POLLUTION CONTROL HEARINGS BOARD
FOR THE STATE OF WASHINGTON

PUGET SOUNDKEEPER ALLIANCE, Petitioner, v. STATE OF WASHINGTON, DEPARTMENT OF ECOLOGY, And SEATTLE IRON & METALS CORP., Respondents.	))))))))))))))))	PCHB No. 13-137c SECOND DECLARATION OF ALLAN B. CHARTRAND

I, Allan B. Chartrand, certify and declare under penalty of perjury of the laws of the Washington and the United States that the following to which I am competent to testify:

1. I reviewed Respondents' Department of Ecology's ("Ecology") and Seattle Iron and Metals' ("SIM") response brief, exhibits, and the declarations of Gerald Shervey and Allison Geiselbrecht, and this declaration is provided in response to explain issues they raised about the information and opinions in my initial declaration. In my professional opinion, Respondents' materials largely fail to address basic environmental fate and effects of PCBs, including

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bioaccumulation/biomagnification, weathering, and other characteristics of PCBs, the key contaminant of concern (see ¶8 and following paragraphs of my December 2, 2014 declaration concerning characteristics of PCBs). Respondents' claim that SIM's permit is "conditioned to be protective" of sediment in the Lower Duwamish Waterway ("LDW") is unsupported and contradicted by the available evidence. As I stated and explained more fully in my previous declaration, it is my opinion (1) that SIM's discharges containing PCBs and other contaminants are likely to cause or contribute to violations of sediment management standards (SMS) and other applicable sediment guidelines; (2) that elevated PCBs in these waste streams are likely to cause or contribute to elevated PCB concentrations in biological tissue, including fish and shellfish in the LDW; (3) none of the available information indicates that the mixing zone granted to SIM would not have a reasonable potential to cause a loss of sensitive or important habitat, substantially interfere with the existing or characteristic uses of the LDW, result in damage to the ecosystem, or adversely affect public health and , such deleterious effects are a likely result of the mixing zone's effects of increasing the allowable discharges of PCBs by a dilution factor of up to 30.2; and (4) that the PCBs, copper, mercury, and zinc contained in SIM's untreated stormwater discharge are reasonably likely to cause or contribute to violations of applicable water and/or sediment quality standards in the LDW.

2. As Geiselbrecht's declaration notes, two of the seventeen LDW bottom sediment PCBs concentrations in Attachment 7 to my December 2014 declaration were inadvertently misrepresented (decimal points misplaced for EPA SI DR118 (corrected value of 53 µg/kg) and RI LDW87 (corrected value of 72 µg/kg)). However, these corrected values in no way alter my conclusions as stated in ¶45 of my previous declaration, which is that many of the PCB values

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(at least 9 out of 17 samples) exceed their corresponding RAL/LAET values as shown on Attachment 7. Additionally, although some of these data points do not exceed the values shown, all of the data points do exceed the more stringent LDW-wide Preliminary Remediation Goal (PRG) and Remedial Action Objective (RAO) for PCBs of 2 µg/kg (discussed in ¶17 of my earlier declaration), lending further support to my conclusion that bottom sediments of the LDW have been compromised by the presence of PCBs immediately adjoining the SIM facility. A corrected Attachment 7 is attached to this declaration, along with a basic map indicating the approximate locations of each of the surface samples collected from LDW sediments depicted on Attachment 7, as well as samples taken from beneath the south wharf and bank soil samples adjoining the SIM facility. The map, which we created by superimposing the south wharf and bank soil samples on Figure 3 from SAIC (2008), is Exhibit A to this declaration. As shown in Exhibit A and corrected Attachment 7, a number of surface sediment samples collected in the immediate vicinity of SIM's outfall and along SIM's shoreline indicate exceedances of the LAET/RAL values for PCBs, contrary to Geiselbrecht's assertion .

