

**NEW JERSEY SURVEY OF FISH AND SHELLFISH TISSUE FOR THE EVALUATION
OF SPATIAL TRENDS AND HUMAN HEALTH IMPACTS**

A SUPPLEMENTAL STUDY TO

**ASSESSMENT OF PCBs, SELECTED ORGANIC
PESTICIDES AND MERCURY IN FISHES FROM NEW JERSEY:
1998-1999 MONITORING PROGRAM (Report No. 00-20F)**

Report No. 02-13

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25 July 2002

INTRODUCTION

In 1998, the Patrick Center for Environmental Research (PCER) initiated a study on concentrations of PCBs, pesticides and mercury in fishes of New Jersey. This study was a follow-up of earlier studies focusing on mercury in freshwater fishes. In 2000, this project was amended to include additional samples of fish and shellfish (See Appendix I for detailed information on samples collected). This document summarizes the results of the QA/QC protocols of this study. The summary of concentrations from this supplemental study includes results from polychlorinated biphenyl (PCB), organochlorine pesticide (OCP) and mercury (Hg) analyses (Appendix II) as well as dioxin analysis for certain samples (Appendix III).

I. Mercury

a) Extractions and Analyses:

Strong acid digestions were performed using 10 ml nitric acid on approximately 1 g homogenized wet fish material in a CEM MDS 2100 microwave digestion system. Mercury analysis was subsequently accomplished on a Perkin Elmer Fimms 400 Cold Vapor AA. Calibration blanks, intercalibration verification samples, and instrument duplicates were analyzed to ensure instrument performance and accuracy.

b) Analytical Quality Assurance:

Sample blanks, duplicates, spikes, and a National Research Counsel of Canada (NRC) Standard Reference Material (DORM-2, dogfish muscle) were digested with the samples to ensure adequate recoveries. Recoveries for NRC Dorm-2 were compared to the certified NRC values and were within 94-100% of the actual concentration for all samples digested. The average relative percent differences (RPD) for duplicates was 11% (ranging from 2 to 20%). Finally, sample spikes were analyzed and were typically within 95-109% of added concentrations.

II. Polychlorinated Biphenyls and Organochlorine Pesticides

a) Extractions and Analyses:

Homogenized fish samples were stored frozen until extraction. Samples were thawed and 2 g of the homogenate was sub-sampled using a stainless steel spatula. An additional 2-5 g sub-sample was taken for moisture analysis. Approximately 30 g of Na₂SO₄ (previously extracted with hexane using a Soxhlet extractor and dried) was added to the sub-sample to eliminate water. The dried sample was placed in a glass thimble and extracted using a Soxhlet extractor with ca. 200 ml dichloromethane (DCM) for a minimum of 18 h. The extracts were sub-sampled for gravimetric lipid determination. For this, a known volume of extract was transferred to a pre-weighed aluminum pan. The solvent was evaporated at 110°C for at least 24 h. The residue remaining (lipid) was weighed and percent lipid was calculated.

Lipids were removed from sample extracts by gel permeation chromatography (GPC) using DCM as the mobile phase. The collected fraction containing analytes was concentrated by roto-evaporation and a N₂ stream. Solid-liquid chromatography using florisil was done as an additional clean-up step. Using this technique, PCBs (as well as heptachlor, nonachlors, and DDEs) were eluted from the chromatographic column containing florisil using petroleum ether (F1 fraction). The remaining organochlorine pesticides were eluted using 50:50 petroleum ether and dichloromethane (F2 fraction).

Congener-specific PCBs and organochlorine pesticides (Table 1) were analyzed using a Hewlett Packard 5890 gas chromatograph equipped with a ⁶³Ni electron capture detector and a 5% phenylmethyl silicon capillary column. The identification and quantification of PCB congeners followed the '610 Method' in which the identities and concentrations of each congener in a mixed Aroclor standard (25:18:18 mixture of Aroclors 1232, 1248 and 1262) were determined by calibration with individual PCB congener standards. Congener identities in the sample extracts were based on their chromatographic retention times relative to the internal standards added. In cases where two or more congeners could not be chromatographically resolved, the combined concentrations were reported (Table 1). Organochlorine pesticides (OCPs) were identified and quantified based on comparisons (retention times and peak areas) with a known calibration standard prepared from individual compounds.

b) Analytical Quality Assurance:

Detection Limits: Matrix blanks were generated to monitor possible laboratory contamination and to calculate the detection limits for PCBs and OCPs. Each matrix blank, consisting of approximately 30 g of clean Na₂SO₄, was analyzed using the same procedures as the samples. Chromatograms of most blanks were void of significant peaks suggesting that little contamination through laboratory exposure occurred.

The detection limit was estimated as three times the peak area of the signal produced in the matrix blank. The method detection may be reported on a mass per sample basis or, if extraction weights of sub-sampled fish remained relatively invariant as in this study (~2 g), a 'wet weight normalized' concentration may be reported. The matrix blank-based detection limits for PCBs and OCPs ranged from 0.01 (several congeners) to 18.82 (congener 1) and 0.10 (p,p DDE) to 324 (beta BHC) ng/g wet weight, respectively (Tables 2 and 3). Based on the matrix blanks, the detection limit for total PCBs (t-PCBs) was 25 ng/g wet weight (excluding congener 1). Based on the high detection limits for beta BHC and congener 1, we suggest that using our analytical techniques and instrumentation, these compounds cannot be accurately determined due to suspected interference (likely coelution). Both of these compounds are very likely not to be found in any appreciable concentrations in fish samples from this study area because of their relatively volatile nature (low Log Kow values).

Surrogate Recoveries: Analyte loss through analytical manipulations was assessed by the addition of surrogate PCB congeners 14, 65 and 166 prior to extraction by Soxhlet apparatus. These surrogates were not industrially prepared and therefore are not present in the environment.

Average recoveries of congeners 14, 65 and 166 were $102 \pm 32\%$, $81 \pm 22\%$ and $102 \pm 25\%$. Due to the relatively high surrogate recoveries and the low standard deviations, all reported values for PCB and OCP concentration in this study were not corrected for analyte loss.

Duplicate Analyses: Table 4 shows the results from duplicate analyses of samples for PCB and OCPs. With a few exceptions, RPDs were low and within past ranges. The average RPD for all chlorinated compounds was 56%. Average RPD for PCBs is 29% and is within past ranges. For OCPs, RPDs ranged from 34% for Aldrin to 90% for chlordanes.

III. Dioxin

a) Background:

The following section of this QA/QC report contains the dioxin/furan results (see Appendix III) of the analyses of 20 tissue samples performed by the Geochemical and Environmental Research Group (GERG) within the College of Geosciences at Texas A&M University (Directed by Dr. Terry Wade). These samples were part of GERG's sample delivery group SDG B1317. The samples were analyzed as two QC batches DX0492 and DX0493. DX0492 was extracted on 01/24/01 and analyzed on 02/13/01. DX0493 was extracted on 01/30/01 and analyzed on 02/21/01.

b) Analytical Results/Methodology:

The samples were extracted and analyzed following the procedures contained in EPA Method 1613 Rev. B and GERG SOP 9722. The analyte concentrations were determined using labeled surrogates added to the sample prior to extraction.

Quality Control:

Calibrations

The analytes are calculated using an average response factor based on the form:

$$\text{RRF (n)} = (\text{Ax} * \text{Cqs}) / (\text{Aqs} * \text{Cx})$$

$$\text{RRF (m)} = (\text{Aqs} * \text{Cis}) / (\text{Ais} * \text{Cqs})$$

where

Ax = sum of the integrated ion abundance's of the quantitation ions for unlabeled PCDDs and PCDFs,

Aqs = sum of the integrated ion abundance's of the quantitation ions for the labeled quantitation standards,

Ais = sum of the integrated ion abundance's of the quantitation ions for the labeled internal standards,

Cx = concentration of the unlabeled PCDD and/or PCDF analyte in the calibration solution (pg/ml),

Cqs = concentration of the $^{13}\text{C}_{12}$ -labeled quantitation standard in the calibration solution (100 pg/ml), and

Calibration data used in the quantitation of detected analytes met the calibration criteria; no deviations beyond the control limits were observed. The average percent deviation was less than 15%, and no analyte had a percent deviation greater than 25% deviation.

Example Calculations

The concentration of the target analytes and the recovery of the $^{13}\text{C}_{12}$ -labeled quantitation standards are calculated using the following equations:

$$C_x = (A_x * C_{qs}) / [A_{qs} * \text{RRF}(n)]$$

$$\% \text{ Recovery} = (A_x * C_{is} * 100) / [A_{is} * C_{qs} * \text{RRF}(m)]$$

where:

A_x = sum of the integrated ion abundance's of the quantitation ions for unlabeled PCDDs and PCDFs,

A_{qs} = sum of the integrated ion abundance's of the quantitation ions for the $^{13}\text{C}_{12}$ -labeled quantitation standards,

A_{is} = sum of the integrated ion abundance's of the quantitation ions for the $^{13}\text{C}_{12}$ -labeled internal standards,

C_x = concentration of the unlabeled PCDDs and PCDFs isomers in pg/ μl

C_{qs} = concentration of the $^{13}\text{C}_{12}$ -labeled quantitation standard in the calibration solution (100 pg/ μl),

C_{is} = concentration of the $^{13}\text{C}_{12}$ -labeled internal standard in the calibration solution (100 pg/ μl),

$\text{RRF}(n)$ = Mean relative response factor for the unlabeled target analyte relative to its $^{13}\text{C}_{12}$ -labeled quantitation standard [RRF(n), with n = 1 to 17], and

$\text{RRF}(m)$ = Mean relative response factor for $^{13}\text{C}_{12}$ -labeled quantitation standard relative to its $^{13}\text{C}_{12}$ -labeled internal standard [RRF(m), with m = 1 to 15].

The sample concentration is calculated using the equation:

$$\text{Concentration} = x * df / wt$$

where:

Concentration = the concentration of the analyte (ng/g or ng/L);

x = amount of the analyte as found from solving the quadratic equation;

df = dilution factor;

wt = the sample weight in grams or volume in liters.

Laboratory Qualifiers

All of the analytical data have been qualified based on the most recent method detection limits determined. Concentrations that were less than the LOQ adjusted for sample sizes are qualified “J” and those analytes not detected are qualified “ND.” Concentrations that exceeded the calibration limits are qualified “EC”. The concentrations that are determined by analyses of a diluted aliquot are qualified “D”. If interference is encountered with the quantification of an analyte due to high concentration of another analyte, the concentration is qualified “I” to denote this interference.

Analytical Difficulties

The procedural blank for QC batch DX0492 contained no analytes above the LOQ. The procedural blank for QC batch DX0493 contained no analytes greater than 3 times the LOQ. Surrogates recoveries were acceptable for all surrogates except 13C-1,2,3,4,7,8,9-HpCDF in samples C37396 (140%). There were no analytes detected in the samples that were quantified with that surrogates. No further action was taken. The matrix spike (MS) and matrix spike duplicate (MSD) recoveries for QC batch DX0492 were acceptable except for 2,3,7,8-TCDD in the MS and 2,3,4,7,8-PeCDF in the MSD. They were only slightly above the acceptance criteria and no further action was taken. The matrix spike (MS) and matrix spike duplicate (MSD) recoveries for QC batch DX0493 were acceptable except for 2,3,7,8-TCDF in both the MS and in the MSD and 2,3,7,8-TCDD, 1,2,3,6,7,8-HxCDF, 1,2,3,7,8,9-HxCDF in the MS. They were only slightly above the acceptance criteria and no further action was taken. The recoveries for 2,3,7,8-TCDD and 2,3,7,8-TCDF in the SRM (NRCC Carp-1) were acceptable for both QC batch DX0492 and DX0493. The 1,2,3,7,8-PeCDD in the SRM for both DX0492 and DX0493 slightly exceeded the acceptance criteria and the MS and MSD are acceptable for this analyte. The 1,2,3,7,8-PeCDF in the SRM for both DX0492 and DX0493 exceeds the acceptance criteria by a factor of 10, but the MS and MSD are acceptable for this analyte. The reason for the high concentration of 1,2,3,7,8-PeCDF in the SRM is not known, but is consistently found for this SRM by GERG. It however does not affect the sample concentrations as documented by the acceptable MS and MSD recoveries. Other analyte were acceptable in the SRM or not detected in any of the samples. No further action was taken. No further variances or difficulties were observed.

