Environmental Services Remedial Investigation/ Feasibility Study/Remedial Action Summary

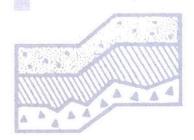
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SBMC West 2360 West Commodore Way Seattle, Washington VCP NW2643

Project No. T-6751

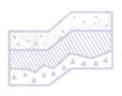


Terra Associates, Inc.

Prepared for:

SBMC West, LLC Seattle, Washington

July 2, 2013



TERRA ASSOCIATES, Inc.

Consultants in Geotechnical Engineering, Geology and Environmental Earth Sciences

> July 2, 2013 Project No. T-6751

Mr. Brooke Stabbert SBMC West, LLC 2284 West Commodore Way, Suite 100 Seattle, Washington 98199

Subject:

Environmental Services

Remedial Investigation/Feasibility Study/Remedial Action Summary

SBMC West

2360 West Commodore Way

Seattle, Washington VCP NW2643

Dear Mr. Stabbert:

This report documents our observations and the results of analytical testing of representative soil samples on the subject site. We provided environmental services on this project starting on July 19, 2012. Our services included reviewing existing reports for the project, monitoring four remedial excavations, providing supplemental environmental consulting services, supplemental site exploration and groundwater sampling, and the preparation of this report summarizing the data collected in 2012.

The attached report describes our study in detail. We trust the information presented is sufficient for your current needs. If you have any questions or require additional information, please call.

Sincerely yours,

TERRA ASSOCIATES, INC.

Charles R. Lie, L.E.G., L.H.G.

Project Manager

cc:

Mr. Eugene Freeman, WDOE NWRO

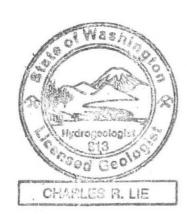


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Environmental Services Remedial Investigation/Feasibility Study/Remedial Action Summary SBMC West 2360 West Commodore Way Seattle, Washington VCP NW2643

1.0 INTRODUCTION

This report presents a summary of our environmental services at SBMC West during the summer and fall of 2012. The SBMC West site has been accepted into the voluntary cleanup program and is listed under the prior name of ER and JR Sutter. The voluntary cleanup number for the site is NW2643. The site was formerly a boat yard and has both an upland component as well as docks that extend out into Salmon Bay, a freshwater body that connects Lake Union and Puget Sound. The upland portion of the site is currently in use for maritime related commercial businesses and a printing business. The shoreline portion of the site is used for the display and moorage of pleasure boats.

Site Name: SBMC West (formerly ER and JR Sutter)

Site Address: 2460 West Commodore Way

Seattle Washington 98199

Tax Parcel: 2771605300

Owner: SBMC West, LLC

2284 West Commodore Way, Suite 100

Seattle, Washington 98199

Mr. Brooke Stabbert, (206) 963-9057

Consultant: Terra Associates, Inc.

12525 Willows Road, Suite 101 Kirkland, Washington 98034

Mr. Charles R. Lie, L.E.G., L.H.G., (425) 821-7777

This report addresses only the upland portion of the project site. The site is located along the Salmon Bay water way. Sediments are not addressed in this report.

A Phase I ESA and a Phase II ESA for the site was prepared by Environmental Associates, Inc. The prior Phase II ESA report identified three areas of concern with confirmed soil contamination. The prior Phase II ESA covered a broad range of contaminants of concern to address the existing Ecology database entry for the site that showed a wide variety of synthetic compounds as being present.

The areas of concern (AOCs) are summarized below.

AOC 1 - Gasoline and Heating Oil UST

This area is along the south side of the northern building. EAI identified a gasoline UST through anecdotal information. Elevated benzene was encountered in the soils and groundwater in Boring B-9 located adjacent to the suspected gasoline UST area. A vent line was present at the location of the former heating oil UST.

With the exception of the soils in B-9, the remedial excavations at AOC 1 removed the soils with the elevated hydrocarbons and benzene.

AOC 2 - Former Crane Foundation Area

A boring at the location of a former crane foundation had slightly elevated hydrocarbons. No USTs were identified as being present at this location.

The remedial excavation at this location removed the soils with the elevated PAHs and hydrocarbons.

AOC 3 - Local Area of Polycyclic Aromatic Hydrocarbons (PAH) Contamination

This area is a concrete apron near the northeast corner of the site adjacent to Salmon Bay. Two borings at this location had slightly elevated PAHs present in near-surface soil samples. No USTs were identified as being present at this location.

The remedial excavation at this location removed the soils with the elevated PAHs and hydrocarbons.

Arsenic and Pesticides

In addition, slightly elevated arsenic was found in three of the temporary wells and the herbicide MCPP was found in two of the temporary wells drilled for the Phase II ESA. Resampling found no MCPPP in the two monitoring wells built at the location of the prior temporary wells.

Slightly elevated arsenic is present in one of the existing monitoring wells. The arsenic is believed to be naturally occurring. Groundwater monitoring has shown that the site groundwater is anoxic, this is a condition that allows naturally occurring arsenic to go into solution.

Remedial Action

As discussed in this report, the areas with the documented soils that exceeded the MTCA Method A cleanup level were excavated and removed from the site. The petroleum contaminated soils (PCS) was removed from the site and routed to the municipal waste stream of Republic Services. Confirmation samples showed that the sidewalls and bases of the excavations met MTCA Method A cleanup levels. One sample with a slightly elevated level of benzene was left in place to avoid undermining the foundation of an existing building. The testing at each AOC is discussed in more detail in the body of this report.

Scope of Work

Our scope of our work for this project included:

- Review of the Ecology file for the project site.
- Review of a Phase I Environmental Assessment (ESA), prepared by Environmental Associates, Inc., dated July 18, 2006.
- Review of a report entitled Subsurface Sampling and Testing, prepared by Environmental Associates, Inc., dated July 17, 2006.
- Observation and field screening of soils during remedial excavation at three areas of concern.
- Collection of representative samples from remedial excavations and stockpiles on-site for analytical testing.
- Assistance in the off-site disposal of the excavated PCS.
- The drilling of six new borings and construction of monitoring wells in each boring.
- Sampling of groundwater from each monitoring well.
- Preparation of this report.

The following sections of this report detail our site observations and the results of analytical testing.

2.0 SITE DESCRIPTION

2.1 Surface

The site is located at 2360 West Commodore Way in Seattle, Washington. The site location is shown on Figures 1 and 2. Figure 3 is an ALTA map prepared for the site that serves as an index location map and shows the locations of the explorations and Areas of Concern AOC 1, AOC 2, and AOC 3.

In general, the site has a gentle slope down towards the north. Overall relief across the site is about ten feet. The site is developed with two buildings. The building along the southern margin of the site is an office building built in 1965. The office building has two stories and includes a warehouse area used by a printing company for printing. The office building has a footprint of 6,000 square feet.

The northern building was built in 1950 and is in use as workshop space for several businesses. There are several additions to this building. A boat upholstery business, a paddle board manufacturer, and a boat maintenance company occupy spaces within the northern building. There is also a small mezzanine area that has an apartment. The northern building has a footprint of about 6,500 square feet.

The northern margin of the site is a concrete wall that is a bulkhead that separates the upland portion of the site from Salmon Bay. The portion of the site that extends out beneath Salmon Bay is in use for the moorage of yachts.

No boatyard activity occurs on the site at this time. No boatyard activities are planned to occur on-site.

The upland portion of the site is completely covered with impervious surfaces consisting of either roofs or paved surfaces. There are no USTs known to exist on-site at this time. There are no ASTs on-site for the storage of fuel. No boat fueling occurs on-site. The site is served by municipal sewers.

The adjacent land uses are summarized below:

North	Boat moorage and Salmon Bay	 ,		٦
East	Commercial and retail buildings		-	
West	Commercial and retail buildings			╗
South	Commercial and retail buildings		-	٦

2.2 Subsurface

Subsurface conditions at the site consist of glacially derived sediments. Soil conditions have been explored and documented by EAI through their direct push explorations and temporary borings and by Terra Associates, Inc. through direct observations of excavations and supplemental explorations. In AOC 1, we observed that dense native soils were within a foot of existing grades. The native soils consisted of silty fine sand. A pocket of fill was encountered in the southwest corner of the large excavation for AOC 1. The heating oil UST cavity was found to consist of an excavation into the dense native silts. The fill in the heating oil UST cavity and in the presumed gasoline UST cavity consisted of miscellaneous materials including wood debris, asphalt debris, and in the case of the heating oil UST cavity, a material that appeared to be a cemented slag.

In AOC 2 and 3, the ground surface was found to be underlain by fill soils that extended down to a depth of three to four feet. Beneath the fill soils, the excavations encountered the same dense native soils observed in AOC 1.

2.3 Geology

The site is located in a glacial drift upland area. The Geologic Map of Northwest Seattle, 2005, by Booth D. B et al, shows the site as being underlain by map unit Qpf, pre-Fraser deposits. The deposits consist of sands, silts, and gravels.

2.4 Groundwater

Groundwater is present beneath the site at a depth of three to six feet below existing grade. Static water levels that have been measured on-site are presented in Table 1. Table 1 follows the text of this report. The static water level will vary with the seasons. The level of Salmon Bay, the discharge point of the groundwater, is regulated by the Army Corps of Engineers at the nearby locks. The level of the lake is lowered by about one-foot each winter to reduce storm damage on waterfront properties. The static water level will vary with the seasons based upon the precipitation and the level of Salmon Bay.

The seepage in AOC 1 was found to enter the excavation from the base of the excavation below about ten feet. The seepage in AOC 2 and 3 was within the fill along the top of the dense native soils.

The monitoring wells have not been surveyed. Using elevations extrapolated from the site survey, the approximately gradient of the groundwater is 0.01 feet per foot towards the north. Based on the grain size of the sediments, groundwater movement through the site will be slow.

3.0 PRIOR REPORTS

3.1 Environmental Associates Inc. Phase I ESA, dated July 17, 2006

This report includes the common elements of a Phase I ESA as outlined by ASTM E 1524-05. The report covers both the upland the aquatic portions of the site. The report concludes that there are the following recognized environmental conditions:

- 1. The historic presence of two USTs and at least one fuel dispensing pump island which were noted near the southwest corner of the 1950 vintage warehouse building.
- 2. The historic storage of heating oil in an UST located adjacent to the south of the 1950 vintage warehouse building.
- 3. Potential risk for adverse environmental impacts to soil, groundwater, surface water, and sediments at the property relating the apparent long-term improper handling, storage, and disposal of hazardous materials at the property.
- 4. Unknown/unassessed location and condition of a 500-gallon UST which was reportedly decommissioned on the property adjacent to the west of the subject property.
- 5. Potential impacts to the sediments on the property from sandblasting grit generated on the adjacent Marco facility.

3.2 Environmental Associates, Inc. Report, dated March 28, 2008

This report includes the results of site exploration and analysis of soils and groundwater samples based on the RECs listed in 4.1 and the Ecology database at the time of the explorations. The report covers both the upland the aquatic portions of the site. The report concludes with the following issues.

- 1. Abandoned UST/benzene in soil and groundwater in vicinity of B-9
- 2. Lube oil, diesel, and/or PAHs in soils and/or groundwater in B-7, B-11, B-12, and B-14.
- 3. MCPP (Chlorinated Acid Herbicide) in groundwater in B-5 and B-6.
- 4. Dissolved arsenic in groundwater in B-9, B-10, and B-12.

3.3 Ecology Confirmed and Contaminated Sites List/Ecology Project File

We printed a CSCSL site summary for ER and JR Sutter, the prior name for the site, on September 9, 2012. The following chart shows the site summary that was established in 1990.

Contaminant	Media									
Contaminant	Groundwater	Surface Water	Soil	Sediment	Air	Bedrock				
Conventional Contaminants, Inorganic	С	C	С	С	C					
Conventional contaminants, organic	С	С	C	C	С					
Halogenated organics	C	C	С	С	C					
Metals other	C	C	С	C	С					
Metals priority pollutants	C	С	C	C	С					
Non- halogenated\solvents	C	С	C	C	С					
Pesticides Unspecified	S	S	S	S	S					
Petroleum products unspecified	C	C	С	С	С					
Tributlytin		***		C		-				

The "C" entry indicates that the contaminant and impacted media has been confirmed through testing. The "S" entry indicates that the contaminant is suspected to have impacted the individual media listed.

On October 10, 2012, Terra Associates, Inc. reviewed the file at the Northwest Regional Office of the Washington State Department of Ecology. The file contains no prior site assessment reports that list actual on-site soil, groundwater, or sediment testing. Most of the file is documentation of site visits related to past boatyard activities on-site and what appear to be poor site management practices by a former tenant, Anderson Marine Repair. The boatyard activities on-site are listed as ending in August of 2003.

A Site Hazard Assessment worksheet completed for the project address lists the media and contaminants presented above and give the site a Washington Ranking Method (WARM) priority 1 ranking. A memo from Debbie Lunt of Ecology dated October 12, 1990 reports "The files for this site do not include any data on sediments, soil, groundwater, or air. It appears that the site was ranked purely on the basis of potential contamination." A subsequent memo dated February 28, 1991 by Mike Spencer of Ecology requests for a rescoring of the site. There were no follow up memos that indicate the site was revisited to rescore or verify the database entries.

There is no subsequent sampling of site soils or groundwater to verify the contaminants listed above. There are no subsequent memos re-ranking the site or supporting the original summary of the site presented above and the ranking methodology used to reach a WARM of 1.

The August 29, 2012 Hazardous Site List shows the ER and JR Sutter site as having a WARM ranking of 1.

4.0 EXPOSURE ROUTE ANALYSIS-EXISTING CONDITIONS

4.1 Terrestrial Ecological Evaluation

The site located immediately adjacent to a water body. No undeveloped land is present within a 500-foot radius. Thus as allowed in WAC 173-340-7491 (1)(c) (i) the site is excluded from a terrestrial ecological evaluation. The impacts to surface water are discussed later in the groundwater element of the site.

4.2 Direct Contact

Direct Contact was the most likely exposure route for soils.

4.3 Vapor Pathway

The chemical of greatest concern with gasoline is benzene. As shown in the data collected on-site, there may have been a risk of benzene vapor intrusion into the older 1950 era building on-site. The fine grained soils that underlie the site will decrease the potential for vapor intrusion.

4.4 Groundwater

The groundwater pathway did not include any drinking water resources. The groundwater beneath the site discharges to Salmon Bay. Salmon Bay is not considered a potential drinking water resource. Salmon Bay is part of the Lake Union body of water.

5.0 CLEANUP OPTIONS

5.1 General

It is the goal of SBMC West, LLC to obtain a No Further Action Determination for the site. The purpose of the NFA is to allow conventional bank financing of the real estate. The current analytical data shows that the soils that exceeded MTCA cleanup levels were removed during the remedial action. Only one sample exceeded the MTCA cleanup requirements. This is discussed in Section 5.2.1. The points of compliance for soils are at all locations on-site. The points of compliance for the groundwater are the northern end of the upland portion of the site as discussed in Section 5.2.2 of this report.

5.2 Remediation/Cleanup Levels

5.2.1 Soils

The cleanup level of the remedial action is the Method A soil cleanup values of the MTCA for gasoline and its constituents, diesel and oil range hydrocarbons, metals, and poly cyclic aromatic hydrocarbons (PAHs). The only analyte that has been found to exceed the MTCA Method A cleanup value in final confirmation samples has been benzene in AOC 1. These values are shown below in Table 1.

Table 1
Soil Cleanup Levels
SBMC West

Compounds of Concern	MTCA Cleanup Level parts per million (ppm)	Notes
TPH oil range	2,000	11. m. 11. 000 41. 11. 2 m. 11.
TPH diesel range	2,000	Also Table 830-1 in the MTCA
TPH gasoline range	30	
Benzene	0.03	
Ethyl Benzene	6.0	
Toluene	7.0	
Xylenes	9.0	
PAHs	varies	See tables for Method B values.
сРАНѕ	0.1	See Table 708-2 in the MTCA for TEF values.

5.2.2 Groundwater

The remediation level for the groundwater on-site is Method B cleanup level for surface water for benzene of 27 ppb. The site is not in an area that influences drinking water resources. Salmon Bay is not considered to be a drinking water resource. The cleanup level for benzene is the surface water standards from Section 131.36 of the National Toxics Rule. The values shown below in bold are the proposed cleanup levels for groundwater based on surface water criteria. The point of compliance is the northern edge of the upland area along the margin of the bulkhead. Groundwater Monitoring Wells MW-3, MW-4, and MW-5 represent the points of compliance for groundwater. Sampling of the surface water was done during the sample event of May 2013 to document the actual condition of the surface water immediately adjacent to the bulkhead on-site. No sheens on the purge water have been observed during groundwater sampling documented in this report.

Table 1
Groundwater Cleanup Levels
SBMC West

Compounds of Concern	Cleanup Level parts per million (ppm)	Notes
TPH oil range	No visible sheen	Surface water standards
TPH diesel range	No visible sheen	7
TPH gasoline range	No visible sheen	
Benzene	27 (1.2)	MTCA B groundwater (National Toxics Rule)
cPAHs	0.03 (0.1)	MTCA B surface water (MTCA A groundwater)
Arsenic	190 (5-10)	Surface Water Standards (MTCA A groundwater and proposed MTCA groundwater)

Options Reviewed For This Project

We have reviewed the following options for remedial action at this site:

Table 3

Remedial Options

Option	Advantage	Disadvantage
1. Capping	Expedient and least expensive solution.	Will require institutional controls and a restrictive covenant. A disproportionate cost analysis would be required.
2. In situ treatment with oxidizing agents	Reduces the quantity of waste generated.	With the location of the site along Salmon Bay, in situ oxidation would require hydraulic controls to contain the oxidizer and secondary compounds on-site.
3. In situ enhanced bio degradation	Reduces the quantity of waste generated.	This option is partially in use for AOC 1 to reduce the benzene level through the use of calcium peroxide placed into the remedial action excavation backfill zone. This option was not considered to be timely to address heavy oil and PAH concerns in soils.
4. Bio venting	Reduces the quantity of waste generated.	Would require the injection of air into the subsurface. With low permeability of site soils this technology is not expected to achieve Method A cleanup values. Not considered to be viable for this site.
5. Vapor extraction	Reduces the quantity of waste generated.	The site soils have a low permeability. Not considered to be viable for this site.
6. Excavation and off-site disposal or treatment	Provides a permanent solution.	This option was chosen due to the accessibility of the impacted site soils and the expediency of the option.
7 Excavation and on-site treatment	Reuses material and reduces export of wastes.	There is insufficient room on-site or the neighborhood to perform land farming. Costs would exceed the cost of excavation and off-site treatment. Would require closing traffic lanes and sidewalks and the shoring of the temporary excavation. Not considered to be viable for this site.
8. No action	No immediate costs.	Will require cleanup at a later date. Will not satisfy the owners need for a No Further Action Determination. Will not allow conventional financing of the real estate.

5.4 Excavate and Off-site Export of PCS Option - Expanded Discussion

This is Option 5 in Table 1.5.1 General

This discussion breaks the site into a series of areas in the general order that they were encountered in the excavations. These areas are shown on Figure 3. These areas correspond with Issues 1 and 2 discussed in Section 3.2 of this report.

5.5 AOC 1

The location of AOC 1 is shown on Figure 3. Figures 4 and 5 shows the extent of the excavation, the prior and recent borings, and the location of the performance and final confirmation samples. Excavations in this area started on July 19, 2012 and extended through August 6, 2012. The heating oil UST cavity was found and soils with elevated TPH were found and removed. The final sidewall samples were below cleanup levels and the cavity was backfilled.

The excavation for the gasoline UST did not find a UST or UST cavity at the locations shown in the referenced report. The remedial excavation started at the location of EAI Boring B-9. B-9 was identified by the surface patch and backfill of bentonite. The excavation proceeded towards the south following a zone with elevated gasoline range hydrocarbons. The native soils consisted of a silty fine sand and silt with some clay. Approximately 50 feet south of the mapped UST location, a loose backfilled cavity was encountered that may have been the former UST location. The soil contamination did not extend south, upgradient from the apparent cavity. The depth of the excavation was about 13 feet.

The final excavation sidewalls were sampled and found to be below cleanup levels for gasoline range hydrocarbons. The excavation did not extend north to include the slightly elevated levels of benzene found in Boring B-9. This would have impacted the foundation of the adjacent building. The level of benzene is less than twice the cleanup level and can be allowed to remain in place under the Model Toxics Control Act.

The excavation was backfilled with recycled concrete compacted in place. The recycled concrete consists of a sand and gravel size mixture of crushed concrete. No concrete rubble is present in the backfill. To assist in a final polishing of the soil and groundwater in the gasoline UST excavation, 1,000 pounds of a slow release oxygen material, TersOx, was mixed into the soils below the static water level. TersOx is a calcium peroxide material. This will increase the dissolved oxygen level and enhance biodegradation of any residual gasoline that may have been present.

The excavation removed 839 tons of petroleum contaminated soils (PCS). Soil samples were tested for TPH, metals, and PAHs. All samples, both performance and final soil samples taken during the excavation are presented on Table 2A, 2B, 2C, and 2D. Table 2E presents only the final confirmation soil samples for the suspected gasoline UST excavation. The tables are appended to this report at the end of the text.

5.6 AOC 2

The location of AOC 2 is shown on Figure 3. Figure 6 shows the extent of the excavation, the prior and recent borings, and the location of the performance and final confirmation samples.

Excavations at this area started on August 16 and concluded on August 20. This excavation extended down to about six feet below existing grade and removed the documented soils with elevated hydrocarbons. No USTs were encountered. It appears that the elevated hydrocarbons were a result of a local surface spill of oil range hydrocarbons sometime in the past prior to the construction of the concrete apron. The final sidewall and base samples were all below cleanup levels.

This excavation removed 85.72 tons of PCS.

The excavation was backfilled with recycled concrete compacted in place. The recycled concrete consists of a sand and gravel mixture. No concrete rubble is present in the backfill.

All samples, both performance and final soil samples taken during the excavation are presented on Table 3A. The tables are appended to this report at the end of the text. Sample 820-3 had a TPH in the diesel range of 1,400 ppm. To address Table 830-1, the sample was also tested for PAHs, volatiles, metals, and PCBs. No PCBs or volatile compounds were present. For brevity, these two suites of contaminants are not summarized in the tabulated results. The lab report is attached to this report.

5.7 AOC 3

The location of AOC 3 is shown on Figure 3. Figure 7 shows the extent of the excavation, the prior and recent borings, and the location of the performance and final confirmation samples.

Excavations at this area started on August 10 and concluded on August 15. This excavation extended down to about six feet below existing grade and removed the documented soils with elevated PAHs. No USTs were encountered. It appears that the elevated PAHs were a result of a local surface spill of oil range hydrocarbons sometime in the past prior to the construction of the concrete apron. The final sidewall and base samples were all below cleanup levels.

All samples, both performance and final soil samples taken during the excavation are presented on Tables 4A and 3B. The tables are appended to this report at the end of the text.

This excavation removed 228 tons of PCS.

The excavation was backfilled with recycled concrete compacted in place. The recycled concrete consists of a sand and gravel mixture. No concrete rubble is present in the backfill.

5.8 Soil Export

The truck tickets documenting soil report are attached in Appendix C. A total of 839 tons of PCS was removed from the site as part of the remedial action.

5.9 Supplemental Groundwater Sampling

On October 17, 2012, six monitoring wells were constructed on-site to allow direct sampling in areas where prior groundwater samples from temporary wells had encountered elevated contaminants of concern. As stated in the EAI report, it was concluded that the use of temporary wells may have included sampling relicts that provided positive hits of the contaminants of concern. The EAI report recommended permanent monitoring wells be constructed to document the actual groundwater conditions. Groundwater sampling procedures are discussed in Appendix A. The groundwater testing summary is summarized on Tables 4 A through 4 D. The groundwater wells were constructed in close proximity to prior temporary wells used by EAI in their assessment of the site conditions.

In addition, sample points have been established to monitor the quality of the surface water along the northern margin of the site to document the possible impacts to surface water quality from the site.

6.0 DISCUSSION/CONCLUSIONS

6.1 AOC 1 – Heating Oil UST

Based on sidewall and base testing of the former heating oil UST cavity, it is our opinion that the soils impacted by the presumed release of heating oil have been removed from the site and properly disposed of. The slag-like material found in the backfilled cavity had elevated lead as seen in sample AOC1 E. The level of lead was 527 ppm. The slag-like material and all other cavity backfill materials were removed incidental to remediation. The final sidewalls were all native soils. The final sidewall samples were also tested for total lead and were found to be below cleanup level. It is our opinion that the heating oil UST cavity does not require any further action.

6.2 AOC 1 - Suspected Gasoline UST Zone

Based on sidewall and base testing of the former heating oil UST cavity, it is our opinion that the soils impacted by the presumed release of gasoline range hydrocarbons have been removed from the site and properly disposed of. The only sample that did not meet MTCA Method A was the sample in Boring B-9 at a depth of 11 feet that had a benzene level of 0.038 ppm. The excavation could not proceed to that area due to the adjacent building foundations. This level of benzene is less than twice the published cleanup value and is one of 12 final samples. All of the other final samples meet the MTCA cleanup value of 0.03 ppm. It is our opinion that the soils in suspected gasoline UST zone do not require further action at this time.

The excavation did not find a UST at the location shown on Plate 3 of the EAI report dated July 17, 2006. The excavation did not encounter any pipes that appeared to be distribution or vent pipes commonly associated with USTs. A distinct loosely backfilled zone was found in the southwest corner of the remedial excavation that exhibited the highest PID readings during the excavation process. A scan for larger metallic objects and metal pipes was done using standard utility locating equipment and a Ground Penetrating Radar unit. No evidence of supply or vent pipes were found outside of the remedial excavation zone shown on Figure 4.

To polish the groundwater in the vicinity of the confirmed zone of gasoline release, 1,080 pounds of TersOx was mixed in with the backfill soils to provide a long-term source of oxygen for enhanced bioremediation.

6.3' AOC 2

Based on sidewall and base testing of the remedial excavation, it is our opinion that the soils impacted by the presumed release of oil range hydrocarbons have been removed from the site and properly disposed of.

6.4 AOC 3

Based on sidewall and base testing of the remedial excavation, it is our opinion that the soils impacted by the presumed release of oil range hydrocarbons have been removed from the site and properly disposed of.

6.5 Overall Upland Site Conditions

General

Based on the testing done for this project, it is our opinion that the site should be reevaluated. The contaminants that were found to be present were hydrocarbons, a local pocket of fill with elevated lead and PAHs. The arsenic is considered to be naturally occurring. None of the other contaminants shown in the ISIS summary were found to be present in the upland portion of the site.

Benzene

It is our opinion that the levels of benzene found in MW-1 will decrease through natural attenuation over the next several years. The most recent level of benzene met the remediation level of 27 ppb and the benzene levels at the point of compliance for surface water met the National Toxics Rule at the monitoring wells along the bulkhead.

Arsenic

The levels of arsenic in groundwater on-site from all monitoring points have been less than 30 percent of the surface water standard for arsenic of 160 ppb for maximum levels of discharge to surface water bodies. No soil samples exceeded the cleanup level for arsenic.

6.6 Conclusion

Based on the testing documented in this report, it is our opinion that the upland portion of the site should be removed from the HSL and that the upland portion of the site should be granted an NFA status. The status of the northern submerged portion of the site should be reevaluated based on actual testing contained in the prior report by EAI.

7.0 LIMITATIONS

The findings, conclusions, and recommendations presented in this report are based on our documented site observations, review of historical and regulatory information, interviews, and review of the referenced historic resources. Other information related to past site uses or current site conditions may exist. Our conclusions in part are based on information provided or prepared by others.

If the existing site uses change, or if further information on the site becomes available, Terra Associates, Inc. should review the information, as it may affect our conclusions.

We prepared our conclusions and recommendations in accordance with generally accepted professional engineering practices. This report is the copyrighted property of Terra Associates, Inc. and is intended for specific application to the SBMC West project in Seattle, Washington. This report is for the exclusive use of SBMC West, LLC and their authorized representatives.

8.0 REFERENCES

Environmental Associates Inc., Phase I ESA, dated July 18, 2006

Environmental Associates Inc., Subsurface Sampling and Testing, July 17, 2006

King County, Lake Union Water Quality, accessed April 8, 2013 http://green.kingcounty.gov/lakes/LakeUnion.aspx

Chapter 173-201A WAC; WATER QUALITY STANDARDS FOR SURFACE WATERS OF THE STATE OF WASHINGTON

Washington State Department of Ecology, Draft Guidance for Remediation of

Petroleum Contaminated Sites, Publication No. 10-09-057, dated November 2010

Table 1 Static Water levels

				Ton or	17.07] -	
Well	Total	Surface	Stick	Io do i	10/17/2012	/2012	1/	1/4/13
Number	Depth	Elevation	Down	FVC Elev.	Depth	Elevation	Depth	Elevation
MW-1	14.3	23.5	0.34	23.16	3.69	19.47	2.77	20.39
MW-2	14.5	23.5	.0.38	23.12	3.77	19.35	3.05	20.07
MW-3	14.5	22	0.37	21.63	4.26	17.37	4.79	16.84
MW-4	14.5	22.25	0.47	21.78	3.45	18.33	3.97	17.81
MW-5	14.8	. 21	0.46	20.54	2.58	17.96	2.55	17.99
9-MM	14.61	. 26	0.45	. 25.55	5.72	19.83	4.83]
								I.

Depth Elevation Down PVC Elev. Depth 14.3 23.5 0.34 23.16 3.14 14.5 23.5 0.38 23.12 2.92 14.5 22 0.37 21.63 4.22 14.5 22.25 0.47 21.78 2.78 14.8 21 0.46 20.54 1.73 14.61 26 0.45 25.55 5.12	Well	Total	Surface	Stick	Top of	5/28/13	/13
14.3 23.5 0.34 23.16 3.14 14.5 23.5 0.38 23.12 2.92 14.5 22 0.37 21.63 4.22 14.5 22.25 0.47 21.78 2.78 14.8 21 0.46 20.54 1.73 14.61 26 0.45 25.55 5.12	Number	Depth	Elevation	Down	PVC Elev.	Depth	Elevation
14.5 23.5 0.38 23.12 2.92 14.5 22 0.37 21.63 4.22 14.5 22.25 0.47 21.78 2.78 14.8 21 0.46 20.54 1.73 14.61 26 0.45 25.55 5.12	MW-1	14.3	23.5	0.34	23.16	3.14	20.02
14.5 22 0.37 21.63 4.22 14.5 22.25 0.47 21.78 2.78 14.8 21 0.46 20.54 1.73 14.61 26 0.45 25.55 5.12	MW-2	14.5	23.5	0.38	23.12	2.92	20.2
14.5 22.25 0.47 21.78 2.78 14.8 21 0.46 20.54 1.73 14.61 26 0.45 25.55 5.12	MW-3	14.5	22	0.37	21.63	4.22	17.41
14.8 21 0.46 20.54 1.73 14.61 26 0.45 25.55 5.12	MW-4	14.5	22.25	0.47	21.78	2.78	61.
14.61 26 0.45 25.55 5.12	MW-5	14.8.	21	0.46	20.54	1.73	18.81
	MW-6	14.61	26	0.45	25.55	5.12	20.43

Table 2A
AOC 1 Samples
Petroleum Hydrocarbons-Heating Oil UST
Performance and Final Samples

				_ ' . · _
0.13	0.06U	0.06U	NT	NT
0.063	0.02U	0.02U	NT	NT
0.02U	0.02U	0.02U	IN	IN
0.02U	0.02U	0.02U	NT	IN
62	10	10	K	NT
250U	250U	250U	250U	250U
. 64	50U	50U	20U	20
N/A	N/A:	N/A	4	4
SP/R	SP/R	SP/R	SW/F	SW/R
7-19-12	7-19-12	7-19-12	7-19-12	7-19-12
SP M	SP E.	SP W	A0C1 W.	A0C 1 S
	7-19-12 SP/R N/A 64 250U 62 0.02U 0.02U 0.063	7-19-12 SP/R N/A 64 250U 62 0.02U 0.02U 0.02U 7-19-12 SP/R N/A 50U 250U 10 0.02U 0.02U 0.02U	7-19-12 SP/R N/A 64 250U 62 0.02U 0.02U 0.02U 0.063 7-19-12 SP/R N/A 50U 250U 10 0.02U 0.02U 0.02U 7-19-12 SP/R N/A 50U 250U 10 0.02U 0.02U 0.02U	7-19-12 SP/R N/A 64 250U 62 0.02U 0.02U 0.02U 0.063 7-19-12 SP/R N/A 50U 250U 10 0.02U 0.02U 0.02U 7-19-12 SP/R N/A 50U 250U 10 0.02U 0.02U 0.02U 7-19-12 SW/F 4 50U 250U NT NT NT NT

Table 2A (continued) AOC 1 Samples Petroleum Hydrocarbons-Heating Oil UST Performance and Final Samples

Sample	Date	Sample type	Depth	TPH diesel	TPH oil	TPH gasoline	Benzene	Toluene	Ethyl benzene	Xylenes
AOC 1E	7-23-12	SW/R	4	50U	250U	NT	NT	NT	NT	NT
AOC 1E	7-23-12	SW/R	4	1,400	250U	, NT	0.03U	0.05U	0.05U	0.015U
AOC 1N	7-23-12	SW/F	4	50U	250U	NT	NT	NT	NT	NT
AOC 1S	7-23-12	SW/F	. 4	1,200	250U	NT	NT	NT	NT	NT
AOC 1 BASE	7-23-12	B/F	7	50U	250U	NT	NT	NT	NT	`NT
	MTCA	A		2,000	2,000	30	0.03	7	6	9

Notes: All units are parts per million (ppm).

U modified indicates the analyte was not present at the numerical detection limit.

Shaded cells exceed MTCA Method A cleanup level.

SW indicates the sample was a sidewall confirmation sample.

B indicates the sample was a base sample.

R indicates the soils represented by the test were exported.

F indicates that the sample was the final sample.

Table 2B AOC 1 Samples Petroleum Hydrocarbons-Suspected Gasoline UST Performance and Final Samples

,	Sample	Date	Sample Type	Depth	TPH Diesel	TPH Oil	TPH Gasoline	Benzene	Toluene	Ethyl benzene	Xylenes
	TP-1	7-19-12	SW/F	8.5	NT	NT	2U	0.02U	0.02U	0.02U	0.06U
	S-1	7-19-12	SW/F	4	NT	ŃT	2U	0.02U	, 0.02U	0.02U	0.06U

Table 2B (continued) AOC 1 Samples Petroleum Hydrocarbons-Suspected Gasoline UST Performance and Final Samples

· · · · · ·	<u> </u>	- ;		`	,	,	<u>' '</u>		·	
Sample	Date	Sample Type	Depth	TPH Diesel	TPH Oil	TPH Gasoline	Benzene	Toluene	Ethyl benzene	Xylenes
S-2	7-23-12	B/F	8.5	NT	NT	2U	0.02U	-0.02U	0.02U	0.06U
S-3	7-23-12	SW/R	.4	NT	NT	200	0.02U	0.02U	0.02U	0.64
S-4	7-23-12	SW/R	6.	NT	NT	2U	0.11	0.02U	0.068	0.06U
S-5	7-23-12	SW/F.	6	NŤ	NT	2U .	0.02U	0.02U	0.02U	0.06U
S-6	7-24-12	SW/F	8	NT	NT	2U	0.02U	0.02U	0.02U	0.06U
S-7	7-24-12	SW/R	5.5	NT	NT	2U	0.02U	0.02U	0.02U	0.06U
S-8	7-24-12	SW/R	6.5	NT	NT.	2Ú	0.092	0.02U	0.02U	0.06U
S-9	7-24-12	SW/R	5.5	NT	NT	290	0.96	1.6	3.8	13
S-10	7-24-12°	SW/R	× 8	NT	NT	4.0	1.3	0.048	0.02U	0.06U
S-11	7-24-12	SW/R	. 8	NŤ	NT	3.8	1.1	0.03	0.093	0.06U
S-12	7 - 26-12	SW/R	- 8	50U	250U	2U	0.46	0.02U	0.02U	0.06U
S-13	7-26-12	B/F	11	50U,	250U	2U .	.0.02U	0.02U	0.02U	0.06U
S-14	7-30-12	SW/F	· 10	NT	NT	2U	0.026	0.02U	0.02U	0.06U
S-15	7-31-12	`B/R	′ 10 ·	NT	NT	ŹU T	0.14	0:02U	0.02U	0.06Ų
S-16	8-1-12	SW/F	10	NT	NT	2 U .	0.02U	0.02U	0.02Ù	0.06U
S-17	8-1-12	SW/F	10 ′	NT	NT	2U .	0.02U	0.02U	0.02U	0.06U
S-18	8-1-12	SW/R	10	NT	NT	2U 📑	0.14	0.02U	0.044	0.06U
S-19	8-1-12	SW/R	10	NT	NT	2 U	0.55	0.02U	0.02U	0.06U
S-20	8-2-12	SW/F	-10	NT	NT	2U	0.02U	0.02U	(0.02U	0.06U
S-21	8-2-12	SW/F	-10	NT	NT	2 U	0.02U	0.02U	0.02U	0.06U
S-22	8-2-12	SW/F	-10	NT	NT	2U	0.02U	0.02U	0.02U	0.06U
	MTCA A	A	_	2,000	2,000	30	0.03	7	6	9

Table 2C AOC 1 Samples Total Metals – Heating Oil UST

Sample	Date	Sample type	Depth	Arsenic	Chrome	Chrome 6	Selenium	Silver	Cadmium	Barium	Mercury	Lead
SP E	7-19-12	SP/R	N/A	NT .	NT	NT	NT	NT	NT	NT	NT	2.44
SP M		SP/R	N/A	NT.	NT	NT	NT	NT	NT	NT	NT	12.7
SP W		SP/R	N/A	NT	NT	NT	NT	NT	NT	NT	NT	10.5
AOC1 E	7-19-12	SW/R	4	6.39	1,310	NT	1U	¹IU	1.24	625	0.1 U	527
AOC1N	7-23-12	SW/F	4	NT	NT	5U	NT	NT	NT	NT	NT	2.78
AOC1 E		SW/F	4	NT	NT	5U	NT	NT	NT	NT	NT	1.94
AOC 1 S		SW/F	4	NT	NT	5U	ŅT	NT	NT	NT	NT	2.64
AOC 1 B		B/F	7.	NT	NT	• 5U .	NT	NT	NT	NT	NT	2,54
. ,	MTCA A	<u>. </u>		20	2,000	19	400	400	2.0	16,000	2.0	250

Notes: All units are parts per million (ppm).

U modifier indicates that the analyte was not present at the stated detection limit. Cleanup values shown are MTCA Method A, values in italics are Method B.

Table 2D
AOC 1 Samples
Total Metals – Suspected Gasoline UST

Sample	Date	Sample type	Depth	Lead
S-10	7-25-12	SW/R	8	4.12
S-11		SW/R	8	1.82
S-12	7-26	SW/R	8	1.03
S-13	7-26	B / F	- 11	4.06
	MTC	4		250

Notes: All units are parts per million (ppm).

U modifier indicates that the analyte was not present at the stated detection limit.

Cleanup values shown are MTCA Method A.

Table 2E AOC 1 Samples TCLP Metals

. ,	Sample	Date	Sample Type	Depth	Arsenic	Chrome	Selenium	Silver	Cadmium	Barium	Mercury	Lead
	AOC1 E	7-23-12	SW	,	1U	1U	1U	-1U	1U	1.5	0.1U	1U
	R	CRA LIM	ITS		√5	5	.1	-5	1	100	0.2	5.

Table 2F
AOC 1 Samples-Heating Oil UST Soils
PAH Analysis

Sample	Date	Sample Type	Depth	Acenaphthene	Fluorine	Fluoranthene	Pyrene	Benzo (a) anthracene	Chrysene	Benzo (b) fluoranthene	Naphthalene
AOC1 E	7-23-12	. SW		0.023	. 0.18	0.0 78	0.18	0.017	0.033	0.014	0.01 U
	MTCA			NP	4,800	NP	NP	24,000	3,200	2,400	5.0

Notes: For brevity, only the compounds that were detected are listed.

All units are parts per million (ppm).

Cleanup value for Naphthalene is MTCA Method A, other cleanup values are Method B.

NP indicates that no cleanup level is posted for the analyte.

Table 2G
AOC 1 Samples
Petroleum Hydrocarbons Heating Oil UST
Final Samples Only

ample	Date	ple Type	epth	H Diesel	ч Оіі	Gasoline	nzene	oluene	benzene -	lenes
Sa		Sample	Q	TP	TI	ТРН	Be	Te	Ethyl	xyl
AOC 1 W	7-19-12	SW`	, 4	50U	250U	ŊŢ	NŢ	NT	NT	NT
AOC 1 S		SW	4	50	250U	NT	·NT	NT	NT	NT
AOC 1E	•	SW	4	-50U	250U	NT	NT	NT	NT	NT

Table 2G (continued)
AOC 1 Samples
Petroleum Hydrocarbons Heating Oil UST
Final Samples Only

Sample	Date	Sample Type	Depth	TPH Diesel	TPH Oil	TPH Gasoline	Benzene	Toluene	Ethyl benzene	xylenes
AOC 1E	7-23-12	SW	4 :	1,400	250U	NT	0.03U	, 0.05U	0.05U	0.015U
AOC 1N	<u> </u>	SW	.4	50U	250U	NT	NT	NT	NT	NT
AOC 1S] 🚶	. SW	4	1,200	250U	NT	NT	NT	NT	NT
AOC 1 BASE		В	7	50U	250U	NT	NT	NT	NT	NT .
	MTCA A	Υ, ,	, , .	2,000	2,000	30	0.03	7	6	9.

Table 2H AOC 1 Samples Petroleum Hydrocarbons Suspected Gasoline UST Final Samples Only

		<u> </u>		1		· · ·	• •				
	Sample	Date	Sample type	Depth	TPH Diesel	TPH Oil	TPH Gasoline	Benzene	Toluene	Ethyl benzene	xylenes
_	TP-1	7-19-12	SW	8.5	NT	NT	2U	0.02U	0.02U	0.02U	0.06U
_	S-1	1-17-12	SW	4 .	NT	NT.	2U	0:02U	0.02U	0.02U	0.06U
	S-2	7-23-12	B/F	8	NT	NT	2U	0.02U	0.02U	.0.02U	0.06U
_ <u> </u>	<u>S-5</u>		SW	6	NT	NT	2U	0.02U	0.02U	0.02U	0.06U
	S-6	7-24-12.	SW	. 8	NT	NT	2U .	0.02U	·0.02U	0.02U	0.06U
	S-13	1-2-1-12.	B/F	11	50U	250U	2U .	0.02U	0.02U	0.02U	0.06U
•. {	S-14	7-30-12	SW/ F	10	NT	NT	2U	0.026	0.02U	0.02U	0.06U
	S-16	8-1-12	SW/ F	10	NT	NT	2U	0.02U	0.02U	0.02U	0.06U
	S-17	0-1-12 	SW/ F	, 10	NT	NT	2U	0.02U	0.02U	0.02U	0.06U
con	ble 2H, ntinued S-20	8-2-12	SW/ F	10	ŅT	NT	2U	0.02U	0:02U	0.02U	0.06U
;	S-21	, ,	SW/ F	10	NT	NT	2U	0.02U	0.02U	0.02U	0.06U

Table 2H (continued) AOC 1 Samples Petroleum Hydrocarbons Suspected Gasoline UST Final Samples Only

Sample	Date	Sample type	Depth	TPH Diesel	трн Оіі	TPH Gasoline	Вепzепе	Toluene	Ethyl benzene	xylenes
S-22	<u> </u>	SW/F	10	NT	NT	2U	0.02U	0.02U	0.02U	0.06U
	MTCA	A	"·	2,000	2,000	30	0.03	. 7	. 6	9

Notes: All units are parts per million (ppm).

U modified indicates the analyte was not present at the numerical detection limit.

Shaded cells exceed MTCA Method A cleanup level.

