LIMITED PHASE II
ENVIRONMENTAL SITE ASSESSMENT REPORT

WIRT ROAD DRAINAGE & PAVING IMPROVEMENTS PROJECT
HOUSTON, HARRIS COUNTY, TEXAS

WBS NO. M-000287-0002-3

PREPARED FOR:

RG MILLER ENGINEERS, INC.

BY:

BERG♦OLIVER ASSOCIATES, INC.
HOUSTON, TEXAS

REPORT NO: 9155H-P2
SEPTEMBER 2014

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September 2, 2014

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RE: Limited Phase II Environmental Site Assessment (ESA) Report
Wirt Road Drainage & Paving Improvements Project
Houston, Harris County, Texas
WBS No. M-000287-0002-3

BOA Project No.: 9155H-P2

Mr. Cristofaro:

EXECUTIVE SUMMARY

Berg♦Oliver Associates, Inc. is pleased to present our report summarizing the findings and conclusions of the Limited Phase II ESA conducted on the Wirt Road Drainage & Paving Improvements project in Houston, Harris County, Texas. The following provides a brief summary of the Phase II ESA:

Thirty-two soil borings, SB-1 through SB-32 were completed at depths of 8 to 24 feet at the sites of potential Recognized Environmental Conditions (RECs). Refusal was observed to occur at 18 to 24 feet utilizing hydraulically-driven direct push technologies. Regulatory facilities and/or historical facilities with the potential to have environmental conditions were evaluated at the REC locations and are depicted on figures (FIGURES). Soil samples were analyzed for total petroleum hydrocarbons and methyl-tert butyl ether and benzene toluene, ethyl-benzene and total xylenes (MTBE/BTEX) or volatile organic compounds (VOCs).

Soil Laboratory Analytical Results

The following was reported for the soil laboratory analytical results for the REC locations:

- The laboratory analytical results indicate that the soil is not significantly hydrocarbon-affected and is not a concern to construction workers. However, elevated PID readings were encountered at two locations and air monitoring is considered warranted at two locations as follows:
    - Vacant/Mundo Auto Sales/old gas station (2061 Wirt Road).

- Handi Stop No. 50/Shell gas station (2330 Wirt Road). Elevated PID readings were encountered in the soils of Kilburn Street, commencing at the east side of Wirt Road.

- Based on the sampling and laboratory analytical results, potentially petroleum affected areas (PPCA) were identified as follows:
  - Townhome/former gas station (1215 Wirt Road Road). Only a portion of the investigated area was observed to have petroleum-affected soil and was limited to TPH detections (SB-1).
  - Vacant/Mundo Auto Sales/old gas station (2061 Wirt Road) and Barri Loans/former Jiffy Lube (2064 Wirt Road). Evidence of gasoline impact and hydrocarbon-affected soil was identified at the location (SB-20 and SB-21). The location was observed to have elevated hydrocarbon concentrations in the soil samples. Evidence of some used oil-affected soil also was identified in soil sample, SB-18 at 12-14 feet.
  - Handi Stop No. 50/Shell gas station (2330 Wirt Road). Soil samples from soil borings SB-24 and SB-25 exceeded the TCEQ Groundwater Protective Concentration Limits (PCLs) for select BTEX analytes and TPH carbon range C_6-C_{12}. The location was observed to have elevated hydrocarbon concentrations in the soil samples.

- Additionally, based on the minor J detections of the volatile organic compounds laboratory analytical results , the following are also PPCA areas:
  - Strip-style retail center/former Exxon gas station (1401 Wirt Road). Two minor VOC detections and no TPH detections were encountered in soil sample SB-6 at 2-4 feet. Soil sample SB-7 at 0-2 feet bgs was identified with evidence of petroleum storage tank impact. TPH detections were identified that confirm the impact.
  - As to Wirt and Hammerly Road: Minor VOC detections were reported in the laboratory analytical results (SB-8 through SB-10 and SB-13 & SB-14). No TPH detections were reported.

- Due to contaminant concentration exceedences, detections or J values at select REC locations, please refer to the following Recommendations.

Groundwater

Groundwater was generally encountered at 21 feet below ground surface (bgs) at two REC locations. Two REC locations were determined to have petroleum hydrocarbon-affected groundwater. The areas have been defined on FIGURES 6 and 7. Special Pipe & Gasket as applicable will be required at the locations. Dewatering should be avoided, if practical. Otherwise, special handling practices of the groundwater will be required.

Recommendations

Based on the laboratory analytical results and field observations of the Limited Phase II ESA for the Wirt Road Drainage & Paving Improvements project in Houston, Harris County, Texas, the following is noted and recommended:

Soil Laboratory Analytical Results

- Based on the sampling and laboratory analytical results, PPCA areas were identified that require special handling practices of the soil as follows:
  - Townhome/former gas station (1215 Wirt Road Road). The following is noted:
    - Station numbers are not available for this location.
  - Strip-style retail center/former Exxon gas station (1401 Wirt Road).
    - Station numbers are not available for this location.
  - Wirt and Long Point Roads
    - The Station No. range is from 3+75 to 6+50 (Long Point Road). The area is a PPCA. Special pipe and gasket will be required at the REC location.
    - Station numbers are not available for this location (Wirt Road, south of Long Point Road at SB-13 and SB-14).
  - Vacant/Mundo Auto Sales/old gas station (2061 Wirt Road) and Barri Loans/former Jiffy Lube (2064 Wirt Road). Based on PID readings encountered during Phase II ESA field activities, air monitoring is considered appropriate.
    - The Station No. range is from 27+50 to 28+75 (Wirt Road). The area is a PPCA. Special Pipe & Gaskets will be required.
  - Handi Stop No. 50/Shell gas station (2330 Wirt Road). Based on PID readings encountered during Phase II ESA field activities, air monitoring is considered appropriate.
    - The Station No. range is from 41+50 to 42+75 (Wirt Road). The area is a PPCA. Special Pipe & Gaskets will be required.
    - The Station No. range is from 2+00 to 5+25 (Kilburn Street). The area is a PPCA. Special Pipe & Gaskets will be required.

  Special Specifications 02105 and 02120 or similar guidance documents shall be utilized to direct environmental work at the construction project. Some of the above-mentioned REC locations have Texas Commission on Environmental Quality (TCEQ), Texas Risk Reduction Program (TRRP) Groundwater Protective ($^{GW}Soil_{Ing}$) Protective Concentration Level (PCL) exceedences.

- Based on the soil laboratory analytical results, the remaining investigated areas were not observed to be areas of environmental condition or concern. Additionally, for all sample locations, the soil was determined not to be a concern to construction workers and below TCEQ Total Soil Combined ($^{Tot}Soil_{Comb}$) PCLs. Confined space protocols still apply. Air monitoring is warranted for two locations.

Groundwater Laboratory Analytical Results

- Groundwater was observed to be affected at two REC locations and had MTBE and/or BTEX and TPH detections. The sample locations consisted of soil borings SB-21A and SB-25 that were converted to temporary well points (TWPs), TWP-

21A and TWP-25. Additionally, TCEQ Groundwater Ingestion ($^{GW}GW_{Ing}$) PCLs were exceeded at two REC locations (2061-2064 Wirt Road at Hammerly Blvd.) and (2330/2218 Wirt Road). Dewatering should be avoided, if practical. Groundwater cannot be discharged to the surface without special handling practices. Special Specifications 02105 and 02120 or similar guidance documents provides guidance for these activities. Groundwater shall be contained, sampled, discharged or disposed as appropriate. Pertinent permits should be obtained related to discharge. Based on the groundwater analytical results, the following is noted:

<u>Wirt Road at Hammerly Boulevard (2061-2064 Wirt Road)</u>

- Groundwater has been hydrocarbon- affected (gasoline impact) at this REC location (SB-21/TWP-21A). On the initial (06/26/14) soil boring completions, SB-18 to SB-21 at the location, refusal was encountered at 18 to 20 feet bgs. On 07/21/14, a more powerful and new push drilling rig was mobilized to this REC location. The rig was able to obtain groundwater at 20 to 24 feet bgs. TABLE 1 summarizes the groundwater laboratory analytical results. If dewatering is required, special handling of groundwater will be required. Based on the city of Houston Guide Specification 02105, Section 1.4-B, solvent resistant pipe and gaskets will be required at the REC location. The constraints of the special pipe and gaskets are presented on *Figure 6*. The area is identified as a Potentially Petroleum Contaminated Area-Special Pipe and Gaskets.
    - The Station No. range is from 27+00 to 28+75 (Wirt Road).

<u>Wirt Road at Kilburn Street and Kilburn Street (2330/2218 Wirt Road)</u>

- Groundwater has been hydrocarbon-affected (gasoline impact) at this REC location (SB-25/TWP-25). The Shell Station (2330 Wirt Road) appears to be the predominant source of the petroleum impact at the location. However, the 2218 Wirt Road location also was reported to have had an LPST event, but is also likely to have been affected by the adjoining Shell station to the north. The owner of the adjoining property to the south reported that a pump and treat groundwater remediation system was present on the east side of the facility for several years. TABLE 1 summarizes the groundwater laboratory analytical results. If dewatering is required, special handling of groundwater will be required. Based on the city of Houston Guide Specification 02105, Section 1.4-B, solvent resistant pipe and gaskets will be required at the REC location. The constraints of the special pipe and gaskets are presented on *Figure 7*. The area is identified as a Potentially Petroleum Contaminated Area-Special Pipe and Gaskets.
    - The Station No. range is from 41+50 to 42+75 (Wirt Road).
    - The Station No. range is from 2+00 to 6+00 (Kilburn Street).

<u>Wirt Road at Long Point Road</u>

- Groundwater could not be obtained with direct push drilling methods at the soil borings at this REC location on 06/26/14. Refusal was occurring at 24 feet bgs. On 07/21/14, a more powerful and new push drilling rig was mobilized to the REC location in an attempt to obtain a groundwater sample

at the location. The drilling rig also encountered refusal at 24 feet bgs. The area is already identified as a PPCA due to volatile organic compound detections in soil. The groundwater should be assumed to be affected until determined not to be VOC-affected.

If you have any questions or comments, please contact me at 281-589-0898.

Regards,

Tom Murphy,
Project Manager

Ben Price, PG
Vice President
Attachment

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APPENDICES

1.0 INTRODUCTION

Utility and paving improvements are proposed for a portion of Wirt Road. The constraint of the project alignment is from Kempwood Drive to the Katy Freeway (US Interstate Highway 10-West). A small portion of Long Point Road also is part of the project alignment. Location maps of the investigated areas of the project alignment (Key Map©® and United States Geological Survey Topographic Map), FIGURE 1A and 1B identifies the investigated areas and are presented in the Figures attachments of this report. The project area will typically be referred to as the "project alignment" in this document.

2.0 SCOPE-OF-WORK

Berg♦Oliver Associates, Inc. (BOA) was retained by RG Miller Engineers, Inc. to evaluate whether the project alignment has been affected by one (1) Texas Voluntary Cleanup Program facility/old gas station, nine (9) Leaking Petroleum Storage Tank facilities, four (4) historical gasoline service stations or former petroleum Underground Storage Tank facilities, one (1) suspect ghost gasoline service station (geotechnical derived) and two dry cleaning-related facilities were identified along the project alignment as follows:

1. IMS Service Center/Barron's Texaco Service Station/Petro Trail Service Station/Phil's Service Station (1215 Wirt Road).
2. Strip-style retail center/former Bateman's Exxon RAS No. 6-7568 (1401 Wirt Road).
3. Roz Food Store-Valero/former Stop-N-Go No. 2599 (1406 Wirt Road).
4. Cobb's Drapery Cleaners (1733 Wirt Road)
5. Lee's Chevron/former Texaco (7901 Long Point Road).
6. Prosperity Bank/former Taco Cabana/former gasoline service station (7811 Long Point Road)
7. Strip-style retail center/former Stop-N-Go No. 2630 (7902 Long Point Road) and Former White's Store (7906 Long Point Road).
8. Former Tenneco gasoline service station (7834 Long Point Road) and Tip Top Cleaners (formerly 1826 Wirt Road).
9. Former Stop-N-Go (2000 Wirt Road).
10. Former Bateman's Humble Service Station/ENCO Service Station/Exxon Service Station (2045 Wirt Road), old gas station (2061 Wirt Road) and former Jiffy Lube Store No. 200 (2064 Wirt Road).
11. Former Fiesta Mart gas station (2333 Wirt Road) and Former ConocoPhillips gas station (2321 Wirt Road).
12. Handi Stop No. 50/Shell gasoline service station (2330 Wirt Road) and Former 7-11 Food Stores (2218 Wirt Road).
13. Potential Geotechnical Identified REC (SE and SW corner of Wirt Road and Shoeshone Road). Some of the facilities have been comingled due to proximity

and location of the facilities to one another and consists of ten (10) potential REC locations.

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

- Conducted an investigation of facilities with the potential for environmental conditions as identified in a previously conducted Phase I ESA for the project alignment.
- Completed a Texas Excavation Safety (Texas 811) notification.
- Placed soil borings for soil sampling 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 32 soil borings at the project alignment. Converted 2 soil borings to temporary well points for the collection of shallow groundwater.
- Submitted soil and groundwater samples for laboratory analyses of volatile organic compounds (VOCs) and/or methyl tert-butyl ether/benzene, toluene, ethyl-benzene and total xylenes (MTBE/BTEX) and total petroleum hydrocarbons (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 ESA ACTIVITIES

On June 23, 24, 26 and 27, 2014, BOA completed thirty-two soil borings, SB-1 through SB-32 at REC locations along the project alignment. Soil borings SB-1 through SB-7 were completed to 8 feet bgs and soil borings SB-8 through SB-32 were completed to refusal. The soil borings were completed to determine whether adjoining leaking petroleum storage tank (LPST) events, PST facilities, historic or active gasoline service stations and dry cleaners has affected the project alignment. Two of the thirty-two soil borings were converted to temporary well points for the collection of groundwater.

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). PID field screening ranged from non-detect (0.0 ppm) to 1,329 ppm. Geologic stratigraphy (lithology) and subsurface characteristics were recorded by the field geologist. FIGURES 2 through 9 provide investigated site details and soil boring locations. 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 head space 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^{o}C prior to submission to Accutest 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 (1215 Wirt Road)

Three soil borings, SB-1, SB-2 and SB-3 were completed on the west side of Wirt Road, across from Wedgewood Lane. The REC is the former location of an IMS Service Center/Barron's Texaco Service Station/Petro Trail Service Station/Phil's Service Station (1215 Wirt Road). The property has been redeveloped and two townhomes are currently present at the location. The gas station appears to have been present on the southern lot. PID readings ranged from non-detect (0.0 ppm) to 5.4 ppm of the soil boring soil cores. The greatest PID reading was submitted for testing for soil boring SB-1. Default soil samples were collected and submitted for laboratory analyses for SB-2 and SB-3. Groundwater was not encountered in the soil borings completed to 8 feet bgs. FIGURE 2 provides site details and soil boring locations.

The facility has had an LPST event. The facility was not reported to have had groundwater impact (LPST ID No. 94963). The facility has been issued a case closure concurrence by the TCEQ, stating, "no further action is necessary" based on the information they received. Two 4,000 gallon and two 3,000 gallon gasoline and one unspecified used oil steel USTs have been permanently filled-in-place at the former facility (Facility ID No. 6472).

3.2 SOIL SAMPLING (1406 Wirt Road)

Two soil borings, SB-4 and SB-5 were completed on the east side of Wirt Road at the REC location on the northeast corner of Wirt Road and Westview Drive. The facility is an active gasoline service station, Roz Food Store-Valero. (1406 Wirt Road). The facility was formerly a Stop-N-Go No. 2599. PID readings were non-detect (0.0 ppm). Default soil samples were collected and submitted for laboratory analyses. Groundwater was not encountered in soil borings SB-4 and SB-5 completed to 8 feet bgs. FIGURE 3 provides site details

and soil boring locations.

The facility has had an LPST event and the facility was reported to have had groundwater impact (LPST ID No. 117913). The facility has been issued a case closure concurrence by the TCEQ. Three 12,000 gallon FRP gasoline USTs have been permanently removed from the ground at the facility. One 18,000 gallon compartmentalized and one 6,000 gallon diesel composite (steel with plastic laminate and fiberglass cladding/coating) are active at the facility (Fac. ID No. 35295).

3.3 SOIL SAMPLING (1401 Wirt Road)

Two soil borings, SB-6 and SB-7 were completed at this REC location along the west side of Wirt Road at the northwest corner of Wirt Road and Westview Drive. A gasoline service station, Bateman's Exxon RAS No. 6-7568 (1401 Wirt Road) was formerly present at this location. The property has since been redeveloped with a small strip-style retail center (Westview Wirt Retail Center). PID readings ranged from non-detect (0.0 ppm) to 23.7 ppm. The highest PID reading (SB-7) and default soil sample (SB-6) were collected and submitted for laboratory analyses. Groundwater was not encountered at 8 feet bgs in soil borings SB-6 and SB-7. FIGURE 3 provides site details and soil boring locations.

The facility has had an LPST event and the facility was reported to have had groundwater impact (LPST ID No. 105866). The facility has been issued a case closure concurrence by the TCEQ. One 10,000 gallon, one 8,000 gallon gasoline, one 6,000 gallon gasoline and one 1,000 gallon used oil FRP USTs have been permanently removed from the ground at the facility (Fac. ID No. 26776).

3.4 SOIL SAMPLING (7834 Long Point Road & 1826 Wirt Road)

Three soil borings, SB-8, SB-9 and SB-10 were completed on the north side of Long Point Road, east of Wirt Road. A historic gas station, Former Tenneco gasoline service station (7834 Long Point Road) and dry cleaner, Tip Top Cleaners (formerly 1826 Wirt Road) were present at the REC location and situated on the larger retail shopping center property located at the northeast corner of Long Point and Wirt Roads. The gas station has been demolished/removed from the property. The dry cleaner is suspected to have been a tenant of the shopping center that is no longer active at the location. PID readings were non-detect (0.0 ppm). Default soil samples were collected and submitted for laboratory analyses. FIGURE 4 provides site details and soil boring locations. Groundwater was not able to be sampled at the location utilizing direct push drilling method. Refusal was occurring at 24 feet bgs. If groundwater is present, it is deeper and may be present between 24 and 40 feet bgs. Minor VOC detections were reported.

The gas station initially applied to be part of the Texas Voluntary Cleanup Program site related to the gasoline service station, but did not appear to be eligible

for the LPST program due to participation deadlines. The facility/site would have been best handled under the LPST program. Part of the property's groundwater had been affected by volatile organic compounds (VOCs). Information on the dry cleaner was not available and the presence of the facility was ascertained and discerned from city directories.

3.5 SOIL SAMPLING (7811 Long Point Road)

Two soil borings were completed along the northern (SB-11) and western (SB-12) property lines of this REC location. The facility and REC location is situated on the southeast corner of Wirt and Long Point Roads. The site was originally a gas station, and then Taco Cabana had a fast food facility at the location for a few years. The property was once again redeveloped and is currently occupied by Prosperity Bank. PID readings were non-detect (0.0 ppm). Default soil samples were collected and submitted for laboratory analyses. FIGURE 4 provides site details and soil boring locations. Groundwater was not able to be sampled at the location utilizing direct push drilling method.

The PST and LPST facility, Prosperity Bank/former Taco Cabana/former gasoline service station was reported to have had groundwater impact (LPST ID No. 113234). The facility has been issued a case closure concurrence by the TCEQ. Tank information was not provided.

3.6 SOIL SAMPLING (1733 Wirt Road)

One soil boring, SB-13 was completed on the west side of Wirt Road, south of Long Point Road. Cobb's Drapery Cleaners (1733 Wirt Road) was formerly present at this potential REC location. During Phase II ESA fieldwork, the building was observed to be inactive and vacant. The exterior of the building has been recently improved. Groundwater was not able to be sampled at the location utilizing direct push drilling method. Some minor VOC detections were reported, but only shallow renovation is proposed and additional work is not required.

PID readings were non-detect (0.0 ppm) and a default soil sample was collected and submitted for laboratory analyses. FIGURE 4 provides site details and soil boring location. Cobb's Drapery Cleaners appears to have conducted dry cleaning at the location (RN103954855).

3.7 SOIL SAMPLING (7901 Long Point Road)

One soil boring, SB-14 was completed on the west side of Wirt Road, along the eastern property line of an active gas station, Lee's Chevron/former Texaco (7901 Long Point Road). The gas station is present on the southwest corner of Wirt and Long Point Roads. PID readings were non-detect (0.0 ppm) and a default soil sample was collected and submitted for laboratory analyses. FIGURE 4 provides site details and soil boring location. Groundwater was not able to be

sampled at the location utilizing direct push drilling method. However, no detections were reported in the soil laboratory analytical results. Also, only shallow renovation is proposed and additional work is not required.

The facility has had an LPST event and the facility was reported to have groundwater impact (LPST ID No. 94963). The facility has been issued a case closure concurrence by the TCEQ. One 20,000 gallon compartmentalized composite UST is active at the facility (Fac. ID No. 35092). One 10,000 gallon gasoline and three 3,000 gallon gasoline steel USTs have been permanently removed from the ground at the facility.

3.8 SOIL SAMPLING (7902 & 7906 Long Point Road)

One soil boring, SB-15 was completed on the west side of Wirt Road, north of Long Point Road. A historic gas station, Stop-N-Go No. 2630 (7902 Wirt Road) and an historic PST facility, Former White's Store (7906 Long Point Road) were identified to be formerly present on the property at the northwest corner of Wirt and Long Point Roads. Both facilities are no longer active and the tenant spaces have been repurposed. PID readings were non-detect (0.0 ppm). A default soil samples was collected and submitted for laboratory analyses. FIGURE 4 provides site details and soil boring location. Groundwater was not able to be sampled at the location utilizing direct push drilling method. However, no evidence of soil impact was noted and additional work is not required.

As to the Former Stop-N-Go No. 2630 (7902 Wirt Road), the facility was reported to have groundwater impact (LPST. ID No. 113009). The facility has been issued a case closure concurrence by the TCEQ. The property is currently a small strip-style retail center. Three 12,000 gallon gasoline FRP USTs have been permanently removed from the ground at the facility (Fac. ID No. 35301).

As to the Former White's Store (7906 Long Point Road), the facility was reported to have groundwater impact (LPST ID No. 95710). The facility has been issued a case closure concurrence by the TCEQ. Whites' was an automotive-related facility similar to an auto parts store and chain type business. The facility was situated near the northwest corner of Wirt and Long Point Roads. One 560 gallon used oil steel UST has been permanently removed from the ground at the facility (Fac. ID No. 53161).

3.9 SOIL SAMPLING (2000 Wirt Road)

Two soil borings, SB-16 and SB-17 were completed on the east side of Long Point Road, north of Amelia Road. A convenience store with suspect gas station, Former Stop-N-Go (2000 Wirt Road) was situated in the small strip-style retail center on the northwest corner of Wirt and Amelia Roads. During ESA II fieldwork, two relict vent lines and subsurface fittings were observed at the location confirming the likely presence of a small fuel station at the location. *The possibility exists that a UST is present at the location*. PID readings were non-

detect (0.0 ppm). Default soil samples were collected and submitted for laboratory analyses. FIGURE 5 provides site details and soil boring locations. Groundwater was not able to be sampled at the location utilizing direct push drilling method. However, no evidence of soil impact was noted and additional work is not required.

3.10 SOIL SAMPLING (2064 Wirt Road)

One soil boring, SB-18 was completed on the immediate east side of the curb at the southeast corner of Wirt Road and Hammerly Boulevard. The original proposed boring location had to be moved due to subsurface conflict. A historic lube center, Former Jiffy Lube Store No. 200 (2064 Wirt Road) was present at the location. The lube center is no longer active and loan business occupies the site. The building remains, but the structure has been repurposed. Barri Loans currently utilizes the structure. PID readings were non-detect (0.0 ppm), but an organic layer in the soil profile with a used oil type odor was encountered at 12-14 feet bgs. Default soil samples were collected and submitted for laboratory analyses. FIGURE 6 provides site details and soil boring locations. Please refer to *Section 3.11* concerning groundwater.

One 4,000 gallon and three 2,000 gallon oil tanks (used and new) USTs have been permanently removed from the ground at the facility (Fac. ID No. 64149).

3.11 SOIL SAMPLING (2045 and 2061 Wirt Road)

Three soil borings, SB-19, SB-20 and SB-21 were completed on the west side of Wirt Road and the southwest corner of Wirt Road and Hammerly Boulevard. One or more gasoline service stations were present at the location. There is the possibility that only one facility was present at the location and the physical address had shifted. An older style gas station remains at this location. The building is currently vacant and inactive. The following historic gas station(s): Batemans's Humble Service Station (2045 Wirt Road) and unspecified gasoline service station (2061 Wirt Road) were referenced to this general location. PID readings ranged from non-detect (0.0 ppm) to 1,329 ppm. A default soil sample (SB-19) and the highest PID readings (SB-20 & SB-21) were collected and submitted for laboratory analyses. FIGURE 6 provides site details and soil boring locations. Groundwater was encountered at 20-24 feet bgs and sampled (SB-21A/TWP-21A).

The facility was not reported to have had an LPST event. However, based on the Phase II ESA fieldwork, the facility has affected the subsurface. The regulatory database reported Spring Branch Auto at one of the physical addresses reported at the location. The listing refers to the currently in-active old gas station (2061 Wirt Road). The facility was most recently utilized by Mundo Auto Sales. Three 5,000 gallon and one 4,000 gallon gasoline USTs have been permanently removed from the ground at the facility (Fac. ID No. 30279).

3.12 SOIL SAMPLING (2218 Wirt Road)

One soil boring, SB-22 was completed on the east side of Wirt Road, south of Kilburn Street. Other soil borings were completed in the area, but were to evaluate the Shell gasoline service station that adjoins this location to the north. A historic gas station, 7-11 Food Stores (2218 Wirt Road) appears to have been formerly present at the strip-style retail center that remains at the location. The tenant space has been repurposed for other uses. PID readings were non-detect (0.0 ppm). A default soil sample was collected and submitted for laboratory analyses. FIGURE 7 provides site details and soil boring location.

The facility was not reported to have had an LPST event and no indication of impact was noted. Two 8,000 gallon gasoline steel USTs have been permanently filled-in-place at the facility (Fac. ID No. 35299). Tank removal is preferable to tank's filled-in-place.

3.13 SOIL SAMPLING (2330 Wirt Road)

Three soil borings, SB-23, SB-24 and SB-25 were completed at this REC location. Soil boring SB-23 was completed in the east side of Wirt Road. Soil borings SB-24 and SB-25 were completed on the south side of Kilburn Street. The gas station/convenience store is active. PID readings ranged from non-detect (0.0 ppm) in soil boring SB-23 to 600 ppm (SB-24) to 1190 ppm (SB-25). The highest PID readings and a default soil sample were collected and submitted for laboratory analyses. FIGURE 7 provides site details and soil boring locations. Groundwater was encountered at 22 feet below ground surface and sampled.

The facility has had an LPST event and the facility was reported to have groundwater impact (LPST ID No. 91207). The facility has been issued a case closure concurrence by the TCEQ. Two 10,000 gallon and one 6,000 gallon gasoline steel USTs have been permanently removed from the ground at the facility (Fac. ID No. 40141). Three 12,000 gallon composite USTs are active at the facility. During the Phase II ESA activities, the owner of the property to the south of the Shell indicated a pump & treat groundwater remediation system operated at the Shell facility for several years.

3.14 SOIL SAMPLING (2321 and 2333 Wirt Road)

Three soil borings, SB-26, SB-27 and SB-28 were completed on the west side of Wirt Road adjacent to the Fiesta Shopping Center. Two historic gas stations, Former ConocoPhillips gas station (2321 Wirt Road) and Former Fiesta Mart gas station (2333 Wirt Road) were situated at the larger retail shopping center. The gas station has been demolished/removed from the property. The dry cleaner was a suspected tenant of the shopping center that is no longer active at the location. PID readings were non-detect (0.0 ppm). Default soil samples were collected and submitted for laboratory analyses. FIGURE 8 provides site details and soil boring locations.

The Former ConocoPhillips gas station is no longer active and has been removed from service. The facility appears to have been present on the larger Fiesta shopping center property and appears to have been situated at the current EZ Pawn area across from Kilburn Street. Two 15,000 gallon gasoline FRP USTs have been permanently removed from the ground at the facility (Fac. ID No. 71255). The tanks were not reported as leaking.

The Former Fiesta Mart gas station is no longer active and has had an LPST event and was reported to have had groundwater impact (LPST ID No. 108609). The facility has been issued a case closure concurrence by the TCEQ. Three 10,000 gallon gasoline and one 10,000 gallon diesel steel USTs have been permanently removed from the ground at the facility (Fac. ID No. 1506).

3.15 SOIL SAMPLING (Wirt Road at Shoshone Street)

Four soil borings, SB-29, SB-30, SB-31 and SB-32 were completed at the intersection of Wirt Road and Shoshone Street. PID readings were non-detect (0.0 ppm). Default soil samples were collected and submitted for laboratory analyses. FIGURE 9 provides site details and soil boring locations. Groundwater was not able to be sampled at the location utilizing direct push drilling method. However, no evidence of soil impact was noted and additional work is not required.

3.16 GROUNDWATER SAMPLING

Two of the thirty-two soil borings were converted to temporary well points, SB-21A/TWP-21A (Wirt Road and Hammerly Boulevard) and SB-25/TWP-25 (2330 Wirt Road). After the completion of soil borings, SB-21A, and SB-25, ¾-inch PVC temporary well points were placed in the borings. The temporary well points were 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 $4^{o}C$ prior to submission to Accutest Laboratories of Houston, Texas. Chain-of-custody documentation accompanied the samples in accordance with standard quality assurance and quality control measures. FIGURES 6 and 7 provide site details and temporary well point location. Soil boring logs for temporary well points 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.

VOCs and/or MTBE/BTEX concentrations will be the environmental and exposure consideration of this project. The $^{Tot}Soil_{Comb}$ and $^{GW}GW_{Ing}$ PCLs are the action levels for this project. TABLE I summarizes the MTBE/BTEX soil laboratory analytical results. TABLE II summarizes the MTBE/BTEX groundwater analytical results.

5.0 SOIL/GROUNDWATER LABORATORY ANALYTICAL RESULTS

A total of thirty-two soil samples were collected from the thirty-two 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, volatile organic compounds (VOCs) or methyl tert-butyl ether/benzene, toluene, ethyl-benzene and total xylenes (MTBE/BTEX) by EPA Method SW846-8260. Two groundwater samples were collected from temporary well points, TWP-21A and TWP-25. Groundwater from TWP-21A and TWP-25 were submitted for MTBE/BTEX and TPH analyses. The following details the laboratory methodology:

5.1 LABORATORY ANALYTICAL METHODS

Methyl tert-butyl ether/benzene, toluene, ethylbenzene, and xylene (MTBE/BTEX) and/or VOCs by SW-846 EPA Method 8260: This laboratory analysis employs a gas chromatograph (GC) equipped with a Mass Spectrometer (MS) detector 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 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 which 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 2-4 feet, SB-2 at 4-6 feet, SB-3 at 4-6 feet; SB-4 at 2-4 feet, SB-5 at 4-6 feet, SB-6 at 2-4 feet; SB-7 at 0-2 feet, SB-8 at 8-10 feet; SB-9 at 4-6 feet, SB-10 at 14-16 feet, SB-11 at 22-24 feet, SB-12 at 18-20 feet, SB-13 at 16-18 feet, SB-14 at 18-20 feet, SB-15 at 6-8 feet, SB-16 at 14-16 feet, SB-17 at 4-6 feet, SB-18 at 12-14 feet, SB-19 at 4-6 feet, SB-20 at 18-20, SB-21 at 10-12 feet, SB-22 at 18-20 feet, SB-23 at 6-8 feet, SB-24 at 10-12 feet, SB-25 at 10-12, SB-26 at 22-24 feet, SB-27 at 6-8 feet, SB-28 at 4-6 feet, SB-29 at 2-4 feet, SB-30 at 10-12 feet, SB-31 at 6-8 feet and SB-32 at 22-24 feet were submitted for TPH, VOCs or 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 (1215 Wirt Road)

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

- MTBE concentrations were determined to be non-detect and ranged from <0.00057) mg/kg to <0.00058 mg/kg.
- Benzene concentrations were determined to be non-detect and ranged from <0.00075 mg/kg to <0.00078 mg/kg.
- Toluene concentrations were determined to be non-detect and ranged from <0.0011 mg/kg to <0.0012 mg/kg..
- Ethyl-benzene concentrations were determined to be non-detect (<0.0011 mg/kg).
- Total xylene concentrations were determined to be non-detect and ranged from <0.0031 mg/kg to <0.0032 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 range from non-detect (<13 mg/kg) to 67.2 mg/kg.
- TPH carbon ranges >C_{12}-C_{28} were determined to range from non-detect (<16 mg/kg) to 237 mg/kg.
- TPH carbon ranges >C_{28}-C_{35} were determined to range from non-

detect (<16 mg/kg) to 159 mg/kg.

MTBE/BTEX constituents were determined to be below the sample detection limit or non detect. Soils samples SB-2 at 2-4 feet and SB-3 at 4-6 feet were determined to be non-detect for TPH. Soil sample SB-1 at 2-4 feet had reported detections for TPH carbon ranges C_6-C_{12} and >C_{12}-C_{28} that exceed the TCEQ $^{GW}Soil_{Ing}$ PCLs. None of the soil laboratory analytical concentrations exceed the TCEQ $^{Tot}Soil_{Comb}$ PCLs and are not a health concern to construction workers. However, part of the investigated area at the REC location is potentially petroleum contaminated area (PPCA).

During construction activities air monitoring is not required. Special handling practices of the soil are required. 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 (1406 Wirt Road)

Two soil samples, SB-4 at 2-4 feet bgs and SB-5 at 4-6 feet bgs, were submitted and analyzed for this REC location. The following was reported for individual MTBE/BTEX constituents for the soil samples:

- MTBE concentrations were determined to be non-detect and ranged from <0.00054 mg/kg to <0.00056 mg/kg.
- Benzene concentrations were determined to be non-detect and ranged from <0.00072 mg/kg to <0.00074 mg/kg.
- Toluene concentrations were determined to be non-detect (<0.0011 mg/kg).
- Ethyl-benzene concentrations were determined to be non-detect and ranged from <0.0010 mg/kg to <0.0011 mg/kg.
- Total xylene concentrations were determined to be non-detect and ranged from <0.0030 mg/kg to <0.0031 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 non-detect (<13 mg/kg).
- TPH carbon ranges >C_{12}-C_{28} were determined to be non-detect (<16 mg/kg).
- TPH carbon ranges >C_{28}-C_{35} were determined to be non-detect (<16 mg/kg).

MTBE/BTEX and TPH concentrations were determined to be non-detect at this REC location. No detections were reported and none of the soil laboratory analytical concentrations exceed the TCEQ $^{Tot}Soil_{Comb}$ or $^{GW}Soil_{Ing}$ PCLs and are not a health concern to construction workers. During construction activities air monitoring is not required. Special handling practices of the soil are not required

on this side of the road.

5.2.3 LAB ANALYTICAL RESULTS (1401 Wirt Road)

Two soil samples, SB-6 at 2-4 feet bgs and SB-7 at 0-2 feet bgs, were submitted and analyzed for this REC location. The following was reported for individual VOC constituents for the soil samples:

- Soil sample, SB-6 at 2-4 feet was reported to have J detections for chloroform (0.00052 mg/kg J) and 1,2-dichlorothane (0.0026 mg/kg J),
- Soil sample, SB-7 at 0-2 feet was reported to have detections for acetone (0.0635 mg/kg), n-butylbenzene (0.178 mg/kg), sec-butylbenzene (0.178 mg/kg), tert-butylbenzene (0.0200 mg/kg), o-dichlorobenzene (0.0214 mg/kg), isopropylbenzene (0.0331 mg/kg), p-isopropyltoluene (0.0272 mg/kg), naphthalene (0.0128 mg/kg), n-propylbenzene (0.130 mg/kg), 1,2,4-trimethylbenzene (0.0346 mg/kg), 1,3,5-trimethylbenzene (0.0119 mg/kg); and J detections for chloroform (0.0016 mg/kg J), carbon disulfide (0.00083 mg/kg J), 1,2-dichloroethane (0.0035 mg/kg J), p-dichlorobenzene (0.0031 mg/kg J), ethyl-benzene (0.0045 mg/kg J) and total xylenes (0.0034 mg/kg J).

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

- TPH carbon ranges C_6-C_{12} were determined to range from non-detect (<13 mg/kg) to 210 mg/kg.
- TPH carbon ranges >C_{12}-C_{28} were determined to range from non-detect (<16 mg/kg) to 585 mg/kg.
- TPH carbon ranges >C_{28}-C_{35} were determined to range from non-detect (<16 mg/kg) to 299 mg/kg.

Minor detections for select volatiles were reported in the laboratory analytical results (Table II). TPH concentrations were reported to be above the TCEQ $^{GW}Soil_{Ing}$ PCL of 65 mg/kg for carbon range C_6-C_{12} and 200 mg/kg for carbon range >C_{12}-C_{28} for soil sample SB-7 at 0-2 feet (Table III). 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 is not necessary. However, special handling practices of the soil are required. The REC location is a PPCA.

5.2.4 LAB ANALYTICAL RESULTS (7834 Long Point Rd. & 1826 Wirt Rd.)

Three soil samples, SB-8 at 8-10 feet bgs, SB-9 at 4-6 feet bgs and SB-10 at 14-16 feet bgs, were submitted and analyzed for this area. The following was reported for individual VOC constituents for the soil samples:

- Minor detections for acetone, n-butylbenzene, chloroform, carbon disulfide and 1,2-dichloroethane were reported in select samples.

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

- TPH carbon ranges C_6-C_{12} were determined to range from non-detect and ranged from <13 mg/kg to <14 mg/kg.
- TPH carbon ranges >C_{12}-C_{28} were determined to be non-detect and ranged from <16 mg/kg to <17 mg/kg.
- TPH carbon ranges >C_{28}-C_{35} were determined to be non-detect and ranged from <16 mg/kg to <17 mg/kg.

TPH concentrations were reported to be non-detect. No PID readings were detected during field screening activities. During construction activities, air monitoring is not necessary. Special handling practices of the soil are required. The REC location is a PPCA.

Due to soil impact, special pipe and gaskets will be required at the REC location.

5.2.5 LAB ANALYTICAL RESULTS (7811 Long Point Road)

Two soil samples, SB-11 at 22-24 feet bgs and SB-12 at 18-20 feet bgs, were submitted and analyzed for this REC location. The following was reported for individual MTBE/BTEX constituents for the soil samples:

- MTBE concentrations were determined to be non-detect and ranged from <0.00058 mg/kg to <0.000059 mg/kg.
- Benzene concentrations were determined to be non-detect (<0.00073 mg/kg).
- Toluene concentrations were determined to be non-detect (<0.0011 mg/kg).
- Ethyl-benzene concentrations were determined to be non-detect (<0.0011 mg/kg).
- Total xylene concentrations were determined to be non-detect (<0.0032 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 non-detect (<13 mg/kg).
- TPH carbon ranges >C_{12}-C_{28} were determined to be non-detect (<15 mg/kg to <16 mg/kg).
- TPH carbon ranges >C_{28}-C_{35} were determined to be non-detect (<15 mg/kg to 16 mg/kg).

TPH concentrations were determined to be non-detect at this REC location. MTBE/BTEX constituents were determined to be non-detect at this REC location. None of the soil laboratory analytical concentrations exceed the

TCEQ $^{Tot}Soil_{Comb}$ or $^{GW}Soil_{Ing}$ PCLs and are not a health concern to construction workers. During construction activities air monitoring is not required. Special handling practices of the soil are not required.

5.2.6 LAB ANALYTICAL RESULTS (1733 Wirt Road & 7901 Long Point Road)

Two soil samples, SB-13 at 16-18 feet bgs and SB-14 at 18-20 feet bgs, were submitted and analyzed for this area. The following was reported for individual VOC constituents for the soil samples:

- Minor detections for acetone and 1,2-dichloroethane were reported in select samples.

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

- TPH carbon ranges C_6-C_{12} were determined to be non-detect (<13 mg/kg).
- TPH carbon ranges >C_{12}-C_{28} were determined to be non-detect (<15 mg/kg).
- TPH carbon ranges >C_{28}-C_{35} were determined to be non-detect (<15 mg/kg).

TPH concentrations were reported to be non-detect. No PID readings were detected during field screening activities. During construction activities, air monitoring is not necessary. Special handling practices of the soil are required. The REC location is a PPCA.

5.2.7 LAB ANALYTICAL RESULTS (7902/7906 Long Point Road)

One soil sample, SB-15 at 6-8 feet bgs was submitted and analyzed for this REC location. The following was reported for individual MTBE/BTEX constituents for the soil samples:

- The MTBE concentration was determined to be non-detect (<0.00055 mg/kg).
- The benzene concentration was determined to be non-detect (<0.00073 mg/kg).
- The toluene concentrations was determined to be non-detect (<0.0011 mg/kg).
- The ethyl-benzene concentrations was determined to be non-detect (<0.0011 mg/kg).
- The total xylene concentration was determined to be non-detect (<0.0030 mg/kg).

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

- TPH carbon range C_6-C_{12} was determined to be non-detect (<13 mg/kg).
- TPH carbon range >C_{12}-C_{28} was determined to be non-detect (<15 mg/kg).
- TPH carbon range >C_{28}-C_{35} was determined to be non-detect (<15 mg/kg.

TPH concentrations were determined to be non-detect at this REC location. MTBE/BTEX constituents were determined to be non-detect at this REC location. None of the soil laboratory analytical concentrations exceed the TCEQ $^{Tot}Soil_{Comb}$ or $^{GW}Soil_{Ing}$ PCLs and are not a health concern to construction workers. During construction activities air monitoring is not required. Special handling practices of the soil are not required.

5.2.8 LAB ANALYTICAL RESULTS (2000 Wirt Road)

Two soil samples, SB-16 at 14-16 feet bgs and SB-17 at 4-6 feet bgs, were submitted and analyzed for this REC location. The following was reported for individual MTBE/BTEX constituents for the soil samples:

- MTBE concentrations were determined to be non-detect and ranged from <0.00058 mg/kg to <0.000061 mg/kg.
- Benzene concentrations were determined to be non-detect and ranged from <0.00077 mg/kg to <0.00081 mg/kg.
- Toluene concentrations were determined to be non-detect (<0.0012 mg/kg).
- Ethyl-benzene concentrations were determined to be non-detect and ranged from <0.0011 mg/kg to <0.0012 mg/kg.
- Total xylene concentrations were determined to be non-detect and ranged from <0.0032 mg/kg to <0.0034 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 non-detect (<13 mg/kg to 14 mg/kg).
- TPH carbon ranges >C_{12}-C_{28} were determined to be non-detect (<16 mg/kg).
- TPH carbon ranges >C_{28}-C_{35} were determined to be non-detect (<16 mg/kg.

TPH concentrations were determined to be non-detect at this REC location. MTBE/BTEX constituents were determined to be non-detect at this REC location. None of the soil laboratory analytical concentrations exceed the TCEQ $^{Tot}Soil_{Comb}$ or $^{GW}Soil_{Ing}$ PCLs and are not a health concern to construction workers. During construction activities air monitoring is not required. Special handling practices of the soil are not required.

5.2.9 LAB ANALYTICAL RESULTS (2045/2061 & 2064 Wirt Road)

Four soil samples, SB-18 at 12-14 feet bgs, SB-19 at 4-6 feet bgs, SB-20 at 18-20 feet bgs and SB-21 at 10-12 feet bgs, were submitted and analyzed for this REC location. The following was reported for individual MTBE/BTEX constituents for the soil samples:

- MTBE concentrations were determined to be non-detect and ranged from <0.00057 mg/kg to <0.035 mg/kg.
- Benzene concentrations were determined to range from non-detect (<0.00075 mg/kg) to 1.49 mg/kg J.
- Toluene concentrations were determined to range from non-detect (<0.0011 mg/kg) to 30.7 mg/kg.
- Ethyl-benzene concentrations were determined to range from non-detect (<0.0011 mg/kg) to 58 mg/kg.
- Total xylene concentrations were determined to range from non-detect (<0.0031 mg/kg) to 236 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 range from non-detect (<13 mg/kg) to 639 mg/kg.
- TPH carbon ranges >C_{12}-C_{28} were determined to range from non-detect (<16 mg/kg) to 127 mg/kg.
- TPH carbon ranges >C_{28}-C_{35} were determined to range from non-detect (<16 mg/kg) to 159 mg/kg.

MTBE/BTEX and TPH constituents were determined to be below the sample detection limit or non-detect for SB-19 at 4-6 feet bgs. Soil sample SB-20 at 18-20 feet bgs also was reported to be non-detect for MTBE/BTEX & TPH constituents, but soil cores were observed to have a hydrocarbon odor and PID readings. Soil sample, SB-18 at 12-14 feet had J detections for benzene (0.0016 mg/kg) and toluene (0.0018 mg/kg). This soil sample also had TPH detection for carbon ranges >C_{12}-C_{28} (129 mg/kg) and >C_{28}-C_{35} (159 mg/kg). Soil sample, SB-21 at 10-12 feet bgs had reported detections for BTEX constituents and a TPH detection for carbon ranges C_6-C_{12} that exceed the TCEQ $^{GW}Soil_{Ing}$ PCLs. None of the soil laboratory analytical concentrations exceed the TCEQ $^{Tot}Soil_{Comb}$ PCLs and are not a health concern to construction workers. However, part of the investigated area at the REC location is a PPCA. Additionally, elevated PID readings were encountered and air monitoring is required. Special handling practices of the soil are required.

Additionally, hydrocarbon-affected groundwater was reported at the REC location (see *Section 5.3*). Due to soil and groundwater impact, special pipe and gaskets will be required at the REC location.

5.2.10 LAB ANALYTICAL RESULTS (2218 & 2330 Wirt Road)

Four soil samples, SB-22 at 18-20 feet bgs, SB-23 at 4-6 feet bgs, SB-24 at 10-12 feet bgs and SB-24 at 10-12 feet bgs, were submitted and analyzed for this REC location. The following was reported for individual MTBE/BTEX constituents for the soil samples:

- MTBE concentrations were determined to range from non-detect (<0.00056 mg/kg) to <0.33 mg/kg.
- Benzene concentrations were determined to range from non-detect (<0.00074 mg/kg) to 1.45 mg/kg J.
- Toluene concentrations were determined to range from non-detect (<0.0011 mg/kg) to 27.8 mg/kg.
- Ethyl-benzene concentrations were determined to range from non-detect (<0.0011 mg/kg) to 31.8 mg/kg.
- Total xylene concentrations were determined to range from non-detect (<0.0031 mg/kg) to 184 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 range from non-detect (<13 mg/kg) to 534 mg/kg.
- TPH carbon ranges >C_{12}-C_{28} were determined to range from non-detect (<16 mg/kg) to 77 mg/kg.
- TPH carbon ranges >C_{28}-C_{35} were determined to be non-detect (<16 mg/kg).

MTBE/BTEX and TPH constituents were determined to be below the sample detection limit or non-detect for soil sample, SB-23 at 6-8 feet bgs. Soil sample, SB-22 at 18-20 feet had an elevated laboratory detection limit for benzene (0.044 mg/kg), but no TPH detections. Soil samples, SB-24 and SB-25 at 10-12 feet had reported detections for BTEX constituents and a TPH detection for carbon ranges C_6-C_{12} that exceed the TCEQ $^{GW}Soil_{Ing}$ PCLs. Soil sample, SB-25 at 10-12 feet bgs also had a TPH carbon range >C_{12}-C_{28} (77 mg/kg) detection. None of the soil laboratory analytical concentrations exceed the TCEQ $^{Tot}Soil_{Comb}$ PCLs and are not a health concern to construction workers. However, part of the investigated area at the REC location is a PPCA. Additionally, elevated PID readings were encountered and air monitoring is required. Special handling practices of the soil are required. Groundwater is also affected at the location (see Section 5.3.3).

