

**DRAFT
TECHNICAL MEMORANDUM**

TO: Marc Petrey, City of Olympia

FROM: Jessica Stone

DATE: March 21, 2014

**RE: RESULTS OF FOCUSED ENVIRONMENTAL INVESTIGATION
WEST BAY DRIVE SIDEWALK PROJECT
OLYMPIA, WASHINGTON**

INTRODUCTION

This technical memorandum presents the results of the focused environmental investigation conducted by Landau Associates for the City of Olympia (City) as part of the West Bay Drive Sidewalk project (project). The investigation focused on three sites previously identified by the City, which are discussed below, as having the potential to impact project construction. The sites are the Woodard Building site located at 1441 West Bay Drive NW, the former substation site located adjacent to the north of the Woodard Building site, and the former Industrial Petroleum Distributors site located at 1115 West Bay Drive NW.

PROJECT UNDERSTANDING AND SUMMARY OF PREVIOUS FINDINGS

The City is proposing to construct a new sidewalk, underground utilities, and associated retaining walls along the west side of West Bay Drive. The project extends from 1115 to 1515 West Bay Drive (project area), a distance of approximately 1,700 feet (ft). Based on the information provided by the City, the depth of ground disturbance/excavation for construction of the sidewalk and retaining walls will be approximately 2 ft below ground surface (BGS), with stormwater and utility work to extend slightly deeper (approximately 4 ft BGS). Previous investigations conducted by the City identified three sites (Woodard Building site, former substation site, and former Industrial Petroleum Distributors site) that could impact project construction due to previously identified environmental conditions (City of Olympia 2013). These three sites and the previous findings regarding environmental conditions at the properties, based on documentation provided by the City, are discussed below.

The project location is shown on the Vicinity Map (Figure 1). The Site and Exploration Plan (Figure 2), shows the locations of the borings advanced for the focused environmental investigation.

Woodard Building Site

Landau Associates reviewed a Phase I Environmental Site Assessment (ESA) report (Environmental Associates 2003) and an incomplete version of the site environmental cleanup report

(Northwest Testing Company 2003), which addressed the identified environmental conditions described in the Phase I ESA report for the proposed Woodard Building site. Although the address identified in the Phase I ESA report is 1433 West Bay Drive, the report figure and historical aerial photographs, as well as City documentation (City of Olympia 2013), indicate that the property that was the focus of the Phase I ESA is located at the current Woodard Building site, 1441 West Bay Drive NW. The information in the two reports indicates that the Woodard Building site received a No Further Action (NFA) determination from the Washington State Department of Ecology (Ecology) in 2003. However, the environmental cleanup report provided by the City was incomplete, and did not include clear documentation of the activities that resulted in the NFA determination. The following is our interpretation of environmental conditions at the Woodard Building site based on review of the text from the cleanup report, and the information and figure (plate 3) in the Phase I ESA report:

- Four underground storage tanks (USTs) were previously located at the property, including two 10,000-gallon USTs (that, based on available information, appear to have contained diesel fuel) located adjacent to West Bay Drive.
- During the cleanup actions, diesel-range total petroleum hydrocarbon (TPH-D) contamination associated with these USTs was identified in soil at depths ranging from approximately 3 to 10 ft BGS.
- The concentrations of TPH-D remaining in the east excavation sidewall (based on the cleanup report, the east sidewall was adjacent to West Bay Drive NW) were up to 3,600 parts per million (ppm), which is greater than the Ecology Model Toxics Control Act (MTCA) Method A cleanup level of 2,000 milligrams per kilogram (mg/kg; mg/kg is equivalent to ppm) for unrestricted land uses.
- Two groundwater samples were collected using a Geoprobe® “directly east of the wall area where contamination remained.” (Northwest Testing Company 2003). Petroleum hydrocarbons were not detected at concentrations greater than the laboratory reporting limit in either sample.