Table 3A AOC 2 Samples Petroleum Hydrocarbons

ple	a a	Туре	th.	Diesel	Oil
Sample	Dat	Sample	Depth	TPH I	TPH
8-20-1	8-20-2012	B/F	6	520	250U
8-20-2	8-20-2012	SW	4	410	250U
8-20-3	8-20-2012	SW	4	. 1,400	250U
8-20-4	8-20-2012	SW	4	350	250U
8-23-5	8-23-2012	SW.	.5	1,700	250U
<u> </u>	ITCA METHO	D A	-	2,000	2,000

Table 3B AOC 2 Samples Total Metals

Sample	Sample Type	Depth	Chromium	Mercury	Arsenic	Selenium	Silver	Cadmium	Barium	Lead
8-20-3 8-20-2012	SW	4	12.5	0.1U	2.45	1U	1U	1U	71.4	4.27
MTCA			2,000	2.0	20	400	400	2.0	16,400	250

Table 3C AOC 2 Samples PAHs

	Sample	Date	Sample type	Depth	Naphthalene	Acenaphthylene	Acenaphthene	Fluorine	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo (g,h,i)perylene
_ I	8-20-1	8-20-12	BF	· 6	0.01U	. 0.01U	0.02	0.25	0.069	0.01U	0.01	0.017	0.01U
_	8-20-2	8-20-12	SW	4	0.01U	· 0.01U	0.14	0.64	0.82	0.01U	0.052	0.059	0.01U
	8-20-3	8-20-12	SW	4	0.01U	0.01U	0.26	1.3	1.4	0.01U	0.031	0.047	0.01U
Ŀ	8-20-4	8-20-12	SW.	· 4	0.01U	0.01U	0.24	1.2	1.3	0:01U	0/74	0.5	0.28
	8-23-5	8-23-12	SW	_ 5	0.01U	0.01U J	0.096J	1.4J	1.5J	0.01U J	0.33J	0.035	0.01U
_	1 -	MTCA	- ;		5.0	NP	4,800	NP	NP	24,000	3,200	2,400	NP

Table 3D AOC 2 Samples cPAHs

Sample 8-20-1 Final Confirmation Sample

Compound	Test Result	TEF	Adjusted Value
benzo(a)pyrene	0.01	1	0.01
benzo(a)anthracene	0.01	0.1	0.001
benzo(b)fluoranthene	0.01	0.1	0.001
benzo(k)fluoranthene	0.01	0.1	0.001
chrysene	0.01	0.01	0.0001
dibenz(a,h)anthracene	0.01	0.1	0.001
indeno(1,2,3-cd)pyrene	0.01	0.1	0.001
TOTAL CPAH	0.07		0.0151

Sample 8-20-1 Final Confirmation Sample

Compound	Test Result	TEF	Adjusted Value		
benzo(a)pyrene	0.01	1	0.01		
benzo(a)anthracene	0.014	, 0.1	0.0014		
benzo(b)fluoranthene	0.011	0.1	0.0011		
benzo(k)fluoranthene	0.01	0.1	0.001		
chrysene	0.016	0.01	0.00016		
dibenz(a,h)anthracene	0.01	0.1	0.001		
indeno(1,2,3-cd)pyrene	0.01	0.1	0.001		
TOTAL CPAH	0.081		0.01566		

Sample 8-20-3 Final Confirmation Sample

Compound	Test Result	TEF	Adjusted Value
benzo(a)pyrene	0.01	1	0.01
benzo(a)anthracene	0.01	0.1	0.001
benzo(b)fluoranthene	0.01	0.1	0.001
benzo(k)fluoranthene	0.01	0.1	0.001
chrysene	0.01	0.01	0.0001
dibenz(a,h)anthracene	0.01	0.1	0.001
indeno(1,2,3-cd)pyrene	0.01	0.1	0.001
TOTAL CPAH	0.07		0.0151

Sample 8-20-4 Performance Sample-removed

Compound	Test Result	TEF	Adjusted Value
benzo(a)pyrene	0.38	1	0.38
benzo(a)anthracene	0.26	0.1	0.026
benzo(b)fluoranthene	0.51	0.1	0.051
benzo(k)fluoranthene	0.19	0.1	0.019
chrysene	0.32	0.01	0.0032
dibenz(a,h)anthracene	0.059	0.1	0.0059
indeno(1,2,3-cd)pyrene	0.4	0.1	0.04
TOTAL CPAH	2.119		0.5251

Sample 8-23-5 Final Confirmation Sample

Compound	Compound Test Result		Adjusted Value
benzo(a)pyrene	0.01	1	0.01
benzo(a)anthracene	0.01	0.1	0.001
benzo(b)fluoranthene	0.01	0.1	0.001
benzo(k)fluoranthene	0.01	0.1	0.001
chrysene	0.013	0.01	0.00013
dibenz(a,h)anthracene	0.01	0.1	0.001
indeno(1,2,3-cd)pyrene	0.01	0.1	0.001
TOTAL CPAH	0.073	. 4	0.01513

Table 4A AOC 3 Samples PAHs

Sample	Date	Sample Type	Depth	Naphthalene	Acenaphthene	Acenaphthene	Fluorine	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo (g,h,i) perylene
AOC3-1	8-8-12	B/F	4.5	0.016	0.010	0.01U	0.01U	0.065	0.011	0.017	0.017 :	0.057
AOC3-2		SW/F	3	0.01U	0.01U	0.01U	0.01U	0.01U	, 0.01U	0.1U	0.01U	0.01U
A0C3-3		· SW/F	2	0.01U	0.01U	0.01U	0.01U	0.01U.	0.01U	0.1U	0.01U	0.01U
AOC3-4	ļ ·	В	5.5	0.01U	0:01U	0.01U	0.01U	0.01U	0.01U	0.1U	0.01U	0.01U
A0C3-5	1	B	5.5	0.01U	0.01U	0.01U	0.01U	0.01U	0.01U	0.1U	0.01U	0.01 U
AOC3-6	8-10-12	SW/F	2	0.01U	0.01U	0.01U	0.01U	0.01U	0.01U	0.1U	.0.01U	0.01U
AOC3-7		SW/F	2	0.01U	0.01U	0.01U	0.01U	0.01U	0.01U	0.017	0.023	0.01U
A0C3-8		SW/F	2	0.024	0.088	0.01U	0.017	0.26	0:12	1.1	1:3	0.4
8-14-9	8-14-12	SW/R	2 -	0.063	0.087	0.01U	0.04	0.39	0.059	. 0.82	0.98	0.32
8-15-10	8-15-12	.SW/F	3	0.01U	0.01U	0.01U	0.01U	0.01U	0.01U	0.01U	0.01U	0.01U
MTCA	, ,	<u> </u>	, ,	5.0	. <i>NP</i>	4,800	NP	NP	24,000	3,200	2,400	ΝP

Table 4A (continued) AOC 3 Samples Petroleum Hydrocarbons

Sample	Date	Sample Type	Depth	TPH Diesel	тен оп
AOC3-1	8-8-12	B/F	4.5	50Ú	250U
_A0C3-2		SW/F	3	50U	250U
AOC3-3		SW/F	2	- 50U	250U
A0C3-4		B	5.5	50U	250U
AOC3-5		В	5.5	50U	250U
AOC3-6	8-10-12	SW/F	2	50U	.250U
AOC3-7		SW/F	2	50U	250U
A0C3-8		SW/F	2	50U	250U
8-14-9	8-14-12	SW/R	. 2	50U	250U
8-14-10	·	SW/F	3	160	250U
	MTCA			2,000	2.000

Table 4B AOC 3 Samples cPAHs

AOC 3-1 Performance Sample-Removed

Compound	Test Result	TEF	Adjusted Value
benzo(a)pyrene	0.087	1	0.087
benzo(a)anthracene	0.069	0.1	0.0069
benzo(b)fluoranthene	0.097	0.1	0.0097
benzo(k)fluoranthene	0.034	0.1	0.0034
chrysene	0.087	0.01	0.00087
dibenz(a,h)anthracene	0.01	0.1	0.001
indeno(1,2,3-cd)pyrene	0.069	0.1	0.0069
TOTAL CPAH	0.453		0.11577

AOC 3-2 Final Confirmation Sample

Compound	Test Result	TEF	Adjusted Value
benzo(a)pyrene	0.01	1	0.01
benzo(a)anthracene	0.01	0.1	0.001
benzo(b)fluoranthene	0.01	0.1	0.001
benzo(k)fluoranthene	0.01	0.1	0.001
chrysene	0.01	0.01	0.0001
dibenz(a,h)anthracene	0.01	0.1	0.001
indeno(1,2,3-cd)pyrene	0.01	0.1	0.001
TOTAL CPAH	0.07		0.0151

AOC 3-3 Final Confirmation Sample

Compound	Test Result	TEF	Adjusted Value
benzo(a)pyrene	0.01	1	0.01
benzo(a)anthracene	0.01	0.1	0.001
benzo(b)fluoranthene	0.01	0.1	0.001
benzo(k)fluoranthene	0.01	0.1	0.001
chrysene	0.01	0.01	0.0001
dibenz(a,h)anthracene	0.01	0.1	0.001
indeno(1,2,3-cd)pyrene	0.01	0.1	0.001
TOTAL CPAH	0.07		0.0151

AOC 3-4 Final Confirmation Sample

Compound	Test Result	TEF	Adjusted Value
benzo(a)pyrene	0.01	1	0.01
benzo(a)anthracene	0.01	0.1	0.001
benzo(b)fluoranthene	0.01	0.1	0.001
benzo(k)fluoranthene	0.01	, 0.1	0.001
chrysene	0.01	0.01	0.0001
dibenz(a,h)anthracene	0.01	0.1	0.001
indeno(1,2,3-cd)pyrene	0.01	0.1	0.001
TOTAL CPAH	0.07		0.0151

AOC 3-5 Final Confirmation Sample

Compound	Test Result	TEF	Adjusted Value
benzo(a)pyrene	0.01	1.	0.01
benzo(a)anthracene	0.01	0.1	0.001
benzo(b)fluoranthene	0.01	0.1	0.001
benzo(k)fluoranthene	0.01	0.1	0.001
chrysene	0.01	0.01	0.0001
dibenz(a,h)anthracene	0.01	0.1	0.001
indeno(1,2,3-cd)pyrene	0.01	0.1	0.001
TOTAL CPAH	0.07		0.0151

AOC 3-6 Final Confirmation Sample

Compound	Test Result	TEF	Adjusted Value
benzo(a)pyrene	0.01	i	0.01
benzo(a)anthracene	0.01	0.1	0.001
benzo(b)fluoranthene	0.01	0.1	0.001
benzo(k)fluoranthene	0.01	0.1	0.001
chrysene	0.013	0.01	0.00013
dibenz(a,h)anthracene	0.01	0.1	0.001
indeno(1,2,3-cd)pyrene	0.01	0.1	0.001
TOTAL CPAH	0.073		0.01513

AOC 3-7 Final Confirmation Sample

Compound	Test Result	TEF	Adjusted Value
benzo(a)pyrene	0.011	1	0.011
benzo(a)anthracene	0.011	0.1	0.0011
benzo(b)fluoranthene	0.011	0.1	0.0011
benzo(k)fluoranthene	0.005	0.1	0.0005
chrysene	0.011	0.01	0.00011
dibenz(a,h)anthracene	0.005	0.1	0.0005
indeno(1,2,3-cd)pyrene	0.005	0.1	0.0005
TOTAL CPAH	0.059		0.01481

AOC 3-8 Performance Sample-Removed

Compound	Test Result	TEF	Adjusted Value
benzo(a)pyrene	0.64	1	0.64
benzo(a)anthracene	0.54	0.1	0.054
benzo(b)fluoranthene	0.69	0.1	0.069
benzo(k)fluoranthene	0.25	0.1	0.025
chrysene	0.65	0.01	0.0065
dibenz(a,h)anthracene	0.1	0.1	0.01
indeno(1,2,3-cd)pyrene	0.44	, 0.1	0.044
TOTAL CPAH	3.31		0.8485

Sample 8-14-9 Performance Sample-Removed

Compound	Test Result	TEF	Adjusted Value
benzo(a)pyrene	0.46	1	0.46
benzo(a)anthracene	0.36	0.1	0.036
benzo(b)fluoranthene	0.47	0.1	0.047
benzo(k)fluoranthene	0.18	0.1	0.018
chrysene	0.47	0.01	0.0047
dibenz(a,h)anthracene	0.058	0.1	0.0058
indeno(1,2,3-cd)pyrene	0.34	0.1	0.034
TOTAL CPAH	2.338		0.6055

Sample 8-15-10 Final Confirmation Sample

	, 		
Compound	Test Result	TEF	Adjusted Value
benzo(a)pyrene	0.01U (0.005)	1	0.005
benzo(a)anthracene	0.01U (0.005)	0.1	0.0005
benzo(b)fluoranthene	0.01U (0.005)	0.1	0.0005
benzo(k)fluoranthene	0.01U (0.005)	0.1	0:0005
chrysene	0.01U (0.005)	0.01	0.00005
dibenz(a,h)anthracene	0.01U (0.005)	0.1	0.0005
indeno(1,2,3-cd)pyrene	0.01U (0.005)	0.1	0.0005
TOTAL CPAH	(0.035)		0.00755
	1		

Table 5A Analytical Test Results Petroleum Hydrocarbons-Groundwater and Surface Water

Well Number	Date	TPH Diesel	тен оп	TPH Gasoline	Вепzепе	Toluene	Ethyl benzene	Xylenes
MW-1	10-17-12.	NT	NT	1.70	47	1U	1U	3U
· ·	1-4-13	NT	NT.	210	34	1.0U	1.0U	3.0U
	5-29-13	NT	NT	- 130	24	1.0U	1.0U	3.0U

Table 5A (continued)
Analytical Test Results
Petroleum Hydrocarbons-Groundwater and surface water

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Well Number	Date	TPH Diesel	трн Оі	TPH Gasoline	Benzene	Toluene	Ethyl benzene	Xylenes
MW-2	1-4-13	NT	NT	100U	1.0U	1.0U	1.0U	3.0U
	5-29-13	NT	NT	NT	1.0U	1.0U	1.0U	3.0U
MW-3	10-17-12	210	250U	NT	NT	NT	NT:	NT
	1-4-13	91	250U	NT	NT	NT	NT	NT
	5-29-13	50U	250U	NT ·	NT	NT	NT	NT
MW-4	10-17-12	7,900	3,400	NT	NT	NT	NT	NT
	1-4-13	1,900	940	NT	NT	NT	NT.	NT
<u> </u>	5-29-13	1,400	930	NT	1.0U	1.0U	·1.0U	7.6
MW-5	1-4-13	1,300	690	NT	NT .	NT	NT	NT
·	5-29-13	1,100	870	NT	NT	NT	NT	NT
SB-1	5-29-13	NΤ	NT	NT	1.0U	1.0U	1.0U	3.0U
SB-2	5-29-13	_ NT	NT	NT	1.0U	1.0U	1.0U	3.0U
MTCA Me groundwat		500	500	800	5	700	1,000	1,000
MTCA Method B surface water		NO VALUE LISTED		23	1,900	6,900	1,600	
	Surface water criteria NO VALUE LISTED 173-201A-240		STED	NV .	ŅV	NV	NV	
Table 8.12 publication		NO	VISIBLE S	HEEN	1.2	NV	530	1,300

Table 5B
Analytical Test Results
PAH-Groundwater

	Sample	Date	Naphthalene	Acenphtylene	Acenpthene	Fluorine	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo (ghi) Perylene
L	MW-5 :	10-17-12	0.087	0.1U	0.28	0.13	0.21	0.1U	0.1U	0.1U	0.1U
1		1-3-13	0.23	0.1U	0.1U	0.1U	0.1U	-0.1U	0.1U	0.1U	0.1U
Ŀ	, (° -	5-29-13	0.46	0.014	0.21	0.11	0.25	0.042	0.034	0.026 :	0.005U
	MTCA ME GROUND		160	NP	960	640	NP	4,800	640	480	NP

Table 5B (continued) Analytical Test Results PAH-Groundwater

Sample	Date	Naphthalene	Acenphtylene	Acenpthene	Fluorine	Phenanthrene	Anthracene	Fluoranthene	Pyrène	Benzo (ghi) Perylene
	THOD B WATER	4,900	NP	640	3,500	NP	26,000	9	2,600	NP
	2 WDOE TION 10- 7	NP	NP	NP	NP	NP	NP	NP	NP	NP

Table 5C Analytical Test Results cPAHs

MW-5 Groundwater 10-17-12

Compound	Test Result	TEF	Adjusted Value
benzo(a)pyrene	0.05	1	0.05
benzo(a)anthracene	0.05	0:1	0.005
benzo(b)fluoranthene	0.05	0.1	0.005
benzo(k)fluoranthene	0.05	0.1	0.005
chrysene	0.05	0.01	0.0005
dibenz(a,h)anthracene	0.05	0.1	0.005
indeno(1,2,3-cd)pyrene	0.05	0.1	0.005
TOTAL CPAH	0.35		0.0755
MTCA Met	hod A Groundwater		0.1
MTCA Meta	hod B Surface water		0.03
TABLE 8.12 WDO	E PUBLICATION 10	-09-57	0.028

Groundwater 1-4-13

Compound	Test Result	TEF	Adjusted Value
benzo(a)pyrene	0.05	1	0.05
benzo(a)anthracene	0.05	0.1	0.005
benzo(b)fluoranthene	0.05	0.1	0.005
benzo(k)fluoranthene	0.05	0.1	0.005
chrysene	0.05	0.01	0.0005

Table 5C (continued) Analytical Test Results cPAHs

Groundwater 1-4-13

Compound	Test Result	TEF.	Adjusted Value
dibenz(a,h)anthracene	0.05	0.1	0.005
indeno(1,2,3-cd)pyrene	0.05	0.1	0.005
TOTAL CPAH	0.35	3 4	0.0755
	thod A Groundwater		0.1
	hod B Surface water		0.03
TABLE 8.12 WDO	E PUBLICATION 1	0-09-57	0.028

MW-5 Groundwater 5-29-13

Compound	Test Result	TEF	Adjusted Value		
benzo(a)pyrene	0.005	1	0.005		
benzo(a)anthracene	0.005	0.1	0.0005		
benzo(b)fluoranthene	0.005	0.1	0.0005		
benzo(k)fluoranthene	0.005	0.1	0.0005		
- chrysene	0.005	0.01	0.00005		
dibenz(a,h)anthracene	0.005	0.1	0.005		
indeno(1,2,3-cd)pyrene	0.005	0.1	0.005		
TOTAL CPAH	0.035		0.00755		
MTCA Meti	hod A Groundwater		0.1		
MTCA Meth	od B Surface water	, ;	0.03		
TABLE 8.12 WDOL	E PUBLICATION 10-	09-57	0.028		

SB-1 Surface Water 5-28-13

Compound	Test Result	TEF	Adjusted Value			
benzo(a)pyrene	0.0086	1	0.0086			
benzo(a)anthracene	0.0077	0.1	0.00077			
benzo(b)fluoranthene	0.011	0.1	0.0011			
benzo(k)fluoranthene	0.005	0.1	0.0005			
chrysene	0.0078	0.01	0.000078			
dibenz(a,h)anthracene	0.005	0.1	0.0005			
indeno(1,2,3-cd)pyrene	0.0082					
TOTAL CPAH	0.0533		0.012368			
MTCA Metho	0.1					
MTCA Metho	0.03					
TABLE 8.12 WDOE	0.028					

SB-2 Surface Water 5-28-13

Compound	Test Result	TEF	Adjusted Value			
benzo(a)pyrene	0.005	1	0.005			
benzo(a)anthracene	0.005	0.1	0.0005			
benzo(b)fluoranthene	0.005	0.1	0.0005			
benzo(k)fluoranthene	0.005	0.1	0.0005			
chrysene	0.005	0.01	0.00005			
dibenz(a,h)anthracene	0.005	0.1	0.0005			
indeno(1,2,3-cd)pyrene	0.005	0.1	0.0005			
TOTAL CPAH	0.035	, ,	0.00755			
MTCA Metho	d A Groundwater		0.1			
MTCA Method B Surface water			0.03			
TABLE 8.12 WDOE	PUBLICATION 10	-09-57	0.028			

Table 5D
Analytical Test Results
MCPP Groundwater

Well Number	Date	MCPP
MW-2	10-17-12	8.0U
MW-5	10-17-12	8.0U
MW-6	10-17-12	8.0U
MTCA	METHOD B	_ 16

Table 5E Analytical Test Results Metals-Groundwater and Surface Water

Well Number	Date	Total Arsenic	dissolved Arsenic	Total Manganese	Dissolved Manganese	Total Iron	Dissolved Iron	Ferrous Iron
MW-1	10-17-12	25.8	19.6	26.1	2.57	1,170	211	0.8
1/1 // -1	1-3-13	33.3	29.7	NT	NT	NT	NT	NT .
	5-29-13	48.5	42.8	NT	NT	· NT	NT	
MW-2	11-17-12	NT	NT	NT	NT .	NT	NT	6.4
MW-3	11-17-12	NT	NT	NT	ŅΤ	NT	NT	2.2

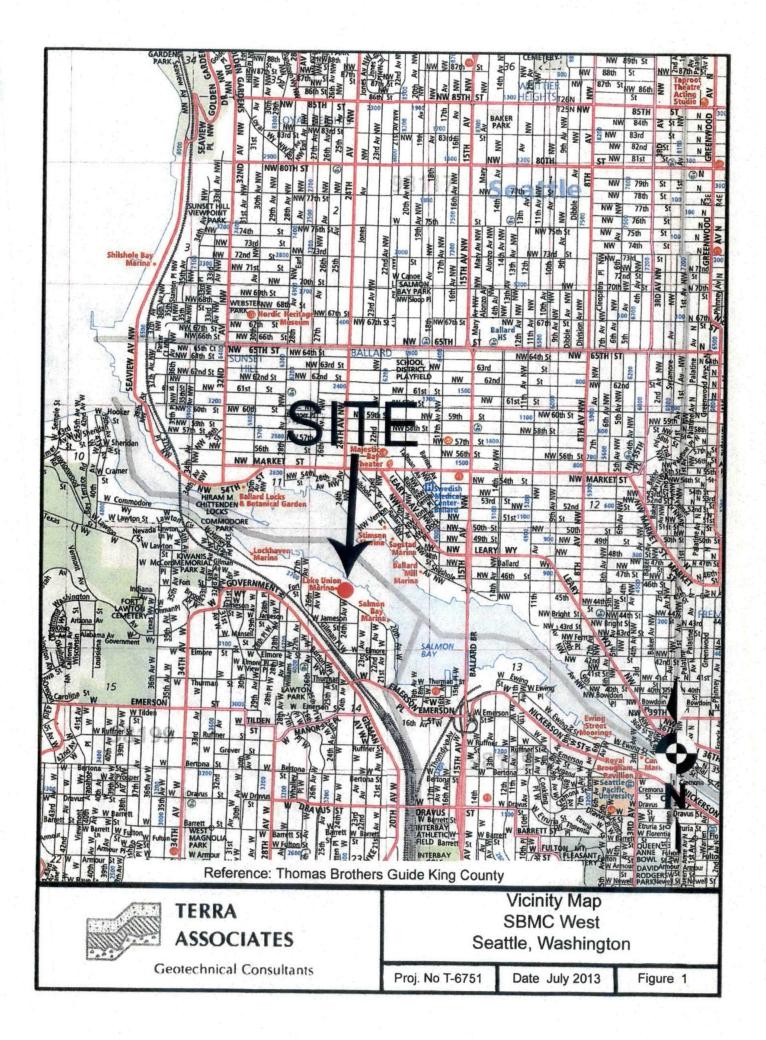
Table 5E (continued)
Analytical Test Results
Metals-Groundwater and Surface Water

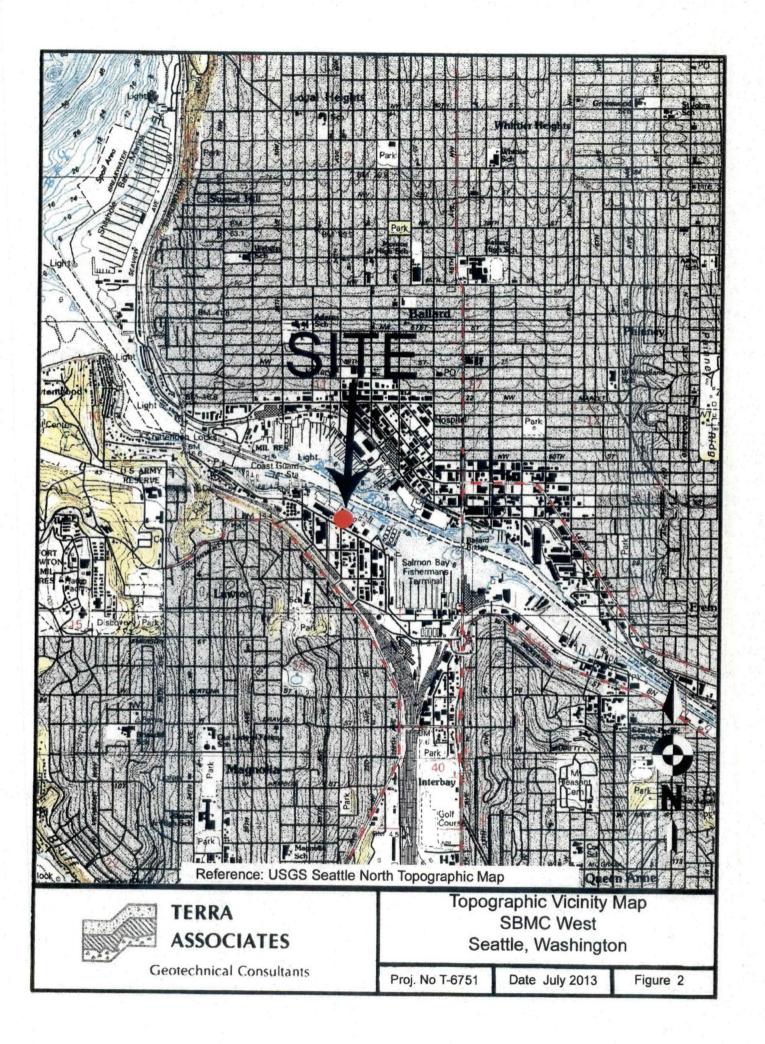
$\overline{}$		r						
Well Number	Date	Total Arsenic	Dissolved Arsenic	Total Manganese	Dissolved Manganese	Total Iron	Dissolved Iron	Ferrous Iron
MW-4	11-17-12	· NT	, NT	NT	NT .	NT.	NT	0.2
MW-5	11-17-12	13.3	14.1	16.5	10U	2,500U	2,500U	0
10100-5	1-3-13	3.3	3	NT	NT	NT	NT	NT
	5-29-13	2.88	2.73	NT	NT	NT	NT	
MW-6	11-17-12	NT	NT	NT	NT	NT	NT	4.4
SB-1	5-29-13	1.0U	NT	NT	NT	NT	NT	NT
SB-2	5-29-13	1.0U	NT	NT	NT	NT.	NT	NT
MTCA m	,	2, 2'	5	2,20	00	11,0		N/A
Surface 173-201	. ,	1	90.0	NI	•	N	P	NP

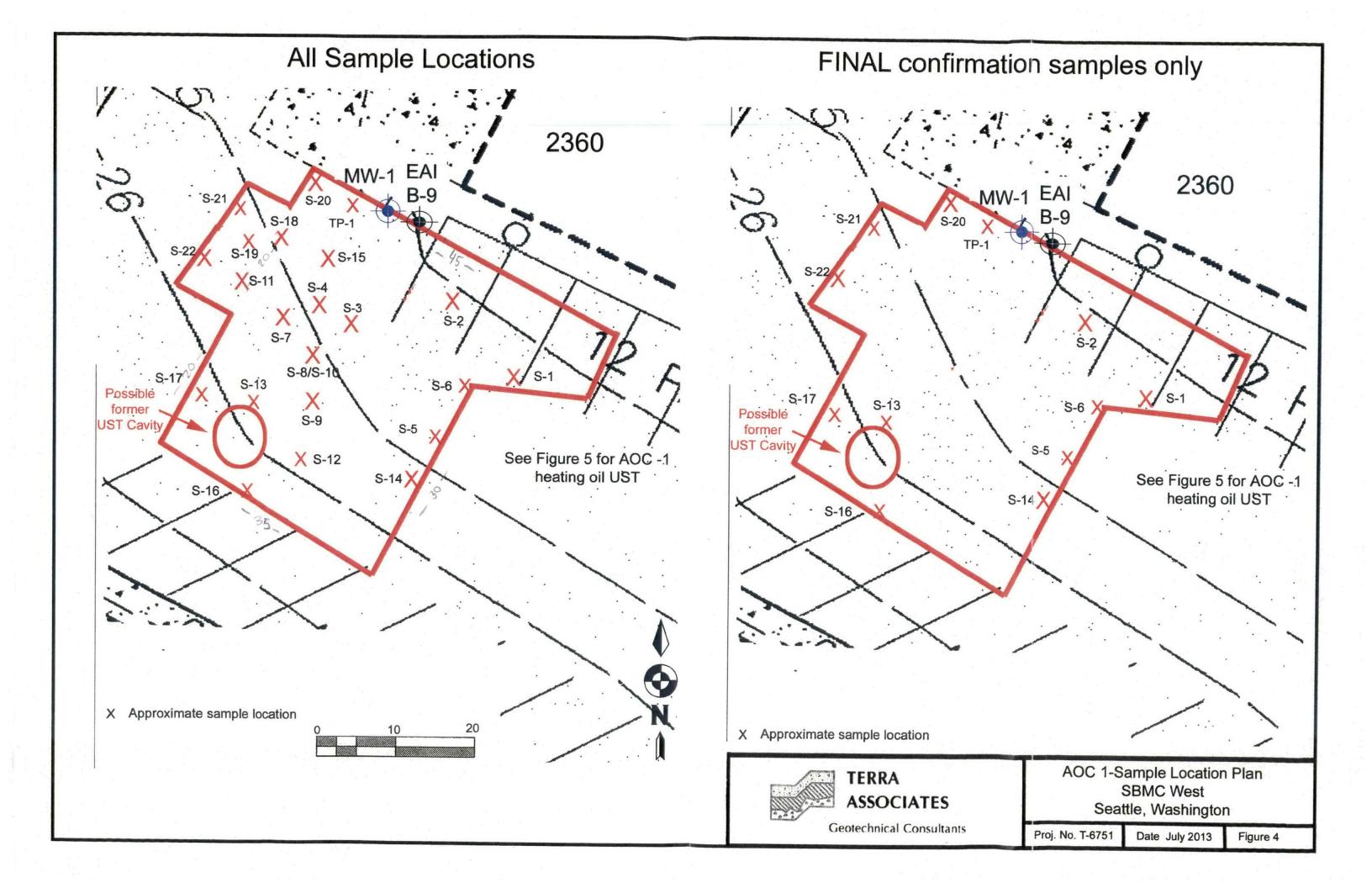
The Surface Water Cleanup value is a 4-day average concentration not to be exceeded more than once every three years on the average.

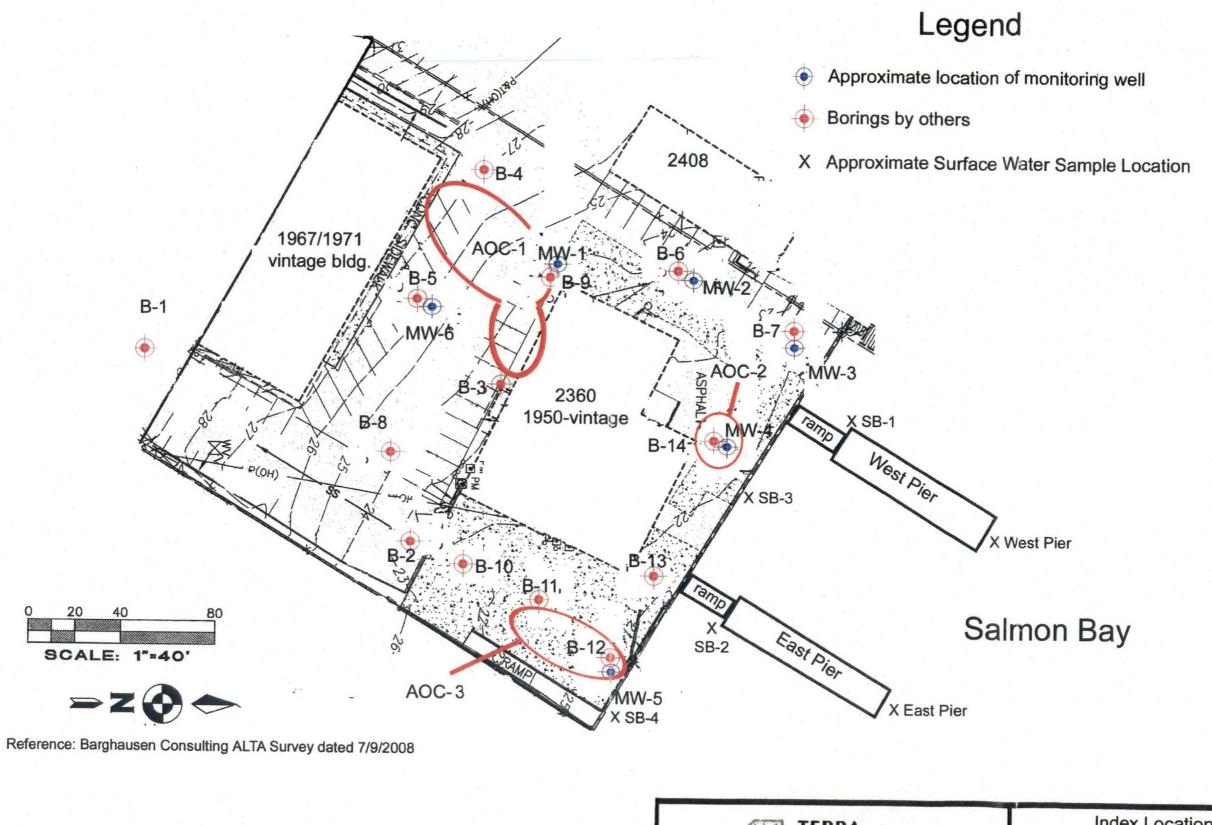
Note: All units for soils are parts per million.

All units for groundwater or surface water are parts per billion.









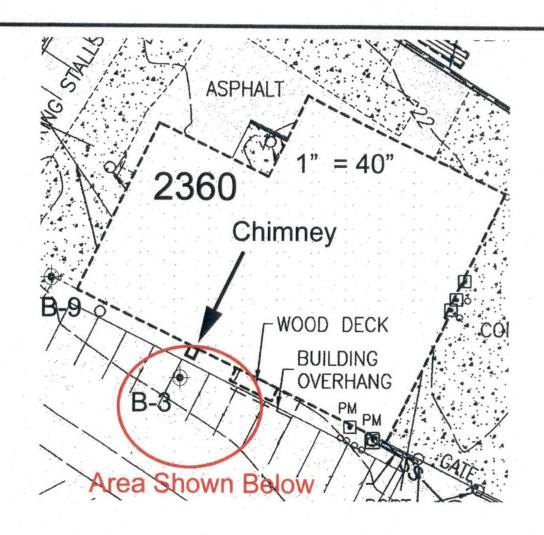


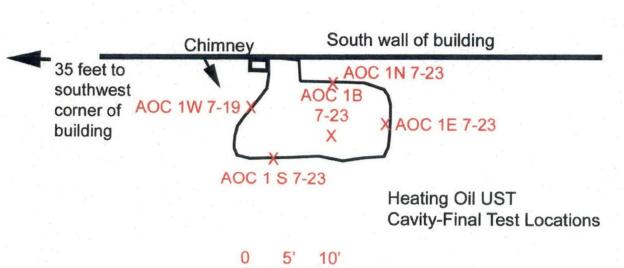
Index Location Plan SBMC West Seattle, Washington

Proj. No. T-6751

Date July 2013

Figure 3





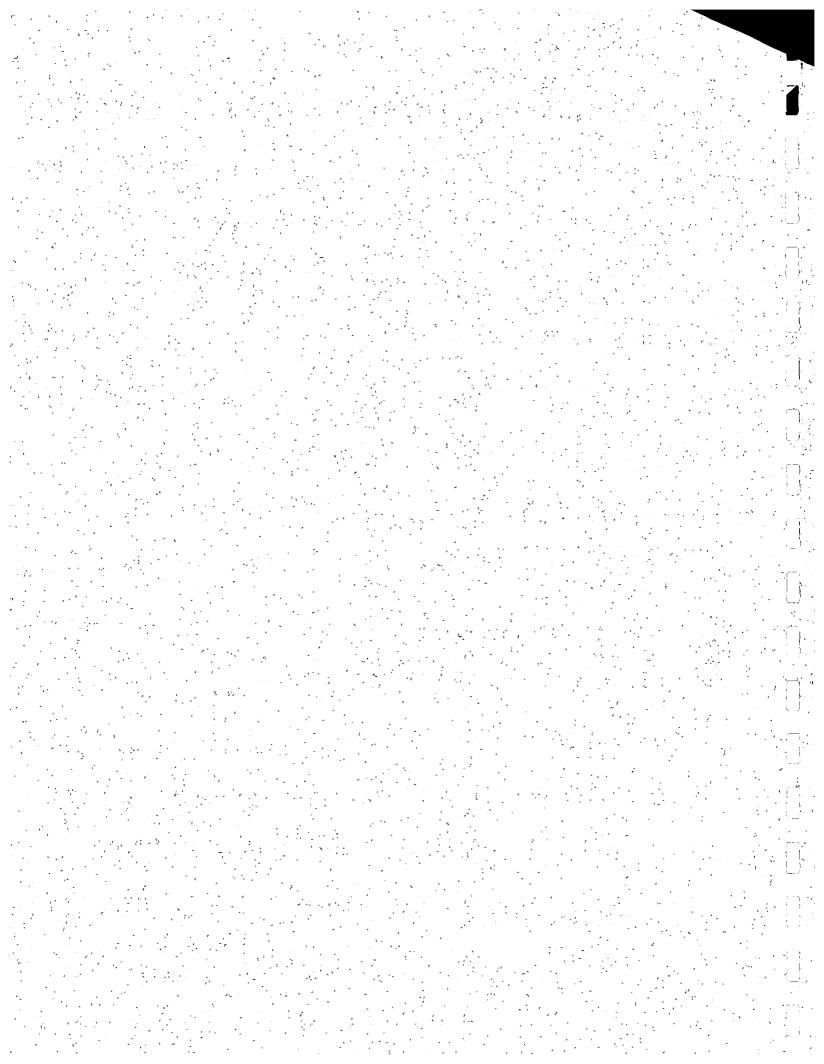


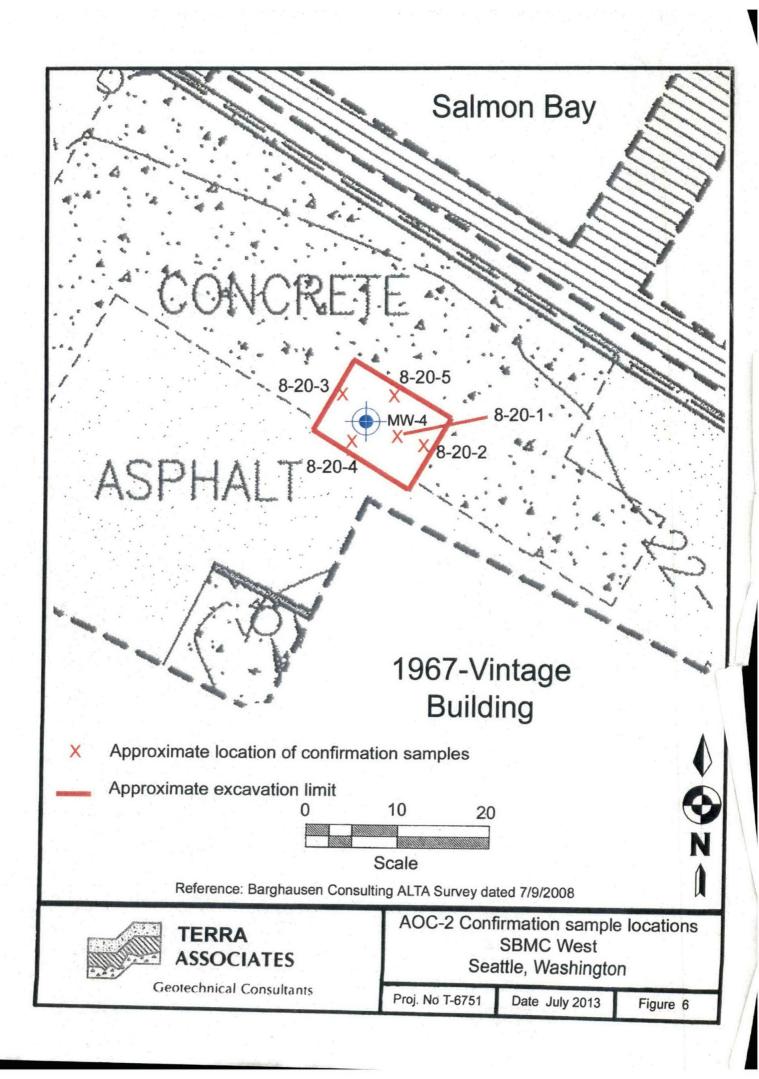
AOC-1 Heating Oil UST Sample Locations SBMC West Seattle, Washington

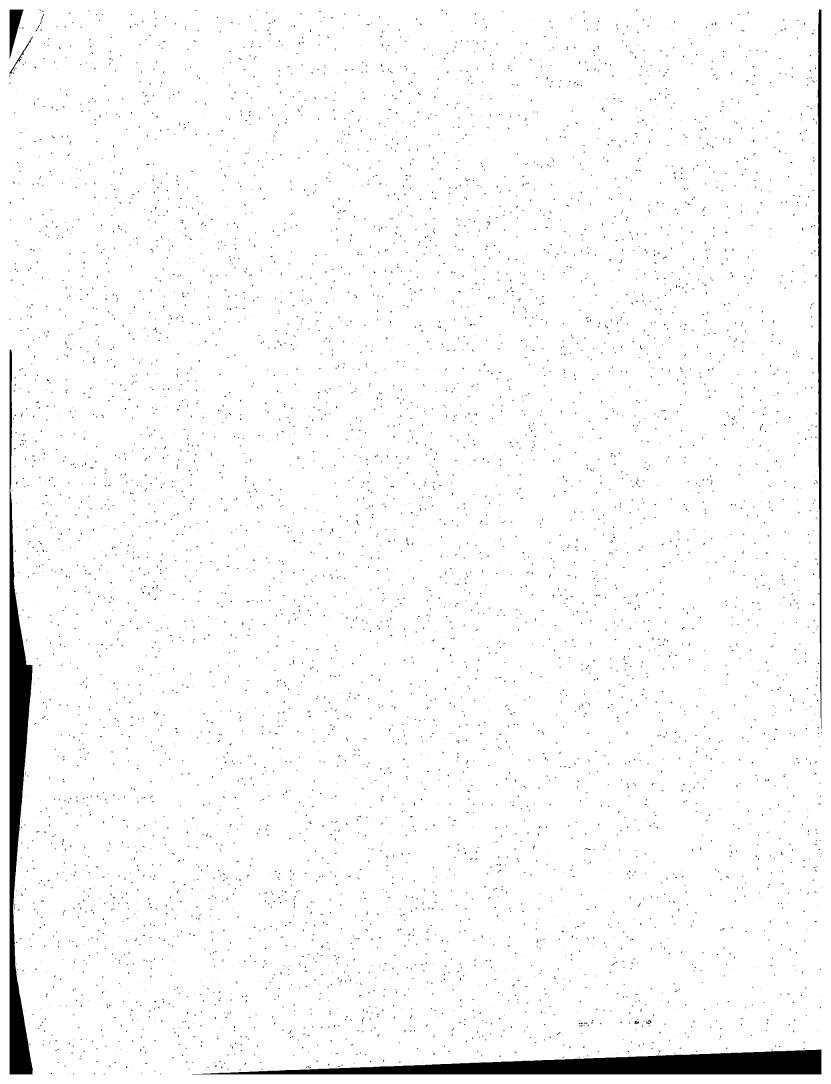
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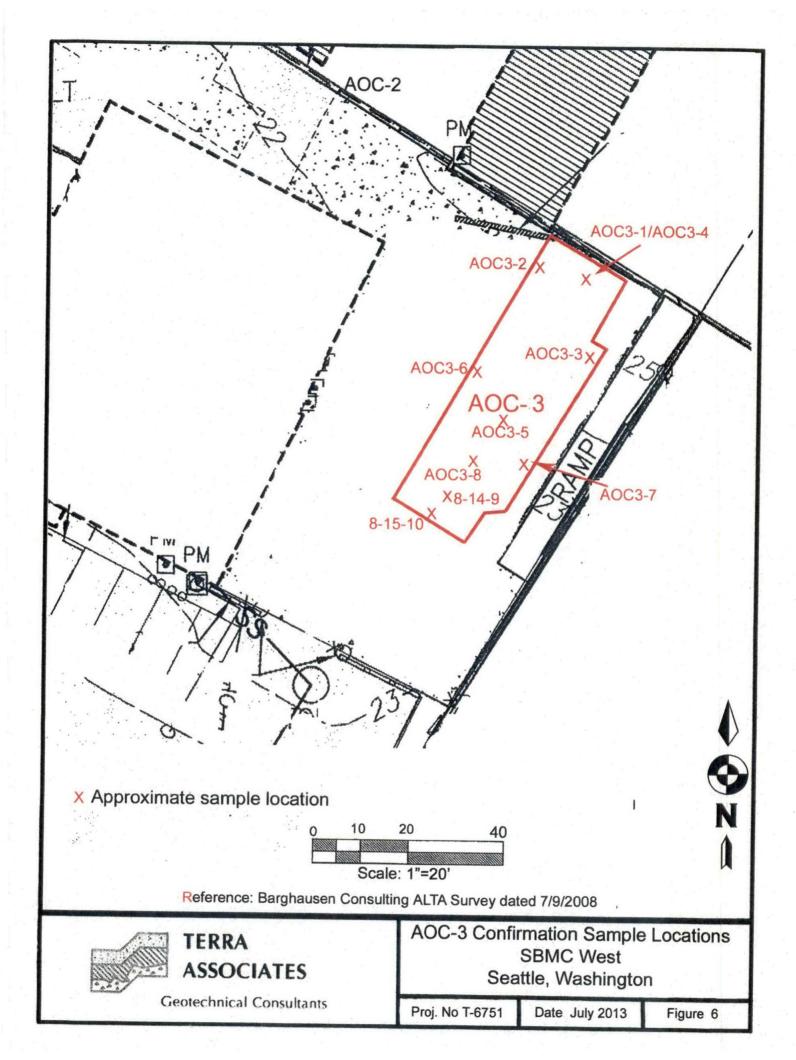
Date July 2013

Figure 5

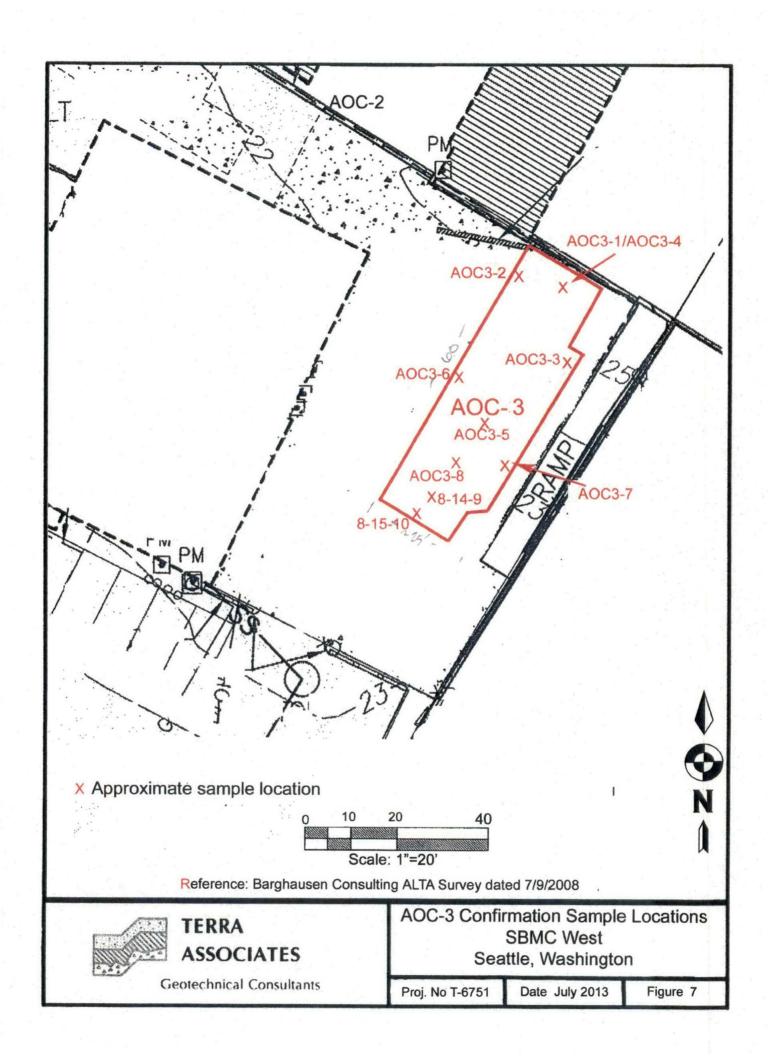








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APPENDIX A FIELD SAMPLING, MONITORING WELL INSTALLATION/ GROUNDWATER SAMPLING AND LABORATORY TESTING

SBMC West Seattle, Washington

Remedial Excavation

During remedial excavations, samples were logged by our representative and placed into laboratory-prepared glassware. Field sampling for volatile and gasoline range organics was performed in accordance with EPA Method 5035A for soil samples. All samples were refrigerated pending delivery to OnSite Environmental Inc. in Redmond, Washington. We followed chain of custody protocols for all samples.