TABLES

Table 1. List of target organic analytes.

Polychlorinated Biphenyls (PCBs)		Organochlorine Pesticides (OCPs)	Dioxins
1	85	o,p DDE	2,3,7,8-TCDF
3	136	p,p DDE	1,2,3,7,8-PeCDF
4+10	77+110	o,p DDT	2,3,4,7,8-PeCDF
7	82	p,p DDT	1,2,3,4,7,8-HxCDF
6	151	o,p DDD	1,2,3,6,7,8-HxCDF
8+5	135+144	p,p DDD	2,3,4,6,7,8-HxCDF
19	107	Alpha BHC	1,2,3,7,8,9-HxCDF
12+13	149	Beta BHC	1,2,3,4,6,7,8-HpCDF
18	118	Delta BHC	1,2,3,4,7,8,9-HpCDF
17	131	Lindane	OCDF
24+27	146	Heptachlor	
16+32	153+132+105	Heptachlor Epoxide	2,3,7,8-TCDD
29	141	Oxychlordane	1,2,3,7,8-PeCDD
26	137+176	Gamma Chlordane	1,2,3,4,7,8-HxCDD
25	163+138	Alpha Chlordane	1,2,3,6,7,8-HxCDD
31+28	158	Cis nonachlor	1,2,3,7,8,9-HxCDD
53+33+21	129+178	Trans nonachlor	1,2,3,4,6,7,8-HpCDD
22	187+182	Dieldrin	OCDD
45	183	Endrin	
46	128	Aldrin	
52	185	Endosulfan I	
49	174	Endosulfan II	
47	177		
48	202+171		
44	157+202		
37+42	172+197		
41+71	180		
40	193		
100	191		
63	199		
74	170+190		
70+76	201		
66+95	203+196		
91	189		
56+60	208+195		
101	207		
99	194		
83	205		
97	206		
87+81	209		

Table 2. Detection limits for individual PCB congeners.

Congener	Detection Limit ng/g sample	Congener	Detection Limit ng/g sample
1	18.82	85	0.08
3	0.30	136	0.01
4+10	0.14	77+110	0.34
7	0.06	82	0.03
6	0.11	151	0.13
8+5	0.79	135+144	0.04
19	0.03	107	0.00
12+13	0.27	149	0.20
18	0.20	118	0.22
17	0.10	131	0.01
24+27	0.06	146	0.26
16+32	0.38	153+132+105	1.42
29	0.02	141	0.05
26	0.03	137+176	0.18
25	1.45	163+138	0.45
31+28	0.34	158	0.33
53+33+21	0.22	129+178	0.30
22	0.91	187+182	0.25
45	0.09	183	0.12
46	0.01	128	0.31
52	0.31	185	0.09
49	0.18	174	0.11
47	5.36	177	0.04
48	0.00	202+171	0.12
44	0.18	157+202	0.15
37+42	0.14	172+197	0.00
41+71	0.82	180	0.32
40	0.01	193	0.07
100	0.01	191	0.02
63	0.01	199	1.35
74	0.20	170+190	0.29
70+76	0.15	201	0.55
66+95	0.81	203+196	1.22
91	0.02	189	0.30
56+60	0.47	208+195	0.25
101	0.26	207	0.30
99	0.11	194	0.17
83	0.02	205	0.30
97	0.03	206	0.30
87+81	0.30	209	0.30

Table 3. Detection limits (ng/g) for individual OCPs.

Organochlorine Pesticide	Detection Limit ng/g sample
o,p DDE	0.41
p,p DDE	0.10
o,p DDT	0.30
p,p DDT	6.98
o,p DDD	0.21
p,p DDD	0.30
Alpha BHC	0.57
Beta BHC	324
Delta BHC	0.30
Lindane	0.30
Heptachlor	0.46
Heptachlor Epoxide	0.30
Oxychlordane	2.67
Gamma Chlordane	0.59
Alpha Chlordane	0.42
Cis nonachlor	1.21
Trans nonachlor	1.30
Dieldrin	0.30
Endrin	0.30
Aldrin	0.30
Endosulfan I	0.30
Endosulfan II	0.30

Table 4. Duplicate relative percent differences (RPDs) for PCBs and OCPs.

<i>Sample</i>	<i>lipid (%)</i>	<i>Total PCBs</i>	<i>Total DDXs</i>	<i>Alpha BHC</i>	<i>Beta BHC</i>	<i>Delta BHC</i>	<i>Lindane</i>	<i>Total Chlordanes</i>	<i>Dieldrin</i>	<i>Endrin</i>	<i>Aldrin</i>	<i>Endos I</i>	<i>Endos II</i>
3964	5.68	1191	423	9.52			2.57	122.68	18.93		4.54	89.32	3.28
3964 dup	3.85	338	148	4.05			0.75	46.18	3.61		2.52	3.93	0.86
RPD	38	112	96	81			109	91	136		57	183	117
4165	10.87	108	71				1.09	10.77			4.28	7.58	
4165dup	10.37	110	86				1.98	32.41			5.07	16.35	
RPD	5	1	108				58	100			17	73	
HP3021	7.05	1476	641	6.64		1.59	0.67	205.11	35.13	2.13	6.00	7.15	18.64
HP3021dup	8.51	2089	761	5.03		1.20	0.51	214.09	26.62	1.62	4.55	5.41	14.12
RPD	19	34	17	28		28	28	4	27.58	27.58	28	28	28
M2992	2.52	14	23					0.20	0.17				
M2992dup	2.58	15	43					30.11	0.30	0.72			0.33
RPD	2	2	62					197	57				
M2993	0.83	31	46					10.53					0.44
M2993dup	0.82	26	40					5.16					0.26
RPD	1	16	14					68					50
M3022	0.64	64	36				0.73	21.77					
M3022dup	0.79	58	34				0.25	9.58					
RPD	21	9	4				99	78					
avg RPD	14	29	50	54		28	74	90	74	28	34	95	65
avg RPD													56

Appendix I: Summary of Collected Samples

Appendix I: List of Fish Samples Collected and Analyzed

Common Name	Scientific Name	Analytical Number	Number	Sex	min TL cm	max TL cm	mean TL cm	mean NW g	min NW g	max NW g	Location	Date
menhaden	<i>Brevoortia tyrannus</i>	F-2696	21		7.4	9.4	8.6	5.9	3.8	9.4	Raritan River, Sayreville	August 23, 2000
menhaden	<i>Brevoortia tyrannus</i>	F-2697	21		7.7	9.8	8.7	6.1	3.9	8.7	Raritan River, Sayreville	August 23, 2000
menhaden	<i>Brevoortia tyrannus</i>	F-2698	21		7.4	9.6	8.5	6.0	4.0	8.7	Raritan River, Sayreville	August 23, 2000
menhaden	<i>Brevoortia tyrannus</i>	F-2699	21		7.5	9.5	8.5	5.9	4.0	7.3	Raritan River, Sayreville	August 23, 2000
menhaden	<i>Brevoortia tyrannus</i>	F-2700	16		12.0	15.0	13.4	25.0	17.7	33.7	Atlantic Ocean off Island Beach SP	October 23, 2000
menhaden	<i>Brevoortia tyrannus</i>	F-2701	16		11.9	14.7	13.6	27.2	17.9	34.6	Atlantic Ocean off Island Beach SP	October 23, 2000
menhaden	<i>Brevoortia tyrannus</i>	F-2702	16		11.2	15.5	13.5	26.0	11.2	15.5	Atlantic Ocean off Island Beach SP	October 23, 2000
menhaden	<i>Brevoortia tyrannus</i>	F-2704	4		7.4	35.9	35.0	445.8	432.2	460.7	Atlantic Ocean, offloaded Cape May	June 13, 2001
menhaden	<i>Brevoortia tyrannus</i>	F-2705	4		7.4	36.4	35.2	452.4	429.1	487.3	Atlantic Ocean, offloaded Cape May	June 13, 2001
menhaden	<i>Brevoortia tyrannus</i>	F-2706	4		7.4	34.5	33.7	414.1	396.8	424.0	Atlantic Ocean, offloaded Cape May	June 13, 2001
menhaden	<i>Brevoortia tyrannus</i>	F-2707	4		7.4	34.9	34.3	418.4	401.1	435.6	Atlantic Ocean, offloaded Cape May	June 13, 2001
swordfish	<i>Xiphias gladius</i>	F-2703	1				about 150				Atlantic Ocean, Tom's Canyon, 80	October 21, 2000
weakfish	<i>Cynoscion regalis</i>	F-2686	1	F			39.5	640.4			Perth Amboy	September 9, 2000
weakfish	<i>Cynoscion regalis</i>	F-2687	1	F			36.9	542.2			Perth Amboy	September 9, 2000
weakfish	<i>Cynoscion regalis</i>	F-2688	1	F			39.8	696.2			Perth Amboy	September 9, 2000
weakfish	<i>Cynoscion regalis</i>	F-2689	1	F			44.2	726.3			Perth Amboy	September 9, 2000
summer flounder	<i>Paralichthys dentatus</i>	F-2690	1	F			42.9	879.7			Perth Amboy	September, 1999
summer flounder	<i>Paralichthys dentatus</i>	F-2691	1	F			39.0	728.6			Perth Amboy	September, 1999
summer flounder	<i>Paralichthys dentatus</i>	F-2692	1	F			31.9	707.8			Perth Amboy	September, 1999
summer flounder	<i>Paralichthys dentatus</i>	F-2693	1	F			37.1	609.9			Perth Amboy	September, 1999
summer flounder	<i>Paralichthys dentatus</i>	F-2694	1	F			36.6	562.4			Perth Amboy	September, 1999
summer flounder	<i>Paralichthys dentatus</i>		1	F			36.3	539.7			Perth Amboy	September, 1999
blue crab	<i>Callinectes sapidus</i>	F-2736	7	M	10.7	16.6			79.3	209.5	South River	July 30, 1998
blue crab	<i>Callinectes sapidus</i>	F-2737	5	M	14.1	15.6			126.5	220.8	Raritan River (lower)	September, 1999
blue crab	<i>Callinectes sapidus</i>	F-2738	7	M,F	11.5	14.9			91.7	160.1	Raritan, Rt 35 (Victory Bridge)	September, 1999
blue crab	<i>Callinectes sapidus</i>	F-2739	8	M,F	13.1	15.4			113.1	162.4	Raritan River (lower)	September, 1999
blue crab	<i>Callinectes sapidus</i>	F-2740	5	M	13.1	15.8			127.8	210.1	Raritan River (lower)	September, 1999
blue crab	<i>Callinectes sapidus</i>	F-2741	7	M,F	12.1	15.0			78.1	156.5	Raritan River (lower)	September, 1999
blue crab	<i>Callinectes sapidus</i>	F-2742	7	M,F	11.5	15.6			95.6	158.6	Raritan River (lower)	September, 1999
blue crab	<i>Callinectes sapidus</i>	F-2743	6	M	12.0	15.0			111.1	187.8	Raritan River (lower)	September, 1999
blue crab	<i>Callinectes sapidus</i>	F-2744	6	M	12.2	14.6			112.5	186.0	Raritan River (lower)	September, 1999
blue crab	<i>Callinectes sapidus</i>	F-2745	8	M,F	11.6	14.5			82.0	186.4	Raritan River (lower)	September, 1999

Appendix II: Summary of Hg, PCB, and organochlorine pesticide concentrations

Appendix II. Summary of concentrations (ng/g) of PCBs, organochlorine pesticides and mercury in fish and crab samples.

