135	0.005	0.00135	0.005	0.05	mg/L	1	05/31/19 21:56	
95-47-6	o-Xylene	<0.00066	U	0.00066	0.005	0.00066	0.005	0.05	mg/L	1	05/31/19 21:56	
135-98-8	sec-Butylbenzene	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	05/31/19 21:56	
100-42-5	Styrene	<0.00069	U	0.00069	0.005	0.00069	0.005	0.05	mg/L	1	05/31/19 21:56	
98-06-6	t-butylbenzene	<0.00100	U	0.00100	0.005	0.00100	0.005	0.05	mg/L	1	05/31/19 21:56	
127-18-4	Tetrachloroethylene	<0.00066	U	0.00066	0.005	0.00066	0.005	0.05	mg/L	1	05/31/19 21:56	
108-88-3	Toluene	<0.00075	U	0.00075	0.005	0.00075	0.005	0.05	mg/L	1	05/31/19 21:56	
156-60-5	trans-1,2-Dichloroethy	<0.00066	U	0.00066	0.005	0.00066	0.005	0.05	mg/L	1	05/31/19 21:56	
10061-02-6	trans-1,3-Dichloropro	<0.00097	U	0.00097	0.005	0.00097	0.005	0.05	mg/L	1	05/31/19 21:56	
79-01-6	Trichloroethylene	<0.00079	U	0.00079	0.005	0.00079	0.005	0.05	mg/L	1	05/31/19 21:56	
75-69-4	Trichlorofluoromethan	<0.00094	U	0.00094	0.005	0.00094	0.005	0.05	mg/L	1	05/31/19 21:56	
75-01-4	Vinyl Chloride	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	05/31/19 21:56	
1330-20-7	Xylenes	<0.00204	U	0.00204	0.005	0.00204	0.005	0.15	mg/L	1	05/31/19 21:56	
17060-07-0	1,2-Dichloroethane-d4	114						70	130	%	1	05/31/19 21:56
1868-53-7	Dibromofluoromethan	106						70	130	%	1	05/31/19 21:56
2037-26-5	Toluene-d8(surr)	103						70	130	%	1	05/31/19 21:56
460-00-4	p-Bromofluorobenzen	104						70	130	%	1	05/31/19 21:56

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-30 Water  
 A&B Job Sample ID: 19052093.08

Date: 6/6/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Dr Reconstruction

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb19060329  
 Prep Method: TX 1005  
 Prepared By: Jdongre  
 Prep Batch ID: PB19060324

Sample Matrix: Water  
 Date Collected: 05/29/2019 10:40  
 Date Received: 05/30/2019 15:30  
 Date Prepared: 05/31/2019 10:30

Analyst Initial: JKD

% Moisture

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12 <sup>1</sup>	<0.60	U	0.60	1.37	0.66	1.5	60	mg/L	0.91	05/31/19 19:29
TPH-1005-2	>C12-C28 <sup>1</sup>	<0.78	U	0.78	1.37	0.86	1.5	60	mg/L	0.91	05/31/19 19:29
TPH-1005-4	>C28-C35 <sup>1</sup>	<0.68	U	0.68	1.37	0.75	1.5	60	mg/L	0.91	05/31/19 19:29
	Total C6-C35	< 0.78	U	0.78		0.86	----	----	mg/L	0.91	05/31/19 19:29
111-85-3	1-Chlorooctane(surr)	94.2					59	122	%	0.91	05/31/19 19:29
3386-33-2	Chlorooctadecane(sur	88.2					48	123	%	0.91	05/31/19 19:29

Soil results reported on dry weight basis  
<sup>1</sup>-Parameter not available for accreditation

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052093

**Date :** 6/6/2019

**Analysis :** Volatile Organic Compounds      **Method :** SW-846 8260C      **Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060104      **Created Date :** 05/31/19      **Created By :** Rajeev

**Samples in This QC Batch :** 19052093.01,03,04,05,07

**Sample Preparation :** PB19060104      **Prep Method :** SW-846 5035A      **Prep Date :** 05/31/19 10:00      **Prep By :** Rajeev

<b>QC Type: Method Blank</b>							
Parameter	CAS #	Result	Units	D.F.	MQL	MDL	Qual
1,1,1,2-Tetrachloroethane	630-20-6	< MDL	mg/Kg	1	0.005	0.00085	
1,1,1-Trichloroethane	71-55-6	< MDL	mg/Kg	1	0.005	0.00148	
1,1,2,2-Tetrachloroethane	79-34-5	< MDL	mg/Kg	1	0.005	0.00132	
1,1,2-Trichloroethane	79-00-5	< MDL	mg/Kg	1	0.005	0.00176	
1,1-Dichloroethane	75-34-3	< MDL	mg/Kg	1	0.005	0.00157	
1,1-Dichloroethylene	75-35-4	< MDL	mg/Kg	1	0.005	0.00173	
1,1-Dichloropropene	563-58-6	< MDL	mg/Kg	1	0.005	0.00144	
1,2,3-trichlorobenzene	87-61-6	< MDL	mg/Kg	1	0.005	0.00166	
1,2,3-Trichloropropane	96-18-4	< MDL	mg/Kg	1	0.005	0.00151	
1,2,4-Trichlorobenzene	120-82-1	< MDL	mg/Kg	1	0.005	0.00138	
1,2,4-Trimethylbenzene	95-63-6	< MDL	mg/Kg	1	0.005	0.00122	
1,2-Dibromo-3-chloropropa	96-12-8	< MDL	mg/Kg	1	0.005	0.00311	
1,2-Dibromoethane	106-93-4	< MDL	mg/Kg	1	0.005	0.00113	
1,2-Dichlorobenzene	95-50-1	< MDL	mg/Kg	1	0.005	0.00100	
1,2-Dichloroethane	107-06-2	< MDL	mg/Kg	1	0.005	0.00132	
1,2-Dichloropropane	78-87-5	< MDL	mg/Kg	1	0.005	0.00113	
1,3,5-Trimethylbenzene	108-67-8	< MDL	mg/Kg	1	0.005	0.00151	
1,3-Dichlorobenzene	541-73-1	< MDL	mg/Kg	1	0.005	0.00141	
1,3-Dichloropropane	142-28-9	< MDL	mg/Kg	1	0.005	0.00141	
1,4-Dichlorobenzene	106-46-7	< MDL	mg/Kg	1	0.005	0.00144	
1,4-Dioxane	123-91-1	< MDL	mg/Kg	1	0.32	0.08023	
2,2-Dichloropropane	594-20-7	< MDL	mg/Kg	1	0.005	0.00220	
2-Chlorotoluene	95-49-8	< MDL	mg/Kg	1	0.005	0.00144	
4-Chlorotoluene	106-43-4	< MDL	mg/Kg	1	0.005	0.00138	
4-Isopropyltoluene	99-87-6	< MDL	mg/Kg	1	0.005	0.00141	
Benzene	71-43-2	< MDL	mg/Kg	1	0.005	0.00107	
Bromobenzene	108-86-1	< MDL	mg/Kg	1	0.005	0.00113	
Bromochloromethane	74-97-5	< MDL	mg/Kg	1	0.005	0.00126	
Bromodichloromethane	75-27-4	< MDL	mg/Kg	1	0.005	0.00088	
Bromoform	75-25-2	< MDL	mg/Kg	1	0.005	0.00072	
Bromomethane	74-83-9	< MDL	mg/Kg	1	0.005	0.00170	
Carbon disulfide	75-15-0	< MDL	mg/Kg	1	0.005	0.00138	
Carbon tetrachloride	56-23-5	< MDL	mg/Kg	1	0.005	0.00151	
Chlorobenzene	108-90-7	< MDL	mg/Kg	1	0.005	0.00148	
Chloroethane	75-00-3	< MDL	mg/Kg	1	0.005	0.00242	
Chloroform	67-66-3	< MDL	mg/Kg	1	0.005	0.00119	
Chloromethane	74-87-3	< MDL	mg/Kg	1	0.005	0.00226	
cis-1,2-Dichloroethylene	156-59-2	< MDL	mg/Kg	1	0.005	0.00119	

Refer to the Definition page for terms.



**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052093

**Date :** 6/6/2019

**Analysis :** Volatile Organic Compounds      **Method :** SW-846 8260C      **Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060104      **Created Date :** 05/31/19      **Created By :** Rajeev

**Samples in This QC Batch :** 19052093.01,03,04,05,07

<b>QC Type: Method Blank</b>									
Parameter	CAS #	Result	Units	D.F.	MLQ	MDL			Qual
cis-1,3-Dichloropropene	10061-01-5	< MDL	mg/Kg	1	0.005	0.00113			
Dibromochloromethane	124-48-1	< MDL	mg/Kg	1	0.005	0.00110			
Dibromomethane	74-95-3	< MDL	mg/Kg	1	0.005	0.00138			
Dichlorodifluoromethane	75-71-8	< MDL	mg/Kg	1	0.005	0.00135			
Ethylbenzene	100-41-4	< MDL	mg/Kg	1	0.005	0.00138			
Isopropylbenzene	98-82-8	< MDL	mg/Kg	1	0.005	0.00126			
m- & p-Xylenes	108-38-3&106-42-3	< MDL	mg/Kg	1	0.01	0.00273			
MEK	78-93-3	< MDL	mg/Kg	1	0.005	0.00267			
Methylene chloride	75-09-2	< MDL	mg/Kg	1	0.005	0.00154			
MTBE	1634-04-4	< MDL	mg/Kg	1	0.005	0.00107			
Naphthalene	91-20-3	< MDL	mg/Kg	1	0.005	0.00188			
n-Butylbenzene	104-51-8	< MDL	mg/Kg	1	0.005	0.00179			
n-Propylbenzene	103-65-1	< MDL	mg/Kg	1	0.005	0.00138			
o-Xylene	95-47-6	< MDL	mg/Kg	1	0.005	0.00126			
sec-Butylbenzene	135-98-8	< MDL	mg/Kg	1	0.005	0.00160			
Styrene	100-42-5	< MDL	mg/Kg	1	0.005	0.00126			
t-butylbenzene	98-06-6	< MDL	mg/Kg	1	0.005	0.00141			
Tetrachloroethylene	127-18-4	< MDL	mg/Kg	1	0.005	0.00138			
Toluene	108-88-3	< MDL	mg/Kg	1	0.005	0.00119			
trans-1,2-Dichloroethylene	156-60-5	< MDL	mg/Kg	1	0.005	0.00144			
trans-1,3-Dichloropropene	10061-02-6	< MDL	mg/Kg	1	0.005	0.00094			
Trichloroethylene	79-01-6	< MDL	mg/Kg	1	0.005	0.00104			
Trichlorofluoromethane	75-69-4	< MDL	mg/Kg	1	0.005	0.00198			
Vinyl Chloride	75-01-4	< MDL	mg/Kg	1	0.005	0.00185			
Xylenes	1330-20-7	< MDL	mg/Kg	1	0.005	0.001			
Dibromofluoromethane(surr)	1868-53-7	89.3	%	1					
1,2-Dichloroethane-d4(surr)	17060-07-0	88.3	%	1					
Toluene-d8(surr)	2037-26-5	101	%	1					
p-Bromofluorobenzene(surr)	460-00-4	97.3	%	1					

<b>QC Type: LCS and LCSD</b>										
Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
1,1,1,2-Tetrachloroethane	0.02	0.0181	90.4	0.02	0.0208	104	14	30	78-125	
1,1,1-Trichloroethane	0.02	0.0155	77.7	0.02	0.0199	99.6	24.6	30	70-130	
1,1,2,2-Tetrachloroethane	0.02	0.0190	95.1	0.02	0.0190	94.8	0.1	30	70-124	
1,1,2-Trichloroethane	0.02	0.0188	93.8	0.02	0.0203	101	7.8	30	78-121	
1,1-Dichloroethane	0.02	0.0163	81.7	0.02	0.0199	99.3	19.7	30	76-125	
1,1-Dichloroethylene	0.02	0.00980	49	0.02	0.0128	63.9	26.6	30	70-131	L2

Refer to the Definition page for terms.

QUALITY CONTROL CERTIFICATE



Job ID : 19052093

Date : 6/6/2019

Analysis : Volatile Organic Compounds Method : SW-846 8260C Reporting Units : mg/Kg

QC Batch ID : Qb19060104 Created Date : 05/31/19 Created By : Rajeev

Samples in This QC Batch : 19052093.01,03,04,05,07

QC Type: LCS and LCSD										
Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
1,1-Dichloropropene	0.02	0.0161	80.6	0.02	0.0197	98.6	19.9	30	76-125	
1,2,3-trichlorobenzene	0.02	0.0175	87.7	0.02	0.0201	100	13.6	30	66-130	
1,2,3-Trichloropropane	0.02	0.0188	94.1	0.02	0.0186	92.8	1.2	30	73-125	
1,2,4-Trichlorobenzene	0.02	0.0193	96.4	0.02	0.0212	106	9.5	30	66-129	
1,2,4-Trimethylbenzene	0.02	0.0185	92.4	0.02	0.0216	108	15.6	30	75-123	
1,2-Dibromo-3-chloropropa	0.02	0.0183	91.7	0.02	0.0169	84.5	8.2	30	61-132	
1,2-Dibromoethane	0.02	0.0189	94.4	0.02	0.0197	98.4	4.2	30	78-122	
1,2-Dichlorobenzene	0.02	0.0195	97.5	0.02	0.0214	107	9.3	30	78-121	
1,2-Dichloroethane	0.02	0.0179	89.3	0.02	0.0195	97.4	8.8	30	71-128	
1,2-Dichloropropane	0.02	0.0179	89.3	0.02	0.0208	104	15.2	30	76-123	
1,3,5-Trimethylbenzene	0.02	0.0183	91.7	0.02	0.0219	110	17.7	30	73-124	
1,3-Dichlorobenzene	0.02	0.0191	95.7	0.02	0.0218	109	13	30	77-121	
1,3-Dichloropropane	0.02	0.0176	88.2	0.02	0.0190	94.8	7.4	30	77-121	
1,4-Dichlorobenzene	0.02	0.0192	96.3	0.02	0.0218	109	12.4	30	75-120	
1,4-Dioxane	0.64	0.592	92.5	0.64	0.550	85.9	7.3	30	55-138	
2,2-Dichloropropane	0.02	0.0144	72.2	0.02	0.0208	104	36	30	67-133	R1
2-Chlorotoluene	0.02	0.0181	90.3	0.02	0.0213	107	16.5	30	75-122	
4-Chlorotoluene	0.02	0.0181	90.4	0.02	0.0214	107	16.8	30	72-124	
4-Isopropyltoluene	0.02	0.0182	90.9	0.02	0.0221	111	19.4	30	73-127	
Benzene	0.02	0.0178	88.9	0.02	0.0215	108	18.9	30	77-121	
Bromobenzene	0.02	0.0194	96.9	0.02	0.0219	109	12.2	30	78-121	
Bromochloromethane	0.02	0.0167	83.4	0.02	0.0187	93.4	11.4	30	75-125	
Bromodichloromethane	0.02	0.0173	86.7	0.02	0.0200	99.9	14.3	30	71-127	
Bromoform	0.02	0.0175	87.5	0.02	0.0189	94.3	7.8	30	67-132	
Bromomethane	0.02	0.0143	71.5	0.02	0.0166	83.2	15	30	55-140	
Carbon disulfide	0.02	0.00979	49	0.02	0.0130	64.9	28.1	30	63-132	L2
Carbon tetrachloride	0.02	0.0161	80.3	0.02	0.0214	107	28.5	30	69-135	
Chlorobenzene	0.02	0.0185	92.6	0.02	0.0219	110	16.7	30	79-120	
Chloroethane	0.02	0.0138	68.8	0.02	0.0179	89.7	26.2	30	59-139	
Chloroform	0.02	0.0167	83.5	0.02	0.0197	98.5	16.5	30	78-123	
Chloromethane	0.02	0.0145	72.7	0.02	0.0184	92	23.5	30	50-136	
cis-1,2-Dichloroethylene	0.02	0.0166	83	0.02	0.0198	99.1	17.6	30	77-123	
cis-1,3-Dichloropropene	0.02	0.0180	90.2	0.02	0.0206	103	13.3	30	74-126	
Dibromochloromethane	0.02	0.0175	87.7	0.02	0.0194	97	10.1	30	74-126	
Dibromomethane	0.02	0.0187	93.5	0.02	0.0199	99.4	6.2	30	78-125	
Dichlorodifluoromethane	0.02	0.0149	74.6	0.02	0.0193	96.6	25.6	30	29-149	
Ethylbenzene	0.02	0.0177	88.6	0.02	0.0218	109	20.7	30	76-122	
Isopropylbenzene	0.02	0.0177	88.5	0.02	0.0219	110	21.3	30	68-134	
m- & p-Xylenes	0.04	0.0358	89.6	0.04	0.0441	110	20.7	30	77-124	
MEK	0.02	0.0190	95.1	0.02	0.0200	100	5	30	51-148	
Methylene chloride	0.02	0.0200	99.8	0.02	0.0215	107	7.4	30	70-128	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052093

**Date :** 6/6/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060104

**Created Date :** 05/31/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19052093.01,03,04,05,07

**QC Type: LCS and LCSD**

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
MTBE	0.02	0.0191	95.6	0.02	0.0202	101	5.4	30	73-125	
Naphthalene	0.02	0.0190	94.8	0.02	0.0192	95.9	1.2	30	62-129	
n-Butylbenzene	0.02	0.0173	86.7	0.02	0.0209	105	18.6	30	70-128	
n-Propylbenzene	0.02	0.0178	89.2	0.02	0.0218	109	19.9	30	73-125	
o-Xylene	0.02	0.0181	90.3	0.02	0.0216	108	17.8	30	77-123	
sec-Butylbenzene	0.02	0.0179	89.3	0.02	0.0218	109	19.9	30	73-126	
Styrene	0.02	0.0187	93.7	0.02	0.0218	109	15.1	30	76-124	
t-butylbenzene	0.02	0.0174	87	0.02	0.0212	106	19.7	30	73-125	
Tetrachloroethylene	0.02	0.0211	106	0.02	0.0218	109	3.1	30	73-128	
Toluene	0.02	0.0180	90.2	0.02	0.0221	110	20.3	30	77-121	
trans-1,2-Dichloroethylene	0.02	0.0161	80.3	0.02	0.0201	100	22.3	30	74-125	
trans-1,3-Dichloropropene	0.02	0.0180	90.1	0.02	0.0202	101	11.4	30	71-130	
Trichloroethylene	0.02	0.0182	91	0.02	0.0224	112	20.7	30	77-123	
Trichlorofluoromethane	0.02	0.0134	66.9	0.02	0.0176	88.1	27.3	30	62-140	
Vinyl Chloride	0.02	0.0148	74.1	0.02	0.0192	96	25.9	30	56-135	
Xylenes	0.06	0.0539	89.8	0.06	0.0657	110	19.7	30	78-124	

**QC Type: MS and MSD**

**QC Sample ID: 19051983.01**

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
1,1,1,2-Tetrachloroethane	BRL	0.019	0.0193	102						71.4-131	
1,1,1-Trichloroethane	BRL	0.019	0.0171	90						69.6-140	
1,1,2,2-Tetrachloroethane	BRL	0.019	0.0186	97.9						66.6-128	
1,1,2-Trichloroethane	BRL	0.019	0.0190	100						72.8-125	
1,1-Dichloroethane	BRL	0.019	0.0175	92.1						72.7-129	
1,1-Dichloroethylene	BRL	0.019	0.0111	58.4						71.4-131	M9
1,1-Dichloropropene	BRL	0.019	0.0167	87.9						75.9-132	
1,2,3-trichlorobenzene	BRL	0.019	0.0180	94.7						56.7-153	
1,2,3-Trichloropropane	BRL	0.019	0.0188	98.9						61.6-138	
1,2,4-Trichlorobenzene	BRL	0.019	0.0188	98.9						55.9-150	
1,2,4-Trimethylbenzene	BRL	0.019	0.0192	101						71.1-131	
1,2-Dibromo-3-chloropropa	BRL	0.019	0.0174	91.6						52.4-150	
1,2-Dibromoethane	BRL	0.019	0.0192	101						72.9-125	
1,2-Dichlorobenzene	BRL	0.019	0.0198	104						76.1-126	
1,2-Dichloroethane	BRL	0.019	0.0188	98.9						66.4-134	
1,2-Dichloropropane	BRL	0.019	0.0189	99.5						70.2-128	
1,3,5-Trimethylbenzene	BRL	0.019	0.0194	102						75.1-127	
1,3-Dichlorobenzene	BRL	0.019	0.0194	102						73.9-126	
1,3-Dichloropropane	BRL	0.019	0.0184	96.8						68.3-124	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052093

**Date :** 6/6/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060104    **Created Date :** 05/31/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19052093.01,03,04,05,07

<b>QC Type: MS and MSD</b>											
<b>QC Sample ID: 19051983.01</b>											
Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
1,4-Dichlorobenzene	BRL	0.019	0.0193	102						72.3-127	
1,4-Dioxane	BRL	0.608	0.599	98.5						70-130	
2,2-Dichloropropane	BRL	0.019	0.0143	75.3						68.5-138	
2-Chlorotoluene	BRL	0.019	0.0189	99.5						71.7-128	
4-Chlorotoluene	BRL	0.019	0.0188	98.9						72.2-126	
4-Isopropyltoluene	BRL	0.019	0.0194	102						77.5-125	
Benzene	BRL	0.019	0.0189	99.5						74-126	
Bromobenzene	BRL	0.019	0.0199	105						73.3-129	
Bromochloromethane	BRL	0.019	0.0175	92.1						68.8-131	
Bromodichloromethane	BRL	0.019	0.0186	97.9						69-135	
Bromoform	BRL	0.019	0.0181	95.3						62-146	
Bromomethane	BRL	0.019	0.0152	80						58.7-139	
Carbon disulfide	BRL	0.019	0.0108	56.8						70-130	M9
Carbon tetrachloride	BRL	0.019	0.0176	92.6						68.7-135	
Chlorobenzene	BRL	0.019	0.0196	103						73.3-129	
Chloroethane	BRL	0.019	0.0159	83.7						66.2-129	
Chloroform	BRL	0.019	0.0177	93.2						73.7-134	
Chloromethane	BRL	0.019	0.0155	81.6						51.4-135	
cis-1,2-Dichloroethylene	BRL	0.019	0.0175	92.1						72.4-132	
cis-1,3-Dichloropropene	BRL	0.019	0.0181	95.3						67.7-134	
Dibromochloromethane	BRL	0.019	0.0183	96.3						73.2-126	
Dibromomethane	BRL	0.019	0.0195	103						69.9-134	
Dichlorodifluoromethane	BRL	0.019	0.0162	85.3						36.8-144	
Ethylbenzene	BRL	0.019	0.0189	99.6						72.2-128	
Isopropylbenzene	BRL	0.019	0.0194	102						71.2-131	
m- & p-Xylenes	BRL	0.038	0.0383	101						70.7-131	
MEK	BRL	0.019	0.0155	81.6						52.5-152	
Methylene chloride	BRL	0.019	0.0187	98.4						70.6-129	
MTBE	BRL	0.019	0.0195	103						70-130	
Naphthalene	BRL	0.019	0.0176	92.6						60.7-145	
n-Butylbenzene	BRL	0.019	0.0183	96.3						66.5-136	
n-Propylbenzene	BRL	0.019	0.0190	100						73.3-126	
o-Xylene	BRL	0.019	0.0190	100						71.6-130	
sec-Butylbenzene	BRL	0.019	0.0193	102						77.9-124	
Styrene	BRL	0.019	0.0195	103						71.1-131	
t-butylbenzene	BRL	0.019	0.0181	95.3						74.4-130	
Tetrachloroethylene	BRL	0.019	0.0261	137						62.6-157	
Toluene	BRL	0.019	0.0189	99.5						73.3-127	
trans-1,2-Dichloroethylene	BRL	0.019	0.0174	91.6						70-130	
trans-1,3-Dichloropropene	BRL	0.019	0.0176	92.6						71.5-124	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052093

**Date :** 6/6/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060104

**Created Date :** 05/31/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19052093.01,03,04,05,07

**QC Type:** MS and MSD

**QC Sample ID:** 19051983.01

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
Trichloroethylene	BRL	0.019	0.0196	103						69.2-133	
Trichlorofluoromethane	BRL	0.019	0.0153	80.5						63.9-140	
Vinyl Chloride	BRL	0.019	0.0162	85.3						40.9-159	
Xylenes	BRL	0.057	0.0573	101						69.2-133	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052093

**Date :** 6/6/2019

**Analysis :** Total Petroleum Hydrocarbons      **Method :** TX 1005      **Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060321      **Created Date :** 05/31/19      **Created By :** Jdongre

**Samples in This QC Batch :** 19052093.01,03,04,05,07

**Sample Preparation :** PB19060316      **Prep Method :** TX 1005      **Prep Date :** 05/31/19 10:00      **Prep By :** Jdongre

**QC Type: Method Blank**

Parameter	CAS #	Result	Units	D.F.	ML	MDL		Qual
C6-C12	TPH-1005-1	< MDL	mg/Kg	1	25	23.7		
>C12-C28	TPH-1005-2	< MDL	mg/Kg	1	25	20.3		
>C28-C35	TPH-1005-4	< MDL	mg/Kg	1	25	17.7		
Total C6-C35		< MDL	mg/Kg	1	---	17.7		
Chlorooctadecane(surr)	3386-33-2	95	%	1				
1-Chlorooctane(surr)	111-85-3	108	%	1				

**QC Type: LCS and LCSD**

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
C6-C12	500	504	101	500	525	105	4.1	20	75-125	
>C12-C28	500	490	98	500	507	101	3.4	20	75-125	
>C28-C35	500	489	97.8	500	553	111	12.3	20	75-125	

**QC Type: MS and MSD**

**QC Sample ID: 19052090.01**

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
C6-C12	BRL	500	530	106	500	519	104	2.1	20	75-125	
>C12-C28	BRL	500	439	87.8	500	441	88.2	0.5	20	75-125	
>C28-C35	BRL	500	523	105	500	510	102	2.5	20	75-125	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052093

**Date :** 6/6/2019

**Analysis :** Volatile Organic Compounds      **Method :** SW-846 8260C      **Reporting Units :** mg/L

**QC Batch ID :** Qb19060328      **Created Date :** 05/31/19      **Created By :** Rajeev

**Samples in This QC Batch :** 19052093.02,06,08

**Sample Preparation :** PB19060323      **Prep Method :** SW-846 5030C      **Prep Date :** 05/31/19 12:00      **Prep By :** Rajeev

<b>QC Type: Method Blank</b>							
Parameter	CAS #	Result	Units	D.F.	MQL	MDL	Qual
1,1,1,2-Tetrachloroethane	630-20-6	< MDL	mg/L	1	0.005	0.00082	
1,1,1-Trichloroethane	71-55-6	< MDL	mg/L	1	0.005	0.00072	
1,1,2,2-Tetrachloroethane	79-34-5	< MDL	mg/L	1	0.005	0.00210	
1,1,2-Trichloroethane	79-00-5	< MDL	mg/L	1	0.005	0.00144	
1,1-Dichloroethane	75-34-3	< MDL	mg/L	1	0.005	0.00119	
1,1-Dichloroethylene	75-35-4	< MDL	mg/L	1	0.005	0.00066	
1,1-Dichloropropene	563-58-6	< MDL	mg/L	1	0.005	0.001	
1,2,3-trichlorobenzene	87-61-6	< MDL	mg/L	1	0.005	0.00085	
1,2,3-Trichloropropane	96-18-4	< MDL	mg/L	1	0.005	0.00170	
1,2,4-Trichlorobenzene	120-82-1	< MDL	mg/L	1	0.005	0.00053	
1,2,4-Trimethylbenzene	95-63-6	< MDL	mg/L	1	0.005	0.00100	
1,2-Dibromo-3-chloropropa	96-12-8	< MDL	mg/L	1	0.005	0.00236	
1,2-Dibromoethane	106-93-4	< MDL	mg/L	1	0.005	0.00129	
1,2-Dichlorobenzene	95-50-1	< MDL	mg/L	1	0.005	0.00060	
1,2-Dichloroethane	107-06-2	< MDL	mg/L	1	0.005	0.00104	
1,2-Dichloropropane	78-87-5	< MDL	mg/L	1	0.005	0.00075	
1,3,5-Trimethylbenzene	108-67-8	< MDL	mg/L	1	0.005	0.00110	
1,3-Dichlorobenzene	541-73-1	< MDL	mg/L	1	0.005	0.00075	
1,3-Dichloropropane	142-28-9	< MDL	mg/L	1	0.005	0.001	
1,4-Dichlorobenzene	106-46-7	< MDL	mg/L	1	0.005	0.00072	
1,4-Dioxane	123-91-1	< MDL	mg/L	1	0.32	0.08177	
2,2-Dichloropropane	594-20-7	< MDL	mg/L	1	0.005	0.001	
2-Chlorotoluene	95-49-8	< MDL	mg/L	1	0.005	0.00082	
4-Chlorotoluene	106-43-4	< MDL	mg/L	1	0.005	0.00082	
4-Isopropyltoluene	99-87-6	< MDL	mg/L	1	0.005	0.00091	
Benzene	71-43-2	< MDL	mg/L	1	0.005	0.00063	
Bromobenzene	108-86-1	< MDL	mg/L	1	0.005	0.001	
Bromochloromethane	74-97-5	< MDL	mg/L	1	0.005	0.00097	
Bromodichloromethane	75-27-4	< MDL	mg/L	1	0.005	0.00069	
Bromoform	75-25-2	< MDL	mg/L	1	0.005	0.00170	
Bromomethane	74-83-9	< MDL	mg/L	1	0.005	0.00079	
Carbon disulfide	75-15-0	< MDL	mg/L	1	0.005	0.00113	
Carbon tetrachloride	56-23-5	< MDL	mg/L	1	0.005	0.00173	
Chlorobenzene	108-90-7	< MDL	mg/L	1	0.005	0.00069	
Chloroethane	75-00-3	< MDL	mg/L	1	0.005	0.00144	
Chloroform	67-66-3	< MDL	mg/L	1	0.005	0.00072	
Chloromethane	74-87-3	< MDL	mg/L	1	0.005	0.00066	
cis-1,2-Dichloroethylene	156-59-2	< MDL	mg/L	1	0.005	0.00053	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052093

**Date :** 6/6/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb19060328

**Created Date :** 05/31/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19052093.02,06,08

<b>QC Type: Method Blank</b>									
Parameter	CAS #	Result	Units	D.F.	MLQ	MDL			Qual
cis-1,3-Dichloropropene	10061-01-5	< MDL	mg/L	1	0.005	0.00072			
Dibromochloromethane	124-48-1	< MDL	mg/L	1	0.005	0.00122			
Dibromomethane	74-95-3	< MDL	mg/L	1	0.005	0.00126			
Dichlorodifluoromethane	75-71-8	< MDL	mg/L	1	0.005	0.00085			
Ethylbenzene	100-41-4	< MDL	mg/L	1	0.005	0.00100			
Isopropylbenzene	98-82-8	< MDL	mg/L	1	0.005	0.00082			
m- & p-Xylenes	108-38-3&106-42-3	< MDL	mg/L	1	0.01	0.00151			
MEK	78-93-3	< MDL	mg/L	1	0.005	0.00286			
Methylene chloride	75-09-2	< MDL	mg/L	1	0.005	0.00487			
MTBE	1634-04-4	< MDL	mg/L	1	0.005	0.00082			
Naphthalene	91-20-3	< MDL	mg/L	1	0.005	0.00270			
n-Butylbenzene	104-51-8	< MDL	mg/L	1	0.005	0.00119			
n-Propylbenzene	103-65-1	< MDL	mg/L	1	0.005	0.00135			
o-Xylene	95-47-6	< MDL	mg/L	1	0.005	0.00066			
sec-Butylbenzene	135-98-8	< MDL	mg/L	1	0.005	0.00082			
Styrene	100-42-5	< MDL	mg/L	1	0.005	0.00069			
t-butylbenzene	98-06-6	< MDL	mg/L	1	0.005	0.00100			
Tetrachloroethylene	127-18-4	< MDL	mg/L	1	0.005	0.00066			
Toluene	108-88-3	< MDL	mg/L	1	0.005	0.00075			
trans-1,2-Dichloroethylene	156-60-5	< MDL	mg/L	1	0.005	0.00066			
trans-1,3-Dichloropropene	10061-02-6	< MDL	mg/L	1	0.005	0.00097			
Trichloroethylene	79-01-6	< MDL	mg/L	1	0.005	0.00079			
Trichlorofluoromethane	75-69-4	< MDL	mg/L	1	0.005	0.00094			
Vinyl Chloride	75-01-4	< MDL	mg/L	1	0.005	0.00082			
Xylenes	1330-20-7	< MDL	mg/L	1	0.005	0.00204			
Dibromofluoromethane(surr)	1868-53-7	100	%	1					
1,2-Dichloroethane-d4(surr)	17060-07-0	97	%	1					
Toluene-d8(surr)	2037-26-5	100	%	1					
p-Bromofluorobenzene(surr)	460-00-4	104	%	1					

<b>QC Type: LCS and LCSD</b>										
Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
1,1,1,2-Tetrachloroethane	0.02	0.0230	115	0.02	0.0234	117	1.5	20	78-120	
1,1,1-Trichloroethane	0.02	0.0195	97.5	0.02	0.0202	101	3.5	20	74-126	
1,1,2,2-Tetrachloroethane	0.02	0.0219	109	0.02	0.0223	112	1.9	20	71-121	
1,1,2-Trichloroethane	0.02	0.0219	110	0.02	0.0222	111	1.3	20	80-120	
1,1-Dichloroethane	0.02	0.0178	89.2	0.02	0.0179	89.6	0.3	20	77-120	
1,1-Dichloroethylene	0.02	0.0177	88.4	0.02	0.0175	87.7	1	20	71-130	

Refer to the Definition page for terms.



**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052093

**Date :** 6/6/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb19060328

**Created Date :** 05/31/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19052093.02,06,08

<b>QC Type: LCS and LCSD</b>										
Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
1,1-Dichloropropene	0.02	0.0198	98.9	0.02	0.0196	98.3	0.9	20	79-125	
1,2,3-trichlorobenzene	0.02	0.0239	119	0.02	0.0234	117	2	20	69-121	
1,2,3-Trichloropropane	0.02	0.0228	114	0.02	0.0236	118	3.5	20	73-122	
1,2,4-Trichlorobenzene	0.02	0.0227	114	0.02	0.0223	112	2	20	69-130	
1,2,4-Trimethylbenzene	0.02	0.0211	105	0.02	0.0213	106	1	20	76-119	
1,2-Dibromo-3-chloropropa	0.02	0.0203	101	0.02	0.0220	110	8.1	20	62-135	
1,2-Dibromoethane	0.02	0.0218	109	0.02	0.0218	109	0.0	20	77-121	
1,2-Dichlorobenzene	0.02	0.0206	103	0.02	0.0206	103	0.0	20	80-113	
1,2-Dichloroethane	0.02	0.0192	95.8	0.02	0.0206	103	7.2	20	70-125	
1,2-Dichloropropane	0.02	0.0214	107	0.02	0.0213	107	0.5	20	78-122	
1,3,5-Trimethylbenzene	0.02	0.0212	106	0.02	0.0214	107	0.9	20	75-117	
1,3-Dichlorobenzene	0.02	0.0210	105	0.02	0.0211	105	0.6	20	80-115	
1,3-Dichloropropane	0.02	0.0219	110	0.02	0.0234	117	6.5	20	80-119	
1,4-Dichlorobenzene	0.02	0.0210	105	0.02	0.0211	106	0.3	20	79-118	
1,4-Dioxane	0.64	0.605	94.6	0.64	0.618	96.6	2.1	20	59-139	
2,2-Dichloropropane	0.02	0.0180	90.1	0.02	0.0180	89.9	0.1	20	65-135	
2-Chlorotoluene	0.02	0.0204	102	0.02	0.0207	103	1.4	20	79-118	
4-Chlorotoluene	0.02	0.0205	103	0.02	0.0205	102	0.2	20	78-118	
4-Isopropyltoluene	0.02	0.0204	102	0.02	0.0207	103	1.2	20	77-116	
Benzene	0.02	0.0209	104	0.02	0.0207	103	0.9	20	79-118	
Bromobenzene	0.02	0.0206	103	0.02	0.0208	104	1.1	20	80-116	
Bromochloromethane	0.02	0.0176	88.2	0.02	0.0179	89.5	1.5	20	78-123	
Bromodichloromethane	0.02	0.0206	103	0.02	0.0216	108	4.6	20	79-125	
Bromoform	0.02	0.0215	108	0.02	0.0236	118	9.2	20	71-130	
Bromomethane	0.02	0.0199	99.6	0.02	0.0212	106	6.3	20	62-141	
Carbon disulfide	0.02	0.0168	84.3	0.02	0.0165	82.4	2.1	20	70-125	
Carbon tetrachloride	0.02	0.0207	104	0.02	0.0212	106	2.4	20	72-132	
Chlorobenzene	0.02	0.0208	104	0.02	0.0203	101	2.5	20	82-116	
Chloroethane	0.02	0.0162	80.9	0.02	0.0178	89	9.5	20	60-138	
Chloroform	0.02	0.0180	89.9	0.02	0.0186	93.1	3.4	20	79-124	
Chloromethane	0.02	0.0202	101	0.02	0.0179	89.3	12.1	20	61-139	
cis-1,2-Dichloroethylene	0.02	0.0178	89	0.02	0.0186	92.9	4.4	20	78-121	
cis-1,3-Dichloropropene	0.02	0.0209	105	0.02	0.0212	106	1.3	20	81-122	
Dibromochloromethane	0.02	0.0219	110	0.02	0.0224	112	2.2	20	77-120	
Dibromomethane	0.02	0.0190	94.8	0.02	0.0201	100	5.8	20	79-124	
Dichlorodifluoromethane	0.02	0.0190	95.2	0.02	0.0196	97.9	2.9	20	51-135	
Ethylbenzene	0.02	0.0200	100	0.02	0.0200	100	0.1	20	84-117	
Isopropylbenzene	0.02	0.0200	99.8	0.02	0.0199	99.7	0.3	20	80-117	
m- & p-Xylenes	0.04	0.0399	99.8	0.04	0.0396	99.1	0.8	20	80-118	
MEK	0.02	0.0168	84.1	0.02	0.0181	90.5	7.4	20	60-136	
Methylene chloride	0.02	0.0176	87.9	0.02	0.0176	87.8	0.1	20	74-124	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052093

**Date :** 6/6/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb19060328

**Created Date :** 05/31/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19052093.02,06,08

**QC Type: LCS and LCSD**

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
MTBE	0.02	0.0220	110	0.02	0.0226	113	2.7	20	71-124	
Naphthalene	0.02	0.0240	120	0.02	0.0231	116	4	20	66-128	
n-Butylbenzene	0.02	0.0210	105	0.02	0.0204	102	2.8	20	75-120	
n-Propylbenzene	0.02	0.0204	102	0.02	0.0202	101	1	20	78-120	
o-Xylene	0.02	0.0201	100	0.02	0.0203	102	1.1	20	84-117	
sec-Butylbenzene	0.02	0.0203	102	0.02	0.0206	103	1.3	20	77-120	
Styrene	0.02	0.0201	101	0.02	0.0203	101	0.8	20	85-120	
t-butylbenzene	0.02	0.0206	103	0.02	0.0204	102	1	20	78-120	
Tetrachloroethylene	0.02	0.0218	109	0.02	0.0255	128	15.8	20	78-129	
Toluene	0.02	0.0205	102	0.02	0.0200	99.9	2.4	20	84-117	
trans-1,2-Dichloroethylene	0.02	0.0180	89.9	0.02	0.0179	89.6	0.4	20	75-124	
trans-1,3-Dichloropropene	0.02	0.0215	107	0.02	0.0217	109	1	20	80-121	
Trichloroethylene	0.02	0.0208	104	0.02	0.0207	104	0.4	20	80-122	
Trichlorofluoromethane	0.02	0.0189	94.7	0.02	0.0208	104	9.4	20	57-141	
Vinyl Chloride	0.02	0.0204	102	0.02	0.0193	96.5	5.3	20	59-130	
Xylenes	0.06	0.06	100	0.06	0.0599	99.8	0.2	20	83-118	

**QC Type: MS and MSD**

**QC Sample ID: 19052093.08**

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
1,1,1,2-Tetrachloroethane	BRL	0.02	0.0257	129						72-139	
1,1,1-Trichloroethane	BRL	0.02	0.0223	111						70.6-135	
1,1,2,2-Tetrachloroethane	BRL	0.02	0.0277	139						55-149	
1,1,2-Trichloroethane	BRL	0.02	0.0237	119						68-139	
1,1-Dichloroethane	BRL	0.02	0.0177	88.3						78-134	
1,1-Dichloroethylene	BRL	0.02	0.0182	91.1						65-141	
1,1-Dichloropropene	BRL	0.02	0.0202	101						79-136	
1,2,3-trichlorobenzene	BRL	0.02	0.0238	119						54-144	
1,2,3-Trichloropropane	BRL	0.02	0.0269	135						58-156	
1,2,4-Trichlorobenzene	BRL	0.02	0.0216	108						69-127	
1,2,4-Trimethylbenzene	BRL	0.02	0.0201	100						80-131	
1,2-Dibromo-3-chloropropa	BRL	0.02	0.0273	137						61-145	
1,2-Dibromoethane	BRL	0.02	0.0243	121						68-140	
1,2-Dichlorobenzene	BRL	0.02	0.0196	97.8						70-138	
1,2-Dichloroethane	BRL	0.02	0.0246	123						67-152	
1,2-Dichloropropane	BRL	0.02	0.0219	109						79-135	
1,3,5-Trimethylbenzene	BRL	0.02	0.0200	100						79-133	
1,3-Dichlorobenzene	BRL	0.02	0.0194	97						79-128	
1,3-Dichloropropane	BRL	0.02	0.0259	129						70-147	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052093

**Date :** 6/6/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb19060328

**Created Date :** 05/31/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19052093.02,06,08

**QC Type: MS and MSD**

**QC Sample ID: 19052093.08**

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
1,4-Dichlorobenzene	BRL	0.02	0.0192	95.8						76-127	
1,4-Dioxane	BRL	0.64	0.893	139						70-125	M8
2,2-Dichloropropane	BRL	0.02	0.0201	100						60-129	
2-Chlorotoluene	BRL	0.02	0.0197	98.3						83-130	
4-Chlorotoluene	BRL	0.02	0.0192	96						82-129	
4-Isopropyltoluene	BRL	0.02	0.0197	98.6						78-129	
Benzene	BRL	0.02	0.0206	103						73-129	
Bromobenzene	BRL	0.02	0.0191	95.6						76-132	
Bromochloromethane	BRL	0.02	0.0191	95.3						76-135	
Bromodichloromethane	BRL	0.02	0.0241	120						80-136	
Bromoform	BRL	0.02	0.0270	135						65-139	
Bromomethane	BRL	0.02	0.0254	127						65-150	
Carbon disulfide	BRL	0.02	0.0155	77.6						70-125	
Carbon tetrachloride	BRL	0.02	0.0241	121						70-136	
Chlorobenzene	BRL	0.02	0.0204	102						69-123	
Chloroethane	BRL	0.02	0.0115	57.4						74-145	M9
Chloroform	BRL	0.02	0.0193	96.5						41.8-164	
Chloromethane	BRL	0.02	0.0173	86.5						42.2-160	
cis-1,2-Dichloroethylene	BRL	0.02	0.0189	94.3						71-134	
cis-1,3-Dichloropropene	BRL	0.02	0.0222	111						74-128	
Dibromochloromethane	BRL	0.02	0.0243	121						67-141	
Dibromomethane	BRL	0.02	0.0222	111						63.1-135	
Dichlorodifluoromethane	BRL	0.02	0.0207	103						62-146	
Ethylbenzene	BRL	0.02	0.0204	102						80-132	
Isopropylbenzene	BRL	0.02	0.0208	104						78-137	
m- & p-Xylenes	BRL	0.04	0.0414	103						74-127	
MEK	BRL	0.02	0.0214	107						52-148	
Methylene chloride	BRL	0.02	0.0165	82.5						68-131	
MTBE	BRL	0.02	0.0239	120						70-130	
Naphthalene	BRL	0.02	0.0275	137						61-116	M8
n-Butylbenzene	BRL	0.02	0.0199	99.6						73-140	
n-Propylbenzene	BRL	0.02	0.0190	95.1						75-127	
o-Xylene	BRL	0.02	0.0210	105						74-126	
sec-Butylbenzene	BRL	0.02	0.0190	95.1						75-129	
Styrene	BRL	0.02	0.0205	103						77-123	
t-butylbenzene	BRL	0.02	0.0195	97.7						75-126	
Tetrachloroethylene	BRL	0.02	0.0199	99.5						27.6-194	
Toluene	BRL	0.02	0.0200	99.8						72-121	
trans-1,2-Dichloroethylene	BRL	0.02	0.0186	92.9						73-138	
trans-1,3-Dichloropropene	BRL	0.02	0.0232	116						66-131	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052093

**Date :** 6/6/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb19060328

**Created Date :** 05/31/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19052093.02,06,08

**QC Type:** MS and MSD

**QC Sample ID:** 19052093.08

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
Trichloroethylene	BRL	0.02	0.0223	111						6-138	
Trichlorofluoromethane	BRL	0.02	0.0247	124						67-148	
Vinyl Chloride	BRL	0.02	0.00965	48.3						59.4-140	M9
Xylenes	BRL	0.06	0.0624	104						73-127	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052093

**Date :** 6/6/2019

**Analysis :** Total Petroleum Hydrocarbons      **Method :** TX 1005      **Reporting Units :** mg/L

**QC Batch ID :** Qb19060329      **Created Date :** 05/31/19      **Created By :** Jdongre

**Samples in This QC Batch :** 19052093.02,06,08

**Sample Preparation :** PB19060324      **Prep Method :** TX 1005      **Prep Date :** 05/31/19 10:30      **Prep By :** Jdongre

**QC Type: Method Blank**

Parameter	CAS #	Result	Units	D.F.	MQL	MDL	Qual
C6-C12	TPH-1005-1	< MDL	mg/L	1	2.15	0.35	
>C12-C28	TPH-1005-2	< MDL	mg/L	1	2.15	0.37	
>C28-C35	TPH-1005-4	< MDL	mg/L	1	2.15	0.18	
Total C6-C35		< MDL	mg/L	1	----	0.18	
Chlorooctadecane(surr)	3386-33-2	107	%	1			
1-Chlorooctane(surr)	111-85-3	102	%	1			

**QC Type: Duplicate**

**QC Sample ID: 19052117.01**

Parameter	QCSample Result	Sample Result	Units	RPD	RPD CtrlLimit	Qual
>C12-C28	BRL	BRL	mg/L	0.0	+20	
>C28-C35	BRL	BRL	mg/L	0.0	+20	
C6-C12	BRL	BRL	mg/L	0.0	+20	
Total C6-C35	BRL	BRL	mg/L	0.0	+20	

**QC Type: LCS and LCSD**

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
C6-C12	43	43.9	102	43	43.6	101	0.6	20	75-125	
>C12-C28	43	38.2	88.7	43	36.5	84.8	4.4	20	75-125	
>C28-C35	43	40.4	94	43	40.2	93.6	0.6	20	75-125	

Refer to the Definition page for terms.



**LABORATORY TERM AND QUALIFIER DEFINITION REPORT**



Job ID : 19052093

Date: 6/6/2019

**General Term Definition**

Back-Wt	Back Weight	Post-Wt	Post Weight
BRL	Below Reporting Limit	ppm	parts per million
cfu	colony-forming units	Pre-Wt	Previous Weight
Conc.	Concentration	Q	Qualifier
D.F.	Dilution Factor	RegLimit	Regulatory Limit
Front-Wt	Front Weight	RPD	Relative Percent Difference
LCS	Laboratory Check Standard	RptLimit	Reporting Limit
LCSD	Laboratory Check Standard Duplicate	SDL	Sample Detection Limit
MS	Matrix Spike	surr	Surrogate
MSD	Matrix Spike Duplicate	T	Time
MW	Molecular Weight	TNTC	Too numerous to count
J	Estimation. Below calibration range but above MDL		

**Qualifier Definition**

D3	Sample dilution required due to insufficient sample.
L2	Associated LCS and/or LCSD recovery is below acceptance limits for flagged analyte. Bias may be low.
M8	Matrix Spike and/or Matrix Spike Duplicate recovery is above laboratory control limits.
M9	Matrix Spike and/or Matrix Spike Duplicate recovery is below laboratory control limits.
R1	RPD exceeds control limits.
S1	Surrogate recovery is above control limit. Results may be biased high.
U	Undetected at SDL (Sample Detection Limit).
V1	CCV recovery is above acceptance limits. This target analyte was not detected in the sample.
V11	CCV recovery is below acceptance limits.



