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SUPPLEMENTAL PUBLIC NOTICE

US Army Corps of Engineers
New York District
ATTN: Harbor Programs Branch (Shea)
26 Federal Plaza, Room 2119
New York, N.Y. 10278-0090

In replying refer to:
Public Notice Number: FP63-SKVK2-2004-A1
Issue Date: 15 April 2004
Expiration Date: 17 May 2004

NEW YORK AND NEW JERSEY HARBOR DEEPENING
NEW YORK AND NEW JERSEY CHANNELS
FEDERAL NAVIGATION PROJECT
CONTRACT AREA S-KVK-2

-- AMENDMENT --

TO WHOM IT MAY CONCERN:

On 19 March 2004, the New York District issued a Public Notice, pursuant to Section 103 of the Marine Protection, Research, and Sanctuaries Act (MPRSA) of 1972 (commonly referred to as the Ocean Dumping Act, 33 U.S.C. 1413), providing notification and a request for comments relating to the potential placement of HARS suitable material obtained under the first construction contract of the New York and New Jersey Harbor Deepening Project, a project authorized by Section 101(a)(2) of the Water Resources Act of 2000, Public Law 106-541. This Amendment serves to explain the status of the Water Quality Certificate, clarify the location of contract area S-KVK-2 and provide data regarding additional glacial till reaches previously analyzed in the S-KVK-2 contract area.

Water Quality Certificate

Prior to issuing the 19 March public notice, the District had requested "programmatic" Water Quality Certificates (WQCs) from the States of New York and New Jersey for the overall project in accordance with Section 401 of the Clean Water Act. The New York State Department of Environmental Conservation issued its WQC to the District on 8 April 2004 (DEC No. 2-6500-00053/00001) and the New Jersey Department of Environmental Protection issued its WQC on 12 April 2004 (File 0000-92-0031.9). Both of these WQCs require the submission of contract area specific data to each agency in order for a specific contract area WQC to be issued. The District is currently in the process of collecting this data to prepare for a specific WQC for the S-KVK-2 construction contract area.

Project Location and Additional Glacial Till Data

Figure 1 provided in the 19 March public notice is replaced in its entirety with the Figure 1 that is part of this Amendment. The contract area S-KVK-2 includes parts of the Kill Van Kull that were in contract areas 3, 4a and 4b of the Kill Van Kull and Newark Bay Channels 45-foot deepening project. Glacial till test results from Reaches 1-3 of contract area 3, which were not provided in the 19 March public notice, are included in this Amendment.

Contract Information

Please contact Mr. Thomas Shea, the NY & NJ Harbor Deepening Project Manager, at telephone number (212) 264-5570 should you have any questions regarding this Amendment or the NY & NJ Harbor Deepening Project in general. Comments or questions may be FAXED to (212) 264-2924.

For more information on New York District programs, visit our website at http://www.nan.usace.army.mil.

We request that you communicate the foregoing information concerning the proposed work to any persons known by you to be interested and who did not receive a copy of this notice.

