Appendix. 1. Map of Sampling Sites.

(a hard copy of Brett's map should be inserted here.)

APPENDIX 2: Sampling Location Descriptions

Trawl 1 (T1) – was in the mainstem of the Hackensack River. The lower end of the trawl began at approximately river mile (RM) 3.7, approximately 300 yards upstream of the mouth of Penhorn Creek. The trawl began in the shallows near the mouth of a small, unnamed tidal creek, and continued out into deeper water adjacent to the Malanka Landfill. The substrate at this location was hard-packed sand and hard mud. This site is located in Secaucus, Hudson County.

Trawl 2 (T2) – was located on the western side of the Hackensack River, upstream of the mouth of Sawmill Creek, at approximately RM 5.4. The substrate at T2 was hard clay and hard-packed sand. This site was located in Lyndhurst, Bergen County.

Trawl 3 (T3) – was located on the eastern side of the River, between the NJ Transit Bergen County Line railroad bridge and red nun buoy #18, at RM 7.0, in Secaucus, Hudson County. The lower end of this trawl generally began (or ended, depending on the tide) just offshore from one of the protrusions of fill that supports a number of Harmon Cove town homes that front the River just upstream (or north of) the railroad. The substrate at T3 ranged from soft black mud to hard clay.

Trawl 4 (T4) – was located on the eastern side of the River, between the mouths of Mill and Cromakill Creeks, at RM 9.2 in Secaucus, Hudson County. The substrate at T4 consisted of mud, clay and occasionally rubble.

Trawl 5 (T5) – was located in the main stem of the River at approximately RM 11.4, adjacent to the Bergen County Utility Authority (BCUA) Little Ferry sewage treatment plant. The shallow end of this trawl began in Ridgefield, progressing towards the deep end in the middle of the River, which forms the boundary between Ridgefield and Little Ferry, Bergen County. The substrate at T5 was soft black mud.

Trawl 6 (T6) – was located in the center of Sawmill Creek, which forms the boundary between Kearny, Hudson County and Lyndhurst, Bergen County. The lower end of the site was approximately 0.3 nautical miles upstream from the mouth of Sawmill Creek. The bottom of Sawmill Creek consists of hard gray clay. There are no deposits of fine sediments in the trawl area due to the large amount of tidal flushing that occurs twice each day between the Sawmill Creek and its associated marshes and the Hackensack River.

Trawl 7 (T7) – was located in Berry's Creek Canal, an man-made canal that was dug by the Erie Railroad circa 1910 in order to maintain navigability between the Hackensack River and upper Berry's Creek without having to build a drawbridge over Berry's Creek. The lower end of the T7 was approximately 0.3 nautical miles above the mouth of the Canal. The substrate in the area of T7 was soft black mud that contained a large amount of *Phragmites* stalks, leaves and other organic debris (tree limbs, etc.). T7 was located in East Rutherford, Bergen County.

Trawl 8 (T8) – was located in Mill Creek, approximately 0.6 nautical miles from its mouth. The substrate at T8 was a mixture of hard clay, soft brown mud, platform mussel (*Congeria leucopheata*) shells, and *Phragmites* stalks and leaves. In the area of T8, the eastern side of Mill Creek was "restored" by the NJMC in 1999, and consisted of mudflats/open water (depending on the level of the tide). The mudflats were vegetated with dwarf spikerush (*Eleochris parvula*) and

salt marsh fleabane (*Pluchea purpurecsens*). The western side of Mill Creek was not restored and consisted of a thick monoculture of *Phragmites*. During the 1987-1988 study, both sides of Mill Creek were dominated by *Phragmites*. T8 was located in Secaucus, Hudson County.

Trawl 9 (T9) – was located in Cromakill Creek, approximately 0.4 nautical miles from its confluence with the Hackensack River (on the eastern side of the NJ Turnpike's eastern spur), in North Bergen, Hudson County. The substrate at T9 was soft black mud, which often contained *Phragmites* leaves and stems. On either side of the Cromakill Creek channel at T9 were mudflats/open water (depending on the tidal stage) with sparse clumps of *Spartina alterniflora* and large areas of *Eleocharis parvula*. During the 1987-1988 study, T9 was located further upstream, approximately 0.8 nautical miles from the mouth, on the straight reach just upstream of the two large meanders in the creek. During 1987-1988, both banks of the entire Cromakill Creek drainage were dominated by dense monocultures of *Phragmites*. The location of T9 was moved after the first collection of the 2001-2003 study (August 2001) due to the shallow depths found in the former area of T9 and the fact that Cromakill Creek was not accessible during high water due to the low clearance of the NJ Turnpike's Eastern Spur bridge crossing of the creek. Due to this logistical problem, the "new" location of T9 was generally sampled on a falling tide, approximately two to three hours after high water.

Trap Net 1 (TN1) – was located on a mudflat adjacent to the northern bank of the Hackensack River, at RM 3.7, approximately 250 yards upstream from the mouth of Penhorn Creek, in Secaucus, Hudson County. The leader of TN1 was generally set within approximately 20 to 30 feet of the River bank, which was dominated by *Phragmites*. Just downstream of TN1 was the mouth of a small tidal creek that fed a small area of mixed *Spartina/Phragmites* marsh. The substrate in the area of TN1 consisted of soft black mud approximately one to three feet deep, underlain by hard clay. During 1987-88, TN1 was set closer to the mouth of Penhorn Creek (at RM 3.6).

Trap Net 2 (TN2) – was located in a shallow tidal embayment/mudflat on the northern side of Sawmill Creek, approximately 1.1 nautical miles above the mouth of Sawmill Creek, just downstream from the NJ Turnpike's Western Spur crossing of Sawmill Creek, in Lyndhurst, Bergen County. The substrate at TN2 was soft mud, underlain by hard clay. Scattered clumps of salt marsh cordgrass (*Spartina alterniflora*), behind which a stand of common reed (*Phragmites australis*), which extended to the NJ Turnpike dominated the shoreline.