10100 East Fwy (I-10)  
Suite 100  
Houston, TX 77029  
713-453-6060  
1-877-478-6060 Toll Free  
713-453-6091 Fax  
ablabs.com

A&B JOB ID # 19052093

5. Project # E/03-19

6. Project Name/Location Memorial Dr Reconstruction

7. Reporting Requirement:  TRRP Limits only  TRRP Rpt. Package  See Attached  Standard Level II  PST  MDL  EDD

8. Sampler's Name & Company (PLEASE PRINT) Robert J Metzger AEC

Sampler's Signature & Date [Signature] 5/30/19

1. Company: Aviles Engineering Corp  
Address: 5790 Winifred Houston TX 77041  
Contact: Robert J Metzger  
Phone: 281-743-8352  
Fax:   
E-mail: Rmetzger@avilesengineering.com

2. Company: Asi...  
Address:   
Contact:   
Phone:   
Fax:   
E-mail:

3. PO #   
3a. A&B Quote #   
4. Turnaround Time (Business Days)  
 1 Day\*  Other:  
 2 Days\*  3 Days\*  7 Days - Standard  
\*Surcharge applies

LAB USE ONLY	9. Sample ID and Description	10. Sampling		11. Matrix							13. No. of Containers	14. Containers*	15. Preservatives**	16. PH-Lab Only	17. Analyses/Methods	18. REMARKS
		Date	Time 24hr	Comp.	Grab	Water	Soil	Sludge	Oil	Drinking Water						
	O1A6 B-15 13-14	5/29/19	16:50	✓	✓	✓	✓	✓	✓	✓	7	✓			VOCS, MTBE, TPAH, 100% moisture	insufficient water to collect set
	O2A B-15 water	5/29/19	17:10	✓	✓	✓	✓	✓	✓	✓	1	✓				
	O3A6 B-16 16-17	5/29/19	15:35	✓	✓	✓	✓	✓	✓	✓	7	✓				
	O4A6 B-17 13-14	5/29/19	14:28	✓	✓	✓	✓	✓	✓	✓	7	✓				
	O5A6 B-18 17-18	5/29/19	12:35	✓	✓	✓	✓	✓	✓	✓	7	✓				
	O6A B18 water	5/29/19	13:00	✓	✓	✓	✓	✓	✓	✓	1	✓				insufficient water to collect set
	O7A6 B-30 18-19	5/29/19	10:30	✓	✓	✓	✓	✓	✓	✓	7	✓				
	O8AF B-30 water	5/29/19	10:46	✓	✓	✓	✓	✓	✓	✓	5	✓				

19. RELINQUISHED BY [Signature] DATE 5/30/19 TIME 10:04

20. RECEIVED BY [Signature] DATE 5/30/19 TIME 10:04

21. KNOWN HAZARDS/COMMENTS Temperature: 37.5-32°C

Containers: VOA - 40 ml vial AG - Amber/Glass 1 Liter  
4 oz/8 oz - glass wide mouth P/O - Plastic/other

METHOD OF SHIPMENT  BILL OF LADING/TRACKING #

LAB USE ONLY SAMPLING  RENTAL  P/U  Supplies  Field Work





# Sample Condition Checklist

A&B JobID : <b>19052093</b>	Date Received : <b>05/30/2019</b>	Time Received : <b>3:30PM</b>																										
Client Name : <b>Aviles Engineering</b>																												
Temperature : <b>3.7-0.5cf=3.2°C</b>	Sample pH : <b>N/A</b>																											
Thermometer ID : <b>1707629</b>	pH Paper ID : <b>N/A</b>																											
<b>Check Points</b>																												
<b>1.</b>	<b>Cooler seal present and signed.</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>																								
<b>2.</b>	<b>Sample(s) in a cooler.</b>	X																										
<b>3.</b>	<b>If yes, ice in cooler.</b>	X																										
<b>4.</b>	<b>Sample(s) received with chain-of-custody.</b>	X																										
<b>5.</b>	<b>C-O-C signed and dated.</b>	X																										
<b>6.</b>	<b>Sample(s) received with signed sample custody seal.</b>		X																									
<b>7.</b>	<b>Sample containers arrived intact. (If no comment).</b>	X																										
<b>8.</b>	<table style="width: 100%; border: none;"> <tr> <td style="width: 10%;"><b>Matrix</b></td> <td style="width: 10%;"><b>Water</b></td> <td style="width: 10%;"><b>Soil</b></td> <td style="width: 10%;"><b>Liquid</b></td> <td style="width: 10%;"><b>Sludge</b></td> <td style="width: 10%;"><b>Solid</b></td> <td style="width: 10%;"><b>Cassette</b></td> <td style="width: 10%;"><b>Tube</b></td> <td style="width: 10%;"><b>Bulk</b></td> <td style="width: 10%;"><b>Badge</b></td> <td style="width: 10%;"><b>Food</b></td> <td style="width: 10%;"><b>Other</b></td> </tr> <tr> <td>:</td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </table>	<b>Matrix</b>	<b>Water</b>	<b>Soil</b>	<b>Liquid</b>	<b>Sludge</b>	<b>Solid</b>	<b>Cassette</b>	<b>Tube</b>	<b>Bulk</b>	<b>Badge</b>	<b>Food</b>	<b>Other</b>	:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
<b>Matrix</b>	<b>Water</b>	<b>Soil</b>	<b>Liquid</b>	<b>Sludge</b>	<b>Solid</b>	<b>Cassette</b>	<b>Tube</b>	<b>Bulk</b>	<b>Badge</b>	<b>Food</b>	<b>Other</b>																	
:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																	
<b>9.</b>	<b>Sample(s) were received in appropriate container(s).</b>	X																										
<b>10.</b>	<b>Sample(s) were received with proper preservative</b>	X																										
<b>11.</b>	<b>All samples were logged or labeled.</b>	X																										
<b>12.</b>	<b>Sample ID labels match C-O-C ID's</b>	X																										
<b>13.</b>	<b>Bottle count on C-O-C matches bottles found.</b>	X																										
<b>14.</b>	<b>Sample volume is sufficient for analyses requested.</b>	X																										
<b>15.</b>	<b>Samples were received within the hold time.</b>	X																										
<b>16.</b>	<b>VOA vials completely filled.</b>	X																										
<b>17.</b>	<b>Sample accepted.</b>	X																										
<b>18.</b>	<b>Has client been contacted about sub-out</b>			X																								
<b>Comments : Include actions taken to resolve discrepancies/problem:</b>																												
Received 1 40mL preserved vial per sample for 02 and 06. 02, 06: Water. 01,03-05,07-08: Soil. - AB 5/31/19 Didn't receive 05G, bulk jar for soil sample. Also received an extra set of terracores. These were labeled as B 31 8-9. The lab labeled the samples as 09AG. - AB 5/31/19																												

Received by : ABarrera

Check in by/date : ABarrera / 05/30/2019

## Robert J. Metzger

---

**From:** Robert J. Metzger <rmetzger@avilesengineering.com>  
**Sent:** Wednesday, June 12, 2019 11:51 AM  
**To:** 'Shantall Carpenter'  
**Subject:** FW: Very Urgent, Sample B-31 soil, Memorial Drive Reconstruction, AEC Project E103-19

**Importance:** High

Shantall,

Please analyze B-31 soil on a 24-hour rush turnaround.

Thank you.

*Robert J. Metzger, P.G., CAPM  
Aviles Engineering Corporation  
5790 Windfern  
Houston, TX 77041  
Office: 713-895-7645  
Fax: 713-895-7943*

*The information transmitted is intended only for the person or entity to which it is addressed and may contain confidential and/or privileged material. Any review, retransmission, dissemination or other use of, or taking of any action in reliance upon, this information by persons or entities other than the intended recipient is prohibited. If you received this in error, please contact the sender and delete the material from any computer.*

---

**From:** Robert J. Metzger [mailto:rmetzger@avilesengineering.com]  
**Sent:** Wednesday, June 12, 2019 10:57 AM  
**To:** 'Shantall Carpenter' <scarpenter@ablabs.com>  
**Subject:** Very Urgent, Sample B-31 soil, Memorial Drive Reconstruction, AEC Project E103-19  
**Importance:** High

Shantall,

I mistakenly forgot to log soil sample B-31, 8-9 feet, sample collected on 5/29/19 at 9:00 on the chain-of- custody dated 5-30-19 (Lab report 19052093). A&B however should have received the sample. Since it wasn't analyzed, I assume it is on hold somewhere. Can this sample be immediately analyzed for VOCs, TPH 1005, and % moisture? Or is it past its holding time? Let me know or if you cannot locate the sample.

Thank you.

*Robert J. Metzger, P.G., CAPM  
Aviles Engineering Corporation  
5790 Windfern  
Houston, TX 77041  
Office: 713-895-7645  
Fax: 713-895-7943*

*The information transmitted is intended only for the person or entity to which it is addressed and may contain confidential and/or privileged material. Any review, retransmission, dissemination or other use of, or taking of any action in reliance upon, this information by persons or entities other than the intended recipient is prohibited. If you received this in error, please contact the sender and delete the material from any computer.*

# Laboratory Analysis Report

Total Number of Pages: 15

Job ID : 19052093



10100 East Freeway, Suite 100, Houston, TX 77029 tel: 713-453-6060, fax: 713-453-6091, <http://www.ablabs.com>

---

**Client Project Name :**  
**E103-19 / Memorial Dr Reconstruction**

**Report To :** Client Name: Aviles Engineering  
Attn: Robert J. Metzger  
Client Address: 5790 Windfern  
City, State, Zip: Houston, Texas, 77041

P.O.#.:  
Sample Collected By: Robert J. Metzger  
Date Collected: 05/29/19

---

**A&B Labs has analyzed the following samples...**

Client Sample ID	Matrix	A&B Sample ID
B-31 8-9	Soil	19052093.09

*Shantall Carpenter*

Released By: Shantall Carpenter  
Title: Senior Project Manager  
Date: 6/13/2019



This Laboratory is NELAP ( T104704213-19-20) accredited. Effective: 04/01/2019; Expires: 3/31/2020

Scope: Non-Potable Water, Drinking Water, Air, Solid, Biological Tissue, Hazardous Waste

I am the laboratory manager, or his/her designee, and I am responsible for the release of this data package. This laboratory data package has been reviewed and is complete and technically compliant with the requirements of the methods used, except where noted in the attached exception reports. I affirm, to the best of my knowledge that all problems/anomalies observed by this laboratory (and if applicable, any and all laboratories subcontracted through this laboratory) that might affect the quality of the data, have been identified in the Laboratory Review Checklist, and that no information or data have been knowingly withheld that would affect the quality of the data.

This report cannot be reproduced, except in full, without prior written permission of A&B Labs. Results shown relate only to the items tested. Samples are assumed to be in acceptable condition unless otherwise noted. Blank correction is not made unless otherwise noted. Air concentrations reported are based on field sampling information provided by client. Soil samples are reported on a wet weight basis unless otherwise noted. Uncertainty estimates are available on request.

Date Received : 05/30/2019 15:30



LABORATORY TEST RESULTS

Client Sample ID: B-31 8-9

Date: 6/13/2019

A&B Job Sample ID: 19052093.09

Client Name: Aviles Engineering

Attn: Robert J. Metzger

Project Name: E103-19 / Memorial Dr Reconstruction

Test Description: % Moisture

Sample Matrix: Soil

Analytical Method: SM 2540G

Date Collected: 05/29/2019 09:00

QC Batch ID: Qb19061358

Date Received: 05/30/2019 15:30

Prep Method: SM 2540G

Date Prepared: 06/13/2019 09:00

Prepared By: KRSaranya

Prep Batch ID: PB19061334

Analyst Initial: KRS

% Moisture: 24.40

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
	% Moisture	24.4	H3				----	----	%	1	06/13/19 09:15



LABORATORY TEST RESULTS

Client Sample ID: B-31 8-9
A&B Job Sample ID: 19052093.09

Date: 6/13/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Dr Reconstruction

Attn: Robert J. Metzger

Test Description: Volatile Organic Compounds by GC/MS

Analytical Method: SW-846 8260C
QC Batch ID: Qb19061114
Prep Method: SW-846 5035A
Prepared By: Rajeev
Prep Batch ID: PB19061222

Sample Matrix: Soil
Date Collected: 05/29/2019 09:00
Date Received: 05/30/2019 15:30
Date Prepared: 06/10/2019 10:00

Analyst Initial: RT

% Moisture: 24.40

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Contains 40 rows of chemical analysis data.

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-31 8-9  
 A&B Job Sample ID: 19052093.09

Date: 6/13/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Dr Reconstruction

Attn: Robert J. Metzger

Test Description: **Volatile Organic Compounds by GC/MS**

Sample Matrix: Soil

Analytical Method: SW-846 8260C

Date Collected: 05/29/2019 09:00

QC Batch ID: Qb19061114

Date Received: 05/30/2019 15:30

Prep Method: SW-846 5035A

Date Prepared: 06/10/2019 10:00

Prepared By: Rajeev

Prep Batch ID: PB19061222

Analyst Initial: RT

% Moisture: 24.40

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
74-87-3	Chloromethane	<0.00245	U	0.00245	0.0054	0.00226	0.005	0.05	mg/Kg	0.82	06/11/19 02:37
156-59-2	cis-1,2-Dichloroethyle	<0.00129	U	0.00129	0.0054	0.00119	0.005	0.05	mg/Kg	0.82	06/11/19 02:37
10061-01-5	cis-1,3-Dichloroprope	<0.00123	U	0.00123	0.0054	0.00113	0.005	0.05	mg/Kg	0.82	06/11/19 02:37
124-48-1	Dibromochloromethan	<0.00119	U	0.00119	0.0054	0.00110	0.005	0.05	mg/Kg	0.82	06/11/19 02:37
74-95-3	Dibromomethane	<0.00150	U	0.00150	0.0054	0.00138	0.005	0.05	mg/Kg	0.82	06/11/19 02:37
75-71-8	Dichlorodifluorometha	<0.00146	U	0.00146	0.0054	0.00135	0.005	0.05	mg/Kg	0.82	06/11/19 02:37
100-41-4	Ethylbenzene	<0.00150	U	0.00150	0.0054	0.00138	0.005	0.05	mg/Kg	0.82	06/11/19 02:37
98-82-8	Isopropylbenzene	<0.00137	U	0.00137	0.0054	0.00126	0.005	0.05	mg/Kg	0.82	06/11/19 02:37
108-38-3&106-4	m- & p-Xylenes	<0.00296	U	0.00296	0.011	0.00273	0.01	0.1	mg/Kg	0.82	06/11/19 02:37
78-93-3	MEK	<0.00290	U	0.00290	0.0054	0.00267	0.005	0.05	mg/Kg	0.82	06/11/19 02:37
75-09-2	Methylene chloride	<0.00167	U	0.00167	0.0054	0.00154	0.005	0.05	mg/Kg	0.82	06/11/19 02:37
1634-04-4	MTBE	<0.00116	U	0.00116	0.0054	0.00107	0.005	0.05	mg/Kg	0.82	06/11/19 02:37
91-20-3	Naphthalene	<0.00204	U	0.00204	0.0054	0.00188	0.005	0.05	mg/Kg	0.82	06/11/19 02:37
104-51-8	n-Butylbenzene	<0.00194	U	0.00194	0.0054	0.00179	0.005	0.05	mg/Kg	0.82	06/11/19 02:37
103-65-1	n-Propylbenzene	<0.00150	U	0.00150	0.0054	0.00138	0.005	0.05	mg/Kg	0.82	06/11/19 02:37
95-47-6	o-Xylene	<0.00137	U	0.00137	0.0054	0.00126	0.005	0.05	mg/Kg	0.82	06/11/19 02:37
135-98-8	sec-Butylbenzene	<0.00174	U	0.00174	0.0054	0.00160	0.005	0.05	mg/Kg	0.82	06/11/19 02:37
100-42-5	Styrene	<0.00137	U	0.00137	0.0054	0.00126	0.005	0.05	mg/Kg	0.82	06/11/19 02:37
98-06-6	t-butylbenzene	<0.00153	U	0.00153	0.0054	0.00141	0.005	0.05	mg/Kg	0.82	06/11/19 02:37
127-18-4	Tetrachloroethylene	<0.00150	U	0.00150	0.0054	0.00138	0.005	0.05	mg/Kg	0.82	06/11/19 02:37
108-88-3	Toluene	<0.00129	U	0.00129	0.0054	0.00119	0.005	0.05	mg/Kg	0.82	06/11/19 02:37
156-60-5	trans-1,2-Dichloroethy	<0.00156	U	0.00156	0.0054	0.00144	0.005	0.05	mg/Kg	0.82	06/11/19 02:37
10061-02-6	trans-1,3-Dichloropro	<0.00102	U	0.00102	0.0054	0.00094	0.005	0.05	mg/Kg	0.82	06/11/19 02:37
79-01-6	Trichloroethylene	<0.00113	U	0.00113	0.0054	0.00104	0.005	0.05	mg/Kg	0.82	06/11/19 02:37
75-69-4	Trichlorofluoromethan	<0.00215	U	0.00215	0.0054	0.00198	0.005	0.05	mg/Kg	0.82	06/11/19 02:37
75-01-4	Vinyl Chloride	<0.00201	U	0.00201	0.0054	0.00185	0.005	0.05	mg/Kg	0.82	06/11/19 02:37
1330-20-7	Xylenes	<0.00108	U	0.00108	0.0054	0.001	0.005	0.15	mg/Kg	0.82	06/11/19 02:37
17060-07-0	1,2-Dichloroethane-d4	104					70	130	%	0.82	06/11/19 02:37
1868-53-7	Dibromofluoromethan	92.9					70	130	%	0.82	06/11/19 02:37
2037-26-5	Toluene-d8(surr)	96.2					70	130	%	0.82	06/11/19 02:37
460-00-4	p-Bromofluorobenzen	91.6					70	130	%	0.82	06/11/19 02:37

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-31 8-9  
 A&B Job Sample ID: 19052093.09

Date: 6/13/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Dr Reconstruction

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb19061132  
 Prep Method: TX 1005  
 Prepared By: Jdongre  
 Prep Batch ID: PB19061224

Sample Matrix: Soil  
 Date Collected: 05/29/2019 09:00  
 Date Received: 05/30/2019 15:30  
 Date Prepared: 06/10/2019 02:00

Analyst Initial: JKD

% Moisture: 24.40

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12	<27.6	U	27.6	29.1	23.7	25	1000	mg/Kg	0.88	06/10/19 23:26
TPH-1005-2	>C12-C28	<23.6	U	23.6	29.1	20.3	25	1000	mg/Kg	0.88	06/10/19 23:26
TPH-1005-4	>C28-C35	<20.6	U	20.6	29.1	17.7	25	1000	mg/Kg	0.88	06/10/19 23:26
	Total C6-C35	< 20.6	U	20.6		17.7	----	----	mg/Kg	0.88	06/10/19 23:26
111-85-3	1-Chlorooctane(surr)	93.2					60	143	%	0.88	06/10/19 23:26
3386-33-2	Chlorooctadecane(sur	86.7					60	150	%	0.88	06/10/19 23:26

Soil results reported on dry weight basis

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052093

**Date :** 6/13/2019

**Analysis :** Volatile Organic Compounds      **Method :** SW-846 8260C      **Reporting Units :** mg/Kg

**QC Batch ID :** Qb19061114      **Created Date :** 06/10/19      **Created By :** Rajeev

**Samples in This QC Batch :** 19052093.09

**Sample Preparation :** PB19061222      **Prep Method :** SW-846 5035A      **Prep Date :** 06/10/19 10:00      **Prep By :** Rajeev

<b>QC Type: Method Blank</b>							
Parameter	CAS #	Result	Units	D.F.	MQL	MDL	Qual
1,1,1,2-Tetrachloroethane	630-20-6	< MDL	mg/Kg	1	0.005	0.00085	
1,1,1-Trichloroethane	71-55-6	< MDL	mg/Kg	1	0.005	0.00148	
1,1,2,2-Tetrachloroethane	79-34-5	< MDL	mg/Kg	1	0.005	0.00132	
1,1,2-Trichloroethane	79-00-5	< MDL	mg/Kg	1	0.005	0.00176	
1,1-Dichloroethane	75-34-3	< MDL	mg/Kg	1	0.005	0.00157	
1,1-Dichloroethylene	75-35-4	< MDL	mg/Kg	1	0.005	0.00173	
1,1-Dichloropropene	563-58-6	< MDL	mg/Kg	1	0.005	0.00144	
1,2,3-trichlorobenzene	87-61-6	< MDL	mg/Kg	1	0.005	0.00166	
1,2,3-Trichloropropane	96-18-4	< MDL	mg/Kg	1	0.005	0.00151	
1,2,4-Trichlorobenzene	120-82-1	< MDL	mg/Kg	1	0.005	0.00138	
1,2,4-Trimethylbenzene	95-63-6	< MDL	mg/Kg	1	0.005	0.00122	
1,2-Dibromo-3-chloropropa	96-12-8	< MDL	mg/Kg	1	0.005	0.00311	
1,2-Dibromoethane	106-93-4	< MDL	mg/Kg	1	0.005	0.00113	
1,2-Dichlorobenzene	95-50-1	< MDL	mg/Kg	1	0.005	0.00100	
1,2-Dichloroethane	107-06-2	< MDL	mg/Kg	1	0.005	0.00132	
1,2-Dichloropropane	78-87-5	< MDL	mg/Kg	1	0.005	0.00113	
1,3,5-Trimethylbenzene	108-67-8	< MDL	mg/Kg	1	0.005	0.00151	
1,3-Dichlorobenzene	541-73-1	< MDL	mg/Kg	1	0.005	0.00141	
1,3-Dichloropropane	142-28-9	< MDL	mg/Kg	1	0.005	0.00141	
1,4-Dichlorobenzene	106-46-7	< MDL	mg/Kg	1	0.005	0.00144	
2,2-Dichloropropane	594-20-7	< MDL	mg/Kg	1	0.005	0.00220	
2-Chlorotoluene	95-49-8	< MDL	mg/Kg	1	0.005	0.00144	
4-Chlorotoluene	106-43-4	< MDL	mg/Kg	1	0.005	0.00138	
4-Isopropyltoluene	99-87-6	< MDL	mg/Kg	1	0.005	0.00141	
Benzene	71-43-2	< MDL	mg/Kg	1	0.005	0.00107	
Bromobenzene	108-86-1	< MDL	mg/Kg	1	0.005	0.00113	
Bromochloromethane	74-97-5	< MDL	mg/Kg	1	0.005	0.00126	
Bromodichloromethane	75-27-4	< MDL	mg/Kg	1	0.005	0.00088	
Bromoform	75-25-2	< MDL	mg/Kg	1	0.005	0.00072	
Bromomethane	74-83-9	< MDL	mg/Kg	1	0.005	0.00170	
Carbon tetrachloride	56-23-5	< MDL	mg/Kg	1	0.005	0.00151	
Chlorobenzene	108-90-7	< MDL	mg/Kg	1	0.005	0.00148	
Chloroethane	75-00-3	< MDL	mg/Kg	1	0.005	0.00242	
Chloroform	67-66-3	< MDL	mg/Kg	1	0.005	0.00119	
Chloromethane	74-87-3	< MDL	mg/Kg	1	0.005	0.00226	
cis-1,2-Dichloroethylene	156-59-2	< MDL	mg/Kg	1	0.005	0.00119	
cis-1,3-Dichloropropene	10061-01-5	< MDL	mg/Kg	1	0.005	0.00113	
Dibromochloromethane	124-48-1	< MDL	mg/Kg	1	0.005	0.00110	

Refer to the Definition page for terms.



**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052093

**Date :** 6/13/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb19061114

**Created Date :** 06/10/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19052093.09

<b>QC Type: Method Blank</b>									
Parameter	CAS #	Result	Units	D.F.	MLQ	MDL			Qual
Dibromomethane	74-95-3	< MDL	mg/Kg	1	0.005	0.00138			
Dichlorodifluoromethane	75-71-8	< MDL	mg/Kg	1	0.005	0.00135			
Ethylbenzene	100-41-4	< MDL	mg/Kg	1	0.005	0.00138			
Isopropylbenzene	98-82-8	< MDL	mg/Kg	1	0.005	0.00126			
m- & p-Xylenes	108-38-3&106-42-3	< MDL	mg/Kg	1	0.01	0.00273			
MEK	78-93-3	< MDL	mg/Kg	1	0.005	0.00267			
Methylene chloride	75-09-2	< MDL	mg/Kg	1	0.005	0.00154			
MTBE	1634-04-4	< MDL	mg/Kg	1	0.005	0.00107			
Naphthalene	91-20-3	< MDL	mg/Kg	1	0.005	0.00188			
n-Butylbenzene	104-51-8	< MDL	mg/Kg	1	0.005	0.00179			
n-Propylbenzene	103-65-1	< MDL	mg/Kg	1	0.005	0.00138			
o-Xylene	95-47-6	< MDL	mg/Kg	1	0.005	0.00126			
sec-Butylbenzene	135-98-8	< MDL	mg/Kg	1	0.005	0.00160			
Styrene	100-42-5	< MDL	mg/Kg	1	0.005	0.00126			
t-butylbenzene	98-06-6	< MDL	mg/Kg	1	0.005	0.00141			
Tetrachloroethylene	127-18-4	< MDL	mg/Kg	1	0.005	0.00138			
Toluene	108-88-3	< MDL	mg/Kg	1	0.005	0.00119			
trans-1,2-Dichloroethylene	156-60-5	< MDL	mg/Kg	1	0.005	0.00144			
trans-1,3-Dichloropropene	10061-02-6	< MDL	mg/Kg	1	0.005	0.00094			
Trichloroethylene	79-01-6	< MDL	mg/Kg	1	0.005	0.00104			
Trichlorofluoromethane	75-69-4	< MDL	mg/Kg	1	0.005	0.00198			
Vinyl Chloride	75-01-4	< MDL	mg/Kg	1	0.005	0.00185			
Xylenes	1330-20-7	< MDL	mg/Kg	1	0.005	0.001			
Dibromofluoromethane(surr)	1868-53-7	89.7	%	1					
1,2-Dichloroethane-d4(surr)	17060-07-0	90.4	%	1					
Toluene-d8(surr)	2037-26-5	99.9	%	1					
p-Bromofluorobenzene(surr)	460-00-4	93.5	%	1					

<b>QC Type: LCS and LCSD</b>										
Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrLimit	%Recovery CtrLimit	Qual
1,1,1,2-Tetrachloroethane	0.02	0.0210	105	0.02	0.0216	108	2.7	30	78-125	
1,1,1-Trichloroethane	0.02	0.0193	96.6	0.02	0.0191	95.4	1.1	30	70-130	
1,1,2,2-Tetrachloroethane	0.02	0.0176	88.1	0.02	0.0182	91.1	3.3	30	70-124	
1,1,2-Trichloroethane	0.02	0.0190	94.9	0.02	0.0191	95.5	0.7	30	78-121	
1,1-Dichloroethane	0.02	0.0186	92.8	0.02	0.0186	93.2	0.2	30	76-125	
1,1-Dichloroethylene	0.02	0.0128	63.9	0.02	0.0137	68.6	6.9	30	70-131	L2
1,1-Dichloropropene	0.02	0.0185	92.4	0.02	0.0183	91.3	1	30	76-125	
1,2,3-trichlorobenzene	0.02	0.0155	77.6	0.02	0.0215	108	32.4	30	66-130	R1

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052093

**Date :** 6/13/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb19061114    **Created Date :** 06/10/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19052093.09

<b>QC Type: LCS and LCSD</b>										
Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
1,2,3-Trichloropropane	0.02	0.0171	85.3	0.02	0.0173	86.6	1.4	30	73-125	
1,2,4-Trichlorobenzene	0.02	0.0188	93.9	0.02	0.0204	102	8.3	30	66-129	
1,2,4-Trimethylbenzene	0.02	0.0210	105	0.02	0.0208	104	0.7	30	75-123	
1,2-Dibromo-3-chloropropa	0.02	0.0153	76.7	0.02	0.0167	83.4	8.5	30	61-132	
1,2-Dibromoethane	0.02	0.0188	94	0.02	0.0188	93.9	0.0	30	78-122	
1,2-Dichlorobenzene	0.02	0.0210	105	0.02	0.0207	104	1.2	30	78-121	
1,2-Dichloroethane	0.02	0.0185	92.4	0.02	0.0192	96.1	3.8	30	71-128	
1,2-Dichloropropane	0.02	0.0190	94.8	0.02	0.0193	96.4	1.8	30	76-123	
1,3,5-Trimethylbenzene	0.02	0.0213	107	0.02	0.0208	104	2.4	30	73-124	
1,3-Dichlorobenzene	0.02	0.0215	107	0.02	0.0214	107	0.3	30	77-121	
1,3-Dichloropropane	0.02	0.0171	85.6	0.02	0.0173	86.4	1.1	30	77-121	
1,4-Dichlorobenzene	0.02	0.0215	107	0.02	0.0214	107	0.3	30	75-120	
2,2-Dichloropropane	0.02	0.0189	94.5	0.02	0.0183	91.4	3.2	30	67-133	
2-Chlorotoluene	0.02	0.0205	103	0.02	0.0201	100	2.1	30	75-122	
4-Chlorotoluene	0.02	0.0205	103	0.02	0.0202	101	1.6	30	72-124	
4-Isopropyltoluene	0.02	0.0213	107	0.02	0.0210	105	1.4	30	73-127	
Benzene	0.02	0.0204	102	0.02	0.0204	102	0.1	30	77-121	
Bromobenzene	0.02	0.0214	107	0.02	0.0216	108	0.8	30	78-121	
Bromochloromethane	0.02	0.0168	84.2	0.02	0.0172	86.2	2.1	30	75-125	
Bromodichloromethane	0.02	0.0194	97.1	0.02	0.0201	100	3.4	30	71-127	
Bromoform	0.02	0.0187	93.6	0.02	0.0199	99.6	6.1	30	67-132	
Bromomethane	0.02	0.0159	79.5	0.02	0.0161	80.7	1.2	30	55-140	
Carbon tetrachloride	0.02	0.0217	108	0.02	0.0217	109	0.0	30	69-135	
Chlorobenzene	0.02	0.0215	108	0.02	0.0215	108	0.0	30	79-120	
Chloroethane	0.02	0.0214	107	0.02	0.0211	105	1.6	30	59-139	
Chloroform	0.02	0.0190	95.1	0.02	0.0192	96.2	1	30	78-123	
Chloromethane	0.02	0.0168	84.2	0.02	0.0170	84.9	1	30	50-136	
cis-1,2-Dichloroethylene	0.02	0.0182	91.1	0.02	0.0184	92	1	30	77-123	
cis-1,3-Dichloropropene	0.02	0.0192	95.9	0.02	0.0195	97.5	1.6	30	74-126	
Dibromochloromethane	0.02	0.0191	95.4	0.02	0.0198	99.1	3.7	30	74-126	
Dibromomethane	0.02	0.0190	95	0.02	0.0192	96.1	1	30	78-125	
Dichlorodifluoromethane	0.02	0.0176	87.9	0.02	0.0181	90.4	2.9	30	29-149	
Ethylbenzene	0.02	0.0209	105	0.02	0.0211	106	0.8	30	76-122	
Isopropylbenzene	0.02	0.0214	107	0.02	0.0214	107	0.1	30	68-134	
m- & p-Xylenes	0.04	0.0424	106	0.04	0.0425	106	0.1	30	77-124	
MEK	0.02	0.0149	74.7	0.02	0.0143	71.7	4.3	30	51-148	
Methylene chloride	0.02	0.0201	101	0.02	0.0205	102	1.9	30	70-128	
MTBE	0.02	0.0158	78.9	0.02	0.0165	82.3	4.5	30	73-125	
Naphthalene	0.02	0.0143	71.7	0.02	0.0178	89	21.5	30	62-129	
n-Butylbenzene	0.02	0.0200	100	0.02	0.0198	99	1	30	70-128	
n-Propylbenzene	0.02	0.0208	104	0.02	0.0203	102	2.2	30	73-125	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052093

**Date :** 6/13/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb19061114    **Created Date :** 06/10/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19052093.09

**QC Type: LCS and LCSD**

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
o-Xylene	0.02	0.0208	104	0.02	0.0208	104	0.1	30	77-123	
sec-Butylbenzene	0.02	0.0209	105	0.02	0.0208	104	0.6	30	73-126	
Styrene	0.02	0.0210	105	0.02	0.0213	106	1.3	30	76-124	
t-butylbenzene	0.02	0.0204	102	0.02	0.0203	101	0.3	30	73-125	
Tetrachloroethylene	0.02	0.0224	112	0.02	0.0228	114	1.9	30	73-128	
Toluene	0.02	0.0211	106	0.02	0.0211	106	0.1	30	77-121	
trans-1,2-Dichloroethylene	0.02	0.0189	94.5	0.02	0.0188	94	0.5	30	74-125	
trans-1,3-Dichloropropene	0.02	0.0186	93.2	0.02	0.0191	95.5	2.5	30	71-130	
Trichloroethylene	0.02	0.0218	109	0.02	0.0224	112	2.7	30	77-123	
Trichlorofluoromethane	0.02	0.0189	94.4	0.02	0.0187	93.3	1	30	62-140	
Vinyl Chloride	0.02	0.0180	90.2	0.02	0.0178	89	1.3	30	56-135	
Xylenes	0.06	0.0632	105	0.06	0.0633	106	0.2	30	78-124	

**QC Type: MS and MSD**

**QC Sample ID: 19060519.09**

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
1,1,1,2-Tetrachloroethane	BRL	0.019	0.0198	104						71.4-131	
1,1,1-Trichloroethane	BRL	0.019	0.0168	88.4						69.6-140	
1,1,2,2-Tetrachloroethane	BRL	0.019	0.0211	111						66.6-128	
1,1,2-Trichloroethane	BRL	0.019	0.0197	104						72.8-125	
1,1-Dichloroethane	BRL	0.019	0.0166	87.4						72.7-129	
1,1-Dichloroethylene	BRL	0.019	0.0112	58.9						71.4-131	M9
1,1-Dichloropropene	BRL	0.019	0.0167	87.9						75.9-132	
1,2,3-trichlorobenzene	BRL	0.019	0.0210	111						56.7-153	
1,2,3-Trichloropropane	BRL	0.019	0.0201	106						61.6-138	
1,2,4-Trichlorobenzene	BRL	0.019	0.0191	101						55.9-150	
1,2,4-Trimethylbenzene	BRL	0.019	0.0179	94.2						71.1-131	
1,2-Dibromo-3-chloropropane	BRL	0.019	0.0211	111						52.4-150	
1,2-Dibromoethane	BRL	0.019	0.0205	108						72.9-125	
1,2-Dichlorobenzene	BRL	0.019	0.0197	104						76.1-126	
1,2-Dichloroethane	BRL	0.019	0.0200	105						66.4-134	
1,2-Dichloropropane	BRL	0.019	0.0181	95.3						70.2-128	
1,3,5-Trimethylbenzene	BRL	0.019	0.0179	94.2						75.1-127	
1,3-Dichlorobenzene	BRL	0.019	0.0190	100						73.9-126	
1,3-Dichloropropane	BRL	0.019	0.0182	95.8						68.3-124	
1,4-Dichlorobenzene	BRL	0.019	0.0193	102						72.3-127	
2,2-Dichloropropane	BRL	0.019	0.0140	73.7						68.5-138	
2-Chlorotoluene	BRL	0.019	0.0178	93.7						71.7-128	
4-Chlorotoluene	BRL	0.019	0.0177	93.2						72.2-126	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052093

**Date :** 6/13/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb19061114

**Created Date :** 06/10/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19052093.09

**QC Type: MS and MSD**

**QC Sample ID: 19060519.09**

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
4-Isopropyltoluene	BRL	0.019	0.0178	93.7						77.5-125	
Benzene	BRL	0.019	0.0187	98.4						74-126	
Bromobenzene	BRL	0.019	0.0199	105						73.3-129	
Bromochloromethane	BRL	0.019	0.0171	90						68.8-131	
Bromodichloromethane	BRL	0.019	0.0193	102						69-135	
Bromoform	BRL	0.019	0.0215	113						62-146	
Bromomethane	BRL	0.019	0.0149	78.4						58.7-139	
Carbon tetrachloride	BRL	0.019	0.0175	92.1						68.7-135	
Chlorobenzene	BRL	0.019	0.0192	101						73.3-129	
Chloroethane	BRL	0.019	0.0143	75.3						66.2-129	
Chloroform	BRL	0.019	0.0178	93.7						73.7-134	
Chloromethane	BRL	0.019	0.0144	75.8						51.4-135	
cis-1,2-Dichloroethylene	BRL	0.019	0.0172	90.5						72.4-132	
cis-1,3-Dichloropropene	BRL	0.019	0.0180	94.7						67.7-134	
Dibromochloromethane	BRL	0.019	0.0197	104						73.2-126	
Dibromomethane	BRL	0.019	0.0206	108						69.9-134	
Dichlorodifluoromethane	BRL	0.019	0.0140	73.7						36.8-144	
Ethylbenzene	BRL	0.019	0.0183	96.3						72.2-128	
Isopropylbenzene	BRL	0.019	0.0185	97.4						71.2-131	
m- & p-Xylenes	BRL	0.038	0.0369	97.1						70.7-131	
MEK	BRL	0.019	0.0146	76.8						52.5-152	
Methylene chloride	BRL	0.019	0.0191	101						70.6-129	
MTBE	BRL	0.019	0.0172	90.5						70-130	
Naphthalene	BRL	0.019	0.0197	104						60.7-145	
n-Butylbenzene	BRL	0.019	0.0167	87.9						66.5-136	
n-Propylbenzene	BRL	0.019	0.0173	91.1						73.3-126	
o-Xylene	BRL	0.019	0.0182	95.8						71.6-130	
sec-Butylbenzene	BRL	0.019	0.0178	93.7						77.9-124	
Styrene	BRL	0.019	0.0192	101						71.1-131	
t-butylbenzene	BRL	0.019	0.0163	85.8						74.4-130	
Tetrachloroethylene	BRL	0.019	0.0213	112						62.6-157	
Toluene	BRL	0.019	0.0184	96.8						73.3-127	
trans-1,2-Dichloroethylene	BRL	0.019	0.0167	87.9						70-130	
trans-1,3-Dichloropropene	BRL	0.019	0.0178	93.7						71.5-124	
Trichloroethylene	BRL	0.019	0.0193	102						69.2-133	
Trichlorofluoromethane	BRL	0.019	0.0150	78.9						63.9-140	
Vinyl Chloride	BRL	0.019	0.0147	77.4						40.9-159	
Xylenes	BRL	0.057	0.0551	96.7						69.2-133	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19052093

**Date :** 6/13/2019

**Analysis :** Total Petroleum Hydrocarbons      **Method :** TX 1005      **Reporting Units :** mg/Kg

**QC Batch ID :** Qb19061132      **Created Date :** 06/10/19      **Created By :** Jdongre

**Samples in This QC Batch :** 19052093.09

**Sample Preparation :** PB19061224      **Prep Method :** TX 1005      **Prep Date :** 06/10/19 02:00      **Prep By :** Jdongre

**QC Type: Method Blank**

Parameter	CAS #	Result	Units	D.F.	ML	MDL	Qual
C6-C12	TPH-1005-1	< MDL	mg/Kg	1	25	23.7	
>C12-C28	TPH-1005-2	< MDL	mg/Kg	1	25	20.3	
>C28-C35	TPH-1005-4	< MDL	mg/Kg	1	25	17.7	
Total C6-C35		< MDL	mg/Kg	1	---	17.7	
Chlorooctadecane(surr)	3386-33-2	91.2	%	1			
1-Chlorooctane(surr)	111-85-3	99	%	1			

**QC Type: LCS and LCSD**

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
C6-C12	500	493	98.6	500	488	97.6	1	20	75-125	
>C12-C28	500	493	98.6	500	488	97.6	1	20	75-125	
>C28-C35	500	530	106	500	537	107	1.3	20	75-125	

**QC Type: MS and MSD**

**QC Sample ID: 19060519.09**

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
C6-C12	BRL	500	506	101	500	502	100	0.8	20	75-125	
>C12-C28	BRL	500	508	102	500	500	100	1.6	20	75-125	
>C28-C35	BRL	500	614	123	500	562	112	8.8	20	75-125	

Refer to the Definition page for terms.



**LABORATORY TERM AND QUALIFIER DEFINITION REPORT**



Job ID : 19052093

Date: 6/13/2019

**General Term Definition**

Back-Wt	Back Weight	Post-Wt	Post Weight
BRL	Below Reporting Limit	ppm	parts per million
cfu	colony-forming units	Pre-Wt	Previous Weight
Conc.	Concentration	Q	Qualifier
D.F.	Dilution Factor	RegLimit	Regulatory Limit
Front-Wt	Front Weight	RPD	Relative Percent Difference
LCS	Laboratory Check Standard	RptLimit	Reporting Limit
LCSD	Laboratory Check Standard Duplicate	SDL	Sample Detection Limit
MS	Matrix Spike	surr	Surrogate
MSD	Matrix Spike Duplicate	T	Time
MW	Molecular Weight	TNTC	Too numerous to count
J	Estimation. Below calibration range but above MDL	U	Undetected at SDL (Sample Detection Limit).

**Qualifier Definition**

L2	Associated LCS and/or LCSD recovery is below acceptance limits for flagged analyte. Bias may be low.
M9	Matrix Spike and/or Matrix Spike Duplicate recovery is below laboratory control limits.
R1	RPD exceeds control limits."The sample randomly selected as QC for this batch was not part of your project. Therefore, this sample matrix is not applicable to your project samples."
H3	Sample received and analyzed past hold time.



10100 East Fwy (I-10)  
Suite 100  
Houston, TX 77029  
713-453-6060  
1-877-478-6060 Toll Free  
713-453-6091 Fax  
ablabs.com

A&B JOB ID # 19052093  
Project # E/03-19  
Project Name/Location Memorial Dr Reconstruction

1. Company: Aviles Engineering Corp  
Address: 5790 Winiflow Houston TX 77041  
Contact: Robert J Metzger  
Phone: 281-743-8352  
Fax:   
E-mail: Rmetzger@avilesengineering.com

2. Company: Asio  
Address:   
Contact:   
Phone:   
Fax:   
E-mail:

3. PO #   
3a. A&B Quote #   
4. Turnaround Time (Business Days)  
 1 Day\*  Other:  
 2 Days\*  3 Days\*  7 Days - Standard  
\*Surcharge applies

7. Reporting Requirement:  
 TRRP Limits only  TRRP Rpt. Package  See Attached  Standard Level II  PST  MDL  EDD

8. Sampler's Name & Company (PLEASE PRINT) Robert J Metzger Aec Sampler's Signature & Date [Signature] 5/30/19

LAB USE ONLY	9. Sample ID and Description	10. Sampling		11. Matrix							13. No. of Containers	14. Containers*	15. Preservatives**	16. PH-Lab Only	17. Analyses/Methods	18. REMARKS
		Date	Time 24hr	Comp.	Grab	Water	Soil	Sludge	Oil	Drinking Water						
	O1A6 B-15 13-14	5/29/19	16:50	✓	✓	✓	✓	✓	✓	✓	7	✓	✓	✓	VOCS, MTBE, TPAH, 100% moisture	insufficient water to collect set
	O2A B-15 water	5/29/19	17:10	✓	✓	✓	✓	✓	✓	✓	7	✓	✓			
	O3A6 B-16 16-17	5/29/19	15:35	✓	✓	✓	✓	✓	✓	✓	7	✓	✓			
	O4A6 B-17 13-14	5/29/19	14:28	✓	✓	✓	✓	✓	✓	✓	7	✓	✓			
	O5A6 B-18 17-18	5/29/19	12:35	✓	✓	✓	✓	✓	✓	✓	7	✓	✓			
	O6A B18 water	5/29/19	13:00	✓	✓	✓	✓	✓	✓	✓	7	✓	✓			
	O7A6 B-30 18-19	5/29/19	10:30	✓	✓	✓	✓	✓	✓	✓	7	✓	✓			
	O8AF B-30 water	5/29/19	10:46	✓	✓	✓	✓	✓	✓	✓	5	✓	✓			

19. RELINQUISHED BY [Signature] DATE 5/30/19 TIME 10:04  
20. RECEIVED BY [Signature] DATE 5/30/19 TIME 10:04  
21. KNOWN HAZARDS/COMMENTS  
Temperature: 37.5-32.2 C  
Thermometer ID 170707  
Intact: Y of N Initials: AB  
A&B cannot accept verbal changes  
Please FAX written changes to 713-453-6091  
Samples will be disposed of after 30 days  
A&B reserves the right to return samples

METHOD OF SHIPMENT  RENTAL  P/U  Field Work   
Containers: VOA - 40 ml vial AG - Amber/Glass 1 Liter  
4 oz/8 oz - glass wide mouth P/O - Plastic/other   
Preservatives: C - Cool H - HCl N - HNO<sub>3</sub> S - H<sub>2</sub>SO<sub>4</sub>  
OH - NaOH T - Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> X - Other   
BILL OF LADING/TRACKING #





# Sample Condition Checklist

A&B JobID : <b>19052093</b>		Date Received : <b>05/30/2019</b>			Time Received : <b>3:30PM</b>							
Client Name : <b>Aviles Engineering</b>												
Temperature : <b>3.7-0.5cf=3.2°C</b>				Sample pH : <b>N/A</b>								
Thermometer ID : <b>1707629</b>				pH Paper ID : <b>N/A</b>								
	<b>Check Points</b>						<b>Yes</b>	<b>No</b>	<b>N/A</b>			
<b>1.</b>	<b>Cooler seal present and signed.</b>							X				
<b>2.</b>	<b>Sample(s) in a cooler.</b>						X					
<b>3.</b>	<b>If yes, ice in cooler.</b>						X					
<b>4.</b>	<b>Sample(s) received with chain-of-custody.</b>						X					
<b>5.</b>	<b>C-O-C signed and dated.</b>						X					
<b>6.</b>	<b>Sample(s) received with signed sample custody seal.</b>							X				
<b>7.</b>	<b>Sample containers arrived intact. (If no comment).</b>						X					
<b>8.</b>	<b>Matrix</b>	<b>Water</b>	<b>Soil</b>	<b>Liquid</b>	<b>Sludge</b>	<b>Solid</b>	<b>Cassette</b>	<b>Tube</b>	<b>Bulk</b>	<b>Badge</b>	<b>Food</b>	<b>Other</b>
:		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>9.</b>	<b>Sample(s) were received in appropriate container(s).</b>						X					
<b>10.</b>	<b>Sample(s) were received with proper preservative</b>						X					
<b>11.</b>	<b>All samples were logged or labeled.</b>						X					
<b>12.</b>	<b>Sample ID labels match C-O-C ID's</b>						X					
<b>13.</b>	<b>Bottle count on C-O-C matches bottles found.</b>						X					
<b>14.</b>	<b>Sample volume is sufficient for analyses requested.</b>						X					
<b>15.</b>	<b>Samples were received within the hold time.</b>						X					
<b>16.</b>	<b>VOA vials completely filled.</b>						X					
<b>17.</b>	<b>Sample accepted.</b>						X					
<b>18.</b>	<b>Has client been contacted about sub-out</b>								X			
<b>Comments : Include actions taken to resolve discrepancies/problem:</b>												
Received 1 40mL preserved vial per sample for 02 and 06. 02, 06: Water. 01,03-05,07-08: Soil. - AB 5/31/19 Didn't receive 05G, bulk jar for soil sample. Also received an extra set of terracores. These were labeled as B 31 8-9. The lab labeled the samples as 09AF; No bulk jar received. - AB 5/31/19 Per client, analyze extra sample B 31 8-9 on rush 1 day TAT. 6/12/19 SGC												

Received by : ABarrera

Check in by/date : ABarrera / 05/30/2019

# Laboratory Analysis Report

Total Number of Pages: 24

Job ID : 19060195



10100 East Freeway, Suite 100, Houston, TX 77029 tel: 713-453-6060, fax: 713-453-6091, <http://www.ablabs.com>

---

**Client Project Name :**  
**E103-19 / Memorial Drive Reconstruction**

**Report To :** Client Name: Aviles Engineering  
Attn: Robert J. Metzger  
Client Address: 5790 Windfern  
City, State, Zip: Houston, Texas, 77041

P.O.#.:  
Sample Collected By: Robert J Metzger  
Date Collected: 06/03/19

---

**A&B Labs has analyzed the following samples...**

Client Sample ID	Matrix	A&B Sample ID
B-20 17-18	Soil	19060195.01
B-20 Water	Water	19060195.02
B-21 16-17	Soil	19060195.03
B-21 Water	Water	19060195.04
B-22 23-24	Soil	19060195.05
B-22 Water	Water	19060195.06

*Shantall Carpenter*

Released By: Shantall Carpenter  
Title: Senior Project Manager  
Date: 6/11/2019



This Laboratory is NELAP ( T104704213-19-20) accredited. Effective: 04/01/2019; Expires: 3/31/2020

Scope: Non-Potable Water, Drinking Water, Air, Solid, Biological Tissue, Hazardous Waste

I am the laboratory manager, or his/her designee, and I am responsible for the release of this data package. This laboratory data package has been reviewed and is complete and technically compliant with the requirements of the methods used, except where noted in the attached exception reports. I affirm, to the best of my knowledge that all problems/anomalies observed by this laboratory (and if applicable, any and all laboratories subcontracted through this laboratory) that might affect the quality of the data, have been identified in the Laboratory Review Checklist, and that no information or data have been knowingly withheld that would affect the quality of the data.