5.2.11 LAB ANALYTICAL RESULTS (2321 & 2333 Wirt Road)

Three soil samples, SB-26 at 22-24 feet bgs and SB-27 at 6-8 feet bgs, SB-28 at 4-6 feet bgs were submitted and analyzed for this REC location. The following was reported for individual MTBE/BTEX constituents for the soil samples:

- MTBE concentrations were determined to be non-detect and ranged from <0.00055 mg/kg to <0.000059 mg/kg.
- Benzene concentrations were determined to be non-detect and ranged from <0.00073 mg/kg to <0.00078 mg/kg.
- Toluene concentrations were determined to be non-detect and ranged from <0.0011 mg/kg to <0.0012 mg/kg.
- Ethyl-benzene concentrations were determined to be non-detect and ranged from <0.0010 mg/kg to <0.0012 mg/kg.
- Total xylene concentrations were determined to be non-detect and ranged from <0.0030 mg/kg to <0.0032 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 non-detect and ranged from <13 mg/kg to <14 mg/kg.
- TPH carbon ranges >C_{12}-C_{28} were determined to be non-detect and ranged from <15 mg/kg to <16 mg/kg
- TPH carbon ranges >C_{28}-C_{35} were determined to be non-detect and ranged from <15 mg/kg to <16 mg/kg.

TPH concentrations were determined to be non-detect at this REC location. MTBE/BTEX constituents were determined to be non-detect at this REC location. None of the soil laboratory analytical concentrations exceed the TCEQ $^{Tot}Soil_{Comb}$ or $^{GW}Soil_{Ing}$ PCLs and are not a health concern to construction workers. During construction activities air monitoring is not required. Special handling practices of the soil are not required.

5.2.12 LAB ANALYTICAL RESULTS (Wirt Road & Shoshone Street)

Four soil samples, SB-29 at 2-4 feet bgs, SB-30 at 10-12 feet bgs, SB-31 at 6-8 feet bgs and SB-32 at 22-24 feet bgs, were submitted and analyzed for this REC location. The following was reported for individual MTBE/BTEX constituents for the soil samples:

- MTBE concentrations were determined to be non-detect and ranged from <0.00056 mg/kg to <0.000058 mg/kg.
- Benzene concentrations were determined to be non-detect and ranged from <0.00074 mg/kg to <0.00077 mg/kg.
- Toluene concentrations were determined to be non-detect and ranged from <0.0011 mg/kg to <0.0012 mg/kg.
- Ethyl-benzene concentrations were determined to be non-detect (<0.0011 mg/kg).
- Total xylene concentrations were determined to be non-detect and ranged from <0.0031 mg/kg to <0.0032 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 non-detect (<13 mg/kg).
- TPH carbon ranges >C_{12}-C_{28} were determined to be non-detect and ranged from <15 mg/kg to 16 mg/kg
- TPH carbon ranges >C_{28}-C_{35} were determined to be non-detect and ranged from <15 mg/kg to <15 mg/kg.

TPH concentrations were determined to be non-detect at this REC location. MTBE/BTEX constituents were determined to be non-detect at this REC location. None of the soil laboratory analytical concentrations exceed the TCEQ $^{Tot}Soil_{Comb}$ or $^{GW}Soil_{Ing}$ PCLs and are not a health concern to construction workers. During construction activities air monitoring is not required. Special handling practices of the soil are not required.

5.3 GROUNDWATER LABORATORY ANALYTICAL RESULTS

Groundwater samples were collected from soil borings (SB-21A, and SB-25) that were converted to temporary well points TWP-21A, TWP-25; and analyzed for MTBE/BTEX by EPA Method SW846-8260 and TPH by Texas Method 1005.

5.3.1 LAB ANALYTICAL RESULTS (2061 Wirt Road)

One groundwater sample, TWP-21A was collected from the above-noted location. The following was reported for individual MTBE/BTEX constituents for the water sample:

- The MTBE concentration was determined to be non-detect (<0.00030 mg/L).
- The benzene concentration was determined to be 3.46 mg/L.
- The toluene concentration was determined to be 13.8 mg/L J.
- The ethyl-benzene concentration was determined to be 2.16 mg/L.
- The total xylene concentration was determined to be 9.82 mg/L.

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

- The TPH carbon range C_6-C_{12} was determined to be 40.0 mg/L.
- The TPH carbon range >C_{12}-C_{28} was determined to be <1.4 mg/L.
- The TPH carbon range >C_{28}-C_{35} was determined to be <1.4 mg/L.

MTBE/BTEX constituents were detected at this REC location. With the exception of MTBE, benzene, toluene and ethyl-benzene concentrations were detected above TCEQ $^{GW}GW_{Ing}$ PCL and/or Federal Drinking Water Standard Maximum Concentration Limits (MCLs). Individual TPH carbon ranges were detected from several magnitudes above to slightly above the 0.98 mg/L PCL

(Table IV). Based on the detections, dewatering should be avoided or special management practices shall be required. Groundwater cannot be discharged to the surface without special handling practices of the generated water. Special waterline pipe and gaskets are required at the REC location.

5.3.2 LAB ANALYTICAL RESULTS (2218/2330 Wirt Road)

One groundwater sample, TWP-25 was collected from the above-noted location. The following was reported for individual MTBE/BTEX constituents for the water sample:

- The MTBE concentration was determined to be 0.0352 mg/L.
- The benzene concentration was determined to be 2.27 mg/L.
- The toluene concentration was determined to be 4.50 mg/L.
- The ethyl-benzene concentration was determined to be 0.786 mg/L.
- The total xylene concentration was determined to be 4.39 mg/L.

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

- The TPH carbon range C_6-C_{12} was determined to be 48.2 mg/L.
- The TPH carbon range >C_{12}-C_{28} was determined to 20.0 mg/L.
- The TPH carbon range >C_{28}-C_{35} was determined to 15.0 mg/L.

MTBE/BTEX constituents were detected at this REC location. With the exception of MTBE, benzene, toluene, ethyl-benzene concentrations were detected above TCEQ $^{GW}GW_{Ing}$ PCL and/or Federal Drinking Water Standard Maximum Concentration Limits (MCLs). Individual TPH carbon ranges were several magnitudes above the 0.98 mg/L PCL. Based on the detections, dewatering should be avoided or special management practices shall be required. Groundwater cannot be discharged to the surface without special handling practices of the generated water. Special waterline pipe and gaskets are required at the REC location.

6.0 AIR MONITORING/WASTE MANAGEMENT PRACTICES

Based on the results of the Phase II ESA, air monitoring is warranted at two investigated areas of the project (Kilburn Street, commencing at Wirt Road) and (SW and SE corners of Wirt and Hammerly Roads). Confined space protocol still applies for all applicable construction work.

As to BTEX/MTBE results: "S*pecial handling practices*" of the soil should be employed for the vicinity of soil boring SB-1 (1215 Wirt Road), SB-6 & SB-7 (1401 Wirt Road), SB-19, SB-20 and SB-21 (2061 & 2064 Wirt Road) and SB-22, SB-24 & SB-25 (2218 Wirt Road & 2230 Wirt Road) as applicable to proposed construction work.

As to VOCs results: "S*pecial handling practices*" of the soil should be employed at SB-6 & SB-7 (1401 Wirt Road). It should be noted that the TPH results of soil sample

SB-7 at 0-2 feet tend to confirm petroleum impact. The VOC results for soil sample SB-6 at 2-4 feet are very low with only two analytes detected and no TPH detections. Soil samples SB-8 at 8-10 feet, SB-9 at 4-6 feet had only a total of three VOC analytes detected. Soil sample 10 at 14-16 feet had four analyte detections. Soil sample SB-13 at 16-18 feet had two VOC analytes detected. Soil sample SB-14 at 18-20 feet had one analyte detected All VOC detections were J values. These detections of the soil samples at Wirt and Long Point Road are not statistically significant. No TPH detections were reported in these soil samples. Waste profiling and characterizations of composite soil samples results will be the best gauge of the condition of the soil for disposal purposes.

Dewatering should be avoided as depicted on FIGURES 6 & 7.

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 Berg♦Oliver Associates, Inc. proposal/workplan dated April 29, 2014. 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 Laboratory Analytical Results

The following was reported for the soil laboratory analytical results for the REC locations:

- The laboratory analytical results indicate that the soil is not significantly hydrocarbon-affected and is not a concern to construction workers. However, elevated PID readings were encountered at two locations and air monitoring is considered warranted at two locations as follows:
    - Vacant/Mundo Auto Sales/old gas station (2061 Wirt Road).
    - Handi Stop No. 50/Shell gas station (2330 Wirt Road). Elevated PID readings were encountered in the soils of Kilburn Street, commencing at the east side of Wirt Road.
- Based on the sampling and laboratory analytical results, potentially petroleum affected areas (PPCA) were identified as follows:
    - Townhome/former gas station (1215 Wirt Road Road). Only a portion of the investigated area was observed to have petroleum-affected soil and was limited to TPH detections (SB-1).
    - Vacant/Mundo Auto Sales/old gas station (2061 Wirt Road) and Barri Loans/former Jiffy Lube (2064 Wirt Road). Evidence of gasoline impact and hydrocarbon-affected soil was identified at the location (SB-20 and SB-21). The location was observed to have elevated hydrocarbon concentrations in the soil samples. Evidence of some used oil-affected soil also was identified in soil sample, SB-18 at 12-14 feet.

- Handi Stop No. 50/Shell gas station (2330 Wirt Road). Soil samples from soil borings SB-24 and SB-25 exceeded the TCEQ Groundwater Protective Concentration Limits (PCLs) for select BTEX analytes and TPH carbon range C_6-C_{12}. The location was observed to have elevated hydrocarbon concentrations in the soil samples.

- Additionally, based on the minor J detections of the volatile organic compounds laboratory analytical results , the following are also PPCA areas:
  - Strip-style retail center/former Exxon gas station (1401 Wirt Road). Two minor VOC detections and no TPH detections were encountered in soil sample SB-6 at 2-4 feet. Soil sample SB-7 at 0-2 feet bgs was identified with evidence of petroleum storage tank impact. TPH detections were identified that confirm the impact.
  - As to Wirt and Hammerly Road: Minor VOC detections were reported in the laboratory analytical results (SB-8 through SB-10 and SB-13 & SB-14). No TPH detections were reported.

- Due to contaminant concentration exceedences, detections or J values at select REC locations, please refer to the following Recommendations.

Groundwater

Groundwater was generally encountered at 21 feet below ground surface (bgs) at two REC locations. Two REC locations were determined to have petroleum hydrocarbon-affected groundwater. The areas have been defined on FIGURES 6 and 7. Special Pipe & Gasket as applicable will be required at the locations. Dewatering should be avoided, if practical. Otherwise, special handling practices of the groundwater will be required.

8.0 RECOMMENDATIONS

Based on the laboratory analytical results and field observations of the Limited Phase II Environmental Site Assessment for the Wirt Road Drainage & Paving Improvements project in Houston, Harris County, Texas, the following is noted:

Soil Laboratory Analytical Results

- Based on the sampling and laboratory analytical results, PPCA areas were identified that require special handling practices of the soil as follows:
  - Townhome/former gas station (1215 Wirt Road Road). The following is noted:
    - Station numbers are not available for this location.
  - Strip-style retail center/former Exxon gas station (1401 Wirt Road).
    - Station numbers are not available for this location.
  - Wirt and Long Point Roads

        - The Station No. range is from 3+75 to 6+50 (Long Point Road). The area is a PPCA. Special pipe and gasket will be required at the REC location.
        - Station numbers are not available for this location (Wirt Road, south of Long Point Road at SB-13 and SB-14).
    - Vacant/Mundo Auto Sales/old gas station (2061 Wirt Road) and Barri Loans/former Jiffy Lube (2064 Wirt Road). Based 0n PID readings encountered during Phase II ESA field activities, air monitoring is considered appropriate.
        - The Station No. range is from 27+50 to 28+75 (Wirt Road). The area is a PPCA. Special Pipe & Gaskets will be required.
    - Handi Stop No. 50/Shell gas station (2330 Wirt Road). Based on PID readings encountered during Phase II ESA field activities, air monitoring is considered appropriate.
        - The Station No. range is from 41+50 to 42+75 (Wirt Road). The area is a PPCA. Special Pipe & Gaskets will be required.
        - The Station No. range is from 2+00 to 5+25 (Kilburn Street). The area is a PPCA. Special Pipe & Gaskets will be required.

    Special Specifications 02105 and 02120 or similar guidance documents shall be utilized to direct environmental work at the construction project. Some of the above-mentioned REC locations have Texas Commission on Environmental Quality (TCEQ), Texas Risk Reduction Program (TRRP) Groundwater Protective ($^{GW}Soil_{Ing}$) Protective Concentration Level (PCL) exceedences.

- Based on the soil laboratory analytical results, the remaining investigated areas were not observed to be areas of environmental condition or concern. Additionally, for all sample locations, the soil was determined not to be a concern to construction workers and below TCEQ Total Soil Combined ($^{Tot}Soil_{Comb}$) PCLs. Confined space protocols still apply. Air monitoring is warranted for two locations.

<u>Groundwater Laboratory Analytical Results</u>

- Groundwater was observed to be affected at two REC locations and had MTBE and/or BTEX and TPH detections. The sample locations consisted of soil borings SB-21A and SB-25 that were converted to temporary well points (TWPs), TWP-21A and TWP-25. Additionally, TCEQ Groundwater Ingestion ($^{GW}GW_{Ing}$) PCLs were exceeded at two REC locations (2061-2064 Wirt Road at Hammerly Blvd.) and (2330/2218 Wirt Road). Dewatering should be avoided, if practical. Groundwater cannot be discharged to the surface without special handling practices. Special Specifications 02105 and 02120 or similar guidance documents provides guidance for these activities. Groundwater shall

be contained, sampled, discharged or disposed as appropriate. Pertinent permits should be obtained related to discharge. Based on the groundwater analytical results, the following is noted:

Wirt Road at Hammerly Boulevard (2061-2064 Wirt Road)

- Groundwater has been hydrocarbon- affected (gasoline impact) at this REC location (SB-21/TWP-21A). On the initial (06/26/14) soil boring completions, SB-18 to SB-21 at the location, refusal was encountered at 18 to 20 feet bgs. On 07/21/14, a more powerful and new push drilling rig was mobilized to this REC location. The rig was able to obtain groundwater at 20 to 24 feet bgs. TABLE 1 summarizes the groundwater laboratory analytical results. If dewatering is required, special handling of groundwater will be required. Based on the city of Houston Guide Specification 02105, Section 1.4-B, solvent resistant pipe and gaskets will be required at the REC location. The constraints of the special pipe and gaskets are presented on *Figure 6*. The area is identified as a Potentially Petroleum Contaminated Area-Special Pipe and Gaskets.
    - The Station No. range is from 27+00 to 28+75 (Wirt Road).

Wirt Road at Kilburn Street and Kilburn Street (2330/2218 Wirt Road)

- Groundwater has been hydrocarbon-affected (gasoline impact) at this REC location (SB-25/TWP-25). The Shell Station (2330 Wirt Road) appears to be the predominant source of the petroleum impact at the location. However, the 2218 Wirt Road location also was reported to have had an LPST event, but is also likely to have been affected by the adjoining Shell station to the north. The owner of the adjoining property to the south reported that a pump and treat groundwater remediation system was present on the east side of the facility for several years. TABLE 1 summarizes the groundwater laboratory analytical results. If dewatering is required, special handling of groundwater will be required. Based on the city of Houston Guide Specification 02105, Section 1.4-B, solvent resistant pipe and gaskets will be required at the REC location. The constraints of the special pipe and gaskets are presented on *Figure 7*. The area is identified as a Potentially Petroleum Contaminated Area-Special Pipe and Gaskets.
    - The Station No. range is from 41+50 to 42+75 (Wirt Road).
    - The Station No. range is from 2+00 to 6+00 (Brinkman Street).

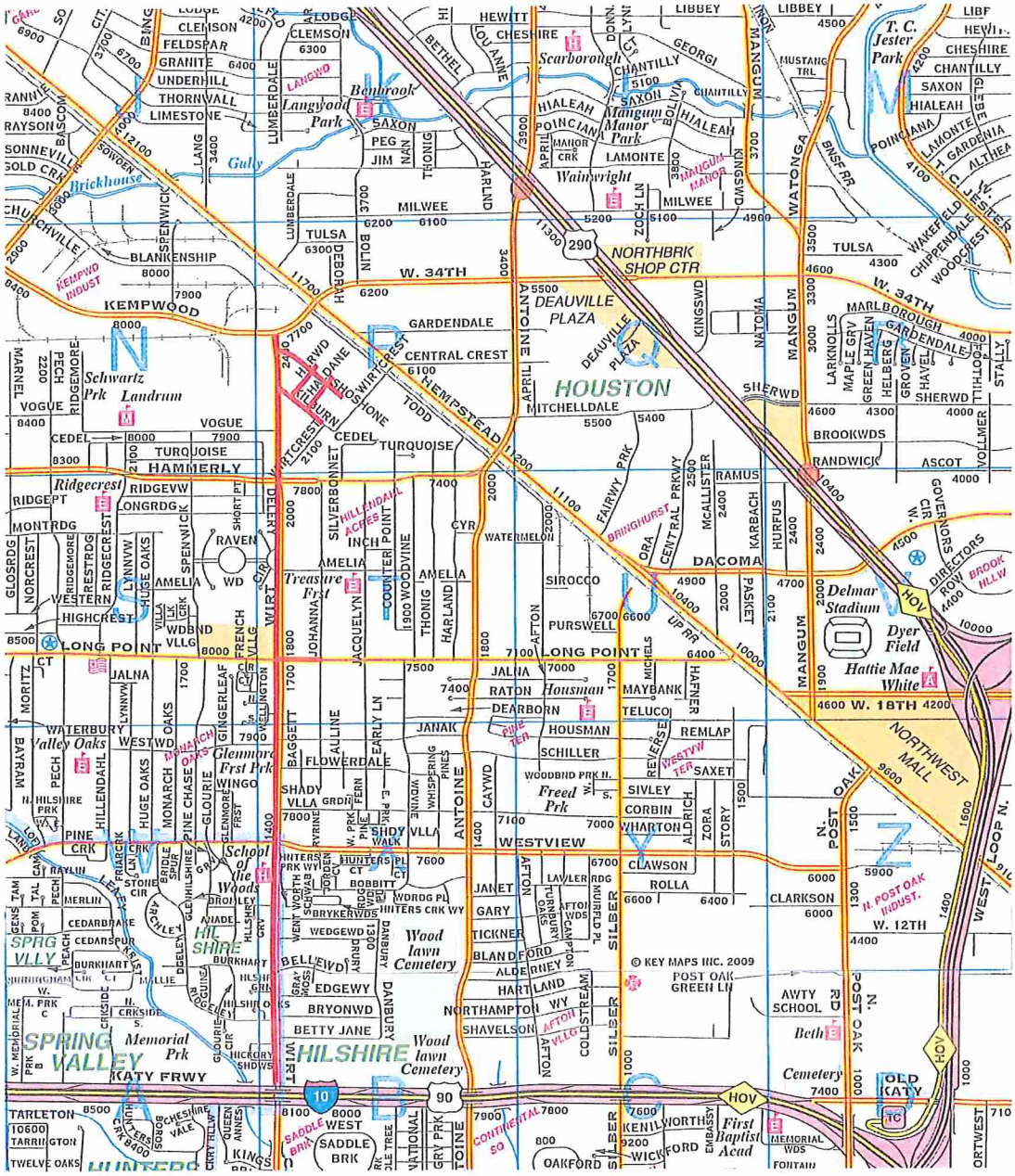
Wirt Road at Long Point Road

- Groundwater could not be obtained with direct push drilling methods at the soil borings at this REC location on 06/26/14. Refusal was occurring at 24 feet bgs. On 07/21/14, a more powerful and new push drilling rig was mobilized to the REC location in an attempt to obtain a groundwater sample at the location. The drilling rig also encountered refusal at 24 feet bgs. The area is already identified as a PPCA due to volatile organic

compound detections in soil. The groundwater should be assumed to be affected until determined not to be VOC-affected.

FIGURES

FIGURE 1A

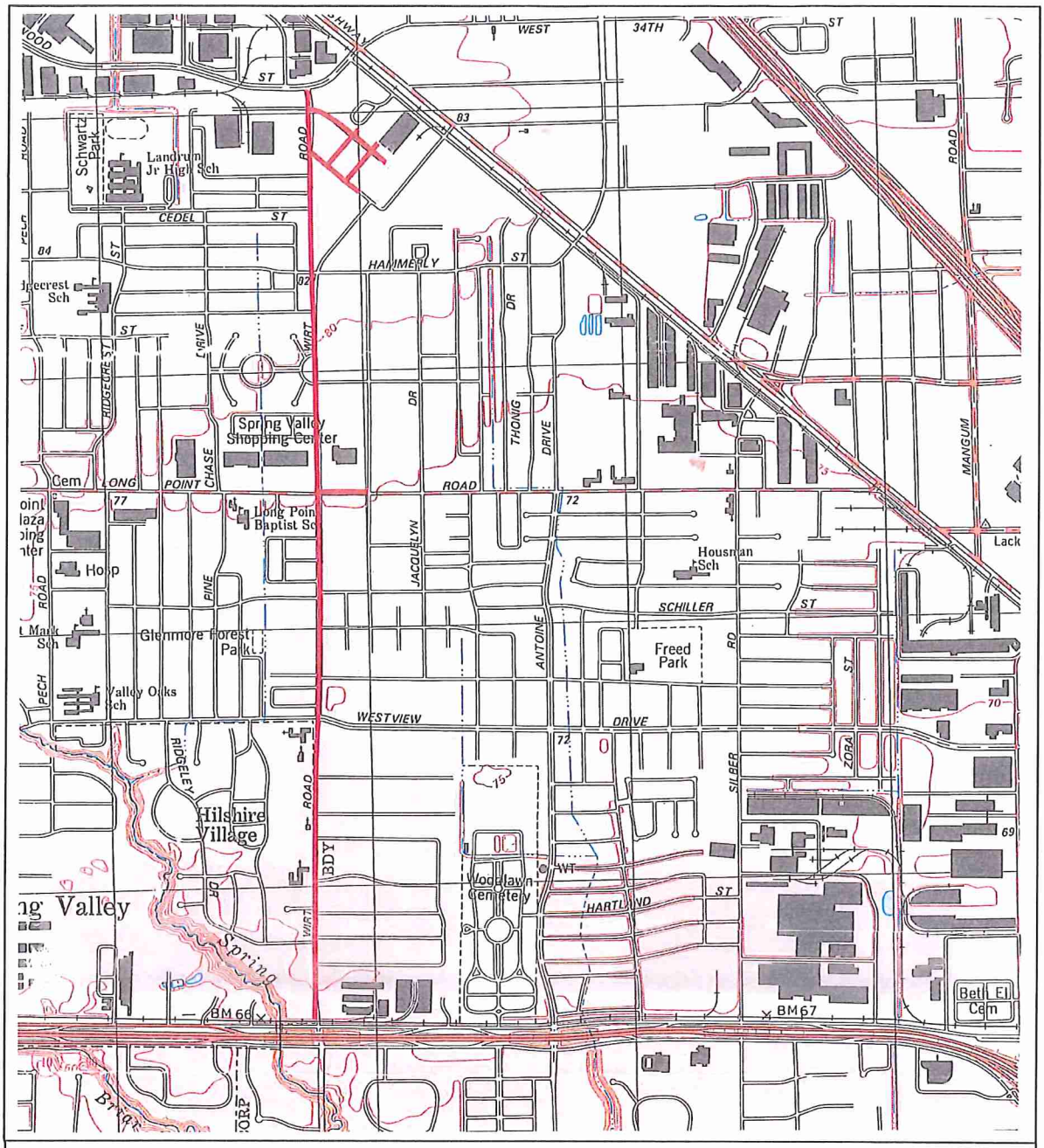


HARRIS COUNTY KEY MAP

PAGE 451 AND 491

APPROXIMATE SCALE 1" = 1/2 MILE = 2,640'

FIGURE 1B



U.S. DEPARTMENT OF INTERIOR GEOLOGICAL SURVEY

HOUSTON HEIGHTS QUADRANGLE
HARRIS COUNTY, TEXAS

7.5 MINUTE SERIES (TOPOGRAPHIC)

FIGURE 2
Soil Boring Location Map
Wirt Road Drainage & Paving Improvements Project
Former gasoilne station
(1215 Wirt Road)
Houston, Harris County, Texas
BOA Job No. 9155H-P2

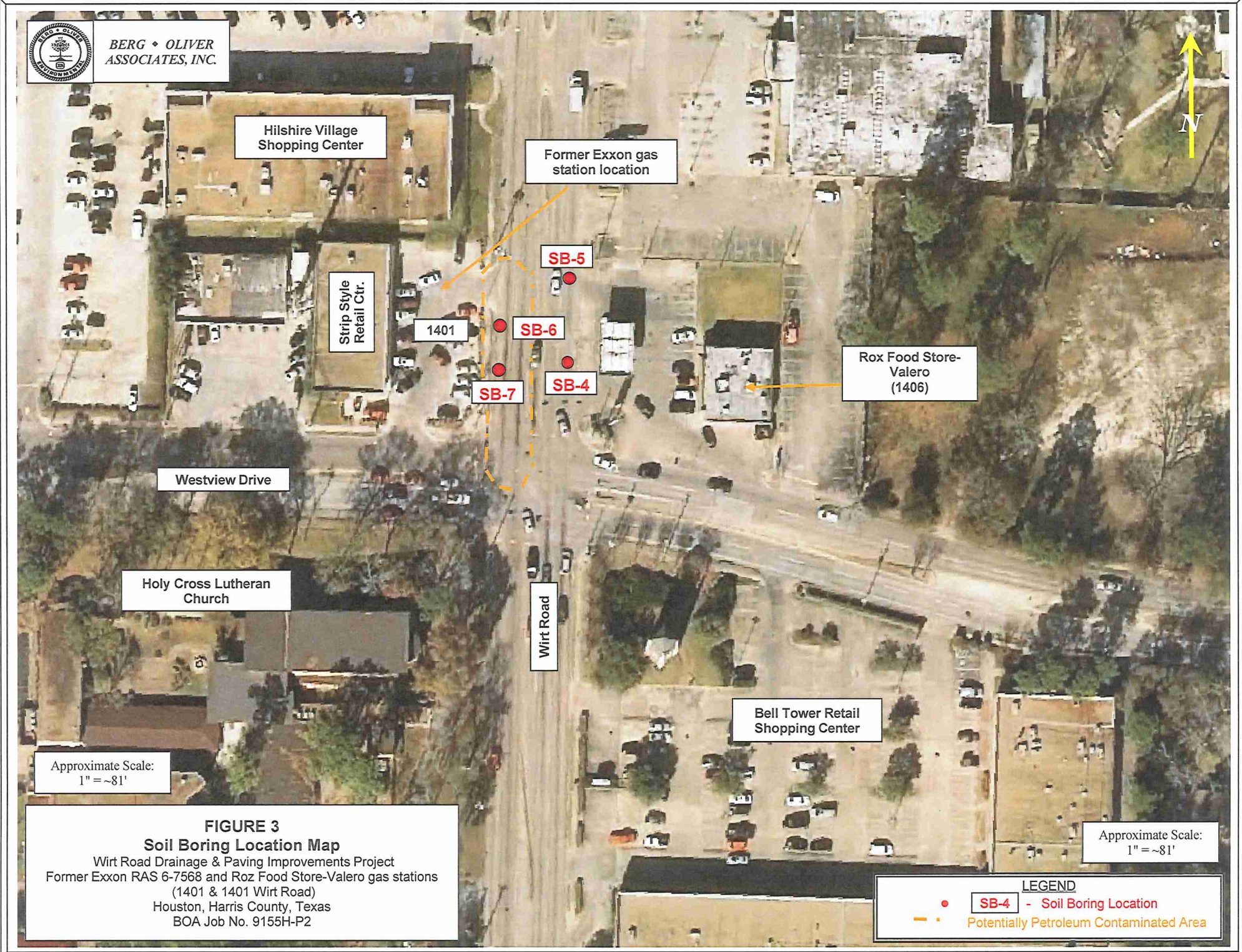


FIGURE 3
Soil Boring Location Map
Wirt Road Drainage & Paving Improvements Project
Former Exxon RAS 6-7568 and Roz Food Store-Valero gas stations
(1401 & 1401 Wirt Road)
Houston, Harris County, Texas
BOA Job No. 9155H-P2

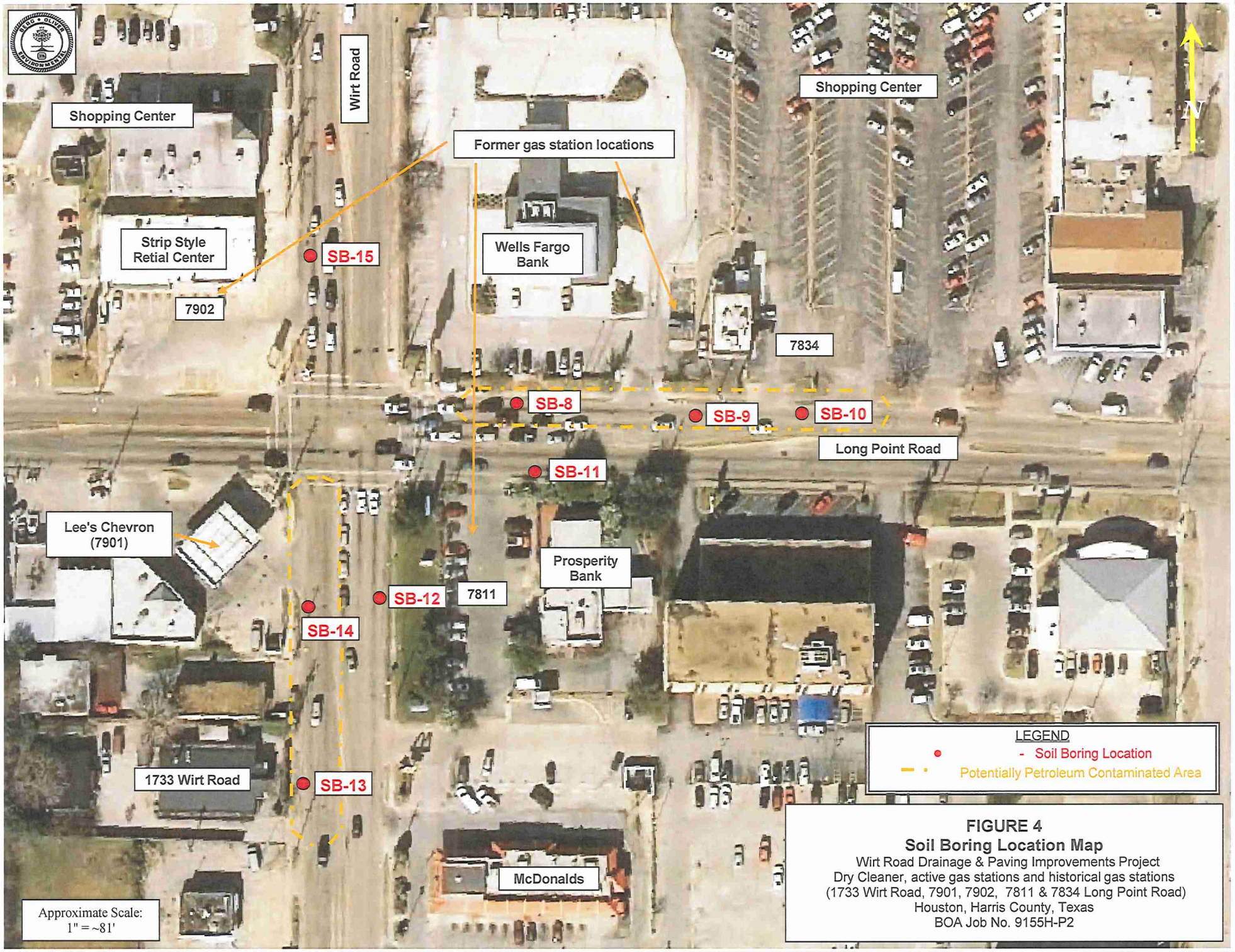


FIGURE 4
Soil Boring Location Map
Wirt Road Drainage & Paving Improvements Project
Dry Cleaner, active gas stations and historical gas stations
(1733 Wirt Road, 7901, 7902, 7811 & 7834 Long Point Road)
Houston, Harris County, Texas
BOA Job No. 9155H-P2

FIGURE 5
Soil Boring Location Map
Wirt Road Drainage & Paving Improvements Project
Strip Style Retail Center wth Former Stop-N-Go
(2000 Wirt Road)
Houston, Harris County, Texas
BOA Job No. 9155H-P2

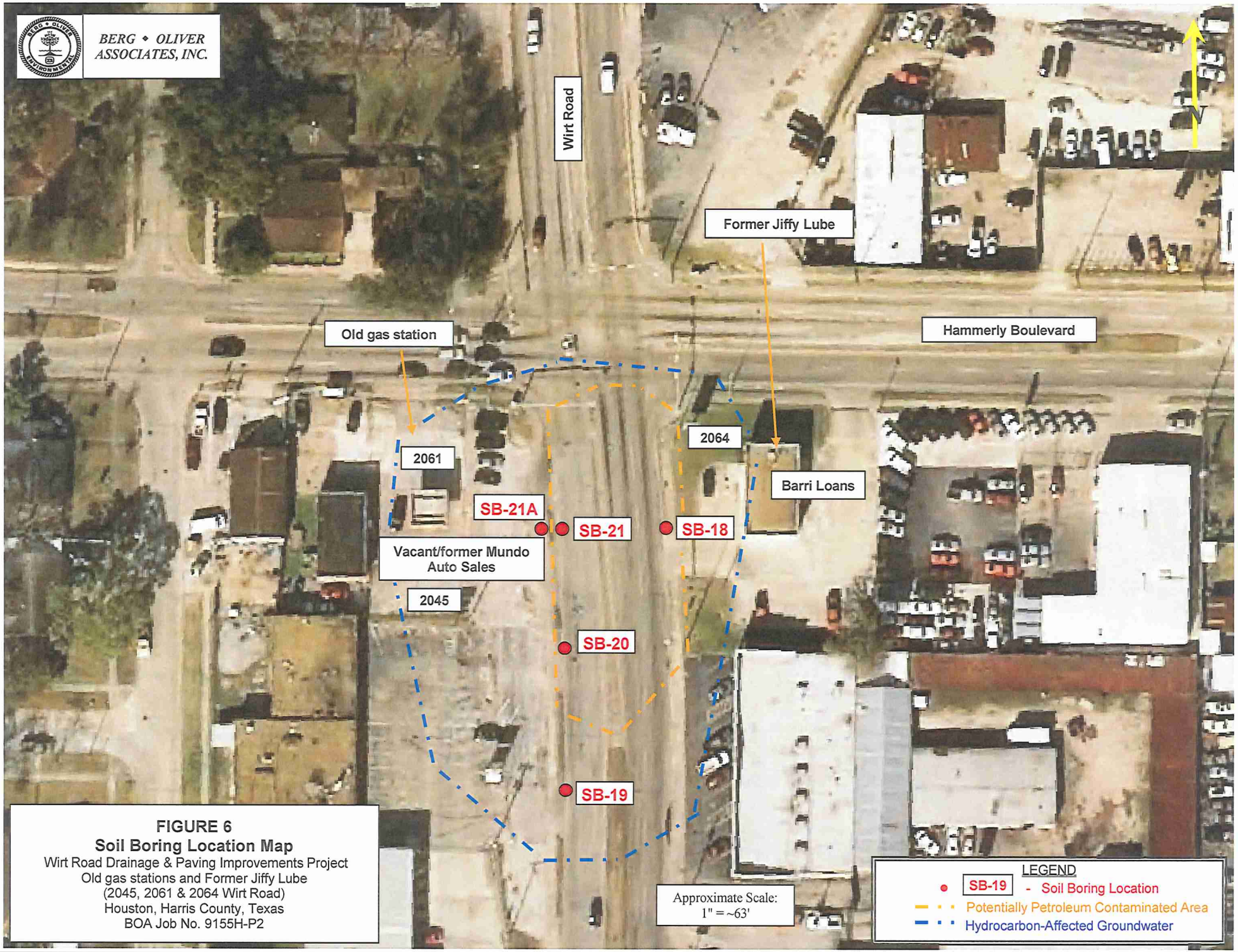


FIGURE 6
Soil Boring Location Map
Wirt Road Drainage & Paving Improvements Project
Old gas stations and Former Jiffy Lube
(2045, 2061 & 2064 Wirt Road)
Houston, Harris County, Texas
BOA Job No. 9155H-P2

FIGURE 7
Soil Boring Location Map
Wirt Road Drainage & Paving Improvements Project
Handi Stop No. 50/Shell gas station and Former 7-11 Food Store
(2218 & 2330 Wirt Road)
Houston, Harris County, Texas
BOA Job No. 9155H-P2

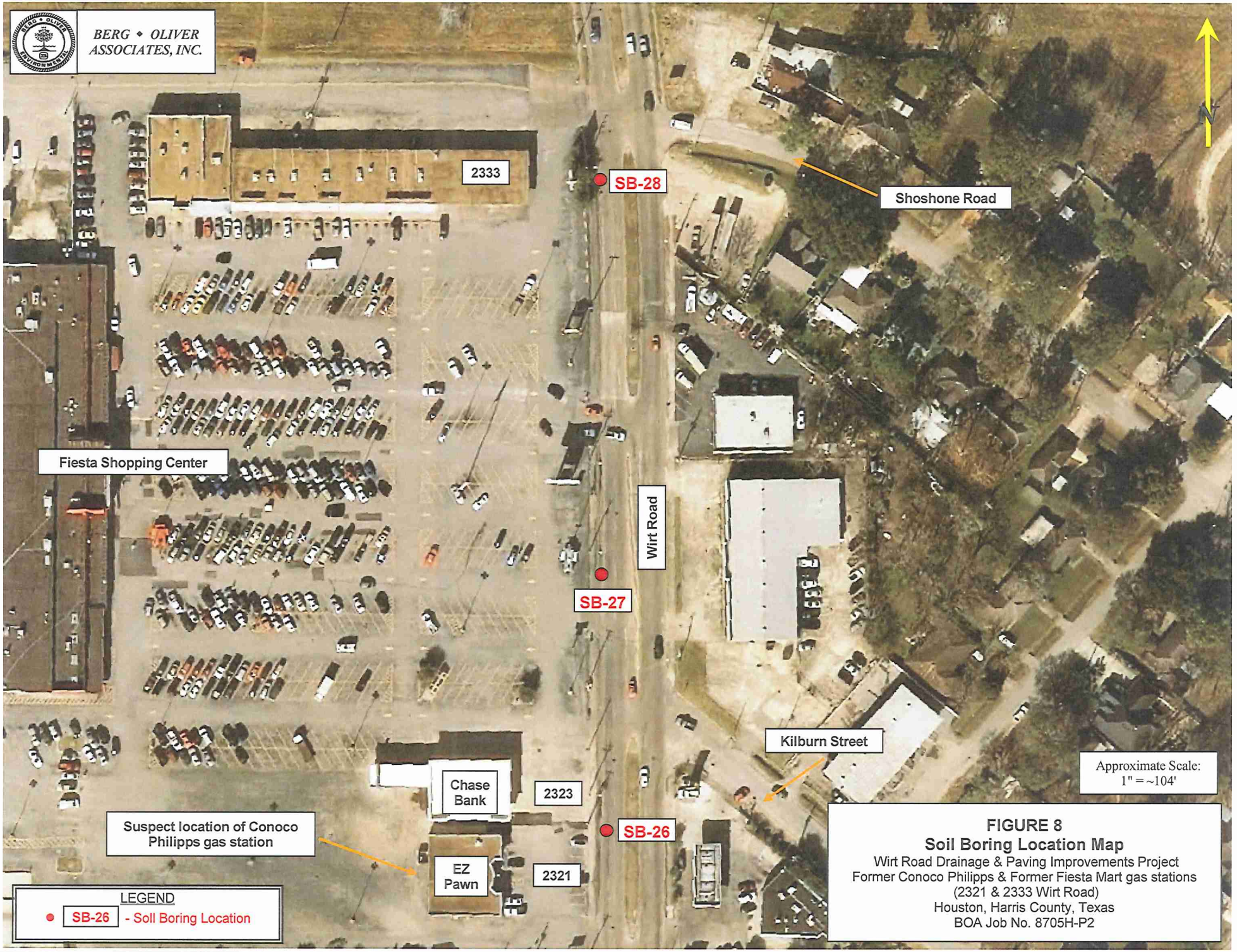


FIGURE 8
Soil Boring Location Map
Wirt Road Drainage & Paving Improvements Project
Former Conoco Philipps & Former Fiesta Mart gas stations
(2321 & 2333 Wirt Road)
Houston, Harris County, Texas
BOA Job No. 8705H-P2

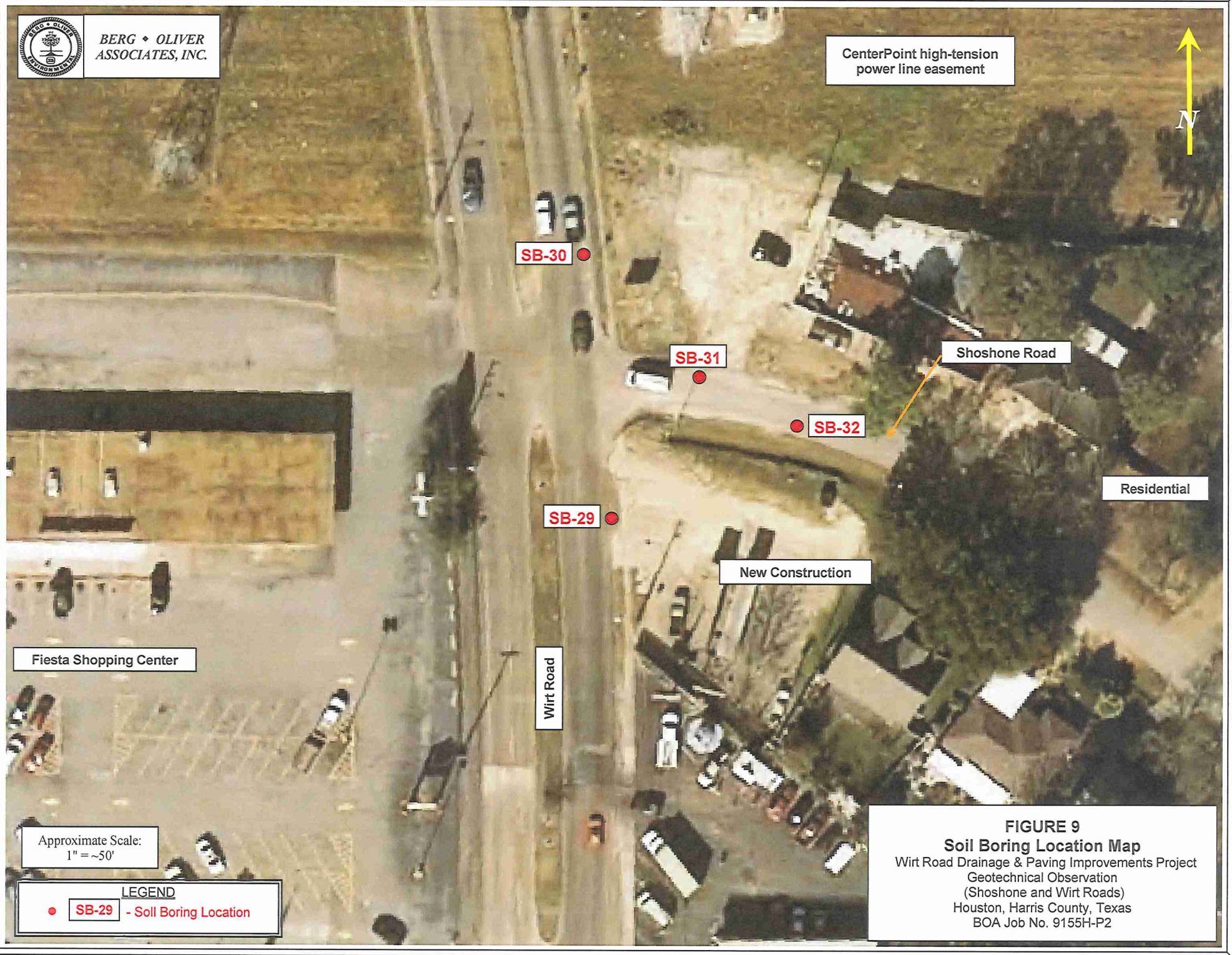


FIGURE 9
Soil Boring Location Map
Wirt Road Drainage & Paving Improvements Project
Geotechnical Observation
(Shoshone and Wirt Roads)
Houston, Harris County, Texas
BOA Job No. 9155H-P2

TABLES

TABLE I

SUMMARY OF SOIL LABORATORY ANALYTICAL RESULTS - BTEX/TPH
WIRT ROAD DRAINAGE AND PAVING IMPROVEMENTS PROJECT
FROM KEMPWOOD DRIVE TO US INTERSTATE HIGHWAY 10-WEST (KATY FREEWAY)
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	116	5,934	6,394	5,957	NA	1,600	2,300	NA	NA
TRRP Tier 1 PCLs ($^{GW}Soil_{Inc}$)			0.621	0.026	8.21	7.63	122	NA	65	200	NA	NA
SOIL BORING SOIL SAMPLES												
Townhomes/Former Baron's Texaco/Petro Trail/Phil's gasoline service station (1215 Wirt Road)												
SB-1	06/23/13	2-4	<0.00057	<0.00076	<0.0011	<0.0011	<0.0032	ND	67.2	237	159	464
SB-2	06/23/14	4-6	<0.00058	<0.00077	<0.0012	<0.0011	<0.0032	ND	<13	<16	<16	ND
SB-3	06/23/14	4-6	<0.00057	<0.00075	<0.0011	<0.0011	<0.0031	ND	<13	<16	<16	ND
Roz Food Store-Valero gasoline service station/convenience store (1406 Wirt Road)												
SB-4	06/23/14	2-4	<0.00056	<0.00074	<0.0011	<0.0011	<0.0031	ND	<13	<16	<16	ND
SB-5	06/23/14	4-6	<0.00054	<0.00072	<0.0011	<0.0010	<0.0030	ND	<13	<16	<16	ND
Prosperity Bank/Former Taco Cabana/Former gas station (7811 Wirt Road)												
SB-11	06/27/14	22-24	<0.00059	<0.00078	<0.0012	<0.0011	<0.0032	ND	<13	<15	<15	ND
SB-12	06/27/14	18-20	<0.00058	<0.00078	<0.0012	<0.0011	<0.0032	ND	<13	<16	<16	ND
Strip-style retail center/former Stop-N-Go gas station (7902 Wirt Road) & Former White's Store (7906 Wirt Road)												
SB-15	06/27/14	6-8	<0.00055	<0.00073	<0.0011	<0.011	<0.0030	ND	<13	<15	<15	ND
Former Stop-N-Go gasoline service station/convenience store (2000 Wirt Road)												
SB-16	06/27/14	14-16	<0.00058	<0.00077	<0.0012	<0.0011	<0.0032	ND	<14	<16	<16	ND
SB-17	06/27/14	4-6	<0.00061	<0.00081	<0.0012	<0.0012	<0.0034	ND	<13	<16	<16	ND
Former Jiffy Lube (2064 Wirt Road), Former Bateman's Humble/ENCO/Exxon service station (2045 Wirt Road) and Old gas station (2061 Wirt Road)												
SB-18	06/26/14	12-14	<0.00063	0.0016 J	0.0018 J	<0.0012	<0.0035	0.0034	<14	129	159	288
SB-19	06/26/14	4-6	<0.00062	<0.00079	<0.0012	<0.0011	<0.0033	ND	<14	<16	<16	ND
SB-20	06/26/14	18-20	<0.00057	<0.00075	<0.0011	<0.0011	<0/0031	ND	<13	<16	<16	ND
SB-21	06/26/14	10-12	<0.035	1.49 J	30.7	58.0	236	326.19	639	<16	<16	639
Former 7-11 Food Store (2218 Wirt Road) and Handi Stop No. 50-Shell gasoline service station/convenience store (2330 Wirt Road)												
SB-22	06/26/14	18-20	<0.033	<0.044	<0.067	<0.063	<0.18	ND	<13	<16	<16	ND
SB-23	06/26/14	6-8	<0.00056	<0.00074	<0.0011	<0.0011	<0.0031	ND	<13	<16	<16	ND
SB-24	06/26/14	10-12	<0.035	0.441	4.24	8.15	47.5	60.331	133	<16	<16	133
SB-25	06/26/14	10-12	<0.33	1.45 J	27.8	31.8	184	245.09	543	77.0	<16	623
Former ConocoPhillps gasoline service station (2321 Wirt Road) and Former Fiesta Mart gas station (2333 Wirt Road)												
SB-26	06/24 & 26/14	22-24	<0.00059	<0.00078	<0.0012	<0.0012	<0.0032	ND	<14	<16	<16	ND
SB-27	06/24/14	6-8	<0.00056	<0.00075	<0.0011	<0.0011	<0.0031	ND	<13	<16	<16	ND
SB-28	06/24/14	4-6	<0.00055	<0.00073	<0.0011	<0.0010	<0.0030	ND	<13	<15	<15	ND

TABLE I

SUMMARY OF SOIL LABORATORY ANALYTICAL RESULTS - BTEX/TPH
WIRT ROAD DRAINAGE AND PAVING IMPROVEMENTS PROJECT
FROM KEMPWOOD DRIVE TO US INTERSTATE HIGHWAY 10-WEST (KATY FREEWAY)
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	116	5,934	6,394	5,957	NA	1,600	2,300	NA	NA
TRRP Tier 1 PCLs ($^{GW}Soil_{Ing}$)			0.621	0.026	8.21	7.63	122	NA	65	200	NA	NA
Geotechnical Observation (Shoshone Street at Wirt Road)												
SB-29	06/24/14	2-4	<0.00057	<0.00075	<0.0011	<0.0011	<0.0031	ND	<13	<16	<16	ND
SB-30	06/24/14	10-12	<0.00056	<0.00074	<0.0011	<0.0011	<0.0031	ND	<13	<15	<15	ND
SB-31	06/24/14	6-8	<0.00057	<0.00076	<0.0011	<0.0011	<0.0031	ND	<13	<15	<15	ND
SB-32	06/23/14	22-24	<0.00058	<0.00077	<0.0012	<0.0011	<0.0032	ND	<13	<15	<15	ND

Notes:

1. PCLs indicates TRRP Tier 1 Tables protective concentration limits (May 2011).
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 ($^{GW}Soil_{Ing}$) 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 SW846-8260; TPH - Texas Method 1005.
5. Detections are provided in bold font.
6. NA indicates Not Applicable, or Not Available.
7. ND indicates Non-Detect.
8. *Italics* indicates soil sample detection limit potentailly above PCL.

