APPENDIX I
CULTURAL RESOURCES MONITORING REPORT

FIELD AND DATA REPORT

DOWNTOWN PORTLAND SEDIMENT CHARACTERIZATION PHASE II

WILLAMETTE RIVER
PORTLAND, OREGON

JUNE 2010

SWCA
ENVIRONMENTAL CONSULTANTS

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April 20, 2010

Rick Ernst
Hart Crowser, Inc.
8910 SW Gemini Drive
Beaverton, Oregon 97008-7123

PROJECT: Cultural Resources Monitoring of the Oregon Department of Environmental Quality Phase 2 Downtown Portland Sediment Characterization Project, Portland, Multnomah County, Oregon

Dear Mr. Ernst:

At the request of Hart Crowser, Inc., on behalf of Oregon Department of Environmental Quality (DEQ), SWCA Environmental Consultants (SWCA) conducted archaeological monitoring for Phase 2 of the Downtown Portland Sediment Characterization (DPSC) project in Portland, Multnomah County, Oregon (Figure 1). The project consists of mechanized grab and vibracore sediment sampling of Willamette River sediments between river mile (RM) 12 and 16. SWCA archaeologists monitored the on-boat grab sample collection and sampling, as well as vibracore processing and sampling from within the SWCA lab facility. This report documents the methods and results of the cultural resource monitoring conducted by SWCA for Hart Crowser, Inc., as well as the cultural resources recommendations. All field notes, data and photographs are on file at the offices of SWCA under project number 16334.

FIELD METHODS

SWCA archaeologists conducted the cultural resources monitoring according to Oregon State Historic Preservation Office guidelines for conducting archaeological monitoring in Oregon. Matthew Steinkamp and Todd Baker served as the archaeological monitors for the project. SWCA field monitored the collection and sampling of mechanized (power) grab samples aboard the vessel *Vibrador* (Figures 2 and 3) and lab monitored the cutting, opening, sampling and characterization of sediments sealed within vibracores obtained from the Willamette River (Figure 4). A total of 39 power grab samples (Table 1) and 11- to 13-foot vibracores (attempted core length) (Table 2) were monitored for the presence, absence or evidence of, cultural resources. Monitoring was conducted from February 22 to March 3, 2010.

Field methods involved observing power grab sampling from the deck of the Subsea Sampling Solutions (SSS) vessel *Vibrador* (see Figure 2). Using a hydraulic cable and A-frame system, power grab samples equal to approximately 0.6 cubic feet were collected at the surface of the Willamette River channel sediments. Once the grab sample was obtained from the river bottom, the power grab, with approximately 200 pounds of head weight, was cable-pulled up onto the deck of the *Vibrador*. Once at rest, the two bay doors located on the top of the sampler