This report cannot be reproduced, except in full, without prior written permission of A&B Labs. Results shown relate only to the items tested. Samples are assumed to be in acceptable condition unless otherwise noted. Blank correction is not made unless otherwise noted. Air concentrations reported are based on field sampling information provided by client. Soil samples are reported on a wet weight basis unless otherwise noted. Uncertainty estimates are available on request.

Date Received : 06/04/2019 17:05



LABORATORY TEST RESULTS

Client Sample ID: B-20 17-18
A&B Job Sample ID: 19060195.01

Date: 6/11/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Drive Reconstruction
Attn: Robert J. Metzger

Test Description: % Moisture
Analytical Method: SM 2540G
QC Batch ID: Qb19060658
Prep Method: SM 2540G
Prepared By: KRSaranya
Prep Batch ID: PB19060637
Analyst Initial: KRS
Sample Matrix: Soil
Date Collected: 06/03/2019 10:35
Date Received: 06/04/2019 17:05
Date Prepared: 06/06/2019 15:00
% Moisture: 10.4

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Row 1: % Moisture, 10.4, ----, ----, %, 1, 06/06/19 17:00

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-20 17-18  
 A&B Job Sample ID: 19060195.01

Date: 6/11/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction

Attn: Robert J. Metzger

Test Description: **Purgeable Aromatics**

Analytical Method: SW-846 8260C  
 QC Batch ID: Qb19060729  
 Prep Method: SW-846 5035A  
 Prepared By: Rajeev  
 Prep Batch ID: PB19060713

Sample Matrix: Soil  
 Date Collected: 06/03/2019 10:35  
 Date Received: 06/04/2019 17:05  
 Date Prepared: 06/06/2019 10:00

Analyst Initial: RT

% Moisture: 10.4

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
1634-04-4	MTBE	<0.00054	U	0.00054	0.0047	0.00057	0.005	0.05	mg/Kg	0.85	06/06/19 15:47
71-43-2	Benzene	<0.00029	U	0.00029	0.0047	0.00031	0.005	0.05	mg/Kg	0.85	06/06/19 15:47
108-88-3	Toluene	<0.00042	U	0.00042	0.0047	0.00044	0.005	0.05	mg/Kg	0.85	06/06/19 15:47
100-41-4	Ethylbenzene	<0.00042	U	0.00042	0.0047	0.00044	0.005	0.05	mg/Kg	0.85	06/06/19 15:47
108-38-3&106-4	m- & p-Xylenes	<0.00104	U	0.00104	0.0095	0.0011	0.010	0.10	mg/Kg	0.85	06/06/19 15:47
95-47-6	o-Xylene	<0.00039	U	0.00039	0.0047	0.00041	0.005	0.05	mg/Kg	0.85	06/06/19 15:47
1330-20-7	Xylenes	<0.00140	U	0.00140	0.014	0.00148	0.015	0.15	mg/Kg	0.85	06/06/19 15:47
17060-07-0	1,2-Dichloroethane-d4	97.5					70	130	%	0.85	06/06/19 15:47
1868-53-7	Dibromofluoromethan	89.5					70	130	%	0.85	06/06/19 15:47
2037-26-5	Toluene-d8(surr)	98.9					70	130	%	0.85	06/06/19 15:47
460-00-4	p-Bromofluorobenzen	93					70	130	%	0.85	06/06/19 15:47

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-20 17-18  
 A&B Job Sample ID: 19060195.01

Date: 6/11/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb19060739  
 Prep Method: TX 1005  
 Prepared By: Jdongre  
 Prep Batch ID: PB19060718

Sample Matrix: Soil  
 Date Collected: 06/03/2019 10:35  
 Date Received: 06/04/2019 17:05  
 Date Prepared: 06/06/2019 10:00

Analyst Initial: JKD

% Moisture: 10.4

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12	<24.6	U	24.6	25.9	23.7	25	1000	mg/Kg	0.93	06/06/19 20:46
TPH-1005-2	>C12-C28	<21.1	U	21.1	25.9	20.3	25	1000	mg/Kg	0.93	06/06/19 20:46
TPH-1005-4	>C28-C35	<18.4	U	18.4	25.9	17.7	25	1000	mg/Kg	0.93	06/06/19 20:46
	Total C6-C35	<18.4	U	18.4		17.7	----	----	mg/Kg	0.93	06/06/19 20:46
111-85-3	1-Chlorooctane(surr)	97.8					60	143	%	0.93	06/06/19 20:46
3386-33-2	Chlorooctadecane(sur	94.7					60	150	%	0.93	06/06/19 20:46

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-20 Water  
 A&B Job Sample ID: 19060195.02

Date: 6/11/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction

Attn: Robert J. Metzger

Test Description: **Purgeable Aromatics**

Analytical Method: SW-846 8260C  
 QC Batch ID: Qb19060679  
 Prep Method: SW-846 5030C  
 Prepared By: Rajeev  
 Prep Batch ID: PB19060645

Sample Matrix: Water  
 Date Collected: 06/03/2019 10:55  
 Date Received: 06/04/2019 17:05  
 Date Prepared: 06/06/2019 10:00

Analyst Initial: RT

% Moisture

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
1634-04-4	MTBE	<0.00066	U	0.00066	0.005	0.00066	0.005	0.05	mg/L	1	06/06/19 11:55
71-43-2	Benzene	<0.00035	U	0.00035	0.005	0.00035	0.005	0.05	mg/L	1	06/06/19 11:55
108-88-3	Toluene	<0.00028	U	0.00028	0.005	0.00028	0.005	0.05	mg/L	1	06/06/19 11:55
100-41-4	Ethylbenzene	<0.00035	U	0.00035	0.005	0.00035	0.005	0.05	mg/L	1	06/06/19 11:55
108-38-3&106-4	m- & p-Xylenes	<0.00060	U	0.00060	0.01	0.0006	0.010	0.10	mg/L	1	06/06/19 11:55
95-47-6	o-Xylene	<0.00250	U	0.00250	0.005	0.0025	0.005	0.05	mg/L	1	06/06/19 11:55
1330-20-7	Xylenes	<0.00820	U	0.00820	0.015	0.0082	0.015	0.15	mg/L	1	06/06/19 11:55
17060-07-0	1,2-Dichloroethane-d4	108					70	130	%	1	06/06/19 11:55
1868-53-7	Dibromofluoromethan	107					70	130	%	1	06/06/19 11:55
2037-26-5	Toluene-d8(surr)	101					70	130	%	1	06/06/19 11:55
460-00-4	p-Bromofluorobenzen	103					70	130	%	1	06/06/19 11:55

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-20 Water  
 A&B Job Sample ID: 19060195.02

Date: 6/11/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb19060582  
 Prep Method: TX 1005  
 Prepared By: Jdongre  
 Prep Batch ID: PB19060548

Sample Matrix: Water  
 Date Collected: 06/03/2019 10:55  
 Date Received: 06/04/2019 17:05  
 Date Prepared: 06/05/2019 10:00

Analyst Initial: JKD

% Moisture

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12 <sup>1</sup>	<0.60	U	0.60	1.37	0.66	1.5	60	mg/L	0.91	06/06/19 16:03
TPH-1005-2	>C12-C28 <sup>1</sup>	<0.78	U	0.78	1.37	0.86	1.5	60	mg/L	0.91	06/06/19 16:03
TPH-1005-4	>C28-C35 <sup>1</sup>	<0.68	U	0.68	1.37	0.75	1.5	60	mg/L	0.91	06/06/19 16:03
	Total C6-C35	< 0.78	U	0.78		0.86	----	----	mg/L	0.91	06/06/19 16:03
111-85-3	1-Chlorooctane(surr)	113					59	122	%	0.91	06/06/19 16:03
3386-33-2	Chlorooctadecane(sur)	102					48	123	%	0.91	06/06/19 16:03



LABORATORY TEST RESULTS

Client Sample ID: B-21 16-17
A&B Job Sample ID: 19060195.03

Date: 6/11/2019

Client Name: Aviles Engineering Attn: Robert J. Metzger
Project Name: E103-19 / Memorial Drive Reconstruction

Test Description: % Moisture
Analytical Method: SM 2540G
QC Batch ID: Qb19060658
Prep Method: SM 2540G
Prepared By: KRSaranya
Prep Batch ID: PB19060637
Analyst Initial: KRS
Sample Matrix: Soil
Date Collected: 06/03/2019 14:30
Date Received: 06/04/2019 17:05
Date Prepared: 06/06/2019 15:00
% Moisture: 17.8

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Row 1: % Moisture, 17.8, ----, ----, %, 1, 06/06/19 17:00





**LABORATORY TEST RESULTS**

Client Sample ID: B-21 16-17  
 A&B Job Sample ID: 19060195.03

Date: 6/11/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction

Attn: Robert J. Metzger

Test Description: **Purgeable Aromatics**

Analytical Method: SW-846 8260C  
 QC Batch ID: Qb19060729  
 Prep Method: SW-846 5035A  
 Prepared By: Rajeev  
 Prep Batch ID: PB19060713

Sample Matrix: Soil  
 Date Collected: 06/03/2019 14:30  
 Date Received: 06/04/2019 17:05  
 Date Prepared: 06/06/2019 10:00

Analyst Initial: RT

% Moisture: 17.8

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
1634-04-4	MTBE	<0.00051	U	0.00051	0.0045	0.00057	0.005	0.05	mg/Kg	0.74	06/06/19 16:21
71-43-2	Benzene	<0.00028	U	0.00028	0.0045	0.00031	0.005	0.05	mg/Kg	0.74	06/06/19 16:21
108-88-3	Toluene	<0.00040	U	0.00040	0.0045	0.00044	0.005	0.05	mg/Kg	0.74	06/06/19 16:21
100-41-4	Ethylbenzene	<0.00040	U	0.00040	0.0045	0.00044	0.005	0.05	mg/Kg	0.74	06/06/19 16:21
108-38-3&106-4	m- & p-Xylenes	<0.00099	U	0.00099	0.009	0.0011	0.010	0.10	mg/Kg	0.74	06/06/19 16:21
95-47-6	o-Xylene	<0.00037	U	0.00037	0.0045	0.00041	0.005	0.05	mg/Kg	0.74	06/06/19 16:21
1330-20-7	Xylenes	<0.00133	U	0.00133	0.014	0.00148	0.015	0.15	mg/Kg	0.74	06/06/19 16:21
17060-07-0	1,2-Dichloroethane-d4	99.5					70	130	%	0.74	06/06/19 16:21
1868-53-7	Dibromofluoromethan	91.9					70	130	%	0.74	06/06/19 16:21
2037-26-5	Toluene-d8(surr)	97					70	130	%	0.74	06/06/19 16:21
460-00-4	p-Bromofluorobenzen	91.8					70	130	%	0.74	06/06/19 16:21

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-21 16-17  
 A&B Job Sample ID: 19060195.03

Date: 6/11/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb19060739  
 Prep Method: TX 1005  
 Prepared By: Jdongre  
 Prep Batch ID: PB19060718

Sample Matrix: Soil  
 Date Collected: 06/03/2019 14:30  
 Date Received: 06/04/2019 17:05  
 Date Prepared: 06/06/2019 10:00

Analyst Initial: JKD

% Moisture: 17.8

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12	<27.4	U	27.4	28.9	23.7	25	1000	mg/Kg	0.95	06/06/19 21:15
TPH-1005-2	>C12-C28	<23.5	U	23.5	28.9	20.3	25	1000	mg/Kg	0.95	06/06/19 21:15
TPH-1005-4	>C28-C35	<20.5	U	20.5	28.9	17.7	25	1000	mg/Kg	0.95	06/06/19 21:15
	Total C6-C35	< 20.5	U	20.5		17.7	----	----	mg/Kg	0.95	06/06/19 21:15
111-85-3	1-Chlorooctane(surr)	104					60	143	%	0.95	06/06/19 21:15
3386-33-2	Chlorooctadecane(sur	94.3					60	150	%	0.95	06/06/19 21:15

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-21 Water  
 A&B Job Sample ID: 19060195.04

Date: 6/11/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction

Attn: Robert J. Metzger

Test Description: **Purgeable Aromatics**

Analytical Method: SW-846 8260C  
 QC Batch ID: Qb19060679  
 Prep Method: SW-846 5030C  
 Prepared By: Rajeev  
 Prep Batch ID: PB19060645

Sample Matrix: Water  
 Date Collected: 06/03/2019 14:50  
 Date Received: 06/04/2019 17:05  
 Date Prepared: 06/06/2019 10:00

Analyst Initial: RT

% Moisture

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
1634-04-4	MTBE	<0.00066	U	0.00066	0.005	0.00066	0.005	0.05	mg/L	1	06/06/19 12:27
71-43-2	Benzene	<0.00035	U	0.00035	0.005	0.00035	0.005	0.05	mg/L	1	06/06/19 12:27
108-88-3	Toluene	<0.00028	U	0.00028	0.005	0.00028	0.005	0.05	mg/L	1	06/06/19 12:27
100-41-4	Ethylbenzene	<0.00035	U	0.00035	0.005	0.00035	0.005	0.05	mg/L	1	06/06/19 12:27
108-38-3&106-4	m- & p-Xylenes	<0.00060	U	0.00060	0.01	0.0006	0.010	0.10	mg/L	1	06/06/19 12:27
95-47-6	o-Xylene	<0.00250	U	0.00250	0.005	0.0025	0.005	0.05	mg/L	1	06/06/19 12:27
1330-20-7	Xylenes	<0.00820	U	0.00820	0.015	0.0082	0.015	0.15	mg/L	1	06/06/19 12:27
17060-07-0	1,2-Dichloroethane-d4	113					70	130	%	1	06/06/19 12:27
1868-53-7	Dibromofluoromethan	108					70	130	%	1	06/06/19 12:27
2037-26-5	Toluene-d8(surr)	100					70	130	%	1	06/06/19 12:27
460-00-4	p-Bromofluorobenzen	98.9					70	130	%	1	06/06/19 12:27

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-21 Water  
 A&B Job Sample ID: 19060195.04

Date: 6/11/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb19060582  
 Prep Method: TX 1005  
 Prepared By: Jdongre  
 Prep Batch ID: PB19060548

Sample Matrix: Water  
 Date Collected: 06/03/2019 14:50  
 Date Received: 06/04/2019 17:05  
 Date Prepared: 06/05/2019 10:00

Analyst Initial: JKD

% Moisture

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12 <sup>1</sup>	<0.60	U	0.60	1.37	0.66	1.5	60	mg/L	0.91	06/06/19 16:32
TPH-1005-2	>C12-C28 <sup>1</sup>	<0.78	U	0.78	1.37	0.86	1.5	60	mg/L	0.91	06/06/19 16:32
TPH-1005-4	>C28-C35 <sup>1</sup>	<0.68	U	0.68	1.37	0.75	1.5	60	mg/L	0.91	06/06/19 16:32
	Total C6-C35	< 0.78	U	0.78		0.86	----	----	mg/L	0.91	06/06/19 16:32
111-85-3	1-Chlorooctane(surr)	86.5					59	122	%	0.91	06/06/19 16:32
3386-33-2	Chlorooctadecane(sur	84.6					48	123	%	0.91	06/06/19 16:32

Soil results reported on dry weight basis



LABORATORY TEST RESULTS

Client Sample ID: B-22 23-24
A&B Job Sample ID: 19060195.05

Date: 6/11/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Drive Reconstruction

Attn: Robert J. Metzger

Test Description: % Moisture
Analytical Method: SM 2540G
QC Batch ID: Qb19060658
Prep Method: SM 2540G
Prepared By: KRSaranya
Prep Batch ID: PB19060637
Analyst Initial: KRS

Sample Matrix: Soil
Date Collected: 06/03/2019 16:20
Date Received: 06/04/2019 17:05
Date Prepared: 06/06/2019 15:00

% Moisture: 18.4

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Row 1: % Moisture, 18.4, ----, ----, %, 1, 06/06/19 17:00



**LABORATORY TEST RESULTS**

Client Sample ID: B-22 23-24  
 A&B Job Sample ID: 19060195.05

Date: 6/11/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction

Attn: Robert J. Metzger

Test Description: **Purgeable Aromatics**

Analytical Method: SW-846 8260C  
 QC Batch ID: Qb19060729  
 Prep Method: SW-846 5035A  
 Prepared By: Rajeev  
 Prep Batch ID: PB19060713

Sample Matrix: Soil  
 Date Collected: 06/03/2019 16:20  
 Date Received: 06/04/2019 17:05  
 Date Prepared: 06/06/2019 10:00

Analyst Initial: RT

% Moisture: 18.4

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
1634-04-4	MTBE	<0.00054	U	0.00054	0.0047	0.00057	0.005	0.05	mg/Kg	0.77	06/06/19 21:40
71-43-2	Benzene	<0.00029	U	0.00029	0.0047	0.00031	0.005	0.05	mg/Kg	0.77	06/06/19 21:40
108-88-3	Toluene	<0.00042	U	0.00042	0.0047	0.00044	0.005	0.05	mg/Kg	0.77	06/06/19 21:40
100-41-4	Ethylbenzene	0.00763		0.00042	0.0047	0.00044	0.005	0.05	mg/Kg	0.77	06/06/19 21:40
108-38-3&106-4	m- & p-Xylenes	0.00655	J	0.00104	0.0094	0.0011	0.010	0.10	mg/Kg	0.77	06/06/19 21:40
95-47-6	o-Xylene	<0.00039	U	0.00039	0.0047	0.00041	0.005	0.05	mg/Kg	0.77	06/06/19 21:40
1330-20-7	Xylenes	0.00655	J	0.00140	0.014	0.00148	0.015	0.15	mg/Kg	0.77	06/06/19 21:40
17060-07-0	1,2-Dichloroethane-d4	91					70	130	%	39	06/06/19 21:40
1868-53-7	Dibromofluoromethan	85.2					70	130	%	39	06/06/19 21:40
2037-26-5	Toluene-d8(surr)	99.4					70	130	%	39	06/06/19 21:40
460-00-4	p-Bromofluorobenzen	102					70	130	%	39	06/06/19 21:40

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-22 23-24  
 A&B Job Sample ID: 19060195.05

Date: 6/11/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb19060739  
 Prep Method: TX 1005  
 Prepared By: Jdongre  
 Prep Batch ID: PB19060718

Sample Matrix: Soil  
 Date Collected: 06/03/2019 16:20  
 Date Received: 06/04/2019 17:05  
 Date Prepared: 06/06/2019 10:00

Analyst Initial: JKD

% Moisture: 18.4

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12	42.5		27.6	29.1	23.7	25	1000	mg/Kg	0.95	06/06/19 21:44
TPH-1005-2	>C12-C28	<23.6	U	23.6	29.1	20.3	25	1000	mg/Kg	0.95	06/06/19 21:44
TPH-1005-4	>C28-C35	<20.6	U	20.6	29.1	17.7	25	1000	mg/Kg	0.95	06/06/19 21:44
	Total C6-C35	42.5		20.6		17.7	----	----	mg/Kg	0.95	06/06/19 21:44
111-85-3	1-Chlorooctane(surr)	99.7					60	143	%	0.95	06/06/19 21:44
3386-33-2	Chlorooctadecane(sur	80.7					60	150	%	0.95	06/06/19 21:44

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-22 Water  
 A&B Job Sample ID: 19060195.06

Date: 6/11/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction

Attn: Robert J. Metzger

Test Description: **Purgeable Aromatics**

Analytical Method: SW-846 8260C  
 QC Batch ID: Qb19060679  
 Prep Method: SW-846 5030C  
 Prepared By: Rajeev  
 Prep Batch ID: PB19060645

Sample Matrix: Water  
 Date Collected: 06/03/2019 16:50  
 Date Received: 06/04/2019 17:05  
 Date Prepared: 06/06/2019 10:00

Analyst Initial: RT

% Moisture

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
1634-04-4	MTBE	<0.00066	U	0.00066	0.005	0.00066	0.005	0.05	mg/L	1	06/06/19 22:08
71-43-2	Benzene	0.0440		0.00035	0.005	0.00035	0.005	0.05	mg/L	1	06/06/19 22:08
108-88-3	Toluene	0.00820		0.00028	0.005	0.00028	0.005	0.05	mg/L	1	06/06/19 22:08
100-41-4	Ethylbenzene	0.269		0.00350	0.05	0.00035	0.005	0.05	mg/L	10	06/06/19 23:13
108-38-3&106-4	m- & p-Xylenes	0.300		0.00300	0.05	0.0006	0.010	0.10	mg/L	5	06/06/19 22:41
95-47-6	o-Xylene	0.00532		0.00250	0.005	0.0025	0.005	0.05	mg/L	1	06/06/19 22:08
1330-20-7	Xylenes	0.30532		0.0410	0.075	0.0082	0.015	0.15	mg/L	5	06/06/19 22:41
17060-07-0	1,2-Dichloroethane-d4	102					70	130	%	1	06/06/19 22:08
1868-53-7	Dibromofluoromethan	98.3					70	130	%	1	06/06/19 22:08
2037-26-5	Toluene-d8(surr)	95.7					70	130	%	1	06/06/19 22:08
460-00-4	p-Bromofluorobenzen	95.7					70	130	%	1	06/06/19 22:08

Soil results reported on dry weight basis





**LABORATORY TEST RESULTS**

Client Sample ID: B-22 Water  
 A&B Job Sample ID: 19060195.06

Date: 6/11/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**

Sample Matrix: Water

Analytical Method: TX 1005

Date Collected: 06/03/2019 16:50

QC Batch ID: Qb19060582

Date Received: 06/04/2019 17:05

Prep Method: TX 1005

Date Prepared: 06/05/2019 10:00

Prepared By: Jdongre

Prep Batch ID: PB19060548

Analyst Initial: JKD

% Moisture

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12 <sup>1</sup>	2.36		0.60	1.37	0.66	1.5	60	mg/L	0.91	06/06/19 17:02
TPH-1005-2	>C12-C28 <sup>1</sup>	<0.78	U	0.78	1.37	0.86	1.5	60	mg/L	0.91	06/06/19 17:02
TPH-1005-4	>C28-C35 <sup>1</sup>	<0.68	U	0.68	1.37	0.75	1.5	60	mg/L	0.91	06/06/19 17:02
	Total C6-C35	2.36		0.78		0.86	----	----	mg/L	0.91	06/06/19 17:02
111-85-3	1-Chlorooctane(surr)	85.6					59	122	%	0.91	06/06/19 17:02
3386-33-2	Chlorooctadecane(sur	74.7					48	123	%	0.91	06/06/19 17:02

Soil results reported on dry weight basis

<sup>1</sup>-Parameter not available for accreditation

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060195

**Date :** 6/11/2019

**Analysis :** Total Petroleum Hydrocarbons

**Method :** TX 1005

**Reporting Units :** mg/L

**QC Batch ID :** Qb19060582    **Created Date :** 06/05/19

**Created By :** Jdongre

**Samples in This QC Batch :** 19060195.02,04,06

**Sample Preparation :** PB19060548

**Prep Method :** TX 1005

**Prep Date :** 06/05/19 10:00

**Prep By :** Jdongre

**QC Type: Method Blank**

Parameter	CAS #	Result	Units	D.F.	MQL	MDL	Qual
C6-C12	TPH-1005-1	< MDL	mg/L	1	1.5	0.66	
>C12-C28	TPH-1005-2	< MDL	mg/L	1	1.5	0.86	
>C28-C35	TPH-1005-4	< MDL	mg/L	1	1.5	0.75	
Total C6-C35		< MDL	mg/L	1	----	0.86	
1-Chlorooctane(surr)	111-85-3	97.1	%	1			
Chlorooctadecane(surr)	3386-33-2	82.9	%	1			

**QC Type: Duplicate**

**QC Sample ID: 19060108.05**

Parameter	QCSample Result	Sample Result	Units	RPD	RPD CtrlLimit	Qual
>C12-C28	BRL	BRL	mg/L	0.0	30	
>C28-C35	BRL	BRL	mg/L	0.0	30	
C6-C12	0.774	0.745	mg/L	3.8	30	
Total C6-C35	0.944	0.745	mg/L	23.6	30	

**QC Type: LCS and LCSD**

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
C6-C12	30	33.2	111	30	32.8	109	1.3	20	75-125	
>C12-C28	30	28.2	94.1	30	28.3	94.3	0.3	20	75-125	
>C28-C35	30	29.7	99	30	31.5	105	5.9	20	75-125	

Refer to the Definition page for terms.



**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060195

**Date :** 6/11/2019

**Analysis :** Purgeable Aromatics

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb19060679

**Created Date :** 06/06/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19060195.02,04,06

**Sample Preparation :** PB19060645

**Prep Method :** SW-846 5030C

**Prep Date :** 06/06/19 10:00

**Prep By :** Rajeev

**QC Type: Method Blank**

Parameter	CAS #	Result	Units	D.F.	MQL	MDL	Qual
Benzene	71-43-2	< MDL	mg/L	1	0.005	0.00063	
Ethylbenzene	100-41-4	< MDL	mg/L	1	0.005	0.00100	
m- & p-Xylenes	108-38-3&106-42-3	< MDL	mg/L	1	0.01	0.00151	
MTBE	1634-04-4	< MDL	mg/L	1	0.005	0.00082	
o-Xylene	95-47-6	< MDL	mg/L	1	0.005	0.00066	
Toluene	108-88-3	< MDL	mg/L	1	0.005	0.00075	
Xylenes	1330-20-7	< MDL	mg/L	1	0.005	0.00204	
Dibromofluoromethane(surr)	1868-53-7	103	%	1			
1,2-Dichloroethane-d4(surr)	17060-07-0	103	%	1			
Toluene-d8(surr)	2037-26-5	101	%	1			
p-Bromofluorobenzene(surr)	460-00-4	102	%	1			

**QC Type: LCS and LCSD**

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
Benzene	0.02	0.0195	97.7	0.02	0.0185	92.5	5.5	20	79-118	
Ethylbenzene	0.02	0.0204	102	0.02	0.0196	97.8	4	20	84-117	
m- & p-Xylenes	0.04	0.0415	104	0.04	0.0396	99	4.7	20	80-118	
MTBE	0.02	0.0205	102	0.02	0.0213	107	4	20	71-124	
o-Xylene	0.02	0.0200	100	0.02	0.0194	96.8	3.1	20	84-117	
Toluene	0.02	0.0199	99.7	0.02	0.0192	96.2	3.8	20	84-117	
Xylenes	0.06	0.0615	103	0.06	0.059	98.3	4.1	20	83-118	

**QC Type: MS and MSD**

**QC Sample ID: 19060274.01**

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
Benzene	BRL	0.02	0.0221	111						73-129	
Ethylbenzene	BRL	0.02	0.0230	115						80-132	
m- & p-Xylenes	BRL	0.04	0.0477	119						74-127	
MTBE	BRL	0.02	0.0215	108						70-130	
o-Xylene	BRL	0.02	0.0216	108						74-126	
Toluene	BRL	0.02	0.0233	117						72-121	
Xylenes	BRL	0.06	0.0693	116						73-127	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060195

**Date :** 6/11/2019

**Analysis :** Purgeable Aromatics      **Method :** SW-846 8260C      **Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060729      **Created Date :** 06/06/19      **Created By :** Rajeev

**Samples in This QC Batch :** 19060195.01,03,05

**Sample Preparation :** PB19060713      **Prep Method :** SW-846 5035A      **Prep Date :** 06/06/19 10:00      **Prep By :** Rajeev

<b>QC Type: Method Blank</b>								
Parameter	CAS #	Result	Units	D.F.	MQL	MDL		Qual
Benzene	71-43-2	< MDL	mg/Kg	1	0.005	0.00107		
Ethylbenzene	100-41-4	< MDL	mg/Kg	1	0.005	0.00138		
m- & p-Xylenes	108-38-3&106-42-3	< MDL	mg/Kg	1	0.01	0.00273		
MTBE	1634-04-4	< MDL	mg/Kg	1	0.005	0.00107		
o-Xylene	95-47-6	< MDL	mg/Kg	1	0.005	0.00126		
Toluene	108-88-3	< MDL	mg/Kg	1	0.005	0.00119		
Xylenes	1330-20-7	< MDL	mg/Kg	1	0.005	0.001		
Dibromofluoromethane(surr)	1868-53-7	90.3	%	1				
1,2-Dichloroethane-d4(surr)	17060-07-0	90.8	%	1				
Toluene-d8(surr)	2037-26-5	98.4	%	1				
p-Bromofluorobenzene(surr)	460-00-4	94.2	%	1				

<b>QC Type: LCS and LCSD</b>										
Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
Benzene	0.02	0.0192	95.8	0.02	0.0205	103	6.8	30	77-121	
Ethylbenzene	0.02	0.0196	98.1	0.02	0.0210	105	6.8	30	76-122	
m- & p-Xylenes	0.04	0.0397	99.1	0.04	0.0422	106	6.2	30	77-124	
MTBE	0.02	0.0173	86.4	0.02	0.0186	93	7.3	30	73-125	
o-Xylene	0.02	0.0195	97.5	0.02	0.0206	103	5.5	30	77-123	
Toluene	0.02	0.0198	99.1	0.02	0.0213	107	7.2	30	77-121	
Xylenes	0.06	0.0592	98.7	0.06	0.0628	105	5.9	30	78-124	

<b>QC Type: MS and MSD</b>											
<b>QC Sample ID: 19060241.02</b>											
Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
Benzene	BRL	0.019	0.0196	103						74-126	
Ethylbenzene	BRL	0.019	0.0197	104						72.2-128	
m- & p-Xylenes	BRL	0.039	0.0397	102						70.7-131	
MTBE	BRL	0.019	0.0180	94.7						70-130	
o-Xylene	BRL	0.019	0.0199	105						71.6-130	
Toluene	BRL	0.019	0.0203	107						73.3-127	
Xylenes	BRL	0.058	0.0596	103						69.2-133	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060195

**Date :** 6/11/2019

**Analysis :** Total Petroleum Hydrocarbons      **Method :** TX 1005      **Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060739      **Created Date :** 06/06/19      **Created By :** Jdongre

**Samples in This QC Batch :** 19060195.01,03,05

**Sample Preparation :** PB19060718      **Prep Method :** TX 1005      **Prep Date :** 06/06/19 10:00      **Prep By :** Jdongre

**QC Type: Method Blank**

Parameter	CAS #	Result	Units	D.F.	MQL	MDL	Qual
C6-C12	TPH-1005-1	< MDL	mg/Kg	1	25	23.7	
>C12-C28	TPH-1005-2	< MDL	mg/Kg	1	25	20.3	
>C28-C35	TPH-1005-4	< MDL	mg/Kg	1	25	17.7	
Total C6-C35		< MDL	mg/Kg	1	----	17.7	
Chlorooctadecane(surr)	3386-33-2	88.5	%	1			
1-Chlorooctane(surr)	111-85-3	101	%	1			

**QC Type: LCS and LCSD**

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
C6-C12	500	533	107	500	529	106	0.8	20	75-125	
>C12-C28	500	518	104	500	513	103	1	20	75-125	
>C28-C35	500	529	106	500	554	111	4.6	20	75-125	

**QC Type: MS and MSD**

**QC Sample ID: 19060207.01**

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
C6-C12	BRL	500	596	119	500	579	116	2.9	20	75-125	
>C12-C28	BRL	500	588	118	500	576	115	2.1	20	75-125	
>C28-C35	BRL	500	621	124	500	615	123	1	20	75-125	

Refer to the Definition page for terms.

**LABORATORY TERM AND QUALIFIER DEFINITION REPORT**



Job ID : 19060195

Date: 6/11/2019

**General Term Definition**

Back-Wt	Back Weight	Post-Wt	Post Weight
BRL	Below Reporting Limit	ppm	parts per million
cfu	colony-forming units	Pre-Wt	Previous Weight
Conc.	Concentration	Q	Qualifier
D.F.	Dilution Factor	RegLimit	Regulatory Limit
Front-Wt	Front Weight	RPD	Relative Percent Difference
LCS	Laboratory Check Standard	RptLimit	Reporting Limit
LCSD	Laboratory Check Standard Duplicate	SDL	Sample Detection Limit
MS	Matrix Spike	surr	Surrogate
MSD	Matrix Spike Duplicate	T	Time
MW	Molecular Weight	TNTC	Too numerous to count
J	Estimation. Below calibration range but above MDL		

**Qualifier Definition**

J	Estimation. Below calibration range but above MDL.
U	Undetected at SDL (Sample Detection Limit).



10100 East Fwy (I-10)  
Suite 100  
Houston, TX 77029  
713-453-6060  
1-877-478-6060 Toll Free  
713-453-6091 Fax  
ablabs.com

1. REPORT TO: (AEC)  
Company: Aviles Engineering Corp  
Address: 5790 Windfern  
Houston, TX 77041  
Contact: Robert (Bob) Metzger  
Phone: 281-793-8352  
Fax:   
E-mail: Rmetzger@aviles  
eng.com

2. INVOICE TO:  
Company: See Box 1  
Address:  
Contact:  
Phone:  
Fax:   
E-mail:

3. PO #  
3a. A&B Quote #  
4. Turnaround Time (Business Days)  
 1 Day\*       Other:  
 2 Days\*  
 3 Days\*      \*Surcharge applies  
 7 Days - Standard

A&B JOB ID # 19000195  
5. Project # E103-19

6. Project Name/Location  
Memorial Drive Reconstruction

7. Reporting Requirement:  
 TRRP Limits only     TRRP Rpt. Package     See Attached     Standard Level II     PST     MDL     EDD

8. Sampler's Name & Company (PLEASE PRINT)      Sampler's Signature & Date  
Robert S Metzger AEC      [Signature] 6/4/19

LAB USE ONLY	9. Sample ID and Description	10. Sampling		12. Matrix								13. No. of Containers	14. Containers*	15. Preservatives**	16. PH-Lab Only	17. Analyses/Methods	18. REMARKS
		Date	Time 24hr	Comp.	Grab	Water	Soil	Sludge	Oil	Drinking Water	Air						
	01AF B-20 17-18	6/3/19	10:35	✓		✓							7	✓	✓		
	02AD B-20 water	6/3/19	10:55	✓	✓								4	✓	✓		Insufficient water for 6 vials
	03AF B-21 16-17	6/3/19	14:30	✓		✓							7	✓	✓		
	04AF B-21 water	6/3/19	14:50	✓	✓								6	✓	✓		
	05AF B-22 23-24	6/3/19	16:20	✓		✓							7	✓	✓		Strong odor
	06AF B-22 water	6/3/19	16:50	✓		✓							6	✓	✓		Strong odor

19. RELINQUISHED BY		DATE	TIME	20. RECEIVED BY		DATE	TIME	21. KNOWN HAZARDS/COMMENTS	
<u>[Signature]</u>		<u>6/4/19</u>	<u>13:27</u>	<u>[Signature]</u>		<u>6-4-19</u>	<u>13:27</u>	B-22 Samples appear to be highly contaminated	
<u>[Signature]</u>		<u>6-6-19</u>	<u>1705</u>	<u>[Signature]</u>		<u>6-4-19</u>	<u>1705</u>	Temperature: <u>5.25-4.7°C</u> Thermometer ID <u>1707629</u> Intact <input checked="" type="checkbox"/> or N Initials <u>[Signature]</u>	

\*Containers: VOA - 40 ml vial      A/G - Amber/Glass 1 Liter      \*\*Preservatives: C - Cool      H - HCl      N - HNO<sub>3</sub>      S - H<sub>2</sub>SO<sub>4</sub>  
4 oz/8 oz - glass wide mouth      P/O - Plastic/other      OH - NaOH      T - NA<sub>2</sub>S<sub>2</sub>O<sub>3</sub>      X - Other

METHOD OF SHIPMENT      BILL OF LADING/TRACKING #

LAB USE ONLY    SAMPLING    RENTAL    P/U    Supplies    Field Work

A&B cannot accept verbal changes  
Please FAX written changes to 713-453-6091  
Samples will be disposed of after 30 days  
A&B reserves the right to return samples





# Sample Condition Checklist

A&B JobID : <b>19060195</b>	Date Received : <b>06/04/2019</b>	Time Received : <b>5:05PM</b>																										
Client Name : <b>Aviles Engineering</b>																												
Temperature : <b>5.2-0.5cf=4.7°C</b>	Sample pH : <b>n/a</b>																											
Thermometer ID : <b>1707629</b>	pH Paper ID : <b>n/a</b>																											
<b>Check Points</b>																												
<b>1.</b>	<b>Cooler seal present and signed.</b>	Yes	No	N/A																								
<b>2.</b>	<b>Sample(s) in a cooler.</b>	X																										
<b>3.</b>	<b>If yes, ice in cooler.</b>	X																										
<b>4.</b>	<b>Sample(s) received with chain-of-custody.</b>	X																										
<b>5.</b>	<b>C-O-C signed and dated.</b>	X																										
<b>6.</b>	<b>Sample(s) received with signed sample custody seal.</b>		X																									
<b>7.</b>	<b>Sample containers arrived intact. (If no comment).</b>	X																										
<b>8.</b>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;"><b>Matrix</b></td> <td style="width: 10%;"><b>Water</b></td> <td style="width: 10%;"><b>Soil</b></td> <td style="width: 10%;"><b>Liquid</b></td> <td style="width: 10%;"><b>Sludge</b></td> <td style="width: 10%;"><b>Solid</b></td> <td style="width: 10%;"><b>Cassette</b></td> <td style="width: 10%;"><b>Tube</b></td> <td style="width: 10%;"><b>Bulk</b></td> <td style="width: 10%;"><b>Badge</b></td> <td style="width: 10%;"><b>Food</b></td> <td style="width: 10%;"><b>Other</b></td> </tr> <tr> <td>:</td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </table>	<b>Matrix</b>	<b>Water</b>	<b>Soil</b>	<b>Liquid</b>	<b>Sludge</b>	<b>Solid</b>	<b>Cassette</b>	<b>Tube</b>	<b>Bulk</b>	<b>Badge</b>	<b>Food</b>	<b>Other</b>	:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
<b>Matrix</b>	<b>Water</b>	<b>Soil</b>	<b>Liquid</b>	<b>Sludge</b>	<b>Solid</b>	<b>Cassette</b>	<b>Tube</b>	<b>Bulk</b>	<b>Badge</b>	<b>Food</b>	<b>Other</b>																	
:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																	
<b>9.</b>	<b>Sample(s) were received in appropriate container(s).</b>	X																										
<b>10.</b>	<b>Sample(s) were received with proper preservative</b>	X																										
<b>11.</b>	<b>All samples were logged or labeled.</b>	X																										
<b>12.</b>	<b>Sample ID labels match C-O-C ID's</b>	X																										
<b>13.</b>	<b>Bottle count on C-O-C matches bottles found.</b>	X																										
<b>14.</b>	<b>Sample volume is sufficient for analyses requested.</b>	X																										
<b>15.</b>	<b>Samples were received within the hold time.</b>	X																										
<b>16.</b>	<b>VOA vials completely filled.</b>	X																										
<b>17.</b>	<b>Sample accepted.</b>	X																										
<b>18</b>	<b>Has client been contacted about sub-out</b>			X																								
<b>Comments : Include actions taken to resolve discrepancies/problem:</b>																												
Soil: 01, 03 & 05. Water: 02, 04 & 06. Received 6 pre-weighed vials and 1 bulk jar for each soil sample. TPH waters in 60mL. -ANA 6-5-19.																												

Received by : AArnett

Check in by/date : AArnett / 06/05/2019

# Laboratory Analysis Report

Total Number of Pages: 46

Job ID : 19060194



10100 East Freeway, Suite 100, Houston, TX 77029 tel: 713-453-6060, fax: 713-453-6091, <http://www.ablabs.com>

## Client Project Name :

**E103-19 / Memorial Drive Reconstruction Houston, TX**

**Report To :** Client Name: Aviles Engineering  
Attn: Robert J. Metzger  
Client Address: 5790 Windfern  
City, State, Zip: Houston, Texas, 77041

P.O.#.:  
Sample Collected By: Robert J. Metzger  
Date Collected: 06/04/19

## A&B Labs has analyzed the following samples...

Client Sample ID	Matrix	A&B Sample ID
B-23 23-24	Soil	19060194.01
B-23 Water	Water	19060194.02
B-24 20-22	Soil	19060194.03
B-24 Water	Water	19060194.04
B-25 9-10	Soil	19060194.05
B-25 Water	Water	19060194.06

*Shantall Carpenter*

Released By: Shantall Carpenter  
Title: Senior Project Manager  
Date: 6/11/2019



This Laboratory is NELAP ( T104704213-19-20) accredited. Effective: 04/01/2019; Expires: 3/31/2020

Scope: Non-Potable Water, Drinking Water, Air, Solid, Biological Tissue, Hazardous Waste

I am the laboratory manager, or his/her designee, and I am responsible for the release of this data package. This laboratory data package has been reviewed and is complete and technically compliant with the requirements of the methods used, except where noted in the attached exception reports. I affirm, to the best of my knowledge that all problems/anomalies observed by this laboratory (and if applicable, any and all laboratories subcontracted through this laboratory) that might affect the quality of the data, have been identified in the Laboratory Review Checklist, and that no information or data have been knowingly withheld that would affect the quality of the data.

This report cannot be reproduced, except in full, without prior written permission of A&B Labs. Results shown relate only to the items tested. Samples are assumed to be in acceptable condition unless otherwise noted. Blank correction is not made unless otherwise noted. Air concentrations reported are based on field sampling information provided by client. Soil samples are reported on a wet weight basis unless otherwise noted. Uncertainty estimates are available on request.