All samples were field screened for volatile organic hydrocarbons using a handheld photo ionization device (PID). The field screening consisted of placing a subsample of each recovered sample into a plastic bag, tying the bag closed, and allowing the soil to reach ambient temperature. The inlet of the PID is then inserted into the bag. In addition, field screening included sheen testing. Sampling done during the remedial excavations was intended to consist of focused sampling to eliminate hot spots. Final sidewall samples were taken from areas that field screening, field observations, or lab testing had shown hot spots to have existed.

Backfill was not placed until laboratory confirmation test results had been received by Terra Associates.

Monitoring Well Construction

On October 3, 2012, we observed soil conditions at 6 test borings drilled to depths of up to 15.5 feet below current site grades. The approximate location of the current test borings and prior test borings by EAI are shown on the attached Exploration Location Plan, Figure 3. Test Boring Logs are attached as Figures A-1 through A-6.

A geologist from our office conducted the field exploration. Our representative classified the soil conditions encountered, maintained a log of each test boring, obtained representative soil samples, and recorded water levels observed during drilling. During drilling, soil samples were obtained in general accordance with ASTM Test Designation D-1586. Using this procedure, a 2.5-inch (inside diameter) split barrel sampler is driven into the ground 18 inches using a 300-pound hammer free falling a height of 30 inches. The number of blows required to drive the sampler 12 inches after an initial 6-inch set is equivalent to as the Standard Penetration Resistance value or N value. This is an index related to the consistency of cohesive soils and relative density of cohesionless materials. N values obtained for each sampling interval are recorded on the Boring Logs, Figures A-1 and A-6.

Two-inch diameter monitoring wells were constructed in the borings. The screened intervals were backfilled with clean silica sand that extended up to two feet above the top of the screen. The area above the screen backfill was backfilled with bentonite chips hydrated in place. The well backfill was placed down the auger while the augers were being withdrawn. Each well was provided with a standard light traffic rated flushmount monitoring well cover.

A representative of our firm continuously monitored the drilling and kept a detailed log of each exploration.

Groundwater Sampling

Prior to sampling, the monitoring wells were surged and bailed on October 4, 2012 to reduce impacts from drilling artifacts. The groundwater samples taken on October 17, 2012 were taken by using a peristaltic pump and dedicated tubing. The pump is run until the turbidity of the discharged water stabilizes. A flow through chamber was used to collect basic water parameter measurements. The field parameter results are summarized in Table 1A.

Table A-1
Groundwater Parameters

Well	Date	Temp	pH	Conductivity	DO	ORP
- 11	10-17-12	18.2	11.26	1,600	0	-237
MW-1	1-4-13	13.75	10.14	941	0.93	-1.
	5-28-13	14.95	10.22	1191	0.28	-173.2
	10-17-12	17.3	6.63	897	0	-80
MW-2	1-4-13	13.89	6.49	645	1.27	-87
	5-28-13	14.00	6.46	881	0.32	-61.9
	10-17-12	17.9	6.66	769	0.3	-31
MW-3	1-4-13	12.66	6.47	397	0.66	-33.9
	5-28-13	14.43	6.44	543	0.3	-59.3
	10-17-12	15.9	12.33	328	0.3	-32.8
MW-4	1-4-13	10.88	12.47	3211	0.4	-22.1
	5-28-13	14.28	12.91	4642	0.22	-194.5
	10-17-12	16.7	12.42	452	0	-253
MW-5	1-4-13	10.05	12.63	2800	0.47	-20
	5-28-13	15.4	12.84	3685	0.2	-168.3
	10-17-12	17.5	6.82	913	0.72	-37
MW-6	1-4-13	NS	NS	NS	NS	NS
	5-28-13	NS	NS	NS	NS	NS

Notes: Temperature is in Celsius.

pH is in standard units.

Conductivity is in micro Siemens.

Dissolved oxygen is in parts per million.

Redox is in millivolts.

Values reported are from the final reading following stabilization of the parameters and about three casing volumes.

Surface Water Sampling

The water in Salmon Bay has been monitored for pH and standard parameters. The monitoring points are along the bulkhead and off of the piers. Surface water samples were taken using a sample jar that was filled at a depth of ten feet.

Table A-2
Surface Water Parameters

Location	Date	Depth	Temp	pН	Conductivity	DO	ORP
SB-1	5-28-13	10	15.39	7.73	139	8.26	136.9
SB-2	5-28-13	10	15.37	8.39	140	8.73	132.4
SB-3	1-4-13	4	NM	7.01	NM	NM	NM
	5-28-13	8	15.39	8.26	138	9.03	149.3
SB-4	1-4-13	4	NM	7.01	NM	NM	NM
	5-28-13	8	15.37	8.52	141	8.29	143.6
West pier	5-28-13	10	15.35	8.33	137	8.95	135
East Pier	5-28-13	10	15.33	8.38	141	9.24	133.1
Pier east of site	5-28-13	10	15.31	8,36	137	9.29	184

Notes: Temperature is in Celsius.

pH is in standard units.

Conductivity is in micro Siemens.

Dissolved oxygen is in parts per million.

Redox is in millivolts.

Chain of Custody and Sample Delivery

All samples taken by Terra Associates were placed into laboratory-prepared glassware. Each sample was given unique sample identification. All samples were kept refrigerated pending delivery to Freidman Bruya Inc. (FBI). Chain of custody protocols were followed for all samples. FBI has accreditation from Ecology for all of the testing performed during this project.

All testing was performed within the designated holding times. At the laboratory, standard quality control procedures were followed. The procedures consisted of sample blanks, duplicates, and matrix spikes. All testing was within normal standards.

Based on our review of the laboratory data, it is our opinion that the results are acceptable for current use.

LO	G	OF MONITORING WELL M	W-1			Figure N	No. A-1
Proje	ct:	SBMC	Project No	: <u>T-6751</u>	Date Drille	ed: _10/3/12	į .
Client	t:	Driller:	Cascade Drilling		Logged B	y: NRH	
Locat	ion:	Seattle, Washington		Approx. Elev:	N/A		<u> </u>
Depth (ft)	Sample Interval	Soil Description	Consistency/ Relative Density	Moisture Content % Wp x WI 10 30 50 70 90	1 2 SP	enetrometer SF	Observ. Well
		(3 inches ASPHALT)					
1- 2- 3- 4-		Recycled concrete.	Medium Dense				
5-			Medium Dense		22	<u>.</u>	
6- 7- 8- 9- 10- 11- 12- 13- 14-		Gray SAND with silt, fine grained, moist. (SP-SM)	Dense			50	
16- 17- 18- 19- 20-		Boring terminated at 15.5 feet. 2-inch PVC monitoring well constructed with 0.10 screen from 5 to 15 feet.					
purpose:	s. I ni: uid no	chole log has been prepared for geotechnical information pertains only to this boring location to the interpeted as being indicative of other areas	CEUP	Terra Associ Consultants in Ge and Environ	ates, In otechnical Eng mental Earth S	ineering Geolog	ואין

Project	: <u>S</u>	BMC	Project No	o: <u>T-6751</u>	Date Dr		gure I 0/4/12	
Client:		Driller: _(Logged			1
Locatio		Seattle, Washington		Approx. Elev:	N/A			1
Depth (ft)	Sample Interval	Soil Description	Consistency/ Relative Density	Moisture Content 9 Wp WI 10 30 50 70 9	A 1	Penetro TSF 2 3 SPT (N) Blows/ft 20 30	4 .1	Obse Wel
1- 2- 3- 4-		(5 inches ASPHALT) Dark brown SILT with organics, moist. (Fill)	Stiff					
5		Gray silty SAND, moist. (SM)	Medium Dense		17			
9-		Gray coarse grained SAND, wet. (SP)	Dense				50	
14	1	Gray SILT with fine grained sand, moist. (ML)	Stiff			!	44	
16- 17- 18- 19-		Boring terminated at 15.5 feet. 2-inch PVC monitoring well constructed with 0.10 screen from 5 to 15 feet.						
urposes.	i nis ii I not b	ole log has been prepared for geotechnical nformation pertains only to this boring location be interpeted as being indicative of other areas	FEIT	Terra Associ Consultants in Ge and Environ	ates, leotechnical E	naineerina	, Geolog	у

: .

Project:	SBMC	Project No	: _T-6751	Date Drik	ed : <u>10/4/12</u>	2
Client: _	Driller: _C			Logged &		
	-			N/A		
Depth (ft) Sample Interval	Soil Description	Consistency/ Relative Density	Moisture Content % Wp	Δ T 1 2 8	PT (N) D 30 40	Obser Well
1-	(2 inches ASPHALT) Dark brown SILT, moist, some organics. (ML)	Stiff				
2- 3- 4- 5- 6-	Gray silty SAND, moist. (SM)	Medium Dense		13		
7- 8- 9-						
10-11-12-13-14-15-15-1	Gray SILT with fine to medium grained sand, moist. (ML)	Very Stiff			39	
16- 17- 18- 19- 20-	Boring terminated at 15.5 feet. 2-inch PVC monitoring well constructed with 0.0 screen from 5 to 15 feet.					

LO	G (OF MONITORING WELL N	/W-4			Figure !	No. A-4
Projec	ct:	SBMC	Project No	: <u>T-6751</u>	Date Drille	ed: 10/4/12	<u> </u>
		Driller:			Logged By	y: NRH	<u> </u>
Locati	ion:	Seattle, Washington		Approx. Elev:	N/A		
Depth (ft)	Sample Interval	Soil Description	Consistency/ Relative Density	Moisture Content 9 Wp	6 A T	enetrometer SF	Observ. Well
1 2 3 4 5		(2 inches ASPHALT) Recycled concrete.	Medium Dense		15		
6- 7- 8- 9-		No recovery.					
10- 11- 12- 13-		Gray SILT with fine grained sand, moist. (ML)	Very Stiff		2.	4	
14 15-			Hard	· · · · · · · · · · · · · · · · · · ·		39	
16- 17- 18- 19-		Boring terminated at 15.5 feet. 2-inch PVC monitoring well constructed with 0.10 screen from 5 to 15 feet.					
purpose	es. Th ould n	rehole log has been prepared for geotechnical is information pertains only to this boring location ot be interpeted as being indicative of other areas		☼ Consultants in G	iates, Ir Geotechnical En Inmental Earth S	aineerina Geola	ogy

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Projec	ct: <u>S</u>	ВВМС	Project No	: <u>T-•6751</u>	Date Drille	d: <u>10/4/12</u>	<u> </u>
Client	: _	Driller: _(Cascade Drilling		Logged By	: NRH	
Locati	ion:	Seattle, Washington		Approx. Elev:	N/A		
Depth (ft)	Sample Interval	Soil Description	Consistency/ Relative Density	Moi:sture Content % Wip x WI 10 30 50 70 9	△ T 1 2 6 SP	enetrometer SF	Obser Well
1- 2- 3- 4-		(2 to 3 inches ASPHALT) Recycled concrete.	Medium Dense				
5		No recovery.					
9-		Gray SILT with fine grained sand, moist, mottled in places. (ML-SM)	Very Stiff/ Dense			27.	
12- 13- 14- 15-	T		Hard			45	
16- 17- 18- 19-		Boring terminated at 15.5 feet. 2-inch PVC monitoring well constructed with 0.10 screen from 5 to 15 feet.					
purpose	es. Thi ould no	rehole log has been prepared for geotechnical is information pertains only to this boring location of be interpeted as being indicative of other areas	The state of the s	Terra Assoc	iates, lı	1 c.	

LO	G (OF MONITORING WELL M	W-6			Figure I	No. A-6
Projed	ct: s	SBMC	Project No	Date Drille	ed: 10/4/12		
Client	:	Driller:	Cascade Drilling		Logged B	y: NRH	
Locat	ion:	Seattle, Washington		Approx. Elev:	_N/A		<u> </u>
Depth (ft)	Sample interval	Soil Description	Consistency/ Relative Density	Moisture Content 9 Wp [Δ T 1 2 6 SP	enetrometer SF	Observ. Well
1-		(3 inches ASPHALT) Brown silty SAND with gravel, moist. (Fill)	Medium Dense				
2- 3- 4-		Brown silty SAND, moist. (SM)	Medium Dense				
5		Gray SILT with sand lenses, moist. (ML)	Stiff		18		
8- 9- 10- 11- 12-		Gray medium to coarse grained SAND with silt lenses, wet. (SP)	Medium Dense to Dense			29	
13- 14- 15-		Becomes fine grained.				45 •	
16- 17- 18- 19- 20-		Boring terminated at 15.5 feet. 2-inch PVC monitoring well constructed with 0.10 screen from 5 to 15 feet.					
purpose	es. Th ould n	rehole log has been prepared for geotechnical is information pertains only to this boring location of be interpeted as being indicative of other areas	A STATE OF THE STA	Consultants in G	iates, li ieotechnical Er nmental Earth	gineering, Geol	ogy

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APPENDIX B

ANALYTICAL TEST REPORTS – REMEDIAL EXCAVATIONS

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Bradley T. Benson, B.S. Kurt Johnson, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 TEL: (206) 285-8282 e-mail: fbi@isomedia.com

July 20, 2012

Chuck Lie, Project Manager Terra Associates 12525 Williams Rd #101 Kirkland, WA

Dear Mr Lie:

Included are the results from the testing of material submitted on July 19, 2012 from the SBMC, F&BI 207267 project. There are 13 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures SBM0720R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on July 19, 2012 by Friedman & Bruya, Inc. from the Terra Associates SBMC, F&BI 207267 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Terra Associates
207267-01	AOC 1 W
207267-02	AOC 1 S
207267-03	AOC 1 E
207267-04	SP M
207267-05	SP E
207267-06	SP W
207267-07	TP-1 6.5
207267-08	S-1

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/20/12 Date Received: 07/19/12 Project: SBMC, F&BI 207267 Date Extracted: 07/19/12

Date Analyzed: 07/19/12 and 07/20/12

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	<u>Toluene</u>	Ethyl <u>Benzene</u>	Total <u>Xylenes</u>	Gasoline <u>Range</u>	Surrogate (% Recovery) (Limit 50-132)
SP M 207267-04	<0.02	<0.02	0.063	0.13	62	82
SP E 207267-05	<0.02	<0.02	<0.02	<0.06	10	78
SP W 207267-06	<0.02	<0.02	<0.02	<0.06	10	81
TP-1 6.5 207267-07	< 0.02	<0.02	<0.02	<0.06	<2	78
S-1 207267-08	<0.02	<0.02	<0.02	<0.06	<2	79
Method Blank 02-1276 MB	<0.02	<0.02	<0.02	<0.06	<2	77

ENVIRONMENTAL CHEMISTS

Date of Report: 07/20/12 Date Received: 07/19/12 Project: SBMC, F&BI 207267 Date Extracted: 07/19/12 Date Analyzed: 07/19/12

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	$rac{ m Diesel~Range}{ m (C_{10}\text{-}C_{25})}$	Motor Oil Range (C ₂₅ -C ₃₆)	Surrogate (% Recovery) (Limit 53-144)
AOC 1 W 207267-01	<50	<250	115
AOC 1 S 207267-02	<50	<250	118
AOC 1 E 207267-03	1,400	<250	100
SP M 207267-04	64	<250	101
SP E 207267-05	<50	<250	101
SP W 207267-06	<50	<250	98
Method Blank 02-1284 MB	<50	<250	105

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:

SP M

Date Received: Date Extracted:

07/19/12 07/20/12 07/20/12

Date Analyzed: Matrix:

Soil

Units:

mg/kg (ppm)

Client:

Project:

Terra Associates

SBMC, F&BI 207267 207267-04

Lab ID: Data File:

207267-04.009

Instrument:

ICPMS1 Operator: AP

Lower Limit: Upper

60

Limit: 125

Internal Standard:

Holmium

Analyte:

% Recovery:

101

Concentration

mg/kg (ppm)

Lead

ENVIRONMENTAL CHEMISTS

Client:

Project:

Lab ID:

Data File:

Instrument:

Analysis For Total Metals By EPA Method 200.8

Client ID: SP E
Date Received: 07/19/12
Date Extracted: 07/20/12

Date Analyzed: 07/20/12

Internal Standard:

Holmium

Analyte:

Matrix: Soil
Units: mg/kg (ppm)

mg/kg (ppm)

Operator:

% Recovery:

Lower Limit: 60 Upper Limit: 125

Terra Associates

207267-05

ICPMS1

AP

207267-05.010

SBMC, F&BI 207267

 ${\bf Concentration}$

mg/kg (ppm)

Lead 2.44

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID: Date Received: SP W 07/19/12

Date Extracted: Date Analyzed: Matrix: 07/20/12 07/20/12 Soil

Units:

mg/kg (ppm)

Client: Project: Terra Associates SBMC, F&BI 207267

Lab ID: 20 Data File: 20

207267-06 207267-06.011 ICPMS1

Instrument: ICI Operator: AP

Lower

Upper Limit:

Internal Standard:

Holmium

% Recovery:

101

Limit: 60

60

125

Analyte:

Concentration mg/kg (ppm)

Lead

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID: Date Received: TP-1 6.5 07/19/12 07/20/12

Date Extracted: Date Analyzed: Matrix:

07/20/12 Soil

Units:

Soil mg/kg (ppm) Client: Project: Terra Associates SBMC, F&BI 207267

Lab ID: Data File: 207267-07 207267-07.012

Instrument: Operator:

ICPMS1 AP

Internal Standard:

Holmium

% Recovery: 93

Lower Limit: 60 Upper Limit: 125

Concentration mg/kg (ppm)

Analyte:

Lead

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:

S-1

Date Received:

07/19/12 07/20/12

Date Extracted: Date Analyzed: Matrix:

07/20/12 Soil

Units:

mg/kg (ppm)

Client:

Terra Associates SBMC, F&BI 207267

Project: Lab ID:

207267-08 207267-08.013

Data File: Instrument:

ICPMS1

Operator:

AP

Internal Standard:

% Recovery:

97

Lower Limit: Upper Limit:

60

125

Concentration mg/kg (ppm)

Analyte:

Holmium

Lead

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID: Date Received: Method Blank Not Applicable

Date Extracted: Date Analyzed:

07/19/12 07/20/12

Matrix: Units:

Soil

mg/kg (ppm)

Client: Project:

Terra Associates SBMC, F&BI 207267

Lab ID: Data File:

I2-478 mb I2-478 mb.008

Instrument:

ICPMS1

Operator:

AP

Internal Standard:

Holmium

% Recovery:

102

Lower Limit: 60

Upper Limit: 125

Concentration

Analyte:

mg/kg (ppm)

Lead

<1

ENVIRONMENTAL CHEMISTS

Date of Report: 07/20/12 Date Received: 07/19/12

Project: SBMC, F&BI 207267

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 207228-02 (Duplicate)

	` •	(Wet Wt)	(Wet Wt)	Relative Percent
	Reporting	Sample	Duplicate	Difference
Analyte	Units	Result	Result	(Limit 20)
Benzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Toluene	mg/kg (ppm)	< 0.02	< 0.02	nm
Ethylbenzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Xylenes	mg/kg (ppm)	< 0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<2	<2	nm

Laboratory Code: Laboratory Control Sample

		Percent				
	Reporting	\mathbf{Spike}	Recovery	Acceptance		
Analyte	Units	Level	LCS	<u>Criteria</u>		
Benzene	mg/kg (ppm)	0.5	84	66-121		
Toluene	mg/kg (ppm)	0.5	85	72-128		
Ethylbenzene	mg/kg (ppm)	0.5	87	69-132		
Xylenes	mg/kg (ppm)	1.5	85	69-131		
Gasoline	mg/kg (ppm)	20	95	61-153		

ENVIRONMENTAL CHEMISTS

Date of Report: 07/20/12 Date Received: 07/19/12

Project: SBMC, F&BI 207267

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 207262-02 (Matrix Spike)

	Reporting	Spike	(Wet wt) Sample	Percent Recovery	Percent Recovery	Acceptance	RPD
Analyte	Units	Level	Result	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	107	107	64-133	0

Laboratory Code: Laboratory Control Sample

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	<u>Units</u>	Level	LCS	Criteria
Diesel Extended	mg/kg (ppm)	5,000	101	58-147

ENVIRONMENTAL CHEMISTS

Date of Report: 07/20/12 Date Received: 07/19/12

Project: SBMC, F&BI 207267

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 207227-01 (Matrix Spike)

				Percent	Percent		
	Reporting	Spike	Sample	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	Result	MS	MSD	Criteria	(Limit 20)
Lead	mg/kg (ppm)	50	56.4	87 b	103 b	64-139	17 b

Laboratory Code: Laboratory Control Sample

			Percent		
Analyte	Reporting Units	Spike Level	Recovery LCS	Acceptance Criteria	
Lead	mg/kg (ppm)	50	99	83-118	-

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- A1 More than one compound of similar molecule structure was identified with equal probability.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte indicated may be due to carryover from previous sample injections.
- d The sample was diluted. Detection limits may be raised due to dilution.
- ds The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb Analyte present in the blank and the sample.
- fc The compound is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.
- ht Analysis performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- j The result is below normal reporting limits. The value reported is an estimate.
- ${\bf J}$ The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the compound indicated is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received in a container not approved by the method. The value reported should be considered an estimate.
- pr The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

Soud Report To CHUCK LES	SAMPLES (oignature)	PURKABOUND TAKE
Company Terra ASSUC	PROJECT NAMENO. POS	D Standard (S Wooks) CKEUSH
101 \$ 12525 Willew 12 # 101	515 W C	Both charges outherized by:
City, State, ZIP Kirkland WA	REMARKS SBUNC attu:	SAMPLE DIFFORAL CI Dispose after 30 days
Phone # 425821.777 Fax #	Brooke Stablert	Disturce samples Divil call with instructions

			· ·	,	1.							粉柳	9.0	(E)	 	
Sample ID	Lab IID	Date	Time	Sample Type	# of containers	TPH-Diesed	TPE-Gasoline	BYEX by 88212	VOCa by appr	SVOCe by 8239	HFS	Lend				Notes
ACCIW	01	_	225	5	1	X										_
AOC 15	02		225		1	K.										
AUC I E	03		230		1	X										
SPM	04		520		1	×	X.	X				Y.			ok	Ris
SPE'	05		250		1	1	×	X				4				_
SP W	06		250		1	Z	7	×				1	ŀ		41	fran 2
TP-1 6.5	07 A-E	_	500		5		×	X				1				
5-1	08 A-€		25	J.	5		N	7				x				
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Friedman & Bruya, Inc.	Rabingare heef by	IGNATUI) E		PRINT	NAI	VIE			<u> </u>		COM	PANY		ATE	TIME

3012 16th Avenue West

Seattle, WA 98119-2029

Ph. (206) 285-8282

Par (200) 283-5044

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Samples received at

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Bradley T. Benson, B.S. Kurt Johnson, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 TEL: (206) 285-8282 e-mail: fbi@isomedia.com

July 27, 2012

Chuck Lie, Project Manager Terra Associates 12525 Willows Rd NE Ste 101 Kirkland, WA 98304

Dear Mr. Lie:

Included are the results from the testing of material submitted on July 23, 2012 from the SBMC, F&BI 207297 project. There are 17 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures NAA0727R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on July 23, 2012 by Friedman & Bruya, Inc. from the Terra Associates SBMC, F&BI 207297 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u> <u>Terra Associates</u>

207297-01 S-2

207297-02 AOC1 E 7-23

A 200.8 internal standard failed the acceptance criteria for sample AOC1 E 7-23 due to matrix interferences. The data were flagged accordingly. The sample was diluted and reanalyzed.

All other quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/27/12 Date Received: 07/23/12

Project: SBMC, F&BI 207297 Date Extracted: 07/23/12 Date Analyzed: 07/23/12

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	<u>Toluene</u>	Ethyl <u>Benzene</u>	Total <u>Xylenes</u>	Gasoline <u>Range</u>	Surrogate (% Recovery) (Limit 50-132)
S-2 207297-01	<0.02	<0.02	<0.02	<0.06	<2	81
Method Blank	< 0.02	<0.02	<0.02	<0.06	<2	77

ENVIRONMENTAL CHEMISTS

Date of Report: 07/27/12 Date Received: 07/23/12 Project: SBMC, F&BI 207297 Date Extracted: 07/23/12 Date Analyzed: 07/23/12

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	$\frac{\text{Diesel Range}}{(\text{C}_{10}\text{-}\text{C}_{25})}$	Motor Oil Range (C ₂₅ -C ₃₆)	Surrogate (% Recovery) (Limit 53-144)
AOC1 E 7-23 207297-02	<50	<250	107
Method Blank 02-1297 MB	<50	<250	117

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	AOC1 E 7-23
Date Received:	07/23/12
Date Extracted:	07/23/12
Date Analyzed:	07/24/12
Matrix:	Soil
Units:	mg/kg (ppm)

Terra Associates
SBMC, F&BI 207297
207297-02
207297-02.026
ICPMS1
AP

		\mathbf{Lower}	Upper
Internal Standard:	% Recovery:	Limit:	Limit:
Germanium	160 vo	60	125
Indium	93	60	125
Holmium	100	60	125
	A		

Analyte:	Concentration mg/kg (ppm)
Chromium	857 J
Arsenic	6.39
Selenium	<1
Silver	<1
Cadmium	1.24
Barium	625
Lead	527

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	AOC1 E 7-23
Date Received:	07/23/12
Date Extracted:	07/23/12
Date Analyzed:	07/24/12
Matrix:	Soil
Units:	mg/kg (ppm)

Client:	Terra Associates
Project:	SBMC, F&BI 207297
Lab ID:	207297-02 x10
Data File:	207297-02 x10.043
Instrument:	ICPMS1
Operator:	AP

		Lower	\mathbf{Upper}
Internal Standard:	% Recovery:	Limit:	Limit:
Germanium	106	60	125
Indium	98	60	125
Holmium	104	60	125

Analyte:	Concentration mg/kg (ppm)
Chromium	1,310
Arsenic	<10
Selenium	<10
Silver	<10
Cadmium	<10
Barium	599
Lead	540

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

	_		
Client ID:	Method Blank	Client:	Terra Associates
Date Received:	NA	Project:	SBMC, F&BI 207297
Date Extracted:	07/23/12	Lab ID:	I2-487 mb
Date Analyzed:	07/24/12	Data File:	I2-487 mb rr.042
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

		Lower	∪pper
Internal Standard:	% Recovery:	Limit:	Limit:
Germanium	90	60	125
Indium	99	60	125
Holmium	103	60	125

Analyte:	Concentration mg/kg (ppm)
Chromium	<1
Arsenic	<1
Selenium	<1
Silver	<1
Cadmium	<1
Barium	<1
Lead	<1

ENVIRONMENTAL CHEMISTS

Date of Report: 07/27/12 Date Received: 07/23/12 Project: SBMC, F&BI 207297 Date Extracted: 07/23/12 Date Analyzed: 07/23/12

RESULTS FROM THE ANALYSIS OF THE SOIL SAMPLES FOR TOTAL MERCURY

USING EPA METHOD 1631E

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID	<u>Total Mercury</u>
Laboratory ID	
AOC1 E 7-23 207297-02	<0.1
Method Blank	<0.1

ENVIRONMENTAL CHEMISTS

Analysis for TCLP Metals By EPA Method 200.8 and 40 CFR PART 261 $\,$

Client ID: Date Received: Date Extracted: Date Analyzed: Matrix: Units:	AOC1 E 7-23 07/23/12 07/24/12 07/24/12 Soil mg/L (ppm)	1	Client: Project: Lab ID: Data File: Instrument:	Terra Associates SBMC, F&BI 207297 207297-02 207297-02.010 ICPMS1 AP
Omio.	mg/11 (ppm)		Operator:	AP
		,	Lower	Upper
Internal Standard:		% Recovery:	Limit:	Limit:
Germanium		.97	60	125
Indium		102	60	125
Holmium		104	60	125
	(Concentration		•
Analyte:		mg/L (ppm)	TCLP Limi	it
Chromium		<1	5.0	
Arsenic		<1	5.0	
Selenium		<1	1.0	
Silver		<1	5.0	
O			5.9	

<1

1.50

<1

1.0

100

5.0

Cadmium

Barium

Lead

ENVIRONMENTAL CHEMISTS

Analysis for TCLP Metals By EPA Method 200.8 and 40 CFR PART 261

Client ID: Date Received: Date Extracted: Date Analyzed: Matrix: Units:	Method Bla: NA 07/24/12 07/24/12 Soil mg/L (ppm)		Client: Project: Lab ID: Data File: Instrument: Operator:	Terra Associates SBMC, F&BI 207297 I2-490 mb I2-490 mb.008 ICPMS1 AP
			Lower	Upper
Internal Standard:		% Recovery:	Limit:	Limit:
Germanium		103	60	125
Indium		101	60	125
Holmium		104	60	125
		Concentration		
Analyte:		mg/L (ppm)	TCLP Lim	iit
Chromium		<1	5.0	
Arsenic		<1	5.0	
Selenium		<1	1.0	
Silver		<1	5.0	
Cadmium		<1	1.0	
Barium		<1	100	
Lead		<1	5.0	

ENVIRONMENTAL CHEMISTS

Date of Report: 07/27/12 Date Received: 07/23/12 Project: SBMC, F&BI 207297 Date Extracted: 07/24/12

Date Extracted: 07/24/12 Date Analyzed: 07/25/12

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TCLP MERCURY IN ACCORDANCE WITH EPA METHOD 1631E AND 40 CFR PART 261

Results Reported as mg/L (ppm)

Sample ID Laboratory ID	<u>Total Mercury</u>
AOC1 E 7-23 207297-02	<0.1
Method Blank	<0.1
TCLP Limit	0.2

ENVIRONMENTAL CHEMISTS

Date of Report: 07/27/12 Date Received: 07/23/12

Project: SBMC, F&BI 207297

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 207294-01 (Duplicate)

Analyte	Reporting Units	(Wet Wt) Sample Result	(Wet Wt) Duplicate Result	Relative Percent Difference (Limit 20)
Benzene	mg/kg (ppm)	< 0.02	<0.02	nm
Toluene	mg/kg (ppm)	< 0.02	< 0.02	\mathbf{nm}
Ethylbenzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Xylenes	mg/kg (ppm)	< 0.06	< 0.06	nm
Gasoline	mg/kg (ppm)	<2	<2	nm

	Percent						
	Reporting	Spike	Recovery	Acceptance			
Analyte	Units	Level	LCS	Criteria			
Benzene	mg/kg (ppm)	0.5	80	66-121			
Toluene	mg/kg (ppm)	0.5	81	72-128			
Ethylbenzene	mg/kg (ppm)	0.5	83	69-132			
Xylenes	mg/kg (ppm)	1.5	83	69-131			
Gasoline	mg/kg (ppm)	20	100	61-153			

ENVIRONMENTAL CHEMISTS

Date of Report: 07/27/12 Date Received: 07/23/12

Project: SBMC, F&BI 207297

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx $\,$

Laboratory Code: 207304-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	(Wet wt) Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5.000	<50	105	104	64-133	1

			Percent	
	Reporting	Spike	Recovery	Acceptance
<u>Analyte</u>	Units	Level	LCS	Criteria
Diesel Extended	mg/kg (ppm)	5,000	106	58-147

ENVIRONMENTAL CHEMISTS

Date of Report: 07/27/12 Date Received: 07/23/12

Project: SBMC, F&BI 207297

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 207294-04 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Chromium	mg/kg (ppm)	50	12.8	95 b	98 b	63-120	3 b
Arsenic	mg/kg (ppm)	10	1.87	101	100	56-125	1
Selenium	mg/kg (ppm)	5	<1	91	96	64-118	5
Silver	mg/kg (ppm)	10	<1	105	104	83-112	1
Cadmium	mg/kg (ppm)	10	<1	108	109	85-117	1
Barium	mg/kg (ppm)	50	34.6	102 b	105 b	65-132	3 b
Lead	mg/kg (ppm)	50	2.72	101	103	64-139	2

			Percent	
Amalasta	Donantina IInita	Spike Level	Recovery	Acceptance Criteria
Analyte	Reporting Units	Tevei	LCS	Criteria
Chromium	mg/kg (ppm)	50	111	81-117
Arsenic	mg/kg (ppm)	10	101	79-112
Selenium	mg/kg (ppm)	5	91	83-113
Silver	mg/kg (ppm)	10	104	85-113
Cadmium	mg/kg (ppm)	10	107	88-114
Barium	mg/kg (ppm)	50	103	87-113
Lead	mg/kg (ppm)	50	106	83-118

ENVIRONMENTAL CHEMISTS

Date of Report: 07/27/12 Date Received: 07/23/12

Project: SBMC, F&BI 207297

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 207294-04 (Matrix Spike)

				Percent	Percent		
	Reporting	Spike	Sample	Recovery	Recovery	Acceptance	\mathbf{RPD}
_Analyte	<u>U</u> nits	Level	Result	MS	MSD	Criteria	(Limit 20)
Mercury	mg/kg (ppm)	0.125	< 0.1	93	99	54-156	6

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance	
				Criteria	_
Mercury	mg/kg (ppm)	0.125	88	73-131	

ENVIRONMENTAL CHEMISTS

Date of Report: 07/27/12 Date Received: 07/23/12

Project: SBMC, F&BI 207297

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TCLP METALS USING EPA METHOD 200.8 AND 40 CFR PART 261

Laboratory Code: 207297-02 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Chromium	mg/L (ppm)	2.0	<1	103	104	50-150	1
Arsenic	mg/L (ppm)	1.0	<1	102	101	50-150	1
Selenium	mg/L (ppm)	0.5	<1	103	106	50-150	3
Silver	mg/L (ppm)	0.5	<1	99	9 8	50-150	1
Cadmium	mg/L (ppm)	0.5	<1	101	100	50-150	1
Barium	mg/L (ppm)	5.0	1.50	103 b	101 b	50-150	2 b
Lead	mg/L (ppm)	1.0	<1	100	99	50-150	1

			${f Percent}$	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Chromium	mg/L (ppm)	2.0	99	70-130
Arsenic	mg/L (ppm)	1.0	99	70-130
Selenium	mg/L (ppm)	0.5	91	70-130
Silver	mg/L (ppm)	0.5	100	70-130
Cadmium	mg/L (ppm)	0.5	102	70-130
Barium	mg/L (ppm)	5.0	103	70-130
Lead	mg/L (ppm)	1.0	101	70-130

ENVIRONMENTAL CHEMISTS

Date of Report: 07/27/12 Date Received: 07/23/12

Project: SBMC, F&BI 207297

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF THE SOIL SAMPLES FOR TCLP MERCURY IN ACCORDANCE WITH EPA METHOD 1631E AND 40 CFR PART 261

Laboratory Code: 207297-02 (Matrix Spike)

				Percent	Percent		
	Reporting	Spike	Sample	Recovery	Recovery	Control	\mathtt{RPD}
Analyte	Units	Level	Result	MS	MSD	Limits	(Limit 20)
Mercury	mg/L (ppm)	0.005	<0.1	95	99	78-124	4

			Percent		
	Reporting	Spike	Recovery	Acceptance	
Analyte	Units	Level	LCS	Criteria	_
Mercury	mg/L (ppm)	0.005	99	78-123	_

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- A1 More than one compound of similar molecule structure was identified with equal probability.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte indicated may be due to carryover from previous sample injections.
- d The sample was diluted. Detection limits may be raised due to dilution.
- ds The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb Analyte present in the blank and the sample.
- fc The compound is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.
- ht Analysis performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- j The result is below normal reporting limits. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the compound indicated is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received in a container not approved by the method. The value reported should be considered an estimate.
- pr-The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

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ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Bradley T. Benson, B.S. Kurt Johnson, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 TEL: (206) 285-8282 e-mail: fbi@isomedia.com

July 30, 2012

Chuck Lie, Project Manager Terra Associates 12525 Willows Rd NE Ste 101 Kirkland, WA 98034

Dear Mr. Lie:

Included are the results from the testing of material submitted on July 23, 2012 from the SBMC, F&BI 207301 project. There are 18 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures NAA0730R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on July 23, 2012 by Friedman & Bruya, Inc. from the Terra Associates SBMC, F&BI 207301 project. Samples were logged in under the laboratory ID's listed below.