Trap Net 3 (TN3) – was located on the western side of the Hackensack River, north of the NJ Transit Bergen Line railroad crossing in East Rutherford, Bergen County at approximate RM 7.1. TN3 was set just downstream of a drainage ditch that conveys tidal water underneath the adjacent NJ Turnpike's Western Spur (which eventually connects with Fish Creek, a tributary of Berry's Creek). The substrate at TN3 consisted of a one to three foot thick layer of soft mud, underlain by hard clay. The shoreline was dominated by a thick stand of common reed.

Trap Net 4 (TN4) – was located on the eastern shore of the Hackensack River, on the mudflat just upstream from (i.e., north of) the mouth of Mill Creek, at RM 9.2 in Secaucus, Hudson County. The substrate at TN4 was soft mud. The river bank at TN4 was dominated by a dense stand of *Phragmites*.

Trap Net 5 (TN5) – was located on the western shore of the River, on the mudflat just downstream from the mouth of the Losen Slote, at approximately RM10.9, in South Hackensack, Bergen County. The substrate at TN5 was soft black mud, and the river bank was dominated by a dense stand of *Phragmites*.

Trap Net 6 (TN6) – was located on the western shore of the River, just upstream (north) of the U.S. Route 46 bridge crossing in Little Ferry, Bergen County. TN6 was approximately 12.5 RM from the mouth of the Hackensack River. The substrate at TN6 was soft black mud. The river bank at TN6 consisted of a thin band of *Phragmites* with a few small trees.

Gill Net 1 (GN1) – was located on the western side of the River, just downstream from the NJ Transit Morristown Line railroad crossing (a.k.a. the Morris & Essex Line) of the lower Hackensack River, at RM 3.0, in Kearny, Hudson County. GN1 was generally set close to the western shore, in an eddy that forms below the rail bridge, due to the high velocity of the tidal currents that occur further offshore. Also due to the large volume of water that passed this point in the River, GN1 was only fished during neap tides. The substrate at GN1 consists of rubble, sand, soft mud and hard clay. The shoreline is mainly riprap, although there is a small area of mudflat that contains sparse clumps of *Spartina alterniflora* to the south of the inshore (or downstream) end of where the gill net was set.

Gill Net 2 (GN2) – was located on the western side of the River, just downstream from the NJ Transit Bergen Line railroad crossing, at RM 6.8 in Rutherford, Bergen County. The location of GN2 was adjacent to the Hackensack River frontage of the old Rutherford landfill. The inshore (shallow) end of the net was set approximately 60 feet upstream (north) from the mouth of Berry's Creek, and the net extended diagonally to the shoreline upstream (northward) out into deeper water, with care taken not to set the offshore end of the net too close to the navigation channel. GN2 was normally fished during neap tides. The shoreline was dominated by riprap that was placed along the face of the landfill in 1990?? The substrate at GN2 consisted of rubble, soft mud, clay and in some areas, refuse that had at one time been likely been contained within the landfill.

Gill Net 3 (GN3) – was located in Overpeck Creek, which forms the boundary between Ridgefield and Ridgefield Park, Bergen County. The inshore (shallow) end of the net was set approximately 60 to 80 feet upstream from the eastern or inner span (formerly Penn Central, now Conrail) of the two adjacent non-functional railroad drawbridges that cross the mouth of Overpeck Creek. The net was extended diagonally across the channel of Overpeck Creek. Due to the presence of the two non-functioning drawbridges across the mouth of Overpeck Creek (New York, Susquehanna and Western drawbridge on the west and Penn Central/Conrail drawbridge on the east), we could only gain access to Overpeck Creek during low water (from approximately two hours before to two hours after the time of low water). Therefore, all GN3 sets and retrievals were done around the predicted time of low water, generally during neap tides.

Seine 1 (S1) – was located on the eastern shore of the River, in front of the Public Service Electric & Gas Company (PSE&G) Hudson Generating Station at RM 3.5, in Jersey City, Hudson County. Riprap and the Generating Station dominated the shoreline. The substrate consisted of smaller pieces of riprap and other debris in a muddy sand matrix. The location where the seine hauls were made was approximately 250 feet upstream from the location of the

Hudson Station's cooling water intake structure. This site was generally sampled close to the predicted time of low water.

Seine 2 (S2) – was located on the western shore of the River, approximately 600 feet downstream from the mouth of Berry's Creek Canal, at RM 7.4 in East Rutherford, Bergen County. The shoreline is dominated by *Phragmites*, with a small patch of sandy beach between the Phragmites and the River. The substrate at S2 grades from sand fill from the NJ Turnpike (high up on the shore), to sandy mud, to very soft mud in the subtidal portion of this location.

Seine 3 (S3) – was located on the western shore of the River, on the downstream (southern) side of the NJ Turnpike Western Spur crossing, in Carlstadt, Bergen County, at approximately RM 10.5. (It is important to note that the location of S3 during the 2001-2003 study is the same as location S4 from the 1987-1988 fisheries study). The shoreline at S3 was dominated largely by bare sand and rock filled gabions (fill from the construction of the NJ Turnpike, which supports the overhead roadway crossing), with a stand of *Phragmites* at the downstream end of the site. As with S2, the substrate at site S3 grades from sand at the upper reaches of the intertidal zone, to sandy mud, to very soft thick black mud in the lower intertidal to subtidal zone. A wide mudflat that is exposed at this location during the time of mid to low water makes this site inaccessible during that portion of the tidal cycle. Therefore, S3 was normally sampled at or close to the predicted time of high water. Directly to the south and west of S3 was a channel that led directly to the mouth of Mudabock Creek, which is cut off from the River by an old earthen dike and tide gate.

