

PHASE II ENVIRONMENTAL SITE ASSESSMENT REPORT

**WMR IN INNER LOOP NORTH AREA
HOUSTON, HARRIS COUNTY, TEXAS**

WBS NO. S-000035-0182-3



PREPARED FOR:
COBB, FENDLEY & ASSOCIATES
HOUSTON, TEXAS

BY:
ASSOCIATED TESTING LABORATORIES, INC.
HOUSTON, TEXAS

REPORT NO: E12-123
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March 13, 2013

COBB, FENDLEY & ASSOCIATES
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RE: PHASE II ENVIRONMENTAL SITE ASSESSMENT

CITY OF HOUSTON
WMR IN INNER LOOP NORTH AREA
WBS No. S-000035-0182-3
HOUSTON, TEXAS
ATL REPORT No.: E12-123

Mr. Eastland:

Associated Testing Laboratories (ATL) is pleased to submit the following Phase II ESA report for the above-mentioned project.

Thank you for considering ATL for this project. We appreciate the opportunity to conduct environmental service for this project and are looking forward to serving you again on future projects. The following provides a brief summary of the Phase II ESA results:

EXECUTIVE SUMMARY

ATL performed a Limited Phase II Environmental Site Assessment (ESA) for the WMR in Inner Loop North Area project in Houston, Texas. Please refer to Figures for the location and site details. The following is reported:

- Nine (9) environmental soil borings were completed to a depth of 15 feet at three (3) sites of Recognized Environmental Conditions (RECs). Soil samples were screened utilizing a MiniRAE Photo Ionization Detector (PID) instrument in the field. PID readings and visual inspection directed the submittal of soil samples. The sample with the greatest PID reading was submitted from each soil boring, and one soil sample was selected from each of the boring. In the event of no significant PID readings, default soil samples were collected from various representative depths and submitted for laboratory analyses. Soil samples were analyzed for total petroleum

hydrocarbons (TPH) and methyl tert-butyl ether (MTBE)/benzene, toluene, ethyl-benzene and total xylenes (BTEX).

- Groundwater was not encountered in the majority of the soil borings to 15 feet below ground surface (bgs). One groundwater sample was collected and submitted for laboratory analyses (BTEX/MTBE and TPH).

The following provides a summary of the soil laboratory analytical results for the REC locations:

- Individual MTBE/BTEX constituents were below the sample detection limit. TPH concentrations ranged from below the sample detection limit to a few minor detections. No Texas Commission on Environmental Quality (TCEQ) Texas Risk Reduction Program (TRRP) Total Soil Combined ($T^{Tot}Soil_{Comb}$) or groundwater protective ($^{GW}Soil_{Ing}$) PCLs exceedences were reported.

Based on the laboratory analytical results, no soil concentrations exceed TCEQ TRRP Total Soil Combined ($T^{Tot}Soil_{Comb}$) PCLs for a 0.5-acre residential use and are not a concern to construction workers. Additionally, no special handling practices of the soil at the project alignment are required.

The following provides a summary of the groundwater laboratory analytical results for the REC locations:

- Groundwater was encountered in soil boring SB-6/TWP-6. Groundwater also was observed in soil borings SB-4 and SB-5, but did not yield adequate water for the collection of groundwater samples.

The groundwater laboratory analytical results for SB-6/TWP-6 were reported to be non-detect to J values. Dewatering, if necessary, should not be a concern based on the laboratory analytical results.

RECOMMENDATIONS

ATL performed a Limited Phase II Environmental Site Assessment (ESA) for the WMR in Inner Loop North Area project in Houston, Texas. Based on field observations and soil laboratory analytical results, the following is noted:

- Based on the laboratory analytical results and PID readings, soil conditions are not a concern to construction workers. No air monitoring or special handling practices of the soil are required at the project alignment. Based on the Phase II ESA results, additional environmental investigation work is not warranted. However, the following is noted:

Sheldon Street

- Minor TPH values were reported in the laboratory analytical results for the groundwater sample collected from soil boring SB-

6/Temporary Well Point-6 (731 E. 20th Street). The detections are only slightly above the sample detection limit. Based on the city of Houston Guide Specification 02105, Section 1.4-B, solvent resistant piping and gaskets will be required at the location. Sheldon Street from the northern property line of the single family residence (2005 Sheldon Street) to East 20th Street should be an adequate constraint for this special piping and gasket consideration (see Figure 3). The area is identified as a Potentially Petroleum Contaminated Area (PPCA)-Special Pipe and Gaskets only.

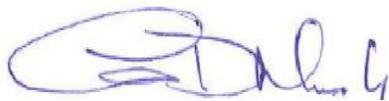
- The Station No. range is from 00+50 to end.

Arlington Street

- Low level TPH detections were reported in the soil sample from soil boring SB-7 (404 N. Loop 610 W.). Based on the city of Houston Guide Specification 02105, Section 1.4-B, solvent resistant piping and gaskets will be required at the location. Arlington Street from the North Loop 610 West frontage/service/feeder road to the northern property line of the single family residence (402 E. 29th Street) should be an adequate constraint for this special piping and gasket consideration (see Figure 4). The area is identified as a PPCA-Special Pipe and Gaskets only.

- The Station No. range is from 80+50 to end.

Regards,



Tom Murphy
Project Manager
Attachment

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1.0 INTRODUCTION

Public water lines are to be replaced and relocated for the WMR in Inner Loop North Area project. The water line replacement project is located in the southwest quadrant area of U.S. Interstate Highway North Loop 610 West and U.S. IH 45-North (North Freeway) in Houston, Texas. Phase II ESA activities occurred at three REC locations along the proposed water line alignment. Location maps (Key Map©® and United States Geological Survey Topographic Map), FIGURE 1A and 1B identify the investigated areas and are presented in Figures of this report.

2.0 SCOPE-OF-WORK

Associated Testing Laboratories (ATL) was retained by Cobb Fendley & Associates to evaluate whether the project alignment has been affected by adjoining regulatory facilities and/or specific historical land-uses. A Texas Commission of Environmental Quality (TCEQ) Texas Voluntary Cleanup Program (TxVCP) facility and three leaking petroleum storage tank (LPST) facilities and/or historical gasoline service stations were identified at the select locations of the project alignment for further investigation. The facilities and physical addresses are as follows:

1. TxVCP/LPST facility (3225 North Freeway)
2. LPST/former gasoline service station (731 E. 20th Street)
3. LPST/former gasoline service station (404 North Loop West)

Sampling and analyses is conducted to determine whether petroleum contamination is present at the above-mentioned locations at the water line alignment. The laboratory analytical results will provide the concentration of the contaminant(s) in the soil and/or groundwater, if any. The following Phase II Assessment activities include:

- Conducted an investigation of facilities with the potential for environmental conditions as identified in the Phase I ESA of the project alignment.
- Completed of a Texas Excavation Safety (Texas 811) notification.
- Soil sampling locations placed at equidistant locations to provide adequate coverage of the investigated facilities or area. Submitted soil samples for laboratory analytical testing based upon field observations (visual and olfactory) and field screening.
- Conducted continuous field screening of soil cores at 2.0-foot intervals utilizing a photo-ionization detector (PID) calibrated to 100 ppm isobutylene standard.
- Completed up to 9 soil borings at the project alignment. Converted one soil borings to a temporary well point for the collection of shallow groundwater.

- Submitted soil samples for laboratory analyses of methyl tert-butyl ether (MTEB)/benzene, toluene, ethyl-benzene and total xylenes (BTEX) and total petroleum hydrocarbons (TPH).
- Submitted of one groundwater sample for laboratory analyses of MTBE/BTEX and TPH.
- Detailed site assessment activities, reviewed laboratory analytical results and presented the results and conclusions in a Limited Phase II ESA investigation report.

3.0 PHASE II ASSESSMENT ACTIVITIES

On January 11th, 13th and 14th, 2013, ATL completed nine soil borings, SB-1 through SB-9 at REC locations along the water line alignment. The soil borings were completed to a depth of 15 feet below ground surface (bgs).

Soil borings were advanced utilizing a truck-mounted hydraulically-driven drilling rig with 4-foot stainless split spoons. Soil samples were continuously collected at 2-foot intervals and field screened utilizing a photo-ionization detector (PID). PID field screening was predominantly non-detect and ranged from 0.0 ppm to 4.8 ppm. Geologic stratigraphy (lithology) and subsurface characteristics were recorded by the field geologist. FIGURES 2 through 4 provide the REC locations of the project alignment including soil boring locations and other details. Soil boring logs are presented in APPENDIX A.

Prior to the initial soil boring and between each 4-foot advancement, all sampling devices were thoroughly cleaned and decontaminated using a hospital grade detergent, water and distilled water. Soil samples were obtained by personnel utilizing appropriate sampling tools and wearing clean, disposable gloves. Disposable nitrile gloves were changed between each sample collection. Two discrete (grab) samples were collected from each 2-foot interval of the soil borings. One sample was placed in a disposable bag for headspace screening. The second soil sample was placed in two separate 4-ounce sterile glass containers equipped with a Teflon-lined lids furnished by the testing laboratory. Each container was filled to capacity with soil to limit the amount of headspace present. All samples were labeled in the field and stored at approximately 4°C prior to submission to A & B Laboratories in Houston, Texas for laboratory analyses. Chain-of-custody documentation accompanied the samples in accordance with standard quality assurance and quality control measures.

3.1 SOIL SAMPLING (3225 North Freeway)

Three soil borings, SB-1, SB-2 and SB-3 were advanced in the northbound lane (east side) of Enid Street, north of Link Road. The soil borings were completed along the western boundary of Precision Engine Rebuilders, a TCEQ TxVCP and LPST facility. The facility is occupied by a business interest that rebuilds motors. PID readings were

predominantly non-detect (0.1 ppm to 0.9 ppm) to a very low reading (4.8 ppm) for the soil boring soil cores. The soil sample interval exhibiting the greatest PID reading from each soil boring, if any, was submitted for laboratory analyses; and one soil sample was submitted from each soil boring. Groundwater was not encountered to 15 feet below ground surface at this location. FIGURE 2 provides site details and soil boring locations.

3.2 SOIL SAMPLING (731 East 20th Street)

Three soil borings, SB-4, SB-5 and SB-6 were advanced in Sheldon Street adjoining a former gasoline service station. PID readings were non-detect (0.0 ppm to 0.8 ppm). The soil sample interval exhibiting the greatest PID reading from each soil boring was submitted for laboratory analyses. Groundwater was encountered at approximately 11 to 12 feet below ground surface at soil boring SB-5 and SB-6 and to a lesser degree in SB-4. A ground water sample was collected from soil boring SB-6. Soil boring, SB-6 was converted to temporary well point, TWP-6 for the collection of groundwater. Sufficient groundwater was not encountered in soil borings SB-4 and SB-5 for groundwater samples to be collected. FIGURE 3 provides site details and soil boring locations.

The former gas gasoline service station property has been redeveloped with a Pharmacy. The pharmacy building/property is currently vacant and inactive. The facility is located at the northwest corner of East 20th Street and North Main Street. The facility also adjoins Sheldon Street to the west along the proposed water line alignment.

3.3 SOIL SAMPLING (404 North Loop West)

Three soil borings, SB-7, SB-8 and SB-9 were advanced in Arlington Street, west of a former gasoline service station (404 North Loop West at Arlington Street). PID readings were non-detect (0.0 ppm) for the soil boring soil cores and default soil samples were collected and submitted for laboratory analyses. Groundwater was not encountered to 15 feet below ground surface at this location. FIGURE 4 provides site details and soil boring locations.

A gasoline service station was formerly present at the property. The property is currently used for a used car lot. The facility is situated on the southeast corner of the feeder/frontage/service road of the US IH North Loop 610 West and Arlington Street. The property also adjoins E. 29th Street to the south.

3.4 GROUNDWATER SAMPLING

One of the nine soil borings was converted to temporary well point SB-6/TWP-6. After the completion of soil boring SB-6, a ¾-inch PVC temporary well point was placed in the boring. The temporary well point was developed by slowly purging the well with a peristaltic pump and purge water was co-mingled with drummed soil cuttings. After purging and recharge, groundwater samples were collected utilizing a dedicated plastic bailer. Groundwater was transferred from the bailer into glass 40 ml VOA vials equipped with Teflon-lined lids furnished by the testing laboratory. Each container was filled to capacity with groundwater to an inverted meniscus. All samples were labeled in the field and stored at approximately 4°C prior to submission to A & B Laboratories of Houston, Texas. Chain-of-custody documentation accompanied the samples in accordance with standard quality assurance and quality control measures. FIGURE 3 provides site details and temporary well point location. Soil boring logs for temporary well point and other soil borings are presented in APPENDIX A.

4.0 REGULATORY FRAMEWORK

The Texas Commission on Environmental Quality (TCEQ) administers the Environmental Protection Agency (EPA) regulations and enforcement in Texas. It has additionally established its own standards for environmental compliance. The Texas Risk Reduction Program (TRRP) administered by TCEQ, as provided for in 30 TAC Chapter 350, addresses levels of regulated compounds and allowable levels of such contaminants to protect human health, safety, and the environment. The TCEQ TRRP applies to closures, corrective actions, and remediation efforts subject to the jurisdiction of the TCEQ. The TRRP, whether residential or commercial, contains provisions for Remedy Standard A (no physical controls required) or Remedy Standard B (physical controls required). Implementation of Remedy Standard A or Remedy Standard B is a tiered process, as described in general terms below:

- Tier 1 is a risk-based analysis to derive non site-specific protective concentration limits (PCLs) for complete or reasonably anticipated to be complete exposure pathways. Tier 1 is based on default exposure factors and affected property parameters, and assumes exposure occurs at, above, or below the source area (i.e., no lateral transport) (TCEQ Subchapter D Section 350.75 (b)).
- Tier 2 is a risk-based analysis to derive site-specific PCLs for complete or reasonably anticipated to be completed exposure pathways utilizing site-specific exposure factors, as allowable, and/or affected property parameters and Tier 1 equations. Tier 2 PCLs may also include lateral transport considerations (TCEQ, Subchapter D Section 350.75 (c)).

- Tier 3 is a risk-based analysis to derive site-specific PCLs for complete or reasonably anticipated to be completed exposure pathways. Tier 3 PCLs are based on measured natural attenuation factors and/or natural attenuation factor models/equations other than those provided for Tier 1 or 2; and may also include site-specific exposure factors, as allowable, and/or affected property parameters (TCEQ, Subchapter D Section 350.75 (d)).

The below provided soil PCLs are concentrations which are protective of human health and the environment:

- * $^{GW}Soil_{Ing}$ * Groundwater Soil Ingestion ($^{GW}Soil_{Ing}$) is the groundwater protection standard for either residential or commercial use. Concentration in soil is assumed protective of groundwater considering cross-medial contamination of groundwater from contaminated soil. This is the critical PCL for special handling practices of the soil for the project.
- * $^{Tot}Soil_{Comb}$ * The Total Soil Combined ($^{Tot}Soil_{Comb}$) PCLs are a combined exposure standard for residential use. The PCL considers cross-media contamination of human ingestion, inhalation and dermal pathways. This is the critical PCL for construction worker exposure concentrations.

The following details groundwater PCLs:

- * $^{GW}GW_{Ing}$ * Groundwater Ingestion ($^{GW}GW_{Ing}$) is the groundwater protection standard for either residential or commercial use. The $^{GW}GW_{Ing}$ PCLs are the same as the Federal Drinking Water Standards Maximum Concentration Limits (MCLs). This will be utilized to determine whether the groundwater is acceptable for surface discharge.

MTBE/BTEX concentrations, if any, will be the predominant environmental and exposure consideration of this project. TPH concentrations, if any, also will be evaluated, but typically involves special handling practices of the soil and not necessarily human exposure considerations. The $^{Tot}Soil_{Comb}$ and $^{GW}GW_{Ing}$ PCLs are the action levels for this project. TABLE I provide the PCLs, soil laboratory analytical and is presented in the attachments of the report. The $^{GW}GW_{Ing}$ PCLs may also be a consideration for the Phase II ESA.

5.0 SOIL/GROUNDWATER LABORATORY ANALYTICAL RESULTS

A total of nine soil samples were collected from the nine soil borings and soil samples were submitted to a certified laboratory for analyses. The soil samples were analyzed for methyl tert-butyl ether (MTBE)/benzene, toluene, ethyl-benzene and total xylenes (BTEX) by EPA Method SW846-8021B and total petroleum hydrocarbons (TPH) by Texas Commission on Environmental Quality (TCEQ) Texas Method 1005. One groundwater sample was collected from one temporary well point, TWP-6 and submitted for MTBE/BTEX and TPH analyses. The following details the laboratory methodology:

5.1 LABORATORY ANALYTICAL METHODS

Methyl tert-butyl ether/benzene, toluene, ethyl-benzene, and xylene (MTBE/BTEX) by SW-846 EPA Method 8021B: This laboratory analysis employs a gas chromatograph (GC) equipped with a photoionization detector and/or electrolytic conductivity detectors to detect and quantify certain regulated, volatile organic compounds in a soil or water sample. Compounds on this list include certain chlorinated solvents used in dry cleaning and printing processes, refined petroleum products such as gasoline and diesel, and others. This method can also be used to test for MTBE/BTEX compounds, which are a portion of the entire VOA list. These compounds are common components of most formulated gasolines, and their presence is a reliable indicator that a gasoline release has occurred.

