United States
Environmental Protection
Agency

Region 10
1200 Sixth Avenue
Seattle WA 98101

Alaska
Idaho
Oregon
Washington

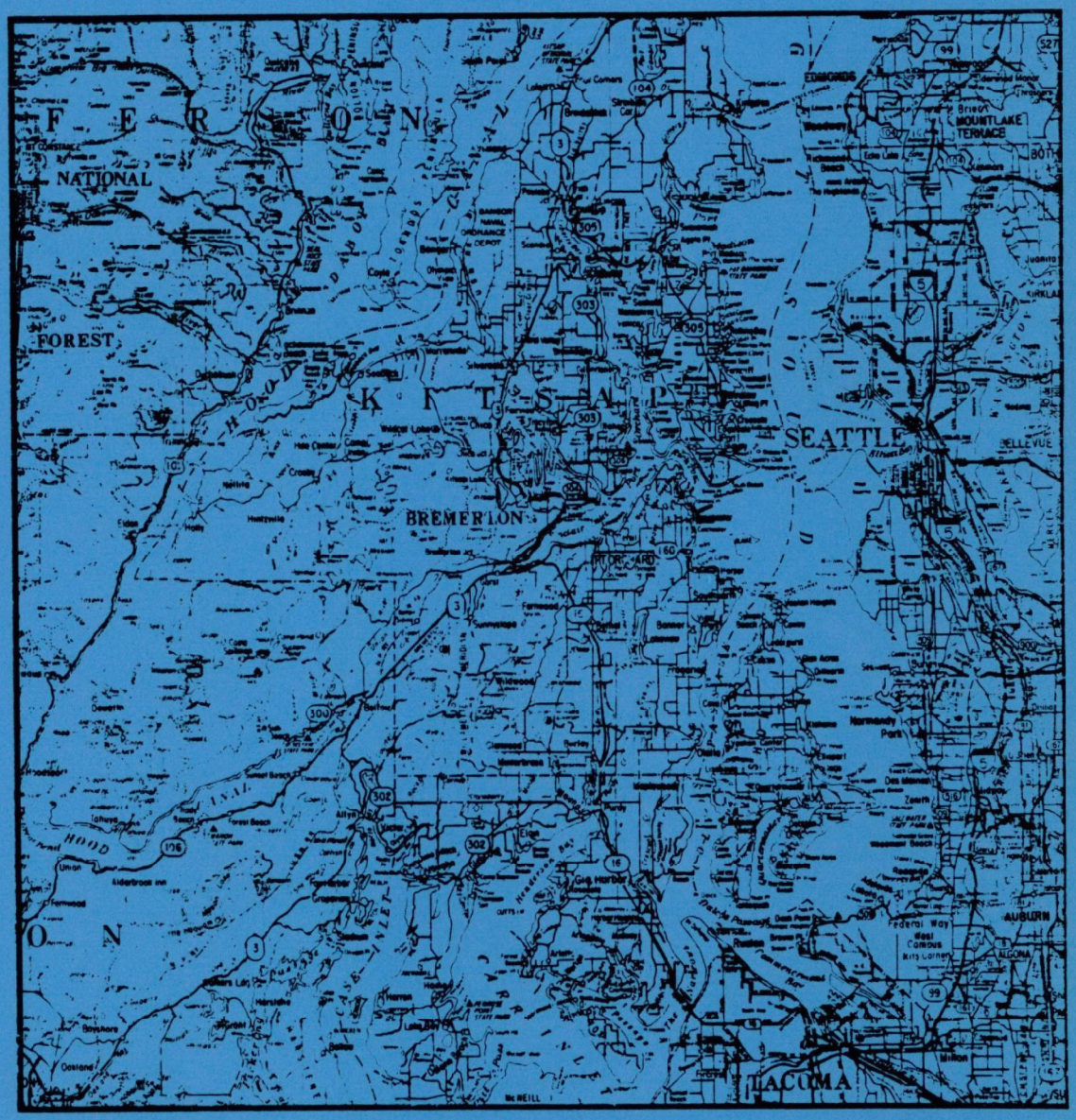
Environmental Services Division

December 1986

EPA

Reconnaissance Survey Of Eight Bays In Puget Sound

Volume II



910-9-87-161B
c.5

RECONNAISSANCE SURVEY OF EIGHT BAYS IN PUGET SOUND

Property of U.S. Environmental Protection Agency Library OMP-104
FEB - 5 2016
1200 Sixth Avenue, Seattle, WA 98101

Final Report

Volume 2
to

U. S. Environmental Protection Agency
Region 10

Prepared under Contract DE-AC06-76RLO 1830

and

Interagency Agreement No. DW89930272-01-1

EPA Project Officers:
Dr. G. L. O'Neal
Mr. R. R. Bauer

by
Pacific Northwest Laboratory
Battelle/Marine Research Laboratory
439 West Sequim Bay Road
Sequim, Washington 98382

Operated for the U.S. Department of Energy
by Battelle Memorial Institute

The information in this document has been funded wholly by the United States Environmental Protection Agency under contract DE-AC06-76RLO 1830 and Interagency Agreement DW89930272-01-1 with the United States Department of Energy and Pacific Northwest Laboratory. It has been subject to the Agency's peer and administrative review, and it has been approved for publication as an EPA document.

CONTENTS

Section		Page
APPENDIX A	STATION IDENTIFICATION AND PROTOCOL FOR STATION SELECTION	
	Station Identification	A.1
	Protocol for Station Selection	A.9
APPENDIX B	SEDIMENTARY CHARACTERISTICS AND CONTAMINANT LEVELS	
	Grain Size, Metals and IR Analyzed by Battelle	B.1
	Metals Analyzed by EPA	B.9
	Organics Analyzed by EPA	B.17
APPENDIX C	AMPHIPOD BIOASSAY	
	Screening Survey (1983) Results	C.1
	Detailed Survey (1984) Results	C.20
	Reference Toxicant Data	C.29
APPENDIX D	OYSTER LARVAL BIOASSAY	
	Screening Survey (1983) Results	D.1
	Detailed Survey (1984) Results	D.3
APPENDIX E	DATA MATRIX	
	Data Matrix	E.1
	Correlation Matrix	E.5
	Code Numbers for Bays	E.6

APPENDIX A

STATION IDENTIFICATION AND

PROTOCOL FOR STATION SELECTION

	Page
STATION IDENTIFICATION	A.1
PROTOCOL FOR STATION SELECTION	A.9

TABLE A-1 Description of Sampling Stations in Bellingham Bay

Station I.D.	Screening Survey	Detailed Survey	North Latitude	West Longitude	Depth (m)
1	August 2, 1983		48°45'06.0"N	122°30'40.5"W	7.3
2	August 3, 1983		48°45'28.2"N	122°30'47.0"W	8.5
3	August 5, 1983	April 23, 1984	48°44'52.6"N	122°29'46.0"W	5.5
4	August 5, 1983	April 23, 1984	48°44'49.7"N	122°29'32.0"W	11.9
5	August 5. 1983	April 23. 1984	48°44'35.2"N	122°29'49.0"W	11.9
6	August 5, 1983		48°44'06.0"N	122°30'15.5"W	12.8
7	August 2, 1983	April 23, 1984	48°44'37.5"N	122°29'34.1"W	10.1
8	August 3, 1983		48°44'53.3"N	122°31'22.0"W	13.1
9	August 3, 1983		48°44'16.8"N	122°30'52.0"W	14.9
10	August 3, 1983		48°44'40.0"N	122°30'39.6"W	11.3
11	August 5, 1983	April 30, 1984	48°44'58.0"N	122°30'02.1"W	7.0
12	August 5, 1983	April 30, 1984	48°45'12.5"N	122°29'40.0"W	6.1
13	August 4, 1983		48°44'43.0"N	122°34'55.0"W	7.6
14	August 4, 1983		48°43'17.0"N	122°34'13.0"W	27.1
15	August 4, 1983		48°43'07.0"N	122°31'31.0"W	41.8
16	August 4, 1983		48°43'48.0"N	122°32'20.0"W	25.6
17	August 4, 1983		48°44'44.0"N	122°32'52.0"W	17.4
18	August 4, 1983		48°45'35.5"N	122°33'07.0"W	2.7
19	August 4, 1983		48°45'38.0"N	122°31'28.0"W	4.0
20	August 4, 1983		48°44'39.0"N	122°31'42.0"W	15.2
21	August 5, 1983		48°44'36.5"N	122°31'33.0"W	10.7
22	August 5, 1983		48°44'30.0"N	122°31'35.0"W	14.6
23	August 5, 1983	April 30, 1984	48°43'35.3"N	122°30'53.1"W	17.4
24	August 5, 1983	April 30, 1984	48°43'56.0"N	122°30'12.5"W	11.0
25	August 5, 1983		48°44'19.0"N	122°29'57.0"W	8.5
26	August 5, 1983		48°45'02.9"N	122°29'09.8"W	9.5

TABLE A-2 Description of Sampling Stations in Samish Bay

Station I.D.	Screening Survey	Detailed Survey	North Latitude	West Longitude	Depth (m)
1	August 6, 1983	April 24, 1984	48°38'38"N	122°31'05"W	13.4
2	August 6, 1983		48°38'11"N	122°30'08"W	15.9
3	August 6, 1983	April 24, 1984	48°37'52"N	122°29'22"W	10.1
4	August 6, 1983		48°37'18"N	122°29'55"W	16.8
5	August 8, 1983		48°37'35"N	122°30'33"W	15.2
6	August 8, 1983		48°37'52"N	122°31'26"W	12.5
7	August 8, 1983	April 24, 1984	48°36'31"N	122°32'12"W	23.5
8	August 8, 1983		48°36'15"N	122°31'30"W	19.5
9	August 8, 1983		48°35'55"N	122°30'43"W	17.7
10	August 8, 1983		48°35'50"N	122°30'13"W	16.5
11	August 8, 1983		48°37'05"N	122°29'21"W	12.2
12	August 8, 1983		48°36'36"N	122°29'21"W	10.1
13	August 9, 1983		48°37'42"N	122°28'52"W	2.7
14	August 9, 1983		48°36'56"N	122°29'02"W	4.0
15	August 9, 1983		48°35'46"N	122°29'47"W	4.3
16	August 9, 1983		48°35'17"N	122°31'03"W	14.6
17	August 9, 1983		48°34'41"N	122°31'31"W	4.0
18	August 9, 1983		48°34'59"N	122°31'45"W	15.9
19	August 9, 1983		48°35'26"N	122°32'12"W	18.9
20	August 9, 1983	April 24, 1984	48°36'02"N	122°32'39"W	30.5

TABLE A-3 Description of Sampling Stations in Port Gardner - Everett Harbor

Station I.D.	Screening Survey	Detailed Survey	North Latitude	West Longitude	Depth (m)
1	August 19, 1983	May 1, 1984	47°59'17.5"N	122°13'02.5"W	16.8
2	August 19, 1983	May 1, 1984	47°59'15.5"N	122°13'11.6"W	16.8
3	August 19, 1983	May 1, 1984	47°59'08.3"N	122°13'11.5"W	13.4
4	August 19, 1983	May 1, 1984	47°59'04.6"N	122°13'07.8"W	13.7
5	August 20, 1983	May 7, 1984	47°59'03.4"N	122°13'16.5"W	10.1
6	August 20, 1983	May 7, 1984	47°58'53.5"N	122°13'26.0"W	11.9
7	August 20, 1983	May 7, 1984	47°58'36.0"N	122°13'35.1"W	16.5
8	August 20, 1983		47°58'07.2"N	122°14'21.1"W	73.2
9	August 20, 1983		47°58'22.2"N	122°14'11.1"W	98.8
10	August 20, 1983		47°58'48.0"N	122°14'08.3"W	54.9
11	August 20, 1983	May 7, 1984	47°58'38.8"N	122°14'46.9"W	97.5
12	August 20, 1983		47°58'04.5"N	122°14'57.9"W	109.7
13	August 20, 1983		47°58'00.9"N	122°15'17.3"W	115.8
14	August 20, 1983		47°58'32.4"N	122°15'37.0"W	115.8
15	August 20, 1983		47°59'09.0"N	122°15'17.8"W	103.6
16	August 21, 1983		47°59'49.6"N	122°15'54.9"W	109.7
17	August 21, 1983		48°00'39.4"N	122°17'08.3"W	98.8
18	August 21, 1983		48°01'36.4"N	122°18'36.1"W	106.7
19	August 21, 1983		47°58'06.0"N	122°16.05.9"W	128.0
20	August 21, 1983		47°58'01.4"N	122°16'53.1"W	124.4
21	August 21, 1983		47°57'44.2"N	122°17'53.2"W	164.6
22	August 21, 1983		47°59'02.1"N	122°18'20.0"W	142.4
23	August 21, 1983		47°58'58.0"N	122°17'02.0"W	124.4
24	August 21, 1983		48°01'41.0"N	122°15'57.0"W	4.6
25	August 21, 1983		48°01'45.5"N	122°13'28.0"W	6.1

TABLE A-4 Description of Sampling Stations at Elliott Bay - Four Mile Rock Dump Site Vicinity

Station I.D.	Screening Survey	Detailed Survey	North Latitude	West Longitude	Depth (m)
1	August 23, 1983		47°37'50.0"N	122°24'44.0"W	57.9
2	August 23, 1983		47°37'50.9"N	122°25'07.1"W	104.9
3	August 23, 1983		47°37'38.3"N	122°25'00.3"W	159.7
4	August 24, 1983		47°38'14.1"N	122°26'23.0"W	165.5
5	August 24, 1983		47°37'59.0"N	122°25'49.9"W	134.1
6	August 24, 1983		47°37'51.4"N	122°25'30.0"W	129.5
7	August 24, 1983		47°39'00.5"N	122°26'33.9"W	228.6
8	August 24, 1983		47°37'45.4"N	122°26'26.8"W	210.3
9	August 24, 1983	May 8, 1984	47°37'41.0"N	122°25'45.0"W	173.1
10	August 24, 1983	May 8, 1984	47°37'27.4"N	122°25'39.7"W	184.1
11	August 25, 1983		47°37'06.5"N	122°26'32.5"W	195.1
12	August 25, 1983	May 8, 1984	47°37'14.0"N	122°26'03.9"W	189.0
13	August 25, 1983		47°35'50.0"N	122°26'32.5"W	201.2
14	August 25, 1983		47°36'16.1"N	122°26'10.0"W	190.5
15	August 25, 1983		47°36'50.1"N	122°25'41.3"W	188.1
16	August 25, 1983		47°37'03.2"N	122°25'29.7"W	179.8
17	August 25, 1983	May 8, 1984	47°37'21.0"N	122°25'12.1"W	170.7
18	August 26, 1983		47°36'11.7"N	122°25'07.0"W	182.9
19	August 26, 1983		47°36'57.2"N	122°25'02.3"W	182.9
20	August 26, 1983	May 15, 1984	47°37'14.9"N	122°25'04.9"W	173.7
21	August 26, 1983		47°36'18.1"N	122°24'39.9"W	185.9
22	August 26, 1983	May 15, 1984	47°36'57.4"N	122°24'31.0"W	179.2
23	August 26, 1983	May 15, 1984	47°37'10.8"N	122°24'08.9"W	121.9
24	August 26, 1983	May 15, 1984	47°37'31.0"N	122°23'52.0"W	137.2
25	August 26, 1983		47°38'05.1"N	122°25'20.5"W	67.1

TABLE A-5 Description of Sampling Stations in Sinclair Inlet

Station I.D.	Screening Survey	Detailed Survey	North Latitude	West Longitude	Depth (m)
1	August 30, 1983		47°31'57.7"N	122°40'49.3"W	6.7
2	August 30, 1983		47°32'27.8"N	122°39'37.6"W	8.2
3	August 30, 1983		47°32'40.9"N	122°39'48.1"W	12.2
4	August 30, 1983		47°32'46.8"N	122°40'02.3"W	11.9
5	August 30, 1983		47°32'42.8"N	122°40'18.9"W	5.2
6	August 30, 1983	May 16, 1984	47°32'54.9"N	122°39'56.9"W	6.7
7	August 30, 1983	May 16, 1984	47°33'05.0"N	122°39'33.0"W	7.6
8	August 30, 1983	May 16, 1984	47°33'04.8"N	122°39'07.6"W	13.4
9	August 30, 1983		47°32'49.0"N	122°38'56.3"W	12.2
10	August 30, 1983		47°32'24.3"N	122°39'06.5"W	5.8
11	August 31, 1983		47°32'35.0"N	122°38'20.1"W	11.0
12	August 31, 1983		47°32'42.9"N	122°38'12.5"W	13.1
13	August 31, 1983		47°33'07.5"N	122°38'29.5"W	14.3
14	August 31, 1983	May 16, 1984	47°33'16.9"N	122°38'41.6"W	14.9
15	August 31, 1983		47°33'06.0"N	122°38'07.0"W	15.2
16	August 31, 1983		47°32'51.8"N	122°37'53.3"W	7.9
17	August 31, 1983	May 21, 1984	47°33'27.1"N	122°38'03.2"W	14.6
18	August 31, 1983	May 21, 1984	47°33'25.5"N	122°37'50.4"W	16.8
19	August 31, 1983	May 21, 1984	47°33'34.6"N	122°37'47.9"W	15.8
20	August 31, 1983	May 21, 1984	47°33'33.8"N	122°37'30.9"W	18.3
21	August 31, 1983		47°33'19.9"N	122°37'23.9"W	18.3
22	August 31, 1983		47°32'58.5"N	122°37'09.9"W	3.0
23	August 31, 1983		47°33'00.9"N	122°36'23.1"W	9.8
24	August 31, 1983		47°33'25.3"N	122°36'16.7"W	19.2
25	August 31, 1983		47°33'43.7"N	122°36'39.9"W	13.1

TABLE A-6 Description of Sampling Stations in Dabob Bay

Station I.D.	Screening Survey	Detailed Survey	North Latitude	West Longitude	Depth (m)
1	September 10, 1983	May 22, 1984	47°41'15.9"N	122°52'18.7"W	112.8
2	September 10, 1983		47°41'31.1"N	122°52'06.9"W	129.8
3	September 10, 1983		47°41'47.9"N	122°51'54.9"W	139.0
4	September 10, 1983		47°42'08.3"N	122°51'08.9"W	137.2
5	September 10, 1983	May 22, 1984	47°42'08.4"N	122°52'31.9"W	88.4
6	September 10, 1983		47°42'27.6"N	122°52'36.2"W	91.4
7	September 10, 1983	May 22, 1984	47°42'40.5"N	122°52'40.4"W	97.5
14	September 9, 1983		47°46'06.5"N	122°51'15.1"W	109.7
15	September 9, 1983	May 22, 1984	47°46'21.0"N	122°51'12.6"W	109.7
16	September 9, 1983		47°46'25.5"N	122°51'32.4"W	91.4
17	September 8, 1983		47°48'52.4"N	122°48'55.8"W	49.7
18	September 8, 1983		47°49'30.5"N	122°49'04.5"W	32.6
19	September 8, 1983		47°50'10.9"N	122°48'49.6"W	28.3
20	September 8, 1983		47°49'37.7"N	122°48'21.9"W	33.5
21	September 8, 1983		47°49'10.0"N	122°48'10.7"W	37.8
22	September 8, 1983		47°48'51.1"N	122°48'03.0"W	47.5
23	September 9, 1983		47°48'26.5"N	122°47'50.1"W	28.7
24	September 9, 1983		47°48'05.5"N	122°47'36.2"W	35.1
25	September 9, 1983		47°47'36.8"N	122°47'38.9"W	36.6
26	September 9, 1983		47°47'17.3"N	122°47'36.3"W	21.0

