

CENPS-OP-DMMO

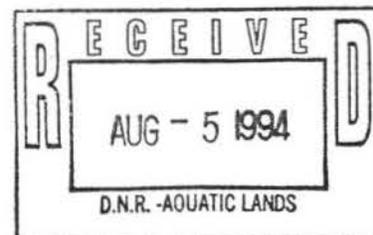
MEMORANDUM FOR RECORD

1 August 1994

**SUBJECT: DETERMINATION OF THE SUITABILITY OF DREDGED MATERIAL TESTED UNDER PSDDA EVALUATION PROCEDURES FOR THE U.S. ARMY CORPS OF ENGINEERS MAINTENANCE DREDGING OF THE SWINOMISH CHANNEL FOR DISPOSAL AT THE PSDDA ROSARIO STRAIT OPEN WATER DISPOSAL SITE.**

1. The U.S. Army Corps of Engineers proposes to maintenance dredge up to 144,000 cubic yards of sediments from the Swinomish Channel. The following summary reflects the PSDDA agencies' (Corps of Engineers, Department of Ecology, Department of Natural Resources<sup>1</sup> and the Environmental Protection Agency) consensus decision on the acceptability of the sampling plan and all relevant test data to make a determination of suitability for the disposal of the material at the PSDDA Rosario Strait open-water disposal site.
2. The ranking for the project area is "low", based on the guidance provided in the PSDDA Management Plan Report, Phase II (page A-11) for the Swinomish Channel area and the suitability determination dated 8 March 1993.
3. A sampling and analysis plan was completed for this project and approved by the PSDDA agencies on 16 May 1994. Sampling for this project was initiated on 1 June 1994.
4. Three dredged material management units (DMMU) were characterized. Because the Swinomish is a high energy, high current area and the sediments are likely to be homogenous, the PSDDA agencies determined that grab samples would be adequate for sediment characterization. For composite C-1, samples were taken at six locations for compositing. For composites C-2 and C-3, samples were taken from seven locations for compositing.
5. The chemistry data indicated there were no detected exceedances of the Dredging Year 1995 PSDDA screening levels (SL) for composites C-1, C-2 and C-3.
6. In summary, PSDDA approved protocols and procedures were followed, and quality assurance, quality control guidelines specified by PSDDA were generally 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 PSDDA agencies concluded that up to 144,000 cubic yards of proposed dredged material are suitable for unconfined open-water disposal at a PSDDA dispersive or non-dispersive site.
7. This memorandum documents the suitability of proposed dredged sediments for disposal at a PSDDA open-water disposal site. This determination of suitability does not preclude the consideration of this material for an appropriate beneficial use. It does not constitute final agency approval of the project. A public notice (PN-83) will be issued for this project. During the public comment period which 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.

See Chemistry Values Table Attached



**Swinomish Channel  
DY 95 Maintenance Dredging**

Concur:

8/1/94  
Date

8/1/94  
Date

8/2/94  
Date

8/3/94  
Date

\_\_\_\_\_  
Date

David R. Kendall  
David Kendall, Ph.D  
Seattle District Corps of Engineers

Stephanie Stirling  
Stephanie Stirling  
Seattle District Corps of Engineers

Justine S. Barton  
Justine Barton  
Environmental Protection Agency, Region 10

Sandra L. Manning  
Sandra Manning  
Washington Department of Ecology

\_\_\_\_\_  
Phil Hertzog<sup>1</sup>  
Washington Department of Natural Resources