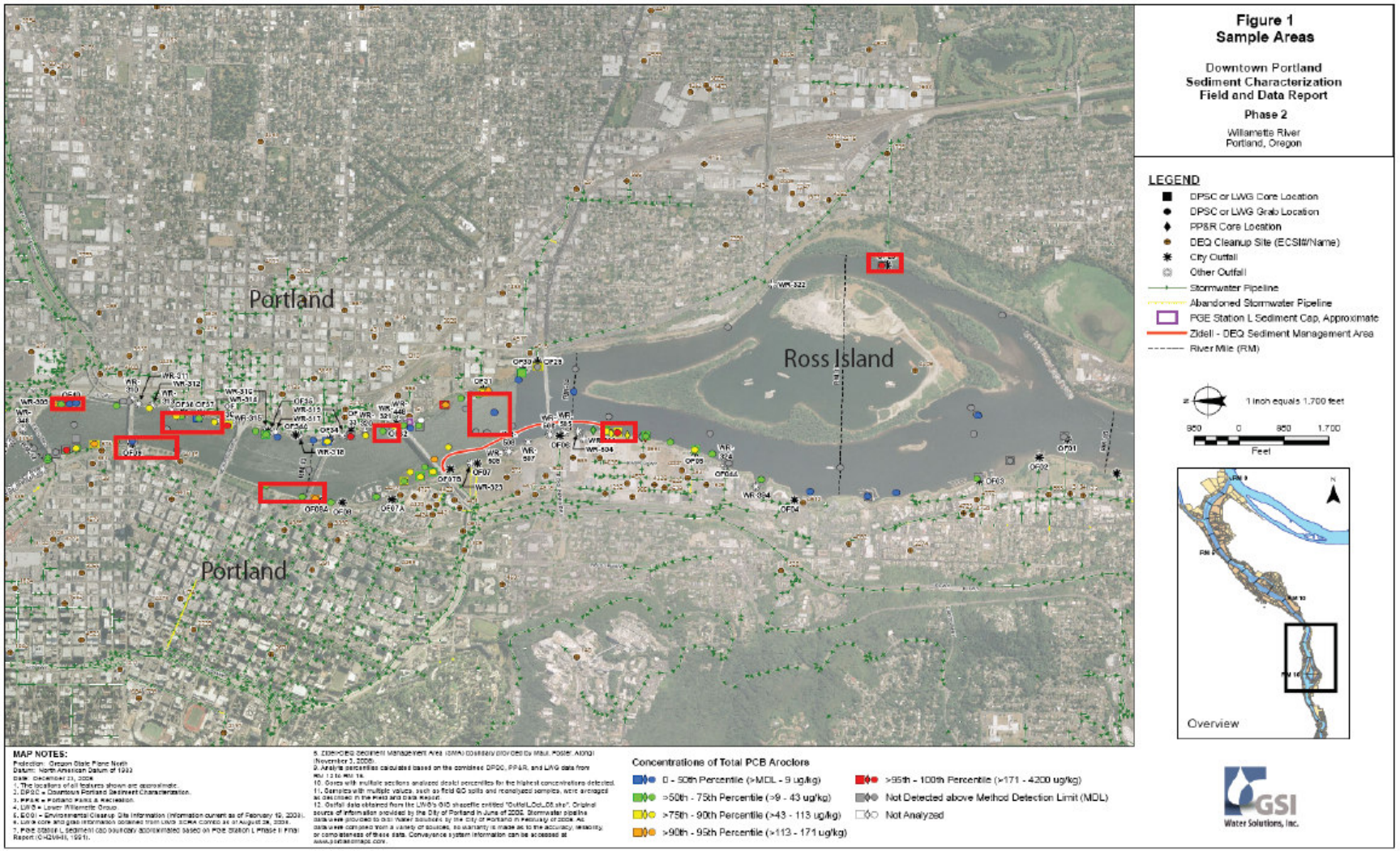

Figure 1. DPSC location map. Areas of DPSC Phase 2 sampling are shown as red boxes (Provided by GSI Water Solutions, Inc.)

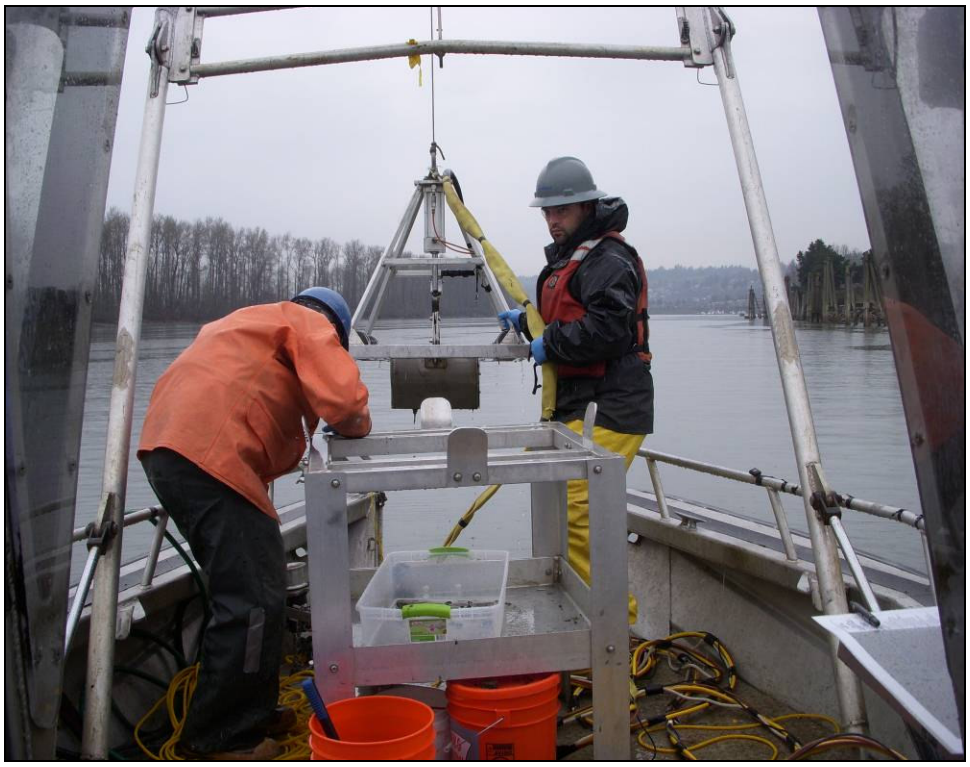

Figure 2. Power grab sampling aboard the *Vibrador*. GSI (left) and Hart Crowser (right) staff operating power grab sampler. View looking south (upstream).

