APPENDIX A

WATER COLUMN AND SEDIMENT DATA FOR ORGANIC COMPOUNDS AND CONVENTIONAL WATER QUALITY PARAMETERS, BY STATION AND SAMPLING DATE AND LABORATORY QA DATA

Mass Bays Program
Merrimack River Chemical Data
Compound Names and Codes

PAHs and Related Compounds	Laboratory Code	Code on Figures
Naphthalene	C0N	N
C1-Naphthalene	C1N	C1N
C2-Naphthalene	C2N	C2N
C3-Naphthalene	C3N	C3N
C4-Naphthalene	C4N	C4N
Acenaphthylene	ACEY	Acyl
Acenaphthene	ACE	ACE
Biphenyl	BIP	BI
Fluorene	C0F	F
C1-Fluorene	C1F	C1F
C2-Fluorene	C2F	C2F
C3-Fluorene	C3F	C3F
Phenanthrene	C0P	P
Anthracene	C0A	A
C1-Phenanthrene/Anthracene	C1P/A	C1P
C2-Phenanthrene/Anthracene	C2P/A	C2P
C3-Phenanthrene/Anthracene	C3P/A	C3P
C4-Phenanthrene/Anthracene	C4P/A	C4P
Dibenzothiophene	C0D	DBT
C1-Dibenzothiophene	C1D	C1D
C2-Dibenzothiophene	C2D	C2D
C3-Dibenzothiophene	C3D	C3D
Fluoranthene	FLANT	FLAN
Pyrene	PYR	PY
C1-Fluoranthene/Pyrene	C1F/P	C1F/P
Benzo(a)anthracene	BAA	BAA
Chrysene	C0C	C
C1-Chrysene	C1C	C1C
C2-Chrysene	C2C	C2C
C3-Chrysene	C3C	C3C
C4-Chrysene	C4C	C4C
Benzo(b)fluoranthene	BBF	BBF
Benzo(k)fluoranthene	BKF	BKF
Benzo(e)pyrene	BEP	BEP
Benzo(a)pyrene	BAP	BAP
Perylene	PER	PER
Indeno(1,2,3-cd)pyrene	IND	IND
Dibenzo(a,h)anthracene	DAH	DBA
Benzo(g,h,i)perylene	BGP	BPER
Total PAHs	TPAH	TPAH
Carcinogenic PAHs	CPAH	CPAH

Total PAHs calculated as the sum of all detected PAH compounds

Carcinogenic PAHs calculated as the sum of the following compounds: pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthe benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, dibenzo(a,h)anthrancene and benzo(g,h,i)perylene.

Mass Bays Program
Merrimack River Chemical Data
Compound Names and Codes

PCBs	Code
2-Chloro	PCB1
2,4'--Dichloro	PCB8
2,2',5-Trichloro	PCB18
2,4,5-Trichloro	PCB29
2,2',4,6-Tetrachloro	PCB50
2,4,4'-Trichloro	PCB28
2,2',5,5'-Tetrachloro	PCB52
2,2',4,6,6'-Pentachloro	PCB104
2,2',3,5'-Tetrachloro	PCB44
2,3',4,4'-Tetrachloro	PCB66
2,2',4,5,5'-Pentachloro	PCB101
2,2',3,4,5'-Pentachloro	PCB87
3,3',4,4'-Tetrachloro	PCB77
2,2',4,4',5,6'-Hexachloro	PCB154
2,3',4,4',5-Pentachloro	PCB118
2,2',3,4',5,6,6'-Heptachloro	PCB188
2,2',4,4',5,5'-Hexachloro	PCB153
2,3,3',4,4'-Pentachloro	PCB105
2,2',3,4,4',5'-Hexachloro	PCB138
3,3',4,4',5-Pentachloro	PCB126
2,2',3,4',5,5',6-Heptachloro	PCB187
2,2',3,3',4,4'-Hexachloro	PCB128
2,2',3,3',4,5',6,6'-Octachloro	PCB200
2,2',3,4,4',5,5'-Heptachloro	PCB180
2,2',3,3',4,4',5-Heptachloro	PCB170
2,2',3,3',4,4',5,6-Octachloro	PCB195
2,2',3,3',4,4',5,5',6-Nonachloro	PCB206
Decachloro	PCB209
Total PCBs	TPCBs

Total PCBs calculated as the sum of all detected PCB compounds.