1. Project not reviewed: suitability determination deferred to other PSDDA agencies.

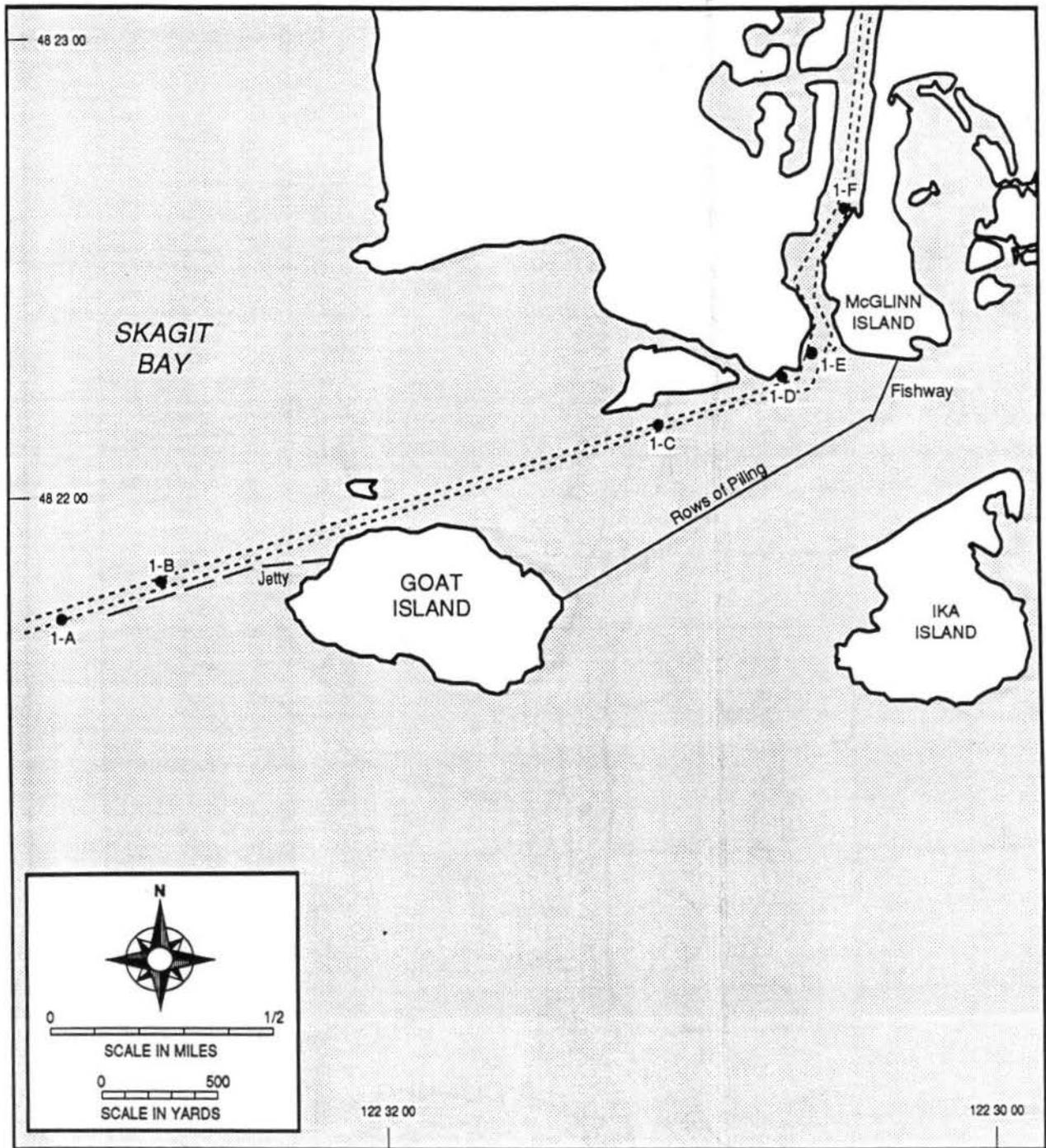
Copies Furnished:

Hiram Arden/CENPS-OP-NP  
Linda Cox/CENPS-EN-PL-ER  
DMMO file

EPA/Justine Barton  
DOE/Sandra Manning  
DNR/Phil Hertzog

**Table 1. Summary of DMMU and Sediment Conventional Parameters**

Conventional Parameters	C-1	C-2	C-3
DMMU Volume (cubic yards)	<48,000	<48,000	<48,000
Grain size (%)			
Gravel	1	8	1
Sand	95	92	95
Silt	4	0	4
Clay	0	0	0
Total Solids (%)	77.8	78.8	74.8
Total Volatile Solids (%)	0.68	0.49	0.66
Total Organic Carbon (%)	.074	.025	.024
Bulk Ammonia (mg/kg)	1.0 U	1.0 U	1.0 U
Total Sulfides (mg/kg)	8.0	.20 U	.20 U



**Figure 2-1.** Composite C1 station locations for the PSDDA chemical characterization study at Swinomish Channel, Washington.