TABLE A-7 Description of Sampling Stations in Case Inlet

Station I.D.	Screening Survey	Detailed Survey	North Latitude	West Longitude	Depth (m)
1	September 14, 1983	May 29, 1984	47°14.46'N	122°51.14'W	40.5
2	September 14, 1983		47°15.26'N	122°51.31'W	48.5
3	September 14, 1983		47°16.16'N	122°51.32'W	49.4
4	September 14, 1983		47°16.70'N	122°51.04'W	43.0
5	September 14, 1983		47°17.34'N	122°50.56'W	39.3
6	September 14, 1983		47°17.08'N	122°49.39'W	41.8
7	September 14, 1983		47°17.14'N	122°48.81'W	32.6
8	September 14, 1983		47°18.25'N	122°49.60'W	36.9
9	September 14, 1983		47°17.91'N	122°48.82'W	31.7
10	September 14, 1983		47°17.80'N	122°47.95'W	27.2
11	September 15, 1983	May 29, 1984	47°18.79'N	122°50.30'W	21.3
12	September 15, 1983		47°19.10'N	122°48.80'W	27.4
13	September 15, 1983		47°18.84'N	122°47.97'W	28.0
14	September 15, 1983		47°19.66'N	122°48.56'W	28.3
15	September 15, 1983	May 29, 1984	47°19.50'N	122°47.87'W	28.3
16	September 15, 1983		47°20.23'N	122°47.98'W	25.9
17	September 15, 1983	May 29, 1984	47°20.82'N	122°48.66'W	24.1
18	September 15, 1983		47°21.23'N	122°49.06'W	18.3
19	September 15, 1983		47°21.28'N	122°48.45'W	14.0
20	September 15, 1983		47°21.82'N	122°48.95'W	13.7

TABLE A-8 Description of Sampling Stations in Sequim Bay

Station I.D.	Screening Survey	Detailed Survey	North Latitude	West Longitude	Depth (m)
1	August 15, 1983		48°04'46"N	123°01'46"W	12.8
2	August 15, 1983		48°04'48"N	123°01'25"W	13.1
3	August 15, 1983		48°04'06"N	123°00'30"W	17.7
4	August 15, 1983		48°03'52"N	123°00'22"W	15.8
5	August 16, 1983		48°03'15"N	123°00'42"W	17.7
6	August 16, 1983		48°02'39"N	123°00'14"W	11.0
7	September 17, 1983		48°02'27"N	123°00'26"W	13.7
8	September 17, 1983		48°02'19"N	123°00'43"W	14.6
9	September 17, 1983		48°02'13"N	123°00'52"W	10.7
10	September 17, 1983		48°02'30"N	123°01'21"W	18.3
11	September 17, 1983		48°03'07"N	123°01'55"W	17.7
12	September 17, 1983		48°03'28"N	123°02'18"W	14.3
13	September 17, 1983		48°03'46"N	123°02'00"W	25.9
14	September 18, 1983	May 29, 1984	48°04'34"N	123°01'25"W	23.8
15	September 18, 1983		48°04'17"N	123°01'25"W	20.1
16	September 18, 1983		48°03'58"N	123°01'23"W	19.8
17	September 18, 1983	May 29, 1984	48°03'41"N	123°01'20"W	25.6
18	September 18, 1983	May 29, 1984	48°03'25"N	123°01'28"W	24.7
19	September 18, 1983		48°03'07"N	123°01'18"W	23.8
20	September 18, 1983	May 29, 1984	48°02'50"N	123°01'21"W	18.9

PROTOCOL FOR SELECTION OF STATIONS TO BE RESAMPLED DURING DETAILED SURVEYS

I. Procedures for ranking the stations within each of the eight bays are the same for both urban and baseline bays.

   A. For Ag, Hg, Pb, and IR, assign a rank to each station from 1 to 26 with rank of 1 going to the station with the highest metal or IR concentration.

   B. In case of ties (two or more observations having exactly the same value), assign an average rank following Conover (1971).

   C. To avoid weighting the metals more heavily than the IR, average the ranks for the three metals to obtain a mean metal rank.

   D. Based on mean metal rank, rerank stations to get composite metal rank.

   E. Average composite metal rank and IR rank to get mean metal-IR rank.

   F. Based on mean metal-IR ranks, rerank stations from 1 to 26 to get overall rank.

   G. Use overall rank for station selection.

II. Procedures for station selection from urban bays aim to select the "hottest" stations based on the chemical data.

   A. Based on the overall ranks from above, select the top ten stations, i.e., those with ranks 1-10. (This was later reduced to eight).

   B. In selecting stations from the urban bays, do not pass over any station because of sediment type or other characteristics.

   C. After station selection, determine the number of stations for all four bays falling within each class of sediment type: clayey-mud, silty-mud, sandy-silt, silty-sand, and (Table A-18).

III. Procedures for station selection for the baseline bays aim to select the "cleanest" stations with the constraint that the distribution of sediment types for the baseline bays be similar to that for the urban bays.

   A. Determine number of stations required for each sediment type from distribution found for urban bays.

B. Target is five (this was later reduced to four) stations per baseline bay, but allow some variation in number taken per bay in order to achieve desired sediment type distribution.

C. Using overall ranks as determined under I. above, start selection at the "cleanest" station, i.e., start with the station ranked 20 and work upward.

D. In working upward from rank 20, pass over those stations where:

   1. The station's sediment type is not required, e.g., sand is a type not among those selected from the urban bays.

   2. The station has a sediment type for which the quota is already filled, e.g., if all the required silty muds have been selected, pass over the remaining silty muds in favor of a different sediment type.

E. After choosing five stations from each baseline bay, determine the resulting distribution of sediment types and compare it with urban bays.

F. If the number of stations with a given sediment type is less than the required, reapportion number selected from each baseline bay.

TABLE A-9. Rankings of Stations in Bellingham Bay Based on Metal and Organic Concentrations.

Battelle Station Number	Sediment Type	RANK							
		Ag	Hg	Pb	Metal Mean	Metal Rank	IR[2]	Metal-IR Mean	Overall Rank
1	Silty mud	19.5	19	20	19.5	19	21	20	22
2	Silty mud	19.5	23	21	21.17	22	11	16.5	17
[1] 3	Sandy silt	4	3	4	3.67	4	2	3	2
[1] 4	Sandy silt	2	1	2	1.67	1	1	1	1
[1] 5	Silty mud	9	8	6	7.67	5	3	4	3.5
6	Silty mud	12.5	6.5	14	11	12	9	10.5	9
[1] 7	Silty mud	3	2	3	2.67	3	5	4	3.5
8	Silty mud	21	20	19	20	20	10	15	15
9	Silty mud	15	10	15	13.33	15	19	17	18
10	Sandy silt	22	16.5	22	20.17	21	7	14	14
[1] 11	Silty mud	8	6.5	13	9.17	8	8	8	6
[1] 12	Silty mud	11	9	10	10	10.5	4	7.25	5
13	Sandy silt	23	21	24	22.67	23	25	24	25
14	Silty mud	12.5	15	8	11.83	14	23	18.5	21
15	Silty mud	5	11.5	7	7.83	6.5	15	10.75	10
16	Silty mud	6	14	9	9.67	9	14	11.5	11
17	Silty mud	17	18	17	17.33	17	18	17.5	19
18	Sand	26	26	26	26	26	26	26	26
19	Sandy silt	25	25	25	25	25	22	23.5	24
20	Silty mud	18	22	18	19.33	18	13	15.5	16
21	Silty sand	24	24	23	23.67	24	17	20.5	23
22	Silty mud	16	16.5	16	16.17	16	20	18	20
[1] 23	Clayey mud	7	11.5	5	7.83	6.5	12	9.25	7
[1] 24	Silty mud	10	13	12	11.67	13	6	9.5	8
25	Silty mud	14	5	11	10	10.5	16	13.25	13
26	Silty sand	1	4	1	2	2	24	13	12

[1] Station selected

[2] Total extractable hydrocarbons determined by infrared spectrophotometry

TABLE A-10. Rankings of Stations in Port Gardner - Everett Harbor Based on Metal and Organic Concentrations

Battelle Station Number	Sediment Type	RANK							
		Ag	Hg	Pb	Metal Mean	Metal Rank	IR [2]	Metal-IR Mean	Overall Rank
[1] 1	Sandy silt	9	7	5	7	6.5	3	4.75	5
[1] 2	Sandy silt	11	3	3	5.67	4	5	4.50	4
[1] 3	Sandy silt	2	4.5	4	3.5	3	2	2.50	2
[1] 4	Sandy silt	1	4.5	2	2.5	1.5	4	2.75	3
[1] 5	Silty sand	4.5	2	1	2.5	1.5	1	1.25	1
[1] 6	Sandy silt	12	1	8	7	6.5	7	6.75	6
[1] 7	Sandy silt	6	12	6	8	8	6	7.00	7
8	Sand	22	20	21	21	21	14	17.50	18
9	Sandy silt	13	11	13	12.33	13	9	11	9
10	Silty sand	17	17	18	17.33	18	10	14	15
[1] 11	Sandy silt	8	10	14	10.67	11	8	9.5	8
12	Silty sand	15	6	16.5	12.5	14	12	13	12.5
13	Silty sand	18	18	20	18.67	19	11	15	16
14	Sandy silt	19.5	14	16.5	16.67	17	20	18.50	20
15	Silty sand	21	21	22	21.33	22	23	22.50	23
16	Silty sand	23	22	23	22.67	23	18	20.50	22
17	Sandy silt	19.5	19	19	19.17	20	17	18.50	20
18	Silty mud	14	15	12	13.67	15	22	18.50	20
19	Silty sand	16	16	15	15.67	16	16	16.00	17
20	Silty mud	10	13	11	11.33	12	13	12.5	10.5
21	Silty mud	7	9	9	8.33	9	19	14	14
22	Silty mud	3	8	7	6	5	21	13	12.5
23	Silty mud	4.5	16	10	10.17	10	15	12.5	10.5
24	Sand	24	24	25	24.33	25	25	25	25
25	Sand	25	23	24	24.0	24	24	24	24

[1] Station selected

[2] Total extractable hydrocarbons determined by infrared spectrophotometry

TABLE A-11. Rankings of Stations in Sinclair Inlet Based on Metal and Organic Concentrations

Battelle Station Number	Sediment Type	RANK							
		Ag	Hg	Pb	Metal Mean	Metal Rank	IR [2]	Metal-IR Mean	Overall Rank
1	Sandy silt	9	18	16	14.33	16	16	16	16.5
2	Sandy silt	18	15	17	16.67	17	15	16	16.5
3	Silty mud	4	11	11	8.67	9	19	14	15
4	Silty mud	2	6	12	6.67	6.5	14	10.25	10
5	Sand	16	20	21	19	19	20	19.50	20.5
[1]6	Silty mud	1	7	8	5.33	3.5	7	5.25	4
[1]7	Sandy silt	3	3	2	2.67	1	2	1.50	1.5
[1]8	Silty mud	7	4	5	5.33	3.5	11	7.25	6
9	Silty mud	6	9	7	7.33	8	18	13	13
10	Sand	20	21	18	19.67	20	22	21	22
11	Silty mud	7	8	14	9.67	10	9	9.50	9
12	Silty mud	8	12	13	11	11	12	11.50	11.5
13	Sandy silt	17	16	6	13	14	13	13.50	14
[1]14	Silty mud	15	10	10	11.67	12.5	6	9.25	8
15	Sandy silt	14	13	15	14	15	8	11.5	11.5
16	Sand	21	19	20	20	21	17	19	18
[1]17	Silty mud	13	2	3	6	5	3	4	3
[1]18	Silty mud	11	5	4	6.67	6.5	5	5.75	5
[1]19	Sandy silt	10	1	1	4	2	1	1.50	1.5
[1]20	Silty mud	12	14	9	11.67	12.5	4	8.25	7
21	Sandy silt	19	17	19	18.33	18	21	19.50	20.5
22	Sand	24	25	25	24.67	25	10	17.50	18
23	Sand	22	22	22	22	22	24	23	23.5
24	Sand	23	23	23	23	23	23	23	23.5
25	Sand	25	24	24	24.33	24	25	24.50	25

[1] Station selected

[2] Total extractable hydrocarbons determined by infrared spectrophotometry

TABLE A-12. Rankings of Stations at Fourmile Rock - Elliot Bay Dump Site Vicinity based on Metal and Organic Concentrations.

Battelle Station Number	Sediment Type	RANK Ag	Hg	Pb	Metal Mean	Metal Rank	IR[3]	Metal-IR Mean	Overall Rank
1	Sand	22	22	22	22	22	24	23	24
2	Sand-gravel	25	25	25	25	25	25	25	25
3	Sand	21	19.5	11	17.17	20	9	14.5	13
4	Sand	23	24	23	23.33	23	8	15.5	15
5	Silty sand	20	6	8	11.33	12	21	16.5	17
6	Silty sand	18.5	8	7	11.17	11	10	10.5	11
7	Silty mud	13	19.5	20	17.5	21	18	19.5	21
8	Silty mud	11	10	14	11.67	13.5	20	16.75	18
[1] 9	Sandy silt	4	3	3	3.33	1	12	6.50	5
10	Sandy silt	7	2	2	3.67	2	14	8	8
[1] 11	Silty mud	9	21	21	17	19	23	21	23
[1] 12	Silty mud	5	15	17	12.33	15	3	9	9
13	Silty mud	14	17	19	16.67	18	22	20	22
14	Clayey mud	12	18	18	16	17	19	18	19
15	Silty mud	6	7	13	8.67	6	17	11.5	12
16	Silty mud	8	16	15	13	16	16	16	16
[1] 17	Silty sand	15	1	1	5.67	3	2	2.5	1
18	Silty mud	3	12	10	8.33	4.5	7	5.75	4
19	Sandy silt	10	13	12	11.67	14.5	15	14.75	14
[1] 20	Sandy silt	16	9	5	10	10	4	7	6
[2] 21	Silty sand	2	14	9	8.33	4.5	5	4.75	3
[1] 22	Silty mud	1	11	16	9.33	8.5	11	9.75	10
[1] 23	Silty sand	17	5	6	9.33	8.5	6	7.25	7
[1] 24	Silty sand	18.5	4	4	8.83	7	1	4	2
25	Sand	24	23	24	23.67	24	13	18.5	20

[1] Station selected
[2] Station passed over at sponsors request
[3] Total extractable hydrocarbons determined by infrared spectrophotometry

TABLE A-13. Rankings of Stations in Dabob Bay Based on Metal and Organic Concentrations

Battelle Station Number	Sediment Type	RANK Ag	Hg	Pb	Metal Mean	Metal Rank	IR[3]	Metal-IR Mean	Overall Rank
[1]1	Sandy silt	7.5	6.5	7	7	8	16	12	13.5
2	Silty mud	5	2	2	3	2	13	7.5	4.5
3	Silty mud	4	1	1	2	1	4	2.5	1
4	Silty mud	7.5	4	3	4.83	5	5	5	2
[1]5	Silty sand	11	10	10	10.33	10	19	14.5	18.5
[2]6	Silty sand	9	8	8	8.33	9	17.5	13.25	16
[1]7	Silty mud	6	9	5	6.67	7	15	11	9.5
14	Silty mud	1	3	6	3.33	3	14	8.5	8
[1]15	Silty mud	3	5	4	4	4	20	12	13.5
16	Silty mud	2	6.5	9	5.83	6	9	7.5	4.5
17	Sand	13	15.5	11	13.17	14	2	8	6.5
18	Silty sand	12	12.5	13	12.5	13	3	8	6.5
19	Silty sand	10	11	12	11	11	1	6	3
[2]20	Sand	17	12.5	19	16.17	18	11	14.5	18.5
21	Sand	17	17	14	16	17	6	11.5	11
[2]22	Sand	17	20	19	18.67	20	17.5	18.75	20
[2]23	Sand	17	18.5	19	18.17	19	7	13	15
[2]24	Sand	17	18.5	16.5	11.67	12	10	11	9.5
[2]25	Sand	17	14	16.5	15.83	15.5	8	11.75	12
[2]26	Sand	17	15.5	15	15.83	15.5	12	13.75	17

[1]Station selected

[2]Station passed over because of sediment type

[3]Total extractable hydrocarbons determined by infrared spectrophotometry

TABLE A-14. Rankings of Stations in Samish Bay Based on Metal and Organic Concentrations

Battelle Station Number	Sediment Type	RANK							
		Ag	Hg	Pb	Metal Mean	Metal Rank	IR[3]	Metal-IR Mean	Overall Rank
[1] 1	Silty mud	11	11	12	11.33	11	16	13.5	15
[2] 2	Silty mud	15	2	4	7	8	15	11.5	11
[1] 3	Silty sand	14	15	15	14.67	15	19	17	20
4	Silty mud	1	1	2	1.33	1	20	10.5	9.5
5	Sandy silt	6	4	7	5.67	5	12	8.5	7.5
[2] 6	Silty mud	9.5	10	10	9.83	10	17	13.5	15
[1] 7	Clayey mud	9.5	12	13	11.50	12	1	6.5	3.5
8	Silty mud	4	5	8	5.67	5	10	7.5	6
9	Silty mud	3	3	3	3	2	11	6.5	3.5
10	Silty mud	5	8	6	6.33	7	7	7	5
11	Silty sand	12.5	14	14	13.5	14	3	8.5	7.5
[2] 12	Silty sand	16	16	16	16	16	14	15	18
[2] 13	Sand	19	20	20	19.67	20	5	12.5	13
[2] 14	Sand	17	19	18	18	17.5	6	11.75	12
[2] 15	Sand	20	18	17	18.33	19	9	14	17
16	Silty mud	7	9	1	5.67	5	2	3.5	1.5
[2] 17	Sand	18	17	19	18	17.5	13	15.25	19
18	Silty mud	8	7	9	8	9	18	13.5	15
19	Silty mud	2	6	5	4.33	3	4	3.5	1.5
[1] 20	Sandy silt	12.5	13	11	12.17	13	8	10.5	9.5

[1] Station selected

[2] Station passed over because of sediment type

[3] Total extractable hydrocarbons determined by infrared spectrophotometry

TABLE A-15. Rankings of Stations in Sequim Bay Based on Metal and Organic Concentrations

Battelle Station Number	Sediment Type	RANK Ag	Hg	Pb	Metal Mean	Metal Rank	IR[3]	Metal-IR Mean	Overall Rank
1	Sand	17	18	17	17.33	17	1	9	7
2	Sandy silt	14	10	11.5	11.83	12	4	8	6
[2]3	Sand	19.5	19.5	19	19.33	20	6	13	14
[2]4	Sand	19.5	19.5	18	19.0	19	9	14	15
[2]5	Sandy silt	7	12	11.5	10.17	11	10	10.5	10
6	Sandy silt	2	13	7	7.33	7	2	4.5	2.5
[2]7	Sandy silt	4	8.5	13.5	8.67	8	15	11.5	11.5
8	Silty mud	5	1.5	3	3.17	2	13	7.5	5
9	Silty mud	9	8.5	9	8.83	9	11	10	8.5
10	Silty mud	10	1.5	2	4.50	4	5	4.5	2.5
[2]11	Sandy silt	15.5	14.5	16	15.33	15	14	14.5	16
[2]12	Silty sand	18	17	20	18.33	18	12	15	17.5
13	Silty sand	13	14.5	9	12.17	13	7	10	8.5
[1]14	Sandy silt	15.5	16	15	15.50	16	16	16	19.5
15	Silty mud	3	3	5	3.67	3	8	5.5	4
16	Sandy silt	12	4.5	13.5	10	10	20	15	17.5
[1]17	Silty mud	8	6	5	6.33	6	17	11.5	11.5
[1]18	Silty mud	6	4.5	5	5.17	5	19	12	13
19	Silty mud	1	7	1	3	1	3	2.5	1
[1]20	Sandy silt	11	11	9	14.67	14	18	16	19.5

