CENWS-OD-TS-DM
MEMORANDUM FOR RECORD 21 November 2003

SUBJECT: RECENCY EXTENSION FOR THE TURNING BASIN MATERIAL PREVIOUSLY TESTED FOR THE PUGET SOUND NAVAL SHIPYARD DREDGING PROJECT (1998-01967) EVALUATED UNDER SECTION 404 OF THE CLEAN WATER ACT (CWA) FOR REMEDIAL ACTION ON STATE OWNED AQUATIC LANDS WITHIN OPERABLE UNIT (OU)-B AT THE CERCLA PIT-CAD SITE IN SINCLAIR INLET.

1. The following summary provides a recency extension determination by the Dredged Material Management Program (DMMP) Agencies' (U.S. Army Corps of Engineers, Department of Ecology, Department of Natural Resources, and the Environmental Protection Agency) on 24,254 cubic yards of proposed dredged material from the Turning Basin for use as capping material on impacted State Owned Aquatic Lands (SOAL) within OU-B at the CERCLA Pit-CAD site in Sinclair Inlet (Attachment 1). This recency extension determination augments the final 21 March 2000 SDM and August 2001 Supplemental SDM, which previously evaluated the suitability of 160,120 cy of the turning basin material for beneficial use capping material around the Pit-CAD site, as an alternative to disposal at the Elliott Bay disposal site.

2. Figure 1 shows the location of the material comprised of eleven DMMUs within the previously characterized Turning Basin footprint. This material was characterized during 1999, and all eleven DMMUs were found to be suitable for unconfined open-water disposal, and these data were re-evaluated in 2001 relative to the SMS guidelines for potential beneficial use placement alternatives at the Pit-CAD site. The 2001 data re-evaluation noted that the 40 DMMUs were suitable as capping material at the Pit-CAD site. The recency date expired for the eleven remaining DMMUs on October 2001.

3. Relevant dates for regulatory tracking purposes are included in Table 1.

Table 1. Regulatory Tracking Dates

Phase I Sampling date(s):	January 11-February 4, 1999
Phase II Retesting Sampling date(s):	October 12-28, 1999
Recency Determination Date: High (2 years)	October 2001 (expired)
Recency Extension Date:	October 2004

Chemical Testing Summary

4. Attachment 2 provides a DMMP and SMS comparison summary of the sediment conventional parameters and chemistry for the 11 remaining DMMUs selected from the Turning Basin/Inner Channel. Table 2 summarizes the percent fines, clay content, and grain size averages for these 11 DMMUs within the turning basin and inner channel sediments.

5. A review of the 1999 chemical testing results for the eleven remaining DMMUs identified for potential beneficial reuse as capping material are briefly summarized as follows: Ten of eleven DMMUs had no chemical SL exceedances, whereas the remaining DMMU (S4) had detected exceedances of the mercury SL and SMS SQS, and CSL, and was quantitated at 0.733 ppm-dry weight (Attachment 2). No other chemical exceedances were noted for this DMMU. All eleven DMMUs were subject to bioassay testing and those results are summarized below.

Table 2. Comparative conventional sediment characteristics of the selectedTurning Basin/Inner Channel Stations.

Parameter	Surface: Turning Basin and Inner Channel
Volume (cubic yards)	24,245 cy
Number of DMMUs	11
Total Sand + Gravel Content	Average = 11.7 % Range: 6.2 – 16.2 %
Total Fines Content (% silt + clay)	Average = 88.3 % Range: 83.5 – 93.9 %
Total Clay Content	Average = 34.4 % Range: 29.9 – 38.3 %
Total Organic Content (% TOC)	Average = 2.3 % Range: 2.1 – 2.5 %

Bioassay Testing Summary

6. A summary of the 1999 DMMP bioassay testing interpretation conducted on the eleven DMMUs are briefly discussed below. In summary, the DMMP agencies using weight of evidence and best-professional judgement (PBJ) concluded that the amphipod testing results indicated that two DMMUs (S29, S50) had two-hit responses from *Eohaustorius estuarius*, whereas the remaining 9 DMMUs had no-hit responses from the amphipod, *Ampelisca abdita* bioassay. Seven DMMUs exhibited bivalve larval bioassay two-hit responses, whereas four DMMUs had no-hit responses. All eleven DMMUs exhibited no-hit responses for the *Neanthes* 20-day growth bioassay. In conclusion, all eleven DMMUs passed the nondispersive disposal site interpretation guidelines for bioassays (see Attachment 2 for DMMP Summary). .

7. Interpretation of the bioassay testing results (Attachment 2) relative to SMS guidelines results in the following outcomes. All eleven DMMUs were below the *Neanthes* SQS guidelines, and nine out of eleven were below the Amphipod (*Ampelisca abdita*) SQS guidelines, whereas two DMMUs (S29, S50) exceeded the SQS interpretation guidelines (*Eohaustorius estuarius*), but did not exceed the CSL interpretation guidelines. Eight of eleven DMMUs were below the Bivalve larval SQS guidelines, whereas the remaining three DMMUs (S4, S5, S30) exceeded the Bivalve larval bioassay SQS guidelines, but did not exceed the CSL guidelines. None of the DMMUs had more than one SQS hit, and there were a sum total of five DMMUs with SQS bioassay exceedances (S4, S5, S29, S30, S50).