Date Received : 06/04/2019 16:19



LABORATORY TEST RESULTS

Client Sample ID: B-23 23-24
A&B Job Sample ID: 19060194.01

Date: 6/11/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Drive Reconstruction Houston, TX
Attn: Robert J. Metzger

Test Description: % Moisture
Analytical Method: SM 2540G
QC Batch ID: Qb19060658
Prep Method: SM 2540G
Prepared By: KRSaranya
Prep Batch ID: PB19060637
Analyst Initial: KRS
Sample Matrix: Soil
Date Collected: 06/04/2019 09:30
Date Received: 06/04/2019 16:19
Date Prepared: 06/06/2019 15:00
% Moisture: 15.5

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Row 1: % Moisture, 15.5, ----, ----, %, 1, 06/06/19 17:00

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-23 23-24  
 A&B Job Sample ID: 19060194.01

Date: 6/11/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction Houston, TX

Attn: Robert J. Metzger

Test Description: **Purgeable Aromatics**

Analytical Method: SW-846 8260C  
 QC Batch ID: Qb19060729  
 Prep Method: SW-846 5035A  
 Prepared By: Rajeev  
 Prep Batch ID: PB19060713

Sample Matrix: Soil  
 Date Collected: 06/04/2019 09:30  
 Date Received: 06/04/2019 16:19  
 Date Prepared: 06/06/2019 10:00

Analyst Initial: RT

% Moisture: 15.5

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
1634-04-4	MTBE	<0.0351	U	0.0351	0.308	0.00057	0.005	0.05	mg/Kg	52	06/07/19 01:47
71-43-2	Benzene	<0.0191	U	0.0191	0.308	0.00031	0.005	0.05	mg/Kg	52	06/07/19 01:47
108-88-3	Toluene	2.39		0.0271	0.308	0.00044	0.005	0.05	mg/Kg	52	06/07/19 01:47
100-41-4	Ethylbenzene	46.0		0.542	6.15	0.00044	0.005	0.05	mg/Kg	1040	06/07/19 02:59
108-38-3&106-4	m- & p-Xylenes	123		1.35	12.3	0.0011	0.010	0.10	mg/Kg	1040	06/07/19 02:59
95-47-6	o-Xylene	14.4		0.126	1.54	0.00041	0.005	0.05	mg/Kg	260	06/07/19 02:23
1330-20-7	Xylenes	137.4		1.82	18.5	0.00148	0.015	0.15	mg/Kg	1040	06/07/19 02:59
17060-07-0	1,2-Dichloroethane-d4	102					70	130	%	52	06/07/19 01:47
1868-53-7	Dibromofluoromethan	82.2					70	130	%	52	06/07/19 01:47
2037-26-5	Toluene-d8(surr)	116					70	130	%	52	06/07/19 01:47
460-00-4	p-Bromofluorobenzen	113					70	130	%	260	06/07/19 01:47

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-23 23-24  
 A&B Job Sample ID: 19060194.01

Date: 6/11/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction Houston, TX

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb19060739  
 Prep Method: TX 1005  
 Prepared By: Jdongre  
 Prep Batch ID: PB19060718

Sample Matrix: Soil  
 Date Collected: 06/04/2019 09:30  
 Date Received: 06/04/2019 16:19  
 Date Prepared: 06/06/2019 10:00

Analyst Initial: JKD

% Moisture: 15.5

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12	490		26.1	27.5	23.7	25	1000	mg/Kg	0.93	06/06/19 18:48
TPH-1005-2	>C12-C28	<22.3	U	22.3	27.5	20.3	25	1000	mg/Kg	0.93	06/06/19 18:48
TPH-1005-4	>C28-C35	<19.5	U	19.5	27.5	17.7	25	1000	mg/Kg	0.93	06/06/19 18:48
	Total C6-C35	490		19.5		17.7	----	----	mg/Kg	0.93	06/06/19 18:48
111-85-3	1-Chlorooctane(surr)	162	S8				60	143	%	0.93	06/06/19 18:48
3386-33-2	Chlorooctadecane(sur	78.5					60	150	%	0.93	06/06/19 18:48

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-23 Water  
 A&B Job Sample ID: 19060194.02

Date: 6/11/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction Houston, TX

Attn: Robert J. Metzger

Test Description: **Purgeable Aromatics**

Analytical Method: SW-846 8260C  
 QC Batch ID: Qb19060679  
 Prep Method: SW-846 5030C  
 Prepared By: Rajeev  
 Prep Batch ID: PB19060645

Sample Matrix: Water  
 Date Collected: 06/04/2019 09:40  
 Date Received: 06/04/2019 16:19  
 Date Prepared: 06/06/2019 10:00

Analyst Initial: RT

% Moisture

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
1634-04-4	MTBE	<0.00330	U	0.00330	0.025	0.00066	0.005	0.05	mg/L	5	06/06/19 23:46
71-43-2	Benzene	0.0342		0.00175	0.025	0.00035	0.005	0.05	mg/L	5	06/06/19 23:46
108-88-3	Toluene	0.714		0.0140	0.25	0.00028	0.005	0.05	mg/L	50	06/06/19 13:30
100-41-4	Ethylbenzene	0.762		0.0175	0.25	0.00035	0.005	0.05	mg/L	50	06/06/19 13:30
108-38-3&106-4	m- & p-Xylenes	2.84		0.0300	0.5	0.0006	0.010	0.10	mg/L	50	06/06/19 13:30
95-47-6	o-Xylene	1.12		0.125	0.25	0.0025	0.005	0.05	mg/L	50	06/06/19 13:30
1330-20-7	Xylenes	3.96		0.410	0.75	0.0082	0.015	0.15	mg/L	50	06/06/19 13:30
17060-07-0	1,2-Dichloroethane-d4	102					70	130	%	5	06/06/19 13:30
1868-53-7	Dibromofluoromethan	99.2					70	130	%	5	06/06/19 13:30
2037-26-5	Toluene-d8(surr)	97.1					70	130	%	5	06/06/19 13:30
460-00-4	p-Bromofluorobenzen	98.5					70	130	%	5	06/06/19 13:30

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-23 Water  
 A&B Job Sample ID: 19060194.02

Date: 6/11/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction Houston, TX

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb19060782  
 Prep Method: TX 1005  
 Prepared By: Jdongre  
 Prep Batch ID: PB19060746

Sample Matrix: Water  
 Date Collected: 06/04/2019 09:40  
 Date Received: 06/04/2019 16:19  
 Date Prepared: 06/06/2019 10:30

Analyst Initial: JKD

% Moisture

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12 <sup>1</sup>	7.01		0.60	1.37	0.66	1.5	60	mg/L	0.91	06/06/19 14:11
TPH-1005-2	>C12-C28 <sup>1</sup>	<0.78	U	0.78	1.37	0.86	1.5	60	mg/L	0.91	06/06/19 14:11
TPH-1005-4	>C28-C35 <sup>1</sup>	<0.68	U	0.68	1.37	0.75	1.5	60	mg/L	0.91	06/06/19 14:11
	Total C6-C35	7.01		0.78		0.86	----	----	mg/L	0.91	06/06/19 14:11
111-85-3	1-Chlorooctane(surr)	94.9					59	122	%	0.91	06/06/19 14:11
3386-33-2	Chlorooctadecane(sur	77.9					48	123	%	0.91	06/06/19 14:11

Soil results reported on dry weight basis



LABORATORY TEST RESULTS

Client Sample ID: B-24 20-22
A&B Job Sample ID: 19060194.03

Date: 6/11/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Drive Reconstruction Houston, TX
Attn: Robert J. Metzger

Test Description: % Moisture
Analytical Method: SM 2540G
QC Batch ID: Qb19060658
Prep Method: SM 2540G
Prepared By: KRSaranya
Prep Batch ID: PB19060637
Analyst Initial: KRS
Sample Matrix: Soil
Date Collected: 06/04/2019 11:00
Date Received: 06/04/2019 16:19
Date Prepared: 06/06/2019 15:00
% Moisture: 21.6

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Row 1: % Moisture, 21.6, ----, ----, %, 1, 06/06/19 17:00

Soil results reported on dry weight basis





**LABORATORY TEST RESULTS**

Client Sample ID: B-24 20-22  
 A&B Job Sample ID: 19060194.03

Date: 6/11/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction Houston, TX

Attn: Robert J. Metzger

Test Description: **Purgeable Aromatics**

Analytical Method: SW-846 8260C  
 QC Batch ID: Qb19060729  
 Prep Method: SW-846 5035A  
 Prepared By: Rajeev  
 Prep Batch ID: PB19060713

Sample Matrix: Soil  
 Date Collected: 06/04/2019 11:00  
 Date Received: 06/04/2019 16:19  
 Date Prepared: 06/06/2019 10:00

Analyst Initial: RT

% Moisture: 21.6

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
1634-04-4	MTBE	<0.00053	U	0.00053	0.0047	0.00057	0.005	0.05	mg/Kg	0.73	06/06/19 16:58
71-43-2	Benzene	<0.00029	U	0.00029	0.0047	0.00031	0.005	0.05	mg/Kg	0.73	06/06/19 16:58
108-88-3	Toluene	<0.00041	U	0.00041	0.0047	0.00044	0.005	0.05	mg/Kg	0.73	06/06/19 16:58
100-41-4	Ethylbenzene	<0.00041	U	0.00041	0.0047	0.00044	0.005	0.05	mg/Kg	0.73	06/06/19 16:58
108-38-3&106-4	m- & p-Xylenes	<0.00102	U	0.00102	0.0093	0.0011	0.010	0.10	mg/Kg	0.73	06/06/19 16:58
95-47-6	o-Xylene	<0.00038	U	0.00038	0.0047	0.00041	0.005	0.05	mg/Kg	0.73	06/06/19 16:58
1330-20-7	Xylenes	<0.00138	U	0.00138	0.014	0.00148	0.015	0.15	mg/Kg	0.73	06/06/19 16:58
17060-07-0	1,2-Dichloroethane-d4	96.8							%	0.73	06/06/19 16:58
1868-53-7	Dibromofluoromethan	90.7							%	0.73	06/06/19 16:58
2037-26-5	Toluene-d8(surr)	98							%	0.73	06/06/19 16:58
460-00-4	p-Bromofluorobenzen	95							%	0.73	06/06/19 16:58

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-24 20-22  
 A&B Job Sample ID: 19060194.03

Date: 6/11/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction Houston, TX

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb19060739  
 Prep Method: TX 1005  
 Prepared By: Jdongre  
 Prep Batch ID: PB19060718

Sample Matrix: Soil  
 Date Collected: 06/04/2019 11:00  
 Date Received: 06/04/2019 16:19  
 Date Prepared: 06/06/2019 10:00

Analyst Initial: JKD

% Moisture: 21.6

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12	<26.9	U	26.9	28.4	23.7	25	1000	mg/Kg	0.89	06/06/19 19:18
TPH-1005-2	>C12-C28	<23.0	U	23.0	28.4	20.3	25	1000	mg/Kg	0.89	06/06/19 19:18
TPH-1005-4	>C28-C35	<20.1	U	20.1	28.4	17.7	25	1000	mg/Kg	0.89	06/06/19 19:18
	Total C6-C35	< 20.1	U	20.1		17.7	----	----	mg/Kg	0.89	06/06/19 19:18
111-85-3	1-Chlorooctane(surr)	80					60	143	%	0.89	06/06/19 19:18
3386-33-2	Chlorooctadecane(sur	67.5					60	150	%	0.89	06/06/19 19:18

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-24 Water  
 A&B Job Sample ID: 19060194.04

Date: 6/11/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction Houston, TX

Attn: Robert J. Metzger

Test Description: **Purgeable Aromatics**

Analytical Method: SW-846 8260C  
 QC Batch ID: Qb19060679  
 Prep Method: SW-846 5030C  
 Prepared By: Rajeev  
 Prep Batch ID: PB19060645

Sample Matrix: Water  
 Date Collected: 06/04/2019 11:25  
 Date Received: 06/04/2019 16:19  
 Date Prepared: 06/06/2019 10:00

Analyst Initial: RT

% Moisture

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
1634-04-4	MTBE	<0.00066	U	0.00066	0.005	0.00066	0.005	0.05	mg/L	1	06/06/19 14:02
71-43-2	Benzene	<0.00035	U	0.00035	0.005	0.00035	0.005	0.05	mg/L	1	06/06/19 14:02
108-88-3	Toluene	<0.00028	U	0.00028	0.005	0.00028	0.005	0.05	mg/L	1	06/06/19 14:02
100-41-4	Ethylbenzene	<0.00035	U	0.00035	0.005	0.00035	0.005	0.05	mg/L	1	06/06/19 14:02
108-38-3&106-4	m- & p-Xylenes	<0.00060	U	0.00060	0.01	0.0006	0.010	0.10	mg/L	1	06/06/19 14:02
95-47-6	o-Xylene	<0.00250	U	0.00250	0.005	0.0025	0.005	0.05	mg/L	1	06/06/19 14:02
1330-20-7	Xylenes	<0.00820	U	0.00820	0.015	0.0082	0.015	0.15	mg/L	1	06/06/19 14:02
17060-07-0	1,2-Dichloroethane-d4	99.4							%	1	06/06/19 14:02
1868-53-7	Dibromofluoromethan	108							%	1	06/06/19 14:02
2037-26-5	Toluene-d8(surr)	98.7							%	1	06/06/19 14:02
460-00-4	p-Bromofluorobenzen	102							%	1	06/06/19 14:02

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-24 Water  
 A&B Job Sample ID: 19060194.04

Date: 6/11/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction Houston, TX

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb19060782  
 Prep Method: TX 1005  
 Prepared By: Jdongre  
 Prep Batch ID: PB19060746

Sample Matrix: Water  
 Date Collected: 06/04/2019 11:25  
 Date Received: 06/04/2019 16:19  
 Date Prepared: 06/06/2019 10:30

Analyst Initial: JKD

% Moisture

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12 <sup>1</sup>	<0.60	U	0.60	1.37	0.66	1.5	60	mg/L	0.91	06/06/19 14:39
TPH-1005-2	>C12-C28 <sup>1</sup>	<0.78	U	0.78	1.37	0.86	1.5	60	mg/L	0.91	06/06/19 14:39
TPH-1005-4	>C28-C35 <sup>1</sup>	<0.68	U	0.68	1.37	0.75	1.5	60	mg/L	0.91	06/06/19 14:39
	Total C6-C35	< 0.78	U	0.78		0.86	----	----	mg/L	0.91	06/06/19 14:39
111-85-3	1-Chlorooctane(surr)	74					59	122	%	0.91	06/06/19 14:39
3386-33-2	Chlorooctadecane(sur)	79.6					48	123	%	0.91	06/06/19 14:39

Soil results reported on dry weight basis



LABORATORY TEST RESULTS

Client Sample ID: B-25 9-10
A&B Job Sample ID: 19060194.05

Date: 6/11/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Drive Reconstruction Houston, TX

Attn: Robert J. Metzger

Test Description: % Moisture
Analytical Method: SM 2540G
QC Batch ID: Qb19060658
Prep Method: SM 2540G
Prepared By: KRSaranya
Prep Batch ID: PB19060637
Analyst Initial: KRS

Sample Matrix: Soil
Date Collected: 06/04/2019 14:30
Date Received: 06/04/2019 16:19
Date Prepared: 06/06/2019 15:00

% Moisture: 7.9

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Row 1: % Moisture, 7.91, ----, ----, %, 1, 06/06/19 17:00



LABORATORY TEST RESULTS

Client Sample ID: B-25 9-10
A&B Job Sample ID: 19060194.05

Date: 6/11/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Drive Reconstruction Houston, TX

Attn: Robert J. Metzger

Test Description: Volatile Organic Compounds by GC/MS

Analytical Method: SW-846 8260C
QC Batch ID: Qb19060729
Prep Method: SW-846 5035A
Prepared By: Rajeev
Prep Batch ID: PB19060713

Sample Matrix: Soil
Date Collected: 06/04/2019 14:30
Date Received: 06/04/2019 16:19
Date Prepared: 06/06/2019 10:00

Analyst Initial: RT

% Moisture: 7.9

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Rows list various chemical compounds and their test results.

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-25 9-10  
 A&B Job Sample ID: 19060194.05

Date: 6/11/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction Houston, TX

Attn: Robert J. Metzger

Test Description: **Volatile Organic Compounds by GC/MS**

Sample Matrix: Soil  
 Date Collected: 06/04/2019 14:30  
 Date Received: 06/04/2019 16:19  
 Date Prepared: 06/06/2019 10:00

Analytical Method: SW-846 8260C  
 QC Batch ID: Qb19060729  
 Prep Method: SW-846 5035A  
 Prepared By: Rajeev  
 Prep Batch ID: PB19060713

Analyst Initial: RT

% Moisture: 7.9

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
74-87-3	Chloromethane	<0.00196	U	0.00196	0.0043	0.00226	0.005	0.05	mg/Kg	0.80	06/06/19 17:33
156-59-2	cis-1,2-Dichloroethyle	<0.00103	U	0.00103	0.0043	0.00119	0.005	0.05	mg/Kg	0.80	06/06/19 17:33
10061-01-5	cis-1,3-Dichloroprope	<0.00098	U	0.00098	0.0043	0.00113	0.005	0.05	mg/Kg	0.80	06/06/19 17:33
124-48-1	Dibromochloromethan	<0.00096	U	0.00096	0.0043	0.00110	0.005	0.05	mg/Kg	0.80	06/06/19 17:33
74-95-3	Dibromomethane	<0.00120	U	0.00120	0.0043	0.00138	0.005	0.05	mg/Kg	0.80	06/06/19 17:33
75-71-8	Dichlorodifluorometha	<0.00117	U,V11	0.00117	0.0043	0.00135	0.005	0.05	mg/Kg	0.80	06/06/19 17:33
100-41-4	Ethylbenzene	<0.00120	U	0.00120	0.0043	0.00138	0.005	0.05	mg/Kg	0.80	06/06/19 17:33
98-82-8	Isopropylbenzene	<0.00109	U	0.00109	0.0043	0.00126	0.005	0.05	mg/Kg	0.80	06/06/19 17:33
108-38-3&106-4	m- & p-Xylenes	<0.00237	U	0.00237	0.0087	0.00273	0.01	0.1	mg/Kg	0.80	06/06/19 17:33
78-93-3	MEK	<0.00232	R1,U	0.00232	0.0043	0.00267	0.005	0.05	mg/Kg	0.80	06/06/19 17:33
75-09-2	Methylene chloride	<0.00134	U	0.00134	0.0043	0.00154	0.005	0.05	mg/Kg	0.80	06/06/19 17:33
1634-04-4	MTBE	<0.00093	U	0.00093	0.0043	0.00107	0.005	0.05	mg/Kg	0.80	06/06/19 17:33
91-20-3	Naphthalene	<0.00163	U	0.00163	0.0043	0.00188	0.005	0.05	mg/Kg	0.80	06/06/19 17:33
104-51-8	n-Butylbenzene	<0.00155	U	0.00155	0.0043	0.00179	0.005	0.05	mg/Kg	0.80	06/06/19 17:33
103-65-1	n-Propylbenzene	<0.00120	U	0.00120	0.0043	0.00138	0.005	0.05	mg/Kg	0.80	06/06/19 17:33
95-47-6	o-Xylene	<0.00109	U	0.00109	0.0043	0.00126	0.005	0.05	mg/Kg	0.80	06/06/19 17:33
135-98-8	sec-Butylbenzene	<0.00139	U	0.00139	0.0043	0.00160	0.005	0.05	mg/Kg	0.80	06/06/19 17:33
100-42-5	Styrene	<0.00109	U	0.00109	0.0043	0.00126	0.005	0.05	mg/Kg	0.80	06/06/19 17:33
98-06-6	t-butylbenzene	<0.00122	U	0.00122	0.0043	0.00141	0.005	0.05	mg/Kg	0.80	06/06/19 17:33
127-18-4	Tetrachloroethylene	<0.00120	U	0.00120	0.0043	0.00138	0.005	0.05	mg/Kg	0.80	06/06/19 17:33
108-88-3	Toluene	<0.00103	U	0.00103	0.0043	0.00119	0.005	0.05	mg/Kg	0.80	06/06/19 17:33
156-60-5	trans-1,2-Dichloroethy	<0.00125	U	0.00125	0.0043	0.00144	0.005	0.05	mg/Kg	0.80	06/06/19 17:33
10061-02-6	trans-1,3-Dichloropro	<0.00081	U	0.00081	0.0043	0.00094	0.005	0.05	mg/Kg	0.80	06/06/19 17:33
79-01-6	Trichloroethylene	<0.00090	U	0.00090	0.0043	0.00104	0.005	0.05	mg/Kg	0.80	06/06/19 17:33
75-69-4	Trichlorofluoromethan	<0.00172	U	0.00172	0.0043	0.00198	0.005	0.05	mg/Kg	0.80	06/06/19 17:33
75-01-4	Vinyl Chloride	<0.00161	U	0.00161	0.0043	0.00185	0.005	0.05	mg/Kg	0.80	06/06/19 17:33
1330-20-7	Xylenes	<0.00087	U	0.00087	0.0043	0.001	0.005	0.15	mg/Kg	0.80	06/06/19 17:33
17060-07-0	1,2-Dichloroethane-d4	101						70 130	%	0.80	06/06/19 17:33
1868-53-7	Dibromofluoromethan	92.3						70 130	%	0.80	06/06/19 17:33
2037-26-5	Toluene-d8(surr)	97.6						70 130	%	0.80	06/06/19 17:33
460-00-4	p-Bromofluorobenzen	94.3						70 130	%	0.80	06/06/19 17:33

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-25 9-10  
 A&B Job Sample ID: 19060194.05

Date: 6/11/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction Houston, TX

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb19060739  
 Prep Method: TX 1005  
 Prepared By: Jdongre  
 Prep Batch ID: PB19060718

Sample Matrix: Soil  
 Date Collected: 06/04/2019 14:30  
 Date Received: 06/04/2019 16:19  
 Date Prepared: 06/06/2019 10:00

Analyst Initial: JKD

% Moisture: 7.9

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12	<25.7	U	25.7	27.1	23.7	25	1000	mg/Kg	1	06/08/19 00:14
TPH-1005-2	>C12-C28	<22.0	U	22.0	27.1	20.3	25	1000	mg/Kg	1	06/08/19 00:14
TPH-1005-4	>C28-C35	<19.2	U	19.2	27.1	17.7	25	1000	mg/Kg	1	06/08/19 00:14
	Total C6-C35	< 19.2	U	19.2		17.7	----	----	mg/Kg	1	06/08/19 00:14
111-85-3	1-Chlorooctane(surr)	97.3					60	143	%	1	06/08/19 00:14
3386-33-2	Chlorooctadecane(sur	68					60	150	%	1	06/08/19 00:14

Soil results reported on dry weight basis





LABORATORY TEST RESULTS

Client Sample ID: B-25 Water
A&B Job Sample ID: 19060194.06

Date: 6/11/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Drive Reconstruction Houston, TX

Attn: Robert J. Metzger

Test Description: Volatile Organic Compounds

Sample Matrix: Water

Analytical Method: SW-846 8260C

Date Collected: 06/04/2019 14:40

QC Batch ID: Qb19060679

Date Received: 06/04/2019 16:19

Prep Method: SW-846 5030C

Date Prepared: 06/06/2019 10:00

Prepared By: Rajeev

Prep Batch ID: PB19060645

Analyst Initial: RT

% Moisture

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Rows list various chemical compounds and their test results.

Soil results reported on dry weight basis



LABORATORY TEST RESULTS

Client Sample ID: B-25 Water
A&B Job Sample ID: 19060194.06

Date: 6/11/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Drive Reconstruction Houston, TX

Attn: Robert J. Metzger

Test Description: Volatile Organic Compounds

Sample Matrix: Water

Analytical Method: SW-846 8260C

Date Collected: 06/04/2019 14:40

QC Batch ID: Qb19060679

Date Received: 06/04/2019 16:19

Prep Method: SW-846 5030C

Date Prepared: 06/06/2019 10:00

Prepared By: Rajeev

Prep Batch ID: PB19060645

Analyst Initial: RT

% Moisture

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Rows include various chemical compounds like Chloromethane, cis-1,2-Dichloroethyle, etc.

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-25 Water  
 A&B Job Sample ID: 19060194.06

Date: 6/11/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction Houston, TX

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb19060782  
 Prep Method: TX 1005  
 Prepared By: Jdongre  
 Prep Batch ID: PB19060746

Sample Matrix: Water  
 Date Collected: 06/04/2019 14:40  
 Date Received: 06/04/2019 16:19  
 Date Prepared: 06/06/2019 10:30

Analyst Initial: JKD

% Moisture

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12 <sup>1</sup>	<0.60	U	0.60	1.37	0.66	1.5	60	mg/L	0.91	06/06/19 15:35
TPH-1005-2	>C12-C28 <sup>1</sup>	<0.78	U	0.78	1.37	0.86	1.5	60	mg/L	0.91	06/06/19 15:35
TPH-1005-4	>C28-C35 <sup>1</sup>	<0.68	U	0.68	1.37	0.75	1.5	60	mg/L	0.91	06/06/19 15:35
	Total C6-C35	< 0.78	U	0.78		0.86	----	----	mg/L	0.91	06/06/19 15:35
111-85-3	1-Chlorooctane(surr)	86.2					59	122	%	0.91	06/06/19 15:35
3386-33-2	Chlorooctadecane(sur)	86.5					48	123	%	0.91	06/06/19 15:35

Soil results reported on dry weight basis  
<sup>1</sup>-Parameter not available for accreditation



**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060194

**Date :** 6/11/2019

**Analysis :** Purgeable Aromatics

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb19060679

**Created Date :** 06/06/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19060194.02,04,06

**Sample Preparation :** PB19060645

**Prep Method :** SW-846 5030C

**Prep Date :** 06/06/19 10:00

**Prep By :** Rajeev

**QC Type: Method Blank**

Parameter	CAS #	Result	Units	D.F.	MQL	MDL	Qual
1,1,1,2-Tetrachloroethane	630-20-6	< MDL	mg/L	1	0.005	0.00082	
1,1,1-Trichloroethane	71-55-6	< MDL	mg/L	1	0.005	0.00072	
1,1,2,2-Tetrachloroethane	79-34-5	< MDL	mg/L	1	0.005	0.00210	
1,1,2-Trichloroethane	79-00-5	< MDL	mg/L	1	0.005	0.00144	
1,1-Dichloroethane	75-34-3	< MDL	mg/L	1	0.005	0.00119	
1,1-Dichloroethylene	75-35-4	< MDL	mg/L	1	0.005	0.00066	
1,1-Dichloropropene	563-58-6	< MDL	mg/L	1	0.005	0.001	
1,2,3-trichlorobenzene	87-61-6	< MDL	mg/L	1	0.005	0.00085	
1,2,3-Trichloropropane	96-18-4	< MDL	mg/L	1	0.005	0.00170	
1,2,4-Trichlorobenzene	120-82-1	< MDL	mg/L	1	0.005	0.00053	
1,2,4-Trimethylbenzene	95-63-6	< MDL	mg/L	1	0.005	0.00100	
1,2-Dibromo-3-chloropropa	96-12-8	< MDL	mg/L	1	0.005	0.00236	
1,2-Dibromoethane	106-93-4	< MDL	mg/L	1	0.005	0.00129	
1,2-Dichlorobenzene	95-50-1	< MDL	mg/L	1	0.005	0.00060	
1,2-Dichloroethane	107-06-2	< MDL	mg/L	1	0.005	0.00104	
1,2-Dichloropropane	78-87-5	< MDL	mg/L	1	0.005	0.00075	
1,3,5-Trimethylbenzene	108-67-8	< MDL	mg/L	1	0.005	0.00110	
1,3-Dichlorobenzene	541-73-1	< MDL	mg/L	1	0.005	0.00075	
1,3-Dichloropropane	142-28-9	< MDL	mg/L	1	0.005	0.001	
1,4-Dichlorobenzene	106-46-7	< MDL	mg/L	1	0.005	0.00072	
1,4-Dioxane	123-91-1	< MDL	mg/L	1	0.32	0.08177	
2,2-Dichloropropane	594-20-7	< MDL	mg/L	1	0.005	0.001	
2-Chlorotoluene	95-49-8	< MDL	mg/L	1	0.005	0.00082	
4-Chlorotoluene	106-43-4	< MDL	mg/L	1	0.005	0.00082	
4-Isopropyltoluene	99-87-6	< MDL	mg/L	1	0.005	0.00091	
Benzene	71-43-2	< MDL	mg/L	1	0.005	0.00063	
Bromobenzene	108-86-1	< MDL	mg/L	1	0.005	0.001	
Bromochloromethane	74-97-5	< MDL	mg/L	1	0.005	0.00097	
Bromodichloromethane	75-27-4	< MDL	mg/L	1	0.005	0.00069	
Bromoform	75-25-2	< MDL	mg/L	1	0.005	0.00170	
Bromomethane	74-83-9	< MDL	mg/L	1	0.005	0.00079	
Carbon disulfide	75-15-0	< MDL	mg/L	1	0.005	0.00113	
Carbon tetrachloride	56-23-5	< MDL	mg/L	1	0.005	0.00173	
Chlorobenzene	108-90-7	< MDL	mg/L	1	0.005	0.00069	
Chloroethane	75-00-3	< MDL	mg/L	1	0.005	0.00144	
Chloroform	67-66-3	< MDL	mg/L	1	0.005	0.00072	
Chloromethane	74-87-3	< MDL	mg/L	1	0.005	0.00066	
cis-1,2-Dichloroethylene	156-59-2	< MDL	mg/L	1	0.005	0.00053	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060194

**Date :** 6/11/2019

**Analysis :** Purgeable Aromatics

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb19060679

**Created Date :** 06/06/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19060194.02,04,06

<b>QC Type: Method Blank</b>									
Parameter	CAS #	Result	Units	D.F.	MQL	MDL			Qual
cis-1,3-Dichloropropene	10061-01-5	< MDL	mg/L	1	0.005	0.00072			
Dibromochloromethane	124-48-1	< MDL	mg/L	1	0.005	0.00122			
Dibromomethane	74-95-3	< MDL	mg/L	1	0.005	0.00126			
Dichlorodifluoromethane	75-71-8	< MDL	mg/L	1	0.005	0.00085			
Ethylbenzene	100-41-4	< MDL	mg/L	1	0.005	0.00100			
Isopropylbenzene	98-82-8	< MDL	mg/L	1	0.005	0.00082			
m- & p-Xylenes	108-38-3&106-42-3	< MDL	mg/L	1	0.01	0.00151			
MEK	78-93-3	< MDL	mg/L	1	0.005	0.00286			
Methylene chloride	75-09-2	< MDL	mg/L	1	0.005	0.00487			
MTBE	1634-04-4	< MDL	mg/L	1	0.005	0.00082			
Naphthalene	91-20-3	< MDL	mg/L	1	0.005	0.00270			
n-Butylbenzene	104-51-8	< MDL	mg/L	1	0.005	0.00119			
n-Propylbenzene	103-65-1	< MDL	mg/L	1	0.005	0.00135			
o-Xylene	95-47-6	< MDL	mg/L	1	0.005	0.00066			
sec-Butylbenzene	135-98-8	< MDL	mg/L	1	0.005	0.00082			
Styrene	100-42-5	< MDL	mg/L	1	0.005	0.00069			
t-butylbenzene	98-06-6	< MDL	mg/L	1	0.005	0.00100			
Tetrachloroethylene	127-18-4	< MDL	mg/L	1	0.005	0.00066			
Toluene	108-88-3	< MDL	mg/L	1	0.005	0.00075			
trans-1,2-Dichloroethylene	156-60-5	< MDL	mg/L	1	0.005	0.00066			
trans-1,3-Dichloropropene	10061-02-6	< MDL	mg/L	1	0.005	0.00097			
Trichloroethylene	79-01-6	< MDL	mg/L	1	0.005	0.00079			
Trichlorofluoromethane	75-69-4	< MDL	mg/L	1	0.005	0.00094			
Vinyl Chloride	75-01-4	< MDL	mg/L	1	0.005	0.00082			
Xylenes	1330-20-7	< MDL	mg/L	1	0.005	0.00204			
Dibromofluoromethane(surr)	1868-53-7	103	%	1					
1,2-Dichloroethane-d4(surr)	17060-07-0	103	%	1					
Toluene-d8(surr)	2037-26-5	101	%	1					
p-Bromofluorobenzene(surr)	460-00-4	102	%	1					

<b>QC Type: LCS and LCSD</b>										
Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
1,1,1,2-Tetrachloroethane	0.02	0.0204	102	0.02	0.0200	100	2.1	20	78-120	
1,1,1-Trichloroethane	0.02	0.0202	101	0.02	0.0199	99.6	1.4	20	74-126	
1,1,2,2-Tetrachloroethane	0.02	0.0190	94.9	0.02	0.0209	104	9.7	20	71-121	
1,1,2-Trichloroethane	0.02	0.0193	96.6	0.02	0.0201	100	4	20	80-120	
1,1-Dichloroethane	0.02	0.0203	101	0.02	0.0199	99.5	2	20	77-120	
1,1-Dichloroethylene	0.02	0.0201	101	0.02	0.0196	98	2.6	20	71-130	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060194

**Date :** 6/11/2019

**Analysis :** Purgeable Aromatics

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb19060679

**Created Date :** 06/06/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19060194.02,04,06

**QC Type: LCS and LCSD**

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
1,1-Dichloropropene	0.02	0.0213	107	0.02	0.0207	104	3	20	79-125	
1,2,3-trichlorobenzene	0.02	0.0182	91.1	0.02	0.0204	102	11.3	20	69-121	
1,2,3-Trichloropropane	0.02	0.0182	90.8	0.02	0.0211	105	15	20	73-122	
1,2,4-Trichlorobenzene	0.02	0.0192	96.2	0.02	0.0204	102	5.9	20	69-130	
1,2,4-Trimethylbenzene	0.02	0.0203	101	0.02	0.0203	101	0.2	20	76-119	
1,2-Dibromo-3-chloropropa	0.02	0.0178	88.8	0.02	0.0216	108	19.5	20	62-135	
1,2-Dibromoethane	0.02	0.0200	100	0.02	0.0211	106	5.3	20	77-121	
1,2-Dichlorobenzene	0.02	0.0195	97.4	0.02	0.0200	99.9	2.7	20	80-113	
1,2-Dichloroethane	0.02	0.0199	99.7	0.02	0.0202	101	1.3	20	70-125	
1,2-Dichloropropane	0.02	0.0206	103	0.02	0.0196	98.2	4.8	20	78-122	
1,3,5-Trimethylbenzene	0.02	0.0203	102	0.02	0.0202	101	0.7	20	75-117	
1,3-Dichlorobenzene	0.02	0.0196	97.9	0.02	0.0200	99.9	2.1	20	80-115	
1,3-Dichloropropane	0.02	0.0202	101	0.02	0.0212	106	5	20	80-119	
1,4-Dichlorobenzene	0.02	0.0193	96.4	0.02	0.0197	98.3	2.1	20	79-118	
1,4-Dioxane	0.64	0.600	93.7	0.64	0.708	111	16.5	20	59-139	
2,2-Dichloropropane	0.02	0.0206	103	0.02	0.0200	99.9	2.9	20	65-135	
2-Chlorotoluene	0.02	0.0197	98.4	0.02	0.0196	97.9	0.4	20	79-118	
4-Chlorotoluene	0.02	0.0201	101	0.02	0.0203	102	0.8	20	78-118	
4-Isopropyltoluene	0.02	0.0204	102	0.02	0.0205	103	0.7	20	77-116	
Benzene	0.02	0.0195	97.7	0.02	0.0185	92.5	5.5	20	79-118	
Bromobenzene	0.02	0.0193	96.7	0.02	0.0201	100	3.9	20	80-116	
Bromochloromethane	0.02	0.0204	102	0.02	0.0208	104	2	20	78-123	
Bromodichloromethane	0.02	0.0207	103	0.02	0.0198	99.2	4.3	20	79-125	
Bromoform	0.02	0.0196	98.1	0.02	0.0211	105	7.3	20	71-130	
Bromomethane	0.02	0.0212	106	0.02	0.0195	97.5	8.3	20	62-141	
Carbon disulfide	0.02	0.0198	99.1	0.02	0.0192	96.1	3.2	20	70-125	
Carbon tetrachloride	0.02	0.0207	103	0.02	0.0192	96	7.3	20	72-132	
Chlorobenzene	0.02	0.0204	102	0.02	0.0196	98.1	4.1	20	82-116	
Chloroethane	0.02	0.0208	104	0.02	0.0201	100	3.5	20	60-138	
Chloroform	0.02	0.0210	105	0.02	0.0203	101	3.2	20	79-124	
Chloromethane	0.02	0.0190	94.8	0.02	0.0192	96	1.3	20	61-139	
cis-1,2-Dichloroethylene	0.02	0.0208	104	0.02	0.0208	104	0.2	20	78-121	
cis-1,3-Dichloropropene	0.02	0.0204	102	0.02	0.0202	101	0.8	20	81-122	
Dibromochloromethane	0.02	0.0203	102	0.02	0.0205	103	0.9	20	77-120	
Dibromomethane	0.02	0.0199	99.4	0.02	0.0203	102	2.1	20	79-124	
Dichlorodifluoromethane	0.02	0.0186	93.2	0.02	0.0181	90.5	2.9	20	51-135	
Ethylbenzene	0.02	0.0204	102	0.02	0.0196	97.8	4	20	84-117	
Isopropylbenzene	0.02	0.0213	107	0.02	0.0207	103	3	20	80-117	
m- & p-Xylenes	0.04	0.0415	104	0.04	0.0396	99	4.7	20	80-118	
MEK	0.02	0.0208	104	0.02	0.0222	111	6.7	20	60-136	
Methylene chloride	0.02	0.00816	40.8	0.02	0.00781	39	4.4	20	74-124	L2

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060194

**Date :** 6/11/2019

**Analysis :** Purgeable Aromatics

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb19060679

**Created Date :** 06/06/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19060194.02,04,06

<b>QC Type: LCS and LCSD</b>										
Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
MTBE	0.02	0.0205	102	0.02	0.0213	107	4	20	71-124	
Naphthalene	0.02	0.0174	87.2	0.02	0.0212	106	19.4	20	66-128	
n-Butylbenzene	0.02	0.0206	103	0.02	0.0204	102	0.9	20	75-120	
n-Propylbenzene	0.02	0.0201	100	0.02	0.0199	99.3	1	20	78-120	
o-Xylene	0.02	0.0200	100	0.02	0.0194	96.8	3.1	20	84-117	
sec-Butylbenzene	0.02	0.0202	101	0.02	0.0201	101	0.6	20	77-120	
Styrene	0.02	0.0209	104	0.02	0.0204	102	2.3	20	85-120	
t-butylbenzene	0.02	0.0204	102	0.02	0.0203	102	0.6	20	78-120	
Tetrachloroethylene	0.02	0.0209	104	0.02	0.0198	98.9	5.3	20	78-129	
Toluene	0.02	0.0199	99.7	0.02	0.0192	96.2	3.8	20	84-117	
trans-1,2-Dichloroethylene	0.02	0.0208	104	0.02	0.0202	101	2.9	20	75-124	
trans-1,3-Dichloropropene	0.02	0.0203	102	0.02	0.0208	104	2.3	20	80-121	
Trichloroethylene	0.02	0.0195	97.5	0.02	0.0184	92.1	5.8	20	80-122	
Trichlorofluoromethane	0.02	0.0204	102	0.02	0.0200	99.8	2	20	57-141	
Vinyl Chloride	0.02	0.0198	99	0.02	0.0191	95.6	3.5	20	59-130	
Xylenes	0.06	0.0615	103	0.06	0.059	98.3	4.1	20	83-118	

<b>QC Type: MS and MSD</b>											
<b>QC Sample ID: 19060274.01</b>											
Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
1,1,1,2-Tetrachloroethane	BRL	0.02	0.0224	112						72-139	
1,1,1-Trichloroethane	BRL	0.02	0.0226	113						70.6-135	
1,1,2,2-Tetrachloroethane	BRL	0.02	0.0274	137						55-149	
1,1,2-Trichloroethane	BRL	0.02	0.0228	114						68-139	
1,1-Dichloroethane	BRL	0.02	0.0217	109						78-134	
1,1-Dichloroethylene	BRL	0.02	0.0219	110						65-141	
1,1-Dichloropropene	BRL	0.02	0.0241	120						79-136	
1,2,3-trichlorobenzene	BRL	0.02	0.0228	114						54-144	
1,2,3-Trichloropropane	BRL	0.02	0.0286	143						58-156	
1,2,4-Trichlorobenzene	BRL	0.02	0.0228	114						69-127	
1,2,4-Trimethylbenzene	BRL	0.02	0.0229	115						80-131	
1,2-Dibromo-3-chloropropa	BRL	0.02	0.0354	177						61-145	M8
1,2-Dibromoethane	BRL	0.02	0.0257	129						68-140	
1,2-Dichlorobenzene	BRL	0.02	0.0219	110						70-138	
1,2-Dichloroethane	BRL	0.02	0.0219	109						67-152	
1,2-Dichloropropane	BRL	0.02	0.0213	107						79-135	
1,3,5-Trimethylbenzene	BRL	0.02	0.0231	115						79-133	
1,3-Dichlorobenzene	BRL	0.02	0.0222	111						79-128	
1,3-Dichloropropane	BRL	0.02	0.0235	118						70-147	

Refer to the Definition page for terms.



**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060194

**Date :** 6/11/2019

**Analysis :** Purgeable Aromatics

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb19060679

**Created Date :** 06/06/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19060194.02,04,06

<b>QC Type: MS and MSD</b>											
<b>QC Sample ID: 19060274.01</b>											
Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
1,4-Dichlorobenzene	BRL	0.02	0.0222	111						76-127	
1,4-Dioxane	BRL	0.64	1.19	186						70-125	M8
2,2-Dichloropropane	BRL	0.02	0.0231	116						60-129	
2-Chlorotoluene	BRL	0.02	0.0226	113						83-130	
4-Chlorotoluene	BRL	0.02	0.0222	111						82-129	
4-Isopropyltoluene	BRL	0.02	0.0235	118						78-129	
Benzene	BRL	0.02	0.0221	111						73-129	
Bromobenzene	BRL	0.02	0.0222	111						76-132	
Bromochloromethane	BRL	0.02	0.0260	130						76-135	
Bromodichloromethane	BRL	0.02	0.0258	129						80-136	
Bromoform	BRL	0.02	0.0264	132						65-139	
Bromomethane	BRL	0.02	0.0240	120						65-150	
Carbon disulfide	BRL	0.02	0.0227	114						70-125	
Carbon tetrachloride	BRL	0.02	0.0239	119						70-136	
Chlorobenzene	BRL	0.02	0.0228	114						69-123	
Chloroethane	BRL	0.02	0.0208	104						74-145	
Chloroform	0.0288	0.02	0.0481	96.8						41.8-164	
Chloromethane	BRL	0.02	0.0215	108						42.2-160	
cis-1,2-Dichloroethylene	BRL	0.02	0.0211	105						71-134	
cis-1,3-Dichloropropene	BRL	0.02	0.0218	109						74-128	
Dibromochloromethane	BRL	0.02	0.0247	124						67-141	
Dibromomethane	BRL	0.02	0.0230	115						63.1-135	
Dichlorodifluoromethane	BRL	0.02	0.0204	102						62-146	
Ethylbenzene	BRL	0.02	0.0230	115						80-132	
Isopropylbenzene	BRL	0.02	0.0240	120						78-137	
m- & p-Xylenes	BRL	0.04	0.0477	119						74-127	
MEK	BRL	0.02	0.0496	248						52-148	M8
Methylene chloride	BRL	0.02	0.00948	47.4						68-131	M9
MTBE	BRL	0.02	0.0215	108						70-130	
Naphthalene	BRL	0.02	0.0281	140						61-116	M8
n-Butylbenzene	BRL	0.02	0.0238	119						73-140	
n-Propylbenzene	BRL	0.02	0.0233	116						75-127	
o-Xylene	BRL	0.02	0.0216	108						74-126	
sec-Butylbenzene	BRL	0.02	0.0232	116						75-129	
Styrene	BRL	0.02	0.0232	116						77-123	
t-butylbenzene	BRL	0.02	0.0229	115						75-126	
Tetrachloroethylene	BRL	0.02	0.0255	128						27.6-194	
Toluene	BRL	0.02	0.0233	117						72-121	
trans-1,2-Dichloroethylene	BRL	0.02	0.0228	114						73-138	
trans-1,3-Dichloropropene	BRL	0.02	0.0233	116						66-131	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060194

**Date :** 6/11/2019

**Analysis :** Purgeable Aromatics

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb19060679    **Created Date :** 06/06/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19060194.02,04,06

<b>QC Type: MS and MSD</b>											
<b>QC Sample ID: 19060274.01</b>											
Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
Trichloroethylene	BRL	0.02	0.0210	105						6-138	
Trichlorofluoromethane	BRL	0.02	0.0243	121						67-148	
Vinyl Chloride	BRL	0.02	0.0222	111						59.4-140	
Xylenes	BRL	0.06	0.0693	116						73-127	

**Sample Preparation :** PB19060645

**Prep Method :** SW-846 5030C

**Prep Date :** 06/06/19 10:00    **Prep By :** Rajeev

<b>QC Type: Method Blank</b>							
Parameter	CAS #	Result	Units	D.F.	MQL	MDL	Qual
1,1,1,2-Tetrachloroethane	630-20-6	< MDL	mg/L	1	0.005	0.00082	
1,1,1-Trichloroethane	71-55-6	< MDL	mg/L	1	0.005	0.00072	
1,1,2,2-Tetrachloroethane	79-34-5	< MDL	mg/L	1	0.005	0.00210	
1,1,2-Trichloroethane	79-00-5	< MDL	mg/L	1	0.005	0.00144	
1,1-Dichloroethane	75-34-3	< MDL	mg/L	1	0.005	0.00119	
1,1-Dichloroethylene	75-35-4	< MDL	mg/L	1	0.005	0.00066	
1,1-Dichloropropene	563-58-6	< MDL	mg/L	1	0.005	0.001	
1,2,3-trichlorobenzene	87-61-6	< MDL	mg/L	1	0.005	0.00085	
1,2,3-Trichloropropane	96-18-4	< MDL	mg/L	1	0.005	0.00170	
1,2,4-Trichlorobenzene	120-82-1	< MDL	mg/L	1	0.005	0.00053	
1,2,4-Trimethylbenzene	95-63-6	< MDL	mg/L	1	0.005	0.00100	
1,2-Dibromo-3-chloropropane	96-12-8	< MDL	mg/L	1	0.005	0.00236	
1,2-Dibromoethane	106-93-4	< MDL	mg/L	1	0.005	0.00129	
1,2-Dichlorobenzene	95-50-1	< MDL	mg/L	1	0.005	0.00060	
1,2-Dichloroethane	107-06-2	< MDL	mg/L	1	0.005	0.00104	
1,2-Dichloropropane	78-87-5	< MDL	mg/L	1	0.005	0.00075	
1,3,5-Trimethylbenzene	108-67-8	< MDL	mg/L	1	0.005	0.00110	
1,3-Dichlorobenzene	541-73-1	< MDL	mg/L	1	0.005	0.00075	
1,3-Dichloropropane	142-28-9	< MDL	mg/L	1	0.005	0.001	
1,4-Dichlorobenzene	106-46-7	< MDL	mg/L	1	0.005	0.00072	
1,4-Dioxane	123-91-1	< MDL	mg/L	1	0.32	0.08177	
2,2-Dichloropropane	594-20-7	< MDL	mg/L	1	0.005	0.001	
2-Chlorotoluene	95-49-8	< MDL	mg/L	1	0.005	0.00082	
4-Chlorotoluene	106-43-4	< MDL	mg/L	1	0.005	0.00082	
4-Isopropyltoluene	99-87-6	< MDL	mg/L	1	0.005	0.00091	
Benzene	71-43-2	< MDL	mg/L	1	0.005	0.00063	
Bromobenzene	108-86-1	< MDL	mg/L	1	0.005	0.001	
Bromochloromethane	74-97-5	< MDL	mg/L	1	0.005	0.00097	
Bromodichloromethane	75-27-4	< MDL	mg/L	1	0.005	0.00069	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060194

**Date :** 6/11/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb19060679

**Created Date :** 06/06/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19060194.02,04,06

**QC Type: Method Blank**

Parameter	CAS #	Result	Units	D.F.	ML	MDL	Qual
Bromoform	75-25-2	< MDL	mg/L	1	0.005	0.00170	
Bromomethane	74-83-9	< MDL	mg/L	1	0.005	0.00079	
Carbon disulfide	75-15-0	< MDL	mg/L	1	0.005	0.00113	
Carbon tetrachloride	56-23-5	< MDL	mg/L	1	0.005	0.00173	
Chlorobenzene	108-90-7	< MDL	mg/L	1	0.005	0.00069	
Chloroethane	75-00-3	< MDL	mg/L	1	0.005	0.00144	
Chloroform	67-66-3	< MDL	mg/L	1	0.005	0.00072	
Chloromethane	74-87-3	< MDL	mg/L	1	0.005	0.00066	
cis-1,2-Dichloroethylene	156-59-2	< MDL	mg/L	1	0.005	0.00053	
cis-1,3-Dichloropropene	10061-01-5	< MDL	mg/L	1	0.005	0.00072	
Dibromochloromethane	124-48-1	< MDL	mg/L	1	0.005	0.00122	
Dibromomethane	74-95-3	< MDL	mg/L	1	0.005	0.00126	
Dichlorodifluoromethane	75-71-8	< MDL	mg/L	1	0.005	0.00085	
Ethylbenzene	100-41-4	< MDL	mg/L	1	0.005	0.00100	
Isopropylbenzene	98-82-8	< MDL	mg/L	1	0.005	0.00082	
m- & p-Xylenes	108-38-3&106-42-3	< MDL	mg/L	1	0.01	0.00151	
MEK	78-93-3	< MDL	mg/L	1	0.005	0.00286	
Methylene chloride	75-09-2	< MDL	mg/L	1	0.005	0.00487	
MTBE	1634-04-4	< MDL	mg/L	1	0.005	0.00082	
Naphthalene	91-20-3	< MDL	mg/L	1	0.005	0.00270	
n-Butylbenzene	104-51-8	< MDL	mg/L	1	0.005	0.00119	
n-Propylbenzene	103-65-1	< MDL	mg/L	1	0.005	0.00135	
o-Xylene	95-47-6	< MDL	mg/L	1	0.005	0.00066	
sec-Butylbenzene	135-98-8	< MDL	mg/L	1	0.005	0.00082	
Styrene	100-42-5	< MDL	mg/L	1	0.005	0.00069	
t-butylbenzene	98-06-6	< MDL	mg/L	1	0.005	0.00100	
Tetrachloroethylene	127-18-4	< MDL	mg/L	1	0.005	0.00066	
Toluene	108-88-3	< MDL	mg/L	1	0.005	0.00075	
trans-1,2-Dichloroethylene	156-60-5	< MDL	mg/L	1	0.005	0.00066	
trans-1,3-Dichloropropene	10061-02-6	< MDL	mg/L	1	0.005	0.00097	
Trichloroethylene	79-01-6	< MDL	mg/L	1	0.005	0.00079	
Trichlorofluoromethane	75-69-4	< MDL	mg/L	1	0.005	0.00094	
Vinyl Chloride	75-01-4	< MDL	mg/L	1	0.005	0.00082	
Xylenes	1330-20-7	< MDL	mg/L	1	0.005	0.00204	
Dibromofluoromethane(surr)	1868-53-7	103	%	1			
1,2-Dichloroethane-d4(surr)	17060-07-0	103	%	1			
Toluene-d8(surr)	2037-26-5	101	%	1			
p-Bromofluorobenzene(surr)	460-00-4	102	%	1			

