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engineers, scientists, economists

Transmitted Via e-mail

January 4, 2005

Sean Sheldrake
US Environmental Protection Agency
Superfund Project Manager
1200 Sixth Avenue
Mailstop: ECL-112
Seattle, WA 98101-1128

Re: Port of Portland Terminal 4 Early Action, Supplemental Field Characterization Activities

Dear Mr. Sheldrake:

As mentioned during the October quarterly meeting, BBL plans to conduct the following supplemental field work during the winter/spring of 2005 in support of the ongoing Terminal 4 Early Action EE/CA and recontamination analysis:

- Groundwater monitoring well water-level measurements;
- Sediment trap redeployment; and
- Stormwater outfall testing and sampling.

Work to be completed under each of these three tasks is described below and a preliminary schedule is attached as Table 1. Health and safety procedures to be followed while conducting the supplemental field work are documented in the Health and Safety Plan (HASP), included as Appendix B to the Terminal 4 Early Action Engineering Evaluation/Cost Analysis Work Plan (Work Plan), and associated Addenda 1 through 3. Addendum 3 to the HASP is attached to this letter.

Groundwater Monitoring Well Water-Level Measurements

The interaction between Willamette River water levels and groundwater levels at Terminal 4 was investigated during the EE/CA field program in April, May, and June 2004. However, because the spring 2004 monitoring period was unseasonably dry, additional water level data is needed during wet-weather conditions, when Willamette River discharge and water levels are expected to be higher. The additional water level data will be used to evaluate seasonal changes in groundwater elevations and gradients within the three geologic units at Terminal 4 (upland fill material, Unconsolidated Alluvial Deposits, and Troutdale Gravel) in order to continue to assess the effectiveness of sediment capping and onsite disposal in the Engineering Evaluation/Cost Analysis (EE/CA).

BBL will install five In-Situ mini-Troll pressure transducers in monitoring well clusters T4-MW01 (shallow, intermediate, and deep) and T4-MW02 (intermediate and deep) for continuous water-level

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monitoring. A sixth transducer will be installed in a stilling well temporarily installed within Slip 1 (Figure 1). The pressure transducers will be installed as described in Field Change Request No. 7 and Section 3.2.3 of the Terminal 4 Early Action Characterization Report (Characterization Report). The pressure transducers will be equipped with data-loggers to log and store electronic water level data for subsequent retrieval and evaluation. Blue Water Engineering, of Seattle, Washington, will assist BBL with stilling well installation.

Following installation, the depth of the transducer will be recorded for each well and converted to Columbia River Datum (CRD) based on the survey conducted by the Port during the 2004 EE/CA field program. The stilling well will be surveyed by the Port relative to the site benchmarks used to survey the monitoring wells. Surveyed elevation will be measured to the nearest 0.01 foot National Geodetic Vertical Datum and will be converted to CRD.

Pressure transducer installation is planned for the first week in January 2005 and water-level measurements will be conducted over an eight-week period. Water-level data will be recorded on one-minute intervals and will be downloaded on a weekly basis for the first two weeks, and every two weeks thereafter using a laptop computer. The pressure transducers will not be removed from the wells during the data download. Manual groundwater-level measurements using a Heron Instruments, inc. water level meter will be taken at well clusters T4-MW01 through T4-MW06 prior to pressure transducer installation and following retrieval at the end of the monitoring period. Procedures to be followed for water-level measurements are described in Section A1-6 of the Work Plan. Groundwater parameters, including pH, dissolved oxygen (DO), specific conductivity (SC), and oxidation reduction potential (ORP) will also be measured in conjunction with the manual water-level measurements using a Yellow Springs Instrument Company, Inc. (YSI) 600 XLM sonde. Water-level data and groundwater parameter values will be presented in the final EE/CA report.

