

PHASE II ENVIRONMENTAL SITE ASSESSMENT REPORT

**SOUTHWEST PUMP STATION IMPROVEMENTS PACKAGE 2
RICHMOND AVENUE AND MID LANE
HOUSTON, HARRIS COUNTY, TEXAS**

WBS NO. S-001000-0047-4



PREPARED FOR:
**KIT PROFESSIONAL
HOUSTON, TEXAS**

BY:
**ASSOCIATED TESTING LABORATORIES, INC.
HOUSTON, TEXAS**

**REPORT NO: E13-122
FEBRUARY 2014**

February 10, 2014

KIT PROFESSIONAL
ATTN: MR. SREE PUNUKULA, PE
2825 WILCREST DRIVE, SUITE 600
HOUSTON, TEXAS 77042

RE: PHASE II ENVIRONMENTAL SITE ASSESSMENT
SOUTHWEST PUMP STATION IMPROVEMENTS PACKAGE 2
RICHMOND AVENUE AT MID LANE
HOUSTON, TEXAS

WBS No. S-001000-0047-4
ATL REPORT NO.: E13-122

Mr. Punukula,

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

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

CONCLUSIONS

ATL performed a Limited Phase II Environmental Site Assessment (ESA) for the Southwest Pump Station Improvements Package II located in Houston, Texas. Please refer to Figures for the location and site details. The following is noted:

- Three (3) environmental soil borings were completed to a depth of 25 feet at the potential recognized environmental condition (REC) area located at Richmond Avenue and Mid Lane. Soil samples were screened utilizing a MiniRAE Photo Ionization Detector (PID) instrument in the field. PID readings were non-detect, thus default soil sample were collected and submitted for testing. One soil sample was submitted from each of the boring at various depths. Soil samples were analyzed for total petroleum hydrocarbons (TPH) and methyl tert-butyl ether/benzene, toluene, ethyl-benzene and total xylenes (MTBE/BTEX).
- Groundwater was not encountered to 25 feet below ground surface.

The following provides a summary of the soil laboratory analytical results for the project site:

- No MTBE/BTEX constituents were detected above the sample detection limit. No elevated TPH detections were reported. Based on the laboratory analytical results, no soil concentrations exceed TCEQ TRRP Total Soil Combined (^{Tot}Soil_{Comb}) PCLs or groundwater protective (^{GW}Soil_{Ing}) PCLs for a 0.5-acre residential use and are not a concern to construction workers.

RECOMMENDATIONS

ATL performed a Limited Phase II Environmental Site Assessment (ESA) for the Southwest Pump Station Improvements Package II project located 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, the soil at the investigated area was determined not to be affected by petroleum hydrocarbons. Soil conditions are not a concern to construction workers.
- No air monitoring or special handling practices for soil/groundwater or special pipe and gaskets is required.

Regards,

A handwritten signature in blue ink, appearing to read 'Tom Murphy', is positioned below the 'Regards,' text.

Tom Murphy
Project Manager

Attachment

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1.0 INTRODUCTION

The replacement of a major water main supply waterline for the Southwest Pump Station is proposed. The investigated area for the project is located at Richmond Avenue and Mid Lane in Houston, Harris County in Houston, Texas. Location maps (Key Map©© and United States Geological Survey Topographic Map), FIGURE 1A and 1B identify the project area and are presented in the Figures attachments of this report. The investigated will typically be referred to as the potential recognized environmental condition (REC) area in this document.

Nielsen Delicatessen (4500 Richmond Avenue), Career Placement Staffing, Inc./Kenneth C Kern Search Consultants (4444 Richmond Avenue), Professional Camera Care (4410 Richmond Avenue), former Palmer Packing shop (4404 Richmond Avenue) and other commercial uses are present to the north/northeast of the REC area. Single family residential is situated to the south of the potential REC area. Richmond Avenue is situated to the east and west of the REC area.

2.0 SCOPE-OF-WORK

Associated Testing Laboratories (ATL) was retained by KIT Professional to evaluate whether a leaking petroleum storage tank (LPST) facility in the vicinity of a proposed main water line has affected the REC area:

1. LPST facility (4500 Richmond Avenue). A gasoline service station/ convenience appeared to formerly be present at Nielsen Delicatessen on the northwest corner of Richmond Avenue and Mid Lane.

Sampling and analyses was conducted to determine whether contamination is present at the project site and the concentration of the contaminant(s) in the soil and/or groundwater, if any. The following Phase II Assessment activities are performed:

- Conducted an investigation of an REC area.
- Notification of potentially affected parties by the completion of a Texas 811.
- Soil sampling locations were placed at equidistant locations to provide adequate coverage of the investigated area. Soil samples were submitted 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 three soil borings at the project site. If groundwater was encountered during drilling, convert up to one soil borings to temporary

well point for the collection of shallow groundwater. During the Phase II ESA sampling event, groundwater was not encountered to 25 feet bgs.

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

3.0 PHASE II ASSESSMENT ACTIVITIES

On November 01, 2013, ATL completed three soil borings, SB-1 through SB-3 at predetermined locations at the project site. The soil borings were completed to a depth of 25 feet below ground surface (bgs).

Soil borings were advanced utilizing direct push technologies inclusive of a truck-mounted hydraulically-driven sampling device consisting of a 2-inch diameter, 4-foot stainless steel sampling spoon. Soil samples were continuously collected at 2-foot intervals and field screened utilizing a photo-ionization detector (PID). Geologic stratigraphy (lithology) and subsurface characteristics were recorded by the field geologist. FIGURE 2 provides investigated site details and soil boring locations. Soil boring logs are presented in APPENDIX A.

Prior to the initial soil boring and between each 2-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

Three soil borings, SB-1, SB-2 and SB-3 were completed in the median (esplanade) of Richmond Avenue to the east of Mid Lane. The soil boring were completed near an LPST facility (4800 Richmond Avenue). PID field screening results were non-detect (0.0 ppm). As a result, default soil samples were submitted collected and submitted for

laboratory analytical testing from various depths to characterize horizontal conditions at the REC area. FIGURE 2 provides site details and soil boring locations. Groundwater was not encountered to 25 feet below ground surface.

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.