[1] Station selected

[2] Station passed over because of sediment type

[3] Total extractable hydrocarbons determined by infrared spectrophotometry

TABLE A-16 Rankings of Stations in Case Inlet Based on Metal and Organic Concentrations

Battelle Station Number	Sediment Type	RANK							
		Ag	Hg	Pb	Metal Mean	Metal Rank	IR[3]	Metal-IR Mean	Overall Rank
1[1]	Sandy silt	3	4	5	4	2	9	5.5	4
2	Silty mud	9	5.5	11	8.50	8	10	9	7.5
3	Silty mud	14.5	5.5	8	9.33	9	12	10.5	10
4	Silty mud	5	15	9	9.67	10	8	9	7.5
5	Silty mud	2	11	7	6.67	5	4	4.5	2.5
6	Silty mud	1	1	2	1.33	1	6	3.5	1
7	Silty mud	4	14	6	8	7	18	12.5	13
8[2]	Silty mud	11	9	11	10.33	12	16	14	17
9	Silty mud	7	9	3	6.33	4	5	4.5	2.5
10	Silty mud	10	9	11	10	11	3	7	5
11[1]	Sandy silt	11	18	19	16	17	2	9.5	9
12	Silty mud	14.5	2.5	17	11.33	14	1	7.5	6
13	Silty mud	6	2.5	4	4.17	3	19	11	11
14	Silty mud	13	7	13	11	13	14	13.5	16
15[1]	Silty mud	16	12.5	15	14.5	16	13	14.5	18
16	Silty mud	8	12.5	1	7.17	6	17	11.5	12
17[1]	Silty mud	17	17	16	16.67	18	15	16.5	19
18	Silty mud	12	16	15	14.33	15	11	13	14.5
19[2]	Sand	20	20	20	20	20	20	20	20
20	Silty mud	18	19	18	18.33	19	7	13	14.5

[1]Station selected

[2]Station passed over because of sediment type

[3]Total extractable hydrocarbons determined by infrared spectrophotometry

TABLE A-17. Sediment Type Distribution among Stations Selected for Task 2

Bay	Number of Selected Stations			
	Silty sand	Sandy silt	Silty mud	Clayey mud
Bellingham	0	2	5	1
Elliot[1]	3	3	2	0
Everett	1	7	0	0
Sinclair	0	2	6	0
Urban Subtotal	4	14	13	1
Samish	1	1	1	1
Dabob	1	1	2	0
Sequim	0	2[2]	2	0
Case	0	2	2[2]	0
Nonurban Subtotal	2	6	7	1

[1] Dump site vicinity.

[2] A silty mud station from Case Inlet was dropped in order to add a sandy silt station which happened to come from Sequim Bay

TABLE A-18. Classification of Sediment Types Based on Grain Size used in Selections of Stations to be Resampled during Detailed Surveys. Modified from Sverdrup, Johnson and Fleming (1942)

Type	Grain-Size Distribution
Sand	>80% coarser than 62 microns
Silty-sand	>50% and <80% coarser than 62 microns
Sandy-silt	>50% coarser than 4 microns and >20% coarser than 62 microns
Silty-mud	>50% coarser than 4 microns and <20% coarser than 62 microns
Clayey-mud	<50% coarser than 4 microns

REFERENCE

Conover, W. J. 1971. Practical Nonparametric Statistics. Wiley and Sons, New York.

Sverdrup, H. U., M. W. Johnson, and R. H. Fleming. 1942. The Oceans. Prentice-Hall, Englewood Cliffs, New Jersey.

APPENDIX B

SEDIMENTARY CHARACTERISTICS

AND

CONTAMINANT LEVELS

	Page
GRAIN SIZE, METALS AND IR ANALYZED BY BATTELLE	B.1
METALS ANALYZED BY EPA	B.9
ORGANICS ANALYZED BY EPA	B.17

TABLE B-1. Results of Screening Surveys in Bellingham Bay, 8/2/83 to 8/5/84.

Station I.D.	% Water	% Volatile	Grain Size, Percent >2 mm	<2 mm >62 µm	<62 µm >4 µm	<4 µm	Metals Concentrations, µg/g Ag	Hg	Pb	I.R. ppm
1	46.60	3.74	0.00	1.48	64.48	34.04	0.125	0.283	13.5	216.95
2	59.36	10.72	0.20	3.16	68.70	27.95	0.125	0.124	13.2	510.31
3[1]	48.56	5.98	6.22	26.38	43.47	23.93	0.295	1.91	28.6	1095.70
4	56.59	7.09	3.06	18.59	53.19	25.17	0.382	2.60	47.8	1921.98
5	57.42	7.47	0.00	3.38	55.28	41.34	0.217	0.717	23.9	1282.10
6	49.56	9.91	0.00	2.37	65.25	32.38	0.200	0.755	20.5	630.17
7[2]	42.97	7.14	1.54	12.87	71.34	14.25	0.303	1.97	37.6	832.56
8	49.34	6.04	0.00	16.44	52.77	30.79	0.121	0.268	15.0	491.99
9	58.47	11.81	0.00	7.85	68.82	23.33	0.178	0.671	20.2	377.80
10[1]	63.02	17.45	1.37	38.07	42.63	17.93	0.111	0.317	11.8	1029.45
11	50.94	3.17	0.00	1.06	61.36	37.58	0.219	0.755	20.8	736.22
12	51.77	8.74	0.03	9.88	51.70	38.38	0.203	0.679	21.4	1098.28
13	40.19	4.20	19.17	24.48	37.44	18.91	0.076	0.170	10.1	151.35
14	58.95	7.16	0.00	1.96	49.35	48.70	0.200	0.434	22.7	237.54
15	63.07	7.75	1.18	1.94	77.72	19.16	0.263	0.623	23.7	427.48
16	63.39	11.51	13.67	3.51	58.02	24.80	0.231	0.457	21.5	457.99
17	51.41	5.88	0.00	1.05	56.40	42.55	0.155	0.306	16.9	297.00
18	15.61	1.20	0.00	98.89	0.25	0.86	<0.014	0.023	2.7	13.25
19	29.68	2.75	0.28	37.09	50.62	12.01	0.042	0.057	6.7	162.33
20	44.39	5.56	0.16	7.99	63.51	28.35	0.128	0.166	15.4	313.65
21[1]	33.09	2.56	26.50	35.53	28.19	9.78	0.064	0.099	10.7	220.33
22	47.53	4.26	0.00	7.68	60.41	31.91	0.162	0.317	16.9	240.06
23	65.41	6.40	0.00	26.19	18.58	55.23	0.241	0.623	24.7	539.52
24	57.01	7.84	0.00	4.96	63.49	31.55	0.212	0.604	21.1	913.40
25	52.24	7.20	0.18	6.43	72.47	20.92	0.190	0.830	21.2	324.83
26	61.28	13.18	2.60	48.99	31.73	16.68	0.522	1.79	158.3	243.90

[1] Metals values are the mean of a laboratory triplicate analysis.
[2] Metals values are the mean of a field sampling triplicate.

TABLE B-2. Results of Screening Surveys in Samish Bay, 8/6/83 to 8/9/84.

Station I.D.	% Water	% Volatile	Grain Size, Percent >2 mm	<2 mm >62 µm	<62 µm >4 µm	<4 µm	Metals Concentrations, µg/g Ag	Hg	Pb	I.R. ppm
1	46.63	4.88	0.00	12.13	61.07	26.80	0.079	0.109	14.7	49.33
2	56.97	5.91	2.71	2.93	68.45	25.91	0.053	0.162	18.8	61.24
3	43.23	3.79	0.00	52.55	30.87	16.58	0.061	0.068	8.9	38.70
4	58.77	6.31	0.00	3.33	58.63	38.04	0.137	0.166	20.2	26.87
5	50.00	6.58	0.00	27.27	49.91	22.82	0.108	0.154	16.9	60.90
6	47.07	4.86	0.00	4.80	63.26	31.93	0.084	0.117	15.3	48.99
7[1 2]	48.23	5.38	0.00	34.95	14.45	50.59	0.084	0.091	14.3	409.10
8	54.50	6.54	0.00	5.12	68.47	26.41	0.117	0.146	16.8	75.14
9	57.80	7.13	0.00	2.39	68.39	29.23	0.118	0.155	19.2	72.66
10	56.43	6.38	0.00	7.24	75.19	17.57	0.115	0.123	17.2	94.58
11	44.72	4.12	0.00	77.48	16.27	6.25	0.075	0.080	9.4	124.08
12	38.25	3.12	0.00	75.03	17.09	7.89	0.047	0.039	6.1	42.70
13	34.77	1.20	0.00	95.19	2.93	1.88	0.016	0.009	2.7	77.65
14	24.06	1.26	0.00	95.94	2.05	2.01	0.027	0.013	3.4	61.54
15	30.20	1.72	0.00	92.52	4.35	3.15	<0.014	0.021	3.6	49.67
16	53.13	5.71	1.09	9.42	64.28	25.21	0.106	0.118	22.7	174.50
17	55.42	6.20	0.00	93.97	3.51	2.52	0.019	0.033	3.3	66.51
18	23.82	1.05	0.00	6.57	67.10	26.33	0.105	0.125	16.2	29.54
19[1]	56.83	6.17	0.28	5.34	59.93	34.45	0.119	0.137	18.6	119.02
20	43.66	4.24	0.00	21.68	53.00	25.31	0.075	0.083	15.2	66.90

[1] Metals values are the mean of a laboratory triplicate analysis.
[2] Metals values are the mean of a field sampling triplicate.

TABLE B-3. Results of Screening Surveys in Port Gardner-Everett Harbor, 8/19/83 to 8/21/83.

Station I.D.	% Water	% Volatile	Grain Size, Percent >2 mm	<2 mm >62 µm	<62 µm >4 µm	<4 µm	Metals Concentrations, µg/g Ag	Hg	Pb	I.R. ppm
1[2]	66.73	26.54	3.30	32.41	49.92	14.36	0.321	0.176	43.6	4529.49
2[1]	70.05	19.87	4.47	22.59	59.86	13.07	0.302	0.312	58.7	4078.91
3	71.01	26.28	12.62	36.96	33.17	17.26	0.394	0.245	52.0	5587.62
4	69.86	23.36	4.12	41.53	41.85	12.50	0.523	0.245	59.8	4246.72
5	68.68	20.84	9.46	46.00	32.46	12.08	0.382	0.381	95.7	15989.91
6	47.95	8.51	2.41	41.89	37.11	18.58	0.289	0.612	31.7	848.84
7	63.97	22.51	21.29	29.69	37.04	11.99	0.342	0.133	37.2	1621.18
8	36.51	5.67	3.18	86.85	2.58	7.39	0.141	0.080	12.9	170.52
9	51.29	7.92	1.76	39.76	44.86	13.62	0.264	0.134	22.9	614.43
10	43.92	5.71	0.00	56.86	35.74	7.40	0.229	0.095	16.5	414.21
11[1]	47.95	6.15	0.00	42.98	27.83	29.19	0.337	0.136	20.5	586.32
12	43.80	4.06	4.41	56.26	26.18	13.15	0.254	0.188	17.8	274.52
13	32.33	2.92	0.37	62.38	26.10	11.15	0.197	0.091	15.7	231.67
14	54.95	5.18	1.68	45.25	36.10	16.98	0.183	0.128	17.8	144.46
15	38.48	4.26	2.60	61.85	23.82	11.73	0.162	0.078	12.3	68.06
16	30.60	2.58	0.00	79.45	12.62	7.92	0.081	0.037	8.5	103.92
17	42.24	4.46	0.00	32.33	36.57	31.10	0.183	0.081	15.9	148.41
18	57.89	6.05	0.00	6.36	58.12	35.51	0.261	0.127	28.4	100.71
19[1]	38.70	3.82	0.00	51.22	29.00	19.78	0.231	0.098	20.2	145.63
20	52.83	5.99	0.00	18.87	56.37	24.76	0.314	0.132	29.3	242.29
21	55.55	5.98	0.25	13.86	63.74	22.14	0.339	0.140	31.5	149.72
22	62.22	6.62	0.00	4.49	52.61	42.90	0.392	0.145	35.0	133.62
23	56.26	6.29	0.00	4.81	58.04	37.15	0.382	0.127	30.6	219.98
24	18.06	0.68	0.00	97.11	2.28	0.61	<0.014	0.006	4.3	4.45
25	19.95	1.14	0.00	99.37	0.12	0.51	<0.014	0.024	5.2	18.73

[1] Metals values are the mean of a laboratory triplicate analysis.
[2] Metals values are the mean of a field sampling triplicate.

TABLE B-4. Results of Screening Surveys in Sequim Bay, 8/15/83 to 8/16/83 and 9/17/83 to 9/18/83.

Station I.D.	% Water	% Volatile	Grain Size, Percent >2 mm	<2 mm >62 µm	<62 µm >4 µm	<4 µm	Metals Concentrations, µg/g Ag	Hg	Pb	I.R. ppm
1[1]	33.26	2.24	0.15	82.86	10.13	6.86	0.063	0.025	6.5	132.92
2	50.73	5.58	0.00	28.18	54.26	17.56	0.118	0.075	12.0	118.65
3	31.50	1.75	7.38	78.24	7.95	6.43	0.043	0.014	4.3	79.45
4	36.76	2.74	0.17	75.24	16.28	8.31	0.043	0.014	5.2	66.81
5	56.87	6.48	0.00	26.48	56.48	17.05	0.168	0.066	12.0	92.35
6	65.58	8.76	3.22	24.22	45.28	27.28	0.190	0.065	13.6	215.49
7	64.35	8.05	0.00	3.00	66.48	30.52	0.182	0.081	11.8	94.53
8	60.33	6.87	0.36	5.83	63.81	29.99	0.179	0.111	13.9	86.24
9	59.56	6.53	0.77	18.69	51.31	29.23	0.157	0.081	13.0	94.88
10	64.72	6.96	0.25	7.77	59.79	32.19	0.154	0.111	14.7	155.02
11	53.09	4.74	0.72	36.83	42.60	19.84	0.107	0.061	8.2	72.69
12	36.74	2.63	0.00	72.78	17.35	9.88	0.060	0.027	4.1	54.43
13	53.99	4.84	0.00	50.06	23.40	26.54	0.123	0.061	13.0	118.13
14	47.46	4.43	0.00	41.80	35.37	22.83	0.107	0.051	8.9	50.34
15	62.40	6.86	0.00	15.07	53.32	31.60	0.186	0.096	13.8	133.56
16	50.36	5.14	0.00	26.48	49.21	24.31	0.135	0.091	11.8	30.22
17	53.57	6.06	0.46	11.48	62.29	25.77	0.160	0.090	13.8	48.12
18	61.44	6.65	0.28	13.73	63.30	22.70	0.176	0.091	13.8	48.83
19	66.14	7.83	0.00	10.84	60.07	29.08	0.217	0.086	15.1	196.40
20	50.62	5.77	0.00	21.00	50.66	28.33	0.142	0.071	13.0	45.08

[1] Metals values are the mean of a laboratory triplicate analysis.
[2] Metals values are the mean of a field sampling triplicate.

TABLE B-5. Results of Screening Surveys in Fourmile Rock - Elliott Bay Dump Site Vicinity, 8/23/83 to 8/26/83.

Station I.D.	% Water	% Volatile	Grain Size, Percent >2 mm	<2 mm >62 µm	<62 µm >4 µm	<4 µm	Metals Concentrations, µg/g Ag	Hg	Pb	I.R. ppm
1[2]	18.17	1.23	2.88	84.21	9.70	3.20	0.155	0.104	27.8	22.96
2	23.73	3.44	36 22	13.30	29.09	27.38	0.032	0.076	11.3.	19.46
3	35.99	4.87	3.48	82.23	9.26	5.03	0.262	0.243	57.5	222.34
4	14.97	0.84	22.72	62.57	7.94	6.77	0.120	0.085	20.4	193.51
5[1]	40.02	3.48	0.12	67.49	20.86	11.54	0.373	0.840	79.7	83.69
6	36.12	3.31	6.35	63.30	17.76	12.59	0.479	0.575	83.7	210.18
7	61.18	5.63	0.00	11.62	55.74	32.64	0.592	0.243	40.1	197.53
8	57.12	6.14	0.00	6.99	58.60	34.41	0.616	0.419	52.4	138.71
9	51.92	5.38	2.67	41.12	38.26	17.94	0.725	2.080	257.9	234.82
10	46.19	9.16	3.90	38.22	40.91	16.96	0.637	2.490	310.3	171.83
11	62.93	7.23	0.00	3.68	59.63	36.69	0.621	0.235	38.5	59.54
12	60.09	6.88	0.00	10.16	62.20	27.63	0.667	0.306	49.8	760.74
13[1]	67.50	7.45	0.00	7.00	72.66	20.34	0.584	0.266	45.0	103.97
14	62.52	7.46	0.00	7.39	32.11	60.50	0.614	0.247	46.2	181.06
15	57.96	6.52	0.00	18.18	51.75	30.07	0.663	0.696	54.0	210.75
16	58.32	6.81	0.00	14.09	49.16	36.75	0.636	0.275	51.4	215.40
17	42.16	4.61	0.63	58.90	28.03	12.44	0.509	4.930	388.4	610.20
18	62.10	7.38	0.00	2.75	58.89	38.37	0.734	0.321	61.7	484.93
19	56.14	5.71	0.00	26.54	46.87	26.58	0.621	0.315	55.3	205.40
20	47.22	4.54	0.00	37.88	44.24	17.88	0.507	0.547	86.9	491.64
21	58.78	6.64	0.00	13.12	55.09	31.79	0.741	0.313	65.3	499.73
22	55.33	5.81	0.00	13.88	57.64	28.48	0.757	0.370	50.1	254.53
23	48.17	5.11	0.76	53.61	27.84	17.79	0.493	1.050	85.9	391.41
24	38.24	3.71	1.65	75.02	15.28	8.05	0.479	1.460	143.8	845.37
25[1]	23.58	1.11	1.99	81.54	11.10	5.38	0.104	0.096	16.6	127.60

[1] Metals values are the mean of a laboratory triplicate analysis.
[2] Metals values are the mean of a field sampling triplicate.

TABLE B-6. Results of Screening Surveys in Sinclair Inlet, 8/30/83 to 8/31/83.