Total Petroleum Hydrocarbons (TPH) by TCEQ Method 1005: This laboratory analysis utilizes a GC equipped with a flame ionization detector (FID) to quantify levels of petroleum compounds or derivatives in the range from C6 to C28, in a soil or groundwater medium. Results are reported in two to three distinct ranges, from C6 to C12, >C12 to C28 and >C28 to C35. This allows some interpretation as to the possible source of the release, based upon the indicated carbon range. Petroleum hydrocarbons are not necessarily hazardous or toxic. The analysis is designed to determine if TPH is present, and to quantify the level of petroleum hydrocarbons. This analysis is especially useful as a broad category procedure, and may indicate additional testing for the specific hazardous or toxic constituents that may be present and contribute to the TPH levels assessed. Some constituents of petroleum hydrocarbons may be hazardous or toxic, high levels of TPH require additional testing of the sample area.

5.2 SOIL LABORATORY ANALYTICAL RESULTS

Soil samples, SB-1 at 10-12 feet, SB-2 at 8-10 feet, SB-3 at 10-12 feet; SB-4 at 8-10 feet, SB-5 at 14-16 feet, SB-6 at 4-6 feet; SB-7 at 2-4 feet, SB-8 at 8-10 feet and SB-9 at 6-8 feet, were submitted for TPH and MTBE/BTEX analyses from the soil borings (9 total). The resulting

laboratory analytical data was compared to the TCEQ TRRP Total Soil Combined ($^{Tot}Soil_{Comb}$) Protective Concentration Limits (PCLs) and Groundwater Soil Ingestion ($^{GW}Soil_{Ing}$) PCLs.

5.2.1 LAB ANALYTICAL RESULTS (3225 North Freeway)

Three soil samples, SB-1 at 10-12 feet bgs, SB-2 at 8-10 feet bgs and SB-3 at 10-12 feet bgs, were submitted and analyzed for this location. The following was reported for individual MTBE/BTEX constituents for the soil samples:

- MTBE concentrations were determined to be below the sample detection limit (<0.001 mg/kg).
- Benzene concentrations were determined to be below the sample detection limit (<0.001 mg/kg).
- Toluene concentrations were determined to be below the sample detection limit (<0.001 mg/kg).
- Ethyl-benzene concentrations were determined to be below the sample detection limit (<0.005 mg/kg).
- Total xylene concentrations were determined to be below the sample detection limit (<0.002 mg/kg).

The following was reported in the designated carbon ranges for the soil samples:

- TPH carbon ranges C_6-C_{12} were determined to be below the sample detection limit and ranged from <26.9 mg/kg to <27.8 mg/kg.
- TPH carbon ranges $>C_{12}-C_{28}$ were determined to be below the sample detection limit and ranged from <23.0 mg/kg to <23.9 mg/kg.
- TPH carbon ranges $>C_{28}-C_{35}$ were determined to be below the sample detection limit and ranged from <20.1 mg/kg to <20.8 mg/kg.

Individual MTBE/BTEX constituents were determined to be less than or below the sample detection limit. TPH concentrations were determined to be below the sample detection limit. None of the soil laboratory analytical concentrations exceed the TCEQ $^{Tot}Soil_{Comb}$ and/or are not a health concern to construction workers. Additionally, the soil laboratory analytical results are below $^{GW}Soil_{Ing}$ PCLs and do not require special handling practices. TABLE I summarizes the laboratory analytical results. A copy of the laboratory analytical results is presented in APPENDIX B. Photographs of some of the field activities are presented in APPENDIX C

5.2.2 LAB ANALYTICAL RESULTS (731 E. 20th Street)

Three soil samples, SB-4 at 8-10 feet bgs, SB-5 at 14-16 feet bgs and SB-6 at 4-6 feet bgs, were submitted and analyzed for this location. The following was reported for individual MTBE/BTEX constituents for the soil samples:

- MTBE concentrations were determined to be below the sample detection limit (<0.001 mg/kg).
- Benzene concentrations were determined to be below the sample detection limit (<0.001 mg/kg).
- Toluene concentrations were determined to be below the sample detection limit (<0.001 mg/kg).
- Ethyl-benzene concentrations were determined to be below the sample detection limit (<0.006 mg/kg).
- Total xylene concentrations were determined to be below the sample detection limit (<0.002 mg/kg).

The following was reported in the designated carbon ranges for the soil samples:

- TPH carbon ranges C₆-C₁₂ were determined to be below the sample detection limit and ranged from <27.1 mg/kg to <30.5 mg/kg.
- TPH carbon ranges >C₁₂-C₂₈. were determined to be below the sample detection limit and ranged from <23.2 mg/kg to <26.1 mg/kg.
- TPH carbon ranges >C₂₈-C₃₅ were determined to be below the sample detection limit and ranged from <17.7 mg/kg to <22.8 mg/kg.

Individual MTBE/BTEX and TPH constituents were determined to be below the sample detection limit at is location. None of the soil laboratory analytical concentrations exceed the TCEQ ^{Tot}Soil_{Comb} and/or are not a health concern to construction workers. Additionally, the soil laboratory analytical results are below ^{GW}Soil_{Ing} PCLs and do not require special handling practices.

5.2.3 LAB ANALYTICAL RESULTS (404 N. Loop 610 W.)

Three soil samples, SB-7 at 2-4 feet bgs, SB-8 at 8-10 feet bgs and SB-9 at 4-6 feet bgs, were submitted and analyzed for this location. The following was reported for individual MTBE/BTEX constituents for the soil samples:

- MTBE concentrations were determined to be below the sample detection limit (<0.001 mg/kg).
- Benzene concentrations were determined to be below the

- sample detection limit (<0.001 mg/kg).
- Toluene concentrations were determined to be below the sample detection limit (<0.001 mg/kg).
- Ethyl-benzene concentrations were determined to be below the sample detection limit (<0.006 mg/kg).
- Total xylene concentrations were determined to be below the sample detection limit (<0.002 mg/kg).

The following was reported in the designated carbon ranges for the soil samples:

- TPH carbon ranges C₆-C₁₂ were determined to be non-detect and ranged from <27.1 mg/kg to <28.7 mg/kg.
- TPH carbon ranges >C₁₂-C₂₈ were determined to range from below the sample detection limit (<23.4 mg/kg) to 33.6 mg/kg.
- TPH carbon ranges >C₂₈-C₃₅ were determined to range from below the sample detection limit (<20.4 mg/kg) to 29.8 mg/kg.

Individual MTBE/BTEX constituents were determined to be below the sample detection limit at is location. TPH concentrations were determined to be predominantly below the sample detection limit. The minor detections in the C₁₂-C₂₈ carbon range and C₂₈-C₃₅ carbon range for soil sample, SB-7 at 2-4 feet are not considered to be a recognized environmental condition. None of the soil laboratory analytical concentrations exceed the TCEQ ^{Tot}Soil_{Comb} and/or are not a health concern to construction workers. Additionally, the soil laboratory analytical results are below ^{GW}Soil_{Ing} PCLs and do not require special handling practices. However due to TPH detections in soil boring SB-7, special piping and gaskets will be required at the REC location.

5.3 GROUNDWATER LABORATORY ANALYTICAL RESULTS

A groundwater sample was collected from soil boring (SB-6) that was converted to temporary well point TWP-6; and analyzed for MTBE/BTEX by EPA Method SW846-8021 and TPH by Texas Method 1005.

5.3.1 GW LAB ANALYTICAL RESULTS (731 E. 20th Street)

Groundwater sample, TWP-6 was collected from the above-noted location (Figure 4). The following was reported for individual MTBE/BTEX constituents for the groundwater sample:

- MTBE concentration was determined to be below the sample detection limit (<0.0006 mg/L).
- Benzene concentration was determined to be below the sample detection limit (<0.0002 mg/L).
- Toluene concentration was determined to be below the sample

- detection limit (<0.0002 mg/L).
- Ethyl-benzene concentrations were determined to be below the sample detection limit (<0.0004 mg/L).
- Total xylene concentration was determined to be below the sample detection limit (<0.0004 mg/L).

The following was reported in the designated carbon ranges for the groundwater samples:

- TPH carbon ranges C₆-C₁₂ was determined to be non-detect (<0.752 mg/L).
- TPH carbon ranges >C₁₂-C₂₈ was determined to be a J value of 1.38 mg/L J.
- TPH carbon ranges >C₂₈-C₃₅ was determined to be a J value of 1.45 mg/L J.

MTBE/BTEX concentrations were determined to be non-detect at this location. No MTBE/BTEX concentrations were detected above TCEQ ^{GW}GW_{Ing} PCL and Federal Drinking Water Standard Maximum Concentration Limits (MCLs). TPH concentrations ranged from non-detect to J values. Due to the lack of associated MTBE/BTEX concentrations, the J values do not appear to be an environmental concern. Dewatering special management practices should not be required. Groundwater can be discharged to the surface without special handling practices of the generated water. However due to TPH detections, special piping and gaskets will be required at the REC location.

A copy of the laboratory analytical results is presented in APPENDIX B.

6.0 AIR MONITORING/WASTE MANAGEMENT PRACTICES

Based on the results of the Phase II ESA, air monitoring is not warranted at the REC locations. Confined space protocol may still apply depending on construction activities. No “*special handling practices*” of the soil is required. No other areas of the project alignment have been identified with environmental conditions.

7.0 CONCLUSIONS

The purpose of the assessment was to determine the absence or presence and concentration levels of petroleum hydrocarbons in soil and/or groundwater. Phase II ESA activities were conducted in accordance with ATL, Inc.’s proposal/workplan dated December 12, 2012. Phase II ESA activities also were conducted in accordance with the ASTM 1903 Standard Practice and the City of Houston criteria. The following was indicated by the laboratory analytical results:

Soil Analytical

Individual MTBE/BTEX constituents were below the sample detection limit. TPH concentrations ranged from below the sample detection limit to a few minor detections. No Texas Commission on Environmental Quality (TCEQ) Texas Risk Reduction Program (TRRP) Total Soil Combined ($^{Tot}Soil_{Comb}$) or groundwater protective ($^{GW}Soil_{Ing}$) PCLs exceedences were reported.

Based on the laboratory analytical results, no soil concentrations exceed TCEQ TRRP Total Soil Combined ($^{Tot}Soil_{Comb}$) PCLs for a 0.5-acre residential use and are not a concern to construction workers. Additionally, no special handling practices of the site are required.

Groundwater Analytical

Groundwater was encountered in soil boring SB-6/TWP-6. Groundwater also was observed in soil borings SB-4 and SB-5, but did not yield adequate water for the collection of groundwater samples.

The groundwater laboratory analytical results for SB-6/TWP-6 were reported to be non-detect to J values. Dewatering, if necessary, should not be a concern based on the laboratory analytical results.

8.0 RECOMMENDATIONS

Based on the laboratory analytical results and field observations of the Limited Phase II Environmental Site Assessment for the WMR in Inner Loop North Area project in Harris County, Texas, the following is noted:

- Based on the laboratory analytical results and PID readings, soil conditions are not a concern to construction workers. No air monitoring or special handling practices of the soil are required at the project alignment. Based on the Phase II ESA results, additional environmental investigation work is not warranted. However, the following is noted:

Sheldon Street

- Minor TPH values were reported in the laboratory analytical results for the groundwater sample collected from soil boring SB-6/Temporary Well Point-6 (731 E. 20th Street). The detections are only slightly above the sample detection limit. Based on the city of Houston Guide Specification 02105, Section 1.4-B, solvent resistant piping and gaskets will be required at the location. Sheldon Street from the northern property line of the single family residence (2005 Sheldon Street) to East 20th Street should be an adequate constraint for this special piping and gasket consideration (see Figure 3). The area is identified as a PPCA-Special Pipe and Gaskets only.
 - The Station No. range is from 00+50 to end.

Arlington Street

- Low level TPH detections were reported in the soil sample from soil boring SB-7 (404 N. Loop 610 W.). Based on the city of Houston Guide Specification 02105, Section 1.4-B, solvent resistant piping and gaskets will be required at the location. Arlington Street from the North Loop 610 West frontage/service/feeder road to the northern property line of the single family residence (402 E. 29th Street) should be an adequate constraint for this special piping and gasket consideration (see Figure 4). The area is identified as a PPCA-Special Pipe and Gaskets only.
 - The Station No. range is from 80+50 to end.

FIGURES

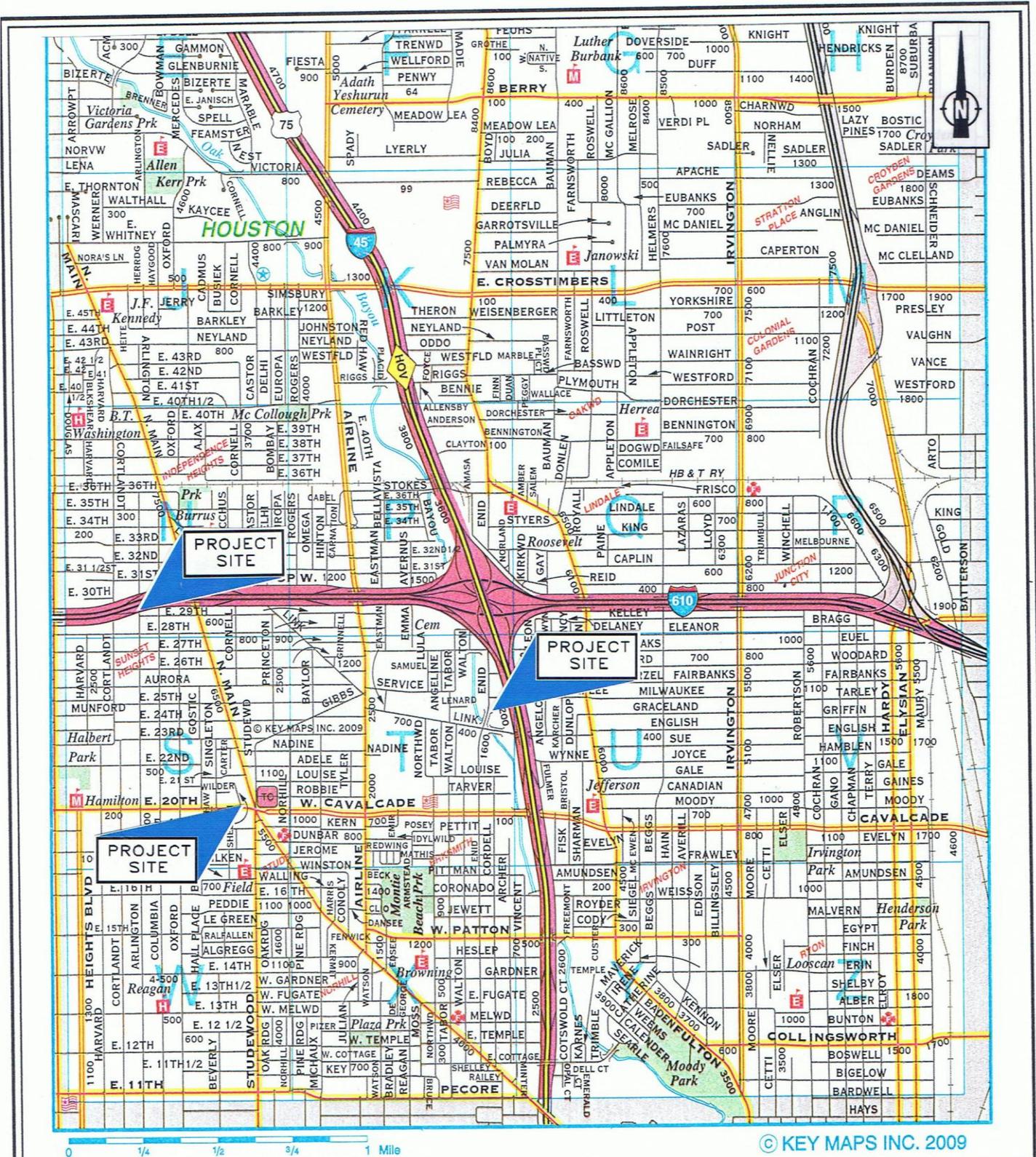


FIGURE 1A

**WMR in Inner Loop North Area
Houston, Harris County, Texas**

Source:

Key Maps, Inc. ©®

Scale:

**1 Inch = 2,640 feet / 0.5-Mile
Page 453, Sections N, S & T**



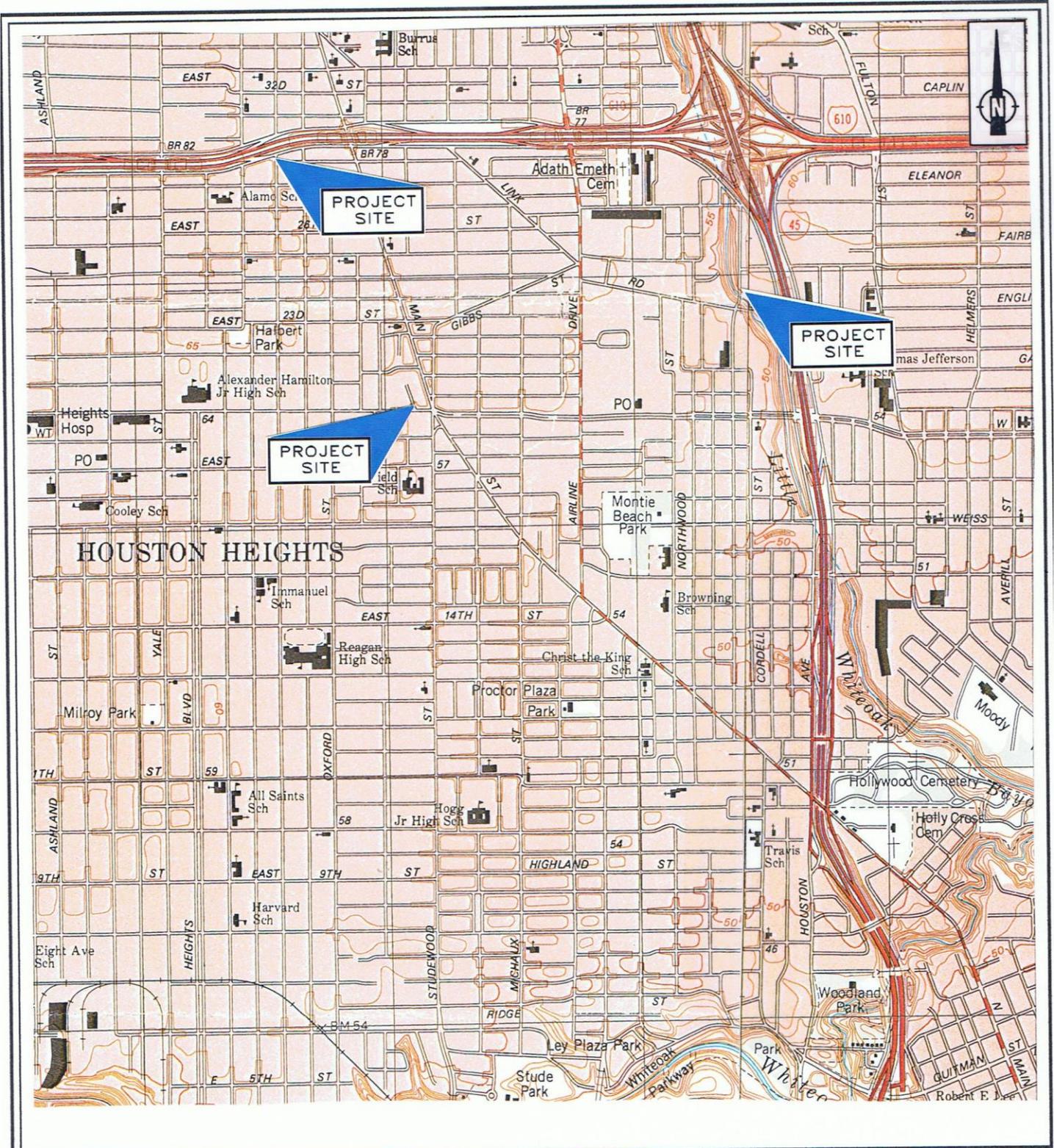


FIGURE 1B

**WMR in Inner Loop North Area
Houston, Harris County, Texas**

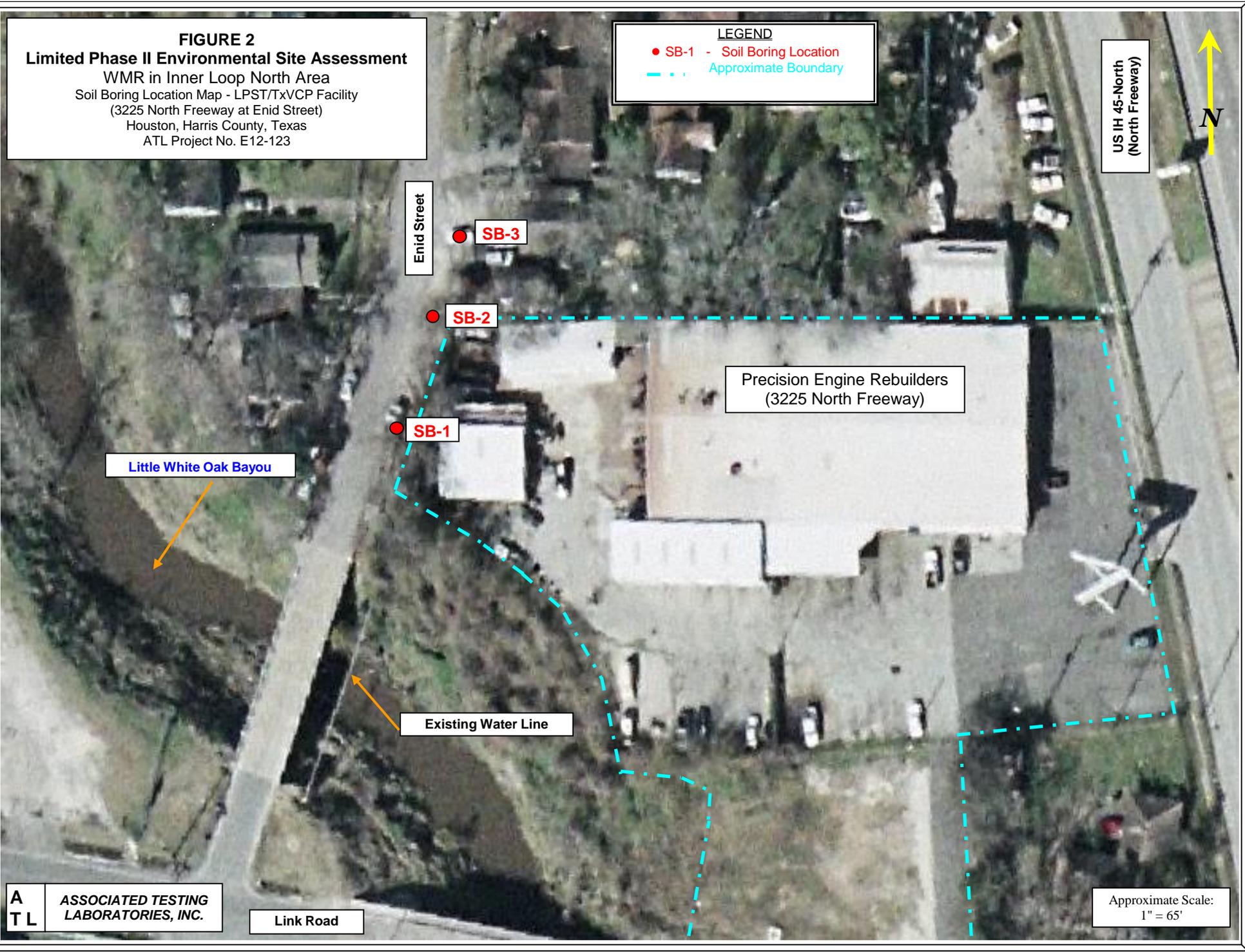
Source:
US Department of Interior
Geological Survey
USGS Topographic Map
7.5 Minute 1995 Houston Heights &
Settegast Quadrangles
Scale:
See Above



FIGURE 2
Limited Phase II Environmental Site Assessment
WMR in Inner Loop North Area
Soil Boring Location Map - LPST/TxVCP Facility
(3225 North Freeway at Enid Street)
Houston, Harris County, Texas
ATL Project No. E12-123

LEGEND

- SB-1 - Soil Boring Location
- - - Approximate Boundary



A
T L ASSOCIATED TESTING
LABORATORIES, INC.

Link Road

Approximate Scale:
1" = 65'



Sheldon Street

SB-6

Vacant
Pharmacy

N. Main Street

SB-5

731 E. 20th Street

SB-4

E. 20th Street

West Cavalcade Street

FIGURE 3
Limited Phase II Environmental Site Assessment

WMR in Inner Loop North Area
Soil Boring Location Map - LPST Facility
(731 East 20th Street at Sheldon Street)
Houston, Harris County, Texas
ATL Project No. E12-123

Approximate Scale:
1" = ~104'

LEGEND

- SB-4 - Soil Boring Location
- - Special Piping & Gaskets Required



ATL

ASSOCIATED TESTING
LABORATORIES, INC.



US IH North Loop 610 West

404 N. Loop 610 W.

SB-9

SB-8

SB-7

Arlington Street

Columbia Street

FIGURE 4
Limited Phase II Environmental Site Assessment

WMR in Inner Loop North Area
Soil Boring Location Map - LPST Facility
(404 North Loop 610 West at Arlington Street)
Houston, Harris County, Texas
ATL Project No. E12-123

Approximate Scale:
1" = ~104'

LEGEND

- SB-9 - Soil Boring Location
- Approximate Boundary
- Special Piping & Gaskets Required

TABLE

TABLE I

**SUMMARY OF SOIL LABORATORY ANALYTICAL RESULTS - BTEX-MTBE/TPH
WMR IN INNER LOOP NORTH AREA
HOUSTON, HARRIS COUNTY, TEXAS**

Sample ID	Date	Depth (feet)	MTBE (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-Benzene (mg/kg)	Xylenes (mg/kg)	BTEX (mg/kg)	TPH C6-C12 (mg/kg)	TPH >C12-C28 (mg/kg)	TPH >C28-C35 (mg/kg)	Total TPH (mg/kg)
TRRP Tier 1 PCLs (^{Tot}Soil_{Comb})			804	32.0	4,500	5,300	6,400	NA	1,600	2,300	NA	NA
*TRRP Tier 1 PCLs (^{GW}Soil_{Ing})			0.621	0.026	8.20	7.80	120	NA	65	200	NA	NA
SOIL BORING SOIL SAMPLES												
LPST/TxVCP Facility/Precision Engine Rebuilders (3225 North Freeway at Enid Street)												
SB-1	01/11/13	10-12	<0.001	<0.001	<0.001	<0.006	<0.002	<SDL	<27.0	<23.1	<20.2	<SDL
SB-2	01/11/13	8-10	<0.001	<0.001	<0.001	<0.006	<0.002	<SDL	<26.9	<23.0	<20.1	<SDL
SB-3	01/11/13	10-12	<0.001	<0.001	<0.001	<0.006	<0.002	<SDL	<27.8	<23.9	<20.8	<SDL
Vacant-Former Pharmacy/former gasoline station (731 East 20th Street at Sheldon Street)												
SB-4	01/11/13	8-10	<0.001	<0.001	<0.001	<0.006	<0.002	<SDL	<27.8	<23.8	<20.8	<SDL
SB-5	01/11/13	14-16	<0.001	<0.001	<0.001	<0.006	<0.003	<SDL	<30.5	<26.1	<22.8	<SDL
SB-6	01/13/13	4-6	<0.001	<0.001	<0.001	<0.006	<0.002	<SDL	<27.1	<23.2	<17.7	<SDL
LPST Facility/Car Lot/former gasoline service station (404 North Loop 610 West at Arlington Street)												
SB-7	01/14/13	2-4	<0.001	<0.001	<0.001	<0.006	<0.002	<SDL	<27.1	33.6	29.8	63.4
SB-8	01/14/13	8-10	<0.001	<0.001	<0.001	<0.006	<0.002	<SDL	<27.3	<23.4	<20.4	<SDL
SB-9	01/14/13	6-8	<0.001	<0.001	<0.001	<0.006	<0.002	<SDL	<28.7	<24.6	<21.5	<SDL

Notes:

- PCLs indicates TRRP Tier 1 Tables protective concentration limits.
- TRRP Tier 1 PCLs (^{Tot}Soil_{Comb}) indicates the PCLs for the combined soil exposure pathways (Residential, 0.5-acre site).
- TRRP Tier 1 PCLs (^{GW}Soil_{Ing}) indicates the PCLs for the leaching of soil concentrations into groundwater (Residential, 0.5-acre site).
- Analyses by the following methods: BTEX - EPA Method SW846-8021B; TPH - Texas Method 1005.
- Detections are provided in bold font.
- NA indicates Not Applicable, or Not Available.
- <SDL indicates less than or below sample detection limit (SDL).

APPENDIX A

Soil Boring Logs

PROJECT NO: E12-123 BOREHOLE MONITOR WELL
SITE NAME: WMR in Inner Loop North Area BORING NUMBER : SB-2 TEMP. WELL NUMBER : _____
FACILITY ADDRESS: 3225 North Freeway at Enid Street
DRILLING COMPANY / METHOD / RIG: Johnson Drilling/Truck-mounted hydraulically-driven drill rig with split spoons
DRILLER: B. Johnson **DATE: (START / FINISH)** 01/10/2013 @ 12:20-12:40
LOGGED BY: T. Murphy **TOP OF CASING ELEVATION:** N/Appl.

DEPTH	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0			Ground Surface		Asphalt (4")	
0.7				CL	Sandy Clay; Gray sandy clay, fines, soft, moist with Fe and some Mg staining (surface to 15 feet)	SB-2 @ 8-10'; 12:31, 1-4 oz
1.4						
5	1.0					
10	4.8	X				
15	1.0					
20					Total Depth = 15 ft	
25					Note: No groundwater encountered to 15 feet.	
30					Drill asphalt at 12:14.	
35					No odor.	
40						
45						

FILTER SAND	BENTONITE SEAL	GROUT / CONCRETE SURFACE	WATER ENCOUNTERED
A TL Associated Testing Laboratories, Inc.		TOTAL DEPTH: 15' SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface SURFACE COMPLETION: <input type="checkbox"/> FLUSH W/CONCRETE <input type="checkbox"/> RISER W/CONCRETE	
		SHEET 1 OF 1	

PROJECT NO: E12-123 BOREHOLE MONITOR WELL
SITE NAME: WMR in Inner Loop North Area BORING NUMBER : SB-3 TEMP. WELL NUMBER : _____
FACILITY ADDRESS: 3225 North Freeway at Enid Street
DRILLING COMPANY / METHOD / RIG: Johnson Drilling/Truck-mounted hydraulically-driven drill rig with split spoons
DRILLER: B. Johnson **DATE: (START / FINISH)** 01/10/2013 @ 12:56-13:23
LOGGED BY: T. Murphy **TOP OF CASING ELEVATION:** N/Appl.

DEPTH	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0			Ground Surface		Asphalt (5")	
0.9				CL	Sandy Clay; Gray sandy clay, fines, firm, soft, moist with Fe and some Mg staining (surface to 15 feet)	SB-2 @ 10-12'; 13:14, 1-4 oz
1.3						
15	0.6				Total Depth = 15 ft Note: No groundwater encountered to 15 feet. Drill asphalt at 12:51. No odor.	

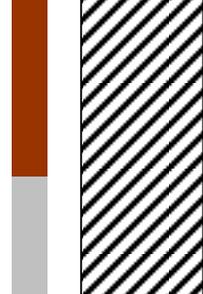
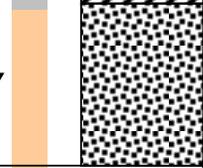
A TL Associated Testing Laboratories, Inc.			
TOTAL DEPTH: <u>15'</u> SEAL MATERIAL: (TYPE/INTERVAL) <u>Bentonite to surface</u> SURFACE COMPLETION: <input type="checkbox"/> FLUSH W/CONCRETE <input type="checkbox"/> RISER W/CONCRETE			
SHEET <u>1</u> OF <u>1</u>			

PROJECT NO: E12-123	<input checked="" type="checkbox"/> BOREHOLE <input type="checkbox"/> MONITOR WELL
SITE NAME: WMR in Inner Loop North Area	BORING NUMBER : SB-5 TEMP. WELL NUMBER : _____
FACILITY ADDRESS: 731 East 10th Street at Sheldon Street	
DRILLING COMPANY / METHOD / RIG: Johnson Drilling/Truck-mounted hydraulically-driven drill rig with split spoons	
DRILLER: B. Johnson	DATE: (START / FINISH) 01/10/2013 @ 14:55-15:12.
LOGGED BY: T. Murphy	TOP OF CASING ELEVATION: N/Appl.