TABLE II

SUMMARY OF GROUNDWATER ANALYTICAL DATA - BTEX/TPH
WIRT ROAD DRAINAGE AND PAVING IMPROVEMENTS PROJECT
FROM KEMPWOOD DRIVE TO US INTERSTATE HIGHWAY 10-WEST (KATY FREEWAY)
HOUSTON, HARRIS COUNTY, TEXAS

Sample ID	Date	Benzene (mg/L)	Toluene (mg/L)	Ethyl-Benzene (mg/L)	Xylenes (mg/L)	BTEX (mg/L)	MTBE (mg/L)	TPH C6-C12 (mg/L)	TPH >C12-C28 (mg/L)	TPH >C28-C35 (mg/L)	Total TPH (mg/L)
TRRP Tier 1 PCLs ($^{GW}GW_{Ing}$)		0.005	1.0	0.7	10.0	NA	0.244	0.98	0.98	0.98	NA
TRRP Tier 1 PCLs ($^{GW}GW_{Class\ 3}$)		0.5	100	70	1,000	NA	24.4	97	97	97	NA
TRRP Tier 1 PCLs ($^{Air}GW_{Inh\text{-}V}$)		50	6,203	15,648	1,676	NA	4,038	4,250	7,497	NA	NA
SOIL BORINGS/TEMPORARY WELL POINTS											
Old gas station (Wirt Road)											
TWP-21A	07/21/14	**3.46**	**13.8**	**2.16**	**9.82**	29.24	<0.00060	**40.0**	*<1.4*	*<1.4*	95.5
Former 7-11 Food Store (2218 Wirt Road) and Handi Stop No. 50-Shell gasoline service station/convenience store (2330 Wirt Road)											
SB-25/TWP-25	06/26/14	**2.27**	**4.50**	**0.786**	**4.39**	11.946	**0.0352**	**48.2**	**20.0**	**15.0**	83.2

Notes:

1. PCLs indicates TRRP Tier 1 Tables protective concentration limits.
2. TRRP Tier 1 PCLs ($^{GW}GW_{Ing}$) indicates the PCLs for groundwater ingestion and is the same as MCLs under Federal Drinking Water Standards.
3. TRRP Tier 1 PCLs ($^{GW}GW_{Class\ 3}$) indicates the PCLs for Class 3 groundwater conditions.
4. TRRP Tier 1 PCLs ($^{Air}GW_{Inh\text{-}V}$) indicates the PCLs for the inhalation of water vapor.
5. Analyses by the following methods: BTEX/MTBE - EPA Method SW846-8260B; TPH - Texas Method 1005
6. Detections are provided in bold font.
7. NA indicates Not Applicable, or Not Available
8. ND indicates Non-Detect
9. Shaded cell indicates PCL exceedence, if applicable
10. J indicates and estimated concentration between the method detection limit and practical quantitation limit.

APPENDIX A

Soil Boring Logs

PROJECT NO: 9155H-P2

SITE NAME: Wirt Road Drainage & Paving Improvements Project

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-1 **TEMP. WELL NUMBER :**

FACILITY ADDRESS: 1215 Wirt Road

DRILLING COMPANY / METHOD / RIG: Alpine/Truck-Mounted Hydraulically-Driven Push Probe

DRILLER: Clay **DATE: (START/FINISH)** 06/23/2014 @ 9:45 to 9:53

LOGGED BY: T. Murphy **TOP OF CASING ELEVATION:** N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0			Ground Surface		Concrete (9")	
	1.0			ML	Sandy loam; Brown sandy loam, fines, moist (surface to 2 feet). Very slight hydrocarbon odor.	SB-1 @ 2-4'; 9:49, 1-4 oz
	5.4					
5	0.0			CL	Sandy clay; Light gray sandy clay, fines, moist with FE staining (2-8 feet)	
	0.0					
10					Total Depth = 8 ft	
					Note: Probe subsurface at 9:43.	
15						
20						
25						
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 8'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

PROJECT NO: 9155H-P2

SITE NAME: Wirt Road Drainage & Paving Improvements Project

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-2 TEMP. WELL NUMBER : _____

FACILITY ADDRESS: 1215 Wirt Road

DRILLING COMPANY / METHOD / RIG: Alpine/Truck-Mounted Hydraulically-Driven Push Probe

DRILLER: Clay DATE: (START/FINISH) 06/23/2014 @ 10:01 to 10:10

LOGGED BY: T. Murphy TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0			Ground Surface		Concrete (9")	
	0.0			ML	Sandy loam; Brown sandy loam, fines, moist (surface to 3 feet)	
	0.0					
5	0.0			CL	Sandy clay; Light gray sandy clay, fines, moist with FE staining (3-8 feet)	SB-2 @ 4-6'; 10:10, 1-4 oz
	0.0					
10					Total Depth = 8 ft	
					Note: Probe subsurface at 10:00.	
15						
20						
25						
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 8'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

PROJECT NO: 9155H-P2

SITE NAME: Wirt Road Drainage & Paving Improvements Project

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-3 **TEMP. WELL NUMBER :** _____

FACILITY ADDRESS: 1215 Wirt Road

DRILLING COMPANY / METHOD / RIG: Alpine/Truck-Mounted Hydraulically-Driven Push Probe

DRILLER: Clay **DATE: (START/FINISH)** 06/23/2014 @ 10:21 to 10:27

LOGGED BY: T. Murphy **TOP OF CASING ELEVATION:** N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0			Ground Surface			
	0.0			ML	Concrete (9") Sandy loam; Brown sandy loam, fines, moist (surface to 2 feet)	
	0.0					
5	0.0			CL	Sandy clay; Light gray sandy clay, fines, moist with FE staining and organic layer at 4-5.2 feet (2-8 feet)	SB-3 @ 4-6'; 10:27, 1-4 oz
	0.0					
10					Total Depth = 8 ft Note: Probe subsurface at 10:20.	
15						
20						
25						
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 8'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

PROJECT NO: 9155H-P2

SITE NAME: Wirt Road Drainage & Paving Improvements Project

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-4 **TEMP. WELL NUMBER :** _____

FACILITY ADDRESS: 1406 Wirt Road

DRILLING COMPANY / METHOD / RIG: Alpine/Truck-Mounted Hydraulically-Driven Push Probe

DRILLER: Clay **DATE: (START/FINISH)** 06/23/2014 @ 10:51 to 10:56

LOGGED BY: T. Murphy **TOP OF CASING ELEVATION:** N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0			Ground Surface		Asphalt/Concrete (7")	
	0.0			ML	Sandy loam; Brown sandy loam, fines, moist (surface to 4 feet)	SB-4 @ 2-4'; 10:52, 1-4 oz
	0.0					
5	0.0			CL	Sandy clay; Light gray sandy clay, fines, moist with FE staining (4-8 feet)	
	0.0					
10					Total Depth = 8 ft	
					Note: Probe subsurface at 10:50.	
15						
20						
25						
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 8'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

PROJECT NO: 9155H-P2

SITE NAME: Wirt Road Drainage & Paving Improvements Project

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-5 TEMP. WELL NUMBER : _____

FACILITY ADDRESS: 1406 Wirt Road

DRILLING COMPANY / METHOD / RIG: Alpine/Truck-Mounted Hydraulically-Driven Push Probe

DRILLER: Clay DATE: (START/FINISH) 06/23/2014 @ 11:08 to 11:15

LOGGED BY: T. Murphy TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0			Ground Surface		Asphalt/Concrete (7")	
	0.0			Fill	Gravel/Brown sand (surface to 1-foot)	
				ML	Sandy loam; Brown sandy loam, fines, moist (1-foot to 2 feet)	
	0.0					
5	0.0			CL	Sandy clay; Light gray sandy clay, fines, moist with FE staining (2-8 feet)	SB-5 @ 4-6'; 11:15, 1-4 oz
	0.0					
10					Total Depth = 8 ft	
					Note: Probe subsurface at 11:07.	
15						
20						
25						
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 8'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

PROJECT NO: 9155H-P2

SITE NAME: Wirt Road Drainage & Paving Improvements Project

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-6 **TEMP. WELL NUMBER :** _____

FACILITY ADDRESS: 1401 Wirt Road

DRILLING COMPANY / METHOD / RIG: Alpine/Truck-Mounted Hydraulically-Driven Push Probe

DRILLER: Clay **DATE: (START/FINISH)** 06/23/2014 @ 11:28 to 11:33

LOGGED BY: T. Murphy **TOP OF CASING ELEVATION:** N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
			Ground Surface			
0	0.0			Fill	Asphalt/Concrete (7") Gravel/Brown sand (surface to 1-foot)	SB-6 @ 2-4'; 11:29, 1-4 oz
	0.0					
5	0.0			CL	Sandy clay; Light gray sandy clay, fines, moist with FE staining (2-8 feet)	
	0.0					
10					Total Depth = 8 ft Note: Probe subsurface at 11:27.	
15						
20						
25						
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 8'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

PROJECT NO: 9155H-P2

SITE NAME: Wirt Road Drainage & Paving Improvements Project

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-7 TEMP. WELL NUMBER : _____

FACILITY ADDRESS: 1401 Wirt Road

DRILLING COMPANY / METHOD / RIG: Alpine/Truck-Mounted Hydraulically-Driven Push Probe

DRILLER: Clay DATE: (START/FINISH) 06/23/2014 @ 11:44 to 11:52

LOGGED BY: T. Murphy TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0			Ground Surface			
	23.7			ML	Asphalt/Concrete (9") Sandy loam; Brown sandy loam, fines, moist (surface to 4 feet). Slight hydrocarbon odor.	SB-7 @ 0-2'; 10:27, 1-4 oz
	5.0					
5	0.0			CL	Sandy clay; Light gray sandy clay, fines, moist with FE staining (4-8 feet)	
	0.0					
10					Total Depth = 8 ft Note: Probe subsurface at 11:43.	
15						
20						
25						
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 8'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

PROJECT NO: 9155H-P2

SITE NAME: Wirt Road Drainage & Paving Improvements Project

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-8 **TEMP. WELL NUMBER :**

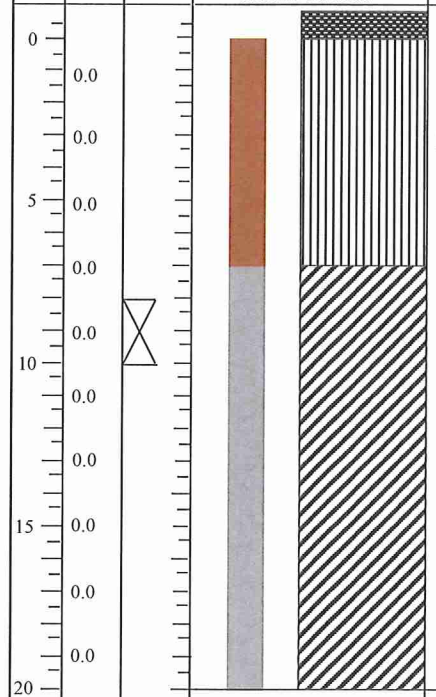
FACILITY ADDRESS: 7834 Long Point Road

DRILLING COMPANY / METHOD / RIG: Alpine/Truck-Mounted Hydraulically-Driven Push Probe

DRILLER: Clay **DATE: (START/FINISH)** 06/27/2014 @ 15:05 to 15:39

LOGGED BY: T. Murphy **TOP OF CASING ELEVATION:** N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0	0.0		Ground Surface		Asphalt/Concrete (10")	
5	0.0			ML	Sandy loam; Brown sandy loam, fines, moist (surface to 7 feet)	
10	0.0					SB-8 @ 8-10'; 15:23, 1-4 oz
15	0.0			CL	Sandy clay; Light gray sandy clay, fines, moist with FE staining (7-20 feet)	
20	0.0				Total Depth = 20 ft Note: Probe subsurface at 15:03.	
25						
30						
35						
40						
45						



FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE SURFACE | WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 20'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

PROJECT NO: 9155H-P2

SITE NAME: Wirt Road Drainage & Paving Improvements Project

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-9 **TEMP. WELL NUMBER :**

FACILITY ADDRESS: 7834 Long Point Road

DRILLING COMPANY / METHOD / RIG: Alpine/Truck-Mounted Hydraulically-Driven Push Probe

DRILLER: Clay **DATE: (START/FINISH)** 06/27/2014 @ 15:55 to 16:20

LOGGED BY: T. Murphy **TOP OF CASING ELEVATION:** N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0			Ground Surface		Concrete (10")	
	0.0			ML	Sandy loam; Brown sandy loam, fines, moist (surface to 5 feet)	
	0.0					
5	0.0					SB-9 @ 4-6'; 15:59, 1-4 oz
	0.0					
	0.0					
10	0.0					
	0.0					
	0.0			CL	Sandy clay; Light gray sandy clay, fines, moist with FE staining (5-24 feet)	
15	0.0					
	0.0					
	0.0					
20	0.0					
	0.0					
25					Total Depth = 24 ft	
					Note: Probe subsurface at 15:54.	
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 24'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

SHEET 1 OF 1

PROJECT NO: 9155H-P2

SITE NAME: Wirt Road Drainage & Paving Improvements Project

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-10 TEMP. WELL NUMBER :

FACILITY ADDRESS: 7834 Long Point Road

DRILLING COMPANY / METHOD / RIG: Alpine/Truck-Mounted Hydraulically-Driven Push Probe

DRILLER: Clay DATE: (START/FINISH) 06/27/2014 @ 14:08 to 14:28

LOGGED BY: T. Murphy TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0	0.0		Ground Surface	ML	Concrete (10") Sandy loam; Brown sandy loam, fines, moist (surface to 3 feet)	
5	0.0					
	0.0					
	0.0					
10	0.0					
	0.0					
	0.0			CL	Sandy clay; Light gray sandy clay, fines, moist with FE staining and calcareous nodules (3-24 feet)	SB-10 @ 14-16'; 14:23, 1-4 oz
15	0.0					
	0.0					
	0.0					
20	0.0					
	0.0					
25					Total Depth = 24 ft Note: Probe subsurface at 14:06.	
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 24'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

PROJECT NO: 9155H-P2

SITE NAME: Wirt Road Drainage & Paving Improvements Project

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-11 TEMP. WELL NUMBER :

FACILITY ADDRESS: 7811 Long Point Road

DRILLING COMPANY / METHOD / RIG: Alpine/Truck-Mounted Hydraulically-Driven Push Probe

DRILLER: Clay DATE: (START/FINISH) 06/27/2014 @ 13:05 to 13:47

LOGGED BY: T. Murphy TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0	0.0		Ground Surface		Concrete (10")	
	0.0			ML	Sandy loam; Brown sandy loam, fines, moist (surface to 5 feet)	
5	0.0					
	0.0					
	0.0					
10	0.0					
	0.0					
	0.0			CL	Sandy clay; Light gray sandy clay, fines, moist with FE staining and calcareous nodules (5-24 feet)	
15	0.0					
	0.0					
	0.0					
20	0.0					
	0.0	X				SB-11 @ 22-24'; 13:47, 1-4 oz
25					Total Depth = 24 ft	
					Note: Probe subsurface at 13:02.	
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 24'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

SHEET 1 OF 1

PROJECT NO: 9155H-P2

SITE NAME: Wirt Road Drainage & Paving Improvements Project

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-12 **TEMP. WELL NUMBER :**

FACILITY ADDRESS: 7811 Long Point Road

DRILLING COMPANY / METHOD / RIG: Alpine/Truck-Mounted Hydraulically-Driven Push Probe

DRILLER: Clay **DATE: (START/FINISH)** 06/27/2014 @ 12:16 to 12:50

LOGGED BY: T. Murphy **TOP OF CASING ELEVATION:** N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0			Ground Surface		Concrete (10")	
	0.0			Fill	Fill, (surface to 1-foot)	
	0.0			ML	Sandy loam; Brown sandy loam, fines, moist (1-foot to 2 feet)	
5	0.0					
	0.0					
	0.0					
10	0.0					
	0.0			CL	Sandy clay; Light gray sandy clay, fines, moist with FE staining with clayey sand at 8-10 feet and 12-13 feet (2-20 feet)	
15	0.0					
	0.0					SB-12 @ 18-20'; 12:50, 1-4 oz
20	0.0					
25					Total Depth = 20 ft Note: Probe subsurface at 12:14.	
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 20'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

PROJECT NO: 9155H-P2

SITE NAME: Wirt Road Drainage & Paving Improvements Project

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-13 TEMP. WELL NUMBER :

FACILITY ADDRESS: 1733 Wirt Road

DRILLING COMPANY / METHOD / RIG: Alpine/Truck-Mounted Hydraulically-Driven Push Probe

DRILLER: Clay DATE: (START/FINISH) 06/27/2014 @ 11:25 to 12:07

LOGGED BY: T. Murphy TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0	0.0		Ground Surface		Concrete (11")	
	0.0			ML	Sandy loam; Brown sandy loam, fines, moist (surface to 2 feet)	
5	0.0					
	0.0					
10	0.0			CL	Sandy clay; Light gray sandy clay, fines, moist with FE staining (2-20 feet)	
	0.0					
15	0.0					SB-13 @ 16-18'; 12:07, 1-4 oz
	0.0					
20	0.0				Total Depth = 20 ft	
25					Note: Probe subsurface at 11:23.	
30						
35						
40						
45						

▨ FILTER SAND ▨ BENTONITE SEAL ▩ GROUT / CONCRETE SURFACE ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 20'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

SHEET 1 OF 1

PROJECT NO: 9155H-P2

SITE NAME: Wirt Road Drainage & Paving Improvements Project

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-14 TEMP. WELL NUMBER :

FACILITY ADDRESS: 7901 Long Point Road

DRILLING COMPANY / METHOD / RIG: Alpine/Truck-Mounted Hydraulically-Driven Push Probe

DRILLER: Clay **DATE: (START/FINISH)** 06/27/2014 @ 10:28 to 10:59

LOGGED BY: T. Murphy **TOP OF CASING ELEVATION:** N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0			Ground Surface		Concrete (11")	
	0.0			ML	Sandy loam; Brown sandy loam, fines, moist (surface to 2 feet)	
	0.0					
5	0.0					
	0.0					
	0.0					
10	0.0			CL	Sandy clay; Light gray sandy clay, fines, moist with FE staining (2-20 feet)	
	0.0					
15	0.0					
	0.0					SB-14 @ 18-20'; 10:59, 1-4 oz
20	0.0					
25					Total Depth = 20 ft	
					Note: Probe subsurface at 10:26.	
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 20'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

PROJECT NO: 9155H-P2

SITE NAME: Wirt Road Drainage & Paving Improvements Project

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-15 **TEMP. WELL NUMBER :**

FACILITY ADDRESS: 7902/7906 Long Point Road

DRILLING COMPANY / METHOD / RIG: Alpine/Truck-Mounted Hydraulically-Driven Push Probe

DRILLER: Clay **DATE: (START/FINISH)** 06/27/2014 @ 9:49 to 10:18

LOGGED BY: T. Murphy **TOP OF CASING ELEVATION:** N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0			Ground Surface		Concrete (10")	
	0.0			ML	Sandy loam; Brown sandy loam, fines, moist (1-foot to 2 feet)	
	0.0					
5	0.0					SB-15 @ 6-8'; 9:54 1-4 oz
	0.0					
	0.0					
10	0.0			CL	Sandy clay; Light gray sandy clay, fines, moist with FE staining (2-20 feet)	
	0.0					
	0.0					
15	0.0					
	0.0					
	0.0					
20					Total Depth = 20 ft	
					Note: Probe subsurface at 9:47.	
25						
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE SURFACE | WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 20'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

PROJECT NO: 9155H-P2

SITE NAME: Wirt Road Drainage & Paving Improvements Project

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-16 **TEMP. WELL NUMBER :**

FACILITY ADDRESS: 2000 Wirt Road

DRILLING COMPANY / METHOD / RIG: Alpine/Truck-Mounted Hydraulically-Driven Push Probe

DRILLER: Clay **DATE: (START/FINISH)** 06/27/2014 @ 9:07 to 9:33

LOGGED BY: T. Murphy **TOP OF CASING ELEVATION:** N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
			Ground Surface			
0	0.0			Fill	Fill, Grass/Topsoil (surface to 1-foot)	
	0.0			ML	Sandy loam; Brown sandy loam, fines, moist (1-foot to 2 feet)	
5	0.0					SB-16 @ 14-16'; 9:28, 1-4 oz
	0.0					
	0.0					
10	0.0			CL	Sandy clay; Light gray sandy clay, fines, moist with FE & Mg staining with calcareous layer at 14.5-16 feet (2-20 feet)	
	0.0					
15	0.0					
	0.0					
20	0.0				Total Depth = 20 ft	
					Note: Probe subsurface at 9:03. Due to subsurface conflict (waterline), the original boring location was moved to the curb.	
25						
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 20'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

PROJECT NO: 9155H-P2

SITE NAME: Wirt Road Drainage & Paving Improvements Project

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-16 **TEMP. WELL NUMBER :** _____

FACILITY ADDRESS: 2000 Wirt Road

DRILLING COMPANY / METHOD / RIG: Alpine/Truck-Mounted Hydraulically-Driven Push Probe

DRILLER: Clay **DATE: (START/FINISH)** 06/27/2014 @ 9:07 to 9:33

LOGGED BY: T. Murphy **TOP OF CASING ELEVATION:** N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0			Ground Surface			
	0.0			Fill	Fill, Grass/Topsoil (surface to 1-foot)	
	0.0			ML	Sandy loam; Brown sandy loam, fines, moist (1-foot to 3 feet)	
5	0.0					
	0.0	X				SB-16 @ 14-16'; 9:28, 1-4 oz
	0.0					
10	0.0			CL	Sandy clay; Light gray sandy clay, fines, moist with FE & Mg staining with calcareous layer at 14.5-16 feet (3-20 feet)	
	0.0					
15	0.0					
	0.0					
20	0.0					
					Total Depth = 20 ft	
					Note: Probe subsurface at 9:03. Due to subsurface conflict (waterline), the original boring location was moved to the curb.	
25						
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 20'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

PROJECT NO: 9155H-P2

SITE NAME: Wirt Road Drainage & Paving Improvements Project

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-17 TEMP. WELL NUMBER :

FACILITY ADDRESS: 2000 Wirt Road

DRILLING COMPANY / METHOD / RIG: Alpine/Truck-Mounted Hydraulically-Driven Push Probe

DRILLER: Clay DATE: (START/FINISH) 06/27/2014 @ 8:30 to 8:50

LOGGED BY: T. Murphy TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0	0.0		Ground Surface		Asphalt/Concrete (6")	
				ML	Sandy loam; Brown sandy loam, fines, moist (1-foot to 2 feet)	
	0.0					
	0.0					SB-17 @ 4-6'; 8:36, 1-4 oz
5	0.0					
	0.0					
	0.0					
10	0.0			CL	Sandy clay; Light gray sandy clay, fines, moist with FE and some Mg staining (2-20 feet)	
	0.0					
	0.0					
15	0.0					
	0.0					
	0.0					
20					Total Depth = 20 ft	
					Note: Probe subsurface at 8:29.	
25						
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 20'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

SHEET 1 OF 1

PROJECT NO: 9155H-P2

SITE NAME: Wirt Road Drainage & Paving Improvements Project

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-18 TEMP. WELL NUMBER : ____

FACILITY ADDRESS: 2064 Wirt Road

DRILLING COMPANY / METHOD / RIG: Alpine/Truck-Mounted Hydraulically-Driven Push Probe

DRILLER: Clay DATE: (START/FINISH) 06/26/2014 @ 16:59 to 17:35

LOGGED BY: T. Murphy TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0	0.0		Ground Surface	Fill	Fill, Grass/Topsoil (surface to 1-foot)	
5	0.0			CL	Sandy clay; Brown sandy clay, fines, moist (1-foot to 11 feet)	
10	0.0					
15	0.0			CL	Sandy clay; Light gray sandy clay, fines, moist with Fe staining and organic layer with slight used oil odor at 12-14 feet (2-20 feet)	SB-18 @ 12-14'; 17:23, 1-4 oz
20	0.0				Total Depth = 20 ft	
25					Note: Probe subsurface at 9:03. Due to subsurface conflict (waterline), the original boring location was moved to the curb.	
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 20'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

SHEET 1 OF 1

PROJECT NO: 9155H-P2

SITE NAME: Wirt Road Drainage & Paving Improvements Project

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-19 TEMP. WELL NUMBER :

FACILITY ADDRESS: 2045, 2061 & 2064 Wirt Road

DRILLING COMPANY / METHOD / RIG: Alpine/Truck-Mounted Hydraulically-Driven Push Probe

DRILLER: Clay DATE: (START/FINISH) 06/26/2014 @ 8:30 to 8:50

LOGGED BY: T. Murphy TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0	0.0		Ground Surface		Concrete (8.5")	
				Fill	Fill, Dark briown sand clay (surface to 1-foot)	
	0.0					
	0.0					SB-19 @ 4-6'; 16:26, 1-4 oz
5	0.0					
	0.0					
	0.0					
10	0.0			CL	Sandy clay; Light gray sandy clay, fines, moist with FE and some Mg staining (1-foot to 20 feet)	
	0.0					
15	0.0					
	0.0					
20	0.0					
					Total Depth = 20 ft	
					Note: Probe subsurface at 8:29.	
					This location may have been one to three gas stations, but appears to be a single facility that has shifted addresses.	
25						
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 20'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

SHEET 1 OF 1

PROJECT NO: 9155H-P2

SITE NAME: Wirt Road Drainage & Paving Improvements Project

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-20 TEMP. WELL NUMBER :

FACILITY ADDRESS: 2045, 2061 & 2064 Wirt Road

DRILLING COMPANY / METHOD / RIG: Alpine/Truck-Mounted Hydraulically-Driven Push Probe

DRILLER: Clay DATE: (START/FINISH) 06/23/2014 @ 8:30 to 9:20

LOGGED BY: T. Murphy TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0			Ground Surface		Concrete (7")	
	0.0					
	0.0					
5	0.0					
	2					
	37			CL	Sandy clay; Light gray sandy clay, fines, moist with FE and some Mg staining (surface to 20 feet). Slight hydrocarbon odor.	
10	40					
	25					
15	29					
	39					SB-20 @ 18-20'; 8:30, 1-4 oz
20	40	X				
25					Total Depth = 20 ft Note: Probe subsurface at 8:29. This location may have been one to three gas stations, but appears to be a single facility that has shifted addresses.	
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 20'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

PROJECT NO: 9155H-P2

SITE NAME: Wirt Road Drainage & Paving Improvements Project

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-21 TEMP. WELL NUMBER :

FACILITY ADDRESS: 2045, 2061 & 2064 Wirt Road

DRILLING COMPANY / METHOD / RIG: Alpine/Truck-Mounted Hydraulically-Driven Push Probe

DRILLER: Clay DATE: (START/FINISH) 06/26/2014 @ 14:55 to 15:40

LOGGED BY: T. Murphy TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0			Ground Surface		Concrete (7")	
	0.0					
	0.0					
5	0.0					
	0.0					
	4.8			CL	Sandy clay; Light gray sandy clay, fines, moist with FE and some Mg staining (surface to 20 feet). Hydrocarbon (gasoline) odor increasing with depth, and moderating at 16 feet bgs.	SB-21 @ 10-12'; 15:09, 1-4 oz
10	1329					
	869					
15	545					
	3.5					
	7.5					
20					Total Depth = 20 ft Note: Probe subsurface at 14:54. This location may have been one to three gas stations, but appears to be a single facility that has shifted addresses.	
25						
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 20'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

PROJECT NO: 9155H-P2

SITE NAME: Wirt Road Drainage & Paving Improvements Project

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-21A TEMP. WELL NUMBER :

FACILITY ADDRESS: 2045, 2061 & 2064 Wirt Road

DRILLING COMPANY / METHOD / RIG: Alpine/Truck-Mounted Hydraulically-Driven Push Probe

DRILLER: Clay DATE: (START/FINISH) 07/21/2014 @ 13:45 to 14:10

LOGGED BY: T. Murphy TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0			Ground Surface			
	NR			CL	Sandy clay; Light gray sandy clay, fines, moist with FE and some Mg staining (surface to 20 feet). Hydrocarbon (gasoline) odor increasing with depth, and moderating at 16 feet bgs.	
5	NR					
	NR					
	NR					
10	NR					
	NR					
	NR					
15	NR					
	NR					
	NR					
20	NR	▼			Sand and silty sand; Light gray sand an silty sand, moist to wet (20-24 feet)	
	NR					
25					Total Depth = 24 ft	
					Note: Probe subsurface at 13:43.	
30					This soil borings was completed to collect groundwater only.	
					NR indicates not recorded.	
35					Groundwater encountered at ~21 feet. Groundwater sampled at 14:19.	
					The boring was completed at the curb.	
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 20'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

PROJECT NO: 9155H-P2

SITE NAME: Wirt Road Drainage & Paving Improvements Project

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-22 TEMP. WELL NUMBER :

FACILITY ADDRESS: 2218 Wirt Road

DRILLING COMPANY / METHOD / RIG: Alpine/Truck-Mounted Hydraulically-Driven Push Probe

DRILLER: Clay DATE: (START/FINISH) 06/26/2014 @ 13:56 to 14:20

LOGGED BY: T. Murphy TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0			Ground Surface		Asphalt/Concrete (9")	
	0.0				Sandy clay; Gray sandy clay, fines, moist	
	0.0				(surface to 2 feet)	
5	0.0					
	0.0					
	0.0			CL	Sandy clay; Light gray with light brown sandy clay , fines, moist with FE	
10	0.0				staining (2-20 feet)	
	0.0					
	0.0					
15	0.0					
	0.0					SB-22 @ 18-20'; 14:20, 1-4 oz
20	0.0					
25					Total Depth = 20 ft	
					Note: Probe subsurface at 13:55.	
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 20'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

SHEET 1 OF 1

PROJECT NO: 9155H-P2

SITE NAME: Wirt Road Drainage & Paving Improvements Project

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-23 TEMP. WELL NUMBER :

FACILITY ADDRESS: 2330 Wirt Road

DRILLING COMPANY / METHOD / RIG: Alpine/Truck-Mounted Hydraulically-Driven Push Probe

DRILLER: Clay DATE: (START/FINISH) 06/26/2014 @ 13:20 to 13:42

LOGGED BY: T. Murphy TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0	0.0		Ground Surface		Asphalt/Concrete (9")	
	0.0			Fill	Fill, Yellowish-brown (tan) aggregate sand (surface to 2 feet)	
5	0.0					
	0.0					SB-23 @ 6-8'; 13:29, 1-4 oz
	0.0			CL	Sandy clay; Light gray with light brown sandy clay , fines, moist with FE staining (2-20 feet)	
10	0.0					
	0.0					
15	0.0					
	0.0					
	0.0					
20					Total Depth = 20 ft Note: Probe subsurface at 13:55.	
25						
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 20'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

PROJECT NO: 9155H-P2

SITE NAME: Wirt Road Drainage & Paving Improvements Project

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-24 TEMP. WELL NUMBER :

FACILITY ADDRESS: 2330 Wirt Road

DRILLING COMPANY / METHOD / RIG: Alpine/Truck-Mounted Hydraulically-Driven Push Probe

DRILLER: Clay DATE: (START/FINISH) 06/26/2014 @ 11:07 to 11:45

LOGGED BY: T. Murphy TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0			Ground Surface		Asphalt/Concrete (5.5")	
	0.0			Fill	Fill, Yellowish-brown (tan) aggregate sand (surface to 1-foot)	
	0.4			ML	Sandy loam; Brown sandy loam, fines, moist (1-foot to 3 feet)	
5	1.5					
	46.1					
	55					
10	600			CL	Sandy clay; Light gray with light brown sandy clay , fines, moist with FE staining (3-20 feet). Hydrocarbon odor incrasing with depth.	SB-24 @ 10-12'; 11:20, 1-4 oz
	86.4					
15	191					
	208					
	104					
20					Total Depth = 20 ft	
					Note: Probe subsurface at 11:05.	
25						
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 20'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

SHEET 1 OF 1

PROJECT NO: 9155H-P2

SITE NAME: Wirt Road Drainage & Paving Improvements Project

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-25 TEMP. WELL NUMBER : TWP-25

FACILITY ADDRESS: 2330 Wirt Road

DRILLING COMPANY / METHOD / RIG: Alpine/Truck-Mounted Hydraulically-Driven Push Probe

DRILLER: Clay **DATE: (START/FINISH)** 06/26/2014 @ 9:32 to 9:50

LOGGED BY: T. Murphy **TOP OF CASING ELEVATION:** N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0			Ground Surface		Asphalt/Concrete (5")	
	0.0			ML	Sandy loam; Brown sandy loam, fines, moist (surface to 4 feet)	
	0.0					
5	0.4					
	0.2					
	25					
10	1190			CL	Sandy clay; Gray, light gray with light brown sandy clay , fines, moist with FE staining (4-20 feet) with sand lenses commencing at 21 feet bgs. Hydrocarbon odor incrasing with depth.	SB-25 @ 10-12'; 9:42, 1-4 oz
	125					
15	72					
	380					
	242					
20	3.9	▼				
	2.9					
25	3.0					
30					Total Depth = 26 ft Note: Probe subsurface at 11:05. Groundwater encountered at ~21 feet. Groundwater sampled at 10:41.	
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 26'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

PROJECT NO: 9155H-P2

SITE NAME: Wirt Road Drainage & Paving Improvements Project

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-26 TEMP. WELL NUMBER :

FACILITY ADDRESS: 2321 & 2333 Wirt Road

DRILLING COMPANY / METHOD / RIG: Alpine/Truck-Mounted Hydraulically-Driven Push Probe

DRILLER: Clay DATE: (START/FINISH) 06/24 & 26/2014

LOGGED BY: T. Murphy TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0	0.0		Ground Surface		Asphalt/Concrete (8")	
	0.0			CL	Sandy clay; Gray sandy clay , fines, moist (surface to 2 feet).	
5	0.0					
	0.0					
	0.0					
10	0.0			CL	Sandy clay; Light gray with light brown sandy clay , fines, moist with FE staining (2-20 feet).	
	0.0					
15	0.0					
	0.0					
	0.0					
20	0.0				Silty sand; Light gray and yellowish brown silty sand, moist (20-24 feet)	SB-26 @ 22-24'; 8:44, 1-4 oz
	0.0	X				
25					Total Depth = 24 ft	
					Note: Probe subsurface at 13:26.	
30					Rain out on 06/24/14 (14.00). Finish boring on 06/26/14.	
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 24'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

PROJECT NO: 9155H-P2

SITE NAME: Wirt Road Drainage & Paving Improvements Project

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-27 TEMP. WELL NUMBER :

FACILITY ADDRESS: 2321 & 2333 Wirt Road

DRILLING COMPANY / METHOD / RIG: Alpine/Truck-Mounted Hydraulically-Driven Push Probe

DRILLER: Clay

DATE: (START/FINISH) 06/24/2014 @ 13:19 to 13:42

LOGGED BY: T. Murphy

TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0	0.0		Ground Surface	ML	Asphalt/Concrete (9") Sandy loam; Brown sandy loam, fines, moist (surface to 1-foot)	
5	0.0					SB-27 @ 6-8'; 13:06, 1-4 oz
10	0.0			CL	Sandy clay; Light gray with light brown sandy clay , fines, moist with FE & MG staining (1-foot to 20 feet).	
15	0.0					
20	0.0				Total Depth = 20 ft Note: Probe subsurface at 13:18.	
25						
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 20'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

SHEET 1 OF 1

PROJECT NO: 9155H-P2

SITE NAME: Wirt Road Drainage & Paving Improvements Project

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-28 **TEMP. WELL NUMBER :**

FACILITY ADDRESS: 2321 & 2333 Wirt Road

DRILLING COMPANY / METHOD / RIG: Alpine/Truck-Mounted Hydraulically-Driven Push Probe

DRILLER: Clay **DATE: (START/FINISH)** 06/24/2014 @ 12:18 to 13:52

LOGGED BY: T. Murphy **TOP OF CASING ELEVATION:** N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
			Ground Surface			
0	0.0			ML	Asphalt/Concrete (10") Sandy loam; Brown sandy loam, fines, moist (surface to 2 feet)	
	0.0					
5	0.0					SB-28 @ 4-6'; 12:23, 1-4 oz
	0.0					
	0.0					
10	0.0			CL	Sandy clay; Light gray with light brown sandy clay , fines, moist with FE & MG staining (2-20 feet).	
	0.0					
15	0.0					
	0.0					
	0.0					
20	0.0					
	0.0				Total Depth = 20 ft Note: Probe subsurface at 12:15.	
25						
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE SURFACE | WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 20'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

PROJECT NO: 9155H-P2

SITE NAME: Wirt Road Drainage & Paving Improvements Project

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-29 **TEMP. WELL NUMBER :**

FACILITY ADDRESS: Wirt Road & Shoshone Street

DRILLING COMPANY / METHOD / RIG: Alpine/Truck-Mounted Hydraulically-Driven Push Probe

DRILLER: Clay **DATE: (START/FINISH)** 06/24/2014 @ 11:02 to 11:31

LOGGED BY: T. Murphy **TOP OF CASING ELEVATION:** N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
			Ground Surface			
0	0.0				Asphalt/Concrete (7.5")	
	0.0			ML	Sandy loam; Brown sandy loam, fines, moist (surface to 5 feet)	SB-29 @ 2-4'; 11:02, 1-4 oz
5	0.0					
	0.0					
	0.0					
10	0.0					
	0.0			CL	Sandy clay; Light gray with light brown sandy clay , fines, moist with FE staining (5-20 feet).	
15	0.0					
	0.0					
	0.0					
20	0.0					
	0.0				Total Depth = 20 ft	
25					Note: Probe subsurface at 10:58.	
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 20'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

PROJECT NO: 9155H-P2

SITE NAME: Wirt Road Drainage & Paving Improvements Project

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-30 **TEMP. WELL NUMBER :** _____

FACILITY ADDRESS: Wirt Road & Shoshone Street

DRILLING COMPANY / METHOD / RIG: Alpine/Truck-Mounted Hydraulically-Driven Push Probe

DRILLER: Clay **DATE: (START/FINISH)** 06/24/2014 @ 10:14 to 10:38

LOGGED BY: T. Murphy **TOP OF CASING ELEVATION:** N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
			Ground Surface			
0	0.0				Asphalt/Concrete (9")	
	0.0			ML	Sandy loam; Brown sandy loam, fines, moist (surface to 5 feet)	
5	0.0					
	0.0					
	0.0					
10	0.0					SB-30 @ 10-12'; 10:30, 1-4 oz
	0.0			CL	Sandy clay; Light gray with light brown sandy clay , fines, moist with FE staining (5-20 feet).	
15	0.0					
	0.0					
	0.0					
20	0.0					
	0.0					
					Total Depth = 20 ft	
					Note: Probe subsurface at 10:12.	
25					Yellowish-brown sand at 20 feet bgs..	
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 20'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

PROJECT NO: 9155H-P2

SITE NAME: Wirt Road Drainage & Paving Improvements Project

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-31 **TEMP. WELL NUMBER :**

FACILITY ADDRESS: Wirt Road & Shoshone Street

DRILLING COMPANY / METHOD / RIG: Alpine/Truck-Mounted Hydraulically-Driven Push Probe

DRILLER: Clay **DATE: (START/FINISH)** 06/24/2014 @ 9:04 to 9:40

LOGGED BY: T. Murphy **TOP OF CASING ELEVATION:** N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
0	0.0		Ground Surface		Asphalt/Concrete (9")	
5	0.0			ML	Sandy loam; Brown sandy loam, fines, moist (surface to 5 feet)	SB-31 @ 6-8'; 9:13, 1-4 oz
10	0.0			CL	Sandy clay; Light gray with light brown sandy clay , fines, moist with FE staining (5-20 feet).	
15	0.0			SM/ SC	Sand and clayey sand; Pale yellowish-brown sand and and clayey sand, moist medium grained (16-20 feet)	
20	0.0				Total Depth = 20 ft Note: Probe subsurface at 9:02.	
25						
30						
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 20'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

PROJECT NO: 9155H-P2

SITE NAME: Wirt Road Drainage & Paving Improvements Project

☒ BOREHOLE ☐ MONITOR WELL

BORING NUMBER : SB-32 TEMP. WELL NUMBER :

FACILITY ADDRESS: Wirt Road & Shoshone Street

DRILLING COMPANY / METHOD / RIG: Alpine/Truck-Mounted Hydraulically-Driven Push Probe

DRILLER: Clay DATE: (START/FINISH) 06/23/2014 @ 12:14 to 15:20

LOGGED BY: T. Murphy TOP OF CASING ELEVATION: N/Appl.

DEPTH (FEET)	PID	SAMPLE INTERVAL	STRATIGRAPHY	USCS	SOIL DESCRIPTION AND COMMENT (CLASSIFICATION, GRAIN SIZE, COLOR, MOISTURE, ODOR, OTHER)	NOTES
			Ground Surface			
0	0.0				Asphalt/Concrete (11.5")	
	0.0			ML	Sandy loam; Dark brown sandy loam, fines, moist (surface to 5 feet)	
5	0.0					
	0.0					
	0.0					
10	0.0					
	0.0			CL	Sandy clay; Light gray with light brown sandy clay , fines, moist with FE staining (5-22 feet).	
15	0.0					
	0.0					
	0.0					
20	0.0					
	0.0	X				SB-31 @ 22-24'; 15:12, 1-4 oz
25	0.0			SM/ SC	Sand and clayey sand; Pale yellowish-brown sand and and clayey sand, moist medium grained (16-20 feet)	
	0.0					
	0.0					
30					Total Depth = 30 ft Note: Probe subsurface at 12:28. Rain delay from 13:40 to 14:40 Restart at 14:45. Refusal at 30 feet.	
35						
40						
45						

FILTER SAND | BENTONITE SEAL | GROUT / CONCRETE SURFACE | ▼ WATER ENCOUNTERED

Berg ♦ Oliver Associates, Inc.

TOTAL DEPTH: 30'

SEAL MATERIAL: (TYPE/INTERVAL) Bentonite to surface

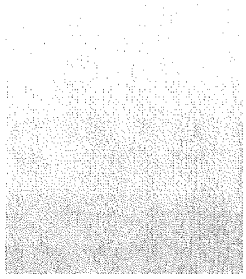
SURFACE COMPLETION: ☐ FLUSH W/CONCRETE ☐ RISER W/CONCRETE

APPENDIX B

Laboratory Analytical Results

Gulf Coast
ACCUTEST
LABORATORIES

07/09/14



Technical Report for

Berg Oliver Associates

Wirt Road Drainage & Paving Project- Houston, TX

9155H-P2

Accutest Job Number: TC50731

Sampling Dates: 06/23/14 - 06/27/14

Report to:

Berg Oliver Associates
14701 Saint Mary's Lane Suite 400
Houston, TX 77079
tmurphy@bergoliver.com

ATTN: Tom Murphy

Total number of pages in report: 160

NELAP ACCREDITED TNI LABORATORY

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Richard Rodriguez
Laboratory Director

Client Service contact: Sylvia Garza 713-271-4700

Certifications: TX (T104704220-14-15, 1M104704220-14-1) AR (14-016-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) NJ (TX010) OK (2013-152) VA (2085)

Sections: 1 2 3 4 5 6 7

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Sections: 1 2 3 4 5 6 7

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Accutest Laboratories

Sample Summary

Berg Oliver Associates

Job No: TC50731

Wirt Road Drainage & Paving Project- Houston, TX
Project No: 9155H-P2

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
TC50731-1	06/23/14	09:49	TM	06/30/14	SO	Soil	SB-1 @ 2-4'
TC50731-2	06/23/14	10:10	TM	06/30/14	SO	Soil	SB-2 @ 4-6'
TC50731-3	06/23/14	10:27	TM	06/30/14	SO	Soil	SB-3 @ 4-6'
TC50731-4	06/23/14	10:56	TM	06/30/14	SO	Soil	SB-4 @ 2-4'
TC50731-5	06/23/14	11:15	TM	06/30/14	SO	Soil	SB-5 @ 4-6'
TC50731-6	06/23/14	11:29	TM	06/30/14	SO	Soil	SB-6 @ 2-4'
TC50731-7	06/23/14	11:44	TM	06/30/14	SO	Soil	SB-7 @ 0-2'
TC50731-8	06/27/14	15:23	TM	06/30/14	SO	Soil	SB-8 @ 8-10'
TC50731-9	06/27/14	15:59	TM	06/30/14	SO	Soil	SB-9 @ 4-6'
TC50731-10	06/27/14	14:23	TM	06/30/14	SO	Soil	SB-10 @ 14-16'
TC50731-11	06/27/14	13:47	TM	06/30/14	SO	Soil	SB-11 @ 22-24'
TC50731-12	06/27/14	12:50	TM	06/30/14	SO	Soil	SB-12 @ 18-20'
TC50731-13	06/27/14	10:49	TM	06/30/14	SO	Soil	SB-14 @ 18-20'

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

Sample Summary
(continued)

Berg Oliver Associates

Job No: TC50731

Wirt Road Drainage & Paving Project- Houston, TX
Project No: 9155H-P2

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
TC50731-14	06/27/14	12:02	TM	06/30/14	SO	Soil	SB-13 @ 16-18'
TC50731-15	06/27/14	09:45	TM	06/30/14	SO	Soil	SB-15 @ 6-8'
TC50731-16	06/27/14	09:28	TM	06/30/14	SO	Soil	SB-16 @ 14-16'
TC50731-17	06/27/14	08:36	TM	06/30/14	SO	Soil	SB-17 @ 4-6'
TC50731-18	06/26/14	17:23	TM	06/30/14	SO	Soil	SB-18 @ 12-14'
TC50731-19	06/26/14	16:26	TM	06/30/14	SO	Soil	SB-19 @ 4-6'
TC50731-20	06/23/14	09:20	TM	06/30/14	SO	Soil	SB-20 @ 18-20'
TC50731-21	06/26/14	15:09	TM	06/30/14	SO	Soil	SB-21 @ 10-12'
TC50731-22	06/26/14	14:20	TM	06/30/14	SO	Soil	SB-22 @ 18-20'
TC50731-23	06/26/14	13:29	TM	06/30/14	SO	Soil	SB-23 @ 6-8'
TC50731-24	06/26/14	11:20	TM	06/30/14	SO	Soil	SB-24 @ 10-12'
TC50731-25	06/26/14	09:42	TM	06/30/14	SO	Soil	SB-25 @ 10-12'
TC50731-26	06/26/14	08:44	TM	06/30/14	SO	Soil	SB-26 @ 22-24'

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

Sample Summary
(continued)

Berg Oliver Associates

Job No: TC50731

Wirt Road Drainage & Paving Project- Houston, TX
Project No: 9155H-P2

Sample Number	Collected Date	Time By	Received	Matrix Code	Matrix Type	Client Sample ID
TC50731-27	06/24/14	13:26 TM	06/30/14	SO	Soil	SB-27 @ 6-8'
TC50731-28	06/24/14	12:32 TM	06/30/14	SO	Soil	SB-28 @ 4-6'
TC50731-29	06/24/14	11:02 TM	06/30/14	SO	Soil	SB-29 @ 2-4'
TC50731-30	06/24/14	10:30 TM	06/30/14	SO	Soil	SB-30 @ 10-12'
TC50731-31	06/24/14	09:13 TM	06/30/14	SO	Soil	SB-31 @ 6-8'
TC50731-32	06/23/14	15:12 TM	06/30/14	SO	Soil	SB-32 @ 22-24'
TC50731-33	06/26/14	11:41 TM	06/30/14	AQ	Ground Water	SB-25/TWP-25

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Berg Oliver Associates **Job No** TC50731

Site: Wirt Road Drainage & Paving Project- Houston, TX **Report Date** 7/9/2014 12:20:42 PM

33 Samples were collected between 06/23/2014 and 06/27/2014 and were received intact at Accutest on 06/30/2014 and properly preserved in 1 cooler at 2.6 Deg C These Samples received an Accutest job number of TC50731. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260C

Matrix: AQ **Batch ID:** VX2252

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

Matrix: AQ **Batch ID:** VZ4345

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC50499-6MS, TC50499-6MSD were used as the QC samples indicated.

