CENPS-OP-TS

MEMORANDUM FOR RECORD November 14, 1996

SUBJECT: SUITABILITY DETERMINATION FOR DREDGED MATERIAL FROM THE EVERETT DOWNSTREAM SETTLING BASIN AND RIVER CHANNEL FOR DISPOSAL AT THE PSDDA PORT GARDNER OPEN-WATER NONDISPERSIVE SITE (Public Notice CENPS-OP-TS-NS-99)

1. The Corps of Engineers proposes to dredge 300,437 cubic yards of sediment from the Everett Downstream Settling Basin and River Channel. The following summary reflects the PSDDA agencies' (Corps of Engineers, Department of Ecology, Department of Natural Resources and the Environmental Protection Agency) suitability determination for disposal of this material at the PSDDA Port Gardner open-water nondispersive site.

2. The PSDDA agencies ranked the project area "low-moderate", based on the results from the partial and full characterizations performed on this project in 1992-3 [1]. Those two surveys indicated that all chemicals of concern were in the "low" or "low-moderate" ranges established by the PSDDA agencies for the ranking of projects [2].

3. A sampling and analysis plan was developed for full characterization [3] and approved verbally by the PSDDA agencies August 30, 1996.

4. Nine dredged material management units (DMMUs) were characterized. Sediment from 24 sampling locations were composited into six surface (C1-C4 and C8-C9) and three subsurface (C5-C7) lab samples [see Attachment 1].

5. The chemistry data indicated that a single detected exceedance of the Dredging Year 1997 PSDDA screening levels (SLs) occurred for C3; diethyl phthalate was detected at 99 ug/kg (SL = 97 ug/kg) [4]. There were no SL exceedances for any other DMMU.

6. A screening level exceedance normally triggers the requirement to run bioassays. But because phthalates are common laboratory contaminants, the PSDDA agencies do not require biological testing based solely on a phthalate exceedance of SL [2, see pages II-100, II-123, II-209]. Therefore, no bioassays were performed. However, to verify or refute the diethylphthalate hit for C3, Seattle District performed additional analyses on frozen archived sediment. The results of a single analysis were reported by AmTest on October 18; diethylphthalate was undetected at a detection limit of 19 ug/kg dw [Attachment 2]. The results of an additional duplicate analysis were reported by AmTest on November 4; diethylphthalate was undetected at a detection limit of 19 ug/kg dw in both duplicates [Attachment 3].

7. In summary, the PSDDA-approved sampling and testing plan was followed, and quality assurance, quality control guidelines specified by PSDDA were complied with. The data gathered were deemed sufficient and acceptable for regulatory decision-making under the PSDDA

program. Based on the results of the chemical testing, the following consensus determination was made by the PSDDA agencies:

All 300,437 cubic yards proposed for dredging from the Everett Downstream Settling Basin and River Channel are suitable for disposal at the Port Gardner open-water nondispersive site.

8. The chemical quality of the proposed dredged material was also evaluated for potential beneficial use projects. Chemical concentrations were compared to the State of Washington SQS and there were no detected exceedances[1]. However, there were some carbon-normalized detection limit exceedances of the SQS for 1,2,4-trichlorobenzene and hexachlorobenzene [Attachment 4]. In addition, dry-weight detection limits were also compared to the draft July 1996 detection limit guidelines provided by the Department of Ecology [Attachment 5]. Again, several chemicals exceeded the detection limit guidelines including dimethyl phthalate, butyl benzyl phthalate, hexachlorobutadiene and individual PCB Aroclors. When compared to the 1988 dry-weight LAETs, only hexachlorobutadiene exceeded its respective value. However, it is highly unlikely that this is a chemical of concern in the present project. Chemical data from 13 PSDDA sediment surveys for 9 different dredging projects in the vicinity of the federal navigation project were examined for the presence of hexachlorobutadiene. This chemical was not detected in any of these surveys.