William F. Slezak
Acting Chief, Harbor Programs Branch

Enclosures

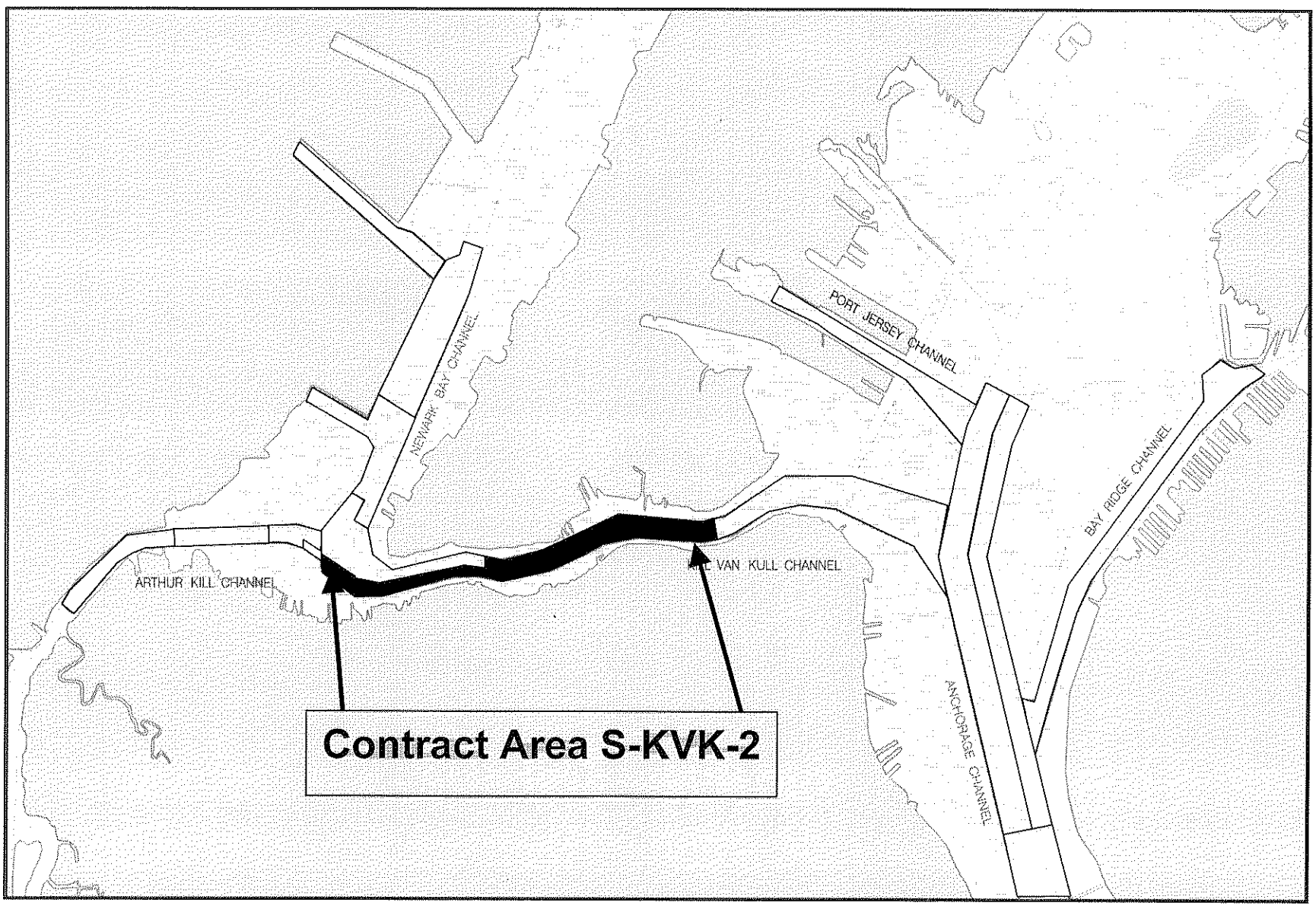

Figure 1 – Contact Area Location Map

Kill van Kull - Contract Area 3, Reach 1

TABLE 2a: Results of Chemical Analysis Of Site Water and Elutriate

CONSTITUENTS	Kill van Kull - Contract Area 3, Reach 1			
	SITE WATER		ELUTRIATE	
	DETECTION LIMITS	CONCENTRATION	DETECTION LIMITS	CONCENTRATION
Metals	ppb (ug/L)	ppb (ug/L)	ppb (ug/L)	ppb (ug/L)
Ag		0.0476	0.0077	ND
Cd		NA		0.0178
Cr		1.26		0.723
Cu		1.73		5.16
Hg		0.0059		0.0028
Ni		1.04		1.50
Pb		0.693		0.325
Zn		6.36		3.69
Pesticides	pptr (ng/L)	pptr (ng/L)	pptr (ng/L)	pptr (ng/L)
Aldrin	4.61	ND	0.63	ND
a-Chlordane	2.10	ND	0.29	ND
trans Nonachlor	2.17	ND	0.35	ND
Dieldrin		1.62	0.46	ND
4,4'-DDT	1.97	ND	0.54	ND
2,4'-DDT	1.92	ND	1.95	ND
4,4'-DDD	1.45	ND	0.16	ND
2,4'-DDD	1.77	ND	0.45	ND
4,4'-DDE	1.59	ND	0.58	ND
2,4'-DDE	1.30	ND	1.17	ND
Total DDT		10.00		4.85
Endosulfan I	2.80	ND	0.41	ND
Endosulfan II	1.95	ND	0.91	ND
Endosulfan sulfate	1.69	ND	0.38	ND
Heptachlor		1.20	0.31	ND
Heptachlor epoxide	2.03	ND	0.28	ND
Industrial Chemicals	pptr (ng/L)	pptr (ng/L)	pptr (ng/L)	pptr (ng/L)
PCB 8	3.17	ND	0.79	ND
PCB 18	4.04	ND	2.69	ND
PCB 28		1.82	1.22	ND
PCB 44	3.73	ND	0.12	ND
PCB 49	3.45	ND	0.14	ND
PCB 52	5.94	ND	0.23	ND
PCB 66	4.03	ND	1.00	ND
PCB 77	3.81	ND	2.16	ND
PCB 87		0.62	1.37	ND
PCB 101	4.38	ND	0.66	ND
PCB 105	3.47	ND	3.28	ND
PCB 118	3.00	ND	0.92	ND
PCB 128	2.88	ND	0.86	ND
PCB 138	3.39	ND	0.95	ND
PCB 153		0.26	2.04	ND
PCB 170		0.08	1.26	ND
PCB 180		0.28		1.29
PCB 183	7.72	ND	0.75	ND
PCB 184		0.38	0.84	ND
PCB 187	3.04	ND	0.25	ND
PCB 195	3.13	ND	0.85	ND
PCB 206	3.10	ND	1.38	ND
PCB 209	3.22	ND	1.78	ND
Total PCBs		130		49.3

Concentrations shown are the mean of three replicate analyses.
ND Not detected.
Total PCBs = 2(x), where x = sum of all PCB congeners detected.
Total DDT = sum of 2,4'- and 4,4'-DDD, DDE, and DDT
Means, total PCBs, and total DDT where determined using conservative estimates of concentrations of constituents below the detection limit.

