

RECEIVED

By Alameda County Environmental Health 3:51 pm, Jul 12, 2016

Mr. Dilan Roe
Alameda County Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94502-6577

Re: **Data Gap Assessment Report**
1244 2nd Avenue
Oakland, California

Dear Mr. Roe:

1244 2nd Avenue LLC, has retained Pangea Environmental Services, Inc. (Pangea) for environmental consulting matters at the project referenced above. Pangea is submitting the attached report on our behalf.

I declare, under penalty of perjury, that the information and/or recommendations contained in the attached report are true and correct to the best of my knowledge.

Sincerely,



Trent Moore
1244 2nd Avenue LLC



July 11, 2016

Trent Moore
Managing Member
1244 2nd Avenue LLC
2655 Van Ness Avenue, Suite 2
San Francisco, California 94109

Re: **Data Gap Assessment Report**
1244 2nd Avenue
Oakland, California 94606

Dear Mr. Moore:

On behalf of 1244 2nd Avenue LLC, Pangea Environmental Services, Inc. (Pangea) has prepared this *Data Gap Assessment Report* for the subject property. This report documents implementation of the *Data Gap Workplan* dated January 22, 2016 and *Revised Proposed Boring Locations* dated May 13, 2016. This Workplan was approved by your agency via email in early May 2016 (Appendix A). The investigation work scope involved sampling of soil, groundwater, and soil gas to characterize potential impact associated with recent removal of a 1,000-gallon heating oil underground storage tank (UST) to help facilitate case closure.

Our conclusions and recommendations pertaining to the investigation results are presented herein. If you have any questions or comments, please call me at (510) 435-8664 or email briddell@pangeaenv.com.

Sincerely,
Pangea Environmental Services, Inc.

A handwritten signature in blue ink that reads "Bob Clark-Riddell". The signature is written in a cursive, flowing style.

Bob Clark-Riddell, P.E.
Principal Engineer

Attachment: *Data Gap Assessment Report*

PANGEA Environmental Services, Inc.

1710 Franklin Street, Suite 200, Oakland, CA 94612 Telephone 510.836.3700 Facsimile 510.836.3709 www.pangeaenv.com



DATA GAP ASSESSMENT REPORT

1244 2ND Avenue
Oakland, CA

July 11, 2016

Prepared for:

1244 2nd Avenue LLC
2655 Van Ness Avenue, Suite 2
San Francisco, California 94109

Prepared by:

Pangea Environmental Services, Inc.
1710 Franklin Street, Suite 200
Oakland, California 94612

Written by:




Elizabeth Avery
Project Geologist


Bob Clark-Riddell, P.E.
Principal Engineer

INTRODUCTION

On behalf of 1244 2nd Avenue LLC, Pangea Environmental Services, Inc. (Pangea) has prepared this *Data Gap Assessment Report* for the subject property. This report documents implementation of the *Data Gap Workplan* dated January 22, 2016 and *Revised Proposed Boring Locations* dated May 13, 2016. This Workplan was approved by your agency via email in early May 2016 (Appendix A). The investigation work scope involved sampling of soil, groundwater, and soil gas to characterize potential impact associated with recent removal of a 1,000-gallon heating oil underground storage tank (UST) and to help facilitate case closure.

SITE BACKGROUND

The subject site is occupied by a mixed-use residential/commercial structure located on the southeast side of 2nd Avenue in Oakland, California.

UST Removal

On December 8, 2015, L&W Construction of Petaluma, California removed a 1,000-gallon UST apparently used to store heating oil. The UST was located beneath the sidewalk on International Boulevard on the southeast side of the site structure. The UST dimensions were four feet in diameter by ten feet in length, and the top of the UST was approximately eight feet below surface grade. During UST removal L&W removed approximately 50 tons of impacted soil and 2,800 gallons of groundwater for secondary source removal. The site and former UST location are shown on Figure 1. The UST excavation was backfilled in early January 2016. UST and secondary source removal activities were reported in the *Underground Storage Tank Removal Report* prepared by L&W and dated January 18, 2016.

Site Investigation

On December 23, 2015, Pangea coordinated soil and groundwater sampling to characterize subsurface impact near and downgradient of the UST. Site assessment results are described in the *Site Assessment Report* dated December 31, 2015. Pangea coordinated the drilling of six soil borings (B-1 through B-6) and sampling within the tank pit. Sampling locations are shown on Figures 1 and 2. Soil and groundwater analytic data are summarized on Tables 1 and 2, respectively. The only detected petroleum hydrocarbons were quantified as TPHd and TPHmo. Since the laboratory fuel fingerprint analysis characterized the sample chromatogram as ‘significant aged diesel pattern between C10 and C23’, the hydrocarbons quantified as TPHmo may represent the heavier range of TPHd hydrocarbons. No TPHg, BTEX, MTBE or other VOCs were reported in soil site soil or groundwater. The TPHd and TPHmo impact in soil was below the final environmental screening levels (ESLs) for commercial site use. The limited TPHd and TPHmo impact detected in groundwater only slightly

exceeded the applicable ESL (aquatic habitat) at two locations, adjacent and approximately 25 ft from the removed UST. The aquatic habitat ESL is applicable given the proximity to surface water and sewer/storm drain conduits, and the lack of anticipated groundwater use as a drinking water resource in the site vicinity. The observed impact will attenuate with time given the removal of the UST and secondary source material.

Underground Utility Location

The *Site Assessment Report* dated December 31, 2015 presents underground utility information. To identify nearby underground utilities that could act as preferential pathway for hydrocarbon migration, Pangea reviewed USA markings and obtained sanitary sewer and storm drain maps from the City of Oakland. The only utility identified nearby the UST was a shallow AT&T communication line about 2 feet from the site structure running parallel to the building and street. The sanitary sewer and storm drain conduits are located in the middle of 2nd Avenue and eastward, as shown on Figure 2. The sanitary sewer and storm drain conduits slope to the north toward Lake Merritt. Sanitary sewer and storm drain maps from the City of Oakland are included in Appendix B of the *Site Assessment Report*.

SITE INVESTIGATION PROCEDURES

The objective of the investigation was to address identified data gaps. The data gaps included additional delineation near the adjacent building, delineation of the downgradient hydrocarbon plume, and evaluation of potential threats to aquatic habitat given the site proximity to nearby surface water, shallow site groundwater, and nearby storm drain conduits. The site assessment work scope involved sampling of soil, groundwater, and soil gas.

Pre-Drilling Activities

Prior to drilling, Pangea obtained a boring permit from the Alameda County Public Works Agency and an encroachment permit from the City of Oakland. The permits are included in Appendix A. A comprehensive site safety plan was prepared to protect site workers and the plan was kept onsite during all field activities. The proposed drilling locations were marked and Underground Service Alert (USA) was notified at least 48 hours before the proposed field activities.

Soil and Groundwater Sampling Procedures

On May 13 and 16, Pangea coordinated the completion of soil sampling at three locations (SB-1 through SB-3) within open structural excavations inside the site building. On June 9, 2016, Pangea coordinated the completion of four soil borings (B-7 through B-10) offsite and downgradient of the former UST. Boring locations are shown on Figure 1.

In May 2016, soil samples at locations SB-1 through SB-3 were completed using hand auger equipment. Soil samples were collected at approximately 12 ft bgs for boring SB-1 and 9 ft bgs for boring SB-3. Samples were also collected at approximately 6, 9, 12 and 15 ft bgs for boring SB-2. Soil samples were collected in new stainless steel soil tubes, and sealed on each end with Teflon tape and end caps. Grab groundwater samples were taken from each boring. Sampling was conducted in accordance with Pangea's *Standard Operating Procedures* presented in Appendix B.

On June 9, 2016, Pangea coordinated continuous direct-push soil sampling of borings B-7 through B-10 using a Geoprobe 7822DT combo rig. Pangea retained Cascade Drilling, L.P. (Cascade) of Richmond, California. The borings were advanced in general accordance with the Standard Operating Procedures in Appendix C. After hand augering to five feet below grade surface (bgs) at each location, Pangea used a direct push drill rig to advance borings B-7, B-8, B-9, and B-10 to 14, 13, 11.3, and 14 ft bgs, respectively. Temporary PVC piping and well screen was installed within borings B-7 through B-10 to first encountered groundwater. A grab groundwater sample was collected from each of these borings. Groundwater samples were decanted into appropriate containers and each boring was then filled with grout. Note that only limited groundwater was present in boring B-9 for sampling. Per laboratory discussion, the 18.5 ml sample was diluted in the field with 24.5 ml deionized water to 43 ml. Due to insufficient volume, the sample was not analyzed for TPHg or TPHmo. Boring logs are included in Appendix C. All samples were shipped under chain of custody to McCampbell Analytical, Inc., of Pittsburg, California, a California-certified laboratory.

The drilling was observed in the field by Pangea engineer Erik Lervaag and supervised by Bob Clark-Riddell, a California Registered Professional Civil Engineer (P.E.). Soil characteristics such as color, texture, and relative water content were noted in the field using the USCS classification system and entered onto a field boring log. Field screening of soil samples for potential hydrocarbons and volatile organic compounds included visual and olfactory observations.

Select soil and groundwater samples were analyzed for the following:

- Total petroleum hydrocarbons as gasoline (TPHg) by EPA Method 8015Bm.
- Total petroleum hydrocarbons as diesel (TPHd) and motor oil (TPHmo) by EPA Method 8015B.

Soil Gas Probe Installation and Sampling Procedures

On May 16, 2016, Pangea coordinated the installation of one soil gas probe (SVW-1). The soil gas probe borehole was installed within native soil approximately 2.0 ft bgs beneath the exposed concrete floor slab, constructed within the sidewall of the open excavation. A semi-permanent soil gas probe was constructed with a stainless steel Geoprobe™ implant connected to new ¼-inch diameter Teflon tubing and capped with a

Swagelok® type fitting. The implant was placed in a 0.5 ft thick sand pack with 0.5 ft of dry granular bentonite above, followed by hydrated bentonite. The structural contractor subsequently poured concrete into the excavation cavity with rebar for the steel moment-frame support and repaired the floor slab. To evaluate shallow soil gas conditions, Pangea coordinated soil gas sampling from SVW-1 on May 24, 2016 several days after the concrete pour and slab replacement. Field data sheets are included in Appendix D. Prior to sample collection a shut in test was conducted on the sampling assembly to confirm no leak and the maintenance of the initial vacuum in the sampling manifold system. After shut in testing, the probe was connected to the sampling assembly using a Swagelok fitting and Teflon tubing, then a shroud was placed over the probe and isopropyl alcohol was introduced to a concentration of approximately 10 to 20%. The isopropyl alcohol concentration was monitored periodically using a PID detector and a separate purge canister was used to purge the manifold/probe assembly. By using a separate purge canister connected to the manifold/probe assembly with a 3-way swagelock valve fitting, the well and manifold can be purged simultaneously. Upon completion of purging of approximately three times the ambient volume of air in the assembly/probe and void space, the probe was then sampled using a vacuum pump equipped with an iron lung containing a Tedlar bag. Sample collection was performed approximately eight days after soil gas probe installation.

The soil gas sampling was conducted in general accordance with procedures described in California EPA's Advisory Active Soil Gas Investigations April 2012. The soil gas samples were submitted for analysis to McCampbell Analytical, Inc., of Pittsburg, California, a California-certified laboratory.

Soil gas samples were analyzed for total petroleum hydrocarbons as gasoline (TPHg) and volatile organic compounds (VOCs) and isopropyl alcohol (leak check compound) by Total Organics Method 15 (TO-15); and for percent oxygen and methane by Method ASTM D-1946. The oxygen analysis helps evaluate the potential for future degradation and bioattenuation of detected hydrocarbons, and helps assess soil column characteristics ($\geq 4\%$ oxygen in soil gas is referenced as a bio-attenuation zone in the SWRCB's Underground Storage Tank Low-Threat Site Closure Policy). Methane analysis was conducted to evaluate if residual petroleum hydrocarbons are contributing to biological activity and generation of methane gas and a potential explosion risk.

INVESTIGATION RESULTS

Field observations and analytical results are described herein. Soil and groundwater analytical data are summarized on Figures 2 and 3, respectively. Analytical results for soil, groundwater, and soil gas are summarized and compared to recently revised Environmental Screening Levels (ESLs) established by the Regional Water Quality Control Board on Tables 1, 2, and 3, respectively. Pangea notes that the ESLs were recently revised by the Water Board. The laboratory analytical reports are included in Appendix E.

Field Observations

No hydrocarbon odor or staining was observed during augering activity. Boring logs are included in Appendix C. Based on soil logging during hand augering of borings SB-1 to SB-3, soil consisted primarily of brown sandy clay and gray clay. Groundwater was encountered between approximately 4 and 7 ft bgs within onsite borings SB-1 to SB-3. Based on soil logging during offsite borings B-7 to B-10, soil consisted primarily of brown sandy clay and dark brown to tan clay. Groundwater was not initially encountered during drilling of offsite borings B-7 to B-10, but infiltrated the borings after drilling.

Soil Analytical Results

Current and historical soil analytical results are summarized on Figure 2 and Table 1. For current soil samples, no TPHg, TPHd, or TPHmo concentrations were detected in soil above reporting limits. For historic data, the only hydrocarbon or VOC detections were 38 mg/kg TPHd and 63 mg/kg TPHmo in the tank pit soil sample from 12' ft bgs; these concentrations are well below applicable ESLs.

Grab Groundwater Analytical Results

Groundwater analytical results are summarized on Figure 3 and Table 2. As shown on Table 2, no TPHg, TPHd, or TPHmo were detected above reporting limits for groundwater in borings SB-1, SB-2, SB-3 or B-8. TPHd concentrations were detected at 170 µg/L (B-9) and 1,600 µg/L (B-10), and TPHmo concentrations were detected at 370 µg/L (B-7) and 35,000 µg/L (B-10).

For *current* data, the only TPHd concentration in groundwater that exceeded the ESL protective of aquatic habitat (640 µg/L) was reported for boring B-10 (1,600 µg/L) located across the street and adjacent to the storm drain. For *historic* data, the only other TPHd concentration in groundwater that exceeded the ESL protective of aquatic habitat (640 µg/L) was reported for boring B-6 (1,600 µg/L) adjacent the former UST. This ESL is applicable as a screening level given the site proximity to nearby surface water, shallow site groundwater, and nearby storm drain conduits, and the lack of anticipated use of shallow groundwater for drinking water or other beneficial use. The final Tier 1 ESL for groundwater for TPHd is 100 µg/L. Downgradient of the former UST, TPHd was reported at 150 µg/L in boring B-2 and non-detect (<50 µg/L) in more distant boring B-8.

The final Tier 1 ESL for groundwater TPHmo impact is 50,000 µg/L. While an elevated TPHmo concentration of 35,000 µg/L was detected in boring B-10 located across the street, this below the final ESL and no ESL is established for aquatic habitat protection for TPHmo. The detection of elevated TPHmo at boring B-10 is anomalous to TPHmo detections in other groundwater samples for this site.

Chromatogram Review

Based on the anomalous TPHd and TPHmo results reported for offsite boring B-10, Pangea requested chromatograms and a laboratory opinion regarding key groundwater sample analyses. The chromatograms for groundwater samples from the UST tank pit, B-6, B-7, B-8, and B-10 are included in Appendix G. Diesel, kerosene, and motor oil standards are also included in Appendix G. The laboratory via email reported that the chromatograms for the source area (B-6 and the Tank Pit) are similar to each other, and that the chromatograms for offsite, downgradient borings (B-7, B-8, and B-10) are similar to each other. For the fuel fingerprint analysis for the tank pit sample, the laboratory references a 'significant aged diesel pattern'. The chromatogram for source area sample B-6 resembles the diesel standard and includes some oil range compounds. The email and the laboratory fuel fingerprint note are also included in Appendix G. For offsite borings B7, B-8 and B-10, the chromatograms look very similar to each other, and represent heavier hydrocarbon impact than shown on source area chromatograms. For the most downgradient boring from the former UST (boring B-9), the laboratory noted kerosene range compounds were also present.

Soil Gas Analytical Results

Soil gas analytical results are summarized on Table 3. No benzene, ethylbenzene, xylenes, or TPHg were detected above reporting limits in soil gas from SVW-1. The only detected hydrocarbon was toluene at a concentration of 8.9 $\mu\text{g}/\text{m}^3$, which is well below the commercial ESLs (1,300,000 $\mu\text{g}/\text{m}^3$) and the residential ESLs (160,000 $\mu\text{g}/\text{m}^3$).

Methane analysis was conducted to evaluate if residual petroleum hydrocarbons are contributing to biological activity and the generation of methane gas, a potential explosion risk. No methane was detected in the soil gas sample.

CONCLUSIONS AND RECOMMENDATIONS

Based on the above data gap assessment information, Pangea offers the following conclusions and recommendations regarding environmental issues at the site:

- No TPHg, BTEX, MTBE or other VOCs were reported in site soil or groundwater for current or historic data. Only a trace toluene concentration (8.9 $\mu\text{g}/\text{m}^3$) was detected in soil gas beneath the building. No methane was detected in the soil gas sample, and oxygen concentrations are indicative of a bioattenuation zone.
- The only reported petroleum hydrocarbons for current or historic data were quantified as TPHd and TPHmo. The only *soil* sample with reported TPHd and TPHmo concentrations was within the tank pit

area, and contained concentrations well below final environmental screening levels (ESLs) for residential or commercial site use.

- Current groundwater data provides delineation of petroleum hydrocarbons emanating from the former UST to below ESLs protective of aquatic habitat. Data from boring B-8 suggests the hydrocarbon impacted emanating from the former UST is also below the final GW Tier 1 ESL. Given the recently revised ESLs and laboratory chromatogram information, available data indicates petroleum hydrocarbon impact emanating from the former UST that exceeds applicable ESLs is the limited TPHd impact at location B-6 adjacent the former UST within the street. This TPHd impact is adequately characterized by the surrounding borings.
- The petroleum hydrocarbon impact detected in groundwater across the street in boring B-10 apparently represents hydrocarbons from a different source. The laboratory noted that chromatograms for two impacted tank area samples (B-6 and the Tank Pit) are similar to each other and differ from chromatograms for offsite, downgradient borings B-7, B-8, and B-10 that resemble each other. From these three borings more distant from the site and located adjacent to underground sanitary sewer or storm drain conduits, only the TPHd impact at boring B-10 slightly exceeds the ESL protective of aquatic habitat. The aquatic habitat ESLs is applicable given the proximity to surface water and sewer/storm drain conduits, and the lack of anticipated groundwater use as a drinking water resource in the site vicinity.
- The above information suggests the limited residual petroleum impact does not represent a significant risk to human health or the environment. Source removal was conducted during UST removal, involving the excavation and offsite disposal of approximately 50 tons of potentially-impacted source soil and 2,800 gallons of groundwater.
- The observed impact will attenuate with time given the removal of the UST and secondary source material. Since the groundwater plume from the former UST is <100 ft in length, site groundwater likely satisfies groundwater-specific criteria of the *Low Threat UST Closure Policy* adopted by the State Water Resources Control Board. The site assessment data also apparently satisfies media-specific criteria of the *Low Threat UST Closure Policy* adopted by the State Water Resources Control Board.
- Based on the above information, Pangea recommends no further action for this case.