Stormwater Outfall Testing and Sampling

The collection of stormwater and stormwater sediment samples from outfalls that drain directly into and upstream of the Removal Action Area will be conducted in January and February 2004 to help estimate the potential for post-Removal Action recontamination of surface sediment within the Removal Action Area. The Administrative Order on Consent for Removal Action (AOC), CERCLA 10-2004-0009 executed by the Port and USEPA in October 2003, and associated Statement of Work (SOW) attached to the AOC as Appendix B, require the Port to conduct an ongoing analysis regarding the potential for post-Removal Action recontamination to the Removal Action Area at various stages during implementation of the SOW. With respect to the EE/CA, the SOW requires that the EE/CA include a section on the results of the recontamination analysis, as follows:

> *The results of the analysis regarding the post Removal Action recontamination potential of the Port of Portland Terminal 4 Removal Action Area by upland or upstream sources of contamination, including whether source control actions will be sufficient or if additional actions may be required to control potential sources of significant recontamination.*

The supplemental stormwater assessment will include the following tasks in support of the ongoing recontamination analysis:

- field reconnaissance;

- sediment trap installation within selected stormwater boxes; and
- collection of water samples from selected stormwater outfalls.

Each of these three tasks is described in detail in Addendum 1 to the Work Plan (attached). The information gathered during this effort, particularly the field reconnaissance, will be used in the recontamination analysis to evaluate annual stormwater discharge volumes and total solids content using the EPA Stormwater Management Model (SWMM). Primary inputs into the model focus on the existing physical attributes of the drainage basins and stormwater systems. The field reconnaissance will help verify the physical characteristics of each drainage basin, including systems that have recently been modified (e.g., the Toyota facility).

The stormwater and sediment trap sampling will allow for the assessment of chemical loading rates for constituents of potential concern (COPCs) associated with particulate matter. Constituents associated with particulate matter are more likely to settle onto surface sediment within the Removal Action Area than dissolved-phase constituents. As described in Addendum 1 to the Work Plan, the following outfalls have been identified for stormwater and sediment trap sampling:

- R-SJ14PP (Berth 401);
- N (Slip 1);
- L-SJ19PP (Wheeler Bay); and
- D-SJ24PP (North of Berth 414).

In addition to the outfalls described above, outfalls discharging directly to Slip 3 will be assessed during the site reconnaissance task for possible sampling. If field conditions are observed during the site reconnaissance that would prevent direct sampling or sediment trap installation, alternative outfalls/drainage systems will be identified. Discussions with the City of Portland related to the sampling of City outfalls in the Removal Action Area and upstream are ongoing. Sampling and analytical procedures are described in the attached Addendum 1. Stormwater data collected during the supplemental field program will be presented in the final EE/CA report.

Sediment Trap Redeployment

Four sediment traps were deployed in and upstream of the Removal Action Area over two periods completed during the 2004 EE/CA field program from mid-March through mid-May 2004. Sediment trap samples collected during these two periods were analyzed for total metals, semivolatile organic compounds (SVOCs), pesticides, PCBs, total petroleum hydrocarbons (TPH), total organic carbon (TOC), total solids (TS), and grain size. However, because the spring 2004 monitoring period was unseasonably dry, additional sediment trap data is needed during wet-weather conditions, when Willamette River discharge and water levels are expected to be higher. The sediment trap data will be used in conjunction with hydrodynamic and sediment transport modeling to evaluate sedimentation patterns within the Removal Action Area. The sedimentation analysis will be used in the EE/CA to evaluate monitored natural recovery and the potential for post-removal action recontamination.

Five sediment traps will be deployed within the Removal Action Area during the first week in January 2005 and will be deployed for a minimum of six weeks (Figure 2). The traps will be prepared, deployed, and recovered as described in Section 3.5 and Appendix H of the Characterization Report. Blue Water Engineering will assist BBL with sediment trap deployment and recovery.