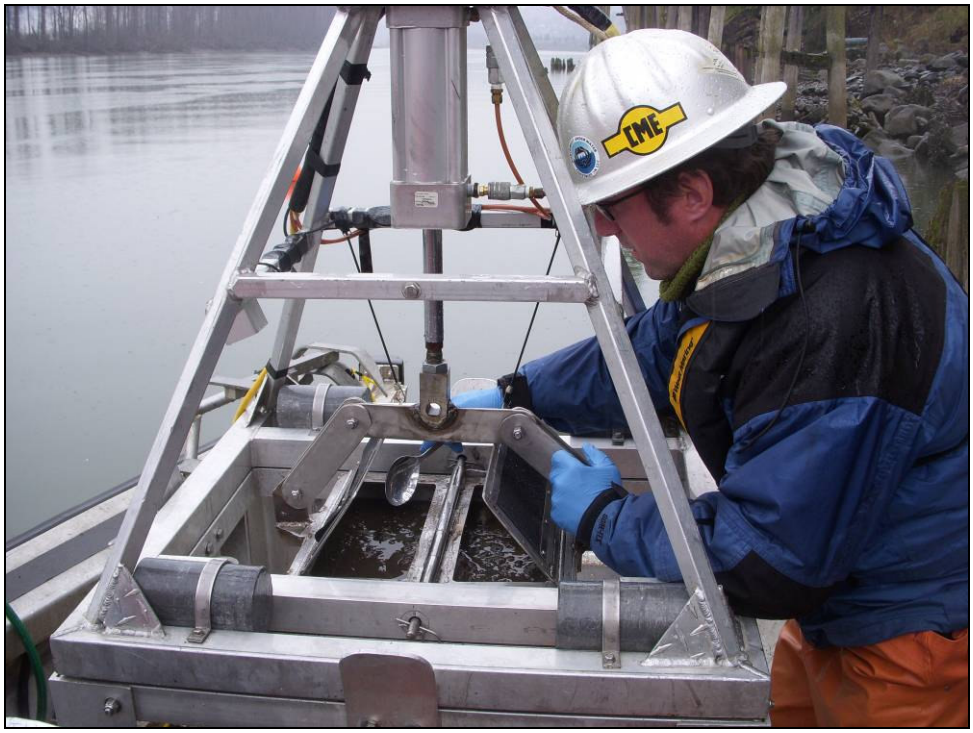

Figure 3. SWCA geoarchaeologist inspecting grab sample within power grab sampler for evidence of cultural resources.

Figure 4. SWCA geoarchaeologist (left) inspecting core sample for evidence of cultural resources. GSI Water Solutions Inc. geologist (right) is logging sediments.

were opened and the sediments observed. If too little sediment was obtained, multiple grab attempts were conducted to collect a roughly 0.6 cubic foot sample that was consolidated into one sample. SWCA monitored the opening of the grab sampler, collection of sediments for sample analysis, and hand sorted through the collected sediments as well as the remainder of the grab sample that was retained in the power grab sampler. Thus, all sediments obtained by the power grab sampler were visually inspected by the SWCA geoarchaeologist.

Laboratory monitoring methods involved monitoring of core longitudinal cutting, sampling, and sediment characterization of sediments removed from vibracore sediment cores. The core sediments were visually inspected for historic and precontact artifacts and evidence of subsurface features. Vibracores measured 13 feet in length and 4 inches in diameter. Prior to opening, inspection, and sampling, the cores were cut into 4-foot lengths for storage.

RESULTS

Cultural resource monitoring of power grab sampling aboard the *Vibrador* resulted in the recordation of a light scatter of historic-era debris mixed with recent garbage in a matrix of dynamic fluvial sediments. The results indicate that the shallow subsurface Willamette River bottom sediments are a mélange of natural and cultural sediments that have been transported, re-worked, rounded, and broken by channel forces. Fluvial sediment matrix grain size ranged from boulder and cobble within the thalweg portion of the river, gravelly sands in slower fluid regimes outside of the thalweg, and silts and sands in more quiescent portions of the river, such as the east side of Ross Island, where fine sediments were mixed with woody debris. Turbulent water flow indicators, such as clay rip-up clasts were observed in channel sands and silts, and indicators of fluctuating hyporheic flow (indicated by alternating oxidized and reduced sediments) were observed in channel sands and gravels.