Appendix 3a **SUMMARY TABLE FOR ALL FISH DATA, EXCEPT ORGANICS**

MPLE #	SPECIES	CATCH LOCATION	Site N-S	CATCH DATE	COLLECTION NUMBER	TOTAL LENGTH (mm)	TOTAL WEIGHT (g)	SEX	Day	%MOISTURE	%LIPID	As (µg/g)
75407	White Perch	GN1	1	17-Apr-2002	264	230	170	M	76	73.9	5.49	0.32
75408	White Perch	GN1	1	17-Apr-2002	264	231	190	F	76	75.2	3.96	0.19
75409	White Perch	GN1	1	17-Apr-2002	264	220	174	M	76	77.1	4.93	0.14
75404	White Perch	GN2	5	17-Apr-2002	263	245	240	M	76	76.8	4.42	0.2
75405	White Perch	GN2	5	17-Apr-2002	263	240	218	F	76	73.7	5.02	0.22
75406	White Perch	GN2	5	17-Apr-2002	263	250	235	F	76	78.2	3.76	0.43
75175	White Perch	S2	7	25-Sep-2001	59	230	175	M	268	77.7	4.19	1.13
75176	White Perch	S2	7	25-Sep-2001	59	194	97	F	268	79.9	1.98	0.47
75177	White Perch	S2	7	25-Sep-2001	59	206	128	F	268	77.6	2.89	0.91
75178	White Perch	S2	7	25-Sep-2001	59	230	191	F	268	77.8	2.51	0.85
75394	White Perch	T4 R1	10	10-Apr-2002	247	260	335	M	100	74.4	4.14	0.37
75395	White Perch	T4 R1	10	10-Apr-2002	247	235	210	M	100	77.7	4	0.23
75396	White Perch	T4 R1	10	10-Apr-2002	247	218	160	M	100	76.9	3.49	0.05
75397	White Perch	T4 R1	10	10-Apr-2002	247	252	237	F	100	78.4	5.28	0.21
75398	White Perch	T4 R2	10	10-Apr-2002	248	321	206	F	100	77.7	4.43	0.12
75399	White Perch	T4 R2	10	10-Apr-2002	248	199	139	F	100	75.7	3.21	0.13
75385	White Perch	T5	13	10-Apr-2002	245	234	206	M	100	78.1	5.15	0.07
75386	White Perch	T5	13	10-Apr-2002	245	236	240	M	100	72	7.81	0.01
75387	White Perch	T5	13	10-Apr-2002	245	216	168	F	100	77.3	8	0.12
75388	White Perch	T5	13	10-Apr-2002	245	272	350	M	100	75.7	5.26	0.12
75389	White Perch	T5	13	10-Apr-2002	245	220	188	M	100	73.5	8.33	0.29
75390	White Perch	T5	13	10-Apr-2002	245	215	160	M	100	77.2	4.93	0.11
75391	White Perch	T5	13	10-Apr-2002	245	191	104	M	100	78.4	3.62	0.06
75392	White Perch	T5	13	10-Apr-2002	245	215	170	M	100	79.5	2.19	0.21
75393	White Perch	T5	13	10-Apr-2002	245	189	112	F	100	77	4.83	0.05
75400	White Perch	T7 R1	8	10-Apr-2002	249	266	380	F	100	74.7	3.78	0.41
75401	White Perch	T7 R1	8	10-Apr-2002	249	253	290	F	100	75.5	8.29	0.15
75402	White Perch	T7 R2	8	10-Apr-2002	250	170	168	F	100	78.5	3.34	0.2
75304	White Perch	TN1	3	27-Nov-2001	117	189	94	M	331	76.8	2.83	0.69
75305	White Perch	TN1	3	27-Nov-2001	117	245	210	F	331	76.5	2.81	0.67
75306	White Perch	TN1	3	27-Nov-2001	117	184	80	M	331	77.8	2.17	0.57
75307	White Perch	TN1	3	27-Nov-2001	117	225	158	F	331	77.3	3.33	0.43
75308	White Perch	TN1	3	27-Nov-2001	117	265	305	F	331	77	2.36	0.35
75309	White Perch	TN1	3	27-Nov-2001	117	255	312	F	331	77.8	2.25	0.21
75310	White Perch	TN1	3	27-Nov-2001	117	159	52	F	331	77	2.41	0.1
75311	White Perch	TN1	3	27-Nov-2001	117	143	41	M	331	77.2	2.29	0.18
76981	White Perch	TN1	3	18-Oct-2002	362	205	116		291	76.1	2.62	0.51
76982	White Perch	TN1	3	18-Oct-2002	362	225	159		291	77.7	2.59	1.01
76983	White Perch	TN1	3	18-Oct-2002	362	200	115		291	77.9	2.21	0.44
76984	White Perch	TN1	3	18-Oct-2002	362	195	91		291	76.7	2.13	0.41
76985	White Perch	TN1	3	18-Oct-2002	362	205	126		291	78.6	2.08	0.46
76986	White Perch	TN1	3	18-Oct-2002	362	195	95		291	77.5	1.87	0.55
76987	White Perch	TN1	3	18-Oct-2002	362	195	95		291	78.4	2.45	0.73