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060194

**Date :** 6/11/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb19060679

**Created Date :** 06/06/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19060194.02,04,06

**QC Type:** LCS and LCSD

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
1,1,1,2-Tetrachloroethane	0.02	0.0204	102	0.02	0.0200	100	2.1	20	78-120	
1,1,1-Trichloroethane	0.02	0.0202	101	0.02	0.0199	99.6	1.4	20	74-126	
1,1,2,2-Tetrachloroethane	0.02	0.0190	94.9	0.02	0.0209	104	9.7	20	71-121	
1,1,2-Trichloroethane	0.02	0.0193	96.6	0.02	0.0201	100	4	20	80-120	
1,1-Dichloroethane	0.02	0.0203	101	0.02	0.0199	99.5	2	20	77-120	
1,1-Dichloroethylene	0.02	0.0201	101	0.02	0.0196	98	2.6	20	71-130	
1,1-Dichloropropene	0.02	0.0213	107	0.02	0.0207	104	3	20	79-125	
1,2,3-trichlorobenzene	0.02	0.0182	91.1	0.02	0.0204	102	11.3	20	69-121	
1,2,3-Trichloropropane	0.02	0.0182	90.8	0.02	0.0211	105	15	20	73-122	
1,2,4-Trichlorobenzene	0.02	0.0192	96.2	0.02	0.0204	102	5.9	20	69-130	
1,2,4-Trimethylbenzene	0.02	0.0203	101	0.02	0.0203	101	0.2	20	76-119	
1,2-Dibromo-3-chloropropa	0.02	0.0178	88.8	0.02	0.0216	108	19.5	20	62-135	
1,2-Dibromoethane	0.02	0.0200	100	0.02	0.0211	106	5.3	20	77-121	
1,2-Dichlorobenzene	0.02	0.0195	97.4	0.02	0.0200	99.9	2.7	20	80-113	
1,2-Dichloroethane	0.02	0.0199	99.7	0.02	0.0202	101	1.3	20	70-125	
1,2-Dichloropropane	0.02	0.0206	103	0.02	0.0196	98.2	4.8	20	78-122	
1,3,5-Trimethylbenzene	0.02	0.0203	102	0.02	0.0202	101	0.7	20	75-117	
1,3-Dichlorobenzene	0.02	0.0196	97.9	0.02	0.0200	99.9	2.1	20	80-115	
1,3-Dichloropropane	0.02	0.0202	101	0.02	0.0212	106	5	20	80-119	
1,4-Dichlorobenzene	0.02	0.0193	96.4	0.02	0.0197	98.3	2.1	20	79-118	
1,4-Dioxane	0.64	0.600	93.7	0.64	0.708	111	16.5	20	59-139	
2,2-Dichloropropane	0.02	0.0206	103	0.02	0.0200	99.9	2.9	20	65-135	
2-Chlorotoluene	0.02	0.0197	98.4	0.02	0.0196	97.9	0.4	20	79-118	
4-Chlorotoluene	0.02	0.0201	101	0.02	0.0203	102	0.8	20	78-118	
4-Isopropyltoluene	0.02	0.0204	102	0.02	0.0205	103	0.7	20	77-116	
Benzene	0.02	0.0195	97.7	0.02	0.0185	92.5	5.5	20	79-118	
Bromobenzene	0.02	0.0193	96.7	0.02	0.0201	100	3.9	20	80-116	
Bromochloromethane	0.02	0.0204	102	0.02	0.0208	104	2	20	78-123	
Bromodichloromethane	0.02	0.0207	103	0.02	0.0198	99.2	4.3	20	79-125	
Bromoform	0.02	0.0196	98.1	0.02	0.0211	105	7.3	20	71-130	
Bromomethane	0.02	0.0212	106	0.02	0.0195	97.5	8.3	20	62-141	
Carbon disulfide	0.02	0.0198	99.1	0.02	0.0192	96.1	3.2	20	70-125	
Carbon tetrachloride	0.02	0.0207	103	0.02	0.0192	96	7.3	20	72-132	
Chlorobenzene	0.02	0.0204	102	0.02	0.0196	98.1	4.1	20	82-116	
Chloroethane	0.02	0.0208	104	0.02	0.0201	100	3.5	20	60-138	
Chloroform	0.02	0.0210	105	0.02	0.0203	101	3.2	20	79-124	
Chloromethane	0.02	0.0190	94.8	0.02	0.0192	96	1.3	20	61-139	
cis-1,2-Dichloroethylene	0.02	0.0208	104	0.02	0.0208	104	0.2	20	78-121	
cis-1,3-Dichloropropene	0.02	0.0204	102	0.02	0.0202	101	0.8	20	81-122	
Dibromochloromethane	0.02	0.0203	102	0.02	0.0205	103	0.9	20	77-120	
Dibromomethane	0.02	0.0199	99.4	0.02	0.0203	102	2.1	20	79-124	
Dichlorodifluoromethane	0.02	0.0186	93.2	0.02	0.0181	90.5	2.9	20	51-135	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060194

**Date :** 6/11/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb19060679

**Created Date :** 06/06/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19060194.02,04,06

**QC Type: LCS and LCSD**

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
Ethylbenzene	0.02	0.0204	102	0.02	0.0196	97.8	4	20	84-117	
Isopropylbenzene	0.02	0.0213	107	0.02	0.0207	103	3	20	80-117	
m- & p-Xylenes	0.04	0.0415	104	0.04	0.0396	99	4.7	20	80-118	
MEK	0.02	0.0208	104	0.02	0.0222	111	6.7	20	60-136	
Methylene chloride	0.02	0.00816	40.8	0.02	0.00781	39	4.4	20	74-124	L2
MTBE	0.02	0.0205	102	0.02	0.0213	107	4	20	71-124	
Naphthalene	0.02	0.0174	87.2	0.02	0.0212	106	19.4	20	66-128	
n-Butylbenzene	0.02	0.0206	103	0.02	0.0204	102	0.9	20	75-120	
n-Propylbenzene	0.02	0.0201	100	0.02	0.0199	99.3	1	20	78-120	
o-Xylene	0.02	0.0200	100	0.02	0.0194	96.8	3.1	20	84-117	
sec-Butylbenzene	0.02	0.0202	101	0.02	0.0201	101	0.6	20	77-120	
Styrene	0.02	0.0209	104	0.02	0.0204	102	2.3	20	85-120	
t-butylbenzene	0.02	0.0204	102	0.02	0.0203	102	0.6	20	78-120	
Tetrachloroethylene	0.02	0.0209	104	0.02	0.0198	98.9	5.3	20	78-129	
Toluene	0.02	0.0199	99.7	0.02	0.0192	96.2	3.8	20	84-117	
trans-1,2-Dichloroethylene	0.02	0.0208	104	0.02	0.0202	101	2.9	20	75-124	
trans-1,3-Dichloropropene	0.02	0.0203	102	0.02	0.0208	104	2.3	20	80-121	
Trichloroethylene	0.02	0.0195	97.5	0.02	0.0184	92.1	5.8	20	80-122	
Trichlorofluoromethane	0.02	0.0204	102	0.02	0.0200	99.8	2	20	57-141	
Vinyl Chloride	0.02	0.0198	99	0.02	0.0191	95.6	3.5	20	59-130	
Xylenes	0.06	0.0615	103	0.06	0.059	98.3	4.1	20	83-118	

**QC Type: MS and MSD**

**QC Sample ID: 19060274.01**

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
1,1,1,2-Tetrachloroethane	BRL	0.02	0.0224	112						72-139	
1,1,1-Trichloroethane	BRL	0.02	0.0226	113						70.6-135	
1,1,2,2-Tetrachloroethane	BRL	0.02	0.0274	137						55-149	
1,1,2-Trichloroethane	BRL	0.02	0.0228	114						68-139	
1,1-Dichloroethane	BRL	0.02	0.0217	109						78-134	
1,1-Dichloroethylene	BRL	0.02	0.0219	110						65-141	
1,1-Dichloropropene	BRL	0.02	0.0241	120						79-136	
1,2,3-trichlorobenzene	BRL	0.02	0.0228	114						54-144	
1,2,3-Trichloropropane	BRL	0.02	0.0286	143						58-156	
1,2,4-Trichlorobenzene	BRL	0.02	0.0228	114						69-127	
1,2,4-Trimethylbenzene	BRL	0.02	0.0229	115						80-131	
1,2-Dibromo-3-chloropropa	BRL	0.02	0.0354	177						61-145	M8
1,2-Dibromoethane	BRL	0.02	0.0257	129						68-140	
1,2-Dichlorobenzene	BRL	0.02	0.0219	110						70-138	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060194

**Date :** 6/11/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb19060679

**Created Date :** 06/06/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19060194.02,04,06

<b>QC Type: MS and MSD</b>											
<b>QC Sample ID: 19060274.01</b>											
Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
1,2-Dichloroethane	BRL	0.02	0.0219	109						67-152	
1,2-Dichloropropane	BRL	0.02	0.0213	107						79-135	
1,3,5-Trimethylbenzene	BRL	0.02	0.0231	115						79-133	
1,3-Dichlorobenzene	BRL	0.02	0.0222	111						79-128	
1,3-Dichloropropane	BRL	0.02	0.0235	118						70-147	
1,4-Dichlorobenzene	BRL	0.02	0.0222	111						76-127	
1,4-Dioxane	BRL	0.64	1.19	186						70-125	M8
2,2-Dichloropropane	BRL	0.02	0.0231	116						60-129	
2-Chlorotoluene	BRL	0.02	0.0226	113						83-130	
4-Chlorotoluene	BRL	0.02	0.0222	111						82-129	
4-Isopropyltoluene	BRL	0.02	0.0235	118						78-129	
Benzene	BRL	0.02	0.0221	111						73-129	
Bromobenzene	BRL	0.02	0.0222	111						76-132	
Bromochloromethane	BRL	0.02	0.0260	130						76-135	
Bromodichloromethane	BRL	0.02	0.0258	129						80-136	
Bromoform	BRL	0.02	0.0264	132						65-139	
Bromomethane	BRL	0.02	0.0240	120						65-150	
Carbon disulfide	BRL	0.02	0.0227	114						70-125	
Carbon tetrachloride	BRL	0.02	0.0239	119						70-136	
Chlorobenzene	BRL	0.02	0.0228	114						69-123	
Chloroethane	BRL	0.02	0.0208	104						74-145	
Chloroform	0.0288	0.02	0.0481	96.8						41.8-164	
Chloromethane	BRL	0.02	0.0215	108						42.2-160	
cis-1,2-Dichloroethylene	BRL	0.02	0.0211	105						71-134	
cis-1,3-Dichloropropene	BRL	0.02	0.0218	109						74-128	
Dibromochloromethane	BRL	0.02	0.0247	124						67-141	
Dibromomethane	BRL	0.02	0.0230	115						63.1-135	
Dichlorodifluoromethane	BRL	0.02	0.0204	102						62-146	
Ethylbenzene	BRL	0.02	0.0230	115						80-132	
Isopropylbenzene	BRL	0.02	0.0240	120						78-137	
m- & p-Xylenes	BRL	0.04	0.0477	119						74-127	
MEK	BRL	0.02	0.0496	248						52-148	M8
Methylene chloride	BRL	0.02	0.00948	47.4						68-131	M9
MTBE	BRL	0.02	0.0215	108						70-130	
Naphthalene	BRL	0.02	0.0281	140						61-116	M8
n-Butylbenzene	BRL	0.02	0.0238	119						73-140	
n-Propylbenzene	BRL	0.02	0.0233	116						75-127	
o-Xylene	BRL	0.02	0.0216	108						74-126	
sec-Butylbenzene	BRL	0.02	0.0232	116						75-129	
Styrene	BRL	0.02	0.0232	116						77-123	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060194

**Date :** 6/11/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb19060679

**Created Date :** 06/06/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19060194.02,04,06

**QC Type:** MS and MSD

**QC Sample ID:** 19060274.01

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
t-butylbenzene	BRL	0.02	0.0229	115						75-126	
Tetrachloroethylene	BRL	0.02	0.0255	128						27.6-194	
Toluene	BRL	0.02	0.0233	117						72-121	
trans-1,2-Dichloroethylene	BRL	0.02	0.0228	114						73-138	
trans-1,3-Dichloropropene	BRL	0.02	0.0233	116						66-131	
Trichloroethylene	BRL	0.02	0.0210	105						6-138	
Trichlorofluoromethane	BRL	0.02	0.0243	121						67-148	
Vinyl Chloride	BRL	0.02	0.0222	111						59.4-140	
Xylenes	BRL	0.06	0.0693	116						73-127	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060194

**Date :** 6/11/2019

**Analysis :** Purgeable Aromatics      **Method :** SW-846 8260C      **Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060729      **Created Date :** 06/06/19      **Created By :** Rajeev

**Samples in This QC Batch :** 19060194.01,03,05

**Sample Preparation :** PB19060713      **Prep Method :** SW-846 5035A      **Prep Date :** 06/06/19 10:00      **Prep By :** Rajeev

<b>QC Type: Method Blank</b>							
Parameter	CAS #	Result	Units	D.F.	MQL	MDL	Qual
1,1,1,2-Tetrachloroethane	630-20-6	< MDL	mg/Kg	1	0.005	0.00085	
1,1,1-Trichloroethane	71-55-6	< MDL	mg/Kg	1	0.005	0.00148	
1,1,2,2-Tetrachloroethane	79-34-5	< MDL	mg/Kg	1	0.005	0.00132	
1,1,2-Trichloroethane	79-00-5	< MDL	mg/Kg	1	0.005	0.00176	
1,1-Dichloroethane	75-34-3	< MDL	mg/Kg	1	0.005	0.00157	
1,1-Dichloroethylene	75-35-4	< MDL	mg/Kg	1	0.005	0.00173	
1,1-Dichloropropene	563-58-6	< MDL	mg/Kg	1	0.005	0.00144	
1,2,3-trichlorobenzene	87-61-6	< MDL	mg/Kg	1	0.005	0.00166	
1,2,3-Trichloropropane	96-18-4	< MDL	mg/Kg	1	0.005	0.00151	
1,2,4-Trichlorobenzene	120-82-1	< MDL	mg/Kg	1	0.005	0.00138	
1,2,4-Trimethylbenzene	95-63-6	< MDL	mg/Kg	1	0.005	0.00122	
1,2-Dibromo-3-chloropropa	96-12-8	< MDL	mg/Kg	1	0.005	0.00311	
1,2-Dibromoethane	106-93-4	< MDL	mg/Kg	1	0.005	0.00113	
1,2-Dichlorobenzene	95-50-1	< MDL	mg/Kg	1	0.005	0.00100	
1,2-Dichloroethane	107-06-2	< MDL	mg/Kg	1	0.005	0.00132	
1,2-Dichloropropane	78-87-5	< MDL	mg/Kg	1	0.005	0.00113	
1,3,5-Trimethylbenzene	108-67-8	< MDL	mg/Kg	1	0.005	0.00151	
1,3-Dichlorobenzene	541-73-1	< MDL	mg/Kg	1	0.005	0.00141	
1,3-Dichloropropane	142-28-9	< MDL	mg/Kg	1	0.005	0.00141	
1,4-Dichlorobenzene	106-46-7	< MDL	mg/Kg	1	0.005	0.00144	
1,4-Dioxane	123-91-1	< MDL	mg/Kg	1	0.32	0.08023	
2,2-Dichloropropane	594-20-7	< MDL	mg/Kg	1	0.005	0.00220	
2-Chlorotoluene	95-49-8	< MDL	mg/Kg	1	0.005	0.00144	
4-Chlorotoluene	106-43-4	< MDL	mg/Kg	1	0.005	0.00138	
4-Isopropyltoluene	99-87-6	< MDL	mg/Kg	1	0.005	0.00141	
Benzene	71-43-2	< MDL	mg/Kg	1	0.005	0.00107	
Bromobenzene	108-86-1	< MDL	mg/Kg	1	0.005	0.00113	
Bromochloromethane	74-97-5	< MDL	mg/Kg	1	0.005	0.00126	
Bromodichloromethane	75-27-4	< MDL	mg/Kg	1	0.005	0.00088	
Bromoform	75-25-2	< MDL	mg/Kg	1	0.005	0.00072	
Bromomethane	74-83-9	< MDL	mg/Kg	1	0.005	0.00170	
Carbon disulfide	75-15-0	< MDL	mg/Kg	1	0.005	0.00138	
Carbon tetrachloride	56-23-5	< MDL	mg/Kg	1	0.005	0.00151	
Chlorobenzene	108-90-7	< MDL	mg/Kg	1	0.005	0.00148	
Chloroethane	75-00-3	< MDL	mg/Kg	1	0.005	0.00242	
Chloroform	67-66-3	< MDL	mg/Kg	1	0.005	0.00119	
Chloromethane	74-87-3	< MDL	mg/Kg	1	0.005	0.00226	
cis-1,2-Dichloroethylene	156-59-2	< MDL	mg/Kg	1	0.005	0.00119	

Refer to the Definition page for terms.



**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060194

**Date :** 6/11/2019

**Analysis :** Purgeable Aromatics

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060729

**Created Date :** 06/06/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19060194.01,03,05

<b>QC Type: Method Blank</b>									
Parameter	CAS #	Result	Units	D.F.	MLQ	MDL			Qual
cis-1,3-Dichloropropene	10061-01-5	< MDL	mg/Kg	1	0.005	0.00113			
Dibromochloromethane	124-48-1	< MDL	mg/Kg	1	0.005	0.00110			
Dibromomethane	74-95-3	< MDL	mg/Kg	1	0.005	0.00138			
Dichlorodifluoromethane	75-71-8	< MDL	mg/Kg	1	0.005	0.00135			
Ethylbenzene	100-41-4	< MDL	mg/Kg	1	0.005	0.00138			
Isopropylbenzene	98-82-8	< MDL	mg/Kg	1	0.005	0.00126			
m- & p-Xylenes	108-38-3&106-42-3	< MDL	mg/Kg	1	0.01	0.00273			
MEK	78-93-3	< MDL	mg/Kg	1	0.005	0.00267			
Methylene chloride	75-09-2	< MDL	mg/Kg	1	0.005	0.00154			
MTBE	1634-04-4	< MDL	mg/Kg	1	0.005	0.00107			
Naphthalene	91-20-3	< MDL	mg/Kg	1	0.005	0.00188			
n-Butylbenzene	104-51-8	< MDL	mg/Kg	1	0.005	0.00179			
n-Propylbenzene	103-65-1	< MDL	mg/Kg	1	0.005	0.00138			
o-Xylene	95-47-6	< MDL	mg/Kg	1	0.005	0.00126			
sec-Butylbenzene	135-98-8	< MDL	mg/Kg	1	0.005	0.00160			
Styrene	100-42-5	< MDL	mg/Kg	1	0.005	0.00126			
t-butylbenzene	98-06-6	< MDL	mg/Kg	1	0.005	0.00141			
Tetrachloroethylene	127-18-4	< MDL	mg/Kg	1	0.005	0.00138			
Toluene	108-88-3	< MDL	mg/Kg	1	0.005	0.00119			
trans-1,2-Dichloroethylene	156-60-5	< MDL	mg/Kg	1	0.005	0.00144			
trans-1,3-Dichloropropene	10061-02-6	< MDL	mg/Kg	1	0.005	0.00094			
Trichloroethylene	79-01-6	< MDL	mg/Kg	1	0.005	0.00104			
Trichlorofluoromethane	75-69-4	< MDL	mg/Kg	1	0.005	0.00198			
Vinyl Chloride	75-01-4	< MDL	mg/Kg	1	0.005	0.00185			
Xylenes	1330-20-7	< MDL	mg/Kg	1	0.005	0.001			
Dibromofluoromethane(surr)	1868-53-7	90.3	%	1					
1,2-Dichloroethane-d4(surr)	17060-07-0	90.8	%	1					
Toluene-d8(surr)	2037-26-5	98.4	%	1					
p-Bromofluorobenzene(surr)	460-00-4	94.2	%	1					

<b>QC Type: LCS and LCSD</b>										
Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
1,1,1,2-Tetrachloroethane	0.02	0.0201	100	0.02	0.0210	105	4.6	30	78-125	
1,1,1-Trichloroethane	0.02	0.0175	87.6	0.02	0.0190	95.2	8.1	30	70-130	
1,1,2,2-Tetrachloroethane	0.02	0.0183	91.4	0.02	0.0218	109	17.5	30	70-124	
1,1,2-Trichloroethane	0.02	0.0188	94	0.02	0.0211	106	11.6	30	78-121	
1,1-Dichloroethane	0.02	0.0178	88.9	0.02	0.0188	93.9	5.6	30	76-125	
1,1-Dichloroethylene	0.02	0.0181	90.5	0.02	0.0134	66.8	29.8	30	70-131	L2

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060194

**Date :** 6/11/2019

**Analysis :** Purgeable Aromatics

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060729

**Created Date :** 06/06/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19060194.01,03,05

<b>QC Type: LCS and LCSD</b>										
Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
1,1-Dichloropropene	0.02	0.0174	87.1	0.02	0.0191	95.6	9.2	30	76-125	
1,2,3-trichlorobenzene	0.02	0.0168	83.9	0.02	0.0191	95.5	12.9	30	66-130	
1,2,3-Trichloropropane	0.02	0.0176	88.1	0.02	0.0217	108	20.8	30	73-125	
1,2,4-Trichlorobenzene	0.02	0.0189	94.4	0.02	0.0211	106	11.1	30	66-129	
1,2,4-Trimethylbenzene	0.02	0.0198	98.8	0.02	0.0208	104	5.1	30	75-123	
1,2-Dibromo-3-chloropropa	0.02	0.0158	78.9	0.02	0.0217	109	31.6	30	61-132	R1
1,2-Dibromoethane	0.02	0.0186	92.9	0.02	0.0217	109	15.5	30	78-122	
1,2-Dichlorobenzene	0.02	0.0201	100	0.02	0.0212	106	5.4	30	78-121	
1,2-Dichloroethane	0.02	0.0181	90.6	0.02	0.0205	102	12.3	30	71-128	
1,2-Dichloropropane	0.02	0.0187	93.3	0.02	0.0196	97.9	4.9	30	76-123	
1,3,5-Trimethylbenzene	0.02	0.0201	100	0.02	0.0209	104	4.1	30	73-124	
1,3-Dichlorobenzene	0.02	0.0204	102	0.02	0.0213	106	4.2	30	77-121	
1,3-Dichloropropane	0.02	0.0174	87.1	0.02	0.0194	97.2	10.8	30	77-121	
1,4-Dichlorobenzene	0.02	0.0202	101	0.02	0.0221	111	9.1	30	75-120	
1,4-Dioxane	0.64	0.546	85.4	0.64	0.695	109	23.9	30	55-138	
2,2-Dichloropropane	0.02	0.0165	82.7	0.02	0.0191	95.7	14.3	30	67-133	
2-Chlorotoluene	0.02	0.0196	97.8	0.02	0.0204	102	4.2	30	75-122	
4-Chlorotoluene	0.02	0.0193	96.5	0.02	0.0204	102	5.6	30	72-124	
4-Isopropyltoluene	0.02	0.0202	101	0.02	0.0212	106	4.8	30	73-127	
Benzene	0.02	0.0192	95.8	0.02	0.0205	103	6.8	30	77-121	
Bromobenzene	0.02	0.0203	102	0.02	0.0216	108	6.2	30	78-121	
Bromochloromethane	0.02	0.0171	85.6	0.02	0.0183	91.7	6.6	30	75-125	
Bromodichloromethane	0.02	0.0187	93.3	0.02	0.0196	97.9	4.9	30	71-127	
Bromoform	0.02	0.0194	96.8	0.02	0.0218	109	11.8	30	67-132	
Bromomethane	0.02	0.0160	80.1	0.02	0.0172	86.2	7.2	30	55-140	
Carbon disulfide	0.02	0.0179	89.3	0.02	0.0136	68	27.1	30	63-132	
Carbon tetrachloride	0.02	0.0192	95.9	0.02	0.0206	103	7.2	30	69-135	
Chlorobenzene	0.02	0.0200	99.9	0.02	0.0213	107	6.4	30	79-120	
Chloroethane	0.02	0.0163	81.4	0.02	0.0183	91.6	11.7	30	59-139	
Chloroform	0.02	0.0178	89.1	0.02	0.0192	95.9	7.4	30	78-123	
Chloromethane	0.02	0.0159	79.7	0.02	0.0179	89.3	11.6	30	50-136	
cis-1,2-Dichloroethylene	0.02	0.0177	88.5	0.02	0.0186	93.2	5	30	77-123	
cis-1,3-Dichloropropene	0.02	0.0188	93.9	0.02	0.0200	100	6.3	30	74-126	
Dibromochloromethane	0.02	0.0189	94.5	0.02	0.0204	102	7.6	30	74-126	
Dibromomethane	0.02	0.0186	93	0.02	0.0212	106	13.1	30	78-125	
Dichlorodifluoromethane	0.02	0.0148	74.2	0.02	0.0196	98.2	27.6	30	29-149	
Ethylbenzene	0.02	0.0196	98.1	0.02	0.0210	105	6.8	30	76-122	
Isopropylbenzene	0.02	0.0200	100	0.02	0.0213	106	6.2	30	68-134	
m- & p-Xylenes	0.04	0.0397	99.1	0.04	0.0422	106	6.2	30	77-124	
MEK	0.02	0.0149	74.6	0.02	0.0234	117	44.3	30	51-148	R1
Methylene chloride	0.02	0.0187	93.7	0.02	0.0208	104	10.4	30	70-128	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060194

**Date :** 6/11/2019

**Analysis :** Purgeable Aromatics

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060729

**Created Date :** 06/06/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19060194.01,03,05

**QC Type: LCS and LCSD**

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
MTBE	0.02	0.0173	86.4	0.02	0.0186	93	7.3	30	73-125	
Naphthalene	0.02	0.0160	79.9	0.02	0.0188	94	16.2	30	62-129	
n-Butylbenzene	0.02	0.0188	93.8	0.02	0.0196	98.1	4.4	30	70-128	
n-Propylbenzene	0.02	0.0195	97.6	0.02	0.0206	103	5.4	30	73-125	
o-Xylene	0.02	0.0195	97.5	0.02	0.0206	103	5.5	30	77-123	
sec-Butylbenzene	0.02	0.0200	100	0.02	0.0208	104	3.8	30	73-126	
Styrene	0.02	0.0199	99.3	0.02	0.0212	106	6.6	30	76-124	
t-butylbenzene	0.02	0.0197	98.6	0.02	0.0201	100	1.9	30	73-125	
Tetrachloroethylene	0.02	0.0205	103	0.02	0.0212	106	3.3	30	73-128	
Toluene	0.02	0.0198	99.1	0.02	0.0213	107	7.2	30	77-121	
trans-1,2-Dichloroethylene	0.02	0.0176	88.2	0.02	0.0191	95.6	8	30	74-125	
trans-1,3-Dichloropropene	0.02	0.0183	91.6	0.02	0.0202	101	9.8	30	71-130	
Trichloroethylene	0.02	0.0204	102	0.02	0.0218	109	6.4	30	77-123	
Trichlorofluoromethane	0.02	0.0170	84.8	0.02	0.0183	91.5	7.6	30	62-140	
Vinyl Chloride	0.02	0.0167	83.6	0.02	0.0189	94.3	12.2	30	56-135	
Xylenes	0.06	0.0592	98.7	0.06	0.0628	105	5.9	30	78-124	

**QC Type: MS and MSD**

**QC Sample ID: 19060241.02**

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
1,1,1,2-Tetrachloroethane	BRL	0.019	0.0196	103						71.4-131	
1,1,1-Trichloroethane	BRL	0.019	0.0176	92.6						69.6-140	
1,1,2,2-Tetrachloroethane	BRL	0.019	0.0201	106						66.6-128	
1,1,2-Trichloroethane	BRL	0.019	0.0199	105						72.8-125	
1,1-Dichloroethane	BRL	0.019	0.0183	96.3						72.7-129	
1,1-Dichloroethylene	BRL	0.019	0.0121	63.7						71.4-131	M9
1,1-Dichloropropene	BRL	0.019	0.0183	96.3						75.9-132	
1,2,3-trichlorobenzene	BRL	0.019	0.0156	82.1						56.7-153	
1,2,3-Trichloropropane	BRL	0.019	0.0202	106						61.6-138	
1,2,4-Trichlorobenzene	BRL	0.019	0.0189	99.5						55.9-150	
1,2,4-Trimethylbenzene	BRL	0.019	0.0199	105						71.1-131	
1,2-Dibromo-3-chloropropa	BRL	0.019	0.0188	98.9						52.4-150	
1,2-Dibromoethane	BRL	0.019	0.0202	106						72.9-125	
1,2-Dichlorobenzene	BRL	0.019	0.0203	107						76.1-126	
1,2-Dichloroethane	BRL	0.019	0.0190	100						66.4-134	
1,2-Dichloropropane	BRL	0.019	0.0191	101						70.2-128	
1,3,5-Trimethylbenzene	BRL	0.019	0.0201	106						75.1-127	
1,3-Dichlorobenzene	BRL	0.019	0.0204	107						73.9-126	
1,3-Dichloropropane	BRL	0.019	0.0185	97.4						68.3-124	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060194

**Date :** 6/11/2019

**Analysis :** Purgeable Aromatics

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060729

**Created Date :** 06/06/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19060194.01,03,05

<b>QC Type: MS and MSD</b>											
<b>QC Sample ID: 19060241.02</b>											
Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
1,4-Dichlorobenzene	BRL	0.019	0.0206	108						72.3-127	
1,4-Dioxane	BRL	0.62	0.629	101						70-130	
2,2-Dichloropropane	BRL	0.019	0.0161	84.7						68.5-138	
2-Chlorotoluene	BRL	0.019	0.0196	103						71.7-128	
4-Chlorotoluene	BRL	0.019	0.0193	102						72.2-126	
4-Isopropyltoluene	BRL	0.019	0.0206	108						77.5-125	
Benzene	BRL	0.019	0.0196	103						74-126	
Bromobenzene	BRL	0.019	0.0208	109						73.3-129	
Bromochloromethane	BRL	0.019	0.0176	92.6						68.8-131	
Bromodichloromethane	BRL	0.019	0.0180	94.7						69-135	
Bromoform	BRL	0.019	0.0188	98.9						62-146	
Bromomethane	BRL	0.019	0.0174	91.6						58.7-139	
Carbon disulfide	BRL	0.019	0.0110	57.9						70-130	M9
Carbon tetrachloride	BRL	0.019	0.0181	95.3						68.7-135	
Chlorobenzene	BRL	0.019	0.0205	108						73.3-129	
Chloroethane	BRL	0.019	0.0195	103						66.2-129	
Chloroform	BRL	0.019	0.0183	96.3						73.7-134	
Chloromethane	BRL	0.019	0.0168	88.4						51.4-135	
cis-1,2-Dichloroethylene	BRL	0.019	0.0181	95.3						72.4-132	
cis-1,3-Dichloropropene	BRL	0.019	0.0189	99.5						67.7-134	
Dibromochloromethane	BRL	0.019	0.0182	95.8						73.2-126	
Dibromomethane	BRL	0.019	0.0199	105						69.9-134	
Dichlorodifluoromethane	BRL	0.019	0.0169	88.9						36.8-144	
Ethylbenzene	BRL	0.019	0.0197	104						72.2-128	
Isopropylbenzene	BRL	0.019	0.0202	106						71.2-131	
m- & p-Xylenes	BRL	0.039	0.0397	102						70.7-131	
MEK	BRL	0.019	0.0154	81.1						52.5-152	
Methylene chloride	BRL	0.019	0.0203	107						70.6-129	
MTBE	BRL	0.019	0.0180	94.7						70-130	
Naphthalene	BRL	0.019	0.0198	104						60.7-145	
n-Butylbenzene	BRL	0.019	0.0191	101						66.5-136	
n-Propylbenzene	BRL	0.019	0.0197	104						73.3-126	
o-Xylene	BRL	0.019	0.0199	105						71.6-130	
sec-Butylbenzene	BRL	0.019	0.0201	106						77.9-124	
Styrene	BRL	0.019	0.0203	107						71.1-131	
t-butylbenzene	BRL	0.019	0.0199	105						74.4-130	
Tetrachloroethylene	BRL	0.019	0.0205	108						62.6-157	
Toluene	BRL	0.019	0.0203	107						73.3-127	
trans-1,2-Dichloroethylene	BRL	0.019	0.0182	95.8						70-130	
trans-1,3-Dichloropropene	BRL	0.019	0.0186	97.9						71.5-124	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060194

**Date :** 6/11/2019

**Analysis :** Purgeable Aromatics      **Method :** SW-846 8260C      **Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060729      **Created Date :** 06/06/19      **Created By :** Rajeev

**Samples in This QC Batch :** 19060194.01,03,05

<b>QC Type: MS and MSD</b>											
<b>QC Sample ID: 19060241.02</b>											
Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
Trichloroethylene	BRL	0.019	0.0204	107						69.2-133	
Trichlorofluoromethane	BRL	0.019	0.0162	85.3						63.9-140	
Vinyl Chloride	BRL	0.019	0.0175	92.1						40.9-159	
Xylenes	BRL	0.058	0.0596	103						69.2-133	

**Sample Preparation :** PB19060713      **Prep Method :** SW-846 5035A      **Prep Date :** 06/06/19 10:00      **Prep By :** Rajeev

<b>QC Type: Method Blank</b>							
Parameter	CAS #	Result	Units	D.F.	MQL	MDL	Qual
1,1,1,2-Tetrachloroethane	630-20-6	< MDL	mg/Kg	1	0.005	0.00085	
1,1,1-Trichloroethane	71-55-6	< MDL	mg/Kg	1	0.005	0.00148	
1,1,2,2-Tetrachloroethane	79-34-5	< MDL	mg/Kg	1	0.005	0.00132	
1,1,2-Trichloroethane	79-00-5	< MDL	mg/Kg	1	0.005	0.00176	
1,1-Dichloroethane	75-34-3	< MDL	mg/Kg	1	0.005	0.00157	
1,1-Dichloroethylene	75-35-4	< MDL	mg/Kg	1	0.005	0.00173	
1,1-Dichloropropene	563-58-6	< MDL	mg/Kg	1	0.005	0.00144	
1,2,3-trichlorobenzene	87-61-6	< MDL	mg/Kg	1	0.005	0.00166	
1,2,3-Trichloropropane	96-18-4	< MDL	mg/Kg	1	0.005	0.00151	
1,2,4-Trichlorobenzene	120-82-1	< MDL	mg/Kg	1	0.005	0.00138	
1,2,4-Trimethylbenzene	95-63-6	< MDL	mg/Kg	1	0.005	0.00122	
1,2-Dibromo-3-chloropropa	96-12-8	< MDL	mg/Kg	1	0.005	0.00311	
1,2-Dibromoethane	106-93-4	< MDL	mg/Kg	1	0.005	0.00113	
1,2-Dichlorobenzene	95-50-1	< MDL	mg/Kg	1	0.005	0.00100	
1,2-Dichloroethane	107-06-2	< MDL	mg/Kg	1	0.005	0.00132	
1,2-Dichloropropane	78-87-5	< MDL	mg/Kg	1	0.005	0.00113	
1,3,5-Trimethylbenzene	108-67-8	< MDL	mg/Kg	1	0.005	0.00151	
1,3-Dichlorobenzene	541-73-1	< MDL	mg/Kg	1	0.005	0.00141	
1,3-Dichloropropane	142-28-9	< MDL	mg/Kg	1	0.005	0.00141	
1,4-Dichlorobenzene	106-46-7	< MDL	mg/Kg	1	0.005	0.00144	
1,4-Dioxane	123-91-1	< MDL	mg/Kg	1	0.32	0.08023	
2,2-Dichloropropane	594-20-7	< MDL	mg/Kg	1	0.005	0.00220	
2-Chlorotoluene	95-49-8	< MDL	mg/Kg	1	0.005	0.00144	
4-Chlorotoluene	106-43-4	< MDL	mg/Kg	1	0.005	0.00138	
4-Isopropyltoluene	99-87-6	< MDL	mg/Kg	1	0.005	0.00141	
Benzene	71-43-2	< MDL	mg/Kg	1	0.005	0.00107	
Bromobenzene	108-86-1	< MDL	mg/Kg	1	0.005	0.00113	
Bromochloromethane	74-97-5	< MDL	mg/Kg	1	0.005	0.00126	
Bromodichloromethane	75-27-4	< MDL	mg/Kg	1	0.005	0.00088	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060194

**Date :** 6/11/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060729

**Created Date :** 06/06/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19060194.01,03,05

<b>QC Type: Method Blank</b>							
Parameter	CAS #	Result	Units	D.F.	ML	MDL	Qual
Bromoform	75-25-2	< MDL	mg/Kg	1	0.005	0.00072	
Bromomethane	74-83-9	< MDL	mg/Kg	1	0.005	0.00170	
Carbon disulfide	75-15-0	< MDL	mg/Kg	1	0.005	0.00138	
Carbon tetrachloride	56-23-5	< MDL	mg/Kg	1	0.005	0.00151	
Chlorobenzene	108-90-7	< MDL	mg/Kg	1	0.005	0.00148	
Chloroethane	75-00-3	< MDL	mg/Kg	1	0.005	0.00242	
Chloroform	67-66-3	< MDL	mg/Kg	1	0.005	0.00119	
Chloromethane	74-87-3	< MDL	mg/Kg	1	0.005	0.00226	
cis-1,2-Dichloroethylene	156-59-2	< MDL	mg/Kg	1	0.005	0.00119	
cis-1,3-Dichloropropene	10061-01-5	< MDL	mg/Kg	1	0.005	0.00113	
Dibromochloromethane	124-48-1	< MDL	mg/Kg	1	0.005	0.00110	
Dibromomethane	74-95-3	< MDL	mg/Kg	1	0.005	0.00138	
Dichlorodifluoromethane	75-71-8	< MDL	mg/Kg	1	0.005	0.00135	
Ethylbenzene	100-41-4	< MDL	mg/Kg	1	0.005	0.00138	
Isopropylbenzene	98-82-8	< MDL	mg/Kg	1	0.005	0.00126	
m- & p-Xylenes	108-38-3&106-42-3	< MDL	mg/Kg	1	0.01	0.00273	
MEK	78-93-3	< MDL	mg/Kg	1	0.005	0.00267	
Methylene chloride	75-09-2	< MDL	mg/Kg	1	0.005	0.00154	
MTBE	1634-04-4	< MDL	mg/Kg	1	0.005	0.00107	
Naphthalene	91-20-3	< MDL	mg/Kg	1	0.005	0.00188	
n-Butylbenzene	104-51-8	< MDL	mg/Kg	1	0.005	0.00179	
n-Propylbenzene	103-65-1	< MDL	mg/Kg	1	0.005	0.00138	
o-Xylene	95-47-6	< MDL	mg/Kg	1	0.005	0.00126	
sec-Butylbenzene	135-98-8	< MDL	mg/Kg	1	0.005	0.00160	
Styrene	100-42-5	< MDL	mg/Kg	1	0.005	0.00126	
t-butylbenzene	98-06-6	< MDL	mg/Kg	1	0.005	0.00141	
Tetrachloroethylene	127-18-4	< MDL	mg/Kg	1	0.005	0.00138	
Toluene	108-88-3	< MDL	mg/Kg	1	0.005	0.00119	
trans-1,2-Dichloroethylene	156-60-5	< MDL	mg/Kg	1	0.005	0.00144	
trans-1,3-Dichloropropene	10061-02-6	< MDL	mg/Kg	1	0.005	0.00094	
Trichloroethylene	79-01-6	< MDL	mg/Kg	1	0.005	0.00104	
Trichlorofluoromethane	75-69-4	< MDL	mg/Kg	1	0.005	0.00198	
Vinyl Chloride	75-01-4	< MDL	mg/Kg	1	0.005	0.00185	
Xylenes	1330-20-7	< MDL	mg/Kg	1	0.005	0.001	
Dibromofluoromethane(surr)	1868-53-7	90.3	%	1			
1,2-Dichloroethane-d4(surr)	17060-07-0	90.8	%	1			
Toluene-d8(surr)	2037-26-5	98.4	%	1			
p-Bromofluorobenzene(surr)	460-00-4	94.2	%	1			

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060194

**Date :** 6/11/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060729

**Created Date :** 06/06/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19060194.01,03,05

**QC Type:** LCS and LCSD

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
1,1,1,2-Tetrachloroethane	0.02	0.0201	100	0.02	0.0210	105	4.6	30	78-125	
1,1,1-Trichloroethane	0.02	0.0175	87.6	0.02	0.0190	95.2	8.1	30	70-130	
1,1,2,2-Tetrachloroethane	0.02	0.0183	91.4	0.02	0.0218	109	17.5	30	70-124	
1,1,2-Trichloroethane	0.02	0.0188	94	0.02	0.0211	106	11.6	30	78-121	
1,1-Dichloroethane	0.02	0.0178	88.9	0.02	0.0188	93.9	5.6	30	76-125	
1,1-Dichloroethylene	0.02	0.0181	90.5	0.02	0.0134	66.8	29.8	30	70-131	L2
1,1-Dichloropropene	0.02	0.0174	87.1	0.02	0.0191	95.6	9.2	30	76-125	
1,2,3-trichlorobenzene	0.02	0.0168	83.9	0.02	0.0191	95.5	12.9	30	66-130	
1,2,3-Trichloropropane	0.02	0.0176	88.1	0.02	0.0217	108	20.8	30	73-125	
1,2,4-Trichlorobenzene	0.02	0.0189	94.4	0.02	0.0211	106	11.1	30	66-129	
1,2,4-Trimethylbenzene	0.02	0.0198	98.8	0.02	0.0208	104	5.1	30	75-123	
1,2-Dibromo-3-chloropropa	0.02	0.0158	78.9	0.02	0.0217	109	31.6	30	61-132	R1
1,2-Dibromoethane	0.02	0.0186	92.9	0.02	0.0217	109	15.5	30	78-122	
1,2-Dichlorobenzene	0.02	0.0201	100	0.02	0.0212	106	5.4	30	78-121	
1,2-Dichloroethane	0.02	0.0181	90.6	0.02	0.0205	102	12.3	30	71-128	
1,2-Dichloropropane	0.02	0.0187	93.3	0.02	0.0196	97.9	4.9	30	76-123	
1,3,5-Trimethylbenzene	0.02	0.0201	100	0.02	0.0209	104	4.1	30	73-124	
1,3-Dichlorobenzene	0.02	0.0204	102	0.02	0.0213	106	4.2	30	77-121	
1,3-Dichloropropane	0.02	0.0174	87.1	0.02	0.0194	97.2	10.8	30	77-121	
1,4-Dichlorobenzene	0.02	0.0202	101	0.02	0.0221	111	9.1	30	75-120	
1,4-Dioxane	0.64	0.546	85.4	0.64	0.695	109	23.9	30	55-138	
2,2-Dichloropropane	0.02	0.0165	82.7	0.02	0.0191	95.7	14.3	30	67-133	
2-Chlorotoluene	0.02	0.0196	97.8	0.02	0.0204	102	4.2	30	75-122	
4-Chlorotoluene	0.02	0.0193	96.5	0.02	0.0204	102	5.6	30	72-124	
4-Isopropyltoluene	0.02	0.0202	101	0.02	0.0212	106	4.8	30	73-127	
Benzene	0.02	0.0192	95.8	0.02	0.0205	103	6.8	30	77-121	
Bromobenzene	0.02	0.0203	102	0.02	0.0216	108	6.2	30	78-121	
Bromochloromethane	0.02	0.0171	85.6	0.02	0.0183	91.7	6.6	30	75-125	
Bromodichloromethane	0.02	0.0187	93.3	0.02	0.0196	97.9	4.9	30	71-127	
Bromoform	0.02	0.0194	96.8	0.02	0.0218	109	11.8	30	67-132	
Bromomethane	0.02	0.0160	80.1	0.02	0.0172	86.2	7.2	30	55-140	
Carbon disulfide	0.02	0.0179	89.3	0.02	0.0136	68	27.1	30	63-132	
Carbon tetrachloride	0.02	0.0192	95.9	0.02	0.0206	103	7.2	30	69-135	
Chlorobenzene	0.02	0.0200	99.9	0.02	0.0213	107	6.4	30	79-120	
Chloroethane	0.02	0.0163	81.4	0.02	0.0183	91.6	11.7	30	59-139	
Chloroform	0.02	0.0178	89.1	0.02	0.0192	95.9	7.4	30	78-123	
Chloromethane	0.02	0.0159	79.7	0.02	0.0179	89.3	11.6	30	50-136	
cis-1,2-Dichloroethylene	0.02	0.0177	88.5	0.02	0.0186	93.2	5	30	77-123	
cis-1,3-Dichloropropene	0.02	0.0188	93.9	0.02	0.0200	100	6.3	30	74-126	
Dibromochloromethane	0.02	0.0189	94.5	0.02	0.0204	102	7.6	30	74-126	
Dibromomethane	0.02	0.0186	93	0.02	0.0212	106	13.1	30	78-125	
Dichlorodifluoromethane	0.02	0.0148	74.2	0.02	0.0196	98.2	27.6	30	29-149	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060194

**Date :** 6/11/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060729

**Created Date :** 06/06/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19060194.01,03,05

**QC Type: LCS and LCSD**

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
Ethylbenzene	0.02	0.0196	98.1	0.02	0.0210	105	6.8	30	76-122	R1
Isopropylbenzene	0.02	0.0200	100	0.02	0.0213	106	6.2	30	68-134	
m- & p-Xylenes	0.04	0.0397	99.1	0.04	0.0422	106	6.2	30	77-124	
MEK	0.02	0.0149	74.6	0.02	0.0234	117	44.3	30	51-148	
Methylene chloride	0.02	0.0187	93.7	0.02	0.0208	104	10.4	30	70-128	
MTBE	0.02	0.0173	86.4	0.02	0.0186	93	7.3	30	73-125	
Naphthalene	0.02	0.0160	79.9	0.02	0.0188	94	16.2	30	62-129	
n-Butylbenzene	0.02	0.0188	93.8	0.02	0.0196	98.1	4.4	30	70-128	
n-Propylbenzene	0.02	0.0195	97.6	0.02	0.0206	103	5.4	30	73-125	
o-Xylene	0.02	0.0195	97.5	0.02	0.0206	103	5.5	30	77-123	
sec-Butylbenzene	0.02	0.0200	100	0.02	0.0208	104	3.8	30	73-126	
Styrene	0.02	0.0199	99.3	0.02	0.0212	106	6.6	30	76-124	
t-butylbenzene	0.02	0.0197	98.6	0.02	0.0201	100	1.9	30	73-125	
Tetrachloroethylene	0.02	0.0205	103	0.02	0.0212	106	3.3	30	73-128	
Toluene	0.02	0.0198	99.1	0.02	0.0213	107	7.2	30	77-121	
trans-1,2-Dichloroethylene	0.02	0.0176	88.2	0.02	0.0191	95.6	8	30	74-125	
trans-1,3-Dichloropropene	0.02	0.0183	91.6	0.02	0.0202	101	9.8	30	71-130	
Trichloroethylene	0.02	0.0204	102	0.02	0.0218	109	6.4	30	77-123	
Trichlorofluoromethane	0.02	0.0170	84.8	0.02	0.0183	91.5	7.6	30	62-140	
Vinyl Chloride	0.02	0.0167	83.6	0.02	0.0189	94.3	12.2	30	56-135	
Xylenes	0.06	0.0592	98.7	0.06	0.0628	105	5.9	30	78-124	

**QC Type: MS and MSD**

**QC Sample ID: 19060241.02**

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
1,1,1,2-Tetrachloroethane	BRL	0.019	0.0196	103						71.4-131	M9
1,1,1-Trichloroethane	BRL	0.019	0.0176	92.6						69.6-140	
1,1,2,2-Tetrachloroethane	BRL	0.019	0.0201	106						66.6-128	
1,1,2-Trichloroethane	BRL	0.019	0.0199	105						72.8-125	
1,1-Dichloroethane	BRL	0.019	0.0183	96.3						72.7-129	
1,1-Dichloroethylene	BRL	0.019	0.0121	63.7						71.4-131	
1,1-Dichloropropene	BRL	0.019	0.0183	96.3						75.9-132	
1,2,3-trichlorobenzene	BRL	0.019	0.0156	82.1						56.7-153	
1,2,3-Trichloropropane	BRL	0.019	0.0202	106						61.6-138	
1,2,4-Trichlorobenzene	BRL	0.019	0.0189	99.5						55.9-150	
1,2,4-Trimethylbenzene	BRL	0.019	0.0199	105						71.1-131	
1,2-Dibromo-3-chloropropa	BRL	0.019	0.0188	98.9						52.4-150	
1,2-Dibromoethane	BRL	0.019	0.0202	106						72.9-125	
1,2-Dichlorobenzene	BRL	0.019	0.0203	107						76.1-126	

Refer to the Definition page for terms.