Mass Bays Program
Merrimack River Chemical Data
Compound Names and Codes

Pesticides	Code
HCB	HCB
gamma-BHC	GBHC
Heptachlor	HEPT
Aldrin	ALD
Heptachlor epoxide	HE
2,4'-DDE	2,4'-DDE
cis-Chlordane	CIS
trans-Chlordane	TRANS
Dieldrin	DIEL
4,4'-DDE	4,4'-DDE
2,4'-DDD	2,4'-DDD
4,4'-DDD	4,4'-DDD
2,4'-DDT	2,4'-DDT
4,4'-DDT	4,4'-DDT
Mirex	MIREX
Total Pesticides	TPEST

Total Pesticides calculated as the sum of all detected pesticide compounds.

Conventional Pollutants	Code
Total Suspended Solids	TSS
Oil & Grease Analytical Results	O&G
Total Organic Carbon	TOC

Mass Bays Program	1st River Cruise	1st River Cruise	2nd River Cruise
Merrimack River Data	No. of Buoy 13	So. of Buoy 13	So. of Buoy 13
Station Designation	SED-1	SED-2	SED-3
Matrix	Sediment	Sediment	Sediment
Organics Sample ID	MESED-1	MESED-2	M3HT-SED
Sample Collection Date	04/29/92	04/29/92	05/09/92
PAH Analytical Results	07/26/92	07/26/92	07/26/92
Units	ng/g	ng/g	ng/g
Naphthalene	5.67	13.22	16.78
C1-Naphthalene	6.91	20.23	24.9
C2-Naphthalene	12.91	49.56	60.88
C3-Naphthalene	13.96	35.59	54.38
C4-Naphthalene	17.49	35.61	33.91
Acenaphthylene	14.24	47.63	61.11
Acenaphthene	3.59	11.05	15.78
Biphenyl	2.72	6.38	5.9
Fluorene	6.74	23.59	29.15
C1-Fluorene	4.02	13.59	17.65
C2-Fluorene	15.01	42.88	60.16
C3-Fluorene	19.28	72.93	45.09
Phenanthrene	51.46	177.82	226.73
Anthracene	17.34	70.99	79
C1-Phenanthrene/Anthracene	93.89	252.22	336.9
C2-Phenanthrene/Anthracene	98.95	279.5	381.7
C3-Phenanthrene/Anthracene	71.91	183.19	232.83
C4-Phenanthrene/Anthracene	74.2	230.3	306.46
Dibenzothiophene	3.92	12.56	17.09
C1-Dibenzothiophene	8.08	19.16	30.18
C2-Dibenzothiophene	15.18	33.69	47.11
C3-Dibenzothiophene			
Fluoranthene	112.43	378.52	463.5
Pyrene	99.59	329.81	404.62
C1-Fluoranthene/Pyrene	114.57	335.98	472.55
Benzo(a)anthracene	52.57	180.9	236.54
Chrysene	71.35	236.46	288.67
C1-Chrysene	59.2	166.05	224.33
C2-Chrysene	23.31	79.37	87.61
C3-Chrysene		44.97	49.11
C4-Chrysene		26.48	21.44
Benzo(b)fluoranthene	61.82	198.14	228.14
Benzo(k)fluoranthene	60.07	202.24	224.61
Benzo(e)pyrene	46.72	147.75	167.57
Benzo(a)pyrene	51.01	167.82	210.81
Perylene	13.74	46.29	55.28
Indeno(1,2,3-cd)pyrene	43.56		137.02
Dibenzo(a,h)anthracene	8.35	24.3	25.16
Benzo(g,h,i)perylene	41.21	115.22	120.31
Total PAHs	**1,417**	**4,312**	**5,501**
Carcinogenic PAHs	**490**	**1,455**	**1,876**

Blank spaces indicate non-detect.