76988	White Perch	TN1	3	18-Oct-2002	362	170	56		291	77.9	2	0.38
76989	White Perch	TN1	3	18-Oct-2002	362	180	88		291	75.6	2.01	0.39
76990	White Perch	TN1	3	18-Oct-2002	362	210	129		291	78.3	1.98	0.37
76991	White Perch	TN1	3	18-Oct-2002	362	210	112		291	78.5	4.13	0.28
75312	White Perch	TN2	4	27-Nov-2001	118	247	231	M	331	76.2	3.85	0.01
75313	White Perch	TN2	4	27-Nov-2001	118	251	216	F	331	75.3	2.35	
75314	White Perch	TN2	4	27-Nov-2001	118	256	245	M	331	75	3.08	
75315	White Perch	TN2	4	27-Nov-2001	118	244	202	F	331	76.7	2.59	0.09
75316	White Perch	TN2	4	27-Nov-2001	118	236	212	M	331	77.2	4.57	0.09
75317	White Perch	TN2	4	27-Nov-2001	118	265	263	M	331	76.7	2.03	0.01
75318	White Perch	TN2	4	27-Nov-2001	118	170	58	M	331	77.3	2.69	0.19
75319	White Perch	TN2	4	27-Nov-2001	118	209	149	M	331	75	4.09	0.09
75320	White Perch	TN2	4	27-Nov-2001	118	186	94	F	331	77	3.24	0.19
75321	White Perch	TN2	4	27-Nov-2001	118	243	218	M	331	76.4	3.04	0.06
75432	White Perch	TN2	4	8-May-2002	276	230	180	M	128	78.9	2.61	0.03
75433	White Perch	TN2	4	8-May-2002	276	260	268	F	128	79.4	2.2	0.03
75434	White Perch	TN2	4	8-May-2002	276	249	222	M	128	77.9	3.78	0.19
75435	White Perch	TN2	4	8-May-2002	276	237	212	F	128	80	2.34	0.15
75436	White Perch	TN2	4	8-May-2002	276	250	238	F	128	79.2	3.32	0.14
75437	White Perch	TN2	4	8-May-2002	276	212	168	M	128	78.2	2.66	0.21
75438	White Perch	TN2	4	8-May-2002	276	232	192	M	128	78.8	2.68	0.09
75439	White Perch	TN2	4	8-May-2002	276	230	168	M	128	78	2.15	0.08
75440	White Perch	TN2	4	8-May-2002	276	229	176	M	128	78.3	2.36	0.61
75441	White Perch	TN2	4	8-May-2002	276	225	152	M	128	80	2.01	0.3
76992	White Perch	TN2	4	18-Oct-2002	363	240	278		291	75.5	3.7	0.37
76993	White Perch	TN2	4	18-Oct-2002	363	210	144		291	76	2.6	0.21
76994	White Perch	TN2	4	18-Oct-2002	363	190	96		291	77.6	3.09	0.19
76995	White Perch	TN2	4	18-Oct-2002	363	220	163		291	74.3	5.5	0.09
76996	White Perch	TN2	4	18-Oct-2002	363	220	151		291	76	3.67	0.15
76997	White Perch	TN2	4	18-Oct-2002	363	195	114		291	79.6	2.15	0.25
76998	White Perch	TN2	4	18-Oct-2002	363	220	170		291	75.7	4.46	0.29
76999	White Perch	TN2	4	18-Oct-2002	363	220	167		291	78.1	2.41	0.06
75322	White Perch	TN3	6	27-Nov-2001	119	176	64	F	331	77	3.24	0.08
75323	White Perch	TN3	6	27-Nov-2001	119	211	149	F	331	76.4	4.23	0.03
75425	White Perch	TN3	6	19-Apr-2002	275	263	310	M	109	71.9	5.16	0.14
75426	White Perch	TN3	6	8-May-2002	275	235	198	F	128	77.5	3.49	0.02
75427	White Perch	TN3	6	8-May-2002	275	242	204	F	128	79.1	2.97	0.04
75428	White Perch	TN3	6	8-May-2002	275	237	212	M	128	75.3	3.53	0.02
75429	White Perch	TN3	6	8-May-2002	275	238	200	M	128	76.9	2.51	0.16
75430	White Perch	TN3	6	8-May-2002	275	233	194	M	128	77.8	3.09	0.36
75431	White Perch	TN3	6	8-May-2002	275	236	160	M	128	75.3	4.41	0.19
76258	White Perch	TN3	6	4-Jun-2002	302	230	184	M	155	76.9	5.95	0.01
76259	White Perch	TN3	6	4-Jun-2002	302	230	148	M	155	77.8	4.41	0.02
76260	White Perch	TN3	6	4-Jun-2002	302	232	162	F	155	78.9	3.11	0.02
76261	White Perch	TN3	6	4-Jun-2002	302	255	252	M	155	77.1	4.76	0.05
76262	White Perch	TN3	6	4-Jun-2002	302	266	256	F	155	80.9	2.14	0.02
76263	White Perch	TN3	6	4-Jun-2002	302	225	192	M	155	77.2	4.88	0.09
76264	White Perch	TN3	6	4-Jun-2002	302	235	190	M	155	68.6	7.86	0.13
76265	White Perch	TN3	6	4-Jun-2002	302	214	158	M	155	76.2	3.88	0.12