DEPTH	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
Ground Surface						
0					Asphalt (6")	
0.2				CL	Sandy Clay; Brown sandy clay, fines, soft, moist with Fe and some Mg staining (surface to 2 feet)	
5				CL	Sandy Clay; Light gray and reddish-orange sandy clay, fines, soft, moist (2-11 feet)	
10				SM	Sand and Silty Sand; Yellowish-brown (tan) sand and sandy silt, medium-grained, moist to wet (11-15 feet)	SB-5 @ 14-16'; 15:12, 1-4 oz
15					Total Depth = 15 ft	
20					Note: No groundwater encountered to 15 feet. Drill asphalt at 14:49. No odor. Groundwater encountered, did not yield adequate groundwater for sampling purposes.	
25						
30						
35						
40						
45						

A TL	Associated Testing Laboratories, Inc.	TOTAL DEPTH: 15'	<input checked="" type="checkbox"/> FILTER SAND <input checked="" type="checkbox"/> BENTONITE SEAL <input checked="" type="checkbox"/> GROUT / CONCRETE SURFACE <input type="checkbox"/> WATER ENCOUNTERED
		SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface	SURFACE COMPLETION: <input type="checkbox"/> FLUSH W/CONCRETE <input type="checkbox"/> RISER W/CONCRETE
		SHEET 1 OF 1	

PROJECT NO: E12-123 BOREHOLE MONITOR WELL
 SITE NAME: WMR in Inner Loop North Area BORING NUMBER : SB-6 TEMP. WELL NUMBER : TWP-6
 FACILITY ADDRESS: 731 East 10th Street at Sheldon Street
 DRILLING COMPANY / METHOD / RIG: Johnson Drilling/Truck-mounted hydraulically-driven drill rig with split spoons
 DRILLER: B. Johnson DATE: (START / FINISH) 01/13/2013 @ 9:15-9:40.
 LOGGED BY: T. Murphy TOP OF CASING ELEVATION: N/Appl.

DEPTH	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0			Ground Surface			
0.0					Asphalt (6")	
0.0				CL	Sandy Clay; Brown sandy clay, fines, soft, moist with Fe and some Mg staining (surface to 6 feet)	
5.0				CL	Sandy Clay; Light gray and reddish-orange sandy clay, fines, soft, moist (6-10 feet)	SB-6 @ 4-6'; 9:20 1-4 oz
10.0				SM	Sand and Silty Sand; Yellowish-brown (tan) sand and sandy silt, medium-grained, moist to wet (10-15 feet)	
15.0						
20.0						
25.0						
30.0						
35.0						
40.0						
45.0						
Total Depth = 15 ft						
Note: No groundwater encountered to 15 feet. Drill asphalt at 9:10. No odor. Groundwater sample collected at 9:45.						

 FILTER SAND	 BENTONITE SEAL	 GROUT / CONCRETE SURFACE	 WATER ENCOUNTERED
A TL Associated Testing Laboratories, Inc.			
TOTAL DEPTH: <u>15'</u>			
SEAL MATERIAL: (TYPE/INTERVAL) <u>Bentonite to surface</u>			
SURFACE COMPLETION: <input type="checkbox"/> FLUSH W/CONCRETE <input type="checkbox"/> RISER W/CONCRETE SHEET <u>1</u> OF <u>1</u>			

PROJECT NO: E12-123
SITE NAME: WMR in Inner Loop North Area
FACILITY ADDRESS: 3225 North Loop 610 West
DRILLING COMPANY / METHOD / RIG: Johnson Drilling/Truck-mounted hydraulically-driven drill rig with split spoons
DRILLER: B. Johnson **DATE: (START / FINISH)** 01/14/2013 @ 10:05-10:23
LOGGED BY: T. Murphy **TOP OF CASING ELEVATION:** N/Appl.

BOREHOLE MONITOR WELL

BORING NUMBER : SB-7 TEMP. WELL NUMBER :

DEPTH	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0			Ground Surface		Asphalt (7")	
0.0				Fill	Fill; Gravel and yellowish-brown (tan) aggregate sand, moist (surface to 1-foot)	
0.0				CL	Sandy Clay; Light gray sandy clay, fines, soft, moist with Fe staining and some Mg staining (1-foot to 12 feet)	SB-7 @ 2-4'; 10:15, 1-4 oz
5.0				CL	Sandy Clay; Brown sandy clay, fines, soft, moist (12-15 feet)	
15.0						
20.0						
25.0						
30.0						
35.0						
40.0						
45.0						
Total Depth = 15 ft						
Note: No groundwater encountered to 15 feet. Drill asphalt at 10:03. No odor.						

FILTER SAND BENTONITE SEAL GROUT / CONCRETE SURFACE WATER ENCOUNTERED

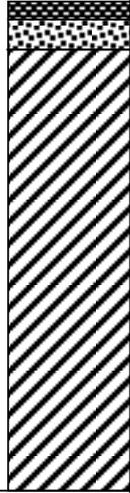
A TL Associated Testing Laboratories, Inc.
 TOTAL DEPTH: 15'
 SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface
 SURFACE COMPLETION: FLUSH W/CONCRETE RISER W/CONCRETE SHEET 1 OF 1

PROJECT NO: E12-123	<input checked="" type="checkbox"/> BOREHOLE <input type="checkbox"/> MONITOR WELL
SITE NAME: WMR in Inner Loop North Area	BORING NUMBER: SB-8 TEMP. WELL NUMBER: _____
FACILITY ADDRESS: 3225 North Loop 610 West	
DRILLING COMPANY / METHOD / RIG: Johnson Drilling/Truck-mounted hydraulically-driven drill rig with split spoons	
DRILLER: B. Johnson	DATE: (START / FINISH) 01/14/2013 @ 10:26-10:49.
LOGGED BY: T. Murphy	TOP OF CASING ELEVATION: N/Appl.

DEPTH	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0			Ground Surface			
0.0			Asphalt (7")			
0.0			Fill		Fill; Gravel and yellowish-brown (tan) aggregate sand, moist (surface to 1-foot)	
5.0			CL		Sandy Clay; Light gray sandy clay, fines, soft, moist with Fe staining and some Mg staining (1-foot to 12 feet)	
10.0			CL		Sandy Clay; Brown sandy clay, fines, soft, moist (12-15 feet)	SB-8 @ 8-10'; 10:42, 1-4 oz
15.0					Total Depth = 15 ft	
20.0					Note: No groundwater encountered to 15 feet. Drill asphalt at 10:24. No odor.	
25.0						
30.0						
35.0						
40.0						
45.0						

FILTER SAND	BENTONITE SEAL	GROUT / CONCRETE SURFACE	WATER ENCOUNTERED
A TL Associated Testing Laboratories, Inc.			
TOTAL DEPTH: 15'			
SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface			
SURFACE COMPLETION: <input type="checkbox"/> FLUSH W/CONCRETE <input type="checkbox"/> RISER W/CONCRETE SHEET 1 OF 1			

PROJECT NO: E12-123 BOREHOLE MONITOR WELL
SITE NAME: WMR in Inner Loop North Area **BORING NUMBER:** SB-9 **TEMP. WELL NUMBER:** _____
FACILITY ADDRESS: 3225 North Loop 610 West
DRILLING COMPANY / METHOD / RIG: Johnson Drilling/Truck-mounted hydraulically-driven drill rig with split spoons
DRILLER: B. Johnson **DATE: (START / FINISH)** 01/14/2013 @ 11:01-11:18.
LOGGED BY: T. Murphy **TOP OF CASING ELEVATION:** N/Appl.

DEPTH	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0			Ground Surface		Asphalt (7")	
0.0				Fill	Fill; Gravel and yellowish-brown (tan) aggregate sand, moist (surface to 1-foot)	
0.0				CL	Sandy Clay; Brown and light gray sandy clay, fines, soft, moist (1-15 feet)	SB-9 @ 6-8'; 11:09, 1-4 oz
5.0						
10.0						
15.0						
20.0						
25.0						
30.0						
35.0						
40.0						
45.0						
Total Depth = 15 ft						
Note: No groundwater encountered to 15 feet. Drill asphalt at 10:59. No odor.						

 FILTER SAND	 BENTONITE SEAL	 GROUT / CONCRETE SURFACE	 WATER ENCOUNTERED
A TL Associated Testing Laboratories, Inc.		TOTAL DEPTH: 15'	
SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface		SURFACE COMPLETION: <input type="checkbox"/> FLUSH W/CONCRETE <input type="checkbox"/> RISER W/CONCRETE	
		SHEET 1 OF 1	

APPENDIX B

Laboratory Analytical Results

Laboratory Analysis Report

Total Number of Pages: 22

Job ID : 13010436



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

Client Project Name :
E12 - 123 / Inner Loop WMR

Report To : Client Name: Associated Testing Lab
Attn: Tom Murphy
Client Address: 3143 Yellowstone Blvd.
City, State, Zip: Houston, Texas, 77054

P.O.#.:
Sample Collected By: Tom Murphy
Date Collected: 01/10/13

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

Client Sample ID	Matrix	A&B Sample ID
SB-1 @ 10-12'	Soil	13010436.01
SB-2 @ 8-10'	Soil	13010436.02
SB-3 @ 10-12'	Soil	13010436.03
SB-4 @ 8-10'	Soil	13010436.04
SB-5 @ 14-16'	Soil	13010436.05

A handwritten signature in black ink that reads "Alisha Rodriguez".

Released By: Alisha Rodriguez
Title: Project Manager
Date: 1/21/2013



This Laboratory is NELAP (T104704213-12-7) accredited. Effective: 07/01/2012; Expires: 03/31/2013
Scope: Non-Potable Water, Drinking Water, Air, Solid, 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 : 01/10/2013 15:37



LABORATORY TEST RESULTS --- TRRP13

Client Sample ID: SB-1 @ 10-12'
A&B Job Sample ID: 13010436.01

Date: 1/21/2013

Client Name: Associated Testing Lab
Project Name: E12 - 123 / Inner Loop WMR

Attn: Tom Murphy

Test Description: **% Moisture**
Analytical Method: SM 2540G
QC Batch ID: Qb13011564
Prep Method: SM 2540G
Prepared By: Ksudha
Prep Batch ID: PB13011540

Sample Matrix: Soil
Date Collected: 01/10/2013 11:19
Date Received: 01/10/2013 15:37
Date Prepared: 01/15/2013 16:40

Analyst Initial: KS

% Moisture: 12.3

CAS Number	Parameter	Result	Flag	SDL	MDL	MLQ	UQL	Units	DF	Date/Time
	% Moisture ¹	12.3				----	----	%	1	01/15/13 16:49



LABORATORY TEST RESULTS --- TRRP 13

Client Sample ID: SB-1 @ 10-12'
 A&B Job Sample ID: 13010436.01

Date: 1/21/2013

Client Name: Associated Testing Lab
 Project Name: E12 - 123 / Inner Loop WMR

Attn: Tom Murphy

Test Description: **Purgeable Aromatics**

Analytical Method: SW-846 8021B

QC Batch ID: Qb13011416

Prep Method: SW-846 5035A

Prepared By: Xan

Prep Batch ID: PB13011413

Analyst Initial: PNS

Sample Matrix: Soil

Date Collected: 01/10/2013 11:19

Date Received: 01/10/2013 15:37

Date Prepared: 01/10/2013 15:50

% Moisture: 12.3

CAS Number	Parameter	Result	Flag	SDL	MDL	MQL	UQL	Units	DF	Date/Time
1634-04-4	MTBE	< SDL	U	0.001	0.001	0.005	0.4	mg/Kg	0.985	01/11/13 23:36
71-43-2	Benzene	< SDL	U	0.001	0.001	0.005	0.4	mg/Kg	0.985	01/11/13 23:36
108-88-3	Toluene	< SDL	U	0.001	0.001	0.005	0.4	mg/Kg	0.985	01/11/13 23:36
100-41-4	Ethylbenzene	< SDL	U	0.006	0.005	0.005	0.4	mg/Kg	0.985	01/11/13 23:36
108-38-3&106-4	m- & p-Xylenes	< SDL	U	0.006	0.005	0.01	0.8	mg/Kg	0.985	01/11/13 23:36
95-47-6	o-Xylene	< SDL	U	0.002	0.002	0.005	0.4	mg/Kg	0.985	01/11/13 23:36
1330-20-7	Xylenes	< SDL	U	0.002	0.002	0.005	1.2	mg/Kg	0.985	01/11/13 23:36
98-08-8	Trifluorotoluene(surr)	97				81	111	%	0.985	01/11/13 23:36

Soil results reported on dry weight basis



LABORATORY TEST RESULTS --- TRRP 13

Client Sample ID: SB-1 @ 10-12'
 A&B Job Sample ID: 13010436.01

Date: 1/21/2013

Client Name: Associated Testing Lab
 Project Name: E12 - 123 / Inner Loop WMR

Attn: Tom Murphy

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005
 QC Batch ID: qb13011510
 Prep Method: TX 1005
 Prepared By: AVBembde
 Prep Batch ID: PB13011507

Sample Matrix: Soil
 Date Collected: 01/10/2013 11:19
 Date Received: 01/10/2013 15:37
 Date Prepared: 01/14/2013 13:00

Analyst Initial: AVB

% Moisture: 12.3

CAS Number	Parameter	Result	Flag	SDL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12 ¹	< SDL	Q18,U	27	23.7	25	1000	mg/Kg	1	01/14/13 14:39
TPH-1005-2	>C12-C28 ¹	< SDL	U	23.1	20.3	25	1000	mg/Kg	1	01/14/13 14:39
TPH-1005-4	>C28-C35 ¹	< SDL	U	20.2	17.7	25	1000	mg/Kg	1	01/14/13 14:39
	Total C6-C35	< SDL				----	----	mg/Kg	1	01/14/13 14:39
111-85-3	1-Chlorooctane(surr)	80.4				60	143	%	1	01/14/13 14:39
3386-33-2	Chlorooctadecane(surr)	81.3				60	150	%	1	01/14/13 14:39

Soil results reported on dry weight basis



LABORATORY TEST RESULTS --- TRRP13

Client Sample ID: SB-2 @ 8-10'
 A&B Job Sample ID: 13010436.02

Date: 1/21/2013

Client Name: Associated Testing Lab
 Project Name: E12 - 123 / Inner Loop WMR

Attn: Tom Murphy

Test Description: **% Moisture**
 Analytical Method: SM 2540G
 QC Batch ID: Qb13011564
 Prep Method: SM 2540G
 Prepared By: Ksudha
 Prep Batch ID: PB13011540
 Analyst Initial: KS

Sample Matrix: Soil
 Date Collected: 01/10/2013 12:31
 Date Received: 01/10/2013 15:37
 Date Prepared: 01/15/2013 16:40

% Moisture: 11.8

CAS Number	Parameter	Result	Flag	SDL	MDL	MQL	UQL	Units	DF	Date/Time
	% Moisture ¹	11.8				----	----	%	1	01/15/13 16:49

Soil results reported on dry weight basis



LABORATORY TEST RESULTS --- TRRP 13

Client Sample ID: SB-2 @ 8-10'
 A&B Job Sample ID: 13010436.02

Date: 1/21/2013

Client Name: Associated Testing Lab
 Project Name: E12 - 123 / Inner Loop WMR

Attn: Tom Murphy

Test Description: **Purgeable Aromatics**

Analytical Method: SW-846 8021B

QC Batch ID: Qb13011416

Prep Method: SW-846 5035A

Prepared By: Xan

Prep Batch ID: PB13011413

Analyst Initial: PNS

Sample Matrix: Soil

Date Collected: 01/10/2013 12:31

Date Received: 01/10/2013 15:37

Date Prepared: 01/10/2013 15:50

% Moisture: 11.8

CAS Number	Parameter	Result	Flag	SDL	MDL	MQL	UQL	Units	DF	Date/Time
1634-04-4	MTBE	< SDL	U	0.001	0.001	0.005	0.4	mg/Kg	1	01/12/13 00:02
71-43-2	Benzene	< SDL	U	0.001	0.001	0.005	0.4	mg/Kg	1	01/12/13 00:02
108-88-3	Toluene	< SDL	U	0.001	0.001	0.005	0.4	mg/Kg	1	01/12/13 00:02
100-41-4	Ethylbenzene	< SDL	U	0.006	0.005	0.005	0.4	mg/Kg	1	01/12/13 00:02
108-38-3&106-4	m- & p-Xylenes	< SDL	U	0.006	0.005	0.01	0.8	mg/Kg	1	01/12/13 00:02
95-47-6	o-Xylene	< SDL	U	0.002	0.002	0.005	0.4	mg/Kg	1	01/12/13 00:02
1330-20-7	Xylenes	< SDL	U	0.002	0.002	0.005	1.2	mg/Kg	1	01/12/13 00:02
98-08-8	Trifluorotoluene(surr)	98				81	111	%	1	01/12/13 00:02

