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TECHNICAL MEMORANDUM

Date: August 7, 2013
To: Steve Teel, LHG - Department of Ecology
From: David Dinkuhn, P.E. - Parametrix
Subject: Solid Wood Incorporated Site – Oil Stain Soil Probe Investigation Sampling and Analysis Plan
cc: Kip Summers, P.E. - City of Olympia
Project Number: 233-1577-038
Project Name: Solid Wood Incorporated Site RI/FS and Interim Action

SOLID WOOD INCORPORATED SITE RI/FS AND IA WORK PLAN ADDENDUM NO. 8 –OIL STAIN SOIL PROBE INVESTIGATION SAMPLING AND ANALYSIS PLAN

INTRODUCTION

This technical memorandum presents a Sampling and Analysis Plan (SAP) for the soil probe investigation of the oil stain located at the Solid Wood Incorporated Site in Olympia, Washington. This SAP describes the investigation approach and specific procedures for the collection and analysis of soil and groundwater samples. This SAP constitutes Addendum No. 8 to the project's Remedial Investigation/Feasibility Study (RI/FS) and Interim Action (IA) Work Plan (work plan; Parametrix 2008).

BACKGROUND AND APPROACH

This work is a continuation of the investigation of the oil stain located as shown on Figure 1. The test pit shown on the figure was excavated on January 15, 2013. The purpose of the test pit was to explore the vertical and horizontal extent of lube-oil contamination discovered in a shallow geo-probe soil boring installed at that location on September 27, 2012. Test results from soil samples collected from the boring indicated that the soil was contaminated with lube-oil at concentrations above cleanup levels. Test results for gasoline, Model Toxics Control Act (MTCA) metals, volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), and carcinogenic polycyclic aromatic hydrocarbons (cPAHs) indicated that these constituents were either not detected or were present at low concentrations that did not exceed cleanup levels.

The approximate dimensions of the pit are 9 feet by 16 feet by 5 feet deep. Excavation was halted and the test pit was backfilled when it became apparent that the extent of the contamination was greater than anticipated. Contaminated soil observed at the edges of the pit was stained a gray color and exhibited a strong petroleum odor. A single sample was collected from the base of the test pit prior to backfilling. The sample was analyzed for diesel and lube oil. The only detected constituent was lube oil at 200 mg/kg, which is below the cleanup level.

Soil sampling

The purpose of the soil probe investigation is to delineate the horizontal and vertical extent of the lube oil contamination. Soil probes will be installed at the approximate locations shown on Figure 1 to depths of 8 feet each. Note that the soil probes are designated as either tier one or tier two. Soil cores collected from the probes will be observed for apparent contamination. Apparent contamination will be identified by the presence of soil staining and petroleum odors. Since no volatile constituents are present, a photoionization detector (PID) will not be used for field screening. A single soil sample will be collected from each of the first tier probes from a depth most likely to be contaminated based on the field observations. If no apparent contamination is present, the sample will be collected from the depth corresponding to the groundwater table interface. The intent of these samples is to further characterize contamination levels within source area soils where present. If the sample is collected from an apparent “smear” zone associated with groundwater table fluctuations, this will be noted in the field log to distinguish the sample from vadose zone source soils.

Second tier probes will be installed following first tier sampling. The intent of the second tier is to delineate the horizontal and vertical extent of the contamination. That is, samples collected from the second should ideally be “clean” to illustrate that the extent of the contamination has been delineated. If apparent gross contamination is present in a second tier probe, a soil sample will not be collected and the probe location will be adjusted outward 5 to 10 feet at the discretion of sampling personnel. A single soil sample will be collected from the adjusted second tier probe regardless of the presence of apparent contamination. Second tier probes will not be adjusted twice due to time constraints as only one day is planned for the field work. A single soil sample from either the original or adjusted second tier probe location will be collected from a depth most likely to be contaminated based on the field observations. If no apparent contamination is present, the sample will be collected from the depth corresponding to the groundwater table interface. If the sample is collected from an apparent “smear” zone associated with groundwater table fluctuations, this will be noted in the field log to distinguish the sample from vadose zone source soils.

A total of thirteen soil samples will be collected and analyzed for diesel and lube oil. Samples will be collected from the soil probe acetate liners using new, disposable polyethylene bowls and scoops. Soil will be placed into pre-labeled laboratory-provided containers. One field duplicate will be collected in addition to the thirteen field samples. All soil samples will be analyzed for diesel and lube oil range organics on a standard 10 day turnaround basis. Sample locations and observations will be recorded on the field probe logs.