Sediment trap samples will be analyzed by Columbia Analytical Services (CAS) in Kelso, Washington for total metals, SVOCs, pesticides, PCBs, TPH, TOC, TS, and grain size. Sample containers, preservation, holding times, packing, handling, and shipping are described in Quality Assurance Project Plan (QAPP), included as Appendix A2 of the Work Plan. Quality assurance procedures are also outlined in the QAPP, and analytical data validation will be performed by EcoChem. Waste management (*e.g.,* for decant water) will be performed in accordance with the specifications outlined in Section A1-10 in Appendix A1 (Field Sampling Plan) of the Work Plan.

Sediment trap data collected during the supplemental field effort will be presented in the final EE/CA report.

Schedule

A tentative schedule for the supplemental field work described above is provided in Table 1.

Sincerely,

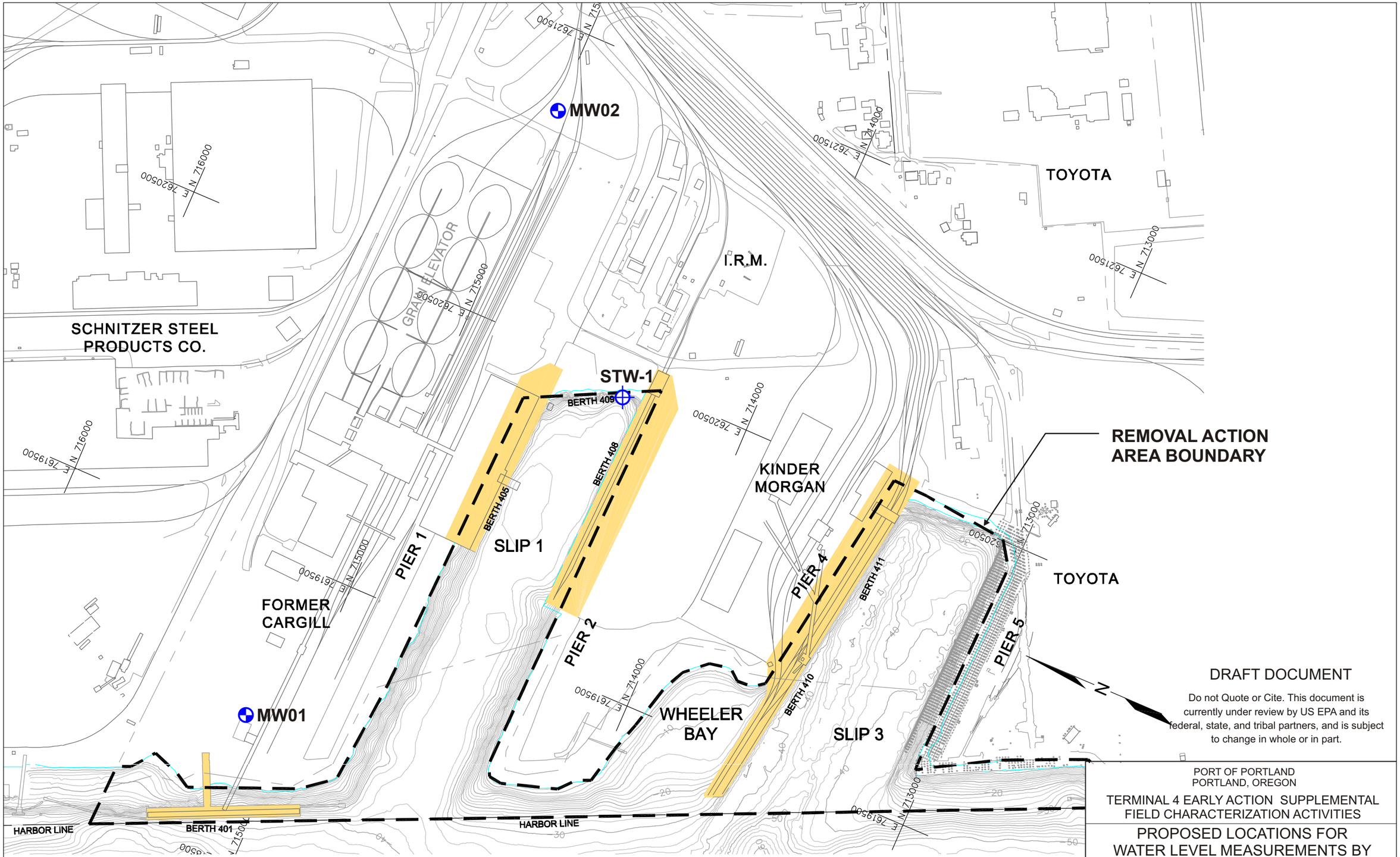
BLASLAND, BOUCK & LEE, INC.