Fish Tissue																
Sample ID	3948	Data	3949	Data	3950	Data	3951	Data	3952	Data	3953	Data	3954	Data	3955	Data
F-Number	2686	Qualifier	2687	Qualifier	2688	Qualifier	2689	Qualifier	2690	Qualifier	2691	Qualifier	2692	Qualifier	2693	Qualifier
Species	CYREG		CYREG		CYREG		CYREG		PADEN		PADEN		PADEN		PADEN	
Common Name	weakfish		weakfish		weakfish		weakfish		flounder		flounder		flounder		flounder	
Lipid Content (%)	5.64		10.26		11.39		1.49		1.51		1.33		2.38		0.84	
Mercury Concentration (ug/g wet wgt)	0.0695		0.0771		0.0725		0.1401		0.087		0.1031		0.0447		0.0679	
PCB Congeners (ng/g wet wgt)																
1		NA		NA		NA		NA		NA		NA		NA		NA
3		ND		ND		ND		ND		ND		ND		ND		ND
4+10		ND		ND		ND		ND		J		J		J		ND
7	0.20		0.27		0.17			ND	0.05		0.04			J		ND
6	0.44		1.59		0.77			ND	0.43		0.43			J	0.37	
8+5	3.16		5.12		3.64			J		J		J		J		ND
19	0.44		0.54		0.45			ND	0.11		0.17		0.08			ND
12+13		J		J		J		J		J		J		J		ND
18	4.25		5.82		4.24		0.34		0.91		1.10		0.69		1.07	
17	2.21		3.42		2.50		0.19		0.57		0.70		0.41		0.64	
24+27	0.37		0.49		0.36			J		J	0.06		0.06		0.07	
16+32	4.90		6.68		5.00		0.58		0.91		1.09		0.72		1.02	
29		ND	0.06		0.03			ND		ND		ND		J		ND
26	1.54		2.22		1.61		0.08		0.37		0.40		0.23		0.31	
25		ND		ND		ND		ND		ND		ND		ND		ND
31+28	9.92		12.49		9.24		0.77		2.28		2.78		1.42		2.33	
53+33+21	1.70		2.49		1.87		0.22		0.57		0.78		0.29		0.63	
22	4.18		5.20		3.96			J		J		J		J		J
45	2.73		3.92		2.67		0.56		0.78		0.75		0.41		0.89	
46	1.07		1.70		1.11		0.10		0.22		0.25		0.09			ND
52	16.62		21.47		14.69		1.36		4.30		4.06		2.31		4.18	
49	11.99		17.48		11.41		1.10		3.35		3.70		1.66		3.12	
47	20.15		24.90		18.56			J		J		J		J		J
48		ND		ND		ND		ND		ND		ND		ND		ND
44	12.94		18.50		12.53		1.19		1.01		1.18		1.06		1.48	
37+42	5.24		8.31		5.39		0.75		0.98		1.10		0.73		1.64	
41+71	9.70		13.01		9.15		0.97		2.65		3.34		1.42		2.89	
40	3.19		4.56		4.49		0.35		0.34			ND	0.22			ND
100	2.12		1.82		2.20		0.14		0.36		0.51		0.21		0.34	
63	2.68		1.76		2.63		0.12		0.39		0.37		0.22		0.32	
74	12.67		12.93		11.42		1.22		2.96		3.96		1.49		3.09	
70+76	17.08		21.93		16.31		1.46		3.93		5.62		2.19		4.31	
66+95	25.07			ND	23.94		2.10		6.72		14.48		2.89		6.62	
91	2.18		3.81		2.24		0.33		0.68		0.75		0.33		0.68	
56+60	16.34		20.47		15.40		3.20		5.46		4.62		2.30		4.47	
101	12.88		19.11		12.29		1.57		4.06		4.44		1.73		3.25	
99	12.62		16.23		11.51		1.40		3.32		5.07		1.60		3.21	
83	1.06		2.09		1.15		0.13		0.13		0.17		0.12		0.67	
97	3.01		4.94		3.21		0.39		0.78		0.77		0.43		0.77	
87+81	2.63		3.27			ND		ND		ND		ND		0.42		0.74
85	3.96		5.58		3.71		0.40		1.13		1.75		0.47		0.77	
136	0.98		1.62		1.00		0.14		0.23		0.22		0.13		0.23	
77+110	17.58		25.50		16.27		2.00		5.01		6.89		2.21		4.62	
82	1.95		2.80		1.89		0.18			ND	0.26		0.26		0.44	
151	6.02		6.87		4.35		0.66		1.78		1.96		0.85		1.18	
135+144	2.81		4.23		2.63		0.37		0.66		0.69		0.33		0.49	
107	2.23		2.86		1.86		0.29		0.64		0.82		0.31		0.50	

Appendix II. Summary of concentrations (ng/g) of PCBs, organochlorine pesticides and mercury in fish and crab samples.

Fish Tissue																
Sample ID	3948	Data	3949	Data	3950	Data	3951	Data	3952	Data	3953	Data	3954	Data	3955	Data
F-Number	2686	Qualifier	2687	Qualifier	2688	Qualifier	2689	Qualifier	2690	Qualifier	2691	Qualifier	2692	Qualifier	2693	Qualifier
Species	CYREG		CYREG		CYREG		CYREG		PADEN		PADEN		PADEN		PADEN	
Common Name	weakfish		weakfish		weakfish		weakfish		flounder		flounder		flounder		flounder	
Lipid Content (%)	5.64		10.26		11.39		1.49		1.51		1.33		2.38		0.84	
149	8.44		12.42		8.27		1.65		3.36		3.13		1.36		2.61	
118	17.34		19.14		14.51		1.82		4.51		6.95		2.11		4.12	
131	0.18		0.25		0.13		0.02		0.05		0.07		0.03		0.04	
146	4.19		4.92		3.12		0.75		1.25		1.46		0.61		1.10	
153+132+105	48.93		58.11		41.85		6.49		13.29		20.11		5.87		11.13	
141	1.91		3.14		1.53		0.28		0.47		0.69		0.25		0.40	
137+176	2.33		2.91		1.65			J	0.86		0.60			ND		ND
163+138	33.14		39.26		27.01		4.00		8.70		13.48		3.96		7.05	
158	1.43		1.44		0.98			J		J	0.49			J		J
129+178	8.52		4.09		2.87		0.52		0.99		1.17		0.69		0.57	
187+182	11.10		11.75		7.89		1.82		2.96		3.91		1.62		2.26	
183	5.78		7.02		4.63		0.79		1.63		2.41		0.70		1.21	
128	3.01		3.99		2.56			J	0.84		1.48			J	0.69	
185	0.52		0.65		0.39			ND		J		J		J		J
174	2.41		3.28		2.10		0.37		0.81		0.86		0.32		0.70	
177	3.39		3.79		2.70		0.65		1.02		1.22		0.50		0.79	
202+171	3.42		3.84		2.57		0.54		0.90		1.30		0.43		0.61	
157+202	2.08		2.40		1.68			J	0.43		0.68			J		J
172+197	1.36		1.79		1.27		0.23		0.37		0.45		0.17		0.22	
180	15.27		17.28		11.90		1.95		4.19		5.62		1.83		3.04	
193		ND		ND		ND		ND		ND		ND		ND		ND
191	0.73		0.26		0.30			J		J	0.12			J	0.09	
199		J		J		J		J		J		J		J		J
170+190	9.15		10.52		7.01		1.12		2.42		3.37		1.18		1.46	
201	4.44		5.80		3.57		0.74		1.20		1.26		0.62		0.84	
203+196	5.13		7.02		4.31			J	1.47		1.57			J		J
189	0.66		0.77		0.53		0.15	J	0.27		0.22		0.09		0.30	
208+195		ND		ND		ND		ND		ND		J		ND		ND
207	0.31		0.42		0.25		0.07			ND	0.11			ND		ND
194	1.93		2.70		1.62			J		J		J		J		J
205		ND	0.11			ND		ND		ND		ND		ND		ND
206	2.38		3.83		2.05		0.43		0.67		0.49		0.24		0.36	
209	0.19		0.26		0.15		0.04		0.05		0.04		0.02		0.08	
Total PCBs	462.49		551.25		407.27		49.12		110.80		148.58		52.89		97.01	
Organochlorine Pesticides																
(ng/g wet wgt)																
alpha BHC	3.78		4.08			J		J		J		ND		J		J
beta BHC		I		I		I		I		I		I		I		I
lindane	0.57		0.47		0.27			ND		ND		J		J		ND
delta BHC		J		J		J		J		ND		J		J		ND
dieldrin	6.23		9.48		7.57			ND		ND	0.74		0.88			ND
aldrin		J	1.79			J		J		J		J		ND		J
endrin	0.61		0.39		1.02			ND		ND	0.55			J		ND
endosulfan I	6.63		16.87		12.68		0.80		1.03		2.02		1.34		1.39	
endosulfan II	1.01		1.01		1.11			ND		ND	0.47			J		J
heptachlor	6.70		12.53		7.70		0.72		1.69		2.09		1.32		1.88	
heptachlor epoxide	1.80		3.40		2.55		0.20		0.67		0.60		0.46		0.99	
oxychlordane	6.92		4.92		6.10			J		J	2.82			J		J

Appendix II. Summary of concentrations (ng/g) of PCBs, organochlorine pesticides and mercury in fish and crab samples.

Fish Tissue															
Sample ID	3948	Data	3949	Data	3950	Data	3951	Data	3952	Data	3953	Data	3954	Data	3955
F-Number	2686	Qualifier	2687	Qualifier	2688	Qualifier	2689	Qualifier	2690	Qualifier	2691	Qualifier	2692	Qualifier	2693
Species	CYREG		CYREG		CYREG		CYREG		PADEN		PADEN		PADEN		PADEN
Common Name	weakfish		weakfish		weakfish		weakfish		flounder		flounder		flounder		flounder
Lipid Content (%)	5.64		10.26		11.39		1.49		1.51		1.33		2.38		0.84
gamma chlordane	7.34		10.16		6.49		1.64		2.00		2.63		1.24		2.11
alpha chlordane	11.26		11.50		6.68			J		J	2.60			J	J
trans nonachlor	22.54		24.38		16.62			J	5.30		7.23			J	6.66
cis nonachlor		ND		ND		ND		ND		ND		ND		ND	ND
total chlordanes	34.01		42.50		29.52		2.56		4.37		10.73		3.02		4.98
opDDE	14.16		20.64		14.54		1.41		2.19		3.03		1.73		3.19
ppDDE	64.05		70.22		57.93		8.61		13.04		25.22		8.41		11.79
opDDD	10.88		17.08		9.44			J	2.68		2.96		2.45		ND
ppDDD	65.15		91.94		62.22		0.88		11.10		20.01		9.67		18.58
opDDT	19.08			ND	28.90		2.22		6.19		11.36		3.99		7.31
ppDDT		J		J		J		J		ND		J		ND	ND
total DDXs	173.31		199.88		173.03		13.12		35.19		62.57		26.26		40.88
surrogate recovery (%)															
PCB congener 14	145		none added		none added		none added		none added		none added		104		125
PCB congener 65	116		none added		none added		none added		none added		none added		84		104
PCB congener 166	153		none added		none added		none added		none added		none added		91		109

Data Qualifiers (DQ):

I: Analytical Interference. The data might be questionable due to an interference from other compounds in the samples

J: <MDL. Concentration of the analyte is below our Method Detection Limit; however peak can be quantified.

ND: Not detected.

NA: Not Analyzed

Appendix II. Summary of concentrations (ng/g) of PCBs, organochlorine pesticides and mercury in fish and crab samples.