Groundwater Sampling

Two groundwater samples will be collected from the second-tier probe locations shown in Figure 1. The purpose of the groundwater samples is to assess impacts to groundwater. The probes are located within the range of groundwater flow directions as determined by past groundwater sampling at the site. Groundwater samples will be collected using a peristaltic pump and low-flow sampling procedures. Prior to sample collection, the groundwater will be purged until turbidity stabilizes as determined visually. The intent is to collect a sample with minimal suspended solids. Field observations will be recorded on a field sampling form. After the groundwater stabilizes, a sample will be collected into pre-labeled laboratory provided containers. One field duplicate and one rinsate sample will also be collected.

Groundwater sample will be analyzed for diesel and lube oil range organics on a standard 10 day turnaround.

Sampling location will be recorded on a field map using a hand tape and swing ties.

SAMPLE NUMBERING CONVENTION

Similar to the sample numbering convention outlined in the RI/FS Workplan (Parametrix 2008), samples will be numbered according to the sample type, matrix, and depth described in Table 1.

Table 1. Sample Numbering Convention

Site	WB = West Bay Park
Matrix	SO = Soil GW = Groundwater WT/TB = Rinsate/trip blank water
Sampling Station	SB48 = Soil Boring No. 48 (for continuity with past work, the first boring will be numbered 48)
Sample Type/Sample Depth	0000 = Field sample collected at a depth of 0.0 feet. 1010 = Field duplicate collected at a depth of 1.0 foot. 4050 = Rinsate blank collected after the collection of a sample at a depth of 5.0 feet.

Example: WB-SO-TP15-0050 = Test pit sample collected from test TP15 at a depth of 0.5 feet.

SAMPLE HANDLING PROCEDURES

All samples, regardless of matrix, will be placed in a cooler and held at approximately 4 degrees Celsius (°C) until they are received by the analytical laboratory. Upon sample receipt, the laboratory will comply with storage temperatures and maximum holding times required for the specific analyses to be performed (Table 2).

Table 2. Sample Storage Temperatures and Maximum Holding Times for Sample Analyses

Sample Analysis	Container and Preservation	Holding Time
Diesel and lube oil range organics NWTPH-Dx	SO = 4 oz cwm jar GW = 2 x 500 ml HCl preserved amber	14 days

SO = soil, GW = groundwater

Chain-of-custody procedures and sample shipping will be conducted in accordance with the work plan.

LABORATORY ANALYTICAL METHODS

Chemical analysis will be performed by OnSite Environmental, Inc. of Redmond, Washington. Table 2 summarizes the proposed analyses in relation to matrix.

DATA ANALYSIS, RECORD KEEPING, AND REPORTING REQUIREMENTS

The results of the sampling and analysis will be included in the report provided for the recent data gap sampling at the site. Reporting format will include a sample location map, description of field procedures, and analytical results and interpretations. Analytical results will be tabulated for all measured analyses and will be presented in a data table. The data table will identify the sampling locations and dates of sample collection. Appropriate data qualifiers will be attached to chemical concentrations, and detection limits will be reported for undetected analyses. An internal quality control/quality assurance data review will be performed and documented in memoranda format.

Appendices will include a memorandum describing the results of the data review, laboratory analytical reports, copies of field or sample logs, and copies of chain-of-custody forms. Laboratory chemical data will be tabulated in the Ecology EIM template format and uploaded into the EIM database.