Mass Bays Program	1st Bay Cruise	1st Bay Cruise	1st Bay Cruise	1st Bay Cruise
Merrimack River Data	Massachusetts	Massachusetts	Massachusetts	Massachusetts
Station Designation	Bay Station 2	Bay Station 4	Bay Station 5	Bay Station 6
Matrix	100L Seawater Particulate	100L Seawater Particulate	100L Seawater Particulate	100L Seawater Particulate
Organics Sample ID	B02-5-21-92	B04-5-21-92	B05-5-21-92	B06 5-21-92
Sample Collection Date	05/21/92	05/21/92	05/21/92	05/21/92
PAH Analytical Results	07/27/92	07/27/92	07/27/92	07/29/92
Units	ng/L	ng/L	ng/L	ng/L
Naphthalene	0.32	0.35	0.39	0.43
C1-Naphthalene	0.31	0.3	0.28	0.24
C2-Naphthalene	1.13	0.57	0.45	
C3-Naphthalene	0.23			
C4-Naphthalene				
Acenaphthylene	0.06			
Acenaphthene				
Biphenyl			0.07	0.1
Fluorene				
C1-Fluorene				
C2-Fluorene				
C3-Fluorene				
Phenanthrene	0.24	0.07		0.075
Anthracene	0.2			
C1-Phenanthrene/Anthracene				0.18
C2-Phenanthrene/Anthracene				
C3-Phenanthrene/Anthracene				
C4-Phenanthrene/Anthracene				
Dibenzothiophene			0.07	
C1-Dibenzothiophene			0.26	
C2-Dibenzothiophene				
C3-Dibenzothiophene				
Fluoranthene	0.33	0.06	0.07	0.048
Pyrene	0.23	0.05	0.05	0.03
C1-Fluoranthene/Pyrene	0.49			
Benzo(a)anthracene	0.21	0.17	0.11	0.07
Chrysene	0.19	0.05	0.06	0.032
C1-Chrysene	0.2			
C2-Chrysene				
C3-Chrysene				
C4-Chrysene				
Benzo(b)fluoranthene	0.14	0.04	0.04	0.028
Benzo(e)pyrene	0.11			
Benzo(a)pyrene	0.15			
Perylene				
Indeno(1,2,3-cd)pyrene	0.13	0.04	0.05	
Dibenzo(a,h)anthracene				
Benzo(g,h,i)perylene	0.13			0
Total PAHs	**4.95**	**1.75**	**1.95**	**1.27**
Carcinogenic PAHs	**1.33**	**0.40**	**0.36**	**0.20**

Blank spaces indicate non-detect.

Mass Bays Program	1st Bay Cruise	2nd Bay Cruise
Merrimack River Data	Massachusetts	Massachusetts
Station Designation	Bay Station 8	Bay Station 6
Matrix	100L Seawater Particulate	300L Seawater Particulate
Organics Sample ID	B08-5-21-92	BO-6-10-15-92
Sample Collection Date	05/21/92	10/15/92
PAH Analytical Results	**07/27/92**	**2/24/93**
Units	mg/L	mg/L
Naphthalene	0.31	0.13
C1-Naphthalene	0.17	0.079
C2-Naphthalene	0.45	0.039
C3-Naphthalene		
C4-Naphthalene		
Acenaphthylene		
Acenaphthene		
Biphenyl	0.07	0.021
Fluorene		
C1-Fluorene		
C2-Fluorene		
C3-Fluorene		
Phenanthrene		0.049
Anthracene		
C1-Phenanthrene/Anthracene		
C2-Phenanthrene/Anthracene	0.37	0.024
C3-Phenanthrene/Anthracene		
C4-Phenanthrene/Anthracene		
Dibenzothiophene		0.028
C1-Dibenzothiophene		
C2-Dibenzothiophene		
C3-Dibenzothiophene		
Fluoranthene	0.05	
Pyrene	0.04	0.036
C1-Fluoranthene/Pyrene		0.025
Benzo(a)anthracene	0.13	0.024
Chrysene	0.03	0.035
C1-Chrysene		
C2-Chrysene		
C3-Chrysene		
C4-Chrysene		
Benzo(b)fluoranthene	0.03	0.03
Benzo(k)fluoranthene	0.03	0.013
Benzo(e)pyrene		0.016
Benzo(a)pyrene		0.025
Perylene		
Indeno(1,2,3-cd)pyrene		0.022
Dibenzo(a,h)anthracene		0.008
Benzo(g,h,i)perylene		0.026
Total PAHs	**1.68**	**0.63**
Carcinogenic PAHs	**0.26**	**0.22**

Blank spaces indicate non-detect.