Recency Extension Determination

8. There have been no documented "changed" conditions such as accidental spills or new discharges in the vicinity of the Turning Basins (Attachment 1). The surface material characterized within the Turning basin composited material from the sediment surface down to four feet in depth relative to the mudline. Portions of ten of eleven DMMUs discussed herein have been dredged and therefore partially removed leaving predominantly the underlying 2 feet of material, except DMMU S7. Therefore, the sediment quality of the fraction remaining is not really known, but is considered suitable by the DMMP in consideration of the generally low chemical-of-concern concentrations in the sediments, and based on

best-professional-judgement. There is no reason-to-believe that the suitability of the sediments previously evaluated have changed since the previous characterization. The DMMP agencies accepted all the data discussed herein as sufficient using best-professional judgement (BPJ) to extend the recency determination date from October 2001 to October 2004.

9. Based on the SMS evaluation of the previous testing results and the CSL exceedance of Hg in DMMU S4 coupled with the SQS bioassay exceedance, the DMMP agencies do not recommend the use of the 2,455 cy of material from this DMMU for proposed remediation on SOAL. The remaining 21,799 cubic yards of potential dredged material within the remaining 10 DMMUs is deemed suitable by the DMMP agencies within this area based on BPJ.

10. This memorandum documents that the DMMP suitability of the 21,799 cubic yards of material previously tested within the U.S. Navy Puget Sound Naval Shipyard Turning Basin dredging area for use as capping material on SOAL within Operable Unit-B. These data are still considered valid, and the recency for these data will be extended to October 2004. However, this recency determination does not constitute final agency approval of the project. A dredging plan for this project must be completed as part of the final project approval process. 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.

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Concur:

12/04/03
Date — David Kendall, Ph.D., Seattle District Corps of Engineers

12/4/03
Date — Erika Hoffman, Environmental Protection Agency

12/04/03
Date — Tom Gries, Washington Department of Ecology

12/4/2003
Date — Peter Leon, Washington Department of Natural Resources

Copies Furnished:
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Jim Green, Corps Regulatory Branch Project Manager
Erika Hoffman, EPA
Tom Gries, Ecology
Peter Leon, DNR
DMMO File

DEPARTMENT OF THE NAVY
ENGINEERING FIELD ACTIVITY, NORTHWEST
NAVAL FACILITIES ENGINEERING COMMAND
19917 7TH AVENUE N.E.
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5090/BNC OUB 13.1
Ser 05ER.1DG/2249
September 11, 2003

Mr. David Kendall, Ph.D
US Army Corps of Engineers of
Seattle District CENWS-OPTS
4735 East Marginal Way South
Seattle, WA 98314-2835

Dear Mr. Kendall:

SUBJECT: PUGET SOUND NAVAL SHIPYARD

The Navy is planning additional remedial activities at the Puget Sound Naval Shipyard (PSNS) and Naval Station Bremerton (NSB), Bremerton, Washington for Operable Unit B Marine conducted under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA).

As part of the CERCLA remedial action, the Navy disposed of contaminated sediments in a Confined Aquatic Disposal (CAD) pit on Navy property. The construction, filling and capping of the CAD pit impacted sediment beyond the southeast boarder of the CAD on State Owned Aquatic Lands. The Navy extended the boundaries of OU B Marine to include the impacted area after consultation with the Environmental Protection Agency (EPA), Washington State Department of Ecology (Ecology), and Washington State Department of Natural Resources (DNR). The Navy is conducting additional sampling to determine the extent of remedial action necessary for the affected sediments.

One of the remedial alternatives under consideration is enhanced natural attenuation through placement of clean sediment on the impacted area (thin-layered capping). The Navy is proposing to utilize Sinclair Inlet Turning Basin Sediment for this alternative. The Turning Basin Sediment was found suitable for open water disposal for the combined military construction (MILCON) and CERCLA dredging action as documented in the Dredged Material Management Program (DDMP) final determination of suitability dated March 21, 2000.

The Navy believes that the substantive requirements of the Clean Water Action Section 404 have been met by the existing sampling data and a formal recency extension is not required to complete the proposed additional CERCLA remedial action. However, the Navy will consider any substantive requirements you wish to provide. A summary of the proposed action and the rationale for the Navy determination is attached for your review.

Attachment 1.

5090/BNC OUB 13.1
Ser 05ER.1DG/2249
September 11, 2003

If you have and questions, please contact Dina Ginn at (360) 396-0016 or by e-mail at ginndr@efanw.navfac.navy.mil.

Sincerely,

Cindy L O'Hare

CINDY L. O'HARE
By direction

Enclosure: 1. Summary of Proposed Action and Rationale for Navy Determination

The United States Navy (Navy) is planning to characterize the sediment on Washintgon State Owned Aquatic Lands (SOAL) impacted by the dredging, disposal, and capping operations conducted at the Confined Aquatic Disposal (CAD) pit under Remedial Action Contract No. N44255-95-D-6030, Delivery Orders No. 67 and 78. The CAD pit is located in Sinclair Inlet within Operable Unit (OU) B Marine at the Bremerton Naval Complex (Figure 1). The southeastern edge of the CAD pit borders SOAL managed by the Washington State Department of Natural Resources (DNR). Limited sampling performed in September, October, and November 2001 indicated elevated concentrations of polychlorinated biphenyls (PCBs) and mercury in the surface sediments adjacent to the CAD pit on SOAL. Based on the data collected during the Sediment Profile Imaging (SPI) Survey on July 31 and August 1, 2002, sediment from the dredging, disposal, and capping operations at the CAD pit appears to have drifted up to approximately 700 feet from the perimeter of the CAD pit onto SOAL (Figure 2) (Germano & Associates 2002).