ATTACHMENTS

Figure 1 – Site Map

Figure 2 – Soil Analytical Data

Figure 3 – TPHg, TPHd, and TPHmo Concentrations in Groundwater

Table 1 – Soil Analytical Data

Table 2 – Groundwater Analytical Data

Table 3 – Soil Gas Analytical Data

Appendix A – Agency Correspondence

Appendix B – Drilling Permit

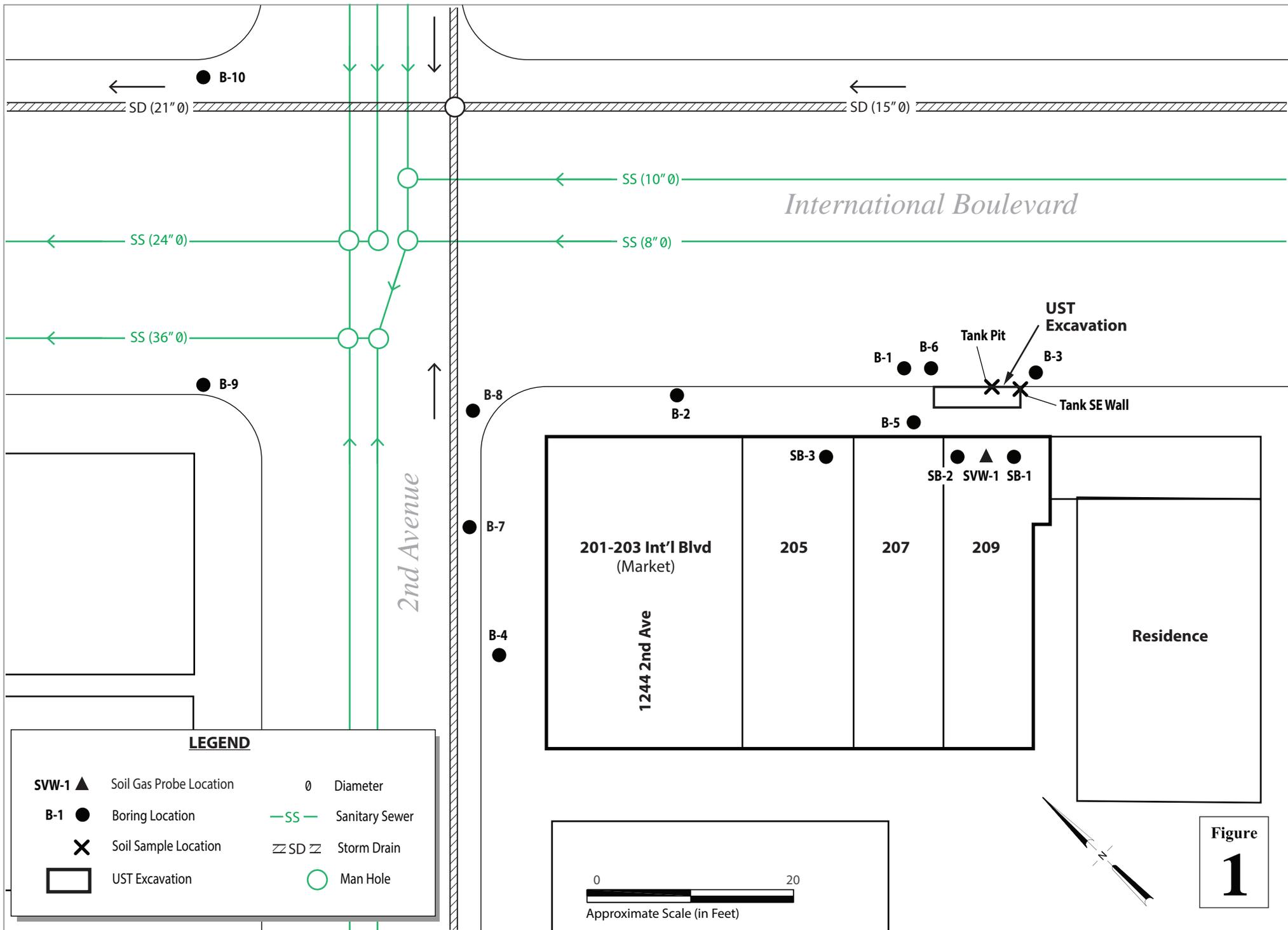
Appendix C – Standard Operating Procedures

Appendix D – Boring Logs

Appendix E – Field Notes

Appendix F – Laboratory Analytical Reports

Appendix G – Chromatograms



1244 2nd Avenue
Oakland, California



Site Map

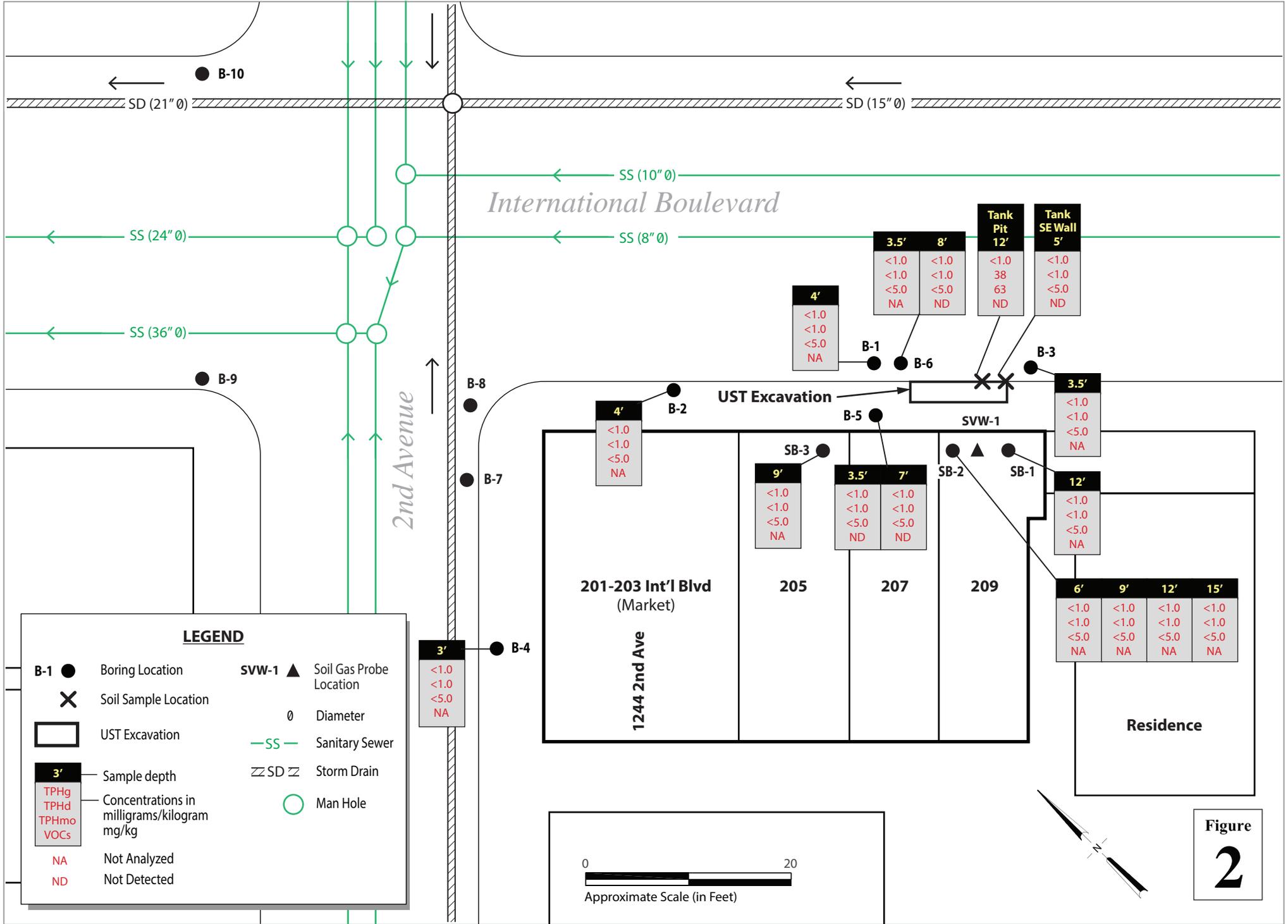


Figure 2

**1244 2nd Avenue
Oakland, California**



Soil Analytical Data

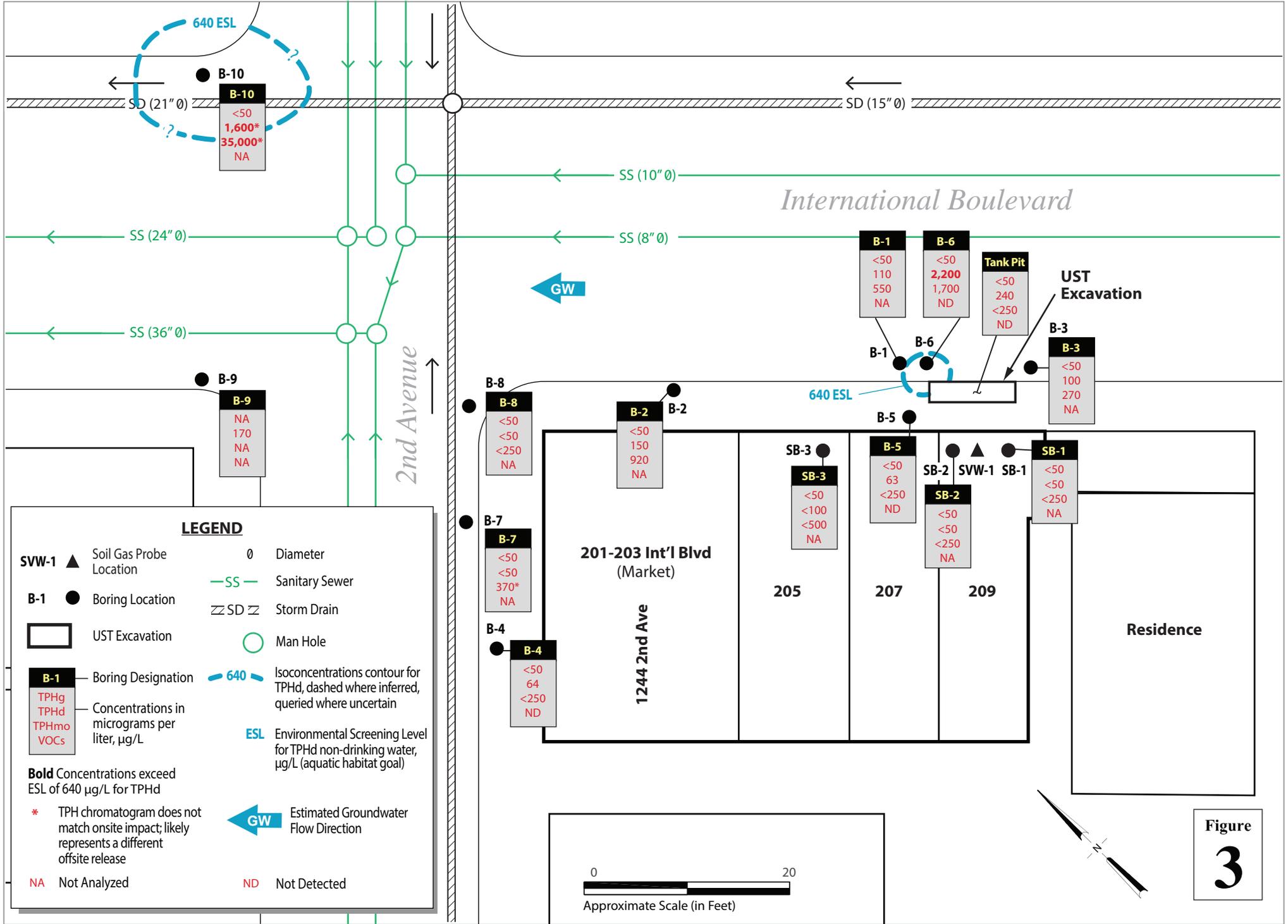


Figure 3

1244 2nd Avenue
Oakland, California



TPHg, TPHd, and TPHmo
Concentrations in Groundwater

Table 1. Soil Analytical Data - 1244 2nd Avenue, Oakland, CA

Boring/Well ID	Date Sampled	Sample Depth (feet bgs)	←								Other VOCs	Notes
			TPHg	TPHd	TPHmo	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE		
			mg/Kg								→	
Soil Tier 1 ESL			100	230	5,100	0.044	2.9	1.4	2.3	0.023	0.033	varies
Odor/Nuisance: Any Land Use, Deep Soil (Const Worker)			500	1,000	NE	1,000	1,000	1,000	1,000	500	1,000	varies
Direct Exposure: Any Land Use, Any Depth (Const Work)			2,800	880	32,000	24	4100	480	2,400	3,700	350	varies
ESL Direct Exposure - Residential Shallow Soil			740	230	NE	0.23	970	5.1	560	42	3.3	varies
ESL Direct Exposure - Commercial Shallow Soil			3,900	1,100	NE	1.0	4,600	22	2,400	180	14	varies
ESL Leaching to Groundwater - Drinking Water			770	570	NE	0.044	2.9	1.4	2.3	0.023	0.033	varies
ESL Leaching to Groundwater - Nondrinking Water			3,400	3,600	NE	0.049	9.3	1.4	11	0.84	3.9	varies
LTCP 0-5 ft (Comm/Indl)			--	--	--	8.2	--	89	--	--	45	--
LTCP 5-10 ft (Comm/Indl)			--	--	--	12	--	134	--	--	45	--
LTCP 0-10 ft (Utility Worker)			--	--	--	14	--	314	--	--	219	--
December 2015 Assessment												
B-1	12/23/2015	4.0	<1.0	<1.0	<5.0	<0.0050	<0.0050	<0.0050	<0.015	<0.050		--
B-2	12/23/2015	4.0	<1.0	<1.0	<5.0	<0.0050	<0.0050	<0.0050	<0.015	<0.050		--
B-3	12/23/2015	3.5	<1.0	<1.0	<5.0	<0.0050	<0.0050	<0.0050	<0.015	<0.050		--
B-4	12/23/2015	3.5	<1.0	<1.0	<5.0	<0.0050	<0.0050	<0.0050	<0.015	<0.050		--
B-5-3.5	12/23/2015	3.5	<1.0	<1.0	<5.0	<0.0050	<0.0050	<0.0050	<0.015	<0.050		ND
B-5-7	12/23/2015	7.0	<1.0	<1.0	<5.0	<0.0050	<0.0050	<0.0050	<0.015	<0.050		ND
B-6-3.5	12/23/2015	3.5	<1.0	<1.0	<5.0	<0.0050	<0.0050	<0.0050	<0.015	<0.050		--
B-6-8	12/23/2015	8.0	<1.0	<1.0	<5.0	<0.0050	<0.0050	<0.0050	<0.015	<0.050		ND
Tank Pit 12'	12/23/2015	12	<1.0	38	63	<0.0050	<0.0050	<0.0050	<0.015	<0.050		--
Tank SE Wall 5'	12/23/2015	5.0	<1.0	<1.0	<5.0	<0.0050	<0.0050	<0.0050	<0.015	<0.050		ND
May 2016 Assessment												
SB-1-12'	5/13/2016	12	<1.0	<1.0	<5.0	--	--	--	--	--		--
SB-2-6'	5/13/2016	6.0	<1.0	<1.0	<5.0	--	--	--	--	--		--
SB-2-9'	5/13/2016	9.0	<1.0	<1.0	<5.0	--	--	--	--	--		--
SB-2-12'	5/13/2016	12	<1.0	<1.0	<5.0	--	--	--	--	--		--
SB-2-15'	5/13/2016	15	<1.0	<1.0	<5.0	--	--	--	--	--		--
SB-3-9'	5/16/2016	12	<1.0	<1.0	<5.0	--	--	--	--	--		--

Table 1. Soil Analytical Data - 1244 2nd Avenue, Oakland, CA

Boring/Well ID	Date Sampled	Sample Depth (feet bgs)	← mg/Kg →									Other VOCs	Notes
			TPHg	TPHd	TPHmo	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene		
Soil Tier 1 ESL			100	230	5,100	0.044	2.9	1.4	2.3	0.023	0.033	varies	
Odor/Nuisance: Any Land Use, Deep Soil (Const Worker)			500	1,000	NE	1,000	1,000	1,000	1,000	500	1,000	varies	
Direct Exposure: Any Land Use, Any Depth (Const Work)			2,800	880	32,000	24	4100	480	2,400	3,700	350	varies	
ESL Direct Exposure - Residential Shallow Soil			740	230	NE	0.23	970	5.1	560	42	3.3	varies	
ESL Direct Exposure - Commercial Shallow Soil			3,900	1,100	NE	1.0	4,600	22	2,400	180	14	varies	
ESL Leaching to Groundwater - Drinking Water			770	570	NE	0.044	2.9	1.4	2.3	0.023	0.033	varies	
ESL Leaching to Groundwater - Nondrinking Water			3,400	3,600	NE	0.049	9.3	1.4	11	0.84	3.9	varies	
LTCP 0-5 ft (Comm/Indl)			--	--	--	8.2	--	89	--	--	45	--	
LTCP 5-10 ft (Comm/Indl)			--	--	--	12	--	134	--	--	45	--	
LTCP 0-10 ft (Utility Worker)			--	--	--	14	--	314	--	--	219	--	

ABBREVIATIONS AND NOTES:

mg/kg = milligrams per kilogram.

TPHg = Total petroleum hydrocarbons as gasoline by EPA Method 8015M.

TPHd = Total petroleum hydrocarbons as diesel by EPA Method 8015.

TPHmo = Total petroleum hydrocarbons as motor oil by EPA Method 8015.

VOCs = Volatile organic compounds by EPA Method 8260 (full list).

-- = Not analyzed.

< = Not detected at or above indicated detection limit.

ND = Not detected at various detection limits.

NE = Not established

ESL = Environmental Screening Level, from California Regional Water Quality Control Board - San Francisco Bay Region, *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater*, Interim Revised February 2016 (Revision 3).

LTCP adopted by State Water Resources Control Board August 2012 includes general and media specific criteria for closure. Shown criteria are for select soil criteria.

Bold = Concentration above final ESL for commercial/industrial worker exposure scenario.

ABBREVIATIONS AND NOTES:

µg/L = micrograms per liter.

TPHg = Total petroleum hydrocarbons as gasoline by EPA Method 8015M.

TPHd = Total petroleum hydrocarbons as diesel by EPA Method 8015.

TPHmo = Total petroleum hydrocarbons as motor oil by EPA Method 8015.

VOCs = Volatile organic compounds by EPA Method 8260.

ESL = Environmental Screening Level, from California Regional Water Quality Control Board - San Francisco Bay Region, *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater*, Interim Revised February 2016 (Revision 3).

Bold = Concentration above Final ESL for sites where groundwater is Not a current or potential drinking water resource.

LTCP adopted by State Water Resources Control Board August 2012 includes general and media specific criteria for closure. Shown criteria are for select groundwater criteria.

-- = Not analyzed.

< = Not detected at or above indicated detection limit.

a = Only limited groundwater was present in boring B-9 for sampling. Per laboratory discussion, the 18.5 ml sample was diluted in the field with 24.5 ml deionized water to 43 ml. Due to insufficient volume, the sample was not analyzed for TPHg or TPHmo.

e2 = diesel range compounds are significant; no recognizable pattern

e3 = aged diesel is significant

e7 = oil range compounds are significant

e8 = kerosene/kerosene range/jet fuel range

ND = Not detected at various detection limits.

NE = ESL not established.

Pangea

Table 3. Soil Gas Analytical Data - 1244 2nd Avenue, Oakland, CA

Boring/ Sample ID	Date Sampled	Depth (ft-ft bgs)	TPH Gasoline	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	Isopropyl Alcohol	Oxygen	Methane	Notes
			← $\mu\text{g}/\text{m}^3$ →						%	%	%	
ESL for Commercial Land Use:			2,500,000	420	1,300,000	4,900	440,000	--	--	--	--	
ESL for Residential Land Use:			300,000	48	160,000	560	52,000	--	--	--	--	
No Bio-Attenuation Zone, Residential (LTCP)			--	85	--	1,100	--	93	--	--	--	
No Bio-Attenuation Zone, Commercial (LTCP)			--	280	--	3,600	--	310	--	--	--	
With Bio-Attenuation Zone, Residential (LTCP)			--	85,000	--	1,100,000	--	93,000	--	--	--	
With Bio-Attenuation Zone, Commercial (LTCP)			--	280,000	--	3,600,000	--	310,000	--	--	--	
SVW-1	5/24/2016	5-6	--	<6.5	8.9	<8.8	<27	<1,800	<0.005	9.9	<0.0001	

Abbreviations:

SVW-1 = Soil Gas Sample

$\mu\text{g}/\text{m}^3$ = Micrograms per cubic meter of air results calculated by laboratory from parts per billion results using normal temperature and pressure (NPT).

ft - ft bgs = Depth interval below ground surface (bgs) in feet.

Other VOCs = Volatile organic compounds by EPA Method TO-15, uses GC/MS scan.

< n = Chemical not present at a concentration in excess of detection limit shown.

--- = Not analyzed

MRL = Method reporting limit.

ESL = Environmental Screening Level, from California Regional Water Quality Control Board - San Francisco Bay Region, *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater*, Interim Revised February 2016 (Revision 3).

LTCP adopted by State Water Resources Control Board August 2012 includes general and media specific criteria for closure. Shown criteria are for select soil gas criteria.

Bold = Concentrations above ESLs for Residential and/or Commercial Land Use for shallow soil gas (SG samples).

Varies = Concentration detections for VOCs varies. Please see analytical report.

APPENDIX A

Agency Correspondence

Bob Clark-Riddell

From: Bob Clark-Riddell
Sent: Friday, May 13, 2016 3:49 PM
To: 'Roe, Dilan, Env. Health'
Cc: Jurek, Anne, Env. Health
Subject: RE: 1244 Second Ave, Oakland
Attachments: Fig 2 Revised Proposed Borings 05-13-16.pdf

Dilan,

Here is the revised sampling plan you verbally approved today. The revised plan involves completing three soil borings inside the building, since we have two structural trenches open right now. We will also install a soil gas probe for measuring methane. We will also perform the downgradient borings. Thank you for our prompt response.