Mass Bays Program	1st River Cruise	1st River Cruise	1st River Cruise	1st River Cruise
Merrimack River Data	So. of Buoy 13	Near Buoy 13	Upstream	Upstream
Station Designation	River Station 1	River Station 2	River Station 3A	River Station 3
	Fresh Layer	Salt Layer	Fresh Layer	Fresh Layer
	High Tide	High Tide	Low Tide	Low Tide
Matrix	River Water	River Water	River Water	River Water
Organics Sample ID	ME3HT	ME7HT	ME12LT	ME16LT
Sample Collection Date	04/29/92	04/29/92	04/29/92	04/29/92
PAH Analytical Results	07/29/92	07/30/92	07/30/92	07/29/92
Units	ng/L	ng/L	ng/L	ng/L
Naphthalene	28.75	10.65	58.51	40.21
C1-Naphthalene	17.59	13.11	59.12	23.06
C2-Naphthalene			34.39	24.79
C3-Naphthalene				
C4-Naphthalene				
Acenaphthylene			8.46	6.96
Acenaphthene	5.17			4.78
Biphenyl	10.49	2.91	7.4	3.42
Fluorene			3.07	
C1-Fluorene				
C2-Fluorene				
C3-Fluorene				
Phenanthrene	6.98	7.11	14.7	12.47
Anthracene	3.18		6.29	5.34
C1-Phenanthrene/Anthracene			15.87	15.51
C2-Phenanthrene/Anthracene				
C3-Phenanthrene/Anthracene				
C4-Phenanthrene/Anthracene				
Dibenzothiophene			1.26	
C1-Dibenzothiophene				
C2-Dibenzothiophene				
C3-Dibenzothiophene				
Fluoranthene	6.54	5.81	20.06	17.49
Pyrene	6.63	3.89	17.01	13.99
C1-Fluoranthene/Pyrene			23.3	17.37
Benzo(a)anthracene			6.41	6.5
Chrysene	3.24		11.11	9.07
C1-Chrysene				
C2-Chrysene				
C3-Chrysene				
C4-Chrysene				
Benzo(b)fluoranthene	2.75		7.45	6.69
Benzo(k)fluoranthene	1.99		6.63	6.6
Benzo(e)pyrene			6.23	5.49
Benzo(a)pyrene			5	5.3
Perylene			1.77	
Indeno(1,2,3-cd)pyrene			4.38	4.71
Dibenzo(a,h)anthracene				
Benzo(g,h,i)perylene			4.58	4.43
Total PAHs	**93.31**	**43.48**	**323**	**234**
Carcinogenic PAHs	**14.61**	**3.89**	**62.57**	**57.29**

Blank spaces indicate non-detect.