TABLE I summarizes the laboratory analytical data. *MTBE/BTEX concentrations will be the predominant environmental and exposure consideration of this project. The $^{Tot}Soil_{Comb}$ and $^{GW}GW_{Ing}$ PCLs are the action levels for this project. Areas with soil or groundwater sampling results exceeding the $^{Tot}Soil_{Comb}$ and/or $^{GW}GW_{Ing}$ PCLs will be areas of environmental concern for the project.*

5.0 SOIL/GW LABORATORY ANALYTICAL RESULTS

A total of three soil samples were collected from the three soil borings and soil samples were submitted to a certified laboratory for analyses. The soil samples were analyzed for total petroleum hydrocarbons (TPH) by Texas Commission on Environmental Quality (TCEQ) Texas Method 1005, methyl tert-butyl ether/benzene, toluene, ethyl-benzene and total xylenes (MTBE/BTEX) by EPA Method SW846-8260. The following details the laboratory methodology:

5.1 LABORATORY ANALYTICAL METHODS

Methyl tert-butyl ether/benzene, toluene, ethyl-benzene, and xylene (MTBE/BTEX) and/or volatile organic compounds (VOCs) 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 24-26 feet and SB-3 at 4-6 feet bgs were submitted for TPH and MTBE/BTEX analyses from the soil borings. 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

Three soil samples, SB-1 at 10-12 feet bgs, SB-2 at 24-26 feet bgs and SB-3 at 4-6 feet bgs, were submitted and analyzed for the REC location. The following was reported for MTBE/BTEX constituents for the soil samples:

- MTBE concentrations were below the sample detection limit or non-detect (<0.001 mg/kg).
- Benzene concentrations were below the sample detection limit or non-detect (<0.001 mg/kg).
- Toluene concentrations were below the sample detection limit or non-detect (<0.001 mg/kg).
- Ethyl-benzene concentrations were below the sample detection limit or non-detect (<0.006 mg/kg).
- Total xylene concentrations were below the sample detection limit or non-detect (<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 <26.7 mg/kg to <28.9 mg/kg.
- TPH carbon ranges >C₁₂-C₂₈ were determined to be non-detect and ranged from <22.9 mg/kg to <30.7 mg/kg.
- TPH carbon ranges >C₂₈-C₃₅ were determined to be non-detect

and ranged from <20 mg/kg to <21.6 mg/kg.

TPH concentrations were determined to be below the sample detection limit or non-detect. No MTBE/BTEX constituents were detected above the sample detection limit. None of the soil laboratory analytical concentrations exceed the TCEQ $^{Tot}Soil_{Comb}$ PCLs and are not a health concern to construction workers. During construction activities, air monitoring, special pipe and gaskets, special soil/groundwater handling is not required. TABLE I summarizes the laboratory analytical results. A copy of the laboratory analytical results is presented in APPENDIX B. Photographs of field activities are presented in APPENDIX C.

6.0 AIR MONITORING/WASTE MANAGEMENT PRACTICES

Based on the results of the Phase II ESA, air monitoring is not warranted at the project site. Confined space protocol may still apply depending on construction activities. No “*special handling practices*” of the soil or groundwater is required. No other areas of the project site 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 October 14, 2013. 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

No MTBE/BTEX constituents were detected above the sample detection limit. No elevated TPH detections were reported. Based on the laboratory analytical results, no soil concentrations exceed TCEQ TRRP Total Soil Combined ($^{Tot}Soil_{Comb}$) PCLs or groundwater protective ($^{GW}Soil_{Ing}$) PCLs for a 0.5-acre residential use.

Groundwater Analytical

Groundwater was not encountered to 25 feet bgs.

8.0 RECOMMENDATIONS

Based on the laboratory analytical results and field observations of the Limited Phase II Environmental Site Assessment for the Southwest Pump Station and Water Plant project in Harris County, Texas, the following is noted:

- Based on the soil laboratory analytical results, the soil was determined not to be a concern to construction workers.
- No air monitoring or special handling practices for soil/groundwater or special pipe and gaskets is required.