A mixture of historic debris was recorded in grab samples (see Table 1) and vibracore samples (see Table 2) which consist of a random mix of recent garbage and historic debris such as rounded brick fragments, glass (flat and bottle glass), unknown metal fragments, and ceramics and tile. The presence of the historic-era debris mixed with modern garbage in a highly mobile and dynamic sediment regime indicates that the historic debris has been re-worked and re-mobilized by fluvial processes after initial shoreline deposition and erosion. It is important to note that most historic debris concentrations, such as brick, were noted to be downstream from observable shoreline fill deposits that contained bricks, concrete, steel, modern garbage, and unknown debris associated with fill episodes along the banks of the Willamette River. It is also important to note that most brick fragments recovered in grab samples exhibited rounding of edges associated with water action (likely due to minor bed load traction and slight saltation of debris during turbulent flow regimes).

CONCLUSIONS AND RECOMMENDATIONS

SWCA monitored power grab sediment sampling of river sediments and sampling of cores that were cut, opened and sampled at the SWCA Portland laboratory during five days of field work and two days of laboratory sampling that occurred from February 22 to March 3, 2010. No precontact or in situ historic-period cultural material was discovered during monitoring. Numerous "ex situ" historic debris fragments were observed within the shallow grab samples and within the vibracores, which were determined to be re-mobilized fill deposits originating from the banks of the river.

Based on the results of the monitoring and the limited volume of samples, it is SWCA's professional opinion that the sampling phase of this project has no affect on cultural resources. SWCA does, however, recommend that future sampling and sediment disturbing activities within the Willamette River channel consider the possible effects on known and unknown cultural resources within the Willamette River channel.

SWCA appreciated the opportunity to participate in the monitoring for the DEQ Downtown Portland Sediment Characterization project between RM 12 and 16. Please contact our office if you have any questions about the results of the monitoring work or this report.

Sincerely,

Matthew J. Steinkamp
Project Manager, Geoarchaeologist
SWCA Cultural Resources
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Table 1. DPSC Grab Sample Cultural Resources Monitoring Data

Grab #/ River Mile (RM)	Date	Sediment Description	Cultural Material	UTM Coordinates (NAD 83) and Water Depth (WD) of Grab Sample
G091 RM 12.9W	2/22/10	Rounded cobbles	None	N 681973.0832, E 7645509.901, WD 50'
G092 RM 12.9W	2/22/10	Rounded cobbles	None	N 681641.4280, E 7645368.211, WD 37.9'
G093 RM 12.9W	2/22/10	Angular and rounded gravel with cobbles	None	N 681272.1114, E 7645233.295, WD 35''
G094 RM 12.9W	2/22/10	Rounded gravel	None	N 680959.3394, E 7645155.709, WD 39'
G095 RM 12.9W	2/22/10	Coarse Sand with Gravel	2 terracotta tile fragments, 1 glass mirror fragment, 1 unknown plastic fragment	N 680659.4163, E 7645101.863, WD 16.5'
G103 RM 14.1W	2/23/10	Gravelly silt	1 brick fragment	N 675066.0775, E 7646512.867, WD 36.7'
G104 RM 14.1W	2/23/10	Gravelly silt with Cobbles	Recent garbage; plastic bags	N 675064.0463, E 7646437.037, WD 10'
G105 RM 14.1W	2/23/10	Gravelly silt	None	N 674997.9939, E 7646502.549, WD 40'
G106 RM 14.1W	2/23/10	Silty sand	1 brick fragment	N 674992.9555, E 7646552.137, WD 45''
G107 RM 14.1W	2/23/10	Alternating sand and silt	None	N 674929.9893, E 7646496.618, WD 45'
G108 RM 14.1W	2/23/10	Gravelly silt with cobbles	2 brick fragments	N 674934.0517, E 7646426.204, WD 15.5'
G112 RM 14.1W	2/23/10	Sandy silt	None	N 674413.3961, E 7646346.312, WD 13.5'
G086 RM 12.1E	2/24/10	Organic rich sand	1 clear glass fragment, 1 plastic spoon fragment	N 685667.2166, E 7647042.930, WD 4.2'
G087 RM 12.1E	2/24/10	No sample	None	N 685382.3104, E 7647085.498, WD 20'
G088 RM 12.4W	2/24/10	Cobbly silt	1 brown glass bottle fragment	N 683372.3273, E 7646072.096, WD 28.5'
G109 RM 14.1W	2/24/10	Silty gravel	None	N 674784.4158, E 7646438.543, WD 19'
G110 RM 14.1W	2/24/10	Sandy silt	None	N 674535.2661, E 7646412.663, WD 57'
G111 RM 14.1W	2/24/10	No sample	None	N 674442.8596, E 7646408.598, WD 30'
G090 RM 12.5E	2/24/10	No sample	None	N 682330.4945, E 7646580.292, WD 30'
G089 RM 12.5E	2/24/10	Silty sand	None	N 683483.8569, E 7646873.054, WD 15.8'
G113 RM 15.1E	2/25/10	Silty fine sand	None	N 674413.3961, E 7646346.312, WD 12'
G114 RM 15.1E	2/25/10	Gravelly sand	None	N 670040.3181, E 7649751.228, WD 19.3'
G115 RM 15.1E	2/25/10	Sandy gravel	1 clear flat glass fragment	N 669975.1126, E 7649745.542, WD 20'
G116 RM 15.1E	2/25/10	Sandy silt	None	N 669854.8851, E 7649768.689, WD 5'