Station I.D.	% Water	% Volatile	Grain Size, Percent >2 mm	<2 mm >62 µm	<62 µm >4 µm	<4 µm	Metals Concentrations, µg/g Ag	Hg	Pb	I.R. ppm
1[2]	53.32	7.47	0.00	30.52	47.49	21.99	1.580	0.510	66.5	387.51
2	51.31	7.28	0.00	21.10	49.41	29.48	0.957	0.619	62.4	377.31
3	61.02	7.13	0.00	1.46	67.59	30.95	1.960	1.080	112.8	292.97
4	58.97	7.10	0.00	2.36	55.17	42.47	2.290	1.710	110.2	532.29
5	26.21	1.65	0.00	91.29	5.70	3.00	1.110	0.255	30.4	149.41
6	55.89	6.87	0.00	9.17	55.16	35.67	2.960	1.370	125.4	961.41
7	48.87	5.25	0.00	47.72	42.29	9.99	2.190	2.500	279.5	1655.00
8	61.72	7.96	1.39	3.20	58.36	37.04	1.880	2.280	155.1	678.71
9	62.10	9.02	0.66	3.14	66.26	29.94	1.760	1.140	130.3	308.05
10	28.95	1.84	0.55	80.55	13.63	5.27	0.449	0.232	53.7	75.75
11	61.21	7.87	0.00	4.35	66.04	29.61	1.660	1.210	105.7	767.34
12	64.34	7.21	3.65	9.34	65.12	21.89	1.610	1.070	108.0	679.98
13[1]	43.65	2.20	0.16	19.64	60.74	19.45	1.020	0.610	144.0	402.87
14	62.99	4.79	0.53	6.59	66.19	26.69	1.200	1.140	115.4	1241.26
15	50.71	6.47	0.62	20.28	51.51	27.58	1.230	0.990	103.4	683.97
16	24.31	1.16	0.19	86.84	7.50	5.47	0.436	0.303	33.3	178.76
17	56.61	6.88	0.83	10.29	60.07	28.82	1.340	4.170	215.1	1454.99
18	57.50	5.04	0.83	12.48	53.36	33.36	1.430	2.050	158.1	1303.01
19	39.48	16.86	1.81	38.52	40.42	19.24	1.440	4.540	308.8	1974.52
20	60.60	6.70	0.00	17.55	54.29	28.16	1.370	0.890	117.0	1531.70
21	52.05	5.32	10.11	28.16	40.82	20.91	0.560	0.534	50.4	179.29
22	23.62	1.01	0.00	92.35	6.32	1.33	0.053	0.046	9.4	360.16
23	24.95	0.80	0.11	90.32	5.85	3.72	0.154	0.159	18.7	49.31
24	25.87	0.72	3.54	86.58	5.45	4.43	0.089	0.101	14.5	57.01
25	21.09	0.89	0.14	96.00	1.81	2.05	<0.014	0.058	11.0	28.10

[1] Metals values are the mean of a laboratory triplicate analysis.
[2] Metals values are the mean of a field sampling triplicate.

TABLE B-7. Results of Screening Surveys in Dabob Bay, 9/8/83 to 9/10/83.

Station I.D.	% Water	% Volatile	Grain Size, Percent >2 mm	<2 mm >62 μm	<62 μm >4 μm	<4 μm	Metals Concentrations, μg/g Ag	Hg	Pb	I.R. ppm
1	55.56	5.76	0.00	20.46	46.13	33.41	0.109	0.089	15.0	24.80
2	69.33	7.49	0.00	1.95	61.57	36.48	0.148	0.112	21.8	36.35
3	68.39	7.04	0.00	1.38	55.69	42.93	0.159	0.120	23.1	71.05
4	65.37	6.48	0.00	9.01	48.41	42.58	0.109	0.094	20.6	53.57
5	38.84	3.84	1.82	65.76	16.90	15.53	0.036	0.056	8.3	17.74
6[1]	47.86	4.31	11.42	42.95	27.45	18.18	0.094	0.087	14.8	21.08
7	55.64	5.74	0.00	16.55	51.38	32.06	0.124	0.079	15.7	24.68
14[1]	70.86	8.45	0.00	3.17	62.80	34.03	0.239	0.110	15.4	37.99
15	65.39	7.95	0.00	5.55	63.67	30.78	0.183	0.091	16.3	21.27
16	61.39	8.09	0.00	2.23	68.48	29.28	0.204	0.089	11.3	38.49
17[2]	24.54	1.92	14.34	76.21	6.26	3.18	0.016	0.016	4.1	33.16
18	29.47	1.94	0.00	69.61	22.28	8.10	0.028	0.020	3.3	32.37
19	33.74	2.72	0.00	57.46	35.83	6.71	0.042	0.025	3.9	45.17
20	21.81	1.03	0.19	94.66	2.48	2.68	<0.014	0.020	1.8	18.57
21	28.21	1.58	0.06	86.19	8.86	4.88	<0.014	0.012	3.0	20.89
22	19.21	0.79	0.00	97.56	1.07	1.37	<0.014	<0.006	1.8	13.60
23	19.40	0.54	0.03	97.76	0.69	1.52	<0.014	0.008	1.8	18.56
24[1]	20.48	0.62	0.00	96.75	1.69	1.55	<0.014	0.008	2.4	18.66
25	20.10	0.61	0.00	97.32	2.00	0.68	<0.014	0.019	2.4	18.56
26	21.34	0.60	0.00	95.55	2.50	1.96	<0.014	0.016	2.7	18.43

[1] Metals values are the mean of a laboratory triplicate analysis.
[2] Metals values are the mean of a field sampling triplicate.

TABLE B-8. Results of Screening Surveys in Case Inlet, 9/14/83 to 9/15/83.

Station I.D.	% Water	% Volatile	Grain Size, Percent >2 mm	<2 mm >62 µm	<62 µm >4 µm	<4 µm	Metals Concentrations, µg/g Ag	Hg	Pb	I.R. ppm
1[2]	67.10	7.35	0.12	29.58	51.83	18.47	0.402	0.183	29.6	141.52
2	53.89	5.30	1.07	5.14	60.94	32.84	0.328	0.181	26.9	90.02
3	59.39	6.77	0.15	4.25	64.49	31.11	0.269	0.181	27.7	93.67
4	65.46	7.24	0.06	2.99	70.62	26.33	0.379	0.167	27.3	161.58
5	66.88	7.53	0.00	1.31	61.28	37.41	0.420	0.176	29.3	245.98
6	74.67	7.22	0.00	0.62	67.79	31.59	0.447	0.215	31.6	302.53
7[1]	65.37	7.22	0.00	2.45	69.85	27.70	0.382	0.168	29.5	76.23
8	69.05	7.96	0.65	4.16	66.59	28.59	0.311	0.180	26.9	109.05
9	68.21	8.04	0.00	1.06	66.42	32.51	0.343	0.180	31.0	255.68
10	66.21	7.53	0.00	2.87	63.40	33.73	0.322	0.180	26.9	243.59
11[1]	52.35	4.31	0.27	42.57	43.84	13.32	0.134	0.089	14.0	189.30
12	70.04	8.01	0.00	3.34	67.47	29.19	0.269	0.190	22.2	332.64
13	67.73	7.46	0.00	5.45	65.26	29.29	0.349	0.190	30.0	79.39
14	71.65	11.22	0.00	2.02	75.69	22.28	0.273	0.185	24.7	119.79
15	71.19	8.07	0.00	4.13	70.84	25.04	0.267	0.170	23.4	117.95
16	68.64	7.91	0.00	3.19	68.81	28.00	0.337	0.170	31.8	99.61
17	69.60	8.74	0.00	3.66	67.56	28.79	0.240	0.129	22.6	107.65
18	70.65	8.72	0.00	4.13	68.47	27.40	0.280	0.134	23.8	130.63
19	30.96	1.89	6.58	75.80	10.98	6.63	0.037	0.042	4.7	32.17
20[1]	62.65	7.34	0.00	11.02	69.31	19.66	0.188	0.080	14.3	159.81

[1] Metals values are the mean of a laboratory triplicate analysis.
[2] Metals values are the mean of a field sampling triplicate.

TABLE B-9. Metals Concentrations in Sediments Collected from Bellingham Bay (μg/g Dry Weight, Analyzed by EPA)

Station Number	Date Sampled	As	Cd	Cr	Cu	Pb	Hg	Ni	Ag	Zn
B-1 S-3	4/23/84	8.5	0.98	68	400	46	1.35	73.5	0.29	102
B-1 S-4	4/23/84	7.9	1.2	81	72	37	1.69	89.6	0.47	135
B-1 S-5	4/23/84	11.6	0.55	86	69	13	0.81	111.2	0.24	111
B-1 S-7	4/23/84	8.9	0.88	82	72	18	0.97	105.1	0.29	117
B-1 S-11	4/30/84	10.8	0.31	63	79	13	0.54	118	0.09	113
B-1 S-12	4/30/84	6.9	0.50	57	61	11	0.64	72	0.13	97
B-1 S-23	4/30/84	10.8	0.33	66	62	10	0.54	102	0.15	114
B-1 S-24	4/30/84	8.5	0.36	69	67	8	0.59	117	0.13	115

TABLE B-10. Metals Concentrations in Sediments Collected from Samish Bay (μg/g Dry Weight, Analyzed by EPA)

Station Number	Date Sampled	As	Cd	Cr	Cu	Pb	Hg	Ni	Ag	Zn
B-2 S-1	4/24/84	4.5	0.14	32	33	5	0.080	20.2	0.09	74
B-2 S-3	4/24/84	8.0	0.21	43	40	5	0.073	27.5	0.10	75
B-2 S-7	4/24/84	4.6	0.17	35	33	6	0.069	19.7	0.09	76
B-2 S-20	4/24/84	5.5	0.14	40	40	6	0.063	21.8	0.12	81

TABLE B-11. Metals Concentrations in Sediments Collected from Port Gardner - Everett Harbor (μg/g Dry Weight, Analyzed by EPA)

Station Number	Date Sampled	As	Cd	Cr	Cu	Pb	Hg	Ni	Ag	Zn
B-4 S-1	5/1/84	12.2	1.9	50	85	38	0.21	44	0.28	313
B-4 S-2	5/1/84	9.9	0.83	54	81	25	0.20	48	0.16	141
B-4 S-3	5/1/84	14.1	1.5	48	82	47	0.23	43	0.31	237
B-4 S-4	5/1/84	18.1	1.1	67	111	82	0.26	45	0.37	1074
B-4 S-5	5/7/84	8.5	3.1	62	101	40	0.18	51	0.45	249
B-4 S-6	5/7/84	6.1	1.1	34	49	25	0.20	34	0.17	78
B-4 S-7	5/7/84	7.7	1.9	53	79	34	0.23	50	0.35	132
B-4 S-11	5/7/84	6.8	0.9	48	70	15	0.12	46	0.26	88

TABLE B-12. Metals Concentrations in Sediments Collected from Elliott Bay - Fourmile Rock Dump Site Vicinity (μg/g Dry Weight, Analyzed by EPA)

Station Number	Date Sampled	As	Cd	Cr	Cu	Pb	Hg	Ni	Ag	Zn
B-5 S-9	5/8/84	12	1.0	41	112	245	1.69	33	0.44	434
B-5 S-10	5/8/84	11	2.0	41	165	607	1.08	33	0.46	687
B-5 S-12	5/8/84	7.2	0.4	43	106	35	0.28	37	0.75	120
B-5 S-17	5/8/84	14	0.7	40	101	100	0.58	26	0.50	192
B-5 S-20	5/15/84	31	0.7	49	152	176	0.78	24	0.44	460
B-5 S-22	5/15/84	9	0.5	38	89	51	0.51	27	0.13	116
B-5 S-23	5/15/84	6.6	0.2	25	39	29	0.16	18	0.21	69
B-5 S-24	5/15/84	5.7	0.2	22	20	23	0.16	17	0.23	44

TABLE B-13. Metals Concentrations in Sediments Collected from Sinclair Inlet (μg/g Dry Weight, Analyzed by EPA)

Station Number	Date Sampled	As	Cd	Cr	Cu	Pb	Hg	Ni	Ag	Zn
B-6 S-6	5/16/84	9	3.6	93	205	132	1.38	44	2.9	330
B-6 S-7	5/16/84	67	1.1	79	807	233	1.28	39	2.0	873
B-6 S-8	5/16/84	14	0.9	71	231	151	1.21	45	1.8	311
B-6 S-14	5/16/84	14	1.2	65	299	175	1.57	43	0.07	272
B-6 S-17	5/21/84	39	1.8	129	240	194	0.70	43	1.5	328
B-6 S-18	5/21/84	15	1.2	73	170	131	0.72	39	1.5	227
B-6 S-19	5/21/84	25	2.3	80	293	360	2.07	45	1.0	343
B-6 S-20	5/21/84	14	2.0	86	198	163	1.64	44	2.5	235

TABLE B-14. Metals Concentrations in Sediments Collected from Dabob Bay (μg/g Dry Weight, Analyzed by EPA)

Station Number	Date Sampled	As	Cd	Cr	Cu	Pb	Hg	Ni	Ag	Zn
B-7 S-1	5/22/84	1.9	0.1	49	28	0.4	0.016	27	0.6	72
B-7 S-5	5/22/84	2.1	0.1	51	33	0.1μ	0.022	30	0.2	77
B-7 S-7	5/22/84	3.4	0.2	60	50	5.6	0.029	33	0.9	86
B-7 S-15	5/22/84	5.6	0.4	76	74	9.9	0.047	46	2.3	102

TABLE B-15. Metals Concentrations in Sediments Collected from Case Inlet (μg/g Dry Weight, Analyzed by EPA)

Station Number	Date Sampled	As	Cd	Cr	Cu	Pb	Hg	Ni	Ag	Zn
B-8 S-1	5/29/84	8.2	0.7	38	56	23	0.12	21	0.21	82
B-8 S-11	5/29/84	6.9	0.6	41	30	9.3	0.054	22	0.17	57
B-8 S-15	5/29/84	6.5	1.7	57	59	19	0.11	33	0.15	98
B-8 S-17	5/29/84	8.1	1.9	57	52	13	0.082	31	0.21	84

TABLE B-16. Metals Concentrations in Sediments Collected from Sequim Bay (μg/g Dry Weight, Analyzed by EPA)

Station Number	Date Sampled	As	Cd	Cr	Cu	Pb	Hg	Ni	Ag	Zn
B-3 S-14	5/29/84	5.6	0.9	60	43	6.8	0.041	37	0.17	76
B-3 S-17	5/29/84	7.3	0.9	67	48	9.0	0.068	41	0.11	88
B-3 S-18	5/29/84	6.9	1.1	66	48	8.5	0.060	39	0.14	85
B-3 S-20	5/29/84	6.9	0.9	65	44	9.0	0.055	38	0.10	83

TABLE B-17. Concentrations of Priority Pollutants in Sediments Sampled from Bellingham Bay 4/23/84, µg/kg dry weight

Station	B-1 S-3	B-1 S-4	B-1 S-5	B-1 S-7
BASE/NEUTRAL COMPOUNDS				
acenaphthene		150		110
fluoranthene	710	1400	480	1500
naphthalene	220	370	260	290
bis(2-ethylhexyl) phthalate	390	290	260	310
butyl benzyl phthalate				
di-n-octyl phthalate				590
benzo(a)anthracene	250	430		700
benzo(a)pyrene				
benzo(k)fluoranthene and/or benzo(b)fluoranthene				770
chrysene	250	540		820
acenaphthylene				
anthracene		110		280
benzo(ghi)perylene				
fluorene		210		150
phenanthrene	240	570	210	880
dibenzo(a,h)anthracene				
indeno(1,2,3-cd)pyrene				
pyrene	620	1100	390	1300
ACID COMPOUNDS				
phenol				
VOLATILES				
benzene		5m		5m
chloroform				
1,1 dichloroethylene				
ethylbenzene		5m		
tetrachloroethylene		5m		5m
toluene		11	5.2m	5m
trichloroethylene		5m		

"m" indicates that a concentration falls between the detection level and the quantitation level for that compound

TABLE B-18. Concentrations of Priority Pollutants in Sediments Sampled from Bellingham Bay 4/30/84, µg/kg dry weight

Station	B-1 S-11	B-1 S-12	B-1 S-23	B-1 S-24
BASE/NEUTRAL COMPOUNDS				
acenaphthene	20m			
fluoranthene	550	200	200	
naphthalene	91	100	95	140
bis(2-ethylhexyl) phthalate				
butyl benzyl phthalate				
di-n-octyl phthalate			300	
benzo(a)anthracene	150	80		
benzo(a)pyrene				
benzo(k)fluoranthene and/or benzo(b)fluoranthene	190			
chrysene	170	93		
acenaphthylene				
anthracene	130	38		
benzo(ghi)perylene				
fluorene	32	66		
phenanthrene	170	170	110	230
dibenzo(a,h)anthracene				
indeno(1,2,3-cd)pyrene				
pyrene	380	230	180	180
ACID COMPOUNDS				
phenol				
VOLATILES				
benzene				
chloroform				
1,1 dichloroethylene	10m			
ethylbenzene				
tetrachloroethylene				10m
toluene				
trichloroethylene				

"m" indicates that a concentration falls between the detection level and the quantitation level for that compound

TABLE B-19. Concentrations of Priority Pollutants in Sediments Sampled from Port Gardner - Everett Harbor 5/1/84, µg/kg dry weight

Station	B-4 S-1	B-4 S-2	B-4 S-3	B-4 S-4
BASE/NEUTRAL COMPOUNDS				
acenaphthene	370	110	280	3300
fluoranthene	4800	770	830	4100
naphthalene	1300	750	1800	5900
bis(2-ethylhexyl) phthalate				
butyl benzyl phthalate				440
di-n-octyl phthalate			60	
benzo(a)anthracene	810	160		370
benzo(a)pyrene	250			
benzo(k)fluoranthene and/or benzo(b)fluoranthene	620	150		310
chrysene	650	160	210	340
acenaphthylene				770
anthracene	700	27	110	410
benzo(ghi)perylene				
fluorene	410	140	290	2100
phenanthrene	1900	380	970	4700
dibenzo(a,h)anthracene				
indeno(1,2,3-cd)pyrene				
pyrene	2500	510	880	2100
ACID COMPOUNDS				
phenol	250	190		1400
VOLATILES				
benzene				
chloroform				18m
1,1 dichloroethylene				
ethylbenzene				18m
tetrachloroethylene				
toluene				
trichloroethylene				

"m" indicates that a concentration falls between the detection level and the quantitation level for that compound

TABLE B-20. Concentration of Priority Pollutants in Sediments Sampled from Port Gardner - Everett Harbor 5/7/85, µg/kg dry weight

Station	B-4 S-5	B-4 S-6	B-4 S-7	B-4 S-11
BASE/NEUTRAL COMPOUNDS				
acenaphthene	240	120	480	
fluoranthene	1800	790	1400	200
naphthalene	590	790	1400	
bis(2-ethylhexyl) phthalate	830	190	290	870
butyl benzyl phthalate				
di-n-octyl phthalate				
benzo(a)anthracene	910		540	
benzo(a)pyrene				
benzo(k)fluoranthene and/or benzo(b)fluoranthene	1000		460	
chrysene	750		460	
acenaphthylene			120	
anthracene	890		480	
benzo(ghi)perylene				
fluorene	250		400	
phenanthrene		630	1600	370
dibenzo(a,h)anthracene				
indeno(1,2,3-cd)pyrene				
pyrene	1500	630	1600	200
ACID COMPOUNDS				
phenol				
VOLATILES				
benzene				
chloroform				
1,1 dichloroethylene				
ethylbenzene				
tetrachloroethylene				
toluene				
trichloroethylene				