The PSDDA agencies agreed that the potential risk for deleterious adverse effects posed by these detection limit exceedances was negligible. Therefore, the PSDDA agencies used best professional judgment in determining that all project sediments are chemically suited for use in beneficial uses projects. Attachment 6 provides sediment conventional data for the evaluation of beneficial use options.

9. Based on the "low-moderate" ranking for this project and the lack of major sources of contamination, under PSDDA recency guidelines the data collected for the full characterization of project sediments are valid for 5-7 years after the sampling date. If a "changed condition" (e.g. after a spill event) occurs between the date of this suitability determination and the time of dredging, the PSDDA agencies will determine whether additional sampling and testing are required prior to dredging.

10. Additional sedimentation is predicted to occur before dredging takes place. Based on the results from two consecutive cycles of sediment testing in 1993 and 1996, the PSDDA agencies do not consider this material to present a significant risk. Therefore, under the PSDDA frequency guidelines, additional sediment accumulating within the project footprint between the time of this determination and the time of dredging in 1997 may be dredged without further characterization.

11. This memorandum documents the suitability of proposed dredged sediments for disposal at the Port Gardner open-water site and the chemical suitability for beneficial use. However, this suitability determination does not constitute final agency approval of the project.

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[1] Chromium is a PSDDA chemical-of-concern only for dredging projects located near specific pollution sources. There are no known sources of chromium in the immediate vicinity of this project. Therefore, the sediment was not analyzed for this element and no comparison to SQS was possible.

References:

[1] Memorandum for Record, 1993, *Decision on the Suitability of Dredged Material Tested under PSDDA Guidelines for the US Army Corps of Engineers Everett Downstream Settling Basin and River Channel Maintenance Dredging Project for Disposal at the PSDDA Port Gardner Open-water Nondispersive Site,* prepared by Seattle District for the PSDDA agencies.

[2] PSDDA, 1988, *Evaluation Procedures Technical Appendix, Phase I.*

[3] USACE, 1996, *Sampling and Analysis Plan for Sediment Characterization at Lower Snohomish River Channel and Settling Basin; FY97 Operations and Maintenance Dredging,* prepared by Seattle District.

[4] USACE, 1996, CITE SEA REPORT.

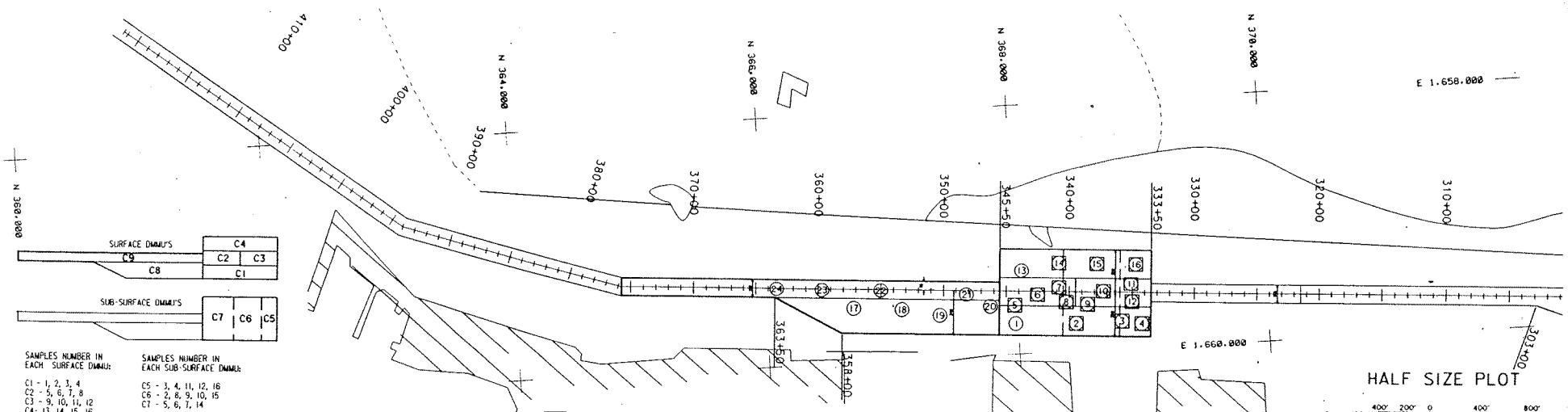
Concur:

11/25/96 Date	David F. Fox David Fox Seattle District Corps of Engineers
Nov. 14, 1986 Date	Justine S. Barton Justine Barton Environmental Protection Agency, Region X
14/20/96 Date	Ted R. Benson Ted Benson Department of Natural Resources
11/15/96 Date	Vernice Santee Vernice Santee Washington Department of Ecology

6 Attachments
Copies Furnished:

DMMO file/CENPS-OP-TS
Hiram Arden/CENPS-OP-NP
Therese Littleton/CENPS-EN-PL-ER
Terry Williams/Tulalip Tribes
Justine Barton/EPA
Vernice Santee/Ecology
Ted Benson/DNR
Sandy Browning/SEA

COMPOSITE NUMBER	Sample Number	Station	Range	Est. Depth To Surface (in feet)	Est. Length of Sample (in feet)	NAD 27 State Plane	NAD 27 Geographic	NAD 83 State Plane	NAD 83 Geographic
C1	1	344+22.5	257.1 LEFT	16	4	N 367,980 E 1,659,750	48 00 01.172 N 122 13 23.425 W	N 367,920.0 E 1,299,870.7	48 00 00.716 N 122 13 27.917 W
	2	339+41.1	250.1 LEFT	14	6	N 368,460 E 1,659,775	48 00 06.111 N 122 13 23.185 W	N 368,400.0 E 1,299,895.7	48 00 05.456 N 122 13 27.677 W
	3	335+78.0	228.3 LEFT	10	10	N 368,825 E 1,659,777	48 00 09.715 N 122 13 23.252 W	N 368,765.0 E 1,299,897.7	48 00 09.059 N 122 13 27.745 W
	4	334+21.0	245.9 LEFT	9	11	N 368,980 E 1,659,805	48 00 11.250 N 122 13 22.882 W	N 368,920.0 E 1,299,925.7	48 00 10.593 N 122 13 27.375 W
C2	5	344+32.1	111.4 LEFT	14	6	N 367,980 E 1,659,604	48 00 01.146 N 122 13 25.571 W	N 367,920.0 E 1,299,724.7	48 00 00.689 N 122 13 30.064 W
	6	342+52.4	25.4 LEFT	14	6	N 368,165 E 1,659,530	48 00 03.159 N 122 13 26.708 W	N 368,105.0 E 1,299,650.7	48 00 02.502 N 122 13 31.201 W
	7	340+83.1	36.0 RIGHT	16	4	N 368,338 E 1,659,480	48 00 04.857 N 122 13 27.489 W	N 368,278.0 E 1,299,600.7	48 00 04.200 N 122 13 31.982 W
	8	340+23.5	83.0 LEFT	13	7	N 368,390 E 1,659,603	48 00 05.392 N 122 13 25.695 W	N 368,330.0 E 1,299,723.7	48 00 04.735 N 122 13 30.188 W
C3	9	338+53.8	97.2 LEFT	12	8	N 368,558 E 1,659,628	48 00 07.054 N 122 13 25.372 W	N 368,498.0 E 1,299,748.7	48 00 06.397 N 122 13 29.865 W
	10	337+29.5	9.3 RIGHT	14	6	N 368,689 E 1,659,530	48 00 08.329 N 122 13 26.848 W	N 368,629.0 E 1,299,650.7	48 00 07.672 N 122 13 31.340 W
	11	335+11.3	73.8 RIGHT	11	9	N 368,911 E 1,659,480	48 00 10.511 N 122 13 27.642 W	N 368,851.0 E 1,299,600.7	48 00 09.854 N 122 13 32.135 W