Although petroleum hydrocarbons were not detected in the two groundwater samples, the environmental cleanup report states that follow-up investigations conducted after the Phase I ESA near the center of the site identified groundwater with TPH-D at concentrations up to 40,000 ppm (sample locations unknown¹). The elevated TPH-D concentrations in groundwater indicates that there is the potential for impacted groundwater to still be present at the Woodard Building site. The Phase I ESA report indicates that groundwater is approximately 4½ ft BGS, which is just below the anticipated maximum project excavation depth of 4 ft BGS noted above.

Based on the available information that soil and groundwater with TPH-D concentrations greater than the MTCA Method A cleanup levels are present at this site, there is the potential for contamination

¹ For reference, the MTCA Method A groundwater cleanup level for diesel is 0.5 ppm (or milligrams per liter).

to be encountered during project construction in this area along West Bay Drive NW. Additionally, existing buried utilities (such as sewer and water pipelines) connecting the Woodard Building site property to the main lines along West Bay Drive NW could be conduits for contaminant migration, and the TPH-D contamination may extend beyond the area that was previously investigated.

Former Substation

The Phase I ESA report provided by the City (Environmental Associates 2003), and discussed above, indicates that a substation was formerly located on a concrete pad on the property adjacent to the north of the Woodard Building site. The Phase I ESA report does not identify any specific releases from substations, including from former transformers; however, the oil in older transformers often contained polychlorinated biphenyls (PCBs). Any releases of oil from the former substation could have affected soil and groundwater, and could be encountered during project construction activities adjacent to the former substation property.

Former Industrial Petroleum Distributors Site

The former Industrial Petroleum Distributors site, located at 1115 West Bay Drive NW, is near the southern end of the project area. Based on an Agreed Order (Ecology 2012), this site contained a tank farm with eight aboveground storage tanks (ASTs), ranging from 20,000 to 150,000 gallons in capacity, which stored “volatile oil,” “diesel oil” and “stove, heat oil.” The ASTs were filled using piping that extended to the east, underneath West Bay Drive NW, to an offshore pier. Based on the Agreed Order, it appears there have been multiple releases at this site with cleanup activities occurring from 1999 through 2003. In 2003, the Ecology Voluntary Cleanup Program issued an opinion letter stating that no further remedial action was needed for a portion of the site (from the available information, this is assumed to be the area to the west of West Bay Drive NW); however, further investigation was required for the area to the east of West Bay Drive NW (Ecology 2012). The remedial investigation report for the former Industrial Petroleum Distributors site to the east of West Bay Drive NW (ARCADIS 2012) identified carcinogenic polycyclic aromatic hydrocarbon, and diesel- and gasoline-range total petroleum hydrocarbon contamination in soil to the east and downgradient of the project area, and documented the historical presence of diesel-, heavy oil-, and gasoline-range total petroleum hydrocarbon contamination in groundwater.

Limited information was available regarding the petroleum pipelines that transported petroleum products under West Bay Drive NW to and from the former Industrial Petroleum Distributors site. The Agreed Order states that “associated piping” was removed in 1999, and that petroleum contamination

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associated with the former product pipeline was present east of West Bay Drive NW. Based on the available information, there is the potential that petroleum hydrocarbon contamination associated with these pipelines is present below West Bay Drive NW and in the project area adjacent to the former location of the tank farm. This potential contamination could be encountered during project construction activities.

FIELD EXPLORATION AND LABORATORY TESTING PROGRAM

On January 31, 2014, Landau Associates conducted a focused investigation to evaluate soil conditions and assess the potential presence of contamination along the planned construction alignment adjacent to each of the three sites described above.