FIGURES

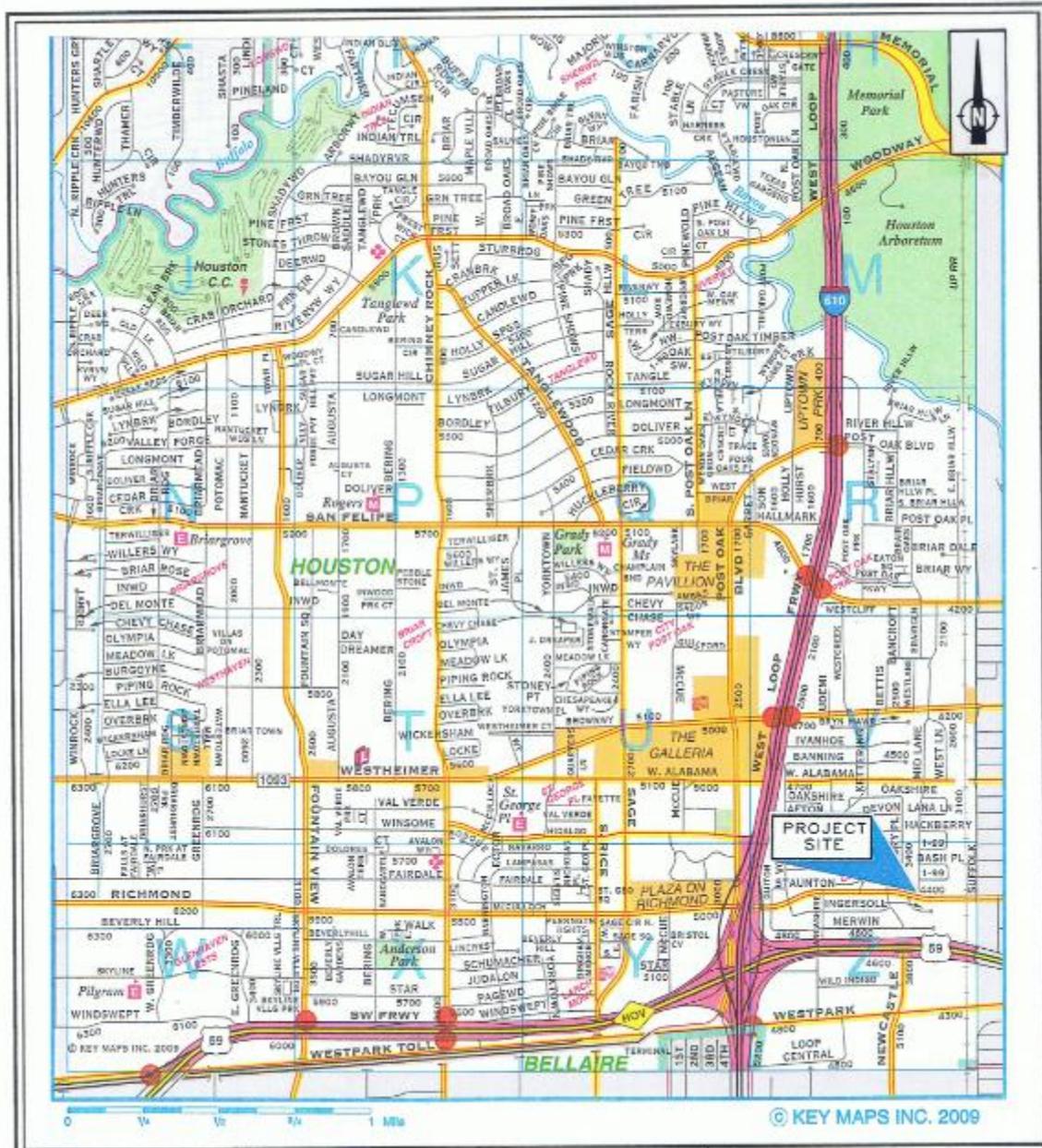


FIGURE 1A

SOUTHWEST PUMP STATION IMPROVEMENTS PACKAGE 2

RICHMOND AVENUE AT MID LANE, HOUSTON, HARRIS COUNTY, TX

WBS NO. S-001000-0047-4

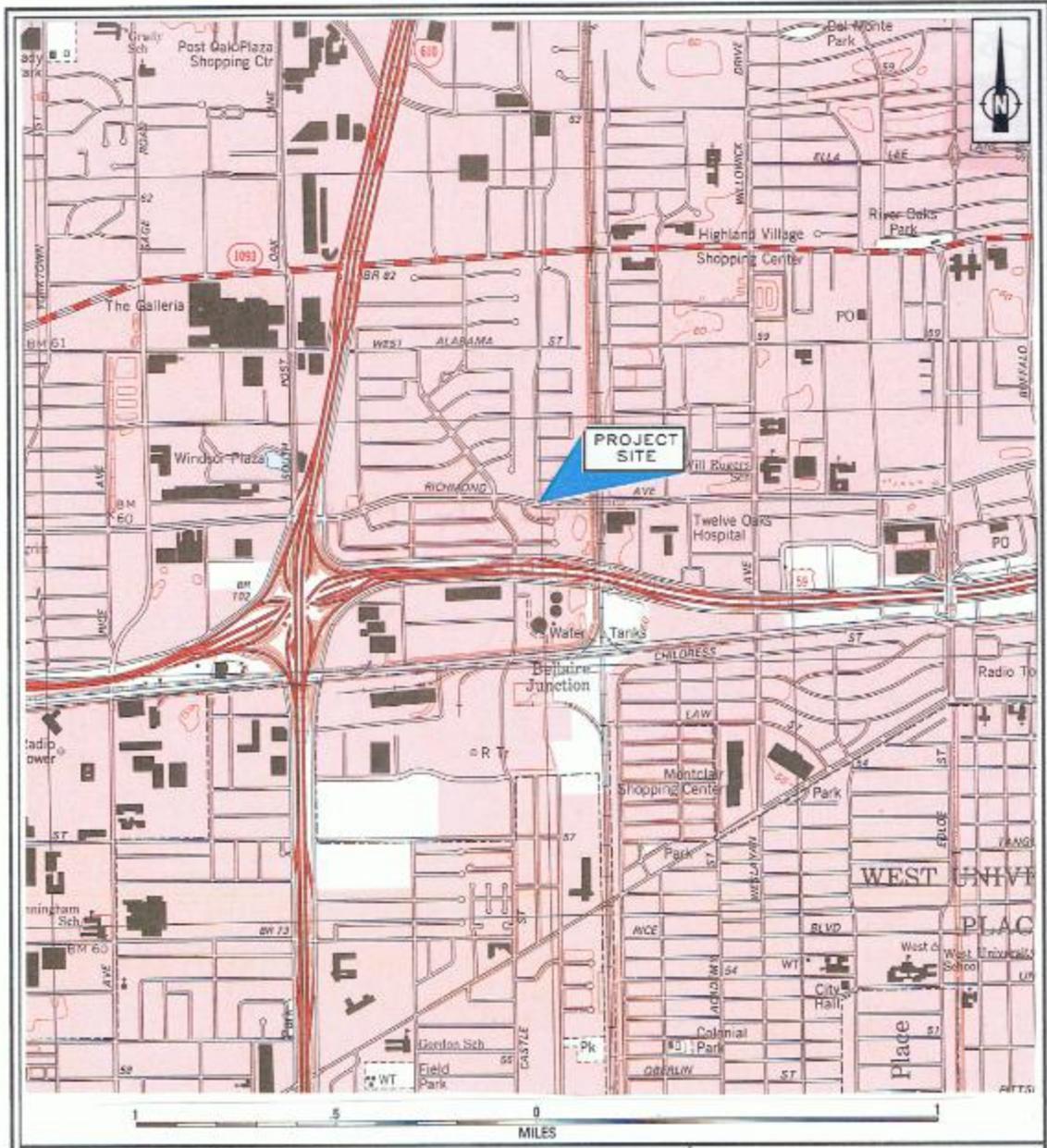


FIGURE 1B

SOUTHWEST PUMP STATION IMPROVEMENTS PACKAGE 2

RICHMOND AVENUE AT MID LANE, HOUSTON, HARRIS COUNTY, TX

WBS NO. S-001000-0047-4



FIGURE 2
Limited Phase II Environmental Site Assessment
SW Pump Station Improvements Package 2
Soil Boring Location Map - LPST Facility
(4500 Richmond Avenue)
Houston, Harris County, Texas
ATL Project No. E13-122

Approximate Scale:
1" = 83'

LEGEND
● SB-1 - Soil Boring Location

| |
|--------------|
| TABLE |
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TABLE I