3. Respondents state that EPA's final Record of Decision (ROD) "concludes that the river bottom near SIM's outfall is not in need of dredging, capping or any other remedial action" and that the ROD "does not indicate sediment remediation in the vicinity of the SIM outfall, but rather indicates areas upstream and downstream of the outfall as targets for remediation" (Respondents' Brief at 9; Geiselbrecht Declaration at ¶ 18). These statements mischaracterize the findings and conclusions of the ROD. I have carefully examined Figure 18 of both the 2014 ROD, which was only issued on the same date as my earlier declaration, and the 2013 Proposed Plan, as discussed in my declaration, and verified that EPA indeed does plan remediation for this

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specific reach of the river. Figure 18 of the ROD clearly shows that both capping and dredging of contaminated sediment is planned at RM 2.5 and immediately south, which corresponds with the specific location of SIM's outfall, located just north of RM 2.5, and SIM's shoreline beneath its south wharf structure, which begins at about RM 2.5 and extends south for several hundred feet. The areas where dredging and/or capping will occur are not readily apparent in the relatively illegible black and white version of Figure 18 of the ROD provided by Respondents (Exhibit 1 to Respondents' Brief), but they are clearly apparent in the original color version, which is attached as Exhibit B to this declaration. This area slated for dredging (close to the shore at RM 2.5, SIM's outfall, and the south wharf) and capping (further offshore along the same reach) appears to correspond with elevated PCB concentrations in sediment identified in Exhibit A and corrected Attachment 7 as evidenced by comparison of these with Exhibit B. For confirmation, I telephoned and spoke with Allison Hiltner, Remedial Project Manager of EPA Region 10 to verify my interpretation of EPA's plan for this reach of the LDW (RM 2.3 to 2.6) as specified by the ROD, and was assured that the only change between the remediation in the 2013 Proposed Plan and the 2014 ROD in this LDW reach relates to the Federal Navigation channel designation and does not affect the dredging and capping remedy planned for the sediments in the immediate vicinity of SIM's outfall.

4. Respondents mischaracterize my opinions related to the uplands stormwater data presented in Attachments 4 (stormwater quality data for PCBs, copper and zinc) and 5 (facility soils and sediments) to my earlier declaration. From Attachment 5, seven of the sediment/soil samples were collected from locations on SIM's property in areas other than the main yard (i.e., the office rooftop, the maintenance building roof gutter, and the catch basin in the employee

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parking lot), and are thus directly representative of untreated stormwater solids at SIM, which comes from building roofs (other than the maintenance building) and the employee parking lot. Attachment 5 to my earlier declaration shows a comparison of the PCB concentrations in these same solids samples with PCB SQS values on both a dry weight- and carbon normalized-basis, and clearly indicates that PCB concentrations were significantly higher than the corresponding SQS values. My conclusion that there is a reasonable potential for PCBs in SIM's untreated stormwater discharge to affect the LDW is based in part on these seven untreated samples. That SIM's recent monitoring has not detected PCBs in the untreated stormwater discharge, as shown on Attachment 4 to my earlier declaration, does not change my opinion because the Practical Quantitation Limit (PQL) for those samples was 0.17 µg/L, whereas the National Toxic Rule water quality criterion for PCBs is three full orders of magnitude below this number, at 0.00017 µg/L.

5. The highest concentrations of PCBs in solids sampled on and adjacent to SIM's facility were found in SIM's main yard, which drains to SIM's treatment system (Attachment 5, samples MN240 and CB207). PCB concentrations from these two sediment/soil samples were much higher than samples (discussed above) from untreated stormwater drainages. Similarly, PCBs have been detected in SIM's main yard wastewater effluent in several recent samples at concentrations above the PQL of 0.17 µg/L (see data in Attachment 3). That there are higher PCB concentrations in the main yard storm drain solids than in SIM's roof and employee parking lot storm drain solids is not unexpected as the main yard is where SIM generates auto shredder residue, which is generally known to be contaminated with PCBs. This is consistent with my opinion that elevated PCBs in the untreated stormwater drainage basin solids suggest that PCBs

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may also be present in SIM's untreated stormwater, albeit at lower concentrations than the main yard wastewater, at concentrations below the PQL value of 0.17 µg/L. My opinions do not rely "largely" on the PCB concentrations in the two solid samples from SIM's main yard (Respondents' Brief at 10), but rather the preponderance of evidence for all the monitoring data combined.