Philip Spadaro
Senior Vice President

PAS:seky

Table 1 –Supplemental Field Activity Schedule

Activity	Date
1. Removal Action Area Sediment Trap Redeployment	January 6-8, 2005
2. Stormwater Outfall Field Reconnaissance	January 10-14, 2005
3. Stormwater Outfall Sediment Trap Installation	January 10-14, 2005
4. Pressure Transducer Deployment	January 6-12, 2005
5. Stormwater sampling	Following first 1-inch in 48 hour rain event
6. Pressure Transducer Download	Every week for first two weeks, and every two weeks thereafter.
7. Removal Action Area Sediment Trap Retrieval	February 21 – 23, 2005
8. Stormwater Sediment Trap Retrieval	February 21 – 23, 2005
9. Pressure Transducer Retrieval	March 7 – 8, 2004
10. Analytical Chemistry Data Received	March 21, 2005



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PORT OF PORTLAND
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TERMINAL 4 EARLY ACTION SUPPLEMENTAL FIELD CHARACTERIZATION ACTIVITIES

PROPOSED LOCATIONS FOR WATER LEVEL MEASUREMENTS BY PRESSURE TRANSDUCER

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 1

● Sediment Trap Deployment Location (April/May 2004)
■ Preliminary Proposed Re-deployment Location

N

0 600 1200
Approximate Scale in Feet

Note: Date of Photo: July 9, 2002

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PORT OF PORTLAND
PORTLAND, OREGON

TERMINAL 4 EARLY ACTION SUPPLEMENTAL FIELD CHARACTERIZATION ACTIVITIES

APRIL/MAY 2004 SEDIMENT TRAP DEPLOYMENT LOCATIONS AND PROPOSED RE-DEPLOYMENT LOCATIONS

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

FIGURE
2

1. Introduction and Objectives

This addendum describes additional stormwater and stormwater sediment sampling proposed within select drainage systems at Terminal 4 to help estimate the potential for post-Removal Action recontamination of surface sediment within the Remedial Action Area. The Administrative Order on Consent for Removal Action (AOC), CERCLA 10-2004-0009 executed by the Port and USEPA in October 2003, and associated Statement of Work (SOW) attached to the AOC as Appendix B require the Port to conduct an ongoing analysis regarding the potential for post-Removal Action recontamination to the Removal Action Area at various stages during implementation of the SOW. With respect to the EE/CA, the SOW requires that the EE/CA include a section on the results of the recontamination analysis, as follows:

> *The results of the analysis regarding the post Removal Action recontamination potential of the Port of Portland Terminal 4 Removal Action Area by upland or upstream sources of contamination, including whether source control actions will be sufficient or if additional actions may be required to control potential sources of significant recontamination.*

The additional field work will include the following tasks in support of the ongoing recontamination analysis:

- field reconnaissance;
- sediment trap installation within selected stormwater boxes; and
- collection of water samples from selected stormwater outfalls.

Each of these three tasks is described in further detail below. The information gathered during this effort, particularly the field reconnaissance, will be used in the recontamination analysis to evaluate annual stormwater discharge volumes and total solids content using the EPA Stormwater Management Model (SWMM). Primary inputs into the model focus on the existing physical attributes of the drainage basins and stormwater systems. The field reconnaissance will help verify the physical characteristics of each drainage basin, including systems that have recently been modified (e.g., the Toyota facility).