Engineering Field Activity, Northwest selected Foster Wheeler Environmental Corporation to develop a Sampling and Analysis Plan to characterize the impacted sediment on SOAL under its Remedial Action Contract (RAC 3) No. N44255-01-D-2000, Task Order (TO) 15. Results of the planned sampling will be used to compare with the remedial action levels and response actions developed for OU B Marine. Using the sampling data collected during this phase, regulators and the Navy will work together to determine the impact to SOAL and select a remedial alternative.

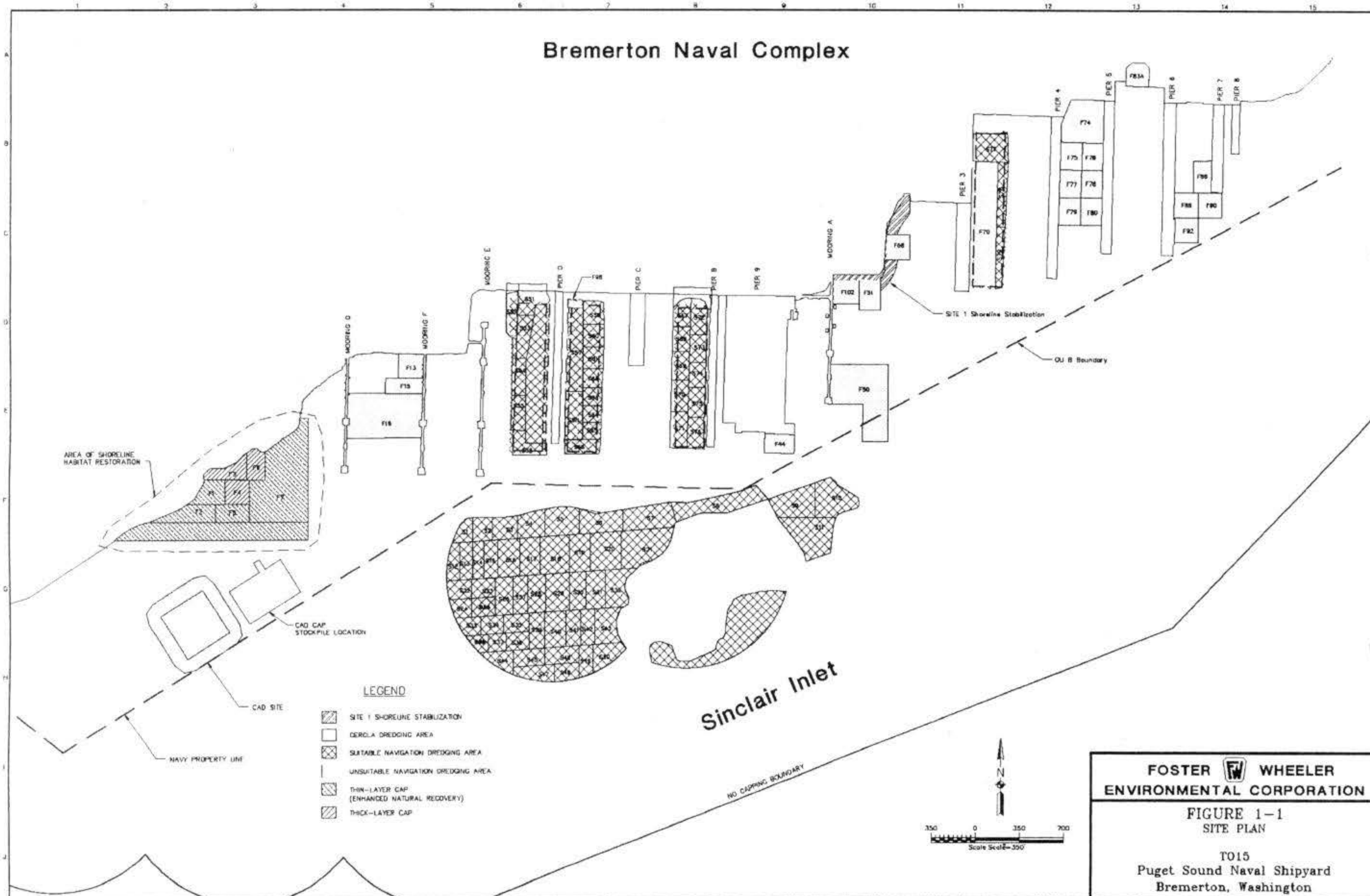
One of the possible alternatives being considered is enhanced natural attenuation through placement of a thin-layer cap on the impacted sediments. The area to be remediated will be determined by the results of the additional sampling, which is scheduled to be performed in September 2003. An upper maximum of approximately 30,000 to 40,000 cy of material are estimated to be needed for this capping alternative. In anticipation of this alternative, the Navy is proactively evaluating potential sources of capping material. One of the capping sources is the remaining sediment from the previously determined suitable sediments in the Sinclair Inlet Turning Basins.