Soil results reported on dry weight basis



LABORATORY TEST RESULTS --- TRRP 13

Client Sample ID: SB-2 @ 8-10'
 A&B Job Sample ID: 13010436.02

Date: 1/21/2013

Client Name: Associated Testing Lab
 Project Name: E12 - 123 / Inner Loop WMR

Attn: Tom Murphy

Test Description: **Total Petroleum Hydrocarbons**

Sample Matrix: Soil
 Date Collected: 01/10/2013 12:31
 Date Received: 01/10/2013 15:37
 Date Prepared: 01/14/2013 13:00

Analytical Method: TX 1005
 QC Batch ID: qb13011510
 Prep Method: TX 1005
 Prepared By: AVBembde
 Prep Batch ID: PB13011507

Analyst Initial: AVB

% Moisture: 11.8

CAS Number	Parameter	Result	Flag	SDL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12 ¹	< SDL	Q18,U	26.9	23.7	25	1000	mg/Kg	1	01/14/13 15:02
TPH-1005-2	>C12-C28 ¹	< SDL	U	23	20.3	25	1000	mg/Kg	1	01/14/13 15:02
TPH-1005-4	>C28-C35 ¹	< SDL	U	20.1	17.7	25	1000	mg/Kg	1	01/14/13 15:02
	Total C6-C35	< SDL				----	----	mg/Kg	1	01/14/13 15:02
111-85-3	1-Chlorooctane(surr)	81.5				60	143	%	1	01/14/13 15:02
3386-33-2	Chlorooctadecane(surr)	81.5				60	150	%	1	01/14/13 15:02

Soil results reported on dry weight basis



LABORATORY TEST RESULTS --- TRRP13

Client Sample ID: SB-3 @ 10-12'
A&B Job Sample ID: 13010436.03

Date: 1/21/2013

Client Name: Associated Testing Lab
Project Name: E12 - 123 / Inner Loop WMR

Attn: Tom Murphy

Test Description: **% Moisture**
Analytical Method: SM 2540G
QC Batch ID: Qb13011564
Prep Method: SM 2540G
Prepared By: Ksudha
Prep Batch ID: PB13011540

Sample Matrix: Soil
Date Collected: 01/10/2013 13:14
Date Received: 01/10/2013 15:37
Date Prepared: 01/15/2013 16:40

Analyst Initial: KS

% Moisture: 14.9

CAS Number	Parameter	Result	Flag	SDL	MDL	MQL	UQL	Units	DF	Date/Time
	% Moisture ¹	14.9				----	----	%	1	01/15/13 16:49

Soil results reported on dry weight basis



LABORATORY TEST RESULTS --- TRRP 13

Client Sample ID: SB-3 @ 10-12'
 A&B Job Sample ID: 13010436.03

Date: 1/21/2013

Client Name: Associated Testing Lab
 Project Name: E12 - 123 / Inner Loop WMR

Attn: Tom Murphy

Test Description: **Purgeable Aromatics**

Sample Matrix: Soil

Analytical Method: SW-846 8021B

Date Collected: 01/10/2013 13:14

QC Batch ID: Qb13011416

Date Received: 01/10/2013 15:37

Prep Method: SW-846 5035A

Date Prepared: 01/10/2013 15:50

Prepared By: Xan

Prep Batch ID: PB13011413

Analyst Initial: PNS

% Moisture: 14.9

CAS Number	Parameter	Result	Flag	SDL	MDL	MQL	UQL	Units	DF	Date/Time
1634-04-4	MTBE	< SDL	U	0.001	0.001	0.005	0.4	mg/Kg	1.010	01/12/13 00:28
71-43-2	Benzene	< SDL	U	0.001	0.001	0.005	0.4	mg/Kg	1.010	01/12/13 00:28
108-88-3	Toluene	< SDL	U	0.001	0.001	0.005	0.4	mg/Kg	1.010	01/12/13 00:28
100-41-4	Ethylbenzene	< SDL	U	0.006	0.005	0.005	0.4	mg/Kg	1.010	01/12/13 00:28
108-38-3&106-4	m- & p-Xylenes	< SDL	U	0.006	0.005	0.01	0.8	mg/Kg	1.010	01/12/13 00:28
95-47-6	o-Xylene	< SDL	U	0.002	0.002	0.005	0.4	mg/Kg	1.010	01/12/13 00:28
1330-20-7	Xylenes	< SDL	U	0.002	0.002	0.005	1.2	mg/Kg	1.010	01/12/13 00:28
98-08-8	Trifluorotoluene(surr)	99				81	111	%	1.010	01/12/13 00:28

Soil results reported on dry weight basis



LABORATORY TEST RESULTS --- TRRP 13

Client Sample ID: SB-3 @ 10-12'
 A&B Job Sample ID: 13010436.03

Date: 1/21/2013

Client Name: Associated Testing Lab
 Project Name: E12 - 123 / Inner Loop WMR

Attn: Tom Murphy

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005
 QC Batch ID: qb13011510
 Prep Method: TX 1005
 Prepared By: AVBembde
 Prep Batch ID: PB13011507

Sample Matrix: Soil
 Date Collected: 01/10/2013 13:14
 Date Received: 01/10/2013 15:37
 Date Prepared: 01/14/2013 13:00

Analyst Initial: AVB

% Moisture: 14.9

CAS Number	Parameter	Result	Flag	SDL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12 ¹	< SDL	Q18,U	27.8	23.7	25	1000	mg/Kg	1	01/14/13 15:26
TPH-1005-2	>C12-C28 ¹	< SDL	U	23.9	20.3	25	1000	mg/Kg	1	01/14/13 15:26
TPH-1005-4	>C28-C35 ¹	< SDL	U	20.8	17.7	25	1000	mg/Kg	1	01/14/13 15:26
	Total C6-C35	< SDL				----	----	mg/Kg	1	01/14/13 15:26
111-85-3	1-Chlorooctane(surr)	80.7				60	143	%	1	01/14/13 15:26
3386-33-2	Chlorooctadecane(surr)	81.6				60	150	%	1	01/14/13 15:26

Soil results reported on dry weight basis



LABORATORY TEST RESULTS --- TRRP13

Client Sample ID: SB-4 @ 8-10'
A&B Job Sample ID: 13010436.04

Date: 1/21/2013

Client Name: Associated Testing Lab
Project Name: E12 - 123 / Inner Loop WMR

Attn: Tom Murphy

Test Description: **% Moisture**
Analytical Method: SM 2540G
QC Batch ID: Qb13011564
Prep Method: SM 2540G
Prepared By: Ksudha
Prep Batch ID: PB13011540

Sample Matrix: Soil
Date Collected: 01/10/2013 14:15
Date Received: 01/10/2013 15:37
Date Prepared: 01/15/2013 16:40

Analyst Initial: KS

% Moisture: 14.7

CAS Number	Parameter	Result	Flag	SDL	MDL	MQL	UQL	Units	DF	Date/Time
	% Moisture ¹	14.7				----	----	%	1	01/15/13 16:49

Soil results reported on dry weight basis



LABORATORY TEST RESULTS --- TRRP 13

Client Sample ID: SB-4 @ 8-10'
 A&B Job Sample ID: 13010436.04

Date: 1/21/2013

Client Name: Associated Testing Lab
 Project Name: E12 - 123 / Inner Loop WMR

Attn: Tom Murphy

Test Description: **Purgeable Aromatics**

Analytical Method: SW-846 8021B

QC Batch ID: Qb13011416

Prep Method: SW-846 5035A

Prepared By: Xan

Prep Batch ID: PB13011413

Analyst Initial: PNS

Sample Matrix: Soil

Date Collected: 01/10/2013 14:15

Date Received: 01/10/2013 15:37

Date Prepared: 01/10/2013 15:50

% Moisture: 14.7

CAS Number	Parameter	Result	Flag	SDL	MDL	MQL	UQL	Units	DF	Date/Time
1634-04-4	MTBE	< SDL	U	0.001	0.001	0.005	0.4	mg/Kg	1.010	01/12/13 00:54
71-43-2	Benzene	< SDL	U	0.001	0.001	0.005	0.4	mg/Kg	1.010	01/12/13 00:54
108-88-3	Toluene	< SDL	U	0.001	0.001	0.005	0.4	mg/Kg	1.010	01/12/13 00:54
100-41-4	Ethylbenzene	< SDL	U	0.006	0.005	0.005	0.4	mg/Kg	1.010	01/12/13 00:54
108-38-3&106-4	m- & p-Xylenes	< SDL	U	0.006	0.005	0.01	0.8	mg/Kg	1.010	01/12/13 00:54
95-47-6	o-Xylene	< SDL	U	0.002	0.002	0.005	0.4	mg/Kg	1.010	01/12/13 00:54
1330-20-7	Xylenes	< SDL	U	0.002	0.002	0.005	1.2	mg/Kg	1.010	01/12/13 00:54
98-08-8	Trifluorotoluene(surr)	100				81	111	%	1.010	01/12/13 00:54

Soil results reported on dry weight basis



LABORATORY TEST RESULTS --- TRRP 13

Client Sample ID: SB-4 @ 8-10'
 A&B Job Sample ID: 13010436.04

Date: 1/21/2013

Client Name: Associated Testing Lab
 Project Name: E12 - 123 / Inner Loop WMR

Attn: Tom Murphy

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005
 QC Batch ID: qb13011510
 Prep Method: TX 1005
 Prepared By: AVBembde
 Prep Batch ID: PB13011507

Sample Matrix: Soil
 Date Collected: 01/10/2013 14:15
 Date Received: 01/10/2013 15:37
 Date Prepared: 01/14/2013 13:00

Analyst Initial: AVB

% Moisture: 14.7

CAS Number	Parameter	Result	Flag	SDL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12 ¹	< SDL	Q18,U	27.8	23.7	25	1000	mg/Kg	1	01/14/13 15:50
TPH-1005-2	>C12-C28 ¹	< SDL	U	23.8	20.3	25	1000	mg/Kg	1	01/14/13 15:50
TPH-1005-4	>C28-C35 ¹	< SDL	U	20.8	17.7	25	1000	mg/Kg	1	01/14/13 15:50
	Total C6-C35	< SDL				----	----	mg/Kg	1	01/14/13 15:50
111-85-3	1-Chlorooctane(surr)	79.3				60	143	%	1	01/14/13 15:50
3386-33-2	Chlorooctadecane(surr)	79.7				60	150	%	1	01/14/13 15:50

Soil results reported on dry weight basis



LABORATORY TEST RESULTS --- TRRP13

Client Sample ID: SB-5 @ 14-16'
 A&B Job Sample ID: 13010436.05

Date: 1/21/2013

Client Name: Associated Testing Lab
 Project Name: E12 - 123 / Inner Loop WMR

Attn: Tom Murphy

Test Description: **% Moisture**
 Analytical Method: SM 2540G
 QC Batch ID: Qb13011564
 Prep Method: SM 2540G
 Prepared By: Ksudha
 Prep Batch ID: PB13011540
 Analyst Initial: KS

Sample Matrix: Soil
 Date Collected: 01/10/2013 15:12
 Date Received: 01/10/2013 15:37
 Date Prepared: 01/15/2013 16:40

% Moisture: 22.2

CAS Number	Parameter	Result	Flag	SDL	MDL	MQL	UQL	Units	DF	Date/Time
	% Moisture ¹	22.2				----	----	%	1	01/15/13 16:49

Soil results reported on dry weight basis



LABORATORY TEST RESULTS --- TRRP 13

Client Sample ID: SB-5 @ 14-16'
 A&B Job Sample ID: 13010436.05

Date: 1/21/2013

Client Name: Associated Testing Lab
 Project Name: E12 - 123 / Inner Loop WMR

Attn: Tom Murphy

Test Description: **Purgeable Aromatics**

Analytical Method: SW-846 8021B

QC Batch ID: Qb13011416

Prep Method: SW-846 5035A

Prepared By: Xan

Prep Batch ID: PB13011413

Analyst Initial: PNS

Sample Matrix: Soil

Date Collected: 01/10/2013 15:12

Date Received: 01/10/2013 15:37

Date Prepared: 01/10/2013 15:50

% Moisture: 22.2

CAS Number	Parameter	Result	Flag	SDL	MDL	MQL	UQL	Units	DF	Date/Time
1634-04-4	MTBE	< SDL	U	0.001	0.001	0.005	0.4	mg/Kg	1	01/12/13 01:20
71-43-2	Benzene	< SDL	U	0.001	0.001	0.005	0.4	mg/Kg	1	01/12/13 01:20
108-88-3	Toluene	< SDL	U	0.001	0.001	0.005	0.4	mg/Kg	1	01/12/13 01:20
100-41-4	Ethylbenzene	< SDL	U	0.006	0.005	0.005	0.4	mg/Kg	1	01/12/13 01:20
108-38-3&106-4	m- & p-Xylenes	< SDL	U	0.006	0.005	0.01	0.8	mg/Kg	1	01/12/13 01:20
95-47-6	o-Xylene	< SDL	U	0.003	0.002	0.005	0.4	mg/Kg	1	01/12/13 01:20
1330-20-7	Xylenes	< SDL	U	0.003	0.002	0.005	1.2	mg/Kg	1	01/12/13 01:20
98-08-8	Trifluorotoluene(surr)	99.5				81	111	%	1	01/12/13 01:20

Soil results reported on dry weight basis



LABORATORY TEST RESULTS --- TRRP 13

Client Sample ID: SB-5 @ 14-16'
 A&B Job Sample ID: 13010436.05

Date: 1/21/2013

Client Name: Associated Testing Lab
 Project Name: E12 - 123 / Inner Loop WMR

Attn: Tom Murphy

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005
 QC Batch ID: qb13011510
 Prep Method: TX 1005
 Prepared By: AVBembde
 Prep Batch ID: PB13011507

Sample Matrix: Soil
 Date Collected: 01/10/2013 15:12
 Date Received: 01/10/2013 15:37
 Date Prepared: 01/14/2013 13:00

Analyst Initial: AVB

% Moisture: 22.2

CAS Number	Parameter	Result	Flag	SDL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12 ¹	< SDL	Q18,U	30.5	23.7	25	1000	mg/Kg	1	01/14/13 16:13
TPH-1005-2	>C12-C28 ¹	< SDL	U	26.1	20.3	25	1000	mg/Kg	1	01/14/13 16:13
TPH-1005-4	>C28-C35 ¹	< SDL	U	22.8	17.7	25	1000	mg/Kg	1	01/14/13 16:13
	Total C6-C35	< SDL				----	----	mg/Kg	1	01/14/13 16:13
111-85-3	1-Chlorooctane(surr)	82.1				60	143	%	1	01/14/13 16:13
3386-33-2	Chlorooctadecane(surr)	84				60	150	%	1	01/14/13 16:13

Soil results reported on dry weight basis

¹-Parameter not available for accreditation

QUALITY CONTROL CERTIFICATE



Job ID : 13010436

Date : 1/21/2013

Analysis : Purgeable Aromatics **Method :** SW-846 8021B **Reporting Units :** mg/Kg

QC Batch ID : Qb13011416 **Created Date :** 01/14/13 **Created By :** Xan

Samples in This QC Batch : 13010436.01,02,03,04,05

Sample Preparation : PB13011413 **Prep Method :** SW-846 5035A **Prep Date :** 01/10/13 15:50 **Prep By :** Xan

QC Type: Method Blank								
Parameter	CAS #	Result	Units	D.F.	MQL	MDL		Qual
MTBE	1634-04-4	< MDL	mg/Kg	1	0.005	0.001		
Benzene	71-43-2	< MDL	mg/Kg	1	0.005	0.001		
Toluene	108-88-3	< MDL	mg/Kg	1	0.005	0.001		
Ethylbenzene	100-41-4	< MDL	mg/Kg	1	0.005	0.005		
m- & p-Xylenes	108-38-3&106-42-3	< MDL	mg/Kg	1	0.01	0.005		
o-Xylene	95-47-6	< MDL	mg/Kg	1	0.005	0.002		
Xylenes	1330-20-7	< MDL	mg/Kg	1	0.005	0.002		
Trifluorotoluene(surr)	98-08-8	99.5	%	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
MTBE	0.05	0.042	84	0.05	0.048	96	13.3	20	67.2-132	
Benzene	0.05	0.043	86	0.05	0.043	86	0	20	76.2-128	
Toluene	0.05	0.044	88	0.05	0.044	88	0	20	74.2-126	
Ethylbenzene	0.05	0.044	88	0.05	0.043	86	2.3	20	79.4-125	
m- & p-Xylenes	0.1	0.089	89	0.1	0.087	87	2.3	20	76.3-126	
o-Xylene	0.05	0.045	90	0.05	0.045	90	0	20	77.1-123	
Xylenes	0.15	0.134	89.3	0.15	0.132	88	1.5	20	77.2-125	

QC Type: MS and MSD											
QC Sample ID: 13010436.02											
Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MTBE	BRL	0.05	0.052	104	0.049	0.051	104	1.9	26	76-134	
Benzene	BRL	0.05	0.043	86	0.049	0.041	83.7	4.8	19	68-138	
Toluene	BRL	0.05	0.044	88	0.049	0.042	85.7	4.6	19	67-135	
Ethylbenzene	BRL	0.05	0.044	88	0.049	0.042	85.7	4.6	20	71-127	
m- & p-Xylenes	BRL	0.1	0.087	87	0.098	0.084	85.7	3.5	27	56-135	
o-Xylene	BRL	0.05	0.045	90	0.049	0.043	87.8	4.6	24	56-134	
Xylenes	BRL	0.15	0.132	88	0.146	0.127	87	3.9	25	59-134	

Refer to the Definition page for terms.