SUMMARY OF SOIL LABORATORY ANALYTICAL RESULTS - BTEX-MTBE/TPH
SOUTHWEST PUMP STATION IMPROVEMENTS-PACKAGE 2
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 (^{SW} Soil _{Ing}) | | | 0.621 | 0.026 | 8.20 | 7.80 | 120 | NA | 65 | 200 | NA | NA |
| SOIL BORING SOIL SAMPLES | | | | | | | | | | | | |
| SB-1 | 11/01/13 | 10-12 | <0.001 | <0.001 | <0.001 | <0.006 | <0.002 | ND | <28.9 | <24.7 | <21.6 | ND |
| SB-2 | 11/01/13 | 24-26 | <0.001 | <0.001 | <0.001 | <0.006 | <0.002 | ND | <26.7 | <22.9 | <20 | ND |
| SB-3 | 11/01/13 | 4-6 | <0.001 | <0.001 | <0.001 | <0.006 | <0.002 | ND | <28.1 | <30.7 | <21 | ND |

Notes:

1. PCLs indicates TRRP Tier 1 Tables protective concentration limits.
2. TRRP Tier 1 PCLs (^{Tot}Soil_{Comb}) indicates the PCLs for the combined soil exposure pathways (Residential, 0.5-acre site).
3. TRRP Tier 1 PCLs (^{SW}Soil_{Ing}) indicates the PCLs for the leaching of soil concentrations into groundwater (Residential, 0.5-acre site).
4. Analyses by the following methods: BTEX - EPA Method SW846-8021B; TPH - Texas Method 1005.
5. NA indicates Not Applicable, or Not Available.
6. ND indicates Non-Detect, if applicable.

APPENDIX A

Soil Boring Logs

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| PROJECT NO: E13-122 | <input checked="" type="checkbox"/> BOREHOLE <input type="checkbox"/> MONITOR WELL |
| SITE NAME: Southwest Pump Station Improvements Package 2 | BORING NUMBER: SB-1 TEMP. WELL NUMBER: _____ |
| FACILITY ADDRESS: Richmond Avenue at Mid Lane | |
| DRILLING COMPANY / METHOD / RIG: Johnson Drilling/Truck-Mounted Hydraulically-Driven Push Probe | |
| DRILLER: B. Johnson | DATE: (START / FINISH) 11/01/2013 @ 14:29-15:26 |
| 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 | | | | | Grass, Topsoil (0 to 2 feet) | |
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| 0.0 | | | | | CL Sandy clay; Dark brown clay, fines, soft, moist (2-6 feet) | |
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| PROJECT NO: <u>E13-122</u> | <input checked="" type="checkbox"/> BOREHOLE <input type="checkbox"/> MONITOR WELL |
| SITE NAME: <u>Southwest Pump Station Improvements Package 2</u> | BORING NUMBER: <u>SB-2</u> TEMP. WELL NUMBER: _____ |
| FACILITY ADDRESS: <u>Richmond Avenue at Mid Lane</u> | |
| DRILLING COMPANY / METHOD / RIG: <u>Johnson Drilling/Truck-Mounted Hydraulically-Driven Push Probe</u> | |
| DRILLER: <u>B. Johnson</u> | DATE: (START / FINISH) <u>11/01/2013 @ 15:55-16:52</u> |
| LOGGED BY: <u>T. Murphy</u> | TOP OF CASING ELEVATION: <u>N/Apl.</u> |

| DEPTH | PID | SAMPLE INTERVAL | STRATIGRAPHY | USCS | SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER) | NOTES |
|----------------|-----|-----------------|--------------|------|---|---------------------------------------|
| Ground Surface | | | | | | |
| 0 | | | | | Grass, Topsoil (0 to 2 feet) | |
| 0.0 | | | | | | |
| 0.0 | | | | | CL Sandy clay; Dark brown clay, fines, soft, moist (2-6 feet) | |
| 5 | | | | | | |
| 0.0 | | | | | | |
| 0.0 | | | | | | |
| 10 | | | | | | |
| 0.0 | | | | | | |
| 0.0 | | | | | | |
| 15 | | | | | | |
| 0.0 | | | | | CL Sandy clay; Light gray and reddish-orange clay, firm, moist with FE/MG staining and calcareous nodules (6-25 feet bgs) | |
| 0.0 | | | | | | |
| 0.0 | | | | | | |
| 20 | | | | | | |
| 0.0 | | | | | | |
| 0.0 | | | | | | |
| 25 | | X | | | | SB-2 @ 24-26'; 16:52, 1-4 oz |
| 0.0 | | | | | | |
| 30 | | | | | Total Depth = 26 ft | |
| 0.0 | | | | | Note: No groundwater encountered to 25 feet bgs. Subsurface clearance at 15:52. | |
| 0.0 | | | | | | |
| 35 | | | | | | |
| 0.0 | | | | | | |
| 40 | | | | | | |
| 0.0 | | | | | | |
| 45 | | | | | | |

| | | | |
|--|----------------|--|-------------------|
| FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE SURFACE | WATER ENCOUNTERED |
| A TL Associated Testing Laboratories, Inc. | | TOTAL DEPTH: <u>25'</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: E13-122 BOREHOLE MONITOR WELL
SITE NAME: Southwest Pump Station Improvements Package 2 BORING NUMBER : SB-3 TEMP. WELL NUMBER : _____
FACILITY ADDRESS: Richmond Avenue at Mid Lane
DRILLING COMPANY / METHOD / RIG: Johnson Drilling/Truck-Mounted Hydraulically-Driven Push Probe
DRILLER: B. Johnson **DATE: (START / FINISH)** 11/01/2013 @ 15:17-16:19
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 | | Grass, Topsoil (0 to 0.5-foot) | |
| 0.0 | | | | | | |
| 0.0 | | | | | | |
| 5 | | | | CL | Sandy clay; Dark brown clay, fines, soft, moist (0.5-foot to 6 feet) | SB-3 @ 4-6'; 15:22, 1-4 oz |
| 0.0 | | | | | | |
| 0.0 | | | | | | |
| 10 | | | | | | |
| 0.0 | | | | | | |
| 0.0 | | | | | | |
| 15 | | | | CL | Sandy clay; Light gray and reddish-orange clay, firm, moist with FE/MG staining and calcareous nodules (6-25 feet bgs) | |
| 0.0 | | | | | | |
| 0.0 | | | | | | |
| 20 | | | | | | |
| 0.0 | | | | | | |
| 0.0 | | | | | | |
| 25 | | | | | | |
| 0.0 | | | | | | |
| 30 | | | | | Total Depth = 26 ft | |
| | | | | | Note: No groundwater encountered to 25 feet bgs. Subsurface clearance at 15:15. | |
| 35 | | | | | | |
| 40 | | | | | | |
| 45 | | | | | | |

| | | | |
|---|----------------|--|-------------------|
| FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE SURFACE | WATER ENCOUNTERED |
| A TL Associated Testing Laboratories, Inc. | | TOTAL DEPTH: <u>25'</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> | |