"m" indicates that a concentration falls between the detection level and the quantitation level for that compound

TABLE B-21. Concentrations of Priority Pollutants in Sediments Sampled from Fourmile Rock - Elliott Bay Dump Site Vicinity 5/8/84, µg/kg dry weight

Station	B-5 S-9	B-5 S-10	B-5 S-12	B-5 S-17
BASE/NEUTRAL COMPOUNDS				
acenaphthene		530		
fluoranthene	610	2300	220	
naphthalene		420		
bis(2-ethylhexyl) phthalate	310		530	
butyl benzyl phthalate				
di-n-octyl phthalate				
benzo(a)anthracene	350	1400		
benzo(a)pyrene		1400		
benzo(k)fluoranthene and/or benzo(b)fluoranthene	490	2200		
chrysene	370	1500		
acenaphthylene				
anthracene		460		
benzo(ghi)perylene				
fluorene		490		
phenanthrene	300	2100	210	
dibenzo(a,h)anthracene				
indeno(1,2,3-cd)pyrene				
pyrene	1100	3400	300	
ACID COMPOUNDS				
phenol				
VOLATILES				
benzene				
chloroform				
1,1 dichloroethylene				
ethylbenzene				
tetrachloroethylene				
toluene				
trichloroethylene				

"m" indicates that a concentration falls between the detection level and the quantitation level for that compound

TABLE B-22. Concentrations of Priority Pollutants in Sediments Sampled from Fourmile Rock - Elliott Bay Dump Site Vicinity 5/15/84, µg/kg dry weight

Station	B-5 S-20	B-5 S-22	B-5 S-23	B-5 S-24
BASE/NEUTRAL COMPOUNDS				
acenaphthene		100m		100m
fluoranthene	820	370	240	190
naphthalene	120	100	100m	100m
bis(2-ethylhexyl) phthalate		210		100m
butyl benzyl phthalate				
di-n-octyl phthalate				
benzo(a)anthracene	690	320		150
benzo(a)pyrene		200		140
benzo(k)fluoranthene and/or benzo(b)fluoranthene	700	370		240
chrysene	560	220		140
acenaphthylene				100m
anthracene	180	100m		100m
benzo(ghi)perylene				400m
fluorene		100m		100m
phenanthrene	480	190		200
dibenzo(a,h)anthracene				400m
indeno(1,2,3-cd)pyrene				400m
pyrene	1400	550	670	300
ACID COMPOUNDS				
phenol	100m		100m	120
VOLATILES				
benzene				
chloroform				
1,1 dichloroethylene				
ethylbenzene				
tetrachloroethylene				
toluene				
trichloroethylene				

"m" indicates that a concentration falls between the detection level and the quantitation level for that compound

TABLE B-23. Concentrations of Priority Pollutants in Sediments Sampled from Sinclair Inlet 5/16/84, μg/kg dry weight

Station	B-5 S-5	B-5 S-7	B-6 S-8	B-6 S-14
BASE/NEUTRAL COMPOUNDS				
acenaphthene		200m		
fluoranthene	200	1300	490	550
naphthalene	200m	200m	200m	
bis(2-ethylhexyl) phthalate	940	420	380	740
butyl benzyl phthalate				
di-n-octyl phthalate				
benzo(a)anthracene	200m	1000	380	490
benzo(a)pyrene	350	1100	360	480
benzo(k)fluoranthene and/or benzo(b)fluoranthene	570	1600	590	980
chrysene	200m	1000	340	510
acenaphthylene				
anthracene		580		
benzo(ghi)perylene		800m		
fluorene		200m		
phenanthrene	150	1200	200m	520
dibenzo(a,h)anthracene				
indeno(1,2,3-cd)pyrene		800m		
pyrene	580	1800	570	1000
ACID COMPOUNDS				
phenol	200m		220	
VOLATILES				
benzene				
chloroform				
1,1 dichloroethylene				
ethylbenzene				
tetrachloroethylene				
toluene				
trichloroethylene				

"m" indicates that a concentration falls between the detection level and the quantitation level for that compound

TABLE B-24. Concentrations of Priority Pollutants in Sediments Sampled from Sinclair Inlet 5/21/84, µg/kg dry weight

Station	B-5 S-17	B-6 S-18	B-6 S-19	B-6 S-20
BASE/NEUTRAL COMPOUNDS				
acenaphthene				1200
fluoranthene	520	640	200	5200
naphthalene		57		1200
bis(2-ethylhexyl) phthalate				
butyl benzyl phthalate				
di-n-octyl phthalate				
benzo(a)anthracene	350	550	230	1900
benzo(a)pyrene	380	220		1100
benzo(k)fluoranthene and/or benzo(b)fluoranthene	980	630		1900
chrysene	370	450	190	2000
acenaphthylene				
anthracene		200		
benzo(ghi)perylene				1000
fluorene				980
phenanthrene	1200	510	110	8900
dibenzo(a,h)anthracene				
indeno(1,2,3-cd)pyrene				640
pyrene	620	680	330	6400
ACID COMPOUNDS				
phenol				
VOLATILES				
benzene				
chloroform				
1,1 dichloroethylene				
ethylbenzene				
tetrachloroethylene				
toluene				
trichloroethylene				

"m" indicates that a concentration falls between the detection level and the quantitation level for that compound

TABLE B-25. Concentrations of Organic Compounds Found in Sediments from Four Baseline Bays in Puget Sound, Collected 4/23/84 through 5/29/84, µg/kg Dry Weight.

Embayment	Case Inlet				Dabob Bay				Samish Bay				Sequim Bay			
Station	1	11	15	17	1	5	7	15	1	3	7	20	14	17	18	20
PRIORITY POLLUTANTS																
Volatiles																
1,1-dichoroethylene										14						
Base/Neutral Compounds																
fluoranthene									76	97	68					
bis(2-ethyl hexyl)phthalate									2,800	340	180	740				
di-n-octyl phthalate									69	160		100				
phenanthrene									170							
pyrene									88	120						
Acid Compounds																
phenol	560															
HAZARDOUS SUBSTANCES																
carbon disulfide									7.8	35						
2-hexanone										50						
TENATIVELY IDENTIFIED																
methane, thiobis-	630															
disulfide, dimethyl-	60															

TABLE B-26. PCB Concentrations in Sediment from Four Urban and Four Baseline Bays in Puget Sound Collected 4/23/84 through 5/29/84, µg/kg dry weight.

Station Location	Battelle Number	PCB 1254 µg/kg	PCB 1260 µg/kg
Bellingham Bay	B-1 S-3	74	20µ*
	B-1 S-4	54	20µ
	B-1 S-5	27	20µ
	B-1 S-7	31	20µ
	B-1 S-11	54	20µ
	B-1 S-12	53	20µ
	B-1 S-23	20µ	20µ
	B-1 S-24	20µ	20µ
Fourmile Rock-Elliott Bay Dump Site Vicinity	B-5 S-9	273	57
	B-5 S-10	245	34
	B-5 S-12	78	20µ
	B-5 S-17	501	145
	B-5 S-20	640	20µ
	B-5 S-22	608	79
	B-5 S-23	148	20µ**
	B-5 S-24	59	20m
Port Gardner-Everett Harbor	B-4 S-1	445	20µ
	B-4 S-2	74	20m
	B-4 S-3	485	31
	B-4 S-4	800	165
	B-4 S-5	352	42
	B-4 S-6	114	20m
	B-4 S-7	130	25
	B-4 S-11	134	37
Sinclair Inlet	B-6 S-6	1080	173
	B-6 S-7	431	157
	B-6 S-8	507	139
	B-6 S-14	1210	462
	B-6 S-17	400	430
	B-6 S-18	200	280
	B-6 S-19	320	380
	B-6 S-20	480	260
Case Inlet	B-8 S-1	20µ	20µ
	B-8 S-11	20µ	20µ
	B-8 S-15	20µ	20µ
	B-8 S-17	20µ	20µ
Dabob Bay	B-7 S-1	20µ	20µ
	B-7 S-5	20µ	20µ
	B-7 S-7	20µ	20µ
	B-7 S-15	20µ	20µ
Samish Bay	B-2 S-1	20µ	20µ
	B-2 S-3	20µ	20µ
	B-2 S-7	20µ	20µ
	B-2 S-20	20µ	20µ
Sequim Bay	B-3 S-14	20µ	20µ
	B-3 S-17	20µ	20µ
	B-3 S-18	20µ	20µ
	B-3 S-20	20µ	20µ

* "µ" Denotes concentration is less than detection limit

** "m" Indicates that a concentration falls between the detection level and the quantitation level for that compound.

APPENDIX C

AMPHIPOD BIOASSAY

	Page
SCREENING SURVEY (1983) RESULTS	C.1
DETAILED SURVEY (1984) RESULTS	C.20
REFERENCE TOXICANT DATA	C.29

TABLE C-1. Responses of the Marine Amphipod, *Rhepoxynius abronius*, to Sediments Collected from Bellingham Bay 8/2/83 through 8/5/83

Sampling Area	Collection Date	Battelle Sample No.	EPA Sample Number	Assay Number	Amphipod Responses[a]: No. of Amphipods Out of Sediment	Amphipod Survival: No. of Survivors	Amphipod Survival: (%)	No. of Surviving Amphipods not Reburying	Chemical Characteristics of Sediments: pH	Eh(mv)	Interstitial Water S°/oo
BELLINGHAM BAY	8/2/83	1-1-1	31015	1	0	18	90	0	7.18	144	30
					-	20	100	0			
	8/3/83	1-2-1	31031		0	19	95	0	7.23	100	-[b]
					-	17	85	1			
	8/5/83	1-3-1	31835	2	2	15	75	1	7.29	88	30
	8/3/83	1-4-1	31033	1	1	18	90	1	7.66	69	30
					-	18	90	0			
		1-4-2	31035		7	11	55	1	7.14	-84	30
					2	18	90	0			
		1-4-3	31037		2	17	85	1	7.69	-70	30
					0	20	100	0			
		1-5-1	31039		0	13	65	0	7.20	86	30
					0	17	85	0			
		1-6-1	31041		0	19	95	1	7.40	61	30
					0	19	95	0			
	8/2/83	1-7-1	31013		1	20	100	1	7.84	-101	-[b]
					-	16	80	0			
	8/3/83	1-8-1	31043		0	19	95	0	7.26	108	-[b]
					0	21	105	0			
		1-9-1	31045		0	16	80	0	7.53	107	30
					0	15	75	0			
		1-10-1	31047		0	16	80	0	7.31	124	29
					0	16	80	0			

TABLE C-1. Responses of the Marine Amphipod, Rhepoxynius abronius, to Sediments Collected from Bellingham Bay 8/2/83 through 8/5/83 (continued)

Sampling Area	Collection Date	Battelle Sample No.	EPA Sample Number	Assay Number	Amphipod Responses[a]				Chemical Characteristics Sediments		
					No. of Amphipods Out of Sediment	Amphipod Survival No. of Survivors	Amphipod Survival (%)	No. of Surviving Amphipods not Reburying	pH	Eh(mv)	Interstitial Water S°/oo
BELLINGHAM BAY	8/5/83	1-11-1	31831	2	1	17	85	0	7.14	41	30
		1-12-1	31833		0	15	75	0	7.13	204	30
	8/4/83	1-13-1	31803		2	19	95	0	6.94	201	29
		1-14-1	31805		0	15	75	0	7.03	276	30
		1-15-1	31807		2	9	45	0	7.10	57	30
		1-16-1	31809		1	15	75	0	7.47	389	30
		1-17-1	31811		1	15	75	0	7.33	155	30
		1-18-1	31813		0	20	100	0	7.14	396	-[b]
		1-19-1	31815		1	15	75	0	7.26	269	30
		1-20-1	31817		0	19	95	0	7.16	148	-[b]
	8/5/83	1-21-1	31821		2	20	100	0	7.27	156	30
		1-22-1	31823		0	17	85	0	7.50	51	30
		1-23-1	31825		0	14	70	0	7.57	29	30
		1-24-1	31827		0	15	75	0	7.28	-45	30
		1-25-1	31829		1	18	90	0	7.27	-12	30
		1-26-1	31837		3	11	55	1	7.27	216	30

Note: Refer to page 19 for footnote explanations and other details.

TABLE C-2. Responses of the Marine Amphipod, Rhepoxynius abronius to Sediments Collected from Samish Bay 8/3/83 through 8/9/83.

Sampling Area	Collection Date	Battelle Sample No.	EPA Sample Number	Assay Number	Amphipod Responses[a]				Chemical Characteristics of Sediments		
					No. of Amphipods Out of Sediment	Amphipod Survival No. of Survivors	Amphipod Survival (%)	No. of Surviving Amphipods not Reburying	pH	Eh(mv)	Interstitial Water S°/oo
SAMISH BAY	8/6/83	2-1-1	31839	2	3	16	80	0	7.46	220	30
		2-2-1	31841		0	15	75	0	7.50	34	30
		2-3-1	31843		1	18	90	0	7.30	60	30
		2-4-1	31845		0	14	70	0	7.54	34	30
	8/8/83	2-5-1	31851		0	16	80	0	7.18	190	30
		2-6-1	31853		1	18	90	0	7.30	42	30
		2-7-1	31855		0	13	65	0	7.46	34	30
		2-7-2	31857		0	18	90	0	7.13	31	30
		2-7-3	31859		0	17	85	0	7.22	100	30
		2-8-1	31861		1	17	85	0	7.40	0	30
		2-9-1	31863		0	8	40	0	7.64	120	30
		2-10-2	31865		1	11	55	1	7.64	217	30
		2-11-1	31867		0	14	70	-	7.42	87	30
		2-12-1	31869		1	18	90	2	7.24	88	30
	8/9/83	2-13-1	31875		0	20	100	0	7.30	256	28
		2-14-1	31877		0	19	95	0	7.41	289	30
		2-15-1	31879		0	21	105	0	7.15	192	30

TABLE C-2. Responses of the Marine Amphipod, Rhepoxynius abronius, to Sediments Collected from Samish Bay 8/6/83 through 8/9/83 (continued)

Sampling Area	Collection Date	Battelle Sample No.	EPA Sample Number	Assay Number	Amphipod Response[a]: No. of Amphipods Out of Sediment	Amphipod Survival: No. of Survivors	Amphipod Survival: (%)	No. of Surviving Amphipods not Reburying	Chemical Characteristics of Sediments: pH	Eh(mv)	Interstitial Water S‰
SAMISH BAY	8/9/83	2-16-1	31881		0	16	80	0	7.56	239	30
		2-17-1	31883		0	20	100	0	7.20	163	30
		2-18-1	31885	2	1	10	50	0	7.60	51	30
		2-19-1	31887		0	15	75	0	7.19	31	30
		2-20-1	31889		0	17	85	0	7.25	65	30

Note: Refer to page 19 for footnote explanations and other details.

TABLE C-3. Responses of the Marine Amphiopd, Rhepoxynius abronius, to Sediments Collected from Sequim Bay 8/15/83 through 9/18/83

Sampling Area	Collection Date	Battele Sample No.	EPA Sample Number	Assay Number	Amphipod Responses[a]				Chemical Characteristics of Sediments		
					No. Amphipods Out of Sediment	Amphipod Survival No. of Survivors	Amphipod Survival (%)	No. of Surviving Amphipods not Reburying	pH	Eh(mv)	Interstitial Water ‰
SEQUIM BAY	8/15/83	3-1-1	33403	3	1	18	90	0	7.68	81	32
		3-1-2	33404		1	13	65	0	7.65	42	30
		3-1-3	33405		0	15	75	0	7.65	40	30
		3-2-1	33409		0	18	90	0	7.44	33	31
		3-3-1	33411		0	19	95	0	7.53	61	31
		3-4-1	33413		0	18	90	0	7.38	81	30
	8/16/83	3-5-1	33415		0	19	95	0	7.60	23	30
		3-6-1	33417		0	19	95	0	7.55	106	30
	9/17/83	3-7-1	38349	8	0	19	95	0	7.31	-95	32
		3-8-1	38351		0	17	85	0	7.47	-27	32
		3-9-1	38353		1	16	80	0	7.54	-115	31
		3-10-1	38355		2	17	85	0	7.44	-122	32
		3-11-1	38357		0	12	60	0	7.51	-42	31
		3-12-1	38359		2	11	55	0	7.21	2	24
		3-13-1	38361		0	19	95	0	7.28	-158	32
	9/18/83	3-14-1	38363		0	19	95	0	7.49	-149	31
		3-15-1	38365		1	19	95	0	7.45	-121	32

TABLE C-3. Responses of the Marine Amphipod, Rhepoxynius abronius, to Sediments Collected from Sequim Bay 8/15/83 through 9/18/83 (continued)

Sampling Area	Collection Date	Battelle Sample No.	EPA Sample Number	Assay Number	Amphipod Responses[a]				Chemical Characteristics of Sediments		
					No. of Amphipods Out of Sediment	Amphipods Survival No. of Survivors	Amphipods Survival (%)	No. of Surviving Amphipods not Reburying	pH	Eh(mv)	Interstitial Water S°/oo
SEQUIM BAY	9/18/83	3-16-1	38367		0	15	75	0	7.60	119	31
		3-17-1	38369		0	15	75	0	7.43	-120	32
		3-18-1	38371	8	0	19	95	0	6.21	-175	31
		3-19-1	38373		0	20	100	0	7.36	-170	32
		3-20-1	38375		0	12	60	0	7.33	-79	32

Note: Refer to page 19 for footnote explanations and other details.

TABLE C-4. Responses of the Marine Amphipod, Rhepoxynius abronius, to Sediments Collected from Port Gardner - Everett Harbor 8/19/83 through 8/21/83

Sampling Area	Collection Date	Battelle Sample No.	EPA Sample Number	Assay Number	Amphipod Responses[a]				Chemical Characteristics of Sediments		
					No. of Amphipods Out of Sediment	Amphipod Survival No. of Survivors	Amphipod Survival (%)	No. of Surviving Amphipods not Reburying	pH	Eh(mv)	Interstitial Water S‰
EVERETT HARBOR	8/19/83	4-1-1	34405	4	8	4	20	0	7.43	-111	30
		4-1-2	34406		7	7	35	0	7.03	-140	29
		4-1-3	34407		7	11	55	7	7.34	200	29
		4-2-1	34409		12	3	15	0	6.87	-22	29
		4-3-1	34411		6	12	60	1	6.89	-38	29
		4-4-1	34413		8	9	45	0	7.08	-85	29
	8/20/83	4-5-1	34416		1	18	90	5	7.51	-77	29
		4-6-1	34420		3	16	80	0	7.30	-71	29
		4-7-1	34423		3	18	90	0	7.03	-116	29
		4-8-1	34425		0	18	90	0	7.17	29	29
		4-9-1	34427		0	13	65	0	7.30	60	30
		4-10-1	34429		0	18	90	0	7.11	20	30
		4-11-1	34431		2	15	75	0	7.46	105	30
		4-12-1	34433		0	14	70	0	7.37	76	31
		4-13-1	34435		1	17	85	0	7.30	23	31
		4-14-1	34437		1	8	40	0	7.08	99	30
		4-15-1	34439		1	19	95	0	7.27	80	30

TABLE C-4. Responses of the Marine Amphipod, Rhepoxynius abronius, to Sediments Collected from Port Gardner - Everett Harbor 8/19/83 through 8/21/83 (continued)

					Amphipod Responses[a]				Chemical Characteristics of Sediments		
Sampling Area	Collection Date	Battelle Sample No.	EPA Sample Number	Assay Number	No. of Amphipods Out of Sediment	Amphipod Survival No. of Survivors	Amphipod Survival (%)	No. of Surviving Amphipods not Reburying	pH	Eh(mv)	Interstitial Water S°/oo
EVERETT HARBOR	8/21/83	4-16-1	34443	4	1	15	75	0	7.06	73	30
		4-17-1	34445		0	13	65	0	7.25	63	30
		4-18-1	34447		0	15	75	0	7.04	29	30
		4-19-1	34449		1	17	85	0	7.07	83	30
		4-20-1	34451		0	19	95	0	7.25	90	30
		4-21-1	34453		0	19	95	0	7.21	53	31
		4-22-1	34455		0	17	85	0	7.45	49	30
		4-23-1	34457		1	17	85	0	7.21	190	30
		4-24-1	34459		0	20	100	0	7.08	291	-[b]
		4-25-1	34461		0	19	95	0	8.03	386	-[b]

Note: Refer to page 19 for footnote explanations and other details.