QUALITY CONTROL CERTIFICATE



Job ID : 13010436

Date : 1/21/2013

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

QC Batch ID : qb13011510 **Created Date :** 01/14/13 **Created By :** AVBembde

Samples in This QC Batch : 13010436.01,02,03,04,05

Sample Preparation : PB13011507 **Prep Method :** TX 1005 **Prep Date :** 01/14/13 13:00 **Prep By :** AVBembde

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	---			
Chlorooctadecane(surr)	3386-33-2	99.4	%	1				
1-Chlorooctane(surr)	111-85-3	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
C6-C12	500	478	95.6	500	490	98	2.5	20	75-125	
>C12-C28	500	462	92.4	500	500	100	7.9	20	75-125	
>C28-C35	500	463	92.6	500	469	93.8	1.3	20	75-125	

QC Type: MS and MSD											
QC Sample ID: 13010436.01											
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	430	83.4						75-125	
>C12-C28	BRL	500	416	80.2						75-125	
>C28-C35	BRL	500	396	77.2						75-125	

Refer to the Definition page for terms.

LABORATORY TERM AND QUALIFIER DEFINITION REPORT



Job ID : 13010436

Date: 1/21/2013

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

Qualifier Definition

Q18	Soils not collected in a hermetically sealed container may lose low-level VOCs.
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

A&B JOB ID #
13010436

5. Project #
E12-123

REPORT TO: (CATL)
Associated Testing Labs
3193 Yellowstone Blvd
Houston, TX 77054
Tom Murphy
713 748 3713
713 748 3748
adm_bar@yahoo.com

INVOICE TO:

3. PO #

3a. A&B Quote #

4. Turnaround Time (Business Days)
 1 Day* Other;
 2 Days*
 3 Days*
 7 Days - Standard

*Surcharge applies

6. Project Name/Location
Inner Loop WMR

7. Reporting Requirement: **Rm TRR TRRP Tier 1 0.5 - Area Res. PCLs only**

TRRP Limits only TRRP Rpt. Package See Attached Standard Level II PST MDL EDD

8. Sampler's Name & Company (PLEASE PRINT)
Tom Murphy / ATL

Sampler's Signature & Date
Tom Murphy 01/10/13

13. Containers*	
15. Preservatives**	
16. PH-Lab Only	
17. Analyses/Methods	TPH (TX1005) <input checked="" type="checkbox"/> MTBE/BTEX (8021) <input checked="" type="checkbox"/>
18. REMARKS	

9. Sample ID and Description	10. Sampling		11, 12. Matrix								
	Date	Time 24hr	Comp.	Grab	Water	Soil	Sludge	Oil	Drinking Water	Air	Other
01A SB-1 D 10-12'	01/10/13	1119	X	X		X					
02A SB-2 D 8-10'	01/10/13	1231	X	X		X					
03A SB-3 D 10-12'	01/10/13	1314	X	X		X					
04A SB-4 D 8-10'	01/10/13	1415	X	X		X					
05A SB-5 D 14-16'	01/10/13	1512	X	X		X					

19. RELINQUISHED BY
Tom Murphy

DATE 01/10/13 **TIME** 1537

20. RECEIVED BY
[Signature]

DATE 01/10/13 **TIME** 1537

21. KNOWN HAZARDS/COMMENTS

Temperature: 3.6 °C
 Thermometer ID 111601055
 Intact Y of N Initials JAL

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

**Preservatives: C - Cool H - HCl N - HNO₃
 OH - NaOH T - Na₂S₂O₃ X - Other

METHOD OF SHIPMENT

LAB USE ONLY **SAMPLING** **RENTAL** **P/U**

Bill of Lading/Tracking #

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 : 13010436	Date Received : 01/10/2013	Time Received : 3:37PM																										
Client Name : Associated Testing Lab																												
Temperature : 3.6°C	Sample pH : NA																											
Thermometer ID : 111601055	pH Paper ID : NA																											
Check Points																												
1.	Cooler seal present and signed.	Yes	No	N/A																								
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 type="checkbox"/></td> <td style="text-align: center;"><input checked="" 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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>											
Matrix	Water	Soil	Liquid	Sludge	Solid	Cassette	Tube	Bulk	Badge	Food	Other																	
:	<input type="checkbox"/>	<input checked="" 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																										
Comments : Include actions taken to resolve discrepancies/problem:																												

Received by : Dlopez

Check in by/date : Dlopez / 01/10/2013

Laboratory Analysis Report

Total Number of Pages: 24

Job ID : 13010599



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

Client Project Name :
E12-123 Inner Loop WMR

Report To : Client Name: Associated Testing Lab
Attn: Tom Murphy
Client Address: 3143 Yellowstone Blvd.
City, State, Zip: Houston, Texas, 77054

P.O.#.:
Sample Collected By: Tom Murphy
Date Collected: 01/13/13

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

Client Sample ID	Matrix	A&B Sample ID
SB-6 @ 4-6'	Soil	13010599.01
SB-6 / TWP-6	Water	13010599.02
SB-7 @ 2-4'	Soil	13010599.03
SB-8 @ 8-10'	Soil	13010599.04
SB-9 @ 6-8'	Soil	13010599.05

A handwritten signature in black ink that reads "Alisha Rodriguez".

Released By: Alisha Rodriguez
Title: Project Manager
Date: 1/23/2013



This Laboratory is NELAP (T104704213-12-7) accredited. Effective: 07/01/2012; Expires: 03/31/2013

Scope: Non-Potable Water, Drinking Water, Air, Solid, 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 : 01/14/2013 15:35



LABORATORY TEST RESULTS --- TRRP13

Client Sample ID: SB-6 @ 4-6'
A&B Job Sample ID: 13010599.01

Date: 1/23/2013

Client Name: Associated Testing Lab
Project Name: E12-123 Inner Loop WMR

Attn: Tom Murphy

Test Description: **% Moisture**
Analytical Method: SM 2540G
QC Batch ID: Qb13011863
Prep Method: SM 2540G
Prepared By: Ksudha
Prep Batch ID: PB13011852

Sample Matrix: Soil
Date Collected: 01/13/2013 09:20
Date Received: 01/14/2013 15:35
Date Prepared: 01/18/2013 16:47

Analyst Initial: KS

% Moisture: 12.6

CAS Number	Parameter	Result	Flag	SDL	MDL	MLQ	UQL	Units	DF	Date/Time
	% Moisture ¹	12.6				----	----	%	1	01/18/13 17:00

Soil results reported on dry weight basis



LABORATORY TEST RESULTS --- TRRP 13

Client Sample ID: SB-6 @ 4-6'
 A&B Job Sample ID: 13010599.01

Date: 1/23/2013

Client Name: Associated Testing Lab
 Project Name: E12-123 Inner Loop WMR

Attn: Tom Murphy

Test Description: **Purgeable Aromatics**

Analytical Method: SW-846 8021B

QC Batch ID: Qb13011733

Prep Method: SW-846 5035A

Prepared By: Xan

Prep Batch ID: PB13011648

Analyst Initial: PNS

Sample Matrix: Soil

Date Collected: 01/13/2013 09:20

Date Received: 01/14/2013 15:35

Date Prepared: 01/14/2013 16:00

% Moisture: 12.6

CAS Number	Parameter	Result	Flag	SDL	MDL	MQL	UQL	Units	DF	Date/Time
1634-04-4	MTBE	< SDL	U	0.001	0.001	0.005	0.4	mg/Kg	0.966	01/15/13 11:38
71-43-2	Benzene	< SDL	Q18,U	0.001	0.001	0.005	0.4	mg/Kg	0.966	01/15/13 11:38
108-88-3	Toluene	< SDL	U	0.001	0.001	0.005	0.4	mg/Kg	0.966	01/15/13 11:38
100-41-4	Ethylbenzene	< SDL	U	0.006	0.005	0.005	0.4	mg/Kg	0.966	01/15/13 11:38
108-38-3&106-4	m- & p-Xylenes	< SDL	U	0.006	0.005	0.01	0.8	mg/Kg	0.966	01/15/13 11:38
95-47-6	o-Xylene	< SDL	U	0.002	0.002	0.005	0.4	mg/Kg	0.966	01/15/13 11:38
1330-20-7	Xylenes	< SDL	U	0.002	0.002	0.005	1.2	mg/Kg	0.966	01/15/13 11:38
98-08-8	Trifluorotoluene(surr)	89.5				81	111	%	0.966	01/15/13 11:38

Soil results reported on dry weight basis



LABORATORY TEST RESULTS --- TRRP 13

Client Sample ID: SB-6 @ 4-6'
 A&B Job Sample ID: 13010599.01

Date: 1/23/2013

Client Name: Associated Testing Lab
 Project Name: E12-123 Inner Loop WMR

Attn: Tom Murphy

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005
 QC Batch ID: Qb13011777
 Prep Method: TX 1005
 Prepared By: JShah
 Prep Batch ID: PB13011764

Sample Matrix: Soil
 Date Collected: 01/13/2013 09:20
 Date Received: 01/14/2013 15:35
 Date Prepared: 01/17/2013 09:00

Analyst Initial: JYS

% Moisture: 12.6

CAS Number	Parameter	Result	Flag	SDL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12 ¹	< SDL	Q18,U	27.1	23.7	25	1000	mg/Kg	1	01/17/13 12:07
TPH-1005-2	>C12-C28 ¹	< SDL	U	23.2	20.3	25	1000	mg/Kg	1	01/17/13 12:07
TPH-1005-4	>C28-C35 ¹	< SDL	U	20.3	17.7	25	1000	mg/Kg	1	01/17/13 12:07
	Total C6-C35	< SDL				----	----	mg/Kg	1	01/17/13 12:07
111-85-3	1-Chlorooctane(surr)	90.3				60	143	%	1	01/17/13 12:07
3386-33-2	Chlorooctadecane(surr)	93.1				60	150	%	1	01/17/13 12:07

Soil results reported on dry weight basis



LABORATORY TEST RESULTS --- TRRP 13

Client Sample ID: SB-6 / TWP-6
 A&B Job Sample ID: 13010599.02

Date: 1/23/2013

Client Name: Associated Testing Lab
 Project Name: E12-123 Inner Loop WMR

Attn: Tom Murphy

Test Description: **Purgeable Aromatics**

Analytical Method: SW-846 8021B

QC Batch ID: Qb13011415

Prep Method: SW-846 5030C

Prepared By: Xan

Prep Batch ID: PB13011647

Analyst Initial: PNS

Sample Matrix: Water

Date Collected: 01/13/2013 09:40

Date Received: 01/14/2013 15:35

Date Prepared: 01/14/2013 16:00

% Moisture

CAS Number	Parameter	Result	Flag	SDL	MDL	MQL	UQL	Units	DF	Date/Time
1634-04-4	MTBE	< SDL	U	0.0006	0.0006	0.002	0.16	mg/L	1	01/15/13 18:00
71-43-2	Benzene	< SDL	U	0.0002	0.0002	0.002	0.16	mg/L	1	01/15/13 18:00
108-88-3	Toluene	< SDL	U	0.0002	0.0002	0.002	0.16	mg/L	1	01/15/13 18:00
100-41-4	Ethylbenzene	< SDL	U	0.0004	0.0004	0.002	0.16	mg/L	1	01/15/13 18:00
108-38-3&106-4	m- & p-Xylenes	< SDL	U	0.0006	0.0006	0.004	0.32	mg/L	1	01/15/13 18:00
95-47-6	o-Xylene	< SDL	U	0.0004	0.0004	0.002	0.16	mg/L	1	01/15/13 18:00
1330-20-7	Xylenes	< SDL	U	0.0004	0.0004	0.002	0.48	mg/L	1	01/15/13 18:00
98-08-8	Trifluorotoluene(surr)	87.5				75	125	%	1	01/15/13 18:00

Soil results reported on dry weight basis



LABORATORY TEST RESULTS --- TRRP13

Client Sample ID: SB-6 / TWP-6
 A&B Job Sample ID: 13010599.02

Date: 1/23/2013

Client Name: Associated Testing Lab
 Project Name: E12-123 Inner Loop WMR

Attn: Tom Murphy

Test Description:
 Analytical Method: TX 1005
 QC Batch ID: Qb13011842
 Prep Method: TX 1005
 Prepared By: AVBembde
 Prep Batch ID: PB13011840

Sample Matrix: Water
 Date Collected: 01/13/2013 09:40
 Date Received: 01/14/2013 15:35
 Date Prepared: 01/17/2013 18:00

Analyst Initial: AVB

% Moisture

CAS Number	Parameter	Result	Flag	SDL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12 ¹	< SDL	U	0.752	0.66	1.5	60	mg/L	1.14	01/18/13 10:34
TPH-1005-2	>C12-C28 ¹	1.38	J	0.980	0.86	1.5	60	mg/L	1.14	01/18/13 10:34
TPH-1005-4	>C28-C35 ¹	1.45	J	0.855	0.75	1.5	60	mg/L	1.14	01/18/13 10:34
	Total C6-C35	2.83				----	----	mg/L	1.14	01/18/13 10:34
111-85-3	1-Chlorooctane(surr)	94.6				59	122	%	1.14	01/18/13 10:34
3386-33-2	Chlorooctadecane(surr)	97.2				48	123	%	1.14	01/18/13 10:34

Soil results reported on dry weight basis



LABORATORY TEST RESULTS --- TRRP13

Client Sample ID: SB-7 @ 2-4'
A&B Job Sample ID: 13010599.03

Date: 1/23/2013

Client Name: Associated Testing Lab
Project Name: E12-123 Inner Loop WMR

Attn: Tom Murphy

Test Description: **% Moisture**
Analytical Method: SM 2540G
QC Batch ID: Qb13011863
Prep Method: SM 2540G
Prepared By: Ksudha
Prep Batch ID: PB13011852

Sample Matrix: Soil
Date Collected: 01/13/2013 10:15
Date Received: 01/14/2013 15:35
Date Prepared: 01/18/2013 16:47

Analyst Initial: KS

% Moisture: 12.7

CAS Number	Parameter	Result	Flag	SDL	MDL	MLQ	UQL	Units	DF	Date/Time
	% Moisture ¹	12.7				----	----	%	1	01/18/13 17:00

Soil results reported on dry weight basis



LABORATORY TEST RESULTS --- TRRP 13

Client Sample ID: SB-7 @ 2-4'
 A&B Job Sample ID: 13010599.03

Date: 1/23/2013

Client Name: Associated Testing Lab
 Project Name: E12-123 Inner Loop WMR

Attn: Tom Murphy

Test Description: **Purgeable Aromatics**

Analytical Method: SW-846 8021B

QC Batch ID: Qb13011733

Prep Method: SW-846 5035A

Prepared By: Xan

Prep Batch ID: PB13011648

Analyst Initial: PNS

Sample Matrix: Soil

Date Collected: 01/13/2013 10:15

Date Received: 01/14/2013 15:35

Date Prepared: 01/14/2013 16:00

% Moisture: 12.7

CAS Number	Parameter	Result	Flag	SDL	MDL	MQL	UQL	Units	DF	Date/Time
1634-04-4	MTBE	< SDL	U	0.001	0.001	0.005	0.4	mg/Kg	0.970	01/15/13 12:04
71-43-2	Benzene	< SDL	Q18,U	0.001	0.001	0.005	0.4	mg/Kg	0.970	01/15/13 12:04
108-88-3	Toluene	< SDL	U	0.001	0.001	0.005	0.4	mg/Kg	0.970	01/15/13 12:04
100-41-4	Ethylbenzene	< SDL	U	0.006	0.005	0.005	0.4	mg/Kg	0.970	01/15/13 12:04
108-38-3&106-4	m- & p-Xylenes	< SDL	U	0.006	0.005	0.01	0.8	mg/Kg	0.970	01/15/13 12:04
95-47-6	o-Xylene	< SDL	U	0.002	0.002	0.005	0.4	mg/Kg	0.970	01/15/13 12:04
1330-20-7	Xylenes	< SDL	U	0.002	0.002	0.005	1.2	mg/Kg	0.970	01/15/13 12:04
98-08-8	Trifluorotoluene(surr)	90				81	111	%	0.970	01/15/13 12:04