APPENDIX B

Laboratory Analytical Results

Laboratory Analysis Report

Total Number of Pages: 16

Job ID : 13110182



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

Client Project Name :

E13-122 / Southwest Pump Station Imp, Package II

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: 11/01/13

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

| Client Sample ID | Matrix | A&B Sample ID |
|------------------|--------|---------------|
| SB-1 @ 10-12' | Soil | 13110182.01 |
| SB-2 @ 24-26' | Soil | 13110182.02 |
| SB-3 @ 4-6' | Soil | 13110182.03 |

Alisha Hughes

Released By: Alisha Hughes
Title: Project Manager
Date: 11/14/2013



This Laboratory is NELAP (T104704213-13-8) accredited. Effective: 04/01/2013; Expires: 03/31/2014

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 : 11/05/2013 09:55



LABORATORY TEST RESULTS --- TRRP13

Client Sample ID: SB-1 @ 10-12'
A&B Job Sample ID: 13110182.01

Date: 11/14/2013

Client Name: Associated Testing Lab

Attn: Tom Murphy

Project Name: E13-122 / Southwest Pump Station Imp, Package II

Test Description: % Moisture

Sample Matrix: Soil

Analytical Method: SM 2540G

Date Collected: 11/01/2013 14:41

QC Batch ID: Qb13110597

Date Received: 11/05/2013 09:55

Prep Method: SM 2540G

Date Prepared: 11/05/2013 18:00

Prepared By: MMaldonado

Prep Batch ID: PB13110571

Analyst Initial: MAM

% Moisture: 17.9

| CAS Number | Parameter | Result | Flag | SDL | MDL | MQL | UQL | Units | DF | Date/Time |
|------------|-------------------------|--------|------|-----|-----|------|------|-------|----|----------------|
| | % Moisture ¹ | 17.9 | | | | ---- | ---- | % | 1 | 11/05/13 18:01 |

Soil results reported on dry weight basis



LABORATORY TEST RESULTS --- TRRP 13

Client Sample ID: SB-1 @ 10-12'
 A&B Job Sample ID: 13110182.01

Date: 11/14/2013

Client Name: Associated Testing Lab Attn: Tom Murphy
 Project Name: E13-122 / Southwest Pump Station Imp, Package II

Test Description: **Purgeable Aromatics**

Sample Matrix: Soil
 Date Collected: 11/01/2013 14:41
 Date Received: 11/05/2013 09:55
 Date Prepared: 11/05/2013 17:00

Analytical Method: SW-846 8021B
 QC Batch ID: Qb13110718
 Prep Method: SW-846 5035A
 Prepared By: SBojja
 Prep Batch ID: PB13110706

Analyst Initial: SRB

% Moisture: 17.9

| CAS Number | Parameter | Result | Flag | SDL | MDL | MQL | UQL | Units | DF | Date/Time |
|----------------|------------------------|---------|-------|-------|-------|-------|-----|-------|-----|----------------|
| 1634-04-4 | MTBE | < 0.001 | U | 0.001 | 0.001 | 0.005 | 0.4 | mg/Kg | 1.0 | 11/06/13 04:31 |
| 71-43-2 | Benzene | < 0.001 | Q18,U | 0.001 | 0.001 | 0.005 | 0.4 | mg/Kg | 1.0 | 11/06/13 04:31 |
| 108-88-3 | Toluene | < 0.001 | U | 0.001 | 0.001 | 0.005 | 0.4 | mg/Kg | 1.0 | 11/06/13 04:31 |
| 100-41-4 | Ethylbenzene | < 0.006 | U | 0.006 | 0.005 | 0.005 | 0.4 | mg/Kg | 1.0 | 11/06/13 04:31 |
| 108-38-3&106-4 | m- & p-Xylenes | < 0.006 | U | 0.006 | 0.005 | 0.01 | 0.8 | mg/Kg | 1.0 | 11/06/13 04:31 |
| 95-47-6 | o-Xylene | < 0.002 | U | 0.002 | 0.002 | 0.005 | 0.4 | mg/Kg | 1.0 | 11/06/13 04:31 |
| 1330-20-7 | Xylenes | < 0.002 | U | 0.002 | 0.002 | 0.005 | 1.2 | mg/Kg | 1.0 | 11/06/13 04:31 |
| 98-08-8 | Trifluorotoluene(surr) | 102 | | | | 81 | 111 | % | 1.0 | 11/06/13 04:31 |

Soil results reported on dry weight basis



LABORATORY TEST RESULTS --- TRRP 13

Client Sample ID: SB-1 @ 10-12'
 A&B Job Sample ID: 13110182.01

Date: 11/14/2013

Client Name: Associated Testing Lab
 Project Name: E13-122 / Southwest Pump Station Imp, Package II

Attn: Tom Murphy

Test Description: **Total Petroleum Hydrocarbons**

Analytical Method: TX 1005
 QC Batch ID: Qb13110617
 Prep Method: TX 1005
 Prepared By: AVBembde
 Prep Batch ID: PB13110613

Sample Matrix: Soil
 Date Collected: 11/01/2013 14:41
 Date Received: 11/05/2013 09:55
 Date Prepared: 11/05/2013 17:00

Analyst Initial: AVB

% Moisture: 17.9

| CAS Number | Parameter | Result | Flag | SDL | MDL | MQL | UQL | Units | DF | Date/Time |
|------------|------------------------|--------|-------|------|------|------|------|-------|----|----------------|
| TPH-1005-1 | C6-C12 ¹ | < 28.9 | Q18,U | 28.9 | 23.7 | 25 | 1000 | mg/Kg | 1 | 11/06/13 02:53 |
| TPH-1005-2 | >C12-C28 ¹ | < 24.7 | U | 24.7 | 20.3 | 25 | 1000 | mg/Kg | 1 | 11/06/13 02:53 |
| TPH-1005-4 | >C28-C35 ¹ | < 21.6 | U | 21.6 | 17.7 | 25 | 1000 | mg/Kg | 1 | 11/06/13 02:53 |
| | Total C6-C35 | <28.9 | | | | ---- | ---- | mg/Kg | 1 | 11/06/13 02:53 |
| 111-85-3 | 1-Chlorooctane(surr) | 102 | | | | 60 | 143 | % | 1 | 11/06/13 02:53 |
| 3386-33-2 | Chlorooctadecane(surr) | 104 | | | | 60 | 150 | % | 1 | 11/06/13 02:53 |