Sample ID F-Number Species Common Name Lipid Content (%)	3956 2694 PADEN flounder 2.15	Data Qualifier	3957 2695 PADEN flounder 1.36	Data Qualifier	3958R 2696 BRTYR menhaden	Data Qualifier	3959 2697 BRTYR menhaden 3.58	Data Qualifier	3960 2698 BRTYR menhaden 3.45	Data Qualifier	3961 2699 BRTYR menhaden 3.07	Data Qualifier	3962 2700 BRTYR menhaden 4.71	Data Qualifier	3963 2701 BRTYR menhaden 2.05	Data Qualifier
Mercury Concentration (ug/g wet wgt)	0.0613		0.0578		0.0394		0.0323		0.0344		0.046		0.0017		0.0013	
PCB Congeners (ng/g wet wgt)																
1		NA		NA	J			NA		NA		NA		NA		NA
3		ND		ND	2.42			ND		ND		ND		ND		ND
4+10		ND		J	0.52		0.14		0.15		ND		ND	J		ND
7	0.05			J	0.29		0.22		0.22		0.18		0.12			ND
6		ND		ND	2.08		1.76			ND		ND		ND		ND
8+5		J		J	3.55		3.31		3.98		4.37		2.10			J
19	0.14		0.09		0.21		0.46		0.43		0.44		0.14			ND
12+13		J		J		J		J		J		ND		J		ND
18	1.44		0.47		3.09		4.24		3.85		4.26		1.46		1.45	
17	0.89		0.28		2.07		2.71		2.46		2.74		1.02		1.03	
24+27	0.08			ND	0.25		0.39		0.36		0.43		0.16		0.16	
16+32	1.44		0.49		3.59		5.36		5.04		5.64		2.09		1.99	
29		ND		ND	0.04		0.06		0.07		0.07			ND		ND
26	0.55		0.14		0.76		1.61		1.50		1.51		0.48		0.47	
25		ND		ND		J		ND		ND		ND		ND		ND
31+28	3.40		1.14		11.08		9.07		8.10		9.11		3.50		3.43	
53+33+21	0.94		0.29		2.82			ND		ND		ND			1.20	
22	1.44			J	2.89		3.85		3.54		4.16		1.53		1.84	
45	0.95		0.34		0.93		3.11		2.85		3.08		1.17		1.26	
46	0.24		0.07		0.82		1.41		1.33		1.50		0.72		0.81	
52	5.05		1.74		10.08		17.00		14.67		15.91		7.04		8.37	
49	4.19		1.37		8.49		14.82		13.14		13.74		6.70		7.93	
47		J		J	7.31		19.71		16.65		19.08		10.72		12.94	
48		ND		ND	1.45			ND		ND		ND		ND		ND
44	1.68		0.69		8.04		15.35		13.29		14.54		5.68		6.01	
37+42	1.47		0.75		3.82		9.51		8.00		9.06		4.00		4.45	
41+71	3.59		1.28		7.93		17.69		15.48		16.61		5.19		6.18	
40		ND		ND	1.54		3.92		3.38		3.87		1.85		2.09	
100	0.64		0.16		0.24		1.50		1.19		1.37		0.71		0.74	
63	0.64		0.19			ND	1.27		0.81		1.23		0.82		0.55	
74	4.24		1.50		4.47		8.07		7.05		7.99		4.60		5.47	
70+76	6.01		1.86		10.02		18.09		15.56		16.07		8.14		9.80	
66+95	16.23		3.03		15.67			ND		ND		ND		ND		ND
91	0.76		0.19		1.80		3.65		3.12		3.32		2.06		3.27	
56+60	5.16		1.79		9.93		19.15		16.34		16.99		7.13		8.45	
101	4.67		1.41		8.39		15.67		12.57		13.93		9.20		13.07	
99	4.70		1.35		4.84		9.70		8.39		9.03		6.91		9.16	
83	0.29		0.08		0.71		1.51		1.26		1.29		0.85		0.81	
97	1.01		0.32		2.48		4.34		3.62			ND	2.61		3.43	
87+81	0.95		0.30		1.48		2.60		2.21		2.40		1.50		2.07	
85	1.59		0.44		1.68			ND	3.63		3.31		2.27		3.28	
136	0.27		0.10		0.64		1.68		1.31		1.50		1.00		1.38	
77+110	6.58		2.00		12.60		22.30		18.26		19.81		12.60		17.56	
82	0.54		0.18		1.16		2.50		2.02		2.27		1.47		1.90	
151	1.96		0.63		2.41		4.30		3.71		4.34		3.27		4.68	
135+144		ND		ND	2.04		4.10		3.06		3.70		2.49		3.34	
107	0.78		0.24		0.73		1.51		1.18		1.39		1.20		1.87	

Appendix II. Summary of concentrations (ng/g) of PCBs, organochlorine pesticides and mercury in fish and crab samples.

Sample ID	3956	Data	3957	Data	3958R	Data	3959	Data	3960	Data	3961	Data	3962	Data	3963	Data
F-Number	2694	Qualifier	2695	Qualifier	2696	Qualifier	2697	Qualifier	2698	Qualifier	2699	Qualifier	2700	Qualifier	2701	Qualifier
Species	PADEN		PADEN		BRTYR		BRTYR		BRTYR		BRTYR		BRTYR		BRTYR	
Common Name	flounder		flounder		menhaden		menhaden		menhaden		menhaden		menhaden		menhaden	
Lipid Content (%)	2.15		1.36				3.58		3.45		3.07		4.71		2.05	
149	3.16		1.16		7.31		13.35		10.93		13.00		9.52		13.66	
118	6.31		1.93		7.02		10.43		8.82		9.17		7.41		10.55	
131	0.06		0.02		0.10		0.13		0.10		0.10		0.09		0.10	
146	1.40		0.56		1.61		2.75		2.18		2.33		2.29		3.15	
153+132+105	17.39		5.21		19.93		32.85		26.75		29.38		25.52		36.59	
141	0.60		0.19		1.23		3.02		2.39		2.27		1.62		2.12	
137+176		ND		ND	0.90		2.65		2.13			ND		ND		ND
163+138	11.63		3.55		15.48		24.28		19.98		20.88		16.80		24.50	
158		J		J	0.44		1.19		1.01		0.83		0.61		0.84	
129+178	0.97		0.33		1.37		3.21		2.70		2.29		2.73		2.52	
187+182	3.38		1.24		4.25		8.34		7.02		6.94		7.49		8.98	
183	1.86		0.60		2.11		4.64		3.78		3.63		4.33		4.41	
128	1.16			J	0.50		2.95		2.44		2.27		2.45		2.60	
185		J		J	0.21		0.57		0.45		0.40		0.40			ND
174	0.79		0.27		1.74		3.72		3.04		3.29		2.28		3.11	
177	1.10		0.39		1.79		3.17		2.65		2.92		2.47		3.38	
202+171	1.07		0.35		2.02		2.56		2.99		3.15		2.74		3.67	
157+202	0.57			J	0.54		1.53		1.06		1.14		1.11		1.68	
172+197	0.39		0.16		0.44		1.16		0.74		0.79		0.72		0.94	
180	4.75		1.55		5.94		10.12		8.26		9.06		7.20		9.59	
193		ND		ND		ND		ND		ND		ND		ND		ND
191		J		J	0.12		0.34		0.26		0.27		0.40		0.20	
199		J		J		J		J		J		J		J		J
170+190	2.88		0.87		4.91		7.35		5.87		6.37		4.46		6.19	
201	1.10			J	2.49		4.05		3.39		3.39		3.28		4.36	
203+196		J		J	3.01		4.56		3.85		3.90		3.56		4.78	
189	0.17			ND	0.95		0.75		0.64		0.62		0.53		0.62	
208+195		J		J	0.93			ND		ND		ND	3.14			ND
207		ND		ND		J	0.26		0.23		0.21		0.23		0.39	
194		J		J	1.04		1.96		1.72		1.67		1.51		2.01	
205		ND		ND		J		ND		ND		ND		ND		ND
206	0.43		0.19		2.06		2.84		2.49		2.46		2.36		2.72	
209	0.03		0.02			J	0.22		0.20		0.18		0.17		0.19	
Total PCBs	145.75		43.50		257.79		412.55		351.83		373.16		242.90		306.29	
Organochlorine Pesticides																
(ng/g wet wgt)																
alpha BHC		J		J	1.68		4.10			J		J		J		J
beta BHC		I		I		I		I		I		I		I		I
lindane		J		J		J	0.23		0.59		0.31		0.39			ND
delta BHC		ND		ND		ND	0.62		0.69			J		ND		J
dieldrin	0.55			ND	6.23		6.28		8.69		7.36		1.19		2.05	
aldrin		J		J	0.33		2.08		2.08			J	1.72			ND
endrin		ND		ND		ND		ND	2.84		1.07		1.82		0.95	
endosulfan I	2.26		2.16		5.04		6.71		5.69		9.53		3.05		2.69	
endosulfan II	0.53			J	0.66		0.74		1.17		1.11		0.61		1.09	
heptachlor	3.35		0.75		2.84		13.78		12.27		13.24		4.39		4.80	
heptachlor epoxide	0.85		0.34		2.07		5.89		4.43		3.77		1.01		0.91	
oxychlordane	3.23			J		J	4.47		4.67		2.45			J	1.92	

Appendix II. Summary of concentrations (ng/g) of PCBs, organochlorine pesticides and mercury in fish and crab samples.

Sample ID	3956	Data	3957	Data	3958R	Data	3959	Data	3960	Data	3961	Data	3962	Data	3963	Data
F-Number	2694	Qualifier	2695	Qualifier	2696	Qualifier	2697	Qualifier	2698	Qualifier	2699	Qualifier	2700	Qualifier	2701	Qualifier
Species	PADEN		PADEN		BRTYR		BRTYR		BRTYR		BRTYR		BRTYR		BRTYR	
Common Name	flounder		flounder		menhaden		menhaden		menhaden		menhaden		menhaden		menhaden	
Lipid Content (%)	2.15		1.36				3.58		3.45		3.07		4.71		2.05	
gamma chlordane	2.87			J	4.74		6.35		6.08		5.49		1.55		1.59	
alpha chlordane	3.25			J	7.64		10.64		10.09		7.98		3.21		8.25	
trans nonachlor	6.89			J	8.61		22.39		18.31		18.91		12.95		18.40	
cis nonachlor		ND		ND		ND		ND		ND		ND		ND		ND
total chlordanes	13.55		1.09		17.29		41.13		37.55		32.92		10.15		17.47	
opDDE	3.62		1.29		10.06		20.59		17.94		19.40		8.05		9.15	
ppDDE	23.11		6.59		25.98		44.44		38.45		41.64		20.69		28.90	
opDDD	4.50		1.34		28.82		29.31		31.31		27.88		6.33		5.99	
ppDDD	23.22		7.89		65.24		97.26		104.25		97.69		29.45		23.84	
opDDT	9.53			ND	9.33		40.37		40.48		33.73		28.96		35.25	
ppDDT		J	4.16		4.80		34.62		29.33		24.82		6.02		6.64	
total DDXs	63.98		21.27		144.23		266.58		261.75		245.16		99.50		109.77	
surrogate recovery (%)																
PCB congener 14	none added		none added			91	150		152		128		130		140	
PCB congener 65	none added		none added			83	111		113		106		97		107	
PCB congener 166	none added		none added			94	148		145		119		151		132	

Data Qualifiers (DQ):

I: Analytical Interference. The

J: <MDL. Concentration of the

ND: Not detected.

NA: Not Analyzed

Appendix II. Summary of concentrations (ng/g) of PCBs, organochlorine pesticides and mercury in fish and crab samples.