	12	335+01.6	73.9 LEFT	9	11	N 368,911 E 1,659,628	48 00 10.537 N 122 13 25.466 W	N 368,851.0 E 1,299,748.7	48 00 09.881 N 122 13 29.959 W
C4	13	343+81.0	176.6 RIGHT	15	4	N 368,050 E 1,659,320	48 00 01.986 N 122 13 29.765 W	N 367,990.0 E 1,299,440.7	48 00 01.329 N 122 13 34.258 W
	14	340+84.7	241.3 RIGHT	15	5	N 368,350 E 1,659,275	48 00 04.939 N 122 13 30.507 W	N 368,290.0 E 1,299,395.7	48 00 04.282 N 122 13 34.999 W
	15	337+83.8	238.2 RIGHT	14	5	N 368,650 E 1,659,298	48 00 07.903 N 122 13 30.248 W	N 368,590.0 E 1,299,418.7	48 00 07.246 N 122 13 34.741 W
	16	334+73.0	236.7 RIGHT	13	7	N 368,960 E 1,659,320	48 00 10.966 N 122 13 30.007 W	N 368,900.0 E 1,299,440.7	48 00 10.309 N 122 13 34.500 W
C8	17	357+14.2	152.2 LEFT	15	4	N 366,698 E 1,659,560	47 59 48.688 N 122 13 25.878 W	N 366,638.0 E 1,299,680.7	47 59 48.032 N 122 13 30.369 W
	18	353+30.9	158.9 LEFT	14	4	N 367,080 E 1,659,592	47 59 52.464 N 122 13 25.509 W	N 367,020.0 E 1,299,712.7	47 59 51.807 N 122 13 30.001 W
	19	350+27.6	200.0 LEFT	15	4	N 367,380 E 1,659,653	47 59 55.435 N 122 13 24.692 W	N 367,320.0 E 1,299,773.7	47 59 54.778 N 122 13 29.184 W
	20	346+26.7	124.3 LEFT	14	4	N 367,785 E 1,659,604	47 59 59.422 N 122 13 25.519 W	N 367,725.0 E 1,299,724.7	47 59 58.765 N 122 13 30.012 W
C9	21	348+18.3	30.8 LEFT	14	4	N 367,600 E 1,659,498	47 59 57.578 N 122 13 27.029 W	N 367,540.0 E 1,299,618.7	47 59 56.921 N 122 13 31.521 W
	22	350+01.4	5.9 LEFT	14	4	N 366,920 E 1,659,428	47 59 50.855 N 122 13 27.877 W	N 366,860.0 E 1,299,548.7	47 59 50.199 N 122 13 32.369 W
	23	359+70.4	6.8 LEFT	14	4	N 366,452 E 1,659,398	47 59 46.232 N 122 13 28.194 W	N 366,392.0 E 1,299,518.7	47 59 45.575 N 122 13 32.686 W
	24	363+33.4	2.8 LEFT	14	4	N 366,090 E 1,659,370	47 59 42.655 N 122 13 28.509 W	N 366,030.0 E 1,299,490.7	47 59 41.998 N 122 13 33.001 W



SAMPLES NUMBER IN EACH SURFACE DMMU:

C1 - 1, 2, 3, 4
C2 - 5, 6, 7, 8
C3 - 9, 10, 11, 12
C4- 13, 14, 15, 16
C8 - 17, 18, 19, 20
C9 - 21, 22, 23, 24

SAMPLES NUMBER IN EACH SUB-SURFACE DMMU:

C5 - 3, 4, 11, 12, 16
C6 - 2, 8, 9, 10, 15
C7 - 5, 6, 7, 14

NOTES:

HORIZONTAL CONTROL BASED ON NAD 27 LAMBERT GRID PROJECTION FOR WASHINGTON STATE PLANE COORDINATE SYSTEM NORTH ZONE.