Bob Clark-Riddell, P.E.
Pangea Environmental Services, Inc.
510.435.8664 direct

-----Original Message-----

From: Roe, Dilan, Env. Health [mailto:Dilan.Roe@acgov.org]
Sent: Wednesday, May 11, 2016 6:16 PM
To: Bob Clark-Riddell <briddell@pangeaenv.com>
Subject: RE: 1244 Second Ave, Oakland

yes

-----Original Message-----

From: Bob Clark-Riddell [mailto:briddell@pangeaenv.com]
Sent: Wednesday, May 11, 2016 6:12 PM
To: Roe, Dilan, Env. Health <Dilan.Roe@acgov.org>
Cc: Jurek, Anne, Env. Health <Anne.Jurek@acgov.org>
Subject: RE: 1244 Second Ave, Oakland

Dilan,

Thank you for the approval. Please clarify how many borings are required on the 'west and east' side of the former UST. We have already proposed two borings adjacent the former UST (boring SB-1 northwest and boring SB-3 southeast of the former UST). Are you asking for two additional borings, near each end of the former UST?

Bob Clark-Riddell, P.E.
Pangea Environmental Services, Inc.
510.435.8664 direct

-----Original Message-----

From: Roe, Dilan, Env. Health [mailto:Dilan.Roe@acgov.org]
Sent: Tuesday, May 10, 2016 11:42 AM
To: Bob Clark-Riddell <briddell@pangeaenv.com>

Cc: Jurek, Anne, Env. Health <Anne.Jurek@acgov.org>

Subject: 1244 Second Ave, Oakland

Hi Bob:

Alameda County Department of Environmental Health concurs with the proposed scope of work for additional field investigation activities to delineate the release from the underground storage tank at the subject property with the exception of the following: please add two additional soil borings on the west and east side of the tank pit to delineate soil impacts. Please conduct the work and submit the results in a Soil and Groundwater investigation Report to ACDEH by July 13, 2016.

Dilan Roe
LOP Program Manager
Alameda County

Sent from my iPhone

On May 7, 2016, at 1:07 PM, Bob Clark-Riddell <briddell@pangeaenv.com<mailto:briddell@pangeaenv.com>> wrote:

Anne and Dilan,

Thank you for calling to discuss the subject site.

REVISED WORK SCOPE

Per our discussion, the attached figure show our revised sampling plan to address agency concerns. Pangea will collect samples from multiple depths and select initial samples for analysis based on field observations. At a minimum, Pangea will analyze soil samples from at or near 12 ft depth in borings SB-1 and SB-2 (adjacent the former UST) to assessment conditions identified at 12 ft depth in the tank pit boring sample at 12 ft depth. Pangea will also collect grab groundwater samples from these two borings.

If significant TPH impact is found in soil or groundwater near the USTs, Pangea will collect a soil gas sampling near the former UST and building to assess methane gas concentrations (and oxygen).

For the downgradient borings, Pangea will collect grab groundwater samples and collect soil samples, but no soil analyses are planned.

FUTURE CASE CLOSURE

Per our discussion, ACEH anticipates closing this case soon if no major contamination found. ACEH will soon issue a Notice of Responsibility letter. The client will provide contact info for all fee title entities for the anticipated case closure notifications.

Please provide a rough duration for issuance of e final case closure letter assuming data is acceptable. Please clarify the duration of any public notice requirement (30 days?). If we can provide a report by June 1, Could case closure be provided within approximately 2 months?

Bob Clark-Riddell, P.E.
Pangea Environmental Services, Inc.
510.435.8664 direct

<Fig 2 Revised Proposed Borings 05-06-16.pdf>

Bob Clark-Riddell

From: Angela Rydelius <angela@mccampbell.com>
Sent: Friday, June 24, 2016 8:54 AM
To: Bob Clark-Riddell
Subject: RE: Analytical Report for Project: 1244 2nd Ave [MAI WO#: 1606439]
Attachments: TPH_DMO_W-004A.pdf

Bob,
It appears that Tank Pit-W & B6-W look similar to each other while B-10, B-7 & B-8 resemble each other. B-10's TPH-d,mo chromatogram is attached.

Regards,
Angela Rydelius
Laboratory Manager
McC Campbell Analytical, Inc.
P: 925-252-9262 ext. 214
F: 925-252-9270

****MAI will be closed on Monday, July 4, 2016 in observance of Independence Day. Please check with us should you have questions about turnaround times &/or testing capabilities during this lab closure.**

From: Bob Clark-Riddell [mailto:briddell@pangeaenv.com]
Sent: Thursday, June 23, 2016 5:19 PM
To: Angela Rydelius
Subject: RE: Analytical Report for Project: 1244 2nd Ave [MAI WO#: 1606439]

Tank pit sample was 1512A04. Other chromatograms are attached. Trying to determine if compounds in B-6-W and Tank pit (located near each other) are different from B-7/B-8, or different from B-10.

Bob Clark-Riddell, P.E.
Pangea Environmental Services, Inc.
510.435.8664 direct

From: Angela Rydelius [mailto:angela@mccampbell.com]
Sent: Thursday, June 23, 2016 5:10 PM
To: Bob Clark-Riddell <briddell@pangeaenv.com>
Cc: melissa@mccampbell.com
Subject: RE: Analytical Report for Project: 1244 2nd Ave [MAI WO#: 1606439]

Hi Bob,
I'll have our analyst pull B-10's chromatogram & get that to you tomorrow.

Can you let me know the MAI ID# for your pit water sample?

Regards,
Angela Rydelius
Laboratory Manager
McC Campbell Analytical, Inc.

APPENDIX B

Drilling Permit

Alameda County Public Works Agency - Water Resources Well Permit



399 Elmhurst Street
Hayward, CA 94544-1395
Telephone: (510)670-6633 Fax:(510)782-1939

Application Approved on: 06/03/2016 By jamesy

Permit Numbers: W2016-0393
Permits Valid from 06/06/2016 to 07/06/2016

Application Id: 1464121658152
Site Location: 1244 2nd Avenue
Project Start Date: 06/06/2016
Assigned Inspector: Contact Lindsay Furuyama at (925) 956-2311 or Lfuruyama@groundzonees.com

City of Project Site:Oakland

Completion Date:07/06/2016

Applicant: Pangea Environmental Services - Elizabeth Avery
1710 Franklin Street #200, Oakland, CA 94612
Property Owner: 1244 2nd Ave LLC
2655 Van Ness Ave, San Francisco, CA 94109
Client: ** same as Property Owner **

Phone: 510-836-3700

Phone: --

	Total Due:	\$265.00
Receipt Number: WR2016-0273	Total Amount Paid:	\$265.00
Payer Name : Robert Clark-Riddell	Paid By: VISA	PAID IN FULL

Works Requesting Permits:

Borehole(s) for Investigation-Environmental/Monitorinig Study - 4 Boreholes
Driller: Cascade Drilling LP - Lic #: 938110 - Method: DP

Work Total: \$265.00

Specifications

Permit Number	Issued Dt	Expire Dt	# Boreholes	Hole Diam	Max Depth
W2016-0393	06/03/2016	09/04/2016	4	2.25 in.	20.00 ft

Specific Work Permit Conditions

1. Backfill bore hole by tremie with cement grout or cement grout/sand mixture. Upper two-three feet replaced in kind or with compacted cuttings. All cuttings remaining or unused shall be containerized and hauled off site. The containers shall be clearly labeled to the ownership of the container and labeled hazardous or non-hazardous.
2. Boreholes shall not be left open for a period of more than 24 hours. All boreholes left open more than 24 hours will need approval from Alameda County Public Works Agency, Water Resources Section. All boreholes shall be backfilled according to permit destruction requirements and all concrete material and asphalt material shall be to Caltrans Spec or County/City Codes. No borehole(s) shall be left in a manner to act as a conduit at any time.
3. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and all expense, cost, liability in connection with or resulting from the exercise of this Permit including, but not limited to, properly damage, personal injury and wrongful death.
4. Applicant shall contact assigned inspector listed on the top of the permit at least five (5) working days prior to starting, once the permit has been approved. Confirm the scheduled date(s) at least 24 hours prior to drilling.
5. Copy of approved drilling permit must be on site at all times. Failure to present or show proof of the approved permit application on site shall result in a fine of \$500.00.
6. Electronic Reporting Regulations (Chapter 30, Division 3 of Title 23 & Division 3 of Title 27, CCR) require electronic

Alameda County Public Works Agency - Water Resources Well Permit

submission of any report or data required by a regulatory agency from a cleanup site. Submission dates are set by a Regional Water Board or by a regulatory agency. Once a report/data is successfully uploaded, as required, you have met the reporting requirement (i.e. the compliance measure for electronic submittals is the actual upload itself). The upload date should be on or prior to the regulatory due date.

7. NOTE:

Under California laws, the owner/operator are responsible for reporting the contamination to the governmental regulatory agencies under Section 25295(a). The owner/operator is liable for civil penalties under Section 25299(a)(4) and criminal penalties under Section 25299(d) for failure to report a leak. The owner/operator is liable for civil penalties under Section 25299(b)(4) for knowing failure to ensure compliance with the law by the operator. These penalty provisions do not apply to a potential buyer.

8. Prior to any drilling activities onto any public right-of-ways, it shall be the applicants responsibilities to contact and coordinate a Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits required for that City or to the County and follow all City or County Ordinances. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County a Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

9. Permit is valid only for the purpose specified herein. No changes in construction procedures, as described on this permit application. Boreholes shall not be converted to monitoring wells, without a permit application process.

Permits for which no major inspection has been approved within 180 days shall expire by limitation. No refund more than 180 days after expiration or final.



CITY OF OAKLAND

FIELD COPY

250 FRANK H. OGAWA PLAZA ▪ 2ND FLOOR ▪ OAKLAND, CA 94612

Planning and Building Department
www.oaklandnet.com

PH: 510-238-3891
FAX: 510-238-2263
TDD: 510-238-3254

Permit No: OB1600623 **Obstruction**

Filed Date: 5/26/2016

Job Site: 200 INTERNATIONAL BLVD

Schedule Inspection by calling: 510-238-3444

Parcel No: 020 013101300

District:

Project Description: Reserve 8 NON-METERED parking space(s) in front of parcels along International and 2nd Ave only for soil boring environmental site assessment vehicle, material, or equipment. Post No-parking signs 72 hours prior in residential areas. No impact on traffic lane or sidewalk allowed. No-parking signs picked up by applicant after payment, 4TH FLOOR. To Have Illegally Parked Vehicle Ticketed Call 510-777-3333. Applicant arranges towing. Comply with terms set forth in CVC Section 22651 (m). For Towed Vehicle: Call 510-238-3021.
Contact: 510 836-3700

RE: Soil borings on 2nd Ave and International Blvd International Blvd. 2 parking spaces for each location. 4 locations.

Related Permits: X1601089 X1601099

	<u>Name</u>	<u>Applicant</u>	<u>Address</u>	<u>Phone</u>	<u>License #</u>
Owner:	NGUYEN CAP		441 SANTA CLARA AVE ALAMEDA, CA		
Contractor:	CASCADE DRILLING L P		P O BOX 1184 WOODINVILLE, WA	(425) 485-9802	938110
Contractor-Employee:	ELIZABETH AVERY	X	P O BOX 1184 WOODINVILLE, WA	510 836-3700	

PERMIT DETAILS: Building/Public Use/Activity/Obstructions

Work Information

Start Date: 06/09/2016 Obstruction Permit Type: Short Term (Max 14 Days)
End Date: 06/10/2016 Number of Meters (Metered Area):
Length Of Obstruction (Unmetered Area): 200

TOTAL FEES TO BE PAID AT FILING: \$392.45

Application Fee	\$70.00	Records Management Fee	\$32.49	Short Term Permits	\$272.00
Technology Enhancement Fee	\$17.96				

Plans Checked By _____ Date _____

Permit Issued By BOG Date 5/26/16

Finalized By _____ Date _____

Permits for which no major inspection has been approved within 180 days shall expire by limitation. No refund more than 180 days after expiration or final.



FIELD COPY

CITY OF OAKLAND

250 FRANK H. OGAWA PLAZA ▪ 2ND FLOOR ▪ OAKLAND, CA 94612

Planning and Building Department
www.oaklandnet.com

PH: 510-238-3891
FAX: 510-238-2263
TDD: 510-238-3254

Permit No: X1601089 OPW - Excavation **Filed Date:** 5/26/2016

Job Site: 200 INTERNATIONAL BLVD **Schedule Inspection by calling:** 510-238-3444

Parcel No: 020 013101300

District:

Project Description: 2 Soil boring(s) on 2nd Ave near International Blvd, site B-7 and 8. No impact on traffic lane or sidewalk allowed. Ensure that environmental controls are in place to prevent dust/debris/waste water from contaminating environment. Do Not Cut Into Pavement Unless And Until Ready To Complete Project.
If working within 25' feet of a monument you must comply with State Law 8771, contact the Inspector prior to starting excavation: minimum \$5,800.00 fine for non-compliance.
Comply with all terms of City of Oakland Public Works Standards, Street Excavation Rules, Revised March 2015 and City Council Ordinance No. 13300 C.M.S. Five day prior notice required for work lasting five days or less in business/commercial districts; 72 hour notice in residential districts. Ten day prior notice required for work lasting six days or more in all districts.
Call PWA INSPECTION prior to start: 510-238-3651. 4th FLOOR.
Contact: 510 836-3700
Note: One more Excavation and an Obstruction permit to follow.

Related Permits:

	<u>Name</u>	<u>Applicant</u>	<u>Address</u>	<u>Phone</u>	<u>License #</u>
Owner:	NGUYEN CAP		441 SANTA CLARA AVE ALAMEDA, CA		
Contractor:	CASCADE DRILLING L P		P O BOX 1184 WOODINVILLE, WA	(425) 485-9802	938110
Contractor-Employee:	ELIZABETH AVERY	X	P O BOX 1184 WOODINVILLE, WA	510 836-3700	

PERMIT DETAILS: Building/Public Infrastructure/Excavation/NA

General Information

Excavation Type: Private Party Special Paving Detail Required: Tree Removal Involved:

Date Street Last Resurfaced: Holiday Restriction (Nov 1 - Jan 1):

Worker's Compensation Company Name: Limited Operation Area (7AM-9AM) And (4PM-6PM):

Worker's Compensation Policy #:

Key Dates

Approximate Start Date:

Approximate End Date:

TOTAL FEES TO BE PAID AT FILING: \$434.91

Application Fee	\$70.00	Excavation - Private Party Type	\$309.00	Records Management Fee	\$36.01
Technology Enhancement Fee	\$19.90				

Permits for which no major inspection has been approved within 180 days shall expire by limitation. No refund more than 180 days after expiration or final.



CITY OF OAKLAND

FIELD COPY

250 FRANK H. OGAWA PLAZA ▪ 2ND FLOOR ▪ OAKLAND, CA 94612

Planning and Building Department
www.oaklandnet.com

PH: 510-238-3891
FAX: 510-238-2263
TDD: 510-238-3254

Permit No: X1601099 OPW - Excavation

Filed Date: 5/26/2016

Job Site: 200 INTERNATIONAL BLVD

Schedule Inspection by calling: 510-238-3444

Parcel No: 020 013101300

District:

Project Description: 2 Soil boring(s) on International Blvd near 2nd Ave, site B-9 and 10. No impact on traffic lane or sidewalk allowed. Ensure that environmental controls are in place to prevent dust/debris/waste water from contaminating environment. Do Not Cut Into Pavement Unless And Until Ready To Complete Project.

If working within 25' feet of a monument you must comply with State Law 8771, contact the Inspector prior to starting excavation: minimum \$5,800.00 fine for non-compliance.

Comply with all terms of City of Oakland Public Works Standards, Street Excavation Rules, Revised March 2015 and City Council Ordinance No. 13300 C.M.S. Five day prior notice required for work lasting five days or less in business/commercial districts; 72 hour notice in residential districts. Ten day prior notice required for work lasting six days or more in all districts.

Call PWA INSPECTION prior to start: 510-238-3651. 4th FLOOR.

Contact: 510 836-3700

Related Permits: X1601089 OB1600623

	<u>Name</u>	<u>Applicant</u>	<u>Address</u>	<u>Phone</u>	<u>License #</u>
Owner:	NGUYEN CAP		441 SANTA CLARA AVE ALAMEDA, CA		
Contractor:	CASCADE DRILLING L P		P O BOX 1184 WOODINVILLE, WA	(425) 485-9802	938110
Contractor-Employee:	ELIZABETH AVERY	X	P O BOX 1184 WOODINVILLE, WA	510 836-3700	

PERMIT DETAILS: Building/Public Infrastructure/Excavation/NA

General Information

Excavation Type: Private Party

Special Paving Detail Required:

Tree Removal Involved:

Date Street Last Resurfaced:

Holiday Restriction (Nov 1 - Jan 1):

Worker's Compensation Company Name:

Limited Operation Area (7AM-9AM) And (4PM-6PM):

Worker's Compensation Policy #:

Key Dates

Approximate Start Date:

Approximate End Date:

TOTAL FEES TO BE PAID AT FILING: \$434.91

Application Fee	\$70.00	Excavation - Private Party Type	\$309.00	Records Management Fee	\$36.01
Technology Enhancement Fee	\$19.90				

APPENDIX C

Standard Operating Procedures

STANDARD FIELD PROCEDURES FOR SOIL BORINGS

This document describes Pangea Environmental Services' standard field methods for drilling and sampling soil borings. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

Objectives

Soil samples are collected to characterize subsurface lithology, assess whether the soils exhibit obvious hydrocarbon or other compound vapor odor or staining, estimate ground water depth and quality, and to submit samples for chemical analysis.

Soil Classification/Logging

All soil samples are classified according to the Unified Soil Classification System by a trained geologist, scientist or engineer working under the supervision of a California Registered Engineer, California Registered Geologist (RG) or a Certified Engineering Geologist (CEG). The following soil properties are noted for each soil sample:

- Principal and secondary grain size category (i.e. sand, silt, clay or gravel)
- Approximate percentage of each grain size category,
- Color,
- Approximate water or product saturation percentage,
- Observed odor and/or discoloration,
- Other significant observations (i.e. cementation, presence of marker horizons, mineralogy), and
- Estimated permeability.

Soil Boring and Sampling

Soil borings are typically drilled using hollow-stem augers or hydraulic-push technologies. At least one and one half ft of the soil column is collected for every five ft of drilled depth. Additional soil samples are collected near the water table and at lithologic changes. With hollow-stem drilling, samples are collected using lined split-barrel or equivalent samplers driven into undisturbed sediments beyond the bottom of the borehole. With hydraulic-push drilling, samples are typically collected using acetate liners. The vertical location of each soil sample is determined by measuring the distance from the middle of the soil sample tube to the end of the drive rod used to advance the split barrel sampler or the acetate tube. All sample depths use the ground surface immediately adjacent to the boring as a datum. The horizontal location of each boring is measured in the field from an onsite permanent reference using a measuring wheel or tape measure.

Drilling and sampling equipment is steam-cleaned prior to drilling and between borings to prevent cross-contamination. Sampling equipment is washed between samples with trisodium phosphate or an equivalent EPA-approved detergent.

Sample Storage, Handling and Transport

Sampling tubes or cut acetate liners chosen for analysis are trimmed of excess soil and capped with Teflon tape and plastic end caps. Soil samples are labeled and stored at or below 4°C on either crushed or dry ice, depending upon local regulations. Samples are transported under chain-of-custody to a State-certified analytic laboratory.

Field Screening

Soil samples collected during drilling will be analyzed in the field for ionizable organic compounds using a photo-ionization detector (PID) with a 10.2 eV lamp. The screening procedure will involve placing an undisturbed soil sample in a sealed container (either a zip-lock bag, glass jar, or a capped soil tube). The container will be set aside, preferably in the sun or warm location. After approximately fifteen minutes, the head space within the container will be tested for total organic vapor, measured in parts per million on a volume to volume basis (ppmv) by the PID. The PID instrument will be calibrated prior to boring using hexane or isobutylene. PID measurements are used along with the field observations, odors, stratigraphy and ground water depth to select soil samples for analysis.

Water Sampling

Water samples collected from borings are either collected from the open borehole, from within screened PVC inserted into the borehole, or from a driven Hydropunch-type sampler. Groundwater is typically extracted using a bailer, check valve and/or a peristaltic pump. The ground water samples are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4°C, and transported under chain-of-custody to the laboratory.

Pangea often performs electrical conductivity (EC) logging and/or continuous coring to identify potential water-bearing zones. Hydropunch-type sampling is then performed to provide discrete-depth grab groundwater sampling within potential water-bearing zones for vertical contaminant delineation. Hydropunch-type sampling typically involves driving a cylindrical sheath of hardened steel with an expendable drive point to the desired depth within undisturbed soil. The sheath is retracted to expose a stainless steel or PVC screen that is sealed inside the sheath with Neoprene O-rings to prevent infiltration of formation fluids until the desired depth is attained. The groundwater is extracted using tubing inserted down the center of the rods into the screened sampler.