Sample ID F-Number Species Common Name Lipid Content (%)	3964 2702 BRTYR menhaden 5.68	Data Qualifier	4165 2703 XIGLA swordfish Hg ONLY	Data Qualifier	4164 2704 BRTYR menhaden 15.16	Data Qualifier	4165 2705 BRTYR menhaden 10.87	Data Qualifier	4166 2706 BRTYR menhaden 13.24	Data Qualifier	4167 2707 BRTYR menhaden 14.28	Data Qualifier
Mercury Concentration (ug/g wet wgt)	0.0058		0.6592		0.6468		0.136		0.0906		0.0599	
PCB Congeners (ng/g wet wgt)												
1		NA				NA		NA		NA		NA
3		ND				ND		ND		ND		ND
4+10		ND				ND	0.25		0.30			ND
7	0.45					ND	0.14		0.14			ND
6		ND				ND		J		J		ND
8+5	8.13					J		J		J		ND
19	0.71					ND	0.22		0.25			ND
12+13		ND				ND		J		J		J
18	7.54					J		J		J		J
17	5.25					ND		ND		ND	0.16	
24+27	0.82					ND	0.06		0.07			J
16+32	10.44					J		J	0.41			J
29		ND				ND		ND	0.10			ND
26	2.73					ND		ND		ND		J
25		J				ND		ND		ND		ND
31+28	17.94				1.24		1.16		1.59			ND
53+33+21	3.57				0.52		0.35		0.91		0.67	
22	8.80					ND		J		J		J
45	5.78					J		J		J	0.36	
46	3.61					ND	0.12		0.16		0.21	
52	37.99				0.99		1.19		1.50		1.25	
49	36.25				1.09		1.30		1.70		1.34	
47	46.38					J	13.35		15.29			J
48		ND				ND		ND		ND		ND
44	30.57				0.90		1.05		1.23		1.13	
37+42	20.60				0.67		0.66		0.78		0.77	
41+71	27.03					J	1.70		1.92		1.32	
40	9.38					ND	0.43			ND	0.55	
100	3.18				0.26		0.38		1.09		0.49	
63	3.69				0.34		1.19		0.99		0.25	
74	20.44					J	4.11		3.51			J
70+76	41.58				1.47		3.23		3.33		1.29	
66+95		ND				ND		ND		ND		ND
91	12.21				0.51		0.67		0.45		0.73	
56+60	35.88				1.64		1.91		2.03		2.37	
101	48.40				2.10		2.58		2.92		3.09	
99	35.26				2.08		2.41		2.39		2.82	
83	3.50				0.23		0.27		0.24		0.25	
97	13.31				0.64		0.84		0.85		0.80	
87+81	7.64				0.29		0.56		0.57		0.36	
85	12.07					ND	0.61		0.70			ND
136	5.15				0.29		0.33		0.35		0.37	
77+110	71.08				2.33		2.67		3.13		3.23	
82	6.95				0.34		0.08		0.38			ND
151	16.38				1.06		1.04		1.22		1.44	
135+144	12.56				0.73		0.79		0.85		1.04	
107	6.22				0.48		0.50		0.52		0.62	

Appendix II. Summary of concentrations (ng/g) of PCBs, organochlorine pesticides and mercury in fish and crab samples.

Sample ID	3964	Data	4165	Data	4164	Data	4165	Data	4166	Data	4167	Data
F-Number	2702	Qualifier	2703	Qualifier	2704	Qualifier	2705	Qualifier	2706	Qualifier	2707	Qualifier
Species	BRTYR		XIGLA		BRTYR		BRTYR		BRTYR		BRTYR	
Common Name	menhaden		swordfish		menhaden		menhaden		menhaden		menhaden	
Lipid Content (%)	5.68		Hg ONLY		15.16		10.87		13.24		14.28	
149	48.26				3.09		3.64		4.52		4.41	
118	38.29				1.80		2.40		2.61		2.53	
131	0.37				0.03		0.05		0.07		0.04	
146	10.44				1.14		1.38			ND	1.64	
153+132+105	132.13				10.32		12.80		13.81		15.19	
141	7.91				0.55		0.63		0.72		0.85	
137+176		ND				J		ND		ND	0.64	
163+138	91.50				5.94		6.69		6.97		8.48	
158	2.54					J	0.65		0.63			J
129+178	7.75				2.95		1.02		0.87		4.08	
187+182	31.26				3.61		3.95		4.19		4.91	
183	14.74				1.34		1.14		1.32		1.76	
128	8.90				0.66		0.84		0.79		0.76	
185	1.28					ND		J		J		ND
174	10.59				0.56		0.97		1.07		1.01	
177	12.08				0.93		1.18		1.21		1.48	
202+171	12.97				1.32		1.60		1.64		1.90	
157+202	6.13				0.88		0.68		0.72		1.08	
172+197	3.57				0.34		0.19		0.26			ND
180	33.81				2.56		3.12		3.53		3.77	
193		ND				ND	2.76		2.98		ND	
191	0.60					ND		ND		ND		J
199		J				J		J		J		J
170+190	21.64				0.89		1.78		2.22		2.06	
201	15.75				2.20		2.39		2.54		3.19	
203+196	16.85				2.30		2.34		2.52		3.30	
189	2.16				0.35		1.34		0.62		0.50	
208+195		ND				ND	3.67		4.41			ND
207	1.17				0.64		0.52		0.73		0.87	
194	7.40					J		J		J		J
205		ND				ND		ND		ND		ND
206	11.03				4.74		4.09		4.45		5.70	
209	0.80				0.58		0.07			ND	0.70	
Total PCBs	1191.42				69.89		108.07		117.26		97.78	
Organochlorine Pesticides												
(ng/g wet wgt)												
alpha BHC	9.52					J		ND		ND		J
beta BHC		I				I		I		I		I
lindane	2.57				1.90		1.09		2.59		0.97	
delta BHC		J			4.72			ND	1.58			J
dieldrin	18.93				8.19			ND		ND	6.02	
aldrin	4.54				6.70		4.28		2.83		2.69	
endrin		ND			27.52			ND	2.54			ND
endosulfan I	89.32				1.51		7.58		9.76		1.38	
endosulfan II	3.28				2.22			ND	1.22		0.99	
heptaclor	25.02					ND		ND	1.50		0.79	
heptachlor epoxide	5.88				3.22		2.32		3.35		1.82	
oxychlordane	8.21					J		J	2.88			J

Appendix II. Summary of concentrations (ng/g) of PCBs, organochlorine pesticides and mercury in fish and crab samples.

Sample ID	3964	Data	4165	Data	4164	Data	4165	Data	4166	Data	4167	Data
F-Number	2702	Qualifier	2703	Qualifier	2704	Qualifier	2705	Qualifier	2706	Qualifier	2707	Qualifier
Species	BRTYR		XIGLA		BRTYR		BRTYR		BRTYR		BRTYR	
Common Name	menhaden		swordfish		menhaden		menhaden		menhaden		menhaden	
Lipid Content (%)	5.68		Hg ONLY		15.16		10.87		13.24		14.28	
gamma chlordane	5.19					ND	8.46		2.34			ND
alpha chlordane	21.66				9.11			J	2.62		2.59	
trans nonachlor	56.73				4.79			ND		ND	6.65	
cis nonachlor		ND				ND	5.19		7.68			ND
total chlordanes	65.95				12.33		10.77		12.69		5.21	
opDDE	40.68				2.42			ND		ND	3.20	
ppDDE	120.71				16.42		15.69		18.93		23.08	
opDDD	34.28				3.17		3.92		3.95		2.61	
ppDDD	120.49				15.45		13.67		12.01		24.09	
opDDT	98.44				50.00		23.41		19.38		39.51	
ppDDT	8.45				14.85		13.85		23.49		5.61	
total DDXs	423.05				102.30		70.53		77.76		98.10	
surrogate recovery (%)												
PCB congener 14	105				none added		110		121		none added	
PCB congener 65	78				none added		91		96		none added	
PCB congener 166	83				none added		95		99		none added	

Data Qualifiers (DQ):

I: Analytical Interference. The c

J: <MDL. Concentration of the ;

ND: Not detected.

NA: Not Analyzed

Crab Tissue (HP-hepatopancreas, M-Muscle)															
Sample ID	HP2992	Data	HP 2993	Data	HP 2994	Data	HP 2995R	Data	HP 2996	Data	HP 2997	Data	HP 2998	Data	2999HP
F-Number	2736	Qualifier	2737	Qualifier	2738	Qualifier	2739	Qualifier	2740	Qualifier	2741	Qualifier	2742	Qualifier	2743
Species	CASAP		CASAP		CASAP		CASAP		CASAP		CASAP		CASAP		CASAP
Common Name	blue crab		blue crab		blue crab		blue crab		blue crab		blue crab		blue crab		blue crab
Lipid Content (%)	16.59		9.4		6.91		11.9		13.99		17.65		17.55		10.56
Mercury Concentration (ug/g wet wgt)	0.069		0.024		0.043		0.048		0.053		0.04		0.021		0.055
PCB Congeners (ng/g wet wgt)															
1		NA		NA		NA		J		NA		NA		NA	
3	0.98			ND	1.71		2.63		2.83		2.56		1.50		1.27
4+10		J		J		J		J		J		J		ND	
7	0.33		0.23		0.55		0.74		0.47		0.34		0.30		0.43
6	0.92			ND		ND		ND		ND		ND		ND	
8+5	21.41		14.95		19.22		20.46		17.48		19.46		13.01		35.23
19	0.31		0.14		0.21		0.25		0.22		0.28		0.23		0.15
12+13		J		J		J		0.45		0.39		J		J	
18	1.96		0.36			J		1.19		0.80		0.36		0.35	
17	1.57		0.83		1.19		2.21		1.63		0.92		1.17		1.09
24+27	0.37			ND	0.21		0.13		0.21		0.22		0.10		0.33
16+32	2.19			J		J		0.48		0.74		J		J	0.33
29	0.02		0.02		0.03		0.03		0.03		0.03		0.01		0.11
26	1.87		0.20			ND		0.08		0.40		0.42		0.33	0.15
25		J		J		ND				ND		ND		ND	
31+28	8.92			ND		ND		ND		1.85		ND		ND	1.58
53+33+21	0.55		2.18		3.02		5.07		5.00		2.82		2.67		0.90
22	2.15			J	1.14		2.50		2.58		1.75		1.37		
45	1.33		2.40		2.86		1.68		4.91		3.21		2.90		1.29
46	0.63		1.36		2.04		1.91		3.25		1.70		2.44		0.74
52	6.61		0.56			J		0.47		1.68		J		0.34	0.53
49	7.06		0.70		0.67		1.12		2.20		0.59		0.63		0.66
47	76.10		48.54		65.87		58.41		90.71		68.80		55.78		116.13
48	0.55			ND		ND		4.32				ND		ND	0.51
44	3.75		0.28		0.29		0.29		0.88		0.28		0.40		0.49
37+42	6.77		3.33		3.78		2.70		6.90		3.44		4.61		3.55
41+71	11.54		1.91		2.36		4.21		4.44		1.39		2.44		
40	1.34			ND	0.59		0.15		1.00			ND	0.64		0.71
100	3.43		2.80		3.85		1.32		5.53		3.80		3.44		5.26
63	1.44		0.89		1.43		0.48		1.82		1.23		1.32		0.84
74	56.09		37.20		57.09		46.87		81.48		58.27		52.88		74.78
70+76	10.96		1.50		1.78		2.60		4.16		1.66		1.60		0.86
66+95	153.19		95.34		128.28		157.19		189.77		132.78		121.45		152.92
91	2.15		0.36		0.19		0.24		0.85		0.24		0.48		0.25
56+60	80.50		42.37		56.45		65.08		81.63		67.22		51.03		77.02
101	13.37		2.49		2.49		3.60		5.99		2.56		3.15		2.63
99	59.08		42.65		61.60		52.66		83.76		65.12		56.52		70.32
83	1.77			ND	0.35		0.62		1.03		0.29		0.51		3.22
97	3.33		0.83		0.88		1.29		2.34		0.85		1.30		0.37
87+81	1.55		0.79		1.06		0.75		1.58		1.22		1.03		0.87
85	16.56		17.84		23.02			ND	33.43		25.44		20.76		26.82
136	0.63			ND	0.33			ND	0.57		0.42		0.40		0.45
77+110	22.74		2.21		2.93		1.77		6.92		2.62		3.08		2.72
82	1.72			ND		ND	0.33		3.96		2.07		2.75		2.23
151	1.74			J		J	0.16		0.69					J	
135+144	2.82		0.56		0.40		0.47		1.19		0.61	J	0.63		0.65
107	4.35		3.27		4.13		3.11		5.92		4.50		4.24		4.08