Kill van Kull - Contract Area 3, Reach 2

TABLE 2b: Results of Chemical Analysis Of Site Water and Elutriate

CONSTITUENTS	SITE WATER		ELUTRIATE	
	DETECTION LIMITS	CONCENTRATION	DETECTION LIMITS	CONCENTRATION
Metals	ppb (ug/L)	ppb (ug/L)	ppb (ug/L)	ppb (ug/L)
Ag		0.0515		0.0384
Cd		NA		1.78
Cr		1.34		1.48
Cu		2.04		7.77
Hg		0.00802		0.00949
Ni		1.12		16.9
Pb		0.879		0.546
Zn		5.98		12.6
Pesticides	pptr (ng/L)	pptr (ng/L)	pptr (ng/L)	pptr (ng/L)
Aldrin	4.71	ND	0.74	ND
a-Chlordane	2.14	ND	0.35	ND
trans Nonachlor		0.32	0.41	ND
Dieldrin		1.52	0.54	ND
4,4'-DDT	2.01	ND	0.63	ND
2,4'-DDT	1.96	ND	2.29	ND
4,4'-DDD	1.48	ND	0.18	ND
2,4'-DDD		0.32	0.53	ND
4,4'-DDE		0.31	0.68	ND
2,4'-DDE	1.32	ND	1.37	ND
Total DDT		7.41		5.70
Endosulfan I	2.86	ND	0.48	ND
Endosulfan II	2.66	ND	1.07	ND
Endosulfan sulfate		0.81	0.44	ND
Heptachlor		1.58	0.36	ND
Heptachlor epoxide	2.07	ND	0.33	ND
Industrial Chemicals	pptr (ng/L)	pptr (ng/L)	pptr (ng/L)	pptr (ng/L)
PCB 8	3.24	ND	0.93	ND
PCB 18	4.13	ND	3.15	ND
PCB 28		1.28	1.43	ND
PCB 44		0.23	0.14	ND
PCB 49	3.52	ND	0.17	ND
PCB 52	6.06	ND	0.55	ND
PCB 66	4.12	ND	1.17	ND
PCB 77	3.89	ND	2.53	ND
PCB 87		0.71	1.61	ND
PCB 101		0.30	0.77	ND
PCB 105	3.54	ND	3.86	ND
PCB 118	3.06	ND	1.08	ND
PCB 128	2.94	ND	1.01	ND
PCB 138	3.46	ND	1.12	ND
PCB 153		0.30	2.40	ND
PCB 170		0.08	1.48	ND
PCB 180		0.28	1.40	ND
PCB 183	7.88	ND	0.88	ND
PCB 184		0.45	0.99	ND
PCB 187	3.10	ND	0.58	ND
PCB 195	3.19	ND	1.00	ND
PCB 206		0.04	1.62	ND
PCB 209		0.07	2.09	ND
Total PCBs		104	58.8	ND

Concentrations shown are the mean of three replicate analyses.
ND Not detected.
Total PCBs = 2(x), where x = sum of all PCB congeners detected.
Total DDT = sum of 2,4'- and 4,4'-DDD, DDE, and DDT
Means, total PCBs, and total DDT where determined using conservative estimates of concentrations of constituents below the detection limit.

TABLE 2c: Results of Chemical Analysis Of Site Water and Elutriate

CONSTITUENTS	SITE WATER		ELUTRIATE	
	DETECTION LIMITS	CONCENTRATION	DETECTION LIMITS	CONCENTRATION
Metals	ppb (ug/L)	ppb (ug/L)	ppb (ug/L)	ppb (ug/L)
Ag		0.0449	0.0077	ND
Cd		NA		0.0231
Cr		1.15		0.625
Cu		2.03		37.8
Hg		0.00575		0.00269
Ni		1.12		4.02
Pb		0.799		0.382
Zn		8.05		3.94
Pesticides	pptr (ng/L)	pptr (ng/L)	pptr (ng/L)	pptr (ng/L)
Aldrin	4.60	ND	0.64	ND
a-Chlordane		0.08	0.30	ND
trans Nonachlor		0.26	0.35	ND
Dieldrin		1.51	0.46	ND
4,4'-DDT	1.97	ND	0.54	ND
2,4'-DDT	1.92	ND	1.96	ND
4,4'-DDD	1.44	ND	0.16	ND
2,4'-DDD		0.25	0.46	ND
4,4'-DDE		0.31	0.58	ND
2,4'-DDE	1.29	ND	1.17	ND
Total DDT		7.17		4.87
Endosulfan I	2.79	ND	0.41	ND
Endosulfan II	1.94	ND	0.91	ND
Endosulfan sulfate	1.68	ND	0.38	ND
Heptachlor		1.31	0.31	ND
Heptachlor epoxide	2.02	ND	0.28	ND
Industrial Chemicals	pptr (ng/L)	pptr (ng/L)	pptr (ng/L)	pptr (ng/L)
PCB 8	3.16	ND	0.80	ND
PCB 18	4.03	ND	2.69	ND
PCB 28		1.42	1.22	ND
PCB 44	3.72	ND	0.12	ND
PCB 49	3.44	ND	0.14	ND
PCB 52	5.92	ND	0.23	ND
PCB 66	4.02	ND	1.00	ND
PCB 77	3.80	ND	2.16	ND
PCB 87		0.61	1.37	ND
PCB 101		0.20	0.66	ND
PCB 105	3.46	ND	3.30	ND
PCB 118	2.99	ND	0.92	ND
PCB 128	2.87	ND	0.86	ND
PCB 138	3.38	ND	0.96	ND
PCB 153		0.27	2.05	ND
PCB 170		0.09	1.27	ND
PCB 180		0.27	1.20	ND
PCB 183	7.69	ND	0.75	ND
PCB 184		0.42	0.84	ND
PCB 187	3.03	ND	0.33	ND
PCB 195	3.12	ND	0.85	ND
PCB 206		0.04	1.39	ND
PCB 209		0.11	1.79	ND
Total PCBs		109	49.5	ND

Concentrations shown are the mean of three replicate analyses.
ND Not detected.
Total PCBs = 2(x), where x = sum of all PCB congeners detected.
Total DDT = sum of 2,4'- and 4,4'-DDD, DDE, and DDT
Means, total PCBs, and total DDT where determined using conservative estimates of concentrations of constituents below the detection limit.