Duplicates and Blanks

Blind duplicate water samples are usually collected only for monitoring well sampling programs, at a rate of one blind sample for every 10 wells sampled. Laboratory-supplied trip blanks accompany samples collected for all sampling programs to check for cross-contamination caused by sample handling and transport. These trip blanks are analyzed if the internal laboratory QA/QC blanks contain the suspected field contaminants. An equipment blank may also be analyzed if non-dedicated sampling equipment is used.

Grouting

If the borings are not completed as wells, the borings are filled to the ground surface with cement grout poured or pumped through a tremie pipe.

Waste Handling and Disposal

Soil cuttings from drilling activities are usually stockpiled onsite on top of and covered by plastic sheeting. At least four individual soil samples are collected from the stockpiles for later compositing at the analytic laboratory. The composite sample is analyzed for the same constituents analyzed in the borehole samples. Soil cuttings are transported by licensed waste haulers and disposed in secure, licensed facilities based on the composite analytic results.

Ground water removed during sampling and/or rinsate generated during decontamination procedures are stored onsite in sealed 55 gallon drums. Each drum is labeled with the drum number, date of generation, suspected contents, generator identification and consultant contact. Disposal of the water is based on the analytic results for the well samples. The water is either pumped out using a vacuum truck for transport to a licensed waste treatment/disposal facility or the individual drums are picked up and transported to the waste facility where the drum contents are removed and appropriately disposed.

APPENDIX D

Boring Logs



Client:
 Project:
 Address: 1244 2nd Ave

BORING LOG
 Boring No. - SB-1
 Page: 1 of 1

Drilling Start Date: 5.13.16
 Drilling End Date: 5.13.16
 Drilling Company: Pangea
 Drilling Method: Hand Auger
 Drilling Equipment:
 Driller: E. Lervag
 Logged By: E. Lervag

Boring Depth (ft): 12'
 Boring Diameter (in): 3"
 Sampling Method(s):
 DTW During Drilling (ft):
 DTW After Drilling (ft):
 Ground Surface Elev. (ft):
 Location (X,Y):

DEPTH (ft)	LITHOLOGY	WATER LEVEL	BORING COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE		DEPTH (ft)
				Sample Type	Date & Time	Blow Counts	Recovery (ft)		PID (ppm)	Lab Sample	
0								0-5' bgs - excavated hole			0
5								-5 Brown sandy clay (SC) moist, no odor			5
10								-7.5 Dark gray clay (CL) wet, no odor			10
15								-11.0 light gray sandy clay (SC) wet.			15
20								-12.0 Boring terminated			20

NOTES:



Client:
 Project:
 Address: 1244 2nd Ave

BORING LOG
 Boring No. - SB-2
 Page: 1 of 1

Drilling Start Date: 5.13.16
 Drilling End Date: 5.13.16
 Drilling Company: Pangea
 Drilling Method: Hand Auger
 Drilling Equipment:
 Driller: E. Lervag
 Logged By: E. Lervag

Boring Depth (ft): 15'
 Boring Diameter (in): 3"
 Sampling Method(s):
 DTW During Drilling (ft):
 DTW After Drilling (ft):
 Ground Surface Elev. (ft):
 Location (X,Y):

DEPTH (ft)	LITHOLOGY	WATER LEVEL	BORING COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE		DEPTH (ft)
				Sample Type	Date & Time	Blow Counts	Recovery (ft)		PID (ppm)	Lab Sample	
0								0-5' excavated hole			0
5								-5' Brown sandy clay (SC) moist, no odor			5
7.5								-7.5' Dark gray clay (CL) wet, no odor medium stiff			7.5
10								-10.5' light gray sandy clay (SC) wet, medium stiff, no odor			10
12											12
15								- Boring terminated @ 15' bgs			15
20											20

NOTES:



Client:
 Project:
 Address: 1244 2nd Ave

BORING LOG
 Boring No. - SB-3
 Page: 1 of 1

Drilling Start Date: 5-16-16
 Drilling End Date: 5-16-16
 Drilling Company: Pangea
 Drilling Method: Hand Auger
 Drilling Equipment:
 Driller: E. Lervag
 Logged By: E. Lervag

Boring Depth (ft): 12'
 Boring Diameter (in): 3"
 Sampling Method(s):
 DTW During Drilling (ft):
 DTW After Drilling (ft):
 Ground Surface Elev. (ft):
 Location (X,Y):

DEPTH (ft)	LITHOLOGY	WATER LEVEL	BORING COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE		DEPTH (ft)
				Sample Type	Date & Time	Blow Counts	Recovery (ft)		PID (ppm)	Lab Sample	
0								0-5' excavated hole			0
5								-5.0 Brown Sandy clay (SC) moist, no odor medium stiff			5
7.0								-7.0 Dark gray clay (CL) wet, no odor medium stiff			
10								-10.0			10
12.0								-12.0 Boring terminated			12.0

NOTES:



Client:
Project:
Address:

BORING LOG
Boring No. - B-7
Page: 1 of 1

Drilling Start Date: 6.9.16
Drilling End Date: 6.9.16
Drilling Company: Cascade
Drilling Method: Direct Push
Drilling Equipment: Geoprobe 6610 - track mount
Driller: Artemio
Logged By: E. Lervaaq

Boring Depth (ft): 14'
Boring Diameter (in): 2.25"
Sampling Method(s): soil (none) (gw - perri - pump)
DTW During Drilling (ft): -
DTW After Drilling (ft): 9.1
Ground Surface Elev. (ft): -
Location (X,Y): -

DEPTH (ft)	LITHOLOGY	WATER LEVEL	BORING COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE		DEPTH (ft)
				Sample Type	Date & Time	Blow Counts	Recovery (ft)		PID (ppm)	Lab Sample	
0			Asphalt					- 6" Asphalt			0
								- Hand Auger to 5' bgs light brown sandy clay with fine gravel (SC). Dry, no odor			
			grout					- PGE stand by on-site			
5								- 5.0 start direct push Similar to above			5
								- 8.0 Tan clay (CL) dry no odor			
10		9.1						- 10.0 Similar to above, MOIST, no odor			10
								14.0 - Boring terminated			
								- Tremie grouted to 6" bgs - Hot patch asphalt (1'x1') repair to match surrounding			
15											15
20											20

NOTES:



Client:
Project:
Address: 1244 rd Ave

BORING LOG
Boring No. - B-8
Page: 1 of 1

Drilling Start Date: 6.9.16
Drilling End Date: 6.9.16
Drilling Company: Cascade
Drilling Method: Direct Push track mount
Drilling Equipment: Geo probe 660 track mount
Driller: Artemio
Logged By: E. Lervog

Boring Depth (ft): 11.3'
Boring Diameter (in): 2.25"
Sampling Method(s): none (soil) X per-pump/water
DTW During Drilling (ft): ~~8.4~~
DTW After Drilling (ft): ~~8.4~~ 8.4
Ground Surface Elev. (ft): -
Location (X,Y): -

DEPTH (ft)	LITHOLOGY	WATER LEVEL	BORING COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE		DEPTH (ft)
				Sample Type	Date & Time	Blow Counts	Recovery (ft)		PID (ppm)	Lab Sample	
0			Hot Asphalt					6" Asphalt - Hand Auger to 5' bgs - PG&E standby on-site - light brown sandy clay (SC)			0
5			Grout					- start direct push similar to above - 7.0 Tan clay, no odor, dry (CL)			5
10		8.4						- 9.0 similar to above, moist, no odor			10
15								- 13.0 Boring terminated - Tremie grouted to 6" bgs. Hot patch asphalt to match surrounding elevation. (1'x1')			15
20											20

NOTES:



Client:
 Project:
 Address: 1244 2nd Ave

BORING LOG
 Boring No. - B-9
 Page: 1 of 1

Drilling Start Date: 6-9-16
 Drilling End Date: 6-9-16
 Drilling Company: Cascade
 Drilling Method: Direct Push/Hand Auger
 Drilling Equipment: Geoprob 6610
 Driller: Artemis
 Logged By:

Boring Depth (ft): 11.3'
 Boring Diameter (in): 2.25"
 Sampling Method(s): none
 DTW During Drilling (ft): -
 DTW After Drilling (ft): 11.1'
 Ground Surface Elev. (ft): -
 Location (X,Y): -

DEPTH (ft)	LITHOLOGY	WATER LEVEL	BORING COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE		DEPTH (ft)
				Sample Type	Date & Time	Blow Counts	Recovery (ft)		PID (ppm)	Lab Sample	
0								6" asphalt			0
								Hand Auger to 5' bgs. Light brown sandy clay with gravel (sc) Dry no odor * PG+E standby on-site			
5			grout					- Direct Push to 10' depth Similar to above			5
10								- 11.3' refusal. Concrete?			10
								1-partial VOA collected			
								- tremie grout to approx. 11.3' ^{6" below} grade			
15								- Hot patch asphalt repair (1'x1') to match surrounding elev.			15
20											20

NOTES:



Client:
 Project:
 Address: 1244 2nd Ave

BORING LOG
 Boring No. - B-10
 Page: 1 of 1

Drilling Start Date: 6.9.16	Boring Depth (ft): 14.0
Drilling End Date: 6.9.16	Boring Diameter (in): 2.25
Drilling Company: Cascade	Sampling Method(s): soil - none, gw - perist pump
Drilling Method: Direct Push	DTW During Drilling (ft): -
Drilling Equipment: GeoProbe 6610	DTW After Drilling (ft): 10.3
Driller: Artemio	Ground Surface Elev. (ft):
Logged By: E. Lervag	Location (X,Y):

DEPTH (ft)	LITHOLOGY	WATER LEVEL	BORING COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE		DEPTH (ft)
				Sample Type	Date & Time	Blow Counts	Recovery (ft)		PID (ppm)	Lab Sample	
0			Asphalt					6" Asphalt - Hand auger to 5' bgs - no PG&E required this location light brown sandy clay (SC), dry no odor			0
5								- start direct push similar to above			5
8.0			Grout					- 8.0 Dark Brown clay (L) Dry, no odor Transition to tan clay @ 9.0 bgs			
10		10.3						Tan clay () moist, no odor			10
11.0								- 11.0 Tan clay (CL) moist, no odor			
14.0								- 14.0 Boring terminated.			15
20											20

NOTES:

APPENDIX E

Field Notes

APPENDIX F

Laboratory Analytical Results



McC Campbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1606439

Report Created for: Pangea Environmental Svcs., Inc.

1710 Franklin Street, Ste. 200
Oakland, CA 94612

Project Contact: Bob Clark-Riddell

Project P.O.:

Project Name: 1244 2nd Ave

Project Received: 06/09/2016

Analytical Report reviewed & approved for release on 06/13/2016 by:

Angela Rydelius,
Laboratory Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.





Glossary of Terms & Qualifier Definitions

Client: Pangea Environmental Svcs., Inc.
Project: 1244 2nd Ave
WorkOrder: 1606439

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
M	Estimate Maximum Possible Concentration
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)



Glossary of Terms & Qualifier Definitions

Client: Pangea Environmental Svcs., Inc.
Project: 1244 2nd Ave
WorkOrder: 1606439

Analytical Qualifiers

S	Surrogate spike recovery outside accepted recovery limits
b1	aqueous sample that contains greater than ~1 vol. % sediment
e2	diesel range compounds are significant; no recognizable pattern
e7	oil range compounds are significant
e8	kerosene/kerosene range/jet fuel range
j1	see attached narrative



McC Campbell Analytical, Inc.

"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
<http://www.mccampbell.com> / E-mail: main@mccampbell.com

Case Narrative

Client: Pangea Environmental Svcs., Inc.
Project: 1244 2nd Ave

Work Order: 1606439
June 13, 2016

Sample 1606439-003A TPH-Diesel Results:

The Chain of Custody stated that the amount of sample taken was 18.5mL and was diluted to a final volume of 43mL. The result reported by McC Campbell Analytical, Inc. include this dilution in the final result and is shown as a dilution of 2.3.



Analytical Report

Client: Pangea Environmental Svcs., Inc.
Date Received: 6/9/16 17:35
Date Prepared: 6/11/16
Project: 1244 2nd Ave

WorkOrder: 1606439
Extraction Method: SW5030B
Analytical Method: SW8021B/8015Bm
Unit: µg/L

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-7	1606439-001A	Water	06/09/2016 14:00	GC3	122180

Analytes	Result	RL	DF	Date Analyzed
TPH(g)	ND	50	1	06/11/2016 15:29
MTBE	---	5.0	1	06/11/2016 15:29
Benzene	---	0.50	1	06/11/2016 15:29
Toluene	---	0.50	1	06/11/2016 15:29
Ethylbenzene	---	0.50	1	06/11/2016 15:29
Xylenes	---	1.5	1	06/11/2016 15:29

Surrogates	REC (%)	Limits	Date Analyzed
aaa-TFT	94	70-130	06/11/2016 15:29

Analyst(s): IA

Analytical Comments: b1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-8	1606439-002A	Water	06/09/2016 15:00	GC3	122180

Analytes	Result	RL	DF	Date Analyzed
TPH(g)	ND	50	1	06/11/2016 16:00
MTBE	---	5.0	1	06/11/2016 16:00
Benzene	---	0.50	1	06/11/2016 16:00
Toluene	---	0.50	1	06/11/2016 16:00
Ethylbenzene	---	0.50	1	06/11/2016 16:00
Xylenes	---	1.5	1	06/11/2016 16:00

Surrogates	REC (%)	Limits	Date Analyzed
aaa-TFT	98	70-130	06/11/2016 16:00

Analyst(s): IA

Analytical Comments: b1



Analytical Report

Client: Pangea Environmental Svcs., Inc.
Date Received: 6/9/16 17:35
Date Prepared: 6/11/16
Project: 1244 2nd Ave

WorkOrder: 1606439
Extraction Method: SW5030B
Analytical Method: SW8021B/8015Bm
Unit: µg/L

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-10	1606439-004A	Water	06/09/2016 09:45	GC3	122180

Analytes	Result	RL	DF	Date Analyzed
TPH(g)	ND	50	1	06/11/2016 16:31
MTBE	---	5.0	1	06/11/2016 16:31
Benzene	---	0.50	1	06/11/2016 16:31
Toluene	---	0.50	1	06/11/2016 16:31
Ethylbenzene	---	0.50	1	06/11/2016 16:31
Xylenes	---	1.5	1	06/11/2016 16:31

Surrogates	REC (%)	Limits	
aaa-TFT	95	70-130	06/11/2016 16:31

Analyst(s): IA

Analytical Comments: b1



Analytical Report

Client: Pangea Environmental Svcs., Inc.
Date Received: 6/9/16 17:35
Date Prepared: 6/10/16
Project: 1244 2nd Ave

WorkOrder: 1606439
Extraction Method: SW3510C
Analytical Method: SW8015B
Unit: µg/L

Total Extractable Petroleum Hydrocarbons w/out SG Clean-Up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-7	1606439-001A	Water	06/09/2016 14:00	GC11A	122101

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	50	1	06/10/2016 19:07
TPH-Motor Oil (C18-C36)	370	250	1	06/10/2016 19:07

Surrogates	REC (%)	Limits	Date Analyzed
C9	90	70-130	06/10/2016 19:07

Analyst(s): TK **Analytical Comments:** e7,b1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-8	1606439-002A	Water	06/09/2016 15:00	GC11A	122101

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	50	1	06/10/2016 20:25
TPH-Motor Oil (C18-C36)	ND	250	1	06/10/2016 20:25

Surrogates	REC (%)	Limits	Date Analyzed
C9	90	70-130	06/10/2016 20:25

Analyst(s): TK **Analytical Comments:** b1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-10	1606439-004A	Water	06/09/2016 09:45	GC39A	122125

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	1600	500	10	06/13/2016 11:10
TPH-Motor Oil (C18-C36)	35,000	2500	10	06/13/2016 11:10

Surrogates	REC (%)	Limits	Date Analyzed
C9	121	70-130	06/13/2016 11:10

Analyst(s): TK **Analytical Comments:** e7,e2,b1



Quality Control Report

Client: Pangea Environmental Svcs., Inc.
Date Prepared: 6/11/16
Date Analyzed: 6/11/16
Instrument: GC3
Matrix: Water
Project: 1244 2nd Ave

WorkOrder: 1606439
BatchID: 122180
Extraction Method: SW5030B
Analytical Method: SW8021B/8015Bm
Unit: µg/L
Sample ID: MB/LCS-122180
 1606490-001AMS/MSD

QC Summary Report for SW8021B/8015Bm

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
TPH(btex)	ND	60.6	40	60	-	101	70-130
MTBE	ND	12.5	5.0	10	-	125	70-130
Benzene	ND	10.4	0.50	10	-	104	70-130
Toluene	ND	10.8	0.50	10	-	108	70-130
Ethylbenzene	ND	11.0	0.50	10	-	110	70-130
Xylenes	ND	33.5	1.5	30	-	112	70-130
Surrogate Recovery							
aaa-TFT	10.2	9.27		10	102	93	70-130

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TPH(btex)	63.0	60.0	60	ND	105	100	70-130	4.87	20
MTBE	11.6	12.0	10	ND	116	120	70-130	3.09	20
Benzene	10.3	10.8	10	ND	103	108	70-130	4.59	20
Toluene	10.5	10.9	10	ND	105	109	70-130	3.78	20
Ethylbenzene	10.7	10.9	10	ND	107	109	70-130	1.84	20
Xylenes	32.6	32.6	30	ND	109	109	70-130	0	20
Surrogate Recovery									
aaa-TFT	9.31	9.04	10		93	90	70-130	2.93	20



Quality Control Report

Client: Pangea Environmental Svcs., Inc.
Date Prepared: 6/9/16
Date Analyzed: 6/10/16 - 6/13/16
Instrument: GC39B
Matrix: Water
Project: 1244 2nd Ave

WorkOrder: 1606439
BatchID: 122101
Extraction Method: SW3510C
Analytical Method: SW8015B
Unit: µg/L
Sample ID: MB/LCS/LCSD-122101

QC Report for SW8015B w/out SG Clean-Up

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
TPH-Diesel (C10-C23)	ND	50	-	-	-
TPH-Motor Oil (C18-C36)	ND	250	-	-	-
Surrogate Recovery					
C9	590		625	94	65-122

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
TPH-Diesel (C10-C23)	1240	1220	1000	124	122	61-157	1.36	30
Surrogate Recovery								
C9	596	583	625	95	93	65-122	2.25	30



Quality Control Report

Client: Pangea Environmental Svcs., Inc.
Date Prepared: 6/10/16
Date Analyzed: 6/11/16 - 6/13/16
Instrument: GC39B
Matrix: Water
Project: 1244 2nd Ave

WorkOrder: 1606439
BatchID: 122125
Extraction Method: SW3510C
Analytical Method: SW8015B
Unit: µg/L
Sample ID: MB/LCS/LCSD-122125

QC Report for SW8015B w/out SG Clean-Up

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
TPH-Diesel (C10-C23)	ND	50	-	-	-
TPH-Motor Oil (C18-C36)	ND	250	-	-	-
Surrogate Recovery					
C9	586		625	94	65-122

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
TPH-Diesel (C10-C23)	1210	1210	1000	121	121	61-157	0	30
Surrogate Recovery								
C9	597	596	625	96	95	65-122	0.171	30



1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1606439

ClientCode: PEO

WaterTrax
 WriteOn
 EDF
 Excel
 EQUS
 Email
 HardCopy
 ThirdParty
 J-flag

Report to:

Bob Clark-Riddell
Pangea Environmental Svcs., Inc.
1710 Franklin Street, Ste. 200
Oakland, CA 94612
(510) 836-3700 FAX: (510) 836-3709

Email: BRiddell@pangeaenv.com
cc/3rd Party:
PO:
ProjectNo: 1244 2nd Ave

Bill to:

Bob Clark-Riddell
Pangea Environmental Svcs., Inc.
1710 Franklin Street, Ste. 200
Oakland, CA 94612

Requested TAT: 5 days;

Date Received: 06/09/2016
Date Logged: 06/10/2016

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)												
					1	2	3	4	5	6	7	8	9	10	11	12	
1606439-001	B-7	Water	6/9/2016 14:00	<input type="checkbox"/>	A		A										
1606439-002	B-8	Water	6/9/2016 15:00	<input type="checkbox"/>	A		A										
1606439-003	B-9	Water	6/9/2016 11:00	<input type="checkbox"/>		A											
1606439-004	B-10	Water	6/9/2016 9:45	<input type="checkbox"/>	A		A										

Test Legend:

1	G-MBTX_W	2	TPH(D)_W	3	TPH(DMO)_W	4	
5		6		7		8	
9		10		11		12	

Prepared by: Maria Venegas

The following SampIDs: 001A, 002A, 004A contain testgroup.

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.



WORK ORDER SUMMARY

Client Name: PANGEA ENVIRONMENTAL SVCS., INC.

QC Level: LEVEL 2

Work Order: 1606439

Project: 1244 2nd Ave

Client Contact: Bob Clark-Riddell

Date Logged: 6/10/2016

Comments: Changed to 2 day 6/10/16.