TABLE C-5. Responses of the Marine Amphipod, Rhepoxynius abronius, to Sediments Collected from Fourmile Rock - Elliott Bay Dump Site Vicinity 8/23/83 through 8/26/83

Sampling Area	Collection Date	Battelle Sample No.	EPA Sample Number	Assay Number	Amphipod Responses[a]: No. of Amphipods Out of Sediment	Amphipod Survival: No. of Survivors	Amphipod Survival: (%)	No. of Surviving Amphipods not Reburying	Chemical Characteristics of Sediments: pH	EH(mv)	Interstitial Water S°/oo
ELLIOTT BAY	8/23/83	5-1-1	34467		0	20	100	0	7.33	52	30
		5-1-2	34468		0	20	100	0	7.30	35	30
		5-1-3	34469	4	0	19	95	0	7.46	123	30
		5-2-1	34471		Not Assayed (Sample Jar Broken in Transit)						
		5-3-1	34473		2	15	75	0	7.16	42	30
	8/24/83	5-4-1	34475		0	17	85	0	7.24	105	30
		5-5-1	34479		0	16	80	0	7.02	37	31
		5-6-1	34481		1	16	80	0	7.04	36	30
		5-7-1	34483	6	4	16	80	0	6.72	45	31
		5-8-1	34485		0	19	95	0	6.91	46	29
		5-9-1	34487		1	18	90	0	6.96	52	30
		5-10-1	34489		3	15	75	0	7.06	15	30
	8/25/83	5-11- 1	35321		1	18	90	0	7.14	23	31
		5-12-1	35323		1	17	85	0	7.10	23	30
		5-13-1	35325	5	0	19	95	0	7.07	114	30
		5-14-1	35327		0	14	70	0	7.11	143	30
		5-15-1	35329		1	16	80	0	7.22	87	30

TABLE C-5. Responses of the Marine Amphipod, Rhepoxynius abronius, to Sediments Collected from Fourmile Rock - Elliott Bay Dump Site Vicinity 8/23/83 through 8/26/83 (continued)

Sampling Area	Collection Date	Battelle Sample No.	EPA Sample Number	Assay Number	Amphipod Responses[a]				Chemical Characteristics of Sediments		
					No. of Amphipods Out of Sediment	Amphipod Survival No. of Survivors	Amphipod Survival (%)	No. of Surviving Amphipods not Reburying	pH	Eh(mv)	Interstitial Water S°/oo
ELLIOTT BAY	8/25/83	5-16-1	35331	5	0	12	60	0	7.18	63	30
		5-17-1	35333		3	19	95	0	7.19	-13	29
	8/26/83	5-18-1	35303		0	20	100	0	6.97	34	30
		5-19-1	35305		0	20	100	0	7.08	91	30
		5-20-1	35307		0	19	95	0	7.11	121	31
		5-21-1	35309		0	20	100	0	7.00	56	30
		5-22-1	35311		0	18	90	0	6.97	91	29
		5-23-1	35313		4	15	75	0	7.14	37	30
		5-24-1	35315		1	15	75	0	7.19	45	30
		5-25-1	35317		1	18	90	0	7.30	75	30

Note: Refer to page 19 for footnote explanations and other details.

TABLE C-6. Responses of the Marine Amphipod, *Rhepoxynius abronius*, to Sediments Collected from Sinclair Inlet 8/30/83 through 8/31/83

Sampling Area	Collection Date	Battelle Sample No.	EPA Sample Number	Assay Number	Amphipod Responses[a]				Chemical Characteristics of Sediments		
					No. of Amphipods Out of Sediment	Amphipod Survival No. of Survivors	Amphipod Survival (%)	No. of Surviving Amphipods not Reburying	pH	Eh(mv)	Interstitial Water S°/oo
SINCLAIR INLET	8/30/83	6-1-1	35337		1	19	95	0	5.38	101	29
		6-1-2	35339		0	16	80	0	7.24	124	29
		6-1-3	35341		0	16	80	0	7.18	122	28
		6-2-1	35343		0	13	65	0	7.16	89	27
		6-3-1	35345		0	9	45	0	7.15	66	28
		6-4-1	35342		1	11	55	0	6.77	81	28
		6-5-1	35349		1	17	85	0	7.36	80	28
		6-6-1	35351		0	16	80	0	7.32	184	28
		6-7-1	35353	5	1	16	80	0	7.28	104	29
		6-8-1	35355		0	15	75	0	7.42	57	30
		6-9-1	35357		0	15	75	0	7.33	118	30
		6-10-1	35359		1	17	85	0	7.18	11	28
	8/31/83	6-11-1	35363		0	12	60	0	7.23	54	28
		6-12-1	35365		1	13	65	0	7.30	-77	28
		6-13-1	35367		0	12	60	0	7.35	-19	28
		6-14-1	35369		0	14	70	0	7.27	193	30
		6-15-1	35371		1	12	60	0	7.12	84	30

TABLE C-6. Responses of the Marine Amphipod, Rhepoxynius abronius, to Sediments Collected from Sinclair Inlet 8/30/83 through 8/31/83 (continued)

Sampling Area	Collection Date	Battelle Sample No.	EPA Sample Number	Assay Number	Amphipod Responses[a]				Chemical Characteristics of Sediments		
					No. of Amphipods Out of Sediment	Amphipod Survival No. of Survivors	Amphipod Survival (%)	No. of Surviving Amphipods not Reburying	pH	Eh(mv)	Interstitial Water S°/oo
SINCLAIR INLET	8/31/83	6-16-2	35373	5	0	19	95	0	7.11	107	30
		6-17-1	35375		0	16	80	0	7.25	178	30
		6-18-1	35377		0	13	65	0	7.16	99	30
		6-19-1	35379		0	15	75	0	7.06	55	30
		6-20-1	35381		0	18	90	0	7.21	23	30
		6-21-1	35383		0	16	80	0	7.27	58	30
		6-22-1	35383		1	19	95	0	7.00	56	29
		6-23-1	35387		2	18	90	0	7.08	85	27
		6-24-1	35389		1	17	85	0	6.37	105	30
		6-25-1	35391		0	19	95	0	7.15	247	-[b]

Note: Refer to page 19 for footnote explanations and other details.

TABLE C-7. Responses of the Marine Amphipod, Rhepoxynius abronius, to Sediments Collected from Dabob Bay 9/8/83 through 9/10/83

Sampling Area	Collection Date	Battelle Sample No.	EPA Sample Number	Assay Number	Amphipod Responses[a]: No. of Amphipods Out of Sediment	Amphipod Survival: No. of Survivors	Amphipod Survival: (%)	No. of Surviving Amphipods not Reburying	Chemical Characteristics of Sediments: pH	Eh(mv)	Interstitial Water S°/oo
DABOB BAY	9/10/83	7-1-1	36335	7	0	16	80	0	7.13	81	29
		7-2-1	36337		0	8	40	0	7.23	82	30
		7-3-1	36339		1	8	40	0	7.22	86	30
		7-4-1	36341		0	13	65	0	7.16	119	30
		7-5-1	36343		0	16	80	0	7.10	98	29
		7-6-1	36345		0	12	60	0	7.14	111	29
		7-7-1	36347		0	17	85	0	6.96	120	29
	9/9/83	7-14-1	36327		0	8	40	0	7.33	124	30
		7-15-1	36329		0	13	65	0	7.10	103	30
		7-16-1	36331		0	11	55	0	7.17	129	30
	9/8/83	7-17-1	36301		6	14	70	0	7.12	47	28
		7-17-1	36303		0	18	90	0	7.17	104	28
		7-17-1	36305		2	18	90	0	7.17	118	30
		7-18-1	36307		0	18	90	0	7.03	96	28
		7-19-1	36309		2	16	80	0	6.98	112	28
		7-20-1	36311		0	19	95	0	7.05	111	29

TABLE C-7. Responses of the Marine Amphipod, *Rhepoxynius abronius*, to Sediments Collected from Dabob Bay 9/8/83 through 9/10/83 (continued)

Sampling Area	Collection Date	Battelle Sample No.	EPA Sample Number	Assay Number	Amphipod Responses[a]				Chemical Characteristics of Sediments		
					No. of Amphipods Out of Sediment	Amphipod Survival No. of Survivors	Amphipod Survival (%)	No. of Surviving Amphipods not Reburying	pH	Eh(mv)	Interstitial Water S‰
DABOB BAY	9/8/83	7-21-1	36313	7	1	19	95	0	7.17	91	30
		7-22-1	36315		2	18	90	0	7.14	106	28
	9/9/83	7-23-1	36319		0	20	100	0	7.08	93	28
		7-24-1	35321		0	20	100	0	7.06	99	29
		7-25-1	36323		1	18	90	0	7.04	88	28
		7-26-1	36325		5	15	75	0	7.06	91	28

Note: Refer to page 19 for footnote explanations and other details.

TABLE C-8. Responses of the Marine Amphipod, *Rhepoxynius abronius*, to Sediments Collected from Case Inlet 9/14/83 through 9/15/83

Sampling Area	Collection Date	Battelle Sample No.	EPA Sample Number	Assay Number	Amphipod Responses[a]				Chemical Characteristics of Sediments		
					No. of Amphipods Out of Sediment	Amphipod Survival No. of Survivors	Amphipod Survival (%)	No. of Surviving Amphipods not Reburying	pH	Eh(mv)	Interstitial Water S°/oo
CASE INLET	9/14/83	8-1-1	38303	8	0	6	30	0	7.06	68	30
		8-1-2	38304		0	10	50	0	7.18	67	28
		8-1-3	38305		0	14	70	0	7.23	-3	29
		8-2-1	38307		0	18	90	0	7.22	30	29
		8-3-1	38309		0	15	75	0	7.18	32	30
		8-4-1	38311		0	9	45	0	7.28	121	30
		8-5-1	38313		0	13	65	0	7.30	65	30
		8-6-1	38315		0	9	45	0	7.36	132	30
		8-7-1	38317		0	8	40	0	7.39	161	30
		8-8-1	38319		0	9	45	0	7.48	3	30
		8-9-1	38321		0	11	55	0	7.38	15	30
		8-10-1	38323		0	13	65	0	6.69	-73	31
	9/15/83	8-11-1	38327		6	8	40	0	7.28	-37	31
		8-12-1	38329		0	13	65	0	7.55	-118	30
		8-13-1	38331		0	18	90	0	7.52	-130	30
		8-14-1	38333		0	17	85	0	7.49	-122	29

TABLE C-8. Responses of the Marine Amphipod, Rhepoxynius abronius, to Sediments Collected from Case Inlet 9/14/83 through 9/15/83 (continued)

Sampling Area	Collection Date	Battelle Sample No.	EPA Sample Number	Assay Number	Amphipod Responses[a]				Chemical Characteristics of Sediments		
					No. of Amphipods Out of Sediment	Amphipod Survival No. of Survivors	Amphipod Survival (%)	No. of Surviving Amphipods not Reburying	pH	Eh(mv)	Interstitial Water S‰
CASE INLET	9/15/83	8-15-1	38335	8	0	14	70	0	6.89	-1	30
		8-16-1	38337		0	19	95	0	7.35	-24	29
		8-17-1	38339		0	18	90	0	6.50	-140	29
		8-18-1	38341		0	20	100	0	7.34	-146	24
		8-19-1	38343		0	18	90	0	7.21	-42	29
		8-20-1	38345		0	20	100	0	7.26	-120	28

Note: Refer to page 19 for footnote explanations and other details.

TABLE C-9. Responses of the Marine Amphipod, *Rhepoxynius abronius*, to Control Sediments Collected from West Beach, Whidbey Island 8/2/83 through 9/20/83

Sampling Area	Collection Date	Replicate Number	Amphipod Responses[a]: No. of Amphipods Out of Sediment	Amphipod Survival: No. of Survivors		(%)		No. of Surviving Amphipods not Reburying	Chemical Characteristics of Sediments: pH	Eh(mv)	Interstitial Water S°/oo
CONTROL SEDIMENT from WEST BEACH, WHIDBEY ISLAND, WA											
Assay No. 1	8/2/83	1	0	18		90		0			
		2	1	18		90		0			
		3	0	20	($\bar{X}$=19.2)	100	($\bar{X}$=95.8)	0	7.10	500	28
		4	0	20		100		0			
		5	0	20		100		0			
		6	0	19		95		0			
Assay No. 2	8/9/83	1	0	19		95		0			
		2	1	18		90		0			
		3	0	20	($\bar{X}$=19.2)	100	($\bar{X}$=96.0)	0	6.96	271	28
		4	1	19		95		0			
		5	0	20		100		0			
Assay No. 3	8/17/83	1	0	20		100		0			
		2	0	20		100		0			
		3	0	19	($\bar{X}$=19.6)	95	($\bar{X}$=98.0)	0	7.28	242	28
		4	1	19		95		0			
		5	0	20		100		0			
Assay No. 4	8/23/83	1	0	20		100		0			
		2	1	19		95		0			
		3	0	20	($\bar{X}$=19.6)	100	($\bar{X}$=98.0)	0	6.71	92	28
		4	0	20		100		0			
		5	0	19		95		0			

TABLE C-9. Responses of the Marine Amphipod, Rhepoxynius abronius, to Control Sediments Collected from West Beach, Whidbey Island 8/2/83 through 9/20/83 (continued)

Sampling Area	Collection Date	Replicate Number	Amphipod Responses[a]: No. of Amphipods Out of Sediment	Amphipod Survival: No. of Survivors		Amphipod Survival: (%)		No. of Surviving Amphipods not Reburying	Chemical Characteristics of Sediments: pH	Eh(mv)	Interstitial Water S‰
CONTROL SEDIMENT from WEST BEACH WHIDBEY ISLAND, WA											
Assay No. 5	8/30/83	1	1	20		100		0			
		2	0	20		100		0			
		3	1	18	($\bar{X}$=18.8)	90	($\bar{X}$=94.0)	0	-	-	28
		4	2	18		90		0			
		5	0	18		90		0			
Assay No. 6	9/6/83	1	0	19		95		0			
		2	2	18		90		0			
		3	1	19	($\bar{X}$=18.4)	95	($\bar{X}$=92.0)	0	7.00	307	28
		4	0	20		100		0			
		5	4	16		80		0			
Assay No. 7	9/13/83	1	19	0		0		0			
		2	15	1		5		0			
		3	17	2	($\bar{X}$=8.8)[c]	10	($\bar{X}$=43.0)[c]	0	6.94	319	28
		4	0	20		100		0			
		5	0	20		100		0			
Assay No. 8	9/20/83	1	0	20		100		0			
		2	0	18		90		0			
		3	0	20	($\bar{X}$=19.0)	100	($\bar{X}$=95.0)	0	-	-	28
		4	0	20		100		0			
		5	1	17		85		0			

Note: Refer to page 19 for footnote explanations and other details.

Footnotes and other Details

[a] (1) Sediment bioassays were conducted according to the general method of Swartz et al. (1985). Amphipod repsonses were measured following a 10-day exposure to sediments at 15°C, under continuous illumination (10-70 ft-c) and aeration. The salinity of the overlying water was 28.0 °/oo.

(2) During the assay of Elliott Bay and Dabob Bay sediments (Assays 6 & 7) aeration was interrupted for about 24 hours as a result of a power failure. Dissolved oxygen concentrations measured in representative test beakers at the end of the power failure ranged from 5.3-6.4 mg/liter. This temporary interruption of the air supply did not appear to have adversely affected the outcome of the assays.

(3) Sediments tested during Assays 1, 2, 3, 4, and 5 were placed in a 4-liter glass beaker and mixed with a plastic spoon before being added to the test beakers. Sediments tested during Assays 6, 7, and 8 were added to the test beakers after being mixed directly in the sample jars with an electric stirrer. The stirrer was equipped with a stainless steel shaft and propeller.

[b] Insufficient free water to make a salinity determination.

[c] Amphipod survival in Assay No. 7 control sediment was unacceptably low in three of the five control replicates tested. Because similar excessive toxicity was not observed in any of the other samples tested, the unidentified contaminant appeared to have been primarily restricted to control replicates 1, 2, and 3. Consequently, the results of Assay No. 7 were not considered to be totally invalid, although retesting of the samples would be desirable.

Note: Initial (0-hr) and Final (10-day) Chemical Characteristics of All Overlying Waters

Initial- Dissolved Oxygen: Mean 7.0 mg/liter; Range (6.3-7.6 mg/liter)
pH: Mean 7.97; Range (7.84-8.11)

Final- Dissolved Oxygen: Mean 7.2 mg/liter; Range (5.5-7.6 mg/l)
pH: Mean 8.14; Range (7.66-8.23)

TABLE C-10. Individual Replicate Responses of the Marine Amphipod, *Rhepoxynius abronius*, to Sediments Collected from Bellingham Bay, 4/23/84 and 4/30/84.

Battelle Number	Assay Number	Replicate	Survivors	Survivors not Reburying	$\bar{X}$ No. Out of Sediment/Day[a]
		1	18	0	0.1
		2	18	0	0.0
B-1 S-3	1	3	20	0	0.2
		4	20	0	0.9
		5	20	0	0.1
		1	17	0	0.3
		2	18	0	0.0
B-1 S-4	1	3	18	2	0.0
		4	13	0	0.2
		5	17	0	0.3
		1	15	0	0.1
		2	11	0	0.0
B-1 S-5	1	3	13	0	0.0
		4	14	1	0.0
		5	13	0	0.0
		1	20	0	0.3
		2	19	0	0.0
B-1 S-7	1	3	19	0	0.5
		4	19	0	0.9
		5	18	0	0.1
		1	15	1	0.2
		2	12	0	0.2
B-1 S-11	2	3	19	0	0.3
		4	17	0	0.7
		5	20	0	0.3
		1	18	0	0.1
		2	19	0	0.1
B-1 S-12	2	3	18	0	0.2
		4	16	0	0.0
		5	18	0	0.0
		1	7	0	0.2
		2	8	0	0.1
B-1 S-23	2	3	10	0	0.0
		4	6	0	0.7
		5	11	0	0.1
		1	16	0	0.1
		2	16	0	0.6
B-1 S-24	2	3	17	1	0.1
		4	20	0	0.5
		5	20	1	1.0

a Mean number of amphipods floating on the surface each day.

TABLE C-11. Individual Replicate Responses of the Marine Amphipod, *Rhepoxynius abronius*, to Sediments Collected from Samish Bay, 4/24/84.