The Navy is requesting that the Dredged Material Management Program (DMMP) agencies provide any substantive compliance comments regarding the Navy's proposal to use Sinclair Inlet Turning Basin Sediment as a source of capping material for impacted SOAL near the CAD pit site. The Turning Basins sediments were found suitable for unconfined open water disposal as described in the March 21, 2000 Suitability Determination (Appendix A). The following discussion is provided for your review.

Approximately 58,800 cy of sediment, previously characterized as suitable for unconfined open water disposal, remains in the Turning Basins and is potentially available for use as capping material (Figure 3). As part of the closure of the CAD pit in 2001, approximately 60,000 cy of the Turning Basin sediments were used as natural capping material. Some of this material came from the dredged material management units (DMMUs) with remaining available sediment (Figure 3).

[Attachment 2] ~~Table~~ 1 summarizes the chemical and biological data for the previously characterized ~~15~~ [11] DMMUs in the Turning Basins containing available material. These DMMUs are also shown in Figure 3. The chemical results for the parameters listed in the March 2000 Suitability Determination report are included in the table. The analytical tests were conducted in 1999. The results of these analyses show that, except for DMMUs S4, ~~S9~~, and S19, all the chemical concentrations are either below the Puget Sound Dredged Disposal Analysis (PSDDA) Screening Level (SL) or were not detected. Mercury is the only compound that exceeded the SL in DMMUs S4, ~~S9~~, and S10; however, these concentrations were all below the Maximum Level (ML). Biological testing was also performed on all ~~15~~ DMMUs in 1999 and all passed the screening criteria and were determined to be suitable for unconfined open water disposal at the Elliott Bay Disposal site.

In the time since the Turning Basin sediments were tested and determined to be suitable for unconfined open water disposal, there have been no documented "changed" conditions such as accidental spills or new discharges in the vicinity of the Turning Basins. Thus, there is no reason to believe that the suitability of the sediments has changed since the previous characterization. Given the results of the previous chemical characterization (i.e., virtually all parameters non-detect or below SL guidelines) the Navy feels the existing data is sufficient to determine that Turning Basin Sediments are an appropriate source for capping material for SOAL within OU B Marine.



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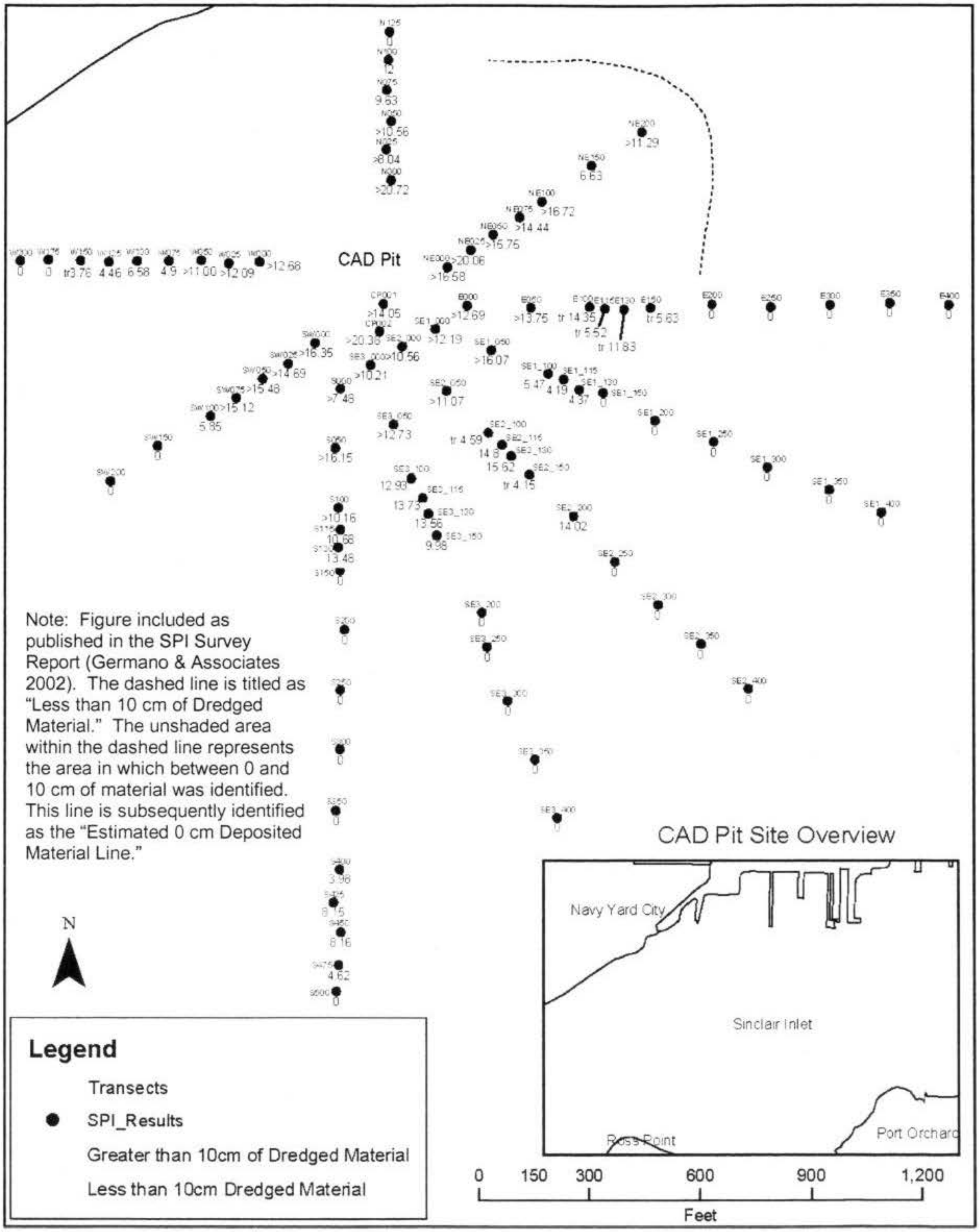