Matrix: SO **Batch ID:** VM2096

- All samples were analyzed within the recommended method holding time.
- Sample(s) TC50844-1MS, TC50844-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for 1,1-Dichloropropene, Chloroethane, Tetrachloroethylene are outside control limits.
- Matrix Spike Recovery(s) for 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, Acetone, Naphthalene, Trichloroethylene are outside control limits. Probable cause due to matrix interference.
- Matrix Spike Duplicate Recovery(s) for 1,2,3-Trichlorobenzene, Acetone, Hexachlorobutadiene, Trichloroethylene are outside control limits. Probable cause due to matrix interference.
- VM2096-BS for Tetrachloroethylene, Chloroethane, and 1,1-Dichloropropene: Outside control limits biased high.

Matrix: SO **Batch ID:** VR772

- All samples were analyzed within the recommended method holding time.
- Sample(s) TC50844-2MS, TC50844-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Matrix: SO **Batch ID:** VR773

- All samples were analyzed within the recommended method holding time.
- Sample(s) TC50792-1MS, TC50792-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Matrix: SO **Batch ID:** VR774

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC50483-2MS, TC50483-2MSD were used as the QC samples indicated.

Matrix: SO **Batch ID:** VR775

Volatiles by GCMS By Method SW846 8260C

Matrix: SO	Batch ID: VR775

- All samples were analyzed within the recommended method holding time.
- Sample(s) TC50948-1MS, TC50948-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Matrix: SO	Batch ID: VX2252

- Sample(s) TC50731-14MS, TC50731-14MSD were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Tetrachloroethylene are outside control limits. Probable cause due to matrix interference.
- Matrix Spike Duplicate Recovery(s) for 1,1,1,2-Tetrachloroethane, 1,1,2,2-Tetrachloroethane, 1,1,2-Trichloroethane, 1,2,3-Trichloropropane, 1,2-Dibromoethane, 1,2-Dichloropropane, 1,3-Dichloropropane, Bromobenzene, Bromodichloromethane, Chloroform, cis-1,2-Dichloroethylene, cis-1,3-Dichloropropene, Dibromochloromethane, Methylene bromide, o-Dichlorobenzene, p-Dichlorobenzene, Styrene, trans-1,3-Dichloropropene are outside control limits. Probable cause due to matrix interference.

Matrix: SO	Batch ID: VX2253

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC50731-22MS, TC50731-22MSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for Methyl Tert Butyl Ether are outside control limits.

Matrix: SO	Batch ID: VX2254

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC50756-1MS, TC50756-1MSD were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Methyl Tert Butyl Ether are outside control limits. Probable cause due to matrix interference.

Extractables by GC By Method TNRCC 1005

Matrix: AQ	Batch ID: OP33103

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) TC50874-3MS, TC50874-3MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Matrix Spike Recovery(s) for TPH (C6-C12) are outside control limits. Probable cause due to matrix interference.
- Sample(s) OP33103-MS, OP33103-MSD have surrogates outside control limits. Probable cause due to matrix interference.

Matrix: SO	Batch ID: OP33076

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC50731-1MS, TC50731-1MSD were used as the QC samples indicated.
- Matrix Spike Recovery(s) for TPH (>C12-C28), TPH (C6-C35) are outside control limits. Probable cause due to matrix interference.
- Matrix Spike Duplicate Recovery(s) for TPH (>C12-C28) are outside control limits. Probable cause due to matrix interference.
- RPD(s) for MSD for TPH (C6-C35) are outside control limits for sample OP33076-MSD. Probable cause due to sample non-homogeneity.
- Sample(s) TC50731-16 have surrogates outside control limits. Outside control limits biased high.

Matrix: SO	Batch ID: OP33086

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) TC50844-6MS, TC50844-6MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Matrix: SO	Batch ID: OP33093

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC50851-1MS, TC50851-1MSD were used as the QC samples indicated.

Wet Chemistry By Method SM 2540 G

Matrix: SO	Batch ID: GN59479

- Sample(s) TC50731-1DUP were used as the QC samples for Solids, Percent.

Matrix: SO	Batch ID: GN59481

- Sample(s) TC50731-7DUP were used as the QC samples for Solids, Percent.

Matrix: SO	Batch ID: GN59483

- Sample(s) TC50856-1DUP were used as the QC samples for Solids, Percent.

Matrix: SO	Batch ID: GN59532

- Sample(s) TC50914-1DUP were used as the QC samples for Solids, Percent.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

Summary of Hits

Job Number: TC50731
Account: Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX
Collected: 06/23/14 thru 06/27/14

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC50731-1	SB-1 @ 2-4'					
TPH (C6-C12)		67.2	29	13	mg/kg	TNRCC 1005
TPH (>C12-C28)		237	29	16	mg/kg	TNRCC 1005
TPH (>C28-C35)		159	29	16	mg/kg	TNRCC 1005
TPH (C6-C35)		464	29	13	mg/kg	TNRCC 1005
TC50731-2	SB-2 @ 4-6'					
No hits reported in this sample.						
TC50731-3	SB-3 @ 4-6'					
No hits reported in this sample.						
TC50731-4	SB-4 @ 2-4'					
No hits reported in this sample.						
TC50731-5	SB-5 @ 4-6'					
No hits reported in this sample.						
TC50731-6	SB-6 @ 2-4'					
Chloroform		0.00052 J	0.0044	0.00047	mg/kg	SW846 8260C
1,2-Dichloroethane		0.0026 J	0.0044	0.00052	mg/kg	SW846 8260C
TC50731-7	SB-7 @ 0-2'					
Acetone		0.0635	0.047	0.012	mg/kg	SW846 8260C
n-Butylbenzene		0.178	0.0047	0.00051	mg/kg	SW846 8260C
sec-Butylbenzene		0.178	0.0047	0.0010	mg/kg	SW846 8260C
tert-Butylbenzene		0.0200	0.0047	0.00091	mg/kg	SW846 8260C
Chloroform		0.0016 J	0.0047	0.00050	mg/kg	SW846 8260C
Carbon disulfide		0.00083 J	0.0047	0.00068	mg/kg	SW846 8260C
1,2-Dichloroethane		0.0035 J	0.0047	0.00056	mg/kg	SW846 8260C
o-Dichlorobenzene		0.0214	0.0047	0.0011	mg/kg	SW846 8260C
p-Dichlorobenzene		0.0031 J	0.0047	0.0010	mg/kg	SW846 8260C
Ethylbenzene		0.0045 J	0.0047	0.0011	mg/kg	SW846 8260C
Isopropylbenzene		0.0331	0.0047	0.0013	mg/kg	SW846 8260C
p-Isopropyltoluene		0.0272	0.0047	0.0015	mg/kg	SW846 8260C
Naphthalene		0.0128	0.0047	0.0023	mg/kg	SW846 8260C
n-Propylbenzene		0.130	0.0047	0.0012	mg/kg	SW846 8260C
1,2,4-Trimethylbenzene		0.0346	0.0047	0.00047	mg/kg	SW846 8260C

Summary of Hits

Job Number: TC50731
Account: Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX
Collected: 06/23/14 thru 06/27/14

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
1,3,5-Trimethylbenzene		0.0119	0.0047	0.0011	mg/kg	SW846 8260C
Xylene (total)		0.0034 J	0.014	0.0033	mg/kg	SW846 8260C
o-Xylene		0.0014 J	0.0047	0.0012	mg/kg	SW846 8260C
TPH (C6-C12)		210	29	13	mg/kg	TNRCC 1005
TPH (>C12-C28)		585	29	16	mg/kg	TNRCC 1005
TPH (>C28-C35)		299	29	16	mg/kg	TNRCC 1005
TPH (C6-C35)		1090	29	13	mg/kg	TNRCC 1005
TC50731-8	SB-8 @ 8-10'					
Acetone		0.0187 J	0.047	0.012	mg/kg	SW846 8260C
n-Butylbenzene		0.00078 J	0.0047	0.00051	mg/kg	SW846 8260C
TC50731-9	SB-9 @ 4-6'					
Acetone		0.0225 J	0.048	0.012	mg/kg	SW846 8260C
TC50731-10	SB-10 @ 14-16'					
Acetone		0.0241 J	0.042	0.011	mg/kg	SW846 8260C
Chloroform		0.00063 J	0.0042	0.00045	mg/kg	SW846 8260C
Carbon disulfide		0.0022 J	0.0042	0.00061	mg/kg	SW846 8260C
1,2-Dichloroethane		0.0021 J	0.0042	0.00050	mg/kg	SW846 8260C
TC50731-11	SB-11 @ 22-24'					
No hits reported in this sample.						
TC50731-12	SB-12 @ 18-20'					
No hits reported in this sample.						
TC50731-13	SB-14 @ 18-20'					
1,2-Dichloroethane		0.0016 J	0.0041	0.00048	mg/kg	SW846 8260C
TC50731-14	SB-13 @ 16-18'					
Acetone		0.0217 J	0.040	0.010	mg/kg	SW846 8260C
1,2-Dichloroethane		0.00049 J	0.0040	0.00048	mg/kg	SW846 8260C
TC50731-15	SB-15 @ 6-8'					
No hits reported in this sample.						

Summary of Hits

Job Number: TC50731
Account: Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX
Collected: 06/23/14 thru 06/27/14

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC50731-16	SB-16 @ 14-16'					
No hits reported in this sample.						
TC50731-17	SB-17 @ 4-6'					
No hits reported in this sample.						
TC50731-18	SB-18 @ 12-14'					
Benzene		0.0016 J	0.0050	0.00084	mg/kg	SW846 8260C
Toluene		0.0018 J	0.0050	0.0013	mg/kg	SW846 8260C
TPH (> C12-C28)		129	30	16	mg/kg	TNRCC 1005
TPH (> C28-C35)		159	30	16	mg/kg	TNRCC 1005
TPH (C6-C35)		288	30	14	mg/kg	TNRCC 1005
TC50731-19	SB-19 @ 4-6'					
No hits reported in this sample.						
TC50731-20	SB-20 @ 18-20'					
No hits reported in this sample.						
TC50731-21	SB-21 @ 10-12'					
Benzene		1.49 J	2.7	0.46	mg/kg	SW846 8260C
Toluene		30.7	2.7	0.70	mg/kg	SW846 8260C
Ethylbenzene		58.0	2.7	0.66	mg/kg	SW846 8260C
Xylene (total)		236	8.2	1.9	mg/kg	SW846 8260C
TPH (C6-C12)		639	30	14	mg/kg	TNRCC 1005
TPH (C6-C35)		639	30	14	mg/kg	TNRCC 1005
TC50731-22	SB-22 @ 18-20'					
No hits reported in this sample.						
TC50731-23	SB-23 @ 6-8'					
No hits reported in this sample.						
TC50731-24	SB-24 @ 10-12'					
Benzene		0.441	0.27	0.046	mg/kg	SW846 8260C
Toluene		4.24	0.27	0.070	mg/kg	SW846 8260C

Summary of Hits

Job Number: TC50731
Account: Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX
Collected: 06/23/14 thru 06/27/14

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
Ethylbenzene		8.15	0.27	0.066	mg/kg	SW846 8260C
Xylene (total)		47.5	1.6	0.38	mg/kg	SW846 8260C
TPH (C6-C12)		133	29	13	mg/kg	TNRCC 1005
TPH (C6-C35)		133	29	13	mg/kg	TNRCC 1005
TC50731-25	SB-25 @ 10-12'					
Benzene		1.45 J	2.6	0.44	mg/kg	SW846 8260C
Toluene		27.8	2.6	0.66	mg/kg	SW846 8260C
Ethylbenzene		31.8	2.6	0.63	mg/kg	SW846 8260C
Xylene (total)		184	7.8	1.8	mg/kg	SW846 8260C
TPH (C6-C12)		543	29	13	mg/kg	TNRCC 1005
TPH (>C12-C28)		77.0	29	16	mg/kg	TNRCC 1005
TPH (C6-C35)		623	29	13	mg/kg	TNRCC 1005
TC50731-26	SB-26 @ 22-24'					
No hits reported in this sample.						
TC50731-27	SB-27 @ 6-8'					
No hits reported in this sample.						
TC50731-28	SB-28 @ 4-6'					
No hits reported in this sample.						
TC50731-29	SB-29 @ 2-4'					
No hits reported in this sample.						
TC50731-30	SB-30 @ 10-12'					
No hits reported in this sample.						
TC50731-31	SB-31 @ 6-8'					
No hits reported in this sample.						
TC50731-32	SB-32 @ 22-24'					
No hits reported in this sample.						

Summary of Hits

Job Number: TC50731
Account: Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX
Collected: 06/23/14 thru 06/27/14

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC50731-33	SB-25/TWP-25					
Benzene		2.27	0.020	0.0068	mg/l	SW846 8260C
Toluene		4.50	0.10	0.033	mg/l	SW846 8260C
Ethylbenzene		0.786	0.020	0.0065	mg/l	SW846 8260C
Xylene (total)		4.39	0.060	0.017	mg/l	SW846 8260C
Methyl Tert Butyl Ether		0.0352	0.020	0.0060	mg/l	SW846 8260C
TPH (C6-C12)		48.2	2.6	0.62	mg/l	TNRCC 1005
TPH (> C12-C28)		20.0	2.6	0.90	mg/l	TNRCC 1005
TPH (> C28-C35)		15.0	2.6	0.90	mg/l	TNRCC 1005
TPH (C6-C35)		83.2	2.6	0.62	mg/l	TNRCC 1005

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Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	SB-1 @ 2-4'		
Lab Sample ID:	TC50731-1	Date Sampled:	06/23/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	86.5
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R023481.D	1	07/03/14	FI	07/02/14 12:00	n/a	VR772
Run #2							

	Initial Weight	Final Volume
Run #1	5.13 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00076 U	0.0045	0.00076	mg/kg	
108-88-3	Toluene	0.0011 U	0.0045	0.0011	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0045	0.0011	mg/kg	
1330-20-7	Xylene (total)	0.0032 U	0.014	0.0032	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00057 U	0.0045	0.00057	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	83%		59-126%
2037-26-5	Toluene-D8	100%		70-139%
460-00-4	4-Bromofluorobenzene	87%		63-138%
17060-07-0	1,2-Dichloroethane-D4	71%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	SB-1 @ 2-4'		
Lab Sample ID:	TC50731-1	Date Sampled:	06/23/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	TNRCC 1005 TX1005	Percent Solids:	86.5
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LF101369.D	1	07/02/14	ZL	07/01/14	OP33076	GLF1503
Run #2							

	Initial Weight	Final Volume
Run #1	10.1 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	67.2	29	13	mg/kg	
	TPH (> C12-C28)	237	29	16	mg/kg	
	TPH (> C28-C35)	159	29	16	mg/kg	
	TPH (C6-C35)	464	29	13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	117%		70-130%
98-08-8	aaa-Trifluorotoluene	107%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-2 @ 4-6'		
Lab Sample ID:	TC50731-2	Date Sampled:	06/23/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	84.1
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R023482.D	1	07/03/14	FI	07/02/14 12:00	n/a	VR772
Run #2							

	Initial Weight	Final Volume
Run #1	5.20 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00077 U	0.0046	0.00077	mg/kg	
108-88-3	Toluene	0.0012 U	0.0046	0.0012	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0046	0.0011	mg/kg	
1330-20-7	Xylene (total)	0.0032 U	0.014	0.0032	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00058 U	0.0046	0.00058	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	81%		59-126%
2037-26-5	Toluene-D8	98%		70-139%
460-00-4	4-Bromofluorobenzene	84%		63-138%
17060-07-0	1,2-Dichloroethane-D4	68%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-2 @ 4-6'		
Lab Sample ID:	TC50731-2	Date Sampled:	06/23/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	TNRCC 1005 TX1005	Percent Solids:	84.1
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LB101376.D	1	07/02/14	ZL	07/01/14	OP33076	GLB1503
Run #2							

	Initial Weight	Final Volume
Run #1	10.1 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	13 U	29	13	mg/kg	
	TPH (>C12-C28)	16 U	29	16	mg/kg	
	TPH (>C28-C35)	16 U	29	16	mg/kg	
	TPH (C6-C35)	13 U	29	13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	105%		70-130%
98-08-8	aaa-Trifluorotoluene	101%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-3 @ 4-6'		
Lab Sample ID:	TC50731-3	Date Sampled:	06/23/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	85.2
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R023483.D	1	07/03/14	FI	07/02/14 12:00	n/a	VR772
Run #2							

	Initial Weight	Final Volume
Run #1	5.27 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00075 U	0.0045	0.00075	mg/kg	
108-88-3	Toluene	0.0011 U	0.0045	0.0011	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0045	0.0011	mg/kg	
1330-20-7	Xylene (total)	0.0031 U	0.013	0.0031	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00057 U	0.0045	0.00057	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	83%		59-126%
2037-26-5	Toluene-D8	103%		70-139%
460-00-4	4-Bromofluorobenzene	100%		63-138%
17060-07-0	1,2-Dichloroethane-D4	70%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-3 @ 4-6'		
Lab Sample ID:	TC50731-3	Date Sampled:	06/23/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	TNRCC 1005 TX1005	Percent Solids:	85.2
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LB101382.D	1	07/02/14	ZL	07/01/14	OP33076	GLB1503
Run #2							

	Initial Weight	Final Volume
Run #1	10.1 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	13 U	29	13	mg/kg	
	TPH (>C12-C28)	16 U	29	16	mg/kg	
	TPH (>C28-C35)	16 U	29	16	mg/kg	
	TPH (C6-C35)	13 U	29	13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	119%		70-130%
98-08-8	aaa-Trifluorotoluene	116%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	SB-4 @ 2-4'		
Lab Sample ID:	TC50731-4	Date Sampled:	06/23/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	84.1
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R023484.D	1	07/03/14	FI	07/02/14 12:00	n/a	VR772
Run #2							

	Initial Weight	Final Volume
Run #1	5.43 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00074 U	0.0044	0.00074	mg/kg	
108-88-3	Toluene	0.0011 U	0.0044	0.0011	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0044	0.0011	mg/kg	
1330-20-7	Xylene (total)	0.0031 U	0.013	0.0031	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00056 U	0.0044	0.00056	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		59-126%
2037-26-5	Toluene-D8	116%		70-139%
460-00-4	4-Bromofluorobenzene	103%		63-138%
17060-07-0	1,2-Dichloroethane-D4	83%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-4 @ 2-4'		
Lab Sample ID:	TC50731-4	Date Sampled:	06/23/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	TNRCC 1005 TX1005	Percent Solids:	84.1
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LF101383.D	1	07/02/14	ZL	07/01/14	OP33076	GLF1503
Run #2							

	Initial Weight	Final Volume
Run #1	10.2 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	13 U	29	13	mg/kg	
	TPH (> C12-C28)	16 U	29	16	mg/kg	
	TPH (> C28-C35)	16 U	29	16	mg/kg	
	TPH (C6-C35)	13 U	29	13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	130%		70-130%
98-08-8	aaa-Trifluorotoluene	115%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-5 @ 4-6'		
Lab Sample ID:	TC50731-5	Date Sampled:	06/23/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	85.5
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R023485.D	1	07/03/14	FI	07/02/14 12:00	n/a	VR772
Run #2							

	Initial Weight	Final Volume
Run #1	5.50 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00072 U	0.0043	0.00072	mg/kg	
108-88-3	Toluene	0.0011 U	0.0043	0.0011	mg/kg	
100-41-4	Ethylbenzene	0.0010 U	0.0043	0.0010	mg/kg	
1330-20-7	Xylene (total)	0.0030 U	0.013	0.0030	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00054 U	0.0043	0.00054	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	84%		59-126%
2037-26-5	Toluene-D8	97%		70-139%
460-00-4	4-Bromofluorobenzene	86%		63-138%
17060-07-0	1,2-Dichloroethane-D4	74%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-5 @ 4-6'		
Lab Sample ID:	TC50731-5	Date Sampled:	06/23/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	TNRCC 1005 TX1005	Percent Solids:	85.5
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LB101384.D	1	07/02/14	ZL	07/01/14	OP33076	GLB1503
Run #2							

	Initial Weight	Final Volume
Run #1	10.2 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	13 U	29	13	mg/kg	
	TPH (>C12-C28)	16 U	29	16	mg/kg	
	TPH (>C28-C35)	16 U	29	16	mg/kg	
	TPH (C6-C35)	13 U	29	13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	114%		70-130%
98-08-8	aaa-Trifluorotoluene	109%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-6 @ 2-4'		
Lab Sample ID:	TC50731-6	Date Sampled:	06/23/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	86.3
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0053827.D	1	07/03/14	FI	07/02/14 12:00	n/a	VM2096
Run #2							

	Initial Weight	Final Volume
Run #1	5.25 g	5.0 ml
Run #2		

VOA 8260 List

CAS No.	Compound	Result	MQL	SDL	Units	Q
67-64-1	Acetone	0.011 U	0.044	0.011	mg/kg	
71-43-2	Benzene	0.00074 U	0.0044	0.00074	mg/kg	
108-86-1	Bromobenzene	0.00044 U	0.0044	0.00044	mg/kg	
74-97-5	Bromochloromethane	0.0012 U	0.0044	0.0012	mg/kg	
75-27-4	Bromodichloromethane	0.00050 U	0.0044	0.00050	mg/kg	
75-25-2	Bromoform	0.00083 U	0.0044	0.00083	mg/kg	
104-51-8	n-Butylbenzene	0.00048 U	0.0044	0.00048	mg/kg	
135-98-8	sec-Butylbenzene	0.00096 U	0.0044	0.00096	mg/kg	
98-06-6	tert-Butylbenzene	0.00086 U	0.0044	0.00086	mg/kg	
108-90-7	Chlorobenzene	0.0010 U	0.0044	0.0010	mg/kg	
75-00-3	Chloroethane	0.0017 U	0.0044	0.0017	mg/kg	
67-66-3	Chloroform	0.00052	0.0044	0.00047	mg/kg	J
95-49-8	o-Chlorotoluene	0.00053 U	0.0044	0.00053	mg/kg	
106-43-4	p-Chlorotoluene	0.00045 U	0.0044	0.00045	mg/kg	
75-15-0	Carbon disulfide	0.00064 U	0.0044	0.00064	mg/kg	
56-23-5	Carbon tetrachloride	0.00095 U	0.0044	0.00095	mg/kg	
75-34-3	1,1-Dichloroethane	0.00045 U	0.0044	0.00045	mg/kg	
75-35-4	1,1-Dichloroethylene	0.00046 U	0.0044	0.00046	mg/kg	
563-58-6	1,1-Dichloropropene	0.00049 U	0.0044	0.00049	mg/kg	
96-12-8	1,2-Dibromo-3-chloropropane	0.0035 U	0.0044	0.0035	mg/kg	
106-93-4	1,2-Dibromoethane	0.00047 U	0.0044	0.00047	mg/kg	
107-06-2	1,2-Dichloroethane	0.0026	0.0044	0.00052	mg/kg	J
78-87-5	1,2-Dichloropropane	0.00064 U	0.0044	0.00064	mg/kg	
142-28-9	1,3-Dichloropropane	0.0011 U	0.0044	0.0011	mg/kg	
594-20-7	2,2-Dichloropropane	0.00060 U	0.0044	0.00060	mg/kg	
124-48-1	Dibromochloromethane	0.0010 U	0.0044	0.0010	mg/kg	
75-71-8	Dichlorodifluoromethane	0.0012 U	0.0044	0.0012	mg/kg	
156-59-2	cis-1,2-Dichloroethylene	0.00050 U	0.0044	0.00050	mg/kg	
10061-01-5	cis-1,3-Dichloropropene	0.00050 U	0.0044	0.00050	mg/kg	
541-73-1	m-Dichlorobenzene	0.00069 U	0.0044	0.00069	mg/kg	
95-50-1	o-Dichlorobenzene	0.0011 U	0.0044	0.0011	mg/kg	
106-46-7	p-Dichlorobenzene	0.00095 U	0.0044	0.00095	mg/kg	

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-6 @ 2-4'		
Lab Sample ID:	TC50731-6	Date Sampled:	06/23/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	86.3
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

VOA 8260 List

CAS No.	Compound	Result	MQL	SDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	0.00048 U	0.0044	0.00048	mg/kg	
10061-02-6	trans-1,3-Dichloropropene	0.00057 U	0.0044	0.00057	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0044	0.0011	mg/kg	
591-78-6	2-Hexanone	0.0082 U	0.044	0.0082	mg/kg	
87-68-3	Hexachlorobutadiene	0.00076 U	0.0044	0.00076	mg/kg	
98-82-8	Isopropylbenzene	0.0012 U	0.0044	0.0012	mg/kg	
99-87-6	p-Isopropyltoluene	0.0014 U	0.0044	0.0014	mg/kg	
108-10-1	4-Methyl-2-pentanone	0.0070 U	0.044	0.0070	mg/kg	
74-83-9	Methyl bromide	0.0020 U	0.0044	0.0020	mg/kg	
74-87-3	Methyl chloride	0.00085 U	0.0044	0.00085	mg/kg	
74-95-3	Methylene bromide	0.00071 U	0.0044	0.00071	mg/kg	
75-09-2	Methylene chloride	0.0028 U	0.011	0.0028	mg/kg	
78-93-3	Methyl ethyl ketone	0.0055 U	0.044	0.0055	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00056 U	0.0044	0.00056	mg/kg	
91-20-3	Naphthalene	0.0022 U	0.0044	0.0022	mg/kg	
103-65-1	n-Propylbenzene	0.0011 U	0.0044	0.0011	mg/kg	
100-42-5	Styrene	0.0010 U	0.0044	0.0010	mg/kg	
630-20-6	1,1,1,2-Tetrachloroethane	0.00056 U	0.0044	0.00056	mg/kg	
71-55-6	1,1,1-Trichloroethane	0.00069 U	0.0044	0.00069	mg/kg	
79-34-5	1,1,2,2-Tetrachloroethane	0.00074 U	0.0044	0.00074	mg/kg	
79-00-5	1,1,2-Trichloroethane	0.00074 U	0.0044	0.00074	mg/kg	
87-61-6	1,2,3-Trichlorobenzene	0.00058 U	0.0044	0.00058	mg/kg	
96-18-4	1,2,3-Trichloropropane	0.0010 U	0.0044	0.0010	mg/kg	
120-82-1	1,2,4-Trichlorobenzene	0.00055 U	0.0044	0.00055	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	0.00045 U	0.0044	0.00045	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	0.0010 U	0.0044	0.0010	mg/kg	
127-18-4	Tetrachloroethylene	0.0011 U	0.0044	0.0011	mg/kg	
108-88-3	Toluene	0.0011 U	0.0044	0.0011	mg/kg	
79-01-6	Trichloroethylene	0.00051 U	0.0044	0.00051	mg/kg	
75-69-4	Trichlorofluoromethane	0.00069 U	0.0044	0.00069	mg/kg	
75-01-4	Vinyl chloride	0.00064 U	0.0044	0.00064	mg/kg	
1330-20-7	Xylene (total)	0.0031 U	0.013	0.0031	mg/kg	
	m,p-Xylene	0.0020 U	0.0088	0.0020	mg/kg	
95-47-6	o-Xylene	0.0011 U	0.0044	0.0011	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	110%		59-126%
2037-26-5	Toluene-D8	103%		70-139%
460-00-4	4-Bromofluorobenzene	87%		63-138%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-6 @ 2-4'		
Lab Sample ID:	TC50731-6	Date Sampled:	06/23/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	86.3
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	86%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-6 @ 2-4'		
Lab Sample ID:	TC50731-6	Date Sampled:	06/23/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	TNRCC 1005 TX1005	Percent Solids:	86.3
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LF101385.D	1	07/02/14	ZL	07/01/14	OP33076	GLF1503
Run #2							

	Initial Weight	Final Volume
Run #1	10.1 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	13 U	29	13	mg/kg	
	TPH (>C12-C28)	16 U	29	16	mg/kg	
	TPH (>C28-C35)	16 U	29	16	mg/kg	
	TPH (C6-C35)	13 U	29	13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	124%		70-130%
98-08-8	aaa-Trifluorotoluene	109%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-7 @ 0-2'		
Lab Sample ID:	TC50731-7	Date Sampled:	06/23/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	84.7
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0053828.D	1	07/03/14	FI	07/02/14 12:00	n/a	VM2096
Run #2							

	Initial Weight	Final Volume
Run #1	5.05 g	5.0 ml
Run #2		

VOA 8260 List

CAS No.	Compound	Result	MQL	SDL	Units	Q
67-64-1	Acetone	0.0635	0.047	0.012	mg/kg	
71-43-2	Benzene	0.00079 U	0.0047	0.00079	mg/kg	
108-86-1	Bromobenzene	0.00047 U	0.0047	0.00047	mg/kg	
74-97-5	Bromochloromethane	0.0013 U	0.0047	0.0013	mg/kg	
75-27-4	Bromodichloromethane	0.00052 U	0.0047	0.00052	mg/kg	
75-25-2	Bromoform	0.00088 U	0.0047	0.00088	mg/kg	
104-51-8	n-Butylbenzene	0.178	0.0047	0.00051	mg/kg	
135-98-8	sec-Butylbenzene	0.178	0.0047	0.0010	mg/kg	
98-06-6	tert-Butylbenzene	0.0200	0.0047	0.00091	mg/kg	
108-90-7	Chlorobenzene	0.0011 U	0.0047	0.0011	mg/kg	
75-00-3	Chloroethane	0.0018 U	0.0047	0.0018	mg/kg	
67-66-3	Chloroform	0.0016	0.0047	0.00050	mg/kg	J
95-49-8	o-Chlorotoluene	0.00056 U	0.0047	0.00056	mg/kg	
106-43-4	p-Chlorotoluene	0.00048 U	0.0047	0.00048	mg/kg	
75-15-0	Carbon disulfide	0.00083	0.0047	0.00068	mg/kg	J
56-23-5	Carbon tetrachloride	0.0010 U	0.0047	0.0010	mg/kg	
75-34-3	1,1-Dichloroethane	0.00048 U	0.0047	0.00048	mg/kg	
75-35-4	1,1-Dichloroethylene	0.00049 U	0.0047	0.00049	mg/kg	
563-58-6	1,1-Dichloropropene	0.00052 U	0.0047	0.00052	mg/kg	
96-12-8	1,2-Dibromo-3-chloropropane	0.0037 U	0.0047	0.0037	mg/kg	
106-93-4	1,2-Dibromoethane	0.00049 U	0.0047	0.00049	mg/kg	
107-06-2	1,2-Dichloroethane	0.0035	0.0047	0.00056	mg/kg	J
78-87-5	1,2-Dichloropropane	0.00068 U	0.0047	0.00068	mg/kg	
142-28-9	1,3-Dichloropropane	0.0012 U	0.0047	0.0012	mg/kg	
594-20-7	2,2-Dichloropropane	0.00063 U	0.0047	0.00063	mg/kg	
124-48-1	Dibromochloromethane	0.0011 U	0.0047	0.0011	mg/kg	
75-71-8	Dichlorodifluoromethane	0.0013 U	0.0047	0.0013	mg/kg	
156-59-2	cis-1,2-Dichloroethylene	0.00053 U	0.0047	0.00053	mg/kg	
10061-01-5	cis-1,3-Dichloropropene	0.00053 U	0.0047	0.00053	mg/kg	
541-73-1	m-Dichlorobenzene	0.00073 U	0.0047	0.00073	mg/kg	
95-50-1	o-Dichlorobenzene	0.0214	0.0047	0.0011	mg/kg	
106-46-7	p-Dichlorobenzene	0.0031	0.0047	0.0010	mg/kg	J

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-7 @ 0-2'		
Lab Sample ID:	TC50731-7	Date Sampled:	06/23/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	84.7
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

VOA 8260 List

CAS No.	Compound	Result	MQL	SDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	0.00051 U	0.0047	0.00051	mg/kg	
10061-02-6	trans-1,3-Dichloropropene	0.00060 U	0.0047	0.00060	mg/kg	
100-41-4	Ethylbenzene	0.0045	0.0047	0.0011	mg/kg	J
591-78-6	2-Hexanone	0.0087 U	0.047	0.0087	mg/kg	
87-68-3	Hexachlorobutadiene	0.00081 U	0.0047	0.00081	mg/kg	
98-82-8	Isopropylbenzene	0.0331	0.0047	0.0013	mg/kg	
99-87-6	p-Isopropyltoluene	0.0272	0.0047	0.0015	mg/kg	
108-10-1	4-Methyl-2-pentanone	0.0074 U	0.047	0.0074	mg/kg	
74-83-9	Methyl bromide	0.0022 U	0.0047	0.0022	mg/kg	
74-87-3	Methyl chloride	0.00090 U	0.0047	0.00090	mg/kg	
74-95-3	Methylene bromide	0.00075 U	0.0047	0.00075	mg/kg	
75-09-2	Methylene chloride	0.0029 U	0.012	0.0029	mg/kg	
78-93-3	Methyl ethyl ketone	0.0058 U	0.047	0.0058	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00059 U	0.0047	0.00059	mg/kg	
91-20-3	Naphthalene	0.0128	0.0047	0.0023	mg/kg	
103-65-1	n-Propylbenzene	0.130	0.0047	0.0012	mg/kg	
100-42-5	Styrene	0.0011 U	0.0047	0.0011	mg/kg	
630-20-6	1,1,1,2-Tetrachloroethane	0.00059 U	0.0047	0.00059	mg/kg	
71-55-6	1,1,1-Trichloroethane	0.00073 U	0.0047	0.00073	mg/kg	
79-34-5	1,1,2,2-Tetrachloroethane	0.00079 U	0.0047	0.00079	mg/kg	
79-00-5	1,1,2-Trichloroethane	0.00078 U	0.0047	0.00078	mg/kg	
87-61-6	1,2,3-Trichlorobenzene	0.00061 U	0.0047	0.00061	mg/kg	
96-18-4	1,2,3-Trichloropropane	0.0011 U	0.0047	0.0011	mg/kg	
120-82-1	1,2,4-Trichlorobenzene	0.00058 U	0.0047	0.00058	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	0.0346	0.0047	0.00047	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	0.0119	0.0047	0.0011	mg/kg	
127-18-4	Tetrachloroethylene	0.0012 U	0.0047	0.0012	mg/kg	
108-88-3	Toluene	0.0012 U	0.0047	0.0012	mg/kg	
79-01-6	Trichloroethylene	0.00054 U	0.0047	0.00054	mg/kg	
75-69-4	Trichlorofluoromethane	0.00073 U	0.0047	0.00073	mg/kg	
75-01-4	Vinyl chloride	0.00068 U	0.0047	0.00068	mg/kg	
1330-20-7	Xylene (total)	0.0034	0.014	0.0033	mg/kg	J
	m,p-Xylene	0.0021 U	0.0094	0.0021	mg/kg	
95-47-6	o-Xylene	0.0014	0.0047	0.0012	mg/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	113%		59-126%
2037-26-5	Toluene-D8	110%		70-139%
460-00-4	4-Bromofluorobenzene	97%		63-138%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-7 @ 0-2'		
Lab Sample ID:	TC50731-7	Date Sampled:	06/23/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	84.7
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	86%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-7 @ 0-2'		
Lab Sample ID:	TC50731-7	Date Sampled:	06/23/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	TNRCC 1005 TX1005	Percent Solids:	84.7
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LB101386.D	1	07/02/14	ZL	07/01/14	OP33076	GLB1503
Run #2							

	Initial Weight	Final Volume
Run #1	10.1 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	210	29	13	mg/kg	
	TPH (> C12-C28)	585	29	16	mg/kg	
	TPH (> C28-C35)	299	29	16	mg/kg	
	TPH (C6-C35)	1090	29	13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	116%		70-130%
98-08-8	aaa-Trifluorotoluene	115%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-8 @ 8-10'		
Lab Sample ID:	TC50731-8	Date Sampled:	06/27/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	85.1
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0053829.D	1	07/03/14	FI	07/02/14 12:00	n/a	VM2096
Run #2							

	Initial Weight	Final Volume
Run #1	5.03 g	5.0 ml
Run #2		

VOA 8260 List

CAS No.	Compound	Result	MQL	SDL	Units	Q
67-64-1	Acetone	0.0187	0.047	0.012	mg/kg	J
71-43-2	Benzene	0.00079 U	0.0047	0.00079	mg/kg	
108-86-1	Bromobenzene	0.00047 U	0.0047	0.00047	mg/kg	
74-97-5	Bromochloromethane	0.0013 U	0.0047	0.0013	mg/kg	
75-27-4	Bromodichloromethane	0.00052 U	0.0047	0.00052	mg/kg	
75-25-2	Bromoform	0.00088 U	0.0047	0.00088	mg/kg	
104-51-8	n-Butylbenzene	0.00078	0.0047	0.00051	mg/kg	J
135-98-8	sec-Butylbenzene	0.0010 U	0.0047	0.0010	mg/kg	
98-06-6	tert-Butylbenzene	0.00091 U	0.0047	0.00091	mg/kg	
108-90-7	Chlorobenzene	0.0011 U	0.0047	0.0011	mg/kg	
75-00-3	Chloroethane	0.0018 U	0.0047	0.0018	mg/kg	
67-66-3	Chloroform	0.00050 U	0.0047	0.00050	mg/kg	
95-49-8	o-Chlorotoluene	0.00056 U	0.0047	0.00056	mg/kg	
106-43-4	p-Chlorotoluene	0.00048 U	0.0047	0.00048	mg/kg	
75-15-0	Carbon disulfide	0.00068 U	0.0047	0.00068	mg/kg	
56-23-5	Carbon tetrachloride	0.0010 U	0.0047	0.0010	mg/kg	
75-34-3	1,1-Dichloroethane	0.00048 U	0.0047	0.00048	mg/kg	
75-35-4	1,1-Dichloroethylene	0.00049 U	0.0047	0.00049	mg/kg	
563-58-6	1,1-Dichloropropene	0.00052 U	0.0047	0.00052	mg/kg	
96-12-8	1,2-Dibromo-3-chloropropane	0.0037 U	0.0047	0.0037	mg/kg	
106-93-4	1,2-Dibromoethane	0.00049 U	0.0047	0.00049	mg/kg	
107-06-2	1,2-Dichloroethane	0.00055 U	0.0047	0.00055	mg/kg	
78-87-5	1,2-Dichloropropane	0.00068 U	0.0047	0.00068	mg/kg	
142-28-9	1,3-Dichloropropane	0.0012 U	0.0047	0.0012	mg/kg	
594-20-7	2,2-Dichloropropane	0.00063 U	0.0047	0.00063	mg/kg	
124-48-1	Dibromochloromethane	0.0011 U	0.0047	0.0011	mg/kg	
75-71-8	Dichlorodifluoromethane	0.0013 U	0.0047	0.0013	mg/kg	
156-59-2	cis-1,2-Dichloroethylene	0.00053 U	0.0047	0.00053	mg/kg	
10061-01-5	cis-1,3-Dichloropropene	0.00053 U	0.0047	0.00053	mg/kg	
541-73-1	m-Dichlorobenzene	0.00073 U	0.0047	0.00073	mg/kg	
95-50-1	o-Dichlorobenzene	0.0011 U	0.0047	0.0011	mg/kg	
106-46-7	p-Dichlorobenzene	0.0010 U	0.0047	0.0010	mg/kg	

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-8 @ 8-10'		
Lab Sample ID:	TC50731-8	Date Sampled:	06/27/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	85.1
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

VOA 8260 List

CAS No.	Compound	Result	MQL	SDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	0.00051 U	0.0047	0.00051	mg/kg	
10061-02-6	trans-1,3-Dichloropropene	0.00060 U	0.0047	0.00060	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0047	0.0011	mg/kg	
591-78-6	2-Hexanone	0.0086 U	0.047	0.0086	mg/kg	
87-68-3	Hexachlorobutadiene	0.00081 U	0.0047	0.00081	mg/kg	
98-82-8	Isopropylbenzene	0.0013 U	0.0047	0.0013	mg/kg	
99-87-6	p-Isopropyltoluene	0.0015 U	0.0047	0.0015	mg/kg	
108-10-1	4-Methyl-2-pentanone	0.0074 U	0.047	0.0074	mg/kg	
74-83-9	Methyl bromide	0.0022 U	0.0047	0.0022	mg/kg	
74-87-3	Methyl chloride	0.00090 U	0.0047	0.00090	mg/kg	
74-95-3	Methylene bromide	0.00075 U	0.0047	0.00075	mg/kg	
75-09-2	Methylene chloride	0.0029 U	0.012	0.0029	mg/kg	
78-93-3	Methyl ethyl ketone	0.0058 U	0.047	0.0058	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00059 U	0.0047	0.00059	mg/kg	
91-20-3	Naphthalene	0.0023 U	0.0047	0.0023	mg/kg	
103-65-1	n-Propylbenzene	0.0012 U	0.0047	0.0012	mg/kg	
100-42-5	Styrene	0.0011 U	0.0047	0.0011	mg/kg	
630-20-6	1,1,1,2-Tetrachloroethane	0.00059 U	0.0047	0.00059	mg/kg	
71-55-6	1,1,1-Trichloroethane	0.00073 U	0.0047	0.00073	mg/kg	
79-34-5	1,1,2,2-Tetrachloroethane	0.00079 U	0.0047	0.00079	mg/kg	
79-00-5	1,1,2-Trichloroethane	0.00078 U	0.0047	0.00078	mg/kg	
87-61-6	1,2,3-Trichlorobenzene	0.00061 U	0.0047	0.00061	mg/kg	
96-18-4	1,2,3-Trichloropropane	0.0011 U	0.0047	0.0011	mg/kg	
120-82-1	1,2,4-Trichlorobenzene	0.00058 U	0.0047	0.00058	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	0.00047 U	0.0047	0.00047	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	0.0011 U	0.0047	0.0011	mg/kg	
127-18-4	Tetrachloroethylene	0.0012 U	0.0047	0.0012	mg/kg	
108-88-3	Toluene	0.0012 U	0.0047	0.0012	mg/kg	
79-01-6	Trichloroethylene	0.00054 U	0.0047	0.00054	mg/kg	
75-69-4	Trichlorofluoromethane	0.00073 U	0.0047	0.00073	mg/kg	
75-01-4	Vinyl chloride	0.00068 U	0.0047	0.00068	mg/kg	
1330-20-7	Xylene (total)	0.0033 U	0.014	0.0033	mg/kg	
	m,p-Xylene	0.0021 U	0.0093	0.0021	mg/kg	
95-47-6	o-Xylene	0.0012 U	0.0047	0.0012	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	119%		59-126%
2037-26-5	Toluene-D8	106%		70-139%
460-00-4	4-Bromofluorobenzene	89%		63-138%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-8 @ 8-10'		
Lab Sample ID:	TC50731-8	Date Sampled:	06/27/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	85.1
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	94%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-8 @ 8-10'		
Lab Sample ID:	TC50731-8	Date Sampled:	06/27/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	TNRCC 1005 TX1005	Percent Solids:	85.1
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LF101387.D	1	07/02/14	ZL	07/01/14	OP33076	GLF1503
Run #2							

	Initial Weight	Final Volume
Run #1	10.1 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	13 U	29	13	mg/kg	
	TPH (>C12-C28)	16 U	29	16	mg/kg	
	TPH (>C28-C35)	16 U	29	16	mg/kg	
	TPH (C6-C35)	13 U	29	13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	120%		70-130%
98-08-8	aaa-Trifluorotoluene	107%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-9 @ 4-6'		
Lab Sample ID:	TC50731-9	Date Sampled:	06/27/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	83.0
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0053830.D	1	07/03/14	FI	07/02/14 12:00	n/a	VM2096
Run #2							

	Initial Weight	Final Volume
Run #1	5.00 g	5.0 ml
Run #2		

VOA 8260 List

CAS No.	Compound	Result	MQL	SDL	Units	Q
67-64-1	Acetone	0.0225	0.048	0.012	mg/kg	J
71-43-2	Benzene	0.00081 U	0.0048	0.00081	mg/kg	
108-86-1	Bromobenzene	0.00049 U	0.0048	0.00049	mg/kg	
74-97-5	Bromochloromethane	0.0013 U	0.0048	0.0013	mg/kg	
75-27-4	Bromodichloromethane	0.00054 U	0.0048	0.00054	mg/kg	
75-25-2	Bromoform	0.00091 U	0.0048	0.00091	mg/kg	
104-51-8	n-Butylbenzene	0.00053 U	0.0048	0.00053	mg/kg	
135-98-8	sec-Butylbenzene	0.0011 U	0.0048	0.0011	mg/kg	
98-06-6	tert-Butylbenzene	0.00094 U	0.0048	0.00094	mg/kg	
108-90-7	Chlorobenzene	0.0011 U	0.0048	0.0011	mg/kg	
75-00-3	Chloroethane	0.0019 U	0.0048	0.0019	mg/kg	
67-66-3	Chloroform	0.00052 U	0.0048	0.00052	mg/kg	
95-49-8	o-Chlorotoluene	0.00057 U	0.0048	0.00057	mg/kg	
106-43-4	p-Chlorotoluene	0.00050 U	0.0048	0.00050	mg/kg	
75-15-0	Carbon disulfide	0.00070 U	0.0048	0.00070	mg/kg	
56-23-5	Carbon tetrachloride	0.0010 U	0.0048	0.0010	mg/kg	
75-34-3	1,1-Dichloroethane	0.00049 U	0.0048	0.00049	mg/kg	
75-35-4	1,1-Dichloroethylene	0.00050 U	0.0048	0.00050	mg/kg	
563-58-6	1,1-Dichloropropene	0.00054 U	0.0048	0.00054	mg/kg	
96-12-8	1,2-Dibromo-3-chloropropane	0.0038 U	0.0048	0.0038	mg/kg	
106-93-4	1,2-Dibromoethane	0.00051 U	0.0048	0.00051	mg/kg	
107-06-2	1,2-Dichloroethane	0.00057 U	0.0048	0.00057	mg/kg	
78-87-5	1,2-Dichloropropane	0.00070 U	0.0048	0.00070	mg/kg	
142-28-9	1,3-Dichloropropane	0.0012 U	0.0048	0.0012	mg/kg	
594-20-7	2,2-Dichloropropane	0.00065 U	0.0048	0.00065	mg/kg	
124-48-1	Dibromochloromethane	0.0011 U	0.0048	0.0011	mg/kg	
75-71-8	Dichlorodifluoromethane	0.0013 U	0.0048	0.0013	mg/kg	
156-59-2	cis-1,2-Dichloroethylene	0.00055 U	0.0048	0.00055	mg/kg	
10061-01-5	cis-1,3-Dichloropropene	0.00054 U	0.0048	0.00054	mg/kg	
541-73-1	m-Dichlorobenzene	0.00075 U	0.0048	0.00075	mg/kg	
95-50-1	o-Dichlorobenzene	0.0012 U	0.0048	0.0012	mg/kg	
106-46-7	p-Dichlorobenzene	0.0010 U	0.0048	0.0010	mg/kg	