Crab Tissue (HP-hepatopancreas, M-Muscle)															
Sample ID	HP2992	Data	HP 2993	Data	HP 2994	Data	HP 2995R	Data	HP 2996	Data	HP 2997	Data	HP 2998	Data	2999HP
F-Number	2736	Qualifier	2737	Qualifier	2738	Qualifier	2739	Qualifier	2740	Qualifier	2741	Qualifier	2742	Qualifier	2743
Species	CASAP		CASAP		CASAP		CASAP		CASAP		CASAP		CASAP		CASAP
Common Name	blue crab		blue crab		blue crab		blue crab		blue crab		blue crab		blue crab		blue crab
Lipid Content (%)	16.59		9.4		6.91		11.9		13.99		17.65		17.55		10.56
149	13.93		4.66		4.92		4.66		9.07		5.19		5.96		6.29
118	94.13		60.21		83.36		80.96		123.81		87.79		80.54		104.71
131	0.21		0.40		0.47		0.01		0.88		0.51		0.57		0.48
146	28.65		10.23		10.66		10.94		19.83		11.24		11.78		34.08
153+132+105	273.17		179.26		256.18		218.53		393.98		250.44		237.66		319.12
141	0.50			ND			0.32		0.23			ND			1.03
137+176	2.73		0.64		0.76		0.59		1.38		0.73		0.80		1.33
163+138	167.10		105.76		132.48		150.62		205.32		142.13		124.16		190.34
158	21.02		3.77		4.68			ND	7.60		5.44		4.64		25.20
129+178	4.52		6.52		4.20		5.97		12.57		5.77		6.85		5.44
187+182	32.29		28.65		31.80		27.51		56.05		31.94		32.52		39.78
183	22.77		20.85		27.65		26.46		45.79		28.57		24.52		30.77
128	23.10		9.65		11.41		6.96		18.30		12.79		11.69		26.86
185	0.48			J			0.08	J	0.26			J		J	
174	2.02		0.44		0.50		0.60		1.14		0.44		0.47		
177	6.99		1.75		2.58		1.89		4.47		2.31		2.19		3.85
202+171	9.52		6.41		6.61		0.00	ND	12.20		7.45		6.96		10.70
157+202	6.05		4.60		5.93		5.77		9.36		6.10		5.97		7.62
172+197	3.60		3.57		3.01		2.35		6.76		3.80		3.85		6.93
180	68.39		60.09		80.85		96.05		131.35		87.21		74.20		113.05
193	1.10			ND				ND		ND		ND		ND	1.03
191		J	1.11		0.92		1.05		1.36		0.84		0.77		
199	3.79			J			0.11	J		J		J		J	2.12
170+190	30.58		30.13		28.51		44.73		45.22		30.72		26.66		48.15
201	13.62		13.75		13.53		17.57		21.37		14.31		13.03		29.12
203+196	18.30		17.43		21.31		29.26		32.25		22.75		19.59		36.41
189	4.51		2.81		1.70		5.20		2.97		1.86		1.86		4.90
208+195	1.10			ND			6.56		7.15		11.79		10.46		6.10
207	0.53		0.83		0.99		1.03		1.04		1.19		0.93		1.27
194	6.43		5.80		7.56		10.58		11.12		8.38		7.09		11.93
205	1.10			ND			0.28	J	0.21			ND		ND	0.32
206	5.61		7.14		8.15		11.23		9.15		9.71		8.49		11.54
209	0.24		0.41		0.62		0.06	J	0.53		0.78		0.64		0.47
Total PCBs	1464.78		915.94		1203.32		1217.89		1855.93		1271.64		1142.60		1673.40
Organochlorine Pesticides															
(ng/g wet wgt)															
alpha BHC	5.14		5.07		5.52		2.08		5.57		6.55		6.17		
beta BHC		I		I						I		I		I	
lindane	6.90		0.73		2.01			J	1.93			ND	0.85		0.31
delta BHC	1.71		1.00		1.73		3.44			J	1.13			J	2.58
dieldrin	37.21		13.73		18.17		31.58		33.95		27.87		31.92		2.63
aldrin	5.49		2.89		6.34		2.48		5.73		5.89		7.61		
endrin		ND	0.49		2.99		0.35		1.37		1.10		1.79		0.39
endosulfan I	3.17		3.51		6.62		2.88		9.27		6.29		2.58		ND
endosulfan II	11.11		8.98		30.98		10.36		20.87		13.31		14.02		
								ND							
heptachlor	21.88		3.16		2.73			J	6.81		3.46		3.51		10.86
heptachlor epoxide	19.50		9.61		15.90		19.57		20.51		16.56		15.01		0.38
oxychlordane	63.73		48.08		55.69		82.61		73.68		62.11		56.10		3.46

Appendix II. Summary of concentrations (ng/g) of PCBs, organochlorine pesticides and mercury in fish and crab samples.

Crab Tissue (HP-hepatopancreas, M-Muscle)															
Sample ID	HP2992	Data	HP 2993	Data	HP 2994	Data	HP 2995R	Data	HP 2996	Data	HP 2997	Data	HP 2998	Data	2999HP
F-Number	2736	Qualifier	2737	Qualifier	2738	Qualifier	2739	Qualifier	2740	Qualifier	2741	Qualifier	2742	Qualifier	2743
Species	CASAP		CASAP		CASAP		CASAP		CASAP		CASAP		CASAP		CASAP
Common Name	blue crab		blue crab		blue crab		blue crab		blue crab		blue crab		blue crab		blue crab
Lipid Content (%)	16.59		9.4		6.91		11.9		13.99		17.65		17.55		10.56
gamma chlordane	16.38		2.43		9.33		22.97		8.52		1.83		3.01		
alpha chlordane	6.38		5.10		2.52		6.23		9.11		7.37		6.95		
trans nonachlor	155.11		60.88		76.62		80.36		123.12		87.16		87.26		124.60
cis nonachlor	127.21			ND		ND		ND		ND		ND		ND	191.54
total chlordanes	127.88		68.38		86.18		131.38		118.63		91.33		84.58		14.70
opDDE	19.20		3.12		5.50		6.68		10.29		6.87		7.70		7.08
ppDDE	836.58		336.24		298.28		550.46		620.72		435.88		376.42		634.94
opDDD	23.15		8.16		11.69		6.98		12.44		9.40		9.36		
ppDDD	524.78		224.19		242.49		336.16		402.84		359.10		199.74		10.20
opDDT	164.52		62.32		98.56		102.82		141.45		103.28		93.08		17.59
ppDDT	10.17		5.48			J	4.96			J	4.96			J	
total DDXs	1578.40		639.51		656.52		1008.06		1187.74		919.49		686.30		669.80
surrogate recovery (%)															
PCB congener 14	119		72		151		99		130		138		123		116
PCB congener 65	84		54		106		80		95		101		91		83
PCB congener 166	105		69		113		94		119		112		101		105

Data Qualifiers (DQ):

Data Qualifiers (DQ):

I: Analytical Interference. The data might be questionable due to an interference from other compounds in the samples

J: <MDL. Concentration of the analyte is below our Method Detection Limit; however peak can be quantified.

ND: Not detected.

ND: Not detected.

NA: Not Analyzed

NA: Not Analyzed

Appendix II. Summary of concentrations (ng/g) of PCBs, organochlorine pesticides and mercury in fish and crab samples.

Sample ID F-Number Species Common Name Lipid Content (%)	Data Qualifier	3000HP 2744 CASAP blue crab 8.28	Data Qualifier	HP 3021 2745 CASAP blue crab 7.05	Data Qualifier	HP 3022 2746 CASAP blue crab 8.48	Data Qualifier	M 2992 2736 CASAP blue crab 0.52	Data Qualifier	M 2993 2737 CASAP blue crab 0.83	Data Qualifier	M 2994 2738 CASAP blue crab 0.69	Data Qualifier	M 2995 2739 CASAP blue crab 0.74	Data Qualifier	M 2996 2740 CASAP blue crab 0.37
Mercury Concentration (ug/g wet wgt)		0.053		0.063		0.056		0.099		0.088		0.077		0.092		0.085
PCB Congeners (ng/g wet wgt)																
1	NA		NA		NA		NA		NA		NA		NA		NA	
3		0.66			ND	0.31		ND		ND		ND		ND		ND
4+10	J		J		ND	0.54		J		J		J		J		
7		0.56		0.43		0.54		J	0.03		0.04		J		J	0.04
6	J		J		ND		J		J		J		J		J	
8+5		7.50		16.13		13.50		J		J		J		J		J
19		0.04			ND	0.07		ND	0.05			ND		ND		ND
12+13	J		J	0.47		0.54		J		J		J		J		ND
18	J	0.32		0.50			J		J		J		J		J	
17		0.30		1.27		0.51		J	0.10			J		J		J
24+27		0.22		0.18		0.26		J	0.06			J		J		J
16+32		0.44		0.53		0.40		J		J		J		J		J
29			J	0.03		0.01		ND	0.02			ND		ND		J
26		0.10			ND	0.23		J		ND		ND		ND		J
25	J		J		ND		J		ND		ND		J		J	
31+28		0.85			ND	0.54		J		ND		2.63		2.12		2.83
53+33+21		0.56		3.07		0.21		J	0.27		0.52			0.26		0.26
22	J		J	1.73			J		J		J		J		J	
45		0.44		3.15		0.59		J		J		J		J		J
46		0.37		2.87		0.53			0.02	0.03		0.23		0.10		0.11
52		1.98		0.71		1.53		J		J		J		J		J
49		1.83		1.35		1.55		J		J		J		J		J
47		35.07		79.42		43.16		J		J		J		J		J
48		0.56			ND	0.54		ND		ND		ND		ND		ND
44		0.99		0.56		0.89		J		J		J		J		J
37+42		1.95		3.93		2.05		J		J		J		J		J
41+71	J	3.08		3.92		3.17		J		J		J		ND		J
40		0.53		0.71		0.57		ND		ND		ND		ND		ND
100		1.15		5.32		2.22			0.08	0.16		0.05		0.05		0.05
63		0.68		2.02		0.71		ND		0.07		0.02			J	0.02
74		29.54		57.06		36.07			0.92	2.09		2.13		2.12		2.37
70+76		2.18		2.89		2.38			0.24	0.34			J		J	
66+95		59.62		116.96		70.30			2.48	4.71		7.96		7.48		8.97
91		0.69		0.50		0.53			0.04	0.03			ND		ND	
56+60		36.88		58.76		48.23			1.44	2.41		3.04		3.39		3.05
101		4.16		4.75		3.70		J			J		J		J	
99		32.54		78.61		40.67			0.92	1.45		2.41		2.73		2.34
83		0.82		0.41		0.92		J		0.04		0.08		0.17		0.03
97		0.96		1.40		0.68			0.06	0.04		0.14		0.20		0.05
87+81		0.68		1.32		0.48		J		0.23			J		J	
85		12.41		27.52		16.57			0.34	0.78		1.07		1.30		1.08
136		0.39		0.56		0.34		ND			J		ND		ND	
77+110		4.97		4.23		4.49		J			J		J		J	
82		0.56			ND	0.54		ND		0.06			ND		ND	
151	J	1.04		0.37		0.52		J			J		ND		ND	
135+144		0.92		0.88		0.67			0.04	0.04			ND		ND	
107		1.93		6.10		2.01			0.10	0.11		0.20		0.19		0.24

Appendix II. Summary of concentrations (ng/g) of PCBs, organochlorine pesticides and mercury in fish and crab samples.