Figure 2. SPI Survey Results

AVAILABLE VOLUMES SPECIFIED BY DMMU AREAS

AREA	DMMU	VOLUME
1	S4	2,455 CY
2	S5	1,985 CY
3	S7	4,117 CY
4	S19	1,650 CY
5	S28	1,943 CY
6	S29	2,530 CY
7	S30	1,399 CY
8	S31	1,921 CY
9	S32	2,558 CY
10	S43	2,437 CY
11	S50	1,259 CY
	TOTAL	24,254 CY

TOTAL AVAILABLE VOLUME = 80,343 CY

LEGEND

SECTION
0+00
SHEET NUMBER

CROSS SECTION LOCATIONS

- > 4.0' AVAILABLE
- 3.5' – 4.0' AVAILABLE
- 3.0' – 3.5' AVAILABLE
- 2.5' – 3.0' AVAILABLE
- 2.0' – 2.5' AVAILABLE
- 1.5' – 2.0' AVAILABLE
- 1.0' – 1.5' AVAILABLE
- 0.5' – 1.0' AVAILABLE
- 0.0' – 0.5' AVAILABLE
- NONE AVAILABLE

DATUMS:
HORIZONTAL: NAD 83, WA SPC North Zone
VERTICAL: MLLW *

*Based on PSNS monument R-30 el. 17.60'

150 0 150 300
Scale

PROGRESS SURVEY
DRAWING REDUCED HALFSIZE

NO	DATE	REVISION	BY	CH	APPROVED

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
ENGINEERING FIELD ACTIVITY, NORTHWEST
POULSBO, WASHINGTON

FIGURE 3
TURNING BASIN, DO#67
AVAILABLE MATERIAL TO PRE-4 FT

FOSTER WHEELER ENVIRONMENTAL CORPORATION

DESIGNED:
DRAWN: AEC
CHECKED:
APPROVED

SIZE: D
SCALE: AS NOTED
DRAWING NO. MD67DP18
1/27

Attachment 2. DMMP and SMS Chemical and Biological Comparison Summary of Selected Turning Basin DMMUs.