Terra Associates
AOC 1E Wall 7-23 pm
AOC 1N Wall 7-23 pm
AOC 1S Wall 7-23 pm
AOC 1Base

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/30/12 Date Received: 07/23/12 Project: SBMC, F&BI 207301 Date Extracted: 07/23/12 Date Analyzed: 07/23/12

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	$\frac{\text{Diesel Range}}{(C_{10}\text{-}C_{25})}$	Motor Oil Range (C ₂₅ -C ₃₆)	Surrogate (% Recovery) (Limit 50-150)
•	•	•	,
AOC 1E Wall 7-23 pm 207301-01	1,400	<250	123
AOC 1N Wall 7-23 pm 207301-02	<50	<250	117
AOC 1S Wall 7-23 pm 207301-03	1,200	<250	115
AOC 1Base 207301-04	<50	<250	106
Method Blank 02-1292 MB	<50	<250	110

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:

AOC 1E Wall 7-23 pm

Date Received: Date Extracted: 07/23/12 07/25/12 07/26/12

Date Analyzed: Matrix:

atrix: Soil

Units:

mg/kg (ppm)

Client: Project: Terra Associates SBMC, F&BI 207301

Lab ID: Data File: 207301-01 207301-01.027

Instrument:

207301-01.0 ICPMS1

Operator: AP

Internal Standard:

% Recovery: 96

Lower Limit: 60 Upper Limit: 125

Concentration

Analyte:

Holmium

mg/kg (ppm)

Lead

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:

AOC 1N Wall 7-23 pm

Date Received:
Date Extracted:

07/23/12 07/25/12 07/26/12

Date Analyzed: Matrix:

Units:

Soil

mg/kg (ppm)

Client: Project: Terra Associates SBMC, F&BI 207301

Lab ID: Data File:

207301-02 ¹ 207301-02.028

Instrument: ICPMS1

Operator: AP

Internal Standard: Holmium % Recovery: 96

Lower Limit: 60 Upper Limit: 125

Concentration

Analyte:

mg/kg (ppm)

Lead

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:

AOC 1S Wall 7-23 pm

Date Received:

07/23/12

Date Extracted: Date Analyzed:

07/25/12 07/26/12

Matrix: Units:

Soil

mg/kg (ppm)

Client: Project: Terra Associates SBMC, F&BI 207301

Lab ID:

207301-03

Data File:

207301-03.029

Instrument: Operator:

ICPMS1 AP

Internal Standard:

% Recovery: 95

Lower Limit: 60

Upper Limit: 125

Holmium

Analyte:

Concentration mg/kg (ppm)

Lead

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID: AOC 1Base Date Received: 07/23/12 Date Extracted: 07/25/12 07/26/12

Date Analyzed: Matrix:

Internal Standard:

Units:

Holmium

Soil

mg/kg (ppm)

% Recovery:

97

Client: Project:

Terra Associates SBMC, F&BI 207301

Lab ID: 207301-04 Data File: 207301-04.030

ICPMS1 Instrument:

Operator: AP

> Lower Limit: 60

Upper Limit: 125

Concentration

Analyte: mg/kg (ppm)

Lead

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:

Method Blank

Date Received:

NA

Date Extracted: Date Analyzed:

07/25/12 07/26/12

Matrix:

Units:

Internal Standard:

Soil

mg/kg (ppm)

Client: Project:

Terra Associates SBMC, F&BI 207301

Lab ID: Data File: I2-494 mb

I2-494 mb.017

Instrument: Operator:

ICPMS1 AP

% Recovery:

Lower

Upper

Limit: 60

Limit: 125

Concentration

Analyte:

Holmium

mg/kg (ppm)

100

Lead

<1

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client:	Terra Associates
Project:	SBMC, F&BI 207301
Lab ID:	207301-01
Data File:	072409.D
Instrument:	GCMS4
Operator:	JS

Lower

Upper

Surrogates:	% Recovery:	Limit:	Limit:
1,2-Dichloroethane-d4	103	62	142
Toluene-d8	101	55	145
4-Bromofluorobenzene	102	65	139
	Concentration		
Compounds:	mg/kg (ppm)		

Benzene	< 0.03
Toluene	< 0.05
Ethylbenzene	< 0.05
m,p-Xylene	< 0.1
o-Xylene	< 0.05
Naphthalene	< 0.05

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank
Date Received:	NA
Date Extracted:	07/24/12
Date Analyzed:	07/24/12
Matrix:	Soil
Units:	mg/kg (ppm)

Client:	Terra Associates
Project:	SBMC, F&BI 207301
Lab ID:	02-1269 mb
Data File:	072408.D
Instrument:	GCMS4 .
Operator:	JS

Surrogates: 1,2-Dichloroethane-d4	% Recovery: 103	Lower Limit: 62	Upper Limit: 142
Toluene-d8 4-Bromofluorobenzene	100 102	55 65	145 139
Compounds:	Concentration mg/kg (ppm)		

 Compounds:
 mg/kg (ppm)

 Benzene
 <0.03</td>

 Toluene
 <0.05</td>

 Ethylbenzene
 <0.05</td>

 m,p-Xylene
 <0.1</td>

 o-Xylene
 <0.05</td>

 Naphthalene
 <0.05</td>

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Date Received: 07/23/12 Date Extracted: 07/24/12 Date Analyzed: 07/24/12 Matrix: Soil Units: mg/kg (ppm)	Project: Lab ID: Data File: Instrument: Operator:	SBMC, F&BI 207301 207301-01 1/5 072408.D GCMS6 ya
--	---	---

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene d10	92	50	150
Benzo(a)anthracene-d12	103	35	159

	Concentration
Compounds:	mg/kg (ppm)
Naphthalene	<0.01
Acenaphthylene	< 0.01
Acenaphthene	0.023
Fluorene	0.18
Phenanthrene	< 0.01
Anthracene	< 0.01
Fluoranthene	0.078
Pyrene	0.18
Benz(a)anthracene	0.017
Chrysene	0.033
Benzo(a)pyrene	< 0.01
Benzo(b)fluoranthene	0.014
Benzo(k)fluoranthene	< 0.01
Indeno(1,2,3-cd)pyrene	< 0.01
Dibenz(a,h)anthracene	< 0.01
Benzo(g,h,i)perylene	< 0.01

ENVIRONMENTAL CHEMISTS

Terra Associates

02-1298 mb 1/5

072407.D GCMS6

ya

SBMC, F&BI 207301

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	Method Blank	Client:
Date Received:	NA	Project:
Date Extracted:	07/24/12	Lab ID:
Date Analyzed:	07/24/12	Data File:
Matrix:	Soil	Instrument:
Units:	mg/kg (ppm)	Operator:

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	108	50	150
Benzo(a)anthracene-d12	81	35	159

Compounds:	Concentration mg/kg (ppm)
Naphthalene	< 0.01
Acenaphthylene	< 0.01
Acenaphthene	< 0.01
Fluorene	< 0.01
Phenanthrene	< 0.01
Anthracene	< 0.01
Fluoranthene	< 0.01
Pyrene	< 0.01
Benz(a)anthracene	< 0.01
Chrysene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b)fluoranthene	< 0.01
Benzo(k)fluoranthene	< 0.01
Indeno(1,2,3-cd)pyrene	< 0.01
Dibenz(a,h)anthracene	< 0.01
Benzo(g,h,i)perylene	< 0.01

ENVIRONMENTAL CHEMISTS

Date of Report: 07/30/12 Date Received: 07/23/12 Project: SBMC, F&BI 207301 Date Extracted: 07/26/12 Date Analyzed: 07/26/12

RESULTS FROM THE ANALYSIS OF THE SOIL SAMPLES FOR HEXAVALENT CHROMIUM USING EPA METHOD 7196

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Hexavalent Chromium
AOC 1E Wall 7-23 pm 207301-01	<5
AOC 1N Wall 7-23 pm ²⁰⁷³⁰¹⁻⁰²	<5
AOC 1S Wall 7-23 pm 207301-03	<5
AOC 1Base 207301-04	<5
Method Blank	< 5

ENVIRONMENTAL CHEMISTS

Date of Report: 07/30/12 Date Received: 07/23/12

Project: SBMC, F&BI 207301

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 207293-02 (Matrix Spike)

	Reporting	Spike	(Wet wt) Sample	Percent	Percent	A	DDD
Analyte	Units	Level	Result	Recovery MS	Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	1,200	109	108	63-146	1

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Diesel Extended	mg/kg (ppm)	5,000	103	79-144

ENVIRONMENTAL CHEMISTS

Date of Report: 07/30/12
Date Received: 07/23/12

Project: SBMC, F&BI 207301

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 207286-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Lead	mg/kg (ppm)	50	12.3	98 b	91 b	64-139	7 b

			Percent		
Analyte	Reporting Units	Spike Level	Recovery LCS	Acceptance Criteria	
1 mary te	tteporting Units	Tiever	LOS	Criteria	_
Lead	mg/kg (ppm)	50	96	83-118	_

ENVIRONMENTAL CHEMISTS

Date of Report: 07/30/12 Date Received: 07/23/12

Project: SBMC, F&BI 207301

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR VOLATILES BY EPA METHOD 8260C

Laboratory Code: 207316-06 (Matrix Spike)

				Percent	
	Reporting	Spike	Sample	Recovery	Acceptance
Analyte	Units	Level	Result	MS	Criteria
Benzene	mg/kg (ppm)	2.5	<0.03	69	29-129
Toluene	mg/kg (ppm)	2.5	< 0.05	75	35-130
Ethylbenzene	mg/kg (ppm)	2.5	< 0.05	79	32-137
m,p-Xylene	mg/kg (ppm)	5	< 0.1	80	34-136
o-Xylene	mg/kg (ppm)	2.5	< 0.05	81	33-134
Naphthalene	mg/kg (ppm)	2.5	< 0.05	82	14-157

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Benzene	mg/kg (ppm)	2.5	83	82	68-114	1
Toluene	mg/kg (ppm)	2.5	88	86	66-126	2
Ethylbenzene	mg/kg (ppm)	2.5	91	88	64-123	3
m,p-Xylene	mg/kg (ppm)	5	92	90	78-122	2
o-Xylene	mg/kg (ppm)	2.5	93	90	77-124	3
Naphthalene	mg/kg (ppm)	2.5	88	88	60-125	0

ENVIRONMENTAL CHEMISTS

Date of Report: 07/30/12 Date Received: 07/23/12 Project: SBMC, F&BI 207301

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR PNA'S BY EPA METHOD 8270D SIM

Laboratory Code: 207286-01 1/5 (Matrix Spike)

				Percent	
	Reporting	Spike	Sample	Recovery	Acceptance
Analyte	Units	Level	Result	MS	Criteria
Naphthalene	mg/kg (ppm)	0.17	0.20	102 b	44-129
Acenaphthylene	mg/kg (ppm)	0.17	< 0.01	86	52 - 121
Acenaphthene	mg/kg (ppm)	0.17	0.069	109 b	51-123
Fluorene	mg/kg (ppm)	0.17	0.069	121 b	37-137
Phenanthrene	mg/kg (ppm)	0.17	0.20	154 b	45-124
Anthracene	mg/kg (ppm)	0.17	0.39	269 b	32-124
Fluoranthene	mg/kg (ppm)	0.17	0.13	116 b	50-125
Pyrene	mg/kg (ppm)	0.17	0.098	117 b	41-135
Benz(a)anthracene	mg/kg (ppm)	0.17	0.035	88 b	23-144
Chrysene	mg/kg (ppm)	0.17	0.082	117 b	45-122
Benzo(b)fluoranthene	mg/kg (ppm)	0.17	0.036	92 b	31-144
Benzo(k)fluoranthene	mg/kg (ppm)	0.17	0.013	93	45-130
Benzo(a)pyrene	mg/kg (ppm)	0.17	0.025	90	39-128
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.17	0.019	93	28-146
Dibenz(a,h)anthracene	mg/kg (ppm)	0.17	< 0.01	80	46-129
Benzo(g,h,i)perylene	mg/kg (ppm)	0.17	0.016	84	37-133

-	•	•	Percent	Percent		ĺ
	Reporting	Spike	Recovery	Recovery	Acceptance	$ ext{RPD}$
Analyte	Units	Level	LCS	LCSD	Criteria	(Limit 20)
Naphthalene	mg/kg (ppm)	0.17	91	90	58-121	1
Acenaphthylene	mg/kg (ppm)	0.17	87	85	54-121	2
Acenaphthene	mg/kg (ppm)	0.17	92	89	54-123	3
Fluorene	mg/kg (ppm)	0.17	92	90	56-127	2
Phenanthrene	mg/kg (ppm)	0.17	91	89	55-122	2
Anthracene	mg/kg (ppm)	0.17	89	89	50-120	0
Fluoranthene	mg/kg (ppm)	0.17	91	89	54-129	2
Pyrene	mg/kg (ppm)	0.17	87	85	53-127	2
Benz(a)anthracene	mg/kg (ppm)	0.17	84	82	51-115	2
Chrysene	mg/kg (ppm)	0.17	92	90	55-129	2
Benzo(b)fluoranthene	mg/kg (ppm)	0.17	87	90	56-123	3
Benzo(k)fluoranthene	mg/kg (ppm)	0.17	97	92	54-1 31	5
Benzo(a)pyrene	mg/kg (ppm)	0.17	83	82	51-118	1
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.17	93	96	49-148	3
Dibenz(a,h)anthracene	mg/kg (ppm)	0.17	90	89	50-14 1	1
Benzo(g,h,i)perylene	mg/kg (ppm)	0.17	90	88	52-131	2

ENVIRONMENTAL CHEMISTS

Date of Report: 07/30/12 Date Received: 07/23/12

Project: SBMC, F&BI 207301

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR HEXAVALENT CHROMIUM USING EPA METHOD 7196

Laboratory Code: 207301-04 (Duplicate)

				Relative	
	Reporting	Sample	Duplicate	Percent	Acceptance
Analyte	Units	Result	Result	Difference	Criteria
Hexavalent Chromium	mg/kg (ppm)	<5		nm	0-20

Laboratory Code: 207301-04 (Matrix Spike)

				Percent	
_Analyte	Reporting Units	Spike Level	Sample Result	Recovery MS	Acceptance Criteria
Hexavalent Chromium	mg/kg (ppm)	250	<5	93	75-125

Laboratory Code: 207301-04 (Matrix Spike) Calibration Verification Spike

				Percent	
	Reporting	Spike	Sample	Recovery	Acceptance
_Analyte	Units	Level	Result	MS	Criteria
Hexavalent Chromium	mg/kg (ppm)	250	<5	106	85-115

Laboratory Code: 207301-04 (Matrix Spike) Insoluble Spike

				Percent	
	Reporting	Spike	Sample	Recovery	Acceptance
Analyte	Units	Level	Result	MS	Criteria
Lead Chromate	mg/kg (ppm)	800	<5	140 vo	75-125

Laboratory Code: 207301-04 (Matrix Spike)

				Percent	
	Reporting	Spike	Sample	Recovery	Acceptance
Analyte	Units	Level	Result	MS	Criteria
Chromium (III)	mg/kg (ppm)	250	<5	0	0-1

			${f Percent}$	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Hexavalent Chromium	mg/kg (ppm)	250	98	80-120

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- A1 More than one compound of similar molecule structure was identified with equal probability.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte indicated may be due to carryover from previous sample injections.
- d The sample was diluted. Detection limits may be raised due to dilution.
- ds The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb Analyte present in the blank and the sample.
- fc The compound is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.
- ht Analysis performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- j The result is below normal reporting limits. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- is The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the compound indicated is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received in a container not approved by the method. The value reported should be considered an estimate.
- pr The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

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ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Bradley T. Benson, B.S. Kurt Johnson, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 TEL: (206) 285-8282 e-mail: fbi@isomedia.com

July 26, 2012

Chuck Lie, Project Manager Terra Associates 12525 Willows Rd NE Ste 101 Kirkland, WA 98304

Dear Mr. Lie:

Included are the results from the testing of material submitted on July 23, 2012 from the SBMC, F&BI 207307 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures NAA0726R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on July 23, 2012 by Friedman & Bruya, Inc. from the Terra Associates SBMC, F&BI 207307 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Terra Associates
207307-01	S-3
207307-02	S-4
207307-03	S-5

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/26/12 Date Received: 07/23/12

Project: SBMC, F&BI 207307 Date Extracted: 07/23/12 Date Analyzed: 07/23/12

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	<u>Toluene</u>	Ethyl <u>Benzene</u>	Total <u>Xylenes</u>	Gasoline <u>Range</u>	Surrogate (% Recovery) (Limit 50-132)
S-3 207307-01	<0.02	<0.02	0.33	0.64	200	88
S-4 207307-02	0.11	<0.02	0.068	<0.06	<2	77
S-5 207307-03	<0.02	<0.02	<0.02	<0.06	<2	78
Method Blank 02-1296 MB	<0.02	<0.02	<0.02	<0.06	<2	77

ENVIRONMENTAL CHEMISTS

Date of Report: 07/26/12 Date Received: 07/23/12

Project: SBMC, F&BI 207307

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 207294-01 (Duplicate)

		(Wet Wt)	(Wet Wt) Duplicate	Relative Percent Difference
Analyte	Reporting Units S	ample Result	Result	(Limit 20)
Benzene	mg/kg (ppm)	<0.02	< 0.02	nm —
Toluene	mg/kg (ppm)	< 0.02	< 0.02	nm
Ethylbenzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Xylenes	mg/kg (ppm)	< 0.06	< 0.06	$\mathbf{n}\mathbf{m}$
Gasoline	mg/kg (ppm)	<2	<2	nm

		Spike	Recovery	Acceptance
Analyte	Reporting Units	Level	LCS	Criteria
Benzene	mg/kg (ppm)	0.5	80	66-121
Toluene	mg/kg (ppm)	0.5	81	72-128
Ethylbenzene	mg/kg (ppm)	0.5	83	69-132
Xylenes	mg/kg (ppm)	1.5	83	69-131
Gasoline	mg/kg (ppm)	20	100	61-153

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- A1 More than one compound of similar molecule structure was identified with equal probability.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte indicated may be due to carryover from previous sample injections.
- d The sample was diluted. Detection limits may be raised due to dilution.
- ds The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb Analyte present in the blank and the sample.
- fc The compound is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.
- ht Analysis performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- j The result is below normal reporting limits. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the compound indicated is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable:
- pc The sample was received in a container not approved by the method. The value reported should be considered an estimate.
- pr The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

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City, State, ZIP Krut and WIM Phone # 475-821-7+77ax #		land will			State, ZIP LOUE ON WIM REMARKS							SAMPLE DISPOSAL O Dispose after 30 days O Return camples O Will call with instructions					
			·							NA.	Lyons	TE		TED		· ·	·
Sample ID	Lab ID	Date	Time	Sample Type	# of containers	TPH-Diesel	ТРИ-Свисине	BTEX by 8624E	VOCe by such	SVOCe by 8279	HFS						Notes
5-3	01 A-E	7-23	15-35	2	5		1	K					1		1		
5-4	02 1	((Ć			×	K	1	1						1	
5-5	05	d	7	T	V		٤	٨				1					
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Friedman & Bruya, Inc.	.] '	IGNATUE	Œ	<u> </u>	PRINT	 NAM	<u> </u>			十		OMP	ANY			DÀTE	TIME
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Seattle, WA 98119-2029 Ph. (206) 285-8282	Reinquished by:			**	MH			-		FBI							15/92
Ph. (206) 285-8282 Par (206) 282-5044															1//	- الرج	مره فرم

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Bradley T. Benson, B.S. Kurt Johnson, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 TEL: (206) 285-8282 e-mail: fbi@isomedia.com

July 30, 2012

Chuck Lie, Project Manager Terra Associates 12525 Willows Rd NE Ste 101 Kirkland, WA 98034

Dear Mr. Lie:

Included are the results from the testing of material submitted on July 24, 2012 from the SBMC, F&BI 207328 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures NAA0730R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on July 24, 2012 by Friedman & Bruya, Inc. from the Terra Associates SBMC, F&BI 207328 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Terra Associates
207328-01	S-6
207328-02	S-7
207328-03	S-8
207328-04	S-9

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/30/12 Date Received: 07/24/12 Project: SBMC, F&BI 207328 Date Extracted: 07/24/12 Date Analyzed: 07/25/12

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	Ethyl <u>Benzene</u>	Total <u>Xylenes</u>	Gasoline <u>Range</u>	Surrogate (% Recovery) (Limit 50-132)
S-6 207328-01	<0.02	<0.02	<0.02	<0.06	<2	75
S-7 207328-02	<0.02	< 0.02	<0.02	<0.06	<2	. 76
S-8 207328-03	0.092	<0.02	<0.02	<0.06	<2	74
S-9 207328-04 1/5	0.96	1.6	3.8	13	290	85
Method Blank 02-1303 MB	<0.02	<0.02	<0.02	<0.06	<2	77

ENVIRONMENTAL CHEMISTS

Date of Report: 07/30/12 Date Received: 07/24/12

Project: SBMC, F&BI 207328

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 207269-02 (Duplicate)

•	· · · · · · · · · · · · · · · · · · ·	/		
	•	(Wet Wt)	(Wet Wt)	Relative Percent
	Reporting	Sample	Duplicate	Difference
Analyte	Units	Result	Result	(Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	< 0.02	< 0.02	$\mathbf{n}\mathbf{m}$
Ethylbenzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Xylenes	mg/kg (ppm)	< 0.06	< 0.06	$\mathbf{n}\mathbf{m}$
Gasoline	mg/kg (ppm)	<2	<2	nm

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Benzene	mg/kg (ppm)	0.5	83	66-121
Toluene	mg/kg (ppm)	0.5	84	72-128
Ethylbenzene	mg/kg (ppm)	0.5	85	69-132
Xylenes	mg/kg (ppm)	1.5	84	69-131
Gasoline	mg/kg (ppm)	20	95	61-153

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- A1 More than one compound of similar molecule structure was identified with equal probability.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte indicated may be due to carryover from previous sample injections.
- d The sample was diluted. Detection limits may be raised due to dilution.
- ds The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb Analyte present in the blank and the sample.
- fc The compound is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.
- ht Analysis performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- j The result is below normal reporting limits. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the compound indicated is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received in a container not approved by the method. The value reported should be considered an estimate.
- pr The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

207328 CH	ack c	18	·	SAMPLESS	(signature)	CI^	<u>~</u>				-			f		HALL X	of Take
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City, State, ZIP	City, State, ZIP KIVE and WA 98039 Phone # 175-821-777 Pax #			REMARKS GII & SBUNC						SAMPLE DESPOSAL. O Dispose titler 30 days O Return samples O Will cell with instructions							
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Sample II)	Lab ID	Date	Time	Sample Type	# of containers	TPH-Diesel	TPH-Caucline	BTEX by 8021B		SVOCe by 8270	HFS				ç		Notes
5-6	01 A-G	7-24-12	1234	5	5		Х	X		\top							
5-7	02		1340				×	X			\exists		1	7			
5-8	03		13.45				٨	x							1		
5-9	04		1350	1	8		7	7	7	1	\top	1	 	1	1		
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Ph. (206) 285-8282 Fox (206) 282-5044	Received by:	···												, -	\neg		1

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Bradley T. Benson, B.S. Kurt Johnson, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 TEL: (206) 285-8282 e-mail: fbi@isomedia.com

July 30, 2012

Chuck Lie, Project Manager Terra Associates 12525 Willows Rd NE Ste 101 Kirkland, WA 98034

Dear Mr. Lie:

Included are the results from the testing of material submitted on July 25, 2012 from the SBMC, F&BI 207362 project. There are 8 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures NAA0730R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on July 25, 2012 by Friedman & Bruya, Inc. from the Terra Associates SBMC, F&BI 207362 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Terra Associates
207362-01	S-10
207362-02	S-11

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/30/12 Date Received: 07/25/12

Project: SBMC, F&BI 207362 Date Extracted: 07/25/12 Date Analyzed: 07/26/12

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	<u>Toluene</u>	Ethyl <u>Benzene</u>	Total <u>Xylenes</u>	Gasoline <u>Range</u>	Surrogate (% Recovery) (Limit 50-132)
S-10 207362-01	1.3	0.048	<0.02	<0.06	4.0	75
S-11 207362-02	1.1	0.030	0.093	<0.06	3.8	75
Method Blank 02-1306 MB	<0.02	<0.02	<0.02	<0.06	<2	79

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID: S-10

Date Received: 07/25/12

Date Extracted: 07/26/12

Date Analyzed: 07/26/12

Matrix:

Internal Standard:

Units:

Soil

mg/kg (ppm)

Lab ID: Data Fi

Data File:
Instrument:

Client:

Project:

Terra Associates SBMC, F&BI 207362

207362-01 207362-01.023

: ICPMS1

Operator: AP

Lower

Lower Limit: 60 Upper Limit: 125

Concentration

% Recovery:

98

Analyte:

Holmium

mg/kg (ppm)

Lead

4.12

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID: Date Received: S-11

Client: Project: Terra Associates SBMC, F&BI 207362

Date Extracted: Date Analyzed:

07/25/12 07/26/12 07/26/12

Lab ID:

207362-02

Matrix:

Soil

Data File:

207362-02.024 ICPMS1

Instrument:

Operator: AP

Units:

mg/kg (ppm)

Lower

Upper

Internal Standard:

% Recovery:

Limit: 60

Limit: 125

Holmium

98

Concentration mg/kg (ppm)

Lead

Analyte:

1.82

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:

Method Blank

Date Received: Date Extracted: NA 07/25/12

Date Analyzed: Matrix:

07/26/12 Soil

Units:

mg/kg (ppm)

Client: Project: Terra Associates SBMC, F&BI 207362

Lab ID: Data File:

I2-494 mb I2-494 mb.017

Instrument:

ICPMS1

AP

Operator:

Lower

Upper

Internal Standard:

Holmium

% Recovery: 100

Limit: 60

Limit: 125

Concentration

Analyte:

mg/kg (ppm)

Lead

<1

ENVIRONMENTAL CHEMISTS

Date of Report: 07/30/12 Date Received: 07/25/12

Project: SBMC, F&BI 207362

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 207333-04 (Duplicate)

•	` .	(Wet Wt)	(Wet Wt)	Relative Percent
	Reporting	Sample	Duplicate	Difference
Analyte	Units	Result	Result	(Limit 20)
Benzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Toluene	mg/kg (ppm)	< 0.02	< 0.02	\mathbf{nm}
Ethylbenzene	mg/kg (ppm)	< 0.02	< 0.02	\mathbf{nm}
Xylenes	mg/kg (ppm)	< 0.06	<0,06	\mathbf{nm}
Gasoline	mg/kg (ppm)	3 a	4 a	29 a

	Percent							
	Reporting	Spike	Recovery	Acceptance				
Analyte	Units	Level	LCS	Criteria				
Benzene	mg/kg (ppm)	0.5	78	66-121				
Toluene	mg/kg (ppm)	0.5	80	72-128				
Ethylbenzene	mg/kg (ppm)	0.5	82	69-132				
Xylenes	mg/kg (ppm)	1.5	82	69-131				
Gasoline	mg/kg (ppm)	20	95	61-153				

ENVIRONMENTAL CHEMISTS

Date of Report: 07/30/12 Date Received: 07/25/12

Project: SBMC, F&BI 207362

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 207286-01 (Matrix Spike)

				Percent	Percent		
	Reporting	Spike	Sample	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	Result	MS	MSD	Criteria	(Limit 20)
Lead	mg/kg (ppm)	50	12.3	98 b	91 b	64-139	7 b

			Percent			
Analyte	Reporting Units	Spike Level	Recovery LCS	Acceptance Criteria		
Lead	mg/kg (ppm)	50	96	83-118		

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- A1 More than one compound of similar molecule structure was identified with equal probability.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte indicated may be due to carryover from previous sample injections.
- d The sample was diluted. Detection limits may be raised due to dilution.
- ds The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb Analyte present in the blank and the sample.
- fc The compound is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.
- ht Analysis performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- j The result is below normal reporting limits. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the compound indicated is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- $\,$ nm $\,$ The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received in a container not approved by the method. The value reported should be considered an estimate.
- pr The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Bradley T. Benson, B.S. Kurt Johnson, B.S.

3012 16th Avenue West Seattle, WA 98119-2029 TEL: (206) 285-8282 e-mail: fbi@isomedia.com

July 31, 2012

Chuck Lie, Project Manager Terra Associates 12525 Willows Rd NE Ste 101 Kirkland, WA 98304

Dear Mr. Lie:

Included are the results from the testing of material submitted on July 26, 2012 from the SBMC, F&BI 207377 project. There are 10 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures NAA0731R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on July 26, 2012 by Friedman & Bruya, Inc. from the Terra Associates SBMC, F&BI 207377 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Terra Associates
207377-01	S12
207377-02	S13

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/31/12 Date Received: 07/26/12

Project: SBMC, F&BI 207377 Date Extracted: 07/26/12 Date Analyzed: 07/26/12

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	<u>Toluene</u>	Ethyl <u>Benzene</u>	Total <u>Xylenes</u>	Gasoline <u>Range</u>	Surrogate (% Recovery) (Limit 50-150)
S12 207377-01	0.46	<0.02	<0.02	<0.06	<2	77
S13 207377-02	<0.02	<0.02	<0.02	<0.06	<2	76
Method Blank 02-1310 MB	<0.02	<0.02	<0.02	<0.06	<2	77

ENVIRONMENTAL CHEMISTS

Date of Report: 07/31/12 Date Received: 07/26/12 Project: SBMC, F&BI 207377 Date Extracted: 07/26/12 Date Analyzed: 07/26/12

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Diesel Range (C ₁₀ -C ₂₅)	Motor Oil Range (C ₂₅ -C ₃₆)	Surrogate (% Recovery) (Limit 53-144)
S12 207377-01	<50	<250	111
S13 207377-02	<50	<250	111
Method Blank 02-1311 MB2	<50	<250	89

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID: S12 Date Received: Date Extracted:

07/26/12 07/27/12 07/27/12

Matrix:

Date Analyzed:

Soil

Units:

mg/kg (ppm)

Client: Project: Terra Associates SBMC, F&BI 207377

Lab ID: Data File: 207377-01 207377-01.024

Instrument: ICPMS1

Operator: AP

Internal Standard:

% Recovery: 92

Lower Limit: 60

Upper Limit: 125

Holmium

Analyte:

Concentration

mg/kg (ppm)

Lead

1.03

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID: S13 Date Received: Date Extracted:

07/26/12 07/27/12 Date Analyzed: 07/27/12

Matrix: Units:

Soil mg/kg (ppm) Client: Project: Terra Associates SBMC, F&BI 207377

Lab ID: Data File: 207377-02 207377-02.025

Instrument:

ICPMS1

Operator: AP

Lower

Internal Standard: Holmium

% Recovery: 91

Limit: 60

Upper Limit: 125

Concentration

Analyte:

mg/kg (ppm)

Lead

4.06

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID: Date Received: Method Blank

Client: Project: Terra Associates

Date Extracted:

NA 07/27/12 07/27/12

Lab ID:

SBMC, F&BI 207377 I2-502 mb

Date Analyzed: Matrix:

Soil

Data File: Instrument:

I2-502 mb.016 ICPMS1

Units:

mg/kg (ppm)

Operator:

AP .

Internal Standard:

% Recovery:

Lower Limit: 60

Upper Limit: 125

Holmium

Analyte:

89

Concentration

mg/kg (ppm)

Lead

<1

ENVIRONMENTAL CHEMISTS

Date of Report: 07/31/12 Date Received: 07/26/12

Project: SBMC, F&BI 207377

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 207352-01 (Duplicate)

Analyte	Reporting Units	(Wet Wt) Sample Result	(Wet Wt) Duplicate Result	Relative Percent Difference (Limit 20)
Benzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Toluene	mg/kg (ppm)	< 0.02	< 0.02	nm
Ethylbenzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Xylenes	mg/kg (ppm)	< 0.06	< 0.06	nm
Gasoline	mg/kg (ppm)	<2	<2	nm

	•		Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Benzene	mg/kg (ppm)	0.5	77	66-121
Toluene	mg/kg (ppm)	0.5	80	72-128
Ethylbenzene	mg/kg (ppm)	0.5	82	69-132
Xylenes	mg/kg (ppm)	1.5	81	69-131
Gasoline	mg/kg (ppm)	20	90	61-153

ENVIRONMENTAL CHEMISTS

Date of Report: 07/31/12 Date Received: 07/26/12

Project: SBMC, F&BI 207377

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 207361-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	(Wet wt) Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	210	110	111	64-133	1

			rercent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Diesel Extended	mg/kg (ppm)	5,000	113	58-147

ENVIRONMENTAL CHEMISTS

Date of Report: 07/31/12 Date Received: 07/26/12

Project: SBMC, F&BI 207377

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 207338-01 (Matrix Spike)

	D (*	a 11	a 1	Percent	Percent		
Analyte	Reporting Units	Spike Level	Sample Result	Recovery MS	Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Lead	mg/kg (ppm)	50	2.14	109	107	64-139	2

			Percent	
		Spike	Recovery	Acceptance
Analyte	Reporting Units	Level	LCS	Criteria
Lead	mg/kg (ppm)	50	108	83-118

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- A1 More than one compound of similar molecule structure was identified with equal probability.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte indicated may be due to carryover from previous sample injections.
- d The sample was diluted. Detection limits may be raised due to dilution.
- ds The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb Analyte present in the blank and the sample.
- fc The compound is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.
- ht Analysis performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- i The result is below normal reporting limits. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- il The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the compound indicated is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received in a container not approved by the method. The value reported should be considered an estimate.
- pr The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

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City, State, ZIP K. + Kland, WA 98034	REMARKS	• · · · · · · · · · · · · · · · · · · ·	SAMPLE DISPOSAL Dispose after 30 days
Phone (125) 821-7777 Fax # 821-4334		:	☐ Return samples ☐ Will call with instructions

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Friedman & Bruya, Inc. 3012 16th Avenue West Seattle, WA 98119-2029

Ph. (206) 285-8282

Fax (206) 283-5044

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ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Bradley T. Benson, B.S. Kurt Johnson, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 TEL: (206) 285-8282 e-mail: fbi@isomedia.com

August 1, 2012

Chuck Lie, Project Manager Terra Associates 12525 Willows Rd NE Ste 101 Kirkland, WA 98304

Dear Mr. Lie:

Included are the results from the testing of material submitted on July 30, 2012 from the SBMC, F&BI 207424 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures NAA0801R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on July 30, 2012 by Friedman & Bruya, Inc. from the Terra Associates SBMC, F&BI 207424 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID

Terra Associates

207424-01

S-14

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/01/12 Date Received: 07/30/12 Project: SBMC, F&BI 207424 Date Extracted: 07/30/12 Date Analyzed: 07/30/12

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	Ethyl <u>Benzene</u>	Total <u>Xylenes</u>	Gasoline <u>Range</u>	Surrogate (% Recovery) (Limit 50-132)
S-14 207424-01	0.026	<0.02	<0.02	<0.06	<2.	78
Method Blank 02-1343 MB	<0.02	<0.02	<0.02	<0.06	<2	82

ENVIRONMENTAL CHEMISTS

Date of Report: 08/01/12 Date Received: 07/30/12

Project: SBMC, F&BI 207424

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 207390-01 (Duplicate)

Analyte	Reporting Units	(Wet Wt) Sample Result	(Wet Wt) Duplicate Result	Relative Percent Difference (Limit 20)
Benzene	mg/kg (ppm)	<0.02	< 0.02	nm
Toluene	mg/kg (ppm)	< 0.02	< 0.02	nm
Ethylbenzene	mg/kg (ppm)	< 0.02	< 0.02	\mathbf{nm}
Xylenes	mg/kg (ppm)	< 0.06	< 0.06	nm
Gasoline	mg/kg (ppm)	<2	<2	nm

Laboratory Code: Laboratory Control Sample

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Benzene	mg/kg (ppm)	0.5	86	66-121
Toluene	mg/kg (ppm)	0.5	87	72-128
Ethylbenzene	mg/kg (ppm)	0.5	89	69-132
Xylenes	mg/kg (ppm)	1.5	86	69-131
Gasoline	mg/kg (ppm)	20	95	61-153

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- A1 More than one compound of similar molecule structure was identified with equal probability.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte indicated may be due to carryover from previous sample injections.
- d The sample was diluted. Detection limits may be raised due to dilution.
- ds. The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb Analyte present in the blank and the sample.
- fc The compound is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.
- ht Analysis performed outside the method or client-specified holding time requirement.
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- jr The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
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- pr-The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

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ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Bradley T. Benson, B.S. Kurt Johnson, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 TEL: (206) 285-8282 e-mail: fbi@isomedia.com

August 2, 2012

Chuck Lie, Project Manager Terra Associates 12525 Willows Rd NE Ste 101 Kirkland, WA 98304

Dear Mr. Lie:

Included are the results from the testing of material submitted on July 31, 2012 from the SBMC, F&BI 207455 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures NAA0802R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on July 31, 2012 by Friedman & Bruya, Inc. from the Terra Associates SBMC, F&BI 207455 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Terra Associates
207455-01	S-15
207455-02	S-16

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/02/12 Date Received: 07/31/12

Project: SBMC, F&BI 207455 Date Extracted: 07/31/12 Date Analyzed: 07/31/12

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	<u>Toluene</u>	Ethyl <u>Benzene</u>	Total <u>Xylenes</u>	Gasoline <u>Range</u>	Surrogate (% Recovery) (Limit 50-150)
S-15 207455-01	0.14	<0.02	<0.02	<0.06	<2	76
S-16 207455-02	<0.02	<0.02	<0.02	<0.06	<2	75
Method Blank 02-1352 MB	<0.02	<0.02	<0.02	<0.06	<2	77

ENVIRONMENTAL CHEMISTS

Date of Report: 08/02/12 Date Received: 07/31/12

Project: SBMC, F&BI 207455

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 207450-01 (Duplicate)

Analyte	Reporting Units	(Wet Wt) Sample Result	(Wet Wt) Duplicate Result	Relative Percent Difference (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	< 0.02	< 0.02	nm
Ethylbenzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Xylenes	mg/kg (ppm)	< 0.06	< 0.06	nm
Gasoline	mg/kg (ppm)	<2	<2	nm

Laboratory Code: Laboratory Control Sample

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Benzene	mg/kg (ppm)	0.5	83	66-121
Toluene	mg/kg (ppm)	0.5	84	72-128
Ethylbenzene	mg/kg (ppm)	0.5	86	69-132
Xylenes	mg/kg (ppm)	1.5	84	69-131
Gasoline	mg/kg (ppm)	20	95	61-153

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- A1 More than one compound of similar molecule structure was identified with equal probability.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte indicated may be due to carryover from previous sample injections.
- d The sample was diluted. Detection limits may be raised due to dilution.
- ds The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv · Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb Analyte present in the blank and the sample.
- fc The compound is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.
- ht Analysis performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- i The result is below normal reporting limits. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the compound indicated is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received in a container not approved by the method. The value reported should be considered an estimate.
- pr The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ye Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

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ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Bradley T. Benson, B.S. Kurt Johnson, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 TEL: (206) 285-8282 e-mail: fbi@isomedia.com

August 7, 2012

Chuck Lie, Project Manager Terra Associates 12525 Willows Rd NE Ste 101 Kirkland, WA 98304

Dear Mr. Lie:

Included are the results from the testing of material submitted on August 1, 2012 from the SBMC, F&BI 208018 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures NAA0807R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on August 1, 2012 by Friedman & Bruya, Inc. from the Terra Associates SBMC, F&BI 208018 project. Samples were logged in under the laboratory ID's listed below.

 $\underline{\textbf{Laboratory ID}} \qquad \underline{\textbf{Terra Associates}}$

208018-01 S19

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/07/12 Date Received: 08/01/12 Project: SBMC, F&BI 208018 Date Extracted: 08/01/12 Date Analyzed: 08/01/12

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	<u>Toluene</u>	Ethyl <u>Benzene</u>	Total <u>Xylenes</u>	Gasoline <u>Range</u>	Surrogate (% Recovery) (Limit 50-150)
S19 208018-01	0.55	<0.02	<0.02	<0.06	<2	79
Method Blank 02-1359 MB	<0.02	<0.02	<0.02	<0.06	<2	79

ENVIRONMENTAL CHEMISTS

Date of Report: 08/07/12 Date Received: 08/01/12

Project: SBMC, F&BI 208018

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 208010-01 (Duplicate)

•		(Wet Wt)	(Wet Wt)	Relative Percent
	Reporting	Sample	Duplicate	Difference
Analyte	Units	Result	Result	(Limit 20)
Benzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Toluene	mg/kg (ppm)	< 0.02	< 0.02	nm
Ethylbenzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Xylenes	mg/kg (ppm)	< 0.06	< 0.06	nm
Gasoline	mg/kg (ppm)	<2	<2	nm

Laboratory Code: Laboratory Control Sample

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Benzene	mg/kg (ppm)	0.5	81	69-120
Toluene	mg/kg (ppm)	0.5	81	70-117
Ethylbenzene	mg/kg (ppm)	0.5	82	65-123
Xylenes	mg/kg (ppm)	1.5	80	66-120
Gasoline	mg/kg (ppm)	20	100	71-131

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- A1 More than one compound of similar molecule structure was identified with equal probability.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.
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- fb Analyte present in the blank and the sample.
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- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.
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- ve Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

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Friedman & Bruya, Inc. 3012 16th Avenue West Seattle, WA 98119-2029 Ph. (206) 285-8282 Fax (206) 283-5044

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
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ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Bradley T. Benson, B.S. Kurt Johnson, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 TEL: (206) 285-8282 e-mail: fbi@isomedia.com

August 9, 2012

Chuck Lie, Project Manager Terra Associates 12525 Willows Rd NE Ste 101 Kirkland, WA 98304

Dear Mr. Lie:

Included are the results from the testing of material submitted on August 2, 2012 from the SBMC, F&BI 208030 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures NAA0809R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on August 2, 2012 by Friedman & Bruya, Inc. from the Terra Associates SBMC, F&BI 208030 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Terra Associates</u>
208030-01	S-20
208030-02	S-21

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/09/12 Date Received: 08/02/12

Project: SBMC, F&BI 208030 Date Extracted: 08/02/12 Date Analyzed: 08/02/12

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl <u>Benzene</u>	Total <u>Xylenes</u>	Gasoline <u>Range</u>	Surrogate (% Recovery) (Limit 50-150)
S-20 208030-01	<0.02	<0.02	<0.02	<0.06	<2	79
S-21 208030-02	<0.02	<0.02	<0.02	<0.06	<2	79
Method Blank 02-1365 MB	<0.02	<0.02	<0.02	<0.06	<2	79

ENVIRONMENTAL CHEMISTS

Date of Report: 08/09/12 Date Received: 08/02/12

Project: SBMC, F&BI 208030

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 208030-01 (Duplicate)

Analyte	Reporting Units	(Wet Wt) Sample Result	(Wet Wt) Duplicate Result	Relative Percent Difference (Limit 20)
Benzene	mg/kg (ppm)	< 0.02	<0.02	nm
Toluene	mg/kg (ppm)	< 0.02	< 0.02	nm
Ethylbenzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Xylenes	mg/kg (ppm)	< 0.06	< 0.06	nm
Gasoline	mg/kg (ppm)	<2	<2	nm

Laboratory Code: Laboratory Control Sample

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Benzene	mg/kg (ppm)	0.5	77	69-120
Toluene	mg/kg (ppm)	0.5	79	70-117
Ethylbenzene	mg/kg (ppm)	0.5	81	65-123
Xylenes	mg/kg (ppm)	1.5	80	66-120
Gasoline	mg/kg (ppm)	20	105	71-131

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- A1 More than one compound of similar molecule structure was identified with equal probability.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte indicated may be due to carryover from previous sample injections.
- d The sample was diluted. Detection limits may be raised due to dilution.
- ds The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb Analyte present in the blank and the sample.
- fc The compound is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.
- ht Analysis performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- j The result is below normal reporting limits. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the compound indicated is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received in a container not approved by the method. The value reported should be considered an estimate.
- pr The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

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ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Bradley T. Benson, B.S. Kurt Johnson, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 TEL: (206) 285-8282 e-mail: fbi@isomedia.com

August 9, 2012

Chuck Lie, Project Manager Terra Associates 12525 Willows Rd NE Ste 101 Kirkland, WA 98304

Dear Mr. Lie:

Included are the results from the testing of material submitted on August 2, 2012 from the SBMC, F&BI 208032 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures NAA0809R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on August 2, 2012 by Friedman & Bruya, Inc. from the Terra Associates SBMC, F&BI 208032 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u> <u>Terra Associates</u>

208032-01 22

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/09/12 Date Received: 08/02/12

Project: SBMC, F&BI 208032 Date Extracted: 08/02/12 Date Analyzed: 08/02/12

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	<u>Toluene</u>	Ethyl <u>Benzene</u>	Total <u>Xylenes</u>	Gasoline <u>Range</u>	Surrogate (% Recovery) (Limit 50-150)
22 208032-01	<0.02	<0.02	<0.02	<0.06	<2	79
Method Blank 02-1365 MB	<0.02	<0.02	<0.02	<0.06	<2	79

ENVIRONMENTAL CHEMISTS

Date of Report: 08/09/12 Date Received: 08/02/12

Project: SBMC, F&BI 208032

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 208030-01 (Duplicate)

Analyte	Reporting Units	(Wet Wt) Sample Result	(Wet Wt) Duplicate Result	Relative Percent Difference (Limit 20)
Benzene	mg/kg (ppm)	< 0.02	<0.02	nm
Toluene	mg/kg (ppm)	< 0.02	< 0.02	nm
Ethylbenzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Xylenes	mg/kg (ppm)	<0.06	< 0.06	nm
Gasoline	mg/kg (ppm)	<2	<2	nm

Laboratory Code: Laboratory Control Sample

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Benzene	mg/kg (ppm)	0.5	77	69-120
Toluene	mg/kg (ppm)	0.5	79	70-117
Ethylbenzene	mg/kg (ppm)	0.5	81	65-123
Xylenes	mg/kg (ppm)	1.5	80	66-120
Gasoline	mg/kg (ppm)	20	105	71-131

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- A1 More than one compound of similar molecule structure was identified with equal probability.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.
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- d The sample was diluted. Detection limits may be raised due to dilution.
- ds The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb Analyte present in the blank and the sample.
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- ht Analysis performed outside the method or client-specified holding time requirement.
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- j The result is below normal reporting limits. The value reported is an estimate.
- ${\bf J}$ The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
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- jr The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
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- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

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ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Bradley T. Benson, B.S. Kurt Johnson, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 TEL: (206) 285-8282 e-mail: fbi@isomedia.com

August 7, 2012

Chuck Lie, Project Manager Terra Associates 12525 Willows Rd NE Ste 101 Kirkland, WA 98304

Dear Mr. Lie:

Included are the results from the testing of material submitted on August 1, 2012 from the SMBC, F&BI 208010 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures NAA0807R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on August 1, 2012 by Friedman & Bruya, Inc. from the Terra Associates SMBC, F&BI 208010 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Terra Associates</u>
208010-01	S17
208010-02	S18

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/07/12 Date Received: 08/01/12 Project: SMBC, F&BI 208010 Date Extracted: 08/01/12 Date Analyzed: 08/01/12

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	<u>Toluene</u>	Ethyl <u>Benzene</u>	Total <u>Xylenes</u>	Gasoline <u>Range</u>	Surrogate (% Recovery) (Limit 50-150)
S17 208010-01	<0.02	<0.02	<0.02	<0.06	<2	81
S18 208010-02	0.14	<0.02	0.044	. <0.06	<2	78
Method Blank 02-1359 MB	<0.02	<0.02	<0.02	<0.06	<2	79

ENVIRONMENTAL CHEMISTS

Date of Report: 08/07/12 Date Received: 08/01/12

Project: SMBC, F&BI 208010

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 208010-01 (Duplicate)

_uvolutoly court	200010 01 (Dupito	(Wet Wt)	(Wet Wt)	Relative Percent		
	Reporting	Sample	Duplicate	Difference		
<u>Ana</u> lyte	Units	Result	Result	(Limit 20)		
Benzene	mg/kg (ppm)	<0.02	< 0.02	'nm		
Toluene	mg/kg (ppm)	< 0.02	< 0.02	$\mathbf{n}\mathbf{m}$		
Ethylbenzene	mg/kg (ppm)	< 0.02	< 0.02	. nm		
Xylenes	mg/kg (ppm)	< 0.06	< 0.06	nm		
Gasoline	mg/kg (ppm)	<2	<2	nm		

Laboratory Code: Laboratory Control Sample

	Percent							
	Reporting	Spike	Recovery	Acceptance				
Analyte	Units	Level	LCS	Criteria				
Benzene	mg/kg (ppm)	0.5	81	69-120				
Toluene	mg/kg (ppm)	0.5	81	70-117				
Ethylbenzene	mg/kg (ppm)	0.5	82	65-123				
Xylenes	mg/kg (ppm)	1.5	80	66-120				
Gasoline	mg/kg (ppm)	20	100	71-131				

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- A1 More than one compound of similar molecule structure was identified with equal probability.
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- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.
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- jr The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
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- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received in a container not approved by the method. The value reported should be considered an estimate.
- pr The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

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Address 12575 Willows Rd		·	Rush charges authorized by
City, State, ZIP Kirk land, WA,	TO THE FAMILIES.		SAMPLE DISPOSAL Dispose after 30 days
Phone # (425) 82 (~ 7777 Fax # 821	~4334		☐ Return samples ☐ Will call with instructions

										AN	ALYS	SES R	EQU	JEST	ED			
Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by8260	SVOCs by 8270	HFS			٠	•		·	Notes
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Friedman & Bruya, Inc. 3012 16th Avenue West Seattle, WA 98119-2029 Ph. (206) 285-8282 Fax (206) 283-5044

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ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Bradley T. Benson, B.S. Kurt Johnson, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 TEL: (206) 285-8282 e-mail: fbi@isomedia.com

August 29, 2012

Chuck Lie, Project Manager Terra Associates 12525 Willows Rd NE Ste 101 Kirkland, WA 98034

Dear Mr. Lie:

Included are the results from the testing of material submitted on August 23, 2012 from the SBMC, F&BI 208329 project. There are 8 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures NAA0829R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on August 23, 2012 by Friedman & Bruya, Inc. from the Terra Associates SBMC, F&BI 208329 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>

Terra Associates

208329-01

8-23-5

An 8270D internal standard failed the acceptance criteria for sample 8-23-5 due to matrix interferences. The data were flagged accordingly. The sample was diluted and reanalyzed.