76266	White Perch	TN3	6	4-Jun-2002	302	252	262	F	155	78.7	3.52	0.17
76267	White Perch	TN3	6	4-Jun-2002	302	221	156	F	155	77.1	4.61	0.09
76268	White Perch	TN3	6	4-Jun-2002	302	255	246	M	155	77.7	4.58	0.09
76269	White Perch	TN3	6	4-Jun-2002	302	267	300	F	155	78.8	2.33	0.03
76270	White Perch	TN3	6	4-Jun-2002	302	220	152	M	155	78.7	4.44	0.1
76271	White Perch	TN3	6	4-Jun-2002	302	245	218	M	155	77.8	4.27	0.04
76272	White Perch	TN3	6	4-Jun-2002	302	231	180	M	155	78.9	5.41	0.79
76273	White Perch	TN3	6	4-Jun-2002	302	124	166	F	155	79.9	3.27	0.08
76274	White Perch	TN3	6	4-Jun-2002	302	210	120	M	155	77.5	5.28	0.1
76275	White Perch	TN3	6	4-Jun-2002	302	278	345	M	155	75.7	10.49	0.28
76276	White Perch	TN3	6	4-Jun-2002	302	242	188	M	155	76.3	5.84	0.38
76277	White Perch	TN3	6	4-Jun-2002	302	219	154	M	155	70.8	4.42	0.17
75235	White Perch	TN4	9	25-Oct-2001	87	164	82	F	298	78.4	1.88	1.6
75236	White Perch	TN4	9	25-Oct-2001	87	241	245	F	298	74.3	2.31	0.5
75237	White Perch	TN4	9	25-Oct-2001	87	195	105	F	298	76	2.09	0.22
75238	White Perch	TN4	9	25-Oct-2001	87	168	60	M	298	77.2	2.57	0.19
75239	White Perch	TN4	9	25-Oct-2001	87	155	50	F	298	77.4	2.32	0.04
75240	White Perch	TN4	9	25-Oct-2001	87	170	85	F	298	76.7	2.29	0.03
75324	White Perch	TN4	9	11-Dec-2001	142	211	149	F	345	76.2	3.49	0.06
75325	White Perch	TN4	9	11-Dec-2001	142	195	103	M	345	75.3	3.6	0.04
75330	White Perch	TN4	9	11-Dec-2001	142	184	94	M	345	75	2.93	0.08
75331	White Perch	TN4	9	11-Dec-2001	142	196	112	M	345	76.7	2.52	0.04
75332	White Perch	TN4	9	11-Dec-2001	142	193	109	F	345	77.2	3.97	0.03
75333	White Perch	TN4	9	11-Dec-2001	142	169	64	M	345	76.7	3.42	0.04
75334	White Perch	TN4	9	11-Dec-2001	142	175	76	F	345	77.3	2.91	0.01
75366	White Perch	TN4	9	6-Mar-2002	212	154	42	M	65	78.2	2.52	0.03
75367	White Perch	TN4	9	6-Mar-2002	212	210	130	M	65	77.1	3.81	0.02
75368	White Perch	TN4	9	6-Mar-2002	212	156	40	F	65	77.5	2.27	0.05
75241	White Perch/CSt	TN5	12	25-Oct-2001	88	170	65	M	298	75.9	2.38	0.04
75242	White Perch/StSt	TN5	12	25-Oct-2001	88	190	95	F	298	76.3	2.8	0.02
75243	White Perch (etc)	TN5	12	25-Oct-2001	88	193	95	F	298	77	2.38	0.07
75244	White Perch	TN5	12	25-Oct-2001	88	178	80	M	298	74.3	1.88	0.07
75335	White Perch	TN5	12	11-Dec-2001	143	196	124	F	345	75	3.34	0.01
75336	White Perch	TN5	12	11-Dec-2001	143	188	107	M	345	77	2.6	0.04
75337	White Perch	TN5	12	11-Dec-2001	143	166	68	F	345	76.4	2.88	0.09
75338	White Perch	TN5	12	11-Dec-2001	143	162	54	F	345	77	3.03	0.03
75339	White Perch	TN5	12	11-Dec-2001	143	201	139	M	345	76.4	3.8	0.07
75340	White Perch	TN5	12	11-Dec-2001	143	173	77	F	345	76.4	3.4	0.02
75341	White Perch	TN5	12	11-Dec-2001	143	153	50	F	345	73.2	4.75	0.01
75342	White Perch	TN5	12	11-Dec-2001	143	180	80	F	345	76.7	3.25	0.01
75343	White Perch	TN5	12	11-Dec-2001	143	155	50	F	345	79.6	3.91	0.08
75344	White Perch	TN5	12	11-Dec-2001	143	176	72	M	345	77.3	2.6	0.01
75345	White Perch	TN5	12	11-Dec-2001	143	197	115	F	345	77.2	3.57	0.01
75346	White Perch	TN5	12	11-Dec-2001	143	196	107	M	345	78.5	3.02	
75347	White Perch	TN5	12	11-Dec-2001	143	215	140	F	345	77.2	3.15	
75369	White Perch	TN5	12	6-Mar-2002	213	161	60	M	65	78.1	3.14	
75370	White Perch	TN5	12	6-Mar-2002	213	208	125	F	65	77.6	2.88	0.08
75371	White Perch	TN5	12	6-Mar-2002	213	171	40	F	65	78.5	2.59	0.14
75372	White Perch	TN5	12	6-Mar-2002	213	171	72	F	65	79.2	3.59	0.04

