CENWS-ODS-ND

MEMORANDUM FOR RECORD April 18, 2018

SUBJECT: EVALUATION OF DREDGING PROPOSED FOR THE METALINE WATERFRONT IMPROVEMENT PROJECT (NWS-2017-1042), METALINE, WASHINGTON (PEND OREILLE COUNTY) FOR COMPLIANCE WITH THE WASHINGTON STATE ANTIDEGRADATION STANDARD

1. Introduction. This memorandum reflects the consensus determination of the Dredged Material Management Program (DMMP) agencies (U.S. Army Corps of Engineers, Washington Departments of Ecology and Natural Resources, and the Environmental Protection Agency) regarding compliance of the sediment surface to be exposed by removal of approximately 2,300 cubic yards (CY) of dredged material from the boat ramp and approach area at Waterfront Park in Metaline, Washington (Figures 1 and 2) with the State of Washington's antidegradation standard. All dredged material will be disposed at an upland location.

2. Background. The proposed dredging of the boat ramp and approach area is part of the Metaline Waterfront Park Improvement Project planned by Seattle City Light. The objective of the dredging is to provide safe public access to the Pend Oreille River during low water levels. The design dredge elevation is 1,982 feet North American Vertical Datum of 1988 (NAVD88), with one foot of advance maintenance dredging and one foot of overdredge allowance to an elevation of 1,980 feet NAVD88 (SoundEarth, 2018a).

   In support of the relicensing of the Boundary Hydroelectric Project under the Federal Energy Regulatory Commission, Seattle City Light undertook a toxics assessment at fourteen stations along a longitudinal transect in the Boundary Reservoir in 2008. Metals and polychlorinated biphenyls (PCBs) had been identified as potential chemicals of concern (COCs) due to upstream mining activities and potential atmospheric deposition. In the 2008 study, the metals concentrations at the two sampling stations closest to the boat ramp (a half-mile upstream and a half-mile downstream) were all below their respective DMMP freshwater screening level 1 (SL1) values. Total PCBs were analyzed at four of the fourteen stations and were undetected in all analyzed samples at a detection limit of 50 ug/kg dry weight (SoundEarth, 2018a).

   For the DMMP evaluation, metals were the primary COCs. Although the 2008 metals results from Boundary Reservoir were all below SL1, Ecology's Environmental Information Management system included data showing elevated metals concentrations in Linton Creek, which flows past the Metaline Mine and enters the Pend Oreille River at Waterfront Park. Other historical mining operations, including the Blue Bucket Mine and Bella May Mine, also exist within the watershed. A secondary chemical of concern was DDT from any past agriculture in the watershed. Seattle City Light agreed to analyze for DDT and the other pesticides listed in the DMMP User Manual (DMMP, 2016) for freshwater projects. Finally, due to the historical presence of a cement kiln in Metaline Falls, Ecology requested that pH be measured. Cement kiln dust, a by-product of cement processing, can raise the pH of receiving waters. It was unknown whether an adequate amount of cement kiln dust may have been blown toward the park and incorporated into the sediment to cause water quality problems during dredging. The inclusion of pH testing was intended to address this possibility.

Seattle City Light contacted the Northeast Tri-County Health Department regarding upland disposal of dredged material. The only permitted landfill in the Tri-County area is the Stevens County Landfill near Kettle Falls. Testing requirements for placement of dredged material at the landfill included pH, ignitability, moisture by paint filter test, and metals (arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, selenium, sliver, and zinc) by the toxicity characteristic leaching procedure (SoundEarth, 2018a). This additional testing for upland disposal was conducted at the same time as the DMMP testing. Results from the testing for upland disposal were included in the sediment characterization report (SoundEarth, 2018b), but were not evaluated by the DMMP agencies and are not addressed in this memorandum.