All other quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/29/12 Date Received: 08/23/12 Project: SBMC, F&BI 208329 Date Extracted: 08/23/12 Date Analyzed: 08/23/12

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	$\frac{\text{Diesel Range}}{(\text{C}_{10}\text{-}\text{C}_{25})}$	Motor Oil Range (C ₂₅ -C ₃₆)	Surrogate (% Recovery) (Limit 50-150)
8-23-5 208329-01	1,700	<250	110
Method Blank 02-1491 MB2	<50	<250	128

ENVIRONMENTAL CHEMISTS

Client:

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID: 8-23-5
Date Received: 08/23/12
Date Extracted: 08/23/12
Date Analyzed: 08/23/12
Matrix: Soil
Units: mg/kg (ppm)

 Project:
 SBMC, F&BI 208329

 Lab ID:
 208329-01 1/5

 Data File:
 082305.D

 Instrument:
 GCMS6

 Operator:
 VM

Terra Associates

Surrogates: Anthracene-d10	% Recovery: 142 J	Lower Limit: 50	Upper Limit: 150
Benzo(a)anthracene-d12	98	35	159

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.01
Acenaphthylene	<0.01 J
Acenaphthene	0.096 J
Fluorene	1.4 J
Phenanthrene	1.5 J
Anthracene	<0.01 J
Fluoranthene	0.033 J
Pyrene	0.035
Benz(a)anthracene	< 0.01
Chrysene	0.013
Benzo(a)pyrene	< 0.01
Benzo(b)fluoranthene	< 0.01
Benzo(k)fluoranthene	< 0.01
Indeno(1,2,3-cd)pyrene	< 0.01
Dibenz(a,h)anthracene	< 0.01
Benzo(g,h,i)perylene	< 0.01

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	8-23-5
Date Received:	08/23/12
Date Extracted:	08/23/12
Date Analyzed:	08/24/12
Matrix:	Soil
Units:	mg/kg (ppm)

Client:	Terra Associates
Project:	SBMC, F&BI 208329
Lab ID:	208329-01 1/50
Data File:	082404.D
Instrument:	GCMS6
Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene d10	103	50	150
Benzo(a)anthracene-d12	99	35	159

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.1
Acenaphthylene	0.14
Acenaphthene	< 0.1
Fluorene	1.2
Phenanthrene	1.4
Anthracene	< 0.1
Fluoranthene	<0.1
Pyrene	< 0.1
Benz(a)anthracene	<0.1
Chrysene	< 0.1
Benzo(a)pyrene	< 0.1
Benzo(b)fluoranthene	<0.1
Benzo(k)fluoranthene	< 0.1
Indeno(1,2,3-cd)pyrene	< 0.1
Dibenz(a,h)anthracene	< 0.1
Benzo(g,h,i)perylene	< 0.1
-	

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	Method Blank
Date Received:	NA
	- '
Date Extracted:	08/23/12
Date Analyzed:	08/23/12
Matrix:	Soil
Units:	malka (nnm)

mg/kg (ppm)

Client: Terra Associates Project: SBMC, F&BI 208329 02-1490 mb2 1/5 Lab ID:

Data File: 082304.D Instrument: GCMS6 Operator: VM

Upper Limit: 150 159

Compounds:	Concentration mg/kg (ppm)
Naphthalene	< 0.01
Acenaphthylene	< 0.01
Acenaphthene	< 0.01
Fluorene	< 0.01
Phenanthrene	< 0.01
Anthracene	< 0.01
Fluoranthene	< 0.01
Pyrene	< 0.01
Benz(a)anthracene	< 0.01
Chrysene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b)fluoranthene	< 0.01
Benzo(k)fluoranthene	< 0.01
Indeno(1,2,3-cd)pyrene	< 0.01
Dibenz(a,h)anthracene	< 0.01
Benzo(g,h,i)perylene	< 0.01

ENVIRONMENTAL CHEMISTS

Date of Report: 08/29/12 Date Received: 08/23/12

Project: SBMC, F&BI 208329

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 208310-04 (Matrix Spike)

	Reporting	Spike	(Wet wt) Sample	Percent Recovery	Percent Recovery	Acceptance	RPD
Analyte	Units	Level	Result	MS	$_$ MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	99	102	64-133	3

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Diesel Extended	mg/kg (ppm)	5,000	104	58-147

ENVIRONMENTAL CHEMISTS

Date of Report: 08/29/12 Date Received: 08/23/12

Project: SBMC, F&BI 208329

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR PNA'S BY EPA METHOD 8270D SIM

Laboratory Code: 208329-01 1/5 and 1/50 (Duplicate)

				Relative Percent
	Reporting	Sample	Duplicate	Difference
Analyte	<u>Uni</u> ts	Result	Result	(Limit 20)
Naphthalene	mg/kg (ppm)	<0.01	<0.01	nm
Acenaphthylene	mg/kg (ppm)	<0.1	<0.1	$\mathbf{n}\mathbf{m}$
Acenaphthene	mg/kg (ppm)	0.14	0.14	nm
Fluorene	mg/kg (ppm)	1.2	1.1	9
Phenanthrene	mg/kg (ppm)	1.4	1.3	7
Anthracene	mg/kg (ppm)	<0.1	<0.1	nm
Fluoranthene	mg/kg (ppm)	0.033 J	0.029 J	13
Pyrene	mg/kg (ppm)	0.035	0.032	9
Benz(a)anthracene	mg/kg (ppm)	< 0.01	< 0.01	$\mathbf{n}\mathbf{m}$
Chrysene	mg/kg (ppm)	0.013	0.011	17
Benzo(b)fluoranthene	mg/kg (ppm)	< 0.01	< 0.01	nm
Benzo(k)fluoranthene	mg/kg (ppm)	< 0.01	< 0.01	\mathbf{nm}
Benzo(a)pyrene	mg/kg (ppm)	< 0.01	< 0.01	nm
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	< 0.01	< 0.01	nm
Dibenz(a,h)anthracene	mg/kg (ppm)	<0.01	< 0.01	nm
Benzo(g,h,i)perylene	mg/kg (ppm)	< 0.01	< 0.01	nm

		_	Percent	Percent		
	Reporting	Spike	Recovery	Recovery	Acceptance	RPD
Analyte_	Units	Level	LCS	LCSD	Criteria	(Limit 20)
Naphthalene	mg/kg (ppm)	0.17	91	93	58-121	2
Acenaphthylene	mg/kg (ppm)	0.17	89	92	54-121	3
Acenaphthene	mg/kg (ppm)	0.17	90	92	54-123	2
Fluorene	mg/kg (ppm)	0.17	89	92	56-127	3
Phenanthrene	mg/kg (ppm)	0.17	89	90	55-122	1
Anthracene	mg/kg (ppm)	0.17	87	88	50-120	1
Fluoranthene	mg/kg (ppm)	0.17	91	93	54-129	2
Pyrene	mg/kg (ppm)	0.17	91	94	53-127	3
Benz(a)anthracene	mg/kg (ppm)	0.17	86	87	51-115	1
Chrysene	mg/kg (ppm)	0.17	92	93	55-129	1
Benzo(b)fluoranthene	mg/kg (ppm)	0.17	90	95	56-123	5
Benzo(k)fluoranthene	mg/kg (ppm)	0.17	97	95	54-131	2
Benzo(a)pyrene	mg/kg (ppm)	0.17	85	85	51-118	0
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.17	83	87	49-148	5
Dibenz(a,h)anthracene	mg/kg (ppm)	0.17	89	91	50-141	2
Benzo(g,h,i)perylene	mg/kg (ppm)	0.17	88	91	52-131	3

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- A1 More than one compound of similar molecule structure was identified with equal probability.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte indicated may be due to carryover from previous sample injections.
- d The sample was diluted. Detection limits may be raised due to dilution.
- ds The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb Analyte present in the blank and the sample.
- fc The compound is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.
- ht Analysis performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- j The result is below normal reporting limits. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- is The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the compound indicated is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received in a container not approved by the method. The value reported should be considered an estimate.
- pr The sample was received with incorrect preservation. The value reported should be considered an estimate
- ve Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

Send Report To_Ch				SAMPLERS PROJECT N		1	1/	1			<u></u>	0#	-	٦			IAROUN (2 Weel	BI/ ID TIME
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ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Bradley T. Benson, B.S. Kurt Johnson, B.S. 3012 16th Avenue West
Seattle, WA 98119-2029
TEL: (206) 285-8282
e-mail: fbi@isomedia.com

August 27, 2012

Chuck Lie, Project Manager Terra Associates 12525 Willows Rd NE Ste 101 Kirkland, WA 98034

Dear Mr. Lie:

Included are the results from the testing of material submitted on August 20, 2012 from the SMBC, F&BI 208280 project. There are 22 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures NAA0827R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on August 20, 2012 by Friedman & Bruya, Inc. from the Terra Associates SMBC, F&BI 208280 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	<u>Terra Associates</u>
208280-01	8-20-1
208280-02	8-20-2
208280-03	8-20-3
208280-04	8-20-4

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/27/12

Date Received: 08/20/12

Project: SMBC, F&BI 208280 Date Extracted: 08/20/12 Date Analyzed: 08/20/12

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	$\frac{\text{Diesel Range}}{\text{(C}_{10}\text{-C}_{25})}$	Motor Oil Range (C ₂₅ -C ₃₆)	Surrogate (% Recovery) (Limit 50-150)
8-20-1 208280-01	520	<250	149
8-20-2 208280-02	410	<250	148
8-20-3 208280-03	1,400	<250	125
8-20-4 208280-04	350	<250	122
Method Blank	<50	<250	127

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID: 8-20-3 Date Received: 08/20/12 Date Extracted: 08/22/12 Date Analyzed: 08/22/12 Matrix: Soil Units: mg/kg (ppm)	Client: Project: Lab ID: Data File: Instrument: Operator:	Terra Associates SMBC, F&BI 208280 208280-03 208280-03.021 ICPMS1 btb
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		\mathbf{Lower}	Upper
Internal Standard:	% Recovery:	Limit:	Limit:
Germanium	99	60	125
Indium	89	60	125
Holmium	90	60	125

Analyte:	Concentration mg/kg (ppm)
Chromium	12.5
Arsenic	2.45
Selenium	<1
Silver	<1
Cadmium	<1
Barium	71.4
Lead	4.27

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID: Date Received: Date Extracted: Date Analyzed: Matrix:	Method Blank	Client:	Terra Associates
	NA	Project:	SMBC, F&BI 208280
	08/22/12	Lab ID:	I2-545 mb
	08/22/12	Data File:	I2-545 mb.008
	Soil	Instrument:	ICPMS1
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	btb
O ALUG.	me, re (bbm)	Operator.	Deb

	•	Lower	\mathbf{Upper}
Internal Standard:	% Recovery:	Limit:	Limit:
Germanium	98	60	125
Indium	93	60	125
Holmium	96	60	125

Analyte:	Concentration mg/kg (ppm)
Chromium	<1
Arsenic	<1
Selenium	<1
Silver	<1
Cadmium	<1
Barium	<1
Lead	<1

ENVIRONMENTAL CHEMISTS

Date of Report: 08/27/12 Date Received: 08/20/12

Project: SMBC, F&BI 208280 Date Extracted: 08/22/12 Date Analyzed: 08/22/12

RESULTS FROM THE ANALYSIS OF THE SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID	<u>Total Mercury</u>
Laboratory ID	
8-20-3 208280-03	<0.1
Method Blank	<0.1

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID: Date Received: Date Extracted: Date Analyzed: Matrix:	8-20-3 08/20/12 08/22/12 08/22/12 Soil	Client: Project: Lab ID: Data File: Instrument:	Terra Associates SMBC, F&BI 208280 208280-03 082222.D GCMS9
Units:	mg/kg (ppm)	Instrument: Operator:	JS

		Lower	Upper
Surrogates:	% Recovery:	Limit:	Limit:
1,2-Dichloroethane-d4	103	50	150
Toluene-d8	102	50	150
4-Bromofluorobenzene	105	50	150

•	Concentration		Concentration
Compounds:	mg/kg (ppm)	Compounds:	mg/kg (ppm)
Dichlorodifluoromethane	<0.5	1,3-Dichloropropane	< 0.05
Chloromethane	< 0.5	Tetrachloroethene	< 0.025
Vinyl chloride	< 0.05	Dibromochloromethane	< 0.05
Bromomethane	< 0.5	1,2-Dibromoethane (EDB)	< 0.05
Chloroethane	< 0.5	Chlorobenzene	< 0.05
Trichlorofluoromethane	< 0.5	Ethylbenzene	< 0.05
Acetone	< 0.5	1,1,1,2-Tetrachloroethane	< 0.05
1,1-Dichloroethene	< 0.05	m,p-Xylene	< 0.1
Methylene chloride	<0.5	o-Xylene	< 0.05
Methyl t-butyl ether (MTBE)	< 0.05	Styrene	< 0.05
trans-1,2-Dichloroethene	< 0.05	Isopropylbenzene	< 0.05
1,1-Dichloroethane	< 0.05	Bromoform	< 0.05
2,2-Dichloropropane	< 0.05	n-Propylbenzene	< 0.05
cis-1,2-Dichloroethene	< 0.05	Bromobenzene	< 0.05
Chloroform	< 0.05	1,3,5-Trimethylbenzene	< 0.05
2-Butanone (MEK)	<0.5	1,1,2,2-Tetrachloroethane	< 0.05
1,2-Dichloroethane (EDC)	< 0.05	1,2,3-Trichloropropane	<0.05
1,1,1-Trichloroethane	< 0.05	2-Chlorotoluene	< 0.05
1,1-Dichloropropene	< 0.05	4-Chlorotoluene	< 0.05
Carbon tetrachloride	< 0.05	tert-Butylbenzene	< 0.05
Benzene	< 0.03	1,2,4-Trimethylbenzene	< 0.05
Trichloroethen e	< 0.03	sec-Butylbenzene	< 0.05
1,2-Dichloropropane	< 0.05	p-Isopropyltoluene	< 0.05
Bromodichloromethane	<0.05	1,3-Dichlorobenzene	< 0.05
Dibromomethane	< 0.05	1,4-Dichlorobenzene	< 0.05
4-Methyl-2-pentanone	<0.5	1,2-Dichlorobenzene	< 0.05
cis-1,3-Dichloropropene	<0.05	1,2-Dibromo-3-chloropropane	< 0.5
Toluene	< 0.05	1,2,4-Trichlorobenzene	< 0.25
trans-1,3-Dichloropropene	<0.05	Hexachlorobutadiene	<0.25
1,1,2-Trichloroethane	< 0.05	Naphthalene	< 0.05
2-Hexanone	<0.5	1,2,3-Trichlorobenzene	< 0.25

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	Terra Associates
Date Received:	Not Applicable	Project:	SMBC, F&BI 208280
Date Extracted:	08/22/12	Lab ID:	02-1452 mb2
Date Analyzed:	08/22/12	Data File:	082219.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm)	Operator:	JS

	Lower	∪pper
% Recovery:	Limit:	Limit:
103	50	150
102	50	150
105	50	150
	103 102	% Recovery: Limit: 103 50 102 50

1 Diomonaorobenienie	100	20 150	
Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Dichlorodifluoromethane	<0.5	1,3-Dichloropropane	< 0.05
Chloromethane	< 0.5	Tetrachloroethene	< 0.025
Vinyl chloride	< 0.05	Dibromochloromethane	< 0.05
Bromomethane	< 0.5	1,2-Dibromoethane (EDB)	< 0.05
Chloroethane	< 0.5	Chlorobenzene	< 0.05
Trichlorofluoromethane	< 0.5	Ethylbenzene	< 0.05
Acetone	< 0.5	1,1,1,2-Tetrachloroethane	< 0.05
1,1-Dichloroethene	< 0.05	m,p-Xylene	<0.1
Methylene chloride	< 0.5	o-Xylene	< 0.05
Methyl t-butyl ether (MTBE)	< 0.05	Styrene	< 0.05
trans-1,2-Dichloroethene	< 0.05	Isopropylbenzene	< 0.05
1,1-Dichloroethane	< 0.05	Bromoform	< 0.05
2,2-Dichloropropane	< 0.05	n-Propylbenzene	< 0.05
cis-1,2-Dichloroethene	< 0.05	Bromobenzene	< 0.05
Chloroform	< 0.05	1,3,5-Trimethylbenzene	< 0.05
2-Butanone (MEK)	<0.5	1,1,2,2-Tetrachloroethane	< 0.05
1,2-Dichloroethane (EDC)	< 0.05	1,2,3-Trichloropropane	< 0.05
1,1,1-Trichloroethane	< 0.05	2-Chlorotoluene	< 0.05
1,1-Dichloropropene	< 0.05	4-Chlorotoluene	< 0.05
Carbon tetrachloride	< 0.05	tert-Butylbenzene	< 0.05
Benzene	< 0.03	1,2,4-Trimethylbenzene	< 0.05
Trichloroethene	< 0.03	sec-Butylbenzene	< 0.05
1,2-Dichloropropane	< 0.05	p-Isopropyltoluene	< 0.05
Bromodichloromethane	< 0.05	1,3-Dichlorobenzene	< 0.05
Dibromomethane	< 0.05	1,4-Dichlorobenzene	< 0.05
4-Methyl-2-pentanone	< 0.5	1,2-Dichlorobenzene	< 0.05
cis-1,3-Dichloropropene	< 0.05	1,2-Dibromo-3-chloropropane	< 0.5
Toluene	< 0.05	1,2,4-Trichlorobenzene	< 0.25
trans-1,3-Dichloropropene	< 0.05	Hexachlorobutadiene	< 0.25
1,1,2-Trichloroethane	< 0.05	Naphthalene	< 0.05
2-Hexanone	< 0.5	1,2,3-Trichlorobenzene	< 0.25

ENVIRONMENTAL CHEMISTS

Analysis For PCBs By EPA Method 8082

Client Sample ID:	8-20-3
Date Received:	08/20/12
Date Extracted:	08/22/12
Date Analyzed:	08/22/12
Matrix:	Soil
TT '4	0 / 5

Units: mg/kg (ppm)

In ppm) C

Client: Terra Associates
Project: SMBC, F&BI 208280
Lab ID: 208280-03

Data File: 082210.D\ECD1A.CH
Instrument: GC7
Operator: mwdl

Surrogates: % Recovery: Limit: Limit: TCMX 108 50 150

Concentration Compounds: mg/kg (ppm) Aroclor 1221 < 0.1 Aroclor 1232 <0.1 Aroclor 1016 < 0.1 Aroclor 1242 < 0.1 Aroclor 1248 <0.1 Aroclor 1254 <0.1 Aroclor 1260 < 0.1

ENVIRONMENTAL CHEMISTS

Analysis For PCBs By EPA Method 8082

Client Sample ID:	Method Blank
Date Received:	NA
Date Extracted:	08/22/12
Date Analyzed:	08/22/12

Date Analyzed: 08/22/1
Matrix: Soil

Units: mg/kg (ppm)

Client: Terra Associates
Project: SMBC, F&BI 208280
Lab ID: 02-1474 mb2

Data File: 082208.D\ECD1A.CH Instrument: GC7

Operator: mwdl

Surrogates:	% Recovery:	Limit: 50	Limit:
TCMX	120		150
•	Concentration		

Compounds: mg/kg (ppm) Aroclor 1221 < 0.1 Aroclor 1232 < 0.1 Aroclor 1016 < 0.1 Aroclor 1242 < 0.1 Aroclor 1248 < 0.1 Aroclor 1254 < 0.1 Aroclor 1260 < 0.1

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID: 8-20-1
Date Received: 08/20/12
Date Extracted: 08/20/12
Date Analyzed: 08/21/12
Matrix: Soil
Units: marks (now)

Units: mg/kg (ppm)

Client: Terra Associates Project: SMBC, F&BI 208280

 Lab ID:
 208280-01 1/5

 Data File:
 082022.D

 Instrument:
 GCMS6

 Operator:
 ya

 Surrogates:
 % Recovery:
 Lower Limit:
 Upper Limit:

 Anthracene-d10
 80
 50
 150

 Benzo(a)anthracene-d12
 97
 35
 159

Concentration Compounds: mg/kg (ppm) Naphthalene < 0.01 Acenaphthylene < 0.01 Acenaphthene 0.020 Fluorene 0.25 Phenanthrene 0.069 Anthracene < 0.01 Fluoranthene 0.010 Pyrene 0.017 Benz(a)anthracene < 0.01 Chrysene < 0.01 Benzo(a)pyrene < 0.01 Benzo(b)fluoranthene < 0.01 Benzo(k)fluoranthene < 0.01 Indeno(1,2,3-cd)pyrene < 0.01 Dibenz(a,h)anthracene < 0.01 Benzo(g,h,i)perylene < 0.01

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID: 8-20-2
Date Received: 08/20/12
Date Extracted: 08/20/12
Date Analyzed: 08/21/12
Matrix: Soil
Units: mg/kg (ppm)

Client: Terra Associates
Project: SMBC, F&BI 208280
Lab ID: 208280-02 1/5
Data File: 082023.D
Instrument: GCMS6

Operator: ya

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene d10	91	50	150
Benzo(a)anthracene-d12	107	35	159

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.01
Acenaphthylene	< 0.01
Acenaphthene	0.14
Fluorene	0.64
Phenanthrene	0.82
Anthracene	< 0.01
Fluoranthene	0.052
Pyrene	0.059
Benz(a)anthracene	0.014
Chrysene	0.016
Benzo(a)pyrene	< 0.01
Benzo(b)fluoranthene	0.011
Benzo(k)fluoranthene	< 0.01
Indeno(1,2,3-cd)pyrene	< 0.01
Dibenz(a,h)anthracene	< 0.01
Benzo(g,h,i)perylene	< 0.01

ENVIRONMENTAL CHEMISTS

Client:

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Comple ID.	8-20-3
Client Sample ID:	0-20-3
Date Received:	08/20/12
Date Extracted:	08/20/12
Date Analyzed:	08/21/12
Matrix:	Soil
Units:	mg/kg (ppm)

Project:	SMBC, F&BI 208280
Lab ID:	208280-03 1/5
Data File:	082024.D
Instrument:	GCMS6
Operator:	ya

Terra Associates

Benzo(a)anthracene-d12 113 35 159	Surrogates: Anthracene-d10 Benzo(a)anthracene-d12	% Recovery: 127 113	Lower Limit: 50 35	Upper Limit: 150 159
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	Concentration
Compounds:	mg/kg (ppm)
Naphthalene	< 0.01
Acenaphthylene	< 0.01
Acenaphthene	0.26
Fluorene	1.3
Phenanthrene	1.4
Anthracene	< 0.01
Fluoranthene	0.031
Pyrene	0.047
Benz(a)anthracene	< 0.01
Chrysene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b)fluoranthene	< 0.01
Benzo(k)fluoranthene	< 0.01
Indeno(1,2,3-cd)pyrene	< 0.01
Dibenz(a,h)anthracene	< 0.01
Benzo(g,h,i)pervlene	< 0.01

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	102	50	150
Benzo(a)anthracene-d12	108	35	159

a ,	Concentration
Compounds:	mg/kg (ppm)
Naphthalene	< 0.01
Acenaphthylene	< 0.01
Acenaphthene	0.24
Fluorene	1.2
Phenanthrene	1.3
Anthracene	< 0.01
Fluoranthene	0.74
Pyrene	0.50
Benz(a)anthracene	0.26
Chrysene	0.32
Benzo(a)pyrene	0.38
Benzo(b)fluoranthene	0.51
Benzo(k)fluoranthene	0.19
Indeno(1,2,3-cd)pyrene	0.40
Dibenz(a,h)anthracene	0.059
Benzo(g,h,i)pervlene	0.28

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID: Date Received: Date Extracted: Date Analyzed: Matrix: Units:	Method Blank	Client:	Terra Associates
	Not Applicable	Project:	SMBC, F&BI 208280
	08/20/12	Lab ID:	02-1466 mb rr 1/5
	08/21/12	Data File:	082033.D
	Soil	Instrument:	GCMS6
	mg/kg (ppm)	Operator:	ya

Surrogates: Anthracene d10 Benzo(a)anthracene-d12	% Recovery: 93 111	Lower Limit: 50 35	Limit: 150 159
Delizo(a)anumacene-u12	111	90	100

Compounds:	Concentration mg/kg (ppm)
Naphthalene	< 0.01
Acenaphthylene	< 0.01
Acenaphthene	< 0.01
Fluorene	< 0.01
Phenanthrene	< 0.01
Anthracene	< 0.01
Fluoranthene	< 0.01
Pyrene	< 0.01
Benz(a)anthracene	< 0.01
Chrysene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b)fluoranthene	< 0.01
Benzo(k)fluoranthene	< 0.01
Indeno(1,2,3-cd)pyrene	< 0.01
Dibenz(a,h)anthracene	< 0.01
Benzo(g,h,i)perylene	< 0.01

ENVIRONMENTAL CHEMISTS

Date of Report: 08/27/12 Date Received: 08/20/12

Project: SMBC, F&BI 208280

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 208273-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	(Wet wt) Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5.000	<50	96	96	63-146	0

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Diesel Extended	mg/kg (ppm)	5,000	100	79-144

ENVIRONMENTAL CHEMISTS

Date of Report: 08/27/12 Date Received: 08/20/12

Project: SMBC, F&BI 208280

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 208240-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Chromium	mg/kg (ppm)	50	6.81	94	98	63-120	4
Arsenic	mg/kg (ppm)	10	2.57	116 b	113 b	56-125	3 b
Selenium	mg/kg (ppm)	5	<1	92	91	64-118	1
Silver	mg/kg (ppm)	10	<1	107	108	83-112	1
Cadmium	mg/kg (ppm)	10	<1	102	103	85-117	1
Barium	mg/kg (ppm)	50	22.0	124 b	124 b	65-132	0 b
Lead	mg/kg (ppm)	20	3.05	96	100	64-139	4

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Chromium	mg/kg (ppm)	50	104	81-117
Arsenic	mg/kg (ppm)	10	101	79-112
Selenium	mg/kg (ppm)	5	101	83-113
Silver	mg/kg (ppm)	10	109	85-113
Cadmium	mg/kg (ppm)	10	104	88-114
Barium	mg/kg (ppm)	50	99	87-113
Lead	mg/kg (ppm)	20	100	83-118

ENVIRONMENTAL CHEMISTS

Date of Report: 08/27/12 Date Received: 08/20/12

Project: SMBC, F&BI 208280

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 208240-01 (Matrix Spike)

_Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Mercury	mg/kg (ppm)	0.125	<0.1	90	104	54-156	14

			Percent	
	Reporting	Spike Level	Recovery	Acceptance
Analyte	Units		LCS	Criteria
Mercury	mg/kg (ppm)	0.125	83	73-131

ENVIRONMENTAL CHEMISTS

Date of Report: 08/27/12 Date Received: 08/20/12

Project: SMBC, F&BI 208280

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR VOLATILES BY EPA METHOD 8260C

Laboratory Code: 208266-06 (Matrix Spike)

				Percent	
Analyte	Reporting Units	Spike Level	Sample Result	Recovery MS	Acceptance Criteria
Dichlorodifluoromethane	mg/kg (ppm)	2.5	40.5	8 vo	10-60
Chloromethane	mg/kg (ppm)	2.5	<0.5	28	10-89
Vinyl chloride	mg/kg (ppm)	2.5	<0.05	26	10-91
Bromomethane	mg/kg (ppm)	2.5	<0.5	38	10-102
Chloroethane	mg/kg (ppm)	2.5	<0.5	36	10-97
Trichlorofluoromethane	mg/kg (ppm)	2.5	<0.5	25	10-94
Acetone 1.1-Dichloroethene	mg/kg (ppm)	12.5 2.5	<0.5	60 37	37-115
Methylene chloride	mg/kg (ppm)	2.5 2.5	<0.05 <0.5	87 45	16-100
Methyl t-butyl ether (MTBE)	mg/kg (ppm) mg/kg (ppm)	2.5 2.5	₹ 0.5 ₹ 0.05	45 64	34-108 42-103
trans-1,2-Dichloroethene	mg/kg (ppm)	2.5	<0.05	48	19-102
1.1-Dichloroethane	mg/kg (ppm)	2.5	<0.05	57	37-97
2,2-Dichloropropane	mg/kg (ppm)	2.5	<0.05	57	29-105
cis-1,2-Dichloroethene	mg/kg (ppm)	2.5	<0.05	63	41-101
Chloroform	mg/kg(ppm)	2.5	<0.05	65	43-100
2-Butanone (MEK)	mg/kg (ppm)	12.5	<0.5	67	48-104
1,2-Dichloroethane (EDC)	mg/kg (ppm)	2.5	<0.05	68	43-98
1,1,1-Trichloroethane	mg/kg (ppm)	2.5	<0.05	59	35-102
1,1-Dichloropropene	mg/kg (ppm)	2.5	<0.05	56	34-100
Carbon tetrachloride Benzene	mg/kg (ppm)	2.5	<0.05	54	30-107
Trichloroethene	mg/kg (ppm) mg/kg (ppm)	2.5 2.5	<0.03 <0.03	62 63	39-98 38-101
1.2-Dichloropropane	mg/kg (ppm)	2.5	<0.05 <0.05	70	45-101
Bromodichloromethane	mg/kg (ppm)	2.5	<0.05	75	45-115
Dibromomethane	mg/kg (ppm)	2.5	<0.05	69	46-101
4-Methyl-2-pentanone	mg/kg (ppm)	12.5	<0.5	78	52-105
cie-1,3-Dichloropropene	mg/kg (ppm)	2.5	<0.05	79	42-120
Toluene	mg/kg (ppm)	2.5	<0.05	72	45-99
trans-1,3-Dichloropropene	mg/kg (ppm)	2,5	<0.05	85	46-118
1,1,2-Trichloroethane	mg/kg (ppm)	2.5	<0.05	79	51-104
2-Hexanone 1.3-Dichloropropane	mg/kg (ppm)	12.5 2.5	<0.5 <0.05	91 78	49-108 49-101
Tetrachloroethene	mg/kg (ppm) mg/kg (ppm)	2.5	<0.05 <0.025	62	38-101 38-102
Dibromochloromethane	mg/kg (ppm)	2.5	<0.025	81	42-132
1,2-Dibromoethane (EDB)	mg/kg (ppm)	2.5	₹0.05	76	49-105
Chlorobenzene	mg/kg (ppm)	2.5	<0.05	74	47-100
Ethylbenzene	mg/kg (ppm)	2.5	<0.05	76	47-101
1,1,1,2-Tetrachloroethane	mg/kg (ppm)	2.5	<0.05	77	46-112
m.pXylene	mg/kg (ppm)	5	<0.1	76	48-102
o-Xylene	mg/kg (ppm)	2.5	<0.05	78	49-101
Styrene	mg/kg (ppm)	2.5	<0.05	80	49-106
Isopropylbenzene Bromoform	mg/kg (ppm) mg/kg (ppm)	2.5 2.5	<0.05 <0.05	78 85	47-104 25-171
n-Propylbenzene	mg/kg (ppm)	2.5	<0.05	78	47-105
Bromobenzene	mg/kg (ppm)	2.5	<0.05	83	48-105
1,3,5-Trimethylbenzene	mg/kg (ppm)	2.5	<0.05	79	47-105
1,1,2,2-Tetrachloroethane	mg/kg (ppm)	2.5	<0.05	83	51-108
1,2,3-Trichloropropane	mg/kg (ppm)	2.5	<0.05	82	50-104
2-Chlorotoluene	mg/kg (ppm)	2.5	<0.05	78	47-102
4-Chlorotoluene tert-Butylbenzene	mg/kg (ppm)	2.5 2.5	<0.05	80 78	47-102
1,2,4 Trimethylbenzene	mg/kg (ppm) mg/kg (ppm)	2.5 2.5	<0.05 <0.05	76 80	48-105 48-105
sec-Butylbenzene	mg/kg (ppm)	2.5	<0.05 <0.05	78	47-106
p-Isopropyltoluene	mg/kg (ppm)	2.5	<0.05	79	47-107
1,3-Dichlorobenzene	mg/kg (ppm)	2.5	⊲0.05	74	47-103
1,4-Dichlorobenzene	mg/kg (ppm)	2.5	<0.05	75	46-102
1,2-Dichlorobenzene	mg/kg (ppm)	2.5	<0.05	76	48-104
1,2-Dibromo-3-chloropropane	mg/kg (ppm)	2.5	<0.5	84	39-130
1,2,4 Trichlorobenzene	mg/kg (ppm)	2.5	<0.25	74	44-106
Hexachlorobutadiene	mg/kg (ppm)	2.5	<0.25	75	44-106
Naphthalene	mg/kg (ppm)	2.5	<0.05	82 73	48-108 46-107
1,2,3-Trichlorobenzene	mg/kg (ppm)	2.5	<0.25	13	46-107

ENVIRONMENTAL CHEMISTS

Date of Report: 08/27/12 Date Received: 08/20/12

Project: SMBC, F&BI 208280

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR VOLATILES BY EPA METHOD 8260C

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Dichlorodifluoromethane	mg/kg (ppm)	2.5	51	48	11-84	
Chloromethane	mg/kg (ppm)	2.5	63	61	41-99	6
Vinyl chloride	mg/kg (ppm)	2.5	74	72	51-102	3 3
Bromomethane	mg/kg (ppm)	2.5	78	77	51-111	3 1
Chloroethane	mg/kg (ppm)	2.5	75	75	53-111 53-113	0
Trichlorofluoromethane	mg/kg (ppm)	2.5	81	80	61-113	1
Acetone	mg/kg (ppm)	12.5	85	84	69-132	î
1,1-Dichloroethene	mg/kg (ppm)	2.5	82	82	67-116	ó
Methylene chloride	mg/kg (ppm)	2.5	73	72	62-130	ĭ
Methyl t-butyl ether (MTBE)	mg/kg (ppm)	2.5	88	86	78-116	2
trans-1,2-Dichloroethene	mg/kg (ppm)	2.5	86	84	70-116	2
1, 1-Dichloroethane	mg/kg (ppm)	2.5	91	90	79-109	ĩ
2,2-Dichloropropane	mg/kg (ppm)	2.5	106	105	70-123	i
cis-1,2-Dichloroethene	mg/kg (ppm)	2.5	94	94	76-113	Ô
Chloroform	mg/kg (ppm)	2.5	97	95	77-113	ž
2-Butanone (MEK)	mg/kg (ppm)	12.5	92	91	76-114	ī
1,2-Dichloroethane (EDC)	mg/kg (ppm)	2.5	102	101	79-114	i
1, 1, 1-Trichloroethane	mg/kg (ppm)	2.5	102	100	73-119	2
1,1-Dichloropropene	mg/kg (ppm)	2.5	99	97	77-110	2
Carbon tetrachloride	mg/kg (ppm)	2.5	104	102	67-126	2
Benzene	mg/kg (ppm)	2.5	95	94	70-115	1
Trichloroethene	mg/kg (ppm)	2.5	95	95	70-113	0
1,2-Dichloropropane	mg/kg (ppm)	2.5	101	102	79-110	1
Bromodichloromethane	mg/kg (ppm)	2.5	107	107	76-119	0
Dibromomethane	mg/kg (ppm)	2.5	99	98	78-115	1
4-Methyl-2-pentanone	mg/kg (ppm)	12.5	103	102	80-120	1
cis-1,3-Dichloropropene Toluene	mg/kg (ppm)	2.5	118	113	80-117	0
trans-1,3-Dichlor opropene	mg/kg (ppm)	2.5	101	102	79-112	1
1.1.2-Trichloroethane	mg/kg (ppm)	2.5	118	119 vo	81-118	1
2-Hexanone	mg/kg (ppm)	2.5	102	103	83-111	1
1,3-Dichloropropane	mg/kg (ppm)	12.5	118	119	80-121	1
Tetrachloroethene	mg/kg (ppm)	2.5 2.5	104	105	81-114	1
Dibromochloromethane	mg/kg (ppm)	2.5	93	93	73-117	0
1,2-Dibromoethane (EDB)	mg/kg (ppm) mg/kg (ppm)	2.5 2.5	112 104	112 104	59-143	0
Chlorobenzene	mg/kg (ppm)	2.5	101	104	82-113	0
Ethylbenzene	mg/kg (ppm)	2.5	106	101	81-110	0
1,1,1,2-Tetrachloroethane	mg/kg (ppm)	2.5	107	105	79-116 76-121	1
m.p.Xylene	mg/kg (ppm)	5	106	106	80-121 80-115	0 0
o-Xylene	mg/kg (ppm)	2.5	106	106	81-113	0
Styrene	mg/kg (ppm)	2.5	107	107	79-118	ő
Isopropylbenzene	mg/kg (ppm)	2.5	107	107	81-114	ő
Bromoform	mg/kg (ppm)	2.5	114	114	36-166	ŏ
n-Propylbenzene	mg/kg (ppm)	2.5	107	107	82-114	ŏ
Bromobenzene	mg/kg (ppm)	2.5	103	103	83-113	Ŏ
1,3,5-Trimethylbenzene	mg/kg (ppm)	2.5	110	109	82-115	1
1, 1,2,2-Tetrachloroethane	mg/kg (ppm)	2.5	107	107	81-116	0
1,2,3-Trichloropropane	mg/kg (ppm)	2.5	105	107	53-136	2
2-Chlorotoluene	mg/kg (ppm)	2.5	107	107	81-113	0
4-Chlorotoluene	mg/kg (ppm)	2.5	106	107	83-111	1
tert-Butylbenzene	mg/kg (ppm)	2.5	106	107	81-113	1
1,2,4-Trimethylbenzene sec-Butylbenzene	mg/kg (ppm)	2.5	108	107	82-115	1
sec-butyloenzene p-Isopropyltoluene	mg/kg (ppm)	2.5	108	108	81-115	0
p-tsopropyttotuene 1.3-Dichlorobenzene	mg/kg (ppm)	2.5	109	109	82-115	0
1,3-Dichloropenzene 1.4-Dichlorobenzene	mg/kg (ppm)	2.5	100	100	81-113	0
1,4-Dichlorobenzene 1,2-Dichlorobenzene	mg/kg (ppm)	2.5	101	101	82-109	0
1,2-Dichioropenzene 1,2-Dibromo-3-chloropropane	mg/kg (ppm)	2.5	102	103	82-111	1
1,2,4 Trichlorobenzene	mg/kg (ppm)	2.5	112	114	72-123	2
1,2,4 i richioropenzene Hexachlorobutadiene	mg/kg (ppm)	2.5	101	102	81-110	1
Naphthalene	mg/kg (ppm)	2.5	101	100	78-116	1
Naphthalene 1,2,3-Trichlorobenzene	mg/kg (ppm)	2.5	109	109	85-114	0
-1-10 TYTOMINI OPENDENT	mg/kg (ppm)	2.5	102	102	86-112	0

ENVIRONMENTAL CHEMISTS

Date of Report: 08/27/12 Date Received: 08/20/12

Project: SMBC, F&BI 208280

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR POLYCHLORINATED BIPHENYLS AS AROCLOR 1016/1260 BY EPA METHOD 8082A

Laboratory Code: 208251-14 (Duplicate)

	Reporting	Sample	Duplicate	\mathbf{RPD}
Analyte	Units	Result	Result	(Limit 20)
Aroclor 1016	mg/kg (ppm)	<0.1	<0.1	nm
Aroclor 1260	mg/kg (ppm)	< 0.1	< 0.1	\mathbf{nm}

_Analyte _	Reporting Units	Spike Level	% Recovery LCS	% Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Aroclor 1016	mg/kg (ppm)	0.8	112	115	70-130	3
Aroclor 1260	mg/kg (ppm)	0.8	106	116	70-130	9

ENVIRONMENTAL CHEMISTS

Date of Report: 08/27/12 Date Received: 08/20/12

Project: SMBC, F&BI 208280

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR PNA'S BY EPA METHOD 8270D SIM

Laboratory Code: 208254-19 1/5 (Matrix Spike)

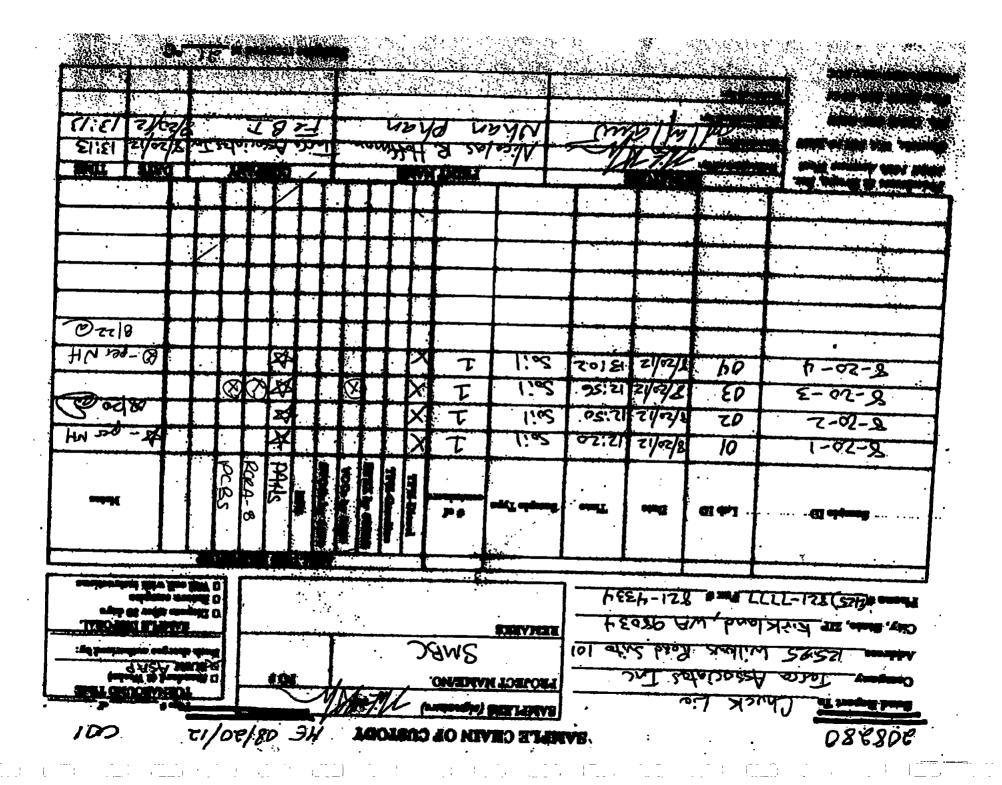
				Percent	
	Reporting	\mathbf{Spike}	Sample	Recovery	Acceptance
Analyte	<u>Units</u>	Level	Result	MS	Criteria
Naphthalene	mg/kg (ppm)	0.17	<0.01	94	44-129
Acenaphthylene	mg/kg (ppm)	0.17	< 0.01	98	52-121
Acenaphthene	mg/kg (ppm)	0.17	< 0.01	93	51-123
Fluorene	mg/kg (ppm)	0.17	< 0.01	99	37-137
Phenanthrene	mg/kg (ppm)	0.17	< 0.01	92	45-124
Anthracene	mg/kg (ppm)	0.17	< 0.01	94	32-124
Fluoranthene	mg/kg (ppm)	0.17	< 0.01	100	50-125
Pyrene	mg/kg (ppm)	0.17	< 0.01	101	41-135
Benz(a)anthracene	mg/kg (ppm)	0.17	< 0.01	93	23-144
Chrysene	mg/kg (ppm)	0.17	< 0.01	93	45-122
Benzo(b)fluoranthene	mg/kg (ppm)	0.17	< 0.01	105	31-144
Benzo(k)fluoranthene	mg/kg (ppm)	0.17	< 0.01	100	45-130
Benzo(a)pyrene	mg/kg (ppm)	0.17	< 0.01	99	39-128
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.17	< 0.01	113	28-146
Dibenz(a,h)anthracene	mg/kg (ppm)	0.17	< 0.01	101	46-129
Benzo(g,h,i)perylene	mg/kg (ppm)	0.17	< 0.01	98	37-133

		_	Percent	Percent		
	Reporting	Spike	Recovery	Recovery	Acceptance	RPD
Analyte	<u>U</u> nits	Level	LCS	LCSD	Criteria	(Limit 20)
Naphthalene	mg/kg (ppm)	0.17	97	98	58-121	1
Acenaphthylene	mg/kg (ppm)	0.17	95	97	54-121	2
Acenaphthene	mg/kg (ppm)	0.17	96	98	54 - 123	2
Fluorene	mg/kg (ppm)	0.17	96	97	56-127	1
Phenanthrene	mg/kg (ppm)	0.17	96	96	55-122	0
Anthracene	mg/kg (ppm)	0.17	94	94	50-120	0
Fluoranthene	mg/kg (ppm)	0.17	98	100	54-129	2
Pyrene	mg/kg (ppm)	0.17	100	101	53-127	1
Benz(a)anthracene	mg/kg (ppm)	0.17	90	90	51-115	0
Chrysene	mg/kg (ppm)	0.17	96	99	55-129	3
Benzo(b)fluoranthene	mg/kg (ppm)	0.17	102	109	56-123	7
Benzo(k)fluoranthene	mg/kg (ppm)	0.17	104	99	54-131	5
Benzo(a)pyrene	mg/kg (ppm)	0.17	90	89	51-118	1
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.17	96	97	49-148	1
Dibenz(a,h)anthracene	mg/kg (ppm)	0.17	95	98	50-141	3
Benzo(g,h,i)perylene	mg/kg (ppm)	0.17	97	99	52-131	2

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- A1 More than one compound of similar molecule structure was identified with equal probability.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte indicated may be due to carryover from previous sample injections.
- d The sample was diluted. Detection limits may be raised due to dilution.
- ds The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb Analyte present in the blank and the sample.
- fc The compound is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.
- ht Analysis performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- j The result is below normal reporting limits. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the compound indicated is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received in a container not approved by the method. The value reported should be considered an estimate.
- pr-The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.



ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Bradley T. Benson, B.S. Kurt Johnson, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 TEL: (206) 285-8282 e-mail: fbi@isomedia.com

August 29, 2012

Chuck Lie, Project Manager Terra Associates 12525 Willows Rd NE Ste 101 Kirkland, WA 98034

Dear Mr. Lie:

Included are the results from the testing of material submitted on August 23, 2012 from the SBMC, F&BI 208329 project. There are 8 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures NAA0829R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on August 23, 2012 by Friedman & Bruya, Inc. from the Terra Associates SBMC, F&BI 208329 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>

Terra Associates

208329-01

8-23-5

An 8270D internal standard failed the acceptance criteria for sample 8-23-5 due to matrix interferences. The data were flagged accordingly. The sample was diluted and reanalyzed.

All other quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/29/12 Date Received: 08/23/12

Project: SBMC, F&BI 208329 Date Extracted: 08/23/12 Date Analyzed: 08/23/12

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	$\frac{\text{Diesel Range}}{(\text{C}_{10}\text{-C}_{25})}$	Motor Oil Range (C ₂₅ -C ₃₆)	Surrogate (% Recovery) (Limit 50-150)
8-23-5 208329-01	1,700	<250	110
Method Blank	<50	<250	128

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID: 8-23-5 Date Received: 08/23/12 Date Extracted: 08/23/12 Date Analyzed: 08/23/12 Matrix: Soil

Units: mg/kg (ppm) Client: Project: Lab ID:

Data File:

Terra Associates SBMC, F&BI 208329

208329-01 1/5 082305.D GCMS6

Instrument: Operator: VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene d10	142 J	50	150
Benzo(a)anthracene-d12	98	35	159

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.01
Acenaphthylene	<0.01 J
Acenaphthene	0.096 J
Fluorene	1.4 J
Phenanthrene	1.5 J
Anthracene	<0.01 J
Fluoranthene	0.033 J
Pyrene	0.035
Benz(a)anthracene	< 0.01
Chrysene	0.013
Benzo(a)pyrene	< 0.01
Benzo(b)fluoranthene	< 0.01
Benzo(k)fluoranthene	< 0.01
Indeno(1,2,3-cd)pyrene	< 0.01
Dibenz(a,h)anthracene	< 0.01
Benzo(g,h,i)perylene	< 0.01

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client:	Terra Associates
Project:	SBMC, F&BI 208329
Lab ID:	208329-01 1/50
Data File:	082404:D
Instrument:	GCMS6
Operator:	VM

		Lower	Upper
Surrogates:	% Recovery:	Limit:	Limit:
Anthracene-d10	103	50	150
Benzo(a)anthracene-d12	99	35	159

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.1
Acenaphthylene	0.14
Acenaphthene	< 0.1
Fluorene	1.2
Phenanthrene	1.4
Anthracene	<0.1
Fluoranthene	< 0.1
Pyrene	< 0.1
Benz(a)anthracene	< 0.1
Chrysene	< 0.1
Benzo(a)pyrene	< 0.1
Benzo(b)fluoranthene	<0.1
Benzo(k)fluoranthene	< 0.1
Indeno(1,2,3-cd)pyrene	< 0.1
Dibenz(a,h)anthracene	<0.1
Benzo(g,h,i)perylene	<0.1

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	Method Blank
Date Received:	NA
Date Extracted:	08/23/12
Date Analyzed:	08/23/12
Matrix:	Soil
Units:	mg/kg (ppm)

Client:	Terra Associates
Project:	SBMC, F&BI 208329
Lab ID:	02-1490 mb2 1/5
Data File:	082304.D

Upper Limit: 150 159

Matrix: Soil Units: mg/kg (ppm)		Instrument: GCMS6 Operator: VM	
Surrogates: Anthracene-d10 Benzo(a)anthracen	% Recovery: 88 e-d12 93	Lower Limit: 50 35	

Compounds:	Concentration mg/kg (ppm)
Naphthalene	< 0.01
Acenaphthylene	< 0.01
Acenaphthene	< 0.01
Fluorene	< 0.01
Phenanthrene	< 0.01
Anthracene	< 0.01
Fluoranthene	< 0.01
Pyrene	< 0.01
Benz(a)anthracene	< 0.01
Chrysene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b)fluoranthene	< 0.01
Benzo(k)fluoranthene	< 0.01
Indeno(1,2,3-cd)pyrene	< 0.01
Dibenz(a,h)anthracene	< 0.01
Benzo(g,h,i)perylene	< 0.01

ENVIRONMENTAL CHEMISTS

Date of Report: 08/29/12 Date Received: 08/23/12

Project: SBMC, F&BI 208329

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 208310-04 (Matrix Spike)

	Reporting	Spike	(Wet wt) Sample	Percent Recovery	Percent Recovery	Acceptance	RPD
Analyte	Units	Level	Result	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	99	102	64-133	3

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Diesel Extended	mg/kg (ppm)	5,000	104	58-147

ENVIRONMENTAL CHEMISTS

Date of Report: 08/29/12
Date Received: 08/23/12

Project: SBMC, F&BI 208329

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR PNA'S BY EPA METHOD 8270D SIM

Laboratory Code: 208329-01 1/5 and 1/50 (Duplicate)

				Relative Percent
	Reporting	Sample	Duplicate	Difference
Analyte	Units	Result	Result	(Limit 20)
Naphthalene	mg/kg (ppm)	<0.01	<0.01	nm
Acenaphthylene	mg/kg (ppm)	< 0.1	< 0.1	nm
Acenaphthene	mg/kg (ppm)	0.14	0.14	nm
Fluorene	mg/kg (ppm)	1.2	1.1	9
Phenanthrene	mg/kg (ppm)	1.4	1.3	7
Anthracene	mg/kg (ppm)	< 0.1	<0.1	$\mathbf{n}\mathbf{m}$
Fluoranthene	mg/kg (ppm)	0.033 J	0.029 J	13
Pyrene	mg/kg (ppm)	0.035	0:032	9
Benz(a)anthracene	mg/kg (ppm)	< 0.01	< 0.01	nm
Chrysene	mg/kg (ppm)	0.013	0.011	17
Benzo(b)fluoranthene	mg/kg (ppm)	< 0.01	< 0.01	nm
Benzo(k)fluoranthene	mg/kg (ppm)	< 0.01	< 0.01	nm
Benzo(a)pyrene	mg/kg (ppm)	< 0.01	< 0.01	nm
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	< 0.01	< 0.01	nm
Dibenz(a,h)anthracene	mg/kg (ppm)	< 0.01	< 0.01	nm
Benzo(g,h,i)perylene	mg/kg (ppm)	< 0.01	< 0.01	nm

		_	Percent	Percent		
	Reporting	Spike	Recovery	Recovery	Acceptance	RPD
Analyte	<u>U</u> nits	Level	LCS	LCSD	Criteria	(Limit 20)
Naphthalene	mg/kg (ppm)	0.17	91	93	58-121	2
Acenaphthylene	mg/kg (ppm)	0.17	89	92	54-121	3
Acenaphthene	mg/kg (ppm)	0.17	90	92	54-123	2
Fluorene	mg/kg (ppm)	0.17	89	92	56-127	3
Phenanthrene	mg/kg (ppm)	0.17	89	90	55-122	1
Anthracene	mg/kg (ppm)	0.17	87	88	50-120	1
Fluoranthene	mg/kg (ppm)	0.17	91	93	54-129	2
Pyrene	mg/kg (ppm)	0.17	91	94	53-127	3
Benz(a)anthracene	mg/kg (ppm)	0.17	86	87	51-115	1
Chrysene	mg/kg (ppm)	0.17	92	93	55-129	1
Benzo(b)fluoranthene	mg/kg (ppm)	0.17	90	95	56-123	5
Benzo(k)fluoranthene	mg/kg (ppm)	0.17	97	95	54-131	2
Benzo(a)pyrene	mg/kg (ppm)	0.17	85	85	51-118	0
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.17	83	87	49-148	5
Dibenz(a,h)anthracene	mg/kg (ppm)	0.17	89	91	50-141	2
Benzo(g,h,i)pervlene	mg/kg (ppm)	0.17	88	91	52-131	3

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- A1 More than one compound of similar molecule structure was identified with equal probability.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte indicated may be due to carryover from previous sample injections.
- d The sample was diluted. Detection limits may be raised due to dilution.
- ds The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb Analyte present in the blank and the sample.
- fc The compound is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.
- ht Analysis performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- j-The result is below normal reporting limits. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the compound indicated is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received in a container not approved by the method. The value reported should be considered an estimate.
- pr-The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

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Company Terra Associates Inc Address 12525 Willows Rd Svite 101 City, State, ZIP Kirkland, WA 98034 Phone #(425)821-777Fax# 821-4334			PROJECT N				***]	PO#		کا ا	O Standard (2 Weeks) S-RUSH ASAO Rush charges authorized by:				
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ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Bradley T. Benson, B.S. Kurt Johnson, B.S.

3012 16th Avenue West Seattle, WA 98119-2029 TEL: (206) 285-8282 e-mail: fbi@isomedia.com

August 10, 2012

Chuck Lie, Project Manager Terra Associates 12525 Willows Rd NE Ste 101 Kirkland, WA 98304

Dear Mr. Lie:

Included are the results from the testing of material submitted on August 8, 2012 from the SBMC, F&BI 208098 project. There are 7 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures NAA0810R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on August 8, 2012 by Friedman & Bruya, Inc. from the Terra Associates SBMC, F&BI 208098 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u> <u>Terra Associates</u>

208098-01 AOC3-1

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/10/12 Date Received: 08/08/12

Project: SBMC, F&BI 208098 Date Extracted: 08/08/12 Date Analyzed: 08/08/12

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	$rac{ ext{Diesel Range}}{ ext{(C}_{10} ext{-C}_{25} ext{)}}$	Motor Oil Range (C ₂₅ -C ₃₆)	Surrogate (% Recovery) (Limit 50-150)
AOC3-1 208098-01	<50	<250	109
Method Blank 02-1402 MB	<50	<250	110

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID: AOC3-1
Date Received: 08/08/12
Date Extracted: 08/08/12
Date Analyzed: 08/08/12
Matrix: Soil
Units: mg/kg (ppm)

Client: Terra Associates
Project: SBMC, F&BI 208098
Lab ID: 208098-01 1/5
Data File: 080811.D
Instrument: GCMS6
Operator: ya

nits: mg/kg (ppm) Operator:

 Surrogates:
 % Recovery:
 Lower Limit:
 Upper Limit:

 Anthracene-d10
 115
 50
 150

 Benzo(a)anthracene-d12
 126
 35
 159

Concentration Compounds: mg/kg (ppm) Naphthalene 0.016 Acenaphthylene 0.010 Acenaphthene < 0.01 Fluorene < 0.01 Phenanthrene 0.065Anthracene 0.011 Fluoranthene 0.17 Pyrene 0.17 Benz(a)anthracene 0.069 Chrysene 0.087 Benzo(a)pyrene 0.087 Benzo(b)fluoranthene 0.097 Benzo(k)fluoranthene 0.034 Indeno(1,2,3-cd)pyrene 0.069 Dibenz(a,h)anthracene 0.010 Benzo(g,h,i)perylene 0.057

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID: Method Blank
Date Received: NA
Date Extracted: 08/08/12
Date Analyzed: 08/08/12
Matrix: Soil
Units: mg/kg (ppm)

Client: Terra Associates
Project: SBMC, F&BI 208098
Lab ID: 02-1399 mb2 1/5
Data File: 080810.D
Instrument: GCMS6
Operator: ya

Compounds:	Concentration mg/kg (ppm)
Naphthalene	< 0.01
Acenaphthylene	< 0.01
Acenaphthene	< 0.01
Fluorene	< 0.01
Phenanthrene	< 0.01
Anthracene	< 0.01
Fluoranthene	< 0.01
Pyrene	< 0.01
Benz(a)anthracene	< 0.01
Chrysene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b)fluoranthene	< 0.01
Benzo(k)fluoranthene	< 0.01
Indeno(1,2,3-cd)pyrene	< 0.01
Dibenz(a,h)anthracene	< 0.01
Benzo(g,h,i)perylene	< 0.01

ENVIRONMENTAL CHEMISTS

Date of Report: 08/10/12 Date Received: 08/08/12

Project: SBMC, F&BI 208098

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 208095-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	(Wet wt) Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD
Timaryte	Omis	Dever	nesun	10122	นเอม	Criteria	_(Limit 20)
Diesel Extended	mg/kg (ppm)	5.000	<50	88	90	63-146	2.

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	<u>Units</u>	Level	LCS	Criteria
Diesel Extended	mg/kg (ppm)	5,000	84	79-144

ENVIRONMENTAL CHEMISTS

Date of Report: 08/10/12 Date Received: 08/08/12

Project: SBMC, F&BI 208098

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR PNA'S BY EPA METHOD 8270D SIM

Laboratory Code: 208088-01 1/5 (Matrix Spike)

				Percent	
	Reporting	Spike	Sample	Recovery	Acceptance
Analyte	Units	Level	Result	MS	Criteria
Naphthalene	mg/kg (ppm)	0.17	< 0.01	92	44-129
Acenaphthylene	mg/kg (ppm)	0.17	< 0.01	96	52-121
Acenaphthene	mg/kg (ppm)	0.17	< 0.01	96	51-123
Fluorene	mg/kg (ppm)	0.17	< 0.01	97	37-137
Phenanthrene	mg/kg (ppm)	0.17	< 0.01	95	45-124
Anthracene	mg/kg (ppm)	0.17	< 0.01	96	32-124
Fluoranthene	mg/kg (ppm)	0.17	< 0.01	97	50-125
Pyrene	mg/kg (ppm)	0.17	< 0.01	99	41-135
Benz(a)anthracene	mg/kg (ppm)	0.17	< 0.01	92	23-144
Chrysene	mg/kg (ppm)	0.17	< 0.01	96	45-122
Benzo(b)fluoranthene	mg/kg (ppm)	0.17	< 0.01	98	31-144
Benzo(k)fluoranthene	mg/kg (ppm)	0.17	< 0.01	97	45-130
Benzo(a)pyrene	mg/kg (ppm)	0.17	< 0.01	94	39-128
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.17	< 0.01	103	28-146
Dibenz(a,h)anthracene	mg/kg (ppm)	0.17	< 0.01	89	46-129
Benzo(g,h,i)perylene	mg/kg (ppm)	0.17	< 0.01	89	37-133

			Percent	Percent		
	Reporting	Spike	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	LCS	LCSD	Criteria	(Limit 20)
Naphthalene	mg/kg (ppm)	0.17	95	104	58-121	9
${f Acenaphthylene}$	mg/kg (ppm)	0.17	95	104	54-121	9
Acenaphthene	mg/kg (ppm)	0.17	97	106	54-123	9
Fluorene	mg/kg (ppm)	0.17	97	107	56-127	10
Phenanthrene	mg/kg (ppm)	0.17	97	105	55-122	8
Anthracene	mg/kg (ppm)	0.17	97	106	50-120	9
Fluoranthene	mg/kg (ppm)	0.17	97	105	54-129	8
Pyrene	mg/kg (ppm)	0.17	96	105	53-127	9
Benz(a)anthracene	mg/kg (ppm)	0.17	91	100	51-115	9
Chrysene	mg/kg (ppm)	0.17	98	108	55-129	10
Benzo(b)fluoranthene	mg/kg (ppm)	0.17	97	104	56-123	7
Benzo(k)fluoranthene	mg/kg (ppm)	0.17	97	109	54-131	12
Benzo(a)pyrene	mg/kg (ppm)	0.17	92	101	51-118	9
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.17	107	111	49-148	4
Dibenz(a,h)anthracene	mg/kg (ppm)	0.17	96	105	50-141	9
Benzo(g,h,i)perylene	mg/kg (ppm)	0.17	95	106	52-131	11

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- A1 More than one compound of similar molecule structure was identified with equal probability.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte indicated may be due to carryover from previous sample injections.
- d The sample was diluted. Detection limits may be raised due to dilution.
- ds The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb Analyte present in the blank and the sample.
- fc The compound is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.
- ht Analysis performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- j The result is below normal reporting limits. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the compound indicated is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received in a container not approved by the method. The value reported should be considered an estimate.
- pr The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

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Samples received at 22 %

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Bradley T. Benson, B.S. Kurt Johnson, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 TEL: (206) 285-8282 e-mail: fbi@isomedia.com

August 9, 2012

Chuck Lie, Project Manager Terra Associates 12525 Willows Rd NE Ste 101 Kirkland, WA 98304

Dear Mr. Lie:

Included are the results from the testing of material submitted on August 8, 2012 from the SBMC, F&BI 208107 project. There are 8 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures NAA0809R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on August 8, 2012 by Friedman & Bruya, Inc. from the Terra Associates SBMC, F&BI 208107 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Terra Associates
208107-01	AOC3-2
208107-02	AOC3-3

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/09/12 Date Received: 08/08/12 Project: SBMC, F&BI 208107 Date Extracted: 08/08/12 Date Analyzed: 08/08/12

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	$\frac{\text{Diesel Range}}{\text{(C}_{10}\text{-C}_{25})}$	Motor Oil Range (C ₂₅ -C ₃₆)	Surrogate (% Recovery) (Limit 50-150)
AOC3-2 208107-01	<50	<250	103
AOC3-3 208107-02	<50	<250	102
Method Blank 02-1402 MB	<50	<250	110

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	AOC3-2
Date Received:	08/08/12
Date Extracted:	08/08/12
Date Analyzed:	08/08/12
Matrix:	Soil
Units:	mg/kg (ppm)

Client:	Terra Associates
Project:	SBMC, F&BI 208107
Lab ID:	208107-01 1/5
Data File:	080816.D
Instrument:	GCMS6
Operator:	va

Lower

Upper Limit: 150

159

Surrogates: Anthracene-d10 Benzo(a)anthracene-d12	% Recovery: 118 130	Limit: 50 35
Compounds:	Concentration mg/kg (ppm)	
Naphthalene	<0.01	
Acenaphthylene	< 0.01	
Acenaphthene	< 0.01	
Fluorene	< 0.01	

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID: AOC3-3
Date Received: 08/08/12
Date Extracted: 08/08/12
Date Analyzed: 08/08/12
Matrix: Soil
Units: mg/kg (ppm)

Client: Terra Associates
Project: SBMC, F&BI 208107
Lab ID: 208107-02 1/5
Data File: 080817.D
Instrument: GCMS6

Operator: ya

 Surrogates:
 % Recovery:
 Lower Limit:
 Upper Limit:

 Anthracene-d10
 115
 50
 150

 Benzo(a)anthracene-d12
 123
 35
 159

Compounds:	Concentration mg/kg (ppm)
•	—8· —8 (PP)
Naphthalene	< 0.01
Acenaphthylene	< 0.01
Acenaphthene	< 0.01
Fluorene	< 0.01
Phenanthrene	< 0.01
Anthracene	< 0.01
Fluoranthene	< 0.01
Pyrene	< 0.01
Benz(a)anthracene	< 0.01
Chrysene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b)fluoranthene	< 0.01
Benzo(k)fluoranthene	< 0.01
Indeno(1,2,3-cd)pyrene	< 0.01
Dibenz(a,h)anthracene	<0.01
Benzo(g.h.i)pervlene	< 0.01

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	Method Blank	Client:	Terra Associates
Date Received:	NA	Project:	SBMC, F&BI 208107
Date Extracted:	08/08/12	Lab ID:	02-1399 mb2 1/5
Date Analyzed:	08/08/12	Data File:	080810.D
Matrix:	Soil	Instrument:	GCMS6
Units:	mg/kg (ppm)	Operator:	ya
		Lower	Ilnner

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene d10	114	50	150
Benzo(a)anthracene-d12	121	35	159

Compounds:	Concentration mg/kg (ppm)
Naphthalene	< 0.01
Acenaphthylene	< 0.01
Acenaphthene	< 0.01
Fluorene	< 0.01
Phenanthrene	< 0.01
Anthracene	< 0.01
Fluoranthene	< 0.01
Pyrene	< 0.01
Benz(a)anthracene	< 0.01
Chrysene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b)fluoranthene	< 0.01
Benzo(k)fluoranthene	< 0.01
Indeno(1,2,3-cd)pyrene	< 0.01
Dibenz(a,h)anthracene	< 0.01
Benzo(g,h,i)perylene	< 0.01

ENVIRONMENTAL CHEMISTS

Date of Report: 08/09/12 Date Received: 08/08/12 Project: SBMC, F&BI 208107

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 208095-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	(Wet wt) Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
					MIDIO	Officeria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	88	90	63-146	2

			Percent	
	Reporting	Spike	Recovery	Acceptance
<u>Ana</u> lyte	Units	Level	LCS	Criteria
Diesel Extended	mg/kg (ppm)	5,000	84	79-144

ENVIRONMENTAL CHEMISTS

Date of Report: 08/09/12 Date Received: 08/08/12

Project: SBMC, F&BI 208107

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR PNA'S BY EPA METHOD 8270D SIM

Laboratory Code: 208088-01 1/5 (Matrix Spike)

				Percent	
	Reporting	Spike	Sample	Recovery	Acceptance
Analyte	Units	Level	Result	MS	Criteria
Naphthalene	mg/kg (ppm)	0.17	<0.01	92	44-129
Acenaphthylene	mg/kg (ppm)	0.17	< 0.01	96	52 - 121
Acenaphthene	mg/kg (ppm)	0.17	< 0.01	96	51-123
Fluorene	mg/kg (ppm)	0.17	< 0.01	97	37-137
Phenanthrene	mg/kg (ppm)	0.17	< 0.01	95	45-124
Anthracene	mg/kg (ppm)	0.17	< 0.01	96	32-124
Fluoranthene	mg/kg (ppm)	0.17	< 0.01	97	50-125
Pyrene	mg/kg (ppm)	0.17	<0.01	99	41-135
Benz(a)anthracene	mg/kg (ppm)	0.17	< 0.01	92	23-144
Chrysene	mg/kg (ppm)	0.17	< 0.01	96	45-122
Benzo(b)fluoranthene	mg/kg (ppm)	0.17	< 0.01	98	31-144
Benzo(k)fluoranthene	mg/kg (ppm)	0.17	< 0.01	97	45-130
Benzo(a)pyrene	mg/kg (ppm)	0.17	< 0.01	94	39-128
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.17	< 0.01	103	28-146
Dibenz(a,h)anthracene	mg/kg (ppm)	0.17	< 0.01	89	46-129
Benzo(g,h,i)perylene	mg/kg (ppm)	0.17	< 0.01	89	37-133

			Percent	Percent		
	Reporting	Spike	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	LCS	LCSD	Criteria	(Limit 20)
Naphthalene	mg/kg (ppm)	0.17	95	104	58-121	9
Acenaphthylene	mg/kg (ppm)	0.17	95	104	54-121	9
Acenaphthene	mg/kg (ppm)	0.17	97	106	54-123	9
Fluorene	mg/kg (ppm)	0.17	97	107	56-127	10
Phenanthrene	mg/kg (ppm)	0.17	97	105	55-122	8
Anthracene	mg/kg (ppm)	0.17	97	106	50-120	9
Fluoranthene	mg/kg (ppm)	0.17	97	105	54-129	8
Pyrene	mg/kg (ppm)	0.17	96	105	53-127	9
Benz(a)anthracene	mg/kg (ppm)	0.17	91	100	51-115	9
Chrysene	mg/kg (ppm)	0.17	98	108	55-129	10
Benzo(b)fluoranthene	mg/kg (ppm)	0.17	97	104	56-123	7
Benzo(k)fluoranthene	mg/kg (ppm)	0.17	97	109	54-131	12
Benzo(a)pyrene	mg/kg (ppm)	0.17	92	101	51-118	9
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.17	107	111	49-148	4
Dibenz(a,h)anthracene	mg/kg (ppm)	0.17	96	105	50-141	9
Benzo(g,h,i)perylene	mg/kg (ppm)	0.17	95	106	52-131	11

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- A1 More than one compound of similar molecule structure was identified with equal probability.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte indicated may be due to carryover from previous sample injections.
- d The sample was diluted. Detection limits may be raised due to dilution.
- ds The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb Analyte present in the blank and the sample.
- fc The compound is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.
- ht Analysis performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- j The result is below normal reporting limits. The value reported is an estimate.
- ${\bf J}$ The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the compound indicated is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received in a container not approved by the method. The value reported should be considered an estimate.
- pr The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

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ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Bradley T. Benson, B.S. Kurt Johnson, B.S.

3012 16th Avenue West Seattle, WA 98119-2029 TEL: (206) 285-8282 e-mail: fbi@isomedia.com

August 14, 2012

Chuck Lie, Project Manager Terra Associates 12525 Willows Rd NE Ste 101 Kirkland, WA 98034

Dear Mr. Lie:

Included are the results from the testing of material submitted on August 9, 2012 from the SBMC, F&BI 208119 project. There are 7 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures NAA0814R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on August 9, 2012 by Friedman & Bruya, Inc. from the Terra Associates SBMC, F&BI 208119 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID

Terra Associates

208119-01

AOC3-4

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/14/12 Date Received: 08/09/12 Project: SBMC, F&BI 208119 Date Extracted: 08/09/12 Date Analyzed: 08/09/12

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Diesel Range (C ₁₀ -C ₂₅)	Motor Oil Range (C ₂₅ -C ₃₆)	Surrogate (% Recovery) (Limit 53-144)
AOC3-4 208119-01	<50	<250	95
Method Blank 02-1410 MB	<50	<250	101

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	AOC3-4
Date Received:	08/09/12
Date Extracted:	08/09/12
Date Analyzed:	08/09/12
Matrix:	Soil
Units:	mg/kg (ppm)

Client:	Terra Associates
Project:	SBMC, F&BI 208119
Lab ID:	208119-01 1/5
Data File:	080911.D
Instrument:	GCMS6
Operator:	va

Surrogates: Anthracene d10 Benzo(a)anthracene-d12	% Recovery: 118 109	Lower Limit: 50 35	Upper Limit: 150 159
Compounds	Concentration mg/kg (ppm)		
Compounds:	mg/kg (ppm)		

Compounds:	mg/kg (ppm)
Naphthalene	<0.01
Acenaphthylene	< 0.01
Acenaphthene	< 0.01
Fluorene	< 0.01
Phenanthrene	< 0.01
Anthracene	<0.01
Fluoranthene	< 0.01
Pyrene	< 0.01
Benz(a)anthracene	< 0.01
Chrysene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b)fluoranthene	< 0.01
Benzo(k)fluoranthene	< 0.01
Indeno(1,2,3-cd)pyrene	< 0.01
Dibenz(a,h)anthracene	< 0.01
Benzo(g,h,i)perylene	< 0.01

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Lab ID:
Data File:
Instrument:
Operator:

Client:

Project:

Terra Associates SBMC, F&BI 208119 02-1414 mb 1/5

080910.D GCMS6 ya

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	133	50	150
Benzo(a)anthracene-d12	109	35	159

Compounds:	Concentration mg/kg (ppm)
Naphthalene	< 0.01
Acenaphthylene	< 0.01
Acenaphthene	< 0.01
Fluorene	< 0.01
Phenanthrene	< 0.01
Anthracene	< 0.01
Fluoranthene	< 0.01
Pyrene	< 0.01
Benz(a)anthracene	< 0.01
Chrysene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b)fluoranthene	< 0.01
Benzo(k)fluoranthene	< 0.01
Indeno(1,2,3-cd)pyrene	< 0.01
Dibenz(a,h)anthracene	< 0.01
Benzo(g,h,i)perylene	< 0.01

ENVIRONMENTAL CHEMISTS

Date of Report: 08/14/12 Date Received: 08/09/12

Project: SBMC, F&BI 208119

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 208114-02 (Matrix Spike)

Analyte	Reporting Units	Spike Level	(Wet wt) Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	92	95	64-133	3

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Diesel Extended	mg/kg (ppm)	5,000	98	58-147

ENVIRONMENTAL CHEMISTS

Date of Report: 08/14/12 Date Received: 08/09/12 Project: SBMC, F&BI 208119

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR PNA'S BY EPA METHOD 8270D SIM

Laboratory Code: 208115-04 1/5 (Matrix Spike)

•				Percent	
	Reporting	Spike	Sample	Recovery	Acceptance
Analyte	Units	Level	Result	MS	Criteria
Naphthalene	mg/kg (ppm)	0.17	0.031	73	44-129
Acenaphthylene	mg/kg (ppm)	0.17	< 0.01	84	52-121
Acenaphthene	mg/kg (ppm)	0.17	0.031	81	51-123
Fluorene	mg/kg (ppm)	0.17	0.031	80	37-137
Phenanthrene	mg/kg (ppm)	0.17	0.24	81 b	45-124
Anthracene	mg/kg (ppm)	0.17	0.042	81 b	32-124
Fluoranthene	mg/kg (ppm)	0.17	0.30	108 b	50-125
Pyrene	mg/kg (ppm)	0.17	0.27	109 b	41-135
Benz(a)anthracene	mg/kg (ppm)	0.17	0.13	84 b	23-144
Chrysene	mg/kg (ppm)	0.17	0.16	87 b	45-122
Benzo(b)fluoranthene	mg/kg (ppm)	0.17	0.19	106 b	31-144
Benzo(k)fluoranthene	mg/kg (ppm)	0.17	0.081	77 b	45-130
Benzo(a)pyrene	mg/kg (ppm)	0.17	0.15	95 b	39-128
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.17	0.14	81 b	28-146
Dibenz(a,h)anthracene	mg/kg (ppm)	0.17	< 0.01	92	46-129
Benzo(g,h,i)perylene	mg/kg (ppm)	0.17	0.10	83 b	37-133

			Percent	Percent		
	Reporting	Spike	Recovery	Recovery	Acceptance	\mathbf{RPD}
Analyte	Units	Level	LCS	LCSD	Criteria	(Limit 20)
Naphthalene	mg/kg (ppm)	0.17	93	92	58-121	1
Acenaphthylene	mg/kg (ppm)	0.17	92	89	54-121	3
Acenaphthene	mg/kg (ppm)	0.17	95	94	54-12 3	1
Fluorene	mg/kg (ppm)	0.17	94	91	56-127	3
Phenanthrene	mg/kg (ppm)	0.17	93	93	55-122	0
Anthracene	mg/kg (ppm)	0.17	94	95	50-120	1
Fluoranthene	mg/kg (ppm)	0.17	95	93	54-129	2
Pyrene	mg/kg (ppm)	0.17	94	92	53-127	2
Benz(a)anthracene	mg/kg (ppm)	0.17	90	83	51-115	8
Chrysene	mg/kg (ppm)	0.17	97	99	55-129	2
Benzo(b)fluoranthene	mg/kg (ppm)	0.17	95	87	56-123	9
Benzo(k)fluoranthene	mg/kg (ppm)	0.17	105	111	54-131	6
Benzo(a)pyrene	mg/kg (ppm)	0.17	95	93	51-118	2
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.17	88	79	49-148	11
Dibenz(a,h)anthracene	mg/kg (ppm)	0.17	94	93	50-141	1
$\operatorname{Benzo}(g,h,i)$ perylene	mg/kg (ppm)	0.17	95	96	52-131	1

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- A1 More than one compound of similar molecule structure was identified with equal probability.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte indicated may be due to carryover from previous sample injections.
- d The sample was diluted. Detection limits may be raised due to dilution.
- ds The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dy Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb Analyte present in the blank and the sample.
- fc The compound is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.
- tht Analysis performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- j The result is below normal reporting limits. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- ${
 m jr}$ The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the compound indicated is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc-The sample was received in a container not approved by the method. The value reported should be considered an estimate.
- pr The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

Commy Tarra Associa	tox Inc		PROJECT NAMENO. SBMC				O#	TURNATURE THE Office of G. Wester) Fitting ASA P. Book durges authorized by:			(L)					
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ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Bradley T. Benson, B.S. Kurt Johnson, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 TEL: (206) 285-8282 e-mail: fbi@isomedia.com

August 14, 2012

Chuck Lie, Project Manager Terra Associates 12525 Willows Rd NE Ste 101 Kirkland, WA 98034

Dear Mr. Lie:

Included are the results from the testing of material submitted on August 9, 2012 from the SBMC, F&BI 208121 project. There are 7 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures NAA0814R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on August 9, 2012 by Friedman & Bruya, Inc. from the Terra Associates SBMC, F&BI 208121 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID

Terra Associates

208121-01

AOC3-5

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/14/12 Date Received: 08/09/12 Project: SBMC, F&BI 208121 Date Extracted: 08/09/12

Date Analyzed: 08/09/12

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	$\frac{\text{Diesel Range}}{\text{(C}_{10}\text{-C}_{25})}$	Motor Oil Range (C ₂₅ -C ₃₆)	Surrogate (% Recovery) (Limit 53-144)
AOC3-5 208121-01	<50	<250	104
Method Blank	<50	<250	101

ENVIRONMENTAL CHEMISTS

Client Sample ID:	AOC3-5
Date Received:	08/09/12
Date Extracted:	08/09/12
Date Analyzed:	08/09/12
Matrix:	Soil
Units:	mg/kg (ppm)

Client:	Terra Associates
Project:	SBMC, F&BI 208121
Lab ID:	208121-01 1/5
Data File:	080912.D
Instrument:	GCMS6
Operator:	ya

Surrogates: Anthracen e-d10 Benzo(a)anthracene-d12	% Recovery: 125 115	Lower Limit: 50 35	Upper Limit: 150 159
Compounds:	Concentration		
Compounds.	mg/kg (ppm)		

	Concentitation
Compounds:	mg/kg (ppm)
Naphthalene	< 0.01
Acenaphthylene	< 0.01
Acenaphthene	< 0.01
Fluorene	< 0.01
Phenanthrene	< 0.01
Anthracene	< 0.01
Fluoranthene	< 0.01
Pyrene	< 0.01
Benz(a)anthracene	< 0.01
Chrysene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b)fluoranthene	< 0.01
Benzo(k)fluoranthene	< 0.01
Indeno(1,2,3-cd)pyrene	< 0.01
Dibenz(a,h)anthracene	< 0.01
Benzo(g,h,i)perylene	< 0.01

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

·	•
Client Sample ID: Method Blank	
Date Received: NA	
Date Extracted: 08/09/12	
Date Analyzed: 08/09/12	
Matrix: Soil	
Units: mg/kg (ppm)	

Client:	Terra Associates
Project:	SBMC, F&BI 208121
Lab ID:	02-1414 mb 1/5
Data File:	080910.D
Instrument:	GCMS6
Operator:	va

Upper Limit: 150 159

Surrogates: Anthracene-d10 Benzo(a)anthracene-d12	% Recovery: 133 109	Lower Limit: 50 35
Compounds:	Concentration mg/kg (ppm)	
Naphthalene Acenaphthylene	<0.01 <0.01	

Compounds:	mg/kg (ppm)
Naphthalene	< 0.01
Acenaphthylene	< 0.01
Acenaphthene	< 0.01
Fluorene	< 0.01
Phenanthrene	< 0.01
Anthracene	< 0.01
Fluoranthene	< 0.01
Pyrene	< 0.01
Benz(a)anthracene	< 0.01
Chrysene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b)fluoranthene	< 0.01
Benzo(k)fluoranthene	< 0.01
Indeno(1,2,3-cd)pyrene	< 0.01
Dibenz(a,h)anthracene	< 0.01
Benzo(g,h,i)perylene	< 0.01

ENVIRONMENTAL CHEMISTS

Date of Report: 08/14/12 Date Received: 08/09/12

Project: SBMC, F&BI 208121

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 208114-02 (Matrix Spike)

Analyte	Reporting Units	Spike Level	(Wet wt) Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	92	95	64-133	3

Laboratory Code: Laboratory Control Sample

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Diesel Extended	mg/kg (ppm)	5,000	98	58-147

ENVIRONMENTAL CHEMISTS

Date of Report: 08/14/12 Date Received: 08/09/12 Project: SBMC, F&BI 208121

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR PNA'S BY EPA METHOD 8270D SIM

Laboratory Code: 208115-04 1/5 (Matrix Spike)

				Percent	
	Reporting	Spike	Sample	Recovery	Acceptance
Analyte	Units	Level	Result	MS	Criteria
Naphthalene	mg/kg (ppm)	0.17	0.031	73	44-129
Acenaphthylene	mg/kg (ppm)	0.17	< 0.01	84	52-121
Acenaphthene	mg/kg (ppm)	0.17	0.031	81	51-123
Fluorene	mg/kg (ppm)	0.17	0.031	80	37-137
Phenanthrene	mg/kg (ppm)	0.17	0.24	81 b	45-124
Anthracene	mg/kg (ppm)	0.17	0.042	81 b	32-124
Fluoranthene	mg/kg (ppm)	0.17	0.30	108 b	50-125
Pyrene	mg/kg (ppm)	0.17	0.27	109 b	41-135
Benz(a)anthracene	mg/kg (ppm)	0.17	0.13	84 b	23-144
Chrysene	mg/kg (ppm)	0.17	0.16	87 b	45-122
Benzo(b)fluoranthene	mg/kg (ppm)	0.17	0.19	106 b	31-144
Benzo(k)fluoranthene	mg/kg (ppm)	0.17	0.081	77 b	45-130
Benzo(a)pyrene	mg/kg (ppm)	0.17	0.15	95 b	39-128
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.17	0.14	81 b	28-146
Dibenz(a,h)anthracene	mg/kg (ppm)	0.17	< 0.01	92	46-129
Benzo(g,h,i)perylene	mg/kg (ppm)	0.17	0.10	83 b	37-133

Laboratory Code: Laboratory Control Sample

			Percent	Percent		
	Reporting	Spike	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	LCS	LCSD	Criteria	(Limit 20)
Naphthalene	mg/kg (ppm)	0.17	93	92	58-121	1 ;
Acenaphthylene	mg/kg (ppm)	0.17	92	89	54-121	3
Acenaphthene	mg/kg (ppm)	0.17	95	94	54-123	1
Fluorene	mg/kg (ppm)	0.17	94	91	56-127	3
Phenanthrene	mg/kg (ppm)	0.17	93	93	55-122	0
Anthracene	mg/kg (ppm)	0.17	94	95	50-120	1 ;
Fluoranthene	mg/kg (ppm)	0.17	95	93	54-129	2
Pyrene	mg/kg (ppm)	0.17	94	92	53-127	2
Benz(a)anthracene	mg/kg (ppm)	0.17	90	83	51-115	8
Chrysene	mg/kg (ppm)	0.17	97	99	55-129	2
Benzo(b)fluoranthene	mg/kg (ppm)	0.17	95	87	56-123	9
Benzo(k)fluoranthene	mg/kg (ppm)	0.17	105	111	54-131	6
Benzo(a)pyrene	mg/kg (ppm)	0.17	95	93	51-118	2
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.17	88	79	49 -148	11
Dibenz(a,h)anthracene	mg/kg (ppm)	0.17	94	93	50-14 1	1
Benzo(g,h,i)perylene	mg/kg (ppm)	0.17	95	96	52-131	1

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- A1 More than one compound of similar molecule structure was identified with equal probability.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte indicated may be due to carryover from previous sample injections.
- d The sample was diluted. Detection limits may be raised due to dilution.
- ds The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb Analyte present in the blank and the sample.
- fc The compound is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.
- ht Analysis performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- j The result is below normal reporting limits. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the compound indicated is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc-The sample was received in a container not approved by the method. The value reported should be considered an estimate.
- pr The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Bradley T. Benson, B.S. Kurt Johnson, B.S.