Contact's Email: BRiddell@pangeaenv.com

WaterTrax
 WriteOn
 EDF
 Excel
 Fax
 Email
 HardCopy
 ThirdParty
 J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1606439-001A	B-7	Water	Multi-Range TPH(g,d,mo)	4	2 VOAs w/HCL + 2-aVOAs (multi-range)	<input type="checkbox"/>	6/9/2016 14:00	2 days	50%+	<input type="checkbox"/>	
1606439-002A	B-8	Water	Multi-Range TPH(g,d,mo)	4	2 VOAs w/HCL + 2-aVOAs (multi-range)	<input type="checkbox"/>	6/9/2016 15:00	2 days	2%+	<input type="checkbox"/>	
1606439-003A	B-9	Water	SW8015B (Diesel)	1	aVOA	<input type="checkbox"/>	6/9/2016 11:00	2 days	Present	<input type="checkbox"/>	
1606439-004A	B-10	Water	Multi-Range TPH(g,d,mo)	4	2 VOAs w/HCL + 2-aVOAs (multi-range)	<input type="checkbox"/>	6/9/2016 9:45	2 days	50%+	<input type="checkbox"/>	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.



Sample Receipt Checklist

Client Name: **Pangea Environmental Svcs., Inc.**
Project Name: **1244 2nd Ave**
WorkOrder №: **1606439** Matrix: Water
Carrier: Client Drop-In

Date and Time Received: **6/9/2016 17:35**
Date Logged: **6/10/2016**
Received by: **Maria Venegas**
Logged by: **Maria Venegas**

Chain of Custody (COC) Information

Chain of custody present? Yes No
Chain of custody signed when relinquished and received? Yes No
Chain of custody agrees with sample labels? Yes No
Sample IDs noted by Client on COC? Yes No
Date and Time of collection noted by Client on COC? Yes No
Sampler's name noted on COC? Yes No

Sample Receipt Information

Custody seals intact on shipping container/cooler? Yes No NA
Shipping container/cooler in good condition? Yes No
Samples in proper containers/bottles? Yes No
Sample containers intact? Yes No
Sufficient sample volume for indicated test? Yes No

Sample Preservation and Hold Time (HT) Information

All samples received within holding time? Yes No
Sample/Temp Blank temperature Temp: 10.2°C NA
Water - VOA vials have zero headspace / no bubbles? Yes No NA
Sample labels checked for correct preservation? Yes No
pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)? Yes No NA
Samples Received on Ice? Yes No
(Ice Type: WET ICE)

UCMR3 Samples:

Total Chlorine tested and acceptable upon receipt for EPA 522? Yes No NA
Free Chlorine tested and acceptable upon receipt for EPA 218.7, 300.1, 537, 539? Yes No NA

Comments:



McC Campbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1605A63

Report Created for: Pangea Environmental Svcs., Inc.

1710 Franklin Street, Ste. 200
Oakland, CA 94612

Project Contact: Bob Clark-Riddell

Project P.O.:

Project Name: 1244 2nd

Project Received: 05/24/2016

Analytical Report reviewed & approved for release on 05/31/2016 by:

Angela Rydelius,
Laboratory Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.





Glossary of Terms & Qualifier Definitions

Client: Pangea Environmental Svcs., Inc.
Project: 1244 2nd
WorkOrder: 1605A63

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

Analytical Qualifiers

H samples were analyzed out of holding time



Case Narrative

Client: Pangea Environmental Svcs., Inc.
Project: 1244 2nd

Work Order: 1605A63
May 31, 2016

TO-15 ANALYSIS

All summa canisters are EVACUATED 5 days after the reporting of the results. Please call or email if a longer retention time is required.

In an effort to attain the lowest reporting limits possible for the majority of the TO-15 target list, high level compounds may be analyzed using EPA Method 8260B.

Polymer (Tedlar) bags are not recommended for TO15 samples. The disadvantages are listed in Appendix B of the DTSC Active Soil Gas Advisory of July 2015.



Analytical Report

Client: Pangea Environmental Svcs., Inc.

WorkOrder: 1605A63

Date Received: 5/24/16 17:40

Extraction Method: ASTM D 1946-90

Date Prepared: 5/25/16

Analytical Method: ASTM D 1946-90

Project: 1244 2nd

Unit: µL/L

Atmospheric gas Oxygen and Nitrogen

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SVW-1	1605A63-001A	SoilGas	05/24/2016 14:46	GC26	121518

Analytes	Result	Qualifiers	RL	DF	Date Analyzed
Oxygen	99,000	H	2000	1	05/25/2016 16:16

Analyst(s): GM

 Angela Rydelius, Lab Manager



Analytical Report

Client: Pangea Environmental Svcs., Inc.

WorkOrder: 1605A63

Date Received: 5/24/16 17:40

Extraction Method: ASTM D 1946-90

Date Prepared: 5/25/16

Analytical Method: ASTM D 1946-90

Project: 1244 2nd

Unit: uL/L

Light Gases

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SVW-1	1605A63-001A	SoilGas	05/24/2016 14:46	GC26	121516

Analytes	Result	Qualifiers	RL	DF	Date Analyzed
Methane	ND	H	1.0	1	05/25/2016 11:54

Analyst(s): AK

 Angela Rydelius, Lab Manager



Analytical Report

Client: Pangea Environmental Svcs., Inc.
Date Received: 5/24/16 17:40
Date Prepared: 5/25/16
Project: 1244 2nd

WorkOrder: 1605A63
Extraction Method: TO15
Analytical Method: TO15
Unit: µg/m³

Volatile Organic Compounds

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SVW-1	1605A63-001A	SoilGas	05/24/2016 14:46	GC29	121526

Analytes	Result	Qualifiers	RL	DF	Date Analyzed
TPH(g)	ND	H	1800	1	05/25/2016 22:32

Surrogates	REC (%)	Qualifiers	Limits	
1,2-DCA-d4	81	H	70-130	05/25/2016 22:32

Analyst(s): GM

 Angela Rydelius, Lab Manager



Analytical Report

Client: Pangea Environmental Svcs., Inc.
Date Received: 5/24/16 17:40
Date Prepared: 5/25/16
Project: 1244 2nd

WorkOrder: 1605A63
Extraction Method: TO15
Analytical Method: TO15
Unit: µg/m³

Leak Check Compound

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SVW-1	1605A63-001A	SoilGas	05/24/2016 14:46	GC29	121526

Analytes	Result	Qualifiers	RL	DF	Date Analyzed
Isopropyl Alcohol	ND	H	50	1	05/25/2016 22:32

Analyst(s): GM

 Angela Rydelius, Lab Manager



Analytical Report

Client: Pangea Environmental Svcs., Inc.
Date Received: 5/24/16 17:40
Date Prepared: 5/25/16
Project: 1244 2nd

WorkOrder: 1605A63
Extraction Method: TO15
Analytical Method: TO15
Unit: µg/m³

Volatile Organic Compounds

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SVW-1	1605A63-001A	SoilGas	05/24/2016 14:46	GC29	121526

Analytes	Result	Qualifiers	RL	DF	Date Analyzed
Benzene	ND	H	6.5	1	05/25/2016 22:32
Ethylbenzene	ND	H	8.8	1	05/25/2016 22:32
Toluene	8.9	H	7.6	1	05/25/2016 22:32
Xylenes, Total	ND	H	27	1	05/25/2016 22:32
Surrogates	REC (%)	Qualifiers	Limits		Date Analyzed
1,2-DCA-d4	74	H	70-130		05/25/2016 22:32
Toluene-d8	86	H	70-130		05/25/2016 22:32

Analyst(s): GM

 Angela Rydelius, Lab Manager



Quality Control Report

Client: Pangea Environmental Svcs., Inc.
Date Prepared: 5/25/16
Date Analyzed: 5/25/16
Instrument: GC26
Matrix: SoilGas
Project: 1244 2nd

WorkOrder: 1605A63
BatchID: 121518
Extraction Method: ASTM D 1946-90
Analytical Method: ASTM D 1946-90
Unit: µL/L
Sample ID: MB/LCS-121518

QC Summary Report for ASTM D1946-90

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Oxygen	ND	6050	2000	7000	-	86	70-130

QA/QC Officer



Quality Control Report

Client: Pangea Environmental Svcs., Inc.
Date Prepared: 5/25/16
Date Analyzed: 5/25/16
Instrument: GC26
Matrix: SoilGas
Project: 1244 2nd

WorkOrder: 1605A63
BatchID: 121516
Extraction Method: ASTM D 1946-90
Analytical Method: ASTM D 1946-90
Unit: uL/L
Sample ID: MB/LCS-121516

QC Summary Report for ASTM D1946-90

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Methane	ND	93.3	1.0	100	-	93	70-130

QA/QC Officer



Quality Control Report

Client: Pangea Environmental Svcs., Inc.
Date Prepared: 5/25/16
Date Analyzed: 5/25/16
Instrument: GC29
Matrix: Tedlar
Project: 1244 2nd

WorkOrder: 1605A63
BatchID: 121526
Extraction Method: TO15
Analytical Method: TO15
Unit: µg/m³
Sample ID: MB-121526

QC Summary Report for TO15

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
TPH(g)	ND	-	1800	-	-	-	-
Surrogate Recovery							
1,2-DCA-d4	0.423	-		0.5	85	-	-
Toluene-d8	0.509	-		0.5	102	-	-
4-BFB	0.470	-		0.5	94	-	-

QA/QC Officer



Quality Control Report

Client: Pangea Environmental Svcs., Inc.
Date Prepared: 5/25/16
Date Analyzed: 5/25/16
Instrument: GC29
Matrix: Tedlar
Project: 1244 2nd

WorkOrder: 1605A63
BatchID: 121526
Extraction Method: TO15
Analytical Method: TO15
Unit: µg/m³
Sample ID: MB/LCS-121526

QC Summary Report for TO15

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Acetone	ND	57.1	12	60	-	95	60-140
Acrolein	ND	70.5	5.8	58.25	-	121	60-140
Acrylonitrile	ND	67.6	4.4	55	-	123	60-140
tert-Amyl methyl ether (TAME)	ND	101	8.5	105	-	96	60-140
Benzene	ND	66.1	6.5	80	-	83	60-140
Benzyl chloride	ND	149	11	132.5	-	113	60-140
Bromodichloromethane	ND	118	14	175	-	67	60-140
Bromoform	ND	208	21	262.5	-	79	60-140
Bromomethane	ND	108	7.9	97.5	-	111	60-140
1,3-Butadiene	ND	45.0	4.5	55	-	82	60-140
2-Butanone (MEK)	ND	82.8	15	75	-	110	60-140
t-Butyl alcohol (TBA)	ND	84.5	16	77.5	-	109	60-140
Carbon Disulfide	ND	94.0	6.3	80	-	117	60-140
Carbon Tetrachloride	ND	116	13	160	-	72	60-140
Chlorobenzene	ND	120	9.4	117.5	-	102	60-140
Chloroethane	ND	58.2	5.4	67	-	87	60-140
Chloroform	ND	99.8	9.9	122.5	-	81	60-140
Chloromethane	ND	45.8	4.2	52.5	-	87	60-140
Cyclohexane	ND	93.4	18	87.5	-	107	60-140
Dibromochloromethane	ND	168	17	217	-	78	60-140
1,2-Dibromo-3-chloropropane	ND	279	20	245	-	114	60-140
1,2-Dibromoethane (EDB)	ND	153	16	195	-	78	60-140
1,2-Dichlorobenzene	ND	145	12	152.5	-	95	60-140
1,3-Dichlorobenzene	ND	144	12	152.5	-	95	60-140
1,4-Dichlorobenzene	ND	139	12	152.5	-	91	60-140
Dichlorodifluoromethane	ND	110	10	125	-	88	60-140
1,1-Dichloroethane	ND	101	8.2	102.5	-	98	60-140
1,2-Dichloroethane (1,2-DCA)	ND	85.5	8.2	102.5	-	83	60-140
1,1-Dichloroethene	ND	97.3	8.1	100	-	97	60-140
cis-1,2-Dichloroethene	ND	104	8.1	100	-	104	60-140
trans-1,2-Dichloroethene	ND	101	8.1	100	-	101	60-140
1,2-Dichloropropane	ND	102	9.4	117.5	-	87	60-140
cis-1,3-Dichloropropene	ND	100	9.2	115	-	87	60-140
trans-1,3-Dichloropropene	ND	95.7	9.2	115	-	83	60-140
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	169	14	177.5	-	95	60-140
Diisopropyl ether (DIPE)	ND	110	8.5	105	-	105	60-140
1,4-Dioxane	ND	77.9	7.3	92.5	-	84	60-140

(Cont.)

QA/QC Officer



Quality Control Report

Client: Pangea Environmental Svcs., Inc.
Date Prepared: 5/25/16
Date Analyzed: 5/25/16
Instrument: GC29
Matrix: Tedlar
Project: 1244 2nd

WorkOrder: 1605A63
BatchID: 121526
Extraction Method: TO15
Analytical Method: TO15
Unit: µg/m³
Sample ID: MB/LCS-121526

QC Summary Report for TO15

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Ethanol	ND	39.7	9.6	47.5	-	84	60-140
Ethyl acetate	ND	87.7	19	92.5	-	95	60-140
Ethyl tert-butyl ether (ETBE)	ND	113	8.5	105	-	108	60-140
Ethylbenzene	ND	108	8.8	110	-	99	60-140
4-Ethyltoluene	ND	123	10	125	-	98	60-140
Freon 113	ND	180	16	195	-	92	60-140
Heptane	ND	90.4	21	105	-	86	60-140
Hexachlorobutadiene	ND	228	22	270	-	85	60-140
Hexane	ND	94.5	18	90	-	105	60-140
2-Hexanone	ND	84.0	21	105	-	80	60-140
4-Methyl-2-pentanone (MIBK)	ND	85.5	8.3	105	-	81	60-140
Methyl-t-butyl ether (MTBE)	ND	86.3	7.3	92.5	-	93	60-140
Methylene chloride	ND	86.8	7.1	87.5	-	99	60-140
Propene	ND	38.4	8.8	42.5	-	90	60-140
Styrene	ND	112	8.6	107.5	-	105	60-140
1,1,1,2-Tetrachloroethane	ND	184	14	175	-	105	60-140
1,1,2,2-Tetrachloroethane	ND	206	14	175	-	118	60-140
Tetrachloroethene	ND	133	14	175.5	-	76	60-140
Tetrahydrofuran	ND	80.7	6.0	75	-	108	60-140
Toluene	ND	82.3	7.6	95	-	87	60-140
1,2,4-Trichlorobenzene	ND	189	15	187.5	-	101	60-140
1,1,1-Trichloroethane	ND	100	11	137.5	-	73	60-140
1,1,2-Trichloroethane	ND	113	11	137.5	-	82	60-140
Trichloroethene	ND	101	11	137.5	-	73	60-140
Trichlorofluoromethane	ND	123	11	142.5	-	86	60-140
1,2,4-Trimethylbenzene	ND	122	10	125	-	97	60-140
1,3,5-Trimethylbenzene	ND	129	10	125	-	103	60-140
Vinyl Acetate	ND	89.4	18	90	-	99	60-140
Vinyl Chloride	ND	53.5	5.2	65	-	82	60-140
Xylenes, Total	ND	328	27	330	-	99	60-140
Surrogate Recovery							
1,2-DCA-d4	384	388		500	77	78	60-140
Toluene-d8	431	411		500	86	82	60-140
4-BFB	454	452		500	91	90	60-140

QA/QC Officer



1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1605A63

ClientCode: PEO

WaterTrax
 WriteOn
 EDF
 Excel
 EQUIS
 Email
 HardCopy
 ThirdParty
 J-flag

Report to:

Bob Clark-Riddell
Pangea Environmental Svcs., Inc.
1710 Franklin Street, Ste. 200
Oakland, CA 94612
(510) 836-3700 FAX: (510) 836-3709

Email: BRiddell@pangeaenv.com
cc/3rd Party:
PO:
ProjectNo: 1244 2nd

Bill to:

Bob Clark-Riddell
Pangea Environmental Svcs., Inc.
1710 Franklin Street, Ste. 200
Oakland, CA 94612

Requested TAT: 5 days;

Date Received: 05/24/2016

Date Logged: 05/24/2016

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
1605A63-001	SVW-1	SoilGas	5/24/2016 14:46	<input type="checkbox"/>	A	A	A	A	A	A						

Test Legend:

1	ATMOSPHERICGAS_SG(UL/L)	2	LG_TEDLAR_SOILGAS	3	TO15_Scan-SIM_SOIL(UG/M3)	4	TO15-8260_SOIL(UG/M3)
5	TO15GAS_Scan-SIM_SOIL(UG/M3)	6	TO15-LC_SOIL(UG/M3)	7		8	
9		10		11		12	

Prepared by: Alexandra Iniguez

The following SampID: 001A contains testgroup.

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.



WORK ORDER SUMMARY

Client Name: PANGEA ENVIRONMENTAL SVCS., INC.

QC Level: LEVEL 2

Work Order: 1605A63

Project: 1244 2nd

Client Contact: Bob Clark-Riddell

Date Logged: 5/24/2016

Comments:

Contact's Email: BRiddell@pangeaenv.com

WaterTrax
 WriteOn
 EDF
 Excel
 Fax
 Email
 HardCopy
 ThirdParty
 J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1605A63-001A	SVW-1	SoilGas	VOCs and TPHgas by TO15 for Soil Vapor	1	Tedlar	<input type="checkbox"/>	5/24/2016 14:46	5 days		<input type="checkbox"/>	
			ASTM D1946-90 (Light Gases) <Methane_4>			<input type="checkbox"/>		5 days		<input type="checkbox"/>	
			ASTM D1946-90 (Light Gases, Atmospheric) <Oxygen>			<input type="checkbox"/>		5 days		<input type="checkbox"/>	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).
 - MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.



Sample Receipt Checklist

Client Name:	Pangea Environmental Svcs., Inc.	Date and Time Received:	5/24/2016 17:40
Project Name:	1244 2nd	Date Logged:	5/24/2016
WorkOrder №:	1605A63	Matrix:	<u>SoilGas</u>
Carrier:	<u>Client Drop-In</u>	Received by:	Jena Alfaro
		Logged by:	Alexandra Iniguez

Chain of Custody (COC) Information

Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Sample IDs noted by Client on COC?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Date and Time of collection noted by Client on COC?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Sampler's name noted on COC?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	NA <input checked="" type="checkbox"/>
Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper containers/bottles?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Sample/Temp Blank temperature		Temp:	NA <input checked="" type="checkbox"/>
Water - VOA vials have zero headspace / no bubbles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	NA <input checked="" type="checkbox"/>
Sample labels checked for correct preservation?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	NA <input checked="" type="checkbox"/>
Samples Received on Ice?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	

UCMR3 Samples:

Total Chlorine tested and acceptable upon receipt for EPA 522?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	NA <input checked="" type="checkbox"/>
Free Chlorine tested and acceptable upon receipt for EPA 218.7, 300.1, 537, 539?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	NA <input checked="" type="checkbox"/>

Comments: Method ASTM D1946-90 (Light Gases, Atmospheric) was received passed its 0.025-day holding time. Method ASTM D1946-90 (Light Gases) was received passed its 0.25-day holding time.



McC Campbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1605677

Report Created for: Pangea Environmental Svcs., Inc.

1710 Franklin Street, Ste. 200
Oakland, CA 94612

Project Contact: Bob Clark-Riddell

Project P.O.:

Project Name: 1244 2nd Ave

Project Received: 05/16/2016

Analytical Report reviewed & approved for release on 05/23/2016 by:

Angela Rydelius,
Laboratory Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.





Glossary of Terms & Qualifier Definitions

Client: Pangea Environmental Svcs., Inc.
Project: 1244 2nd Ave
WorkOrder: 1605677

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

Analytical Qualifiers

a3 sample diluted due to high organic content.