At selected locations along the alignment, a direct-push drilling rig was used to advance a 2-inch inside-diameter core barrel with a removable polyethylene liner into the shallow subsurface. Landau Associates subcontracted with ESN Northwest of Olympia, Washington to advance eight direct-push borings to a depth of 4 ft BGS with oversight by a Landau Associates geologist. A continuous soil core was collected inside the liner during drilling for each boring. Once the desired sampling depth was reached, the liner and soil core were removed from the core barrel. Field screening was conducted during drilling and consisted of observing soil for obvious staining and sheen, and using a photoionization detector (PID) to screen the soil for volatile organic compound (VOC) vapors. The soil was then described for logging purposes, and soil samples were collected for laboratory analysis. Soil lithology was documented and described in accordance with the Unified Soil Classification System [ASTM International (ASTM) D2487] using the visual-manual procedure for describing soils (ASTM D2488). Logs of the borings are provided in Attachment A. These logs represent our interpretation of subsurface conditions identified during the field exploration program. The stratigraphic contacts shown on the logs represent the approximate boundaries between soil types; actual transitions may be more gradual. The soil and groundwater conditions depicted are only for the specific date and locations reported, and therefore, are not necessarily representative of other locations and times. Upon completion of the sampling activities at each location, the borings were backfilled in accordance with applicable regulations (Washington Administrative Code 173-160) and patched to be consistent with the surrounding ground surface (gravel or concrete).

Boring Locations, Soil Sampling and Field Screening Observation

The boring locations were selected taking into account current site features, the locations of utilities, and the extent of the planned sidewalk construction. Soil samples collected from each of the

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boring locations were submitted for selected laboratory analysis based on the contaminants of concern for each site. Soil samples were analyzed for heavy oil-range total petroleum hydrocarbons (TPH-O), TPH-D, gasoline-range total petroleum hydrocarbons (TPH-G), benzene, toluene, ethylbenzene, and xylenes (BTEX), and PCBs. The locations of the eight direct-push borings are shown on Figure 2, and sampling activities are described below:

- Borings B-1 and B-2 were located east of the former substation in the west shoulder of West Bay Drive NW. Composite soil samples were collected from B-1 from 0.5 to 1.5 ft BGS and B-2 from 0.5 to 1.5 ft BGS. These samples were analyzed for TPH-O, TPH-D, and PCBs. There were no field-screening indications of contamination detected during the drilling and sampling at B-1 or B-2.
- Borings B-3, B-4, and B-5 were located east of the Woodard Building site in the west shoulder of West Bay Drive NW. Composite soil samples were collected from B-3 from 1.7 to 2.7 ft BGS, B-4 from 2.3 to 3.3 ft BGS, and B-5 from 2.6 to 3.6 ft BGS. These samples were analyzed for TPH-O and TPH-D. There were no field-screening indications of contamination detected during drilling and sampling at B-3, B-4, and B-5.
- Borings B-6, B-7, and B-8 were located east of the former Industrial Petroleum Distributors site in the center of the southbound lane of West Bay Drive NW. Composite soil samples were collected from B-6 from 2 to 3 ft BGS, B-7 from 2.5 to 3.5 ft BGS, and B-8 from 2.6 to 3.6 ft BGS. These samples were analyzed for TPH-O, TPH-D, and the sample from boring B-6 was additionally analyzed for TPH-G and BTEX. There were no field-screening indications of contamination detected during drilling and sampling at B-6, B-7, and B-8.

Subsurface Soil Conditions

The upper 1 to 2 ft of soil encountered during drilling generally consisted of a dense sand or gravel fill with varying amounts of silt. The sand fill overlies tidal deposits to the maximum depth of each boring with the exception of B-3. Tidal deposits were not encountered in B-3 to the maximum depth of 4 ft BGS. The tidal deposits generally consisted of gray or brown silt with varying amounts of sand. The tidal deposits were generally observed to be hard. Groundwater was not encountered during drilling of any of the borings.

Soil Sampling

Field screening was conducted as described above during drilling and sample collection. Since evidence of potential contamination was not detected in any of the borings, a composite soil sample was collected from the 12 inches of soil below the road base at borings B-1 and B-2 and from the bottom 12 inches at borings B-3 through B-8.

The soil samples for TPH-Gx and BTEX analysis were collected prior to creating the composite sample. This sampling consisted of collecting a small aliquot of soil using a laboratory-supplied sampler directly from the soil core. The remaining soil from the selected sample interval was then composited in

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a stainless steel bowl, mixed thoroughly using a stainless steel spoon, and then placed in 4-oz laboratory-supplied jars for laboratory analysis. Eight soil samples, consisting of one each from boring, (B-1 through B-8) were collected for laboratory analyses. Soil samples were labeled, stored in a cooler with ice, and transported to Libby Environmental of Olympia, Washington for analysis. Soil samples were analyzed for the following:

- TPH-O and TPH-D using the Semivolatile Petroleum Products Method (NWTPH-Dx)
- TPH-G and BTEX using the Volatile Petroleum Products Method (NWTPH-Gx)
- PCBs using U.S. Environmental Protection Agency (EPA) Method 8082.