3012 16th Avenue West Seattle, WA 98119-2029 TEL: (206) 285-8282 e-mail: fbi@isomedia.com

August 13, 2012

Chuck Lie, Project Manager Terra Associates 12525 Willows Rd NE Ste 101 Kirkland, WA 98034

Dear Mr. Lie:

Included are the results from the testing of material submitted on August 10, 2012 from the SBMC, F&BI 208137 project. There are 9 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures NAA0813R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on August 10, 2012 by Friedman & Bruya, Inc. from the Terra Associates SBMC, F&BI 208137 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	<u>Terra Associates</u>
208137-01	AOC3-6
208137-02	AOC3-7
208137-03	AOC3-8

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/13/12 Date Received: 08/10/12 Project: SBMC, F&BI 208137 Date Extracted: 08/10/12 Date Analyzed: 08/10/12

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	$\frac{\text{Diesel Range}}{\text{(C}_{10}\text{-C}_{25})}$	Motor Oil Range (C ₂₅ -C ₃₆)	Surrogate (% Recovery) (Limit 50-150)
AOC3-6 208137-01	<50	<250	107
AOC3-7 208137-02	<50	<250	105
AOC3-8 208137-03	<50	<250	108
Method Blank	<50	<250	96

ENVIRONMENTAL CHEMISTS

Client Sample ID:	AOC3-6	Client:	Terra Associates
Date Received:	08/10/12	Project:	SBMC, F&BI 208137
Date Extracted:	08/10/12	Lab ID:	208137-01 1/5
Date Analyzed:	08/10/12	Data File:	081005.D
Matrix:	Soil	Instrument:	GCMS6
Units:	mg/kg (ppm)	Operator:	ya
		T	7.7

		Lower	Upper
Surrogates:	% Recovery:	Limit:	Limit:
Anthracene-d10	110	50	150
Benzo(a)anthracene-d12	124	35	159

Compounds:	Concentration mg/kg (ppm)
Naphthalene	< 0.01
Acenaphthylene	< 0.01
Acenaphthene	< 0.01
Fluorene	< 0.01
Phenanthrene	< 0.01
Anthracene	< 0.01
Fluoranthene	< 0.01
Pyrene	< 0.01
Benz(a)anthracene	< 0.01
Chrysene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b)fluoranthene	< 0.01
Benzo(k)fluoranthene	< 0.01
Indeno(1,2,3-cd)pyrene	< 0.01
Dibenz(a,h)anthracene	< 0.01
Benzo(g,h,i)perylene	< 0.01

ENVIRONMENTAL CHEMISTS

Client Sample ID:	AOC3-7
Date Received:	08/10/12
Date Extracted:	08/10/12
Date Analyzed:	08/10/12
Matrix:	Soil
Units:	mg/kg (ppm)

Client:	Terra Associates
Project:	SBMC, F&BI 208137
Lab ID:	208137-02 1/5
Data File:	081006.D
Instrument:	GCMS6
Operator:	ya

Surrogates: Anthracene d10 Benzo(a)anthracene-d12	% Recovery: 122 137	Lower Limit: 50 35	Upper Limit: 150 159
			15

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.01
Acenaphthylene	< 0.01
Acenaphthene	< 0.01
Fluorene	< 0.01
Phenanthrene	< 0.01
Anthracene	< 0.01
Fluoranthene	0.017
Pyrene	0.023
Benz(a)anthracene	0.011
Chrysene	0.011
Benzo(a)pyrene	0.011
Benzo(b)fluoranthene	0.011
Benzo(k)fluoranthene	< 0.01
Indeno(1,2,3-cd)pyrene	< 0.01
Dibenz(a,h)anthracene	< 0.01
Benzo(g,h,i)perylene	< 0.01

ENVIRONMENTAL CHEMISTS

Client Sample ID:	AOC3-8
Date Received:	08/10/12
Date Extracted:	08/10/12
Date Analyzed:	08/10/12
Matrix:	Soil
Units:	mg/kg (ppm)

Client:	Terra Associates
Project:	SBMC, F&BI 208137
Lab ID:	208137-03 1/5
Data File:	081007.D
Instrument:	GCMS6
Operator	va ·

Surrogates: % R Anthracene-d10 Benzo(a)anthracene-d12	Low Lim 106 50 112 35	it: Limit:
---	-----------------------	------------

	Concentration
Compounds:	mg/kg (ppm)
Naphthalene	0.024
Acenaphthylene	0.088
Acenaphthene	< 0.01
Fluorene	0.017
Phenanthrene	0.26
Anthracene	0.12
Fluoranthene	1.1
Pyrene	1.3
Benz(a)anthracene	0.54
Chrysene	0.65
Benzo(a)pyrene	0.64
Benzo(b)fluoranthene	0.69
Benzo(k)fluoranthene	0.25
Indeno(1,2,3-cd)pyrene	0.44
Dibenz(a,h)anthracene	0.10
Benzo(g,h,i)perylene	0.40

ENVIRONMENTAL CHEMISTS

Client:	Terra Associates
Project:	SBMC, F&BI 208137
Lab ID:	02-1414 mb2 1/5
Data File:	081004.D
Instrument:	GCMS6
Operator	va

Surrogates: Anthracene-d10 Benzo(a)anthracene-d12	% Recovery: 126 151	Lower Limit: 50 35	Upper Limit: 150 159
Compounds:	Concentration mg/kg (ppm)		

	Concentration
Compounds:	mg/kg (ppm)
Naphthalene	< 0.01
Acenaphthylene	< 0.01
Acenaphthene	< 0.01
Fluorene	< 0.01
Phenanthrene	< 0.01
Anthracene	< 0.01
Fluoranthene	< 0.01
Pyrene	< 0.01
Benz(a)anthracene	< 0.01
Chrysene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b)fluoranthene	< 0.01
Benzo(k)fluoranthene	< 0.01
Indeno(1,2,3-cd)pyrene	< 0.01
Dibenz(a,h)anthracene	< 0.01
Benzo(g,h,i)perylene	< 0.01

ENVIRONMENTAL CHEMISTS

Date of Report: 08/13/12 Date Received: 08/10/12

Project: SBMC, F&BI 208137

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 208134-02 (Matrix Spike)

			(Wet wt)	Percent	Percent		
	Reporting	Spike	Sample	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	Result	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	92	93	63-146	1

Laboratory Code: Laboratory Control Sample

			Percent	
	Reporting	Spike	Recovery	Acceptance
<u>Analyte</u>	Units	Level	LCS	Criteria
Diesel Extended	mg/kg (ppm)	5,000	90	79-144

ENVIRONMENTAL CHEMISTS

Date of Report: 08/13/12 Date Received: 08/10/12

Project: SBMC, F&BI 208137

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR PNA'S BY EPA METHOD 8270D SIM

Laboratory Code: 208115-04 1/5 (Matrix Spike)

				Percent	
	Reporting	Spike	Sample	Recovery	Acceptance
Analyte	Units	Level	Result	MS	Criteria
Naphthalene	mg/kg (ppm)	0.17	0.031	73	44-129
Acenaphthylene	mg/kg (ppm)	0.17	< 0.01	84	52-121
Acenaphthene	mg/kg (ppm)	0.17	0.031	81	51-123
Fluorene	mg/kg (ppm)	0.17	0.031	80	37-137
Phenanthrene	mg/kg (ppm)	0.17	0.24	81 b	45-124
Anthracene	mg/kg (ppm)	0.17	0.042	81 b	32-124
Fluoranthene	mg/kg (ppm)	0.17	0.30	108 b	50-125
Pyrene	mg/kg (ppm)	0.17	0.27	109 b	41-135
Benz(a)anthracene	mg/kg (ppm)	0.17	0.13	84 b	23-144
Chrysene	mg/kg (ppm)	0.17	0.16	87 b	45-122
Benzo(b)fluoranthene	mg/kg (ppm)	0.17	0.19	106 b	31-144
Benzo(k)fluoranthene	mg/kg (ppm)	0.17	0.081	77 b	45-130
Benzo(a)pyrene	mg/kg (ppm)	0.17	0.15	95 b	39-128
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.17	0.14	81 b	28-146
Dibenz(a,h)anthracene	mg/kg (ppm)	0.17	< 0.01	92	46-129
Benzo(g,h,i)perylene	mg/kg (ppm)	0.17	0.10	83 b	37-133

Laboratory Code: Laboratory Control Sample

	•	_	Percent	Percent		
	Reporting	Spike	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	LCS	LCSD	Criteria	(Limit 20)
Naphthalene	mg/kg (ppm)	0.17	93	92	58-121	1
Acenaphthylene	mg/kg (ppm)	0.17	92	89	54-121	3
Acen aphthene	mg/kg (ppm)	0.17	95	94	54-123	1
Fluorene	mg/kg (ppm)	0.17	94	91	56-127	3
Phenanthrene	mg/kg (ppm)	0.17	93	93	55-122	0
Anthracene	mg/kg (ppm)	0.17	94	95	50-120	1
Fluoranthene	mg/kg (ppm)	0.17	95	93	54-129	2
Pyrene	mg/kg (ppm)	0.17	94	92	53-127	2
Benz(a)anthracene	mg/kg (ppm)	0.17	90	83	51-115	8
Chrysene	mg/kg (ppm)	0.17	97	99	55-129	2
Benzo(b)fluoranthene	mg/kg (ppm)	0.17	95	87	56-123	9
Benzo(k)fluoranthene	mg/kg (ppm)	0.17	105	111	54-131	6
Benzo(a)pyrene	mg/kg (ppm)	0.17	95	93	51-118	2
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.17	88	79	49-148	11
Dibenz(a,h)anthracene	mg/kg (ppm)	0.17	94	93	50-141	1
Benzo(g,h,i)perylene	mg/kg (ppm)	0.17	95	96	52-131	1

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- A1 More than one compound of similar molecule structure was identified with equal probability.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca. The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte indicated may be due to carryover from previous sample injections.
- d The sample was diluted. Detection limits may be raised due to dilution.
- ds The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb Analyte present in the blank and the sample.
- fc The compound is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.
- ht Analysis performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- j The result is below normal reporting limits. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the compound indicated is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received in a container not approved by the method. The value reported should be considered an estimate.
- pr-The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

Send Report To Ch	W 13	0	•	SAMPLER8	(signature,	11	WZ.		P	~	**************************************]		-	۔ په معلم		
Company Tarra A	SSOCIAT	Inc		PROJECT N		<u>-</u> -	<u>V.</u>)		-/		No.		481	ilian EUS	dard (2 Week	d) This ks)
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ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Bradley T. Benson, B.S. Kurt Johnson, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 TEL: (206) 285-8282 e-mail: fbi@isomedia.com

August 17, 2012

Chuck Lie, Project Manager Terra Associates 12525 Willows Rd NE Ste 101 Kirkland, WA 98034

Dear Mr. Lie:

Included are the results from the testing of material submitted on August 14, 2012 from the SBMC, F&BI 208180 project. There are 7 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures NAA0817R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on August 14, 2012 by Friedman & Bruya, Inc. from the Terra Associates SBMC, F&BI 208180 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>

Terra Associates

208180-01

8-14-9

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/17/12 Date Received: 08/14/12

Project: SBMC, F&BI 208180 Date Extracted: 08/14/12 Date Analyzed: 08/15/12

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	$\frac{\text{Diesel Range}}{\text{(C}_{10}\text{-C}_{25})}$	Motor Oil Range (C ₂₅ -C ₃₆)	Surrogate (% Recovery) (Limit 50-150)
8-14-9 208180-01	<50	<250	113
Method Blank	<50	<250	113

ENVIRONMENTAL CHEMISTS

Client Sample ID:	8-14-9	Client:	Terra Associates
Date Received:	08/14/12	Project:	SBMC, F&BI 208180
Date Extracted:	08/14/12	Lab ID:	208180-01 1/5
Date Analyzed:	08/14/12	Data File:	081406.D
Matrix:	Soil	Instrument:	GCMS6
Units:	mg/kg (ppm)	Operator:	ya

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	133	50	150
Benzo(a)anthracene-d12	143	35	159

Compounds:	Concentration mg/kg (ppm)
compounds.	mg,rg (hhm)
Naphthalene	0.063
Acenaphthylene	0.087
Acenaphthene	< 0.01
Fluorene	0.040
Phenanthrene	0.39
Anthracene	0.059
Fluoranthene	0.82
Pyrene	0.98
Benz(a)anthracene	0.36
Chrysene	0.47
Benzo(a)pyrene	0.46
Benzo(b)fluoranthene	0.47
Benzo(k)fluoranthene	0.18
Indeno(1,2,3-cd)pyrene	0.34
Dibenz(a,h)anthracene	0.058
Benzo(g,h,i)perylene	0.32

ENVIRONMENTAL CHEMISTS

Client Sample ID:	Method Blank	Client:	Terra Associates
Date Received:	NA	Project:	SBMC, F&BI 208180
Date Extracted:	08/14/12	Lab ID:	02-1431 mb 1/5
Date Analyzed:	08/14/12	Data File:	081405.D
Matrix:	Soil	Instrument:	GCMS6
Units:	mg/kg (ppm)	Operator:	ya

Surrogates:	% Recovery:	Lower Limit:	Opper Limit:
Anthracene-d10	97	50	150
Benzo(a)anthracene-d12	93	35	159

Compounds:	Concentration mg/kg (ppm)
Naphthalene	< 0.01
Acenaphthylene	< 0.01
Acenaphthene	< 0.01
Fluorene	< 0.01
Phenanthrene	< 0.01
Anthracene	< 0.01
Fluoranthene	< 0.01
Pyrene	< 0.01
Benz(a)anthracene	< 0.01
Chrysene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b)fluoranthene	< 0.01
Benzo(k)fluoranthene	< 0.01
Indeno(1,2,3-cd)pyrene	< 0.01
Dibenz(a,h)anthracene	< 0.01
Benzo(g,h,i)perylene	< 0.01

ENVIRONMENTAL CHEMISTS

Date of Report: 08/17/12 Date Received: 08/14/12

Project: SBMC, F&BI 208180

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 208183-06 (Matrix Spike)

Analyte	Reporting Units	Spike Level	(Wet wt) Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5.000	<50	95	94		1
Dieser Batemaca	mg, vg (hhm)	0,000	~00	อบ	94	63-146	1

Laboratory Code: Laboratory Control Sample

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Diesel Extended	mg/kg (ppm)	5,000	92	79-144

ENVIRONMENTAL CHEMISTS

Date of Report: 08/17/12 Date Received: 08/14/12

Project: SBMC, F&BI 208180

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR PNA'S BY EPA METHOD 8270D SIM

Laboratory Code: 208180-01 1/5 (Matrix Spike)

			Percent	
Reporting	Spike	Sample	Recovery	Acceptance
Units	Level	Result	MS	Criteria
mg/kg (ppm)	0.17	0.063	71 b	44-129
mg/kg (ppm)	0.17	0.087	88 b	52-121
mg/kg (ppm)	0.17	< 0.01	88	51-123
mg/kg (ppm)	0.17	0.040	82 b	37-137
mg/kg (ppm)	0.17	0.39	36 b	45-124
mg/kg (ppm)	0.17	0.059	83 b	32-124
mg/kg (ppm)	0.17	0.82	15 b	50-125
mg/kg (ppm)	0.17	0.98	2 b	41-135
mg/kg (ppm)	0.17	0.36	54 b	23-144
mg/kg (ppm)	0.17	0.47	33 b	45-122
mg/kg (ppm)	0.17	0.47	43 b	31-144
mg/kg (ppm)	0.17	0.18	57 b	45-130
mg/kg (ppm)	0.17	0.46	37 b	39-128
mg/kg (ppm)	0.17	0.34	39 b	28-146
mg/kg (ppm)	0.17	0.058	70 b	46-129
mg/kg (ppm)	0.17	0.32	38 b	37-133
	Units mg/kg (ppm) mg/kg (ppm)	Units Level mg/kg (ppm) 0.17 mg/kg (ppm) 0.17	Units Level Result mg/kg (ppm) 0.17 0.063 mg/kg (ppm) 0.17 0.087 mg/kg (ppm) 0.17 0.040 mg/kg (ppm) 0.17 0.39 mg/kg (ppm) 0.17 0.059 mg/kg (ppm) 0.17 0.98 mg/kg (ppm) 0.17 0.36 mg/kg (ppm) 0.17 0.47 mg/kg (ppm) 0.17 0.47 mg/kg (ppm) 0.17 0.18 mg/kg (ppm) 0.17 0.34 mg/kg (ppm) 0.17 0.34 mg/kg (ppm) 0.17 0.058	Reporting Units Spike Level Sample Recovery Recovery MS MS MS mg/kg (ppm) 0.17 0.063 71 b mg/kg (ppm) 0.17 0.087 88 b mg/kg (ppm) 0.17 0.040 82 b mg/kg (ppm) 0.17 0.059 83 b mg/kg (ppm) 0.17 0.98 2 b mg/kg (ppm) 0.17 0.98 2 b mg/kg (ppm) 0.17 0.36 54 b mg/kg (ppm) 0.17 0.47 33 b mg/kg (ppm) 0.17 0.47 43 b mg/kg (ppm) 0.17 0.18 57 b mg/kg (ppm) 0.17 0.46 37 b mg/kg (ppm) 0.17 0.34 39 b mg/kg (ppm) 0.17 0.058 70 b

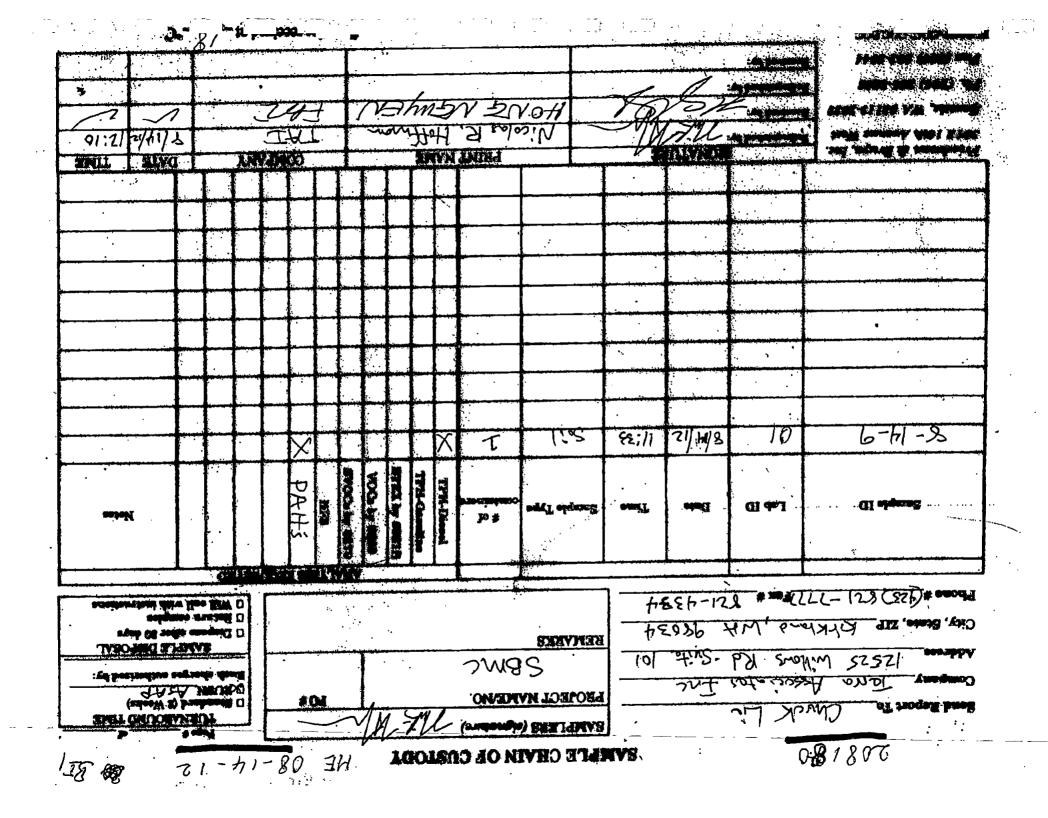
Laboratory Code: Laboratory Control Sample

			Percent	Percent	•	1
	Reporting	Spike	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	LCS	LCSD	Criteria	(Limit 20)
Naphthalene	mg/kg (ppm)	0.17	92	94	58-121	2
Acenaphthylene	mg/kg (ppm)	0.17	94	97	54-121	3
Acenaphthene	mg/kg (ppm)	0.17	95	97	54-12 3	2
Fluorene	mg/kg (ppm)	0.17	93	98	56-127	5
Phenanthrene	mg/kg (ppm)	0.17	93	95	55-122	2
Anthracene	mg/kg (ppm)	0.17	95	96	50-120	1 '
Fluoranthene	mg/kg (ppm)	0.17	95	97	54-129	2
Pyrene	mg/kg (ppm)	0.17	95	9 8	53-127	3
Benz(a)anthracene	mg/kg (ppm)	0.17	89	92	51-115	3
Chrysene	mg/kg (ppm)	0.17	98	99	55-129	1
Benzo(b)fluoranthene	mg/kg (ppm)	0.17	95	94	56-123	1
Benzo(k)fluoranthene	mg/kg (ppm)	0.17	9 8	100	54-131	2
Benzo(a)pyrene	mg/kg (ppm)	0.17	91	91	51-118	0
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.17	97	104	49-148	7
Dibenz(a,h)anthracene	mg/kg (ppm)	0.17	94	95	50-141	1
Benzo(g,h,i)perylene	mg/kg (ppm)	0.17	94	95	52-131	1

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- A1 More than one compound of similar molecule structure was identified with equal probability.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte indicated may be due to carryover from previous sample injections.
- d The sample was diluted. Detection limits may be raised due to dilution.
- ds The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb Analyte present in the blank and the sample.
- fc The compound is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.
- ht Analysis performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- j The result is below normal reporting limits. The value reported is an estimate.
- ${\bf J}$ The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the compound indicated is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- $\,$ nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received in a container not approved by the method. The value reported should be considered an estimate.
- pr-The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.



ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Bradley T. Benson, B.S. Kurt Johnson, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 TEL: (206) 285-8282 e-mail: fbi@isomedia.com

August 17, 2012

Chuck Lie, Project Manager Terra Associates 12525 Willows Rd NE Ste 101 Kirkland, WA 98034

Dear Mr. Lie:

Included are the results from the testing of material submitted on August 15, 2012 from the SBMC, F&BI 208202 project. There are 7 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures NAA0817R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on August 15, 2012 by Friedman & Bruya, Inc. from the Terra Associates SBMC, F&BI 208202 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID

Terra Associates

208202-01

8-15-10

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/17/12 Date Received: 08/15/12 Project: SBMC, F&BI 208202 Date Extracted: 08/15/12 Date Analyzed: 08/16/12

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Diesel Range (C ₁₀ -C ₂₅)	Motor Oil Range (C ₂₅ -C ₃₆)	Surrogate (% Recovery) (Limit 50-150)
8-15-10 208202-01	160	<250	104
Method Blank	<50	<250	120

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	8-15-10	
Date Received:	08/15/12	
Date Extracted:	08/15/12	
Date Analyzed:	08/15/12	
Matrix:	Soil	•
Units:	mg/kg (ppm)	

15/12 l /kg (ppm)

Client: Terra Associates
Project: SBMC, F&BI 208202
Lab ID: 208202.01 1/5

Lab ID: 208202-01 1/5
Data File: 081515.D
Instrument: GCMS6
Operator: ya

Surrogates:	% Recovery:	Lower	Upper
Anthracene d10	80	Limit:	Limit:
Benzo(a)anthracene-d12	81	50 35	150 159

Compounds:	Concentration mg/kg (ppm)
Naphthalene	< 0.01
Acenaphthylene	< 0.01
Acenaphthene	< 0.01
Fluorene	< 0.01
Phenanthrene	< 0.01
Anthracene	< 0.01
Fluoranthene	< 0.01
Pyrene	< 0.01
Benz(a)anthracene	< 0.01
Chrysene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b)fluoranthene	< 0.01
Benzo(k)fluoranthene	< 0.01
Indeno(1,2,3-cd)pyrene	< 0.01
Dibenz(a,h)anthracene	< 0.01
Benzo(g,h,i)perylene	< 0.01

ENVIRONMENTAL CHEMISTS

Operator:

Date Extracted: 08/15/12 Date Analyzed: 08/15/12 Matrix: Soil	Client Sample ID:	Method Blank
Date Analyzed: 08/15/12 Matrix: Soil	Date Received:	NA 09/15/10
Matrix: Soil		
	•	
	Units:	mg/kg (ppm)

Client:	Terra Associates
Project:	SBMC, F&BI 208202
Lab ID:	02-1431 mb2 1/5
Data File:	081514.D
Instrument:	GCMS6

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene d10	86	50	150
Benzo(a)anthracene-d12	86	35	159

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.01
Acenaphthylene	< 0.01
Acenaphthene	< 0.01
Fluorene	< 0.01
Phenanthrene	< 0.01
Anthracene	< 0.01
Fluoranthene	< 0.01
Pyrene	< 0.01
Benz(a)anthracene	< 0.01
Chrysene	< 0.01
Benzo(a)pyrene	<0.01
Benzo(b)fluoranthene	<0.01
Benzo(k)fluoranthene	<0.01
Indeno(1,2,3-cd)pyrene	< 0.01
Dibenz(a,h)anthracene	< 0.01
Benzo(g,h,i)perylene	<0.01

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/17/12 Date Received: 08/15/12

Project: SBMC, F&BI 208202

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 208183-06 (Matrix Spike)

			(Wet wt)	Percent	Percent		1
	Reporting	Spike	Sample	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	Result	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	95	94	63-146	1

Laboratory Code: Laboratory Control Sample

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Diesel Extended	mg/kg (ppm)	5,000	92	79-144

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/17/12 Date Received: 08/15/12 Project: SBMC, F&BI 208202

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR PNA'S BY EPA METHOD 8270D SIM

Laboratory Code: 208180-01 1/5 (Matrix Spike)

				Percent	
	Reporting	Spike	Sample	Recovery	Acceptance
Analyte	Units	Level	Result	MS	Criteria
Naphthalene	mg/kg (ppm)	0.17	0.063	71 b	44-129
Acenaphthylene	mg/kg (ppm)	0.17	0.087	88 b	52-121
Acenaphthene	mg/kg (ppm)	0.17	< 0.01	88	51-123
Fluorene	mg/kg (ppm)	0.17	0.040	82 b	37-137
Phenanthrene	mg/kg (ppm)	0.17	0.39	36 b	45-124
Anthracene	mg/kg (ppm)	0.17	0.059	83 b	32-124
Fluoranthene	mg/kg (ppm)	0.17	0.82	15 b	50-125
Pyrene	mg/kg (ppm)	0.17	0.98	2 b	41-135
Benz(a)anthracene	mg/kg (ppm)	0.17	0.36	54 b	23-144
Chrysene	mg/kg (ppm)	0.17	0.47	33 b	45-122
Benzo(b)fluoranthene	mg/kg (ppm)	0.17	0.47	43 b	31-144
Benzo(k)fluoranthene	mg/kg (ppm)	0.17	0.18	57 b	45-130
Benzo(a)pyrene	mg/kg (ppm)	0.17	0.46	37 b	39-128
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.17	0.34	39 b	28-146
Dibenz(a,h)anthracene	mg/kg (ppm)	0.17	0.058	70 b	46-129
Benzo(g,h,i)perylene	mg/kg (ppm)	0.17	0.32	38 b	37-133

Laboratory Code: Laboratory Control Sample

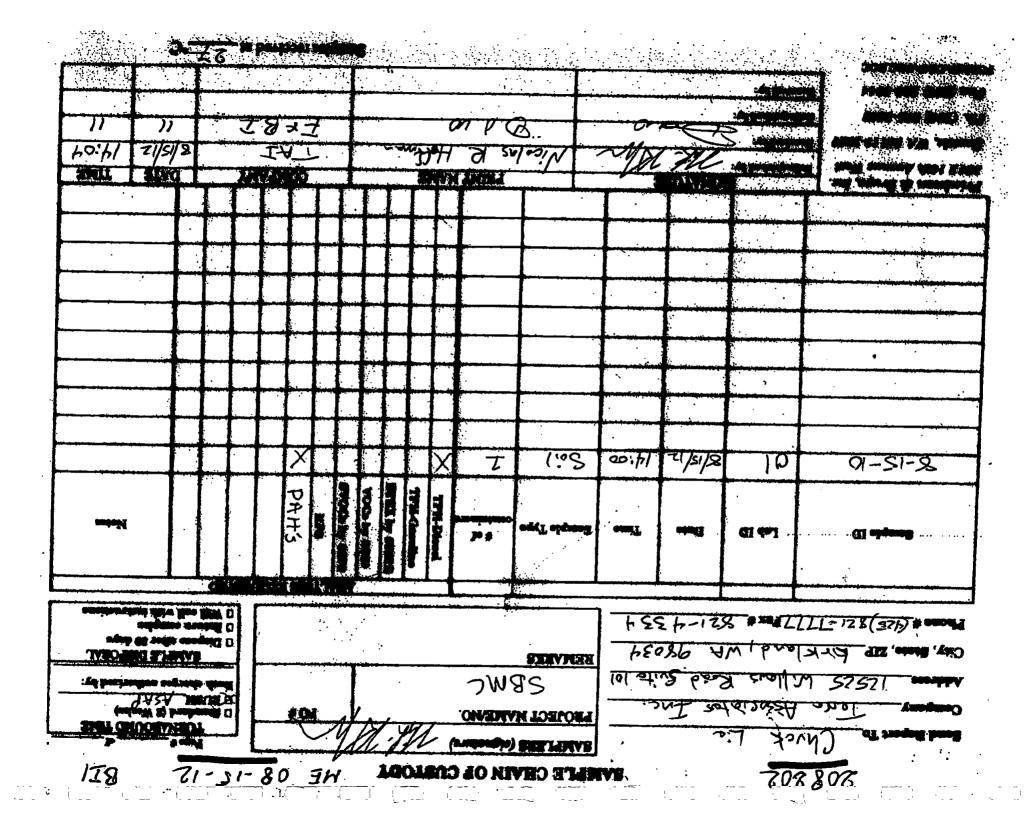
			Percent	Percent		
	Reporting	Spike	Recovery	Recovery	Acceptance	RPD
<u>Analyte</u>	Units	Level	LCS	LCSD	Criteria	(Limit 20)
Naphthalene	mg/kg (ppm)	0.17	92	94	58-121	2
Acenaphthylene	mg/kg (ppm)	0.17	94	97	54-121	3
Acenaphthene	mg/kg (ppm)	0.17	95	97	54-123	2
Fluorene	mg/kg (ppm)	0.17	93	98	56-127	5
Phenanthrene	mg/kg (ppm)	0.17	93	95	55-122	2
Anthracene	mg/kg (ppm)	0.17	95	96	50-120	1
Fluoranthene	mg/kg (ppm)	0.17	95	97	54-129	2
Pyrene	mg/kg (ppm)	0.17	95	98	53-127	3
Benz(a)anthracene	mg/kg (ppm)	0.17	89	92	51-115	3
Chrysene	mg/kg (ppm)	0.17	98	99	55-129	1
Benzo(b)fluoranthene	mg/kg (ppm)	0.17	95	94	56-123	1
Benzo(k)fluoranthene	mg/kg (ppm)	0.17	98	100	54-131	2
Benzo(a)pyrene	mg/kg (ppm)	0.17	91	91	51-118	0
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.17	97	104	49-148	7
Dibenz(a,h)anthracene	mg/kg (ppm)	0.17	94	95	50-141	1
Benzo(g,h,i)perylene	mg/kg (ppm)	0.17	94	95	52-131	1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- A1 More than one compound of similar molecule structure was identified with equal probability.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte indicated may be due to carryover from previous sample injections.
- d The sample was diluted. Detection limits may be raised due to dilution.
- ds The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb Analyte present in the blank and the sample.
- fc The compound is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.
- ht Analysis performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- j The result is below normal reporting limits. The value reported is an estimate.
- ${\bf J}$ The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the compound indicated is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received in a container not approved by the method. The value reported should be considered an estimate.
- pr-The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.



APPENDIX C

TRUCK TICKETS – REMEDIAL EXCAVATIONS

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Activity By Job ID

Report period August 2012 REGIONAL DISPOSAL INTERMODAL

Job ID:	LW-	12295	60,163	TD Excavating L	LC				
<u>Date</u> 8/28/12 10:10	<u>Ticket #</u> an 552,453	<u>truck</u> SOIL		<u>Container</u> 74	Material Code/Desc SW-CONT SOIL W/F	<u>Gross</u> 98,280	<u>Tare Net</u> 35,62062,660	<u>Tons</u> 31.33	<u>Origin</u> SEATTLE/KING
8/28/12 11:59	an 552,541	SOIL		74	SW-CONT SOIL W/F	100,440	35,40065,040		SEATTLE/KING
8/28/12 2:39	pm 552,635	SOIL		74	SW-CONT SOIL W/F	79,020	35,28043,740	21.87	SEATTLE/KING
				Total For Jo	b LW-12295	3 Loa	ds	85.72	, TN

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Irea 3

APPENDIX D

ANALYTICAL TEST RESULTS – GROUNDWATER

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Bradley T. Benson, B.S. Kurt Johnson, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 TEL: (206) 285-8282 e-mail: fbi@isomedia.com

November 9, 2012

Chuck Lie, Project Manager Terra Associates 12525 Willows Rd NE Ste 101 Kirkland, WA 98034

Dear Mr. Lie:

Included are the results from the testing of material submitted on October 17, 2012 from the T-6751, F&BI 210277 project. There are 17 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures NAA1109R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on October 17, 2012 by Friedman & Bruya, Inc. from the Terra Associates T-6751, F&BI 210277 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Terra Associates
210277-01	MW-1
210277-02	MW-2
210277-03	MW-3
210277-04	MW-4
210277-05	MW-5
210277-06	MW-6

Samples MW-2, MW-5, and MW-6 were sent to Fremont for MCPP herbicide analysis. Review of the enclosed report indicates that all quality assurance were acceptable.

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/09/12 Date Received: 10/17/12

Project: T-6751, F&BI 210277 Date Extracted: 10/19/12 Date Analyzed: 10/20/12

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	<u>Toluene</u>	Ethyl <u>Benzene</u>	Total <u>Xylenes</u>	Gasoline <u>Range</u>	Surrogate (% Recovery) (Limit 52-124)
MW-1 210277-01	47	<1	<1	<3	170	101
Method Blank 02-1907 MB	<1	<1	<1	<3	<100	102

ENVIRONMENTAL CHEMISTS

Date of Report: 11/09/12 Date Received: 10/17/12

Project: T-6751, F&BI 210277 Date Extracted: 10/22/12 Date Analyzed: 10/22/12

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Diesel Range (C ₁₀ -C ₂₅)	Motor Oil Range (C ₂₅ -C ₃₆)	Surrogate (% Recovery) (Limit 47-140)
MW-3 210277-03	210 х	<250	124
MW-4 210277-04	7,900 x	3,400 x	59
Method Blank 02-1913 MB	<50	<250	105

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

% Recovery:

107

1,170

Client ID: MW-1
Date Received: 10/17/12
Date Extracted: 10/18/12
Date Analyzed: 10/22/12
Matrix: Water
Units: ug/L (ppb)

Internal Standard:

Germanium

Iron Screen

 Client:
 Terra Associates

 Project:
 T-6751, F&BI 210277

 Lab ID:
 210277-01

 Data File:
 210277-01.067

 Instrument:
 ICPMS1

 Operator:
 AP

Upper

Limit:

125

125

Lower
Limit:

60

60

Indium 97

Concentration ug/L (ppb)

Arsenic 25.8

Manganese 26.1

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

MW-5 10/17/12 10/18/12 10/22/12 Water
ug/L (ppb)

Client:	Terra Associates
Project:	T-6751, F&BI 210277
Lab ID:	210277-05 x10
Data File:	210277-05 x10.070
Instrument:	ICPMS1
Operator:	AP

		Lower	Upper
Internal Standard:	% Recovery:	Limit:	Limit:
Germanium	96	60	125
Indium	95	60	125
	Concentration		

Analyte:	Concentration ug/L (ppb)
Arsenic	13.3
Manganese	16.6
Iron Screen	<2,500

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID: Method Blank Date Received: Date Extracted: Date Analyzed:

Internal Standard:

Germanium

NA 10/18/12 10/22/12

Matrix: Units:

Water ug/L (ppb) Client: Project: Terra Associates T-6751, F&BI 210277

Lab ID: I2-713 mb Data File: I2-713 mb rr. 072

Instrument: ICPMS1 Operator: ΑP

% Recovery: 97 99

Lower Limit: 60 60

Upper Limit: 125 125

Concentration

Analyte:

Indium

ug/L (ppb)

Arsenic Manganese Iron Screen

<1 <1 <250

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID: MW-1
Date Received: 10/17/12
Date Extracted: 10/23/12
Date Analyzed: 10/23/12
Matrix: Water
Units: ug/L (ppb)

 Client:
 Terra Associates

 Project:
 T-6751, F&BI 210277

 Lab ID:
 210277-01

 Data File:
 210277-01.052

 Instrument:
 ICPMS1

Instrument: ICF Operator: AP

 Internal Standard:
 % Recovery:
 Limit:
 Limit:

 Germanium
 92
 60
 125

 Indium
 82
 60
 125

Analyte: Concentration ug/L (ppb)

Arsenic 19.6
Manganese 2.57
Iron Screen 211

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID: MW-5
Date Received: 10/17/12
Date Extracted: 10/23/12
Date Analyzed: 10/23/12
Matrix: Water
Units: ug/L (ppb)

 Client:
 Terra Associates

 Project:
 T-6751, F&BI 210277

 Lab ID:
 210277-05 x10

 Data File:
 210277-05 x10.053

 Instrument:
 ICPMS1

 Operator:
 AP

Lower Upper Internal Standard: % Recovery: Limit: Limit: Germanium 96 60 125 Indium 89 60 125

Analyte: Concentration ug/L (ppb)

Arsenic 14.1

Manganese <10Iron Screen <2,500

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID: Method Blank
Date Received: NA
Date Extracted: 10/23/12
Date Analyzed: 10/23/12
Matrix: Water
Units: ug/L (ppb)

Client: Terra Associates
Project: T-6751, F&BI 210277
Lab ID: I2-721 mb
Data File: I2-721 mb.043
Instrument: ICPMS1
Operator: AP

 Internal Standard:
 % Recovery:
 Limit:
 Limit:

 Germanium
 107
 60
 125

 Indium
 103
 60
 125

Analyte: Concentration ug/L (ppb)

Arsenic <1
Manganese <1
Iron Screen <250

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

•	_	_	
Client Sample ID:	MW-5	Client:	Terra Associates
Date Received:	10/17/12	Project:	T-6751, F&BI 210277
Date Extracted:	10/23/12	Lab ID:	210277-05 1/2
Date Analyzed:	10/23/12	Data File:	102311.D
Matrix:	Water	Instrument:	GCMS6
Units:	ug/L (ppb)	Operator:	ya
		T	TT

_		Lower	∪pper
Surrogates:	% Recovery:	Limit:	Limit:
Anthracene d10	108	50	150
Benzo(a)anthracene-d12	122	50	129

	Concentration
Compounds:	ug/L (ppb)
Naphthalene	0.87
Acenaphthylene	<0.1
Acenaphthene	0.28
Fluorene	0.13
Phenanthrene	0.21
Anthracene	< 0.1
Fluoranthene	< 0.1
Pyrene	< 0.1
Benz(a)anthracene	< 0.1
Chrysene	< 0.1
Benzo(a)pyrene	< 0.1
Benzo(b)fluoranthene	< 0.1
Benzo(k)fluoranthene	< 0.1
Indeno(1,2,3-cd)pyrene	< 0.1
Dibenz(a,h)anthracene	< 0.1
Benzo(g,h,i)perylene	< 0.1

ENVIRONMENTAL CHEMISTS

Terra Associates T-6751, F&BI 210277

02-1926 mb 102309.D GCMS6 ya

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Date Extracted: 10/23/12 Lab ID: Date Analyzed: 10/23/12 Data File:	Date Analyzed:	10/23/12	Data File:
	Matrix:	Water	Instrument:

Surrogates:	0/ Dogovor	Lower Limit:	Upper Limit:
0	% Recovery:	Limit;	Limit:
Anthracene-d10	110	50	150
Benzo(a)anthracene-d12	111	50	129

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.1
Acenaphthylene	< 0.1
Acenaphthene	< 0.1
Fluorene	< 0.1
Phenanthrene	<0.1
Anthracene	< 0.1
Fluoranthene	< 0.1
Pyrene	< 0.1
Benz(a)anthracene	< 0.1
Chrysene	< 0.1
Benzo(a)pyrene	< 0.1
Benzo(b)fluoranthene	< 0.1
Benzo(k)fluoranthene	< 0.1
Indeno(1,2,3-cd)pyrene	< 0.1
Dibenz(a,h)anthracene	< 0.1
Benzo(g,h,i)perylene	< 0.1

ENVIRONMENTAL CHEMISTS

Date of Report: 11/09/12 Date Received: 10/17/12

Project: T-6751, F&BI 210277

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 210318-03 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	<1	<1	\mathbf{nm}
Xylenes	ug/L (ppb)	<3	<3	nm
Gasoline	ug/L (ppb)	<100	<100	nm

		Percent				
	Reporting	Spike	Recovery	Acceptance		
Analyte	Units	Level	LCS	Criteria		
Benzene	ug/L (ppb)	50	94	65-118		
Toluene	ug/L (ppb)	50	97	72-122		
Ethylbenzene	ug/L (ppb)	50	101	73-126		
Xylenes	ug/L (ppb)	150	96	74-118		
Gasoline	ug/L (ppb)	1,000	105	69-134		

ENVIRONMENTAL CHEMISTS

Date of Report: 11/09/12 Date Received: 10/17/12

Project: T-6751, F&BI 210277

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

			Percent	Percent		
	Reporting	Spike	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	LCS	LCSD	Criteria	(Limit 20)
Diesel Extended	ug/L (ppb)	2,500	108	113	61-133	5

ENVIRONMENTAL CHEMISTS

Date of Report: 11/09/12 Date Received: 10/17/12

Project: T-6751, F&BI 210277

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 210277-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	ug/L (ppb)	10	25.8	66 b	60 b	51-167	10 b
Manganese	ug/L (ppb)	20	26.1	81 b	90 b	54-157	11 b

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Arsenic	ug/L (ppb)	10	102	81-118
Manganese	ug/L (ppb)	20	101	81-122

ENVIRONMENTAL CHEMISTS

Date of Report: 11/09/12 Date Received: 10/17/12

Project: T-6751, F&BI 210277

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR DISSOLVED METALS USING EPA METHOD 200.8

Laboratory Code: 210318-09 (Matrix Spike)

_Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	ug/L (ppb)	10	<1	98	114	51-167	15
Manganese	ug/L (ppb)	20	4.26	99 b	116 b	54-157	16 b

		Percent					
Analyte	Reporting Units	Reporting Spike : Units Level		Acceptance Criteria			
Arsenic			LCS				
: -	ug/L (ppb)	10	107	81-118			
Manganese	ug/L (ppb)	20	112	81-122			

ENVIRONMENTAL CHEMISTS

Date of Report: 11/09/12 Date Received: 10/17/12

Project: T-6751, F&BI 210277

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR PNA'S BY EPA METHOD 8270D SIM

•	•	•	Percent	Percent		
	Reporting	\mathbf{Spike}	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	LCS	LCSD	Criteria	(Limit 20)
Naphthalene	ug/L (ppb)	1	87	91	67-116	4
Acenaphthylene	ug/L (ppb)	1	93	95	65-119	2
Acenaphthene	ug/L (ppb)	1	89	91	66-118	2
Fluorene	ug/L (ppb)	1	94	97	64-125	3
Phenanthrene	ug/L (ppb)	1	89	91	67-120	2
Anthracen e	ug/L (ppb)	1	87	92	65-122	6
Fluoranthene	ug/L (ppb)	1	87	92	65-127	6
Pyrene	ug/L (ppb)	1	88	99	62-130	12
Benz(a)anthracene	ug/L (ppb)	1	85	92	60 -118	8
Chrysene	ug/L (ppb)	1	90	94	66-125	4
Benzo(b)fluoranthene	ug/L (ppb)	1	91	95	55-135	4
Benzo(k)fluoranthene	ug/L (ppb)	1	95	95	62-125	0
Benzo(a)pyrene	ug/L (ppb)	1	97	100	58-127	3
Indeno(1,2,3-cd)pyrene	ug/L (ppb)	1	98	97	36-142	1
Dibenz(a,h)anthracene	ug/L (ppb)	1	91	95	37-133	4
Benzo(g,h,i)perylene	ug/L (ppb)	1	90	94	34-135	4

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- A1 More than one compound of similar molecule structure was identified with equal probability.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte indicated may be due to carryover from previous sample injections.
- d The sample was diluted. Detection limits may be raised due to dilution.
- ds The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb Analyte present in the blank and the sample.
- fc The compound is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.
- ht Analysis performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- j The result is below normal reporting limits. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the compound indicated is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- $\,\mathrm{nm}$ The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received in a container not approved by the method. The value reported should be considered an estimate.
- pr The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.