The stormwater and sediment trap sampling will allow for the assessment of chemical loading rates for constituents of potential concern (COPCs) that are associated with particulate matter. Constituents associated with particulate matter are more likely to settle onto surface sediment within the Removal Action Area than dissolved-phase constituents.

2. Task Descriptions

The following subsections described the field reconnaissance task; sediment trap installation; and collection of water samples from select stormwater outfalls in support of the recontamination analysis.

2.1 Task 1 - Field Reconnaissance

BBL's current understanding of the stormwater drainage system at Terminal 4 is based on available storm-sewer drawings provided by the Port (Port of Portland, 2000) and more recent as-built drawings reflecting modifications made to the drainage system within the Toyota facility (Port of Portland 2004). The Terminal 4 stormwater drainage system and outfalls are shown on Figure A-1. Figure A-1 is considered to be a working document and will continue to be updated as additional information is obtained. The following five objectives have been identified for the field reconnaissance task:

- review drainage basin areas as shown on Figure A-1;
- describe existing land uses;
- describe existing stormwater systems;
- identify stormwater boxes in designated drainage basins that will be appropriate for sediment trap installation;
- identify locations in designated drainage basins for stormwater water sample collection;
- assess flow rates within the stormwater drainage system, as possible.

Fulfilling these objectives will allow for more targeted stormwater sampling. Further, the field reconnaissance will provide an opportunity to review the feasibility of sampling active portions of the site.

2.2 Task 2 - Sediment Trap Installation

To support the recontamination analysis, sediment traps will be installed in select outfalls that discharge into or upstream of the Removal Action Area. Outfalls that have selected for sampling include:

- R-SJ14PP (Berth 401);
- N (Slip 1);
- L-SJ19PP (Wheeler Bay); and
- D-SJ24PP (North of Berth 414).

In addition to the outfalls described above, outfalls discharging directly to Slip 3 will be assessed during the site reconnaissance task for possible sampling. The list of outfalls identified for sampling may also be modified, as needed, based on findings from the field reconnaissance and or additional information provided from the Port. If field conditions are observed during the site reconnaissance that would prevent direct sampling or sediment trap installation, alternative outfalls/drainage systems will be identified. Discussions with the City of Portland related to the sampling of City outfalls in the Removal Action Area and upstream are ongoing.

The intent of the sediment trap sampling will be to collect a portion of the suspended sediment load within the stormwater system for a period of approximately six weeks. The deployment period may be lengthened if sufficient sample volume is not collected after the initial six-week period. As possible, the solid samples will be analyzed for total metals, SVOCs, pesticides, PCBs, TPH gasoline-range organics, TPH diesel-range organics, TPH-residual range organics, total organic carbon (TOC) total solids (TS), and grain size. The

sediment trap samples will be analyzed by Columbia Analytical Services (CAS) in Kelso, Washington. If sufficient sample volume is not available at the termination of the final deployment period, the analyses performed will be prioritized as described in Table 1.

Table 1. Analyses to be performed based on available sample size.

Scenario	Mass of Material Available	Analytes
1	Greater than 90 grams	All
2	60 to 90 grams	Eliminate NWTPH-diesel-range
3	50 to 60 grams	Eliminate NWTPH-gasoline-range
4	47 to 50 grams	Eliminate TOC
5	Less than 47 grams	Redeploy bottles to collect additional samples/consider additional bottles.

Results of the analyses will be used to determine if a particular outfall represents a potential source of post-Removal Action recontamination to Removal Action Area sediment. If the results indicate that an outfall is a potential source of recontamination, then the concentrations of constituents of potential concern (COPCs) within the sediment will be used in conjunction with SWMM modeling results to gauge the possible extent of recontamination.