LEGEND:

SURFACE ONLY SAMPLE LOCATION (19)

SURFACE AND SUB-SURFACE SAMPLE LOCATION [2]

The coordinates shown are referenced to NAD 27 and are in feet based on the SPCS 27 WA, 4601. Differences between NAD 27 and NAD 83 and between SPCS 27 and SPCS 83 at the center of the sheet are shown on the diagram below. Datum conversion was performed using the computer program "CORPSCON." Metric conversions were based on US Survey Foot = 1200/3937 Meter.

NAD 27 → NAD 83: d Lat. -0.657" ↓ d Long. 4.493"

SPCS 27 → SPCS 83: d North -59.979 ft ↓ d East -359,879.279 ft

HALF SIZE PLOT

1" = 400' (400' 200' 0 400' 800')

U.S. ARMY ENGINEER DISTRICT, SEATTLE
CORPS OF ENGINEERS
SEATTLE, WASHINGTON

SNOHOMISH RIVER

SEDIMENT CHARACTERIZATION PLAN
SEPTEMBER 1996

EVERETT, WASHINGTON

PROJECT MANAGER: HIRAM T. ARDEN, NAVIGATION SECTION
CHIEF: ROBERT W. PARRY, NAVIGATION SECTION
CHIEF, OPERATIONS DIVISION: BRIAN R. APPLEBURY, P.E.
PLOTTED BY: LMR
CHECKED BY: DSM
DATE: 28 AUG 96
SCALE: 1" = 400'
PLATE: E-2-8-206
SHEET: 1 OF 1

SHEET 1 OF 1

Attachment 1

AMTEST

Attachment 2

Striplin and Associates
6541 Sexton Dr. N.W. Suite E-1
Olympia, WA 98502
Attention: Sandy Browning

Date Received: 10/ 9/96
Date Reported: 10/18/96

Project Name: Snohomish River

PSDDA CHEMICALS OF CONCERN

AM TEST ID	96-A014504
CLIENT ID	SNO-C3
DATE SAMPLED	9/ 4/96

	RESULT	Q	S.L.	M.L.
CONVENTIONALS (DRY WEIGHT)				
Total Solids (%)	74.5			
ORGANICS (UG/KG DRY WEIGHT)				
LPAH				
Acenaphthylene	< 19		64	640
Acenaphthene	< 19		63	630
Anthracene	< 19		130	1,300
Fluorene	< 19		64	640
Naphthalene	< 19		210	2,100
Phenanthrene	< 19		320	3,200
2-Methylnaphthalene	< 19		67	670
HPAH				
Benzo(a)anthracene	< 19		450	4,500
Benzo(a)pyrene	< 19		680	6,800
Benzo(b)fluoranthene	< 19		800	8,000
Benzo(k)fluoranthene	< 19			
Benzo(ghi)perylene	< 19		540	5,400
Chrysene	< 19		670	6,700
Dibenzo(a,h)anthracene	< 19		120	5,400
Fluoranthene	28		630	6,300
Indeno(1,2,3-cd)pyrene	< 19		69	5,200
Pyrene	24		430	7,300
PHTHALATES				
Diethyl phthalate	< 19		97	
Dimethyl phthalate	< 19		160	
Di-n-butyl phthalate	< 19		1,400	
Di-n-octyl phthalate	< 19		6,200	
Bis(2-ethylhexyl)phthalate	< 19		3,100	
Butyl benzyl phthalate	< 19		470	
PHENOLS				
Pentachlorophenol	< 48		100	690
Phenol	< 19		120	1,200
2 Methylphenol	< 10		20	72
4 Methylphenol	< 19		120	1,200
2,4-Dimethylphenol	< 10		29	50

Attachment 3

AMTEST

AmTest Inc.
Professional Analytical Services
14603 N.E. 87th St.
Redmond, WA 98052
Fax: 206 883 3495
Tel: 206 885 1664

Striplin and Associates
6541 Sexton Dr. N.W. Suite E-1
Olympia, WA 98502
Attention: Gene Revelas