75373	White Perch	TN5	12	6-Mar-2002	213	171	70	M	65	78.3	3.06	0.06
76419	White Perch	TN5	12	19-Jul-2002	358	210	135	M	200	75.6	4.4	
76420	White Perch	TN5	12	19-Jul-2002	358	215	125	F	200	76.3	7.14	0.03
76421	White Perch	TN5	12	19-Jul-2002	358	165	58	F	200	78.2	2.93	0.07
76422	White Perch	TN5	12	19-Jul-2002	358	200	120	F	200	77.8	2.08	0.25
76423	White Perch	TN5	12	19-Jul-2002	358	188	94	F	200	79.4	2.68	0.01
76424	White Perch	TN5	12	19-Jul-2002	358	253	240	F	200	78.5	3.68	0.11
76425	White Perch	TN5	12	8-May-2002	358	210	134	M	128	76.6	8.59	0.12
76426	White Perch	TN5	12	19-Jul-2002	358	229	164	M	200	78.3	5.2	0.04
76427	White Perch	TN5	12	19-Jul-2002	358	171	70	F	200	78.4	3.11	0.04
76428	White Perch	TN5	12	19-Jul-2002	358	245	208	F	200	80.1	2.08	0.27
76429	White Perch	TN5	12	19-Jul-2002	358	205	109	M	200	79.5	2.3	0.05
76430	White Perch	TN5	12	19-Jul-2002	358	201	109	F	200	78.7	3.4	0.09
76431	White Perch	TN5	12	19-Jul-2002	358	221	169	M	200	79.6	2.7	0.01
76432	White Perch	TN5	12	19-Jul-2002	358	219	150	F	200	78.4	3.57	
75245	White Perch	TN6	15	25-Oct-2001	89	250	250	F	298	76.5	2.51	0.12
75246	White Perch	TN6	15	25-Oct-2001	89	225	165	M	298	72.5	4.33	0.06
75247	White Perch	TN6	15	25-Oct-2001	89	350	480	M	298	69.6	6.6	0.08
75248	White Perch	TN6	15	25-Oct-2001	89	237	185	F	298	76.7	4.03	0.05
75249	White Perch	TN6	15	25-Oct-2001	89	195	100	M	298	78.2	2.9	
75250	White Perch	TN6	15	25-Oct-2001	89	181	80	F	298	77.2	4.76	0.06
76413	White Perch	TN6	15	19-Jul-2002	359	265	268	M	200	78.6	3.44	0.29
76414	White Perch	TN6	15	19-Jul-2002	359	175	67	F	200	78.7	3.59	0.07
76415	White Perch	TN6	15	19-Jul-2002	359	181	79	M	200	79.3	2.85	0.12
76416	White Perch	TN6	15	19-Jul-2002	359	226	168	F	200	79.1	2.27	0.17
76417	White Perch	TN6	15	19-Jul-2002	359	191	90	M	200	81.2	4.89	0.06
76418	White Perch	TN6	15	19-Jul-2002	359	191	90	F	200	78.5	2.31	0.06
				Total Number	168	168	168			168	168	160
				Min.		124.00	40.00			68.60	1.87	0.01
				Max.		350.00	480.00			81.20	10.49	1.60
				Median		215.00	152.00			77.20	3.24	0.10
				Mean		213.67	156.43			77.09	3.57	0.19
				STDEV		34.22	76.41			1.91	1.48	0.24
MPLE #	**SPECIES**	**CATCH LOCATION**		**CATCH DATE**	**COLLECTION NUMBER**	**TOTAL LENGTH (mm)**	**TOTAL WEIGHT (g)**	**SEX**		**%MOISTURE**	**%LIPID**	**As (µg/g)**
75381	Brown Bullhead	TN3		5-Apr-2002	244	280	265			78.1	3.4	
75382	Brown Bullhead	TN3		5-Apr-2002	244	300	339			78.1	7.47	
75383	Brown Bullhead	TN3		5-Apr-2002	244	240	171			78.1	5.9	
75384	Brown Bullhead	TN3		5-Apr-2002	244	240	171			75.1	7.64	0.03
75461	Brown Bullhead	TN3		8-May-2002	275	290	319			77.7	3.1	0.05
75462	Brown Bullhead	TN3		8-May-2002	275	238	216			77.4	4.55	
75418	Brown Bullhead	TN4		19-Apr-2002	265	225	137			79.4	4.52	
75419	Brown Bullhead	TN4		19-Apr-2002	265	230	140			77.3	4.53	
75181	Brown Bullhead	TN5		12-Sep-2001	52	298	385			77.5	5.85	0.17
75182	Brown Bullhead	TN5		12-Sep-2001	52	243	157			78.4	2.86	0.28

75183	Brown Bullhead	TN5		12-Sep-2001	52	243	199			76.3	4.48	0.28
75184	Brown Bullhead	TN5		12-Sep-2001	52	255	216			77.5	3.66	5
75257	Brown Bullhead	TN5		25-Oct-2001	88	293	305			77.8	3.7	0.03
75258	Brown Bullhead	TN5		25-Oct-2001	88	360	669			80.9	2.37	
75453	Brown Bullhead	TN5		19-Apr-2002	266	277	303			78.3	4.11	
75454	Brown Bullhead	TN5		19-Apr-2002	266	290	314			81	3.1	0.01
75455	Brown Bullhead	TN5		19-Apr-2002	266	285	319			78.5	2.95	
75456*	Brown Bullhead	TN5		19-Apr-2002	266	348	473			78.3	4.34	0.01
75457	Brown Bullhead	TN5		19-Apr-2002	266	300	361			72.1	10.77	
75458	Brown Bullhead	TN5		19-Apr-2002	266	283	306			77.6	3.78	
75179	Brown Bullhead	TN6		12-Sep-2001	53	243	192			78.3	6.9	0.22
75180	Brown Bullhead	TN6		12-Sep-2001	53	245	214			75.7	3.16	0.3
75234	Brown Bullhead	TN6		14-Aug-2001	7	348	590			77.5	2.2	0.96
75230	Brown Bullhead	TN6		14-Aug-2001	7	350	604			80.2	1.79	
75231	Brown Bullhead	TN6		14-Aug-2001	7	373	507			83.1	1.18	0.01
75232	Brown Bullhead	TN6		14-Aug-2001	7	348	447			80.1	2.52	
75233	Brown Bullhead	TN6		14-Aug-2001	7	374	758			77.5	3.2	0.01
75259	Brown Bullhead	TN6		25-Oct-2001	89	380	764			77.9	2.53	
75269	Brown Bullhead	TN6		9-Nov-2001	105	360	662			75.1	3.87	0.11
				Total Number	29	29	29			29	29	15
				Min.		225.00	137.00			72.10	1.18	0.01
				Max.		380.00	764.00			83.10	10.77	5.00
				Median		290.00	314.00			77.90	3.70	0.11
				Mean		294.45	362.17			77.96	4.15	0.50
				STDEV		50.35	190.40			2.05	2.04	1.27
AMPLE #	**SPECIES**	**CATCH LOCATION**		**CATCH DATE**	**COLLECTION NUMBER**	**TOTAL LENGTH (mm)**	**TOTAL WEIGHT (g)**	**SEX**		**%MOISTURE**	**%LIPID**	**As (µg/g)**
75201	Mummichog	S3		21-Sep-2001	57	46	225			71.7	7.04	0.44
75202	Mummichog	S3		21-Sep-2001	57	48	225			73.4	7.78	0.52
75203	Mummichog	S3		21-Sep-2001	57	47	225			72.1	7.91	0.51
75204	Mummichog	S3		21-Sep-2001	57	46	220			76	8.37	0.44
'7904.1	Mummichog	TN2		7-May-2003	424					78.3	4.02	nd
'7904.2	Mummichog	TN2		7-May-2003	424					75.6	4.93	nd
'7904.3	Mummichog	TN2		7-May-2003	424					74.9	5.30	nd
'7904.4	Mummichog	TN2		7-May-2003	424					76.1	4.18	nd
'7904.5	Mummichog	TN2		7-May-2003	424					76.1	4.40	nd
75361	Mummichog	TN3		23-Jan-2002	178	87	297			74.6	6.15	
75362	Mummichog	TN3		23-Jan-2002	178	85	298			73.2	6.13	
75251	Mummichog	TN4		25-Oct-2001	87	65	282			73.7	8.17	0.04
75252	Mummichog	TN4		25-Oct-2001	87	63	281			74.2	7.82	0.05
75351	Mummichog	TN4		9-Nov-2001	103	72	278			71.9	9.03	0.16
75365	Mummichog	TN4		25-Jan-2002	179	80	180			73.6	8.48	
76433	Mummichog	TN4		19-Jul-2002	357	87	104			78.6	4.66	0.06
75253	Mummichog	TN5		25-Oct-2001	88	71	251			75	5.96	0.1