A true antidegradation evaluation would include sampling and testing of the existing sediment surface and post-dredge sampling and testing of the sediment surface exposed by dredging. However, for many dredging projects, characterization of the material to be dredged provides adequate information about sediment quality at the project site. If concentrations of contaminants in the dredged material are low enough for the material to be suitable for open-water disposal, and there is no reason to believe that sediment to be exposed by dredging is of lesser quality than the dredged material itself, then a determination can be made that the dredging project meets the State of Washington antidegradation standard. If the dredged material is not suitable for open-water disposal, or if there is reason to believe that the sediment to be exposed by dredging is of lesser quality than the dredged material, then sampling and testing of the sediment that would be exposed by dredging would be necessary. For the Metaline Waterfront Park Improvement project, the DMMP agencies agreed to a tiered testing approach. If characterization of the dredged material showed that it would be suitable for open-water disposal, then no additional sampling and testing would be needed. If characterization showed that the dredged material was not suitable for open-water disposal, then pre- or post-dredge characterization of the new surface material might be necessary.

3. Project Summary. Table 1 includes project summary and tracking information.

Table 1. Project Summary

Project ranking	Low
Proposed dredging volume	2,300 CY
Proposed dredging depth	1,980 ft NAVD88 (including 1 foot of advance maintenance and 1 foot of overdepth)
SAP received	January 8, 2018
DMMP comments on 1st draft	January 17, 2018
Revised SAP received	January 30, 2018
DMMP comments on revised SAP	February 3, 2018
Final SAP received	February 8, 2018
Final SAP approved	February 9, 2018
Sampling date(s)	February 9, 2018
Draft Sediment Characterization Report (SCR) received	March 19, 2018
DMMP comments on 1st draft SCR	March 28, 2018

Revised SCR received	April 4, 2018
DMMP comments on revised SCR	April 4, 2018
Final SCR received	April 9, 2018
DMMO tracking number	METAL-1-A-F-396
EIM study ID	METAL18
USACE Permit Application Number	NWS-2017-1042
Recency Determination (low rank = 7 years)	February 2025

4. Project Ranking and Sampling Requirements. Sediments in the project area are currently ranked "low" because this is a small community berthing facility with available data verifying chemical concentrations below screening levels (DMMP, 2016). For a low-ranked project, the number of samples and analyses are calculated using the following guidelines:
   - Maximum volume of sediment represented by each field sample = 8,000 cy
   - Maximum volume of sediment represented by each surface dredged material management unit (DMMU) = 48,000 cy
   - Maximum volume of sediment represented by each subsurface DMMU = 72,000 cy

   For the Metaline Waterfront Improvement project, the SAP included collection of three field samples to get a good spatial representation of the dredge area. Sediment from the three sampling stations were to be composited to represent one DMMU. Given the depth of the dredge prism (~4 feet), no differentiation of surface and subsurface material was required. The sampling design met the DMMP requirements.

5. Sampling. Sediment cores (20-cm diameter, 10-cm height) were collected by a Research Support Services (RSS) diver on February 9, 2018 at the three locations shown in Figure 3. Coordinates of the sampling stations, water depth and mudline elevations are provided in Table 2. Due to the nature of the substrate in the project area, the diver needed to remove large-diameter gravel and cobbles from the sediment surface prior to deploying the core sampler. Despite significant resistance encountered during advancement of the sampler, full penetration was achieved and recovery was estimated to be approximately 90 to 100 percent (SoundEarth, 2018b).

   Moderate river currents at the time of sampling resulted in minor deviations from the procedures outlined in the SAP. RSS was unable to use its Trimble differential global positioning system (DGPS) unit due to movement of the sampling vessel in the current. Instead, sample locations were determined and marked with anchor weights prior to commencing sample collection. The estimated horizontal accuracy of the alternative positioning method was 1 to 2 feet. The river currents also made use of the vessel's fathometer or a lead line impractical for measuring water depths. The diver's depth gauge was used instead (SoundEarth, 2018b). Because only the top 10 cm of sediment was collected, the accuracy of the water depth was not critical. The DMMP agencies determined that the samples collected were representative of the dredge prism.