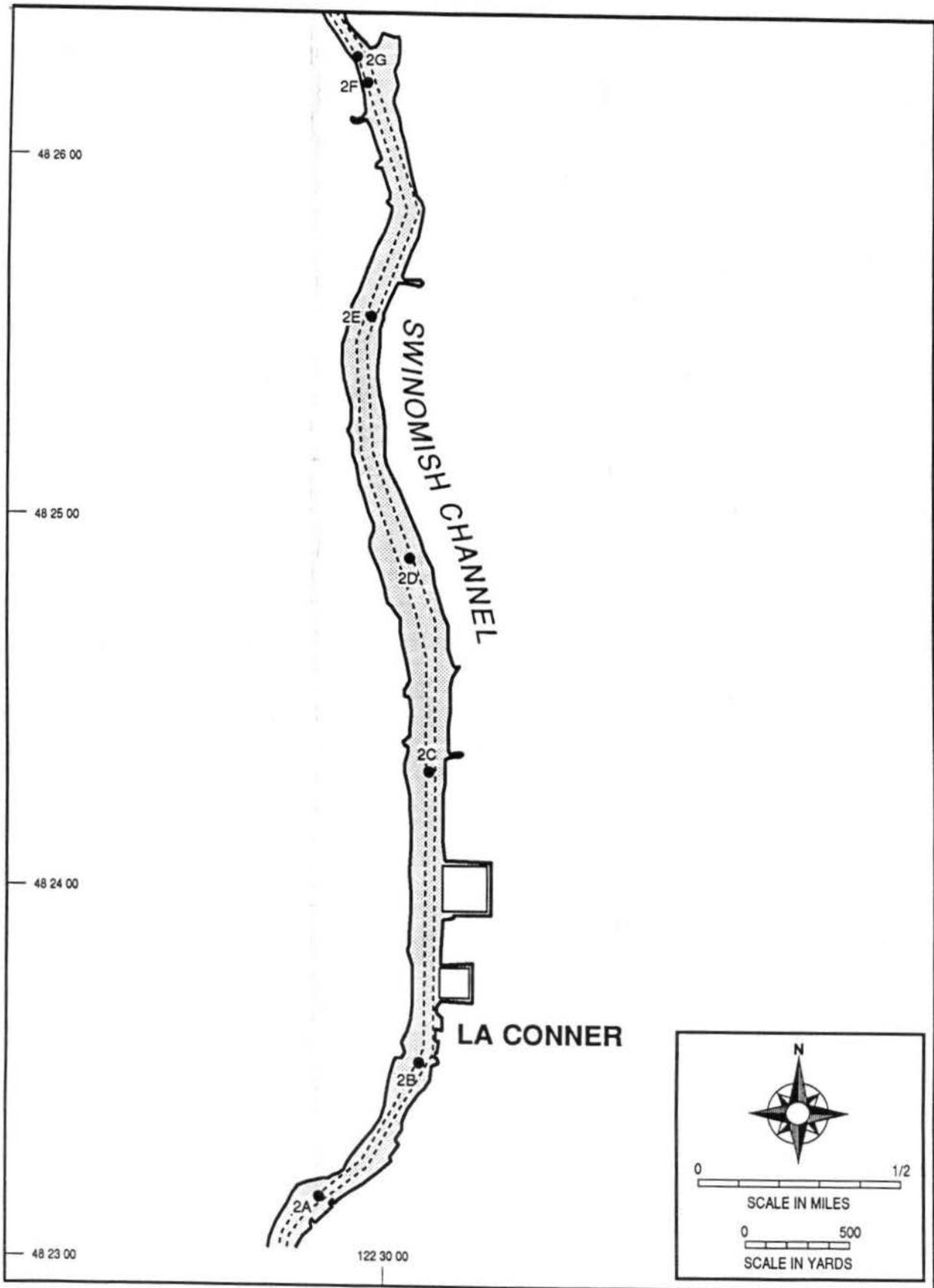


Figure 2-2. Composite C2 station locations for the PSDDA chemical characterization study at Swinomish Channel, Washington.