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-9 @ 4-6'		
Lab Sample ID:	TC50731-9	Date Sampled:	06/27/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	83.0
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

VOA 8260 List

CAS No.	Compound	Result	MQL	SDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	0.00053 U	0.0048	0.00053	mg/kg	
10061-02-6	trans-1,3-Dichloropropene	0.00062 U	0.0048	0.00062	mg/kg	
100-41-4	Ethylbenzene	0.0012 U	0.0048	0.0012	mg/kg	
591-78-6	2-Hexanone	0.0089 U	0.048	0.0089	mg/kg	
87-68-3	Hexachlorobutadiene	0.00083 U	0.0048	0.00083	mg/kg	
98-82-8	Isopropylbenzene	0.0013 U	0.0048	0.0013	mg/kg	
99-87-6	p-Isopropyltoluene	0.0016 U	0.0048	0.0016	mg/kg	
108-10-1	4-Methyl-2-pentanone	0.0076 U	0.048	0.0076	mg/kg	
74-83-9	Methyl bromide	0.0022 U	0.0048	0.0022	mg/kg	
74-87-3	Methyl chloride	0.00092 U	0.0048	0.00092	mg/kg	
74-95-3	Methylene bromide	0.00078 U	0.0048	0.00078	mg/kg	
75-09-2	Methylene chloride	0.0030 U	0.012	0.0030	mg/kg	
78-93-3	Methyl ethyl ketone	0.0060 U	0.048	0.0060	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00061 U	0.0048	0.00061	mg/kg	
91-20-3	Naphthalene	0.0024 U	0.0048	0.0024	mg/kg	
103-65-1	n-Propylbenzene	0.0013 U	0.0048	0.0013	mg/kg	
100-42-5	Styrene	0.0011 U	0.0048	0.0011	mg/kg	
630-20-6	1,1,1,2-Tetrachloroethane	0.00061 U	0.0048	0.00061	mg/kg	
71-55-6	1,1,1-Trichloroethane	0.00076 U	0.0048	0.00076	mg/kg	
79-34-5	1,1,2,2-Tetrachloroethane	0.00081 U	0.0048	0.00081	mg/kg	
79-00-5	1,1,2-Trichloroethane	0.00081 U	0.0048	0.00081	mg/kg	
87-61-6	1,2,3-Trichlorobenzene	0.00063 U	0.0048	0.00063	mg/kg	
96-18-4	1,2,3-Trichloropropane	0.0011 U	0.0048	0.0011	mg/kg	
120-82-1	1,2,4-Trichlorobenzene	0.00060 U	0.0048	0.00060	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	0.00049 U	0.0048	0.00049	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	0.0011 U	0.0048	0.0011	mg/kg	
127-18-4	Tetrachloroethylene	0.0012 U	0.0048	0.0012	mg/kg	
108-88-3	Toluene	0.0012 U	0.0048	0.0012	mg/kg	
79-01-6	Trichloroethylene	0.00056 U	0.0048	0.00056	mg/kg	
75-69-4	Trichlorofluoromethane	0.00076 U	0.0048	0.00076	mg/kg	
75-01-4	Vinyl chloride	0.00070 U	0.0048	0.00070	mg/kg	
1330-20-7	Xylene (total)	0.0034 U	0.014	0.0034	mg/kg	
	m,p-Xylene	0.0022 U	0.0096	0.0022	mg/kg	
95-47-6	o-Xylene	0.0012 U	0.0048	0.0012	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	119%		59-126%
2037-26-5	Toluene-D8	103%		70-139%
460-00-4	4-Bromofluorobenzene	88%		63-138%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-9 @ 4-6'		
Lab Sample ID:	TC50731-9	Date Sampled:	06/27/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	83.0
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	95%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-9 @ 4-6'		
Lab Sample ID:	TC50731-9	Date Sampled:	06/27/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	TNRCC 1005 TX1005	Percent Solids:	83.0
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LB101388.D	1	07/02/14	ZL	07/01/14	OP33076	GLB1503
Run #2							

	Initial Weight	Final Volume
Run #1	10.3 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	13 U	29	13	mg/kg	
	TPH (>C12-C28)	16 U	29	16	mg/kg	
	TPH (>C28-C35)	16 U	29	16	mg/kg	
	TPH (C6-C35)	13 U	29	13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	118%		70-130%
98-08-8	aaa-Trifluorotoluene	115%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-10 @ 14-16'		
Lab Sample ID:	TC50731-10	Date Sampled:	06/27/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	81.9
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0053831.D	1	07/03/14	FI	07/02/14 12:00	n/a	VM2096
Run #2							

	Initial Weight	Final Volume
Run #1	5.77 g	5.0 ml
Run #2		

VOA 8260 List

CAS No.	Compound	Result	MQL	SDL	Units	Q
67-64-1	Acetone	0.0241	0.042	0.011	mg/kg	J
71-43-2	Benzene	0.00071 U	0.0042	0.00071	mg/kg	
108-86-1	Bromobenzene	0.00043 U	0.0042	0.00043	mg/kg	
74-97-5	Bromochloromethane	0.0012 U	0.0042	0.0012	mg/kg	
75-27-4	Bromodichloromethane	0.00048 U	0.0042	0.00048	mg/kg	
75-25-2	Bromoform	0.00080 U	0.0042	0.00080	mg/kg	
104-51-8	n-Butylbenzene	0.00046 U	0.0042	0.00046	mg/kg	
135-98-8	sec-Butylbenzene	0.00092 U	0.0042	0.00092	mg/kg	
98-06-6	tert-Butylbenzene	0.00083 U	0.0042	0.00083	mg/kg	
108-90-7	Chlorobenzene	0.00099 U	0.0042	0.00099	mg/kg	
75-00-3	Chloroethane	0.0017 U	0.0042	0.0017	mg/kg	
67-66-3	Chloroform	0.00063	0.0042	0.00045	mg/kg	J
95-49-8	o-Chlorotoluene	0.00050 U	0.0042	0.00050	mg/kg	
106-43-4	p-Chlorotoluene	0.00043 U	0.0042	0.00043	mg/kg	
75-15-0	Carbon disulfide	0.0022	0.0042	0.00061	mg/kg	J
56-23-5	Carbon tetrachloride	0.00091 U	0.0042	0.00091	mg/kg	
75-34-3	1,1-Dichloroethane	0.00043 U	0.0042	0.00043	mg/kg	
75-35-4	1,1-Dichloroethylene	0.00044 U	0.0042	0.00044	mg/kg	
563-58-6	1,1-Dichloropropene	0.00047 U	0.0042	0.00047	mg/kg	
96-12-8	1,2-Dibromo-3-chloropropane	0.0033 U	0.0042	0.0033	mg/kg	
106-93-4	1,2-Dibromoethane	0.00045 U	0.0042	0.00045	mg/kg	
107-06-2	1,2-Dichloroethane	0.0021	0.0042	0.00050	mg/kg	J
78-87-5	1,2-Dichloropropane	0.00061 U	0.0042	0.00061	mg/kg	
142-28-9	1,3-Dichloropropane	0.0011 U	0.0042	0.0011	mg/kg	
594-20-7	2,2-Dichloropropane	0.00057 U	0.0042	0.00057	mg/kg	
124-48-1	Dibromochloromethane	0.00096 U	0.0042	0.00096	mg/kg	
75-71-8	Dichlorodifluoromethane	0.0012 U	0.0042	0.0012	mg/kg	
156-59-2	cis-1,2-Dichloroethylene	0.00048 U	0.0042	0.00048	mg/kg	
10061-01-5	cis-1,3-Dichloropropene	0.00048 U	0.0042	0.00048	mg/kg	
541-73-1	m-Dichlorobenzene	0.00066 U	0.0042	0.00066	mg/kg	
95-50-1	o-Dichlorobenzene	0.0010 U	0.0042	0.0010	mg/kg	
106-46-7	p-Dichlorobenzene	0.00091 U	0.0042	0.00091	mg/kg	

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-10 @ 14-16'		
Lab Sample ID:	TC50731-10	Date Sampled:	06/27/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	81.9
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

VOA 8260 List

CAS No.	Compound	Result	MQL	SDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	0.00046 U	0.0042	0.00046	mg/kg	
10061-02-6	trans-1,3-Dichloropropene	0.00054 U	0.0042	0.00054	mg/kg	
100-41-4	Ethylbenzene	0.0010 U	0.0042	0.0010	mg/kg	
591-78-6	2-Hexanone	0.0078 U	0.042	0.0078	mg/kg	
87-68-3	Hexachlorobutadiene	0.00073 U	0.0042	0.00073	mg/kg	
98-82-8	Isopropylbenzene	0.0012 U	0.0042	0.0012	mg/kg	
99-87-6	p-Isopropyltoluene	0.0014 U	0.0042	0.0014	mg/kg	
108-10-1	4-Methyl-2-pentanone	0.0067 U	0.042	0.0067	mg/kg	
74-83-9	Methyl bromide	0.0020 U	0.0042	0.0020	mg/kg	
74-87-3	Methyl chloride	0.00081 U	0.0042	0.00081	mg/kg	
74-95-3	Methylene bromide	0.00068 U	0.0042	0.00068	mg/kg	
75-09-2	Methylene chloride	0.0026 U	0.011	0.0026	mg/kg	
78-93-3	Methyl ethyl ketone	0.0053 U	0.042	0.0053	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00054 U	0.0042	0.00054	mg/kg	
91-20-3	Naphthalene	0.0021 U	0.0042	0.0021	mg/kg	
103-65-1	n-Propylbenzene	0.0011 U	0.0042	0.0011	mg/kg	
100-42-5	Styrene	0.00097 U	0.0042	0.00097	mg/kg	
630-20-6	1,1,1,2-Tetrachloroethane	0.00053 U	0.0042	0.00053	mg/kg	
71-55-6	1,1,1-Trichloroethane	0.00066 U	0.0042	0.00066	mg/kg	
79-34-5	1,1,2,2-Tetrachloroethane	0.00071 U	0.0042	0.00071	mg/kg	
79-00-5	1,1,2-Trichloroethane	0.00071 U	0.0042	0.00071	mg/kg	
87-61-6	1,2,3-Trichlorobenzene	0.00055 U	0.0042	0.00055	mg/kg	
96-18-4	1,2,3-Trichloropropane	0.00096 U	0.0042	0.00096	mg/kg	
120-82-1	1,2,4-Trichlorobenzene	0.00052 U	0.0042	0.00052	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	0.00043 U	0.0042	0.00043	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	0.00099 U	0.0042	0.00099	mg/kg	
127-18-4	Tetrachloroethylene	0.0011 U	0.0042	0.0011	mg/kg	
108-88-3	Toluene	0.0011 U	0.0042	0.0011	mg/kg	
79-01-6	Trichloroethylene	0.00049 U	0.0042	0.00049	mg/kg	
75-69-4	Trichlorofluoromethane	0.00066 U	0.0042	0.00066	mg/kg	
75-01-4	Vinyl chloride	0.00061 U	0.0042	0.00061	mg/kg	
1330-20-7	Xylene (total)	0.0030 U	0.013	0.0030	mg/kg	
	m,p-Xylene	0.0019 U	0.0085	0.0019	mg/kg	
95-47-6	o-Xylene	0.0011 U	0.0042	0.0011	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	120%		59-126%
2037-26-5	Toluene-D8	105%		70-139%
460-00-4	4-Bromofluorobenzene	89%		63-138%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-10 @ 14-16'		
Lab Sample ID:	TC50731-10	Date Sampled:	06/27/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	81.9
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	95%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-10 @ 14-16'		
Lab Sample ID:	TC50731-10	Date Sampled:	06/27/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	TNRCC 1005 TX1005	Percent Solids:	81.9
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LF101389.D	1	07/02/14	ZL	07/01/14	OP33076	GLF1503
Run #2							

	Initial Weight	Final Volume
Run #1	10.1 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	14 U	30	14	mg/kg	
	TPH (>C12-C28)	17 U	30	17	mg/kg	
	TPH (>C28-C35)	17 U	30	17	mg/kg	
	TPH (C6-C35)	14 U	30	14	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	124%		70-130%
98-08-8	aaa-Trifluorotoluene	114%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-11 @ 22-24'		
Lab Sample ID:	TC50731-11	Date Sampled:	06/27/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	86.3
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R023504.D	1	07/04/14	FI	07/02/14 12:00	n/a	VR773
Run #2							

	Initial Weight	Final Volume
Run #1	5.00 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00078 U	0.0046	0.00078	mg/kg	
108-88-3	Toluene	0.0012 U	0.0046	0.0012	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0046	0.0011	mg/kg	
1330-20-7	Xylene (total)	0.0032 U	0.014	0.0032	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00059 U	0.0046	0.00059	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	78%		59-126%
2037-26-5	Toluene-D8	90%		70-139%
460-00-4	4-Bromofluorobenzene	79%		63-138%
17060-07-0	1,2-Dichloroethane-D4	64%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-11 @ 22-24'		
Lab Sample ID:	TC50731-11	Date Sampled:	06/27/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	TNRCC 1005 TX1005	Percent Solids:	86.3
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LB101390.D	1	07/02/14	ZL	07/01/14	OP33076	GLB1503
Run #2							

	Initial Weight	Final Volume
Run #1	10.3 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	13 U	28	13	mg/kg	
	TPH (> C12-C28)	15 U	28	15	mg/kg	
	TPH (> C28-C35)	15 U	28	15	mg/kg	
	TPH (C6-C35)	13 U	28	13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	113%		70-130%
98-08-8	aaa-Trifluorotoluene	103%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-12 @ 18-20'		
Lab Sample ID:	TC50731-12	Date Sampled:	06/27/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	86.7
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R023506.D	1	07/04/14	FI	07/02/14 12:00	n/a	VR773
Run #2							

	Initial Weight	Final Volume
Run #1	5.01 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00078 U	0.0046	0.00078	mg/kg	
108-88-3	Toluene	0.0012 U	0.0046	0.0012	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0046	0.0011	mg/kg	
1330-20-7	Xylene (total)	0.0032 U	0.014	0.0032	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00058 U	0.0046	0.00058	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	88%		59-126%
2037-26-5	Toluene-D8	98%		70-139%
460-00-4	4-Bromofluorobenzene	87%		63-138%
17060-07-0	1,2-Dichloroethane-D4	74%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-12 @ 18-20'		
Lab Sample ID:	TC50731-12	Date Sampled:	06/27/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	TNRCC 1005 TX1005	Percent Solids:	86.7
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LF101391.D	1	07/02/14	ZL	07/01/14	OP33076	GLF1503
Run #2							

	Initial Weight	Final Volume
Run #1	10.0 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	13 U	29	13	mg/kg	
	TPH (>C12-C28)	16 U	29	16	mg/kg	
	TPH (>C28-C35)	16 U	29	16	mg/kg	
	TPH (C6-C35)	13 U	29	13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	124%		70-130%
98-08-8	aaa-Trifluorotoluene	113%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-14 @ 18-20'		
Lab Sample ID:	TC50731-13	Date Sampled:	06/27/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	86.4
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0053832.D	1	07/03/14	FI	07/02/14 12:00	n/a	VM2096
Run #2							

	Initial Weight	Final Volume
Run #1	5.68 g	5.0 ml
Run #2		

VOA 8260 List

CAS No.	Compound	Result	MQL	SDL	Units	Q
67-64-1	Acetone	0.010 U	0.041	0.010	mg/kg	
71-43-2	Benzene	0.00069 U	0.0041	0.00069	mg/kg	
108-86-1	Bromobenzene	0.00041 U	0.0041	0.00041	mg/kg	
74-97-5	Bromochloromethane	0.0011 U	0.0041	0.0011	mg/kg	
75-27-4	Bromodichloromethane	0.00046 U	0.0041	0.00046	mg/kg	
75-25-2	Bromoform	0.00077 U	0.0041	0.00077	mg/kg	
104-51-8	n-Butylbenzene	0.00045 U	0.0041	0.00045	mg/kg	
135-98-8	sec-Butylbenzene	0.00089 U	0.0041	0.00089	mg/kg	
98-06-6	tert-Butylbenzene	0.00080 U	0.0041	0.00080	mg/kg	
108-90-7	Chlorobenzene	0.00095 U	0.0041	0.00095	mg/kg	
75-00-3	Chloroethane	0.0016 U	0.0041	0.0016	mg/kg	
67-66-3	Chloroform	0.00044 U	0.0041	0.00044	mg/kg	
95-49-8	o-Chlorotoluene	0.00048 U	0.0041	0.00048	mg/kg	
106-43-4	p-Chlorotoluene	0.00042 U	0.0041	0.00042	mg/kg	
75-15-0	Carbon disulfide	0.00059 U	0.0041	0.00059	mg/kg	
56-23-5	Carbon tetrachloride	0.00088 U	0.0041	0.00088	mg/kg	
75-34-3	1,1-Dichloroethane	0.00042 U	0.0041	0.00042	mg/kg	
75-35-4	1,1-Dichloroethylene	0.00042 U	0.0041	0.00042	mg/kg	
563-58-6	1,1-Dichloropropene	0.00046 U	0.0041	0.00046	mg/kg	
96-12-8	1,2-Dibromo-3-chloropropane	0.0032 U	0.0041	0.0032	mg/kg	
106-93-4	1,2-Dibromoethane	0.00043 U	0.0041	0.00043	mg/kg	
107-06-2	1,2-Dichloroethane	0.0016	0.0041	0.00048	mg/kg	J
78-87-5	1,2-Dichloropropane	0.00059 U	0.0041	0.00059	mg/kg	
142-28-9	1,3-Dichloropropane	0.0010 U	0.0041	0.0010	mg/kg	
594-20-7	2,2-Dichloropropane	0.00055 U	0.0041	0.00055	mg/kg	
124-48-1	Dibromochloromethane	0.00092 U	0.0041	0.00092	mg/kg	
75-71-8	Dichlorodifluoromethane	0.0011 U	0.0041	0.0011	mg/kg	
156-59-2	cis-1,2-Dichloroethylene	0.00047 U	0.0041	0.00047	mg/kg	
10061-01-5	cis-1,3-Dichloropropene	0.00046 U	0.0041	0.00046	mg/kg	
541-73-1	m-Dichlorobenzene	0.00063 U	0.0041	0.00063	mg/kg	
95-50-1	o-Dichlorobenzene	0.00099 U	0.0041	0.00099	mg/kg	
106-46-7	p-Dichlorobenzene	0.00088 U	0.0041	0.00088	mg/kg	

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-14 @ 18-20'		
Lab Sample ID:	TC50731-13	Date Sampled:	06/27/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	86.4
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

VOA 8260 List

CAS No.	Compound	Result	MQL	SDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	0.00045 U	0.0041	0.00045	mg/kg	
10061-02-6	trans-1,3-Dichloropropene	0.00052 U	0.0041	0.00052	mg/kg	
100-41-4	Ethylbenzene	0.00099 U	0.0041	0.00099	mg/kg	
591-78-6	2-Hexanone	0.0075 U	0.041	0.0075	mg/kg	
87-68-3	Hexachlorobutadiene	0.00070 U	0.0041	0.00070	mg/kg	
98-82-8	Isopropylbenzene	0.0011 U	0.0041	0.0011	mg/kg	
99-87-6	p-Isopropyltoluene	0.0013 U	0.0041	0.0013	mg/kg	
108-10-1	4-Methyl-2-pentanone	0.0064 U	0.041	0.0064	mg/kg	
74-83-9	Methyl bromide	0.0019 U	0.0041	0.0019	mg/kg	
74-87-3	Methyl chloride	0.00078 U	0.0041	0.00078	mg/kg	
74-95-3	Methylene bromide	0.00066 U	0.0041	0.00066	mg/kg	
75-09-2	Methylene chloride	0.0025 U	0.010	0.0025	mg/kg	
78-93-3	Methyl ethyl ketone	0.0051 U	0.041	0.0051	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00052 U	0.0041	0.00052	mg/kg	
91-20-3	Naphthalene	0.0020 U	0.0041	0.0020	mg/kg	
103-65-1	n-Propylbenzene	0.0011 U	0.0041	0.0011	mg/kg	
100-42-5	Styrene	0.00094 U	0.0041	0.00094	mg/kg	
630-20-6	1,1,1,2-Tetrachloroethane	0.00051 U	0.0041	0.00051	mg/kg	
71-55-6	1,1,1-Trichloroethane	0.00064 U	0.0041	0.00064	mg/kg	
79-34-5	1,1,2,2-Tetrachloroethane	0.00069 U	0.0041	0.00069	mg/kg	
79-00-5	1,1,2-Trichloroethane	0.00068 U	0.0041	0.00068	mg/kg	
87-61-6	1,2,3-Trichlorobenzene	0.00053 U	0.0041	0.00053	mg/kg	
96-18-4	1,2,3-Trichloropropane	0.00093 U	0.0041	0.00093	mg/kg	
120-82-1	1,2,4-Trichlorobenzene	0.00050 U	0.0041	0.00050	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	0.00041 U	0.0041	0.00041	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	0.00095 U	0.0041	0.00095	mg/kg	
127-18-4	Tetrachloroethylene	0.0010 U	0.0041	0.0010	mg/kg	
108-88-3	Toluene	0.0010 U	0.0041	0.0010	mg/kg	
79-01-6	Trichloroethylene	0.00047 U	0.0041	0.00047	mg/kg	
75-69-4	Trichlorofluoromethane	0.00064 U	0.0041	0.00064	mg/kg	
75-01-4	Vinyl chloride	0.00059 U	0.0041	0.00059	mg/kg	
1330-20-7	Xylene (total)	0.0029 U	0.012	0.0029	mg/kg	
	m,p-Xylene	0.0018 U	0.0082	0.0018	mg/kg	
95-47-6	o-Xylene	0.0010 U	0.0041	0.0010	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	122%		59-126%
2037-26-5	Toluene-D8	106%		70-139%
460-00-4	4-Bromofluorobenzene	89%		63-138%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-14 @ 18-20'		
Lab Sample ID:	TC50731-13	Date Sampled:	06/27/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	86.4
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	95%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-14 @ 18-20'		
Lab Sample ID:	TC50731-13	Date Sampled:	06/27/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	TNRCC 1005 TX1005	Percent Solids:	86.4
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LB101392.D	1	07/02/14	ZL	07/01/14	OP33076	GLB1503
Run #2							

	Initial Weight	Final Volume
Run #1	10.3 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	13 U	28	13	mg/kg	
	TPH (>C12-C28)	15 U	28	15	mg/kg	
	TPH (>C28-C35)	15 U	28	15	mg/kg	
	TPH (C6-C35)	13 U	28	13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	121%		70-130%
98-08-8	aaa-Trifluorotoluene	113%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-13 @ 16-18'		
Lab Sample ID:	TC50731-14	Date Sampled:	06/27/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	86.7
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X0100543.D	1	07/05/14	FI	07/02/14 12:00	n/a	VX2252
Run #2							

	Initial Weight	Final Volume
Run #1	5.70 g	5.0 ml
Run #2		

VOA 8260 List

CAS No.	Compound	Result	MQL	SDL	Units	Q
67-64-1	Acetone	0.0217	0.040	0.010	mg/kg	J
71-43-2	Benzene	0.00068 U	0.0040	0.00068	mg/kg	
108-86-1	Bromobenzene	0.00041 U	0.0040	0.00041	mg/kg	
74-97-5	Bromochloromethane	0.0011 U	0.0040	0.0011	mg/kg	
75-27-4	Bromodichloromethane	0.00045 U	0.0040	0.00045	mg/kg	
75-25-2	Bromoform	0.00076 U	0.0040	0.00076	mg/kg	
104-51-8	n-Butylbenzene	0.00044 U	0.0040	0.00044	mg/kg	
135-98-8	sec-Butylbenzene	0.00088 U	0.0040	0.00088	mg/kg	
98-06-6	tert-Butylbenzene	0.00079 U	0.0040	0.00079	mg/kg	
108-90-7	Chlorobenzene	0.00094 U	0.0040	0.00094	mg/kg	
75-00-3	Chloroethane	0.0016 U	0.0040	0.0016	mg/kg	
67-66-3	Chloroform	0.00044 U	0.0040	0.00044	mg/kg	
95-49-8	o-Chlorotoluene	0.00048 U	0.0040	0.00048	mg/kg	
106-43-4	p-Chlorotoluene	0.00042 U	0.0040	0.00042	mg/kg	
75-15-0	Carbon disulfide	0.00059 U	0.0040	0.00059	mg/kg	
56-23-5	Carbon tetrachloride	0.00087 U	0.0040	0.00087	mg/kg	
75-34-3	1,1-Dichloroethane	0.00041 U	0.0040	0.00041	mg/kg	
75-35-4	1,1-Dichloroethylene	0.00042 U	0.0040	0.00042	mg/kg	
563-58-6	1,1-Dichloropropene	0.00045 U	0.0040	0.00045	mg/kg	
96-12-8	1,2-Dibromo-3-chloropropane	0.0032 U	0.0040	0.0032	mg/kg	
106-93-4	1,2-Dibromoethane	0.00043 U	0.0040	0.00043	mg/kg	
107-06-2	1,2-Dichloroethane	0.00049	0.0040	0.00048	mg/kg	J
78-87-5	1,2-Dichloropropane	0.00059 U	0.0040	0.00059	mg/kg	
142-28-9	1,3-Dichloropropane	0.0010 U	0.0040	0.0010	mg/kg	
594-20-7	2,2-Dichloropropane	0.00055 U	0.0040	0.00055	mg/kg	
124-48-1	Dibromochloromethane	0.00092 U	0.0040	0.00092	mg/kg	
75-71-8	Dichlorodifluoromethane	0.0011 U	0.0040	0.0011	mg/kg	
156-59-2	cis-1,2-Dichloroethylene	0.00046 U	0.0040	0.00046	mg/kg	
10061-01-5	cis-1,3-Dichloropropene	0.00046 U	0.0040	0.00046	mg/kg	
541-73-1	m-Dichlorobenzene	0.00063 U	0.0040	0.00063	mg/kg	
95-50-1	o-Dichlorobenzene	0.00098 U	0.0040	0.00098	mg/kg	
106-46-7	p-Dichlorobenzene	0.00087 U	0.0040	0.00087	mg/kg	

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-13 @ 16-18'		
Lab Sample ID:	TC50731-14	Date Sampled:	06/27/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	86.7
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

VOA 8260 List

CAS No.	Compound	Result	MQL	SDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	0.00044 U	0.0040	0.00044	mg/kg	
10061-02-6	trans-1,3-Dichloropropene	0.00052 U	0.0040	0.00052	mg/kg	
100-41-4	Ethylbenzene	0.00098 U	0.0040	0.00098	mg/kg	
591-78-6	2-Hexanone	0.0075 U	0.040	0.0075	mg/kg	
87-68-3	Hexachlorobutadiene	0.00070 U	0.0040	0.00070	mg/kg	
98-82-8	Isopropylbenzene	0.0011 U	0.0040	0.0011	mg/kg	
99-87-6	p-Isopropyltoluene	0.0013 U	0.0040	0.0013	mg/kg	
108-10-1	4-Methyl-2-pentanone	0.0064 U	0.040	0.0064	mg/kg	
74-83-9	Methyl bromide	0.0019 U	0.0040	0.0019	mg/kg	
74-87-3	Methyl chloride	0.00078 U	0.0040	0.00078	mg/kg	
74-95-3	Methylene bromide	0.00065 U	0.0040	0.00065	mg/kg	
75-09-2	Methylene chloride	0.0025 U	0.010	0.0025	mg/kg	
78-93-3	Methyl ethyl ketone	0.0051 U	0.040	0.0051	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00051 U	0.0040	0.00051	mg/kg	
91-20-3	Naphthalene	0.0020 U	0.0040	0.0020	mg/kg	
103-65-1	n-Propylbenzene	0.0011 U	0.0040	0.0011	mg/kg	
100-42-5	Styrene	0.00093 U	0.0040	0.00093	mg/kg	
630-20-6	1,1,1,2-Tetrachloroethane	0.00051 U	0.0040	0.00051	mg/kg	
71-55-6	1,1,1-Trichloroethane	0.00064 U	0.0040	0.00064	mg/kg	
79-34-5	1,1,2,2-Tetrachloroethane	0.00068 U	0.0040	0.00068	mg/kg	
79-00-5	1,1,2-Trichloroethane	0.00068 U	0.0040	0.00068	mg/kg	
87-61-6	1,2,3-Trichlorobenzene	0.00053 U	0.0040	0.00053	mg/kg	
96-18-4	1,2,3-Trichloropropane	0.00092 U	0.0040	0.00092	mg/kg	
120-82-1	1,2,4-Trichlorobenzene	0.00050 U	0.0040	0.00050	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	0.00041 U	0.0040	0.00041	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	0.00095 U	0.0040	0.00095	mg/kg	
127-18-4	Tetrachloroethylene	0.0010 U	0.0040	0.0010	mg/kg	
108-88-3	Toluene	0.0010 U	0.0040	0.0010	mg/kg	
79-01-6	Trichloroethylene	0.00047 U	0.0040	0.00047	mg/kg	
75-69-4	Trichlorofluoromethane	0.00063 U	0.0040	0.00063	mg/kg	
75-01-4	Vinyl chloride	0.00059 U	0.0040	0.00059	mg/kg	
1330-20-7	Xylene (total)	0.0028 U	0.012	0.0028	mg/kg	
	m,p-Xylene	0.0018 U	0.0081	0.0018	mg/kg	
95-47-6	o-Xylene	0.0010 U	0.0040	0.0010	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	88%		59-126%
2037-26-5	Toluene-D8	96%		70-139%
460-00-4	4-Bromofluorobenzene	94%		63-138%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-13 @ 16-18'		
Lab Sample ID:	TC50731-14	Date Sampled:	06/27/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	86.7
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	91%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-13 @ 16-18'		
Lab Sample ID:	TC50731-14	Date Sampled:	06/27/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	TNRCC 1005 TX1005	Percent Solids:	86.7
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LF101393.D	1	07/02/14	ZL	07/01/14	OP33076	GLF1503
Run #2							

	Initial Weight	Final Volume
Run #1	10.3 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	13 U	28	13	mg/kg	
	TPH (> C12-C28)	15 U	28	15	mg/kg	
	TPH (> C28-C35)	15 U	28	15	mg/kg	
	TPH (C6-C35)	13 U	28	13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	126%		70-130%
98-08-8	aaa-Trifluorotoluene	114%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-15 @ 6-8'		
Lab Sample ID:	TC50731-15	Date Sampled:	06/27/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	82.6
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R023507.D	1	07/04/14	FI	07/02/14 12:00	n/a	VR773
Run #2							

	Initial Weight	Final Volume
Run #1	5.58 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00073 U	0.0043	0.00073	mg/kg	
108-88-3	Toluene	0.0011 U	0.0043	0.0011	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0043	0.0011	mg/kg	
1330-20-7	Xylene (total)	0.0030 U	0.013	0.0030	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00055 U	0.0043	0.00055	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	87%		59-126%
2037-26-5	Toluene-D8	94%		70-139%
460-00-4	4-Bromofluorobenzene	84%		63-138%
17060-07-0	1,2-Dichloroethane-D4	77%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-15 @ 6-8'		
Lab Sample ID:	TC50731-15	Date Sampled:	06/27/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	TNRCC 1005 TX1005	Percent Solids:	82.6
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LB101394.D	1	07/02/14	ZL	07/01/14	OP33076	GLB1503
Run #2							

	Initial Weight	Final Volume
Run #1	10.7 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	13 U	28	13	mg/kg	
	TPH (> C12-C28)	15 U	28	15	mg/kg	
	TPH (> C28-C35)	15 U	28	15	mg/kg	
	TPH (C6-C35)	13 U	28	13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	125%		70-130%
98-08-8	aaa-Trifluorotoluene	118%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-16 @ 14-16'		
Lab Sample ID:	TC50731-16	Date Sampled:	06/27/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	79.6
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R023508.D	1	07/04/14	FI	07/02/14 12:00	n/a	VR773
Run #2							

	Initial Weight	Final Volume
Run #1	5.54 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00077 U	0.0045	0.00077	mg/kg	
108-88-3	Toluene	0.0012 U	0.0045	0.0012	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0045	0.0011	mg/kg	
1330-20-7	Xylene (total)	0.0032 U	0.014	0.0032	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00058 U	0.0045	0.00058	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	86%		59-126%
2037-26-5	Toluene-D8	96%		70-139%
460-00-4	4-Bromofluorobenzene	83%		63-138%
17060-07-0	1,2-Dichloroethane-D4	71%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-16 @ 14-16'		
Lab Sample ID:	TC50731-16	Date Sampled:	06/27/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	TNRCC 1005 TX1005	Percent Solids:	79.6
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LF101395.D	1	07/02/14	ZL	07/01/14	OP33076	GLF1503
Run #2							

	Initial Weight	Final Volume
Run #1	10.5 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	14 U	30	14	mg/kg	
	TPH (> C12-C28)	16 U	30	16	mg/kg	
	TPH (> C28-C35)	16 U	30	16	mg/kg	
	TPH (C6-C35)	14 U	30	14	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	131% [a]		70-130%
98-08-8	aaa-Trifluorotoluene	115%		70-130%

(a) Outside control limits biased high.

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-17 @ 4-6'		
Lab Sample ID:	TC50731-17	Date Sampled:	06/27/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C SW846 5030A	Percent Solids:	82.2
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R023509.D	1	07/04/14	FI	07/02/14 12:00	n/a	VR773
Run #2							

	Initial Weight	Final Volume
Run #1	5.05 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00081 U	0.0048	0.00081	mg/kg	
108-88-3	Toluene	0.0012 U	0.0048	0.0012	mg/kg	
100-41-4	Ethylbenzene	0.0012 U	0.0048	0.0012	mg/kg	
1330-20-7	Xylene (total)	0.0034 U	0.014	0.0034	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00061 U	0.0048	0.00061	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	83%		59-126%
2037-26-5	Toluene-D8	98%		70-139%
460-00-4	4-Bromofluorobenzene	87%		63-138%
17060-07-0	1,2-Dichloroethane-D4	69%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-17 @ 4-6'		
Lab Sample ID:	TC50731-17	Date Sampled:	06/27/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	TNRCC 1005 TX1005	Percent Solids:	82.2
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LB101396.D	1	07/02/14	ZL	07/01/14	OP33076	GLB1503
Run #2							

	Initial Weight	Final Volume
Run #1	10.4 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	13 U	29	13	mg/kg	
	TPH (>C12-C28)	16 U	29	16	mg/kg	
	TPH (>C28-C35)	16 U	29	16	mg/kg	
	TPH (C6-C35)	13 U	29	13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	121%		70-130%
98-08-8	aaa-Trifluorotoluene	113%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-18 @ 12-14'		
Lab Sample ID:	TC50731-18	Date Sampled:	06/26/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C	Percent Solids:	79.1
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R023510.D	1	07/04/14	FI	n/a	n/a	VR773
Run #2							

	Initial Weight	Final Volume
Run #1	5.08 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.0016	0.0050	0.00084	mg/kg	J
108-88-3	Toluene	0.0018	0.0050	0.0013	mg/kg	J
100-41-4	Ethylbenzene	0.0012 U	0.0050	0.0012	mg/kg	
1330-20-7	Xylene (total)	0.0035 U	0.015	0.0035	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00063 U	0.0050	0.00063	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	81%		59-126%
2037-26-5	Toluene-D8	97%		70-139%
460-00-4	4-Bromofluorobenzene	93%		63-138%
17060-07-0	1,2-Dichloroethane-D4	68%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-18 @ 12-14'		
Lab Sample ID:	TC50731-18	Date Sampled:	06/26/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	TNRCC 1005 TX1005	Percent Solids:	79.1
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LF101397.D	1	07/02/14	ZL	07/01/14	OP33076	GLF1503
Run #2							

	Initial Weight	Final Volume
Run #1	10.6 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	14 U	30	14	mg/kg	
	TPH (>C12-C28)	129	30	16	mg/kg	
	TPH (>C28-C35)	159	30	16	mg/kg	
	TPH (C6-C35)	288	30	14	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	130%		70-130%
98-08-8	aaa-Trifluorotoluene	115%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-19 @ 4-6'		
Lab Sample ID:	TC50731-19	Date Sampled:	06/26/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C	Percent Solids:	82.4
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X0100547.D	1	07/05/14	FI	n/a	n/a	VX2252
Run #2							

	Initial Weight	Final Volume
Run #1	5.18 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00079 U	0.0047	0.00079	mg/kg	
108-88-3	Toluene	0.0012 U	0.0047	0.0012	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0047	0.0011	mg/kg	
1330-20-7	Xylene (total)	0.0033 U	0.014	0.0033	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00060 U	0.0047	0.00060	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		59-126%
2037-26-5	Toluene-D8	98%		70-139%
460-00-4	4-Bromofluorobenzene	98%		63-138%
17060-07-0	1,2-Dichloroethane-D4	95%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-19 @ 4-6'		
Lab Sample ID:	TC50731-19	Date Sampled:	06/26/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	TNRCC 1005 TX1005	Percent Solids:	82.4
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LB101439.D	1	07/02/14	ZL	07/02/14	OP33086	GLB1504
Run #2							

	Initial Weight	Final Volume
Run #1	10.1 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	14 U	30	14	mg/kg	
	TPH (> C12-C28)	16 U	30	16	mg/kg	
	TPH (> C28-C35)	16 U	30	16	mg/kg	
	TPH (C6-C35)	14 U	30	14	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	109%		70-130%
98-08-8	aaa-Trifluorotoluene	109%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-20 @ 18-20'		
Lab Sample ID:	TC50731-20	Date Sampled:	06/23/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C	Percent Solids:	86.2
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R023505.D	1	07/04/14	FI	n/a	n/a	VR773
Run #2							

	Initial Weight	Final Volume
Run #1	5.20 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00075 U	0.0045	0.00075	mg/kg	
108-88-3	Toluene	0.0011 U	0.0045	0.0011	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0045	0.0011	mg/kg	
1330-20-7	Xylene (total)	0.0031 U	0.013	0.0031	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00057 U	0.0045	0.00057	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	81%		59-126%
2037-26-5	Toluene-D8	98%		70-139%
460-00-4	4-Bromofluorobenzene	84%		63-138%
17060-07-0	1,2-Dichloroethane-D4	67%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-20 @ 18-20'		
Lab Sample ID:	TC50731-20	Date Sampled:	06/23/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	TNRCC 1005 TX1005	Percent Solids:	86.2
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LF101440.D	1	07/02/14	ZL	07/02/14	OP33086	GLF1504
Run #2							

	Initial Weight	Final Volume
Run #1	10.2 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	13 U	29	13	mg/kg	
	TPH (>C12-C28)	16 U	29	16	mg/kg	
	TPH (>C28-C35)	16 U	29	16	mg/kg	
	TPH (C6-C35)	13 U	29	13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	109%		70-130%
98-08-8	aaa-Trifluorotoluene	106%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-21 @ 10-12'		
Lab Sample ID:	TC50731-21	Date Sampled:	06/26/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C	Percent Solids:	83.0
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R023553.D	10	07/07/14	FI	n/a	n/a	VR775
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.20 g	5.0 ml	100 ul
Run #2			

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	1.49	2.7	0.46	mg/kg	J
108-88-3	Toluene	30.7	2.7	0.70	mg/kg	
100-41-4	Ethylbenzene	58.0	2.7	0.66	mg/kg	
1330-20-7	Xylene (total)	236	8.2	1.9	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.35 U	2.7	0.35	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	90%		59-126%
2037-26-5	Toluene-D8	100%		70-139%
460-00-4	4-Bromofluorobenzene	84%		63-138%
17060-07-0	1,2-Dichloroethane-D4	66%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-21 @ 10-12'		
Lab Sample ID:	TC50731-21	Date Sampled:	06/26/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	TNRCC 1005 TX1005	Percent Solids:	83.0
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LB101441.D	1	07/02/14	ZL	07/02/14	OP33086	GLB1504
Run #2							

	Initial Weight	Final Volume
Run #1	10.1 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	639	30	14	mg/kg	
	TPH (> C12-C28)	16 U	30	16	mg/kg	
	TPH (> C28-C35)	16 U	30	16	mg/kg	
	TPH (C6-C35)	639	30	14	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	104%		70-130%
98-08-8	aaa-Trifluorotoluene	103%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-22 @ 18-20'		
Lab Sample ID:	TC50731-22	Date Sampled:	06/26/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C	Percent Solids:	85.8
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X0100561.D	1	07/05/14	FI	n/a	n/a	VX2253
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.11 g	5.0 ml	100 ul
Run #2			

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.044 U	0.26	0.044	mg/kg	
108-88-3	Toluene	0.067 U	0.26	0.067	mg/kg	
100-41-4	Ethylbenzene	0.063 U	0.26	0.063	mg/kg	
1330-20-7	Xylene (total)	0.18 U	0.78	0.18	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.033 U	0.26	0.033	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		59-126%
2037-26-5	Toluene-D8	94%		70-139%
460-00-4	4-Bromofluorobenzene	91%		63-138%
17060-07-0	1,2-Dichloroethane-D4	93%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-22 @ 18-20'		
Lab Sample ID:	TC50731-22	Date Sampled:	06/26/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	TNRCC 1005 TX1005	Percent Solids:	85.8
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LF101442.D	1	07/02/14	ZL	07/02/14	OP33086	GLF1504
Run #2							

	Initial Weight	Final Volume
Run #1	10.3 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	13 U	28	13	mg/kg	
	TPH (>C12-C28)	16 U	28	16	mg/kg	
	TPH (>C28-C35)	16 U	28	16	mg/kg	
	TPH (C6-C35)	13 U	28	13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	100%		70-130%
98-08-8	aaa-Trifluorotoluene	99%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-23 @ 6-8'		
Lab Sample ID:	TC50731-23	Date Sampled:	06/26/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C	Percent Solids:	84.1
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R023527.D	1	07/05/14	FI	n/a	n/a	VR774
Run #2							

	Initial Weight	Final Volume
Run #1	5.40 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00074 U	0.0044	0.00074	mg/kg	
108-88-3	Toluene	0.0011 U	0.0044	0.0011	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0044	0.0011	mg/kg	
1330-20-7	Xylene (total)	0.0031 U	0.013	0.0031	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00056 U	0.0044	0.00056	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	90%		59-126%
2037-26-5	Toluene-D8	98%		70-139%
460-00-4	4-Bromofluorobenzene	85%		63-138%
17060-07-0	1,2-Dichloroethane-D4	75%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-23 @ 6-8'		
Lab Sample ID:	TC50731-23	Date Sampled:	06/26/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	TNRCC 1005 TX1005	Percent Solids:	84.1
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LF101508.D	1	07/03/14	ZL	07/03/14	OP33093	GLF1505
Run #2							

	Initial Weight	Final Volume
Run #1	10.1 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	13 U	30	13	mg/kg	
	TPH (>C12-C28)	16 U	30	16	mg/kg	
	TPH (>C28-C35)	16 U	30	16	mg/kg	
	TPH (C6-C35)	13 U	30	13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	107%		70-130%
98-08-8	aaa-Trifluorotoluene	104%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-24 @ 10-12'		
Lab Sample ID:	TC50731-24	Date Sampled:	06/26/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C	Percent Solids:	83.4
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X0100576.D	1	07/06/14	FI	n/a	n/a	VX2253
Run #2	R023554.D	2	07/07/14	FI	n/a	n/a	VR775

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.12 g	5.0 ml	100 ul
Run #2	5.12 g	5.0 ml	100 ul

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.441	0.27	0.046	mg/kg	
108-88-3	Toluene	4.24	0.27	0.070	mg/kg	
100-41-4	Ethylbenzene	8.15	0.27	0.066	mg/kg	
1330-20-7	Xylene (total)	47.5 [a]	1.6	0.38	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.035 U	0.27	0.035	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%	88%	59-126%
2037-26-5	Toluene-D8	100%	99%	70-139%
460-00-4	4-Bromofluorobenzene	99%	84%	63-138%
17060-07-0	1,2-Dichloroethane-D4	93%	66%	54-123%

(a) Result is from Run# 2

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-24 @ 10-12'		
Lab Sample ID:	TC50731-24	Date Sampled:	06/26/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	TNRCC 1005 TX1005	Percent Solids:	83.4
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LB101509.D	1	07/03/14	ZL	07/03/14	OP33093	GLB1505
Run #2							

	Initial Weight	Final Volume
Run #1	10.3 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	133	29	13	mg/kg	
	TPH (>C12-C28)	16 U	29	16	mg/kg	
	TPH (>C28-C35)	16 U	29	16	mg/kg	
	TPH (C6-C35)	133	29	13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	97%		70-130%
98-08-8	aaa-Trifluorotoluene	100%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-25 @ 10-12'		
Lab Sample ID:	TC50731-25	Date Sampled:	06/26/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C	Percent Solids:	83.5
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X0100577.D	10	07/06/14	FI	n/a	n/a	VX2253
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.45 g	5.0 ml	100 ul
Run #2			

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	1.45	2.6	0.44	mg/kg	J
108-88-3	Toluene	27.8	2.6	0.66	mg/kg	
100-41-4	Ethylbenzene	31.8	2.6	0.63	mg/kg	
1330-20-7	Xylene (total)	184	7.8	1.8	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.33 U	2.6	0.33	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		59-126%
2037-26-5	Toluene-D8	96%		70-139%
460-00-4	4-Bromofluorobenzene	95%		63-138%
17060-07-0	1,2-Dichloroethane-D4	89%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-25 @ 10-12'		
Lab Sample ID:	TC50731-25	Date Sampled:	06/26/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	TNRCC 1005 TX1005	Percent Solids:	83.5
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LB101443.D	1	07/02/14	ZL	07/02/14	OP33086	GLB1504
Run #2							

	Initial Weight	Final Volume
Run #1	10.2 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	543	29	13	mg/kg	
	TPH (> C12-C28)	77.0	29	16	mg/kg	
	TPH (> C28-C35)	16 U	29	16	mg/kg	
	TPH (C6-C35)	623	29	13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	98%		70-130%
98-08-8	aaa-Trifluorotoluene	102%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-26 @ 22-24'		
Lab Sample ID:	TC50731-26	Date Sampled:	06/26/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C	Percent Solids:	81.7
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R023528.D	1	07/05/14	FI	n/a	n/a	VR774
Run #2							

	Initial Weight	Final Volume
Run #1	5.30 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00078 U	0.0046	0.00078	mg/kg	
108-88-3	Toluene	0.0012 U	0.0046	0.0012	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0046	0.0011	mg/kg	
1330-20-7	Xylene (total)	0.0032 U	0.014	0.0032	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00059 U	0.0046	0.00059	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	86%		59-126%
2037-26-5	Toluene-D8	100%		70-139%
460-00-4	4-Bromofluorobenzene	85%		63-138%
17060-07-0	1,2-Dichloroethane-D4	67%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-26 @ 22-24'		
Lab Sample ID:	TC50731-26	Date Sampled:	06/26/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	TNRCC 1005 TX1005	Percent Solids:	81.7
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LF101444.D	1	07/02/14	ZL	07/02/14	OP33086	GLF1504
Run #2							