6. Analytical Results. The DMMU composite was analyzed in duplicate (METCOMP1 and METCOMP2) for sediment conventionals, metals, pesticides and pH for the DMMP evaluation. The analytical results are summarized in Tables 3-5.

The DMMU was comprised almost entirely of sand and gravel, with less than 1% fines. The total organic carbon (TOC) content was low in METCOMP1, as expected for such coarse-grained sediment, with a concentration of only 0.17%. The TOC for METCOMP2 was higher than expected, being measured at 1.13%. A matrix spike was prepared for TOC, but resulted in no spike recovery. The laboratory indicated that matrix interference was likely. The total solids content was as expected, exceeding 90% in both duplicates. The SAP called for total volatile solids analysis, but this analysis was not conducted. The DMMP agencies agreed that this minor deficiency did not warrant analysis of archived sediment.

All metals – except mercury – were detected in at least one duplicate, but concentrations were well below the DMMP freshwater SL1 values. The reporting limit for mercury was also below SL1. None of the pesticides were detected. Reporting limits for pesticides were all below SL1. The pH results measured 7.7 and 8.1 in the duplicate analyses, which are within the State of Washington water quality standard of 6.5 to 8.5.

A summary-level validation (EPA Stage 2a) was conducted by Validata, LLC. Only minor issues were documented, and all data were considered usable by the data validator, as qualified.

7. Biological Testing. No biological testing was required for this project.

8. Anti-Degradation Determination.
Based on the results of the previously described testing, the DMMP agencies have concluded that the dredged material would be suitable for open-water disposal, had open-water disposal been proposed. There were no SL1 exceedances of any of the COCs. There is no reason to believe that the sediment that will be exposed by dredging is any different than the material tested from the dredge prism. Therefore, this project meets the State of Washington antidegradation standard.

This anti-degradation determination does ***not*** constitute final agency approval of the project. During the public comment period that follows a public notice, the resource agencies will provide input on the overall project. A final decision will be made after full consideration of agency input, and after an alternatives analysis is done under section 404(b)(1) of the Clean Water Act.

9. References.

SoundEarth, 2018a. Sampling and Analysis Plan for the Proposed Metaline Waterfront Improvement Project. Prepared for Seattle City Light by SoundEarth Strategies, February 6, 2018.

SoundEarth, 2018b. Sediment Characterization Report for the Proposed Metaline Waterfront Improvement Project. Prepared for Seattle City Light by SoundEarth Strategies, April 9, 2018.

DMMP, 2016. *Dredged Material Evaluation and Disposal Procedures (User Manual)*. Prepared by the Seattle District Dredged Material Management Office for the Dredged Material Management Program, August 2016.

10. Agency Signatures.

Concur:

The signed copy is on file in the Dredged Material Managment Office.

_____ _____
Date David Fox – U.S. Army Corps of Engineers, Seattle District

_____ _____
Date Justine Barton - Environmental Protection Agency

_____ _____
Date Laura Inouye, Ph.D. - Washington Department of Ecology

_____ _____
Date Celia Barton - Washington Department of Natural Resources

Copies furnished:
DMMP signatories
Jess Jordan – Seattle District Regulatory
Mike Aronowitz – Seattle City Light
Kris Lepine – Seattle City Light