Battelle Number	Assay Number	Replicate	Survivors	Survivors not Reburying	$\bar{X}$ No. Out of Sediment/Day[a]
		1	17	0	0.0
		2	10	0	0.0
B-2 S-1	1	3	15	1	0.0
		4	14	0	0.0
		5	13	0	0.2
		1	10	0	0.0
		2	12	1	0.0
B-2 S-3	1	3	10	0	0.1
		4	10	0	0.0
		5	11	0	0.0
		1	18	0	0.0
		2	13	0	0.0
B-2 S-7	1	3	14	0	0.0
		4	17	0	0.0
		5	13	0	0.1
		1	17	0	0.0
		2	12	0	0.1
B-2 S-20	1	3	13	0	0.0
		4	13	0	0.0
		5	14	0	0.0

[a] Mean number of amphipods floating on the surface each day.

TABLE C-12. Individual Replicate Responses of the Marine Amphipod, *Rhepoxynius abronius*, to Sediments Collected from Sequim Bay, 5/29/84.

Battelle Number	Assay Number	Replicate	Survivors	Survivors not Reburying	$\bar{X}$ No. Out of Sediment/Day[a]
		1	19	0	0.0
		2	16	0	0.0
B-3 S-14	6	3	19	0	0.0
		4	16	0	0.1
		5	18	0	0.1
		1	16	1	0.1
		2	20	0	0.1
B-3 S-17	6	3	17	0	0.0
		4	19	0	0.0
		5	18	0	0.1
		1	15	0	0.0
		2	15	0	0.0
B-3 S-18	6	3	20	0	0.1
		4	20	0	0.0
		5	19	0	0.0
		1	13	0	0.0
		2	16	0	0.0
B-3 S-20	6	3	11	0	0.1
		4	16	1	0.1
		5	17	0	0.1

[a] Mean number of amphipods floating on the surface each day.

TABLE C-13. Individual Replicate Responses of the Marine Amphipod, *Rhepoxynius abronius*, to Sediments Collected from Everett Harbor, 5/1/84 and 5/7/84.

Battelle Number	Assay Number	Replicate	Survivors	Survivors not Reburying	$\bar{X}$ No. Out of Sediment/Day[a]
		1	13	1	6.1
		2	9	2	1.8
B-4 S-1	2	3	9	1	4.7
		4	7	0	1.3
		5	6	1	3.4
		1	16	0	0.1
		2	14	0	0.3
B-4 S-2	2	3	14	0	0.0
		4	14	0	0.2
		5	13	1	0.5
		1	15	0	0.2
		2	15	2	0.1
B-4 S-3	2	3	15	1	1.2
		4	11	0	0.3
		5	11	1	1.2
		1	6	3	4.8
		2	11	6	6.6
B-4 S-4	2	3	8	3	5.8
		4	7	0	4.5
		5	10	2	6.5
		1	3	0	2.3
		2	2	0	1.0
B-4 S-5	3	3	0	0	0.9
		4	8	1	2.8
		5	1	1	0.6
		1	18	0	0.3
		2	16	0	0.2
B-4 S-6	3	3	19	0	0.2
		4	18	0	0.0
		5	18	0	0.2
		1	20	0	0.0
		2	18	0	0.3
B-4 S-7	3	3	19	0	0.2
		4	19	0	0.0
		5	14	0	0.6
		1	15	0	0.0
		2	14	1	0.0
B-4 S-11	3	3	14	0	0.0
		4	17	0	0.0
		5	14	0	0.0

[a] Mean number of amphipods floating on the surface each day.

TABLE C-14. Individual Replicate Responses of the Marine Amphipod, *Rhepoxynius abronius*, to Sediments Collected from Elliott Bay, 5/8/84 and 5/15/84.

Battelle Number	Assay Number	Replicate	Survivors	Survivors not Reburying	$\bar{X}$ No. Out of Sediment/Day[a]
		1	19	0	0.1
		2	17	0	0.0
B-5 S-9	3	3	15	0	0.0
		4	18	0	0.0
		5	18	0	0.0
		1	17	0	0.1
		2	17	0	0.7
B-5 S-10	3	3	15	0	0.0
		4	18	0	0.1
		5	19	0	0.1
		1	15	0	0.0
		2	17	0	0.0
B-5 S-12	3	3	18	0	0.1
		4	19	0	0.0
		5	15	0	0.0
		1	17	0	0.0
		2	19	0	0.0
B-5 S-17	3	3	20	0	0.2
		4	18	0	0.0
		5	18	0	0.0
		1	18	0	0.2
		2	17	0	0.[illegible]
B-5 S-20	4	3	14	0	0.[illegible]
		4	16	0	0.0
		5	18	0	0.1
		1	17	0	0.2
		2	17	0	0.0
B-5 S-22	4	3	17	0	0.0
		4	17	0	0.0
		5	18	1	0.0
		1	17	0	0.0
		2	19	0	0.0
B-5 S-23	4	3	16	0	0.0
		4	19	0	0.1
		5	17	0	0.0
		1	19	1	0.0
		2	18	0	0.0
B-5 S-24	4	3	15	0	0.1
		4	20	0	0.0
		5	15	0	0.1

[a] Mean number of amphipods floating on the surface each day.

TABLE C-15. Individual Replicate Responses of the Marine Amphipod, *Rhepoxynius abronius*, to Sediments Collected from Sinclair Inlet, 5/16/84 and 5/21/84.

Battelle Number	Assay Number	Replicate	Survivors	Survivors not Reburying	$\bar{X}$ No. Out of Sediment/Day[a]
		1	15	0	0.0
		2	6	0	0.1
B-6 S-6	4	3	12	0	0.0
		4	9	0	0.1
		5	13	0	0.1
		1	16	0	0.0
		2	19	0	0.1
B-6 S-7	4	3	15	0	0.1
		4	17	0	0.1
		5	14	0	0.0
		1	12	0	0.0
		2	16	0	0.2
B-6 S-8	4	3	13	0	0.1
		4	8	0	0.0
		5	13	0	0.0
		1	9	0	0.0
		2	13	0	0.0
B-6 S-14	4	3	14	0	0.1
		4	8	0	0.2
		5	13	0	0.0
		1	15	0	0.1
		2	15	0	0.0
B-6 S-17	5	3	17	0	0.0
		4	12	0	0.0
		5	15	0	0.0
		1	9	0	0.0
		2	11	0	0.0
B-6 S-18	5	3	15	0	0.1
		4	18	0	0.0
		5	15	0	0.0
		1	17	1	0.8
		2	17	0	0.2
B-6 S-19	5	3	15	0	0.1
		4	18	3	0.8
		5	14	0	0.2
		1	9	0	0.0
		2	14	0	0.0
B-6 S-20	5	3	12	0	0.1
		4	12	0	0.0
		5	15	0	0.0

a Mean number of amphipods floating on the surface each day.

TABLE C-16. Individual Replicate Responses of the Marine Amphipod, *Rhepoxynius abronius*, to Sediments Collected from Dabob Bay, 5/22/84.

Battelle Number	Assay Number	Replicate	Survivors	Survivors not Reburying	$\bar{X}$ No. Out of Sediment/Day[a]
		1	19	0	0.1
		2	17	0	0.0
B-7 S-1	5	3	17	0	0.0
		4	19	0	0.0
		5	18	0	0.0
		1	18	0	0.0
		2	18	1	0.0
B-7 S-5	5	3	18	0	0.1
		4	19	0	0.0
		5	20	0	0.1
		1	16	0	0.0
		2	14	0	0.0
B-7 S-7	5	3	15	0	0.0
		4	18	0	0.1
		5	11	0	0.0
		1	8	0	0.0
		2	13	0	0.0
B-7 S-15	5	3	13	0	0.1
		4	14	0	0.1
		5	16	0	0.0

[a] Mean number of amphipods floating on the surface each day.

TABLE C-17. Individual Replicate Responses of the Marine Amphipod, *Rhepoxynius abronius*, to Sediments Collected from Case Inlet, 5/29/84.

Battelle Number	Assay Number	Replicate	Survivors	Survivors not Reburying	$\bar{X}$ No. Out of Sediment/Day[a]
		1	12	0	0.1
		2	14	0	0.1
B-8 S-1	6	3	17	0	0.1
		4	13	0	0.0
		5	16	0	0.0
		1	17	0	0.0
		2	16	0	0.0
B-8 S-11	6	3	11	0	0.1
		4	13	0	0.0
		5	15	0	0.1
		1	14	1	0.0
		2	14	0	0.0
B-8 S-15	6	3	8	0	0.0
		4	9	0	0.0
		5	12	0	0.0
		1	12	0	0.0
		2	15	0	0.0
B-8 S-17	6	3	10	0	0.0
		4	11	0	0.0
		5	11	0	0.0

[a] Mean number of amphipods floating on the surface each day.

TABLE C-18. Individual Replicate Responses of the Marine Amphipod, *Rhepoxynius abronius*, to Control Sediments Collected from West Beach, Whidbey Island, Wa., 4/24/84 through 5/29/84.

Sampling Date	Assay Number	Replicate	Survivors	Survivors not Reburying	$\bar{X}$ No. Out of Sediment/Day[a]
		1	20	0	0.0
		2	20	0	0.0
4/24/84	1	3	19	0	0.0
		4	20	0	0.0
		5	20	0	0.0
		1	19	0	0.0
		2	18	0	0.0
5/1/84	2	3	20	0	0.0
		4	20	0	0.0
		5	20	0	0.0
		1	19	0	0.0
		2	19	0	0.0
5/8/84	3	3	20	0	0.0
		4	20	0	0.0
		5	19	0	0.0
		1	19	0	0.0
		2	19	0	0.0
5/15/84	4	3	20	0	0.0
		4	18	0	0.0
		5	19	0	0.0
		1	20	0	0.0
		2	20	0	0.0
5/22/84	5	3	20	0	0.0
		4	20	0	0.0
		5	20	0	0.0
		1	20	0	0.0
		2	18	0	0.0
5/29/84	6	3	20	0	0.0
		4	19	0	0.0
		5	18	0	0.1

[a] Mean number of amphipods floating on the surface each day.

TABLE C-19. Responses of the Marine Amphipod, *Rhepoxynius abronius*, to the Reference Toxicant, Sodium Pentachlorophenate, During Six Successive Assays of Marine Sediments, April 28 to June 2, 1984.

Date	Assay Number	LC50[1] (mg/L)	Confidence Interval (95%)
April 28, 1984	1	0.39	0.37 - 0.43
May 5, 1984	2	0.37	0.34 - 0.41
May 12, 1984	3	0.38	0.35 - 0.43
May 19, 1984	4	0.38	0.35 - 0.40
May 26, 1984	5	0.37	0.35 - 0.40
June 2, 1984	6	0.35	0.33 - 0.37

[1] Determined by the moving Average-Angle technique.

APPENDIX D

OYSTER LARVAL BIOASSAY

	Page
SCREENING SURVEY (1983) RESULTS	D.1
DETAILED SURVEY (1984) RESULTS	D.3

TABLE D-1. Environmental Conditions[1] for Oyster Larval Bioassays Performed August 24 - September 24, 1983

Sediment Concentration	Sequim Bay Station 14				Port Gardner - Everett Harbor Station 2				Elliott Bay Fourmile Rock[2] Station 6			
g/l	D.O.	pH	S°/₀₀	°C	D.O.	pH	S°/₀₀	°C	D.O.	pH	S°/₀₀	°C
Control	6.3	8.10	32.1	20.2	6.8	8.15	32.0	21.0	6.5	8.15	32.0	20.2
0.01	6.5	8.21	32.0	20.2	6.6	8.03	32.1	21.0	6.5	8.12	32.0	20.2
0.10	6.5	8.09	32.0	20.2	6.4	8.12	31.9	21.0	6.3	8.10	32.0	20.2
1.00	6.6	8.17	32.0	20.2	6.4	8.00	31.9	21.0	6.6	8.10	32.0	20.2
10.00	6.7	8.21	31.9	20.2	6.4	7.97	32.0	21.0	6.6	8.03	32.0	20.2
100.00	6.4	8.05	31.8	20.2	6.4	8.08	32.0	21.0	6.4	8.14	32.0	20.2

[1] Mean of triplicate analyses performed at beginning of assay.

[2] Dump site vicinity

TABLE D-2. Environmental Conditions[1] for Oyster Larval Bioassays Performed August 24 - September 24, 1983

Sediment Concentration	Fourmile Rock[2]- Elliott Bay Station 2				Sinclair Inlet Station 1				Sinclair Inlet Station 7			
g/l	D.O.	pH	S°/₀₀	°C	D.O.	pH	S°/₀₀	°C	D.O.	pH	S°/₀₀	°C
Control	6.4	8.13	32.0	20.2	6.7	8.08	32.0	20.4	6.6	8.08	32.0	20.8
0.01	6.6	8.09	31.9	20.2	6.5	8.09	32.0	20.4	6.5	8.09	32.0	20.8
0.10	6.5	8.15	32.0	20.2	6.6	8.12	32.0	20.4	6.7	8.08	32.0	20.8
1.00	6.4	7.99	32.0	20.2	6.5	8.11	32.0	20.4	6.8	8.11	32.0	20.8
10.00	6.6	8.21	32.0	20.2	6.8	8.09	32.0	20.4	6.5	8.12	32.0	20.8
100.00	6.4	8.13	32.0	20.2	6.5	8.08	32.0	20.4	6.7	8.02	31.9	20.8

[1] Mean of triplicate analyses performed at beginning of each assay.
[2] Dump site vicinity.

TABLE D-3. Environmental Conditions for Oyster Larval Bioassay Performed April 26-28, 1984

	C-A[1]	1-3[2]	1-4	1-5	1-7	C-E[1]	2-1	2-3	2-7	2-20
Initial Observations										
D.O.	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
pH	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
S°/oo	30	30	30	30	30	30	30	30	30	30
°C	20.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2
Final Observations										
D.O.	7.4	7.1	7.4	7.4	7.4	7.4	7.4	7.3	7.4	7.4
pH	8.40	8.40	8.40	8.40	8.40	8.40	8.40	8.40	8.40	8.40
S°/oo	-[3]	-[3]	-[3]	-[3]	-[3]	-[3]	-[3]	-[3]	-[3]	-[3]
°C	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.0	20.0

[1] Control.
[2] Code (Bay-Station): Bay 1 is Bellingham Bay, Bay 2 is Samish Bay.
[3] No values recorded.

TABLE D-4. Environmental Conditions for Oyster Larval Bioassay No. 2 Performed May 10-12, 1984

	C-D[1]	1-23[2]	4-3	1-12	1-24	C-C[1]	1-11	4-4	4-2	4-1
Initial Observations										
D.O.	7.4	6.7	6.3	6.6	6.0	7.2	5.9	7.0	6.1	5.1
pH	8.08	8.04	7.79	7.80	7.95	8.12	7.86	7.78	7.80	7.73
S°/oo	31	31	31	31	31	31	31	31	31	31
°C	20.0	20.1	20.0	20.1	20.0	20.0	20.0	20.0	20.0	20.0
Final Observations										
D.O.	7.0	6.6	6.6	6.8	6.7	7.5	7.2	7.4	7.3	7.4
pH	8.25	8.17	8.17	8.12	8.16	8.25	8.17	8.20	8.20	8.13
S°/oo	34	32	32	32	32	32	32	32	32	33
°C	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0

1 Control.
2 Code (Bay-Station): Bay 1 is Bellingham Bay, Bay 4 is Port Gardner - Everett Harbor.

TABLE D-5. Environmental Conditions for Oyster Laval Bioassay No. 3 Performed May 10-12, 1984

	C-F[1]	4-5[2]	4-6	4-7	4-11	C-G[1]	5-9	5-10	5-12	5-17
Initial Observations										
D.O	7.1	6.9	6.9	6.9	6.9	7.1	6.9	6.9	6.9	6.9
pH	8.12	8.12	8.09	8.08	8.05	8.07	8.03	7.94	8.07	8.04
S°/oo	30	30	30	30	30	30	30	30	30	30
°C	20.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2
Final Observations										
D.O	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
pH	8.28	8.21	8.18	8.17	8.17	8.21	8.17	8.17	8.05	8.11
S°/oo	32	32	32	32	32	32	32	32	32	32
°C	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5

1 Control.
2 Code (Bay-Station): Bay 4 is Port Gardner - Everett Harbor, Bay 5 is Fourmile Rock - Elliott Bay dump site vicinity.

TABLE D-6. Environmental Conditions for Oyster Larval Bioassay No. 4 Performed May 17-19, 1984

	C-H[1]	5-20[2]	5-22	5-23	5-24	C-I[1]	6-6	6-7	6-8	6-14
Initial Observations										
D.O.	7.4	7.4	7.3	7.4	7.4	7.4	7.2	7.0	6.8	6.8
pH	8.01	7.95	7.91	7.93	7.99	8.02	8.00	8.00	7.94	8.02
S°/₀₀	31	31	31	31	31	31	31	31	31	31
°C	20.3	20.3	20.3	20.3	20.3	20.2	20.2	20.1	20.1	20.2
Final Observations										
D.O.	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
pH	8.17	8.17	8.17	8.13	8.16	8.17	8.15	8.16	8.16	8.09
S°/₀₀	32	32	32	32	32	32	32	32	32	32
°C	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4

[1] Control.
[2] Code (Bay-Station): Bay 5 is Elliott Bay - Fourmile Rock dump site vicinity, Bay 6 is Sinclair Inlet.

TABLE D-7. Environmental Conditions for Oyster Larval Bioassay No. 5 Performed May 24-26, 1984

	C-J[1]	6-17[2]	6-18	6-19	6-20	C-K[1]	7-1	7-5	7-7	7-15
Initial Observations										
D.O.	7.3	7.1	7.0	7.1	7.1	7.3	7.1	7.1	7.1	6.9
pH	7.96	7.92	7.93	7.93	7.92	8.00	7.89	7.89	7.90	7.89
S°/₀₀	31	31	31	31	31	31	31	31	31	31
°C	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Final Observations										
D.O.	7.4	7.4	7.4	7.3	7.4	7.4	7.4	7.4	7.4	7.3
pH	8.14	8.12	8.11	8.13	8.13	8.17	8.14	8.14	8.14	8.13
S°/₀₀	32	32	32	32	32	32	32	32	32	32
°C	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3

[1] Control.
[2] Code (Bay-Station): Bay 6 is Sinclair Inlet, Bay 7 is Dabob Bay.

TABLE D-8. Environmental Conditions for Oyster Larval Bioassay No. 6 Performed June 4-6, 1984

	C-L[1]	3-14[2]	3-17	3-18	3-20	C-M[1]	8-1	8-11	8-15	8-17
Initial Observations										
D.O.	7.4	7.2	7.2	7.2	7.2	7.4	7.2	7.2	7.2	7.2
pH	8.07	8.02	7.97	7.99	8.00	8.07	7.92	7.96	7.98	7.97
S°/oo	31	31	31	31	31	31	31	31	31	31
°C	20.5	20.5	20.4	20.4	20.4	20.4	20.3	20.3	20.3	20.3
Final Observations										
D.O.	7.4	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
pH	8.17	8.13	8.14	8.13	8.12	8.18	8.09	8.14	8.13	8.14
S°/oo	31	31	31	31	31	31	31	31	31	31
°C	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1

[1] Control.
[2] Code (Bay-Station): Bay 3 is Sequim Bay, Bay 8 is Case Inlet.