Date Received: 10/22/96
Date Reported: 11/ 4/96

Project Name: Snohomish/Duwamish
Project #: A95-01-02

PSDDA CHEMICALS OF CONCERN

AM TEST ID	96-A014747
CLIENT ID	SNO-C3 A
DATE SAMPLED	9/ 4/96

	RESULT	Q	S.L.	M.L.
ORGANICS (UG/KG DRY WEIGHT)				
LPAH				
Acenaphthylene	< 19		64	640
Acenaphthene	< 19		63	630
Anthracene	27		130	1,300
Fluorene	< 19		64	640
Naphthalene	< 19		210	2,100
Phenanthrene	< 19		320	3,200
2-Methylnaphthalene	< 19		67	670
HPAH				
Benzo(a)anthracene	< 19		450	4,500
Benzo(a)pyrene	< 19		680	6,800
Benzo(b)fluoranthene	< 19		800	8,000
Benzo(k)fluoranthene	< 19			
Benzo(ghi)perylene	< 19		540	5,400
Chrysene	< 19		670	6,700
Dibenzo(a,h)anthracene	< 19		120	5,400
Fluoranthene	25		630	6,300
Indeno(1,2,3-cd)pyrene	< 19		69	5,200
Pyrene	< 19		430	7,300
CHLORINATED HYDROCARBONS				
Hexachlorobenzene	< 11		23	230
1,2,4-Trichlorobenzene	< 6		13	64
PHTHALATES				
Diethyl phthalate	< 19		97	
Dimethyl phthalate	< 19		160	
Di-n-butyl phthalate	< 19		1,400	
Di-n-octyl phthalate	< 19		6,200	
Bis(2-ethylhexyl)phthalate	< 19		3,100	
Butyl benzyl phthalate	< 19		470	
PHENOLS				
Pentachlorophenol	< 47		100	690
Phenol	< 19		120	1,200
2 Methylphenol	< 9		20	72
4 Methylphenol	< 19		120	1,200

Attachment 3 continued

AMTEST

Striplin and Associates
6541 Sexton Dr. N.W. Suite E-1
Olympia, WA 98502
Attention: Gene Revelas

Date Received: 10/22/96
Date Reported: 11/ 4/96

Project Name: Snohomish/Duwamish
Project #: A95-01-02

PSDDA CHEMICALS OF CONCERN

AM TEST ID	96-A014748
CLIENT ID	SNO-C3 B
DATE SAMPLED	9/ 4/96

	RESULT	Q	S.L.	M.L.
ORGANICS (UG/KG DRY WEIGHT)				
LPAH				
Acenaphthylene	< 19		64	640
Acenaphthene	< 19		63	630
Anthracene	< 19		130	1,300
Fluorene	< 19		64	640
Naphthalene	< 19		210	2,100
Phenanthrene	< 19		320	3,200
2-Methylnaphthalene	< 19		67	670
HPAH				
Benzo(a)anthracene	< 19		450	4,500
Benzo(a)pyrene	< 19		630	6,300
Benzo(b)fluoranthene	< 19		800	8,000
Benzo(k)fluoranthene	< 19			
Benzo(ghi)perylene	< 19		540	5,400
Chrysene	< 19		670	6,700
Dibenzo(a,h)anthracene	< 19		540	5,400
Fluoranthene	45		630	6,300
Indeno(1,2,3-cd)pyrene	< 19		69	5,200
Pyrene	30		430	7,300
CHLORINATED HYDROCARBONS				
Hexachlorobenzene	< 11		23	230
1,2,4-Trichlorobenzene	< 6		13	64
PHTHALATES				
Diethyl phthalate	< 19		97	
Dimethyl phthalate	< 19		160	
Di-n-butyl phthalate	< 19		1,400	
Di-n-octyl phthalate	< 19		6,200	
Bis(2-ethylhexyl)phthalate	< 19		3,100	
Butyl benzyl phthalate	< 19		470	
PHENOLS				
Pentachlorophenol	< 47		100	690
Phenol	< 19		120	1,200
2 Methylphenol	< 9		20	72
4 Methylphenol	< 19		120	1,200