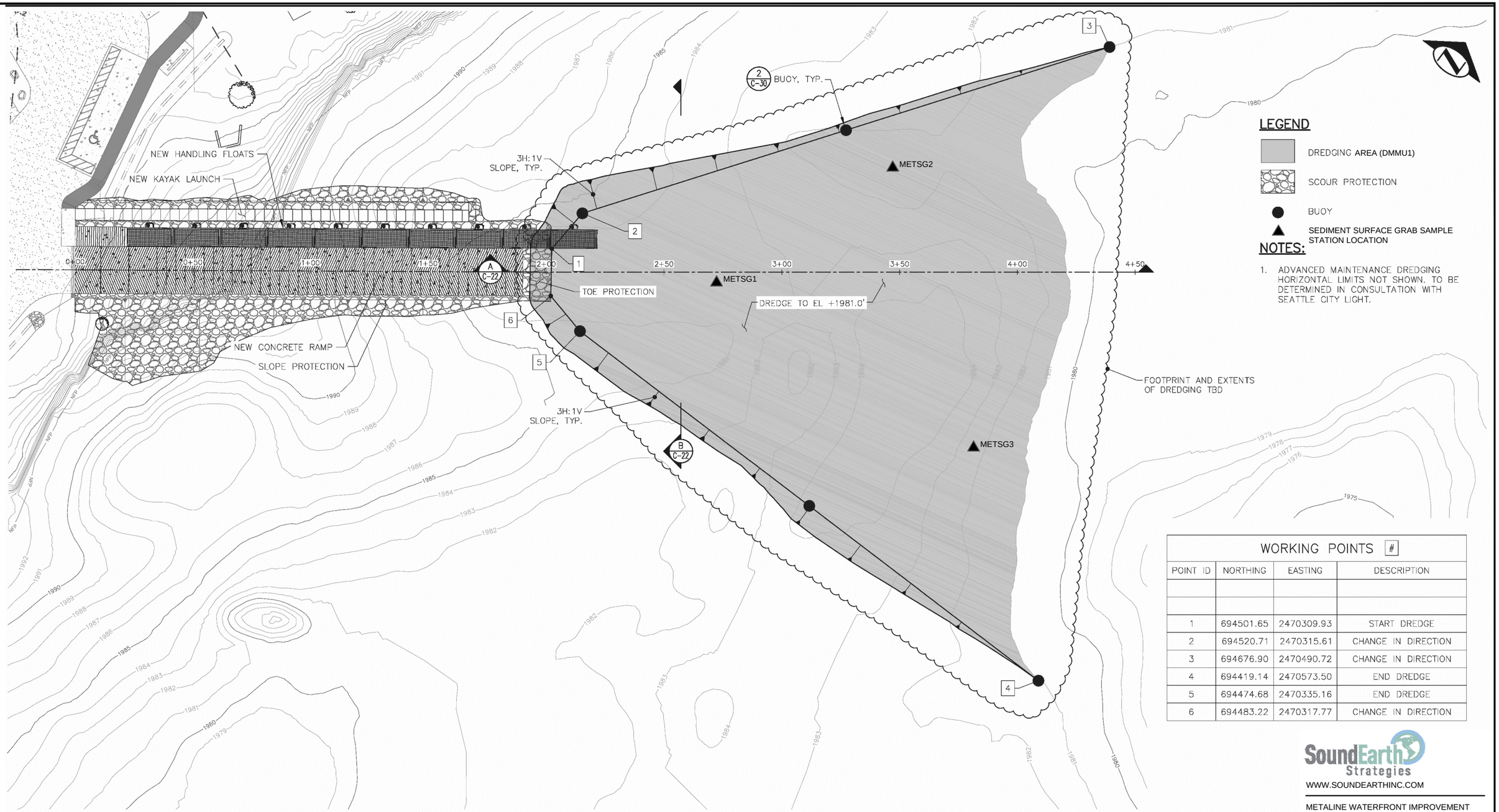
SoundEarth Strategies

WWW.SOUNDEARTHINC.COM

METALINE WATERFRONT
IMPROVEMENT PROJECT
METALINE BOAT RAMP
NORTHING: 694501.65 AND
EASTING 2470309.93
METALINE, WASHINGTON
SOUNDEARTH PROJECT #1267-012

FIGURE 1
SITE VICINITY MAP

FIGURE 2
Metaline Boat Ramp
image courtesy Google Maps



LEGEND

- DREDGING AREA (DMMU1)
- SCOUR PROTECTION
- BUOY
- SEDIMENT SURFACE GRAB SAMPLE STATION LOCATION

NOTES:

1. ADVANCED MAINTENANCE DREDGING HORIZONTAL LIMITS NOT SHOWN. TO BE DETERMINED IN CONSULTATION WITH SEATTLE CITY LIGHT.

WORKING POINTS #

POINT ID	NORTHING	EASTING	DESCRIPTION
1	694501.65	2470309.93	START DREDGE
2	694520.71	2470315.61	CHANGE IN DIRECTION
3	694676.90	2470490.72	CHANGE IN DIRECTION
4	694419.14	2470573.50	END DREDGE
5	694474.68	2470335.16	END DREDGE
6	694483.22	2470317.77	CHANGE IN DIRECTION

SITE AND DREDGING PLAN

SCALE: 1"=20'

SOURCE: SHEET C-21 "METALINE WATERFRONT PARK PARK IMPROVEMENTS DREDGING SITE PLAN" BY COAST & HARBOR ENGINEERING

SoundEarth Strategies

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METALINE WATERFRONT IMPROVEMENT PROJECT
METALINE BOAT RAMP
NORTHING: 694501.65, EASTING 2470309.93
METALINE, WASHINGTON
SOUNDEARTH PROJECT # 1267-012

FIGURE 3
SEDIMENT SAMPLE STATION LOCATIONS

3/12/2018

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Table 2
Sediment Sampling Stations
Metaline Boat Ramp
(from SoundEarth, 2018b)

DMMU	Sample Station Location	Latitude[1]	Longitude[1]	WA North SPCS 4601 X (Easting)[2]	WA North SPCS 4601 Y (Northing)[2]	River Water Level Elevation (ft NAVD88)[3]	Water Depth at Sample Location (ft)[4]	Sample Location Mudline Elevation (ft NAVD88)[5]
1	METSG1	48.852851	-117.385301	2470345	694495	1,991.55	8.0	1,983.6
	METSG2	48.852878	-117.385134	2470385	694807	1,991.28	9.0	1,982.3
	METSG3	48.852766	-117.385140	2470385	694466	1,991.42	10.0	1,981.4

NOTES:

[1]Latitude/Longitude is presented in decimal degrees NAD83.

[2]Washington State Plane North 4601 US Survey Feet.

[3]Water level elevation readings from nearest USGS water level elevation gauge on the Pend Oreille River; below Box Canyon Dam (Site number 12396500), retrieved by SCL phone request at the time of sampling.

[4]Water depth at sample location as measured by RSS depth gauge. Depth gauge utilized instead of fathometer or lead line due to moderate river current at time of sampling.

[5]Approximate sample mudline elevation based on measured water depth and river water level elevation (feet NAVD88).

DMMU = Dredged Material Management Unit

ft = feet

NAD83 = North American Datum of 1983

NAVD88 = North American Vertical Datum of 1988

MET = Metaline

SG = Surface Grab

SPCS = State Plane Coordinate System

USGS = U.S. Geological Survey

Table 3
Results for Conventional Parameters
Metaline Boat Ramp
(from SoundEarth, 2018b)

Sample ID	Date Sampled	Sampled By	Total Solids[1] (%)	Grain Size[2] (% by weight)				Moisture Content[3] (%)	Total Organic Carbon[4] (%)
				Gravel	Sand	Silt	Clay		
METCOMP1	02/09/18	SoundEarth	93.49	37.1[5]	61.7[5]	0.9[5]	0[5]	9.8	0.17
METCOMP2 (DUP)	02/09/18	SoundEarth	92.69	48.7	46.6	0.5	0.0	7.8	1.13

NOTES:

Total solids and total organic carbon analysis conducted by Analytical Resources Inc. - Tukwila, WA. Grain size and moisture content analysis conducted by Materials Testing and Consulting Inc. - Tukwila, WA

[1]Samples analyzed by Method SM 2540 G-97.

[2]Samples analyzed in accordance with ASTM D422.

[3]Samples analyzed in accordance with ASTM D2216.

[4]Samples analyzed by EPA Method 9060A, modified for sediments.

[5]Average value calculated from triplicate analysis.

ASTM = American Standard Testing Materials

DUP = duplicate sample

EPA = U.S. Environmental Protection Agency

SoundEarth = SoundEarth Strategies, Inc.