6. The EPA (1991) pilot study of lead, cadmium, and PCBs associated with auto-shredder residue (ASR or "fluff") does not alter any of my opinions about SIM's discharge. First, EPA cautions against making generalizations based on the study because it included only seven facilities and its estimates are based on a limited number of samples. EPA "determined that the limited size of the samples precludes using the analytic results from this Pilot Study to characterize the shredder industry as a whole" (EPA (1991) at 12). In addition, the claim that PCBs incorporated into solids (ASR) will remain highly sorbed to those materials and remain inert indefinitely has been contradicted by studies which demonstrate that environmental weathering can cause originally highly sorbed PCBs to change their chemical form and leach into the environment over time, often years, eventually becoming bioavailable and prone to bioaccumulation and/or biomagnification in biological tissue, as discussed in my declaration (a representative and comprehensive review is provided by ATSDR (2000), cited in my previous declaration. The EPA (1991) study, which tumbled $\leq$ 9.5 mm pieces of ASR in high purity water before filtering and analyzing the extract, does not necessarily represent long-term environmental conditions and processes, including weathering, in a marine environment over the period of years. Thus, even PCB residues that are sorbed to auto-shredder residue particles as they are discharged to the LDW via SIM's discharges will be subject to environmental

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weathering, degradation via a number of pathways, and potentially increasing bioavailability over the long term. ATSDR (2000, page 510) describes the process as follows: "aerobic degradation rates of PCBs can be highly variable, depending not only on structural characteristics [e.g. number and position of chlorine atoms on the biphenyl structures], but also on a number of other factors including previous exposure to PCBs or PCB-like compounds, bioavailability, initial concentration, moisture, temperature, available nutrients such as carbon sources, and the presence of inhibitory compounds." This means that weathering and biodegradation of PCBs proceeds unpredictably over the course of time in sediments such as those of the LDW. In addition, the regulations under CWA and CERCLA refer to *total* PCBs in water, sediment and other environmental media, as opposed to a specific fraction, and because PCB residues cannot be assured to remain inert or sequestered over time, the degree to which they remain sorbed to ASR is not necessarily relevant and does not change my conclusions concerning potential effects to the receiving environment. In addition, EPA (1991) found that PCB concentrations in the soils beneath the stored piles of fluff were in the same range as those in stored fluff (EPA (1991) at 7). EPA could not determine how the PCBs entered or infiltrated into the soil, but speculated that PCBs may have migrated from the stored fluff to the soils. EPA concluded that PCBs are more likely to leach from soils than fluff; however, EPA did not test the PCB-contaminated soils from beneath the fluff piles to determine PCB leaching potential. EPA (1991) at 9 and 6. Thus, EPA's investigation does not contradict my opinion that PCBs are likely to be present in SIM's discharge, potentially as part of the TSS fraction, potentially including ASR particles, present in the combined stormwater and wastewater effluent, and following discharge are prone to settle into sediments, to sorb to organically enriched sediments

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within the LDW, and to bioaccumulate within biological tissue. Either way, they will remain a concern, and are not safely sequestered within ASR materials.

EXECUTED at Seattle, Washington this 9th day of January, 2015.

Allan B. Chartrand

LIST OF ATTACHMENTS

Attachment 7 (Corrected): Bottom sediment from LDW immediately adjoining SIM facility, including total PCBs, copper, and zinc

Exhibit A: Map of surface bottom sediment sample locations

Exhibit B: EPA Region 10, Record of Decision Lower Duwamish Waterway Superfund Site (November 2014) [Excerpts].