Soil results reported on dry weight basis



LABORATORY TEST RESULTS --- TRRP13

Client Sample ID: SB-2 @ 24-26'
 A&B Job Sample ID: 13110182.02

Date: 11/14/2013

Client Name: Associated Testing Lab Attn: Tom Murphy
 Project Name: E13-122 / Southwest Pump Station Imp, Package II

| | | | |
|--------------------|-------------------|----------------|------------------|
| Test Description: | % Moisture | Sample Matrix | Soil |
| Analytical Method: | SM 2540G | Date Collected | 11/01/2013 16:52 |
| QC Batch ID: | Qb13110597 | Date Received | 11/05/2013 09:55 |
| Prep Method: | SM 2540G | Date Prepared | 11/05/2013 18:00 |
| Prepared By: | MMaldonado | | |
| Prep Batch ID | PB13110571 | | |
| Analyst Initial | MAM | % Moisture | 11.4 |

| CAS Number | Parameter | Result | Flag | SDL | MDL | MQL | UQL | Units | DF | Date/Time |
|------------|-------------------------|--------|------|-----|-----|------|------|-------|----|----------------|
| | % Moisture ¹ | 11.4 | | | | ---- | ---- | % | 1 | 11/05/13 18:01 |

Soil results reported on dry weight basis



LABORATORY TEST RESULTS --- TRRP 13

Client Sample ID: SB-2 @ 24-26'
 A&B Job Sample ID: 13110182.02

Date: 11/14/2013

Client Name: Associated Testing Lab Attn: Tom Murphy
 Project Name: E13-122 / Southwest Pump Station Imp, Package II

Test Description: **Purgeable Aromatics**
 Analytical Method: SW-846 8021B
 QC Batch ID: Qb13110718
 Prep Method: SW-846 5035A
 Prepared By: SBojja
 Prep Batch ID: PB13110706
 Analyst Initial: SRB

Sample Matrix: Soil
 Date Collected: 11/01/2013 16:52
 Date Received: 11/05/2013 09:55
 Date Prepared: 11/05/2013 17:00

% Moisture: 11.4

| CAS Number | Parameter | Result | Flag | SDL | MDL | MQL | UQL | Units | DF | Date/Time |
|----------------|------------------------|---------|-------|-------|-------|-------|-----|-------|-----|----------------|
| 1634-04-4 | MTBE | < 0.001 | U | 0.001 | 0.001 | 0.005 | 0.4 | mg/Kg | 1.0 | 11/06/13 04:57 |
| 71-43-2 | Benzene | < 0.001 | Q18,U | 0.001 | 0.001 | 0.005 | 0.4 | mg/Kg | 1.0 | 11/06/13 04:57 |
| 108-88-3 | Toluene | < 0.001 | U | 0.001 | 0.001 | 0.005 | 0.4 | mg/Kg | 1.0 | 11/06/13 04:57 |
| 100-41-4 | Ethylbenzene | < 0.006 | U | 0.006 | 0.005 | 0.005 | 0.4 | mg/Kg | 1.0 | 11/06/13 04:57 |
| 108-38-3&106-4 | m- & p-Xylenes | < 0.006 | U | 0.006 | 0.005 | 0.01 | 0.8 | mg/Kg | 1.0 | 11/06/13 04:57 |
| 95-47-6 | o-Xylene | < 0.002 | U | 0.002 | 0.002 | 0.005 | 0.4 | mg/Kg | 1.0 | 11/06/13 04:57 |
| 1330-20-7 | Xylenes | < 0.002 | U | 0.002 | 0.002 | 0.005 | 1.2 | mg/Kg | 1.0 | 11/06/13 04:57 |
| 98-08-8 | Trifluorotoluene(surr) | 102 | | | | 81 | 111 | % | 1.0 | 11/06/13 04:57 |

Soil results reported on dry weight basis



LABORATORY TEST RESULTS --- TRRP 13

Client Sample ID: SB-2 @ 24-26'
A&B Job Sample ID: 13110182.02

Date: 11/14/2013

Client Name: Associated Testing Lab
Project Name: E13-122 / Southwest Pump Station Imp, Package II

Attn: Tom Murphy

Test Description: Total Petroleum Hydrocarbons
Analytical Method: TX 1005
QC Batch ID: Qb13110617
Prep Method: TX 1005
Prepared By: AVBembde
Prep Batch ID: PB13110613
Analyst Initial: AVB

Sample Matrix: Soil
Date Collected: 11/01/2013 16:52
Date Received: 11/05/2013 09:55
Date Prepared: 11/05/2013 17:00

% Moisture: 11.4

Table with 11 columns: CAS Number, Parameter, Result, Flag, SDL, MDL, MQL, UQL, Units, DF, Date/Time. Rows include TPH-1005-1 through 3386-33-2.



LABORATORY TEST RESULTS --- TRRP13

Client Sample ID: SB-3 @ 4-6'
 A&B Job Sample ID: 13110182.03

Date: 11/14/2013

Client Name: Associated Testing Lab Attn: Tom Murphy
 Project Name: E13-122 / Southwest Pump Station Imp, Package II

| | | | |
|--------------------|-------------------|----------------|------------------|
| Test Description: | % Moisture | Sample Matrix | Soil |
| Analytical Method: | SM 2540G | Date Collected | 11/01/2013 17:22 |
| QC Batch ID: | Qb13110597 | Date Received | 11/05/2013 09:55 |
| Prep Method: | SM 2540G | Date Prepared | 11/05/2013 18:00 |
| Prepared By: | MMaldonado | | |
| Prep Batch ID | PB13110571 | | |
| Analyst Initial | MAM | % Moisture | 15.6 |

| CAS Number | Parameter | Result | Flag | SDL | MDL | MQL | UQL | Units | DF | Date/Time |
|------------|-------------------------|--------|------|-----|-----|------|------|-------|----|----------------|
| | % Moisture ¹ | 15.6 | | | | ---- | ---- | % | 1 | 11/05/13 18:01 |