Sediment trap methodology will follow similar sampling projects at the Thea Foss waterway and a pilot study performed by the Washington State Department of Ecology (Ecology) in 1996 (Ecology, 1996). A one-liter polyethylene bottle will be installed within a stormwater box by means of bolting a stainless steel support into the concrete. The bottle will then be secured within the support with a stainless steel collar (Figure A-2). Sediment traps will be installed as close to the bottom of the stormwater boxes as is practicable to collect solid material as it settles within the relatively quiescent environment of the box. One to two bottles may be installed within the same box to increase the amount of material available for sampling.

Deployment locations for the sediment traps will be identified during the field reconnaissance. Deployment locations will be intended to sample representative basins within T4 that span the range of upland land uses in the area. Sediment traps will be placed within the stormwater system as opposed to the outfall locations to avoid sampling the effects of water from the Willamette River. Further consideration for deployment locations will be given to logistic and safety concerns for personnel to install the devices.

Sample recovery will be performed as described in Section A1-6.5 in Appendix A Field Sampling Plan of the Terminal 4 Early Action Engineering Evaluation/Cost Analysis Work Plan (Work Plan; BBL, 2004a) and Section 3.5.2.3 of the Terminal 4 Early Action Engineering Evaluation Cost Analysis Characterization Report (Characterization Report; BBL, 2004b). Sample containers, preservation, holding times, packing, handling, and shipping are described in Quality Assurance Project Plan (QAPP), included as Appendix A2 of the Work Plan. Quality assurance procedures are also outlined in the QAPP, and analytical data validation will be performed by EcoChem.

2.3 Task 3 - Water Sampling

To provide a measure of solids concentrations within the stormwater discharged from Terminal 4 outfalls, water samples will be collected and analyzed for total suspended solids (TSS) and total Dissolved Solids (TDS). Field measurements of temperature, pH, conductivity, and turbidity will be made at the time of sampling using a Yellow Springs Instrument Company, Inc. (YSI) 6920 sonde fitted with a flow-through cell. The methodology for sample collection and analysis will follow the water sampling description provided in the Work Plan (Section A1-3.2 in Appendix A1 Field Sampling Plan). As possible, estimates of flow rates will also be made during this sampling effort. Sampling will occur at the six locations where sediment traps are deployed.

The intent of the water sampling is to provide a snapshot in time of conditions where the stormwater system is fully engaged. Therefore, sampling will occur after a 1 inch precipitation over 48 hour period storm event as measured by the number of tips at the City of Portland HYDRA weather station at T4 at 11040 N. Lombard Street, Warehouse 5. Recent observations for this station are available at http://or.water.usgs.gov/non-usgs/bes/terminal4ne.rain. If a 1 inch/48 hour storm has not occurred by February 1, then sampling will occur on the next storm that results in flow within the stormwater system as determined by BBL personnel.

3. Schedule

The tentative schedule for the field tasks described in this addendum is provided in Table 2.

Table 2. Schedule

Activity	Date
Field reconnaissance	January 10-14, 2005
Sediment Trap Installation	January 10-14, 2005
Stormwater sampling	Following first 1-inch in 48-hour rain event
Sediment Trap Retrieval	February 21-23, 2005
Analytical Data Received	March 21, 2005

4. Health and Safety

The health and safety plan provided in Appendix B of the Work Plan and Addendum 3 (BBL, 2004c) will be in effect for this work. Waste management (*e.g.,* for decant water) will be performed in accordance with the specifications outlined in Section A1-10 in Appendix A Field Sampling Plan of the Work Plan.

5. References

Blasland, Bouck & Lee, Inc. (BBL), 2004a. Work Plan, Terminal 4 Early Action Engineering Evaluation/Cost Analysis, Port of Portland, Portland, Oregon. February 23.