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Attachment 7: Bottom sediment from LDW immediately adjoining SIM facility, including total PCBs, copper, and zinc

Month\Year	Sample ID	Total PCBs (µg/kg dw)	PCB SQS (µg/kg dw)	Copper (mg/kg)	Copper SQS (mg/kg)	Zinc (mg/kg)	Zinc SQS (mg/kg)	Reference/comments
6/2012	SIM-SS-01	**970**	130[2/] 240[1]	DNE	390[2]	DNE	410[2]	South wharf surface sediments adjoining SIM facility (Floyd Snider 2012)
6/2012	SIM-SS-02	**700**	130[2/] 240[1]	DNE	390[2]	DNE	410[2]	South wharf surface sediments adjoining SIM facility
6/2012	SIM-SS-03	60	130[2/] 240[1]	**624**	390[2]	DNE	410[2]	South wharf surface sediments adjoining SIM facility
6/2012	SIM-SS-04	130	130[2/] 240[1]	DNE	390[2]	DNE	410[2]	South wharf surface sediments adjoining SIM facility
6/2012	SIM-SS-100	840	130[2/] 240[1]	DNE	390[2]	DNE	410[2]	South wharf surface sediments adjoining SIM facility
5/2011	SIM-BS-1	**192**	130 (LAET[2]) 240 (RAL[1])	**392**	390[2]	DNE	410[2]	[3]Soil samples collected from river bank adjoining SIM facility. (Hart Crowser 2011)
5/2011	SIM-BS-2	62	130[2/] 240[1]	**422**	390[2]	**690**	410[2]	[3]Soil samples collected from river bank adjoining SIM facility.
5/2011	SIM-BS-3	71	130[2/]240[1]	317	390[2]	220	410[2]	[3]Soil samples collected from river bank adjoining SIM facility.
5/2011	SIM-BS-4	53	130[2/]240[1]	**522**	390[2]	130	410[2]	[3]Soil samples collected from river bank adjoining SIM facility.
SAIC (2008)	RI LDW-SS88	**660**	130[2/]240[1]	DNE	390[2]	DNE	410[2]	Correlates to the location of Seattle municipal storm drain outfall for S. Othello Street.
SAIC (2008)	RI LDW-SS87	72	130[2/]240[1]	DNE	390[2]	DNE	410[2]	Located in the LDW offshore of the SIM facility.
SAIC (2008)	EPA SI DR174 (740)	**490**	130[2/]240[1]	DNE	390[2]	DNE	410[2]	Located in the LDW offshore of the SIM facility.