KILL VAN KULL - Contract Area 3, Reach 1

TABLE 3a: Toxicity Test Results

Suspended Particulate Phase

Test Species	Test Duration	LC50/EC50	LPC (a)
Menidia beryllina	96 hours	(b) > 100%	1.000
Mysidopsis bahia	96 hours	(b) > 100%	1.000
Mytilus galloprovincialis (larval survival)	70 hours	(b) > 100%	1.000
Mytilus galloprovincialis (larval normal development)	70 hours	(c) > 100%	1.000

(a) Limiting Permissible Concentration (LPC) is the LC50 or EC50 times 0.01.
(b) Median Lethal Concentration (LC50) resulting in 50% mortality at test termination.
(c) Median Effective Concentration (EC50) based on normal development to the D-cell, prodissoconch 1 stage.

Whole Sediment (10 days)

Test Species	% Survival in Reference	% Survival in Test	% Difference Reference - Test	Is difference statistically significant? (α=0.05)
Ampelisca abdita	94%	94%	0%	NO
Mysidopsis bahia	98%	97%	1%	NO

KILL VAN KULL - Contract Area 3, Reach 2

TABLE 3b: Toxicity Test Results

Suspended Particulate Phase

Test Species	Test Duration	LC50/EC50	LPC (a)
Menidia beryllina	96 hours	(b) > 100%	1.000
Mysidopsis bahia	96 hours	(b) > 100%	1.000
Mytilus galloprovincialis (larval survival)	70 hours	(b) > 100%	1.000
Mytilus galloprovincialis (larval normal development)	70 hours	(c) > 100%	1.000

(a) Limiting Permissible Concentration (LPC) is the LC50 or EC50 times 0.01.
(b) Median Lethal Concentration (LC50) resulting in 50% mortality at test termination.
(c) Median Effective Concentration (EC50) based on normal development to the D-cell, prodissoconch 1 stage.

Whole Sediment (10 days)

Test Species	% Survival in Reference	% Survival in Test	% Difference Reference - Test	Is difference statistically significant? (α=0.05)
Ampelisca abdita	94%	89%	5%	NO
Mysidopsis bahia	98%	98%	0%	NO

TABLE 3c: Toxicity Test Results

Suspended Particulate Phase

Test Species	Test Duration	LC50/EC50	LPC (a)
Menidia beryllina	96 hours	(b) > 100%	1.000
Mysidopsis bahia	96 hours	(b) > 100%	1.000
Mytilus galloprovincialis (larval survival)	70 hours	(b) > 100%	1.000
Mytilus galloprovincialis (larval normal development)	70 hours	(c) > 100%	1.000

(a) Limiting Permissible Concentration (LPC) is the LC50 or EC50 times 0.01.
(b) Median Lethal Concentration (LC50) resulting in 50% mortality at test termination.
(c) Median Effective Concentration (EC50) based on normal development to the D-cell, prodissoconch 1 stage.

Whole Sediment (10 days)

Test Species	% Survival in Reference	% Survival in Test	% Difference Reference - Test	Is difference statistically significant? (α=0.05)
Ampelisca abdita	94%	93%	1%	NO
Mysidopsis bahia	98%	98%	0%	NO

TABLE 4a

PROJECT KVK-3 CONTRACT AREA 3, REACH 1

28-DAY BIOACCUMULATION TEST RESULTS: CHEMICAL ANALYSIS OF TISSUE (in wet weight concentrations)