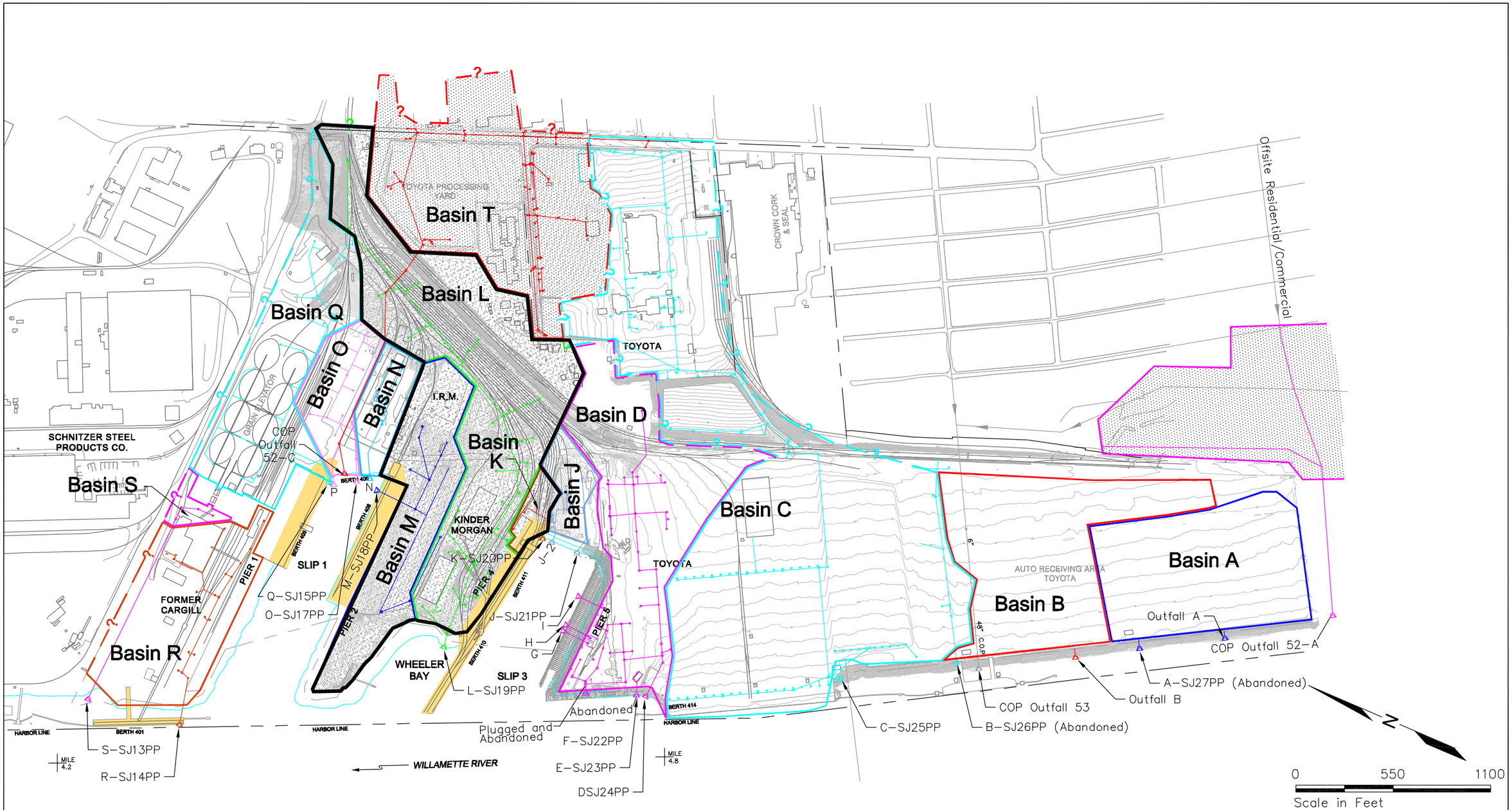
BBL, 2004b. Characterization Report, Terminal 4 Early Action Engineering Evaluation/Cost Analysis, Port of Portland, Portland, Oregon. September 17.

BBL 2004c. Health and Safety Plan Addendum 3, Terminal 4 Early Action Engineering Evaluation/Cost Analysis, Port of Portland, Portland, Oregon. December 17.

Washington State Department of Ecology, 1996. Stormwater Sediment Trap Pilot Study. Publication No. 96-347, Olympia, Washington. November.