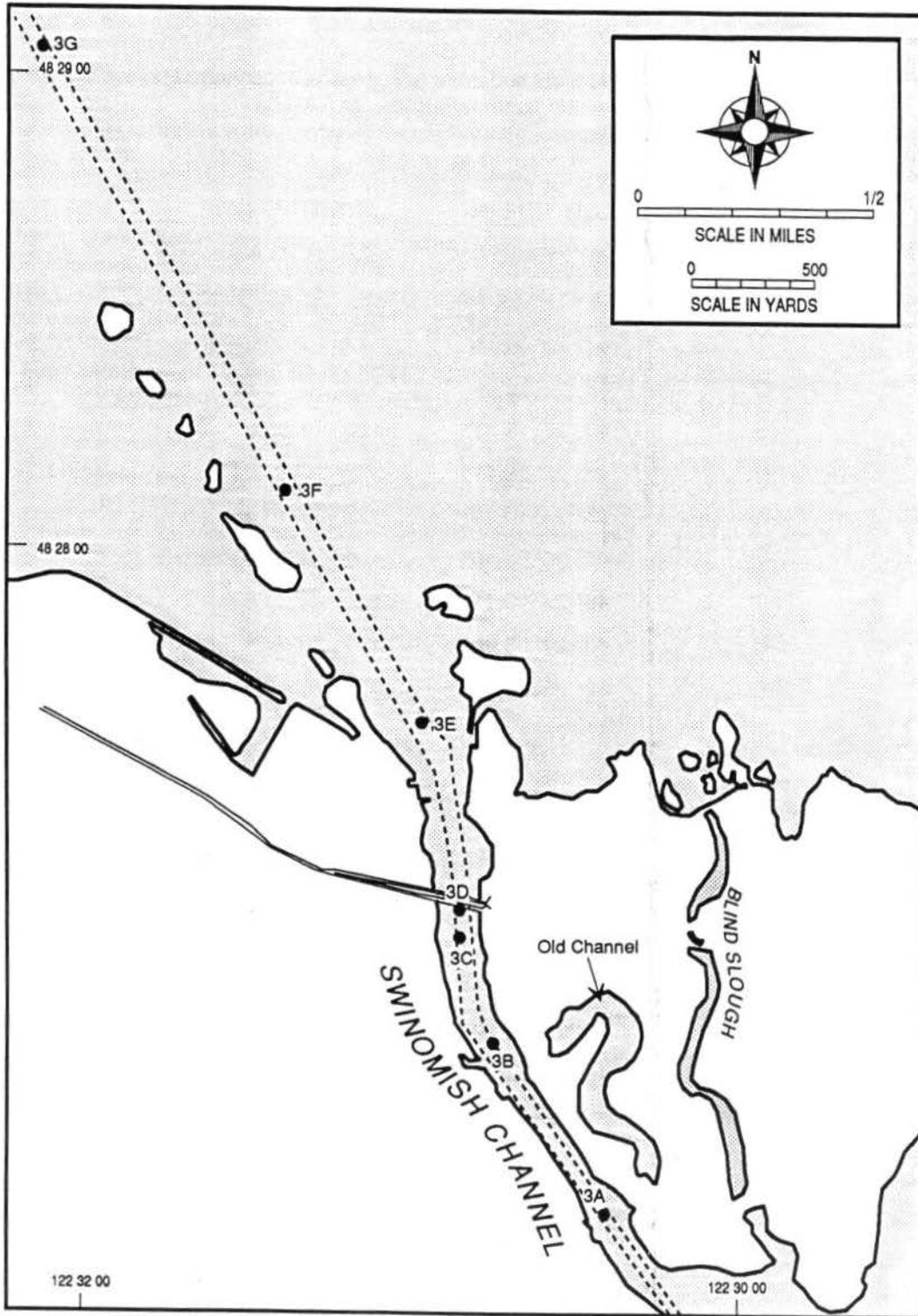


Figure 2-3. Composite C3 station locations for the PSDDA chemical characterization study at Swinomish Channel, Washington.

