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TECHNICAL MEMORANDUM

Date:	June 25, 2012
To:	Steve Teel, LHG - Department of Ecology
From:	Lara Linde, LG - Parametrix
Subject:	Solid Wood Incorporated Site – RI/FS Data Gap Sampling and Analysis Plan Revision 1
cc:	Kip Summers, P.E. - City of Olympia
Project Number:	233-1577-037
Project Name:	Final West Bay Park RI/FS Services

SOLID WOOD INCORPORATED SITE RI/FS AND IA WORK PLAN ADDENDUM NO. 5 – DATA GAP SAMPLING AND ANALYSIS PLAN REVISION 1

INTRODUCTION

This revised technical memorandum presents a Data Gap Sampling and Analysis Plan (SAP) for the Solid Wood Incorporated Site located in Olympia, Washington (Figure 1). This SAP provides specific procedures for the collection and analysis of surface soil, groundwater, surface water, and sediment samples at the site as requested by Washington State Department of Ecology (Ecology) under the site's existing Agreed Order (No. DE-08-TCPSR-5415). It also constitutes Addendum No. 5 to the project's Remedial Investigation/Feasibility Study (RI/FS) and Interim Action (IA) Work Plan (work plan; Parametrix 2008). This SAP addresses four areas identified by Ecology as data gaps:

- Oil staining near the former Solid Wood facility foundation.
- Surface soils near the rail spur in the vicinity of the former Solid Wood facility.
- Metals in seeps and groundwater at the former wood burner location.
- Petroleum contamination in sediments near sediment station SD-33.

BACKGROUND

In 2004, Parametrix performed a Phase I Environmental Site Assessment (ESA) for the site (Parametrix 2004a) which was followed by a Phase II ESA (Parametrix 2004b). An additional Phase II ESA was performed in 2007 along the Burlington Northern Santa Fe (BNSF) rail spur which ran through the site (Parametrix 2007). The majority of surface and subsurface contamination associated with the findings in these reports has been investigated during the ongoing RI/FS work (Parametrix 2008) and IA (Parametrix 2010) for the site.

Following an Interim Action (IA) at the site in the summer of 2009, three monitoring wells (MW-08 through MW-10; Figure 2) were installed in the vicinity of the former wood burner and confirmational sediment samples were also collected from piling removal areas. The wells were sampled for four quarters, the most recent in December 2010 (Parametrix 2011) and were for the purpose of determining effectiveness of the Area D removal during the IA. At the conclusion of the four quarterly sampling events, copper and nickel concentrations in groundwater continued to exceed the screening levels established in the RI/FS of 2.4 ug/l and 8.2 ug/l, respectively. Surface water and seep samples were also collected during the August and December 2010 sampling events for comparison, most of which exceeded the same screening levels. Confirmational sediment samples were collected from several locations over the years of 2010 and 2011, of which one location (SD-33) failed biological testing during two separate tests.

SOLID WOOD FACILITY OIL STAINING

As noted in the Phase I ESA site reconnaissance, an oil stain was observed on the east side of the former Solid Wood facility perimeter. To investigate the stain, Parametrix proposes coring the asphalt in the vicinity of the oil staining (Figure 3) and using a hand auger to advance a shallow boring to visually assess soils under the stained asphalt. A log of the hand auger boring will be recorded on a boring log using the unified soil classification system (USCS) to describe soils in the boring. Up to two grab soil samples will be collected at two different depth intervals based on visual and olfactory observations below the asphalt using new, disposable polyethylene bowls and scoops. Soil will be placed into pre-labeled laboratory-provided containers. In addition to the two soil samples, one field duplicate will be collected. Soil samples from the oil-stained area will be submitted for analysis of gasoline, diesel, oil, volatile organic compounds (VOCs), carcinogenic polycyclic aromatic hydrocarbons (cPAHs), polychlorinated biphenyls (PCBs), and Model Toxics Control Act (MTCA) Method A list metals arsenic, cadmium, chromium, lead, and mercury. Sample locations and observations will be recorded in the field notebook or separate field form, recorded using a hand-held global positioning system (GPS) device, and surveyed.