Port of Portland, 2000. Terminal No. 4 Storm Sewer System. Drawing No. T4 2000-3027. June.

Port of Portland 2004. As-built drawings for Terminal 4 Toyota Renovation – Phase 2. Prepared by HDR Engineering, Inc. Portland, Oregon. July 1.



Notes:

1. Upland topographic vertical datum is MSL; Bathymetric vertical datum is CRD
2. Site Plan is based on drawings provided by the Port of Portland.
3. Shoreline boundary for Ordinary High Water is approximate.
4. Willamette River Mile Reference Marks are approximate.
5. Diurnal tide range during low river stages is 2.2 feet at St. Johns and 2.4 feet at Portland.
6. Datum conversion tables to CRD provided by Port of Portland.
7. Drainage basins for Outfalls 52A and 52C were provided by the City of Portland (see legend).
8. Catch basins and drain lines in Basins A and B require field verification.
9. Stormwater drainage information based on Port of Portland "Drawing No. T4 2000-3027" from June 2000, HDR drawings "Utility Plan Area 4" from July 1, 2004, and Port of Portland "Overall Drainage Plan" drawing from 2004.

Area to be modified for Berth 408 Rail Yard Modernization Project.

Existing Piers

Approximate Drainage Basin Incorporating City of Portland Stormwater Subbasin

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PORT OF PORTLAND
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TERMINAL 4 EARLY ACTION
ENGINEERING EVALUATION COST ANALYSIS
WORK PLAN ADDENDUM 1 -
STORMWATER OUTFALL INVESTIGATION

STORMWATER DRAINAGE BASINS

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE A1

DWG NAME: G:\project\Clients\BBL\Terminal 4\t4_050(EECA_AddunFigA1).dwg
DATE: 12/21/04 1:15pm

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TERMINAL 4 EARLY ACTION
ENGINEERING EVALUATION COST ANALYSIS
WORK PLAN ADDENDUM 1 -
STORMWATER OUTFALL INVESTIGATION

PHOTOGRAPH OF SEDIMENT TRAP
BASED ON CITY OF TACOMA PROTOTYPE

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FIGURE
A2

MEMORANDUM

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To: Terminal 4 Health and Safety Plan File

Date: January 4, 2005

From: Jennifer Deters

cc: Terminal 4 BBL Field Staff

Re: Addendum 3 – Additional decontamination requirements for Blue Water Engineering and BBL staff potentially sampling CSO outfalls

By issuance of Addendum 3 to the Terminal 4 Health and Safety Plan, the following procedures are required for the supplemental field work conducted by Blue Water Engineering and for BBL personnel who are involved in sampling combined sewer overflow (CSO) outfalls during winter and spring 2005. These additional procedures include:

- Prior to the start of diving activities, the on-site Dive Safety Officer will evaluate site conditions (i.e., has heavy rain occurred within the past 24 hrs which would result in significant CSO discharges) and make a determination if diving should commence.

- Following diving activities, divers will perform a complete rinse with fresh water (not river water) after exiting the water and before doffing the suit. A second antiseptic rinse, using a mild Betadine solution or a mild bleach solution (10 percent) if Betadine is not available, will then be conducted. Water and antiseptic solutions used to rinse diver equipment will not be collected.

- BBL employees who are involved in sampling CSO outfalls (if conducted) must perform a complete rinse of their hands and all sampling equipment that contacts CSO water prior to removing sampling gloves. Fresh water should be used for an initial rinse, with a second antiseptic rinse completed using a mild Betadine solution or mild bleach solution (10-percent). Water and antiseptic solutions will not be collected.

Related issues:

- The Dive Safety Officer must attend the daily health and safety briefing.
- All BBL and Blue Water Engineering staff must sign the acknowledgement page of the Health and Safety Plan.
- Blue Water Engineering must provide a Dive Plan (number of dives, anticipated depths, anticipated dive time, and dates) to the Health and Safety Supervisor.

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