Table 2-1. Sampling station locations for the sediment full characterization study at Swinomish Channel, Washington. Latitude and longitude referenced to NAD 83.

COMPOSITE	STATION	<sup>DAIS</sup> Station	LATITUDE (N)	LONGITUDE (W)	DEPTH (ft)
C1	1-A	1	48° 21' 44.25"	122° 33' 03.44"	13.5
	1-B	2	48° 21' 48.81"	122° 32' 43.72"	15.0
	1-C	3	48° 22' 09.78"	122° 31' 05.61"	12.5
	1-D	4	48° 22' 16.89"	122° 30' 40.10"	12.8
	1-E	5	48° 22' 18.73"	122° 30' 35.09"	11.9
	1-F	6	48° 22' 38.41"	122° 30' 29.24"	11.8
C2	2-A	7	48° 23' 10.51"	122° 30' 16.55"	15.0
	2-B	8	48° 23' 31.40"	122° 29' 51.55"	10.8
	2-C	9	48° 24' 19.11"	122° 29' 49.89"	16.0
	2-D	10	48° 24' 53.69"	122° 29' 54.12"	14.5
	2-E	11	48° 25' 33.78"	122° 30' 02.69"	15.1
	2-F	12	48° 26' 12.06"	122° 30' 03.69"	16.4
	2-G	13	48° 26' 16.37"	122° 30' 06.43"	17.8
C3	3-A	14	48° 26' 36.12"	122° 30' 25.46"	16.8
	3-B	15	48° 26' 58.21"	122° 30' 45.56"	17.2
	3-C	16	48° 27' 12.29"	122° 30' 51.81"	14.3
	3-D	17	48° 27' 14.96"	122° 30' 52.20"	11.2
	3-E	18	48° 27' 38.20"	122° 30' 58.97"	16.9
	3-F	19	48° 28' 08.12"	122° 31' 22.84"	17.3
	3-G	20	48° 29' 03.36"	122° 32' 06.96"	15.6

Estimated locations due to discrepancies in survey measurements.

$$\frac{20}{292.4} \\ \bar{X} = 14.6$$

DAIS Value Table - Dry Weight Basis

Project: Swinomish Channel, DY95

SWINR1AF104

	units	C1	C2	C3
<b>SEDIMENT CONVENTIONALS</b>				
Total Solids	%	77.8	78.8	74.8
Volatile Solids	%	0.68	0.49	0.66
Total Organic Carbon	%	0.07	0.03	0.02
Ammonia	MG/KG	1 u	1 u	1 u
Total Sulfides	MG/KG	0.8	0.2 u	0.2 u
<b>METALS</b>				
Antimony (1)	MG/KG	1.2 u	1.2 u	1.2 u
Arsenic	MG/KG	5.3	5.3	4.2
Cadmium	MG/KG	0.1 u	0.1 u	0.1
Chromium (4)	MG/KG	-	-	-
Copper	MG/KG	11	11	9.6
Lead	MG/KG	6.5	4.7	3.8
Mercury	MG/KG	0.03 u	0.03 u	0.03 u
Nickel	MG/KG	31	39	37
Selenium (4)	MG/KG	-	-	-
Silver	MG/KG	0.2 u	0.2 u	0.2 u
Zinc	MG/KG	57	70	59
<b>LPAH</b>				
2-Methylnaphthalene (1)	UG/KG	19 u	18 u	18 u
Acenaphthene (1)	UG/KG	19 u	18 u	18 u
Acenaphthylene (1)	UG/KG	19 u	18 u	18 u
Anthracene (1)	UG/KG	19 u	18 u	18 u
Fluorene (1)	UG/KG	19 u	18 u	18 u
Naphthalene (1)	UG/KG	19 u	18 u	18 u
Phenanthrene (1)	UG/KG	19 u	18 u	42
Total LPAH (1)	UG/KG	19 u	18 u	42
<b>HPAH</b>				
Benzo(a)anthracene (1)	UG/KG	19 u	18 u	18 u
Benzo(a)pyrene (1)	UG/KG	19 u	18 u	18 u
Benzo(g,h,i)perylene (1)	UG/KG	19 u	18 u	18 u
Benzofluoranthenes (1)	UG/KG	19 u	18 u	18 u
Chrysene (1)	UG/KG	19 u	18 u	18 u
Dibenzo(a,h)anthracene (1)	UG/KG	19 u	18 u	18 u
Fluoranthene	UG/KG	19 u	18 u	51
Indeno(1,2,3-c,d)pyrene (1)	UG/KG	19 u	18 u	18 u
Pyrene	UG/KG	19 u	18 u	34
Total HPAH (1)	UG/KG	19 u	18 u	85
<b>CHLORINATED HYDROCARBONS</b>				
1,2,4-Trichlorobenzene (1)	UG/KG	5.6 u	5.3 u	5.3 u
1,2-Dichlorobenzene (1)	UG/KG	2 u	2 u	2 u
1,3-Dichlorobenzene (3)	UG/KG	2 u	2 u	2 u
1,4-Dichlorobenzene (1)	UG/KG	2 u	2 u	2 u
Hexachlorobenzene	UG/KG	11 u	11 u	11 u
<b>PHTHALATES</b>				
Bis(2-ethylhexyl)phthalate (1)	UG/KG	19 u	18 u	18 u

