



SOIL QUALITY CHARACTERIZATION

527 Marine View Drive

Port Angeles, Washington

Prepared for: Pettit Oil Company

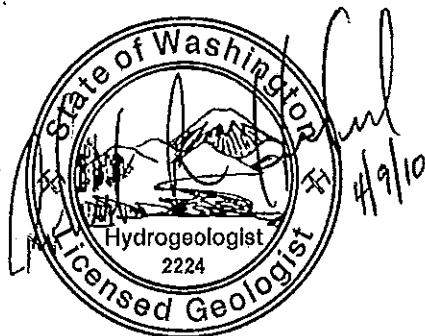
Project No. 100016-001-01 • April 9, 2010

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Aspect Consulting, LLC



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Introduction

This report describes the results of soil sampling completed to characterize shallow soil conditions at the Pettit Oil Company site located at 527 Marine View Drive in Port Angeles, Washington (Site). The Site location is shown on Figure 1. On November 17, 2009, flooding of Tumwater Creek occurred after heavy precipitation, and blockage of Tumwater Creek resulted in flood waters inundating the Site. The site stormwater system was inundated, three vehicles were partially submerged, and empty 55-gallon drums and empty heating oil tanks were observed floating on the flood waters. Petroleum odor was present in the area after the flooding, and some minor emulsified petroleum and petroleum sheen were noted on the floodwaters. There was no evidence of off-property migration of the petroleum observed on the flood waters.

Ecology representatives were on scene and estimated that approximately 30 gallons of petroleum hydrocarbons were initially present on the flood water. Ecology's BRTS report is included in Appendix A. Recovery of floating petroleum and sheen was accomplished by Pettit staff and Cowlitz Clean Sweep (CCS) using a variety of sorbent materials. Pettit and CCS collected practically all recoverable petroleum by noon on November 17th, before the flood waters fully receded. Aspect Consulting, LLC (Aspect) completed a supplemental site inspection on November 24th, after the flood waters had receded. No evidence of any significant surface soil accumulations of petroleum were noted at that time.

Subsequent to the flooding incident, Ecology spill staff notified the Toxics Cleanup Program (TCP) of the potential release to soil, and the TCP referred the Site to Clallam County Health for an initial investigation. Aspect prepared a Work Plan (Aspect, 2010) to meet the requirements of the initial investigation. This Work Plan provided for collection of surface soil quality data to assess the potential impacts to Site soil from any residual petroleum hydrocarbons that may have remained on the flood water after recovery efforts were complete. The Work Plan was approved by Clallam County Health on February 24, 2010, and the soil sampling effort was completed on March 3, 2010.

Site Description

The project Site is approximately 0.6 acres and lies about 6 feet below the level of Marine View Drive to the south and 4 feet below the alley to the north. The Site consists of a warehouse building to the east, an abandoned overhead fuel loading rack structure in the center of the Site, and various low lying concrete structures to the west. Current uses on the Site include storage of equipment and vehicle parking.

Soil Sampling and Analysis

On March 3, 2010, a geologist from Aspect completed soil sampling on a grid covering the previously flooded area. Soil samples were collected approximately 50 feet apart (see *Figure 2, Surface Sample Locations*). Sample collection procedures utilized hand sampling equipment such as hand augers, posthole diggers, and small trowels. Soils encountered during sampling were screened for evidence of petroleum hydrocarbon impacts using a photoionization detector (PID), as well as visual and olfactory methods. Textural soil classifications were documented in a field notebook. Field evidence of petroleum impacts was not observed in any of the subsurface soil samples.

Soil Sampling Procedures

Samples were collected from the upper 6 inches of soil. Vegetation, if present, was removed prior to sampling. The sample at each location was homogenized in stainless steel bowls and placed in 4-ounce glass jars supplied by the laboratory. Samples for gasoline and volatiles were collected prior to sample homogenization using EPA sampling protocol 5035A. Samples were collected by the following procedures:

1. All sampling equipment (hand auger, posthole digger, stainless steel trowels, bowls, etc.) that contacted the sample was decontaminated after collection of each sample. Clean nitrile gloves were used for handling each sample.
2. Sample labels were filled out and attached to the appropriate containers; labels contained the location and date of each sample.
3. To protect the samples from possible contamination during handling, containerization of samples took place over a clean piece of plastic sheeting.
4. After filling the jars, the remaining sample was used to log sample information (soil characteristics, odor, color, etc.) and was recorded in a field notebook.
5. All non-disposable sampling equipment was decontaminated in accordance with the following procedures:
 - Tap water rinse;
 - Non-phosphatic detergent (Liquinox or similar) and tap water wash; and
 - Distilled water rinse.
6. After being filled, the sample containers were placed on ice in a cooler and handled under proper chain-of-custody procedures until delivered to the Friedman & Bruya Laboratory in Seattle, Washington.

Analytical Results

Samples were analyzed within the standard turnaround time for each analytical method. Soil samples from the nine grid sample locations were analyzed for the following parameters:

- Total Petroleum Hydrocarbons (TPHs) diesel and oil by NWTPH-Dx and gasoline by NWTPH-Gx.
- Benzene, toluene, ethylbenzene, xylenes and naphthalene (BTEXN) by EPA Method 8260C; and
- Lead (EPA Method 200.8) at the three sample locations with the highest petroleum concentrations.

Sample summaries and analytical results are presented in Table 1. The quality control parameters were within laboratory control limits, and no data were qualified. The laboratory certificates of analysis are included in Appendix B.