Mass Bays Program	2nd River Cruise	2nd River Cruise	2nd River Cruise	2nd River Cruise
Merrimack River Data	So. of Buoy 13	Near Buoy 13	Upstream	Upstream
Station Designation	River Station 1	River Station 2	River Station 3A	River Station 3
	Fresh Layer	**Salt Layer**	**Fresh Layer**	**Fresh Layer**
	High Tide	**High Tide**	**Low Tide**	**Low Tide**
Matrix	**River Water**	**River Water**	**River Water**	**River Water**
Organics Sample ID	**M3HT**	**M4HT**	**M1LT**	**M2LT**
Sample Collection Date	**05/09/92**	**05/09/92**	**05/09/92**	**05/09/92**
PAH Analytical Results	**07/26/92**	**07/26/92**	**07/26/92**	**07/26/92**
Units	**ng/L**	**ng/L**	**ng/L**	**ng/L**
Naphthalene	58.05	9.28	32.46	31.26
C1-Naphthalene	42.24	10.6	15.47	15.37
C2-Naphthalene			15.46	
C3-Naphthalene				
C4-Naphthalene				
Acenaphthylene	5.21		6.9	5.92
Acenaphthene			5.76	5.92
Biphenyl	3.76		2.32	3.15
Fluorene	4.35		4.98	3.43
C1-Fluorene				
C2-Fluorene				
C3-Fluorene				
Phenanthrene	9.41	2.76	18.43	15.55
Anthracene			6.91	5.99
C1-Phenanthrene/Anthracene			22.09	17.99
C2-Phenanthrene/Anthracene			30.66	
C3-Phenanthrene/Anthracene			19.58	
C4-Phenanthrene/Anthracene			27.18	21.46
Dibenzothiophene			1.89	1.69
C1-Dibenzothiophene				
C2-Dibenzothiophene				
C3-Dibenzothiophene				
Fluoranthene	12.54	2.41	36.96	25.59
Pyrene	9.08	1.86	31.75	21.39
C1-Fluoranthene/Pyrene			37.6	24.66
Benzo(a)anthracene	2.67		16.91	9.04
Chrysene	5.13		20.25	12.69
C1-Chrysene			12.35	8.51
C2-Chrysene				
C3-Chrysene				
C4-Chrysene				
Benzo(b)fluoranthene	3.68		16.42	10.97
Benzo(k)fluoranthene	3.72		16.21	10.2
Benzo(e)pyrene	3.39		12.88	8.38
Benzo(a)pyrene	3.42		17.19	9.97
Perylene			4.36	2.8
Indeno(1,2,3-cd)pyrene			11.8	7.67
Dibenzo(a,h)anthracene			2.29	2.16
Benzo(g,h,i)perylene			12.35	8.49
Total PAHs	**167**	**26.91**	**459**	**290**
Carcinogenic PAHs	**27.70**	**1.86**	**145**	**92.58**

Blank spaces indicate non-detect

Mass Bays Program	3rd River Cruise	3rd River Cruise	3rd River Cruise
Merrimack River Data	So. of Buoy 13	Near Buoy 13	Upstream
Station Designation	River Station 1	River Station 2	River Station 3
	Fresh Layer	Salt Layer	Fresh Layer
	High Tide	High Tide	Low Tide
Matrix	River Water	River Water	River Water
Organics Sample ID	01HT-PAH	02HT-PAH	03LT-PAH
Sample Collection Date	10/10/92	10/10/92	10/10/92
PAH Analytical Results	11/11/93	11/11/93	11/11/93
Units	ng/L	ng/L	ng/L
Naphthalene	7.1	9.8	23
C1-Naphthalene	9.9		32
C2-Naphthalene			27
C3-Naphthalene			
C4-Naphthalene			
Acenaphthylene			
Acenaphthene			
Biphenyl	2.9		3.1
Fluorene			
C1-Fluorene			
C2-Fluorene			
C3-Fluorene			
Phenanthrene	3.7		5.3
Anthracene			1.4
C1-Phenanthrene/Anthracene			
C2-Phenanthrene/Anthracene			
C3-Phenanthrene/Anthracene			
C4-Phenanthrene/Anthracene			
Dibenzothiophene			
C1-Dibenzothiophene			
C2-Dibenzothiophene			
C3-Dibenzothiophene			
Fluoranthene	4.5		7.6
Pyrene	3.1		5.7
C1-Fluoranthene/Pyrene			
Benzo(a)anthracene	1.8		3.4
Chrysene	1.4		4
C1-Chrysene			
C2-Chrysene			
C3-Chrysene			
C4-Chrysene			
Benzo(b)fluoranthene	1.4		3.1
Benzo(k)fluoranthene			
Benzo(e)pyrene	0.97		1.9
Benzo(a)pyrene			2.3
Perylene			
Indeno(1,2,3-cd)pyrene			
Dibenzo(a,h)anthracene			
Benzo(g,h,i)perylene			1.7
Total PAHs	**36.77**	**9.8**	**122**
Carcinogenic PAHs	**7.70**	**0.0**	**20.2**

Blank spaces indicate non-detect.