Soil results reported on dry weight basis



LABORATORY TEST RESULTS --- TRRP 13

Client Sample ID: SB-3 @ 4-6'
 A&B Job Sample ID: 13110182.03

Date: 11/14/2013

Client Name: Associated Testing Lab
 Project Name: E13-122 / Southwest Pump Station Imp, Package II

Attn: Tom Murphy

Test Description: **Purgeable Aromatics**

Sample Matrix: Soil

Analytical Method: SW-846 8021B

Date Collected: 11/01/2013 17:22

QC Batch ID: Qb13110718

Date Received: 11/05/2013 09:55

Prep Method: SW-846 5035A

Date Prepared: 11/05/2013 17:00

Prepared By: SBojja

Prep Batch ID: PB13110706

Analyst Initial: SRB

% Moisture: 15.6

| CAS Number | Parameter | Result | Flag | SDL | MDL | MQL | UQL | Units | DF | Date/Time |
|----------------|------------------------|---------|-------|-------|-------|-------|-----|-------|-----|----------------|
| 1634-04-4 | MTBE | < 0.001 | U | 0.001 | 0.001 | 0.005 | 0.4 | mg/Kg | 1.0 | 11/06/13 05:23 |
| 71-43-2 | Benzene | < 0.001 | Q18,U | 0.001 | 0.001 | 0.005 | 0.4 | mg/Kg | 1.0 | 11/06/13 05:23 |
| 108-88-3 | Toluene | < 0.001 | U | 0.001 | 0.001 | 0.005 | 0.4 | mg/Kg | 1.0 | 11/06/13 05:23 |
| 100-41-4 | Ethylbenzene | < 0.006 | U | 0.006 | 0.005 | 0.005 | 0.4 | mg/Kg | 1.0 | 11/06/13 05:23 |
| 108-38-3&106-4 | m- & p-Xylenes | < 0.006 | U | 0.006 | 0.005 | 0.01 | 0.8 | mg/Kg | 1.0 | 11/06/13 05:23 |
| 95-47-6 | o-Xylene | < 0.002 | U | 0.002 | 0.002 | 0.005 | 0.4 | mg/Kg | 1.0 | 11/06/13 05:23 |
| 1330-20-7 | Xylenes | < 0.002 | U | 0.002 | 0.002 | 0.005 | 1.2 | mg/Kg | 1.0 | 11/06/13 05:23 |
| 98-08-8 | Trifluorotoluene(surr) | 102 | | | | 81 | 111 | % | 1.0 | 11/06/13 05:23 |

Soil results reported on dry weight basis



LABORATORY TEST RESULTS --- TRRP 13

Client Sample ID: SB-3 @ 4-6'
 A&B Job Sample ID: 13110182.03

Date: 11/14/2013

Client Name: Associated Testing Lab Attn: Tom Murphy
 Project Name: E13-122 / Southwest Pump Station Imp, Package II

Test Description: **Total Petroleum Hydrocarbons**

Sample Matrix: Soil
 Date Collected: 11/01/2013 17:22
 Date Received: 11/05/2013 09:55
 Date Prepared: 11/05/2013 17:00

Analytical Method: TX 1005
 QC Batch ID: Qb13110617
 Prep Method: TX 1005
 Prepared By: AVBembde
 Prep Batch ID: PB13110613

Analyst Initial: AVB

% Moisture: 15.6

| CAS Number | Parameter | Result | Flag | SDL | MDL | MQL | UQL | Units | DF | Date/Time |
|------------|------------------------|--------|-------|------|------|------|------|-------|----|----------------|
| TPH-1005-1 | C6-C12 ¹ | < 28.1 | Q18,U | 28.1 | 23.7 | 25 | 1000 | mg/Kg | 1 | 11/06/13 03:40 |
| TPH-1005-2 | >C12-C28 ¹ | 30.7 | | 24.1 | 20.3 | 25 | 1000 | mg/Kg | 1 | 11/06/13 03:40 |
| TPH-1005-4 | >C28-C35 ¹ | < 21 | U | 21 | 17.7 | 25 | 1000 | mg/Kg | 1 | 11/06/13 03:40 |
| | Total C6-C35 | 30.7 | | | | ---- | ---- | mg/Kg | 1 | 11/06/13 03:40 |
| 111-85-3 | 1-Chlorooctane(surr) | 108 | | | | 60 | 143 | % | 1 | 11/06/13 03:40 |
| 3386-33-2 | Chlorooctadecane(surr) | 114 | | | | 60 | 150 | % | 1 | 11/06/13 03:40 |

Soil results reported on dry weight basis
¹-Parameter not available for accreditation

QUALITY CONTROL CERTIFICATE



Job ID : 13110182

Date : 11/14/2013

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

QC Batch ID : Qb13110617 **Created Date :** 11/06/13 **Created By :** AVBembde

Samples in This QC Batch : 13110182.01,02,03

Sample Preparation : PB13110613 **Prep Method :** TX 1005 **Prep Date :** 11/05/13 17:00 **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 | 105 | % | 1 | | | | | |
| 1-Chlorooctane(surr) | 111-85-3 | 104 | % | 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 | 448 | 89.6 | 500 | 441 | 88.2 | 1.6 | 20 | 75-125 | |
| >C12-C28 | 500 | 449 | 89.8 | 500 | 437 | 87.4 | 2.7 | 20 | 75-125 | |
| >C28-C35 | 500 | 462 | 92.4 | 500 | 445 | 89 | 3.7 | 20 | 75-125 | |

| QC Type: MS and MSD | | | | | | | | | | | |
|----------------------------------|---------------|--------------|-----------|----------|---------------|------------|-----------|------|---------------|----------------|------|
| QC Sample ID: 13110171.01 | | | | | | | | | | | |
| 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 | 451 | 87.5 | 500 | 407 | 78.7 | 10.6 | 20 | 75-125 | |
| >C12-C28 | BRL | 500 | 447 | 85.9 | 500 | 416 | 79.7 | 7.5 | 20 | 75-125 | |
| >C28-C35 | BRL | 500 | 462 | 89.3 | 500 | 445 | 85.9 | 3.9 | 20 | 75-125 | |

Refer to the Definition page for terms.