Sample ID F-Number Species Common Name	Data Qualifier	3000HP 2744 CASAP blue crab	Data Qualifier	HP 3021 2745 CASAP blue crab	Data Qualifier	HP 3022 2746 CASAP blue crab	Data Qualifier	M 2992 2736 CASAP blue crab	Data Qualifier	M 2993 2737 CASAP blue crab	Data Qualifier	M 2994 2738 CASAP blue crab	Data Qualifier	M 2995 2739 CASAP blue crab	Data Qualifier	M 2996 2740 CASAP blue crab
Lipid Content (%)		8.28		7.05		8.48		0.52		0.83		0.69		0.74		0.37
149		5.29		7.68		5.05	J		J				J			0.33
118		49.36		95.43		57.56		1.34		2.46		3.44		3.48		3.63
131		0.10		0.76		0.11		0.01			ND		ND		ND	
146		16.47		17.47		18.20	J		J	0.35		0.72		0.74		0.79
153+132+105		174.94		347.12		206.63		3.34		5.67		10.46		10.77		10.28
141		0.50		0.17		0.13	ND		J		J		J		J	
137+176		0.82		1.73		0.74	J		J				ND		ND	
163+138		87.39		165.04		112.55		1.74		2.67		4.47		4.78		4.46
158		10.92		6.16		16.36	J		J	0.91		0.91		1.04		0.89
129+178		2.38		11.35		2.36		0.20		0.72		0.41		0.30		0.45
187+182		19.76		48.66		21.09	J		J	1.38		1.16		1.25		1.25
183		15.05		37.43		18.65	J		J	0.63		0.97		1.02		0.93
128		11.04		14.38		15.28	J		J		J	1.05		1.04		1.04
185	J		J		ND		J		ND		ND		ND		ND	
174	J	0.87		0.85		0.54			J		J		J		J	
177		2.35		4.42		2.13		0.07		0.07		0.13		0.06		0.11
202+171		5.65		10.96		6.43			ND	0.25		0.69		0.83		0.79
157+202		3.88		8.84		4.05	J		J		BDL		J		J	
172+197		2.97		5.63		2.94		0.10		0.08		0.11		0.20		0.21
180		55.45		96.26		64.36		0.68		1.49		2.41		2.76		2.44
193		1.12			ND	1.07			ND	0.87			ND		ND	
191	J		J	1.00			J	0.15			J		J		J	
199			J		J	4.65			ND		ND		ND		ND	
170+190		20.06		33.67		22.95			J	0.75		1.13		1.27		1.17
201		10.22		20.72		10.15			J		J	0.53		0.56		
203+196		13.24		24.89		14.76			J		J		J		J	
189		2.96		2.40		3.02			ND		ND	0.05		0.05		0.14
208+195		2.24			ND	1.07			ND		J		ND		ND	
207		0.55		1.26		0.50			ND	0.03		0.03		0.02		0.03
194		4.65		9.20		5.06			J		J		J		J	
205		0.12			ND	1.07			ND		ND		ND		ND	
206		4.50		10.92		3.68		0.09		0.12		0.20		0.23		0.17
209		0.24		0.82		0.17			ND	0.01		0.02		0.03		0.02
Total PCBs		775.57		1475.84		927.56		14.42		30.65		49.42		50.56		50.58
Organochlorine Pesticides																
(ng/g wet wgt)																
alpha BHC	J		J	6.64			J		J		J		J		J	
beta BHC	I		I		I		I		I		I		I		I	
lindane		0.26		0.67		1.10			ND		ND		J	0.36		0.30
delta BHC			J	1.59		0.64			ND	0.61			ND		ND	
dieldrin		0.28		35.13		7.16		0.17			ND	1.80		4.62		2.47
aldrin	J		J	6.00		3.76			J		J		J		J	
endrin			ND	2.13			ND		ND		ND	0.32		0.51		
endosulfan I			J	7.15		2.67			J		ND	0.19		0.69		0.21
endosulfan II	J	0.28		18.64		8.10			J	0.44		0.52		0.85		
heptachlor		4.08		3.98		3.17			J		ND		ND		J	
heptachlor epoxide		0.32		15.80		12.73		0.20			ND	0.93		1.59		0.96
oxychlordane		2.38		72.42		50.19			J	6.01			ND		ND	

Appendix II. Summary of concentrations (ng/g) of PCBs, organochlorine pesticides and mercury in fish and crab samples.

Sample ID F-Number Species Common Name Lipid Content (%)	Data Qualifier	3000HP 2744 CASAP blue crab 8.28	Data Qualifier	HP 3021 2745 CASAP blue crab 7.05	Data Qualifier	HP 3022 2746 CASAP blue crab 8.48	Data Qualifier	M 2992 2736 CASAP blue crab 0.52	Data Qualifier	M 2993 2737 CASAP blue crab 0.83	Data Qualifier	M 2994 2738 CASAP blue crab 0.69	Data Qualifier	M 2995 2739 CASAP blue crab 0.74	Data Qualifier	M 2996 2740 CASAP blue crab 0.37
gamma chlordane	ND	1.20			ND	2.38			ND		ND	16.38		9.25		14.01
alpha chlordane	J		J	5.89			J		J		J		J		J	
trans nonachlor		60.11		107.03		71.50			J	4.51			J		J	
cis nonachlor		70.17			ND	78.02			ND	4.11			ND		ND	
total chlordanes		7.98		98.08		68.46		0.20		6.01		17.31		10.85		14.97
opDDE		5.87		7.54		4.90			J		ND		J		J	
ppDDE		372.95		263.53		336.18		7.69		9.83		15.27		20.73		15.06
opDDD	J		J	9.19			J		J		J		ND		ND	
ppDDD		5.59		207.58		151.76		8.08		25.30		8.77		12.92		7.40
opDDT		5.71		153.29		90.36		7.20		11.08		4.90		5.65		5.53
ppDDT	J		J		ND	9.10			J		J		J		J	
total DDXs		390.12		641.13		592.30		22.97		46.21		28.94		39.30		27.99
surrogate recovery (%)																
PCB congener 14		79		98		79		47		74		71		60		74
PCB congener 65		61		82		64		46		85		62		53		64
PCB congener 166		67		91		74		50		99		95		85		102

Data Qualifiers (DQ):

I: Analytical Interference. The c

J: <MDL. Concentration of the ;

ND: Not detected.

NA: Not Analyzed

Appendix II. Summary of concentrations (ng/g) of PCBs, organochlorine pesticides and mercury in fish and crab samples.

Sample ID F-Number Species Common Name Lipid Content (%)	Data Qualifier	M 2997 2741 CASAP blue crab 0.69	Data Qualifier	M 2998 2742 CASAP blue crab 0.58	Data Qualifier	M 2999 2743 CASAP blue crab 0.7	Data Qualifier	M 3000 2744 CASAP blue crab 0.63	Data Qualifier	M 3021 2745 CASAP blue crab 0.7	Data Qualifier	M 3022 2746 CASAP blue crab 0.64	Data Qualifier
Mercury Concentration (ug/g wet wgt)		0.407		0.055		0.075		0.07		0.081		0.084	
PCB Congeners (ng/g wet wgt)													
1	NA		NA		NA		NA		NA		NA		NA
3	ND	0.25			ND		ND		ND		ND		ND
4+10	J		J		J		J		J		J		J
7		0.05			J	0.05		0.04		0.07			ND
6	J	0.45			J	0.70			J		J		J
8+5	J		J		J		J		J		J		J
19	J		J		ND		ND		J		J		J
12+13	ND		J		J		J		ND		ND		ND
18	J		J		J		J		J		J		J
17	J		J		J	0.09			J		J		J
24+27	J		J		J		J		J		J		J
16+32	J		J		J		J		J		J		J
29	J		ND		ND		ND		J		ND		J
26	ND		ND		ND	0.86			ND		ND	0.04	
25	J		J		J		J		J		J		J
31+28		2.65		1.30		4.52		2.35		2.75		2.24	
53+33+21		0.97		0.88		1.71		0.27		0.53			J
22	J		J		J		J		J		J		J
45	J		ND		ND		J		J		J		J
46		0.48		0.37		0.83		0.05		0.18		0.05	
52	J		J		J		J	0.21			J		J
49	J		J		J		J		J		J		J
47	J		J		J		J		J		J		J
48	ND		ND		ND		ND		ND		ND		ND
44	J		J		J		J		J		J		J
37+42	J		J		J		J		J		J		J
41+71	J		ND		J		ND		J		J		J
40	ND		ND		ND	0.07		0.01			ND	0.01	
100		0.05		0.02		0.08		0.11		0.09		0.08	
63			ND		ND	0.02		0.04		0.03		0.04	
74		2.60		1.20		3.91		2.66		2.96		2.63	
70+76	J	0.16			J	0.21		0.52		0.45		0.39	
66+95		9.69		4.50		13.95		9.53		10.53		8.86	
91	J		ND		ND		ND	0.06		0.07		0.06	
56+60		3.75		1.67		4.94		4.92		4.13		6.70	
101	J		J		J		J	0.46			J		J
99		2.88		1.45		3.80		4.17		3.76		3.52	
83		0.02		0.06		0.06		0.06		0.08		0.08	
97		0.16		0.14		0.29		0.12		0.18		0.09	
87+81	J		J		ND		ND	0.18			J		ND
85		1.41		0.63		1.54		1.49		1.81		1.54	
136	ND		ND		ND		ND	0.02		ND			J
77+110	J		J		ND		J		J		J		J
82	ND		ND		ND		ND	0.06			ND		ND
151	J		ND		ND		ND		J		J		J
135+144	J		ND		ND		ND	0.09		0.06		0.06	
107		0.21		0.13		0.37		0.35		0.38		0.27	

Appendix II. Summary of concentrations (ng/g) of PCBs, organochlorine pesticides and mercury in fish and crab samples.

Sample ID F-Number Species Common Name Lipid Content (%)	Data Qualifier	M 2997 2741 CASAP blue crab 0.69	Data Qualifier	M 2998 2742 CASAP blue crab 0.58	Data Qualifier	M 2999 2743 CASAP blue crab 0.7	Data Qualifier	M 3000 2744 CASAP blue crab 0.63	Data Qualifier	M 3021 2745 CASAP blue crab 0.7	Data Qualifier	M 3022 2746 CASAP blue crab 0.64	Data Qualifier
149			J		J	0.44		0.65		0.48		0.50	
118		4.11		2.08		5.50		5.64		5.05		4.58	
131	ND		ND		ND		ND		J		ND		ND
146		0.68		0.46		1.23		1.68		1.26		1.14	
153+132+105		10.79		6.12		13.87		21.51		15.56		14.29	
141	ND		ND		ND		ND		J		ND		ND
137+176	J		J		J		ND		J		J		J
163+138		4.76		2.34		6.16		9.10		6.75		6.19	
158		0.94		0.49		1.21		1.77		1.30		1.33	
129+178		0.43		0.51		0.98		0.81		0.57		0.51	
187+182		1.05		0.67		1.63		2.66		1.87		1.56	
183		0.87		0.62		1.43		1.71		1.22		1.12	
128		1.27			J	1.33		1.53		1.23		1.30	
185	ND		ND		ND		ND		J		ND		J
174	J		J	0.23			ND		J		J		J
177		0.05		0.07		0.15		0.17		0.21		0.11	
202+171		0.80		0.40		1.07		1.46			ND		ND
157+202	J		J		J		J	0.39			ND		ND
172+197		0.23			ND	0.24		0.37		0.29		0.22	
180		2.36		1.39		3.08		4.41		3.18		2.85	
193	ND		ND		ND		ND		ND		ND		ND
191	J		J		ND		J	0.10			J		J
199	ND		ND		ND		ND		ND		ND		ND
170+190		1.23		0.55		1.51		2.06		1.47		1.20	
201	J		J		J	0.85		1.19		0.82			J
203+196	J		J		J		J	1.41			J		J
189		0.09		0.04		0.07		0.16		0.08		0.08	
208+195	J		J		J		J		ND		ND		ND
207		0.05		0.02		0.04		0.09		0.05		0.03	
194	J		J		J		J		J		J		J
205	ND		ND		ND		ND		ND		ND		ND
206		0.19		0.10		0.23		0.58		0.29		0.10	
209		0.03		0.02		0.03		0.06		0.04		0.02	
Total PCBs		55.71		28.49		79.06		87.24		69.80		63.81	
Organochlorine Pesticides (ng/g wet wgt)													
alpha BHC	J		J		J		J		J		J		J
beta BHC	I		I		I		I		I		I		I
lindane		0.28		0.37		0.75			J	0.77		0.73	
delta BHC	ND		ND		ND		ND		ND		ND		ND
dieldrin		2.30		3.33		4.47		3.04		3.84			ND
aldrin	J		J		J		J		J		ND		J
endrin	ND		ND		ND		ND		J		ND	0.56	
endosulfan I		0.20			J		J		J		ND	0.29	
endosulfan II	ND		ND	0.25			ND	0.83		0.37		7.98	
heptachlor	J		ND		ND		J		ND		ND		J
heptachlor epoxide		0.90		1.02		1.00		1.11		1.26		0.98	
oxychlordane	ND		ND		ND		ND		ND		ND	16.32	

Appendix II. Summary of concentrations (ng/g) of PCBs, organochlorine pesticides and mercury in fish and crab samples.