							S4			S5			S7			S19			S28			S29			S30			S31		
		DMMP	DMMP		SMS	SMS	DMMP	SMS		DMMP	SMS		DMMP	SMS		DMMP	SMS		DMMP	SMS		DMMP	SMS		DMMP	SMS		DMMP	SMS	
CHEMICAL NAME	Units	SL	BT	Units	SQS	CSL	Conc	Conc	VQ	Conc.	Conc	VQ	Conc.	Conc	VQ	Conc.	Conc	VQ	Conc.	Conc.	VQ	Conc.	Conc.	VQ	Conc.	Conc.	VQ	Conc.	Conc.	VQ
Arsenic	mg/kg	57	507.1	mg/kg	57	93	9.8	9.8		7.7	7.7		9.4	9.4		8.3	8.3		8.2	8.2		8.6	8.6		12.0	12.0		10.0	10.0	
Copper	mg/kg	390		mg/kg	390	390	61.0	61.0		42.0	42.0		66	66		51	51		36	36		44	44		53	53		43	43	
Lead	mg/kg	450		mg/kg	450	530	35.0	35.0		11.0	11.0		15	15		12	12		5	5	U	19	19		40	40		23	23	
Mercury	mg/kg	0.41	1.5	mg/kg	0.41	0.6	0.773	0.773		0.106	0.106		0.328	0.328		0.171	0.171		0.073	0.073		0.165	0.165		0.241	0.241		0.351	0.351	
Silver	mg/kg	6.1	6.1	mg/kg	6.1	6.1	0.170	0.170		0.590	0.590		0.240	0.240		0.180	0.180	U	0.290	0.290		0.270	0.270	U	0.240	0.240	U	0.390	0.390	
Zinc	mg/kg	410	2,783	mg/kg	410	960	96.0	96.0		71.0	71.0		57	57		53	53		45	45		55	55		73	73		55	55	
Tributyltin ion (porewater)	ug/L	0.15	0.15	ug/L	0.05		0.007	0.007	J1	0.005	0.005	U	0.005	0.005	U	0.005	0.005	U	0.010	0.010	J1	0.008	0.008	J1	0.005	0.005	U	0.005	0.005	U
Acenaphthene	ug/kg	500		mg/kg-oc	16	57	36.0	1.6	U	33.0	1.5	U	36	1.6	U	34	1.5	U	37	1.6	U	37	1.5	U	37	1.5	U	38	1.7	U
Fluorene	ug/kg	540		mg/kg-oc	23	79	36.0	1.6	U	33.0	1.5	U	36	1.6	U	34	1.5	U	37	1.6	U	37	1.5	U	37	1.5	U	38	1.7	U
Phenanthrene	ug/kg	1,500		mg/kg-oc	100	480	51.0	0.1		33.0	0.0	U	36	0.0	U	34	0.3	U	37	0.1	U	37	0.0	U	37	0.0	U	38	0.0	U
Anthracene	ug/kg	960		mg/kg-oc	220	1,200	36.0	1.6	U	33.0	1.5	U	36	1.6	U	34	1.5	U	37	1.6	U	37	1.5	U	37	1.5	U	38	1.7	U
Fluoranthene	ug/kg	1,700	4,600	mg/kg-oc	160	1,200	120.0	1.2		33.0	0.2	U	39	0.3		34	0.3	U	37	0.4	U	37	0.6	U	55	0.6		54	0.5	
Pyrene	ug/kg	2,600	11,980	mg/kg-oc	1,000	1,400	280.0	12.2		33.0	1.5	U	97	4.4		40	1.7		37	1.6	U	37	1.5	U	74	3.1		110	4.8	
Benzo(a)anthracene	ug/kg	1,300		mg/kg-oc	110	460	88.0	3.8		33.0	1.5	U	39	1.8		100	4.3		37	1.6	U	37	1.5	U	37	1.5	U	38	1.7	U
Chrysene	ug/kg	1,400		mg/kg-oc	110	460	110.0	0.1		33.0	0.0	U	47	0.1		180	0.2		37	0.0	U	37	0.0	U	37	0.0	U	43	0.1	
Indeno(1,2,3-c,d)pyrene	ug/kg	600		mg/kg-oc	34	88	80.0	3.5		33.0	1.5	U	39	1.8		34	1.5	U	37	1.6	U	37	1.5	U	37	1.5	U	38	1.7	U
Total HPAHs	ug/kg	12,000		mg/kg-oc	960	5,300	727.0	31.6		33.0	1.5	U	466	21.2		320	13.9		37	1.6	U	37	1.5	U	129	5.4		207	9.0	
1,2,4-Trichlorobenzene	ug/kg	31		mg/kg-oc	0.81	1.8	11.0	0.5	U	10.0	0.5	U	11	0.5	U	10	0.4	U	11	0.5	U	11	0.4	U	11	0.5	U	11	0.5	U
Hexaclorobenzene (HCB)	ug/kg	22	168	mg/kg-oc	0.38	2.3	18.0	0.8	U	17.0	0.8	U	18	0.8	U	17	0.7	U	19	0.8	U	19	0.8	U	19	0.8	U	19	0.8	U
Hexachlorobutadiene	ug/kg	29		mg/kg-oc	3.9	6.2	21.0	0.9	U	20.0	0.9	U	22	1.0	U	21	0.9	U	22	1.0	U	22	0.9	U	22	0.9	U	23	1.0	U
N-Nitrosodiphenylamine	ug/kg	28		mg/kg-oc	11	11	18.0	0.8	U	17.0	0.8	U	18	0.8	U	17	0.7	U	19	0.8	U	19	0.8	U	19	0.8	U	19	0.8	U