	Macoma nasuta				*Nereis virens*			
	REFERENCE		TEST		REFERENCE		TEST	
CONSTITUENTS	DETECTION LIMITS	CONCEN-TRATION	DETECTION LIMITS	CONCEN-TRATION	DETECTION LIMITS	CONCEN-TRATION	DETECTION LIMITS	CONCEN-TRATION
Metals	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)
Ag		0.04		0.04		0.03		0.03
As		2.73		3.10		2.36		2.53
Cd		0.04		0.03		0.05		0.05
Cr		0.27		* 0.65		0.10		0.14
Cu		2.06		2.53		0.87		1.00
Hg		0.02		0.02		0.02		0.02
Ni		0.40		* 0.63		0.08		* 0.13
Pb		0.20		* 0.64		0.10		0.18
Zn		13.2		13.9		7.03		6.99
Pesticides	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)
ALDRIN	0.36	ND	0.10	ND	0.57	ND	0.08	ND
ALPHA CHLORDANE		0.08		* 0.42		0.12		0.18
TRANS-NONACHLOR		0.05		* 0.21		0.49		0.42
DIELDRIN		0.16		* 0.26		0.26		0.30
OP-DDD		0.04		* 0.43		0.27		0.21
OP-DDE	0.09	ND		* 0.37	0.90	ND		0.07
OP-DDT	0.32	ND		0.09		0.26		0.06
PP-DDD		0.09		* 1.07		0.36		0.39
PP-DDE		0.43		* 1.87		0.06		0.08
PP-DDT		0.04		* 0.28		0.03		* 0.06
TOTAL DDT		0.80		* 4.12		0.98		0.87
ENDOSULFAN I	0.10	ND		* 0.04	0.52	ND		0.04
ENDOSULFAN II	0.13	ND	0.10	ND	0.19	ND	0.11	ND
ENDOSULFAN SULFATE	0.09	ND	0.10	ND		0.11		0.10
HEPTACHLOR		0.06	0.18	ND	0.50	ND	0.06	ND
HEPTACHLOR EPOXIDE	0.06	ND	0.15	ND	0.65	ND	0.08	ND
Industrial Chemicals	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)
CL2_8		0.06	0.05	ND		0.60		0.11
CL3_18		0.05		* 0.46		0.06		0.12
CL3_28		0.05		* 0.85		0.05		* 0.22
CL4_44		0.02		* 0.32		0.10		* 0.20
CL4_49		0.09		* 1.11		0.30		0.38
CL4_52		0.29		* 1.46		1.11		1.23
CL4_66		0.03		* 0.90		0.08		* 0.23
CL4_77	0.13	ND	0.10	ND	0.74	ND		0.10
CL5_101		0.13		* 1.48		0.95		0.84
CL5_105		0.03		* 0.30		0.44		0.24
CL5_118		0.08		* 0.79		0.54		0.43
CL5_87		0.08		* 0.41		0.13		0.14
CL6_128		0.02		* 0.14		0.20		0.15
CL6_138		0.12		* 0.95		1.33		1.12
CL6_153		0.11		* 0.93		1.73		1.49
CL7_170		0.03		* 0.23		0.34		0.22
CL7_180		0.05		* 0.37		0.82		0.63
CL7_183	0.15	ND		* 0.21		0.24		0.35
CL7_184	0.12	ND	0.08	ND	0.31	ND	0.09	ND
CL7_187		0.09		* 0.31		0.80		0.59
CL8_195	0.08	ND		* 0.05		0.14		0.11
CL9_206	0.06	ND		* 0.05		0.21		0.20
CL10_209	0.09	ND		* 0.04		0.17		0.18
TOTAL PCBs		3.19		* 22.8		20.9		18.5
1,4-DICHLOROBENZENE		0.19		0.24		0.09		* 0.23

TABLE 4a(2)

PROJECT KVK-3 CONTRACT AREA 3, REACH 1

28-DAY BIOACCUMULATION TEST RESULTS: CHEMICAL ANALYSIS OF TISSUE (in wet weight concentrations)

	Macoma nasuta				*Nereis virens*			
	REFERENCE		TEST		REFERENCE		TEST	
CONSTITUENTS	DETECTION LIMITS	CONCEN-TRATION	DETECTION LIMITS	CONCEN-TRATION	DETECTION LIMITS	CONCEN-TRATION	DETECTION LIMITS	CONCEN-TRATION
Dioxins and Furans	(pg/g)	(pg/g)	(pg/g)	(pg/g)	(pg/g)	(pg/g)	(pg/g)	(pg/g)
2378-TCDD	0.42	ND	0.31	ND	0.50	ND	0.51	ND
12378-PeCDD	0.46	ND	0.30	ND	0.75	ND	0.45	ND
123478-HxCDD	0.25	ND	0.27	ND	0.36	ND	0.29	ND
123678-HxCDD	0.28	ND	0.30	ND	0.39	ND	0.33	ND
123789-HxCDD	0.21	ND	0.25	ND	0.49	ND	0.33	ND
1234678-HpCDD	0.48	ND		0.55		1.11		0.64
OCDD		1.02		* 5.52		3.85		3.88
2378-TCDF	0.42	ND		0.53		0.88		0.77
12378-PeCDF	0.34	ND	0.23	ND	0.10	ND	0.19	ND
23478-PeCDF	0.17	ND		0.05	0.37	ND	0.25	ND
123478-HxCDF	0.26	ND		0.10		0.14	0.38	ND
123678-HxCDF	0.25	ND	0.12	ND	0.21	ND	0.37	ND
123789-HxCDF	0.44	ND	0.33	ND	0.44	ND	0.44	ND
234678-HxCDF	0.35	ND	0.41	ND	0.44	ND	0.25	ND
1234678-HpCDF	0.35	ND		0.35		0.32		0.33
1234789-HpCDF	0.55	ND		0.11	0.46	ND	0.46	ND
OCDF	0.93	ND		0.42	1.26	ND	0.93	ND
PAHs	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)
NAPHTHALENE		2.08		1.38		4.07		4.23
ACENAPHTHYLENE	0.38	ND		* 0.51	4.06	ND		0.85
ACENAPHTHENE		0.17		0.45		1.14		0.25
FLUORENE		0.17		0.27	3.37	ND	1.28	ND
PHENANTHRENE		0.43		* 1.86		0.33		0.83
ANTHRACENE		0.35		* 1.51	2.47	ND		0.57
FLUORANTHENE		1.81		* 9.93		0.47		2.57
PYRENE		1.16		* 21.7		0.74		* 3.83
BENZO[A]ANTHRACENE		0.18		* 4.19	1.26	ND		1.13
CHRYSENE		0.84		* 6.89		0.81		1.44
BENZO[B]FLUORANTHENE		0.35		* 5.66	2.03	ND		0.68
BENZO[K]FLUORANTHENE		0.27		* 5.54	1.76	ND		0.92
BENZO[A]PYRENE		0.17		* 5.50	0.95	ND		0.96
INDENO[1,2,3-C,D]PYRENE		0.87		* 1.90	1.31	ND		0.96
DIBENZ[A,H]ANTHRACENE	1.07	ND		* 0.58	2.60	ND		* 0.74
BENZO[G,H,I]PERYLENE		0.77		* 2.27	1.91	ND		1.02

Concentrations shown are the mean of 5 replicate analyses.