75254	Mummichog	TN5		25-Oct-2001	88	70	251			75.5	5.23	0.05
75255	Mummichog	TN5		25-Oct-2001	88	71	140			73.8	7.59	
75348	Mummichog	TN5		9-Nov-2001	104	74	230			74.6	7.59	0.16
75363	Mummichog	TN5		25-Jan-2002	180	70	306			74	6.71	0.01
75364	Mummichog	TN5		25-Jan-2002	180	76	305			73.8	7.24	0.01
75442	Mummichog	TN5		19-Apr-2002	266	81	126			75.1	5.04	
75443	Mummichog	TN5		19-Apr-2002	266	83	125			75.8	4.33	
75256	Mummichog	TN6		25-Oct-2001	89	82	268			76	6.3	0.01
75349	Mummichog	TN6		9-Nov-2001	105	73	250			73.6	6.14	0.06
75350	Mummichog	TN6		9-Nov-2001	105	76	322			73.8	5.22	0.08
75352	Mummichog	TN6		11-Dec-2001	144	69	251			74.9	7.67	0.09
75353	Mummichog	TN6		11-Dec-2001	144	71	185			75.1	7.39	0.06
75354	Mummichog	TN6		11-Dec-2001	144	70	183			74.4	7.41	0.03
75360	Mummichog	TN6		25-Jan-2002	181	75	260			76.1	5.02	0.07
75444	Mummichog	TN6		19-Apr-2002	267	85	130			76.8	6.09	
75445	Mummichog	TN6		19-Apr-2002	267	81	133			77.4	6.54	
75446	Mummichog	TN6		19-Apr-2002	267	81	136			77.1	4.83	
76434	Mummichog	TN6		19-Jul-2002	359	80	104			79.4	4.39	0.06
				Total Number	35	30	30			35	35	21
				Min.		46.00	104.00			71.70	4.02	0.01
				Max.		87.00	322.00			79.40	9.03	0.52
				Median		73.50	227.50			74.90	6.15	0.06
				Mean		72.17	219.03			75.03	6.32	0.14
				STDEV		11.94	67.95			1.80	1.44	0.17
MPLE #	**SPECIES**	**CATCH LOCATION**		**CATCH DATE**	**COLLECTION NUMBER**	**TOTAL LENGTH (mm)**	**TOTAL WEIGHT (g)**	**SEX**		**%MOISTURE**	**%LIPID**	**As (µg/g)**
75355	Atlantic Silverside	S1		13-Nov-2001	107	78	257			77.7	3.7	0.11
75380	Atlantic Silverside	S1		26-Mar-2002	241	105	139			74.9	7.83	0.15
'8879.1	Atlantic Silverside	S1		8/26/02	476					72.0	4.64	nd
'8879.2	Atlantic Silverside	S1		8/26/02	476					70.7	5.23	nd
'8879.3	Atlantic Silverside	S1		8/26/02	476					73.4	4.37	nd
75423	Atlantic Silverside	S2		23-Apr-2002	268	106	102			75.9	3.53	
'6435.1	Atlantic Silverside	S2		7/22/02	EX-015					75.1	4.31	nd
'6435.2	Atlantic Silverside	S2		7/22/02	EX-015					72.1		nd
'6435.3	Atlantic Silverside	S2		7/22/02	EX-015					76.4		nd
'6435.4	Atlantic Silverside	S2		7/22/02	EX-015					74.4		nd
75226	Atlantic Silverside	S3		15-Oct-2001	84	86	226			71.2	7.58	0.98
75227	Atlantic Silverside	S3		15-Oct-2001	84	89	226			76.1	6.13	0.74
75228	Atlantic Silverside	S3		15-Oct-2001	84	90	226			75.8	6.23	0.41
75229	Atlantic Silverside	S3		15-Oct-2001	84	90	195			71.3	7.88	0.77
75424	Atlantic Silverside	S3		26-Apr-2002	271	105	108			77.3	3.2	
				Total Number	11	8	8			15	12	6