Soil results reported on dry weight basis



LABORATORY TEST RESULTS --- TRRP 13

Client Sample ID: SB-7 @ 2-4'
 A&B Job Sample ID: 13010599.03

Date: 1/23/2013

Client Name: Associated Testing Lab
 Project Name: E12-123 Inner Loop WMR

Attn: Tom Murphy

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005
 QC Batch ID: Qb13011777
 Prep Method: TX 1005
 Prepared By: JShah
 Prep Batch ID: PB13011764

Sample Matrix: Soil
 Date Collected: 01/13/2013 10:15
 Date Received: 01/14/2013 15:35
 Date Prepared: 01/17/2013 09:00

Analyst Initial: JYS

% Moisture: 12.7

CAS Number	Parameter	Result	Flag	SDL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12 ¹	< SDL	Q18,U	27.1	23.7	25	1000	mg/Kg	1	01/17/13 12:54
TPH-1005-2	>C12-C28 ¹	33.6		23.3	20.3	25	1000	mg/Kg	1	01/17/13 12:54
TPH-1005-4	>C28-C35 ¹	29.8		20.3	17.7	25	1000	mg/Kg	1	01/17/13 12:54
	Total C6-C35	63.4				----	----	mg/Kg	1	01/17/13 12:54
111-85-3	1-Chlorooctane(surr)	87.6				60	143	%	1	01/17/13 12:54
3386-33-2	Chlorooctadecane(surr)	95				60	150	%	1	01/17/13 12:54

Soil results reported on dry weight basis



LABORATORY TEST RESULTS --- TRRP13

Client Sample ID: SB-8 @ 8-10'
A&B Job Sample ID: 13010599.04

Date: 1/23/2013

Client Name: Associated Testing Lab
Project Name: E12-123 Inner Loop WMR

Attn: Tom Murphy

Test Description: **% Moisture**
Analytical Method: SM 2540G
QC Batch ID: Qb13011863
Prep Method: SM 2540G
Prepared By: Ksudha
Prep Batch ID: PB13011852

Sample Matrix: Soil
Date Collected: 01/13/2013 10:42
Date Received: 01/14/2013 15:35
Date Prepared: 01/18/2013 16:47

Analyst Initial: KS

% Moisture: 13.2

CAS Number	Parameter	Result	Flag	SDL	MDL	MQL	UQL	Units	DF	Date/Time
	% Moisture ¹	13.2				----	----	%	1	01/18/13 17:00

Soil results reported on dry weight basis



LABORATORY TEST RESULTS --- TRRP 13

Client Sample ID: SB-8 @ 8-10'
 A&B Job Sample ID: 13010599.04

Date: 1/23/2013

Client Name: Associated Testing Lab
 Project Name: E12-123 Inner Loop WMR

Attn: Tom Murphy

Test Description: **Purgeable Aromatics**

Analytical Method: SW-846 8021B

QC Batch ID: Qb13011733

Prep Method: SW-846 5035A

Prepared By: Xan

Prep Batch ID: PB13011648

Analyst Initial: PNS

Sample Matrix: Soil

Date Collected: 01/13/2013 10:42

Date Received: 01/14/2013 15:35

Date Prepared: 01/14/2013 16:00

% Moisture: 13.2

CAS Number	Parameter	Result	Flag	SDL	MDL	MQL	UQL	Units	DF	Date/Time
1634-04-4	MTBE	< SDL	U	0.001	0.001	0.005	0.4	mg/Kg	0.995	01/15/13 12:29
71-43-2	Benzene	< SDL	Q18,U	0.001	0.001	0.005	0.4	mg/Kg	0.995	01/15/13 12:29
108-88-3	Toluene	< SDL	U	0.001	0.001	0.005	0.4	mg/Kg	0.995	01/15/13 12:29
100-41-4	Ethylbenzene	< SDL	U	0.006	0.005	0.005	0.4	mg/Kg	0.995	01/15/13 12:29
108-38-3&106-4	m- & p-Xylenes	< SDL	U	0.006	0.005	0.01	0.8	mg/Kg	0.995	01/15/13 12:29
95-47-6	o-Xylene	< SDL	U	0.002	0.002	0.005	0.4	mg/Kg	0.995	01/15/13 12:29
1330-20-7	Xylenes	< SDL	U	0.002	0.002	0.005	1.2	mg/Kg	0.995	01/15/13 12:29
98-08-8	Trifluorotoluene(surr)	91				81	111	%	0.995	01/15/13 12:29

Soil results reported on dry weight basis



LABORATORY TEST RESULTS --- TRRP 13

Client Sample ID: SB-8 @ 8-10'
 A&B Job Sample ID: 13010599.04

Date: 1/23/2013

Client Name: Associated Testing Lab
 Project Name: E12-123 Inner Loop WMR

Attn: Tom Murphy

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005
 QC Batch ID: Qb13011777
 Prep Method: TX 1005
 Prepared By: JShah
 Prep Batch ID: PB13011764

Sample Matrix: Soil
 Date Collected: 01/13/2013 10:42
 Date Received: 01/14/2013 15:35
 Date Prepared: 01/17/2013 09:00

Analyst Initial: JYS

% Moisture: 13.2

CAS Number	Parameter	Result	Flag	SDL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12 ¹	< SDL	Q18,U	27.3	23.7	25	1000	mg/Kg	1	01/17/13 13:18
TPH-1005-2	>C12-C28 ¹	< SDL	U	23.4	20.3	25	1000	mg/Kg	1	01/17/13 13:18
TPH-1005-4	>C28-C35 ¹	< SDL	U	20.4	17.7	25	1000	mg/Kg	1	01/17/13 13:18
	Total C6-C35	< SDL				----	----	mg/Kg	1	01/17/13 13:18
111-85-3	1-Chlorooctane(surr)	75.9				60	143	%	1	01/17/13 13:18
3386-33-2	Chlorooctadecane(surr)	81.9				60	150	%	1	01/17/13 13:18

Soil results reported on dry weight basis



LABORATORY TEST RESULTS --- TRRP13

Client Sample ID: SB-9 @ 6-8'
A&B Job Sample ID: 13010599.05

Date: 1/23/2013

Client Name: Associated Testing Lab
Project Name: E12-123 Inner Loop WMR

Attn: Tom Murphy

Test Description: **% Moisture**
Analytical Method: SM 2540G
QC Batch ID: Qb13011863
Prep Method: SM 2540G
Prepared By: Ksudha
Prep Batch ID: PB13011852

Sample Matrix: Soil
Date Collected: 01/13/2013 11:09
Date Received: 01/14/2013 15:35
Date Prepared: 01/18/2013 16:47

Analyst Initial: KS

% Moisture: 17.5

CAS Number	Parameter	Result	Flag	SDL	MDL	MQL	UQL	Units	DF	Date/Time
	% Moisture ¹	17.5				----	----	%	1	01/18/13 17:00

Soil results reported on dry weight basis



LABORATORY TEST RESULTS --- TRRP 13

Client Sample ID: SB-9 @ 6-8'
 A&B Job Sample ID: 13010599.05

Date: 1/23/2013

Client Name: Associated Testing Lab
 Project Name: E12-123 Inner Loop WMR

Attn: Tom Murphy

Test Description: **Purgeable Aromatics**

Analytical Method: SW-846 8021B

QC Batch ID: Qb13011733

Prep Method: SW-846 5035A

Prepared By: Xan

Prep Batch ID: PB13011648

Analyst Initial: PNS

Sample Matrix: Soil

Date Collected: 01/13/2013 11:09

Date Received: 01/14/2013 15:35

Date Prepared: 01/14/2013 16:00

% Moisture: 17.5

CAS Number	Parameter	Result	Flag	SDL	MDL	MQL	UQL	Units	DF	Date/Time
1634-04-4	MTBE	< SDL	U	0.001	0.001	0.005	0.4	mg/Kg	1	01/15/13 12:54
71-43-2	Benzene	< SDL	Q18,U	0.001	0.001	0.005	0.4	mg/Kg	1	01/15/13 12:54
108-88-3	Toluene	< SDL	U	0.001	0.001	0.005	0.4	mg/Kg	1	01/15/13 12:54
100-41-4	Ethylbenzene	< SDL	U	0.006	0.005	0.005	0.4	mg/Kg	1	01/15/13 12:54
108-38-3&106-4	m- & p-Xylenes	< SDL	U	0.006	0.005	0.01	0.8	mg/Kg	1	01/15/13 12:54
95-47-6	o-Xylene	< SDL	U	0.002	0.002	0.005	0.4	mg/Kg	1	01/15/13 12:54
1330-20-7	Xylenes	< SDL	U	0.002	0.002	0.005	1.2	mg/Kg	1	01/15/13 12:54
98-08-8	Trifluorotoluene(surr)	90				81	111	%	1	01/15/13 12:54

Soil results reported on dry weight basis



LABORATORY TEST RESULTS --- TRRP 13

Client Sample ID: SB-9 @ 6-8'
 A&B Job Sample ID: 13010599.05

Date: 1/23/2013

Client Name: Associated Testing Lab
 Project Name: E12-123 Inner Loop WMR

Attn: Tom Murphy

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005
 QC Batch ID: Qb13011777
 Prep Method: TX 1005
 Prepared By: JShah
 Prep Batch ID: PB13011764

Sample Matrix: Soil
 Date Collected: 01/13/2013 11:09
 Date Received: 01/14/2013 15:35
 Date Prepared: 01/17/2013 09:00

Analyst Initial: JYS

% Moisture: 17.5

CAS Number	Parameter	Result	Flag	SDL	MDL	MQL	UQL	Units	DF	Date/Time
TPH-1005-1	C6-C12 ¹	< SDL	Q18,U	28.7	23.7	25	1000	mg/Kg	1	01/17/13 13:42
TPH-1005-2	>C12-C28 ¹	< SDL	U	24.6	20.3	25	1000	mg/Kg	1	01/17/13 13:42
TPH-1005-4	>C28-C35 ¹	< SDL	U	21.5	17.7	25	1000	mg/Kg	1	01/17/13 13:42
	Total C6-C35	< SDL				----	----	mg/Kg	1	01/17/13 13:42
111-85-3	1-Chlorooctane(surr)	81.1				60	143	%	1	01/17/13 13:42
3386-33-2	Chlorooctadecane(surr)	85.4				60	150	%	1	01/17/13 13:42

Soil results reported on dry weight basis

¹-Parameter not available for accreditation

QUALITY CONTROL CERTIFICATE



Job ID : 13010599

Date : 1/23/2013

Analysis : Purgeable Aromatics **Method :** SW-846 8021B **Reporting Units :** mg/L

QC Batch ID : Qb13011415 **Created Date :** 01/14/13 **Created By :** Xan

Samples in This QC Batch : 13010599.02

Sample Preparation : PB13011647 **Prep Method :** SW-846 5030C **Prep Date :** 01/14/13 16:00 **Prep By :** Xan

QC Type: Method Blank								
Parameter	CAS #	Result	Units	D.F.	MQL	MDL		Qual
MTBE	1634-04-4	< MDL	mg/L	1	0.002	0.0006		
Benzene	71-43-2	< MDL	mg/L	1	0.002	0.0002		
Toluene	108-88-3	< MDL	mg/L	1	0.002	0.0002		
Ethylbenzene	100-41-4	< MDL	mg/L	1	0.002	0.0004		
m- & p-Xylenes	108-38-3&106-42-3	< MDL	mg/L	1	0.004	0.0006		
o-Xylene	95-47-6	< MDL	mg/L	1	0.002	0.0004		
Xylenes	1330-20-7	< MDL	mg/L	1	0.002	0.0004		
Trifluorotoluene(surr)	98-08-8	98.8	%	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
MTBE	0.02	0.022	110	0.02	0.023	115	4.4	30	69.4-124	
Benzene	0.02	0.021	105	0.02	0.018	90	15.4	30	79.1-123	
Toluene	0.02	0.022	110	0.02	0.019	95	14.6	30	72.3-117	
Ethylbenzene	0.02	0.022	110	0.02	0.019	95	14.6	30	77.4-119	
m- & p-Xylenes	0.04	0.044	110	0.04	0.038	95	14.6	30	77.2-127	
o-Xylene	0.02	0.022	110	0.02	0.019	95	14.6	30	71-114	
Xylenes	0.06	0.066	110	0.06	0.057	95	14.6	30	75.8-121	

QC Type: MS and MSD											
QC Sample ID: 13010543.01											
Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MTBE	BRL	0.02	0.018	90	0.02	0.016	80	11.8	21	68-117	
Benzene	BRL	0.02	0.018	90	0.02	0.017	85	5.7	17	65-143	
Toluene	BRL	0.02	0.018	90	0.02	0.017	85	5.7	29	67-136	
Ethylbenzene	BRL	0.02	0.018	90	0.02	0.017	85	5.7	30	80-134	
m- & p-Xylenes	BRL	0.04	0.036	90	0.04	0.035	87.5	2.8	22	81-131	
o-Xylene	BRL	0.02	0.019	95	0.02	0.018	90	5.4	21	74-134	
Xylenes	BRL	0.06	0.055	91.7	0.06	0.053	88.3	3.7	21	80-136	

Refer to the Definition page for terms.

QUALITY CONTROL CERTIFICATE



Job ID : 13010599

Date : 1/23/2013

Analysis : Purgeable Aromatics **Method :** SW-846 8021B **Reporting Units :** mg/Kg

QC Batch ID : Qb13011733 **Created Date :** 01/17/13 **Created By :** Xan

Samples in This QC Batch : 13010599.01,03,04,05

Sample Preparation : PB13011648 **Prep Method :** SW-846 5035A **Prep Date :** 01/14/13 16:00 **Prep By :** Xan

QC Type: Method Blank

Parameter	CAS #	Result	Units	D.F.	MQL	MDL	Qual
MTBE	1634-04-4	< MDL	mg/Kg	1	0.005	0.001	
Benzene	71-43-2	< MDL	mg/Kg	1	0.005	0.001	
Toluene	108-88-3	< MDL	mg/Kg	1	0.005	0.001	
Ethylbenzene	100-41-4	< MDL	mg/Kg	1	0.005	0.005	
m- & p-Xylenes	108-38-3&106-42-3	< MDL	mg/Kg	1	0.01	0.005	
o-Xylene	95-47-6	< MDL	mg/Kg	1	0.005	0.002	
Xylenes	1330-20-7	< MDL	mg/Kg	1	0.005	0.002	
Trifluorotoluene(surr)	98-08-8	95	%	1			

QC Type: Duplicate

QC Sample ID: 13010599.01

Parameter	QCSample Result	Sample Result	Units	RPD	RPD CtrLimit	Qual
Benzene	BRL	BRL	mg/Kg		30	
Ethylbenzene	BRL	BRL	mg/Kg		30	
m- & p-Xylenes	BRL	BRL	mg/Kg		30	
MTBE	BRL	BRL	mg/Kg		30	
o-Xylene	BRL	BRL	mg/Kg		30	
Toluene	BRL	BRL	mg/Kg		30	
Xylenes	BRL	BRL	mg/Kg		30	

QC Type: LCS and LCSD

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	RPD	RPD CtrLimit	%Recovery CtrLimit	Qual
MTBE	0.05	0.056	112	0.05	0.048	96	15.4	20	67.2-132	
Benzene	0.05	0.053	106	0.05	0.045	90	16.3	20	76.2-128	
Toluene	0.05	0.053	106	0.05	0.046	92	14.1	20	74.2-126	
Ethylbenzene	0.05	0.053	106	0.05	0.045	90	16.3	20	79.4-125	
m- & p-Xylenes	0.1	0.106	106	0.1	0.091	91	15.2	20	76.3-126	
o-Xylene	0.05	0.055	110	0.05	0.046	92	17.8	20	77.1-123	
Xylenes	0.15	0.161	107	0.15	0.137	91.3	16.1	20	77.2-125	

Refer to the Definition page for terms.