Laboratory data packages are provided in Appendix 2. The soil analytical results are summarized in Table 1 and discussed below in the Laboratory Analytical Results section.

EQUIPMENT DECONTAMINATION AND INVESTIGATION-DERIVED WASTE

Non-dedicated sampling equipment was decontaminated between sample intervals using an Alconox[®]/tap water solution, followed by a tap water rinse with a final de-ionized water rinse. Downhole drilling equipment was decontaminated between borings using the same decontamination procedure. Investigation-derived waste (IDW), including soil cuttings and decontamination water, was contained and stored in a 16-gallon drum, approved by the Washington State Department of Transportation. All IDW was removed from the project area for disposal pending receipt of sample analytical results.

LABORATORY ANALYTICAL RESULTS

Eight soil samples were collected and submitted for laboratory analysis. Soil samples were selectively analyzed for TPH-G plus BTEX, TPH-D, TPH-O, or PCBs. Final laboratory data packages are provided in Attachment B and the analytical results are provided in the attached Table 1.

For screening purposes, the laboratory analytical results for soil were compared to the MTCA Method A soil cleanup levels for unrestricted land uses. As shown in Table 1, the analytical data for soil indicate the following:

- TPH-G plus BTEX and TPH-D were not detected in soil at concentrations greater than the laboratory reporting limits (non-detect).
- Concentrations of TPH-O were detected in borings B-3 (1,490 mg/kg), B-5 (430 mg/kg), and B-7 (210 mg/kg); the detected concentrations are below the MTCA Method A soil cleanup level for unrestricted land uses.
- PCBs were not detected in soil at concentrations greater than the laboratory reporting limits.

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CONCLUSIONS AND RECOMMENDATIONS

Focused soil sampling was conducted adjacent to three properties along the project area that have had confirmed or suspected releases of hazardous materials due to previous operations that included a former substation, leaking USTs (Woodard Building site) and a former petroleum distribution center. Soil samples collected from eight direct-push borings to a maximum depth of 4 ft BGS did not contain concentrations of PCBs, TPH-D, TPH-G, or BTEX above their respective laboratory reporting limits. Three soil samples from three borings located adjacent to the Woodard Building site and the former Industrial Petroleum Distributors site contained concentrations of TPH-O greater than the laboratory reporting limit, but below the MTCA Method A cleanup level. Based on the sample analytical results and the absence of field-screening evidence of potential contamination during drilling, TPH and PCB contamination is not anticipated to be present in these areas at concentrations greater than the Ecology MTCA Method A cleanup levels. There is still the potential for TPH contamination (or PCB contamination adjacent to the substation) to be present below the maximum investigation depth (4 ft BGS) or within areas not investigated. If staining, odor, or other evidence of potential contamination is encountered during construction activities in the project area, procedures should be in place for further investigation and appropriate handling and disposition of any contaminated material.

USE OF THIS TECHNICAL MEMORANDUM

Landau Associates prepared this technical memorandum for the exclusive use of the City of Olympia, its legal representatives, and their authorized users for specific application to the project area. It is intended to provide the authorized users with a preliminary understanding of the potential environmental liabilities associated with the sidewalk construction. Reliance on this report by third parties, or others who do not have a contractual relationship with Landau Associates on this project, is at their sole risk. The findings and conclusions of this technical memorandum are based on our evaluation of information obtained and reviewed for this project and reflect our professional judgment with respect to that information. Landau Associates warrants that within the limitations of scope, schedule, and budget, our services have been provided in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions as this project. We make no other warranty, either express or implied.