Mass Bays Program	4th River Cruise	4th River Cruise	4th River Cruise
Merrimack River Data	So. of Buoy 13	Near Buoy 13	Upstream
Station Designation	River Station 1	River Station 2	River Station 3
	Fresh Layer	**Salt Layer**	**Fresh Layer**
	High Tide	**High Tide**	**Low Tide**
Matrix	**River Water**	**River Water**	**River Water**
Organics Sample ID	**2J-HT-PAH**	**1J-HT-PAH**	**3J-LT-PAH**
Sample Collection Date	**1/8/93**	**1/8/93**	**1/8/93**
PAH Analytical Results	**05/08/93**	**05/08/93**	**05/08/93**
Units	**ng/L**	**ng/L**	**ng/L**
Naphthalene	39	19	
C1-Naphthalene		26	
C2-Naphthalene			
C3-Naphthalene			
C4-Naphthalene			
Acenaphthylene		13	
Acenaphthene			
Biphenyl			
Fluorene			
C1-Fluorene			
C2-Fluorene			
C3-Fluorene			
Phenanthrene	5.5	26	29
Anthracene			
C1-Phenanthrene/Anthracene			
C2-Phenanthrene/Anthracene			
C3-Phenanthrene/Anthracene			
C4-Phenanthrene/Anthracene			
Dibenzothiophene			
C1-Dibenzothiophene			
C2-Dibenzothiophene			
C3-Dibenzothiophene			
Fluoranthene	8.8	44	52
Pyrene	5.2	30	38
C1-Fluoranthene/Pyrene			
Benzo(a)anthracene		12	
Chrysene		21	
C1-Chrysene			11
C2-Chrysene			22
C3-Chrysene			
C4-Chrysene			
Benzo(b)fluoranthene	5.6	23	38
Benzo(k)fluoranthene	3.4	15	15
Benzo(e)pyrene	3.5	18	19
Benzo(a)pyrene	3.4	12	18
Perylene			
Indeno(1,2,3-cd)pyrene		14	17
Dibenzo(a,h)anthracene			
Benzo(g,h,i)perylene	5.9	21	23
Total PAHs	**80.3**	**294**	**282**
Carcinogenic PAHs	**23.5**	**148**	**149**

Blank spaces indicate non-detect.

Mass Bays Program	5th River Cruise	5th River Cruise	5th River Cruise	5th River Cruise
Merrimack River Data	So. of Buoy 13	Near Buoy 13	Upstream	Upstream
Station Designation	River Station 1	River Station 2	River Station 3	River Station 3
	Fresh Layer	**Salt Layer**	**Fresh Layer**	**Fresh Layer**
	High Tide	**High Tide**	**Low Tide**	**Low Tide**
Matrix	**River Water**	**River Water**	**River Water**	**River Water**
Organics Sample ID	**SB13-PAH**	**B13MA-PAH**	**CA-PAH-1**	**Duplicate**
Sample Collection Date	**5/1/93**	**5/1/93**	**5/1/93**	**5/1/93**
PAH Analytical Results	**05/29/93**	**05/29/93**	**05/29/93**	**Not Analyzed**
Units	**ng/L**	**ng/L**	**ng/L**	
Naphthalene	88	71	123	
C1-Naphthalene	9.8	5.2	8.9	
C2-Naphthalene			6.5	
C3-Naphthalene				
C4-Naphthalene				
Acenaphthylene	1.9	0.93	2.8	
Acenaphthene	3.6		3.2	
Biphenyl	50	40	62	
Fluorene	2.8		3.3	
C1-Fluorene				
C2-Fluorene				
C3-Fluorene				
Phenanthrene	58	49	72	
Anthracene			2.7	
C1-Phenanthrene/Anthracene			10	
C2-Phenanthrene/Anthracene			11	
C3-Phenanthrene/Anthracene			6.5	
C4-Phenanthrene/Anthracene				
Dibenzothiophene			3.1	
C1-Dibenzothiophene				
C2-Dibenzothiophene				
C3-Dibenzothiophene				
Fluoranthene	15	13	28	
Pyrene	6.6	3.7	17	
C1-Fluoranthene/Pyrene			10	
Benzo(a)anthracene	3.2	2.3	7.1	
Chrysene	7.1	6.2	15	
C1-Chrysene			5.7	
C2-Chrysene				
C3-Chrysene				
C4-Chrysene				
Benzo(b)fluoranthene	6.1	4.2	12	
Benzo(k)fluoranthene	1.6	1.8	4.7	
Benzo(e)pyrene	3.1	2.5	6.5	
Benzo(a)pyrene	1.6	2.2	7.6	
Perylene	0.49		2.5	
Indeno(1,2,3-cd)pyrene	1.5		5.6	
Dibenzo(a,h)anthracene			1.5	
Benzo(g,h,i)perylene	2.3	1.7	5.4	
Total PAHs	**263**	**204**	**444**	**0**
Carcinogenic PAHs	**30.00**	**22.10**	**75.9**	**0**