RAIL SPUR SURFACE SOIL CHARACTERIZATION

Surface soils in the vicinity of the former rail spur are suspected to be contaminated with cPAHs associated with creosote-treated rail tiles and/or railroad operations. As an example, subsurface soil samples collected from three soil borings (SB-26, SB-29, and SB-30) located beside the rail spur exceeded MTCA A concentrations for cPAHs (Figure 3). To investigate the extent of potential surface soil contamination related to the rail spur in these areas, fourteen discrete surface samples will be collected spanning both sides of the rail spur at the locations shown on Figure 3. Grab samples will be collected using disposable polyethylene scoops from within 0 to 6 inches of the surface and placed in a disposable polyethylene bowl and homogenized thoroughly before placement into pre-labeled laboratory-provided containers. Several of the samples are located in paved areas. These locations will be exposed by coring a 4-inch diameter hole through the asphalt. All visible evidence of asphalt debris will be carefully removed from the soil surface prior to sampling. Any other unrepresentative material (e.g., large woody debris and rocks) will be removed at the discretion of the sampler. One field duplicate will be collected in addition to fourteen field samples. Soil samples from along the rail spur will be analyzed for cPAHs only. Following sampling, the location of each surface soil sample will be surveyed and sketched in the field notebook along with other pertinent information such as observations and GPS coordinates.

GROUNDWATER, SURFACE WATER, AND SEEP SAMPLING

Two consecutive quarterly sampling events are proposed to gather additional groundwater, surface water, and seep data in the vicinity of the former wood burner. Groundwater samples will be collected at monitoring wells MW-08 through MW-10 (Figure 2) on an outgoing or low-slack tide with a peristaltic pump using low-flow sampling procedures. A multiparameter water quality meter will be used to monitor field parameters (pH, conductivity, dissolved oxygen, turbidity, oxidation reduction potential [ORP], and temperature) until parameters stabilize. Field observations of parameters will be recorded on a field sampling form. After the field parameters

stabilize, groundwater samples will be collected into pre-labeled laboratory provided containers. One field duplicate will be collected at MW-10.

Grab surface water and seep samples will be collected during the same timeframe, also on an outgoing or low-slack tide. One set of field parameters will be collected at each surface water and seep sampling location following sample collection. Three surface water samples (SW-01 through SW-03) and two seep samples (SEEP4 and SEEP5) will be collected at the locations shown on Figure 2. Seep sample locations will be identified and a depression excavated deep enough to submerge the largest sample container. The depression will be allowed to run until clear prior to sample collection. GPS coordinates, observations, and a field sketch will be recorded in the field notebook or on a separate field form. No field duplicates will be collected at seep and surface water locations.

All water samples will be submitted for analysis of total and dissolved copper and nickel, dissolved organic carbon (DOC), chloride, salinity, and total dissolved solids (TDS). Groundwater, surface water, and seep samples will be field filtered using a peristaltic pump and a 0.45µm disposable groundwater filter.

SEDIMENT STATION SD-33 DELINEATION

Additional delineation of the area downslope and cross slope from sediment station SD-33 will be conducted to determine the potential horizontal extent of contamination. Samples will be collected within an approximate 20-foot grid (Figure 2). The SD-33 sample station will be re-established by survey within plus or minus 1 foot of the original location. One grab sample will be collected at each of the eight stations from the top 10 centimeters of sediments using new, disposable polyethylene bowls and scoops. The samples will be collected during low tide. Sample collection will target the fine-grained portion of sediments. Any unrepresentative material (e.g., large woody debris, shells, and rocks) will be removed at the discretion of the sampler. Samples will be placed into pre-labeled laboratory-provided containers. The three samples located nearest SD-33 will be analyzed first and compared to the 100 mg/kg screening level for petroleum used throughout the project. If a sample exceeds the screening level, all of the remaining samples will be analyzed. Sediment samples will be analyzed for diesel and lube oil only. One field duplicate will be collected for the sediment sampling.

Detailed notes regarding the sample composition will be recorded in the field notebook or on an alternate field log sheet. Following sampling, the location of each sediment sample will be staked and surveyed, sketched on a field map, and recorded using a GPS.