REFERENCES

ARCADIS. 2012. Report: *Remedial Investigation Report, Former ARCO Olympic Bulk Terminal, Industrial Petroleum Distributors Site, 1120 West Bay Drive, Olympia, Washington*. January 30.

Ecology. 2012. *Agreed Order No. DE 8953, in the Matter of Remedial Action by Atlantic Richfield Company*. Washington State Department of Ecology. Effective date: September 17.

Environmental Associates. 2003. Report: *Phase I Environmental Assessment, Proposed Woodard Building Site, 1433 West Bay Drive, Olympia Washington*. Prepared for Stillwell, LLC. May 23.

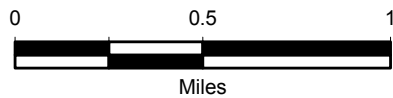
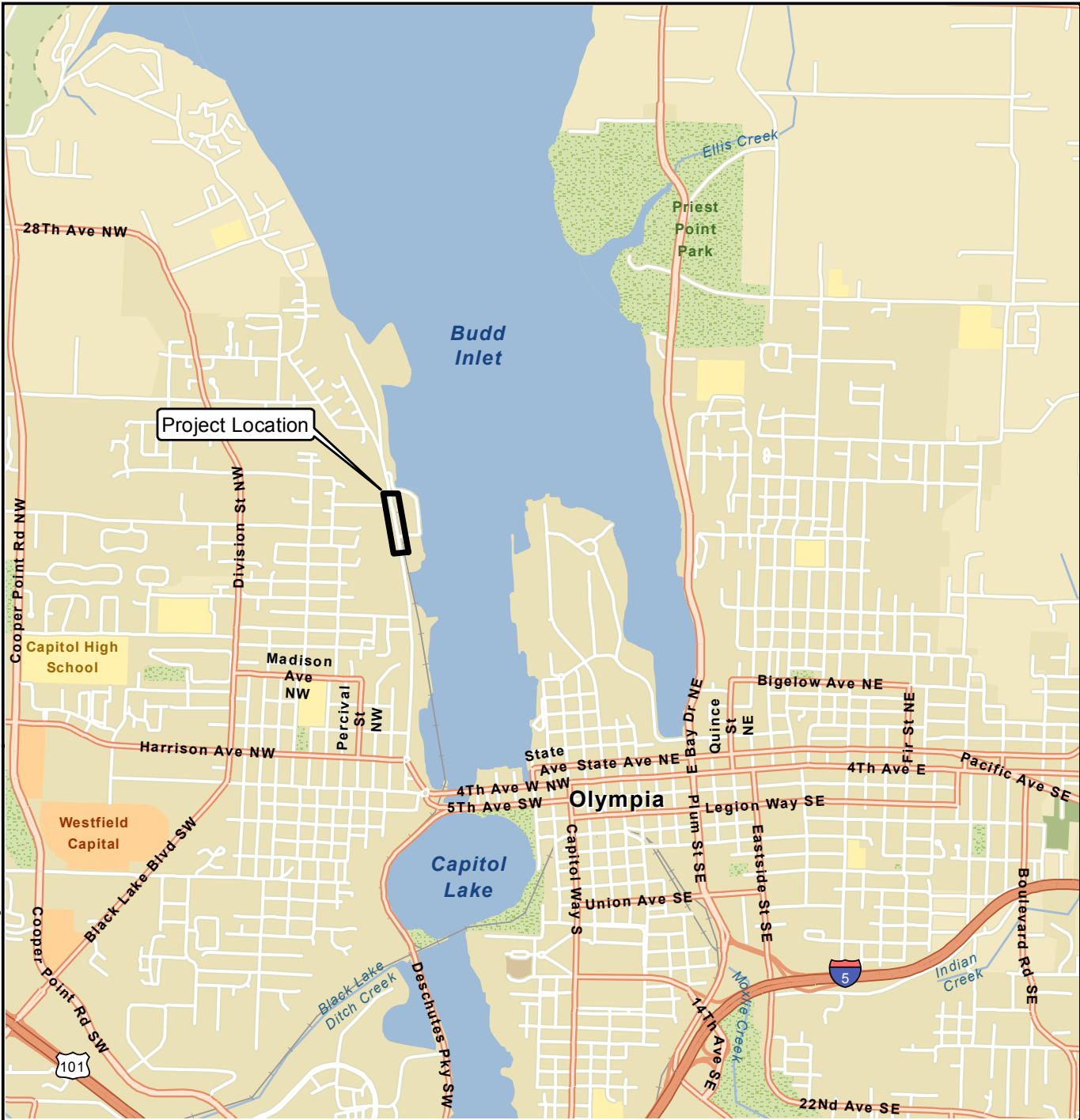
Northwest Testing Company. 2003. Report: *Level III Independent Cleanup Action for the Woodard Building Site, 1441 West Bay Drive Northwest, Olympia Washington*. August 13.