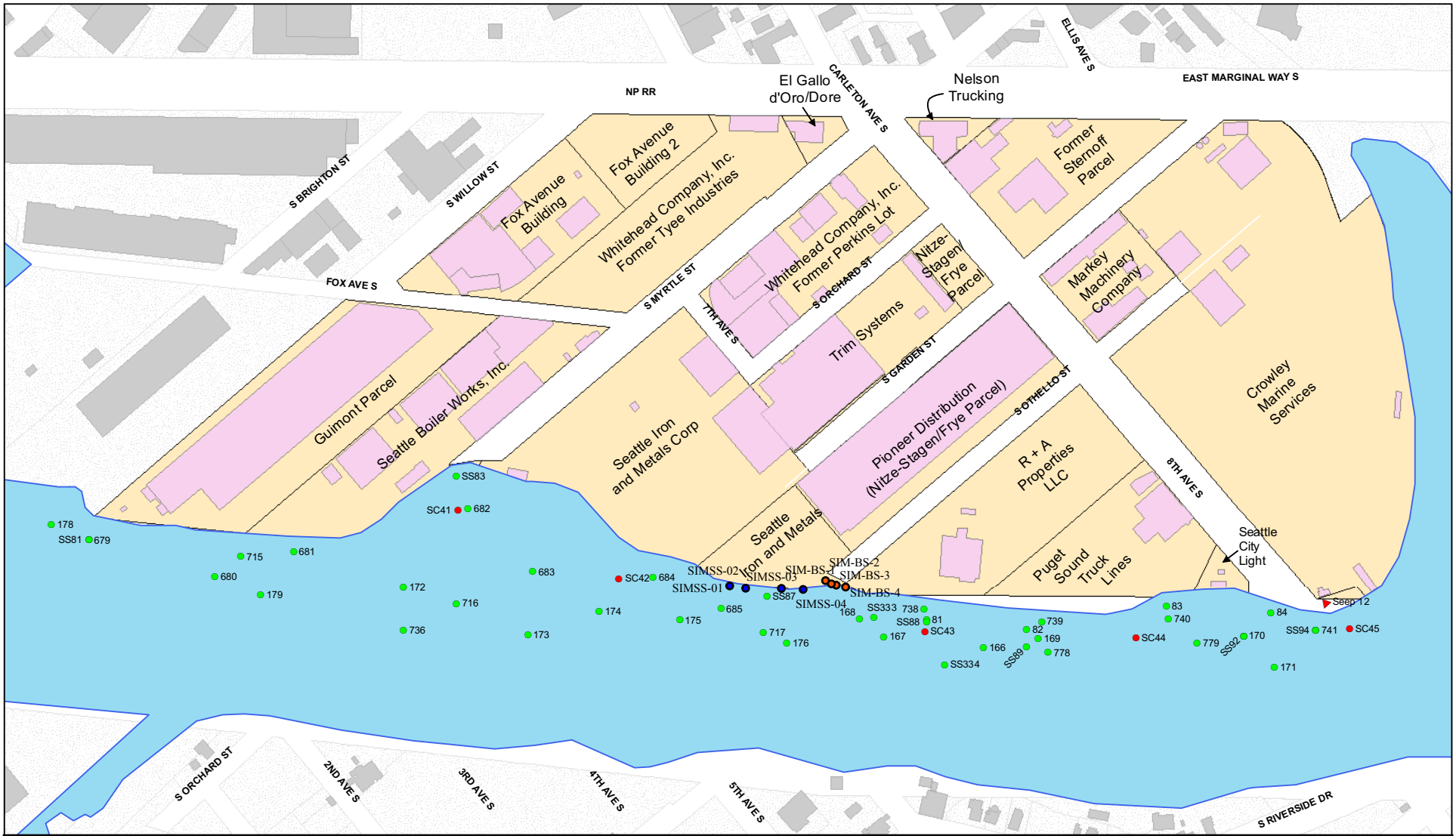
SAIC (2008)	EPA SI DR119 (685)	**390**	130[2]/240[1]	DNE	390[2]	DNE	410[2]	Correlates to the location of Seattle municipal storm drain outfall for S. Garden Street.
SAIC (2008)	EPA SI DR118 (684)	53	130[2]/240[1]	DNE	390[2]	DNE	410[2]	Correlates to the location of Seattle municipal storm drain outfall for S. Garden Street.
SAIC (2008)	EPA SI DR151 (717)	**330**	130[2]/240[1]	DNE	390[2]	DNE	410[2]	Correlates to the location of Seattle municipal storm drain outfall for S. Othello Street.
SAIC (2008)	NOAA EST182 (172)	**250**	130[2]/240[1]	DNE	390[2]	DNE	410[2]	Correlates to the location of Seattle municipal storm drain outfall for S. Myrtle Street.
SAIC (2008)	EPA SI EST176 (166)	120	130[2]/240[1]	DNE	390[2]	DNE	410[2]	Correlates to the location of Seattle municipal storm drain outfall for S. Othello Street.

Notes:

[1] RAL is Remedial Action Level for total PCBs set specifically for LDW sediments as part of EPA's CERCLA action.
[2] LAET is Lowest Apparent Effects Threshold, a toxicity-based value established for Puget Sound sediments
[3] Soil samples collected from the river bank adjoining SIM facility between the apparent mean higher high water elevation and the vegetation line to a depth of 1 to 5 cm. Chromium levels in each of these samples exceeded the most stringent soil standard and the MTCA Method B human health criteria.

Parentheses("()" denotes revised numbering system as shown in SAIC (2008), Figure 3.
DNE = did not exceed corresponding SQS value.
Bold denotes exceedance of corresponding SQS value.