**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060194

**Date :** 6/11/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060729

**Created Date :** 06/06/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19060194.01,03,05

**QC Type:** MS and MSD

**QC Sample ID:** 19060241.02

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
1,2-Dichloroethane	BRL	0.019	0.0190	100						66.4-134	
1,2-Dichloropropane	BRL	0.019	0.0191	101						70.2-128	
1,3,5-Trimethylbenzene	BRL	0.019	0.0201	106						75.1-127	
1,3-Dichlorobenzene	BRL	0.019	0.0204	107						73.9-126	
1,3-Dichloropropane	BRL	0.019	0.0185	97.4						68.3-124	
1,4-Dichlorobenzene	BRL	0.019	0.0206	108						72.3-127	
1,4-Dioxane	BRL	0.62	0.629	101						70-130	
2,2-Dichloropropane	BRL	0.019	0.0161	84.7						68.5-138	
2-Chlorotoluene	BRL	0.019	0.0196	103						71.7-128	
4-Chlorotoluene	BRL	0.019	0.0193	102						72.2-126	
4-Isopropyltoluene	BRL	0.019	0.0206	108						77.5-125	
Benzene	BRL	0.019	0.0196	103						74-126	
Bromobenzene	BRL	0.019	0.0208	109						73.3-129	
Bromochloromethane	BRL	0.019	0.0176	92.6						68.8-131	
Bromodichloromethane	BRL	0.019	0.0180	94.7						69-135	
Bromoform	BRL	0.019	0.0188	98.9						62-146	
Bromomethane	BRL	0.019	0.0174	91.6						58.7-139	
Carbon disulfide	BRL	0.019	0.0110	57.9						70-130	M9
Carbon tetrachloride	BRL	0.019	0.0181	95.3						68.7-135	
Chlorobenzene	BRL	0.019	0.0205	108						73.3-129	
Chloroethane	BRL	0.019	0.0195	103						66.2-129	
Chloroform	BRL	0.019	0.0183	96.3						73.7-134	
Chloromethane	BRL	0.019	0.0168	88.4						51.4-135	
cis-1,2-Dichloroethylene	BRL	0.019	0.0181	95.3						72.4-132	
cis-1,3-Dichloropropene	BRL	0.019	0.0189	99.5						67.7-134	
Dibromochloromethane	BRL	0.019	0.0182	95.8						73.2-126	
Dibromomethane	BRL	0.019	0.0199	105						69.9-134	
Dichlorodifluoromethane	BRL	0.019	0.0169	88.9						36.8-144	
Ethylbenzene	BRL	0.019	0.0197	104						72.2-128	
Isopropylbenzene	BRL	0.019	0.0202	106						71.2-131	
m- & p-Xylenes	BRL	0.039	0.0397	102						70.7-131	
MEK	BRL	0.019	0.0154	81.1						52.5-152	
Methylene chloride	BRL	0.019	0.0203	107						70.6-129	
MTBE	BRL	0.019	0.0180	94.7						70-130	
Naphthalene	BRL	0.019	0.0198	104						60.7-145	
n-Butylbenzene	BRL	0.019	0.0191	101						66.5-136	
n-Propylbenzene	BRL	0.019	0.0197	104						73.3-126	
o-Xylene	BRL	0.019	0.0199	105						71.6-130	
sec-Butylbenzene	BRL	0.019	0.0201	106						77.9-124	
Styrene	BRL	0.019	0.0203	107						71.1-131	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060194

**Date :** 6/11/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060729

**Created Date :** 06/06/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19060194.01,03,05

**QC Type:** MS and MSD

**QC Sample ID:** 19060241.02

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
t-butylbenzene	BRL	0.019	0.0199	105						74.4-130	
Tetrachloroethylene	BRL	0.019	0.0205	108						62.6-157	
Toluene	BRL	0.019	0.0203	107						73.3-127	
trans-1,2-Dichloroethylene	BRL	0.019	0.0182	95.8						70-130	
trans-1,3-Dichloropropene	BRL	0.019	0.0186	97.9						71.5-124	
Trichloroethylene	BRL	0.019	0.0204	107						69.2-133	
Trichlorofluoromethane	BRL	0.019	0.0162	85.3						63.9-140	
Vinyl Chloride	BRL	0.019	0.0175	92.1						40.9-159	
Xylenes	BRL	0.058	0.0596	103						69.2-133	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060194

**Date :** 6/11/2019

**Analysis :** Total Petroleum Hydrocarbons      **Method :** TX 1005      **Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060739      **Created Date :** 06/06/19      **Created By :** Jdongre

**Samples in This QC Batch :** 19060194.01,03,05

**Sample Preparation :** PB19060718      **Prep Method :** TX 1005      **Prep Date :** 06/06/19 10:00      **Prep By :** Jdongre

**QC Type: Method Blank**

Parameter	CAS #	Result	Units	D.F.	MQL	MDL	Qual
C6-C12	TPH-1005-1	< MDL	mg/Kg	1	25	23.7	
>C12-C28	TPH-1005-2	< MDL	mg/Kg	1	25	20.3	
>C28-C35	TPH-1005-4	< MDL	mg/Kg	1	25	17.7	
Total C6-C35		< MDL	mg/Kg	1	---	17.7	
Chlorooctadecane(surr)	3386-33-2	88.5	%	1			
1-Chlorooctane(surr)	111-85-3	101	%	1			

**QC Type: LCS and LCSD**

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
C6-C12	500	533	107	500	529	106	0.8	20	75-125	
>C12-C28	500	518	104	500	513	103	1	20	75-125	
>C28-C35	500	529	106	500	554	111	4.6	20	75-125	

**QC Type: MS and MSD**

**QC Sample ID: 19060207.01**

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
C6-C12	BRL	500	596	119	500	579	116	2.9	20	75-125	
>C12-C28	BRL	500	588	118	500	576	115	2.1	20	75-125	
>C28-C35	BRL	500	621	124	500	615	123	1	20	75-125	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060194

**Date :** 6/11/2019

**Analysis :** Total Petroleum Hydrocarbons      **Method :** TX 1005      **Reporting Units :** mg/L

**QC Batch ID :** Qb19060782      **Created Date :** 06/06/19      **Created By :** Jdongre

**Samples in This QC Batch :** 19060194.02,04,06

**Sample Preparation :** PB19060746      **Prep Method :** TX 1005      **Prep Date :** 06/06/19 10:30      **Prep By :** Jdongre

**QC Type: Method Blank**

Parameter	CAS #	Result	Units	D.F.	MQL	MDL	Qual
C6-C12	TPH-1005-1	< MDL	mg/L	1	1.5	0.66	
>C12-C28	TPH-1005-2	< MDL	mg/L	1	1.5	0.86	
>C28-C35	TPH-1005-4	< MDL	mg/L	1	1.5	0.75	
Total C6-C35		< MDL	mg/L	1	---	0.86	
1-Chlorooctane(surr)	111-85-3	91.8	%	1			
Chlorooctadecane(surr)	3386-33-2	78.6	%	1			

**QC Type: Duplicate**

**QC Sample ID: 19060194.04**

Parameter	QCSample Result	Sample Result	Units	RPD	RPD CtrlLimit	Qual
>C12-C28	BRL	BRL	mg/L	0	30	
>C28-C35	BRL	BRL	mg/L	0	30	
C6-C12	BRL	BRL	mg/L	0	30	
Total C6-C35	BRL	BRL	mg/L	0	30	

**QC Type: LCS and LCSD**

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
C6-C12	30	32.3	108	30	32.2	107	0.3	20	75-125	
>C12-C28	30	27.7	92.3	30	27.6	92	0.4	20	75-125	
>C28-C35	30	30.4	101	30	29.7	99	2.3	20	75-125	

Refer to the Definition page for terms.

**LABORATORY TERM AND QUALIFIER DEFINITION REPORT**



Job ID : 19060194

Date: 6/11/2019

**General Term Definition**

Back-Wt	Back Weight	Post-Wt	Post Weight
BRL	Below Reporting Limit	ppm	parts per million
cfu	colony-forming units	Pre-Wt	Previous Weight
Conc.	Concentration	Q	Qualifier
D.F.	Dilution Factor	RegLimit	Regulatory Limit
Front-Wt	Front Weight	RPD	Relative Percent Difference
LCS	Laboratory Check Standard	RptLimit	Reporting Limit
LCSD	Laboratory Check Standard Duplicate	SDL	Sample Detection Limit
MS	Matrix Spike	surr	Surrogate
MSD	Matrix Spike Duplicate	T	Time
MW	Molecular Weight	TNTC	Too numerous to count
J	Estimation. Below calibration range but above MDL		

**Qualifier Definition**

L2	Associated LCS and/or LCSD recovery is below acceptance limits for flagged analyte. Bias may be low.
M8	Matrix Spike and/or Matrix Spike Duplicate recovery is above laboratory control limits.
M9	Matrix Spike and/or Matrix Spike Duplicate recovery is below laboratory control limits.
R1	RPD exceeds control limits.
S8	Target compounds caused elevation of baseline. Surrogate may be biased high.
U	Undetected at SDL (Sample Detection Limit).
V11	CCV recovery is below acceptance limits.



10100 East Fwy (I-10)  
Suite 100  
Houston, TX 77029  
713-453-6060  
1-877-478-6060 Toll Free  
713-453-6091 Fax  
ablabs.com

1. **REPORT TO:**  
Company: Aviles Engineering Corp  
Address: 5790 Windfern  
Houston TX 77041  
Contact: Robert J Metzger  
Phone: 281-793-8352  
Fax:   
E-mail:  Rmetzger@avilesengineering.com

2. **INVOICE TO:**  
Company: As in Box 1  
Address: \_\_\_\_\_  
Contact: \_\_\_\_\_  
Phone: \_\_\_\_\_  
Fax:   
E-mail:

3. PO # \_\_\_\_\_  
3a. A&B Quote # \_\_\_\_\_  
4. Turnaround Time (Business Days)  
 1 Day\*       Other:  
 2 Days\*  
 3 Days\*      \*Surcharge applies  
 7 Days - Standard

A&B JOB ID # 19060194

5. Project # E103-19

6. Project Name/Location  
Memorial Drive Reconstruction, Houston, TX

7. Reporting Requirement:  
 TRRP Limits only     TRRP Rpt. Package     See Attached     Standard Level II     PST     MDL     EDD

8. Sampler's Name & Company (PLEASE PRINT)      Sampler's Signature & Date  
Robert J Metzger AEC      [Signature] 6/4/19

9. Sample ID and Description      10. Sampling      11. 12. Matrix

LAB USE ONLY	Sample ID and Description	Date	Time 24hr	Comp.	Grab	Water	Matrix							
							Soil	Sludge	Oil	Drinking Water	Air	Other		
	<u>B-23 23-24</u>	<u>6/3/19</u>	<u>9:30</u>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>							
	<u>B-23 water</u>	<u>6/4/19</u>	<u>9:40</u>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>							
	<u>B-24 20-22</u>	<u>6/4/19</u>	<u>11:00</u>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>							
	<u>B-24 water</u>	<u>6/4/19</u>	<u>11:25</u>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>							
	<u>B-25 9-10</u>	<u>6/4/19</u>	<u>11:30</u>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>							
	<u>B-25 water</u>	<u>6/4/19</u>	<u>14:40</u>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>							

No. of Containers	Analyses/Methods	13.	14. Containers*	15. Preservatives**	16. PH-Lab Only	18. REMARKS
			VOA	VIA	VSA	
7	<u>BTEX/IMMRE</u>		<input checked="" type="checkbox"/>	<u>A/C</u>		<u>Strong odor</u>
6	<u>TPH/1005</u>		<input checked="" type="checkbox"/>	<u>A/C</u>		
7	<u>VOCS/IMMRE</u>		<input checked="" type="checkbox"/>	<u>A/C</u>		
6	<u>96 mo. SVOC</u>		<input checked="" type="checkbox"/>	<u>A/C</u>		
7			<input checked="" type="checkbox"/>			
6			<input checked="" type="checkbox"/>			

19. RELINQUISHED BY  
[Signature]

DATE 6/4/19 TIME 16:19

20. RECEIVED BY  
[Signature]

DATE 6.4.19 TIME 16:19

21. KNOWN HAZARDS/COMMENTS  
Temperature: 17.5 ± 1.2 °C  
Thermometer ID 170762P  
Intact  Y or N      Initials RL

\*Containers: VOA - 40 ml vial      A/G - Amber/Glass 1 Liter  
4 oz/8 oz - glass wide mouth      P/O - Plastic/other

\*\*Preservatives: C - Cool      H - HCl      N - HNO<sub>3</sub>      S - H<sub>2</sub>SO<sub>4</sub>  
OH - NaOH      T - Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>      X - Other

METHOD OF SHIPMENT

BILL OF LADING/TRACKING #

LAB USE ONLY    SAMPLING \_\_\_\_\_    RENTAL \_\_\_\_\_    P/U \_\_\_\_\_    Supplies \_\_\_\_\_    Field Work \_\_\_\_\_

A&B cannot accept verbal changes  
Please FAX written changes to 713-453-6091  
Samples will be disposed of after 30 days  
A&B reserves the right to return samples



# Sample Condition Checklist

A&B JobID : <b>19060194</b>	Date Received : <b>06/04/2019</b>	Time Received : <b>4:19PM</b>																										
Client Name : <b>Aviles Engineering</b>																												
Temperature : <b>1.7-0.5cf=1.2°C</b>	Sample pH : <b>n/a</b>																											
Thermometer ID : <b>1707629</b>	pH Paper ID : <b>n/a</b>																											
<b>Check Points</b>																												
<b>1.</b>	<b>Cooler seal present and signed.</b>	Yes	No	N/A																								
<b>2.</b>	<b>Sample(s) in a cooler.</b>	X																										
<b>3.</b>	<b>If yes, ice in cooler.</b>	X																										
<b>4.</b>	<b>Sample(s) received with chain-of-custody.</b>	X																										
<b>5.</b>	<b>C-O-C signed and dated.</b>	X																										
<b>6.</b>	<b>Sample(s) received with signed sample custody seal.</b>		X																									
<b>7.</b>	<b>Sample containers arrived intact. (If no comment).</b>	X																										
<b>8.</b>	<table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><b>Matrix</b></td> <td style="text-align: center;"><b>Water</b></td> <td style="text-align: center;"><b>Soil</b></td> <td style="text-align: center;"><b>Liquid</b></td> <td style="text-align: center;"><b>Sludge</b></td> <td style="text-align: center;"><b>Solid</b></td> <td style="text-align: center;"><b>Cassette</b></td> <td style="text-align: center;"><b>Tube</b></td> <td style="text-align: center;"><b>Bulk</b></td> <td style="text-align: center;"><b>Badge</b></td> <td style="text-align: center;"><b>Food</b></td> <td style="text-align: center;"><b>Other</b></td> </tr> <tr> <td style="text-align: center;">:</td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </table>	<b>Matrix</b>	<b>Water</b>	<b>Soil</b>	<b>Liquid</b>	<b>Sludge</b>	<b>Solid</b>	<b>Cassette</b>	<b>Tube</b>	<b>Bulk</b>	<b>Badge</b>	<b>Food</b>	<b>Other</b>	:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
<b>Matrix</b>	<b>Water</b>	<b>Soil</b>	<b>Liquid</b>	<b>Sludge</b>	<b>Solid</b>	<b>Cassette</b>	<b>Tube</b>	<b>Bulk</b>	<b>Badge</b>	<b>Food</b>	<b>Other</b>																	
:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																	
<b>9.</b>	<b>Sample(s) were received in appropriate container(s).</b>	X																										
<b>10.</b>	<b>Sample(s) were received with proper preservative</b>	X																										
<b>11.</b>	<b>All samples were logged or labeled.</b>	X																										
<b>12.</b>	<b>Sample ID labels match C-O-C ID's</b>	X																										
<b>13.</b>	<b>Bottle count on C-O-C matches bottles found.</b>	X																										
<b>14.</b>	<b>Sample volume is sufficient for analyses requested.</b>	X																										
<b>15.</b>	<b>Samples were received within the hold time.</b>	X																										
<b>16.</b>	<b>VOA vials completely filled.</b>	X																										
<b>17.</b>	<b>Sample accepted.</b>	X																										
<b>18</b>	<b>Has client been contacted about sub-out</b>			X																								
<b>Comments : Include actions taken to resolve discrepancies/problem:</b>																												
Soil: 01, 03 & 05. Water: 02, 04 & 06. Received 6 pre-weighed vials and 1 bulk jar for each soil sample. TPH waters in 60mL. -ANA 6-5-19.																												

Received by : RCini

Check in by/date : AArnett / 06/05/2019

# Laboratory Analysis Report

Total Number of Pages: 47

Job ID : 19060383



10100 East Freeway, Suite 100, Houston, TX 77029 tel: 713-453-6060, fax: 713-453-6091, <http://www.ablabs.com>

---

**Client Project Name :**  
**E103-19 / Memorial Drive Reconstruction, Houston**

**Report To :** Client Name: Aviles Engineering  
Attn: Robert J. Metzger  
Client Address: 5790 Windfern  
City, State, Zip: Houston, Texas, 77041

P.O.#.:  
Sample Collected By: Robert J. Metzger  
Date Collected: 06/06/19

---

**A&B Labs has analyzed the following samples...**

Client Sample ID	Matrix	A&B Sample ID
B-26 25-26	Soil	19060383.01
B-26 Water	Water	19060383.02
B-27 6-7	Soil	19060383.03
B-27 Water	Water	19060383.04
B-28 18-20	Soil	19060383.05
B-28 Water	Water	19060383.06
B-29 17-18	Soil	19060383.07
B-29 Water	Water	19060383.08

*Shantall Carpenter*

Released By: Shantall Carpenter  
Title: Senior Project Manager  
Date: 6/14/2019



This Laboratory is NELAP ( T104704213-19-20) accredited. Effective: 04/01/2019; Expires: 3/31/2020

Scope: Non-Potable Water, Drinking Water, Air, Solid, Biological Tissue, Hazardous Waste

I am the laboratory manager, or his/her designee, and I am responsible for the release of this data package. This laboratory data package has been reviewed and is complete and technically compliant with the requirements of the methods used, except where noted in the attached exception reports. I affirm, to the best of my knowledge that all problems/anomalies observed by this laboratory (and if applicable, any and all laboratories subcontracted through this laboratory) that might affect the quality of the data, have been identified in the Laboratory Review Checklist, and that no information or data have been knowingly withheld that would affect the quality of the data.

This report cannot be reproduced, except in full, without prior written permission of A&B Labs. Results shown relate only to the items tested. Samples are assumed to be in acceptable condition unless otherwise noted. Blank correction is not made unless otherwise noted. Air concentrations reported are based on field sampling information provided by client. Soil samples are reported on a wet weight basis unless otherwise noted. Uncertainty estimates are available on request.

Date Received : 06/07/2019 08:07





**LABORATORY TEST RESULTS**

Client Sample ID: B-26 25-26  
 A&B Job Sample ID: 19060383.01

Date: 6/14/2019

Client Name: Aviles Engineering Attn: Robert J. Metzger  
 Project Name: E103-19 / Memorial Drive Reconstruction, Houston

Test Description:	<b>% Moisture</b>	Sample Matrix	Soil
Analytical Method:	SM 2540G	Date Collected	06/06/2019 09:35
QC Batch ID:	Qb19061169	Date Received	06/07/2019 08:07
Prep Method:	SM 2540G	Date Prepared	06/11/2019 08:00
Prepared By:	KRSaranya		
Prep Batch ID	PB19061152		
Analyst Initial	KRS	% Moisture	16.4

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
	% Moisture	16.4					----	----	%	1	06/11/19 08:10

Soil results reported on dry weight basis



LABORATORY TEST RESULTS

Client Sample ID: B-26 25-26
A&B Job Sample ID: 19060383.01

Date: 6/14/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Drive Reconstruction, Houston

Attn: Robert J. Metzger

Test Description: Volatile Organic Compounds by GC/MS

Analytical Method: SW-846 8260C

QC Batch ID: Qb19060801

Prep Method: SW-846 5035A

Prepared By: Rajeev

Prep Batch ID: PB19060802

Analyst Initial: RT

Sample Matrix: Soil

Date Collected: 06/06/2019 09:35

Date Received: 06/07/2019 08:07

Date Prepared: 06/07/2019 10:00

% Moisture: 16.4

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Rows include various chemical compounds like 1,1,1,2-Tetrachloroet, 1,1,1-Trichloroethane, etc.

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-26 25-26  
 A&B Job Sample ID: 19060383.01

Date: 6/14/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction, Houston

Attn: Robert J. Metzger

Test Description: **Volatile Organic Compounds by GC/MS**

Sample Matrix: Soil

Analytical Method: SW-846 8260C

Date Collected: 06/06/2019 09:35

QC Batch ID: Qb19060801

Date Received: 06/07/2019 08:07

Prep Method: SW-846 5035A

Date Prepared: 06/07/2019 10:00

Prepared By: Rajeev

Prep Batch ID: PB19060802

Analyst Initial: RT

% Moisture: 16.4

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
67-66-3	Chloroform	<0.00100	U	0.00100	0.0042	0.00119	0.005	0.05	mg/Kg	0.70	06/07/19 23:23
74-87-3	Chloromethane	<0.00189	U	0.00189	0.0042	0.00226	0.005	0.05	mg/Kg	0.70	06/07/19 23:23
156-59-2	cis-1,2-Dichloroethyle	<0.00100	U	0.00100	0.0042	0.00119	0.005	0.05	mg/Kg	0.70	06/07/19 23:23
10061-01-5	cis-1,3-Dichloroprope	<0.00094	U	0.00094	0.0042	0.00113	0.005	0.05	mg/Kg	0.70	06/07/19 23:23
124-48-1	Dibromochloromethan	<0.00092	U	0.00092	0.0042	0.00110	0.005	0.05	mg/Kg	0.70	06/07/19 23:23
74-95-3	Dibromomethane	<0.00116	U	0.00116	0.0042	0.00138	0.005	0.05	mg/Kg	0.70	06/07/19 23:23
75-71-8	Dichlorodifluorometha	<0.00113	U	0.00113	0.0042	0.00135	0.005	0.05	mg/Kg	0.70	06/07/19 23:23
100-41-4	Ethylbenzene	<0.00116	U	0.00116	0.0042	0.00138	0.005	0.05	mg/Kg	0.70	06/07/19 23:23
98-82-8	Isopropylbenzene	<0.00106	U	0.00106	0.0042	0.00126	0.005	0.05	mg/Kg	0.70	06/07/19 23:23
108-38-3&106-4	m- & p-Xylenes	<0.00229	U	0.00229	0.0084	0.00273	0.01	0.1	mg/Kg	0.70	06/07/19 23:23
78-93-3	MEK	<0.00224	U	0.00224	0.0042	0.00267	0.005	0.05	mg/Kg	0.70	06/07/19 23:23
75-09-2	Methylene chloride	<0.00129	U	0.00129	0.0042	0.00154	0.005	0.05	mg/Kg	0.70	06/07/19 23:23
1634-04-4	MTBE	<0.00090	U	0.00090	0.0042	0.00107	0.005	0.05	mg/Kg	0.70	06/07/19 23:23
91-20-3	Naphthalene	<0.00157	U	0.00157	0.0042	0.00188	0.005	0.05	mg/Kg	0.70	06/07/19 23:23
104-51-8	n-Butylbenzene	<0.00150	U	0.00150	0.0042	0.00179	0.005	0.05	mg/Kg	0.70	06/07/19 23:23
103-65-1	n-Propylbenzene	<0.00116	U	0.00116	0.0042	0.00138	0.005	0.05	mg/Kg	0.70	06/07/19 23:23
95-47-6	o-Xylene	<0.00106	U	0.00106	0.0042	0.00126	0.005	0.05	mg/Kg	0.70	06/07/19 23:23
135-98-8	sec-Butylbenzene	<0.00134	U	0.00134	0.0042	0.00160	0.005	0.05	mg/Kg	0.70	06/07/19 23:23
100-42-5	Styrene	<0.00106	U	0.00106	0.0042	0.00126	0.005	0.05	mg/Kg	0.70	06/07/19 23:23
98-06-6	t-butylbenzene	<0.00118	U	0.00118	0.0042	0.00141	0.005	0.05	mg/Kg	0.70	06/07/19 23:23
127-18-4	Tetrachloroethylene	<0.00116	U	0.00116	0.0042	0.00138	0.005	0.05	mg/Kg	0.70	06/07/19 23:23
108-88-3	Toluene	<0.00100	U	0.00100	0.0042	0.00119	0.005	0.05	mg/Kg	0.70	06/07/19 23:23
156-60-5	trans-1,2-Dichloroethy	<0.00121	U	0.00121	0.0042	0.00144	0.005	0.05	mg/Kg	0.70	06/07/19 23:23
10061-02-6	trans-1,3-Dichloropro	<0.00078	U	0.00078	0.0042	0.00094	0.005	0.05	mg/Kg	0.70	06/07/19 23:23
79-01-6	Trichloroethylene	<0.00087	U	0.00087	0.0042	0.00104	0.005	0.05	mg/Kg	0.70	06/07/19 23:23
75-69-4	Trichlorofluoromethan	<0.00166	U	0.00166	0.0042	0.00198	0.005	0.05	mg/Kg	0.70	06/07/19 23:23
75-01-4	Vinyl Chloride	<0.00155	U	0.00155	0.0042	0.00185	0.005	0.05	mg/Kg	0.70	06/07/19 23:23
1330-20-7	Xylenes	<0.00084	U	0.00084	0.0042	0.001	0.005	0.15	mg/Kg	0.70	06/07/19 23:23
17060-07-0	1,2-Dichloroethane-d4	98.5					70	130	%	0.70	06/07/19 23:23
1868-53-7	Dibromofluoromethan	91.8					70	130	%	0.70	06/07/19 23:23
2037-26-5	Toluene-d8(surr)	97.7					70	130	%	0.70	06/07/19 23:23
460-00-4	p-Bromofluorobenzen	92.9					70	130	%	0.70	06/07/19 23:23

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-26 25-26  
 A&B Job Sample ID: 19060383.01

Date: 6/14/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction, Houston

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**

Sample Matrix: Soil

Analytical Method: TX 1005

Date Collected: 06/06/2019 09:35

QC Batch ID: Qb19061132

Date Received: 06/07/2019 08:07

Prep Method: TX 1005

Date Prepared: 06/10/2019 10:00

Prepared By: Jdongre

Prep Batch ID: PB19061116

Analyst Initial: JKD

% Moisture: 16.4

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12	<26.4	U	26.4	27.8	23.7	25	1000	mg/Kg	0.93	06/10/19 17:41
TPH-1005-2	>C12-C28	<22.6	U	22.6	27.8	20.3	25	1000	mg/Kg	0.93	06/10/19 17:41
TPH-1005-4	>C28-C35	<19.7	U	19.7	27.8	17.7	25	1000	mg/Kg	0.93	06/10/19 17:41
	Total C6-C35	< 19.7	U	19.7		17.7	----	----	mg/Kg	0.93	06/10/19 17:41
111-85-3	1-Chlorooctane(surr)	89.3					60	143	%	0.93	06/10/19 17:41
3386-33-2	Chlorooctadecane(sur	82.7					60	150	%	0.93	06/10/19 17:41

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-26 Water  
 A&B Job Sample ID: 19060383.02

Date: 6/14/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction, Houston

Attn: Robert J. Metzger

Test Description: **Volatile Organic Compounds**

Sample Matrix: Water

Analytical Method: SW-846 8260C

Date Collected: 06/06/2019 09:50

QC Batch ID: Qb19060802

Date Received: 06/07/2019 08:07

Prep Method: SW-846 5030C

Date Prepared: 06/07/2019 10:00

Prepared By: Rajeev

Prep Batch ID: PB19060803

Analyst Initial: RT

% Moisture

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
630-20-6	1,1,1,2-Tetrachloroet	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	06/07/19 22:51
71-55-6	1,1,1-Trichloroethane	<0.00072	U	0.00072	0.005	0.00072	0.005	0.05	mg/L	1	06/07/19 22:51
79-34-5	1,1,2,2-Tetrachloroet	<0.00210	U	0.00210	0.005	0.00210	0.005	0.05	mg/L	1	06/07/19 22:51
79-00-5	1,1,2-Trichloroethane	<0.00144	U	0.00144	0.005	0.00144	0.005	0.05	mg/L	1	06/07/19 22:51
75-34-3	1,1-Dichloroethane	<0.00119	U	0.00119	0.005	0.00119	0.005	0.05	mg/L	1	06/07/19 22:51
75-35-4	1,1-Dichloroethylene	<0.00066	U	0.00066	0.005	0.00066	0.005	0.05	mg/L	1	06/07/19 22:51
563-58-6	1,1-Dichloropropene	<0.00100	U	0.00100	0.005	0.001	0.005	0.05	mg/L	1	06/07/19 22:51
87-61-6	1,2,3-trichlorobenzen	<0.00085	U	0.00085	0.005	0.00085	0.005	0.05	mg/L	1	06/07/19 22:51
96-18-4	1,2,3-Trichloropropan	<0.00170	U	0.00170	0.005	0.00170	0.005	0.05	mg/L	1	06/07/19 22:51
120-82-1	1,2,4-Trichlorobenzen	<0.00053	U	0.00053	0.005	0.00053	0.005	0.05	mg/L	1	06/07/19 22:51
95-63-6	1,2,4-Trimethylbenze	<0.00100	U	0.00100	0.005	0.00100	0.005	0.05	mg/L	1	06/07/19 22:51
96-12-8	1,2-Dibromo-3-chloro	<0.00236	U	0.00236	0.005	0.00236	0.005	0.05	mg/L	1	06/07/19 22:51
106-93-4	1,2-Dibromoethane	<0.00129	U	0.00129	0.005	0.00129	0.005	0.05	mg/L	1	06/07/19 22:51
95-50-1	1,2-Dichlorobenzene	<0.00060	U	0.00060	0.005	0.00060	0.005	0.05	mg/L	1	06/07/19 22:51
107-06-2	1,2-Dichloroethane	<0.00104	U	0.00104	0.005	0.00104	0.005	0.05	mg/L	1	06/07/19 22:51
78-87-5	1,2-Dichloropropane	<0.00075	U	0.00075	0.005	0.00075	0.005	0.05	mg/L	1	06/07/19 22:51
108-67-8	1,3,5-Trimethylbenze	<0.00110	U	0.00110	0.005	0.00110	0.005	0.05	mg/L	1	06/07/19 22:51
541-73-1	1,3-Dichlorobenzene	<0.00075	U	0.00075	0.005	0.00075	0.005	0.05	mg/L	1	06/07/19 22:51
142-28-9	1,3-Dichloropropane	<0.00100	U	0.00100	0.005	0.001	0.005	0.05	mg/L	1	06/07/19 22:51
106-46-7	1,4-Dichlorobenzene	<0.00072	U	0.00072	0.005	0.00072	0.005	0.05	mg/L	1	06/07/19 22:51
123-91-1	1,4-Dioxane	<0.08177	U	0.08177	0.32	0.08177	0.32	1.6	mg/L	1	06/07/19 22:51
594-20-7	2,2-Dichloropropane	<0.00100	U	0.00100	0.005	0.001	0.005	0.05	mg/L	1	06/07/19 22:51
95-49-8	2-Chlorotoluene	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	06/07/19 22:51
106-43-4	4-Chlorotoluene	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	06/07/19 22:51
99-87-6	4-Isopropyltoluene	<0.00091	U	0.00091	0.005	0.00091	0.005	0.05	mg/L	1	06/07/19 22:51
71-43-2	Benzene	<0.00063	U	0.00063	0.005	0.00063	0.005	0.05	mg/L	1	06/07/19 22:51
108-86-1	Bromobenzene	<0.00100	U	0.00100	0.005	0.001	0.005	0.05	mg/L	1	06/07/19 22:51
74-97-5	Bromochloromethane	<0.00097	U	0.00097	0.005	0.00097	0.005	0.05	mg/L	1	06/07/19 22:51
75-27-4	Bromodichloromethan	<0.00069	U	0.00069	0.005	0.00069	0.005	0.05	mg/L	1	06/07/19 22:51
75-25-2	Bromoform	<0.00170	U	0.00170	0.005	0.00170	0.005	0.05	mg/L	1	06/07/19 22:51
74-83-9	Bromomethane	<0.00079	U	0.00079	0.005	0.00079	0.005	0.05	mg/L	1	06/07/19 22:51
75-15-0	Carbon disulfide	<0.00113	U	0.00113	0.005	0.00113	0.005	0.05	mg/L	1	06/07/19 22:51
56-23-5	Carbon tetrachloride	<0.00173	U	0.00173	0.005	0.00173	0.005	0.05	mg/L	1	06/07/19 22:51
108-90-7	Chlorobenzene	<0.00069	U	0.00069	0.005	0.00069	0.005	0.05	mg/L	1	06/07/19 22:51
75-00-3	Chloroethane	<0.00144	U	0.00144	0.005	0.00144	0.005	0.05	mg/L	1	06/07/19 22:51
67-66-3	Chloroform	<0.00072	U	0.00072	0.005	0.00072	0.005	0.05	mg/L	1	06/07/19 22:51

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-26 Water  
 A&B Job Sample ID: 19060383.02

Date: 6/14/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction, Houston

Attn: Robert J. Metzger

Test Description: **Volatile Organic Compounds**

Sample Matrix: Water

Analytical Method: SW-846 8260C

Date Collected: 06/06/2019 09:50

QC Batch ID: Qb19060802

Date Received: 06/07/2019 08:07

Prep Method: SW-846 5030C

Date Prepared: 06/07/2019 10:00

Prepared By: Rajeev

Prep Batch ID: PB19060803

Analyst Initial: RT

% Moisture

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
74-87-3	Chloromethane	<0.00066	U	0.00066	0.005	0.00066	0.005	0.05	mg/L	1	06/07/19 22:51
156-59-2	cis-1,2-Dichloroethyle	<0.00053	U	0.00053	0.005	0.00053	0.005	0.05	mg/L	1	06/07/19 22:51
10061-01-5	cis-1,3-Dichloroprope	<0.00072	U	0.00072	0.005	0.00072	0.005	0.05	mg/L	1	06/07/19 22:51
124-48-1	Dibromochloromethan	<0.00122	U	0.00122	0.005	0.00122	0.005	0.05	mg/L	1	06/07/19 22:51
74-95-3	Dibromomethane	<0.00126	U	0.00126	0.005	0.00126	0.005	0.05	mg/L	1	06/07/19 22:51
75-71-8	Dichlorodifluorometha	<0.00085	U	0.00085	0.005	0.00085	0.005	0.05	mg/L	1	06/07/19 22:51
100-41-4	Ethylbenzene	<0.00100	U	0.00100	0.005	0.00100	0.005	0.05	mg/L	1	06/07/19 22:51
98-82-8	Isopropylbenzene	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	06/07/19 22:51
108-38-3&106-4	m- & p-Xylenes	<0.00151	U	0.00151	0.01	0.00151	0.01	0.1	mg/L	1	06/07/19 22:51
78-93-3	MEK	<0.00286	U	0.00286	0.005	0.00286	0.005	0.05	mg/L	1	06/07/19 22:51
75-09-2	Methylene chloride	<0.00487	U	0.00487	0.005	0.00487	0.005	0.05	mg/L	1	06/07/19 22:51
1634-04-4	MTBE	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	06/07/19 22:51
91-20-3	Naphthalene	<0.00270	U	0.00270	0.005	0.00270	0.005	0.05	mg/L	1	06/07/19 22:51
104-51-8	n-Butylbenzene	<0.00119	U	0.00119	0.005	0.00119	0.005	0.05	mg/L	1	06/07/19 22:51
103-65-1	n-Propylbenzene	<0.00135	U	0.00135	0.005	0.00135	0.005	0.05	mg/L	1	06/07/19 22:51
95-47-6	o-Xylene	<0.00066	U	0.00066	0.005	0.00066	0.005	0.05	mg/L	1	06/07/19 22:51
135-98-8	sec-Butylbenzene	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	06/07/19 22:51
100-42-5	Styrene	<0.00069	U	0.00069	0.005	0.00069	0.005	0.05	mg/L	1	06/07/19 22:51
98-06-6	t-butylbenzene	<0.00100	U	0.00100	0.005	0.00100	0.005	0.05	mg/L	1	06/07/19 22:51
127-18-4	Tetrachloroethylene	<0.00066	U	0.00066	0.005	0.00066	0.005	0.05	mg/L	1	06/07/19 22:51
108-88-3	Toluene	<0.00075	U	0.00075	0.005	0.00075	0.005	0.05	mg/L	1	06/07/19 22:51
156-60-5	trans-1,2-Dichloroethy	<0.00066	U	0.00066	0.005	0.00066	0.005	0.05	mg/L	1	06/07/19 22:51
10061-02-6	trans-1,3-Dichloropro	<0.00097	U	0.00097	0.005	0.00097	0.005	0.05	mg/L	1	06/07/19 22:51
79-01-6	Trichloroethylene	<0.00079	U	0.00079	0.005	0.00079	0.005	0.05	mg/L	1	06/07/19 22:51
75-69-4	Trichlorofluoromethan	<0.00094	U	0.00094	0.005	0.00094	0.005	0.05	mg/L	1	06/07/19 22:51
75-01-4	Vinyl Chloride	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	06/07/19 22:51
1330-20-7	Xylenes	<0.00204	U	0.00204	0.005	0.00204	0.005	0.15	mg/L	1	06/07/19 22:51
17060-07-0	1,2-Dichloroethane-d4	112						70 130	%	1	06/07/19 22:51
1868-53-7	Dibromofluoromethan	107						70 130	%	1	06/07/19 22:51
2037-26-5	Toluene-d8(surr)	98.5						70 130	%	1	06/07/19 22:51
460-00-4	p-Bromofluorobenzen	98.4						70 130	%	1	06/07/19 22:51

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-26 Water  
 A&B Job Sample ID: 19060383.02

Date: 6/14/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction, Houston

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb19061145  
 Prep Method: TX 1005  
 Prepared By: Jdongre  
 Prep Batch ID: PB19061130

Sample Matrix: Water  
 Date Collected: 06/06/2019 09:50  
 Date Received: 06/07/2019 08:07  
 Date Prepared: 06/10/2019 10:30

Analyst Initial: JKD

% Moisture

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12 <sup>1</sup>	<0.60	U	0.60	1.37	0.66	1.5	60	mg/L	0.91	06/14/19 12:48
TPH-1005-2	>C12-C28 <sup>1</sup>	<0.78	U	0.78	1.37	0.86	1.5	60	mg/L	0.91	06/14/19 12:48
TPH-1005-4	>C28-C35 <sup>1</sup>	<0.68	U	0.68	1.37	0.75	1.5	60	mg/L	0.91	06/14/19 12:48
	Total C6-C35	< 0.78	U	0.78		0.86	----	----	mg/L	0.91	06/14/19 12:48
111-85-3	1-Chlorooctane(surr)	63.9					59	122	%	0.91	06/14/19 12:48
3386-33-2	Chlorooctadecane(sur	114					48	123	%	0.91	06/14/19 12:48

Soil results reported on dry weight basis



LABORATORY TEST RESULTS

Client Sample ID: B-27 6-7

Date: 6/14/2019

A&B Job Sample ID: 19060383.03

Client Name: Aviles Engineering

Attn: Robert J. Metzger

Project Name: E103-19 / Memorial Drive Reconstruction, Houston

Test Description: % Moisture

Sample Matrix: Soil

Analytical Method: SM 2540G

Date Collected: 06/06/2019 11:14

QC Batch ID: Qb19061169

Date Received: 06/07/2019 08:07

Prep Method: SM 2540G

Date Prepared: 06/11/2019 08:00

Prepared By: KRSaranya

Prep Batch ID: PB19061152

Analyst Initial: KRS

% Moisture: 14.4

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
	% Moisture	14.4					----	----	%	1	06/11/19 08:10

Soil results reported on dry weight basis





LABORATORY TEST RESULTS

Client Sample ID: B-27 6-7
A&B Job Sample ID: 19060383.03

Date: 6/14/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Drive Reconstruction, Houston

Attn: Robert J. Metzger

Test Description: Volatile Organic Compounds by GC/MS

Analytical Method: SW-846 8260C

QC Batch ID: Qb19060801

Prep Method: SW-846 5035A

Prepared By: Rajeev

Prep Batch ID: PB19060802

Analyst Initial: RT

Sample Matrix: Soil

Date Collected: 06/06/2019 11:14

Date Received: 06/07/2019 08:07

Date Prepared: 06/07/2019 10:00

% Moisture: 14.4

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Rows list various chemical compounds and their test results.

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-27 6-7  
 A&B Job Sample ID: 19060383.03

Date: 6/14/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction, Houston

Attn: Robert J. Metzger

Test Description: **Volatile Organic Compounds by GC/MS**

Sample Matrix: Soil  
 Date Collected: 06/06/2019 11:14  
 Date Received: 06/07/2019 08:07  
 Date Prepared: 06/07/2019 10:00

Analytical Method: SW-846 8260C  
 QC Batch ID: Qb19060801  
 Prep Method: SW-846 5035A  
 Prepared By: Rajeev  
 Prep Batch ID: PB19060802

Analyst Initial: RT

% Moisture: 14.4

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
67-66-3	Chloroform	<0.00088	U	0.00088	0.0037	0.00119	0.005	0.05	mg/Kg	0.63	06/08/19 00:01
74-87-3	Chloromethane	<0.00166	U	0.00166	0.0037	0.00226	0.005	0.05	mg/Kg	0.63	06/08/19 00:01
156-59-2	cis-1,2-Dichloroethyle	<0.00088	U	0.00088	0.0037	0.00119	0.005	0.05	mg/Kg	0.63	06/08/19 00:01
10061-01-5	cis-1,3-Dichloroprope	<0.00083	U	0.00083	0.0037	0.00113	0.005	0.05	mg/Kg	0.63	06/08/19 00:01
124-48-1	Dibromochloromethan	<0.00081	U	0.00081	0.0037	0.00110	0.005	0.05	mg/Kg	0.63	06/08/19 00:01
74-95-3	Dibromomethane	<0.00102	U	0.00102	0.0037	0.00138	0.005	0.05	mg/Kg	0.63	06/08/19 00:01
75-71-8	Dichlorodifluorometha	<0.00099	U	0.00099	0.0037	0.00135	0.005	0.05	mg/Kg	0.63	06/08/19 00:01
100-41-4	Ethylbenzene	<0.00102	U	0.00102	0.0037	0.00138	0.005	0.05	mg/Kg	0.63	06/08/19 00:01
98-82-8	Isopropylbenzene	<0.00093	U	0.00093	0.0037	0.00126	0.005	0.05	mg/Kg	0.63	06/08/19 00:01
108-38-3&106-4	m- & p-Xylenes	<0.00201	U	0.00201	0.0074	0.00273	0.01	0.1	mg/Kg	0.63	06/08/19 00:01
78-93-3	MEK	<0.00197	U	0.00197	0.0037	0.00267	0.005	0.05	mg/Kg	0.63	06/08/19 00:01
75-09-2	Methylene chloride	<0.00113	U	0.00113	0.0037	0.00154	0.005	0.05	mg/Kg	0.63	06/08/19 00:01
1634-04-4	MTBE	<0.00079	U	0.00079	0.0037	0.00107	0.005	0.05	mg/Kg	0.63	06/08/19 00:01
91-20-3	Naphthalene	<0.00138	U	0.00138	0.0037	0.00188	0.005	0.05	mg/Kg	0.63	06/08/19 00:01
104-51-8	n-Butylbenzene	<0.00132	U	0.00132	0.0037	0.00179	0.005	0.05	mg/Kg	0.63	06/08/19 00:01
103-65-1	n-Propylbenzene	<0.00102	U	0.00102	0.0037	0.00138	0.005	0.05	mg/Kg	0.63	06/08/19 00:01
95-47-6	o-Xylene	<0.00093	U	0.00093	0.0037	0.00126	0.005	0.05	mg/Kg	0.63	06/08/19 00:01
135-98-8	sec-Butylbenzene	<0.00118	U	0.00118	0.0037	0.00160	0.005	0.05	mg/Kg	0.63	06/08/19 00:01
100-42-5	Styrene	<0.00093	U	0.00093	0.0037	0.00126	0.005	0.05	mg/Kg	0.63	06/08/19 00:01
98-06-6	t-butylbenzene	<0.00104	U	0.00104	0.0037	0.00141	0.005	0.05	mg/Kg	0.63	06/08/19 00:01
127-18-4	Tetrachloroethylene	<0.00102	U	0.00102	0.0037	0.00138	0.005	0.05	mg/Kg	0.63	06/08/19 00:01
108-88-3	Toluene	<0.00088	U	0.00088	0.0037	0.00119	0.005	0.05	mg/Kg	0.63	06/08/19 00:01
156-60-5	trans-1,2-Dichloroethy	<0.00106	U	0.00106	0.0037	0.00144	0.005	0.05	mg/Kg	0.63	06/08/19 00:01
10061-02-6	trans-1,3-Dichloropro	<0.00069	U	0.00069	0.0037	0.00094	0.005	0.05	mg/Kg	0.63	06/08/19 00:01
79-01-6	Trichloroethylene	<0.00077	U	0.00077	0.0037	0.00104	0.005	0.05	mg/Kg	0.63	06/08/19 00:01
75-69-4	Trichlorofluoromethan	<0.00146	U	0.00146	0.0037	0.00198	0.005	0.05	mg/Kg	0.63	06/08/19 00:01
75-01-4	Vinyl Chloride	<0.00136	U	0.00136	0.0037	0.00185	0.005	0.05	mg/Kg	0.63	06/08/19 00:01
1330-20-7	Xylenes	<0.00074	U	0.00074	0.0037	0.001	0.005	0.15	mg/Kg	0.63	06/08/19 00:01
17060-07-0	1,2-Dichloroethane-d4	99.3					70	130	%	0.63	06/08/19 00:01
1868-53-7	Dibromofluoromethan	90.3					70	130	%	0.63	06/08/19 00:01
2037-26-5	Toluene-d8(surr)	96.5					70	130	%	0.63	06/08/19 00:01
460-00-4	p-Bromofluorobenzen	93.2					70	130	%	0.63	06/08/19 00:01

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-27 6-7  
 A&B Job Sample ID: 19060383.03

Date: 6/14/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction, Houston

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb19061132  
 Prep Method: TX 1005  
 Prepared By: Jdongre  
 Prep Batch ID: PB19061116

Sample Matrix: Soil  
 Date Collected: 06/06/2019 11:14  
 Date Received: 06/07/2019 08:07  
 Date Prepared: 06/10/2019 10:00

Analyst Initial: JKD

% Moisture: 14.4

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12	<26.0	U	26.0	27.5	23.7	25	1000	mg/Kg	0.94	06/10/19 18:09
TPH-1005-2	>C12-C28	<22.3	U	22.3	27.5	20.3	25	1000	mg/Kg	0.94	06/10/19 18:09
TPH-1005-4	>C28-C35	<19.4	U	19.4	27.5	17.7	25	1000	mg/Kg	0.94	06/10/19 18:09
	Total C6-C35	< 19.4	U	19.4		17.7	----	----	mg/Kg	0.94	06/10/19 18:09
111-85-3	1-Chlorooctane(surr)	87.2					60	143	%	0.94	06/10/19 18:09
3386-33-2	Chlorooctadecane(sur	81.1					60	150	%	0.94	06/10/19 18:09

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-27 Water  
 A&B Job Sample ID: 19060383.04