* Statistically higher than reference at 95% confidence.

ND = Not detected.

Total PCB = sum of congeners reported * 2.

Total DDT = sum of OP- and PP-DDD, DDE, and DDT.

Means and statistical comparisons were determined using conservative estimates of concentrations of replicates that were below the detection limits.

TABLE 4b

PROJECT KVK-3 CONTRACT AREA 3, REACH 2

28-DAY BIOACCUMULATION TEST RESULTS: CHEMICAL ANALYSIS OF TISSUE (in wet weight concentrations)

	Macoma nasuta				*Nereis virens*			
	REFERENCE		TEST		REFERENCE		TEST	
CONSTITUENTS	DETECTION LIMITS	CONCEN-TRATION	DETECTION LIMITS	CONCEN-TRATION	DETECTION LIMITS	CONCEN-TRATION	DETECTION LIMITS	CONCEN-TRATION
Metals	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)
Ag		0.04		0.04		0.03		0.02
As		2.73		3.12		2.36		2.50
Cd		0.04		* 0.05		0.05		0.04
Cr		0.27		0.43		0.10		0.12
Cu		2.06		2.02		0.87		* 1.32
Hg		0.02		0.02		0.02		0.02
Ni		0.40		* 0.62		0.08		* 0.17
Pb		0.20		* 0.42		0.10		0.11
Zn		13.2		14.7		7.03		7.62
Pesticides	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)
ALDRIN	0.36	ND	0.11	ND	0.57	ND	0.11	ND
ALPHA CHLORDANE		0.08		* 0.41		0.12		* 0.24
TRANS-NONACHLOR		0.05		* 0.21		0.49		0.45
DIELDRIN		0.16		* 0.27		0.26		* 0.38
OP-DDD		0.04		* 0.44		0.27		0.42
OP-DDE	0.09	ND		0.23	0.90	ND		0.16
OP-DDT	0.32	ND		0.06		0.26		0.08
PP-DDD		0.09		* 1.05		0.36		* 0.72
PP-DDE		0.43		* 1.24		0.06		0.11
PP-DDT		0.04		* 0.14		0.03		* 0.07
TOTAL DDT		0.80		* 3.16		0.98		1.57
ENDOSULFAN I	0.10	ND		0.05	0.52	ND		0.07
ENDOSULFAN II	0.13	ND	0.11	ND	0.19	ND	0.14	ND
ENDOSULFAN SULFATE	0.09	ND	0.11	ND		0.11		0.10
HEPTACHLOR		0.06	0.21	ND	0.50	ND		0.04
HEPTACHLOR EPOXIDE	0.06	ND	0.17	ND	0.65	ND	0.11	ND
Industrial Chemicals	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)
CL2_8		0.06	0.06	ND		0.60	0.32	ND
CL3_18		0.05	0.16	ND		0.06		0.07
CL3_28		0.05		* 0.18		0.05		* 0.12
CL4_44		0.02		* 0.10		0.10		* 0.20
CL4_49		0.09		* 0.36		0.30		0.34
CL4_52		0.29		* 0.66		1.11		1.34
CL4_66		0.03		* 0.32		0.08		* 0.17
CL4_77	0.13	ND	0.11	ND	0.74	ND		0.12
CL5_101		0.13		* 0.85		0.95		0.99
CL5_105		0.03		* 0.18		0.44		0.30
CL5_118		0.08		* 0.47		0.54		0.55
CL5_87		0.08		* 0.29		0.13		* 0.20
CL6_128		0.02		* 0.09		0.20		0.20
CL6_138		0.12		* 0.61		1.33		1.34
CL6_153		0.11		* 0.64		1.73		1.74
CL7_170		0.03		* 0.21		0.34		0.24
CL7_180		0.05		* 0.21		0.82		0.73
CL7_183	0.15	ND		* 0.05		0.24		* 0.47
CL7_184	0.12	ND	0.09	ND	0.31	ND	0.12	ND
CL7_187		0.09		* 0.17		0.80		0.66
CL8_195	0.08	ND		* 0.03		0.14		0.13
CL9_206	0.06	ND		* 0.04		0.21		0.24
CL10_209	0.09	ND		* 0.03		0.17		0.21
TOTAL PCBs		3.19		* 11.3		20.9		21.0
1,4-DICHLOROBENZENE		0.19		0.25		0.09		* 0.28

TABLE 4b(2)

PROJECT KVK-3 CONTRACT AREA 3, REACH 2

28-DAY BIOACCUMULATION TEST RESULTS: CHEMICAL ANALYSIS OF TISSUE (in wet weight concentrations)