QUALITY CONTROL CERTIFICATE



Job ID : 13010599

Date : 1/23/2013

Analysis : Purgeable Aromatics

Method : SW-846 8021B

Reporting Units : mg/Kg

QC Batch ID : Qb13011733

Created Date : 01/17/13

Created By : Xan

Samples in This QC Batch : 13010599.01,03,04,05

QC Type: MS and MSD											
QC Sample ID: 13010599.01											
Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
MTBE	BRL	0.05	0.049	98						76-134	
Benzene	BRL	0.05	0.042	84						68-138	
Toluene	BRL	0.05	0.043	86						67-135	
Ethylbenzene	BRL	0.05	0.042	84						71-127	
m- & p-Xylenes	BRL	0.1	0.085	85						56-135	
o-Xylene	BRL	0.05	0.043	86						56-134	
Xylenes	BRL	0.149	0.128	85.9						59-134	

Refer to the Definition page for terms.

QUALITY CONTROL CERTIFICATE



Job ID : 13010599

Date : 1/23/2013

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

QC Batch ID : Qb13011777 **Created Date :** 01/17/13 **Created By :** JShah

Samples in This QC Batch : 13010599.01,03,04,05

Sample Preparation : PB13011764 **Prep Method :** TX 1005 **Prep Date :** 01/17/13 09:00 **Prep By :** JShah

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	94.2	%	1			
1-Chlorooctane(surr)	111-85-3	92.5	%	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	454	90.8	500	473	94.6	4.1	20	75-125	
>C12-C28	500	452	90.4	500	479	95.8	5.8	20	75-125	
>C28-C35	500	416	83.2	500	442	88.4	6.1	20	75-125	

QC Type: MS and MSD

QC Sample ID: 13010599.01

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	454	87.5						75-125	
>C12-C28	BRL	500	446	85.7						75-125	
>C28-C35	BRL	500	351	68						75-125	M2

Refer to the Definition page for terms.

QUALITY CONTROL CERTIFICATE



Job ID : 13010599

Date : 1/23/2013

Analysis : **Method :** TX 1005 **Reporting Units :** mg/L

QC Batch ID : Qb13011842 **Created Date :** 01/18/13 **Created By :** AVBembde

Samples in This QC Batch : 13010599.02

Sample Preparation : PB13011840 **Prep Method :** TX 1005 **Prep Date :** 01/17/13 18:00 **Prep By :** AVBembde

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	71.3	%	1				
Chlorooctadecane(surr)	3386-33-2	69.4	%	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	30	29.2	97.3	30	30	100	2.7	20	75-125	
>C12-C28	30	28.7	95.7	30	29.1	97	1.4	20	75-125	
>C28-C35	30	24.1	80.3	30	25.9	86.3	7.2	20	75-125	

QC Type: MS and MSD											
QC Sample ID: 13010599.02											
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	34.3	33.2	94.8						75-125	
>C12-C28	1.38	34.3	31.8	88.7						75-125	
>C28-C35	1.45	34.3	33.6	93.7						75-125	

Refer to the Definition page for terms.

LABORATORY TERM AND QUALIFIER DEFINITION REPORT



Job ID : 13010599

Date: 1/23/2013

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

Qualifier Definition

J	Estimation. Below calibration range but above MDL.
M2	Matrix Spike and/or Matrix Spike Duplicate recovery is below laboratory control limits due to matrix interference.
Q18	Soils not collected in a hermetically sealed container may lose low-level VOCs.
S6	Surrogate recovery is outside control limits due to matrix effects.
U	Undetected at SDL (Sample Detection Limit).

10100 East Fwy (E-10)
Suite 100
Houston, TX 77029
713-453-6060
1-877-478-6060 Toll Free
713-453-6091 Fax
ablabs.com



1. REPORT TO: **CATL**
Company: **Associated Testing Labs**
Address: **3143 Yellowstone Blvd, Houston, TX 77054**
Contact: **Tom Murphy**
Phone: **713.748.3717**
Fax: **713.748.3748**
E-mail: **tdm - bog@yahoo.com**

2. INVOICE TO:
Company:
Address:
Contact:
Phone:
Fax:
E-mail:

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

A&B JOB ID: **13010509**
5. Project # (**E12-123**)

6. Project Name/Location: **Inner Loop WMR**

7. Reporting Requirement: **Bun TLER TRRP Tier 1 0.5-Acc Res PCLs**
 TRRP Limits only TRRP Rpt. Package See Attached Standard Level II PST MDL EDD

8. Sampler's Name & Company (PLEASE PRINT) **Tom Murphy / ATL**
Sampler's Signature & Date: *[Signature]* **01/14/13**

LAB USE ONLY	9. Sample ID and Description	10. Sampling		11. 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	Sudge	Oil	Drinking Water							Air
	02A SB-6 @ 4-6'	01/13/13	920	X													
	02AD SB-6 / TWP-6	01/13/13	940	X	X												
	03A SB-7 @ 2-4'	01/14/13	1015	X		X											
	04A SB-8 @ 8-10'		1042	X	X												
	05A SB-9 @ 6-8'		1109	X	X												

19. RELINQUISHED BY: *[Signature]*
DATE: **01/14/13** TIME: **15135**
20. RECEIVED BY: **Alvin Gunn**
DATE: **1/14/13** TIME: **15:35**
21. KNOWN HAZARDS/COMMENTS: Temperature: **2-3°** °C
Thermometer ID: **11600 J5**
Intact: For N Initials: **AN**
*Containers: VOA - 40 ml vial
4 oz/8 oz - glass wide mouth
P/C - Plastic/other
A/G - Amber/Glass 1 Liter
**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

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 : 13010599	Date Received : 01/14/2013	Time Received : 3:35PM																										
Client Name : Associated Testing Lab																												
Temperature : 2.3°C	Sample pH : N/A																											
Thermometer ID : 111601055	pH Paper ID : N/A																											
Check Points																												
1.	Cooler seal present and signed.	Yes	No	N/A																								
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> </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"/>											
Matrix	Water	Soil	Liquid	Sludge	Solid	Cassette	Tube	Bulk	Badge	Food	Other																	
:	<input checked="" type="checkbox"/>	<input checked="" 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																										
Comments : Include actions taken to resolve discrepancies/problem:																												

Received by : ANguyen

Check in by/date : CCripe / 01/14/2013

APPENDIX C

Photographs



View of drilling asphalt at soil boring SB-1.



Another view of drilling the asphalt at SB-1.



View of field notes, sampling and field screening equipment.



View of field screening soil samples for soil boring SB-1.



View decontamination of split spoons.



View of set up soil boring SB-2.



View of push drilling at soil boring SB-2.



View of push drilling at soil boring SB-3.



Another view of decontamination of spilt spoons.



View of the decontamination trailer, if needed.



View of some of the field screening soil samples for SB-3.



View of drilling the asphalt at soil boring SB-4.



View of push drilling at SB-4.



View push drilling at soil boring SB-5.



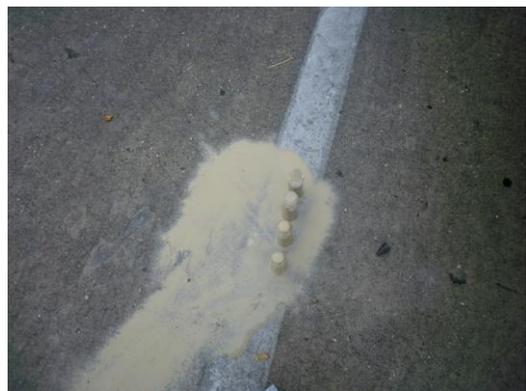
View of the vacant Pharmacy east of Sheldon Street.



View of push drilling activity at SB-6.



View surging and developing temporary well point, SB-6/TWP-6.



View of water sample from TWP-6.



View of push drilling at soil boring SB-7



View of cutting the asphalt at soil boring SB-8.



Another view of retrieval of spilt spoons from SB-8.



View of push drilling at soil boring SB-9.

APPENDIX D

Qualifications of Environmental Professional

TOM MURPHY
PROJECT MANAGER
ENVIRONMENTAL ENGINEERING SERVICES

EDUCATION

Texas State (formerly Southwest Texas State University): B. S., Geography-Resource and Environmental Studies/Biology, 1993

REGISTRATION/TRAINING

40/8-Hour CFR 1910.120, OSHA Training and Refreshers (HazWop)
40 CFR 265.16, Hazardous Waste Management Certification
49 CFR 172 & 173, DOT Hazardous Materials Training
29 CFR 1919.134, Respirator Fit Test/Training
RRC Rule 36 & API-RP 49, Hydrogen Sulfide Training
ExxonMobil LPS and OIMS Training
Facility, Client or Site-Specific Safety Training and Protocols

PROFESSIONAL EXPERIENCE

Project Manager
Project Geologist/Scientist/Manager
Field Geologist
Bioremedial Field Engineer
Specialization:
Spill response and assessment/remediation to closure
Environmental site assessments
Remediation systems installation and system design
General construction experience
Regulatory and data interpretation
Surveying/mapping/site plans

PROFESSIONAL HISTORY

Associated Testing Laboratories, Inc., Contract Environmental Professional/Project Manager, Sept. 2013 to present
Berg-Oliver Associates, Inc., Project Manager, November 2004 to present
BNC Environmental Svs., Inc. (successor CRA), Project Geologist/Scientist/Manager, Oct. 2001 to Nov. 2004.
Eco-Systems, Inc., Project Scientist, March 2001 to October 2001.
Self-Employed, Environmental Consultant/Scientist, November 2000 to March 2001.
Associated Environmental Consultants, Inc., Project Manager, August 1995 to November 2000.
Self-Employed, Environmental Consultant, April 1995 to August 1995.
Sybron Chemicals, Inc., Bioremedial Field Engineer, October 1993 to April 1995.

REPRESENTATIVE EXPERIENCE

Mr. Murphy is a mid to senior-level project manager with over 18 years of diverse environmental experience. Mr. Murphy's responsibilities include: project management activities, conducting surface and/or subsurface soil groundwater investigations, Phase II ESAs, Phase IIIs, Affected Property Assessment Reports (APARs), spill response and environmental management, conducting over twenty six hundred Phase I ESAs/due diligence, transaction screens, wetland projects (delineation, nationwide and individual permits), road (new and reconstruction) and infrastructure (waterlines, sanitary sewer and storm sewer) projects and other environmental-related tasks. Experience and preparation of cost proposals, project coordination, health and safety plans and supervisory duties of sub-contractors, bioremedial equipment project design/set-up, various remediation technology projects, equipment and design for treating petroleum-contaminated soil and groundwater, equipment set-up/construction, QA/QC, monitor well advancement, supervision of sampling discharge effluents and storm water, groundwater monitoring supervision, EPA/TCEQ & RRC protocol, expediting projects, treatability studies and contaminant plume mapping. He has project experience in field assessments and remediation projects for banks, developers, brokers, institutions, companies, corporations, engineering firms/government entities (city of Houston,

HCPID-AED and other cities) and the Texas Commission on Environmental Quality Leaking Petroleum Storage Tank (LPST) RPR Division. Mr. Murphy excels in the application of technical knowledge, site-specific factors, data analysis, report preparation to existing and potential clients. Knowledgeable in government environmental acts and regulations. Representative projects include:

- Performed numerous Subsurface Investigations and Phase II-Environmental Site Assessments for various clients to determine the presence or absence of adverse environmental conditions.
- Conducting spill response activities and delineations predominantly for pipeline-related enterprises and bulk storage facilities inclusive of: air monitoring, subcontractor supervision, excavation and over-excavation, sampling, waste disposal (waste profiling/characterization, transportation and disposal), reporting and closure under Railroad Commission of Texas or TCEQ. Representative clients:
 - ❑ ExxonMobil Pipeline Co. (EMPCo.)
 - ❑ BP Pipelines North America (NA), Inc.
 - ❑ Valero Logistics Operations, L.P.
 - ❑ Kinder Morgan
 - ❑ Shell Oil Products US, Equiva, Motiva and Equilon
 - ❑ TEPPCO
- Prepared a pilot project leading to a contracted waste water line build-up treatment plan, technical documents, cost proposal for the City of Houston (waste water line bioremediation).
- Conducted numerous new road, road reconstruction, waterline alignments, sanitary sewer alignments, storm sewer alignments and Limited Environmental Assessment projects for the City of Houston Public Works and Engineering Department, Harris County Public Infrastructure Department-Architecture and Engineering Division and Engineering Firms and other numerous linear projects (TxDOT (State CE, CE and support for LEAs).
- LPST remediation equipment set-up and design, petroleum contaminant reduction, TCEQ approved closure of several LPST sites and supervision of LPST sites.
- Experience in all phases of construction including bioremediation equipment installation, sampling protocol of water and/or soils, and closure of project site. Field Engineer for numerous site assessments throughout the Gulf Coast region. Construction of bioremediation systems to convert pump and treat contaminated ground water including recovery/treatment/microbe and nutrient injection systems. Projects:
 - ❑ Houston Lighting & Power-Spring Branch, Houston, bioreactor system; and
 - ❑ Wilburforce Road, Houston-First Interstate (successor Wells Fargo Bank), bioreactor.
- Field experience with soil injection, bioreactors, air strippers, and vacuum heaps and air sparging to treat soil/groundwater contaminants. Field Engineer for various remediation projects of oil and petroleum-contaminated soils. Field experience in soil vapor extraction equipment (SVE) including a specially designed bio-treated fluid separator. Constructed a vapor extraction system with a biological scrubber to extend carbon polishing efficiency and/or the potential for breakthrough or fugitive releases, and reduction of overall total emissions. System also included method to remove groundwater from vapor extraction wells, which tended to accumulate due to excessive rainfall and shallow groundwater effects. Constructed, maintained and operated landfarms for various clients. Provided technical and consulting services during the operation of the landfarm, including biological health analyses sampling, data interpretation, report presentation and closure. Other Environmental Projects:
 - ❑ Numerous due diligence assessments and affected property assessments for various clients.
 - ❑ Non-producing “old oilfield” asset assessments (Chevron Environmental Management Company and Chevron Business and Real Estate Services).

- ❑ Several States, Monitoring and assessments of natural gas compressor stations (El Paso Energy Corporation-Tennessee Gas Pipeline and Southern Natural Gas).
- ❑ Texas – Hydrostatic water treatment projects.
- ❑ Texas – Wastewater permitting and discharge analyses (Williams Energy-Williams Gas Pipeline and EMPCo.).
- ❑ Numerous crude oil and refined product spill delineations.
- ❑ Texas City, Texas – BP-Amoco pipeline release assessment affecting sanitary sewer system.
- ❑ Texas – Assessments of Shell Oil Products US and related enterprises-Equiva, Motiva and Equilon.
- ❑ Pasadena, Texas – Kinder Morgan Texas Pipeline, Assessment to evaluate off-site source of corrosion to pipeline.
- ❑ Remediation and landfarms (Chevron Environmental Management Co., First Interstate (successor Wells Fargo Bank), Kinder Morgan, Genesis Crude Oil, L.P., Valero Logistics Operations, L.P., TEPPCO, Specialty Lubricants and Commercial Metals).
- ❑ Angleton, Texas – First Interstate (successor Wells Fargo Bank), specialty soil vapor extraction system.
- ❑ Rockport and Marshall, Texas-First Interstate (successor Wells Fargo Bank), vacuum heap/augmented with automated microbial/nutrient additive system.
- Administrative duties, supervision, cost proposals, report preparation, regulatory document preparation, client project status reports. Supervision and field experience in soil boring/monitor well drilling advancement, logging, decommissioning and soil sampling criteria. Installation of numerous soil borings and groundwater monitoring wells at various sites.
- Field experience in groundwater monitoring, low flow sampling, flow interpretation, and contaminant plume mapping. Experience in a variety of mapping, site plan creation/surveying, geographic information systems, regulatory databases and land-use planning.
- Performed over twenty-six hundred Phase I Site Assessments, Categorical Exclusions and Limited Environmental Assessments for various clients including oil companies (Chevron Environmental Management Co., ChevronTexaco Business and Real Estate Services, Shell Oil Products US, Weatherford International, Inc., EMPCo., etc.) banks, lending agencies, private individuals and/or businesses and corporations, engineering firms, Texas Department of Transportation, City of Houston Department of Public Works and Engineering and Harris County Public Infrastructure Department-Architecture and Engineering Division. Performed site assessments on all types of properties and facilities including vacant and developing properties, office buildings, office/warehouses, machine shops, and industrial properties. Performed PCS PrimeCo., Sprint, NEXTEL, and American Tower Company pad site assessments. Project Budgets \$2,500-\$5,500: Locations: Texas, Louisiana, North Carolina, Ohio, Virginia, West Virginia.
- Performed and managed various site clean-ups (hazardous and non-hazardous materials/items). Sampling events of abandoned drums and containers with unidentified substances, laboratory supervision, obtaining waste codes, arranging pick-up by certified waste hauling enterprises and appropriate final disposal activities.

ASSOCIATIONS AND ORGANIZATIONS

The Society of Texas Environmental Professionals

National Association of Environmental Professionals