Bis(2-ethylhexyl)phthalate	ug/kg	1,300		mg/kg-oc	47	78	44.0	1.9		33.0	1.5	U	36	1.6	U	34	1.5	U	37	1.6	U	37	1.5	U	37	1.5	U	38	1.7	U
2-Methylphenol	ug/kg	63		ug/kg	63	63	18.0	18.0	U	17.0	17.0	U	18	18	U	17	17	U	19	19	U	19	19	U	19	19	U	19	19	U
2,4-Dimethylphenol	ug/kg	29		ug/kg	29	29	18.0	18.0	U	17.0	17.0	U	18	18	U	17	17	U	19	19	U	19	19	U	19	19	U	19	19	U
Pentachlorophenol	ug/kg	400	504	ug/kg	360	690	140.0	140.0	U	130.0	130.0	U	150	150	U	140	140	U	150	150	U	150	150	U	150	150	U	150	150	U
Benzoic Acid	ug/kg	650		ug/kg	650	650	180.0	180.0	U	170.0	170.0	U	180	180	U	170	170	U	190	190	U	190	190	U	190	190	U	190	190	U
Benzyl alcohol	ug/kg	57		ug/kg	57	73	25.0	25.0	U	23.0	23.0	U	36	36	U	28	28	U	30	30	U	30	30	U	30	30	U	30	30	U
alpha-Chlordane (DMMP)	ug/kg	10	37				2.8		U	2.6		U	3		U	3		U	3		U	3		U	3		U	3		U
Dieldrin (DMMP)	ug/kg	10					1.4		U	1.3		U	1		U	1		U	2		U	2		U	2		U	2		U
Total DDT (DMMP)	ug/kg	6.9	50				3.5		U	3.2		U	4		U	4		U	4		U	4		U	4		U	4		U
Total PCBs	ug/kg	130					44.0			18.0			33			70		U	75		U	75		U	75		U	19		
Total PCBs (TOC- normalized)	mg/kg-oc		38	mg/kg-oc	12	65	1.9	1.9		0.8	0.8		1.5	1.5		3.0	3.0	U	3.3	3.3	U	3.0	3.0	U	3.1	3.1	U	0.8	0.8	
Total Solids				%			43.0			44.6			40.5			39.0			38.3			37.1			38.7			38.1		
Total Volatile Solids				%			5.9			5.8			7.6			6.7			7.3			6.7			6.0		J	4.6		J
Total Organic Carbon				%			2.3			2.2			2.2			2.3			2.3			2.5			2.4			2.3		
Total Ammonia				mg/kg			61.0			46.0			34.0			39.0			54.0			57.0			37.0			45.0		
Total Sulfides				mg/kg			45			71			130			10		U	44			78			150			140		
Gravel (percent)				%			-			0.4			2.9			0.5			0.3			-			1.8			4.0		
Sand (percent)				%			9.7			15.8			11.2			13.6			8.8			6.2			8.9			10.8		
Silt (percent)				%			52.3			47.8			55.4			48.6			52.7			56.6			59.7			51.9		
Clay (percent)				%			37.9			35.7			30.1			37.1			38.3			37.3			29.9			33.4		
Fines (percent silt + clay)				%			90.2			83.5			85.5			85.9			91.0			93.9			89.6			85.3		
preferred reference match:																			78.7			82.7			78.7			78.7		
Eohaustorius estuarius hits:							2-H(I)			1-H(I)			1-H(I)			1-H(I)			1-H(I)			2-H(I)	SQS		1-H(I)			2-H(I)		
Ampelisca abdita hits:							NH			NH			NH			NH			NH						NH			NH		
Mytilus galloprovincialis hits:							2-H	SQS		2-H	SQS		2-H			2-H			NH			NH			2-H	SQS		2-H		
Neanthes arenaceodentata hits:							NH			NH			NH			NH			NH			NH			NH			NH		
Bioassay Pass/Fail:							Pass	SQS		Pass	SQS		Pass			Pass			Pass			Pass	SQS		Pass	SQS		Pass		
BTs exceeded:																														
Bioaccumulation conducted:																														
Bioaccumulation Pass/Fail:																														
ML Rule exceeded:																														
DMMP/SMS Determination:							Pass	Fail (bpj)		Pass	Pass		Pass	Pass		Pass	Pass		Pass	Pass		Pass	Pass		Pass	Pass		Pass	Pass	
DMMU Volume Remaining:				cy			2,455			1,985			4,117			1,650			1,943			2,530			1,399			1,921		
DMMU ID:							S4			S5			S7			S19			S28			S29			S30			S31		