	Macoma nasuta				*Nereis virens*			
	REFERENCE		TEST		REFERENCE		TEST	
CONSTITUENTS	DETECTION LIMITS	CONCEN-TRATION	DETECTION LIMITS	CONCEN-TRATION	DETECTION LIMITS	CONCEN-TRATION	DETECTION LIMITS	CONCEN-TRATION
Dioxins and Furans	(pg/g)	(pg/g)	(pg/g)	(pg/g)	(pg/g)	(pg/g)	(pg/g)	(pg/g)
2378-TCDD	0.42	ND	0.40	ND	0.50	ND	0.46	ND
12378-PeCDD	0.46	ND	0.41	ND	0.75	ND	0.44	ND
123478-HxCDD	0.25	ND	0.28	ND	0.36	ND	0.27	ND
123678-HxCDD	0.28	ND	0.31	ND	0.39	ND	0.30	ND
123789-HxCDD	0.21	ND	0.24	ND	0.49	ND	0.31	ND
1234678-HpCDD	0.48	ND		0.37		1.11		0.77
OCDD		1.02		* 2.47		3.85		3.42
2378-TCDF	0.42	ND		* 0.40		0.88		1.01
12378-PeCDF	0.34	ND	0.31	ND	0.10	ND	0.17	ND
23478-PeCDF	0.17	ND	0.13	ND	0.37	ND	0.24	ND
123478-HxCDF	0.26	ND	0.21	ND		0.14		0.20
123678-HxCDF	0.25	ND	0.21	ND	0.21	ND	0.32	ND
123789-HxCDF	0.44	ND	0.43	ND	0.44	ND	0.39	ND
234678-HxCDF	0.35	ND	0.40	ND	0.44	ND	0.25	ND
1234678-HpCDF	0.35	ND		0.24		0.32		0.33
1234789-HpCDF	0.55	ND	0.46	ND	0.46	ND	0.39	ND
OCDF	0.93	ND	0.86	ND	1.26	ND	0.87	ND
PAHs	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)
NAPHTHALENE		2.08		1.87		4.07		5.17
ACENAPHTHYLENE	0.38	ND		0.30	4.06	ND		1.41
ACENAPHTHENE		0.17		* 0.63		1.14		0.68
FLUORENE		0.17		0.33	3.37	ND	1.74	ND
PHENANTHRENE		0.43		* 1.24		0.33		0.25
ANTHRACENE		0.35		* 0.78	2.47	ND		0.57
FLUORANTHENE		1.81		* 6.90		0.47		1.45
PYRENE		1.16		* 10.8		0.74		2.50
BENZO[A]ANTHRACENE		0.18		* 4.72	1.26	ND	0.56	ND
CHRYSENE		0.84		* 10.8		0.81		1.57
BENZO[B]FLUORANTHENE		0.35		* 6.57	2.03	ND		0.34
BENZO[K]FLUORANTHENE		* 0.27		* 4.91	1.76	ND		0.33
BENZO[A]PYRENE		0.17		* 6.69	0.95	ND		0.36
INDENO[1,2,3-C,D]PYRENE		0.87		* 1.43	1.31	ND	2.04	ND
DIBENZ[A,H]ANTHRACENE	1.07	ND		0.77	2.60	ND	2.18	ND
BENZO[G,H,I]PERYLENE		0.77		* 2.50	1.91	ND		0.59

Concentrations shown are the mean of 5 replicate analyses.

* Statistically higher than reference at 95% confidence.

ND = Not detected.

Total PCB = sum of congeners reported * 2.

Total DDT = sum of OP- and PP-DDD, DDE, and DDT.

Means and statistical compansons were determined using conservative estimates of concentrations of replicates that were below the detection limits.

TABLE 4c

PROJECT KVK-3 CONTRACT AREA 3, REACH 3

28-DAY BIOACCUMULATION TEST RESULTS: CHEMICAL ANALYSIS OF TISSUE (in wet weight concentrations)

	Macoma nasuta				*Nereis virens*			
	REFERENCE		TEST		REFERENCE		TEST	
CONSTITUENTS	DETECTION LIMITS	CONCEN-TRATION	DETECTION LIMITS	CONCEN-TRATION	DETECTION LIMITS	CONCEN-TRATION	DETECTION LIMITS	CONCEN-TRATION
Metals	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)
Ag		0.04		0.05		0.03		0.03
As		2.73		2.91		2.36		2.40
Cd		0.04		0.04		0.05		0.05
Cr		0.27		* 0.55		0.10		0.13
Cu		2.06		* 2.91		0.87		* 1.20
Hg		0.02		0.02		0.02		0.02
Ni		0.40		* 0.72		0.08		* 0.15
Pb		0.20		* 0.64		0.10		0.15
Zn		13.2		15.1		7.03		7.28
Pesticides	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)
ALDRIN	0.36	ND	0.45	* ND	0.57	ND	0.48	* ND
ALPHA CHLORDANE		0.08		* 0.30		0.12		* 0.24
TRANS-NONACHLOR		0.05		* 0.13		0.49		0.43
DIELDRIN		0.16		* 0.34		0.26		0.37
OP-DDD		0.04		* 0.52		0.27		0.61
OP-DDE	0.09	ND		* 0.30	0.90	ND	0.75	* ND
OP-DDT	0.32	ND		0.20		0.26		0.34
PP-DDD		0.09		* 0.99		0.36		* 1.02
PP-DDE		0.43		* 1.92		0.06		* 0.14
PP-DDT		0.04		* 0.51		0.03		* 0.19
TOTAL DDT		0.80		* 4.43		0.98		* 3.05
ENDOSULFAN I	0.10	ND	0.12	ND	0.52	ND	0.43	* ND
ENDOSULFAN II	0.13	ND	0.17	ND	0.19	ND	0.16	ND
ENDOSULFAN SULFATE	0.09	ND	0.11	ND		0.11		0.15
HEPTACHLOR		0.06	0.09	ND	0.50	ND	0.42	* ND
HEPTACHLOR EPOXIDE	0.06	ND	0.08	ND	0.65	ND	0.54	* ND
Industrial Chemicals	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)
CL2_8		0.06		* 0.15		0.60		* 1.30
CL3_18		0.05		* 0.24		0.06		* 0.16
CL3_28		0.05		* 0.85		0.05		* 0.29
CL4_44		0.02		* 0.16		0.10		* 0.23
CL4_49		0.09		* 0.92		0.30		* 0.55
CL4_52		0.29		* 1.25		1.11		* 1.58
CL4_66		0.03		* 0.62		0.08		* 0.25
CL4_77	0.13	ND	0.17	ND	0.74	ND	0.61	* ND
CL5_101		0.13		* 1.25		0.95		1.34
CL5_105		0.03		* 0.37		0.44		0.50
CL5_118		0.08		* 1.13		0.54		0.83
CL5_87		0.08		* 0.43		0.13		0.19
CL6_128		0.02		* 0.18		0.20		0.25
CL6_138		0.12		* 1.07		1.33		1.59
CL6_153		0.11		* 0.91		1.73		1.69
CL7_170		0.03		* 0.25		0.34		0.32
CL7_180		0.05		* 0.34		0.82		0.80
CL7_183	0.15	ND		0.07		0.24		0.24
CL7_184	0.12	ND	0.15	ND	0.31	ND		0.45
CL7_187		0.09		* 0.36		0.80		0.78
CL8_195	0.08	ND		* 0.05		0.14		0.14
CL9_206	0.06	ND		* 0.05		0.21		0.22
CL10_209	0.09	ND		* 0.04		0.17		0.19
TOTAL PCBs		3.19		* 20.7		20.9		27.8
1,4-DICHLOROBENZENE		0.19		* 0.32		0.09		* 0.33