Date: 6/14/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction, Houston

Attn: Robert J. Metzger

Test Description: **Volatile Organic Compounds**

Sample Matrix: Water

Analytical Method: SW-846 8260C

Date Collected: 06/06/2019 11:25

QC Batch ID: Qb19060802

Date Received: 06/07/2019 08:07

Prep Method: SW-846 5030C

Date Prepared: 06/07/2019 10:00

Prepared By: Rajeev

Prep Batch ID: PB19060803

Analyst Initial: RT

% Moisture

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
630-20-6	1,1,1,2-Tetrachloroet	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	06/07/19 23:25
71-55-6	1,1,1-Trichloroethane	<0.00072	U	0.00072	0.005	0.00072	0.005	0.05	mg/L	1	06/07/19 23:25
79-34-5	1,1,2,2-Tetrachloroet	<0.00210	U	0.00210	0.005	0.00210	0.005	0.05	mg/L	1	06/07/19 23:25
79-00-5	1,1,2-Trichloroethane	<0.00144	U	0.00144	0.005	0.00144	0.005	0.05	mg/L	1	06/07/19 23:25
75-34-3	1,1-Dichloroethane	<0.00119	U	0.00119	0.005	0.00119	0.005	0.05	mg/L	1	06/07/19 23:25
75-35-4	1,1-Dichloroethylene	<0.00066	U	0.00066	0.005	0.00066	0.005	0.05	mg/L	1	06/07/19 23:25
563-58-6	1,1-Dichloropropene	<0.00100	U	0.00100	0.005	0.001	0.005	0.05	mg/L	1	06/07/19 23:25
87-61-6	1,2,3-trichlorobenzen	<0.00085	U	0.00085	0.005	0.00085	0.005	0.05	mg/L	1	06/07/19 23:25
96-18-4	1,2,3-Trichloropropan	<0.00170	U	0.00170	0.005	0.00170	0.005	0.05	mg/L	1	06/07/19 23:25
120-82-1	1,2,4-Trichlorobenzen	<0.00053	U	0.00053	0.005	0.00053	0.005	0.05	mg/L	1	06/07/19 23:25
95-63-6	1,2,4-Trimethylbenze	<0.00100	U	0.00100	0.005	0.00100	0.005	0.05	mg/L	1	06/07/19 23:25
96-12-8	1,2-Dibromo-3-chloro	<0.00236	U	0.00236	0.005	0.00236	0.005	0.05	mg/L	1	06/07/19 23:25
106-93-4	1,2-Dibromoethane	<0.00129	U	0.00129	0.005	0.00129	0.005	0.05	mg/L	1	06/07/19 23:25
95-50-1	1,2-Dichlorobenzene	<0.00060	U	0.00060	0.005	0.00060	0.005	0.05	mg/L	1	06/07/19 23:25
107-06-2	1,2-Dichloroethane	<0.00104	U	0.00104	0.005	0.00104	0.005	0.05	mg/L	1	06/07/19 23:25
78-87-5	1,2-Dichloropropane	<0.00075	U	0.00075	0.005	0.00075	0.005	0.05	mg/L	1	06/07/19 23:25
108-67-8	1,3,5-Trimethylbenze	<0.00110	U	0.00110	0.005	0.00110	0.005	0.05	mg/L	1	06/07/19 23:25
541-73-1	1,3-Dichlorobenzene	<0.00075	U	0.00075	0.005	0.00075	0.005	0.05	mg/L	1	06/07/19 23:25
142-28-9	1,3-Dichloropropane	<0.00100	U	0.00100	0.005	0.001	0.005	0.05	mg/L	1	06/07/19 23:25
106-46-7	1,4-Dichlorobenzene	<0.00072	U	0.00072	0.005	0.00072	0.005	0.05	mg/L	1	06/07/19 23:25
123-91-1	1,4-Dioxane	<0.08177	U	0.08177	0.32	0.08177	0.32	1.6	mg/L	1	06/07/19 23:25
594-20-7	2,2-Dichloropropane	<0.00100	U	0.00100	0.005	0.001	0.005	0.05	mg/L	1	06/07/19 23:25
95-49-8	2-Chlorotoluene	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	06/07/19 23:25
106-43-4	4-Chlorotoluene	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	06/07/19 23:25
99-87-6	4-Isopropyltoluene	<0.00091	U	0.00091	0.005	0.00091	0.005	0.05	mg/L	1	06/07/19 23:25
71-43-2	Benzene	<0.00063	U	0.00063	0.005	0.00063	0.005	0.05	mg/L	1	06/07/19 23:25
108-86-1	Bromobenzene	<0.00100	U	0.00100	0.005	0.001	0.005	0.05	mg/L	1	06/07/19 23:25
74-97-5	Bromochloromethane	<0.00097	U	0.00097	0.005	0.00097	0.005	0.05	mg/L	1	06/07/19 23:25
75-27-4	Bromodichloromethan	<0.00069	U	0.00069	0.005	0.00069	0.005	0.05	mg/L	1	06/07/19 23:25
75-25-2	Bromoform	<0.00170	U	0.00170	0.005	0.00170	0.005	0.05	mg/L	1	06/07/19 23:25
74-83-9	Bromomethane	<0.00079	U	0.00079	0.005	0.00079	0.005	0.05	mg/L	1	06/07/19 23:25
75-15-0	Carbon disulfide	<0.00113	U	0.00113	0.005	0.00113	0.005	0.05	mg/L	1	06/07/19 23:25
56-23-5	Carbon tetrachloride	<0.00173	U	0.00173	0.005	0.00173	0.005	0.05	mg/L	1	06/07/19 23:25
108-90-7	Chlorobenzene	<0.00069	U	0.00069	0.005	0.00069	0.005	0.05	mg/L	1	06/07/19 23:25
75-00-3	Chloroethane	<0.00144	U	0.00144	0.005	0.00144	0.005	0.05	mg/L	1	06/07/19 23:25
67-66-3	Chloroform	<0.00072	U	0.00072	0.005	0.00072	0.005	0.05	mg/L	1	06/07/19 23:25

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-27 Water  
 A&B Job Sample ID: 19060383.04

Date: 6/14/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction, Houston

Attn: Robert J. Metzger

Test Description: **Volatile Organic Compounds**

Sample Matrix: Water

Analytical Method: SW-846 8260C

Date Collected: 06/06/2019 11:25

QC Batch ID: Qb19060802

Date Received: 06/07/2019 08:07

Prep Method: SW-846 5030C

Date Prepared: 06/07/2019 10:00

Prepared By: Rajeev

Prep Batch ID: PB19060803

Analyst Initial: RT

% Moisture

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time	
74-87-3	Chloromethane	<0.00066	U	0.00066	0.005	0.00066	0.005	0.05	mg/L	1	06/07/19 23:25	
156-59-2	cis-1,2-Dichloroethyle	<0.00053	U	0.00053	0.005	0.00053	0.005	0.05	mg/L	1	06/07/19 23:25	
10061-01-5	cis-1,3-Dichloroprope	<0.00072	U	0.00072	0.005	0.00072	0.005	0.05	mg/L	1	06/07/19 23:25	
124-48-1	Dibromochloromethan	<0.00122	U	0.00122	0.005	0.00122	0.005	0.05	mg/L	1	06/07/19 23:25	
74-95-3	Dibromomethane	<0.00126	U	0.00126	0.005	0.00126	0.005	0.05	mg/L	1	06/07/19 23:25	
75-71-8	Dichlorodifluorometha	<0.00085	U	0.00085	0.005	0.00085	0.005	0.05	mg/L	1	06/07/19 23:25	
100-41-4	Ethylbenzene	<0.00100	U	0.00100	0.005	0.00100	0.005	0.05	mg/L	1	06/07/19 23:25	
98-82-8	Isopropylbenzene	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	06/07/19 23:25	
108-38-3&106-4	m- & p-Xylenes	<0.00151	U	0.00151	0.01	0.00151	0.01	0.1	mg/L	1	06/07/19 23:25	
78-93-3	MEK	<0.00286	U	0.00286	0.005	0.00286	0.005	0.05	mg/L	1	06/07/19 23:25	
75-09-2	Methylene chloride	<0.00487	U	0.00487	0.005	0.00487	0.005	0.05	mg/L	1	06/07/19 23:25	
1634-04-4	MTBE	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	06/07/19 23:25	
91-20-3	Naphthalene	<0.00270	U	0.00270	0.005	0.00270	0.005	0.05	mg/L	1	06/07/19 23:25	
104-51-8	n-Butylbenzene	<0.00119	U	0.00119	0.005	0.00119	0.005	0.05	mg/L	1	06/07/19 23:25	
103-65-1	n-Propylbenzene	<0.00135	U	0.00135	0.005	0.00135	0.005	0.05	mg/L	1	06/07/19 23:25	
95-47-6	o-Xylene	<0.00066	U	0.00066	0.005	0.00066	0.005	0.05	mg/L	1	06/07/19 23:25	
135-98-8	sec-Butylbenzene	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	06/07/19 23:25	
100-42-5	Styrene	<0.00069	U	0.00069	0.005	0.00069	0.005	0.05	mg/L	1	06/07/19 23:25	
98-06-6	t-butylbenzene	<0.00100	U	0.00100	0.005	0.00100	0.005	0.05	mg/L	1	06/07/19 23:25	
127-18-4	Tetrachloroethylene	<0.00066	U	0.00066	0.005	0.00066	0.005	0.05	mg/L	1	06/07/19 23:25	
108-88-3	Toluene	<0.00075	U	0.00075	0.005	0.00075	0.005	0.05	mg/L	1	06/07/19 23:25	
156-60-5	trans-1,2-Dichloroethy	<0.00066	U	0.00066	0.005	0.00066	0.005	0.05	mg/L	1	06/07/19 23:25	
10061-02-6	trans-1,3-Dichloropro	<0.00097	U	0.00097	0.005	0.00097	0.005	0.05	mg/L	1	06/07/19 23:25	
79-01-6	Trichloroethylene	<0.00079	U	0.00079	0.005	0.00079	0.005	0.05	mg/L	1	06/07/19 23:25	
75-69-4	Trichlorofluoromethan	<0.00094	U	0.00094	0.005	0.00094	0.005	0.05	mg/L	1	06/07/19 23:25	
75-01-4	Vinyl Chloride	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	06/07/19 23:25	
1330-20-7	Xylenes	<0.00204	U	0.00204	0.005	0.00204	0.005	0.15	mg/L	1	06/07/19 23:25	
17060-07-0	1,2-Dichloroethane-d4	116						70	130	%	1	06/07/19 23:25
1868-53-7	Dibromofluoromethan	109						70	130	%	1	06/07/19 23:25
2037-26-5	Toluene-d8(surr)	98.5						70	130	%	1	06/07/19 23:25
460-00-4	p-Bromofluorobenzen	96						70	130	%	1	06/07/19 23:25

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-27 Water  
 A&B Job Sample ID: 19060383.04

Date: 6/14/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction, Houston

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb19061145  
 Prep Method: TX 1005  
 Prepared By: Jdongre  
 Prep Batch ID: PB19061130

Sample Matrix: Water  
 Date Collected: 06/06/2019 11:25  
 Date Received: 06/07/2019 08:07  
 Date Prepared: 06/10/2019 10:30

Analyst Initial: JKD

% Moisture

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12 <sup>1</sup>	<0.60	U	0.60	1.37	0.66	1.5	60	mg/L	0.91	06/14/19 01:16
TPH-1005-2	>C12-C28 <sup>1</sup>	<0.78	U	0.78	1.37	0.86	1.5	60	mg/L	0.91	06/14/19 01:16
TPH-1005-4	>C28-C35 <sup>1</sup>	<0.68	U	0.68	1.37	0.75	1.5	60	mg/L	0.91	06/11/19 01:16
	Total C6-C35	< 0.78	U	0.78		0.86	----	----	mg/L	0.91	06/11/19 01:16
111-85-3	1-Chlorooctane(surr)	59.4					59	122	%	0.91	06/11/19 01:16
3386-33-2	Chlorooctadecane(sur	114					48	123	%	0.91	06/11/19 01:16

Soil results reported on dry weight basis



LABORATORY TEST RESULTS

Client Sample ID: B-28 18-20
A&B Job Sample ID: 19060383.05

Date: 6/14/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Drive Reconstruction, Houston

Attn: Robert J. Metzger

Test Description: % Moisture
Analytical Method: SM 2540G
QC Batch ID: Qb19061169
Prep Method: SM 2540G
Prepared By: KRSaranya
Prep Batch ID: PB19061152
Analyst Initial: KRS

Sample Matrix: Soil
Date Collected: 06/06/2019 14:15
Date Received: 06/07/2019 08:07
Date Prepared: 06/11/2019 08:00

% Moisture 12.2

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Row 1: % Moisture, 12.2, ----, ----, %, 1, 06/11/19 08:10



LABORATORY TEST RESULTS

Client Sample ID: B-28 18-20
A&B Job Sample ID: 19060383.05

Date: 6/14/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Drive Reconstruction, Houston

Attn: Robert J. Metzger

Test Description: Volatile Organic Compounds by GC/MS

Analytical Method: SW-846 8260C
QC Batch ID: Qb19060801
Prep Method: SW-846 5035A
Prepared By: Rajeev
Prep Batch ID: PB19060802

Sample Matrix: Soil
Date Collected: 06/06/2019 14:15
Date Received: 06/07/2019 08:07
Date Prepared: 06/07/2019 10:00

Analyst Initial: RT

% Moisture: 12.2

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Rows list various chemical compounds and their test results.

Soil results reported on dry weight basis





**LABORATORY TEST RESULTS**

Client Sample ID: B-28 18-20  
 A&B Job Sample ID: 19060383.05

Date: 6/14/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction, Houston

Attn: Robert J. Metzger

Test Description: **Volatile Organic Compounds by GC/MS**

Sample Matrix: Soil  
 Date Collected: 06/06/2019 14:15  
 Date Received: 06/07/2019 08:07  
 Date Prepared: 06/07/2019 10:00

Analytical Method: SW-846 8260C  
 QC Batch ID: Qb19060801  
 Prep Method: SW-846 5035A  
 Prepared By: Rajeev  
 Prep Batch ID: PB19060802

Analyst Initial: RT

% Moisture: 12.2

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
67-66-3	Chloroform	<0.00100	U	0.00100	0.0042	0.00119	0.005	0.05	mg/Kg	0.74	06/08/19 00:40
74-87-3	Chloromethane	<0.00190	U	0.00190	0.0042	0.00226	0.005	0.05	mg/Kg	0.74	06/08/19 00:40
156-59-2	cis-1,2-Dichloroethyle	<0.00100	U	0.00100	0.0042	0.00119	0.005	0.05	mg/Kg	0.74	06/08/19 00:40
10061-01-5	cis-1,3-Dichloroprope	<0.00095	U	0.00095	0.0042	0.00113	0.005	0.05	mg/Kg	0.74	06/08/19 00:40
124-48-1	Dibromochloromethan	<0.00093	U	0.00093	0.0042	0.00110	0.005	0.05	mg/Kg	0.74	06/08/19 00:40
74-95-3	Dibromomethane	<0.00116	U	0.00116	0.0042	0.00138	0.005	0.05	mg/Kg	0.74	06/08/19 00:40
75-71-8	Dichlorodifluorometha	<0.00114	U	0.00114	0.0042	0.00135	0.005	0.05	mg/Kg	0.74	06/08/19 00:40
100-41-4	Ethylbenzene	<0.00116	U	0.00116	0.0042	0.00138	0.005	0.05	mg/Kg	0.74	06/08/19 00:40
98-82-8	Isopropylbenzene	<0.00106	U	0.00106	0.0042	0.00126	0.005	0.05	mg/Kg	0.74	06/08/19 00:40
108-38-3&106-4	m- & p-Xylenes	<0.00230	U	0.00230	0.0084	0.00273	0.01	0.1	mg/Kg	0.74	06/08/19 00:40
78-93-3	MEK	<0.00225	U	0.00225	0.0042	0.00267	0.005	0.05	mg/Kg	0.74	06/08/19 00:40
75-09-2	Methylene chloride	<0.00130	U	0.00130	0.0042	0.00154	0.005	0.05	mg/Kg	0.74	06/08/19 00:40
1634-04-4	MTBE	<0.00090	U	0.00090	0.0042	0.00107	0.005	0.05	mg/Kg	0.74	06/08/19 00:40
91-20-3	Naphthalene	<0.00158	U	0.00158	0.0042	0.00188	0.005	0.05	mg/Kg	0.74	06/08/19 00:40
104-51-8	n-Butylbenzene	<0.00151	U	0.00151	0.0042	0.00179	0.005	0.05	mg/Kg	0.74	06/08/19 00:40
103-65-1	n-Propylbenzene	<0.00116	U	0.00116	0.0042	0.00138	0.005	0.05	mg/Kg	0.74	06/08/19 00:40
95-47-6	o-Xylene	<0.00106	U	0.00106	0.0042	0.00126	0.005	0.05	mg/Kg	0.74	06/08/19 00:40
135-98-8	sec-Butylbenzene	<0.00135	U	0.00135	0.0042	0.00160	0.005	0.05	mg/Kg	0.74	06/08/19 00:40
100-42-5	Styrene	<0.00106	U	0.00106	0.0042	0.00126	0.005	0.05	mg/Kg	0.74	06/08/19 00:40
98-06-6	t-butylbenzene	<0.00119	U	0.00119	0.0042	0.00141	0.005	0.05	mg/Kg	0.74	06/08/19 00:40
127-18-4	Tetrachloroethylene	<0.00116	U	0.00116	0.0042	0.00138	0.005	0.05	mg/Kg	0.74	06/08/19 00:40
108-88-3	Toluene	<0.00100	U	0.00100	0.0042	0.00119	0.005	0.05	mg/Kg	0.74	06/08/19 00:40
156-60-5	trans-1,2-Dichloroethy	<0.00121	U	0.00121	0.0042	0.00144	0.005	0.05	mg/Kg	0.74	06/08/19 00:40
10061-02-6	trans-1,3-Dichloropro	<0.00079	U	0.00079	0.0042	0.00094	0.005	0.05	mg/Kg	0.74	06/08/19 00:40
79-01-6	Trichloroethylene	<0.00088	U	0.00088	0.0042	0.00104	0.005	0.05	mg/Kg	0.74	06/08/19 00:40
75-69-4	Trichlorofluoromethan	<0.00167	U	0.00167	0.0042	0.00198	0.005	0.05	mg/Kg	0.74	06/08/19 00:40
75-01-4	Vinyl Chloride	<0.00156	U	0.00156	0.0042	0.00185	0.005	0.05	mg/Kg	0.74	06/08/19 00:40
1330-20-7	Xylenes	<0.00084	U	0.00084	0.0042	0.001	0.005	0.15	mg/Kg	0.74	06/08/19 00:40
17060-07-0	1,2-Dichloroethane-d4	100					70	130	%	0.74	06/08/19 00:40
1868-53-7	Dibromofluoromethan	91.1					70	130	%	0.74	06/08/19 00:40
2037-26-5	Toluene-d8(surr)	97.2					70	130	%	0.74	06/08/19 00:40
460-00-4	p-Bromofluorobenzen	92.5					70	130	%	0.74	06/08/19 00:40

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-28 18-20  
 A&B Job Sample ID: 19060383.05

Date: 6/14/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction, Houston

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb19061132  
 Prep Method: TX 1005  
 Prepared By: Jdongre  
 Prep Batch ID: PB19061116

Sample Matrix: Soil  
 Date Collected: 06/06/2019 14:15  
 Date Received: 06/07/2019 08:07  
 Date Prepared: 06/10/2019 10:00

Analyst Initial: JKD

% Moisture: 12.2

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12	<25.9	U	25.9	27.3	23.7	25	1000	mg/Kg	0.96	06/10/19 18:38
TPH-1005-2	>C12-C28	<22.2	U	22.2	27.3	20.3	25	1000	mg/Kg	0.96	06/10/19 18:38
TPH-1005-4	>C28-C35	<19.4	U	19.4	27.3	17.7	25	1000	mg/Kg	0.96	06/10/19 18:38
	Total C6-C35	< 19.4	U	19.4		17.7	----	----	mg/Kg	0.96	06/10/19 18:38
111-85-3	1-Chlorooctane(surr)	90.2					60	143	%	0.96	06/10/19 18:38
3386-33-2	Chlorooctadecane(sur	82.8					60	150	%	0.96	06/10/19 18:38

Soil results reported on dry weight basis



LABORATORY TEST RESULTS

Client Sample ID: B-28 Water
A&B Job Sample ID: 19060383.06

Date: 6/14/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Drive Reconstruction, Houston

Attn: Robert J. Metzger

Test Description: Volatile Organic Compounds

Sample Matrix: Water

Analytical Method: SW-846 8260C

Date Collected: 06/06/2019 14:35

QC Batch ID: Qb19060802

Date Received: 06/07/2019 08:07

Prep Method: SW-846 5030C

Date Prepared: 06/07/2019 10:00

Prepared By: Rajeev

Prep Batch ID: PB19060803

Analyst Initial: RT

% Moisture

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Rows list various chemical compounds and their test results.

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-28 Water  
 A&B Job Sample ID: 19060383.06

Date: 6/14/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction, Houston

Attn: Robert J. Metzger

Test Description: **Volatile Organic Compounds**

Sample Matrix: Water

Analytical Method: SW-846 8260C

Date Collected: 06/06/2019 14:35

QC Batch ID: Qb19060802

Date Received: 06/07/2019 08:07

Prep Method: SW-846 5030C

Date Prepared: 06/07/2019 10:00

Prepared By: Rajeev

Prep Batch ID: PB19060803

Analyst Initial: RT

% Moisture

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
74-87-3	Chloromethane	<0.00066	U	0.00066	0.005	0.00066	0.005	0.05	mg/L	1	06/08/19 00:32
156-59-2	cis-1,2-Dichloroethyle	<0.00053	U	0.00053	0.005	0.00053	0.005	0.05	mg/L	1	06/08/19 00:32
10061-01-5	cis-1,3-Dichloroprope	<0.00072	U	0.00072	0.005	0.00072	0.005	0.05	mg/L	1	06/08/19 00:32
124-48-1	Dibromochloromethan	<0.00122	U	0.00122	0.005	0.00122	0.005	0.05	mg/L	1	06/08/19 00:32
74-95-3	Dibromomethane	<0.00126	U	0.00126	0.005	0.00126	0.005	0.05	mg/L	1	06/08/19 00:32
75-71-8	Dichlorodifluorometha	<0.00085	U	0.00085	0.005	0.00085	0.005	0.05	mg/L	1	06/08/19 00:32
100-41-4	Ethylbenzene	<0.00100	U	0.00100	0.005	0.00100	0.005	0.05	mg/L	1	06/08/19 00:32
98-82-8	Isopropylbenzene	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	06/08/19 00:32
108-38-3&106-4	m- & p-Xylenes	<0.00151	U	0.00151	0.01	0.00151	0.01	0.1	mg/L	1	06/08/19 00:32
78-93-3	MEK	<0.00286	U	0.00286	0.005	0.00286	0.005	0.05	mg/L	1	06/08/19 00:32
75-09-2	Methylene chloride	<0.00487	U	0.00487	0.005	0.00487	0.005	0.05	mg/L	1	06/08/19 00:32
1634-04-4	MTBE	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	06/08/19 00:32
91-20-3	Naphthalene	<0.00270	U	0.00270	0.005	0.00270	0.005	0.05	mg/L	1	06/08/19 00:32
104-51-8	n-Butylbenzene	<0.00119	U	0.00119	0.005	0.00119	0.005	0.05	mg/L	1	06/08/19 00:32
103-65-1	n-Propylbenzene	<0.00135	U	0.00135	0.005	0.00135	0.005	0.05	mg/L	1	06/08/19 00:32
95-47-6	o-Xylene	<0.00066	U	0.00066	0.005	0.00066	0.005	0.05	mg/L	1	06/08/19 00:32
135-98-8	sec-Butylbenzene	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	06/08/19 00:32
100-42-5	Styrene	<0.00069	U	0.00069	0.005	0.00069	0.005	0.05	mg/L	1	06/08/19 00:32
98-06-6	t-butylbenzene	<0.00100	U	0.00100	0.005	0.00100	0.005	0.05	mg/L	1	06/08/19 00:32
127-18-4	Tetrachloroethylene	<0.00066	U	0.00066	0.005	0.00066	0.005	0.05	mg/L	1	06/08/19 00:32
108-88-3	Toluene	<0.00075	U	0.00075	0.005	0.00075	0.005	0.05	mg/L	1	06/08/19 00:32
156-60-5	trans-1,2-Dichloroethy	<0.00066	U	0.00066	0.005	0.00066	0.005	0.05	mg/L	1	06/08/19 00:32
10061-02-6	trans-1,3-Dichloropro	<0.00097	U	0.00097	0.005	0.00097	0.005	0.05	mg/L	1	06/08/19 00:32
79-01-6	Trichloroethylene	<0.00079	U	0.00079	0.005	0.00079	0.005	0.05	mg/L	1	06/08/19 00:32
75-69-4	Trichlorofluoromethan	<0.00094	U	0.00094	0.005	0.00094	0.005	0.05	mg/L	1	06/08/19 00:32
75-01-4	Vinyl Chloride	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	06/08/19 00:32
1330-20-7	Xylenes	<0.00204	U	0.00204	0.005	0.00204	0.005	0.15	mg/L	1	06/08/19 00:32
17060-07-0	1,2-Dichloroethane-d4	112						70 130	%	1	06/08/19 00:32
1868-53-7	Dibromofluoromethan	108						70 130	%	1	06/08/19 00:32
2037-26-5	Toluene-d8(surr)	98.5						70 130	%	1	06/08/19 00:32
460-00-4	p-Bromofluorobenzen	95.8						70 130	%	1	06/08/19 00:32

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-28 Water  
 A&B Job Sample ID: 19060383.06

Date: 6/14/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction, Houston

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb19061145  
 Prep Method: TX 1005  
 Prepared By: Jdongre  
 Prep Batch ID: PB19061130

Sample Matrix: Water  
 Date Collected: 06/06/2019 14:35  
 Date Received: 06/07/2019 08:07  
 Date Prepared: 06/10/2019 10:30

Analyst Initial: JKD

% Moisture

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12 <sup>1</sup>	<0.60	U	0.60	1.37	0.66	1.5	60	mg/L	0.91	06/10/19 18:06
TPH-1005-2	>C12-C28 <sup>1</sup>	<0.78	U	0.78	1.37	0.86	1.5	60	mg/L	0.91	06/10/19 18:06
TPH-1005-4	>C28-C35 <sup>1</sup>	<0.68	U	0.68	1.37	0.75	1.5	60	mg/L	0.91	06/10/19 18:06
	Total C6-C35	< 0.78	U	0.78		0.86	----	----	mg/L	0.91	06/10/19 18:06
111-85-3	1-Chlorooctane(surr)	66.1					59	122	%	0.91	06/10/19 18:06
3386-33-2	Chlorooctadecane(sur	78.4					48	123	%	0.91	06/10/19 18:06

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-29 17-18  
 A&B Job Sample ID: 19060383.07

Date: 6/14/2019

Client Name: Aviles Engineering Attn: Robert J. Metzger  
 Project Name: E103-19 / Memorial Drive Reconstruction, Houston

Test Description:	<b>% Moisture</b>	Sample Matrix	Soil
Analytical Method:	SM 2540G	Date Collected	06/06/2019 16:00
QC Batch ID:	Qb19061169	Date Received	06/07/2019 08:07
Prep Method:	SM 2540G	Date Prepared	06/11/2019 08:00
Prepared By:	KRSaranya		
Prep Batch ID	PB19061152		
Analyst Initial	KRS	% Moisture	11.7

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
	% Moisture	11.7					----	----	%	1	06/11/19 08:10

Soil results reported on dry weight basis



LABORATORY TEST RESULTS

Client Sample ID: B-29 17-18
A&B Job Sample ID: 19060383.07

Date: 6/14/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Drive Reconstruction, Houston

Attn: Robert J. Metzger

Test Description: Volatile Organic Compounds by GC/MS

Analytical Method: SW-846 8260C
QC Batch ID: Qb19060801
Prep Method: SW-846 5035A
Prepared By: Rajeev
Prep Batch ID: PB19060802

Sample Matrix: Soil
Date Collected: 06/06/2019 16:00
Date Received: 06/07/2019 08:07
Date Prepared: 06/07/2019 10:00

Analyst Initial: RT

% Moisture: 11.7

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Rows list various chemical compounds and their test results.

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-29 17-18  
 A&B Job Sample ID: 19060383.07

Date: 6/14/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction, Houston

Attn: Robert J. Metzger

Test Description: **Volatile Organic Compounds by GC/MS**

Sample Matrix: Soil  
 Date Collected: 06/06/2019 16:00  
 Date Received: 06/07/2019 08:07  
 Date Prepared: 06/07/2019 10:00

Analytical Method: SW-846 8260C  
 QC Batch ID: Qb19060801  
 Prep Method: SW-846 5035A  
 Prepared By: Rajeev  
 Prep Batch ID: PB19060802

Analyst Initial: RT

% Moisture: 11.7

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
67-66-3	Chloroform	<0.00092	U	0.00092	0.0039	0.00119	0.005	0.05	mg/Kg	0.68	06/08/19 01:19
74-87-3	Chloromethane	<0.00174	U	0.00174	0.0039	0.00226	0.005	0.05	mg/Kg	0.68	06/08/19 01:19
156-59-2	cis-1,2-Dichloroethyle	<0.00092	U	0.00092	0.0039	0.00119	0.005	0.05	mg/Kg	0.68	06/08/19 01:19
10061-01-5	cis-1,3-Dichloroprope	<0.00087	U	0.00087	0.0039	0.00113	0.005	0.05	mg/Kg	0.68	06/08/19 01:19
124-48-1	Dibromochloromethan	<0.00085	U	0.00085	0.0039	0.00110	0.005	0.05	mg/Kg	0.68	06/08/19 01:19
74-95-3	Dibromomethane	<0.00106	U	0.00106	0.0039	0.00138	0.005	0.05	mg/Kg	0.68	06/08/19 01:19
75-71-8	Dichlorodifluorometha	<0.00104	U	0.00104	0.0039	0.00135	0.005	0.05	mg/Kg	0.68	06/08/19 01:19
100-41-4	Ethylbenzene	<0.00106	U	0.00106	0.0039	0.00138	0.005	0.05	mg/Kg	0.68	06/08/19 01:19
98-82-8	Isopropylbenzene	<0.00097	U	0.00097	0.0039	0.00126	0.005	0.05	mg/Kg	0.68	06/08/19 01:19
108-38-3&106-4	m- & p-Xylenes	<0.00210	U	0.00210	0.0077	0.00273	0.01	0.1	mg/Kg	0.68	06/08/19 01:19
78-93-3	MEK	<0.00206	U	0.00206	0.0039	0.00267	0.005	0.05	mg/Kg	0.68	06/08/19 01:19
75-09-2	Methylene chloride	<0.00119	U	0.00119	0.0039	0.00154	0.005	0.05	mg/Kg	0.68	06/08/19 01:19
1634-04-4	MTBE	<0.00082	U	0.00082	0.0039	0.00107	0.005	0.05	mg/Kg	0.68	06/08/19 01:19
91-20-3	Naphthalene	<0.00145	U	0.00145	0.0039	0.00188	0.005	0.05	mg/Kg	0.68	06/08/19 01:19
104-51-8	n-Butylbenzene	<0.00138	U	0.00138	0.0039	0.00179	0.005	0.05	mg/Kg	0.68	06/08/19 01:19
103-65-1	n-Propylbenzene	<0.00106	U	0.00106	0.0039	0.00138	0.005	0.05	mg/Kg	0.68	06/08/19 01:19
95-47-6	o-Xylene	<0.00097	U	0.00097	0.0039	0.00126	0.005	0.05	mg/Kg	0.68	06/08/19 01:19
135-98-8	sec-Butylbenzene	<0.00123	U	0.00123	0.0039	0.00160	0.005	0.05	mg/Kg	0.68	06/08/19 01:19
100-42-5	Styrene	<0.00097	U	0.00097	0.0039	0.00126	0.005	0.05	mg/Kg	0.68	06/08/19 01:19
98-06-6	t-butylbenzene	<0.00109	U	0.00109	0.0039	0.00141	0.005	0.05	mg/Kg	0.68	06/08/19 01:19
127-18-4	Tetrachloroethylene	<0.00106	U	0.00106	0.0039	0.00138	0.005	0.05	mg/Kg	0.68	06/08/19 01:19
108-88-3	Toluene	<0.00092	U	0.00092	0.0039	0.00119	0.005	0.05	mg/Kg	0.68	06/08/19 01:19
156-60-5	trans-1,2-Dichloroethy	<0.00111	U	0.00111	0.0039	0.00144	0.005	0.05	mg/Kg	0.68	06/08/19 01:19
10061-02-6	trans-1,3-Dichloropro	<0.00072	U	0.00072	0.0039	0.00094	0.005	0.05	mg/Kg	0.68	06/08/19 01:19
79-01-6	Trichloroethylene	<0.00080	U	0.00080	0.0039	0.00104	0.005	0.05	mg/Kg	0.68	06/08/19 01:19
75-69-4	Trichlorofluoromethan	<0.00152	U	0.00152	0.0039	0.00198	0.005	0.05	mg/Kg	0.68	06/08/19 01:19
75-01-4	Vinyl Chloride	<0.00142	U	0.00142	0.0039	0.00185	0.005	0.05	mg/Kg	0.68	06/08/19 01:19
1330-20-7	Xylenes	<0.00077	U	0.00077	0.0039	0.001	0.005	0.15	mg/Kg	0.68	06/08/19 01:19
17060-07-0	1,2-Dichloroethane-d4	101					70	130	%	0.68	06/08/19 01:19
1868-53-7	Dibromofluoromethan	91.8					70	130	%	0.68	06/08/19 01:19
2037-26-5	Toluene-d8(surr)	96.6					70	130	%	0.68	06/08/19 01:19
460-00-4	p-Bromofluorobenzen	93.7					70	130	%	0.68	06/08/19 01:19

Soil results reported on dry weight basis





**LABORATORY TEST RESULTS**

Client Sample ID: B-29 17-18  
 A&B Job Sample ID: 19060383.07

Date: 6/14/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction, Houston

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb19061132  
 Prep Method: TX 1005  
 Prepared By: Jdongre  
 Prep Batch ID: PB19061116

Sample Matrix: Soil  
 Date Collected: 06/06/2019 16:00  
 Date Received: 06/07/2019 08:07  
 Date Prepared: 06/10/2019 10:00

Analyst Initial: JKD

% Moisture: 11.7

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12	<26.6	U	26.6	28	23.7	25	1000	mg/Kg	0.99	06/10/19 19:07
TPH-1005-2	>C12-C28	<22.8	U	22.8	28	20.3	25	1000	mg/Kg	0.99	06/10/19 19:07
TPH-1005-4	>C28-C35	<19.8	U	19.8	28	17.7	25	1000	mg/Kg	0.99	06/10/19 19:07
	Total C6-C35	< 19.8	U	19.8		17.7	----	----	mg/Kg	0.99	06/10/19 19:07
111-85-3	1-Chlorooctane(surr)	96.1					60	143	%	0.99	06/10/19 19:07
3386-33-2	Chlorooctadecane(sur	85					60	150	%	0.99	06/10/19 19:07

Soil results reported on dry weight basis



LABORATORY TEST RESULTS

Client Sample ID: B-29 Water
A&B Job Sample ID: 19060383.08

Date: 6/14/2019

Client Name: Aviles Engineering
Project Name: E103-19 / Memorial Drive Reconstruction, Houston

Attn: Robert J. Metzger

Test Description: Volatile Organic Compounds

Sample Matrix: Water

Analytical Method: SW-846 8260C

Date Collected: 06/06/2019 16:10

QC Batch ID: Qb19060802

Date Received: 06/07/2019 08:07

Prep Method: SW-846 5030C

Date Prepared: 06/07/2019 10:00

Prepared By: Rajeev

Prep Batch ID: PB19060803

Analyst Initial: RT

% Moisture

Table with 12 columns: CAS Number, Parameter, Result, Flag, SDL, SQL, MDL, MQL, UQL, Units, DF, Date/Time. Rows list various chemical compounds like 1,1,1,2-Tetrachloroet, 1,1,1-Trichloroethane, etc., with their respective test results and flags.

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-29 Water  
 A&B Job Sample ID: 19060383.08

Date: 6/14/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction, Houston

Attn: Robert J. Metzger

Test Description: **Volatile Organic Compounds**

Sample Matrix: Water

Analytical Method: SW-846 8260C

Date Collected: 06/06/2019 16:10

QC Batch ID: Qb19060802

Date Received: 06/07/2019 08:07

Prep Method: SW-846 5030C

Date Prepared: 06/07/2019 10:00

Prepared By: Rajeev

Prep Batch ID: PB19060803

Analyst Initial: RT

% Moisture

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
74-87-3	Chloromethane	<0.00066	U	0.00066	0.005	0.00066	0.005	0.05	mg/L	1	06/08/19 01:06
156-59-2	cis-1,2-Dichloroethyle	<0.00053	U	0.00053	0.005	0.00053	0.005	0.05	mg/L	1	06/08/19 01:06
10061-01-5	cis-1,3-Dichloroprope	<0.00072	U	0.00072	0.005	0.00072	0.005	0.05	mg/L	1	06/08/19 01:06
124-48-1	Dibromochloromethan	<0.00122	U	0.00122	0.005	0.00122	0.005	0.05	mg/L	1	06/08/19 01:06
74-95-3	Dibromomethane	<0.00126	U	0.00126	0.005	0.00126	0.005	0.05	mg/L	1	06/08/19 01:06
75-71-8	Dichlorodifluorometha	<0.00085	U	0.00085	0.005	0.00085	0.005	0.05	mg/L	1	06/08/19 01:06
100-41-4	Ethylbenzene	<0.00100	U	0.00100	0.005	0.00100	0.005	0.05	mg/L	1	06/08/19 01:06
98-82-8	Isopropylbenzene	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	06/08/19 01:06
108-38-3&106-4	m- & p-Xylenes	<0.00151	U	0.00151	0.01	0.00151	0.01	0.1	mg/L	1	06/08/19 01:06
78-93-3	MEK	<0.00286	U	0.00286	0.005	0.00286	0.005	0.05	mg/L	1	06/08/19 01:06
75-09-2	Methylene chloride	<0.00487	U	0.00487	0.005	0.00487	0.005	0.05	mg/L	1	06/08/19 01:06
1634-04-4	MTBE	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	06/08/19 01:06
91-20-3	Naphthalene	<0.00270	U	0.00270	0.005	0.00270	0.005	0.05	mg/L	1	06/08/19 01:06
104-51-8	n-Butylbenzene	<0.00119	U	0.00119	0.005	0.00119	0.005	0.05	mg/L	1	06/08/19 01:06
103-65-1	n-Propylbenzene	<0.00135	U	0.00135	0.005	0.00135	0.005	0.05	mg/L	1	06/08/19 01:06
95-47-6	o-Xylene	<0.00066	U	0.00066	0.005	0.00066	0.005	0.05	mg/L	1	06/08/19 01:06
135-98-8	sec-Butylbenzene	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	06/08/19 01:06
100-42-5	Styrene	<0.00069	U	0.00069	0.005	0.00069	0.005	0.05	mg/L	1	06/08/19 01:06
98-06-6	t-butylbenzene	<0.00100	U	0.00100	0.005	0.00100	0.005	0.05	mg/L	1	06/08/19 01:06
127-18-4	Tetrachloroethylene	<0.00066	U	0.00066	0.005	0.00066	0.005	0.05	mg/L	1	06/08/19 01:06
108-88-3	Toluene	<0.00075	U	0.00075	0.005	0.00075	0.005	0.05	mg/L	1	06/08/19 01:06
156-60-5	trans-1,2-Dichloroethy	<0.00066	U	0.00066	0.005	0.00066	0.005	0.05	mg/L	1	06/08/19 01:06
10061-02-6	trans-1,3-Dichloropro	<0.00097	U	0.00097	0.005	0.00097	0.005	0.05	mg/L	1	06/08/19 01:06
79-01-6	Trichloroethylene	<0.00079	U	0.00079	0.005	0.00079	0.005	0.05	mg/L	1	06/08/19 01:06
75-69-4	Trichlorofluoromethan	<0.00094	U	0.00094	0.005	0.00094	0.005	0.05	mg/L	1	06/08/19 01:06
75-01-4	Vinyl Chloride	<0.00082	U	0.00082	0.005	0.00082	0.005	0.05	mg/L	1	06/08/19 01:06
1330-20-7	Xylenes	<0.00204	U	0.00204	0.005	0.00204	0.005	0.15	mg/L	1	06/08/19 01:06
17060-07-0	1,2-Dichloroethane-d4	112						70 130	%	1	06/08/19 01:06
1868-53-7	Dibromofluoromethan	111						70 130	%	1	06/08/19 01:06
2037-26-5	Toluene-d8(surr)	97.5						70 130	%	1	06/08/19 01:06
460-00-4	p-Bromofluorobenzen	99.4						70 130	%	1	06/08/19 01:06

Soil results reported on dry weight basis



**LABORATORY TEST RESULTS**

Client Sample ID: B-29 Water  
 A&B Job Sample ID: 19060383.08

Date: 6/14/2019

Client Name: Aviles Engineering  
 Project Name: E103-19 / Memorial Drive Reconstruction, Houston

Attn: Robert J. Metzger

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005  
 QC Batch ID: Qb19061145  
 Prep Method: TX 1005  
 Prepared By: Jdongre  
 Prep Batch ID: PB19061130

Sample Matrix: Water  
 Date Collected: 06/06/2019 16:10  
 Date Received: 06/07/2019 08:07  
 Date Prepared: 06/10/2019 10:30

Analyst Initial: JKD

% Moisture

CAS Number	Parameter	Result	Flag	SDL	SQL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12 <sup>1</sup>	<0.60	U	0.60	1.37	0.66	1.5	60	mg/L	0.91	06/10/19 18:34
TPH-1005-2	>C12-C28 <sup>1</sup>	<0.78	U	0.78	1.37	0.86	1.5	60	mg/L	0.91	06/10/19 18:34
TPH-1005-4	>C28-C35 <sup>1</sup>	<0.68	U	0.68	1.37	0.75	1.5	60	mg/L	0.91	06/10/19 18:34
	Total C6-C35	< 0.78	U	0.78		0.86	----	----	mg/L	0.91	06/10/19 18:34
111-85-3	1-Chlorooctane(surr)	74.9					59	122	%	0.91	06/10/19 18:34
3386-33-2	Chlorooctadecane(sur	85.6					48	123	%	0.91	06/10/19 18:34

Soil results reported on dry weight basis  
<sup>1</sup>-Parameter not available for accreditation

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060383

**Date :** 6/14/2019

**Analysis :** Volatile Organic Compounds      **Method :** SW-846 8260C      **Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060801      **Created Date :** 06/07/19      **Created By :** Rajeev

**Samples in This QC Batch :** 19060383.01,03,05,07

**Sample Preparation :** PB19060802      **Prep Method :** SW-846 5035A      **Prep Date :** 06/07/19 10:00      **Prep By :** Rajeev

<b>QC Type: Method Blank</b>							
Parameter	CAS #	Result	Units	D.F.	MQL	MDL	Qual
1,1,1,2-Tetrachloroethane	630-20-6	< MDL	mg/Kg	1	0.005	0.00085	
1,1,1-Trichloroethane	71-55-6	< MDL	mg/Kg	1	0.005	0.00148	
1,1,2,2-Tetrachloroethane	79-34-5	< MDL	mg/Kg	1	0.005	0.00132	
1,1,2-Trichloroethane	79-00-5	< MDL	mg/Kg	1	0.005	0.00176	
1,1-Dichloroethane	75-34-3	< MDL	mg/Kg	1	0.005	0.00157	
1,1-Dichloroethylene	75-35-4	< MDL	mg/Kg	1	0.005	0.00173	
1,1-Dichloropropene	563-58-6	< MDL	mg/Kg	1	0.005	0.00144	
1,2,3-trichlorobenzene	87-61-6	< MDL	mg/Kg	1	0.005	0.00166	
1,2,3-Trichloropropane	96-18-4	< MDL	mg/Kg	1	0.005	0.00151	
1,2,4-Trichlorobenzene	120-82-1	< MDL	mg/Kg	1	0.005	0.00138	
1,2,4-Trimethylbenzene	95-63-6	< MDL	mg/Kg	1	0.005	0.00122	
1,2-Dibromo-3-chloropropa	96-12-8	< MDL	mg/Kg	1	0.005	0.00311	
1,2-Dibromoethane	106-93-4	< MDL	mg/Kg	1	0.005	0.00113	
1,2-Dichlorobenzene	95-50-1	< MDL	mg/Kg	1	0.005	0.00100	
1,2-Dichloroethane	107-06-2	< MDL	mg/Kg	1	0.005	0.00132	
1,2-Dichloropropane	78-87-5	< MDL	mg/Kg	1	0.005	0.00113	
1,3,5-Trimethylbenzene	108-67-8	< MDL	mg/Kg	1	0.005	0.00151	
1,3-Dichlorobenzene	541-73-1	< MDL	mg/Kg	1	0.005	0.00141	
1,3-Dichloropropane	142-28-9	< MDL	mg/Kg	1	0.005	0.00141	
1,4-Dichlorobenzene	106-46-7	< MDL	mg/Kg	1	0.005	0.00144	
1,4-Dioxane	123-91-1	< MDL	mg/Kg	1	0.32	0.08023	
2,2-Dichloropropane	594-20-7	< MDL	mg/Kg	1	0.005	0.00220	
2-Chlorotoluene	95-49-8	< MDL	mg/Kg	1	0.005	0.00144	
4-Chlorotoluene	106-43-4	< MDL	mg/Kg	1	0.005	0.00138	
4-Isopropyltoluene	99-87-6	< MDL	mg/Kg	1	0.005	0.00141	
Benzene	71-43-2	< MDL	mg/Kg	1	0.005	0.00107	
Bromobenzene	108-86-1	< MDL	mg/Kg	1	0.005	0.00113	
Bromochloromethane	74-97-5	< MDL	mg/Kg	1	0.005	0.00126	
Bromodichloromethane	75-27-4	< MDL	mg/Kg	1	0.005	0.00088	
Bromoform	75-25-2	< MDL	mg/Kg	1	0.005	0.00072	
Bromomethane	74-83-9	< MDL	mg/Kg	1	0.005	0.00170	
Carbon disulfide	75-15-0	< MDL	mg/Kg	1	0.005	0.00138	
Carbon tetrachloride	56-23-5	< MDL	mg/Kg	1	0.005	0.00151	
Chlorobenzene	108-90-7	< MDL	mg/Kg	1	0.005	0.00148	
Chloroethane	75-00-3	< MDL	mg/Kg	1	0.005	0.00242	
Chloroform	67-66-3	< MDL	mg/Kg	1	0.005	0.00119	
Chloromethane	74-87-3	< MDL	mg/Kg	1	0.005	0.00226	
cis-1,2-Dichloroethylene	156-59-2	< MDL	mg/Kg	1	0.005	0.00119	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060383

**Date :** 6/14/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060801    **Created Date :** 06/07/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19060383.01,03,05,07

**QC Type: Method Blank**

Parameter	CAS #	Result	Units	D.F.	MLQ	MDL	Qual
cis-1,3-Dichloropropene	10061-01-5	< MDL	mg/Kg	1	0.005	0.00113	
Dibromochloromethane	124-48-1	< MDL	mg/Kg	1	0.005	0.00110	
Dibromomethane	74-95-3	< MDL	mg/Kg	1	0.005	0.00138	
Dichlorodifluoromethane	75-71-8	< MDL	mg/Kg	1	0.005	0.00135	
Ethylbenzene	100-41-4	< MDL	mg/Kg	1	0.005	0.00138	
Isopropylbenzene	98-82-8	< MDL	mg/Kg	1	0.005	0.00126	
m- & p-Xylenes	108-38-3&106-42-3	< MDL	mg/Kg	1	0.01	0.00273	
MEK	78-93-3	< MDL	mg/Kg	1	0.005	0.00267	
Methylene chloride	75-09-2	< MDL	mg/Kg	1	0.005	0.00154	
MTBE	1634-04-4	< MDL	mg/Kg	1	0.005	0.00107	
Naphthalene	91-20-3	< MDL	mg/Kg	1	0.005	0.00188	
n-Butylbenzene	104-51-8	< MDL	mg/Kg	1	0.005	0.00179	
n-Propylbenzene	103-65-1	< MDL	mg/Kg	1	0.005	0.00138	
o-Xylene	95-47-6	< MDL	mg/Kg	1	0.005	0.00126	
sec-Butylbenzene	135-98-8	< MDL	mg/Kg	1	0.005	0.00160	
Styrene	100-42-5	< MDL	mg/Kg	1	0.005	0.00126	
t-butylbenzene	98-06-6	< MDL	mg/Kg	1	0.005	0.00141	
Tetrachloroethylene	127-18-4	< MDL	mg/Kg	1	0.005	0.00138	
Toluene	108-88-3	< MDL	mg/Kg	1	0.005	0.00119	
trans-1,2-Dichloroethylene	156-60-5	< MDL	mg/Kg	1	0.005	0.00144	
trans-1,3-Dichloropropene	10061-02-6	< MDL	mg/Kg	1	0.005	0.00094	
Trichloroethylene	79-01-6	< MDL	mg/Kg	1	0.005	0.00104	
Trichlorofluoromethane	75-69-4	< MDL	mg/Kg	1	0.005	0.00198	
Vinyl Chloride	75-01-4	< MDL	mg/Kg	1	0.005	0.00185	
Xylenes	1330-20-7	< MDL	mg/Kg	1	0.005	0.001	
Dibromofluoromethane(surr)	1868-53-7	87.4	%	1			
1,2-Dichloroethane-d4(surr)	17060-07-0	87.8	%	1			
Toluene-d8(surr)	2037-26-5	99.8	%	1			
p-Bromofluorobenzene(surr)	460-00-4	94.8	%	1			