	Initial Weight	Final Volume
Run #1	10.3 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	14 U	30	14	mg/kg	
	TPH (>C12-C28)	16 U	30	16	mg/kg	
	TPH (>C28-C35)	16 U	30	16	mg/kg	
	TPH (C6-C35)	14 U	30	14	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	103%		70-130%
98-08-8	aaa-Trifluorotoluene	97%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-27 @ 6-8'		
Lab Sample ID:	TC50731-27	Date Sampled:	06/24/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C	Percent Solids:	86.0
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R023529.D	1	07/05/14	FI	n/a	n/a	VR774
Run #2							

	Initial Weight	Final Volume
Run #1	5.25 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00075 U	0.0044	0.00075	mg/kg	
108-88-3	Toluene	0.0011 U	0.0044	0.0011	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0044	0.0011	mg/kg	
1330-20-7	Xylene (total)	0.0031 U	0.013	0.0031	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00056 U	0.0044	0.00056	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	84%		59-126%
2037-26-5	Toluene-D8	98%		70-139%
460-00-4	4-Bromofluorobenzene	83%		63-138%
17060-07-0	1,2-Dichloroethane-D4	68%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-27 @ 6-8'		
Lab Sample ID:	TC50731-27	Date Sampled:	06/24/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	TNRCC 1005 TX1005	Percent Solids:	86.0
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LB101445.D	1	07/02/14	ZL	07/02/14	OP33086	GLB1504
Run #2							

	Initial Weight	Final Volume
Run #1	10.2 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	13 U	29	13	mg/kg	
	TPH (>C12-C28)	16 U	29	16	mg/kg	
	TPH (>C28-C35)	16 U	29	16	mg/kg	
	TPH (C6-C35)	13 U	29	13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	84%		70-130%
98-08-8	aaa-Trifluorotoluene	91%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-28 @ 4-6'		
Lab Sample ID:	TC50731-28	Date Sampled:	06/24/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C	Percent Solids:	87.4
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R023530.D	1	07/05/14	FI	n/a	n/a	VR774
Run #2							

	Initial Weight	Final Volume
Run #1	5.28 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00073 U	0.0043	0.00073	mg/kg	
108-88-3	Toluene	0.0011 U	0.0043	0.0011	mg/kg	
100-41-4	Ethylbenzene	0.0010 U	0.0043	0.0010	mg/kg	
1330-20-7	Xylene (total)	0.0030 U	0.013	0.0030	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00055 U	0.0043	0.00055	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	86%		59-126%
2037-26-5	Toluene-D8	97%		70-139%
460-00-4	4-Bromofluorobenzene	85%		63-138%
17060-07-0	1,2-Dichloroethane-D4	69%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-28 @ 4-6'		
Lab Sample ID:	TC50731-28	Date Sampled:	06/24/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	TNRCC 1005 TX1005	Percent Solids:	87.4
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LF101446.D	1	07/02/14	ZL	07/02/14	OP33086	GLF1504
Run #2							

	Initial Weight	Final Volume
Run #1	10.4 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	13 U	28	13	mg/kg	
	TPH (> C12-C28)	15 U	28	15	mg/kg	
	TPH (> C28-C35)	15 U	28	15	mg/kg	
	TPH (C6-C35)	13 U	28	13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	105%		70-130%
98-08-8	aaa-Trifluorotoluene	102%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-29 @ 2-4'		
Lab Sample ID:	TC50731-29	Date Sampled:	06/24/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C	Percent Solids:	84.2
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R023531.D	1	07/05/14	FI	n/a	n/a	VR774
Run #2							

	Initial Weight	Final Volume
Run #1	5.33 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00075 U	0.0045	0.00075	mg/kg	
108-88-3	Toluene	0.0011 U	0.0045	0.0011	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0045	0.0011	mg/kg	
1330-20-7	Xylene (total)	0.0031 U	0.013	0.0031	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00057 U	0.0045	0.00057	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	87%		59-126%
2037-26-5	Toluene-D8	99%		70-139%
460-00-4	4-Bromofluorobenzene	88%		63-138%
17060-07-0	1,2-Dichloroethane-D4	68%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-29 @ 2-4'		
Lab Sample ID:	TC50731-29	Date Sampled:	06/24/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	TNRCC 1005 TX1005	Percent Solids:	84.2
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LB101453.D	1	07/02/14	ZL	07/02/14	OP33086	GLB1504
Run #2							

	Initial Weight	Final Volume
Run #1	10.1 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	13 U	29	13	mg/kg	
	TPH (>C12-C28)	16 U	29	16	mg/kg	
	TPH (>C28-C35)	16 U	29	16	mg/kg	
	TPH (C6-C35)	13 U	29	13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	98%		70-130%
98-08-8	aaa-Trifluorotoluene	102%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-30 @ 10-12'		
Lab Sample ID:	TC50731-30	Date Sampled:	06/24/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C	Percent Solids:	86.8
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X0100548.D	1	07/05/14	FI	n/a	n/a	VX2252
Run #2							

	Initial Weight	Final Volume
Run #1	5.25 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00074 U	0.0044	0.00074	mg/kg	
108-88-3	Toluene	0.0011 U	0.0044	0.0011	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0044	0.0011	mg/kg	
1330-20-7	Xylene (total)	0.0031 U	0.013	0.0031	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00056 U	0.0044	0.00056	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	85%		59-126%
2037-26-5	Toluene-D8	92%		70-139%
460-00-4	4-Bromofluorobenzene	93%		63-138%
17060-07-0	1,2-Dichloroethane-D4	87%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-30 @ 10-12'		
Lab Sample ID:	TC50731-30	Date Sampled:	06/24/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	TNRCC 1005 TX1005	Percent Solids:	86.8
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LF101454.D	1	07/02/14	ZL	07/02/14	OP33086	GLF1504
Run #2							

	Initial Weight	Final Volume
Run #1	10.2 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	13 U	28	13	mg/kg	
	TPH (>C12-C28)	15 U	28	15	mg/kg	
	TPH (>C28-C35)	15 U	28	15	mg/kg	
	TPH (C6-C35)	13 U	28	13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	107%		70-130%
98-08-8	aaa-Trifluorotoluene	104%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-31 @ 6-8'		
Lab Sample ID:	TC50731-31	Date Sampled:	06/24/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C	Percent Solids:	88.5
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X0100549.D	1	07/05/14	FI	n/a	n/a	VX2252
Run #2							

	Initial Weight	Final Volume
Run #1	5.03 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00076 U	0.0045	0.00076	mg/kg	
108-88-3	Toluene	0.0011 U	0.0045	0.0011	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0045	0.0011	mg/kg	
1330-20-7	Xylene (total)	0.0031 U	0.013	0.0031	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00057 U	0.0045	0.00057	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	88%		59-126%
2037-26-5	Toluene-D8	95%		70-139%
460-00-4	4-Bromofluorobenzene	94%		63-138%
17060-07-0	1,2-Dichloroethane-D4	89%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-31 @ 6-8'		
Lab Sample ID:	TC50731-31	Date Sampled:	06/24/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	TNRCC 1005 TX1005	Percent Solids:	88.5
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LB101455.D	1	07/02/14	ZL	07/02/14	OP33086	GLB1504
Run #2							

	Initial Weight	Final Volume
Run #1	10.0 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	13 U	28	13	mg/kg	
	TPH (> C12-C28)	15 U	28	15	mg/kg	
	TPH (> C28-C35)	15 U	28	15	mg/kg	
	TPH (C6-C35)	13 U	28	13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	91%		70-130%
98-08-8	aaa-Trifluorotoluene	94%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-32 @ 22-24'		
Lab Sample ID:	TC50731-32	Date Sampled:	06/23/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C	Percent Solids:	87.5
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X0100588.D	1	07/07/14	FI	n/a	n/a	VX2254
Run #2							

	Initial Weight	Final Volume
Run #1	5.01 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00077 U	0.0046	0.00077	mg/kg	
108-88-3	Toluene	0.0012 U	0.0046	0.0012	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0046	0.0011	mg/kg	
1330-20-7	Xylene (total)	0.0032 U	0.014	0.0032	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00058 U	0.0046	0.00058	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	86%		59-126%
2037-26-5	Toluene-D8	89%		70-139%
460-00-4	4-Bromofluorobenzene	88%		63-138%
17060-07-0	1,2-Dichloroethane-D4	77%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-32 @ 22-24'		
Lab Sample ID:	TC50731-32	Date Sampled:	06/23/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	TNRCC 1005 TX1005	Percent Solids:	87.5
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LF101456.D	1	07/02/14	ZL	07/02/14	OP33086	GLF1504
Run #2							

	Initial Weight	Final Volume
Run #1	10.2 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	13 U	28	13	mg/kg	
	TPH (> C12-C28)	15 U	28	15	mg/kg	
	TPH (> C28-C35)	15 U	28	15	mg/kg	
	TPH (C6-C35)	13 U	28	13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	106%		70-130%
98-08-8	aaa-Trifluorotoluene	101%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-25/TWP-25		
Lab Sample ID:	TC50731-33	Date Sampled:	06/26/14
Matrix:	AQ - Ground Water	Date Received:	06/30/14
Method:	SW846 8260C	Percent Solids:	n/a
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z042616.D	20	07/08/14	EM	n/a	n/a	VZ4345
Run #2	Z042617.D	100	07/08/14	EM	n/a	n/a	VZ4345

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	2.27	0.020	0.0068	mg/l	
108-88-3	Toluene	4.50 [a]	0.10	0.033	mg/l	
100-41-4	Ethylbenzene	0.786	0.020	0.0065	mg/l	
1330-20-7	Xylene (total)	4.39	0.060	0.017	mg/l	
1634-04-4	Methyl Tert Butyl Ether	0.0352	0.020	0.0060	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	89%	90%	72-122%
17060-07-0	1,2-Dichloroethane-D4	90%	91%	68-124%
2037-26-5	Toluene-D8	93%	94%	80-119%
460-00-4	4-Bromofluorobenzene	81%	81%	72-126%

(a) Result is from Run# 2

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB-25/TWP-25		
Lab Sample ID:	TC50731-33	Date Sampled:	06/26/14
Matrix:	AQ - Ground Water	Date Received:	06/30/14
Method:	TNRCC 1005 TX1005	Percent Solids:	n/a
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LB101567.D	1	07/07/14	ZL	07/03/14	OP33103	GLB1506
Run #2							

	Initial Volume	Final Volume
Run #1	28.5 ml	3.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	48.2	2.6	0.62	mg/l	
	TPH (>C12-C28)	20.0	2.6	0.90	mg/l	
	TPH (>C28-C35)	15.0	2.6	0.90	mg/l	
	TPH (C6-C35)	83.2	2.6	0.62	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	94%		70-130%
98-08-8	aaa-Trifluorotoluene	111%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Gulf Coast ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- LRC Form

CHAIN OF CUSTODY

PAGE 1 OF 3

ACCUTEST LABORATORIES

10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL: 713-271-4700 FAX: 713-271-4770
www.accutest.com

FED-EX Tracking #: | Bottle Order Control #:
Accutest Quote #: | Accutest Job #: TC50731

Client / Reporting Information

Company Name: Berg Oliver Associates
Street Address: 14701 Saint Mary's Lane, Suite 400
City: Houston | State: TX | Zip: 77079
Project Contact: Tom Murphy | E-mail: on file
Phone #: 281.589.0898 | Fax #: 281.589.0007
Sampler(s) Name(s): Tom Murphy | Phone #:

Project Information

Project Name: Wirt Road Drainage + Paving Impr.
Street: Wirt Road
City: Houston | State: TX
Project #: 91551H-P2
Client Purchase Order #: —
Project Manager: Tom Murphy

Billing Information (if different from Report to)

Company Name:
Street Address: Same
City: | State: | Zip:
Attention:

Requested Analyses

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank

Accutest Sample #	Field ID / Point of Collection	Date	Time	Sampled By	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	ZnAcNaOH	HNO3	H2SO4	NONE	DI Water	MEOH	TSP	NaHSO4	ENCORE	OTHER	MTBE/BTEX (8260)	TPH (TX1005)	VOCs (8260)	LAB USE ONLY
1	SB-1 @ 2-4'	06/23/14	949	TM	SO	1													X	X		
2	SB-2 @ 4-6'		1010																X	X		
3	SB-3 @ 4-6'		1027																X	X		
4	SB-4 @ 2-4'		1056																X	X		
5	SB-5 @ 4-6'		1115																X	X		
6	SB-6 @ 2-4'		1129																	X	X	
7	SB-7 @ 0-2'		1144																	X	X	
8	SB-8 @ 8-10'	06/27/14	1523																	X	X	
9	SB-9 @ 4-6'		1559																	X	X	
10	SB-10 @ 14-16'		1423																	X	X	
11	SB-11 @ 22-24'		1347																X	X		
12	SB-12 @ 18-20'		1250																X	X		

Turnaround Time (Business days)

- [X] Standard
- [ ] 5 Day *RUSH*
- [ ] 4 Day *RUSH*
- [ ] 3 Day *RUSH*
- [ ] 2 Day *RUSH*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Labtink

Approved By (Accutest PM): / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULT1 (Level 3+4)
- [ ] REDT1 (Level 3+4)
- [ ] Commercial "C"
- [X] TRRP
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC & Surrogate Summary

Comments / Special Instructions

Run TLEQ TRRP Tier 1 only
Ave Res PCLs only

Sample Custody must be documented below each time samples change possession, including courier delivery. 1510

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
	06/30/14	1	2	06/30/14	2
Relinquished by Sampler:	Date Time: 1344	Received By:	Relinquished By:	Date Time:	Received By:
3		3	4		4
Relinquished by:	Date Time:	Received By:	Custody Seal #	Intact / Not Intact	Preserved where applicable	On Ice	Cooler Temp.
5		5					

5.1.5

TC50731: Chain of Custody
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CHAIN OF CUSTODY

ACCUTEST LABORATORIES
10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL: 713-271-4700 FAX: 713-271-4770
www.accutest.com

FED-EX Tracking #: | Bottle Order Control #:
Accutest Quote #: | Accutest Job #: TC50731

Client / Reporting Information

Company Name: Berg Oliver Associates
Street Address: 14701 Saint Mary's Lane, Suite 400
City: Houston | State: TX | Zip: 77079
Project Contact: Tom Murphy | E-mail: Oil File
Phone #: 281.589.0848 | Fax #: 281.589.0007
Sampler(s) Name(s): Tom Murphy | Phone #:

Project Information

Project Name: Wirt Road Drainage + Paving Imp.
Street: Wirt Road
City: Houston | State: TX
Project #: 9155H-P2
Client Purchase Order #: —
Project Manager: Tom Murphy

Billing Information (if different from Report to)
Company Name: Same
Street Address:
City: | State: | Zip:
Attention:

Requested Analyses

MTBE/BTEX (8260)
TPH (TX 1005)
VOCs (8260)

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
L/Q - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank

Accutest Sample #	Field ID / Point of Collection	Collection Date	Collection Time	Sampled By	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	ZnAcNaOH	HNO3	H2SO4	NONE	DI Water	MEOH	TSP	NaHSO4	ENCORE	OTHER	MTBE/BTEX (8260)	TPH (TX 1005)	VOCs (8260)	LAB USE ONLY
13	SB-14 @ 18-20'	06/27/14	1049	TM	SO	1													X	X		
14	SB-13 @ 16-18'		1202																X	X		
15	SB-15 @ 6-8		945																X	X		
16	SB-16 @ 14-16'		928																X	X		
17	SB-17 @ 4-6'		836																X	X		
18	SB-18 @ 12-14'	06/26/14	1723																X	X		
19	SB-19 @ 4-6'	06/26/14	1626																X	X		
20	SB-20 @ 18-20'	06/23/14	920																X	X		
21	SB-21 @ 10-12'	06/26/14	1509																X	X		
22	SB-22 @ 18-20		1420																X	X		
23	SB-23 @ 6-8'		1329																			
24	SB-24 @ 10-12'		1120																			

Turnaround Time (Business days)

- [X] Standard
- [ ] 5 Day *RUSH*
- [ ] 4 Day *RUSH*
- [ ] 3 Day *RUSH*
- [ ] 2 Day *RUSH*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Labtink

Approved By (Accutest PM): / Date: 12-49

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULT1 (Level 3+4)
- [ ] REDT1 (Level 3+4)
- [ ] Commercial "C"
- [X] TRRP
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC & Surrogate Summary

Comments / Special Instructions

Run TLEQ TRRP Tier 1 DISS Acre Res PCLs only

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished by:	Date Time:	Received By:
1		06/30/14		2	1514	
3	Relinquished by Sampler:	Date Time: 1344	Received By:	Relinquished By: 4	Date Time:	Received By: 4
5	Relinquished by:	Date Time:	Received By: 5	Custody Seal #	Intact / Not Intact	Preserved where applicable: On Ice: Cooler Temp.

TC50731: Chain of Custody
Page 2 of 6

CHAIN OF CUSTODY

ACCUTEST Laboratories
10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL. 713-271-4700 FAX: 713-271-4770
www.accutest.com

FED-EX Tracking #: | Bottle Order Control #:
Accutest Quote #: | Accutest Job #: TC50731

Client / Reporting Information

Company Name: Berg-Oliver Associates
Street Address: 14701 St. Mary's Ln, Ste 400
City: Houston State: TX Zip: 77079
Project Contact: Tom Murphy E-mail: on file
Phone #: 281.589.0898 Fax #: 281.589.0007
Sampler(s) Name(s): Tom Murphy Phone #:

Project Information

Project Name: Wirt Road Drainage & Pump Imp.
Street: Wirt Road
City: Houston State: TX
Project #: 9155H-P2
Client Purchase Order #: —
Project Manager: Tom Murphy
Billing Information (if different from Report to)
Company Name:
Street Address: Same
City: State: Zip:
Attention:

Requested Analyses

BTEX/MTBE (8260) | TPH (TX1005)

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
SED - Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB - Field Blank
EB - Equipment Blank
RB - Rinse Blank
TB - Trip Blank

Accutest Sample #	Field ID / Point of Collection	Collection: Date	Time	Sampled By	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	ZnAcNaOH	HNO3	H2SO4	NONE	DI Water	MEOH	TSP	NaHSO4	ENCORE	OTHER	BTEX/MTBE (8260)	TPH (TX1005)	LAB USE ONLY
25	SB-25 @ 10-12'	06/26/14	942	TM	SO	1													X	X	
26	SB-26 @ 22-24'	06/26/14	844																X	X	
27	SB-27 @ 6-8'	06/24/14	1326																X	X	
28	SB-28 @ 4-6'		1232																X	X	
29	SB-29 @ 2-4'		1102																X	X	
30	SB-30 @ 10-12'		1030																X	X	
31	SB-31 @ 6-8'		913																X	X	
32	SB-32 @ 22-24'	06/23/14	1517																X	X	
33	SB-25/TWP-25	06/26/14	1141		GW	4	X												X	X	

Turnaround Time (Business days)

- [ ] Standard
- [ ] 5 Day RUSH
- [ ] 4 Day RUSH
- [ ] 3 Day RUSH
- [ ] 2 Day RUSH
- [ ] 1 Day EMERGENCY

Approved By (Accutest PM): / Date:

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULT1 (Level 3+4)
- [ ] REDT1 (Level 3+4)
- [ ] Commercial "C"
- [ ] TRRP
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC & Summaries Summary

Comments / Special Instructions

— Same as previous pages

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	6/30/14	1	2	6/30/14 1510	2
Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
3		3	4		4
Relinquished by:	Date Time:	Received By:	Custody Seal #	Intact / Not Intact	Preserved where applicable	On Ice	Cooler Temp.
5		6					

TC50731: Chain of Custody
Page 3 of 6

ACCUTEST LABORATORIES

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: TC50731 **Client:** BERG OLIVER **Project:** WIRT ROAD DRAINAGE

Date / Time Received: 6/30/2014 **Delivery Method:** **Airbill #'s:**

No. Coolers: 1 **Therm ID:** IR-5; **Temp Adjustment Factor:** 0;

Cooler Temps (Initial/Adjusted): #1: (2.6/2.6);

Cooler Security	Y or N		Y or N
1. Custody Seals Present:	☑ ☐	3. COC Present:	☑ ☐
2. Custody Seals Intact:	☑ ☐	4. Smpl Dates/Time OK	☑ ☐

Cooler Temperature	Y or N
1. Temp criteria achieved:	☑ ☐
2. Cooler temp verification:	
3. Cooler media:	Ice (Bag)

Quality Control Preservation	Y or N	N/A	WTB	STB
1. Trip Blank present / cooler:	☐ ☑	☐	☐	☐
2. Trip Blank listed on COC:	☐ ☑	☐		
3. Samples preserved properly:	☑ ☐			
4. VOCs headspace free:	☑ ☐	☐		

Sample Integrity - Documentation	Y or N
1. Sample labels present on bottles:	☑ ☐
2. Container labeling complete:	☑ ☐
3. Sample container label / COC agree:	☑ ☐

Sample Integrity - Condition	Y or N
1. Sample recvd within HT:	☑ ☐
2. All containers accounted for:	☑ ☐
3. Condition of sample:	Intact

Sample Integrity - Instructions	Y or N	N/A
1. Analysis requested is clear:	☑ ☐	
2. Bottles received for unspecified tests	☐ ☑	
3. Sufficient volume recvd for analysis:	☑ ☐	
4. Compositing instructions clear:	☐ ☐	☑
5. Filtering instructions clear:	☐ ☐	☑

Comments -Sample #23 "SB-23 @6-8'" and sample #24 "SB-23@10-12" are not mark on chain for analysis.

* Per Client run samples for BTEXM and TPHTX1005, sag

5

Sample Receipt Log

Job #: TC50731 **Date / Time Received:** 6/30/2014 3:10:00 PM **Initials:** RE

Client: BERG OLIVER

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC50731-1	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2.6	0	2.6
1	TC50731-2	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2.6	0	2.6
1	TC50731-3	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2.6	0	2.6
1	TC50731-4	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2.6	0	2.6
1	TC50731-5	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2.6	0	2.6
1	TC50731-6	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2.6	0	2.6
1	TC50731-7	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2.6	0	2.6
1	TC50731-8	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2.6	0	2.6
1	TC50731-9	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2.6	0	2.6
1	TC50731-10	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2.6	0	2.6
1	TC50731-11	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2.6	0	2.6
1	TC50731-12	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2.6	0	2.6
1	TC50731-13	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2.6	0	2.6
1	TC50731-14	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2.6	0	2.6
1	TC50731-15	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2.6	0	2.6
1	TC50731-16	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2.6	0	2.6
1	TC50731-17	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2.6	0	2.6
1	TC50731-18	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2.6	0	2.6
1	TC50731-19	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2.6	0	2.6
1	TC50731-20	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2.6	0	2.6
1	TC50731-21	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2.6	0	2.6
1	TC50731-22	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2.6	0	2.6
1	TC50731-23	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2.6	0	2.6

ACCUTEST LABORATORIES

Sample Receipt Log

Job #: TC50731 **Date / Time Received:** 6/30/2014 3:10:00 PM **Initials:** RE

Client: BERG OLIVER

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC50731-24	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2.6	0	2.6
1	TC50731-25	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2.6	0	2.6
1	TC50731-26	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2.6	0	2.6
1	TC50731-27	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2.6	0	2.6
1	TC50731-28	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2.6	0	2.6
1	TC50731-29	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2.6	0	2.6
1	TC50731-30	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2.6	0	2.6
1	TC50731-31	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2.6	0	2.6
1	TC50731-32	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2.6	0	2.6
1	TC50731-33	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	2.6	0	2.6
1	TC50731-33	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	2.6	0	2.6
1	TC50731-33	40ml	3	4Q	HCL	pH < 2	IR-5	2.6	0	2.6
1	TC50731-33	40ml	4	4Q	HCL	pH < 2	IR-5	2.6	0	2.6

Appendix A Laboratory Data Package Cover Page

TC50731 This data package consists of

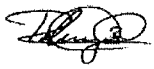
- [ ] This signature page, the laboratory review checklist, and the following reportable data:
- [ ] R1 Field chain-of-custody documentation;
- [ ] R2 Sample identification cross-reference;
- [ ] R3 Test reports (analytical data sheets) for each environmental sample that includes:
  - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
  - b) dilution factors,
  - c) preparation methods,
  - d) cleanup methods, and
  - e) if required for the project, tentatively identified compounds (TICs).
- [ ] R4 Surrogate recovery data including:
  - a) Calculated recovery (%R), and
  - b) The laboratory's surrogate QC limits.
- [ ] R5 Test reports/summary forms for blank samples;
- [ ] R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  - a) LCS spiking amounts,
  - b) Calculated %R for each analyte, and
  - c) The laboratory's LCS QC limits.
- [ ] R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  - a) Samples associated with the MS/MSD clearly identified,
  - b) MS/MSD spiking amounts,
  - c) Concentration of each MS/MSD analyte measured in the parent and
  - d) Calculated %Rs and relative percent differences (RPDs), and
  - e) The laboratory's MS/MSD QC limits
- [ ] R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  - a) The amount of analyte measured in the duplicate,
  - b) The calculated RPD, and
  - c) The laboratory's QC limits for analytical duplicates.
- [ ] R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- [ ] R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC&25.6 and was last inspection by

[ ] [X] TCEQ or [ ] _____ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

QA Manager Name (Printed)	Signature	Official Title (printed)	Date
Richard Rodriguez		Laboratory Director	7/9/2014

5.2

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LABORATORY REVIEW CHECKLIST: REPORTABLE DATA

Laboratory Name:	Accutest Gulf Coast	LRC Date:	7/9/2014
Project Name:	Wirt Road Drainage & Paving Project- Houston, TX	Laboratory Project Number:	TC50731
Reviewer Name:	Anita Patel	Prep Batch Number(s):	GN59479, GN59481, GN59483, GN59532, OP33076, OP33086, OP33093, OP33103, VM2096, VR772, VR773, VR774, VR775, VX2252, VX2253, VX2254, VZ4345

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

		Was applicable and available technology used to lower the SDL to minimize the	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?	X				3

Laboratory Name:		Accutest Gulf Coast	LRC Date:	7/9/2014				
Project Name:		Wirt Road Drainage & Paving Pr	Laboratory Project Number:	TC50731				
Reviewer Name:		Anita Patel	Prep Batch Number(s):	GN59479, GN59481, GN59483, GN59532, OP33076, OP33086, OP33093, OP33103, VM2096, VR772, VR773, VR774, VR775, VX2252, VX2253, VX2254, VZ4345				
#[1]	A[2]	DESCRIPTION		YES	NO	NA[3]	NR[4]	ER #[5]
S1	OI	**Initial calibration (ICAL)**						
		Were response factors and/or relative response factors for each analyte within QC limits?		X				
		Were percent RSDs or correlation coefficient criteria met?		X				
		Was the number of standards recommended in the method used for all analytes?		X				
		Were all points generated between the lowest and highest standard used to calculate the curve?		X				
		Are ICAL data available for all instruments used?		X				
		Has the initial calibration curve been verified using an appropriate second source standard?		X				
S2	OI	**Initial and continuing calibration verification (ICCV AND CCV) and continuing**						
		Was the CCV analyzed at the method-required frequency?		X				
		Were percent differences for each analyte within the method-required QC limits?		X				
		Was the ICAL curve verified for each analyte?		X				
		Was the absolute value of the analyte concentration in the inorganic CCB<MDL?				X		
S3	O	**Mass spectral tuning**						
		Was the appropriate compound for the method used for tuning?		X				
		Were ion abundance data within the method-required QC limits?		X				
S4	O	**Internal standards (IS)**						
		Were IS area counts and retention times within the method-required QC limits?		X				
S5	OI	**Raw data (NELAC Section 5.5.10)**						
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?		X				
		Were data associated with manual integrations flagged on the raw data?		X				
S6	O	**Dual column confirmation**						
		Did dual column confirmation results meet the method-required QC?				X		
S7	O	**Tentatively identified compounds (TICs):**						
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?				X		
S8	I	**Interference Check Sample (ICS) results**						
		Were percent recoveries within method QC limits?				X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**						
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?				X		
S10	OI	**Method detection limit (MDL) studies**						
		Was a MDL study performed for each reported analyte?		X				
		Is the MDL either adjusted or supported by the analysis of DCSs?		X				
S11	OI	**Proficiency test reports**						
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?		X				
S12	OI	**Standards documentation**						
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?		X				
S13	OI	**Compound/analyte identification procedures**						
		Are the procedures for compound/analyte identification documented?		X				
S14	OI	**Demonstration of analyst competency (DOC)**						
		Was DOC conducted consistent with NELAC Chapter 5?		X				
		Is documentation of the analyst's competency up-to-date and on file?		X				
S15	OI	**Verification/validation documentation for methods (NELAC Chapter 5)**						
		Are all the methods used to generate the data documentated, verified, and validated, where applicable?		X				
S16	OI	**Laboratory standard operating procedures (SOPs)**						
		Are laboratory SOPs current and on file for each method performed?		X				

LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:	Accutest Gulf Coast	LRC Date:	7/9/2014
Project Name:	Wirt Road Drainage & Paving Pr	Laboratory Project Number:	TC50731
Reviewer Name:	Anita Patel	Prep Batch Number(s):	GN59479, GN59481, GN59483, GN59532, OP33076, OP33086, OP33093, OP33103, VM2096, VR772, VR773, VR774, VR775, VX2252, VX2253, VX2254, VZ4345

ER#[1]	Description
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.
4	All anomalies are discussed in the case narrative.

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on

Gulf Coast
ACCUTEST
LABORATORIES

GC/MS Volatiles

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QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VM2096-MB	M0053817.D	1	07/03/14	FI	n/a	n/a	VM2096

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-6, TC50731-7, TC50731-8, TC50731-9, TC50731-10, TC50731-13

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	36	9.1	ug/kg	
71-43-2	Benzene	ND	3.6	0.62	ug/kg	
108-86-1	Bromobenzene	ND	3.6	0.37	ug/kg	
74-97-5	Bromochloromethane	ND	3.6	0.99	ug/kg	
75-27-4	Bromodichloromethane	ND	3.6	0.41	ug/kg	
75-25-2	Bromoform	ND	3.6	0.69	ug/kg	
104-51-8	n-Butylbenzene	ND	3.6	0.40	ug/kg	
135-98-8	sec-Butylbenzene	ND	3.6	0.80	ug/kg	
98-06-6	tert-Butylbenzene	ND	3.6	0.71	ug/kg	
108-90-7	Chlorobenzene	ND	3.6	0.85	ug/kg	
75-00-3	Chloroethane	ND	3.6	1.4	ug/kg	
67-66-3	Chloroform	ND	3.6	0.39	ug/kg	
95-49-8	o-Chlorotoluene	ND	3.6	0.43	ug/kg	
106-43-4	p-Chlorotoluene	ND	3.6	0.38	ug/kg	
75-15-0	Carbon disulfide	ND	3.6	0.53	ug/kg	
56-23-5	Carbon tetrachloride	ND	3.6	0.79	ug/kg	
75-34-3	1,1-Dichloroethane	ND	3.6	0.37	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	3.6	0.38	ug/kg	
563-58-6	1,1-Dichloropropene	ND	3.6	0.41	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.6	2.9	ug/kg	
106-93-4	1,2-Dibromoethane	ND	3.6	0.39	ug/kg	
107-06-2	1,2-Dichloroethane	ND	3.6	0.43	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.6	0.53	ug/kg	
142-28-9	1,3-Dichloropropane	ND	3.6	0.93	ug/kg	
594-20-7	2,2-Dichloropropane	ND	3.6	0.49	ug/kg	
124-48-1	Dibromochloromethane	ND	3.6	0.83	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	3.6	1.0	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	3.6	0.42	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.6	0.41	ug/kg	
541-73-1	m-Dichlorobenzene	ND	3.6	0.57	ug/kg	
95-50-1	o-Dichlorobenzene	ND	3.6	0.88	ug/kg	
106-46-7	p-Dichlorobenzene	ND	3.6	0.79	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	3.6	0.40	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.6	0.47	ug/kg	
100-41-4	Ethylbenzene	ND	3.6	0.88	ug/kg	
591-78-6	2-Hexanone	ND	36	6.8	ug/kg	

Method Blank Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VM2096-MB	M0053817.D	1	07/03/14	FI	n/a	n/a	VM2096

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-6, TC50731-7, TC50731-8, TC50731-9, TC50731-10, TC50731-13

CAS No.	Compound	Result	RL	MDL	Units	Q
87-68-3	Hexachlorobutadiene	ND	3.6	0.63	ug/kg	
98-82-8	Isopropylbenzene	ND	3.6	1.0	ug/kg	
99-87-6	p-Isopropyltoluene	ND	3.6	1.2	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	36	5.7	ug/kg	
74-83-9	Methyl bromide	ND	3.6	1.7	ug/kg	
74-87-3	Methyl chloride	ND	3.6	0.70	ug/kg	
74-95-3	Methylene bromide	ND	3.6	0.59	ug/kg	
75-09-2	Methylene chloride	ND	9.1	2.3	ug/kg	
78-93-3	Methyl ethyl ketone	ND	36	4.6	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	3.6	0.46	ug/kg	
91-20-3	Naphthalene	ND	3.6	1.8	ug/kg	
103-65-1	n-Propylbenzene	ND	3.6	0.95	ug/kg	
100-42-5	Styrene	ND	3.6	0.84	ug/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	3.6	0.46	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.6	0.57	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.6	0.62	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.6	0.61	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	3.6	0.48	ug/kg	
96-18-4	1,2,3-Trichloropropane	ND	3.6	0.83	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	3.6	0.45	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	3.6	0.37	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	3.6	0.85	ug/kg	
127-18-4	Tetrachloroethylene	ND	3.6	0.92	ug/kg	
108-88-3	Toluene	ND	3.6	0.93	ug/kg	
79-01-6	Trichloroethylene	ND	3.6	0.43	ug/kg	
75-69-4	Trichlorofluoromethane	ND	3.6	0.57	ug/kg	
75-01-4	Vinyl chloride	ND	3.6	0.53	ug/kg	
1330-20-7	Xylene (total)	ND	11	2.6	ug/kg	
	m,p-Xylene	ND	7.3	1.6	ug/kg	
95-47-6	o-Xylene	ND	3.6	0.92	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	113%	59-126%
2037-26-5	Toluene-D8	104%	70-139%

Method Blank Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VM2096-MB	M0053817.D	1	07/03/14	FI	n/a	n/a	VM2096

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-6, TC50731-7, TC50731-8, TC50731-9, TC50731-10, TC50731-13

CAS No.	Surrogate Recoveries		Limits
460-00-4	4-Bromofluorobenzene	88%	63-138%
17060-07-0	1,2-Dichloroethane-D4	90%	54-123%

Method Blank Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VR772-MB	R023472.D	1	07/03/14	FI	n/a	n/a	VR772

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-1, TC50731-2, TC50731-3, TC50731-4, TC50731-5

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	3.9	0.66	ug/kg	
100-41-4	Ethylbenzene	ND	3.9	0.95	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	3.9	0.50	ug/kg	
108-88-3	Toluene	ND	3.9	1.0	ug/kg	
1330-20-7	Xylene (total)	ND	12	2.7	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	85%	59-126%
2037-26-5	Toluene-D8	99%	70-139%
460-00-4	4-Bromofluorobenzene	86%	63-138%
17060-07-0	1,2-Dichloroethane-D4	74%	54-123%

Method Blank Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VR773-MB	R023496.D	1	07/03/14	FI	n/a	n/a	VR773

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-11, TC50731-12, TC50731-15, TC50731-16, TC50731-17, TC50731-18, TC50731-20

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	3.8	0.64	ug/kg	
100-41-4	Ethylbenzene	ND	3.8	0.92	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	3.8	0.48	ug/kg	
108-88-3	Toluene	ND	3.8	0.97	ug/kg	
1330-20-7	Xylene (total)	ND	11	2.7	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	81%	59-126%
2037-26-5	Toluene-D8	98%	70-139%
460-00-4	4-Bromofluorobenzene	84%	63-138%
17060-07-0	1,2-Dichloroethane-D4	69%	54-123%

Method Blank Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VR774-MB	R023520.D	1	07/05/14	FI	n/a	n/a	VR774

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-23, TC50731-26, TC50731-27, TC50731-28, TC50731-29

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	3.7	0.62	ug/kg	
100-41-4	Ethylbenzene	ND	3.7	0.89	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	3.7	0.47	ug/kg	
108-88-3	Toluene	ND	3.7	0.94	ug/kg	
1330-20-7	Xylene (total)	ND	11	2.6	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	86%	59-126%
2037-26-5	Toluene-D8	102%	70-139%
460-00-4	4-Bromofluorobenzene	86%	63-138%
17060-07-0	1,2-Dichloroethane-D4	71%	54-123%

Method Blank Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX2252-MB	X0100542.D	1	07/05/14	FI	n/a	n/a	VX2252

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-14, TC50731-19, TC50731-30, TC50731-31

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.34	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.29	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.42	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.34	ug/l	
75-25-2	Bromoform	ND	1.0	0.44	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.39	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.45	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.45	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.27	ug/l	
75-00-3	Chloroethane	ND	1.0	0.72	ug/l	
67-66-3	Chloroform	ND	1.0	0.35	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.36	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.31	ug/l	
75-15-0	Carbon disulfide	ND	1.0	0.36	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.43	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.34	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.45	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.62	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	1.6	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.35	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.33	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.32	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.51	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.37	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.5	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.40	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.29	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.33	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.28	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.32	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.32	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l	
591-78-6	2-Hexanone	ND	10	2.6	ug/l	

Method Blank Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX2252-MB	X0100542.D	1	07/05/14	FI	n/a	n/a	VX2252

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-14, TC50731-19, TC50731-30, TC50731-31

CAS No.	Compound	Result	RL	MDL	Units	Q
87-68-3	Hexachlorobutadiene	ND	1.0	0.49	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.40	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.36	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.2	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.51	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.63	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.45	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.6	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.7	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	1.6	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.35	ug/l	
100-42-5	Styrene	ND	1.0	0.29	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.37	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.43	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.40	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.35	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.42	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.46	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.41	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.32	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.35	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.46	ug/l	
108-88-3	Toluene	ND	1.0	0.33	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.49	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.75	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l	
	m,p-Xylene	ND	2.0	0.59	ug/l	
95-47-6	o-Xylene	ND	1.0	0.28	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	84%	72-122%
17060-07-0	1,2-Dichloroethane-D4	84%	68-124%

Method Blank Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX2252-MB	X0100542.D	1	07/05/14	FI	n/a	n/a	VX2252

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-14, TC50731-19, TC50731-30, TC50731-31

CAS No.	Surrogate Recoveries		Limits
2037-26-5	Toluene-D8	92%	80-119%
460-00-4	4-Bromofluorobenzene	92%	72-126%

Method Blank Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX2253-MB	X0100560.D	1	07/05/14	FI	n/a	n/a	VX2253

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-22, TC50731-24, TC50731-25

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	3.9	0.66	ug/kg	
100-41-4	Ethylbenzene	ND	3.9	0.95	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	3.9	0.50	ug/kg	
108-88-3	Toluene	ND	3.9	1.0	ug/kg	
1330-20-7	Xylene (total)	ND	12	2.7	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	92%	59-126%
2037-26-5	Toluene-D8	96%	70-139%
460-00-4	4-Bromofluorobenzene	93%	63-138%
17060-07-0	1,2-Dichloroethane-D4	93%	54-123%

Method Blank Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX2254-MB	X0100587.D	1	07/07/14	FI	n/a	n/a	VX2254

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-32

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	3.8	0.64	ug/kg	
100-41-4	Ethylbenzene	ND	3.8	0.92	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	3.8	0.48	ug/kg	
108-88-3	Toluene	ND	3.8	0.97	ug/kg	
1330-20-7	Xylene (total)	ND	11	2.7	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	118%	59-126%
2037-26-5	Toluene-D8	108%	70-139%
460-00-4	4-Bromofluorobenzene	106%	63-138%
17060-07-0	1,2-Dichloroethane-D4	106%	54-123%

Method Blank Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VR775-MB	R023545.D	1	07/07/14	FI	n/a	n/a	VR775

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-21, TC50731-24

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	3.6	0.62	ug/kg	
100-41-4	Ethylbenzene	ND	3.6	0.88	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	3.6	0.46	ug/kg	
108-88-3	Toluene	ND	3.6	0.93	ug/kg	
1330-20-7	Xylene (total)	ND	11	2.6	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	87%	59-126%
2037-26-5	Toluene-D8	97%	70-139%
460-00-4	4-Bromofluorobenzene	83%	63-138%
17060-07-0	1,2-Dichloroethane-D4	68%	54-123%

Method Blank Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ4345-MB	Z042612.D	1	07/08/14	EM	n/a	n/a	VZ4345

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-33

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.34	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.33	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	90%	72-122%
17060-07-0	1,2-Dichloroethane-D4	90%	68-124%
2037-26-5	Toluene-D8	93%	80-119%
460-00-4	4-Bromofluorobenzene	80%	72-126%

Blank Spike Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VM2096-BS	M0053815.D	1	07/03/14	FI	n/a	n/a	VM2096

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-6, TC50731-7, TC50731-8, TC50731-9, TC50731-10, TC50731-13

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
67-64-1	Acetone	243	274	113	43-141
71-43-2	Benzene	48.6	49.9	103	58-124
108-86-1	Bromobenzene	48.6	49.8	102	72-110
74-97-5	Bromochloromethane	48.6	54.2	111	71-122
75-27-4	Bromodichloromethane	48.6	47.4	97	72-119
75-25-2	Bromoform	48.6	52.9	109	61-120
104-51-8	n-Butylbenzene	48.6	50.4	104	58-118
135-98-8	sec-Butylbenzene	48.6	56.5	116	63-119
98-06-6	tert-Butylbenzene	48.6	51.1	105	67-121
108-90-7	Chlorobenzene	48.6	54.0	111	74-116
75-00-3	Chloroethane	48.6	65.1	134* [a]	48-133
67-66-3	Chloroform	48.6	50.9	105	72-119
95-49-8	o-Chlorotoluene	48.6	50.1	103	65-121
106-43-4	p-Chlorotoluene	48.6	50.0	103	67-118
75-15-0	Carbon disulfide	48.6	56.4	116	45-133
56-23-5	Carbon tetrachloride	48.6	57.8	119	58-128
75-34-3	1,1-Dichloroethane	48.6	50.8	104	69-122
75-35-4	1,1-Dichloroethylene	48.6	63.6	131	60-131
563-58-6	1,1-Dichloropropene	48.6	62.1	128* [a]	66-123
96-12-8	1,2-Dibromo-3-chloropropane	48.6	44.2	91	55-125
106-93-4	1,2-Dibromoethane	48.6	51.2	105	73-120
107-06-2	1,2-Dichloroethane	48.6	44.2	91	69-121
78-87-5	1,2-Dichloropropane	48.6	46.3	95	71-121
142-28-9	1,3-Dichloropropane	48.6	47.5	98	72-117
594-20-7	2,2-Dichloropropane	48.6	58.1	119	57-129
124-48-1	Dibromochloromethane	48.6	49.1	101	71-121
75-71-8	Dichlorodifluoromethane	48.6	45.1	93	22-158
156-59-2	cis-1,2-Dichloroethylene	48.6	53.6	110	70-119
10061-01-5	cis-1,3-Dichloropropene	48.6	48.0	99	75-117
541-73-1	m-Dichlorobenzene	48.6	56.1	115	70-119
95-50-1	o-Dichlorobenzene	48.6	52.7	108	73-116
106-46-7	p-Dichlorobenzene	48.6	50.0	103	70-119
156-60-5	trans-1,2-Dichloroethylene	48.6	52.4	108	62-119
10061-02-6	trans-1,3-Dichloropropene	48.6	49.5	102	78-125
100-41-4	Ethylbenzene	48.6	51.3	105	57-124
591-78-6	2-Hexanone	243	216	89	58-124

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VM2096-BS	M0053815.D	1	07/03/14	FI	n/a	n/a	VM2096

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-6, TC50731-7, TC50731-8, TC50731-9, TC50731-10, TC50731-13

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
87-68-3	Hexachlorobutadiene	48.6	59.1	122	57-127
98-82-8	Isopropylbenzene	48.6	54.8	113	77-135
99-87-6	p-Isopropyltoluene	48.6	56.7	117	66-120
108-10-1	4-Methyl-2-pentanone	243	226	93	60-127
74-83-9	Methyl bromide	48.6	56.4	116	47-137
74-87-3	Methyl chloride	48.6	48.2	99	46-139
74-95-3	Methylene bromide	48.6	49.8	102	72-118
75-09-2	Methylene chloride	48.6	45.8	94	50-134
78-93-3	Methyl ethyl ketone	243	253	104	60-131
1634-04-4	Methyl Tert Butyl Ether	48.6	49.7	102	65-119
91-20-3	Naphthalene	48.6	48.6	100	56-122
103-65-1	n-Propylbenzene	48.6	54.5	112	65-119
100-42-5	Styrene	48.6	49.5	102	74-117
630-20-6	1,1,1,2-Tetrachloroethane	48.6	51.0	105	74-119
71-55-6	1,1,1-Trichloroethane	48.6	56.5	116	63-126
79-34-5	1,1,2,2-Tetrachloroethane	48.6	44.9	92	65-120
79-00-5	1,1,2-Trichloroethane	48.6	45.4	93	72-119
87-61-6	1,2,3-Trichlorobenzene	48.6	52.0	107	62-116
96-18-4	1,2,3-Trichloropropane	48.6	46.5	96	68-118
120-82-1	1,2,4-Trichlorobenzene	48.6	55.2	113	58-122
95-63-6	1,2,4-Trimethylbenzene	48.6	48.0	99	61-119
108-67-8	1,3,5-Trimethylbenzene	48.6	48.4	100	53-123
127-18-4	Tetrachloroethylene	48.6	66.4	137* [a]	64-130
108-88-3	Toluene	48.6	50.6	104	67-119
79-01-6	Trichloroethylene	48.6	55.1	113	70-122
75-69-4	Trichlorofluoromethane	48.6	60.2	124	41-137
75-01-4	Vinyl chloride	48.6	51.6	106	43-120
1330-20-7	Xylene (total)	146	158	108	62-120
	m,p-Xylene	97.3	105	108	62-120
95-47-6	o-Xylene	48.6	52.6	108	62-121

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	108%	59-126%
2037-26-5	Toluene-D8	107%	70-139%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VM2096-BS	M0053815.D	1	07/03/14	FI	n/a	n/a	VM2096

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-6, TC50731-7, TC50731-8, TC50731-9, TC50731-10, TC50731-13

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	4-Bromofluorobenzene	89%	63-138%
17060-07-0	1,2-Dichloroethane-D4	87%	54-123%

(a) Outside control limits biased high.