	S4		S5	S7	S19	S28	S29	S30	S31
Failed:		2,455							
Passed:			1,985	4,117	1,650	1,943	2,530	1,399	1,921

Eohaustorius retest

Attachment 2. DMMP and SMS Chemical and Biological Comparison Summary of Selected Turning Basin DMMUs.

							S32			S43			S50			DMMU
		DMMP	DMMP		SMS	SMS	DMMP	SMS		DMMP	SMS		DMMP	SMS		exceed. freq
CHEMICAL NAME	Units	SL	BT	Units	SQS	CSL	Conc.	Conc.	VQ	Conc.	Conc.	VQ	Conc.	Conc.	VQ	
Arsenic	mg/kg	57	507.1	mg/kg	57	93	11.0	11.0		10.0	10.0		22.0	22.0		
Copper	mg/kg	390		mg/kg	390	390	39	39		41	41		47	47		
Lead	mg/kg	450		mg/kg	450	530	17	17		31	31		24	24		
Mercury	mg/kg	0.41	1.5	mg/kg	0.41	0.6	0.323	0.323		0.285	0.285		0.364	0.364		1 of 11
Silver	mg/kg	6.1	6.1	mg/kg	6.1	6.1	0.310	0.310		0.560	0.560	U	0.480	0.480	U	
Zinc	mg/kg	410	2,783	mg/kg	410	960	48	48		63	63		60	60		
Tributyltin ion (porewater)	ug/L	0.15	0.15	ug/L	0.05		0.005	0.005	J1	0.005	0.005	U	0.005	0.005	U	
Acenaphthene	ug/kg	500		mg/kg-oc	16	57	37	1.8	U	39	1.6	U	40	1.8	U	
Fluorene	ug/kg	540		mg/kg-oc	23	79	37	1.8	U	39	1.6	U	40	1.8	U	
Phenanthrene	ug/kg	1,500		mg/kg-oc	100	480	37	0.1	U	39	0.0	U	40	0.0	U	
Anthracene	ug/kg	960		mg/kg-oc	220	1,200	37	1.8	U	39	1.6	U	40	1.8	U	
Fluoranthene	ug/kg	1,700	4,600	mg/kg-oc	160	1,200	40	0.3		39	0.5	U	43	0.4		
Pyrene	ug/kg	2,600	11,980	mg/kg-oc	1,000	1,400	110	5.2		42	1.8		100	4.5		
Benzo(a)anthracene	ug/kg	1,300		mg/kg-oc	110	460	37	1.8	U	39	1.6	U	40	1.8	U	
Chrysene	ug/kg	1,400		mg/kg-oc	110	460	37	0.0	U	39	0.0	U	40	0.0	U	
Indeno(1,2,3-c,d)pyrene	ug/kg	600		mg/kg-oc	34	88	37	1.8	U	39	1.6	U	40	1.8	U	
Total HPAHs	ug/kg	12,000		mg/kg-oc	960	5,300	229	10.9		42	1.8		238	10.9		
1,2,4-Trichlorobenzene	ug/kg	31		mg/kg-oc	0.81	1.8	11	0.5	U	12	0.5	U	12	0.5	U	
Hexaclorobenzene (HCB)	ug/kg	22	168	mg/kg-oc	0.38	2.3	18	0.9	U	19	0.8	U	20	0.9	U	
Hexachlorobutadiene	ug/kg	29		mg/kg-oc	3.9	6.2	22	1.0	U	23	1.0	U	24	1.1	U	
N-Nitrosodiphenylamine	ug/kg	28		mg/kg-oc	11	11	18	0.9	U	19	0.8	U	20	0.9	U	
Bis(2-ethylhexyl)phthalate	ug/kg	1,300		mg/kg-oc	47	78	37	1.8	U	39	1.6	U	40	1.8	U	
2-Methylphenol	ug/kg	63		ug/kg	63	63	18	18	U	19	19	U	20	20	U	
2,4-Dimethylphenol	ug/kg	29		ug/kg	29	29	18	18	U	19	19	U	20	20	U	
Pentachlorophenol	ug/kg	400	504	ug/kg	360	690	150	150	U	150	150	U	160	160	U	
Benzoic Acid	ug/kg	650		ug/kg	650	650	180	180	U	190	190	U	200	200	U	
Benzyl alcohol	ug/kg	57		ug/kg	57	73	29	29	U	31	31	U	32	32	U	
alpha-Chlordane (DMMP)	ug/kg	10	37				3		U	3		U	3		U	
Dieldrin (DMMP)	ug/kg	10					2		U	2		U	2		U	
Total DDT (DMMP)	ug/kg	6.9	50				4		U	4		U	4		U	
Total PCBs	ug/kg	130					74		U	77		U	83		U	
Total PCBs (TOC- normalized)	mg/kg-oc		38	mg/kg-oc	12	65	3.5	3.5	U	3.2	3.2	U	3.8	3.8	U	
Total Solids				%			35.5			39.8			35.2			
Total Volatile Solids				%			7.4		J	17.0			7.9			7.5
Total Organic Carbon				%			2.1			2.4			2.2			2.3
Total Ammonia				mg/kg			28.0			40.0			53.0			
Total Sulfides				mg/kg			43			95			140			
Gravel (percent)				%			0.6			1.3			0.3			1.1
Sand (percent)				%			13.0			8.6			10.0			10.6
Silt (percent)				%			54.3			55.9			57.2			53.9
Clay (percent)				%			32.3			34.4			32.5			34.4
Fines (percent silt + clay)				%			86.6			90.3			89.7			88.3
preferred reference match:							78.7			78.7			82.7			
Eohaustorius estuarius hits:							1-H(I)			2-H(I)			2-H(I)	SQS		
Ampelisca abdita hits:							NH			NH						
Mytilus galloprovincialis hits:							NH			2-H			NH			
Neanthes arenaceodentata hits:							NH			NH			NH			
Bioassay Pass/Fail:							Pass			Pass			Pass	SQS		
BTs exceeded:																
Bioaccumulation conducted:																
Bioaccumulation Pass/Fail:																
ML Rule exceeded:																
DMMP/SMS Determination:							Pass	Pass		Pass	Pass		Pass	Pass		
DMMU Volume Remaining:				cy			2,558			2,437			1,259			
DMMU ID:							S32			S43			S50			

Total Remaining Volume Tested
24,254 cy

Failed: 2,455 cy
Passed: 2,558 | 2,437 | 1,259 — 21,799 cy
Eohaustorius retest

10.1% Unsuitable for BU at OU-B
89.88% Suitable for BU at OU-B

Turning Basin/Inner Channel (surface)	Unsuitable	Suitable
Total 24,254 cy	2,455 F	21,799 P

Legend:

NH = No Hit (nondispersive guidelines)
2H = two hit failure (nondispersive guidelines)
1H = one hit failure (nondispersive guidelines)
P = Pass (Suitable for UCOWD)
F = Failure (Unsuitable for UCOWD)
UCOWD = Unconfined open-water disposal
VQ = Validation Qualifier
D = Compound required dilution due to matrix or concentration
E = Estimated Value
U = Undetected
J = Positive identified; approx. conc. of analyte in sample.
NQ = Not Quantifiable, but positive identification
SL = Screening Level (DMMP) (lower chemical guideline)
SQS = Sediment Quality Standard (lower chemical guideline)
BT = DMMP Bioaccumulation Trigger
CSL = Cleanup Screening Level Exceedance