	units	C1	C2	C3
Butyl benzyl phthalate (1)	UG/KG	19 u	18 u	18 u
Di-n-butyl phthalate (1)	UG/KG	19 u	18 u	18 u
Di-n-octyl phthalate (1)	UG/KG	19 u	18 u	18 u
Diethyl phthalate (1)	UG/KG	19 u	18 u	18 u
Dimethyl phthalate (1)	UG/KG	19 u	18 u	18 u
PHENOLS				
2 Methylphenol (1)	UG/KG	9.3 u	8.8 u	8.8 u
2,4-Dimethylphenol (1)	UG/KG	9.3 u	8.8 u	8.8 u
4 Methylphenol (1)	UG/KG	19 u	18 u	18 u
Pentachlorophenol	UG/KG	47 u	44 u	44 u
Phenol (1)	UG/KG	19 u	18 u	18 u
MISCELLANEOUS EXTRACTABLES				
Benzoic acid (1)	UG/KG	93 u	88 u	88 u
Benzyl alcohol (1)	UG/KG	11 u	11 u	11 u
Dibenzofuran (1)	UG/KG	19 u	18 u	18 u
Hexachlorobutadiene (1)	UG/KG	15 u	14 u	14 u
Hexachloroethane (1)	UG/KG	19 u	18 u	18 u
N-Nitrosodiphenylamine (1)	UG/KG	11 u	11 u	11 u
VOLATILE ORGANICS				
Ethylbenzene (1)	UG/KG	2 u	2 u	2 u
Tetrachloroethene (1)	UG/KG	2 u	2 u	2 u
Total Xylene (1)	UG/KG	2 u	2 u	2 u
Trichloroethene (1)	UG/KG	2 u	2 u	2 u
PESTICIDES AND PCBs				
Aldrin (3)	UG/KG	0.57 u	0.53 u	1.8 u
Chlordane (2)	UG/KG	0.57 u	0.53 u	1.8 u
Dieldrin (3)	UG/KG	1	0.71 u	2.4 u
Heptachlor (3)	UG/KG	0.57 u	0.53 u	1.8 u
Lindane (3)	UG/KG	0.57 u	0.53 u	1.8 u
Total DDT	UG/KG	1.9 u	1.8 u	6 u
Total PCBs	UG/KG	38 u	35 u	36 u
ORGANOMETALLICS				
Tributyltin (porewater) (2)	UG/L	-	-	-

A dash indicates that no data exists for this analyte in DAIS

(1) = No BT exists (2) = No ML exists (3) = No BT or ML exists (4) = No SL or ML exists

END OF REPORT