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VR772-BS	R023470.D	1	07/03/14	FI	n/a	n/a	VR772

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-1, TC50731-2, TC50731-3, TC50731-4, TC50731-5

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	49.3	46.6	95	58-124
100-41-4	Ethylbenzene	49.3	50.3	102	57-124
1634-04-4	Methyl Tert Butyl Ether	49.3	45.5	92	65-119
108-88-3	Toluene	49.3	49.8	101	67-119
1330-20-7	Xylene (total)	148	158	107	62-120

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	90%	59-126%
2037-26-5	Toluene-D8	99%	70-139%
460-00-4	4-Bromofluorobenzene	86%	63-138%
17060-07-0	1,2-Dichloroethane-D4	74%	54-123%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VR773-BS	R023494.D	1	07/03/14	FI	n/a	n/a	VR773

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-11, TC50731-12, TC50731-15, TC50731-16, TC50731-17, TC50731-18, TC50731-20

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	48.4	46.7	96	58-124
100-41-4	Ethylbenzene	48.4	48.6	100	57-124
1634-04-4	Methyl Tert Butyl Ether	48.4	42.4	88	65-119
108-88-3	Toluene	48.4	49.4	102	67-119
1330-20-7	Xylene (total)	145	153	105	62-120

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	87%	59-126%
2037-26-5	Toluene-D8	101%	70-139%
460-00-4	4-Bromofluorobenzene	88%	63-138%
17060-07-0	1,2-Dichloroethane-D4	69%	54-123%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VR774-BS	R023518.D	1	07/05/14	FI	n/a	n/a	VR774

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-23, TC50731-26, TC50731-27, TC50731-28, TC50731-29

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	45.5	47.3	104	58-124
100-41-4	Ethylbenzene	45.5	50.5	111	57-124
1634-04-4	Methyl Tert Butyl Ether	45.5	42.0	92	65-119
108-88-3	Toluene	45.5	50.8	112	67-119
1330-20-7	Xylene (total)	136	157	115	62-120

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	89%	59-126%
2037-26-5	Toluene-D8	102%	70-139%
460-00-4	4-Bromofluorobenzene	87%	63-138%
17060-07-0	1,2-Dichloroethane-D4	68%	54-123%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX2252-BS	X0100540.D	1	07/05/14	FI	n/a	n/a	VX2252

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-14, TC50731-19, TC50731-30, TC50731-31

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
67-64-1	Acetone	232	195	84	43-141
71-43-2	Benzene	46.5	42.4	91	58-124
108-86-1	Bromobenzene	46.5	44.0	95	72-110
74-97-5	Bromochloromethane	46.5	43.6	94	71-122
75-27-4	Bromodichloromethane	46.5	43.5	94	72-119
75-25-2	Bromoform	46.5	44.6	96	61-120
104-51-8	n-Butylbenzene	46.5	43.5	94	58-118
135-98-8	sec-Butylbenzene	46.5	48.5	104	63-119
98-06-6	tert-Butylbenzene	46.5	47.1	101	67-121
108-90-7	Chlorobenzene	46.5	46.3	100	74-116
75-00-3	Chloroethane	46.5	40.5	87	48-133
67-66-3	Chloroform	46.5	40.9	88	72-119
95-49-8	o-Chlorotoluene	46.5	47.1	101	65-121
106-43-4	p-Chlorotoluene	46.5	47.6	102	67-118
75-15-0	Carbon disulfide	46.5	41.8	90	45-133
56-23-5	Carbon tetrachloride	46.5	43.1	93	58-128
75-34-3	1,1-Dichloroethane	46.5	41.5	89	69-122
75-35-4	1,1-Dichloroethylene	46.5	43.8	94	60-131
563-58-6	1,1-Dichloropropene	46.5	44.6	96	66-123
96-12-8	1,2-Dibromo-3-chloropropane	46.5	45.5	98	55-125
106-93-4	1,2-Dibromoethane	46.5	45.2	97	73-120
107-06-2	1,2-Dichloroethane	46.5	44.0	95	69-121
78-87-5	1,2-Dichloropropane	46.5	43.7	94	71-121
142-28-9	1,3-Dichloropropane	46.5	45.1	97	72-117
594-20-7	2,2-Dichloropropane	46.5	44.7	96	57-129
124-48-1	Dibromochloromethane	46.5	44.2	95	71-121
75-71-8	Dichlorodifluoromethane	46.5	28.8	62	22-158
156-59-2	cis-1,2-Dichloroethylene	46.5	41.2	89	70-119
10061-01-5	cis-1,3-Dichloropropene	46.5	43.8	94	75-117
541-73-1	m-Dichlorobenzene	46.5	48.4	104	70-119
95-50-1	o-Dichlorobenzene	46.5	46.4	100	73-116
106-46-7	p-Dichlorobenzene	46.5	43.7	94	70-119
156-60-5	trans-1,2-Dichloroethylene	46.5	41.3	89	62-119
10061-02-6	trans-1,3-Dichloropropene	46.5	48.3	104	78-125
100-41-4	Ethylbenzene	46.5	43.5	94	57-124
591-78-6	2-Hexanone	232	206	89	58-124

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX2252-BS	X0100540.D	1	07/05/14	FI	n/a	n/a	VX2252

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-14, TC50731-19, TC50731-30, TC50731-31

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
87-68-3	Hexachlorobutadiene	46.5	45.8	99	57-127
98-82-8	Isopropylbenzene	46.5	48.5	104	77-135
99-87-6	p-Isopropyltoluene	46.5	48.0	103	66-120
108-10-1	4-Methyl-2-pentanone	232	203	87	60-127
74-83-9	Methyl bromide	46.5	31.9	69	47-137
74-87-3	Methyl chloride	46.5	33.7	73	46-139
74-95-3	Methylene bromide	46.5	43.4	93	72-118
75-09-2	Methylene chloride	46.5	40.9	88	50-134
78-93-3	Methyl ethyl ketone	232	207	89	60-131
1634-04-4	Methyl Tert Butyl Ether	46.5	46.0	99	65-119
91-20-3	Naphthalene	46.5	46.5	100	56-122
103-65-1	n-Propylbenzene	46.5	48.1	104	65-119
100-42-5	Styrene	46.5	44.0	95	74-117
630-20-6	1,1,1,2-Tetrachloroethane	46.5	44.0	95	74-119
71-55-6	1,1,1-Trichloroethane	46.5	41.3	89	63-126
79-34-5	1,1,2,2-Tetrachloroethane	46.5	45.2	97	65-120
79-00-5	1,1,2-Trichloroethane	46.5	44.5	96	72-119
87-61-6	1,2,3-Trichlorobenzene	46.5	45.9	99	62-116
96-18-4	1,2,3-Trichloropropane	46.5	44.8	96	68-118
120-82-1	1,2,4-Trichlorobenzene	46.5	45.4	98	58-122
95-63-6	1,2,4-Trimethylbenzene	46.5	43.2	93	61-119
108-67-8	1,3,5-Trimethylbenzene	46.5	43.1	93	53-123
127-18-4	Tetrachloroethylene	46.5	47.5	102	64-130
108-88-3	Toluene	46.5	43.2	93	67-119
79-01-6	Trichloroethylene	46.5	43.5	94	70-122
75-69-4	Trichlorofluoromethane	46.5	33.1	71	41-137
75-01-4	Vinyl chloride	46.5	36.0	77	43-120
1330-20-7	Xylene (total)	139	137	98	62-120
	m,p-Xylene	92.9	89.7	97	62-120
95-47-6	o-Xylene	46.5	46.9	101	62-121

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	86%	59-126%
2037-26-5	Toluene-D8	96%	70-139%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX2252-BS	X0100540.D	1	07/05/14	FI	n/a	n/a	VX2252

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-14, TC50731-19, TC50731-30, TC50731-31

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	4-Bromofluorobenzene	96%	63-138%
17060-07-0	1,2-Dichloroethane-D4	87%	54-123%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX2253-BS	X0100558.D	1	07/05/14	FI	n/a	n/a	VX2253

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-22, TC50731-24, TC50731-25

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	47.5	51.6	109	58-124
100-41-4	Ethylbenzene	47.5	48.0	101	57-124
1634-04-4	Methyl Tert Butyl Ether	47.5	60.7	128*	65-119
108-88-3	Toluene	47.5	48.7	102	67-119
1330-20-7	Xylene (total)	143	150	105	62-120

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	107%	59-126%
2037-26-5	Toluene-D8	99%	70-139%
460-00-4	4-Bromofluorobenzene	95%	63-138%
17060-07-0	1,2-Dichloroethane-D4	98%	54-123%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX2254-BS	X0100585.D	1	07/07/14	FI	n/a	n/a	VX2254

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-32

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	48.3	41.7	86	58-124
100-41-4	Ethylbenzene	48.3	40.8	85	57-124
1634-04-4	Methyl Tert Butyl Ether	48.3	49.0	102	65-119
108-88-3	Toluene	48.3	40.7	84	67-119
1330-20-7	Xylene (total)	145	127	88	62-120

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	93%	59-126%
2037-26-5	Toluene-D8	89%	70-139%
460-00-4	4-Bromofluorobenzene	89%	63-138%
17060-07-0	1,2-Dichloroethane-D4	85%	54-123%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VR775-BS	R023543.D	1	07/07/14	FI	n/a	n/a	VR775

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-21, TC50731-24

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	48.9	47.2	96	58-124
100-41-4	Ethylbenzene	48.9	49.2	101	57-124
1634-04-4	Methyl Tert Butyl Ether	48.9	46.9	96	65-119
108-88-3	Toluene	48.9	49.7	102	67-119
1330-20-7	Xylene (total)	147	153	104	62-120

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	95%	59-126%
2037-26-5	Toluene-D8	101%	70-139%
460-00-4	4-Bromofluorobenzene	87%	63-138%
17060-07-0	1,2-Dichloroethane-D4	68%	54-123%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ4345-BS	Z042610.D	1	07/08/14	EM	n/a	n/a	VZ4345

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-33

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	23.3	93	68-119
100-41-4	Ethylbenzene	25	24.1	96	71-117
1634-04-4	Methyl Tert Butyl Ether	25	22.4	90	65-119
108-88-3	Toluene	25	24.6	98	73-119
1330-20-7	Xylene (total)	75	75.8	101	74-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	88%	72-122%
17060-07-0	1,2-Dichloroethane-D4	88%	68-124%
2037-26-5	Toluene-D8	94%	80-119%
460-00-4	4-Bromofluorobenzene	79%	72-126%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC50844-1MS	M0053821.D	1	07/03/14	FI	n/a	n/a	VM2096
TC50844-1MSD	M0053822.D	1	07/03/14	FI	n/a	n/a	VM2096
TC50844-1	M0053818.D	1	07/03/14	FI	n/a	n/a	VM2096

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-6, TC50731-7, TC50731-8, TC50731-9, TC50731-10, TC50731-13

CAS No.	Compound	TC50844-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	52 U		320	929	291*	324	897	277*	4	43-141/33
71-43-2	Benzene	5.2 U		63.9	65.6	103	64.8	62.9	97	4	58-124/26
108-86-1	Bromobenzene	5.2 U		63.9	70.1	110	64.8	68.7	106	2	72-110/28
74-97-5	Bromochloromethane	5.2 U		63.9	71.5	112	64.8	73.0	113	2	71-122/25
75-27-4	Bromodichloromethane	5.2 U		63.9	57.5	90	64.8	58.1	90	1	72-119/25
75-25-2	Bromoform	5.2 U		63.9	62.2	97	64.8	63.3	98	2	61-120/27
104-51-8	n-Butylbenzene	5.2 U		63.9	51.5	81	64.8	49.8	77	3	58-118/32
135-98-8	sec-Butylbenzene	5.2 U		63.9	64.7	101	64.8	62.5	96	3	63-119/31
98-06-6	tert-Butylbenzene	5.2 U		63.9	62.9	98	64.8	61.3	95	3	67-121/30
108-90-7	Chlorobenzene	5.2 U		63.9	66.1	103	64.8	65.6	101	1	74-116/26
75-00-3	Chloroethane	5.2 U		63.9	81.9	128	64.8	79.9	123	2	48-133/38
67-66-3	Chloroform	5.2 U		63.9	66.2	104	64.8	67.0	103	1	72-119/25
95-49-8	o-Chlorotoluene	5.2 U		63.9	68.1	107	64.8	65.9	102	3	65-121/30
106-43-4	p-Chlorotoluene	5.2 U		63.9	67.5	106	64.8	65.0	100	4	67-118/29
75-15-0	Carbon disulfide	5.2 U		63.9	69.4	109	64.8	66.9	103	4	45-133/34
56-23-5	Carbon tetrachloride	5.2 U		63.9	73.5	115	64.8	68.3	105	7	58-128/28
75-34-3	1,1-Dichloroethane	5.2 U		63.9	63.9	100	64.8	65.6	101	3	69-122/25
75-35-4	1,1-Dichloroethylene	5.2 U		63.9	79.6	125	64.8	78.5	121	1	60-131/31
563-58-6	1,1-Dichloropropene	5.2 U		63.9	75.0	117	64.8	74.0	114	1	66-123/27
96-12-8	1,2-Dibromo-3-chloropropane	5.2 U		63.9	60.4	94	64.8	61.0	94	1	55-125/33
106-93-4	1,2-Dibromoethane	5.2 U		63.9	64.0	100	64.8	64.1	99	0	73-120/26
107-06-2	1,2-Dichloroethane	5.2 U		63.9	61.2	96	64.8	59.7	92	2	69-121/24
78-87-5	1,2-Dichloropropane	5.2 U		63.9	56.8	89	64.8	58.6	90	3	71-121/26
142-28-9	1,3-Dichloropropane	5.2 U		63.9	60.2	94	64.8	60.6	94	1	72-117/25
594-20-7	2,2-Dichloropropane	5.2 U		63.9	72.7	114	64.8	72.4	112	0	57-129/29
124-48-1	Dibromochloromethane	5.2 U		63.9	61.5	96	64.8	60.9	94	1	71-121/26
75-71-8	Dichlorodifluoromethane	5.2 U		63.9	56.2	88	64.8	54.2	84	4	22-158/38
156-59-2	cis-1,2-Dichloroethylene	5.2 U		63.9	69.0	108	64.8	69.4	107	1	70-119/25
10061-01-5	cis-1,3-Dichloropropene	5.2 U		63.9	53.5	84	64.8	53.0	82	1	75-117/27
541-73-1	m-Dichlorobenzene	5.2 U		63.9	66.8	104	64.8	66.7	103	0	70-119/30
95-50-1	o-Dichlorobenzene	5.2 U		63.9	58.6	92	64.8	60.0	93	2	73-116/30
106-46-7	p-Dichlorobenzene	5.2 U		63.9	59.0	92	64.8	59.0	91	0	70-119/30
156-60-5	trans-1,2-Dichloroethylene	5.2 U		63.9	66.1	103	64.8	66.6	103	1	62-119/29
10061-02-6	trans-1,3-Dichloropropene	5.2 U		63.9	59.6	93	64.8	58.7	91	2	78-125/27
100-41-4	Ethylbenzene	5.2 U		63.9	64.0	100	64.8	61.1	94	5	57-124/29
591-78-6	2-Hexanone	52 U		320	270	84	324	269	83	0	58-124/32

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC50844-1MS	M0053821.D	1	07/03/14	FI	n/a	n/a	VM2096
TC50844-1MSD	M0053822.D	1	07/03/14	FI	n/a	n/a	VM2096
TC50844-1	M0053818.D	1	07/03/14	FI	n/a	n/a	VM2096

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-6, TC50731-7, TC50731-8, TC50731-9, TC50731-10, TC50731-13

CAS No.	Compound	TC50844-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
87-68-3	Hexachlorobutadiene	5.2 U		63.9	37.0	58	64.8	35.3	54*	5	57-127/33
98-82-8	Isopropylbenzene	5.2 U		63.9	77.8	122	64.8	73.8	114	5	77-135/29
99-87-6	p-Isopropyltoluene	5.2 U		63.9	64.4	101	64.8	62.3	96	3	66-120/30
108-10-1	4-Methyl-2-pentanone	52 U		320	294	92	324	304	94	3	60-127/30
74-83-9	Methyl bromide	5.2 U		63.9	66.3	104	64.8	63.9	99	4	47-137/37
74-87-3	Methyl chloride	5.2 U		63.9	61.7	97	64.8	59.9	92	3	46-139/36
74-95-3	Methylene bromide	5.2 U		63.9	62.8	98	64.8	63.6	98	1	72-118/25
75-09-2	Methylene chloride	13 U		63.9	61.5	96	64.8	63.3	98	3	50-134/35
78-93-3	Methyl ethyl ketone	52 U		320	326	102	324	334	103	2	60-131/31
1634-04-4	Methyl Tert Butyl Ether	5.2 U		63.9	67.9	106	64.8	71.3	110	5	65-119/29
91-20-3	Naphthalene	5.2 U		63.9	34.9	55*	64.8	39.0	60	11	56-122/36
103-65-1	n-Propylbenzene	5.2 U		63.9	72.6	114	64.8	72.0	111	1	65-119/31
100-42-5	Styrene	5.2 U		63.9	57.7	90	64.8	57.6	89	0	74-117/28
630-20-6	1,1,1,2-Tetrachloroethane	5.2 U		63.9	62.7	98	64.8	61.5	95	2	74-119/27
71-55-6	1,1,1-Trichloroethane	5.2 U		63.9	71.7	112	64.8	71.1	110	1	63-126/27
79-34-5	1,1,2,2-Tetrachloroethane	5.2 U		63.9	66.2	104	64.8	64.1	99	3	65-120/31
79-00-5	1,1,2-Trichloroethane	5.2 U		63.9	60.4	94	64.8	60.0	93	1	72-119/27
87-61-6	1,2,3-Trichlorobenzene	5.2 U		63.9	28.0	44*	64.8	30.9	48*	10	62-116/33
96-18-4	1,2,3-Trichloropropane	5.2 U		63.9	73.1	114	64.8	70.5	109	4	68-118/31
120-82-1	1,2,4-Trichlorobenzene	5.2 U		63.9	35.3	55*	64.8	37.9	58	7	58-122/34
95-63-6	1,2,4-Trimethylbenzene	5.2 U		63.9	62.4	98	64.8	60.7	94	3	61-119/30
108-67-8	1,3,5-Trimethylbenzene	5.2 U		63.9	61.9	97	64.8	60.5	93	2	53-123/30
127-18-4	Tetrachloroethylene	5.2 U		63.9	81.0	127	64.8	77.5	120	4	64-130/28
108-88-3	Toluene	5.2 U		63.9	66.2	104	64.8	62.6	97	6	67-119/28
79-01-6	Trichloroethylene	5.2 U		63.9	113	177*	64.8	89.4	138*	23	70-122/27
75-69-4	Trichlorofluoromethane	5.2 U		63.9	74.9	117	64.8	74.1	114	1	41-137/39
75-01-4	Vinyl chloride	5.2 U		63.9	68.2	107	64.8	66.9	103	2	43-120/38
1330-20-7	Xylene (total)	16 U		192	188	98	194	185	95	2	62-120/27
	m,p-Xylene	10 U		128	126	99	130	123	95	2	62-120/28
95-47-6	o-Xylene	5.2 U		63.9	62.3	97	64.8	61.7	95	1	62-121/28

CAS No.	Surrogate Recoveries	MS	MSD	TC50844-1	Limits
1868-53-7	Dibromofluoromethane	114%	114%	119%	59-126%
2037-26-5	Toluene-D8	112%	109%	113%	70-139%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC50844-1MS	M0053821.D	1	07/03/14	FI	n/a	n/a	VM2096
TC50844-1MSD	M0053822.D	1	07/03/14	FI	n/a	n/a	VM2096
TC50844-1	M0053818.D	1	07/03/14	FI	n/a	n/a	VM2096

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-6, TC50731-7, TC50731-8, TC50731-9, TC50731-10, TC50731-13

CAS No.	Surrogate Recoveries	MS	MSD	TC50844-1	Limits
460-00-4	4-Bromofluorobenzene	100%	97%	102%	63-138%
17060-07-0	1,2-Dichloroethane-D4	89%	87%	86%	54-123%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC50844-2MS	R023478.D	1	07/03/14	FI	n/a	n/a	VR772
TC50844-2MSD	R023479.D	1	07/03/14	FI	n/a	n/a	VR772
TC50844-2	R023476.D	1	07/03/14	FI	n/a	n/a	VR772
TC50844-2 [a]	R023477.D	1	07/03/14	FI	n/a	n/a	VR772

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-1, TC50731-2, TC50731-3, TC50731-4, TC50731-5

CAS No.	Compound	TC50844-2 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	4.7 U		3370	3360	100	3370	3250	96	3	58-124/26
100-41-4	Ethylbenzene	4.7 U		3370	3580	106	3370	3430	102	4	57-124/29
1634-04-4	Methyl Tert Butyl Ether	4.7 U		3370	3050	91	3370	3100	92	2	65-119/29
108-88-3	Toluene	4.7 U		3370	3580	106	3370	3420	102	5	67-119/28
1330-20-7	Xylene (total)	14 U		10100	11300	112	10100	10800	107	5	62-120/27

CAS No.	Surrogate Recoveries	MS	MSD	TC50844-2	TC50844-2	Limits
1868-53-7	Dibromofluoromethane	80%	88%	83%		59-126%
2037-26-5	Toluene-D8	91%	100%	101%		70-139%
460-00-4	4-Bromofluorobenzene	78%	87%	97%		63-138%
17060-07-0	1,2-Dichloroethane-D4	64%	71%	72%		54-123%

(a) Sample used for QC purposes only.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC50792-1MS	R023498.D	10	07/03/14	FI	n/a	n/a	VR773
TC50792-1MSD	R023499.D	10	07/03/14	FI	n/a	n/a	VR773
TC50792-1	R023497.D	10	07/03/14	FI	n/a	n/a	VR773

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-11, TC50731-12, TC50731-15, TC50731-16, TC50731-17, TC50731-18, TC50731-20

CAS No.	Compound	TC50792-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1410	J	30000	30200	96	30000	30100	96	0	58-124/26
100-41-4	Ethylbenzene	1930	J	30000	31600	99	30000	31300	98	1	57-124/29
1634-04-4	Methyl Tert Butyl Ether	2400 U		30000	26000	87	30000	27500	92	6	65-119/29
108-88-3	Toluene	885	J	30000	30900	100	30000	30800	100	0	67-119/28
1330-20-7	Xylene (total)	3690	J	90000	96700	103	90000	95800	102	1	62-120/27

CAS No.	Surrogate Recoveries	MS	MSD	TC50792-1	Limits
1868-53-7	Dibromofluoromethane	87%	90%	84%	59-126%
2037-26-5	Toluene-D8	98%	101%	99%	70-139%
460-00-4	4-Bromofluorobenzene	86%	87%	84%	63-138%
17060-07-0	1,2-Dichloroethane-D4	68%	69%	70%	54-123%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC50483-2MS	R023524.D	2	07/05/14	FI	n/a	n/a	VR774
TC50483-2MSD	R023525.D	2	07/05/14	FI	n/a	n/a	VR774
TC50483-2 [a]	R023521.D	2	07/05/14	FI	n/a	n/a	VR774

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-23, TC50731-26, TC50731-27, TC50731-28, TC50731-29

CAS No.	Compound	TC50483-2 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	2830		5340	8130	99	5340	8140	99	0	58-124/26
100-41-4	Ethylbenzene	1860		5340	7510	106	5340	7480	105	0	57-124/29
1634-04-4	Methyl Tert Butyl Ether	ND		5340	4370	82	5340	4750	89	8	65-119/29
108-88-3	Toluene	7090		5340	12700	105	5340	12800	107	1	67-119/28
1330-20-7	Xylene (total)	24700		16000	41000	102	16000	41400	104	1	62-120/27

CAS No.	Surrogate Recoveries	MS	MSD	TC50483-2	Limits
1868-53-7	Dibromofluoromethane	86%	91%		59-126%
2037-26-5	Toluene-D8	100%	102%		70-139%
460-00-4	4-Bromofluorobenzene	83%	87%		63-138%
17060-07-0	1,2-Dichloroethane-D4	66%	67%		54-123%

(a) Sample used for QC purposes only.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC50731-14MS	X0100544.D	1	07/05/14	FI	n/a	n/a	VX2252
TC50731-14MSD	X0100545.D	1	07/05/14	FI	n/a	n/a	VX2252
TC50731-14	X0100543.D	1	07/05/14	FI	n/a	n/a	VX2252

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-14, TC50731-19, TC50731-30, TC50731-31

CAS No.	Compound	TC50731-14 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	21.7	J	276	202	65	267	183	60	10	43-141/33
71-43-2	Benzene	4.0 U		55.1	45.5	83	53.5	38.1	71	18	58-124/26
108-86-1	Bromobenzene	4.0 U		55.1	44.3	80	53.5	35.5	66*	22	72-110/28
74-97-5	Bromochloromethane	4.0 U		55.1	43.5	79	53.5	38.1	71	13	71-122/25
75-27-4	Bromodichloromethane	4.0 U		55.1	44.3	80	53.5	36.6	68*	19	72-119/25
75-25-2	Bromoform	4.0 U		55.1	42.0	76	53.5	35.3	66	17	61-120/27
104-51-8	n-Butylbenzene	4.0 U		55.1	45.3	82	53.5	36.4	68	22	58-118/32
135-98-8	sec-Butylbenzene	4.0 U		55.1	52.0	94	53.5	41.6	78	22	63-119/31
98-06-6	tert-Butylbenzene	4.0 U		55.1	50.6	92	53.5	40.2	75	23	67-121/30
108-90-7	Chlorobenzene	4.0 U		55.1	48.9	89	53.5	40.1	75	20	74-116/26
75-00-3	Chloroethane	4.0 U		55.1	41.1	75	53.5	38.0	71	8	48-133/38
67-66-3	Chloroform	4.0 U		55.1	43.7	79	53.5	37.0	69*	17	72-119/25
95-49-8	o-Chlorotoluene	4.0 U		55.1	49.8	90	53.5	39.5	74	23	65-121/30
106-43-4	p-Chlorotoluene	4.0 U		55.1	49.9	91	53.5	39.7	74	23	67-118/29
75-15-0	Carbon disulfide	4.0 U		55.1	44.7	81	53.5	39.1	73	13	45-133/34
56-23-5	Carbon tetrachloride	4.0 U		55.1	47.1	85	53.5	39.4	74	18	58-128/28
75-34-3	1,1-Dichloroethane	4.0 U		55.1	43.5	79	53.5	37.2	70	16	69-122/25
75-35-4	1,1-Dichloroethylene	4.0 U		55.1	45.9	83	53.5	40.4	76	13	60-131/31
563-58-6	1,1-Dichloropropene	4.0 U		55.1	47.3	86	53.5	40.9	76	15	66-123/27
96-12-8	1,2-Dibromo-3-chloropropane	4.0 U		55.1	40.2	73	53.5	36.3	68	10	55-125/33
106-93-4	1,2-Dibromoethane	4.0 U		55.1	43.5	79	53.5	36.6	68*	17	73-120/26
107-06-2	1,2-Dichloroethane	0.49	J	55.1	46.3	83	53.5	39.6	73	16	69-121/24
78-87-5	1,2-Dichloropropane	4.0 U		55.1	45.5	83	53.5	37.5	70*	19	71-121/26
142-28-9	1,3-Dichloropropane	4.0 U		55.1	43.7	79	53.5	36.9	69*	17	72-117/25
594-20-7	2,2-Dichloropropane	4.0 U		55.1	47.2	86	53.5	38.9	73	19	57-129/29
124-48-1	Dibromochloromethane	4.0 U		55.1	44.0	80	53.5	36.2	68*	19	71-121/26
75-71-8	Dichlorodifluoromethane	4.0 U		55.1	29.1	53	53.5	26.2	49	10	22-158/38
156-59-2	cis-1,2-Dichloroethylene	4.0 U		55.1	43.1	78	53.5	37.1	69*	15	70-119/25
10061-01-5	cis-1,3-Dichloropropene	4.0 U		55.1	44.0	80	53.5	36.4	68*	19	75-117/27
541-73-1	m-Dichlorobenzene	4.0 U		55.1	49.5	90	53.5	39.3	73	23	70-119/30
95-50-1	o-Dichlorobenzene	4.0 U		55.1	47.0	85	53.5	38.0	71*	21	73-116/30
106-46-7	p-Dichlorobenzene	4.0 U		55.1	44.3	80	53.5	35.6	67*	22	70-119/30
156-60-5	trans-1,2-Dichloroethylene	4.0 U		55.1	43.8	79	53.5	37.8	71	15	62-119/29
10061-02-6	trans-1,3-Dichloropropene	4.0 U		55.1	47.6	86	53.5	39.4	74*	19	78-125/27
100-41-4	Ethylbenzene	4.0 U		55.1	47.0	85	53.5	38.5	72	20	57-124/29
591-78-6	2-Hexanone	40 U		276	199	72	267	174	65	13	58-124/32

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC50731-14MS	X0100544.D	1	07/05/14	FI	n/a	n/a	VX2252
TC50731-14MSD	X0100545.D	1	07/05/14	FI	n/a	n/a	VX2252
TC50731-14	X0100543.D	1	07/05/14	FI	n/a	n/a	VX2252

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-14, TC50731-19, TC50731-30, TC50731-31

CAS No.	Compound	TC50731-14 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
87-68-3	Hexachlorobutadiene	4.0 U		55.1	49.6	90	53.5	39.0	73	24	57-127/33
98-82-8	Isopropylbenzene	4.0 U		55.1	52.4	95	53.5	41.3	77	24	77-135/29
99-87-6	p-Isopropyltoluene	4.0 U		55.1	50.7	92	53.5	40.3	75	23	66-120/30
108-10-1	4-Methyl-2-pentanone	40 U		276	194	70	267	173	65	11	60-127/30
74-83-9	Methyl bromide	4.0 U		55.1	32.0	58	53.5	30.6	57	4	47-137/37
74-87-3	Methyl chloride	4.0 U		55.1	35.4	64	53.5	31.4	59	12	46-139/36
74-95-3	Methylene bromide	4.0 U		55.1	42.2	77	53.5	35.8	67*	16	72-118/25
75-09-2	Methylene chloride	10 U		55.1	41.7	76	53.5	36.0	67	15	50-134/35
78-93-3	Methyl ethyl ketone	40 U		276	196	71	267	180	67	9	60-131/31
1634-04-4	Methyl Tert Butyl Ether	4.0 U		55.1	42.6	77	53.5	37.5	70	13	65-119/29
91-20-3	Naphthalene	4.0 U		55.1	42.0	76	53.5	35.7	67	16	56-122/36
103-65-1	n-Propylbenzene	4.0 U		55.1	51.5	93	53.5	41.3	77	22	65-119/31
100-42-5	Styrene	4.0 U		55.1	46.2	84	53.5	37.5	70*	21	74-117/28
630-20-6	1,1,1,2-Tetrachloroethane	4.0 U		55.1	45.4	82	53.5	37.6	70*	19	74-119/27
71-55-6	1,1,1-Trichloroethane	4.0 U		55.1	44.9	81	53.5	37.5	70	18	63-126/27
79-34-5	1,1,2,2-Tetrachloroethane	4.0 U		55.1	38.1	69	53.5	31.0	58*	21	65-120/31
79-00-5	1,1,2-Trichloroethane	4.0 U		55.1	42.6	77	53.5	35.7	67*	18	72-119/27
87-61-6	1,2,3-Trichlorobenzene	4.0 U		55.1	42.9	78	53.5	34.9	65	21	62-116/33
96-18-4	1,2,3-Trichloropropane	4.0 U		55.1	42.3	77	53.5	35.1	66*	19	68-118/31
120-82-1	1,2,4-Trichlorobenzene	4.0 U		55.1	43.4	79	53.5	34.7	65	22	58-122/34
95-63-6	1,2,4-Trimethylbenzene	4.0 U		55.1	45.6	83	53.5	36.2	68	23	61-119/30
108-67-8	1,3,5-Trimethylbenzene	4.0 U		55.1	45.9	83	53.5	36.4	68	23	53-123/30
127-18-4	Tetrachloroethylene	4.0 U		55.1	82.4	149*	53.5	66.1	124	22	64-130/28
108-88-3	Toluene	4.0 U		55.1	47.0	85	53.5	38.7	72	19	67-119/28
79-01-6	Trichloroethylene	4.0 U		55.1	51.6	94	53.5	43.1	81	18	70-122/27
75-69-4	Trichlorofluoromethane	4.0 U		55.1	34.9	63	53.5	30.5	57	13	41-137/39
75-01-4	Vinyl chloride	4.0 U		55.1	37.0	67	53.5	32.2	60	14	43-120/38
1330-20-7	Xylene (total)	12 U		165	147	89	160	119	74	21	62-120/27
	m,p-Xylene	8.1 U		110	96.6	88	107	78.8	74	20	62-120/28
95-47-6	o-Xylene	4.0 U		55.1	50.1	91	53.5	40.3	75	22	62-121/28

CAS No.	Surrogate Recoveries	MS	MSD	TC50731-14	Limits
1868-53-7	Dibromofluoromethane	80%	86%	88%	59-126%
2037-26-5	Toluene-D8	93%	95%	96%	70-139%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC50731-14MS	X0100544.D	1	07/05/14	FI	n/a	n/a	VX2252
TC50731-14MSD	X0100545.D	1	07/05/14	FI	n/a	n/a	VX2252
TC50731-14	X0100543.D	1	07/05/14	FI	n/a	n/a	VX2252

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-14, TC50731-19, TC50731-30, TC50731-31

CAS No.	Surrogate Recoveries	MS	MSD	TC50731-14	Limits
460-00-4	4-Bromofluorobenzene	92%	93%	94%	63-138%
17060-07-0	1,2-Dichloroethane-D4	83%	90%	91%	54-123%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC50731-22MS	X0100562.D	1	07/05/14	FI	n/a	n/a	VX2253
TC50731-22MSD	X0100563.D	1	07/05/14	FI	n/a	n/a	VX2253
TC50731-22	X0100561.D	1	07/05/14	FI	n/a	n/a	VX2253

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-22, TC50731-24, TC50731-25

CAS No.	Compound	TC50731-22 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	260 U		3260	3240	99	3260	2920	89	10	58-124/26
100-41-4	Ethylbenzene	260 U		3260	3050	93	3260	2870	88	6	57-124/29
1634-04-4	Methyl Tert Butyl Ether	260 U		3260	3780	116	3260	3430	105	10	65-119/29
108-88-3	Toluene	260 U		3260	3110	95	3260	2920	89	6	67-119/28
1330-20-7	Xylene (total)	780 U		9790	9550	98	9790	9020	92	6	62-120/27

CAS No.	Surrogate Recoveries	MS	MSD	TC50731-22	Limits
1868-53-7	Dibromofluoromethane	94%	85%	100%	59-126%
2037-26-5	Toluene-D8	91%	92%	94%	70-139%
460-00-4	4-Bromofluorobenzene	87%	91%	91%	63-138%
17060-07-0	1,2-Dichloroethane-D4	86%	84%	93%	54-123%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC50756-1MS	X0100590.D	1	07/07/14	FI	n/a	n/a	VX2254
TC50756-1MSD	X0100591.D	1	07/07/14	FI	n/a	n/a	VX2254
TC50756-1	X0100589.D	1	07/07/14	FI	n/a	n/a	VX2254

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-32

CAS No.	Compound	TC50756-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		51.9	61.6	119	51.8	53.1	102	15	58-124/26
100-41-4	Ethylbenzene	ND		51.9	58.7	113	51.8	51.8	100	12	57-124/29
1634-04-4	Methyl Tert Butyl Ether	ND		51.9	70.1	135*	51.8	60.8	117	14	65-119/29
108-88-3	Toluene	ND		51.9	58.4	112	51.8	51.7	100	12	67-119/28
1330-20-7	Xylene (total)	ND		156	183	117	156	162	104	12	62-120/27

CAS No.	Surrogate Recoveries	MS	MSD	TC50756-1	Limits
1868-53-7	Dibromofluoromethane	109%	100%	108%	59-126%
2037-26-5	Toluene-D8	101%	96%	96%	70-139%
460-00-4	4-Bromofluorobenzene	101%	94%	96%	63-138%
17060-07-0	1,2-Dichloroethane-D4	98%	88%	91%	54-123%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC50948-1MS	R023551.D	1	07/07/14	FI	n/a	n/a	VR775
TC50948-1MSD	R023552.D	1	07/07/14	FI	n/a	n/a	VR775
TC50948-1	R023548.D	1	07/07/14	FI	n/a	n/a	VR775

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-21, TC50731-24

CAS No.	Compound	TC50948-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		55	50.6	92	55.8	49.7	89	2	58-124/26
100-41-4	Ethylbenzene	ND		55	53.1	97	55.8	52.4	94	1	57-124/29
1634-04-4	Methyl Tert Butyl Ether	ND		55	44.0	80	55.8	45.7	82	4	65-119/29
108-88-3	Toluene	ND		55	53.8	98	55.8	53.5	96	1	67-119/28
1330-20-7	Xylene (total)	ND		165	164	99	168	163	97	1	62-120/27

CAS No.	Surrogate Recoveries	MS	MSD	TC50948-1	Limits
1868-53-7	Dibromofluoromethane	89%	88%	86%	59-126%
2037-26-5	Toluene-D8	98%	99%	98%	70-139%
460-00-4	4-Bromofluorobenzene	85%	83%	83%	63-138%
17060-07-0	1,2-Dichloroethane-D4	64%	62%	65%	54-123%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC50499-6MS	Z042618.D	1	07/08/14	EM	n/a	n/a	VZ4345
TC50499-6MSD	Z042619.D	1	07/08/14	EM	n/a	n/a	VZ4345
TC50499-6	Z042613.D	1	07/08/14	EM	n/a	n/a	VZ4345

The QC reported here applies to the following samples: Method: SW846 8260C

TC50731-33

CAS No.	Compound	TC50499-6 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		25	22.5	90	25	21.9	88	3	68-119/12
100-41-4	Ethylbenzene	ND		25	23.1	92	25	22.5	90	3	71-117/12
1634-04-4	Methyl Tert Butyl Ether	6.2		25	28.3	88	25	27.6	86	3	65-119/13
108-88-3	Toluene	ND		25	23.8	95	25	23.0	92	3	73-119/13
1330-20-7	Xylene (total)	ND		75	71.6	95	75	70.9	95	1	74-119/13

CAS No.	Surrogate Recoveries	MS	MSD	TC50499-6	Limits
1868-53-7	Dibromofluoromethane	89%	89%	90%	72-122%
17060-07-0	1,2-Dichloroethane-D4	88%	87%	88%	68-124%
2037-26-5	Toluene-D8	95%	95%	92%	80-119%
460-00-4	4-Bromofluorobenzene	80%	82%	81%	72-126%

* = Outside of Control Limits.

Gulf Coast ACCUTEST LABORATORIES

GC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33076-MB	LB101412.D	1	07/02/14	ZL	07/01/14	OP33076	GLB1504

The QC reported here applies to the following samples: Method: TNRCC 1005

TC50731-1, TC50731-2, TC50731-3, TC50731-4, TC50731-5, TC50731-6, TC50731-7, TC50731-8, TC50731-9, TC50731-10, TC50731-11, TC50731-12, TC50731-13, TC50731-14, TC50731-15, TC50731-16, TC50731-17, TC50731-18

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	25	11	mg/kg	
	TPH (>C12-C28)	ND	25	14	mg/kg	
	TPH (>C28-C35)	ND	25	14	mg/kg	
	TPH (C6-C35)	ND	25	11	mg/kg	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	117%	70-130%
98-08-8	aaa-Trifluorotoluene	106%	70-130%

Method Blank Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33086-MB	LB101426.D	1	07/02/14	ZL	07/02/14	OP33086	GLB1504

The QC reported here applies to the following samples: Method: TNRCC 1005

TC50731-19, TC50731-20, TC50731-21, TC50731-22, TC50731-25, TC50731-26, TC50731-27, TC50731-28, TC50731-29, TC50731-30, TC50731-31, TC50731-32

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	25	11	mg/kg	
	TPH (>C12-C28)	ND	25	14	mg/kg	
	TPH (>C28-C35)	ND	25	14	mg/kg	
	TPH (C6-C35)	ND	25	11	mg/kg	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	100%	70-130%
98-08-8	aaa-Trifluorotoluene	101%	70-130%

Method Blank Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33093-MB	LB101479.D	1	07/03/14	ZL	07/03/14	OP33093	GLB1505

The QC reported here applies to the following samples: Method: TNRCC 1005

TC50731-23, TC50731-24

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	25	11	mg/kg	
	TPH (>C12-C28)	ND	25	14	mg/kg	
	TPH (>C28-C35)	ND	25	14	mg/kg	
	TPH (C6-C35)	ND	25	11	mg/kg	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	102%	70-130%
98-08-8	aaa-Trifluorotoluene	111%	70-130%

Method Blank Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33103-MB	LB101549.D	1	07/07/14	ZL	07/03/14	OP33103	GLB1506

The QC reported here applies to the following samples: Method: TNRCC 1005

TC50731-33

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	2.5	0.59	mg/l	
	TPH (>C12-C28)	ND	2.5	0.85	mg/l	
	TPH (>C28-C35)	ND	2.5	0.85	mg/l	
	TPH (C6-C35)	ND	2.5	0.59	mg/l	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	103%	70-130%
98-08-8	aaa-Trifluorotoluene	99%	70-130%

Blank Spike/Blank Spike Duplicate Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33076-BS	LB101414.D	1	07/02/14	ZL	07/01/14	OP33076	GLB1504
OP33076-BSD	LB101374.D	1	07/02/14	ZL	07/01/14	OP33076	GLB1503

The QC reported here applies to the following samples: Method: TNRCC 1005

TC50731-1, TC50731-2, TC50731-3, TC50731-4, TC50731-5, TC50731-6, TC50731-7, TC50731-8, TC50731-9, TC50731-10, TC50731-11, TC50731-12, TC50731-13, TC50731-14, TC50731-15, TC50731-16, TC50731-17, TC50731-18

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	BSD mg/kg	BSD %	RPD	Limits Rec/RPD
	TPH (C6-C12)	250	234	94	229	92	2	75-125/20
	TPH (>C12-C28)	250	225	90	220	88	2	75-125/20
	TPH (C6-C35)	500	459	92	449	90	2	75-125/20

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
84-15-1	o-Terphenyl	118%	111%	70-130%
98-08-8	aaa-Trifluorotoluene	104%	100%	70-130%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33086-BS	LB101428.D	1	07/02/14	ZL	07/02/14	OP33086	GLB1504
OP33086-BSD	LB101430.D	1	07/02/14	ZL	07/02/14	OP33086	GLB1504

The QC reported here applies to the following samples: Method: TNRCC 1005

TC50731-19, TC50731-20, TC50731-21, TC50731-22, TC50731-25, TC50731-26, TC50731-27, TC50731-28, TC50731-29, TC50731-30, TC50731-31, TC50731-32

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	BSD mg/kg	BSD %	RPD	Limits Rec/RPD
	TPH (C6-C12)	250	247	99	248	99	0	75-125/20
	TPH (>C12-C28)	250	268	107	272	109	1	75-125/20
	TPH (C6-C35)	500	514	103	521	104	1	75-125/20

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
84-15-1	o-Terphenyl	102%	101%	70-130%
98-08-8	aaa-Trifluorotoluene	105%	106%	70-130%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33093-BS	LB101481.D	1	07/03/14	ZL	07/03/14	OP33093	GLB1505
OP33093-BSD	LB101483.D	1	07/03/14	ZL	07/03/14	OP33093	GLB1505

The QC reported here applies to the following samples: Method: TNRCC 1005

TC50731-23, TC50731-24

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	BSD mg/kg	BSD %	RPD	Limits Rec/RPD
	TPH (C6-C12)	250	250	100	268	107	7	75-125/20
	TPH (>C12-C28)	250	267	107	296	118	10	75-125/20
	TPH (C6-C35)	500	518	104	563	113	8	75-125/20

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
84-15-1	o-Terphenyl	99%	111%	70-130%
98-08-8	aaa-Trifluorotoluene	108%	115%	70-130%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33103-BS	LB101551.D	1	07/07/14	ZL	07/03/14	OP33103	GLB1506
OP33103-BSD	LB101553.D	1	07/07/14	ZL	07/03/14	OP33103	GLB1506

The QC reported here applies to the following samples: Method: TNRCC 1005

TC50731-33

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	BSD mg/l	BSD %	RPD	Limits Rec/RPD
	TPH (C6-C12)	50	47.9	96	50.7	101	6	75-125/20
	TPH (>C12-C28)	50	50.7	101	51.7	103	2	75-125/20
	TPH (C6-C35)	100	98.6	99	102	102	3	75-125/20

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
84-15-1	o-Terphenyl	102%	102%	70-130%
98-08-8	aaa-Trifluorotoluene	104%	96%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33076-MS	LF101371.D	1	07/02/14	ZL	07/01/14	OP33076	GLF1503
OP33076-MSD	LF101373.D	1	07/02/14	ZL	07/01/14	OP33076	GLF1503
TC50731-1	LF101369.D	1	07/02/14	ZL	07/01/14	OP33076	GLF1503

The QC reported here applies to the following samples: Method: TNRCC 1005

TC50731-1, TC50731-2, TC50731-3, TC50731-4, TC50731-5, TC50731-6, TC50731-7, TC50731-8, TC50731-9, TC50731-10, TC50731-11, TC50731-12, TC50731-13, TC50731-14, TC50731-15, TC50731-16, TC50731-17, TC50731-18

CAS No.	Compound	TC50731-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	Spike mg/kg	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH (C6-C12)	67.2		266	320	95	285	325	91	2	75-125/20
	TPH (>C12-C28)	237		266	348	42*	285	395	55*	13	75-125/20
	TPH (C6-C35)	464		531	668	38*	569	890	75	28*	75-125/20

CAS No.	Surrogate Recoveries	MS	MSD	TC50731-1	Limits
84-15-1	o-Terphenyl	123%	129%	117%	70-130%
98-08-8	aaa-Trifluorotoluene	109%	117%	107%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33086-MS	LF101429.D	1	07/02/14	ZL	07/02/14	OP33086	GLF1504
OP33086-MSD	LF101431.D	1	07/02/14	ZL	07/02/14	OP33086	GLF1504
TC50844-6	LF101427.D	1	07/02/14	ZL	07/02/14	OP33086	GLF1504

The QC reported here applies to the following samples: Method: TNRCC 1005

TC50731-19, TC50731-20, TC50731-21, TC50731-22, TC50731-25, TC50731-26, TC50731-27, TC50731-28, TC50731-29, TC50731-30, TC50731-31, TC50731-32

CAS No.	Compound	TC50844-6 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	Spike mg/kg	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH (C6-C12)	33	U	328	337	103	333	346	104	3	75-125/20
	TPH (>C12-C28)	33	U	328	387	118	333	402	121	4	75-125/20
	TPH (C6-C35)	33	U	656	724	110	666	747	112	3	75-125/20

CAS No.	Surrogate Recoveries	MS	MSD	TC50844-6	Limits
84-15-1	o-Terphenyl	109%	113%	107%	70-130%
98-08-8	aaa-Trifluorotoluene	103%	105%	102%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33093-MS	LF101482.D	1	07/03/14	ZL	07/03/14	OP33093	GLF1505
OP33093-MSD	LF101484.D	1	07/03/14	ZL	07/03/14	OP33093	GLF1505
TC50851-1	LF101480.D	1	07/03/14	ZL	07/03/14	OP33093	GLF1505

The QC reported here applies to the following samples: Method: TNRCC 1005

TC50731-23, TC50731-24

CAS No.	Compound	TC50851-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	Spike mg/kg	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH (C6-C12)	ND		262	270	103	261	279	107	3	75-125/20
	TPH (>C12-C28)	61.5		262	291	88	261	321	99	10	75-125/20
	TPH (C6-C35)	61.5		524	564	95	523	604	103	7	75-125/20

CAS No.	Surrogate Recoveries	MS	MSD	TC50851-1	Limits
84-15-1	o-Terphenyl	107%	116%	103%	70-130%
98-08-8	aaa-Trifluorotoluene	99%	105%	96%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC50731
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33103-MS	LF101552.D	1	07/07/14	ZL	07/03/14	OP33103	GLF1506
OP33103-MSD	LF101554.D	1	07/07/14	ZL	07/03/14	OP33103	GLF1506
TC50874-3 [a]	LF101550.D	1	07/07/14	ZL	07/03/14	OP33103	GLF1506

The QC reported here applies to the following samples: Method: TNRCC 1005

TC50731-33

CAS No.	Compound	TC50874-3 mg/l	Q	Spike mg/l	MS mg/l	MS %	Spike mg/l	MSD mg/l	MSD %	RPD	Limits Rec/RPD
	TPH (C6-C12)	2.4 U		48.5	61.7	127*	48.9	59.3	121	4	75-125/20
	TPH (>C12-C28)	0.998	J	48.5	59.2	120	48.9	57.3	115	3	75-125/20
	TPH (C6-C35)	1.95	J	97	121	123	97.8	117	118	3	75-125/20

CAS No.	Surrogate Recoveries	MS	MSD	TC50874-3	Limits
84-15-1	o-Terphenyl	138%*	138%*		70-130%
98-08-8	aaa-Trifluorotoluene	110%	107%		70-130%

(a) Sample used for QC purposes only.

* = Outside of Control Limits.