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 Waterfront Park
Matrix	SO = Soil SD = Sediment SW = Surface water GW = Groundwater SEEP = Seep on shoreline WT/TB = Rinsate/trip blank water
Sampling Station	SB33 = Soil Boring No. 33 (for continuity with past work borings will begin with 33) SD34 = Sediment Station 34 (for continuity with past work sediment stations will begin with 34) MW08 = Monitoring Well 8 SW1 = Surface Water Station 1 SEEP4 = Seep Station 4 SS17 = Surface Soil Station 17 (for continuity with past work, surface soil stations will begin with 17)
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-SD-SD34-0050 = Sediment sample collected from sediment station SD34 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
Gasoline	SO = 1 pre-weighed VOA and 1-4oz cwm jar	14 days
Diesel and lube oil range organics	SO & SD = 4 oz cwm jar GW, SW, & SP = 2 x 500 ml HCl preserved amber	14 days
Total and dissolved copper and nickel	GW, SW, & SP = 500 ml field filtered and NO_3 preserved poly	6 months
Dissolved organic carbon	GW, SW, & SP = 500 ml HCl preserved poly	28 days
Chloride	GW, SW, & SP = 500 ml unpreserved poly	28 days
Salinity	GW, SW, & SP = 500 ml unpreserved poly	28 days
Total dissolved solids	GW, SW, & SP = 500 ml unpreserved poly	7 days
SVOCs	SO = 4 oz cwm jar	14 days
PCBs	SO = 4 oz cwm jar	None
Metals – 5 MTCA	SO = 4 oz cwm jar	28 days for Hg only 6 months
cPAHs	SO = 4oz cwm jar	14 days
VOCs	SO = 2 pre-weighed VOAs and 1-4oz cwm jar	14 days

SO = soil, SD = sediment, GW = groundwater, SW = surface water, SP = seeps

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 3 summarizes the proposed analyses in relation to the location and sampling task.

Table 3. Sample Analysis by Task

Sample Analysis and Method Number	Solid Wood Facility Oil Stain	Rail Spur	Groundwater, Surface Water and Seeps	SD-33 Sediment Characterization
Gasoline (NWTPH-Gx)	X			
Diesel and lube oil range organics (NWTPH-Dx)	X			X
Total and dissolved copper and nickel (EPA 200.8/6010B)			X	
Dissolved organic carbon (SM5310B)			X	
Chloride (SM 4500-Cl)			X	
Salinity (SM 2520D)			X	
Total dissolved solids (SM 2540C)			X	
Polychlorinated biphenyls (PCBs) (EPA 8082)	X			
Metals – 5 MTCA (EPA 6010B/7471)	X			
cPAHs (EPA 8270D/SIM)	X	X		
VOCs (EPA 8260)	X			

DATA ANALYSIS, RECORD KEEPING, AND REPORTING REQUIREMENTS

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. Results of soil, groundwater, surface water, and seeps samples will be compared to the Remedial Levels outlined in Table 4-1 of the RI/FS Workplan (Parametrix 2008). Results exceeding applicable environmental quality criteria will be clearly identified. An internal quality control/quality assurance data review will be performed and documented in memoranda format.

The results of the sampling and analysis will be provided in a brief written report presented in technical memorandum format that includes a sample location map, GPS coordinates for all sampling locations, description of field procedures, and the analytical results and interpretations described above. 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 the City of Olympia for a minimum of 10 years.

REFERENCES

Parametrix. 2004a. West Bay phase I environmental site assessment Port of Olympia property. Prepared for City of Olympia Parks, Arts, and Recreation Department. June.

Parametrix. 2004b. West Bay phase II environmental site assessment. Prepared for City of Olympia Parks, Arts, and Recreation Department. June.

Parametrix. 2007. West Bay rail spur phase II environmental site assessment report. Prepared for City of Olympia Parks, Arts, and Recreation Department. December.

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.

Parametrix 2010. Solid Wood Incorporated site (West Bay Park) interim action report revision 1. Prepared for the City of Olympia Parks, Arts, and Recreation Department. September.

Parametrix. 2011. Technical memorandum: Solid Wood Incorporated site – Quarter 8 groundwater results, December 2010. Prepared for City of Olympia Parks, Arts, and Recreation Department. February 1.