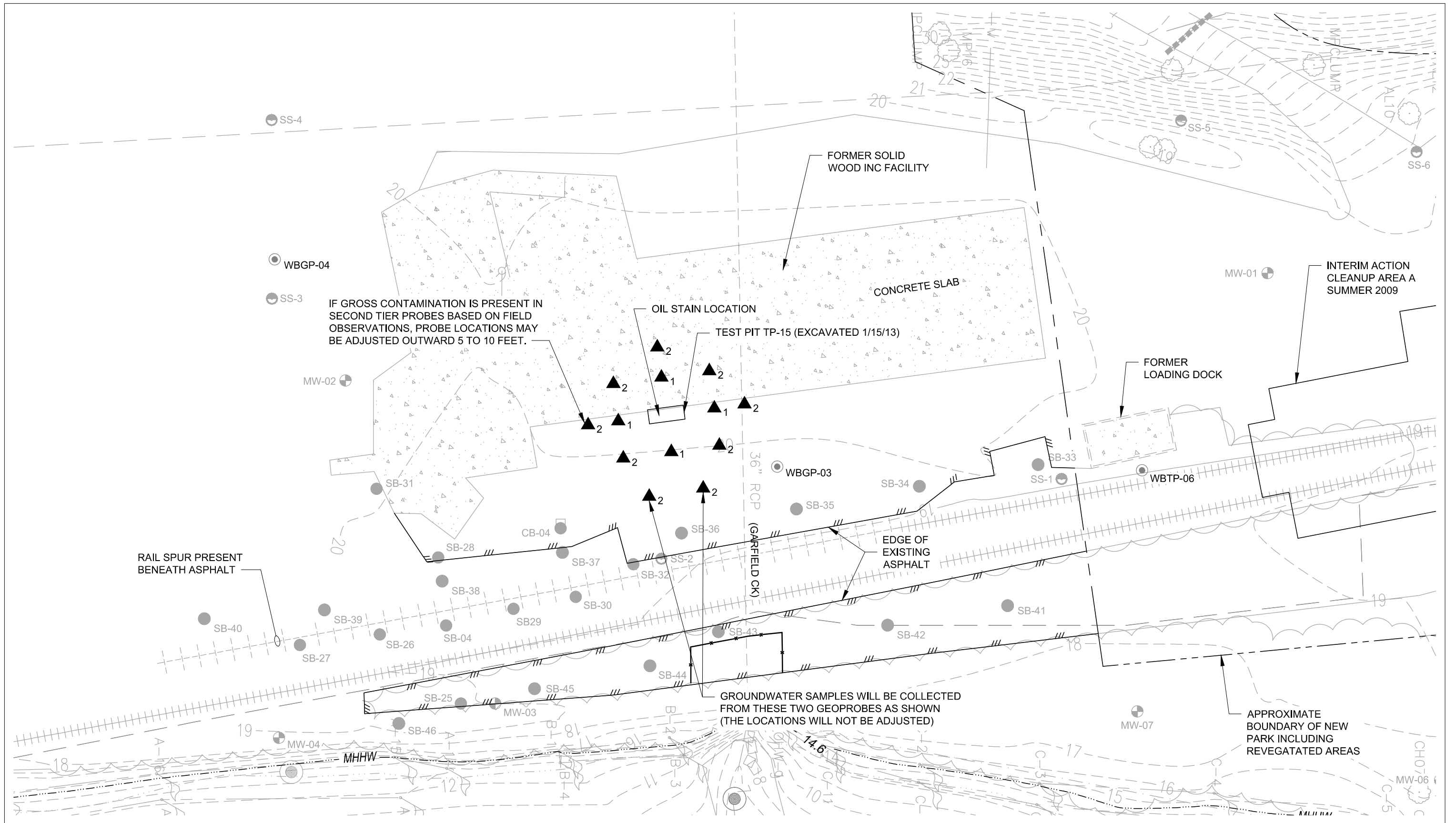
All work plans, field notes, and data reports will be maintained by Parametrix for a minimum of 10 years.

REFERENCES

Parametrix 2008. Work plan for remedial investigation/feasibility study and interim action, Solid Wood Incorporated site (West Bay Park). Prepared for City of Olympia Parks, Arts, and Recreation Department. October.

ATTACHMENTS

Figure 1



Parametrix DATE: 08/28/08 08:01am FILE: BR1577024P04T04F-13



LEGEND

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|------|---|---|-----------------------------------|----------------|--|
| WBGP | 2004 GEOPROPE SAMPLING LOCATIONS | ● | PORT OF OLYMPIA TEST PIT LOCATION | SS | SURFACE SOIL SAMPLING LOCATION |
| WBTP | 2004 TEST PIT SAMPLING LOCATION | ● | MONITORING WELL | SB | SOIL BORING LOCATION |
| ● | PMX PHASE II ESA/RIFS SAMPLING LOCATION | ○ | TEST PIT | — | FENCE |
| | | □ | EDGE OF ASPHALT | ▲ ₁ | PROPOSED OIL STAIN SOIL PROBE LOCATION - FIRST TIER |
| | | — | | ▲ ₂ | PROPOSED OIL STAIN SOIL PROBE LOCATION - SECOND TIER |

Figure 1
Proposed Oil Stain Investigation Sampling Locations
 Solid Wood Incorporated Site
 (West Bay Park)
 Olympia, Washington