Total Petroleum Hydrocarbons

Concentrations of diesel and oil were detected above the practical quantitative limit (PQL) in six of the nine samples collected. All diesel samples were below the Model Toxics Control Act (MTCA) Method A soil cleanup levels for unrestricted land use of 2,000 mg/kg. Two samples, SS-5 and SS-9, contained oil range hydrocarbons above the MTCA Method A soil cleanup level of 2,000 mg/kg. Samples SS-5 and SS-9 had oil range hydrocarbon concentrations of 3,200 mg/kg and 5,600 mg/kg, respectively. These samples were both collected from high vehicle traffic areas. Gasoline-range hydrocarbons were detected in one sample at a concentration of 16 mg/kg. The MTCA Method A soil cleanup levels for unrestricted land use for gasoline (in the absence of benzene) is 100 mg/kg.

BTEXN

BTEXN compounds were reported at non-detect in all soil sample collected.

Lead

Lead samples were analyzed at the three locations with the highest levels of TPHs. The three samples analyzed for lead ranged in concentration from 31.6 mg/kg in sample SS-5 to 82.2 mg/kg in sample SS-9. The MTCA Method A soil cleanup levels for unrestricted land use for lead is 250 mg/kg.

Conclusion

During the November 2009 flooding event, a release of limited amounts of petroleum was documented on flood waters. The source is unclear, but could have been from empty container/tanks, the site stormwater system, or the inundated vehicles, or a combination of these potential sources. Most of the recoverable petroleum was collected before the flood water receded.

If significant residual petroleum remained on the flood waters after recovery efforts were completed, it presumably would have spread out and should have resulted in site-wide soil impacts. This type of site-wide distribution is not indicated by our site observations or sampling data. During the recent soil sampling, we observed only minor, isolated oil stains on surface soils, and these were in areas of high vehicle traffic and/or parking. No staining, odor, or free fuel was observed in subsurface soils during sampling activities. The limited areas of oil-impacted shallow soil documented by laboratory results appear to reflect cumulative impacts from minor leaks and spills during historical operations and vehicle activities at the facility, as opposed to some discrete and more significant impact from the recent flooding.

Based on the findings summarized above, the TPHs as diesel and oil in the soil samples collected appear to be primarily related to historic day-to-day operations and vehicle activities, as opposed to any release to soil that may have occurred after the flood water from the November 2009 event receded. The presence of such limited soil impacts at a commercial or industrial facility appears to be specifically addressed in Section 5 of Ecology Policy 300, Site Discovery – Reporting Releases (Ecology, 2004), which states: “Ecology recognizes that hazardous substances can be found at almost any commercial or industrial facility. The presence of such substances does not necessarily mean that a release has occurred.” Based on the evidence that we have seen, it is our professional judgment that no “reportable release,” as defined under either WAC 174-340-300 or Ecology Policy 300, occurred as a consequence of the December 2009 flooding, and that the limited areas of oil-impacted shallow soil documented at the Site by the completed sampling and analysis do not pose a potential threat to human health or the environment.

References

- Aspect Consulting, LLC, 2010, Soil Sampling Work Plan, 527 Marine View Drive, Port Angeles, Washington. Bainbridge Island, Washington, Unpublished Work. March 8, 2010.
- Washington State Department of Ecology (Ecology), 2004, Policy 300 Site Discovery-Reporting Releases April 8, 1992, revised June 10, 2004.

Limitations

Work for this project was performed and this report prepared in accordance with generally accepted professional practices for the nature and conditions of work completed in the same or similar localities, at the time the work was performed. It is intended for the exclusive use of Pettit Oil Company for specific application to the referenced property. This report does not represent a legal opinion. No other warranty, expressed or implied, is made.

Table 1 - Soil Sample Analytical Results Summary

527 Marine View Drive
Port Angeles, Washington

Sample Information			Analytical Method								
Sample Identification	Sample Date	Gasoline by NWTPH-Gx	BTEXN Compounds by EPA Method 8260C						NWTPH-Dx		EPA Method 200.8
		Gasoline (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-Benzene (mg/kg)	Total Xylenes (mg/kg)	Naphthalene (mg/kg)	Diesel (mg/kg)	Motor Oil (mg/kg)	Lead (mg/kg)	
SS-1-030310	3/3/2010	<2	<0.03	<0.05	<0.05	<0.1	<0.05	110	350	N/A	
SS-2-030310	3/3/2010	<2	<0.03	<0.05	<0.05	<0.1	<0.05	<50	<250	N/A	
SS-3-030310	3/3/2010	<2	<0.03	<0.05	<0.05	<0.1	<0.05	400	760	N/A	
SS-4-030310	3/3/2010	<2	<0.03	<0.05	<0.05	<0.1	<0.05	<50	<250	N/A	
SS-5-030310	3/3/2010	<2	<0.03	<0.05	<0.05	<0.1	<0.05	330	3,200	31.6	
SS-6-030310	3/3/2010	<2	<0.03	<0.05	<0.05	<0.1	<0.05	160	620	N/A	
SS-7-030310	3/3/2010	<2	<0.03	<0.05	<0.05	<0.1	<0.05	<50	<250	N/A	
SS-8-030310	3/3/2010	16	<0.03	<0.05	<0.05	<0.1	0.17	910	1,700	38.4	
SS-9-030310	3/3/2010	<2	<0.03	<0.05	<0.05	<0.1	<0.05	1,400	5,600	82.2	
MTCA Method A Soil Cleanup Levels for Unrestricted Land Use			100 ¹	0.03	7	6	9	5	2,000	2,000	250

Exceedance of MTCA Method A cleanup level shown in bold italics.

¹ Cleanup level for gasoline when benzene is not present.

Aspect Consulting, LLC

4/9/2010

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Table 1

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