				Min.		78.00	102.00			70.70	3.20	0.11
				Max.		106.00	257.00			77.70	7.88	0.98
				Median		90.00	210.50			74.90	4.94	0.58
				Mean		93.63	184.88			74.29	5.39	0.53
				STDEV		10.43	60.07			2.34	1.71	0.36
MPLE #	**SPECIES**	**CATCH LOCATION**		**CATCH DATE**	**COLLECTION NUMBER**	**TOTAL LENGTH (mm)**	**TOTAL WEIGHT (g)**	**SEX**		**%MOISTURE**	**%LIPID**	**As (µg/g)**
76291	Carp	GN3		21-Jun-2002	330	573	3772			74.3	7.63	0.02
76292	Carp	GN3		21-Jun-2002	330	698	3746			75.1	7.36	0.14
76293	Carp	GN3		21-Jun-2002	330	613	3541			72.6	3.55	0.15
75412	Carp	TN4		19-Apr-2002	265	596	2656			78.9	3.87	0.03
75413	Carp	TN4		19-Apr-2002	265	596	2656			79	2.3	0.03
75414	Carp	TN4		19-Apr-2002	265	596	2656			79	4.85	0
75415	Carp	TN4		19-Apr-2002	265	596	2656			78.8	2.36	0
75416	Carp	TN4		19-Apr-2002	265	596	2656			77	3.64	0
77154	Carp	TN6		1-Nov-2002	386	370	972			74.9	1.96	0.16
				Total Number	9	9	9			9	9	9
				Min.		370.00	972.00			72.60	1.96	0.00
				Max.		698.00	######			79.00	7.63	0.16
				Median		596.00	######			77.00	3.64	0.03
				Mean		581.56	######			76.62	4.17	0.06
				STDEV		86.91	853.86			2.46	2.09	0.07
MPLE #	**SPECIES**	**CATCH LOCATION**		**CATCH DATE**	**COLLECTION NUMBER**	**TOTAL LENGTH (mm)**	**TOTAL WEIGHT (g)**	**SEX**		**%MOISTURE**	**%LIPID**	**As (µg/g)**
Crab1	Blue Crab	TN1		18-Oct-2002	362			M		79.6		2.01
Crab2	Blue Crab	TN1		18-Oct-2002	362			M		80.5	1.52	0.96
Crab3	Blue Crab	TN1		18-Oct-2002	362			M		75.7	1.66	1.13
Crab4	Blue Crab	TN1		18-Oct-2002	362			M		76.5	1.57	0.68
				Total Number	4					4	3	4
				Min.						75.70	1.52	0.68
				Max.						80.50	1.66	2.01
				Median						78.05	1.57	1.05
				Mean						78.08	1.58	1.20
				STDEV						2.33	0.07	0.57

APPENDIX 3b. CALCULATION OF SRM RETURN (Quality Assurance)

			As (µg/g)	Cd (µg/g)	Cr (µg/g)	Cu(µg/g)	Hg(µg/g)	Pb (µg/g)	Ni (µg/g)	
SRM	DOLT2	215		19.36	0.98	29.73	1.930	0.56	0.86	
SRM	DOLT2	215		17.93	0.77	28.23	2.070	1.14	0.91	
SRM	DOLT2	1209	9.63				1.753			
SRM	DORM2	1209	12.92				2.533			
SRM	DOLT2	1112	8.54	19.34	0.58	22.76	2.003	0.16	0.46	
SRM	DOLT2	1105	11.91	21.42	0.48	25.27	2.046	0.22	0.48	
SRM	DOLT2	1101	12.80	19.39	0.59	20.15	1.731	0.22	0.41	
SRM	DOLT2	1021	10.75	18.90	0.39	24.00	1.726	0.42	0.45	
SRM	DOLT2	82-2	10.56	18.62	0.40	23.83	1.857	0.31	0.61	
SRM	DOLT2	9	9.20				2.210			
SRM	DOLT2	82-1	11.10	25.82	0.42	24.13	1.995	0.31		
	DOLT2	82-2		25.05	0.46	24.03		0.27		
SRM		92	10.30	21.43	1.59	25.46	1.981	0.36	0.63	
SRM	DOLT2	73-1	8.64	19.10	0.76	25.08	2.524	0.37		Zn
SRM		52		21.73	0.64	33.17	1.691	0.49		Zn
	Dolt2	34-2	4.29							Zn
		41-2	5.53							Zn
SRM	DOLT2	5		20.77	0.64	35.87		0.41		Zn
SRM	Dolt2	41-2		20.60	0.60	32.81	1.720	1.89		Zn
SRM	Dolt2-1			21.02	0.59	30.39	1.824	1.93		Zn
SRM	Dolt2-2			20.56	0.52	33.88	1.894	2.03		Zn
SRM6	DOLT2		6.21	12.45	0.34	26.80	1.855	0.70		Zn
SRM5	DOLT2		7.93	16.10	0.38	26.85	2.005	0.78		Zn
SRM4	DOLT2		2.51	10.34	0.48	28.10	1.756	1.32		Zn
SRM2	DOLT2		23.70	22.28	0.36	27.92		1.31	85.36	Zn
SRM3	DOLT2		19.20	22.11	0.36	28.04	2.008	1.29	94.52	Zn
	Mean		10.32	19.73	0.59	27.45	1.96	0.79	0.60	89.94
	St. Dev.		5.00	3.55	0.28	4.05	0.23	0.61	0.19	6.48
	Exp'd		*16.60*	*20.80*	*0.37*	*25.80*	*1.990*	*0.22*	*0.20*	*85.8*
	95%CI		*1.10*	*0.50*	*0.08*	*1.10*	*0.100*	*0.02*	*0.02*	*2.5*

APPENDIX 3C. ORGANIC ANALYSIS, Submitted By J. Ashley, Acad. Nat. Sci.