1311 N. 35th St. Seattle, WA 98103 T: (206) 352-3790 F: (206) 352-7178 info@fremontanalytical.com

Friedman & Bruya Michael Erdahl 3012 16th Ave. W.

Seattle, Washington 98119

RE: 210277 Lab ID: 1210167

November 06, 2012

Attention Michael Erdahl:

Fremont Analytical, Inc. received 3 sample(s) on 10/18/2012 for the analyses presented in the following report.

Herbicides by EPA Method 8151A

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Michael Dee

MGPm

Sr. Chemist / Principal



Date: 11/06/2012

CLIENT: Project:

Lab Order:

Friedman & Bruya

210277 1210167 **Work Order Sample Summary**

Lab Sample ID

Client Sample ID

Date/Time Collected

Date/Time Received

1210167-001

MW-2 MW-5

10/17/2012 2:10 PM 10/18/2012 4:00 PM 10/17/2012 4:20 PM

1210167-002

MW-6

10/18/2012 4:00 PM

1210167-003

10/17/2012 12:00 PM

10/18/2012 4:00 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned



Case Narrative

WO#: 1210167 Date: 11/6/2012

CLIENT:

Friedman & Bruya

Project:

210277

I. SAMPLE RECEIPT:

All samples were received intact.

II. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.



Analytical Report

WO#:

1210167

Date Reported: 11/6/2012

Client: Friedman & Bruya

Collection Date: 10/17/2012 2:10:00 PM

Project: 210277

Lab ID: 1210167-001 Client Sample ID: MW-2

Matrix: Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Herbicides by EPA Method 8151A				Bato	h ID: 3540	Analyst: MD
MCPP	ND	8.00		μg/L	1	10/29/2012 2:48:00 PM
Surr: 2,4-Dichlorophenylacetic acid	93.5	50-135		%REC	1	10/29/2012 2:48:00 PM

Qualifiers:

Analyte detected in the associated Method Blank

Е Value above quantitation range

J Analyte detected below quantitation limits

RL Reporting Limit

D Dilution was required

Holding times for preparation or analysis exceeded Н

Not detected at the Reporting Limit

Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210167

Date Reported: 11/6/2012

Client: Friedman & Bruya

Project: 210277

Lab ID: 1210167-002

Client Sample ID: MW-5

Collection Date: 10/17/2012 4:20:00 PM

Matrix: Water

Analyses	Result RL		Qual	Units	DF	Date Analyzed
Herbicides by EPA Method 8151A				Bato	h ID: 3540	Analyst: MD
MCPP Surr: 2,4-Dichlorophenylacetic acid	ND 131	8.00 50-135		μg/L %REC	1	10/29/2012 2:48:00 PM 10/29/2012 2:48:00 PM

Qualifiers:

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

RL Reporting Limit

D Dilution was required

H Holding times for preparation or analysis exceeded

ND Not detected at the Reporting Limit

S Spike recovery outside accepted recovery limits



Analytical Report

WO#:

1210167

Date Reported: 11/6/2012

Client:

Friedman & Bruya

Collection Date: 10/17/2012 12:00:00 P

Project: 210277

Lab ID: 1210167-003

Matrix: Water

Client Sample ID: MW-6

Analyses Result RL Qual Units DF **Date Analyzed Herbicides by EPA Method 8151A** Batch ID: 3540 Analyst: MD MCPP ND 8.00 μg/L 10/29/2012 2:48:00 PM 1 Surr: 2,4-Dichlorophenylacetic acid 75.8 50-135 %REC 10/29/2012 2:48:00 PM

Qualifiers:

Analyte detected in the associated Method Blank

Е Value above quantitation range

J Analyte detected below quantitation limits

Reporting Limit

D Dilution was required

Н Holding times for preparation or analysis exceeded

ND Not detected at the Reporting Limit

Spike recovery outside accepted recovery limits s



Date: 11/6/2012

Work Order: CLIENT: Project:	1210167 Friedman & E 210277	Bruya						`		•	SUMMA es by EPA		
Sample ID: MB-0	-3540	SampType	: MBLK			Units: µg/L		Prep Dat	e: 10/20/20	12	RunNo: 64:	25	
Client ID: MBLI	œ	Batch ID:	3540					Analysis Dat	e: 10/29/20	12	SeqNo: 127	7624	
Analyte			Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
MCPP			ND	8,00								· ·	
Surr: 2,4-Dichlo	rophenylacetic acid		2.32		2.000		116	50	135				
Sample ID: LCS-	C-3540	SampType	: LCS			Units: µg/L	_	Prep Dat	e: 10/20/20	12	RunNo: 642	25	
Client ID: LCSV	٧	Batch ID:	3540					Analysis Date	e: 10/29/20	12	SeqNo: 127	7625	
Analyte			Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
MCPP			80.9	8.00	100.0	0	80.9	50	150		•		
Surr: 2,4-Dichlo	rophenylacetic acid		1.85		2.000		92.3	50	150				i
Sample ID: 12101	67-002DUP	SampType	: DUP			Units: µg/L	•	Prep Date	e: 10/20/20		RunNo: 642	26	
Client ID: BATC	н	Batch ID:	3540					Analysis Date	e: 10/29/20	12	SeqNo: 127	7631	١
Analyte		1	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
ИСРР			ND	8.00						0	0	50	
Surr. 2,4-Dichlo	rophenylacetic acid		1.72		2.000		86.2	50	135		0		
Sample ID: 12101	67-003AMS	SampType	: MS			Units: µg/L		Prep Date	e: 10/20/20	12	RunNo: 642	25	
Client ID: MW-6		Batch ID:	3540					Analysis Date	e: 10/29/20	12	SeqNo: 127	7633	. !
Analyte		1	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
MCPP			61.4	8.00	100.0	0	61.4	50	150				ì
Surr. 2,4-Dichlo	ropnenylacetic acid		1,45		2,000		72.3	50	150				1

Qualifiers:

B Analyte detected in the associated Method Blank

H Holding times for preparation or analysis exceeded

R RPD outside accepted recovery limits

D Dilution was required

J Analyte detected below quantitation limits

RL Reporting Limit

E Value above quantitation range

ND Not detected at the Reporting Limit

S Spike recovery outside accepted recovery limits

					SUB	CONT	RACTI	ER	remo	-£:				٦.		Page		of			
Send Report To N	<u> Aichael</u>	Erdahl		·	DDO	TRANS	NAME		rem-	<u>~†</u>		20#		4			NAROUND	TIME			
CompanyE	riedme	in and Bruya	, Іпс.		FIG		•							Standard (2 Weeks)							
Address 3	012 16	th Ave W	ALCO 100 100 100 100 100 100 100 100 100 10	_ 2 10277 C-115						Rush charges authorized by:											
City, State, ZIP_S	nn##In	SVAnessan			REM	ARKS								┪┟			PLE DISP				
- -			· —			Ph	ease Er	nnil R	contra						□ Disp □ Retu	B: 920	fter 30 days	1			
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Sample ID	Lab ID	Date Sampled	Time Sampled	Mat	rix	#of jars	Dioxins and Furans by 8290	ная	VPH	Nitrate	Sulfate	Alkalinity	McDD He-Melde					Notes			
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Phone # 425 821 - 7777 Fax #		LYSES REQUEST	☐ Will call with instructions

										<u>ANA</u>	LY <u>S</u>	ES F	ΕŲ)E21	ED_		,			
Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by8260	SVOCs by 8270	HFS	Probed metals	AS, Fe, Ma	that metic	A CPP	PAH			Notes	
MW-1	A.E	10/14/12	1310	Water	5		X	X				X		X				•		
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Friedman & Bruya, Inc. 3012 16th Avenue West

Seattle, WA 98119-2029

Ph. (206) 285-8282

Fax (206) 283-5044

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME .
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ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Bradley T. Benson, B.S. Kurt Johnson, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 TEL: (206) 285-8282 e-mail: fbi@isomedia.com

January 10, 2013

Chuck Lie, Project Manager Terra Associates 12525 Willows Rd NE Ste 101 Kirkland, WA 98034

Dear Mr. Lie:

Included are the results from the testing of material submitted on January 4, 2013 from the 6751, F&BI 301037 project. There are 17 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures NAA0110R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on January 4, 2013 by Friedman & Bruya, Inc. from the Terra Associates 6751, F&BI 301037 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Terra Associates
301037-01	MW-1
301037-02	.MW-2
301037-03	MW-3
301037-04	MW-4
301037-05	MW-5

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 01/10/13 Date Received: 01/04/13 Project: 6751, F&BI 301037 Date Extracted: 01/07/13 Date Analyzed: 01/07/13

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	Ethyl <u>Benzene</u>	Total <u>Xylenes</u>	Gasoline <u>Range</u>	Surrogate (% Recovery) (Limit 52-124)
MW-1 301037-01	34	<1	<1	<3	210	92
MW-2 301037-02	<1	<1	<1	<3	<100	96
Method Blank 03-0037 MB	<1	<1	<1	<3	<100	94

ENVIRONMENTAL CHEMISTS

Date of Report: 01/10/13 Date Received: 01/04/13 Project: 6751, F&BI 301037 Date Extracted: 01/07/13 Date Analyzed: 01/07/13

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Sample ID Laboratory ID	<u>Diesel Range</u> (C ₁₀ -C ₂₅)	Motor Oil Range (C ₂₅ -C ₃₆)	Surrogate (% Recovery) (Limit 51-134)
MW-3 301037-03	91 x	<250	104
MW-4 301037-04	1,900 x	940 x	110
MW-5 301037-05	1,300 x	690 x	108
Method Blank	<50	<250	101

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID: MW-1
Date Received: 01/04/13
Date Extracted: 01/08/13
Date Analyzed: 01/09/13
Matrix: Water
Units: ug/L (ppb)

 Client:
 Terra Associates

 Project:
 6751, F&BI 301037

 Lab ID:
 301037-01 x10

 Data File:
 301037-01 x10.020

 Instrument:
 ICPMS1

 Operator:
 AP

Internal Standard: Indium % Recovery: 92

Lower Limit: 60

Upper Limit: 125

Analyte:

Concentration ug/L (ppb)

Arsenic

29.7

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID: MW-5
Date Received: 01/04/13
Date Extracted: 01/08/13
Date Analyzed: 01/09/13
Matrix: Water
Units: ug/L (ppb)

Client: Terra Associates
Project: 6751, F&BI 301037
Lab ID: 301037-05
Data File: 301037-05.019
Instrument: ICPMS1
Operator: AP

Internal Standard: % Recovery: Limit: Limit: Indium 86 60 125

Analyte: Concentration ug/L (ppb)

Arsenic 3.00

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:

Method Blank

Date Received: Date Extracted:

NA 01/08/13 01/09/13

Date Analyzed: Matrix: Units:

Water

ug/L (ppb)

Client: Project:

Terra Associates 6751, F&BI 301037

Lab ID: Data File: I3-009 mb I3-009 mb.013

Instrument:

ICPMS1

Operator:

AP

Internal Standard:

Indium

% Recovery:

85

Lower Limit: 60

Upper Limit: 125

Concentration

Analyte:

ug/L (ppb)

Arsenic

<1

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID: MW-1
Date Received: 01/04/13
Date Extracted: 01/08/13
Date Analyzed: 01/09/13
Matrix: Water
Units: ug/L (ppb)

 Client:
 Terra Associates

 Project:
 6751, F&BI 301037

 Lab ID:
 301037-01 x10

 Data File:
 301037-01 x10.015

 Instrument:
 ICPMS1

 Operator:
 AP

Upper

Limit:

125

Internal Standard: % Recovery: Limit: Indium 95 60

Analyte: Concentration ug/L (ppb)

Arsenic 33.3

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID: MW-5
Date Received: 01/04/13
Date Extracted: 01/08/13
Date Analyzed: 01/09/13
Matrix: Water
Units: ug/L (ppb)

 Client:
 Terra Associates

 Project:
 6751, F&BI 301037

 Lab ID:
 301037-05

 Data File:
 301037-05.018

 Instrument:
 ICPMS1

 Operator:
 AP

Internal Standard: Indium

% Recovery: 87 Lower Limit: 60 Upper Limit: 125

Analyte:

Concentration ug/L (ppb)

Arsenic

3.30

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID: Date Received: Date Extracted:

Date Analyzed:

Method Blank

NA 01/08/13 01/09/13

Matrix: Units:

Water

ug/L (ppb)

Client: Project: Terra Associates 6751, F&BI 301037

Lab ID: Data File:

I3-008 mb I3-008 mb.008

Instrument: ICPMS1

Operator: AP

Internal Standard:

% Recovery:

Lower Limit:

Upper Limit:

Indium

93

60

125

Concentration

Analyte:

ug/L (ppb)

Arsenic ·

<1

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID: Date Received: Date Extracted: Date Analyzed: Matrix: Units:	MW-5	Client:	Terra Associates
	01/04/13	Project:	6751, F&BI 301037
	01/08/13	Lab ID:	301037-05 1/2
	01/08/13	Data File:	010806.D
	Water	Instrument:	GCMS6
	ug/L (ppb)	Operator:	ya

Surrogates:	0/ D	Lower	Upper
	% Recovery:	Limit:	Limit:
Anthracene-d10	100	50	150
Benzo(a)anthracene-d12	105	50	129

Compounds:	Concentration ug/L (ppb)
Naphthalene	0.23
Acenaphthylene	< 0.1
Acenaphthene	< 0.1
Fluorene	< 0.1
Phenanthrene	<0.1
Anthracene	<0.1
Fluoranthene	<0.1
Pyrene	<0.1
Benz(a)anthracene	<0.1
Chrysene	<0.1
Benzo(a)pyrene	<0.1
Benzo(b)fluoranthene	<0.1
Benzo(k)fluoranthene	<0.1
Indeno(1,2,3-cd)pyrene	<0.1
Dibenz(a,h)anthracene	<0.1
Benzo(g,h,i)perylene	<0.1

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client:	Terra Associates
Project:	6751, F&BI 301037
Lab ID:	03-060 mb
Data File:	010805.D
Instrument:	GCMS6
Operator:	ya

Upper Limit: 150

129

Surrogates: Anthracene d 10 Benzo(a) anthracene - d 12	% Recovery: 106 85	Lower Limit: 50 50	
Compounds:	Concentration ug/L (ppb)		
Naphthalene	<0.1		
Acenaphthylene	< 0.1		
Acenaphthene	< 0.1		
Fluorene	<0.1		

ENVIRONMENTAL CHEMISTS

Date of Report: 01/10/13 Date Received: 01/04/13 Project: 6751, F&BI 301037

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 301037-02 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	$\mathbf{n}\mathbf{m}$
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	nm
Gasoline	ug/L (ppb)	<100	<100	nm

		Percent			
	Reporting	Spike	Recovery	Acceptance	
Analyte	Units_	Level	LCS	Criteria	
Benzene	ug/L (ppb)	50	84	65-118	
Toluene	ug/L (ppb)	50	92	72-122	
Ethylbenzene	ug/L (ppb)	50	92	73-126	
Xylenes	ug/L (ppb)	150	91	74-118	
Gasoline	ug/L (ppb)	1,000	95	69-134	

ENVIRONMENTAL CHEMISTS

Date of Report: 01/10/13 Date Received: 01/04/13 Project: 6751, F&BI 301037

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

			Percent	Percent		
	Reporting	Spike	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	LCS	LCSD	Criteria	(Limit 20)
Diesel Extended	ug/L (ppb)	2,500	106	113	58-134	6

ENVIRONMENTAL CHEMISTS

Date of Report: 01/10/13 Date Received: 01/04/13 Project: 6751, F&BI 301037

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR DISSOLVED METALS USING EPA METHOD 200.8

Laboratory Code: 301037-01 1/10 (Matrix Spike)

				Percent	Percent		
	Reporting	Spike	Sample	Recovery	Recovery	Acceptance	\mathbf{RPD}
Analyte	Units	Level	Result	MS	MSD	Criteria	(Limit 20)
Arsenic	ug/L (ppb)	10	29.7	87 b	99 b	51-167	13 b

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Arsenic	ug/L (ppb)	10	95	81-118

ENVIRONMENTAL CHEMISTS

Date of Report: 01/10/13 Date Received: 01/04/13 Project: 6751, F&BI 301037

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 301046-01 (Matrix Spike)

,	Reporting	Svike	Sample	Percent Recovery	Percent Recovery	Acceptance	RPD
Analyte	Units	Level	Result	MS	MSD	Criteria	(Limit 20)
Arsenic	ug/L (ppb)	10	1.45	103	103	51-167	. 0

	Reporting	Spike	Recovery	Acceptance	
Analyte	Units	Level	LCS_	Criteria	
Arsenic	ug/L (ppb)	10	99	81-118	

ENVIRONMENTAL CHEMISTS

Date of Report: 01/10/13 Date Received: 01/04/13 Project: 6751, F&BI 301037

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR PNA'S BY EPA METHOD 8270D SIM

			Percent	Percent		
	Reporting	Spike	Recovery	Recovery	Acceptance	$ ext{RPD}$
Analyte	<u>U</u> nits	Level	LCS_	LCSD	Criteria	(Limit 20)
Naphthalene	ug/L (ppb)	1	88	90	67-116	2
Acenaphthylene	ug/L (ppb)	1	89	87	65-119	2
Acenaphthene	ug/L (ppb)	1	91	92	66-118	1
Fluorene	ug/L (ppb)	1	91	88	64-125	3
Phenanthrene	ug/L (ppb)	1	90	90	67-120	0
Anthracene	ug/L (ppb)	1	92	93	65-122	1
Fluoranthene	ug/L (ppb)	1	91	87	65-127	4
Pyrene	ug/L (ppb)	1	88	89	62-130	1
Benz(a)anthracene	ug/L (ppb)	1	79	78	60-118	1
Chrysene	ug/L (ppb)	1	92	92	66-125	0
Benzo(b)fluoranthene	ug/L (ppb)	1	82	81	55-135	1
Benzo(k)fluoranthene	ug/L (ppb)	1	100	100	62-125	0
Benzo(a)pyrene	ug/L (ppb)	1	86	85	58-127	1
Indeno(1,2,3-cd)pyrene	ug/L (ppb)	1	75	72	36-142	4
Dibenz(a,h)anthracene	ug/L (ppb)	1	75	75	37-133	0
Benzo(g,h,i)perylene	ug/L (ppb)	1	84	84	34-135	0

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- A1 More than one compound of similar molecule structure was identified with equal probability.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte indicated may be due to carryover from previous sample injections.
- d The sample was diluted. Detection limits may be raised due to dilution.
- ds The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb Analyte present in the blank and the sample.
- fc The compound is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.
- ht Analysis performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- i The result is below normal reporting limits. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the compound indicated is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received in a container not approved by the method. The value reported should be considered an estimate.
- pr-The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

301037 SA	MPLE CHAIN OF CUSTODY	ME 01-01	4-13 /DIZ/VI/10
Send Report To Charles Line Company Terro Address 12525 Williams Rd. Sato 101		PO#	Page #of
City, State, ZIP KINA, WA, 98034 Phone # 425 821-7777 Fax # 821-4334	REMARKS		SAMPLE DISPOSAL Dispose after 30 days Return samples Will call with instructions
	ANA	LYSES REQUESTE	D

┝		-									ANA	LYS	SES F	EQ	JEST	ED.	,			_
	Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	TPH-Diesei	TPH-Gasoline	BTEX by 8021B	VOCs by8260	SVOCs by 8270	HFS	Johl Assanic	Dischar Assu	<u>ک</u> د				Notes	
	MW-2 MW-2	DIAS	1/4/13	0100	Water	5		X	X	•		·	X	Ÿ				·		•
	MW-2	52AC	1/4/13	11:00	water	3		X	X									·		
·L	MW-3	03	1/4/13			1	X												 	
L	MW-5	04	1/4/13	12:35	water	1	X													,
L	MW-5	BM	1/4/13	13130	vator	3	X						X	又	X					
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Friedman & Bruya, Inc. 3012 16th Avenue West Seattle, WA 98119-2029 Ph. (206) 285-8282 Fax (206) 283-5044

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SIGNATURE Relinquished by:	PRINT NAME	COMPANY	DATE	TIME
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ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Michael Erdahl, B.S. Kurt Johnson, B.S. Eric Young, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 (206) 285-8282 fbi@isomedia.com www.friedmanandbruya.com

June 11, 2013

Chuck Lie, Project Manager Terra Associates 12525 Willows Rd NE Ste 101 Kirkland, WA 98034

Dear Mr. Lie:

Included are the results from the testing of material submitted on May 29, 2013 from the T-6751, F&BI 305532 project. There are 18 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures NAA0611R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on May 29, 2013 by Friedman & Bruya, Inc. from the Terra Associates T-6751, F&BI 305532 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Terra Associates
305532-01	MW-1
305532-02	MW-2
305532-03	MW-3
305532-04	MW-4
305532-05	MW-5

Phenanthrene was detected in the 8270D SIM method blank. The results were flagged as due to laboratory contamination.

All other quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/11/13 Date Received: 05/29/13

Project: T-6751, F&BI 305532 Date Extracted: 05/29/13 Date Analyzed: 05/29/13

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Sample ID Laboratory ID	Benzene	<u>Toluene</u>	Ethyl <u>Benzene</u>	Total <u>Xylenes</u>	Gasoline <u>Range</u>	Surrogate (% Recovery) (Limit 50-150)
MW-1 305532-01	. 24	<1	<1	<3	130	85
Method Blank 03-1008 MB	<1	<1	<1	<3	<100	83

ENVIRONMENTAL CHEMISTS

Date of Report: 06/11/13 Date Received: 05/29/13

Project: T-6751, F&BI 305532

Date Extracted: 05/29/13 Date Analyzed: 05/29/13

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES USING METHOD 8021B

Sample ID Laboratory ID	<u>Benzene</u>	Toluene	Ethyl <u>Benzene</u>	Total <u>Xylenes</u>	Surrogate (% Recovery) Limit (50-150)
MW-2 305532-02	<1	<1	<1	<3	85
MW-4 305532-04	<1	<1	<1	7.6	85
Method Blank 03-1008 MB	<1	<1	<1	<3	83

ENVIRONMENTAL CHEMISTS

Date of Report: 06/11/13 Date Received: 05/29/13

Project: T-6751, F&BI 305532 Date Extracted: 05/31/13 Date Analyzed: 05/31/13

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Sample ID Laboratory ID	Diesel Range (C ₁₀ -C ₂₅)	Motor Oil Range (C ₂₅ -C ₃₆)	Surrogate (% Recovery) (Limit 51-134)
MW-3 305532-03	<50	<250	101
MW-4 305532-04	1,400 x	930 x	96
MW-5 305532-05	1,100 x	870 x	98
Method Blank 03-1046 MB	<50	<250	93

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Concentration

 Client ID:
 MW-1

 Date Received:
 05/29/13

 Date Extracted:
 05/31/13

 Date Analyzed:
 06/05/13

 Matrix:
 Water

 Units:
 ug/L (ppb)

Client: Terra Associates
Project: T-6751, F&BI 305532
Lab ID: 305532-01
Data File: 305532-01.015
Instrument: ICPMS1
Operator: AP

Internal Standard: % Recovery: Indium 82

Lower Upper Limit: Limit: 60 125

Analyte: ug/L (ppb)

Arsenic 42.8

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID: MW-5
Date Received: 05/29/13
Date Extracted: 05/31/13
Date Analyzed: 06/05/13
Matrix: Water
Units: ug/L (ppb)

Client: Terra Associates
Project: T-6751, F&BI 305532
Lab ID: 305532-05
Data File: 305532-05.016
Instrument: ICPMS1
Operator: AP

Upper

Operator: .
Lower

Internal Standard: % Recovery: Indium 77

Concentration

 % Recovery:
 Limit:
 Limit:

 77
 60
 125

Analyte: ug/L (ppb)

Arsenic 2.73

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:

Method Blank

Date Received: Date Extracted:

NA. 05/31/13 06/05/13

Date Analyzed: Matrix: Units:

Water

ug/L (ppb)

Client: Project:

Terra Associates T-6751, F&BI 305532

Lab ID: Data File: I3-296 mb

Instrument:

I3-296 mb.008 ICPMS1

Operator: AP

Internal Standard:

% Recovery:

Lower Limit:

Upper Limit:

Indium

96

60

125

Concentration

Analyte:

ug/L (ppb)

Arsenic

<1

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID: MW-1
Date Received: 05/29/13
Date Extracted: 06/04/13
Date Analyzed: 06/05/13

Matrix: Water

Units: ug/L (ppb)

Client: Terra Associates
Project: T-6751, F&BI 305532
Lab ID: 305532-01 x10
Data File: 305532-01 x10.025

Instrument: ICPMS1 Operator: AP

Internal Standard: % Recovery:

Indium 70 In

ecovery: Limit: 83 60

Lower Upper Limit: Limit: 60 125

Concentration

Analyte: ug/L (ppb)

Arsenic 48.5

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID: MW-5 Date Received: 05/29/13 Date Extracted: 06/04/13 Date Analyzed: 06/05/13 Matrix:

Water Units:

Indium

Analyte:

ug/L (ppb)

Lab ID: Data File: Instrument:

Client:

Project:

Terra Associates T-6751, F&BI 305532

305532-05 305532-05.026

ICPMS1 Operator: AP

Internal Standard: % Recovery:

Lower Limit: 60

Upper Limit: 125

Concentration

69

ug/L (ppb)

Arsenic 2.88

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID: Date Received: Method Blank

Client:

Terra Associates

Date Extracted:

NA 06/04/13 06/05/13

Project: Lab ID: T-6751, F&BI 305532 I3-303 mb

Date Analyzed:

Water

Data File:

I3-303 mb.018

Matrix: Units:

ug/L (ppb)

Instrument: Operator:

ICPMS1 AP

Internal Standard:

% Recovery:

Lower Limit: Upper

Indium

88

60

Limit: 125

Concentration

Analyte:

ug/L (ppb)

Arsenic

<1

ENVIRONMENTAL CHEMISTS

Operator:

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	MW-5
Date Received:	05/29/13
Date Extracted:	06/03/13
Date Analyzed:	06/04/13
Matrix:	Water
Units:	ug/L (ppb)

Client:	Terra Associates
Project:	T-6751, F&BI 305532
Lab ID:	305532-05 1/0.25
Data File:	060409.D
Instrument	GCMS6

VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene d10	78	50	150
Benzo(a)anthracene-d12	98	50	129

Compounds:	Concentration ug/L (ppb)
Naphthalene	0.46
Acenaphthylene	0.014
Acenaphthene	0.21
Fluorene	0.11
Phenanthrene	0.25
Anthracene	0.042
Fluoranthene	0.034
Pyrene	0.026
Benz(a)anthracene	<0.005 j
Chrysene	<0.005 j
Benzo(a)pyrene	<0.005 j
Benzo(b)fluoranthene	<0.005 j
Benzo(k)fluoranthene	<0.005 j
Indeno(1,2,3-cd)pyrene	<0.005 j
Dibenz(a,h)anthracene	<0.005 j
Benzo(g,h,i)perylene	<0.005 j

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID: Date Received: Date Extracted: Date Analyzed: Matrix:	Method Blank NA 06/03/13 06/04/13 Water	Client: Project: Lab ID: Data File: Instrument:	Terra Associates T-6751, F&BI 305532 03-1063 mb 1/0.25 060406.D GCMS6
Units:	ug/L (ppb)	Operator:	VM
		_	

Surrogates:	% Recovery:	Limit:	Limit:
Anthracene-d10	84	50	150
Benzo(a)anthracene-d12	93	50	129

	Concentration
Compounds:	ug/L (ppb)
Naphthalene	<0.005 j
Acenaphthylene	<0.005 j
Acenaphthene	<0.005 j
Fluorene	<0.005 j
Phenanthrene	0.0051 j lc
Anthracene	<0.005 i
Fluoranthene	<0.005 j
Pyrene	<0.005 j
Benz(a)anthracene	<0.005 j
Chrysene	<0.005 i
Benzo(a)pyrene	<0.005 j
Benzo(b)fluoranthene	<0.005 i
Benzo(k)fluoranthene	<0.005 j
Indeno(1,2,3-cd)pyrene	<0.005 j
Dibenz(a,h)anthracene	<0.005 j
Benzo(g,h,i)perylene	<0.005 j

ENVIRONMENTAL CHEMISTS

Date of Report: 06/11/13 Date Received: 05/29/13

Project: T-6751, F&BI 305532

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 305522-02 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	$\mathbf{n}\mathbf{m}$
Gasoline	ug/L (ppb)	<100	<100	nm

	Percent						
	Reporting	Spike	Recovery	Acceptance			
Analyte	Units	Level	LCS	Criteria			
Benzene	ug/L (ppb)	50	90	72-119			
Toluene	ug/L (ppb)	50	90	71-113			
Ethylbenzene	ug/L (ppb)	50	93	72-114			
Xylenes	ug/L (ppb)	150	89	72-113			
Gasoline	ug/L (ppb)	1,000	96	70-119			

ENVIRONMENTAL CHEMISTS

Date of Report: 06/11/13 Date Received: 05/29/13

Project: T-6751, F&BI 305532

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

			Percent	Percent		
	Reporting	Spike	Recovery	Recovery	Acceptance	\mathtt{RPD}
Analyte	Units	Level	LCS	LCSD	Criteria	(Limit 20)
Diesel Extended	ug/L (ppb)	2,500	103	116	58-134	12

ENVIRONMENTAL CHEMISTS

Date of Report: 06/11/13 Date Received: 05/29/13

Project: T-6751, F&BI 305532

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR DISSOLVED METALS USING EPA METHOD 200.8

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	ug/L (ppb)	10	1.42	106	99	60-150	7

	Reporting	Spike	Percent Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Arsenic	ug/L (ppb)	10	97	80-111

ENVIRONMENTAL CHEMISTS

Date of Report: 06/11/13 Date Received: 05/29/13

Project: T-6751, F&BI 305532

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 305522-03 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	ug/L (ppb)	10	2.03	99 b	99 b	60-150	0 b

			Percent	
Analyte	Reporting Units	Spike Level	Recovery LCS	Acceptance Criteria
Arsenic	ug/L (ppb)	10	95	80-111

ENVIRONMENTAL CHEMISTS

Date of Report: 06/11/13 Date Received: 05/29/13

Project: T-6751, F&BI 305532

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR PNA'S BY EPA METHOD 8270D SIM

			Percent	Percent		
	Reporting	\mathbf{Spike}	Recovery	Recovery	Acceptance	\mathbf{RPD}
<u>Analyte</u>	<u>Units</u>	Level	LCS	LCSD	Criteria	(Limit 20)
Naphthalene	ug/L (ppb)	1	86	92	67-116	7
Acenaphthylene	ug/L (ppb)	1	86	92	65-119	7
Acenaphthene	ug/L (ppb)	1	86	93	66-118	8
Fluorene	ug/L (ppb)	1	86	90	64-125	5
Phenanthrene	ug/L (ppb)	1	87	93	67-120	7
Anthracene	ug/L (ppb)	1	86	92	65-122	7
Fluoranthene	ug/L (ppb)	1	88	89	65-127	1
Pyrene	ug/L (ppb)	1	89	97	62-130	9
Benz(a)anthracene	ug/L (ppb)	1	82	88	60-118	7
Chrysene	ug/L (ppb)	1	88	94	66-125	7
Benzo(b)fluoranthene	ug/L (ppb)	1	83	88	55-135	6
Benzo(k)fluoranthene	ug/L (ppb)	1	92	100	62-125	8
Benzo(a)pyrene	ug/L (ppb)	1	84	91	58-127	8
Indeno(1,2,3-cd)pyrene	ug/L (ppb)	1	82	86	36-142	5
Dibenz(a,h)anthracene	ug/L (ppb)	1	77	81	37-133	5
Benzo(g,h,i)perylene	ug/L (ppb)	1	84	89	34-135	6

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- A1 More than one compound of similar molecule structure was identified with equal probability.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte indicated may be due to carryover from previous sample injections.
- d The sample was diluted. Detection limits may be raised due to dilution.
- ds The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb Analyte present in the blank and the sample.
- fc The compound is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.
- ht Analysis performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- j The result is below normal reporting limits. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the compound indicated is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received in a container not approved by the method. The value reported should be considered an estimate.
- pr The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

305532 SA	MPLE CHAIN OF CUSTODY $-\frac{ME}{05-29}$.	-13 BO5/AT3/V3
Send Report To Charles Lie	SAMPLERS (signature) CB kuchi	Page #of TURNAROUND TIME
Company Terra Associates, Inc.	PROJECT NAME DO 1-6751 PO#	Standard (2 Weeks) RUSH
Address 12525 Willows Road, Smite WI		Rush charges authorized by
City, State, ZIP Kirk land Washington	REMARKS * Dissolved Arsenic Field Fileral	SAMPLE DISPOSAL ☐ Dispose after 30 days
Phone #(425)821-7777Fax #	Bill TO SBMC	☐ Return samples ☐ Will call with instructions
	ANALYSES REQUESTS	BD C

				· · · · · · · · · · · · · · · · · · ·						ANA	LYS	ES R	EQU	JEST	ED					
Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by8260	SVOCs by 8270	i	Potal Arranc	Dissolved-	Arsnið	PAH.				Notes	
M W-1 M W-2	OI A-E	5/28/13	1035	Water	5		X	X	7			X	X							
M W-2	02 k.C	5/20/13	1148	Water	3			X												-
M W-3	13.A-D	5/28/13	1300	Water	4	X														
mw-4	04 T	5/28/13	1420	Water	4	X		X												
M W - 5	OSA-É	5/28/13	1550	Water	5	X						X	X		X					
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Friedman & Bruya, Inc. 3012 16th Avenue West

Seattle, WA 98119-2029

Ph. (206) 285-8282

Fax (206) 283-5044

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SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by ABhuh	Very Brkowski	Grownold Feld Some	929/13	0000
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Received by:			- 440	

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Michael Erdahl, B.S. Kurt Johnson, B.S. Eric Young, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 (206) 285-8282 fbi@isomedia.com www.friedmanandbruya.com

June 11, 2013

Chuck Lie, Project Manager Terra Associates 12525 Willows Rd NE Ste 101 Kirkland, WA 98034

Dear Mr. Lie:

Included are the results from the testing of material submitted on May 29, 2013 from the T-6751, F&BI 305533 project. There are 12 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures NAA0611R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on May 29, 2013 by Friedman & Bruya, Inc. from the Terra Associates T-6751, F&BI 305533 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Terra Associates
305533-01	SB-1
305533-02	SB-2

Phenanthrene was detected in the 8270D SIM method blank. The results were flagged as due to laboratory contamination.

All other quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/11/13 Date Received: 05/29/13

Project: T-6751, F&BI 305533 Date Extracted: 05/29/13 Date Analyzed: 05/29/13

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES USING METHOD 8021B

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	Ethyl <u>Benzene</u>	Total <u>Xylenes</u>	Surrogate (% Recovery) Limit (50-150)
SB-1 305533-01	<1	<1	<1	<3	84
SB-2 305533-02	<1	<1	<1	<3	86
Method Blank	<1	<1	<1	<3	83

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID: Date Received: SB-1 05/29/13 06/04/13

Date Extracted: Date Analyzed: 06/05/13 Matrix: Units:

Water ug/L (ppb)

Client: Project:

Terra Associates T-6751, F&BI 305533

Lab ID: Data File: 305533-01 305533-01.029

Instrument:

ICPMS1

AP

Operator:

Internal Standard:

Indium

% Recovery: 77

Lower Limit: 60

Upper Limit: 125

Concentration

Analyte:

ug/L (ppb)

Arsenic

<1

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID: Date Received: Date Extracted:

Date Analyzed:

SB-205/29/13

06/04/13 06/05/13

Matrix: Units:

Water

ug/L (ppb)

Client: Project:

Terra Associates T-6751, F&BI 305533

Lab ID: Data File:

305533-02 305533-02.030

Instrument: ICPMS1

Operator: AP

Internal Standard:

Indium

· % Recovery:

81

Lower Limit: 60

Upper Limit: 125

Concentration ug/L (ppb)

Arsenic

Analyte:

<1

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:

Method Blank

Date Received: Date Extracted:

NA 06/04/13

Date Analyzed: Matrix:

06/05/13 Water

Units:

ug/L (ppb)

Client: Project:

Terra Associates T-6751, F&BI 305533

Lab ID: Data File: I3-303 mb I3-303 mb.018

Instrument: Operator:

ICPMS1

AP

Lower Limit: Upper

Internal Standard: Indium

% Recovery:

88

60

Limit: 125

Concentration

Analyte:

ug/L (ppb)

Arsenic

<1

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID: SB-1
Date Received: 05/29/13
Date Extracted: 06/03/13
Date Analyzed: 06/04/13
Matrix: Water
Units: ug/L (ppb)

 Client:
 Terra Associates

 Project:
 T-6751, F&BI 305533

 Lab ID:
 305533-01 1/0.25

 Data File:
 060410.D

Instrument: GCMS6
Operator: VM

Surrogates: % Recovery:
Anthracene-d10 87
Benzo(a)anthracene-d12 96

 Lower
 Upper

 Limit:
 Limit:

 50
 150

 50
 129

	Concentration
Compounds:	ug/L (ppb)
Naphthalene	<0.005 j
Acenaphthylene	<0.005 j
Acenaphthene	<0.005 j
Fluorene	<0.005 j
Phenanthrene	0.011 fb
Anthracene	<0.005 j
Fluoranthene	0.018
Pyrene	0.017
Benz(a)anthracene	0.0077
Chrysene	0.0078
Benzo(a)pyrene	0.0086
Benzo(b)fluoranthene	0.011
Benzo(k)fluoranthene	<0.005 j
Indeno(1,2,3-cd)pyrene	0.0082
Dibenz(a,h)anthracene	<0.005 j
Benzo(g,h,i)perylene	0.0091

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID: Date Received: Date Extracted: Date Analyzed: Matrix:	SB-2 05/29/13 06/03/13 06/04/13 Water
Units:	ug/L (ppb)

Client:	Terra Associates
Project:	T-6751, F&BI 305533
Lab ID:	305533-02 1/0.25
Data File:	060411.D
Instrument:	GCMS6
Operator:	VM

Surrogates: Anthracene-d10 Benzo(a)anthracene-d12	% Recovery: 85 89	Lower Limit: 50 50	Upper Limit: 150 129

Compounds:	Concentration ug/L (ppb)
	agin (ppu)
Naphthalene	0.0051 j
Acenaphthylene	<0.005 j
Acenaphthene	<0.005 j
Fluorene	<0.005 j
Phenanthrene	0.0061 j fb
Anthracene	<0.005 j
Fluoranthene	0.0077
Pyrene	0.0051 j
Benz(a)anthracene	<0.005 j
Chrysene	<0.005 j
Benzo(a)pyrene	<0.005 j
Benzo(b)fluoranthene	<0.005 j
Benzo(k)fluoranthene	<0.005 j
Indeno(1,2,3-cd)pyrene	<0.005 j
Dibenz(a,h)anthracene	<0.005 j
Benzo(g,h,i)perylene	<0.005 j

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Olient Committee ID.	M-41-1 D11	ar .	<i>T</i> D 4 1 1
Client Sample ID:	Method Blank	Client:	Terra Associates
Date Received:	NA	Project:	T-6751, F&BI 305533
Date Extracted:	06/03/13	Lab ID:	03-1063 mb 1/0.25
Date Analyzed:	06/04/13	Data File:	060406.D
Matrix:	Water	Instrument:	GCMS6
Units:	ug/L (ppb)	Operator:	VM
		*	**

Surrogates:	% Recovery:	Limit:	Limit:
Anthracene-d10	84	50	150
Benzo(a)anthracene-d12	93	50	129

	Concentration
Compounds:	ug/L (ppb)
Naphthalene	<0.005 j
Acenaphthylene	<0.005 j
Acenaphthene	<0.005 j
Fluorene	<0.005 j
Phenanthrene	0.0051 j lc
Anthracene	<0.005 j
Fluoranthene	<0.005 j
Pyrene	<0.005 j
Benz(a)anthracene	<0.005 j
Chrysene	<0.005 j
Benzo(a)pyrene	<0.005 j
Benzo(b)fluoranthene	<0.005 j
Benzo(k)fluoranthene	<0.005 j
Indeno(1,2,3-cd)pyrene	<0.005 j
Dibenz(a,h)anthracene	<0.005 j
Benzo(g,h,i)perylene	<0.005 j

ENVIRONMENTAL CHEMISTS

Date of Report: 06/11/13 Date Received: 05/29/13

Project: T-6751, F&BI 305533

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES USING EPA METHOD 8021B

Laboratory Code: 305522-02 (Duplicate)

	Reporting	Sample	Duplicate	RPD
_Analyte	Units	Result	Result	(Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	$\mathbf{n}\mathbf{m}$
Ethylbenzene	ug/L (ppb)	<1	<1	$\mathbf{n}\mathbf{m}$
Xylenes	ug/L (ppb)	<3	<3	nm

Laboratory Code: Laboratory Control Sample

			Percent	
	Reporting	Spike	Recovery	Acceptance
<u>Analyte</u>	Units	Level	LCS	Criteria
Benzene	ug/L (ppb)	50	90	72-119
Toluene	ug/L (ppb)	50	90	71-113
Ethylbenzene	ug/L (ppb)	50	93	72-114
Xylenes	ug/L (ppb)	150	89	72-113

ENVIRONMENTAL CHEMISTS

Date of Report: 06/11/13 Date Received: 05/29/13

Project: T-6751, F&BI 305533

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 305522-03 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	ug/L (ppb)	10	2.03	99 b	99 b	60-150	0 b

Laboratory Code: Laboratory Control Sample

		Percent										
	Reporting	Spike	Recovery	Acceptance								
<u>Analyte</u>	Units	Level	LCS	Criteria								
Arsenic	ug/L (ppb)	10	95	80-111								

ENVIRONMENTAL CHEMISTS

Date of Report: 06/11/13 Date Received: 05/29/13

Project: T-6751, F&BI 305533

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR PNA'S BY EPA METHOD 8270D SIM

Laboratory Code: Laboratory Control Sample

			Percent	Percent		
	Reporting	Spike	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	LCS	LCSD	Criteria	(Limit 20)
Naphthalene	ug/L (ppb)	1	86	92	67-116	$\overline{7}$
Acenaphthylene	ug/L (ppb)	1	86	92	65-119	7
Acenaphthene	ug/L (ppb)	1	86	93	66-118	8
Fluorene	ug/L (ppb)	1	86	90	64-125	5
Phenanthrene	ug/L (ppb)	1	87	93	67-120	7
Anthracene	ug/L (ppb)	1	86	92	65-122	7
Fluoranthene	ug/L (ppb)	1	88	89	65-127	1
Pyrene	ug/L (ppb)	1	89	97	62-130	9
Benz(a)anthracene	ug/L (ppb)	1	82	88	60-118	7
Chrysene	ug/L (ppb)	1	88	94	66-125	7
Benzo(b)fluoranthene	ug/L (ppb)	1	83	88	55-135	6
Benzo(k)fluoranthene	ug/L (ppb)	1	92	100	62-125	8
Benzo(a)pyrene	ug/L (ppb)	1	84	91	58-127	8
Indeno(1,2,3-cd)pyrene	ug/L (ppb)	1	82	86	36-142	5
Dibenz(a,h)anthracene	ug/L (ppb)	1	77	81	37-133	5
Benzo(g,h,i)perylene	ug/L (ppb)	1	84	89	34-135	6

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- A1 More than one compound of similar molecule structure was identified with equal probability.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte indicated may be due to carryover from previous sample injections.
- d The sample was diluted. Detection limits may be raised due to dilution.
- ds The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb Analyte present in the blank and the sample.
- fc The compound is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.
- ht Analysis performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- j The result is below normal reporting limits. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the compound indicated is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received in a container not approved by the method. The value reported should be considered an estimate.
- pr The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

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