Sample ID F-Number Species Common Name Lipid Content (%)	Data Qualifier	M 2997 2741 CASAP blue crab 0.69	Data Qualifier	M 2998 2742 CASAP blue crab 0.58	Data Qualifier	M 2999 2743 CASAP blue crab 0.7	Data Qualifier	M 3000 2744 CASAP blue crab 0.63	Data Qualifier	M 3021 2745 CASAP blue crab 0.7	Data Qualifier	M 3022 2746 CASAP blue crab 0.64	Data Qualifier
gamma chlordane		13.09		9.52		16.79		3.26		36.79			ND
alpha chlordane	J		J		J		J		ND		ND		J
trans nonachlor	J		J		J		J	5.03			J	4.47	
cis nonachlor	ND		ND		ND		ND		ND		J		ND
total chlordanes		13.98		10.55		17.78		4.37		38.05		17.30	
opDDE	J		J		ND		J		J		J		J
ppDDE		15.79		9.90		19.02		23.89		19.01		19.71	
opDDD	ND		ND		ND		ND		ND		ND		ND
ppDDD		6.91		6.72		12.14		15.71		10.33		4.85	
opDDT		5.16		4.13		5.31		7.01		10.34			J
ppDDT	J		J		J		J		J		J	10.98	
total DDXs		27.86		20.75		36.46		46.61		39.67		35.53	
surrogate recovery (%)													
PCB congener 14		76		57		66		68		64		78	
PCB congener 65		72		43		50		55		55		69	
PCB congener 166		108		76		87		86		93		104	

Data Qualifiers (DQ):

I: Analytical Interference. The

J: <MDL. Concentration of the

ND: Not detected.

NA: Not Analyzed

Appendix III: Summary of dioxin concentrations

Appendix III. Summary of concentrations of dioxin (ng/g) in crab samples.

Dioxin Concentrations (pg/g dry wgt)

Client Sample ID	2993 F2737				2993 F2737				2994 F2738				2994 F2738				2995 F2739				2995 F2739				2996 F2740				2996 F2740				2997 F2741				2997 F2741				2998 F2742																											
Sample Descriptor	Crab Muscle				Crab Hepatopancreas				Crab Muscle				Crab Hepatopancreas				Crab Muscle				Crab Hepatopancreas				Crab Muscle				Crab Hepatopancreas				Crab Muscle				Crab Hepatopancreas																															
Original Sample																																																																				
GERG ID	C37379				C37380				C37381				C37382				C37383				C37384				C37385				C37386				C37387				C37388				C37389																											
Sample Type	SAMP				SAMP				SAMP				SAMP				SAMP				SAMP				SAMP				SAMP				SAMP				SAMP				SAMP																											
SDG	B1317				B1317				B1317				B1317				B1317				B1317				B1317				B1317				B1317				B1317				B1317																											
Dry Weight	1.96				1.55				2.42				1.72				2.37				2.04				1.87				2.23				1.99				1.86				2.16																											
Wet Weight	10.73				8.21				12.37				8.10				13.11				10.21				10.33				10.20				10.02				8.27				11.82																											
Sample Size Units	Grams				Grams				Grams				Grams				Grams				Grams				Grams				Grams				Grams				Grams				Grams																											
Matrix	Tissue				Tissue				Tissue				Tissue				Tissue				Tissue				Tissue				Tissue				Tissue				Tissue				Tissue																											
% solid	18.3				18.9				19.6				21.3				18.1				20.0				18.1				21.8				19.9				22.5				18.3																											
% Lipid	1.3				48.1				1.5				40.5				1.5				33.3				1.2				44.5				2.0				40.9				2.1																											
Reporting Units	pg/g				pg/g				pg/g				pg/g				pg/g				pg/g				pg/g				pg/g				pg/g				pg/g				pg/g																											
Calculation Basis (dry/wet)	Dry				Dry				Dry				Dry				Dry				Dry				Dry				Dry				Dry				Dry				Dry																											
QC Batch ID	DX0492				DX0492				DX0492				DX0492				DX0492				DX0492				DX0492				DX0492				DX0492				DX0492				DX0492																											
Method	GC/HRMS				GC/HRMS				GC/HRMS				GC/HRMS				GC/HRMS				GC/HRMS				GC/HRMS				GC/HRMS				GC/HRMS				GC/HRMS				GC/HRMS																											
Collection Date																																																																				
Receive Date	1/24/01				1/24/01				1/24/01				1/24/01				1/24/01				1/24/01				1/24/01				1/24/01				1/24/01				1/24/01																															
Extraction Date	1/25/01				1/25/01				1/25/01				1/25/01				1/25/01				1/25/01				1/25/01				1/25/01				1/25/01				1/25/01																															
Analysis Date	2/14/01				2/14/01				2/14/01				2/14/01				2/14/01				2/14/01				2/14/01				2/14/01				2/14/01				2/14/01																															
Surrogate Compounds	%Recovery				%Recovery				%Recovery				%Recovery				%Recovery				%Recovery				%Recovery				%Recovery				%Recovery				%Recovery																															
13C-2,3,7,8-TCDF	87.3				102.1				86.2				75.4				91.2				76.6				83.7				73.7				76.1				93.8				79.0																											
13C-1,2,3,7,8-PeCDF	96.2				107.6				92.2				83.0				91.8				84.5				94.2				76.5				80.0				89.2				83.9																											
13C-2,3,4,7,8-PeCDF	88.5				102.3				88.9				81.1				89.4				79.9				94.4				75.0				83.0				89.6				81.0																											
13C-1,2,3,4,7,8-HxCDF	86.8				80.1				89.8				74.9				83.3				65.3				85.2				69.8				58.7				82.3				81.6																											
13C-1,2,3,6,7,8-HxCDF	90.8				91.2				95.6				81.6				88.0				76.5				87.3				67.6				63.7				88.5				80.2																											
13C-2,3,4,6,7,8-HxCDF	96.5				97.3				98.7				87.0				91.6				78.1				94.2				70.7				66.5				93.4				87.6																											
13C-1,2,3,7,8,9-HxCDF	85.9				93.6				88.0				77.3				85.5				74.5				83.8				72.2				63.1				87.0				77.1																											
13C-1,2,3,4,6,7,8-HpCDF	90.3				108.1				96.4				95.0				88.2				85.8				91.0				84.3				62.0				103.5				92.6																											
13C-1,2,3,4,7,8,9-HpCDF	94.4				115.8				104.0				94.5				101.6				89.2				100.3				88.3				68.3				108.4				97.4																											
13C-2,3,7,8-TCDD	80.6				87.8				74.1				77.4				87.0				74.8				91.1				77.1				63.1				86.3				71.9																											
37Cl-2,3,7,8-TCDD	0.0				0.0				0.0				0.0				0.0				0.0				0.0				0.0				0.0				0.0				0.0																											
13C-1,2,3,7,8-PeCDD	86.1				105.5				84.4				84.0				82.2				72.5				81.5				70.6				73.7				85.9				80.3																											
13C-1,2,3,4,7,8-HxCDD	91.5				85.5				101.6				60.2				89.1				77.3				99.1				85.5				69.2				89.1				88.4																											
13C-1,2,3,6,7,8-HxCDD	92.8				94.0				90.9				80.5				84.2				77.3				89.7				64.5				63.7				97.2				85.1																											
13C-1,2,3,4,6,7,8-HpCDD	77.0				81.5				90.6				71.4				78.7				69.5				83.9				67.1				56.7				79.2				80.3																											
13C-OCDD	78.4				90.1				94.0				79.9				87.7				75.1				87.5				71.1				65.3				95.2				80.6																											
PCDD/PCDF Compounds	Concentration				Concentration				Concentration				Concentration				Concentration				Concentration				Concentration				Concentration				Concentration				Concentration																															
2,3,7,8-TCDF	12.9				288.1				8.1				253.1				9.4				279.9				0.0				ND				383.5				0.0				ND				140.9				0.0																			
1,2,3,7,8-PeCDF	0.0				ND				135.6				0.0				ND				78.0				0.0				ND				117.8				0.0				ND				0.0				ND																			
2,3,4,7,8-PeCDF	0.0				ND				64.8				0.0				ND				38.9				0.0				ND				0.0				ND				0.0				ND				41.8				0.0															
1,2,3,4,7,8-HxCDF	0.0				ND				0.0				ND				0.0				ND				0.0				ND				0.0				ND				0.0				ND				0.0				ND															
1,2,3,6,7,8-HxCDF	0.0				ND				0.0				ND				0.0				ND				0.0				ND				0.0				ND				0.0				ND				0.0				ND															
2,3,4,6,7,8-HxCDF	0.0				ND				0.0				ND				0.0				ND				0.0				ND				0.0				ND				0.0				ND				0.0				ND															
1,2,3,7,8,9-HxCDF	0.0				ND				0.0				ND				0.0				ND				0.0				ND				0.0				ND				0.0				ND				0.0				ND															
1,2,3,4,6,7,8-HpCDF	0.0				ND				55.7				0.0				ND				0.0				ND				55.8				0.0				ND				0.0				ND				60.5				0.0															
1,2,3,4,7,8,9-HpCDF	0.0				ND				0.0				ND				0.0				ND				0.0				ND				0.0				ND				0.0				ND				0.0				ND															
OCDF	0.0				ND				0.0				ND				0.0				ND				0.0				ND				0.0				ND				0.0				ND				0.0				ND															
2,3,7,8-TCDD	0.0				ND				83.3				0.0				ND				58.2				0.0				ND				83.1				7.9				153.8				0.0				ND				57.0				0.0											
1,2,3,7,8-PeCDD	0.0				ND				0.0				ND				0.0				ND				0.0				ND				44.1				0.0				ND				0.0				ND				17.5				L				0.0							
1,2,3,4,7,8-HxCDD	0.0				ND				0.0				ND				0.0				ND				0.0				ND				0.0				ND				0.0				ND				0.0				ND				0.0											
1,2,3,6,7,8-HxCDD	0.0				ND				0.0				ND				0.0				ND				0.0				ND				0.0				ND				0.0				ND				0.0				ND				0.0											
1,2,3,7,8,9-HxCDD	0.0				ND				0.0				ND				0.0				ND				0.0				ND				0.0				ND				0.0				ND				0.0				ND				0.0											
1,2,3,4,6,7,8-HpCDD	0.0				ND				0.0				ND				0.0				ND				0.0				ND				0.0				ND				15.4				L				0.0				ND				0.0				ND				0.0			
OCDD	0.0				ND				89.9				0.0				ND				0.0				ND				75.7				0.0				ND				82.7				0.0				ND				57.5				0.0											

Dioxin Concentrations (pg/g dry w