ATTACHMENT 4
DETECTION LIMIT COMPARISONS

Guidelines for Comparison			*Detection Limits Exceeding Listed Guidelines*								
	SQS (mg/kg oc)		C1	C2	C3	C4	C5	C6	C7	C8	C9
Hexachlorobenzene	0.38		1.08	0.82	1.55	0.52	0.43	0.86	0.61	0.93	0.67
1,2,4-Trichlorobenzene	0.81				0.85						
	Draft 1996 SMS DL (ug/kg dw)	**PSDDA SL (ug/kg dw)**									
Hexachlorobutadiene	11	29	17	18	15	20	17	17	19	17	19
Dimethyl phthalate	24	160				25					
Butyl benzyl phthalate	21	470		23		25	22		24		23
Aroclor 1016	6	*	32	11	29	37	33	31	35	32	36
Aroclor 1221	6	*	64	23	57	74	66	63	71	63	71
Aroclor 1232	6	*	32	11	29	37	33	31	35	32	36
Aroclor 1242	6	*	32	11	29	37	33	31	35	32	36
Aroclor 1248	6	*	32	11	29	37	33	31	35	32	36
Aroclor 1254	6	*	32	11	29	37	33	31	35	32	36
Aroclor 1260	6	*	11	11	29	12	11		12	11	12
	1988 LAET (ug/kg dw)	**PSDDA SL (ug/kg dw)**									
Hexachlorobutadiene	11	29	17	18	15	20	17	17	19	17	19

* SL for Total PCBs = 130 ug/kg dw
SQS = Sediment Quality Standard
SMS = Sediment Management Standards
DL = Detection Limit
LAET = Lowest Apparent Effects Threshold

oc = organic-carbon-normalized
dw = dry-weight-normalized

Recommended Sample Preparation Methods, Cleanup Methods, Analytical Methods, and Detection Limits For Sediment Management Standards, Chapter 173-204 WAC

Draft - July 1996

	Recommended Sample Preparation Methods	Recommended Sample Cleanup Methods	Recommended Analytical Methods	Recommended Detection Limits (mg/kg dry weight)	RDLs are all assumed to be the DWLAET/3 unless otherwise noted
Metals					
Arsenic	PSEP	--	6010/7061	19	
Cadmium	PSEP	--	6010/7131	1.70	
Chromium	PSEP	--	6010/7191	87	benaet/3, only 2 aet
Copper	PSEP	--	6010	130	
Lead	PSEP	--	6010/7421	150	
Mercury	#NAME?	--	7471	0.14	
Silver	PSEP	--	6010	2	
Zinc	PSEP	--	6010	137	
Nonionizable Organic Compounds					
LPAH Compounds					
Naphthalene	3540/3550	3640/3660	8270/1625C	700	
Acenaphthylene	3540/3550	3640/3660	8270/1625C	433	
Acenaphthene	3540/3550	3640/3660	8270/1625C	167	
Fluorene	3540/3550	3640/3660	8270/1625C	180	
Phenanthrene	3540/3550	3640/3660	8270/1625C	500	
Anthracene	3540/3550	3640/3660	8270/1625C	320	
2 Methylnaphthalene	3540/3550	3640/3660	8270/1625C	223	
HPAH Compounds					
Fluoranthene	3540/3550	3640/3660	8270/1625C	567	
Pyrene	3540/3550	3640/3660	8270/1625C	867	
Benz[a]anthracene	3540/3550	3640/3660	8270/1625C	433	
Chrysene	3540/3550	3640/3660	8270/1625C	467	
Total benzofluoranthene	3540/3550	3640/3660	8270/1625C	1067	
Benzo[a]pyrene	3540/3550	3640/3660	8270/1625C	533	
Indeno[1,2,3 cd]pyrene	3540/3550	3640/3660	8270/1625C	200	
Dibenz[a,h]anthracene	3540/3550	3640/3660	8270/1625C	77	
Benzo[ghi]perylene	3540/3550	3640/3660	8270/1625C	223	