TABLE 4c(2)

PROJECT KVK-3 CONTRACT AREA 3, REACH 3

28-DAY BIOACCUMULATION TEST RESULTS: CHEMICAL ANALYSIS OF TISSUE (in wet weight concentrations)

	Macoma nasuta				*Nereis virens*			
	REFERENCE		TEST		REFERENCE		TEST	
CONSTITUENTS	DETECTION LIMITS	CONCEN-TRATION	DETECTION LIMITS	CONCEN-TRATION	DETECTION LIMITS	CONCEN-TRATION	DETECTION LIMITS	CONCEN-TRATION
Dioxins and Furans	(pg/g)	(pg/g)	(pg/g)	(pg/g)	(pg/g)	(pg/g)	(pg/g)	(pg/g)
2378-TCDD	0.42	ND	1.60	* ND	0.50	ND	0.51	ND
12378-PeCDD	0.46	ND	0.40	ND	0.75	ND	0.44	ND
123478-HxCDD	0.25	ND	0.23	ND	0.36	ND	0.30	ND
123678-HxCDD	0.28	ND	0.25	ND	0.39	ND		0.19
123789-HxCDD	0.21	ND	0.20	ND	0.49	ND	0.32	ND
1234678-HpCDD	0.48	ND		0.51		1.11		0.90
OCDD		1.02		* 3.32		3.85		3.68
2378-TCDF	0.42	ND		2.63		0.88		1.10
12378-PeCDF	0.34	ND	0.44	ND	0.10	ND	0.20	ND
23478-PeCDF	0.17	ND	0.14	ND	0.37	ND		0.20
123478-HxCDF	0.26	ND	0.18	ND		0.14		0.22
123678-HxCDF	0.25	ND	0.17	ND	0.21	ND	0.39	ND
123789-HxCDF	0.44	ND	0.35	ND	0.44	ND	0.44	ND
234678-HxCDF	0.35	ND	0.34	ND	0.44	ND	0.25	ND
1234678-HpCDF	0.35	ND		0.22		0.32		0.34
1234789-HpCDF	0.55	ND	0.35	ND	0.46	ND	0.41	ND
OCDF	0.93	ND	0.67	ND	1.26	ND	0.93	ND
PAHs	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)
NAPHTHALENE		2.08		2.54		4.07		3.03
ACENAPHTHYLENE	0.38	ND		* 0.33	4.06	ND	3.38	ND
ACENAPHTHENE		0.17		0.21		1.14		0.51
FLUORENE		0.17		* 0.36	3.37	ND	2.80	ND
PHENANTHRENE		0.43		* 1.99		0.33		0.30
ANTHRACENE		0.35		* 4.31	2.47	ND	2.06	ND
FLUORANTHENE		1.81		* 10.7		0.47		1.50
PYRENE		1.16		* 22.9		0.74		* 2.81
BENZO[A]ANTHRACENE		0.18		* 3.95	1.26	ND	1.04	ND
CHRYSENE		0.84		* 8.72		0.81		0.83
BENZO[B]FLUORANTHENE		0.35		* 4.96	2.03	ND	1.69	ND
BENZO[K]FLUORANTHENE		0.27		* 4.02	1.76	ND	1.46	ND
BENZO[A]PYRENE		0.17		* 4.34	0.95	ND	0.79	ND
INDENO[1,2,3-C,D]PYRENE		0.87		1.06	1.31	ND	1.09	ND
DIBENZ[A,H]ANTHRACENE	1.07	ND		0.48	2.60	ND	2.16	ND
BENZO[G,H,I]PERYLENE		0.77		* 1.72	1.91	ND	1.59	ND

Concentrations shown are the mean of 5 replicate analyses.

* Statistically higher than reference at 95% confidence.

ND = Not detected.

Total PCB = sum of congeners reported * 2.

Total DDT = sum of OP- and PP-DDD, DDE, and DDT.

Means and statistical comparisons were determined using conservative estimates of concentrations of replicates that were below the detection limits.