ATTACHMENTS

Figures 1 through 3

FIGURES

Parametrix DATE: 1/12/2011 2:32 PM FILE: BR1577024P04T04F-01B

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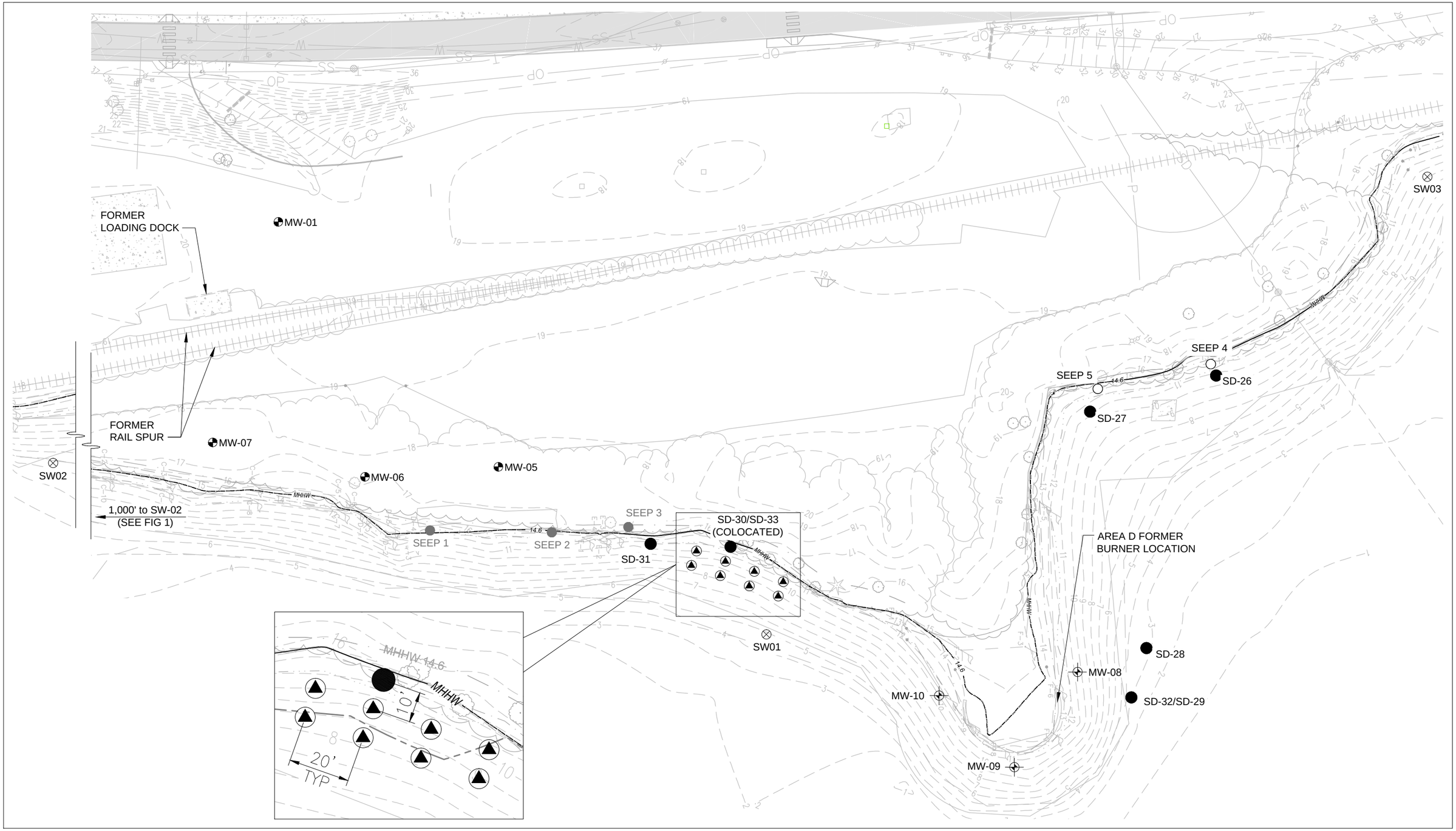
SCALE IN FEET

LEGEND

● PROPOSED SURFACE WATER SAMPLE LOCATION

Figure 1
Solid Wood Incorporated Site
(West Bay Park)
Olympia, Washington
Site Plan and Proposed Surface Water Sampling Locations