Analytical Report

Client: Pangea Environmental Svcs., Inc.
Date Received: 5/16/16 17:00
Date Prepared: 5/19/16-5/20/16
Project: 1244 2nd Ave

WorkOrder: 1605677
Extraction Method: SW5030B
Analytical Method: SW8021B/8015Bm
Unit: µg/L

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SB-1	1605677-001A	Water	05/16/2016 10:00	GC3	121200

Analytes	Result	RL	DF	Date Analyzed
TPH(g)	ND	50	1	05/19/2016 23:10
MTBE	---	5.0	1	05/19/2016 23:10
Benzene	---	0.50	1	05/19/2016 23:10
Toluene	---	0.50	1	05/19/2016 23:10
Ethylbenzene	---	0.50	1	05/19/2016 23:10
Xylenes	---	1.5	1	05/19/2016 23:10
Surrogates	REC (%)	Limits		
aaa-TFT	102	70-130		05/19/2016 23:10

Analyst(s): LT

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SB-2	1605677-002A	Water	05/16/2016 10:15	GC3	121306

Analytes	Result	RL	DF	Date Analyzed
TPH(g)	ND	50	1	05/20/2016 18:00
MTBE	---	5.0	1	05/20/2016 18:00
Benzene	---	0.50	1	05/20/2016 18:00
Toluene	---	0.50	1	05/20/2016 18:00
Ethylbenzene	---	0.50	1	05/20/2016 18:00
Xylenes	---	1.5	1	05/20/2016 18:00
Surrogates	REC (%)	Limits		
aaa-TFT	107	70-130		05/20/2016 18:00

Analyst(s): LT



Analytical Report

Client: Pangea Environmental Svcs., Inc.	WorkOrder: 1605677
Date Received: 5/16/16 17:00	Extraction Method: SW5030B
Date Prepared: 5/19/16-5/20/16	Analytical Method: SW8021B/8015Bm
Project: 1244 2nd Ave	Unit: µg/L

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SB-3	1605677-003A	Water	05/16/2016 14:45	GC3	121306
<u>Analytes</u>	<u>Result</u>		<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
TPH(g)	ND		50	1	05/20/2016 19:01
MTBE	---		5.0	1	05/20/2016 19:01
Benzene	---		0.50	1	05/20/2016 19:01
Toluene	---		0.50	1	05/20/2016 19:01
Ethylbenzene	---		0.50	1	05/20/2016 19:01
Xylenes	---		1.5	1	05/20/2016 19:01
<u>Surrogates</u>	<u>REC (%)</u>		<u>Limits</u>		
aaa-TFT	102		70-130		05/20/2016 19:01
<u>Analyst(s):</u> LT					



Analytical Report

Client: Pangea Environmental Svcs., Inc.
Date Received: 5/16/16 17:00
Date Prepared: 5/16/16
Project: 1244 2nd Ave

WorkOrder: 1605677
Extraction Method: SW3510C
Analytical Method: SW8015B
Unit: µg/L

Total Extractable Petroleum Hydrocarbons w/out SG Clean-Up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SB-1	1605677-001A	Water	05/16/2016 10:00	GC9a	121004

<u>Analytes</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
TPH-Diesel (C10-C23)	ND	50	1	05/17/2016 06:32
TPH-Motor Oil (C18-C36)	ND	250	1	05/17/2016 06:32

<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>	<u>Date Analyzed</u>
C9	96	70-130	05/17/2016 06:32

Analyst(s): TK

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SB-2	1605677-002A	Water	05/16/2016 10:15	GC9a	121004

<u>Analytes</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
TPH-Diesel (C10-C23)	ND	50	1	05/17/2016 08:28
TPH-Motor Oil (C18-C36)	ND	250	1	05/17/2016 08:28

<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>	<u>Date Analyzed</u>
C9	95	70-130	05/17/2016 08:28

Analyst(s): TK

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SB-3	1605677-003A	Water	05/16/2016 14:45	GC11A	121004

<u>Analytes</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
TPH-Diesel (C10-C23)	ND	100	1	05/17/2016 07:13
TPH-Motor Oil (C18-C36)	ND	500	1	05/17/2016 07:13

<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>	<u>Date Analyzed</u>
C9	91	70-130	05/17/2016 07:13

Analyst(s): TK

Analytical Comments: a3



Quality Control Report

Client: Pangea Environmental Svcs., Inc.
Date Prepared: 5/19/16
Date Analyzed: 5/19/16
Instrument: GC3
Matrix: Water
Project: 1244 2nd Ave

WorkOrder: 1605677
BatchID: 121200
Extraction Method: SW5030B
Analytical Method: SW8021B/8015Bm
Unit: µg/L
Sample ID: MB/LCS-121200
 1605701-001AMS/MSD

QC Summary Report for SW8021B/8015Bm

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
TPH(btex)	ND	61.5	40	60	-	102	70-130
MTBE	ND	10.8	5.0	10	-	108	70-130
Benzene	ND	10.7	0.50	10	-	107	70-130
Toluene	ND	10.5	0.50	10	-	105	70-130
Ethylbenzene	ND	10.7	0.50	10	-	107	70-130
Xylenes	ND	31.8	1.5	30	-	106	70-130
Surrogate Recovery							
aaa-TFT	10.3	9.79		10	103	98	70-130

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TPH(btex)	NR	NR		1300	NR	NR	-	NR	
MTBE	NR	NR		ND<50	NR	NR	-	NR	
Benzene	NR	NR		180	NR	NR	-	NR	
Toluene	NR	NR		380	NR	NR	-	NR	
Ethylbenzene	NR	NR		60	NR	NR	-	NR	
Xylenes	NR	NR		400	NR	NR	-	NR	
Surrogate Recovery									
aaa-TFT	NR	NR			NR	NR	-	NR	



Quality Control Report

Client: Pangea Environmental Svcs., Inc.
Date Prepared: 5/20/16
Date Analyzed: 5/20/16
Instrument: GC3
Matrix: Water
Project: 1244 2nd Ave

WorkOrder: 1605677
BatchID: 121306
Extraction Method: SW5030B
Analytical Method: SW8021B/8015Bm
Unit: µg/L
Sample ID: MB/LCS-121306
 1605677-002AMS/MSD

QC Summary Report for SW8021B/8015Bm

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
TPH(btex)	ND	61.4	40	60	-	102	70-130
MTBE	ND	10.9	5.0	10	-	109	70-130
Benzene	ND	10.6	0.50	10	-	106	70-130
Toluene	ND	10.5	0.50	10	-	105	70-130
Ethylbenzene	ND	10.7	0.50	10	-	107	70-130
Xylenes	ND	32.2	1.5	30	-	107	70-130
Surrogate Recovery							
aaa-TFT	9.80	9.48		10	98	95	70-130

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TPH(btex)	62.7	63.3	60	ND	104	106	70-130	1.01	20
MTBE	11.7	11.9	10	ND	107	109	70-130	1.45	20
Benzene	10.6	10.4	10	ND	106	104	70-130	2.15	20
Toluene	10.6	10.4	10	ND	106	104	70-130	2.05	20
Ethylbenzene	10.8	10.6	10	ND	108	106	70-130	2.56	20
Xylenes	32.5	31.9	30	ND	108	106	70-130	1.93	20
Surrogate Recovery									
aaa-TFT	9.51	9.41	10		95	94	70-130	1.04	20



Quality Control Report

Client: Pangea Environmental Svcs., Inc.
Date Prepared: 5/16/16
Date Analyzed: 5/16/16
Instrument: GC9a
Matrix: Water
Project: 1244 2nd Ave

WorkOrder: 1605677
BatchID: 121004
Extraction Method: SW3510C
Analytical Method: SW8015B
Unit: µg/L
Sample ID: MB/LCS/LCSD-121004

QC Report for SW8015B w/out SG Clean-Up

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
TPH-Diesel (C10-C23)	ND	50	-	-	-
TPH-Motor Oil (C18-C36)	ND	250	-	-	-
Surrogate Recovery					
C9	588		625	94	65-122

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
TPH-Diesel (C10-C23)	1090	1170	1000	109	117	61-157	7.10	30
Surrogate Recovery								
C9	582	598	625	93	96	65-122	2.68	30

McC Campbell Analytical, Inc.



1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1605677

ClientCode: PEO

WaterTrax
 WriteOn
 EDF
 Excel
 EQulS
 Email
 HardCopy
 ThirdParty
 J-flag

Report to:

Bob Clark-Riddell
Pangea Environmental Svcs., Inc.
1710 Franklin Street, Ste. 200
Oakland, CA 94612
(510) 836-3700 FAX: (510) 836-3709

Email: BRiddell@pangeaenv.com
cc/3rd Party:
PO:
ProjectNo: 1244 2nd Ave

Bill to:

Bob Clark-Riddell
Pangea Environmental Svcs., Inc.
1710 Franklin Street, Ste. 200
Oakland, CA 94612

Requested TAT: 5 days;

Date Received: 05/16/2016

Date Logged: 05/16/2016

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)												
					1	2	3	4	5	6	7	8	9	10	11	12	
1605677-001	SB-1	Water	5/16/2016 10:00	<input type="checkbox"/>	A	A											
1605677-002	SB-2	Water	5/16/2016 10:15	<input type="checkbox"/>	A	A											
1605677-003	SB-3	Water	5/16/2016 14:45	<input type="checkbox"/>	A	A											

Test Legend:

1	G-MBTX_W	2	TPH(DMO)_W	3		4	
5		6		7		8	
9		10		11		12	

Prepared by: Briana Cutino

The following SamplIDs: 001A, 002A, 003A contain testgroup.

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.



WORK ORDER SUMMARY

Client Name: PANGEA ENVIRONMENTAL SVCS., INC.

QC Level: LEVEL 2

Work Order: 1605677

Project: 1244 2nd AVE

Client Contact: Bob Clark-Riddell

Date Logged: 5/16/2016

Comments:

Contact's Email: BRiddell@pangeaenv.com

WaterTrax
 WriteOn
 EDF
 Excel
 Fax
 Email
 HardCopy
 ThirdParty
 J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1605677-001A	SB-1	Water	Multi-Range TPH(g,d,mo)	4	2 VOAs w/HCL + 2-aVOAs (multi-range)	<input type="checkbox"/>	5/16/2016 10:00	5 days	Trace	<input type="checkbox"/>	
1605677-002A	SB-2	Water	Multi-Range TPH(g,d,mo)	5	2 VOAs w/HCL + 2-aVOAs (multi-range)	<input type="checkbox"/>	5/16/2016 10:15	5 days	Trace	<input type="checkbox"/>	
1605677-003A	SB-3	Water	Multi-Range TPH(g,d,mo)	4	2 VOAs w/HCL + 2-aVOAs (multi-range)	<input type="checkbox"/>	5/16/2016 14:45	5 days	Trace	<input type="checkbox"/>	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).
 - MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.



Sample Receipt Checklist

Client Name: **Pangea Environmental Svcs., Inc.**
 Project Name: **1244 2nd Ave**
 WorkOrder No: **1605677** Matrix: Water
 Carrier: Client Drop-In

Date and Time Received: **5/16/2016 17:00**
 Date Logged: **5/16/2016**
 Received by: **Jena Alfaro**
 Logged by: **Briana Cutino**

Chain of Custody (COC) Information

Chain of custody present? Yes No
 Chain of custody signed when relinquished and received? Yes No
 Chain of custody agrees with sample labels? Yes No
 Sample IDs noted by Client on COC? Yes No
 Date and Time of collection noted by Client on COC? Yes No
 Sampler's name noted on COC? Yes No

Sample Receipt Information

Custody seals intact on shipping container/cooler? Yes No NA
 Shipping container/cooler in good condition? Yes No
 Samples in proper containers/bottles? Yes No
 Sample containers intact? Yes No
 Sufficient sample volume for indicated test? Yes No

Sample Preservation and Hold Time (HT) Information

All samples received within holding time? Yes No
 Sample/Temp Blank temperature Temp: 2°C NA
 Water - VOA vials have zero headspace / no bubbles? Yes No NA
 Sample labels checked for correct preservation? Yes No
 pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)? Yes No NA
 Samples Received on Ice? Yes No

(Ice Type: WET ICE)

UCMR3 Samples:

Total Chlorine tested and acceptable upon receipt for EPA 522? Yes No NA
 Free Chlorine tested and acceptable upon receipt for EPA 218.7, 300.1, 537, 539? Yes No NA

 Comments:



McC Campbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1605676

Report Created for: Pangea Environmental Svcs., Inc.

1710 Franklin Street, Ste. 200
Oakland, CA 94612

Project Contact: Bob Clark-Riddell

Project P.O.:

Project Name: 1244 2nd Ave

Project Received: 05/16/2016

Analytical Report reviewed & approved for release on 05/20/2016 by:

Angela Rydelius,
Laboratory Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.





Glossary of Terms & Qualifier Definitions

Client: Pangea Environmental Svcs., Inc.
Project: 1244 2nd Ave
WorkOrder: 1605676

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)



Analytical Report

Client: Pangea Environmental Svcs., Inc.
Date Received: 5/16/16 19:00
Date Prepared: 5/16/16
Project: 1244 2nd Ave

WorkOrder: 1605676
Extraction Method: SW5030B
Analytical Method: SW8021B/8015Bm
Unit: mg/Kg

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SB-1-12'	1605676-003A	Soil	05/13/2016 15:50	GC19	121002

Analytes	Result	RL	DF	Date Analyzed
TPH(g)	ND	1.0	1	05/19/2016 22:30
MTBE	---	0.050	1	05/19/2016 22:30
Benzene	---	0.0050	1	05/19/2016 22:30
Toluene	---	0.0050	1	05/19/2016 22:30
Ethylbenzene	---	0.0050	1	05/19/2016 22:30
Xylenes	---	0.015	1	05/19/2016 22:30

Surrogates	REC (%)	Limits
2-Fluorotoluene	98	70-130

Analyst(s): TD

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SB-2-6'	1605676-004A	Soil	05/13/2016 18:00	GC19	121002

Analytes	Result	RL	DF	Date Analyzed
TPH(g)	ND	1.0	1	05/19/2016 23:00
MTBE	---	0.050	1	05/19/2016 23:00
Benzene	---	0.0050	1	05/19/2016 23:00
Toluene	---	0.0050	1	05/19/2016 23:00
Ethylbenzene	---	0.0050	1	05/19/2016 23:00
Xylenes	---	0.015	1	05/19/2016 23:00

Surrogates	REC (%)	Limits
2-Fluorotoluene	83	70-130

Analyst(s): TD

(Cont.)



Analytical Report

Client: Pangea Environmental Svcs., Inc.
Date Received: 5/16/16 19:00
Date Prepared: 5/16/16
Project: 1244 2nd Ave

WorkOrder: 1605676
Extraction Method: SW5030B
Analytical Method: SW8021B/8015Bm
Unit: mg/Kg

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SB-2-9'	1605676-005A	Soil	05/13/2016 18:10	GC19	121002

Analytes	Result	RL	DF	Date Analyzed
TPH(g)	ND	1.0	1	05/19/2016 23:30
MTBE	---	0.050	1	05/19/2016 23:30
Benzene	---	0.0050	1	05/19/2016 23:30
Toluene	---	0.0050	1	05/19/2016 23:30
Ethylbenzene	---	0.0050	1	05/19/2016 23:30
Xylenes	---	0.015	1	05/19/2016 23:30

Surrogates	REC (%)	Limits
2-Fluorotoluene	83	70-130

Analyst(s): TD

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SB-2-12'	1605676-006A	Soil	05/13/2016 18:20	GC19	121002

Analytes	Result	RL	DF	Date Analyzed
TPH(g)	ND	1.0	1	05/20/2016 00:00
MTBE	---	0.050	1	05/20/2016 00:00
Benzene	---	0.0050	1	05/20/2016 00:00
Toluene	---	0.0050	1	05/20/2016 00:00
Ethylbenzene	---	0.0050	1	05/20/2016 00:00
Xylenes	---	0.015	1	05/20/2016 00:00

Surrogates	REC (%)	Limits
2-Fluorotoluene	80	70-130

Analyst(s): TD



Analytical Report

Client: Pangea Environmental Svcs., Inc.
Date Received: 5/16/16 19:00
Date Prepared: 5/16/16
Project: 1244 2nd Ave

WorkOrder: 1605676
Extraction Method: SW5030B
Analytical Method: SW8021B/8015Bm
Unit: mg/Kg

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SB-2-15'	1605676-007A	Soil	05/13/2016 18:40	GC19	121002

Analytes	Result	RL	DF	Date Analyzed
TPH(g)	ND	1.0	1	05/20/2016 00:30
MTBE	---	0.050	1	05/20/2016 00:30
Benzene	---	0.0050	1	05/20/2016 00:30
Toluene	---	0.0050	1	05/20/2016 00:30
Ethylbenzene	---	0.0050	1	05/20/2016 00:30
Xylenes	---	0.015	1	05/20/2016 00:30

Surrogates	REC (%)	Limits	Date Analyzed
2-Fluorotoluene	84	70-130	05/20/2016 00:30

Analyst(s): TD

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SB-3-9'	1605676-009A	Soil	05/16/2016 11:10	GC19	121002

Analytes	Result	RL	DF	Date Analyzed
TPH(g)	ND	1.0	1	05/20/2016 01:00
MTBE	---	0.050	1	05/20/2016 01:00
Benzene	---	0.0050	1	05/20/2016 01:00
Toluene	---	0.0050	1	05/20/2016 01:00
Ethylbenzene	---	0.0050	1	05/20/2016 01:00
Xylenes	---	0.015	1	05/20/2016 01:00

Surrogates	REC (%)	Limits	Date Analyzed
2-Fluorotoluene	93	70-130	05/20/2016 01:00

Analyst(s): TD



Analytical Report

Client: Pangea Environmental Svcs., Inc.
Date Received: 5/16/16 19:00
Date Prepared: 5/16/16
Project: 1244 2nd Ave

WorkOrder: 1605676
Extraction Method: SW3550B
Analytical Method: SW8015B
Unit: mg/Kg

Total Extractable Petroleum Hydrocarbons w/out SG Clean-Up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SB-1-12'	1605676-003A	Soil	05/13/2016 15:50	GC9b	121001

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	1.0	1	05/17/2016 07:11
TPH-Motor Oil (C18-C36)	ND	5.0	1	05/17/2016 07:11

Surrogates	REC (%)	Limits	Date Analyzed
C9	92	70-130	05/17/2016 07:11

Analyst(s): TK

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SB-2-6'	1605676-004A	Soil	05/13/2016 18:00	GC9a	121001

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	1.0	1	05/17/2016 09:46
TPH-Motor Oil (C18-C36)	ND	5.0	1	05/17/2016 09:46

Surrogates	REC (%)	Limits	Date Analyzed
C9	92	70-130	05/17/2016 09:46

Analyst(s): TK

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SB-2-9'	1605676-005A	Soil	05/13/2016 18:10	GC9b	121001

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	1.0	1	05/17/2016 07:50
TPH-Motor Oil (C18-C36)	ND	5.0	1	05/17/2016 07:50

Surrogates	REC (%)	Limits	Date Analyzed
C9	91	70-130	05/17/2016 07:50

Analyst(s): TK

(Cont.)