Table 4
Analytical Results for Metals
Metaline Boat Ramp
(from SoundEarth, 2018b)

Sample ID	Date Sampled	Sampled By	Analytical Results (milligrams per kilogram) (dry weight)										
			Arsenic[1]	Barium[1]	Cadmium[1]	Chromium[1]	Copper[1]	Lead[1]	Nickel[1]	Mercury[2]	Selenium[1]	Silver[1]	Zinc[1]
METCOMP1	02/09/18	SoundEarth	5.57	44.7	0.13	10.2	9.16	13	7.23	<0.0232[U]	<0.40[U]	0.05[J]	35.2
METCOMP2 (DUP)	02/09/18	SoundEarth	4.38	42.7	0.13	9.33	7.40	6.99	9.08	<0.0261[U]	0.49[J]	0.04[J]	38.8
SL1 Freshwater Level[3]			14	NE	2.1	72	400	360	38	0.66	11	0.57	3,200
SL2 Freshwater Level[4]			120	NE	5.4	88	1,200	>1,300	110	0.8	>20	1.7	>4,200

NOTES:

Analysis conducted by Analytical Resources Incorporated - Tukwila, WA.

[1]Samples analyzed by EPA Method 6020A.

[2]Samples analyzed by EPA Method 7471B.

[3]SL1 for SMS Freshwater from Table 8-3 in 2016 Dredged Material Management Program User Manual.

[4]SL2 for SMS Freshwater from Table 8-3 in 2016 Dredged Material Management Program User Manual.

Laboratory Notes:

[U]This analyte is not detected above the applicable reporting or detection limit.

[J]Estimated concentration value detected below the reporting limit.

< = not detected at a concentration exceeding the laboratory reporting limit

> = greater than

DUP = duplicate sample

EPA = U.S. Environmental Protection Agency

NE = not established

SL1 = Freshwater Screening Level 1

SL2 = Freshwater Screening Level 2

SMS = Sediment Management Standards

SoundEarth = SoundEarth Strategies, Inc.

Table 5
Analytical Results for Selected Pesticides
Metaline Boat Ramp
(from SoundEarth, 2018b)

Sample ID	Date Sampled	Sampled By	Analytical Results[1] (micrograms per kilogram)(dry weight)							
			2,4'-DDD	4,4'-DDD	2,4'-DDE	4,4'-DDE	2,4'-DDT	4,4'-DDT	Dieldrin	Endrin Ketone
METCOMP1	02/09/18	SoundEarth	<0.19[U]	<0.31[U]	<0.24[U]	<0.13[U]	<0.18[U]	<0.31[U]	<0.11[U]	<0.27[U]
METCOMP2 (DUP)	02/09/18	SoundEarth	<0.18[U]	<0.30[U]	<0.23[U]	<0.13[U]	<0.18[U]	<0.31[U]	<0.11[U]	<0.27[U]
SL1 Freshwater Level[2]			310	310	21	21	100	100	4.9	8.5
SL2 Freshwater Level[3]			860	860	33	33	8,100	8,100	9.3	>8.5

NOTES:

Analysis conducted by Analytical Resources Incorporated - Tukwila, WA.

[1]Samples analyzed by EPA Method 8081B.

[2]SL1 for SMS Freshwater from Table 8-3 in 2016 Dredged Material Management Program User Manual.

[3]SL2 for SMS Freshwater from Table 8-3 in 2016 Dredged Material Management Program User Manual.

Laboratory Note:

[U]This analyte is not detected above the applicable reporting or detection limit.

< = not detected at a concentration exceeding the laboratory reporting limit

DDD = dichlorodiphenyldichloroethane

DDE = dichlorodiphenyldichloroethylene

DDT = dichlorodiphenyltrichloroethane

DUP = duplicate sample

EPA = U.S. Environmental Protection Agency

SL1 = Freshwater Screening Level 1

SL2 = Freshwater Screening Level 2

SMS = Sediment Management Standards

SoundEarth = SoundEarth Strategies, Inc.