**QC Type: LCS and LCSD**

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
1,1,1,2-Tetrachloroethane	0.02	0.0208	104	0.02	0.0209	105	0.3	30	78-125	
1,1,1-Trichloroethane	0.02	0.0180	90.1	0.02	0.0190	95.1	5.3	30	70-130	
1,1,2,2-Tetrachloroethane	0.02	0.0197	98.4	0.02	0.0203	101	3.1	30	70-124	
1,1,2-Trichloroethane	0.02	0.0197	98.5	0.02	0.0204	102	3.5	30	78-121	
1,1-Dichloroethane	0.02	0.0186	92.9	0.02	0.0189	94.4	1.7	30	76-125	
1,1-Dichloroethylene	0.02	0.0122	60.8	0.02	0.0125	62.3	2.8	30	70-131	L2

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060383

**Date :** 6/14/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060801    **Created Date :** 06/07/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19060383.01,03,05,07

<b>QC Type: LCS and LCSD</b>										
Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
1,1-Dichloropropene	0.02	0.0184	92.1	0.02	0.0194	97.1	5.2	30	76-125	
1,2,3-trichlorobenzene	0.02	0.0215	108	0.02	0.0182	90.8	16.8	30	66-130	
1,2,3-Trichloropropane	0.02	0.0190	95.1	0.02	0.0195	97.3	2.5	30	73-125	
1,2,4-Trichlorobenzene	0.02	0.0207	103	0.02	0.0209	105	1.1	30	66-129	
1,2,4-Trimethylbenzene	0.02	0.0206	103	0.02	0.0209	105	1.6	30	75-123	
1,2-Dibromo-3-chloropropa	0.02	0.0180	89.9	0.02	0.0186	93	3.4	30	61-132	
1,2-Dibromoethane	0.02	0.0200	100	0.02	0.0208	104	3.9	30	78-122	
1,2-Dichlorobenzene	0.02	0.0210	105	0.02	0.0216	108	3	30	78-121	
1,2-Dichloroethane	0.02	0.0191	95.3	0.02	0.0195	97.3	2.3	30	71-128	
1,2-Dichloropropane	0.02	0.0195	97.7	0.02	0.0198	99	1.3	30	76-123	
1,3,5-Trimethylbenzene	0.02	0.0206	103	0.02	0.0213	107	3.4	30	73-124	
1,3-Dichlorobenzene	0.02	0.0212	106	0.02	0.0216	108	2	30	77-121	
1,3-Dichloropropane	0.02	0.0184	92	0.02	0.0191	95.4	3.8	30	77-121	
1,4-Dichlorobenzene	0.02	0.0211	105	0.02	0.0218	109	3.4	30	75-120	
1,4-Dioxane	0.64	0.551	86.2	0.64	0.584	91.3	5.7	30	55-138	
2,2-Dichloropropane	0.02	0.0172	85.8	0.02	0.0187	93.3	8.6	30	67-133	
2-Chlorotoluene	0.02	0.0201	100	0.02	0.0206	103	2.5	30	75-122	
4-Chlorotoluene	0.02	0.0200	100	0.02	0.0205	102	2.4	30	72-124	
4-Isopropyltoluene	0.02	0.0207	103	0.02	0.0216	108	4.3	30	73-127	
Benzene	0.02	0.0201	100	0.02	0.0209	105	3.9	30	77-121	
Bromobenzene	0.02	0.0214	107	0.02	0.0220	110	2.6	30	78-121	
Bromochloromethane	0.02	0.0177	88.3	0.02	0.0179	89.5	1.3	30	75-125	
Bromodichloromethane	0.02	0.0195	97.5	0.02	0.0198	99	1.5	30	71-127	
Bromoform	0.02	0.0202	101	0.02	0.0204	102	1	30	67-132	
Bromomethane	0.02	0.0174	87	0.02	0.0173	86.4	0.5	30	55-140	
Carbon disulfide	0.02	0.0106	53.2	0.02	0.0110	55	3.4	30	63-132	L2
Carbon tetrachloride	0.02	0.0200	100	0.02	0.0201	101	0.4	30	69-135	
Chlorobenzene	0.02	0.0210	105	0.02	0.0217	108	3.1	30	79-120	
Chloroethane	0.02	0.0203	102	0.02	0.0186	93.2	8.9	30	59-139	
Chloroform	0.02	0.0188	93.9	0.02	0.0192	95.8	2.3	30	78-123	
Chloromethane	0.02	0.0175	87.7	0.02	0.0178	89.2	1.4	30	50-136	
cis-1,2-Dichloroethylene	0.02	0.0185	92.6	0.02	0.0190	94.8	2.6	30	77-123	
cis-1,3-Dichloropropene	0.02	0.0196	98.2	0.02	0.0200	100	1.9	30	74-126	
Dibromochloromethane	0.02	0.0197	98.4	0.02	0.0200	100	1.7	30	74-126	
Dibromomethane	0.02	0.0200	99.8	0.02	0.0204	102	2.2	30	78-125	
Dichlorodifluoromethane	0.02	0.0170	84.9	0.02	0.0185	92.6	8.5	30	29-149	
Ethylbenzene	0.02	0.0207	104	0.02	0.0210	105	1.3	30	76-122	
Isopropylbenzene	0.02	0.0210	105	0.02	0.0216	108	2.9	30	68-134	
m- & p-Xylenes	0.04	0.0414	103	0.04	0.0425	106	2.7	30	77-124	
MEK	0.02	0.0151	75.5	0.02	0.0167	83.7	10	30	51-148	
Methylene chloride	0.02	0.0203	101	0.02	0.0214	107	5.3	30	70-128	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060383

**Date :** 6/14/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060801

**Created Date :** 06/07/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19060383.01,03,05,07

<b>QC Type: LCS and LCSD</b>										
Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
MTBE	0.02	0.0175	87.4	0.02	0.0180	89.8	3	30	73-125	
Naphthalene	0.02	0.0193	96.4	0.02	0.0182	91.2	5.8	30	62-129	
n-Butylbenzene	0.02	0.0192	96.1	0.02	0.0198	99.1	3	30	70-128	
n-Propylbenzene	0.02	0.0202	101	0.02	0.0207	104	2.4	30	73-125	
o-Xylene	0.02	0.0206	103	0.02	0.0210	105	1.9	30	77-123	
sec-Butylbenzene	0.02	0.0205	102	0.02	0.0211	106	3	30	73-126	
Styrene	0.02	0.0211	105	0.02	0.0216	108	2.6	30	76-124	
t-butylbenzene	0.02	0.0205	103	0.02	0.0206	103	0.3	30	73-125	
Tetrachloroethylene	0.02	0.0218	109	0.02	0.0216	108	0.9	30	73-128	
Toluene	0.02	0.0207	104	0.02	0.0215	107	3.6	30	77-121	
trans-1,2-Dichloroethylene	0.02	0.0185	92.6	0.02	0.0193	96.4	4.2	30	74-125	
trans-1,3-Dichloropropene	0.02	0.0195	97.4	0.02	0.0199	99.5	2.1	30	71-130	
Trichloroethylene	0.02	0.0216	108	0.02	0.0224	112	3.6	30	77-123	
Trichlorofluoromethane	0.02	0.0166	83	0.02	0.0169	84.7	1.8	30	62-140	
Vinyl Chloride	0.02	0.0175	87.3	0.02	0.0186	93.2	6.3	30	56-135	
Xylenes	0.06	0.062	103	0.06	0.0635	106	2.4	30	78-124	

<b>QC Type: MS and MSD</b>											
<b>QC Sample ID: 19060411.03</b>											
Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
1,1,1,2-Tetrachloroethane	BRL	0.019	0.0202	106						71.4-131	
1,1,1-Trichloroethane	BRL	0.019	0.0171	89.8						69.6-140	
1,1,2,2-Tetrachloroethane	BRL	0.019	0.0220	116						66.6-128	
1,1,2-Trichloroethane	BRL	0.019	0.0209	110						72.8-125	
1,1-Dichloroethane	BRL	0.019	0.0176	92.6						72.7-129	
1,1-Dichloroethylene	BRL	0.019	0.0112	59						71.4-131	M9
1,1-Dichloropropene	BRL	0.019	0.0175	92.1						75.9-132	
1,2,3-trichlorobenzene	BRL	0.019	0.0185	97.4						56.7-153	
1,2,3-Trichloropropane	BRL	0.019	0.0208	109						61.6-138	
1,2,4-Trichlorobenzene	BRL	0.019	0.0184	97						55.9-150	
1,2,4-Trimethylbenzene	BRL	0.019	0.0192	101						71.1-131	
1,2-Dibromo-3-chloropropane	BRL	0.019	0.0216	114						52.4-150	
1,2-Dibromoethane	BRL	0.019	0.0216	114						72.9-125	
1,2-Dichlorobenzene	BRL	0.019	0.0205	108						76.1-126	
1,2-Dichloroethane	BRL	0.019	0.0199	105						66.4-134	
1,2-Dichloropropane	BRL	0.019	0.0192	101						70.2-128	
1,3,5-Trimethylbenzene	BRL	0.019	0.0191	100						75.1-127	
1,3-Dichlorobenzene	BRL	0.019	0.0197	104						73.9-126	
1,3-Dichloropropane	BRL	0.019	0.0190	99.9						68.3-124	

Refer to the Definition page for terms.



**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060383

**Date :** 6/14/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060801    **Created Date :** 06/07/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19060383.01,03,05,07

<b>QC Type: MS and MSD</b>											
<b>QC Sample ID: 19060411.03</b>											
Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
1,4-Dichlorobenzene	BRL	0.019	0.0204	107						72.3-127	
1,4-Dioxane	BRL	0.615	0.706	115						70-130	
2,2-Dichloropropane	BRL	0.019	0.0139	73						68.5-138	
2-Chlorotoluene	BRL	0.019	0.0189	99.4						71.7-128	
4-Chlorotoluene	BRL	0.019	0.0186	97.9						72.2-126	
4-Isopropyltoluene	BRL	0.019	0.0192	101						77.5-125	
Benzene	BRL	0.019	0.0197	104						74-126	
Bromobenzene	BRL	0.019	0.0208	110						73.3-129	
Bromochloromethane	BRL	0.019	0.0176	92.7						68.8-131	
Bromodichloromethane	BRL	0.019	0.0196	103						69-135	
Bromoform	BRL	0.019	0.0225	118						62-146	
Bromomethane	BRL	0.019	0.0154	81						58.7-139	
Carbon disulfide	BRL	0.019	0.00941	49.5						70-130	M9
Carbon tetrachloride	BRL	0.019	0.0186	98						68.7-135	
Chlorobenzene	BRL	0.019	0.0202	106						73.3-129	
Chloroethane	BRL	0.019	0.0159	83.5						66.2-129	
Chloroform	BRL	0.019	0.0183	96.2						73.7-134	
Chloromethane	BRL	0.019	0.0146	76.9						51.4-135	
cis-1,2-Dichloroethylene	BRL	0.019	0.0178	93.8						72.4-132	
cis-1,3-Dichloropropene	BRL	0.019	0.0185	97.5						67.7-134	
Dibromochloromethane	BRL	0.019	0.0205	108						73.2-126	
Dibromomethane	BRL	0.019	0.0214	113						69.9-134	
Dichlorodifluoromethane	BRL	0.019	0.0142	74.7						36.8-144	
Ethylbenzene	BRL	0.019	0.0195	102						72.2-128	
Isopropylbenzene	BRL	0.019	0.0197	104						71.2-131	
m- & p-Xylenes	BRL	0.038	0.0389	102						70.7-131	
MEK	BRL	0.019	0.0154	81						52.5-152	
Methylene chloride	BRL	0.019	0.0196	103						70.6-129	
MTBE	BRL	0.019	0.0179	94.2						70-130	
Naphthalene	BRL	0.019	0.0189	99.3						60.7-145	
n-Butylbenzene	BRL	0.019	0.0173	91.2						66.5-136	
n-Propylbenzene	BRL	0.019	0.0186	97.7						73.3-126	
o-Xylene	BRL	0.019	0.0196	103						71.6-130	
sec-Butylbenzene	BRL	0.019	0.0191	101						77.9-124	
Styrene	BRL	0.019	0.0202	106						71.1-131	
t-butylbenzene	BRL	0.019	0.0191	101						74.4-130	
Tetrachloroethylene	BRL	0.019	0.0223	118						62.6-157	
Toluene	BRL	0.019	0.0197	104						73.3-127	
trans-1,2-Dichloroethylene	BRL	0.019	0.0173	90.9						70-130	
trans-1,3-Dichloropropene	BRL	0.019	0.0182	95.9						71.5-124	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060383

**Date :** 6/14/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/Kg

**QC Batch ID :** Qb19060801

**Created Date :** 06/07/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19060383.01,03,05,07

**QC Type:** MS and MSD

**QC Sample ID:** 19060411.03

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
Trichloroethylene	BRL	0.019	0.0207	109						69.2-133	
Trichlorofluoromethane	BRL	0.019	0.0145	76.3						63.9-140	
Vinyl Chloride	BRL	0.019	0.0161	84.8						40.9-159	
Xylenes	BRL	0.058	0.0585	101						69.2-133	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060383

**Date :** 6/14/2019

**Analysis :** Volatile Organic Compounds      **Method :** SW-846 8260C      **Reporting Units :** mg/L

**QC Batch ID :** Qb19060802      **Created Date :** 06/07/19      **Created By :** Rajeev

**Samples in This QC Batch :** 19060383.02,04,06,08

**Sample Preparation :** PB19060803      **Prep Method :** SW-846 5030C      **Prep Date :** 06/07/19 10:00      **Prep By :** Rajeev

QC Type: Method Blank							
Parameter	CAS #	Result	Units	D.F.	MQL	MDL	Qual
1,1,1,2-Tetrachloroethane	630-20-6	< MDL	mg/L	1	0.005	0.00082	
1,1,1-Trichloroethane	71-55-6	< MDL	mg/L	1	0.005	0.00072	
1,1,2,2-Tetrachloroethane	79-34-5	< MDL	mg/L	1	0.005	0.00210	
1,1,2-Trichloroethane	79-00-5	< MDL	mg/L	1	0.005	0.00144	
1,1-Dichloroethane	75-34-3	< MDL	mg/L	1	0.005	0.00119	
1,1-Dichloroethylene	75-35-4	< MDL	mg/L	1	0.005	0.00066	
1,1-Dichloropropene	563-58-6	< MDL	mg/L	1	0.005	0.001	
1,2,3-trichlorobenzene	87-61-6	< MDL	mg/L	1	0.005	0.00085	
1,2,3-Trichloropropane	96-18-4	< MDL	mg/L	1	0.005	0.00170	
1,2,4-Trichlorobenzene	120-82-1	< MDL	mg/L	1	0.005	0.00053	
1,2,4-Trimethylbenzene	95-63-6	< MDL	mg/L	1	0.005	0.00100	
1,2-Dibromo-3-chloropropa	96-12-8	< MDL	mg/L	1	0.005	0.00236	
1,2-Dibromoethane	106-93-4	< MDL	mg/L	1	0.005	0.00129	
1,2-Dichlorobenzene	95-50-1	< MDL	mg/L	1	0.005	0.00060	
1,2-Dichloroethane	107-06-2	< MDL	mg/L	1	0.005	0.00104	
1,2-Dichloropropane	78-87-5	< MDL	mg/L	1	0.005	0.00075	
1,3,5-Trimethylbenzene	108-67-8	< MDL	mg/L	1	0.005	0.00110	
1,3-Dichlorobenzene	541-73-1	< MDL	mg/L	1	0.005	0.00075	
1,3-Dichloropropane	142-28-9	< MDL	mg/L	1	0.005	0.001	
1,4-Dichlorobenzene	106-46-7	< MDL	mg/L	1	0.005	0.00072	
1,4-Dioxane	123-91-1	< MDL	mg/L	1	0.32	0.08177	
2,2-Dichloropropane	594-20-7	< MDL	mg/L	1	0.005	0.001	
2-Chlorotoluene	95-49-8	< MDL	mg/L	1	0.005	0.00082	
4-Chlorotoluene	106-43-4	< MDL	mg/L	1	0.005	0.00082	
4-Isopropyltoluene	99-87-6	< MDL	mg/L	1	0.005	0.00091	
Benzene	71-43-2	< MDL	mg/L	1	0.005	0.00063	
Bromobenzene	108-86-1	< MDL	mg/L	1	0.005	0.001	
Bromochloromethane	74-97-5	< MDL	mg/L	1	0.005	0.00097	
Bromodichloromethane	75-27-4	< MDL	mg/L	1	0.005	0.00069	
Bromoform	75-25-2	< MDL	mg/L	1	0.005	0.00170	
Bromomethane	74-83-9	< MDL	mg/L	1	0.005	0.00079	
Carbon disulfide	75-15-0	< MDL	mg/L	1	0.005	0.00113	
Carbon tetrachloride	56-23-5	< MDL	mg/L	1	0.005	0.00173	
Chlorobenzene	108-90-7	< MDL	mg/L	1	0.005	0.00069	
Chloroethane	75-00-3	< MDL	mg/L	1	0.005	0.00144	
Chloroform	67-66-3	< MDL	mg/L	1	0.005	0.00072	
Chloromethane	74-87-3	< MDL	mg/L	1	0.005	0.00066	
cis-1,2-Dichloroethylene	156-59-2	< MDL	mg/L	1	0.005	0.00053	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060383

**Date :** 6/14/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb19060802      **Created Date :** 06/07/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19060383.02,04,06,08

**QC Type: Method Blank**

Parameter	CAS #	Result	Units	D.F.	MLQ	MDL	Qual
cis-1,3-Dichloropropene	10061-01-5	< MDL	mg/L	1	0.005	0.00072	
Dibromochloromethane	124-48-1	< MDL	mg/L	1	0.005	0.00122	
Dibromomethane	74-95-3	< MDL	mg/L	1	0.005	0.00126	
Dichlorodifluoromethane	75-71-8	< MDL	mg/L	1	0.005	0.00085	
Ethylbenzene	100-41-4	< MDL	mg/L	1	0.005	0.00100	
Isopropylbenzene	98-82-8	< MDL	mg/L	1	0.005	0.00082	
m- & p-Xylenes	108-38-3&106-42-3	< MDL	mg/L	1	0.01	0.00151	
MEK	78-93-3	< MDL	mg/L	1	0.005	0.00286	
Methylene chloride	75-09-2	< MDL	mg/L	1	0.005	0.00487	
MTBE	1634-04-4	< MDL	mg/L	1	0.005	0.00082	
Naphthalene	91-20-3	< MDL	mg/L	1	0.005	0.00270	
n-Butylbenzene	104-51-8	< MDL	mg/L	1	0.005	0.00119	
n-Propylbenzene	103-65-1	< MDL	mg/L	1	0.005	0.00135	
o-Xylene	95-47-6	< MDL	mg/L	1	0.005	0.00066	
sec-Butylbenzene	135-98-8	< MDL	mg/L	1	0.005	0.00082	
Styrene	100-42-5	< MDL	mg/L	1	0.005	0.00069	
t-butylbenzene	98-06-6	< MDL	mg/L	1	0.005	0.00100	
Tetrachloroethylene	127-18-4	< MDL	mg/L	1	0.005	0.00066	
Toluene	108-88-3	< MDL	mg/L	1	0.005	0.00075	
trans-1,2-Dichloroethylene	156-60-5	< MDL	mg/L	1	0.005	0.00066	
trans-1,3-Dichloropropene	10061-02-6	< MDL	mg/L	1	0.005	0.00097	
Trichloroethylene	79-01-6	< MDL	mg/L	1	0.005	0.00079	
Trichlorofluoromethane	75-69-4	< MDL	mg/L	1	0.005	0.00094	
Vinyl Chloride	75-01-4	< MDL	mg/L	1	0.005	0.00082	
Xylenes	1330-20-7	< MDL	mg/L	1	0.005	0.00204	
Dibromofluoromethane(surr)	1868-53-7	102	%	1			
1,2-Dichloroethane-d4(surr)	17060-07-0	99.7	%	1			
Toluene-d8(surr)	2037-26-5	99.1	%	1			
p-Bromofluorobenzene(surr)	460-00-4	97.4	%	1			

**QC Type: LCS and LCSD**

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
1,1,1,2-Tetrachloroethane	0.02	0.0203	101	0.02	0.0205	102	1.1	20	78-120	
1,1,1-Trichloroethane	0.02	0.0195	97.6	0.02	0.0204	102	4.4	20	74-126	
1,1,2,2-Tetrachloroethane	0.02	0.0204	102	0.02	0.0216	108	6	20	71-121	
1,1,2-Trichloroethane	0.02	0.0206	103	0.02	0.0213	106	3.2	20	80-120	
1,1-Dichloroethane	0.02	0.0203	101	0.02	0.0204	102	0.6	20	77-120	
1,1-Dichloroethylene	0.02	0.0200	100	0.02	0.0201	100	0.4	20	71-130	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060383

**Date :** 6/14/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb19060802

**Created Date :** 06/07/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19060383.02,04,06,08

**QC Type: LCS and LCSD**

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
1,1-Dichloropropene	0.02	0.0204	102	0.02	0.0208	104	1.8	20	79-125	
1,2,3-trichlorobenzene	0.02	0.0217	109	0.02	0.0208	104	4.4	20	69-121	
1,2,3-Trichloropropane	0.02	0.0209	104	0.02	0.0214	107	2.4	20	73-122	
1,2,4-Trichlorobenzene	0.02	0.0207	104	0.02	0.0206	103	0.5	20	69-130	
1,2,4-Trimethylbenzene	0.02	0.0203	102	0.02	0.0205	103	0.9	20	76-119	
1,2-Dibromo-3-chloropropa	0.02	0.0209	104	0.02	0.0221	110	5.6	20	62-135	
1,2-Dibromoethane	0.02	0.0209	105	0.02	0.0216	108	3.1	20	77-121	
1,2-Dichlorobenzene	0.02	0.0204	102	0.02	0.0206	103	0.9	20	80-113	
1,2-Dichloroethane	0.02	0.0195	97.5	0.02	0.0207	104	5.9	20	70-125	
1,2-Dichloropropane	0.02	0.0202	101	0.02	0.0208	104	3	20	78-122	
1,3,5-Trimethylbenzene	0.02	0.0204	102	0.02	0.0206	103	1	20	75-117	
1,3-Dichlorobenzene	0.02	0.0201	100	0.02	0.0204	102	1.5	20	80-115	
1,3-Dichloropropane	0.02	0.0202	101	0.02	0.0215	107	6.4	20	80-119	
1,4-Dichlorobenzene	0.02	0.0202	101	0.02	0.0201	101	0.3	20	79-118	
1,4-Dioxane	0.64	0.719	112	0.64	0.788	123	9.2	20	59-139	
2,2-Dichloropropane	0.02	0.0191	95.3	0.02	0.0194	97.2	1.7	20	65-135	
2-Chlorotoluene	0.02	0.0200	100	0.02	0.0204	102	1.7	20	79-118	
4-Chlorotoluene	0.02	0.0206	103	0.02	0.0206	103	0.2	20	78-118	
4-Isopropyltoluene	0.02	0.0203	102	0.02	0.0207	103	1.8	20	77-116	
Benzene	0.02	0.0194	96.9	0.02	0.0202	101	4.2	20	79-118	
Bromobenzene	0.02	0.0204	102	0.02	0.0208	104	1.9	20	80-116	
Bromochloromethane	0.02	0.0202	101	0.02	0.0210	105	3.6	20	78-123	
Bromodichloromethane	0.02	0.0199	99.6	0.02	0.0208	104	4.4	20	79-125	
Bromoform	0.02	0.0208	104	0.02	0.0217	108	4.4	20	71-130	
Bromomethane	0.02	0.0185	92.3	0.02	0.0195	97.4	5.5	20	62-141	
Carbon disulfide	0.02	0.0201	100	0.02	0.0202	101	0.7	20	70-125	
Carbon tetrachloride	0.02	0.0187	93.5	0.02	0.0197	98.6	5.2	20	72-132	
Chlorobenzene	0.02	0.0200	99.9	0.02	0.0206	103	3	20	82-116	
Chloroethane	0.02	0.0176	88	0.02	0.0180	90.1	2.3	20	60-138	
Chloroform	0.02	0.0202	101	0.02	0.0207	104	2.4	20	79-124	
Chloromethane	0.02	0.0197	98.3	0.02	0.0201	101	2.2	20	61-139	
cis-1,2-Dichloroethylene	0.02	0.0207	104	0.02	0.0207	104	0	20	78-121	
cis-1,3-Dichloropropene	0.02	0.0202	101	0.02	0.0208	104	2.7	20	81-122	
Dibromochloromethane	0.02	0.0203	102	0.02	0.0212	106	4.1	20	77-120	
Dibromomethane	0.02	0.0202	101	0.02	0.0213	106	5.5	20	79-124	
Dichlorodifluoromethane	0.02	0.0194	96.9	0.02	0.0199	99.3	2.6	20	51-135	
Ethylbenzene	0.02	0.0200	100	0.02	0.0204	102	1.8	20	84-117	
Isopropylbenzene	0.02	0.0202	101	0.02	0.0209	104	3.2	20	80-117	
m- & p-Xylenes	0.04	0.0400	99.9	0.04	0.0409	102	2.4	20	80-118	
MEK	0.02	0.0201	100	0.02	0.0220	110	9.2	20	60-136	
Methylene chloride	0.02	0.0207	104	0.02	0.0207	103	0	20	74-124	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060383

**Date :** 6/14/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb19060802

**Created Date :** 06/07/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19060383.02,04,06,08

<b>QC Type: LCS and LCSD</b>										
Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
MTBE	0.02	0.0215	107	0.02	0.0216	108	0.6	20	71-124	
Naphthalene	0.02	0.0228	114	0.02	0.0222	111	2.9	20	66-128	
n-Butylbenzene	0.02	0.0204	102	0.02	0.0202	101	0.9	20	75-120	
n-Propylbenzene	0.02	0.0200	100	0.02	0.0204	102	1.8	20	78-120	
o-Xylene	0.02	0.0208	104	0.02	0.0213	106	2.2	20	84-117	
sec-Butylbenzene	0.02	0.0204	102	0.02	0.0205	103	0.7	20	77-120	
Styrene	0.02	0.0204	102	0.02	0.0209	105	2.3	20	85-120	
t-butylbenzene	0.02	0.0204	102	0.02	0.0207	104	1.4	20	78-120	
Tetrachloroethylene	0.02	0.0209	104	0.02	0.0223	111	6.6	20	78-129	
Toluene	0.02	0.0200	100	0.02	0.0205	103	2.2	20	84-117	
trans-1,2-Dichloroethylene	0.02	0.0202	101	0.02	0.0205	103	1.3	20	75-124	
trans-1,3-Dichloropropene	0.02	0.0204	102	0.02	0.0209	104	2.7	20	80-121	
Trichloroethylene	0.02	0.0187	93.6	0.02	0.0193	96.7	3	20	80-122	
Trichlorofluoromethane	0.02	0.0188	93.8	0.02	0.0198	98.9	5.4	20	57-141	
Vinyl Chloride	0.02	0.0193	96.7	0.02	0.0197	98.3	1.8	20	59-130	
Xylenes	0.06	0.0608	101	0.06	0.0622	104	2.3	20	83-118	

<b>QC Type: MS and MSD</b>											
<b>QC Sample ID: 19060383.04</b>											
Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
1,1,1,2-Tetrachloroethane	BRL	0.02	0.0203	101						72-139	
1,1,1-Trichloroethane	BRL	0.02	0.0198	98.8						70.6-135	
1,1,2,2-Tetrachloroethane	BRL	0.02	0.0254	127						55-149	
1,1,2-Trichloroethane	BRL	0.02	0.0220	110						68-139	
1,1-Dichloroethane	BRL	0.02	0.0197	98.3						78-134	
1,1-Dichloroethylene	BRL	0.02	0.0198	99						65-141	
1,1-Dichloropropene	BRL	0.02	0.0198	99.2						79-136	
1,2,3-trichlorobenzene	BRL	0.02	0.0210	105						54-144	
1,2,3-Trichloropropane	BRL	0.02	0.0262	131						58-156	
1,2,4-Trichlorobenzene	BRL	0.02	0.0194	96.8						69-127	
1,2,4-Trimethylbenzene	BRL	0.02	0.0197	98.4						80-131	
1,2-Dibromo-3-chloropropa	BRL	0.02	0.0283	141						61-145	
1,2-Dibromoethane	BRL	0.02	0.0235	117						68-140	
1,2-Dichlorobenzene	BRL	0.02	0.0203	102						70-138	
1,2-Dichloroethane	BRL	0.02	0.0214	107						67-152	
1,2-Dichloropropane	BRL	0.02	0.0196	98.2						79-135	
1,3,5-Trimethylbenzene	BRL	0.02	0.0199	99.3						79-133	
1,3-Dichlorobenzene	BRL	0.02	0.0197	98.5						79-128	
1,3-Dichloropropane	BRL	0.02	0.0227	114						70-147	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060383

**Date :** 6/14/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb19060802

**Created Date :** 06/07/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19060383.02,04,06,08

<b>QC Type: MS and MSD</b>											
<b>QC Sample ID: 19060383.04</b>											
Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
1,4-Dichlorobenzene	BRL	0.02	0.0200	100						76-127	
1,4-Dioxane	BRL	0.64	0.996	156						70-125	M8
2,2-Dichloropropane	BRL	0.02	0.0186	93.2						60-129	
2-Chlorotoluene	BRL	0.02	0.0199	99.4						83-130	
4-Chlorotoluene	BRL	0.02	0.0199	99.3						82-129	
4-Isopropyltoluene	BRL	0.02	0.0197	98.6						78-129	
Benzene	BRL	0.02	0.0195	97.4						73-129	
Bromobenzene	BRL	0.02	0.0198	99						76-132	
Bromochloromethane	BRL	0.02	0.0213	106						76-135	
Bromodichloromethane	BRL	0.02	0.0206	103						80-136	
Bromoform	BRL	0.02	0.0240	120						65-139	
Bromomethane	BRL	0.02	0.0197	98.5						65-150	
Carbon disulfide	BRL	0.02	0.0196	98.2						70-125	
Carbon tetrachloride	BRL	0.02	0.0195	97.3						70-136	
Chlorobenzene	BRL	0.02	0.0195	97.7						69-123	
Chloroethane	BRL	0.02	0.0150	75.2						74-145	
Chloroform	BRL	0.02	0.0202	101						41.8-164	
Chloromethane	BRL	0.02	0.0178	88.8						42.2-160	
cis-1,2-Dichloroethylene	BRL	0.02	0.0198	99.1						71-134	
cis-1,3-Dichloropropene	BRL	0.02	0.0190	95.2						74-128	
Dibromochloromethane	BRL	0.02	0.0219	109						67-141	
Dibromomethane	BRL	0.02	0.0218	109						63.1-135	
Dichlorodifluoromethane	BRL	0.02	0.0180	90						62-146	
Ethylbenzene	BRL	0.02	0.0195	97.4						80-132	
Isopropylbenzene	BRL	0.02	0.0199	99.3						78-137	
m- & p-Xylenes	BRL	0.04	0.0392	98.1						74-127	
MEK	BRL	0.02	0.0250	125						52-148	
Methylene chloride	BRL	0.02	0.0196	98.2						68-131	
MTBE	BRL	0.02	0.0229	115						70-130	
Naphthalene	BRL	0.02	0.0249	124						61-116	M8
n-Butylbenzene	BRL	0.02	0.0194	97.1						73-140	
n-Propylbenzene	BRL	0.02	0.0196	98						75-127	
o-Xylene	BRL	0.02	0.0199	99.4						74-126	
sec-Butylbenzene	BRL	0.02	0.0200	99.8						75-129	
Styrene	BRL	0.02	0.0202	101						77-123	
t-butylbenzene	BRL	0.02	0.0200	99.8						75-126	
Tetrachloroethylene	BRL	0.02	0.0175	87.7						27.6-194	
Toluene	BRL	0.02	0.0197	98.5						72-121	
trans-1,2-Dichloroethylene	BRL	0.02	0.0199	99.6						73-138	
trans-1,3-Dichloropropene	BRL	0.02	0.0209	105						66-131	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060383

**Date :** 6/14/2019

**Analysis :** Volatile Organic Compounds

**Method :** SW-846 8260C

**Reporting Units :** mg/L

**QC Batch ID :** Qb19060802

**Created Date :** 06/07/19

**Created By :** Rajeev

**Samples in This QC Batch :** 19060383.02,04,06,08

**QC Type:** MS and MSD

**QC Sample ID:** 19060383.04

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
Trichloroethylene	BRL	0.02	0.0185	92.6						6-138	
Trichlorofluoromethane	BRL	0.02	0.0203	101						67-148	
Vinyl Chloride	BRL	0.02	0.0180	89.9						59.4-140	
Xylenes	BRL	0.06	0.0591	98.5						73-127	

Refer to the Definition page for terms.



**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060383

**Date :** 6/14/2019

**Analysis :** Total Petroleum Hydrocarbons      **Method :** TX 1005      **Reporting Units :** mg/Kg

**QC Batch ID :** Qb19061132      **Created Date :** 06/10/19      **Created By :** Jdongre

**Samples in This QC Batch :** 19060383.01,03,05,07

**Sample Preparation :** PB19061116      **Prep Method :** TX 1005      **Prep Date :** 06/10/19 10:00      **Prep By :** Jdongre

**QC Type: Method Blank**

Parameter	CAS #	Result	Units	D.F.	MQL	MDL	Qual
C6-C12	TPH-1005-1	< MDL	mg/Kg	1	25	23.7	
>C12-C28	TPH-1005-2	< MDL	mg/Kg	1	25	20.3	
>C28-C35	TPH-1005-4	< MDL	mg/Kg	1	25	17.7	
Total C6-C35		< MDL	mg/Kg	1	----	17.7	
Chlorooctadecane(surr)	3386-33-2	91.2	%	1			
1-Chlorooctane(surr)	111-85-3	99	%	1			

**QC Type: LCS and LCSD**

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
C6-C12	500	493	98.6	500	488	97.6	1	20	75-125	
>C12-C28	500	493	98.6	500	488	97.6	1	20	75-125	
>C28-C35	500	530	106	500	537	107	1.3	20	75-125	

**QC Type: MS and MSD**

**QC Sample ID: 19060519.09**

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
C6-C12	BRL	500	506	101	500	502	100	0.8	20	75-125	
>C12-C28	BRL	500	508	102	500	500	100	1.6	20	75-125	
>C28-C35	BRL	500	614	123	500	562	112	8.8	20	75-125	

Refer to the Definition page for terms.

**QUALITY CONTROL CERTIFICATE**



**Job ID :** 19060383

**Date :** 6/14/2019

**Analysis :** Total Petroleum Hydrocarbons      **Method :** TX 1005      **Reporting Units :** mg/L

**QC Batch ID :** Qb19061145      **Created Date :** 06/10/19      **Created By :** Jdongre

**Samples in This QC Batch :** 19060383.02,04,06,08

**Sample Preparation :** PB19061130      **Prep Method :** TX 1005      **Prep Date :** 06/10/19 10:30      **Prep By :** Jdongre

**QC Type: Method Blank**

Parameter	CAS #	Result	Units	D.F.	MQL	MDL	Qual
C6-C12	TPH-1005-1	< MDL	mg/L	1	1.5	0.66	
>C12-C28	TPH-1005-2	< MDL	mg/L	1	1.5	0.86	
>C28-C35	TPH-1005-4	< MDL	mg/L	1	1.5	0.75	
Total C6-C35		< MDL	mg/L	1	----	0.86	
1-Chlorooctane(surr)	111-85-3	93.7	%	1			
Chlorooctadecane(surr)	3386-33-2	81.4	%	1			

**QC Type: Duplicate**

**QC Sample ID: 19060515.06**

Parameter	QCSample Result	Sample Result	Units	RPD	RPD CtrlLimit	Qual
>C12-C28	BRL	BRL	mg/L	0	30	
>C28-C35	BRL	BRL	mg/L	0	30	
C6-C12	BRL	BRL	mg/L	0	30	
Total C6-C35	BRL	BRL	mg/L	0	30	

**QC Type: LCS and LCSD**

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
C6-C12	30	31.1	104	30	31.4	105	0.9	20	75-125	
>C12-C28	30	26.4	87.9	30	26.8	89.3	1.6	20	75-125	
>C28-C35	30	28.4	94.5	30	25.2	84.1	11.8	20	75-125	

Refer to the Definition page for terms.



**LABORATORY TERM AND QUALIFIER DEFINITION REPORT**



Job ID : 19060383

Date: 6/14/2019

**General Term Definition**

Back-Wt	Back Weight	Post-Wt	Post Weight
BRL	Below Reporting Limit	ppm	parts per million
cfu	colony-forming units	Pre-Wt	Previous Weight
Conc.	Concentration	Q	Qualifier
D.F.	Dilution Factor	RegLimit	Regulatory Limit
Front-Wt	Front Weight	RPD	Relative Percent Difference
LCS	Laboratory Check Standard	RptLimit	Reporting Limit
LCSD	Laboratory Check Standard Duplicate	SDL	Sample Detection Limit
MS	Matrix Spike	surr	Surrogate
MSD	Matrix Spike Duplicate	T	Time
MW	Molecular Weight	TNTC	Too numerous to count
J	Estimation. Below calibration range but above MDL		

**Qualifier Definition**

L2	Associated LCS and/or LCSD recovery is below acceptance limits for flagged analyte. Bias may be low.
M8	Matrix Spike and/or Matrix Spike Duplicate recovery is above laboratory control limits.
M9	Matrix Spike and/or Matrix Spike Duplicate recovery is below laboratory control limits.
U	Undetected at SDL (Sample Detection Limit).
V11	CCV recovery is below acceptance limits.



10100 East Fwy (I-10) Suite 100 Houston, TX 77029 713-453-6060 1-877-478-6060 Toll Free 713-453-6091 Fax ablabs.com

1. REPORT TO: AEC Company: Aviles Engineering Corp Address: 5790 Windfern Houston TX 77051 Contact: Robert J Metzger Phone: 281-793-8352 E-mail: Rmetzger@aviles.org.neering.com

2. INVOICE TO: AS in Box 1 Company: Address: Contact: Phone: Fax: E-mail:

3. PO # 3a. A&B Quote # 4. Turnaround Time (Business Days) [ ] 1 Day\* [ ] Other: [ ] 2 Days\* [ ] 3 Days\* \*Surcharge applies [ ] 7 Days - Standard

A&B JOB ID # 19060383 5. Project # E103-19

6. Project Name/Location Memorial Drive Reconstruction, Houston

7. Reporting Requirement: [ ] TRRP Limits only [ ] TRRP Rpt. Package [ ] See Attached [ ] Standard Level II [ ] PST [ ] MDL [ ] EDD

8. Sampler's Name & Company (PLEASE PRINT) Robert J Metzger AEC Sampler's Signature & Date [Signature] 6/7/19

9. Sample ID and Description 10. Sampling 11. 12. Matrix

Table with columns for Sample ID, Date, Time, Matrix (Comp., Grab, Water, Soil, Sludge, Oil, Drinking Water, Air, Other) and No. of Containers. Rows include samples 01AV, 02AF, 03AV, 04AF, 05AV, 06AF, 07AV, 08AF.

Table for 13. 14. Containers\* (V03, V04, V05), 15. Preservatives\*\* (C/H, C/I, C), 16. PH-Lab Only, 17. Analyses/Methods (VOCs, MTBE, TPH, TOCS, Temperature), 18. REMARKS

19. RELINQUISHED BY [Signature] DATE 6/7/19 TIME 8:07

20. RECEIVED BY [Signature] DATE 6-7-19 TIME 8:07

21. KNOWN HAZARDS/COMMENTS 9/5 Temperature: 4.5-5=4.0 °C Thermometer ID: 1707629 Intact: Y or N Initials [Signature]

\*Containers: VOA - 40 ml vial 4 oz/8 oz - glass wide mouth A/G - Amber/Glass 1 Liter P/O - Plastic/other

\*\*Preservatives: C - Cool H - HCl N - HNO3 S - H2SO4 OH - NaOH T - Na2S2O3 X - Other

METHOD OF SHIPMENT BILL OF LADING/TRACKING # LAB USE ONLY SAMPLING RENTAL P/U Supplies Field Work

A&B cannot accept verbal changes Please FAX written changes to 713-453-6091 Samples will be disposed of after 30 days A&B reserves the right to return samples



# Sample Condition Checklist

A&B JobID : <b>19060383</b>	Date Received : <b>06/07/2019</b>	Time Received : <b>8:07AM</b>																										
Client Name : <b>Aviles Engineering</b>																												
Temperature : <b>4.5-0.5cf=4.0°C</b>	Sample pH : <b>n/a</b>																											
Thermometer ID : <b>1707629</b>	pH Paper ID : <b>n/a</b>																											
<b>Check Points</b>																												
<b>1.</b>	<b>Cooler seal present and signed.</b>	Yes	No	N/A																								
<b>2.</b>	<b>Sample(s) in a cooler.</b>	X																										
<b>3.</b>	<b>If yes, ice in cooler.</b>	X																										
<b>4.</b>	<b>Sample(s) received with chain-of-custody.</b>	X																										
<b>5.</b>	<b>C-O-C signed and dated.</b>	X																										
<b>6.</b>	<b>Sample(s) received with signed sample custody seal.</b>		X																									
<b>7.</b>	<b>Sample containers arrived intact. (If no comment).</b>	X																										
<b>8.</b>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;"><b>Matrix</b></td> <td style="width: 10%;"><b>Water</b></td> <td style="width: 10%;"><b>Soil</b></td> <td style="width: 10%;"><b>Liquid</b></td> <td style="width: 10%;"><b>Sludge</b></td> <td style="width: 10%;"><b>Solid</b></td> <td style="width: 10%;"><b>Cassette</b></td> <td style="width: 10%;"><b>Tube</b></td> <td style="width: 10%;"><b>Bulk</b></td> <td style="width: 10%;"><b>Badge</b></td> <td style="width: 10%;"><b>Food</b></td> <td style="width: 10%;"><b>Other</b></td> </tr> <tr> <td>:</td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </table>	<b>Matrix</b>	<b>Water</b>	<b>Soil</b>	<b>Liquid</b>	<b>Sludge</b>	<b>Solid</b>	<b>Cassette</b>	<b>Tube</b>	<b>Bulk</b>	<b>Badge</b>	<b>Food</b>	<b>Other</b>	:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
<b>Matrix</b>	<b>Water</b>	<b>Soil</b>	<b>Liquid</b>	<b>Sludge</b>	<b>Solid</b>	<b>Cassette</b>	<b>Tube</b>	<b>Bulk</b>	<b>Badge</b>	<b>Food</b>	<b>Other</b>																	
:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																	
<b>9.</b>	<b>Sample(s) were received in appropriate container(s).</b>	X																										
<b>10.</b>	<b>Sample(s) were received with proper preservative</b>	X																										
<b>11.</b>	<b>All samples were logged or labeled.</b>	X																										
<b>12.</b>	<b>Sample ID labels match C-O-C ID's</b>	X																										
<b>13.</b>	<b>Bottle count on C-O-C matches bottles found.</b>	X																										
<b>14.</b>	<b>Sample volume is sufficient for analyses requested.</b>	X																										
<b>15.</b>	<b>Samples were received within the hold time.</b>	X																										
<b>16.</b>	<b>VOA vials completely filled.</b>	X																										
<b>17.</b>	<b>Sample accepted.</b>	X																										
<b>18</b>	<b>Has client been contacted about sub-out</b>			X																								
<b>Comments : Include actions taken to resolve discrepancies/problem:</b>																												
Soil: 01, 03, 05 & 07. Water: 02, 04, 06 & 08. Received 6 pre-weighed vials and 1 bulk jar for each soil sample. TPH waters in 60mL. -ANA 6-7-19.																												

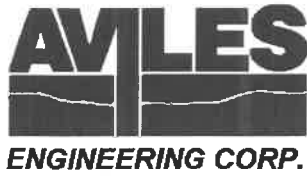
Received by : LPorter

Check in by/date : AArnett / 06/07/2019

**Limited Phase II Environmental Site Assessment  
Memorial Drive Reconstruction, Houston, Texas**

**APPENDIX F**

**RESUME**



## ROBERT J. METZGER, PG, CAPM

<b>POSITION</b>	Senior Geologist for 17 years Aviles Engineering Corporation, Houston, Texas
<b>EDUCATION</b>	Bowling Green State University, Bachelor of Science in Education - Earth and Biological Sciences  Bowling Green State University, Master of Science – Geology
<b>REGISTRATIONS</b>	Texas Registered Professional Geoscientist License No. 1133  Texas Commission on Environmental Quality Corrective Action Project Manager No. 01418  Certified with 40-Hour OSHA Hazardous Material Health and Safety Training and 8-Hour Refresher
<b>EXPERIENCE</b>	<b>Conducted Phase I and Phase II ESAs for the City of Houston Department of Public Works and Engineering Projects:</b> <ul style="list-style-type: none"><li>• 108-Inch Water Line from Union Pacific Railroad to John Ralston ESAs I and II</li><li>• Gessner Drainage and Paving ESA-I</li><li>• West Orem Force Main ESA-1</li><li>• Dunlay Paving and Drainage-From W. Main to Richmond Avenue ESAs-I and II</li><li>• Houston Avenue Paving and Drainage Project ESAs I and II</li><li>• ESAs I and II, 24-Inch Water Line Replacement along West Airport Boulevard</li><li>• ESA-I: Proposed 72-inch Diameter Water Line From Dowling to Tuam along Polk, Hutchins, Clay, Chenevert, Hadley, and Crawford, Contract 9E</li><li>• 66-Inch Storm Water Repair ESA-I</li><li>• TIRZ 17 Reconstruction of Memorial Drive Between West Sam Houston Parkway and Tallowood Road</li><li>• Riverwood Estates No. 1 Lift Station and Force Main</li><li>• Harvey Wilson Drive and Armour Drive Reconstruction</li><li>• Jensen Drive Pump Station Valve Box and Pipeline</li><li>• Polk Street Underpass Storm Water Inlet Replacement</li><li>• Park Row Road from State Highway 6 to Eldridge Parkway</li><li>• Heights Area Waterline Replacement</li><li>• West Little York Street Reconstruction from Deep Forest Drive to TC Jester Boulevard</li></ul> <b>Phase II Environmental Site Assessment: Toyota Center, Houston, Texas:</b> Conducted comprehensive Phase II ESA of a six-block site to assess and delineate contaminated soil and groundwater prior to construction of the Toyota Center.



**EXPERIENCE,  
continued**

**Houston Airport Systems Hobby Airport Taxiway H Phase II Environmental Site Assessment:** Conducted Phase II ESA for expansion of Taxiway H at Hobby Airport, which included advancement of soil borings, installation of temporary groundwater monitoring wells and soil and groundwater sampling. Prepared Phase II ESA report.

**Environmental Sampling and Analysis during Geotechnical Investigation for Proposed United Airlines Terminal C Ramp and Apron BIAH Airport:** Two soil samples were collected from each of 20 boreholes for environmental analysis during geotechnical field work. Samples were also collected in bags for photoionization detector (PID) readings of organic vapors. Prepared and edited letter report.

**Environmental Soil Sampling and Analysis Woodhouse Paving Phase I and II Project Areas at Port of Houston Authority:** During the Phase I Project, surface concrete was cored, a soil boring was conducted from the soil surface to 18 inches below the surface, and a soil sample was collected from each boring at 20 locations. During the Phase II Project, six soil borings were drilled to 4 feet below the ground surface (bgs), two borings were drilled to 10 feet bgs, and two borings were drilled to 30 feet bgs. One to two soil samples were collected from each boring for a total of 14 samples. Each of the soil samples collected during Phase I and Phase II was submitted to a commercial laboratory for analyses of the following potential environmental contaminants:

- Total petroleum hydrocarbons
- Total RCRA metals
- Volatile and semi volatile organic compounds
- Polychlorinated biphenyls (PCBs)
- Herbicides and Pesticides

Following analysis, a report was prepared for each project area describing the soil boring and sampling procedures, and the results of the laboratory analyses. Concentrations of contaminant in the soil samples were compared to applicable TCEQ standards.

**Additional Phase II Environmental Site Assessments**

- City of Pasadena Strawberry Road Improvements from Cherrybrook Lane to Spencer Highway.
- City of Pasadena Strawberry Road Improvements from State Highway 225 to Harris Avenue.
- Property at 44 Aldine Bender Road impacted by adjoining leaking underground storage tank site.