QUALITY CONTROL CERTIFICATE



Job ID : 13110182

Date : 11/14/2013

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

QC Batch ID : Qb13110718 **Created Date :** 11/05/13 **Created By :** SBojja

Samples in This QC Batch : 13110182.01,02,03

Sample Preparation : PB13110706 **Prep Method :** SW-846 5035A **Prep Date :** 11/05/13 17:00 **Prep By :** SBojja

| 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 | 104 | % | 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 | 0.049 | 98 | 0.05 | 0.048 | 96 | 2.1 | 20 | 67.2-132 | |
| Benzene | 0.05 | 0.05 | 100 | 0.05 | 0.047 | 94 | 6.2 | 20 | 76.2-128 | |
| Toluene | 0.05 | 0.051 | 102 | 0.05 | 0.049 | 98 | 4 | 20 | 74.2-126 | |
| Ethylbenzene | 0.05 | 0.051 | 102 | 0.05 | 0.049 | 98 | 4 | 20 | 79.4-125 | |
| m- & p-Xylenes | 0.1 | 0.102 | 102 | 0.1 | 0.098 | 98 | 4 | 20 | 76.3-126 | |
| o-Xylene | 0.05 | 0.051 | 102 | 0.05 | 0.049 | 98 | 4 | 20 | 77.1-123 | |
| Xylenes | 0.15 | 0.153 | 102 | 0.15 | 0.147 | 98 | 4 | 20 | 77.2-125 | |

| QC Type: MS and MSD | | | | | | | | | | | |
|----------------------------------|---------------|--------------|-----------|----------|---------------|------------|-----------|------|---------------|----------------|------|
| QC Sample ID: 13110170.01 | | | | | | | | | | | |
| 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 | 0.05 | 100 | 0.05 | 0.044 | 88 | 12.8 | 26 | 76-134 | |
| Benzene | BRL | 0.05 | 0.049 | 98 | 0.05 | 0.045 | 90 | 8.5 | 19 | 68-138 | |
| Toluene | BRL | 0.05 | 0.05 | 100 | 0.05 | 0.046 | 92 | 8.3 | 19 | 67-135 | |
| Ethylbenzene | BRL | 0.05 | 0.049 | 98 | 0.05 | 0.046 | 92 | 6.3 | 20 | 71-127 | |
| m- & p-Xylenes | BRL | 0.1 | 0.098 | 98 | 0.1 | 0.092 | 92 | 6.3 | 27 | 56-135 | |
| o-Xylene | BRL | 0.05 | 0.05 | 99.9 | 0.05 | 0.046 | 91.9 | 8.3 | 24 | 56-134 | |
| Xylenes | BRL | 0.149 | 0.148 | 99.3 | 0.15 | 0.138 | 92 | 7 | 25 | 59-134 | |

Refer to the Definition page for terms.

LABORATORY TERM AND QUALIFIER DEFINITION REPORT



Job ID : 13110182

Date: 11/14/2013

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 # 1310182

5. Project # E13-122

6. Project Name/Location

Southwest Pump Station Imp. Package II

7. Reporting Requirement: Run TLEQ TRRP TIE I 0.5-Acre 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

11/01/13

9. Sample ID and Description

10. Sampling

11. 12. Matrix

| Date | Time 24hr | Comp. | Grab | Water | Soil | Sludge | Oil | Drinking Water | Air | Other |
|----------|-----------|-------|------|-------|------|--------|-----|----------------|-----|-------|
| 11/01/13 | 1441 | | | | X | | | | | |
| | 1652 | | | | X | | | | | |
| | 1722 | | | | X | | | | | |

18. REMARKS

19. RELINQUISHED BY

Tom Murphy

20. RECEIVED BY

Amber Beane

DATE

TIME

21. KNOWN HAZARDS/COMMENTS

11/05/13 9:52 AM

Temperature: 6.6 °C
Thermometer ID 10200320
Initials AB

Intact Y N

Please FAX written changes to 713-453-6091

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

| No. of Containers | 13. Containers* | 14. Containers* | 15. Preservatives** | 16. PH-Lab Only | 17. Analytes/Methods | 18. REMARKS |
|-------------------|-----------------|-----------------|---------------------|-----------------|----------------------|-------------|
| | | | | | TPH (TX1005) | |
| | | | | | MTBE/BTEX (601B) | |

Containers: VOA - 40 ml vial
4.0z/8 oz - glass wide mouth
A/G - Amber/Glass 1 Liter
P/O - Plastic/other

METHOD OF SHIPMENT

BILL OF LADING/TRACKING #

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

S - H₂SO₄



Sample Condition Checklist

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------|--------------|---|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--|--|--|
| A&B JobID : 13110182 | Date Received : 11/05/2013 | Time Received : 9:55AM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Client Name : Associated Testing Lab | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Temperature : 5.6°C | Sample pH : N/A | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Thermometer ID : 102002320 | 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 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 : ABecerra

Check in by/date : AHall / 11/05/2013

APPENDIX C

Photographs



View facing west on Richmond toward Mid Lane.



View Nielsen's Deli (4500 Richmond Avenue) at Richmond Ave and Mid Ln.



View of 4444 Richmond Avenue north of the REC area.



View facing east at Richmond Avenue.



View the 4410 & 4401 Richmond northeast of the REC area.



View of one of the single-family residence south of the REC area.



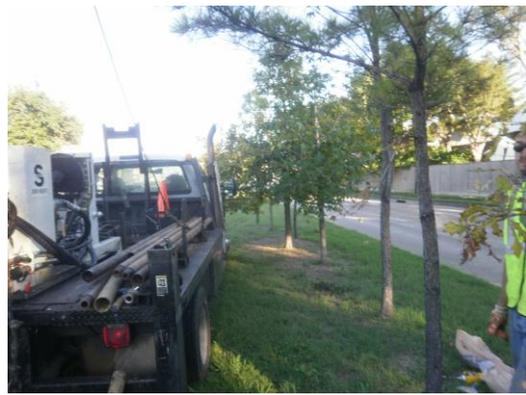
View of push drilling activity at SB-3.



Another push drilling at SB-3.



View of the east side of Stiles Street.



Another view of drilling activity at SB-1.



View of push drilling activity at soil boring SB-2.



Another view east of the REC area.

Associated Testing Laboratories, Inc
3143 Yellowstone Blvd
Houston, Texas 77054

SITE PHOTOGRAPHS

ATL Project No.: E13-122
Project Site: WBS No. S-001000-0047-4
SW Pump Station Imp. Pack. 2
Richmond Ave. at Mid Ln.
Houston, Texas