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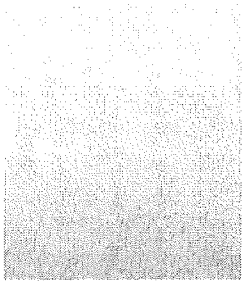
07/28/14



Technical Report for

Berg Oliver Associates

Wirt Road Drainage & Paving Project- Houston, TX

Accutest Job Number: TC51946

Sampling Date: 07/21/14

Report to:

Berg Oliver Associates
14701 Saint Mary's Lane Suite 400
Houston, TX 77079
tmurphy@bergoliver.com

ATTN: Tom Murphy

Total number of pages in report: 24

NELAP ACCREDITED TNI LABORATORY

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Richard Rodriguez
Laboratory Director

Client Service contact: Sylvia Garza 713-271-4700

Certifications: TX (T104704220-14-15, 1M104704220-14-1) AR (14-016-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) NJ (TX010) OK (2013-152) VA (2085)

Sections: 1 2 3 4 5 6 7

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Accutest Laboratories

Sample Summary

Berg Oliver Associates

Job No: TC51946

Wirt Road Drainage & Paving Project- Houston, TX

Sample Number	Collected Date	Time By	Received	Matrix Code	Matrix Type	Client Sample ID
TC51946-1	07/21/14	14:19 TM	07/22/14	AQ	Ground Water	SB-21A/TWP-21A

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	Berg Oliver Associates	Job No	TC51946
Site:	Wirt Road Drainage & Paving Project- Houston, TX	Report Date	7/28/2014 4:18:08 PM

1 Sample was collected on 07/21/2014 and received intact at Accutest on 07/22/2014 and properly preserved in 1 cooler at 2.9 Deg C. The sample received an Accutest job number of TC51946. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260C

Matrix AQ Batch ID: VK1153

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC51358-1MS, TC51358-1MSD were used as the QC samples indicated.

Extractables by GC By Method TNRCC 1005

Matrix AQ Batch ID: OP33292

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC51876-1MS, TC51876-1MSD were used as the QC samples indicated.
- RPD(s) for MSD for TPH (>C12-C28), TPH (C6-C12), TPH (C6-C35) are outside control limits for sample OP33292-MSD. Probable cause due to sample non-homogeneity.
- TC51946-1: Aqueous phase was subsampled prior to extraction. Volatile fraction may be compromised.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

Summary of Hits

Job Number: TC51946
Account: Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX
Collected: 07/21/14

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC51946-1	SB-21A/TWP-21A					
Benzene		3.46	0.020	0.0068	mg/l	SW846 8260C
Toluene		13.8	1.0	0.33	mg/l	SW846 8260C
Ethylbenzene		2.16	0.020	0.0065	mg/l	SW846 8260C
Xylene (total)		9.82	0.060	0.017	mg/l	SW846 8260C
TPH (C6-C12) [a]		40.0	4.0	0.94	mg/l	TNRCC 1005
TPH (C6-C35) [a]		40.0	4.0	0.94	mg/l	TNRCC 1005

(a) Aqueous phase was subsampled prior to extraction. Volatile fraction may be compromised.

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Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	SB-21A/TWP-21A		
Lab Sample ID:	TC51946-1	Date Sampled:	07/21/14
Matrix:	AQ - Ground Water	Date Received:	07/22/14
Method:	SW846 8260C	Percent Solids:	n/a
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	K26989.D	20	07/24/14	SC	n/a	n/a	VK1153
Run #2	K26986.D	1000	07/24/14	SC	n/a	n/a	VK1153

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	3.46	0.020	0.0068	mg/l	
108-88-3	Toluene	13.8 [a]	1.0	0.33	mg/l	
100-41-4	Ethylbenzene	2.16	0.020	0.0065	mg/l	
1330-20-7	Xylene (total)	9.82	0.060	0.017	mg/l	
1634-04-4	Methyl Tert Butyl Ether	0.0060 U	0.020	0.0060	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%	98%	72-122%
17060-07-0	1,2-Dichloroethane-D4	93%	97%	68-124%
2037-26-5	Toluene-D8	98%	99%	80-119%
460-00-4	4-Bromofluorobenzene	93%	94%	72-126%

(a) Result is from Run# 2

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-21A/TWP-21A		
Lab Sample ID:	TC51946-1	Date Sampled:	07/21/14
Matrix:	AQ - Ground Water	Date Received:	07/22/14
Method:	TNRCC 1005 TX1005	Percent Solids:	n/a
Project:	Wirt Road Drainage & Paving Project- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	LB102694.D	1	07/24/14	ZL	07/23/14	OP33292	GLB1516
Run #2							

	Initial Volume	Final Volume
Run #1	18.7 ml	3.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	40.0	4.0	0.94	mg/l	
	TPH (>C12-C28)	1.4 U	4.0	1.4	mg/l	
	TPH (>C28-C35)	1.4 U	4.0	1.4	mg/l	
	TPH (C6-C35)	40.0	4.0	0.94	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	101%		70-130%
98-08-8	aaa-Trifluorotoluene	112%		70-130%

(a) Aqueous phase was subsampled prior to extraction. Volatile fraction may be compromised.

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Gulf Coast ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- LRC Form

CHAIN OF CUSTODY

ACCUTEST
10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL. 713-271-4700 FAX: 713-271-4770
www.accutest.com

FED-EX Tracking #: | Bottle Order Control #:
Accutest Quote #: | Accutest Job #: TC51946

Client / Reporting Information

Company Name: Berg Oliver Associates
Street Address: 14701 Saint Mary's Lane Suite 400
City: Houston | State: TX | Zip: 77079
Project Contact: Tom Murphy | E-mail:
Phone #: 281.589.0848 | Fax #: 281.589.0007
Sampler(s) Name(s): Tom Murphy | Phone #:

Project Information

Project Name: Wirt Road Drainage & Paving
Street: Wirt Road
City: Houston | State: TX
Project #: 9155H-P2
Client Purchase Order #:
Project Manager: Tom Murphy

Billing Information (If different from Report to)

Company Name:
Street Address: Same
City: | State: | Zip:
Attention:

Requested Analyses

MTBE/BTEX (8260)
TPH (TX1005)

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank

Accutest Sample #	Field ID / Point of Collection	Collection: Date	Time	Sampled By	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	ZnAc+NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	TSP	NaHSO4	ENCORE	OTHER	MTBE/BTEX (8260)	TPH (TX1005)	LAB USE ONLY
1	SB-21A/TWP-21A	07/21/14	1419	TM	GW	4	X											X2	X	X	

Turnaround Time (Business days)

- [ ] Standard
- [X] 5 Day
- [ ] 4 Day RUSH
- [X] 3 Day RUSH
- [ ] 2 Day RUSH
- [ ] 1 Day EMERGENCY

Emergency & Rush T/A data available VIA Labtink

Approved By (Accutest PM): / Date: 1412 7-22-14

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [X] TRRP
- [ ] Commercial "B" (Level 2)
- [ ] EDD Format
- [ ] FULT1 (Level 3+4)
- [ ] Other
- [ ] REDT1 (Level 3+4)
- [ ] Commercial "C"

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC & Surrogate Summary

Comments / Special Instructions

- Run TCEQ TRRP Tier 1 GW detection limits
- Samples very silty/silty (top issues)

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler	Date Time	Received By	Relinquished By	Date Time	Received By
1	Tom Murphy	07/22/14	Dennis Melde	2 Dennis Melde	7-22-14 1710	2 Ruben St.
3	Relinquished by Sampler:	Date Time: 13:40	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
5	Relinquished by:	Date Time:	Received By: 5	Custody Seal #	Intact / Not Intact	Preserved where applicable / On Ice / Cooler Temp.

TC51946: Chain of Custody
Page 1 of 3

ACCUTEST LABORATORIES

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: TC51946 **Client:** BERG OLIVER **Project:** WIRT ROAD

Date / Time Received: 7/22/2014 **Delivery Method:** **Airbill #'s:**

No. Coolers: 1 **Therm ID:** IR-5; **Temp Adjustment Factor:** 0;

Cooler Temps (Initial/Adjusted): #1: (2.9/2.9);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:			
3. Cooler media:	Ice (Bag)		

Quality Control Preservation	Y	or	N	N/A	WTB	STB
1. Trip Blank present / cooler:	☐		☐	☑	☐	☐
2. Trip Blank listed on COC:	☐		☐	☑		
3. Samples preserved properly:	☑		☐			
4. VOCs headspace free:	☐		☑	☐		

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Comments -Received all vials with headspace greater than a pea size.

Accutest Laboratories
V:713.271.4700

10165 Harwin Drive
F: 713.271.4770

Houston, TX 77036
www/accutest.com

TC51946: Chain of Custody
Page 2 of 3

ACCUTEST LABORATORIES

Sample Receipt Log

Job #: TC51946 **Date / Time Received:** 7/22/2014 5:10:00 PM **Initials:** RE

Client: BERG OLIVER

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC51946-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	2.9	0	2.9
1	TC51946-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	2.9	0	2.9
1	TC51946-1	40ml	3	4AA	HCL	pH < 2	IR-5	2.9	0	2.9
1	TC51946-1	40ml	4	4AA	HCL	pH < 2	IR-5	2.9	0	2.9

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TC51946: Chain of Custody
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Appendix A Laboratory Data Package Cover Page

TC51946 This data package consists of

- ☐ This signature page, the laboratory review checklist, and the following reportable data:
- ☐ R1 Field chain-of-custody documentation;
- ☐ R2 Sample identification cross-reference;
- ☐ R3 Test reports (analytical data sheets) for each environmental sample that includes:
  - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
  - b) dilution factors,
  - c) preparation methods,
  - d) cleanup methods, and
  - e) if required for the project, tentatively identified compounds (TICs).
- ☐ R4 Surrogate recovery data including:
  - a) Calculated recovery (%R), and
  - b) The laboratory's surrogate QC limits.
- ☐ R5 Test reports/summary forms for blank samples;
- ☐ R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  - a) LCS spiking amounts,
  - b) Calculated %R for each analyte, and
  - c) The laboratory's LCS QC limits.
- ☐ R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  - a) Samples associated with the MS/MSD clearly identified,
  - b) MS/MSD spiking amounts,
  - c) Concentration of each MS/MSD analyte measured in the parent and
  - d) Calculated %Rs and relative percent differences (RPDs), and
  - e) The laboratory's MS/MSD QC limits
- ☐ R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  - a) The amount of analyte measured in the duplicate,
  - b) The calculated RPD, and
  - c) The laboratory's QC limits for analytical duplicates.
- ☐ R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- ☐ R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC&25.6 and was last inspection by

[ ] [X] TCEQ or [ ] _____ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

QA Manager Name (Printed)	Signature	Official Title (printed)	Date
Richard Rodriguez		Laboratory Director	7/28/2014

5.2

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA

Laboratory Name:		Accutest Gulf Coast	LRC Date:	7/28/2014				
Project Name:		Wirt Road Drainage & Paving Project- Houston, TX	Laboratory Project Number:	TC51946				
Reviewer Name:		Anita Patel	Prep Batch Number(s):	OP33292, VK1153				
#[1]	A[2]	DESCRIPTION		YES	NO	NA[3]	NR[4]	ER #[5]
R1	OI	**CHAIN-OF-CUSTODY (C-O-C):**						
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?		X				
		Were all departures from standard conditions described in an exception report?		X				
R2	OI	**Sample and quality control (QC) identification**						
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?		X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?		X				
R3	OI	**Test reports**						
		Were samples prepared and analyzed within holding times?		X				
		Other than those results <MQL, were all other raw values bracketed by calibration standards?		X				
		Were calculations checked by a peer or supervisor?		X				
		Were all analyte identifications checked by a peer or supervisor?		X				
		Were sample detection limits reported for all analytes not detected?		X				
		Were all results for soil and sediment samples reported on a dry weight basis?				X		
		Were % moisture (or solids) reported for all soil and sediment samples?				X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?				X		
		If required for the project, are TIC's reported?				X		
R4	O	**Surrogate recovery data**						
		Were surrogates added prior to extraction?		X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?		X				
R5	OI	**Test reports/summary forms for blank samples**						
		Were appropriate type(s) of blanks analyzed?		X				
		Were blanks analyzed at the appropriate frequency?		X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?		X				
		Were blank concentrations <MQL?		X				
R6	OI	**Laboratory control samples (LCS):**						
		Were all COCs included in the LCS?		X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?		X				
		Were LCSs analyzed at required frequency?		X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?		X				
		Does the detectablility check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?		X				
		Was the LCSD RPD within QC limits?		X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**						
		Were the project/method specified analytes included in the MS and MSD?		X				
		Were MS/MSD analyzed at the appropriate frequency?		X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?		X				
		Were the MS/MSD RPDs within laboratory QC limits?			X			4
R8	OI	**Analytical duplicate data**						
		Were appropriate analytical duplicates analyzed for each matrix?				X		
		Were analytical duplicates analyzed at the appropriate frequency?				X		
		Were RPDs or relative standard deviations within the laboratory QC limits?				X		
R9	OI	**Method quantitation limits (MQLs):**						
		Are the MQLs for each method analyte included in the laboratory data package?		X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration		X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?			X			2
R10	OI	**Other problems/anomalies**						
		Are all known problems/anomalies/special conditions noted in this LRC and ER?		X				
		Was applicable and available technology used to lower the SDL to minimize the		X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?		X				3

Laboratory Name:		Accutest Gulf Coast	LRC Date:	7/28/2014				
Project Name:		Wirt Road Drainage & Paving Pr	Laboratory Project Number:	TC51946				
Reviewer Name:		Anita Patel	Prep Batch Number(s):	OP33292, VK1153				
#[1]	A[2]	DESCRIPTION		YES	NO	NA[3]	NR[4]	ER #[5]
S1	OI	**Initial calibration (ICAL)**						
		Were response factors and/or relative response factors for each analyte within QC limits?		X				
		Were percent RSDs or correlation coefficient criteria met?		X				
		Was the number of standards recommended in the method used for all analytes?		X				
		Were all points generated between the lowest and highest standard used to calculate the curve?		X				
		Are ICAL data available for all instruments used?		X				
		Has the initial calibration curve been verified using an appropriate second source standard?		X				
S2	OI	**Initial and continuing calibration verification (ICCV AND CCV) and continuing**						
		Was the CCV analyzed at the method-required frequency?		X				
		Were percent differences for each analyte within the method-required QC limits?		X				
		Was the ICAL curve verified for each analyte?		X				
		Was the absolute value of the analyte concentration in the inorganic CCB<MDL?				X		
S3	O	**Mass spectral tuning**						
		Was the appropriate compound for the method used for tuning?		X				
		Were ion abundance data within the method-required QC limits?		X				
S4	O	**Internal standards (IS)**						
		Were IS area counts and retention times within the method-required QC limits?		X				
S5	OI	**Raw data (NELAC Section 5.5.10)**						
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?		X				
		Were data associated with manual integrations flagged on the raw data?		X				
S6	O	**Dual column confirmation**						
		Did dual column confirmation results meet the method-required QC?				X		
S7	O	**Tentatively identified compounds (TICs):**						
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?				X		
S8	I	**Interference Check Sample (ICS) results**						
		Were percent recoveries within method QC limits?				X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**						
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?				X		
S10	OI	**Method detection limit (MDL) studies**						
		Was a MDL study performed for each reported analyte?		X				
		Is the MDL either adjusted or supported by the analysis of DCSs?		X				
S11	OI	**Proficiency test reports**						
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?		X				
S12	OI	**Standards documentation**						
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?		X				
S13	OI	**Compound/analyte identification procedures**						
		Are the procedures for compound/analyte identification documented?		X				
S14	OI	**Demonstration of analyst competency (DOC)**						
		Was DOC conducted consistent with NELAC Chapter 5?		X				
		Is documentation of the analyst's competency up-to-date and on file?		X				
S15	OI	**Verification/validation documentation for methods (NELAC Chapter 5)**						
		Are all the methods used to generate the data documentated, verified, and validated, where applicable?		X				
S16	OI	**Laboratory standard operating procedures (SOPs)**						
		Are laboratory SOPs current and on file for each method performed?		X				

LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:	Accutest Gulf Coast	LRC Date:	7/28/2014
Project Name:	Wirt Road Drainage & Paving Pr	Laboratory Project Number:	TC51946
Reviewer Name:	Anita Patel	Prep Batch Number(s):	OP33292, VK1153

ER#[1]	Description
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.
4	All anomalies are discussed in the case narrative.

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on

Gulf Coast ACCUTEST LABORATORIES

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TC51946
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK1153-MB	K26979.D	1	07/24/14	SC	n/a	n/a	VK1153

The QC reported here applies to the following samples: Method: SW846 8260C

TC51946-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.34	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.33	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	99%	72-122%
17060-07-0	1,2-Dichloroethane-D4	100%	68-124%
2037-26-5	Toluene-D8	99%	80-119%
460-00-4	4-Bromofluorobenzene	95%	72-126%

Blank Spike Summary

Job Number: TC51946
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK1153-BS	K26977.D	1	07/24/14	SC	n/a	n/a	VK1153

The QC reported here applies to the following samples: Method: SW846 8260C

TC51946-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	20.3	81	68-119
100-41-4	Ethylbenzene	25	21.1	84	71-117
1634-04-4	Methyl Tert Butyl Ether	25	19.6	78	65-119
108-88-3	Toluene	25	20.7	83	73-119
1330-20-7	Xylene (total)	75	61.0	81	74-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	97%	72-122%
17060-07-0	1,2-Dichloroethane-D4	94%	68-124%
2037-26-5	Toluene-D8	99%	80-119%
460-00-4	4-Bromofluorobenzene	91%	72-126%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC51946
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC51358-1MS	K26987.D	1	07/24/14	SC	n/a	n/a	VK1153
TC51358-1MSD	K26988.D	1	07/24/14	SC	n/a	n/a	VK1153
TC51358-1	K26980.D	1	07/24/14	SC	n/a	n/a	VK1153

The QC reported here applies to the following samples: Method: SW846 8260C

TC51946-1

CAS No.	Compound	TC51358-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		25	20.5	82	25	20.2	81	1	68-119/12
100-41-4	Ethylbenzene	ND		25	21.9	88	25	20.6	82	6	71-117/12
1634-04-4	Methyl Tert Butyl Ether	ND		25	20.3	81	25	19.6	78	4	65-119/13
108-88-3	Toluene	ND		25	21.1	84	25	20.6	82	2	73-119/13
1330-20-7	Xylene (total)	ND		75	62.6	83	75	60.3	80	4	74-119/13

CAS No.	Surrogate Recoveries	MS	MSD	TC51358-1	Limits
1868-53-7	Dibromofluoromethane	96%	97%	101%	72-122%
17060-07-0	1,2-Dichloroethane-D4	95%	97%	97%	68-124%
2037-26-5	Toluene-D8	99%	98%	98%	80-119%
460-00-4	4-Bromofluorobenzene	94%	93%	94%	72-126%

* = Outside of Control Limits.

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GC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TC51946
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33292-MB	LF102615.D	1	07/23/14	ZL	07/23/14	OP33292	GLF1516

The QC reported here applies to the following samples: Method: TNRCC 1005

TC51946-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	2.5	0.59	mg/l	
	TPH (>C12-C28)	ND	2.5	0.85	mg/l	
	TPH (>C28-C35)	ND	2.5	0.85	mg/l	
	TPH (C6-C35)	ND	2.5	0.59	mg/l	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	94%	70-130%
98-08-8	aaa-Trifluorotoluene	94%	70-130%

Blank Spike/Blank Spike Duplicate Summary

Job Number: TC51946
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33292-BS	LF102617.D	1	07/23/14	ZL	07/23/14	OP33292	GLF1516
OP33292-BSD	LF102619.D	1	07/23/14	ZL	07/23/14	OP33292	GLF1516

The QC reported here applies to the following samples: Method: TNRCC 1005

TC51946-1

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	BSD mg/l	BSD %	RPD	Limits Rec/RPD
	TPH (C6-C12)	50	41.0	82	41.9	84	2	75-125/20
	TPH (> C12-C28)	50	43.9	88	46.8	94	6	75-125/20
	TPH (C6-C35)	100	84.8	85	88.7	89	4	75-125/20

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
84-15-1	o-Terphenyl	104%	99%	70-130%
98-08-8	aaa-Trifluorotoluene	98%	97%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC51946
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Project- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33292-MS	LB102618.D	1	07/23/14	ZL	07/23/14	OP33292	GLB1516
OP33292-MSD	LB102620.D	1	07/23/14	ZL	07/23/14	OP33292	GLB1516
TC51876-1	LF102683.D	1	07/24/14	ZL	07/23/14	OP33292	GLF1516

The QC reported here applies to the following samples: Method: TNRCC 1005

TC51946-1

CAS No.	Compound	TC51876-1 mg/l	Q	Spike mg/l	MS mg/l	MS %	Spike mg/l	MSD mg/l	MSD %	RPD	Limits Rec/RPD
	TPH (C6-C12)	ND		52.9	45.5	86	48.3	36.4	75	22*	75-125/20
	TPH (>C12-C28)	ND		52.9	45.9	87	48.3	36.7	76	22*	75-125/20
	TPH (C6-C35)	ND		106	91.3	86	96.5	73.1	76	22*	75-125/20

CAS No.	Surrogate Recoveries	MS	MSD	TC51876-1	Limits
84-15-1	o-Terphenyl	91%	78%	93%	70-130%
98-08-8	aaa-Trifluorotoluene	99%	86%	95%	70-130%

* = Outside of Control Limits.

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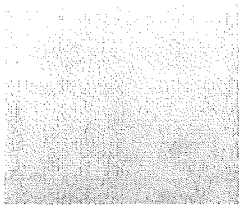
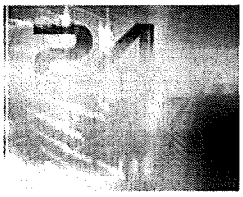
07/08/14





Technical Report for

Berg Oliver Associates

Wirt Road Drainage & Paving Inspection- Houston, TX

9155H-P2

Accutest Job Number: TC50733

Sampling Date: 06/27/14

Report to:

Berg Oliver Associates
14701 Saint Mary's Lane Suite 400
Houston, TX 77079
tmurphy@bergoliver.com

ATTN: Tom Murphy

Total number of pages in report: 24

NELAP ACCREDITED TNI LABORATORY

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Richard Rodriguez
Laboratory Director

Client Service contact: Sylvia Garza 713-271-4700

Certifications: TX (T104704220-14-15, 1M104704220-14-1) AR (14-016-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) NJ (TX010) OK (2013-152) VA (2085)

Sections: 1 2 3 4 5 6 7

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Accutest Laboratories

Sample Summary

Berg Oliver Associates

Job No: TC50733

Wirt Road Drainage & Paving Inspection- Houston, TX
Project No: 9155H-P2

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
TC50733-1	06/27/14	16:04	TM	06/30/14	SO	Soil	IDW

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	Berg Oliver Associates	Job No	TC50733
Site:	Wirt Road Drainage & Paving Inspection- Houston, TX	Report Date	7/8/2014 4:35:41 PM

1 Sample was collected on 06/27/2014 and received intact at Accutest on 06/30/2014 and properly preserved in 1 cooler at 2.6 Deg C. The sample received an Accutest job number of TC50733. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260C

Matrix SO Batch ID: VX2253

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC50731-22MS, TC50731-22MSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for Methyl Tert Butyl Ether are outside control limits.

Extractables by GC By Method TNRCC 1005

Matrix SO Batch ID: OP33086

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC50844-6MS, TC50844-6MSD were used as the QC samples indicated.

Wet Chemistry By Method SM 2540 G

Matrix SO Batch ID: GN59479

- Sample(s) TC50731-1DUP were used as the QC samples for Solids, Percent.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

Summary of Hits

Job Number: TC50733
Account: Berg Oliver Associates
Project: Wirt Road Drainage & Paving Inspection- Houston, TX
Collected: 06/27/14

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC50733-1	IDW					

No hits reported in this sample.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	IDW		
Lab Sample ID:	TC50733-1	Date Sampled:	06/27/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	SW846 8260C	Percent Solids:	87.1
Project:	Wirt Road Drainage & Paving Inspection- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X0100579.D	1	07/06/14	FI	n/a	n/a	VX2253
Run #2							

	Initial Weight	Final Volume
Run #1	5.13 g	5.0 ml
Run #2		

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00076 U	0.0045	0.00076	mg/kg	
108-88-3	Toluene	0.0011 U	0.0045	0.0011	mg/kg	
100-41-4	Ethylbenzene	0.0011 U	0.0045	0.0011	mg/kg	
1330-20-7	Xylene (total)	0.0031 U	0.013	0.0031	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.00057 U	0.0045	0.00057	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	114%		59-126%
2037-26-5	Toluene-D8	103%		70-139%
460-00-4	4-Bromofluorobenzene	100%		63-138%
17060-07-0	1,2-Dichloroethane-D4	99%		54-123%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	IDW		
Lab Sample ID:	TC50733-1	Date Sampled:	06/27/14
Matrix:	SO - Soil	Date Received:	06/30/14
Method:	TNRCC 1005 TX1005	Percent Solids:	87.1
Project:	Wirt Road Drainage & Paving Inspection- Houston, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	LB101457.D	1	07/02/14	ZL	07/02/14	OP33086	GLB1504
Run #2							

	Initial Weight	Final Volume
Run #1	10.3 g	10.0 ml
Run #2		

CAS No.	Compound	Result	MQL	SDL	Units	Q
	TPH (C6-C12)	13 U	28	13	mg/kg	
	TPH (>C12-C28)	15 U	28	15	mg/kg	
	TPH (>C28-C35)	15 U	28	15	mg/kg	
	TPH (C6-C35)	13 U	28	13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	93%		70-130%
98-08-8	aaa-Trifluorotoluene	94%		70-130%

U = Not detected SDL = Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- LRC Form

ACCUTEST Laboratories

CHAIN OF CUSTODY

PAGE 1 OF 1

10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL. 713-271-4700 FAX: 713-271-4770
www.accutest.com

FED-EX Tracking #:
Bottle Order Control #:
Accutest Quote #:
Accutest Job #: TC50733

Client / Reporting Information

Company Name: Berg-Oliver Associates
Street Address: 14701 St. Mary's Ln, Ste 400
City: Houston State: Tx Zip: 77079
Project Contact: Tom Murphy E-mail:
Phone #: 281.589.0898 Fax #: 281.589.0007
Sampler(s) Name(s): Tom Murphy Phone #:

Project Information

Project Name: Wirt Road Drainage + Paving Imp
Street: Wirt Road
City: Hou State: Tx
Project #: 9155H-P2
Client Purchase Order #: —
Project Manager: Tom Murphy

Billing Information (If different from Report to)

Company Name:
Street Address: Same
City: State: Zip:
Attention:

Requested Analyses

MTBE/BTEX (8260)
TPH (TX 1005)

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB-Rinse Blank
TB-Trip Blank

Accutest Sample #	Field ID / Point of Collection	Collection: Date	Time	Sampled By	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	ZnAc/NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	TSP	Na2SO4	ENCORE	OTHER	MTBE/BTEX (8260)	TPH (TX 1005)	LAB USE ONLY
1	FDW	06/27/14	1604	TM	SO	1												X	X		

Turnaround Time (Business days)

- [x] Standard
- [ ] 5 Day RUSH
- [ ] 4 Day RUSH
- [ ] 3 Day RUSH
- [ ] 2 Day RUSH
- [ ] 1 Day EMERGENCY

Approved By (Accutest PM): / Date:

Emergency & Rush T/A data available VIA Lablink

PM9

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULT1 (Level 3+4)
- [ ] REDT1 (Level 3+4)
- [ ] Commercial "C"
- [ ] TRRP
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC & Surrogate Summary

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession including courier delivery.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1		06/30/14			6/30/14 1510	
2						
3	Relinquished by Sampler:	Date Time: 13:44	Received By:	Relinquished By:	Date Time:	Received By:
4						
5	Relinquished by:	Date Time:	Received By:	Custody Seal #	Intact / Not Intact	Preserved where applicable	On Ice	Cooler Temp. 2.6

TC50733: Chain of Custody
Page 1 of 3

ACCUTEST LABORATORIES

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: TC50733 **Client:** BERG OLIVER **Project:** WIRT ROAD DRAINAGE

Date / Time Received: 6/30/2014 **Delivery Method:** **Airbill #'s:**

No. Coolers: 1 **Therm ID:** IR-5; **Temp Adjustment Factor:** 0;

Cooler Temps (Initial/Adjusted): #1: (2.6/2.6);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:			
3. Cooler media:	Ice (Bag)		

Quality Control Preservation	Y	or	N	N/A	WTB	STB
1. Trip Blank present / cooler:	☐		☐	☑	☐	☐
2. Trip Blank listed on COC:	☐		☐	☑		
3. Samples preserved properly:	☑		☐			
4. VOCs headspace free:	☐		☐	☑		

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Comments

TC50733: Chain of Custody
Page 2 of 3

ACCUTEST LABORATORIES

Sample Receipt Log

Job #: TC50733 **Date / Time Received:** 6/30/2014 3:10:00 PM **Initials:** RE

Client: BERG OLIVER

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC50733-1	4oz	1	VR	N/P	Note #2 - Preservative check not applicable.	IR-5	2.6	0	2.6

5.1

5

TC50733: Chain of Custody
Page 3 of 3

Appendix A Laboratory Data Package Cover Page

TC50733 This data package consists of

- [ ] This signature page, the laboratory review checklist, and the following reportable data:
- [ ] R1 Field chain-of-custody documentation;
- [ ] R2 Sample identification cross-reference;
- [ ] R3 Test reports (analytical data sheets) for each environmental sample that includes:
  - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
  - b) dilution factors,
  - c) preparation methods,
  - d) cleanup methods, and
  - e) if required for the project, tentatively identified compounds (TICs).
- [ ] R4 Surrogate recovery data including:
  - a) Calculated recovery (%R), and
  - b) The laboratory's surrogate QC limits.
- [ ] R5 Test reports/summary forms for blank samples;
- [ ] R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  - a) LCS spiking amounts,
  - b) Calculated %R for each analyte, and
  - c) The laboratory's LCS QC limits.
- [ ] R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  - a) Samples associated with the MS/MSD clearly identified,
  - b) MS/MSD spiking amounts,
  - c) Concentration of each MS/MSD analyte measured in the parent and
  - d) Calculated %Rs and relative percent differences (RPDs), and
  - e) The laboratory's MS/MSD QC limits
- [ ] R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  - a) The amount of analyte measured in the duplicate,
  - b) The calculated RPD, and
  - c) The laboratory's QC limits for analytical duplicates.
- [ ] R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- [ ] R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC&25.6 and was last inspection by

[ ] [X] TCEQ or [ ] _____ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

QA Manager Name (Printed)	Signature	Official Title (printed)	Date
Richard Rodriguez		Laboratory Director	7/8/2014

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA

Laboratory Name:	Accutest Gulf Coast	LRC Date:	7/8/2014	
Project Name:	Wirt Road Drainage & Paving Inspection- Houston, TX	Laboratory Project Number:	TC50733	
Reviewer Name:	Anita Patel	Prep Batch Number(s):	GN59479, OP33086, VX2253	

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

Laboratory Name:		Accutest Gulf Coast	LRC Date:	7/8/2014				
Project Name:		Wirt Road Drainage & Paving Ins	Laboratory Project Number:	TC50733				
Reviewer Name:		Anita Patel	Prep Batch Number(s):	GN59479, OP33086, VX2253				
#[1]	A[2]	DESCRIPTION		YES	NO	NA[3]	NR[4]	ER #[5]
S1	OI	**Initial calibration (ICAL)**						
		Were response factors and/or relative response factors for each analyte within QC limits?		X				
		Were percent RSDs or correlation coefficient criteria met?		X				
		Was the number of standards recommended in the method used for all analytes?		X				
		Were all points generated between the lowest and highest standard used to calculate the curve?		X				
		Are ICAL data available for all instruments used?		X				
		Has the initial calibration curve been verified using an appropriate second source standard?		X				
S2	OI	**Initial and continuing calibration verification (ICCV AND CCV) and continuing**						
		Was the CCV analyzed at the method-required frequency?		X				
		Were percent differences for each analyte within the method-required QC limits?		X				
		Was the ICAL curve verified for each analyte?		X				
		Was the absolute value of the analyte concentration in the inorganic CCB<MDL?				X		
S3	O	**Mass spectral tuning**						
		Was the appropriate compound for the method used for tuning?		X				
		Were ion abundance data within the method-required QC limits?		X				
S4	O	**Internal standards (IS)**						
		Were IS area counts and retention times within the method-required QC limits?		X				
S5	OI	**Raw data (NELAC Section 5.5.10)**						
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?		X				
		Were data associated with manual integrations flagged on the raw data?		X				
S6	O	**Dual column confirmation**						
		Did dual column confirmation results meet the method-required QC?				X		
S7	O	**Tentatively identified compounds (TICs):**						
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?				X		
S8	I	**Interference Check Sample (ICS) results**						
		Were percent recoveries within method QC limits?				X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**						
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?				X		
S10	OI	**Method detection limit (MDL) studies**						
		Was a MDL study performed for each reported analyte?		X				
		Is the MDL either adjusted or supported by the analysis of DCSs?		X				
S11	OI	**Proficiency test reports**						
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?		X				
S12	OI	**Standards documentation**						
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?		X				
S13	OI	**Compound/analyte identification procedures**						
		Are the procedures for compound/analyte identification documented?		X				
S14	OI	**Demonstration of analyst competency (DOC)**						
		Was DOC conducted consistent with NELAC Chapter 5?		X				
		Is documentation of the analyst's competency up-to-date and on file?		X				
S15	OI	**Verification/validation documentation for methods (NELAC Chapter 5)**						
		Are all the methods used to generate the data documentated, verified, and validated, where applicable?		X				
S16	OI	**Laboratory standard operating procedures (SOPs)**						
		Are laboratory SOPs current and on file for each method performed?		X				

LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:	Accutest Gulf Coast	LRC Date:	7/8/2014
Project Name:	Wirt Road Drainage & Paving Ins	Laboratory Project Number:	TC50733
Reviewer Name:	Anita Patel	Prep Batch Number(s):	GN59479, OP33086, VX2253

ER#[1]	Description
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.
4	All anomalies are discussed in the case narrative.

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on

Gulf Coast ACCUTEST LABORATORIES

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TC50733
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Inspection- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX2253-MB	X0100560.D	1	07/05/14	FI	n/a	n/a	VX2253

The QC reported here applies to the following samples: Method: SW846 8260C

TC50733-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	3.9	0.66	ug/kg	
100-41-4	Ethylbenzene	ND	3.9	0.95	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	3.9	0.50	ug/kg	
108-88-3	Toluene	ND	3.9	1.0	ug/kg	
1330-20-7	Xylene (total)	ND	12	2.7	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	92%	59-126%
2037-26-5	Toluene-D8	96%	70-139%
460-00-4	4-Bromofluorobenzene	93%	63-138%
17060-07-0	1,2-Dichloroethane-D4	93%	54-123%

Blank Spike Summary

Job Number: TC50733
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Inspection- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX2253-BS	X0100558.D	1	07/05/14	FI	n/a	n/a	VX2253

The QC reported here applies to the following samples: Method: SW846 8260C

TC50733-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	47.5	51.6	109	58-124
100-41-4	Ethylbenzene	47.5	48.0	101	57-124
1634-04-4	Methyl Tert Butyl Ether	47.5	60.7	128*	65-119
108-88-3	Toluene	47.5	48.7	102	67-119
1330-20-7	Xylene (total)	143	150	105	62-120

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	107%	59-126%
2037-26-5	Toluene-D8	99%	70-139%
460-00-4	4-Bromofluorobenzene	95%	63-138%
17060-07-0	1,2-Dichloroethane-D4	98%	54-123%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC50733
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Inspection- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC50731-22MS	X0100562.D	1	07/05/14	FI	n/a	n/a	VX2253
TC50731-22MSD	X0100563.D	1	07/05/14	FI	n/a	n/a	VX2253
TC50731-22	X0100561.D	1	07/05/14	FI	n/a	n/a	VX2253

The QC reported here applies to the following samples: Method: SW846 8260C

TC50733-1

CAS No.	Compound	TC50731-22 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	260 U		3260	3240	99	3260	2920	89	10	58-124/26
100-41-4	Ethylbenzene	260 U		3260	3050	93	3260	2870	88	6	57-124/29
1634-04-4	Methyl Tert Butyl Ether	260 U		3260	3780	116	3260	3430	105	10	65-119/29
108-88-3	Toluene	260 U		3260	3110	95	3260	2920	89	6	67-119/28
1330-20-7	Xylene (total)	780 U		9790	9550	98	9790	9020	92	6	62-120/27

CAS No.	Surrogate Recoveries	MS	MSD	TC50731-22	Limits
1868-53-7	Dibromofluoromethane	94%	85%	100%	59-126%
2037-26-5	Toluene-D8	91%	92%	94%	70-139%
460-00-4	4-Bromofluorobenzene	87%	91%	91%	63-138%
17060-07-0	1,2-Dichloroethane-D4	86%	84%	93%	54-123%

* = Outside of Control Limits.

Gulf Coast ACCUTEST LABORATORIES

GC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TC50733
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Inspection- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33086-MB	LB101426.D	1	07/02/14	ZL	07/02/14	OP33086	GLB1504

The QC reported here applies to the following samples: Method: TNRCC 1005

TC50733-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C6-C12)	ND	25	11	mg/kg	
	TPH (> C12-C28)	ND	25	14	mg/kg	
	TPH (> C28-C35)	ND	25	14	mg/kg	
	TPH (C6-C35)	ND	25	11	mg/kg	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	100%	70-130%
98-08-8	aaa-Trifluorotoluene	101%	70-130%

Blank Spike/Blank Spike Duplicate Summary

Job Number: TC50733
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Inspection- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33086-BS	LB101428.D	1	07/02/14	ZL	07/02/14	OP33086	GLB1504
OP33086-BSD	LB101430.D	1	07/02/14	ZL	07/02/14	OP33086	GLB1504

The QC reported here applies to the following samples: Method: TNRCC 1005

TC50733-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	BSD mg/kg	BSD %	RPD	Limits Rec/RPD
	TPH (C6-C12)	250	247	99	248	99	0	75-125/20
	TPH (>C12-C28)	250	268	107	272	109	1	75-125/20
	TPH (C6-C35)	500	514	103	521	104	1	75-125/20

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
84-15-1	o-Terphenyl	102%	101%	70-130%
98-08-8	aaa-Trifluorotoluene	105%	106%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TC50733
Account: BOATXHO Berg Oliver Associates
Project: Wirt Road Drainage & Paving Inspection- Houston, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33086-MS	LF101429.D	1	07/02/14	ZL	07/02/14	OP33086	GLF1504
OP33086-MSD	LF101431.D	1	07/02/14	ZL	07/02/14	OP33086	GLF1504
TC50844-6	LF101427.D	1	07/02/14	ZL	07/02/14	OP33086	GLF1504

The QC reported here applies to the following samples: Method: TNRCC 1005

TC50733-1

CAS No.	Compound	TC50844-6 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	Spike mg/kg	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH (C6-C12)	33	U	328	337	103	333	346	104	3	75-125/20
	TPH (>C12-C28)	33	U	328	387	118	333	402	121	4	75-125/20
	TPH (C6-C35)	33	U	656	724	110	666	747	112	3	75-125/20

CAS No.	Surrogate Recoveries	MS	MSD	TC50844-6	Limits
84-15-1	o-Terphenyl	109%	113%	107%	70-130%
98-08-8	aaa-Trifluorotoluene	103%	105%	102%	70-130%

* = Outside of Control Limits.

APPENDIX C

Photographs

Typical view of coring at soil boring SB-1.

Another view of coring activity at SB-2.

View coring concrete at SB-4.

View of coring activity at SB-6.

View of push drilling activity at soil boring SB-1.

Close up view of push drilling at SB-1.

SITE PHOTOGRAPHS
Wirt Road Drainage and Paving Improvements
WBS No. M-000287-0002-3
Houston, Texas

Typical view of probing for subsurface conflicts prior to drilling.

View of push drilling activity at SB-2.

Typical view of patching concrete cores for soil borings.

View of push drilling at soil borings SB-5.

View of push drilling at SB-6.

View of push drilling at SB-7.

SITE PHOTOGRAPHS
Wirt Road Drainage and Paving Improvements
WBS No. M-000287-0002-3
Houston, Texas

View push drilling at soil boring SB-31.

Typical view of placing bentonite pellets in the soil annulus.

View push drilling activity at SB-30.

View of push drilling at SB-29.

View of preclearance activity at SB-28.

Close up view of push drilling at SB-28.

SITE PHOTOGRAPHS

Wirt Road Drainage and Paving Improvements

WBS No. M-000287-0002-3

Houston, Texas

View of push drilling at SB-27.

View of push drilling activity at SB-26.

View of push drilling at SB-25.

Typical view of some of the soil cores generated for the project.

View of sampling supplies and equipment.

View of the temporary well point at SB-25/TWP-25.

SITE PHOTOGRAPHS

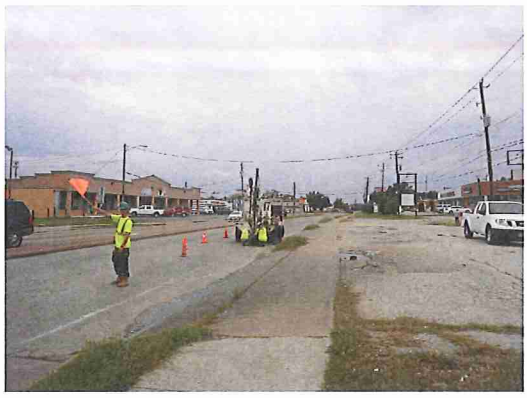
Wirt Road Drainage and Paving Improvements
WBS No. M-000287-0002-3
Houston, Texas

View push drilling at soil boring SB-24.

View of push drilling at SB-23

Typical view concrete core.

View of push drilling at SB-22.



View of push drilling activity at SB-21.

View of concrete patch activities.

SITE PHOTOGRAPHS
Wirt Road Drainage and Paving Improvements
WBS No. M-000287-0002-3
Houston, Texas

View of push drilling at SB-18. The proposed soil boring location had to be moved due to subsurface conflict.

View of push drilling activity at SB-17.

View of old vent lines at 2000 Wirt Road (SB-16 & 17 area).

View of push drilling at SB-16. The original proposed boring location had to be moved due to waterline conflict.

View of push drilling at SB-15.

View of push drilling at SB-14.

SITE PHOTOGRAPHS

Wirt Road Drainage and Paving Improvements

WBS No. M-000287-0002-3

Houston, Texas

View push drilling at soil boring SB-13.

View of push drilling at SB-12.

SITE PHOTOGRAPHS
Wirt Road Drainage and Paving Improvements
WBS No. M-000287-0002-3
Houston, Texas

APPENDIX D

Qualifications of Environmental Professionals

TOM MURPHY
PROJECT MANAGER
ENVIRONMENTAL ENGINEERING SERVICES

EDUCATION

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 Protocol

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

Berg-Oliver Associates, Inc., Project Manager, December 2004 to present
BNC Environmental Services, Inc., Project Geologist/Scientist/Manager, October 2001 to December 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 15 years of diverse environmental experience. His responsibilities have included: conducting surface and/or subsurface soil and groundwater investigations, Affected Property Assessment Reports (APARs), Phase II ESAs, Phase IIIs, spill response and environmental management, project management, conducting over two thousand Phase I ESAs/due diligence, and transaction screens. 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, 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 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 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) 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, 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 bioremedation).

- 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 bioremedial equipment installation, sampling protocol of water and/or soils, and closure of 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 sixteen hundred Phase I Site 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. 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 (in-active)

BENJAMIN M. PRICE, GEOLOGIST
VICE PRESIDENT AND PROJECT MANAGER
ENVIRONMENTAL ENGINEERING SERVICES

EDUCATION
Master of Science, Geology, Texas A&M University (1991)
Bachelor of Science, Geology, Florida Atlantic University

CERTIFICATIONS/AFFILIATIONS
Certified Wetland Delineator 1997
Society of Wetland Scientists
Certified Environmental Auditor, 1997
Registered Environmental Manager (R.E.M. #10916)
Texas Association of Environmental Professionals
National Registry of Environmental Professional
Federal Energy Regulatory Commission (FERC) Training and Certification
National Environmental Policy Act (NEPA) Training and Certification
Texas Department of Transportation Certification No. 6550
TxDOT precertified in 2.3.1, 2.4.1, 2.6.1, and 2.13.1

EXPERIENCE
Mr. Price is an environmental scientist with diverse experience in both business and technical aspects of the environmental industry. Utilizing his extensive background in geological and biological disciplines, he has developed expertise in environmental regulations, property assessments, hazardous waste testing and evaluation, wetland evaluation, endangered species audits, health and safety issues, and silviculture activities. Mr. Price specializes in site investigations relating to hazardous material and petroleum product contamination. His experience with the petroleum industry and contaminated site remediation allows him to effectively consult on cost efficient solutions to environmental impairment concerns. Mr. Price is involved with problem solving related to environmental and ecological issues, especially those which may hinder property transfer, land development activities, or oil and gas activities. He has developed a unique working relationship with many federal and state resource agencies responsible for project permitting and approval.

REPRESENTATIVE PROJECTS

- *Alamo Lumber Company, City of Houston, Texas: Subsurface Investigation and Remediation.* Project Manager for the conduct of Phase I, Phase II, and Phase III investigations and level three remediation of soil and groundwater. Contaminates of concern included Pentachlorophenol (PCP) and various Dioxins. The project required agency supervision and approvals.

- *U. S. 59 and Grand Parkway, private development project, Fort Bend County, Texas: Limited Environmental Assessment.* Project Hazards Manager for the preparation of a Limited Environmental Assessment (EA) for a 500-acre land development between the Brazos River and Highway 59 (Southwest Freeway) bisected by the Grand Parkway. The project involved assessment and documentation of environmental issues, such as wetlands, hazardous waste, historic/archaeological investigation and preservation, threatened and endangered species, surface hydrology, and flood plains.

- *Houston Comprehensive Bikeway Program, City of Houston, all locations, Environmental Assessment.* Project Coordinator for the preparation of an Environmental Assessment (EA) for the comprehensive bikeways program covering 100 lineal miles and involving a TxDOT EA for ISTEA funding. The project involved the preparation of NEPA documentation and assessments of environmental issues, such as wetlands, hazardous waste, historic preservation, threatened and endangered species, air quality, noise, water quality, hydrology, and flood plains.

- *Stafford-Staffordshire Road Expansion of roadway, City of Stafford, east Fort Bend County, Environmental Assessment.* Project Coordinator for the preparation of a TxDOT Environmental Assessment (EA) for the expansion of Stafford-Staffordshire Road through three jurisdictions (Harris County, City of Stafford, and City of Missouri City). The project involved preparation of a NEPA environmental assessment, including wetlands, hazardous waste, historic preservation, threatened and endangered species, air quality, water quality, hydrology, and flood plains.

- *Sienna Plantation, private client, east Fort Bend County, Texas: Environmental Assessment and Planning.* Project Coordinator for an approximate 11,000-acre project involving current and long range environmental planning. The project involved assessment, permitting, and mitigation for many different tracts and sections of the development. Specific tasks included evaluation of existing wetlands, creation of constructed wetlands, overall project planning, hazardous waste assessments, historic/cultural/archaeological preservation, threatened and endangered species, coordination, land management, and contractor supervision.

- *Independence Boulevard, Murphy Road Detention and Drainage Facilities, City of Missouri City, east Fort Bend County, Texas: Environmental Assessments.* Project Coordinator for the preparation of an Environmental Assessment for the extension of Murphy Road, the Environmental Assessment for the Murphy Road Detention and Drainage Improvements, and other environmental evaluations for the City of Missouri City, Texas. Projects involved preparation of Section 404 permit documentation, and assessment of environmental issues, such as wetlands, hazardous waste, historic/archaeological investigation and preservation, and threatened and endangered species.

- *Sugarland Oil and Gas, private oil company, northeast Fort Bend County: Field Assessment and Compliance Review.* Project Coordinator for the environmental assessment and compliance review of a large oil field located around a salt dome structure. The property contained over 125 known oil and gas wells. Environmental evaluation included the evaluation of each currently producing and non-producing historic well site for hazardous material, toxic material, and petroleum products. Phase II site investigation and characterization is still ongoing.