Attachment 5

Recommended Sample Preparation Methods, Cleanup Methods, Analytical Methods, and Detection Limits For Sediment Management Standards, Chapter 173-204 WAC

Draft - July 1996

Chlorinated Benzenes				Recommended Detection Limits (ug/kg dry weight)	
1.2 Dichlorobenzene	3540/3550	3640/3660	8270/1625C	35*	DWLAET, LAET/3 <8270
1.4 Dichlorobenzene	3540/3550	3640/3660	8270/1625C	37	
1.2.4 Trichlorobenzene	3540/3550	3640/3660	8270/1625C	31*	DWLAET, LAET/3 <8270
Hexachlorobenzene	3540/3550	3640/3660	8270/1625C	22*	DWLAET, LAET/3 <8270
Phthalate Esters					
Dimethyl phthalate	3540/3550	3640/3660	8270/1625C	24	
Diethyl phthalate	3540/3550	3640/3660	8270/1625C	67	
Di-n-butyl phthalate	3540/3550	3640/3660	8270/1625C	467	
Butyl benzyl phthalate	3540/3550	3640/3660	8270/1625C	21	This LAET/3 is close to 8270 # of 16
Bis[2 ethylhexyl]phthala	3540/3550	3640/3660	8270/1625C	433	
Di n octyl phthalate	3540/3550	3640/3660	8270/1625C	2067	
Misc. Extractable Comp's.					
Dibenzofuran	3540/3550	3640/3660	8270/1625C	180	
Hexachlorobutadiene	3540/3550	3640/3660	8270/1625C	11*	DWLAET, LAET/3 <8270 #=27
N-nitrosodiphenylamine	3540/3550	3640/3660	8270/1625C	28*	This # = DWLAET, LAET/3 <8270 #=27
PCBs					
Individual PCB Aroclors®	3540/3550	3620/3640/3660	8080	6	Agreed w/Metro&SMU
Ionizable Org. Comp's.					
Phenol	3540/3550	3640/3660	8270/1625C	140	
2 Methylphenol	3540/3550	3640/3660	8270/1625C	63*	DWLAET, LAET/3 <8270 #=27
4 Methylphenol	3540/3550	3640/3660	8270/1625C	223	
2.4 Dimethylphenol	3540/3550	3640/3660	8270/1625C	29*	DWLAET, LAET/3 <8270 #=27
Pentachlorophenol	3540/3550	3640/3660	8270/1625C	120	
Benzyl alcohol	3540/3550	3640/3660	8270/1625C	57*	DWLAET, LAET/3 <8270 #=27
Benzoic acid	3540/3550	3640/3660	8270/1625C	217	

Attachment 5 (cont.)

ATTACHMENT 6
SEDIMENT CONVENTIONAL DATA

	C1	C2	C3	C4	C5	C6	C7	C8	C9
total solids (%)	67.9	61.7	73.0	55.7	67.6	71.6	61.8	62.7	58.4
total volatile solids (%)	4.1	5.2	3.2	7.1	5.7	4.0	6.9	5.0	7.1
total organic carbon (%)	1.2	1.7	0.7	2.9	3.0	1.4	2.3	1.4	2.1
ammonia (mg/kg)	23	43	10	46	55	47	51	40	38
total sulfides (mg/kg)	110	260	660	480	210	180	430	150	100
sand (%)	83.9	70.4	91.5	49.0	73.7	70.4	68.5	66.5	60.0
silt (%)	11.0	22.7	5.4	44.6	19.8	23.4	24.8	27.1	32.8
clay (%)	5.0	6.7	2.9	6.6	6.3	5.9	6.8	6.6	7.3