NELAP 4033ORELAP

 Angela Rydelius, Lab Manager



Analytical Report

Client: Pangea Environmental Svcs., Inc.
Date Received: 5/16/16 19:00
Date Prepared: 5/16/16
Project: 1244 2nd Ave

WorkOrder: 1605676
Extraction Method: SW3550B
Analytical Method: SW8015B
Unit: mg/Kg

Total Extractable Petroleum Hydrocarbons w/out SG Clean-Up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SB-2-12'	1605676-006A	Soil	05/13/2016 18:20	GC9b	121001

<u>Analytes</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
TPH-Diesel (C10-C23)	ND	1.0	1	05/17/2016 08:28
TPH-Motor Oil (C18-C36)	ND	5.0	1	05/17/2016 08:28

<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>	<u>Date Analyzed</u>
C9	91	70-130	05/17/2016 08:28

Analyst(s): TK

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SB-2-15'	1605676-007A	Soil	05/13/2016 18:40	GC9a	121001

<u>Analytes</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
TPH-Diesel (C10-C23)	ND	1.0	1	05/17/2016 05:53
TPH-Motor Oil (C18-C36)	ND	5.0	1	05/17/2016 05:53

<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>	<u>Date Analyzed</u>
C9	96	70-130	05/17/2016 05:53

Analyst(s): TK

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SB-3-9'	1605676-009A	Soil	05/16/2016 11:10	GC9b	121001

<u>Analytes</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
TPH-Diesel (C10-C23)	ND	1.0	1	05/17/2016 09:46
TPH-Motor Oil (C18-C36)	ND	5.0	1	05/17/2016 09:46

<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>	<u>Date Analyzed</u>
C9	92	70-130	05/17/2016 09:46

Analyst(s): TK



Quality Control Report

Client: Pangea Environmental Svcs., Inc.
Date Prepared: 5/16/16
Date Analyzed: 5/16/16
Instrument: GC19
Matrix: Soil
Project: 1244 2nd Ave

WorkOrder: 1605676
BatchID: 121002
Extraction Method: SW5030B
Analytical Method: SW8021B/8015Bm
Unit: mg/Kg
Sample ID: MB/LCS-121002
 1605630-001AMS/MSD

QC Summary Report for SW8021B/8015Bm

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
TPH(btex)	ND	0.601	0.40	0.60	-	100	70-130
MTBE	ND	0.101	0.050	0.10	-	101	70-130
Benzene	ND	0.104	0.0050	0.10	-	104	70-130
Toluene	ND	0.106	0.0050	0.10	-	106	70-130
Ethylbenzene	ND	0.106	0.0050	0.10	-	106	70-130
Xylenes	ND	0.320	0.015	0.30	-	107	70-130
Surrogate Recovery							
2-Fluorotoluene	0.105	0.100		0.10	105	101	70-130

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TPH(btex)	0.615	0.575	0.60	ND	102	96	70-130	6.67	20
MTBE	0.0944	0.104	0.10	ND	91	101	70-130	9.43	20
Benzene	0.0989	0.110	0.10	ND	99	110	70-130	10.4	20
Toluene	0.101	0.111	0.10	ND	101	111	70-130	8.98	20
Ethylbenzene	0.103	0.109	0.10	ND	103	109	70-130	5.26	20
Xylenes	0.313	0.325	0.30	ND	104	108	70-130	3.85	20
Surrogate Recovery									
2-Fluorotoluene	0.0982	0.107	0.10		98	107	70-130	8.58	20



Quality Control Report

Client: Pangea Environmental Svcs., Inc.
Date Prepared: 5/16/16
Date Analyzed: 5/16/16
Instrument: GC9b
Matrix: Soil
Project: 1244 2nd Ave

WorkOrder: 1605676
BatchID: 121001
Extraction Method: SW3550B
Analytical Method: SW8015B
Unit: mg/Kg
Sample ID: MB/LCS-121001
 1605630-001AMS/MSD

QC Report for SW8015B w/out SG Clean-Up

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
TPH-Diesel (C10-C23)	ND	45.2	1.0	40	-	113	70-130
TPH-Motor Oil (C18-C36)	ND	-	5.0	-	-	-	-
Surrogate Recovery							
C9	23.0	22.9		25	92	92	70-130

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TPH-Diesel (C10-C23)	45.9	45.8	40	ND	113	113	70-130	0	30
Surrogate Recovery									
C9	23.0	23.0	25		92	92	70-130	0	30

1534 Willow Pass Rd
 Pittsburg, CA 94565-1701
 (925) 252-9262



CHAIN-OF-CUSTODY RECORD

WorkOrder: 1605676

ClientCode: PEO

WaterTrax
 WriteOn
 EDF
 Excel
 EQUIS
 Email
 HardCopy
 ThirdParty
 J-flag

Report to:

Bob Clark-Riddell
 Pangea Environmental Svcs., Inc.
 1710 Franklin Street, Ste. 200
 Oakland, CA 94612
 (510) 836-3700 FAX: (510) 836-3709

Email: BRiddell@pangeaenv.com
 cc/3rd Party:
 PO:
 ProjectNo: 1244 2nd Ave

Bill to:

Bob Clark-Riddell
 Pangea Environmental Svcs., Inc.
 1710 Franklin Street, Ste. 200
 Oakland, CA 94612

Requested TAT: 5 days;

Date Received: 05/16/2016

Date Logged: 05/16/2016

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)												
					1	2	3	4	5	6	7	8	9	10	11	12	
1605676-003	SB-1-12'	Soil	5/13/2016 15:50	<input type="checkbox"/>	A	A											
1605676-004	SB-2-6'	Soil	5/13/2016 18:00	<input type="checkbox"/>	A	A											
1605676-005	SB-2-9'	Soil	5/13/2016 18:10	<input type="checkbox"/>	A	A											
1605676-006	SB-2-12'	Soil	5/13/2016 18:20	<input type="checkbox"/>	A	A											
1605676-007	SB-2-15'	Soil	5/13/2016 18:40	<input type="checkbox"/>	A	A											
1605676-009	SB-3-9'	Soil	5/16/2016 11:10	<input type="checkbox"/>	A	A											

Test Legend:

1	G-MBTX_S	2	TPH(DMO)_S	3		4	
5		6		7		8	
9		10		11		12	

Prepared by: Briana Cutino

The following SamplIDs: 003A, 004A, 005A, 006A, 007A, 009A contain testgroup.

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
 Hazardous samples will be returned to client or disposed of at client expense.



WORK ORDER SUMMARY

Client Name: PANGEA ENVIRONMENTAL SVCS., INC.

QC Level: LEVEL 2

Work Order: 1605676

Project: 1244 nd AVE

Client Contact: Bob Clark-Riddell

Date Logged: 5/16/2016

Comments:

Contact's Email: BRiddell@pangeaenv.com

WaterTrax WriteOn EDF Excel Fax Email HardCopy ThirdParty J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1605676-001A	SB-1-6'	Soil		1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	5/13/2016 15:32			<input checked="" type="checkbox"/>	
1605676-002A	SB-1-9'	Soil		1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	5/13/2016 15:40			<input checked="" type="checkbox"/>	
1605676-003A	SB-1-12'	Soil	Multi-Range TPH(g,d,mo)	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	5/13/2016 15:50	5 days		<input type="checkbox"/>	
1605676-004A	SB-2-6'	Soil	Multi-Range TPH(g,d,mo)	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	5/13/2016 18:00	5 days		<input type="checkbox"/>	
1605676-005A	SB-2-9'	Soil	Multi-Range TPH(g,d,mo)	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	5/13/2016 18:10	5 days		<input type="checkbox"/>	
1605676-006A	SB-2-12'	Soil	Multi-Range TPH(g,d,mo)	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	5/13/2016 18:20	5 days		<input type="checkbox"/>	
1605676-007A	SB-2-15'	Soil	Multi-Range TPH(g,d,mo)	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	5/13/2016 18:40	5 days		<input type="checkbox"/>	
1605676-008A	SB-3-6'	Soil		1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	5/16/2016 11:00			<input checked="" type="checkbox"/>	
1605676-009A	SB-3-9'	Soil	Multi-Range TPH(g,d,mo)	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	5/16/2016 11:10	5 days		<input type="checkbox"/>	
1605676-010A	SB-3-12'	Soil		1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	5/16/2016 11:20			<input checked="" type="checkbox"/>	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).
 - MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.



Sample Receipt Checklist

Client Name: **Pangea Environmental Svcs., Inc.**
 Project Name: **1244 2nd Ave**
 WorkOrder No: **1605676** Matrix: Soil
 Carrier: Client Drop-In

Date and Time Received: **5/16/2016 19:00**
 Date Logged: **5/16/2016**
 Received by: **Jena Alfaro**
 Logged by: **Briana Cutino**

Chain of Custody (COC) Information

Chain of custody present? Yes No
 Chain of custody signed when relinquished and received? Yes No
 Chain of custody agrees with sample labels? Yes No
 Sample IDs noted by Client on COC? Yes No
 Date and Time of collection noted by Client on COC? Yes No
 Sampler's name noted on COC? Yes No

Sample Receipt Information

Custody seals intact on shipping container/cooler? Yes No NA
 Shipping container/cooler in good condition? Yes No
 Samples in proper containers/bottles? Yes No
 Sample containers intact? Yes No
 Sufficient sample volume for indicated test? Yes No

Sample Preservation and Hold Time (HT) Information

All samples received within holding time? Yes No
 Sample/Temp Blank temperature Temp: 3°C NA
 Water - VOA vials have zero headspace / no bubbles? Yes No NA
 Sample labels checked for correct preservation? Yes No
 pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)? Yes No NA
 Samples Received on Ice? Yes No

(Ice Type: WET ICE)

UCMR3 Samples:

Total Chlorine tested and acceptable upon receipt for EPA 522? Yes No NA
 Free Chlorine tested and acceptable upon receipt for EPA 218.7, 300.1, 537, 539? Yes No NA

 Comments:

APPENDIX G

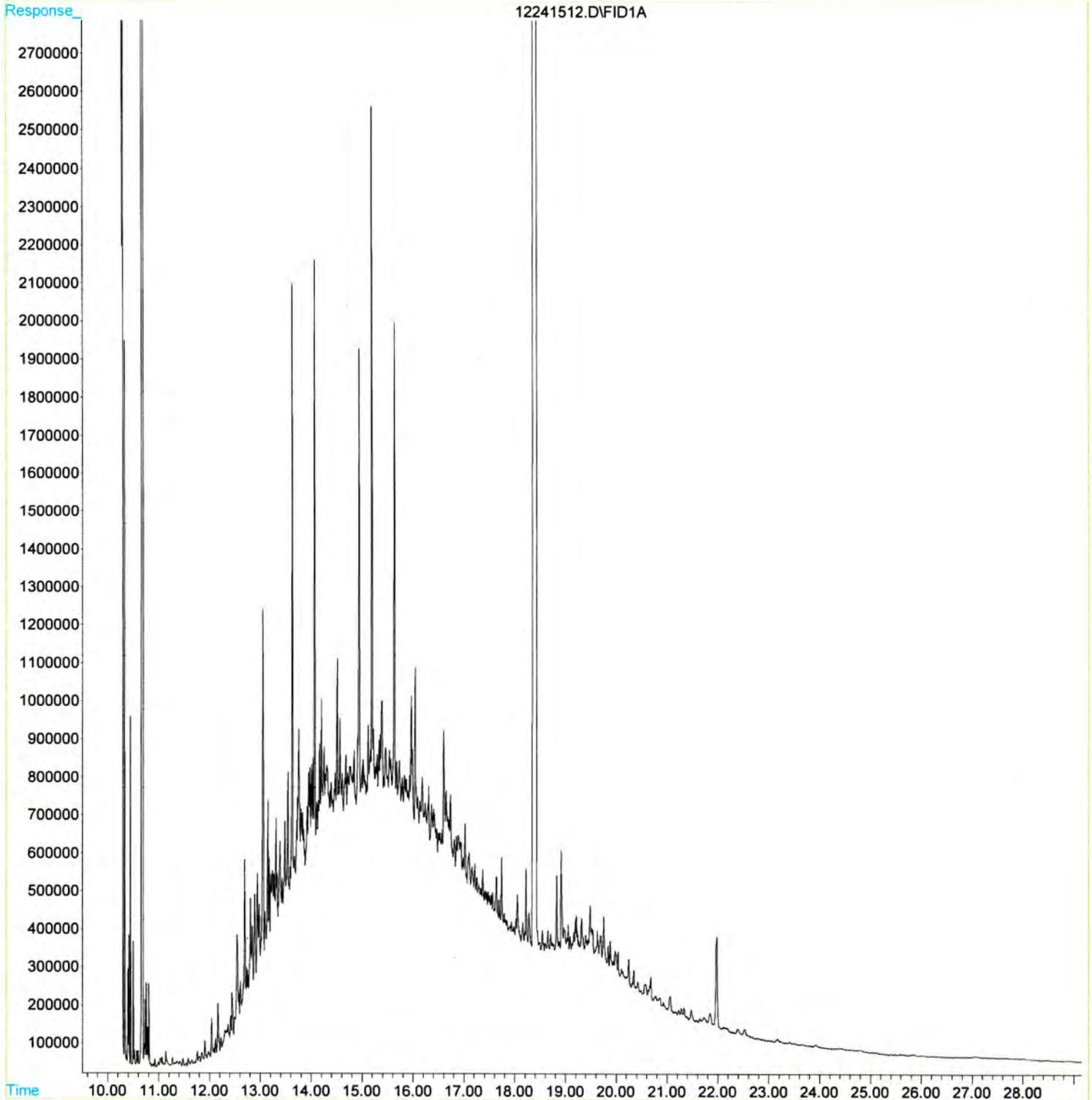
Chromatograms

Source Area Chromatograms

File : D:\HPCHEM\GC39\DATA\12241512.D
Operator : Toshiko
Acquired : 24 Dec 2015 9:01 pm using AcqMethod GC39A_I.M
Instrument : GC-39
Sample Name: 1512A04-001B W 40:2 +BO 1DAY
Misc Info : TPH
Vial Number: 6

1512A04-001B

SAMPLE B-6-W





Glossary of Terms & Qualifier Definitions

Client: Pangea Environmental Svcs., Inc.
Project: 1244 2nd Ave, Oakland, CA
WorkOrder: 1512A04

B-b-W NOTES

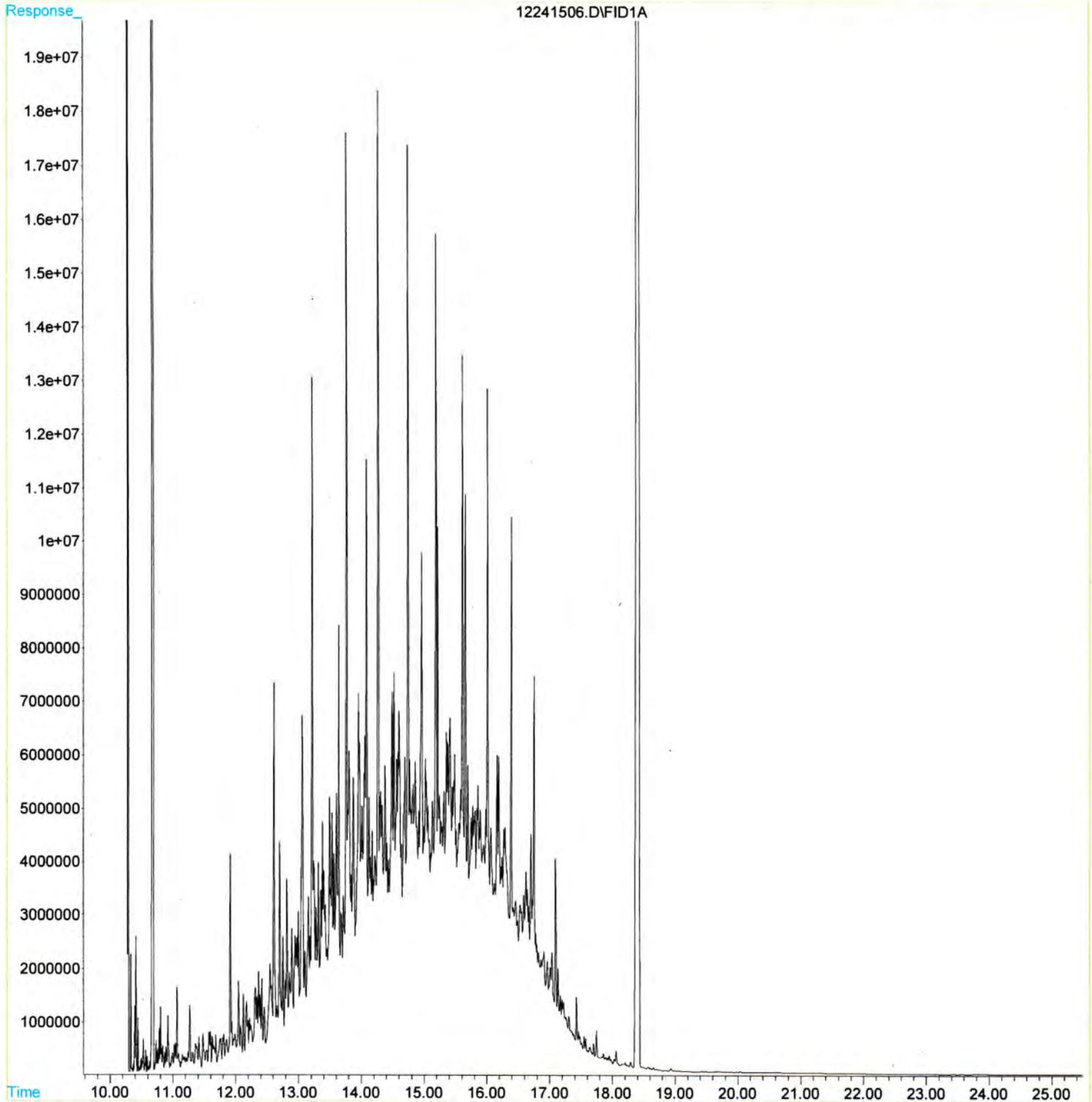
Analytical Qualifiers

e2 diesel range compounds are significant; no recognizable pattern
e3 aged diesel is significant
e7 oil range compounds are significant

File : D:\HPCHEM\GC39\DATAA\12241506.D
Operator : Toshiko
Acquired : 24 Dec 2015 7:04 pm using AcqMethod GC39A_I.M
Instrument : GC-39
Sample Name: CCV 12-04
Misc Info : TPH(DMO)_S
Vial Number: 3

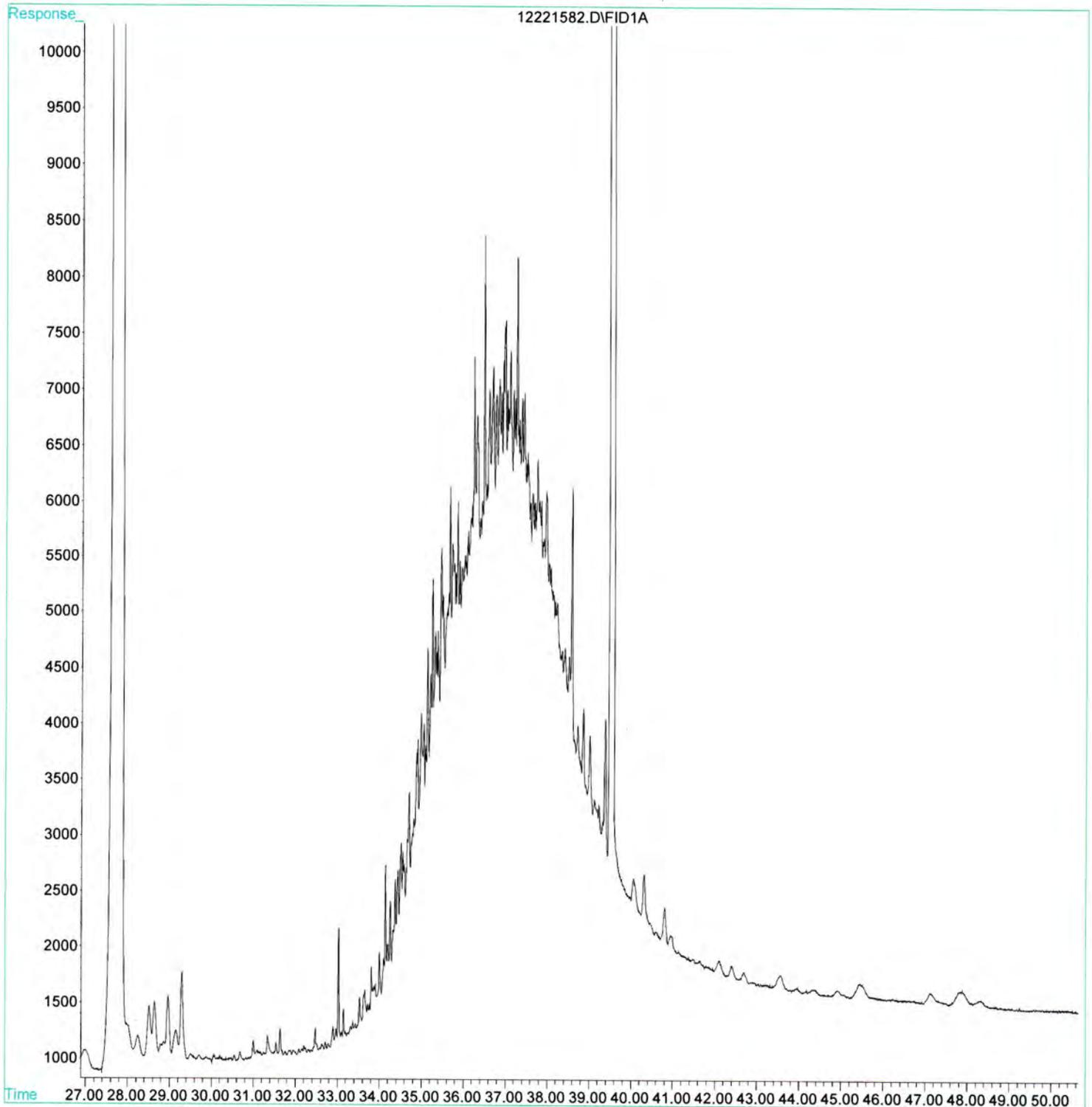
Diesel Reference Standard

(WITH B-6-W)



File : D:\HPCHEM\GC6\DATAA\12221582.D
Operator : Toshiko
Acquired : 24 Dec 2015 3:20 pm using AcqMethod GC6AH1.M
Instrument : GC-6
Sample Name: 1512A04-004B W +FF,BO 1DAY RE
Misc Info : TPH
Vial Number: 41

TANK PIT





McC Campbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
 Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
 http://www.mcccampbell.com / E-mail: main@mcccampbell.com

Pangea Environmental Svcs., Inc. 1710 Franklin Street, Ste. 200 Oakland, CA 94612	Client Project ID: 1244 2nd Ave, Oakland, CA	Date Sampled: 12/23/15
	Client Contact: Bob Clark-Riddell	Date Received: 12/23/15
	Client P.O.:	Date Extracted: 12/23/15
		Date Analyzed: 12/24/15