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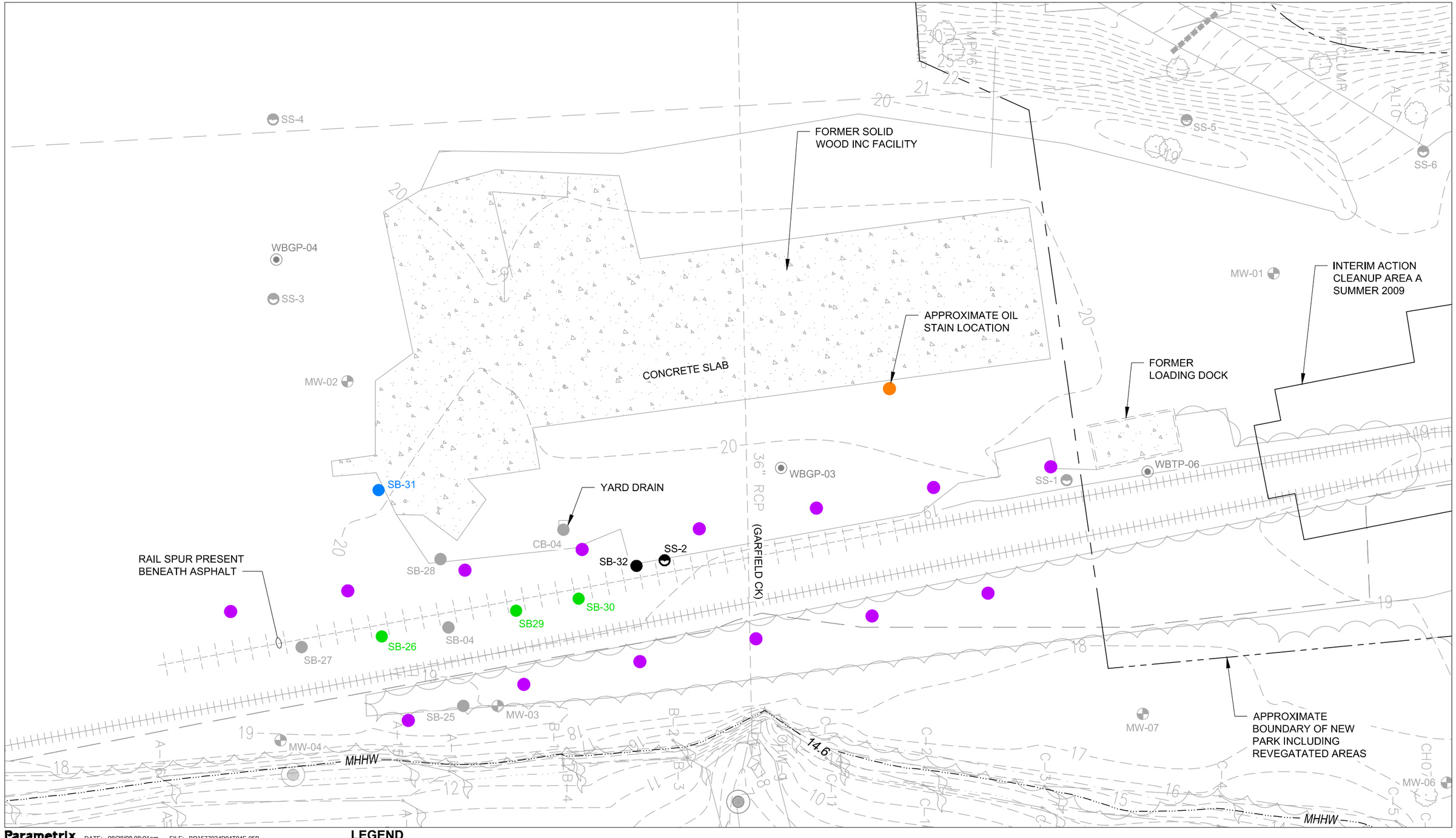
- EXISTING MONITORING WELL NOT SAMPLED
- SEEPS SAMPLED PREVIOUSLY DURING THE RI
- PROPOSED SEEP SAMPLE LOCATION
- PROPOSED SURFACE WATER SAMPLE STATION
- MW-10 PROPOSED MONITORING WELL TO BE SAMPLED
- PROPOSED SEDIMENT SAMPLE LOCATION
- SEDIMENT SAMPLED PREVIOUSLY DURING RI

NOTES

1. ELEVATION DATUM: MLLW
2. TOPOGRAPHY SHOWN BASED ON PRE-PARK CONSTRUCTION CONDITIONS.

Figure 2
Solid Wood Incorporated Site
(West Bay Park)
Olympia, Washington
Proposed Surface Water, Seep, Groundwater, And Sediment Sample Locations



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LEGEND

- WBGP — 2004 GEOPROPE SAMPLING LOCATIONS
- WBTP — 2004 TEST PIT SAMPLING LOCATION
- PMX PHASE II ESA/RIFS SAMPLING LOCATION
- MONITORING WELL
- PORT OF OLYMPIA TEST PIT LOCATION
- SOIL CONCENTRATIONS EXCEED SCREENING LEVELS FOR PAHs
- PROPOSED SURFACE SOIL LOCATION
- PROPOSED SHALLOW BORING

- SS — SURFACE SOIL SAMPLING LOCATION
- SB — SOIL BORING LOCATION
- TP — TEST PIT LOCATION

Figure 3
Solid Wood Incorporated Site
Olympia, Washington
Proposed Surface Soil Sample Locations