Blank spaces indicate non-detect.

Mass Bays Program	1st River Cruise	1st River Cruise	2nd River Cruise
Merrimack River Data	No. of Buoy 13	So. of Buoy 13	So. of Buoy 13
Station Designation	SED-1	SED-2	SED-3
Matrix	**Sediment**	**Sediment**	**Sediment**
Organics Sample ID	**MESED-1**	**MESED-2**	**M3HT-SED**
Sample Collection Date	**04/29/92**	**04/29/92**	**05/09/92**
PCB/Pesticide Analytical Results	**6/4/92**	**6/4/92**	**6/4/92**
Blank spaces indicate non-detect.			
Units	**ng/g**	**ng/g**	**ng/g**
PCBs			
2-Chloro			
2,4'–Dichloro			1.5
2,2',5-Trichloro			
2,4,5-Trichloro		0.068	
2,2',4,6-Tetrachloro			
2,4,4'-Trichloro	0.66	2.2	2.8
2,2',5,5'-Tetrachloro	1.1	1.6	
2,2',4,6,6'-Pentachloro			
2,2',3,5'-Tetrachloro	3.1	2.6	1.2
2,3',4,4'-Tetrachloro	0.63	3	3
2,2',4,5,5'-Pentachloro	0.72	1.6	1.9
2,2',3,4,5'-Pentachloro	0.37	0.59	0.76
3,3',4,4'-Tetrachloro	1		3.5
2,2',4,4',5,6'-Hexachloro			
2,3',4,4',5-Pentachloro		1.7	2
2,2',3,4',5,6,6'-Heptachloro			
2,2',4,4',5,5'-Hexachloro	1.5	2.8	3.2
2,3,3',4,4'-Pentachloro			0.99
2,2',3,4,4',5'-Hexachloro	1.4	3.2	2.9
3,3',4,4',5-Pentachloro			
2,2',3,4',5,5',6-Heptachloro		1.1	1.1
2,2',3,3',4,4'-Hexachloro	0.16	0.4	0.47
2,2',3,3',4,5',6,6'-Octachloro			
2,2',3,4,4',5,5'-Heptachloro	0.53	1.4	1.4
2,2',3,3',4,4',5-Heptachloro	0.96	2.4	2.5
2,2',3,3',4,4',5,6-Octachloro	0.97	0.42	2
2,2',3,3',4,4',5,5',6-Nonachloro	0.33	0.39	0.35
Decachloro	1.8	1.7	1.3
Total PCBs	**15**	**27**	**33**
Pesticides	**6/4/92**	**6/4/92**	**6/4/92**
HCB	1.2	3.6	12
gamma-BHC		4.1	
Heptachlor			
Aldrin			
Heptachlor epoxide			
2,4'-DDE			
cis-Chlordane	0.38	0.87	1
trans-Chlordane	0.37	1.2	1.5
Dieldrin			
4,4'-DDE		1.5	1.7
2,4'-DDD	0.095	0.41	0.78
4,4'-DDD	1.1	2.1	2.9
2,4'-DDT			
4,4'-DDT			
Mirex			
Total Pesticides	**3.1**	**14**	**20**