Table 1. DPSC Grab Sample Cultural Resources Monitoring Data

Grab #/ River Mile (RM)	Date	Sediment Description	Cultural Material	UTM Coordinates (NAD 83) and Water Depth (WD) of Grab Sample
G096 RM 13.3E	2/25/10	Sandy gravel	1 brown bottle glass fragment, 2 red brick fragments, 1 yellow brick fragment	N 679222.1739, E 7646567.292, WD 22''
G097 RM 13.3E	2/25/10	Cobbles, concrete, silt	5 concrete chunks	N 679152.4219, E 7646650.422, WD 20'
G100 RM 15.1E	2/26/10	Sandy silt	None	N 677437.679, E 7646232.197, WD 20'
G101 RM 15.1E	2/26/10	Gravelly sand	None	N 677416.207, E 7646336.410, WD 25'
G099 RM 15.1E	2/26/10	Gravelly sand with silt	None	N 677874.947, E 7646781.559, WD 45'
G098 RM 15.1E	2/26/10	Silty fine sand	None	N 677986.086, E 7646882.160, WD 45'
G102 RM 15.1E	2/26/10	Sandy clayey silt	None	N 677310.946, E 7646340.075, WD 35.5'
G100 RM 15.1E	3/25/10	Sandy silt	None	N 677437.679, E 7646232.197, WD 20'
G093 Diver RM 12.9W	3/25/10	Cobbly silt	1 yellow brick fragment, 1 clear flat glass fragment, 1 concrete fragment	N 681272.1114, E 7645233.295, WD 39'
G094 Diver RM 12.9W	3/25/10	Gravelly silt	None	N 680959.3394, E 7645155.709, WD 41'
G091 Diver RM 12.9W	3/25/10	Gravelly silt with sand	None	N 681973.0832, E 7645509.901, WD 39'
G092 Diver RM 12.9W	3/25/10	Gravelly silt with sand	None	N 681641.4280, E 7645368.211, WD 38'

Table 2. DPSC Vibracore Cultural Resources Monitoring Data

Core #	Date	Sediment Description	Cultural Material	Latitude/Longitude Coordinates of Core Sample
C112 R1	3/2/10	Silty fine sand	1 brick fragment, 1 concrete fragment 15 cm below surface	N 45.496097, E -122.667572
C095 R1	3/2/10	Gravelly sand	3 clear glass bottle fragments, 1 brown glass bottle fragment, chewing gum, 0 to 15 cm below surface	N 45.513168, E -122.673153
C112 R2	3/2/10	Silty sand	None	Rejected/no coordinates
C112 R3	3/2/10	Silty sand	None	N 45.496097, E -122.667572
C099 R1	3/2/10	Silty sand	None	N 45.505597, E -122.666253
C102 R1	3/2/10	Clayey silt	None	N 45.504359, E -122.668354
C095 R2	3/2/10	Gravelly silt	None	N 45.513168, E -122.673153
C090 R1	3/3/10	Gravelly silt	None. Recent garbage noted from 0 to 18 cm	N 45.517881, E -122.667794
C089 R1	3/3/10	Gravelly sand to silt	1 copper wire fragment at 42 cm, 1 clear flat glass fragment at 76 cm	N 45.505952, E -122.665881
C087 R1	3/3/10	Gravelly sand	1 concrete fragment at 34 cm	N 45.526228, E -122.666013
C086 R3	3/3/10	Sandy gravel	Plastic fragments from 0 to 2 cm, 1 aluminum metal fragment at 33 cm	N 45.526958, E -122.666145