Fuel Fingerprint *

Extraction method: SW3510C Analytical methods: SW8015B Work Order: 1512A04

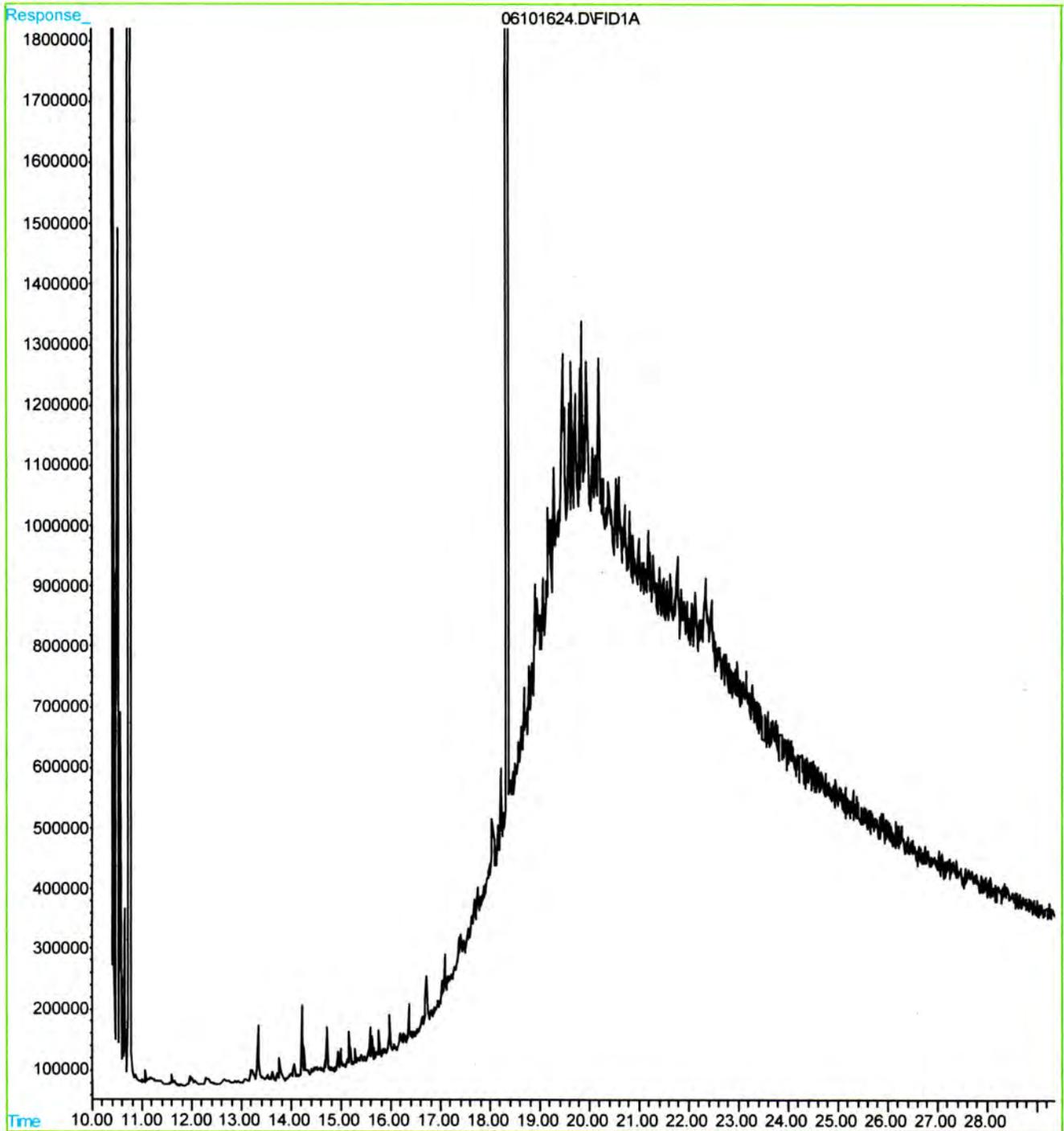
Lab ID	Client ID	Matrix	Fuel Fingerprint
1512A04-004B	Tank Pit-W	W	This sample contains a significant aged diesel pattern between C10 and C23. Chromatogram enclosed.

TANK PIT-W

Offsite Chromatograms

File : D:\HPCHEM\GC11\DATAA\06101624.D
Operator : Toshiko
Acquired : 11 Jun 2016 10:15 am using AcqMethod GC11A_B.M
Instrument : GC-11
Sample Name: 1606439-004A W 1DAY
Misc Info : TPH
Vial Number: 12

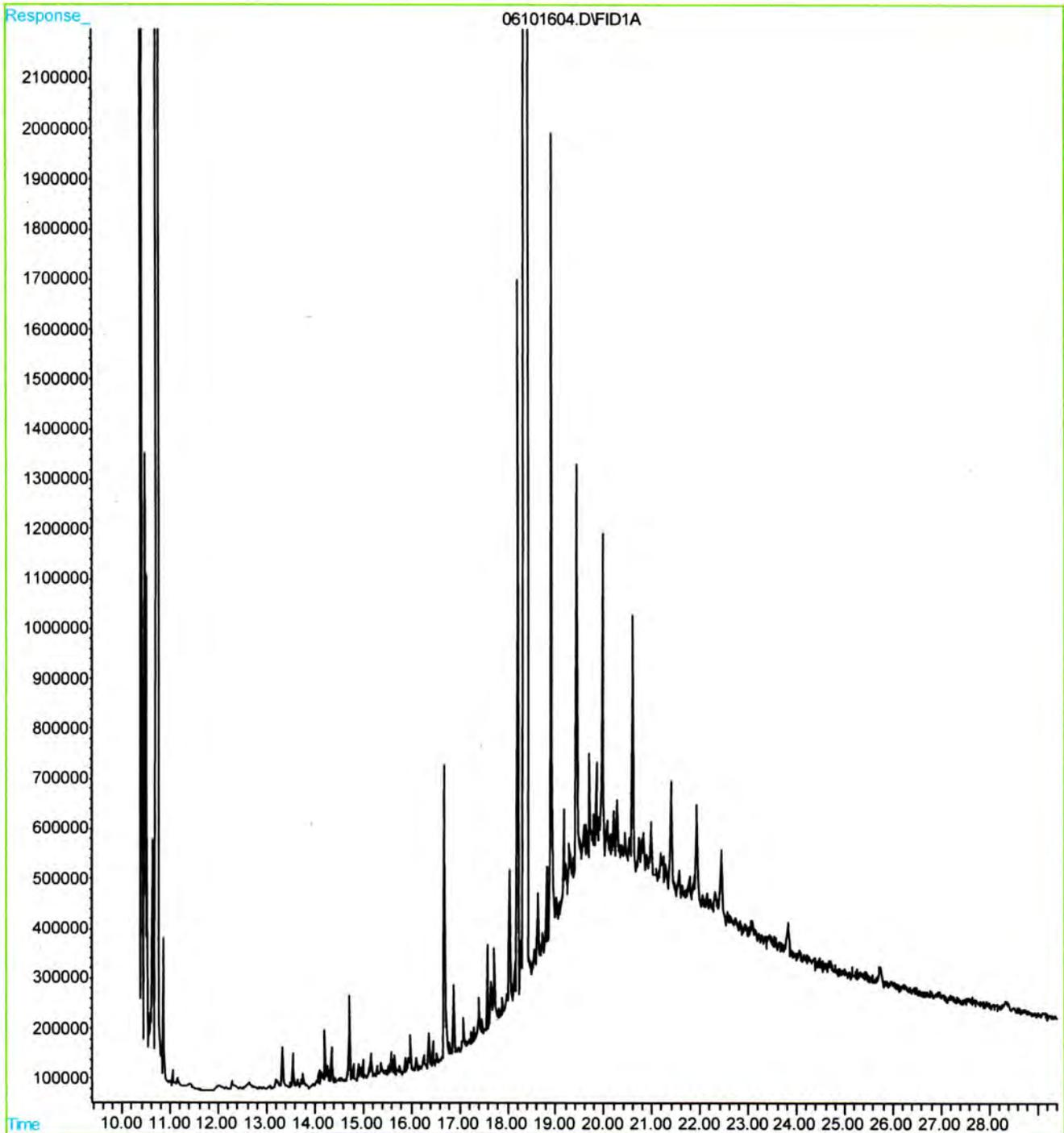
B-10



File : D:\HPCHEM\GC11\DATAA\06101604.D
Operator : Toshiko
Acquired : 10 Jun 2016 7:07 pm using AcqMethod GC11A_B.M
Instrument : GC-11
Sample Name: 1606439-001A W 1DAY
Misc Info : TPH
Vial Number: 2

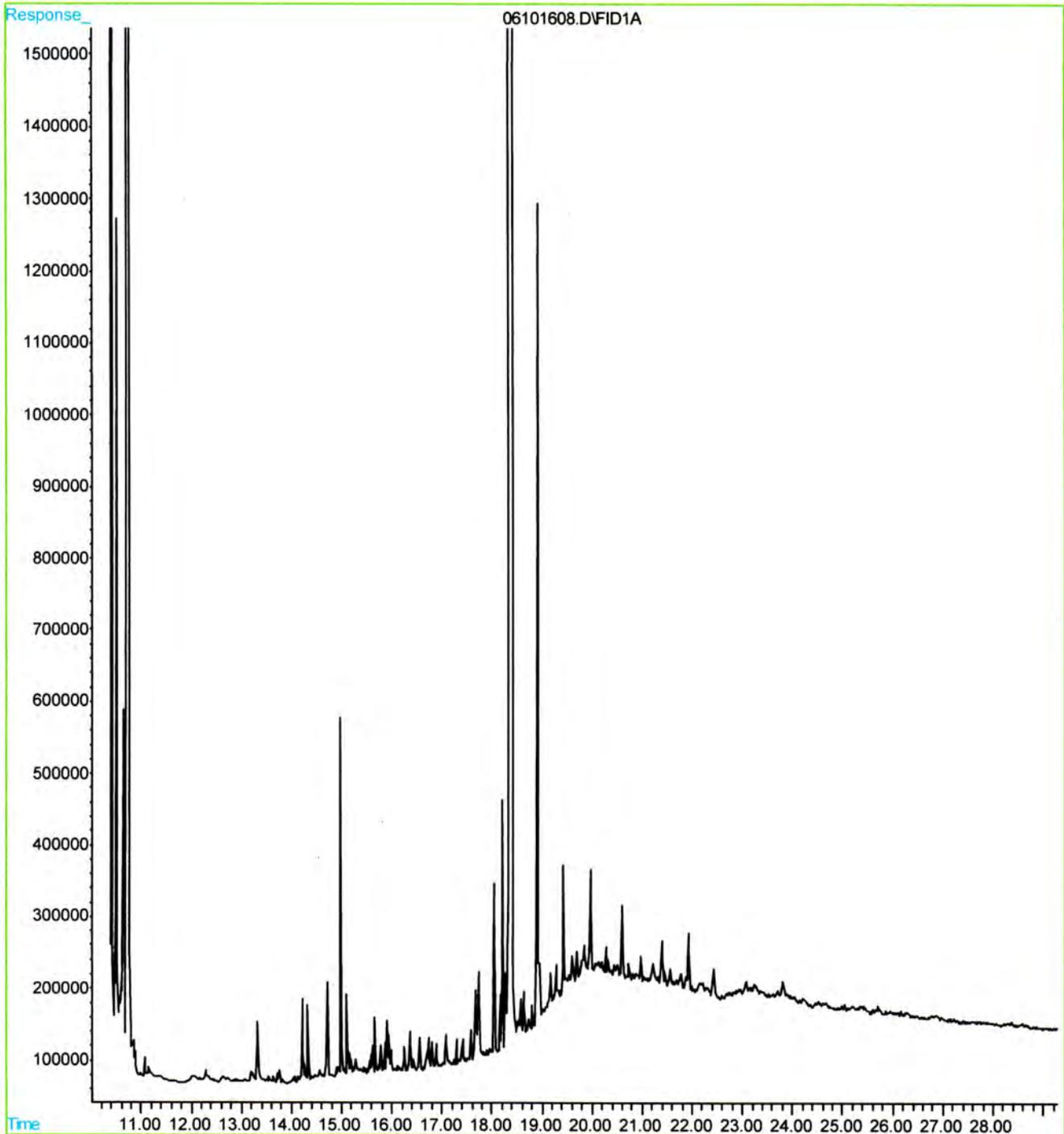
B-7

1606439-001A



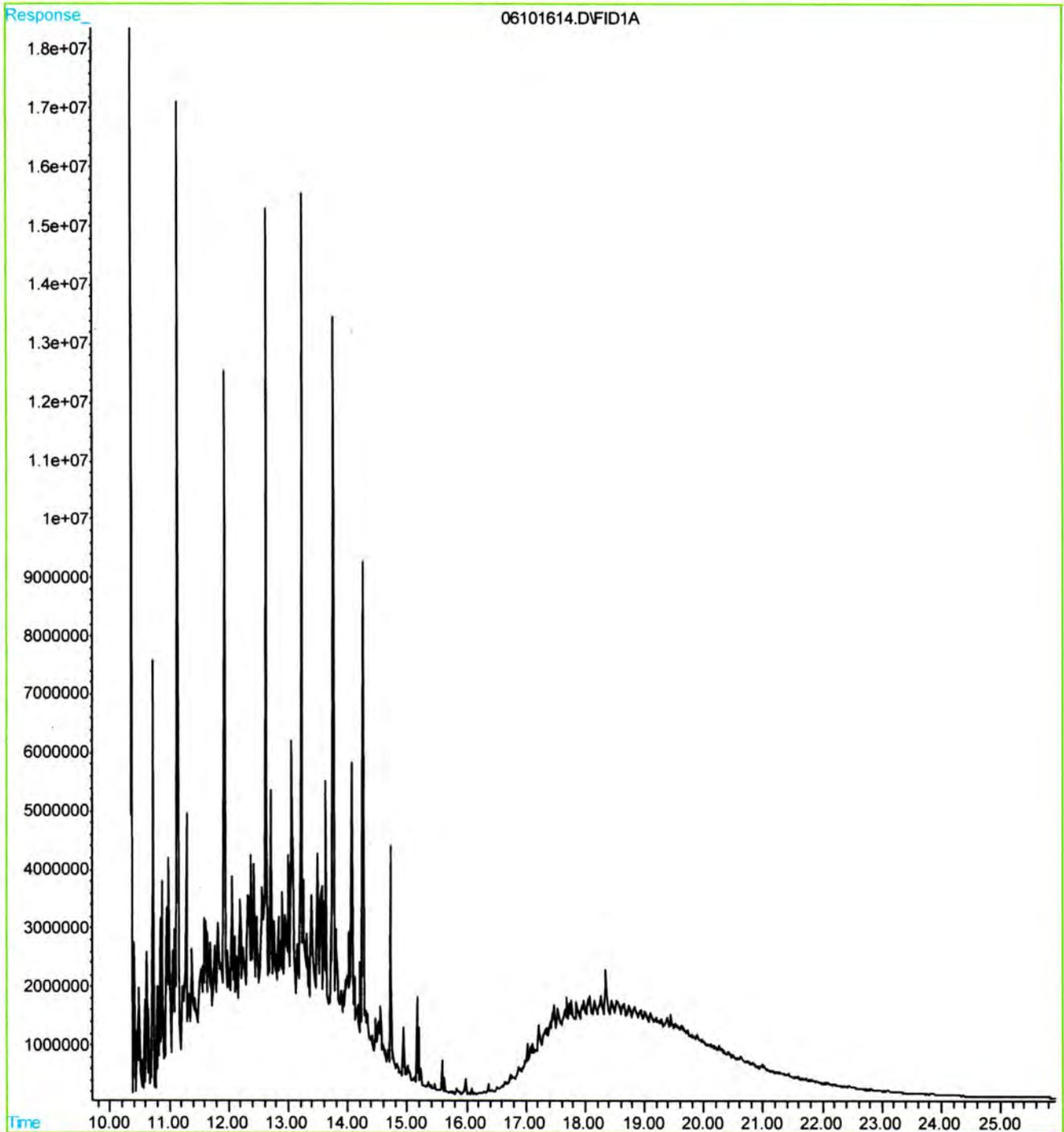
File : D:\HPCHEM\GC11\DATAA\06101608.D
Operator : Toshiko
Acquired : 10 Jun 2016 8:25 pm using AcqMethod GC11A_B.M
Instrument : GC-11
Sample Name: 1606439-002A W 1DAY
Misc Info : TPH
Vial Number: 4

1606439-002A *B-8*



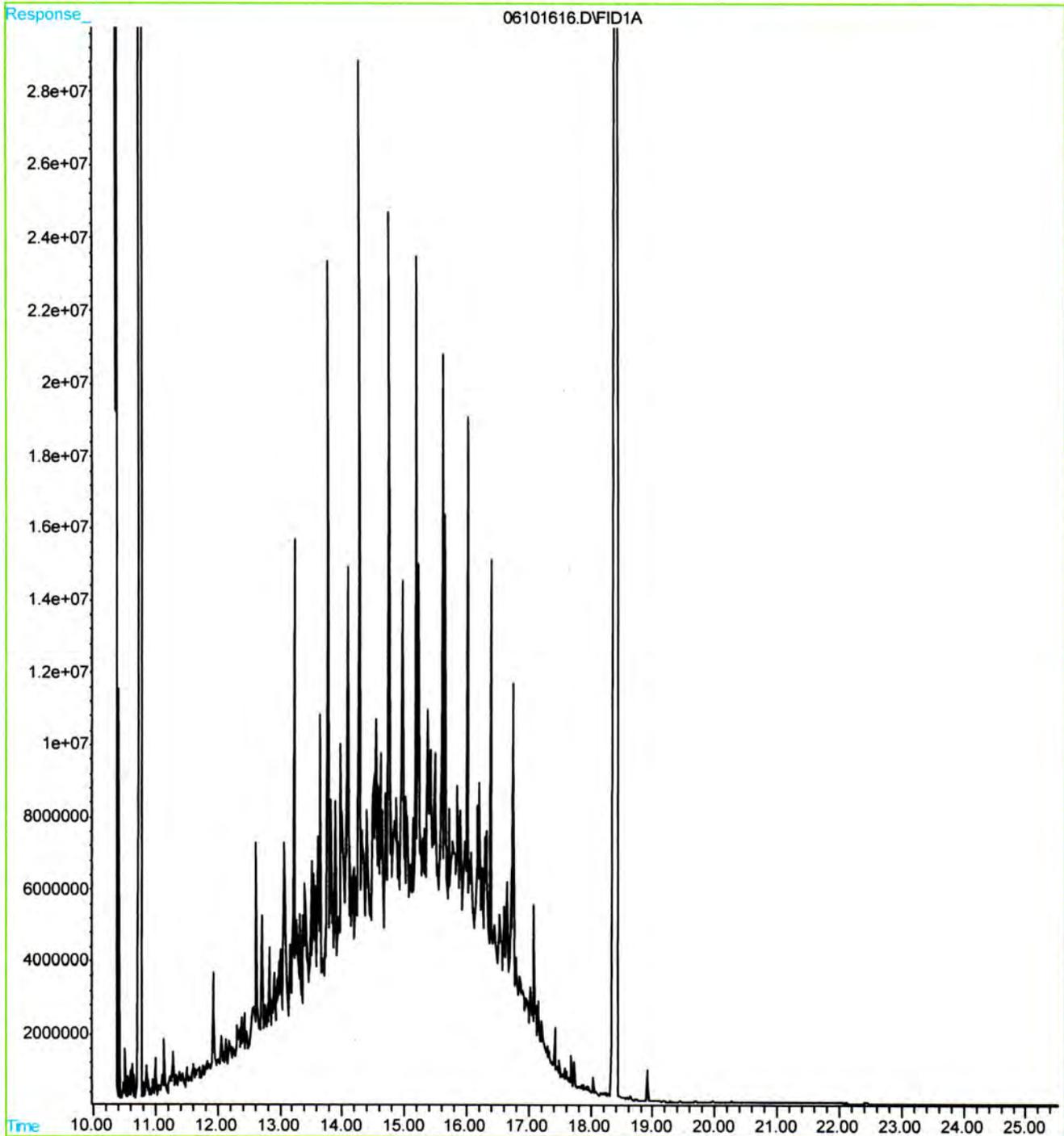
File : D:\HPCHEM\GC11\DATAA\06101614.D
Operator : Toshiko
Acquired : 10 Jun 2016 10:22 pm using AcqMethod GC11A_B.M
Instrument : GC-11
Sample Name: CCV K MO
Misc Info :
Vial Number: 7

Kerosene and Motor Oil Reference Standard
(with offsite)



File : D:\HPCHEM\GC11\DATAA\06101616.D
Operator : Toshiko
Acquired : 10 Jun 2016 11:01 pm using AcqMethod GC11A_B.M
Instrument : GC-11
Sample Name: CCV 5-18
Misc Info :
Vial Number: 8

Diesel Reference Standard
(WITH OFFSET)





Glossary of Terms & Qualifier Definitions

Client: Pangea Environmental Svcs., Inc.
Project: 1244 2nd Ave
WorkOrder: 1606439

*OFFSITE BORINGS
B-7/8/10*

Analytical Qualifiers

S	Surrogate spike recovery outside accepted recovery limits
b1	aqueous sample that contains greater than ~1 vol. % sediment
e2	diesel range compounds are significant; no recognizable pattern
e7	oil range compounds are significant
e8	kerosene/kerosene range/jet fuel range
j1	see attached narrative