Exhibit A



SAIC
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Figure 3. RM 2.3-2.8 East (Seattle Boiler Works to Slip 4) Source Control Area Sediment and Seep Sample Locations

Exhibit B

Record of Decision

Lower Duwamish Waterway Superfund Site

United States
Environmental Protection Agency
Region 10

November 2014

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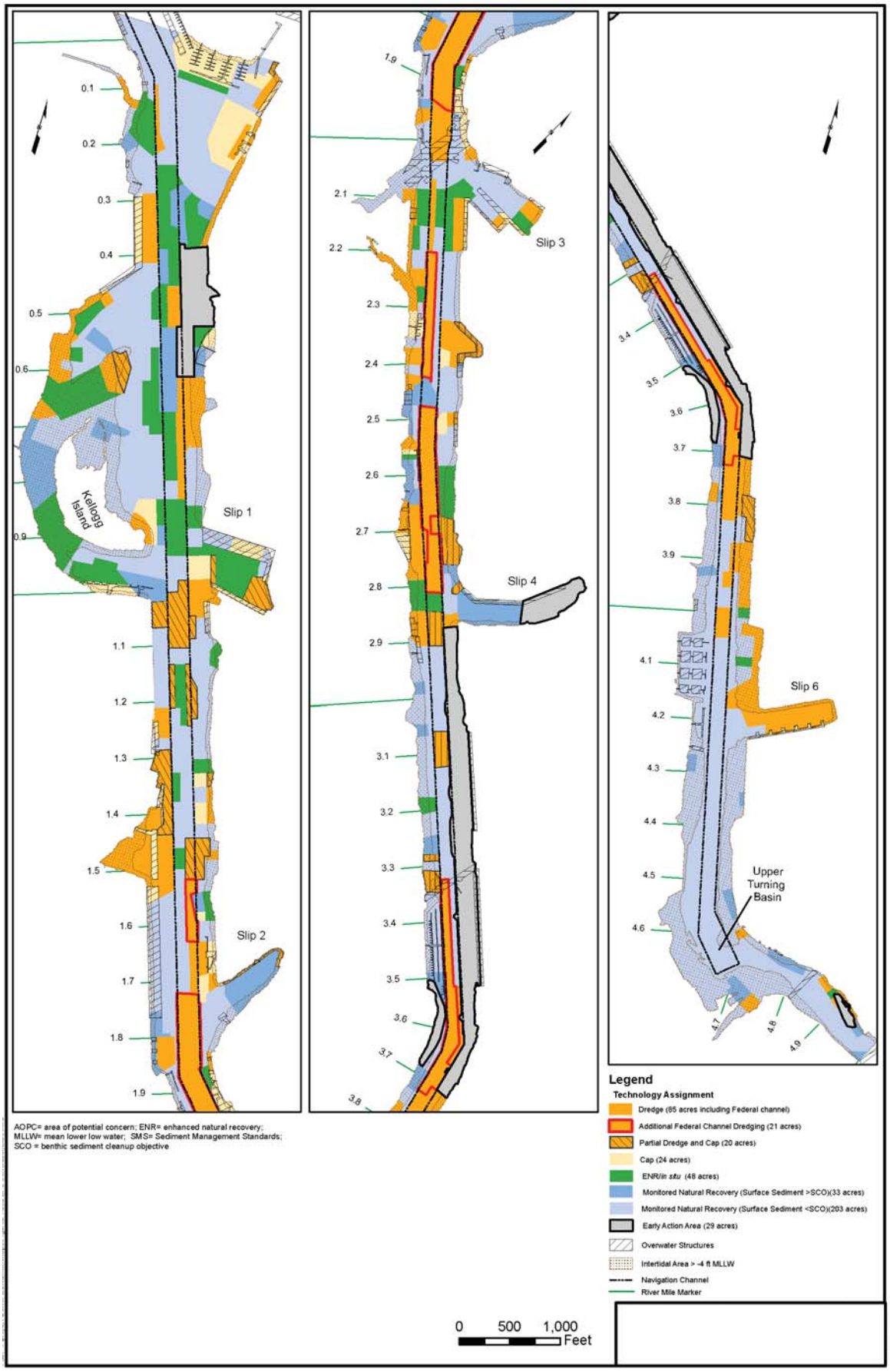

Figure 18. Selected Remedy