Olympia, City of. 2013. Memorandum: *DOE VSP Sites, West Bay Drive Sidewalk Project No. 1034G*. From Mark Petrey, Engineering Tech II, City of Olympia Public Works Engineering, to Project File. August 14.

ATTACHMENTS

Figure 1: Vicinity Map
Figure 2: Site and Exploration Plan
Table 1: Soil Analytical Results
Attachment A: Boring Logs
Attachment B: Laboratory Data Package

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Data Source: Esri 2012



West Bay Drive
Sidewalk Project
Olympia, Washington

Vicinity Map

Figure
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Aerial Photo: Google Earth Professional 2014

City of Olympia | \\TACOMA3\Project\258\031.040\T\Figures\Figs 2A and 2B.dwg (A) "Figure 2B" 3/21/2014



Aerial Photo: Google Earth Professional 2014

TABLE 1
SOIL ANALYTICAL RESULTS
WEST BAY DRIVE SIDEWALK PROJECT
OLYMPIA, WASHINGTON

		Former Substation Site		Woodard Building Site			Former Industrial Petroleum Distributors Site		
	MTCA Method A Cleanup Level	B1 (0.5- 1/31/14	B2 (0.5- 1/31/14	B3 (1.7- 1/31/14	B4 (2.3-3.3) 1/31/14	B5 (2.6-3.6) 1/31/14	B6 (2-3) 1/31/14	B7 (2.5-3.5) 1/31/14	B8 (2.6-3.6) 1/31/14
TOTAL PETROLEUM HYDROCARBONS (mg/kg)									
Method NWTPH-Gx and BTEX									
Gasoline	100/30 (a)	NA	NA	NA	NA	NA	10 U	NA	NA
Benzene	0.03	NA	NA	NA	NA	NA	0.02 U	NA	NA
Toluene	7	NA	NA	NA	NA	NA	0.1 U	NA	NA
Ethylbenzene	6	NA	NA	NA	NA	NA	0.05 U	NA	NA
Xylenes	9	NA	NA	NA	NA	NA	0.15 U	NA	NA
Method NWTPH-Dx (mg/kg)									
Diesel	2,000	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Heavy Oil	2,000	40 U	40 U	1,490	40 U	430	40 U	210	40 U
Polychlorinated Biphenyls (mg/kg)									
Method EPA 8082									
Aroclor 1016	1	0.03 U	0.03 U	NA	NA	NA	NA	NA	NA
Aroclor 1221	1	0.03 U	0.03 U	NA	NA	NA	NA	NA	NA
Aroclor 1232	1	0.03 U	0.03 U	NA	NA	NA	NA	NA	NA
Aroclor 1242	1	0.03 U	0.03 U	NA	NA	NA	NA	NA	NA
Aroclor 1248	1	0.03 U	0.03 U	NA	NA	NA	NA	NA	NA
Aroclor 1254	1	0.03 U	0.03 U	NA	NA	NA	NA	NA	NA
Aroclor 1260	1	0.03 U	0.03 U	NA	NA	NA	NA	NA	NA

U = The compound was not detected at the reported concentration.

Bold = Detected compound.

NA = Not Analyzed

(a) Gasoline mixtures without the presence of benzene have a cleanup level of 100 mg/kg; otherwise, the cleanup level is 30 mg/kg.

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