APPENDIX E

	Page
DATA MATRIX	E.1
CORRELATION MATRIX	E.5
CODE NUMBERS FOR BAYS	E.6

TABLE E-1. Data Matrix

Row	Bay	Stat	Ag MRL	Hg MRL	Pb MRL	As EPA	Cu EPA	Zn EPA
1	1	1	0.104	0.098	15.1	4.5	33	74
2	1	2	0.127	0.109	13.9	8.0	40	75
3	1	3	0.108	0.098	14.9	4.6	33	76
4	1	4	0.118	0.093	15.7	5.5	40	81
5	2	1	0.037	0.041	6.0	1.9	28	72
6	2	2	0.037	0.042	6.5	2.1	33	77
7	2	3	0.078	0.075	10.3	3.4	50	86
8	2	4	0.218	0.097	16.8	5.6	74	102
9	3	1	0.170	0.063	11.3	5.6	43	76
10	3	2	0.226	0.084	14.3	7.3	48	88
11	3	3	0.223	0.082	13.6	6.9	48	85
12	3	4	0.193	0.079	13.9	6.9	44	83
13	4	1	0.569	0.158	31.7	8.2	56	82
14	4	2	0.119	0.100	26.6	6.9	30	57
15	4	3	0.364	0.130	27.3	6.5	59	98
16	4	4	0.262	0.118	19.5	8.1	52	84
17	5	1	0.254	1.600	24.2	8.5	400	102
18	5	2	0.377	1.730	43.3	7.9	72	135
19	5	3	0.221	0.971	20.4	11.6	69	111
20	5	4	0.280	1.230	28.0	8.9	72	117
21	5	5	0.203	0.653	18.9	10.8	79	113
22	5	6	0.207	0.606	16.1	6.9	61	97
23	5	7	0.236	0.733	20.6	10.8	62	114
24	5	8	0.217	0.680	18.9	8.5	67	115
25	6	1	0.741	1.490	197.3	12.0	112	434
26	6	2	0.651	8.400	491.3	11.0	165	687
27	6	3	0.675	0.264	38.1	7.2	106	120
28	6	4	0.653	0.707	98.3	14.0	101	192
29	6	5	0.600	0.725	123.7	31.0	152	460
30	6	6	0.671	0.470	53.7	9.0	89	116
31	6	7	0.176	0.145	20.0	6.6	39	69
32	6	8	0.254	0.106	50.8	5.7	20	44
33	7	1	0.368	0.299	43.3	12.2	85	313
34	7	2	0.218	0.225	28.2	9.9	81	141
35	7	3	0.334	0.485	48.0	14.1	82	237
36	7	4	0.155	0.190	71.6	18.1	111	1074
37	7	5	0.415	0.160	44.3	8.5	101	249
38	7	6	0.184	0.209	30.0	6.1	49	78
39	7	7	0.372	0.176	36.1	7.7	79	132
40	7	8	0.344	0.170	19.6	6.8	70	88
41	8	1	3.700	2.390	127.0	9.0	205	330
42	8	2	2.300	1.630	191.4	67.0	807	873
43	8	3	2.290	1.480	133.8	14.0	231	311
44	8	4	2.320	1.760	163.1	14.0	299	272
45	8	5	1.290	1.350	129.0	39.0	240	328
46	8	6	1.560	1.120	129.0	15.0	170	227
47	8	7	1.360	4.280	329.2	25.0	293	343
48	8	8	2.670	2.880	160.2	14.0	198	235

TABLE E-1. Data Matrix (Continued)

Row	Bay	Stat	Depth	%H2O	%Grav	%Sand	%Silt	%Clay	%Fines
1	1	1	13.40	51.49	0.75	18.08	61.58	19.59	81.17
2	1	2	10.10	60.00	0.12	19.00	55.15	25.73	80.88
3	1	3	23.50	52.02	0.06	15.03	57.53	27.38	84.91
4	1	4	30.50	54.88	0.23	12.50	61.43	25.84	87.27
5	2	1	112.80	33.69	2.39	77.36	12.43	7.82	20.25
6	2	2	88.40	35.80	1.34	75.00	13.25	10.41	23.66
7	2	3	97.50	51.42	1.06	49.99	24.51	24.45	48.96
8	2	4	109.70	67.62	0.21	10.10	49.37	40.31	89.68
9	3	1	23.80	60.42	0.00	36.11	35.18	28.71	63.89
10	3	2	25.60	65.27	0.13	16.81	47.81	35.25	83.06
11	3	3	24.70	65.95	0.33	20.22	45.52	33.93	79.45
12	3	4	18.90	61.39	0.24	15.89	48.40	35.47	83.87
13	4	1	40.50	64.87	1.39	9.20	54.61	34.79	89.40
14	4	2	21.30	52.22	9.46	51.57	21.01	17.96	38.97
15	4	3	28.30	69.41	0.08	16.58	43.71	37.64	81.35
16	4	4	24.10	71.85	0.19	21.68	31.42	46.71	78.13
17	5	1	5.50	68.35	10.75	22.34	50.03	16.88	66.91
18	5	2	11.90	59.47	1.77	14.64	58.66	24.93	83.59
19	5	3	11.90	60.56	0.66	2.83	71.35	25.17	96.52
20	5	4	10.10	60.01	0.99	7.32	63.57	28.12	91.69
21	5	5	7.00	50.97	0.04	1.98	60.65	37.42	98.07
22	5	6	6.10	47.66	0.08	35.70	36.14	28.08	64.22
23	5	7	17.40	69.46	0.00	4.63	67.44	27.92	95.36
24	5	8	11.00	60.47	0.03	2.52	64.97	32.48	97.45
25	6	1	173.10	52.86	0.77	43.56	31.96	23.72	55.68
26	6	2	184.10	56.73	1.34	29.76	41.80	27.10	68.90
27	6	3	189.00	63.88	0.41	10.97	50.94	37.68	88.62
28	6	4	170.70	52.21	0.54	43.54	34.01	21.90	55.91
29	6	5	173.70	48.41	1.40	46.25	34.00	18.34	52.34
30	6	6	179.20	55.76	0.03	37.59	36.65	25.72	62.37
31	6	7	121.90	35.24	3.03	72.49	13.82	10.67	24.49
32	6	8	137.20	29.83	1.15	85.18	6.40	7.27	13.67
33	7	1	16.80	68.34	2.83	34.28	42.86	20.02	62.88
34	7	2	16.80	56.51	1.16	15.74	62.37	20.73	83.10
35	7	3	13.40	66.21	7.28	29.19	40.98	22.56	63.54
36	7	4	13.70	74.22	12.83	33.35	34.24	19.58	53.82
37	7	5	10.10	69.64	4.42	28.26	45.49	21.83	67.32
38	7	6	11.90	46.63	4.99	54.83	28.22	11.96	40.18
39	7	7	16.50	60.92	3.19	29.26	48.29	19.25	67.54
40	7	8	97.50	50.46	0.21	30.70	50.69	18.39	69.08
41	8	1	6.70	60.17	0.12	13.12	60.30	26.46	86.76
42	8	2	7.60	53.40	3.39	41.13	30.85	24.63	55.48
43	8	3	13.40	63.47	0.25	9.88	52.04	37.83	89.87
44	8	4	14.90	68.94	0.84	7.59	58.36	33.20	91.56
45	8	5	14.60	61.90	2.10	19.67	45.21	33.02	78.23
46	8	6	16.80	61.80	0.07	22.13	46.04	31.77	77.81
47	8	7	15.80	52.73	7.01	43.99	29.93	19.07	49.00
48	8	8	18.30	61.25	0.77	30.67	39.82	28.74	68.56

TABLE E-1. Data Matrix (Continued)

Row	Bay	Stat	PCB	PAH	IR MRL	%Vol	TOC	AvgPhi
1	1	1	20	334	80.38	5.71	1.32	5.40
2	1	2	20	217	97.35	7.50	1.89	5.66
3	1	3	20	68	88.93	6.12	1.32	5.91
4	1	4	20	0	100.71	6.64	1.39	5.95
5	2	1	20	0	24.28	4.14	0.83	2.10
6	2	2	20	0	33.96	5.51	1.39	2.41
7	2	3	20	0	41.38	7.66	2.14	4.13
8	2	4	20	0	80.71	13.24	2.65	6.64
9	3	1	20	0	80.60	9.19	2.09	5.02
10	3	2	20	0	76.01	10.44	2.30	6.14
11	3	3	20	0	122.08	11.58	2.28	5.92
12	3	4	20	0	76.92	9.55	2.23	6.18
13	4	1	20	0	135.21	10.33	2.01	6.35
14	4	2	20	0	63.83	6.18	1.36	3.00
15	4	3	20	0	95.13	11.84	2.42	6.14
16	4	4	20	0	70.69	11.87	2.69	6.37
17	5	1	74	2290	1681.23	26.93	12.15	4.15
18	5	2	54	4880	1679.37	13.72	4.83	5.67
19	5	3	27	1340	647.08	9.20	2.34	6.32
20	5	4	31	6800	870.23	10.67	3.15	6.20
21	5	5	54	1883	376.36	7.25	2.07	6.91
22	5	6	53	977	558.85	9.33	3.69	5.01
23	5	7	20	585	834.68	8.14	2.01	6.41
24	5	8	20	550	751.51	6.50	2.09	6.68
25	6	1	273	3220	443.78	7.02	1.77	4.42
26	6	2	245	16300	590.94	6.68	2.35	5.12
27	6	3	78	730	134.00	9.89	2.14	6.47
28	6	4	501	0	280.04	7.32	1.92	4.36
29	6	5	640	4950	499.77	6.76	1.39	4.02
30	6	6	608	2620	167.04	8.20	1.93	4.83
31	6	7	148	1010	195.95	8.01	1.11	2.38
32	6	8	59	3060	120.42	6.22	3.80	1.85
33	7	1	445	14310	3957.36	20.14	8.98	4.49
34	7	2	74	3157	1783.81	13.42	4.17	5.51
35	7	3	485	5370	3055.84	25.44	11.00	4.40
36	7	4	800	24400	3528.16	35.06	16.42	3.56
37	7	5	352	7930	1373.19	25.99	9.22	4.68
38	7	6	114	2960	541.88	10.52	4.51	3.04
39	7	7	130	8940	387.15	18.13	6.67	4.65
40	7	8	134	770	188.94	7.36	2.29	4.83
41	8	1	1080	2450	759.73	9.78	2.93	5.96
42	8	2	431	11780	660.09	8.23	2.12	4.31
43	8	3	507	3130	353.13	11.08	2.87	6.54
44	8	4	1210	4638	907.92	12.93	3.04	6.41
45	8	5	400	4420	950.39	9.63	2.40	5.74
46	8	6	200	3937	959.42	9.59	2.58	5.77
47	8	7	320	1060	1972.92	7.82	2.33	3.62
48	8	8	480	32420	3190.97	10.92	3.28	5.20

TABLE E-1. Data Matrix (Continued)

Row	Bay	Stat	Nematod	Capitella	Amphipod	OysLar
1	1	1	0	0	13.8	-1.3
2	1	2	0	0	10.6	-3.3
3	1	3	0	0	15.0	-2.0
4	1	4	0	0	13.8	-2.4
5	2	1	0	0	18.0	8.4
6	2	2	0	1	18.6	2.9
7	2	3	0	0	14.8	9.3
8	2	4	0	0	12.8	6.1
9	3	1	0	0	17.6	-3.7
10	3	2	0	0	18.0	0.9
11	3	3	0	0	17.8	7.9
12	3	4	0	0	14.6	2.3
13	4	1	0	0	14.4	9.9
14	4	2	0	0	14.4	5.5
15	4	3	0	0	11.4	1.1
16	4	4	0	0	11.8	-1.7
17	5	1	5	0	19.2	-3.1
18	5	2	39	9	16.6	-1.8
19	5	3	0	0	13.2	-1.5
20	5	4	0	0	19.0	-3.9
21	5	5	0	0	16.6	8.8
22	5	6	0	0	17.8	14.7
23	5	7	0	1	8.4	100.0
24	5	8	0	0	17.8	9.8
25	6	1	0	0	17.4	3.5
26	6	2	0	1	17.2	0.9
27	6	3	0	0	16.8	13.9
28	6	4	0	0	18.4	25.4
29	6	5	0	0	16.6	-0.2
30	6	6	0	0	17.2	-0.7
31	6	7	0	0	17.6	1.6
32	6	8	0	1	17.4	0.3
33	7	1	109	16	8.8	2.2
34	7	2	64	17	14.2	0.7
35	7	3	84	11	13.4	0.9
36	7	4	122	43	8.4	0.9
37	7	5	279	50	2.8	22.5
38	7	6	5	6	17.8	1.4
39	7	7	0	1	18.0	2.3
40	7	8	0	0	14.8	0.2
41	8	1	0	0	11.0	5.0
42	8	2	0	0	16.2	5.3
43	8	3	0	0	12.4	2.0
44	8	4	0	0	11.4	5.3
45	8	5	0	0	14.8	6.8
46	8	6	0	0	13.6	5.1
47	8	7	0	0	16.2	20.8
48	8	8	0	0	12.4	10.2

TABLE E-2. Data Matrix (continued)

		BAY	STATION	AGMRL	HGMRL	PBMRL	ASEPA	CUEPA	ZNEPA	DEPTH	PCH20
		1	2	3	4	5	6	7	8	9	10
BAY	1	1.0000									
STATION	2	0.3699	1.0000								
AGMRL	3	0.6148	0.0334	1.0000							
HGMRL	4	0.3853	-0.0055	0.4427	1.0000						
PBMRL	5	0.4970	0.0231	0.5215	0.9166	1.0000					
ASEPA	6	0.4986	0.0451	0.4672	0.2657	0.4541	1.0000				
CUEPA	7	0.5015	-0.0776	0.6270	0.4043	0.5011	0.8295	1.0000			
ZNEPA	8	0.4921	-0.0994	0.3898	0.4679	0.6302	0.6726	0.5900	1.0000		
DEPTH	9	-0.0306	0.0474	-0.1276	0.1481	0.2546	-0.0869	-0.1470	0.0599	1.0000	
PCH20	10	0.1592	-0.1653	0.1881	0.0527	0.0161	0.0817	0.1452	0.2107	-0.4178	1.0000
GRAVEL	11	0.2566	-0.0735	-0.1026	0.0617	0.0941	0.1850	0.2496	0.4074	-0.2040	0.1148
SAND	12	0.0206	0.1073	-0.1543	-0.0692	0.0639	0.0057	-0.0480	0.0466	0.4467	-0.7457
SILT	13	-0.0325	-0.0863	0.1077	0.0563	-0.1075	-0.0655	-0.0059	-0.1087	-0.4316	0.5795
CLAY	14	-0.0739	-0.0706	0.2043	0.0431	0.0121	0.0430	0.0406	-0.0503	-0.2055	0.6656
FINES	15	-0.0539	-0.0916	0.1619	0.0585	-0.0731	-0.0300	0.0123	-0.0996	-0.3976	0.6935
PCB	16	0.6379	0.0319	0.7142	0.2935	0.4412	0.3982	0.4377	0.5846	0.0504	0.2169
PAH	17	0.4856	0.1514	0.3559	0.4162	0.4276	0.3231	0.3118	0.6450	-0.0798	0.2338
IRMRL	18	0.5193	0.0475	0.2064	0.2238	0.2110	0.2334	0.2224	0.4625	-0.3229	0.3770
PCVOL	19	0.3203	-0.0821	-0.0417	-0.0853	-0.0925	0.0389	0.1326	0.3684	-0.3335	0.5965
TOC	20	0.3368	-0.0418	-0.0827	-0.0362	-0.0541	0.0371	0.1249	0.4075	-0.2956	0.4371
AVGPHI	21	-0.0866	-0.0768	0.1835	0.0479	-0.0596	-0.0306	-0.0077	-0.1306	-0.3207	0.6666
NEMATOD	22	0.2433	-0.0453	-0.1105	-0.1167	-0.0668	0.0048	-0.0430	0.2758	-0.1976	0.3211
CAPITELL	23	0.2526	-0.0163	-0.1320	-0.1172	-0.0546	0.0185	-0.0519	0.4126	-0.1965	0.3138
AMPHIPOD	24	-0.1498	0.0149	-0.2011	0.0895	0.0331	-0.0298	0.0116	-0.2240	0.3538	-0.5461
OYSLAR	25	0.1032	0.2932	0.0269	0.0352	0.0209	0.0498	-0.0001	-0.0304	-0.0174	0.1452

		GRAVEL	SAND	SILT	CLAY	FINES	PCB	PAH	IRMRL	PCVOL	TOC
		11	12	13	14	15	16	17	18	19	20
GRAVEL	11	1.0000									
SAND	12	0.2770	1.0000								
SILT	13	-0.3014	-0.9375	1.0000							
CLAY	14	-0.4436	-0.7579	0.5122	1.0000						
FINES	15	-0.4006	-0.9913	0.9361	0.7816	1.0000					
PCB	16	0.1905	-0.0114	-0.0038	-0.0275	-0.0140	1.0000				
PAH	17	0.3230	0.0431	-0.0622	-0.0959	-0.0844	0.4361	1.0000			
IRMRL	18	0.5237	-0.0646	0.0774	-0.1594	-0.0090	0.4213	0.7119	1.0000		
PCVOL	19	0.6556	-0.1606	0.1001	-0.0241	0.0628	0.3060	0.4495	0.6856	1.0000	
TOC	20	0.7245	-0.0262	0.0111	-0.2001	-0.0739	0.2935	0.4920	0.7352	0.9599	1.0000
AVGPHI	21	-0.5187	-0.9510	0.8489	0.8808	0.9773	-0.0381	-0.1220	-0.1061	-0.0335	-0.1868
NEMATOD	22	0.3912	-0.0017	0.0203	-0.1619	-0.0516	0.2188	0.3402	0.5382	0.6962	0.6590
CAPITELL	23	0.4875	0.0196	-0.0074	-0.1946	-0.0851	0.2511	0.4252	0.5573	0.7419	0.7251
AMPHIPOD	24	-0.1000	0.3166	-0.2780	-0.2062	-0.2864	-0.3229	-0.2771	-0.3864	-0.4356	-0.3455
OYSLAR	25	-0.0730	-0.1132	0.1310	0.0575	0.1187	-0.0251	-0.0617	0.0398	-0.0704	-0.0843

		AVGPHI	NEMATOD	CAPITELL	AMPHIPOD	OYSLAR
		21	22	23	24	25
AVGPHI	21	1.0000				
NEMATOD	22	-0.1238	1.0000			
CAPITELL	23	-0.1675	0.9455	1.0000		
AMPHIPOD	24	-0.2512	-0.6367	-0.6066	1.0000	
OYSLAR	25	0.1099	0.0658	0.0476	-0.2911	1.0000

R	p - level
0.241	$p < 0.1$
0.285	$p < 0.05$
0.371	$p < 0.01$
0.461	$p < 0.001$

TABLE E-3. Code Numbers for Bays[1]

Code Number	Bays
1	Samish Bay
2	Dabob Bay
3	Sequim Bay
4	Case Inlet
5	Bellingham Bay
6	Fourmile Rock - Elliott Bay
7	Everett Harbor - Port Gardner
8	Sinclair Inlet

[1]Code numbers are referred to in Table E-1.