Mass Bays Program Merrimack River Data Station Designation	1st Bay Cruise Massachusetts Bay Station 2	1st Bay Cruise Massachusetts Bay Station 4	1st Bay Cruise Massachusetts Bay Station 5	1st Bay Cruise Massachusetts Bay Station 6
Matrix	**100L Seawater Particulate**	**100L Seawater Particulate**	**100L Seawater Particulate**	**100L Seawater Particulate**
Organics Sample ID	**B02-5-21-92**	**B04-5-21-92**	**B05-5-21-92**	**B06 5-21-92**
Sample Collection Date	**05/21/92**	**05/21/92**	**05/21/92**	**05/21/92**
PCB/Pesticide Analytical Results	**6/26/92**	**6/26/92**	**6/26/92**	**6/26/92**
Blank spaces indicate non-detect				
Units	**ng/l**	**ng/l**	**ng/l**	**ng/l**
PCBs				
2-Chloro				
2,4'--Dichloro	0.12			
2,2',5-Trichloro				
2,4,5-Trichloro				
2,2',4,6-Tetrachloro				
2,4,4'-Trichloro				
2,2',5,5'-Tetrachloro				
2,2',4,6,6'-Pentachloro				
2,2',3,5'-Tetrachloro				
2,3',4,4'-Tetrachloro				
2,2',4,5,5'-Pentachloro				
2,2',3,4,5'-Pentachloro				
3,3',4,4'-Tetrachloro				
2,2',4,4',5,6'-Hexachloro				
2,3',4,4',5-Pentachloro				
2,2',3,4',5,6,6'-Heptachloro				
2,2',4,4',5,5'-Hexachloro				
2,3,3',4,4'-Pentachloro				
2,2',3,4,4',5'-Hexachloro				
3,3',4,4',5-Pentachloro				
2,2',3,4',5,5',6-Heptachloro				
2,2',3,3',4,4'-Hexachloro				
2,2',3,3',4,5',6,6'-Octachloro				
2,2',3,4,4',5,5'-Heptachloro				
2,2',3,3',4,4',5-Heptachloro				
2,2',3,3',4,4',5,6-Octachloro				
2,2',3,3',4,4',5,5',6-Nonachloro				
Decachloro		0.56	0.039	0.33
Total PCBs	**0.12**	**0.56**	**0.039**	**0.33**
Pesticides	**6/26/92**	**6/26/92**	**6/26/92**	**6/26/92**
HCB				
gamma-BHC				
Heptachlor				
Aldrin				
Heptachlor epoxide				
2,4'-DDE				
cis-Chlordane				
trans-Chlordane				
Dieldrin				
4,4'-DDE				
2,4'-DDD				
4,4'-DDD				
2,4'-DDT				
4,4'-DDT				
Mirex				
Total Pesticides	**0.0**	**0.0**	**0.0**	**0.0**

Mass Bays Program	1st Bay Cruise	2nd Bay Cruise
Merrimack River Data	Massachusetts	Massachusetts
Station Designation	Bay Station 8	Bay Station 6
Matrix	100L Seawater Particulate	300L Seawater Particulate
Organics Sample ID	B08-5-21-92	BO-6-10-15-92
Sample Collection Date	05/21/92	10/15/92
PCB/Pesticide Analytical Results	**6/26/92**	**04/09/93**
Blank spaces indicate non-detect.		
Units	**ng/l**	**ng/l**
PCBs		
2-Chloro		
2,4'--Dichloro		0.078
2,2',5-Trichloro		
2,4,5-Trichloro		
2,2',4,6-Tetrachloro		
2,4,4'-Trichloro		
2,2',5,5'-Tetrachloro		
2,2',4,6,6'-Pentachloro		
2,2',3,5'-Tetrachloro		
2,3',4,4'-Tetrachloro		
2,2',4,5,5'-Pentachloro		
2,2',3,4,5'-Pentachloro		0.0037
3,3',4,4'-Tetrachloro		
2,2',4,4',5,6'-Hexachloro		
2,3',4,4',5-Pentachloro		
2,2',3,4',5,6,6'-Heptachloro		
2,2',4,4',5,5'-Hexachloro		
2,3,3',4,4'-Pentachloro		
2,2',3,4,4',5'-Hexachloro		0.013
3,3',4,4',5-Pentachloro		
2,2',3,4',5,5',6-Heptachloro		
2,2',3,3',4,4'-Hexachloro		
2,2',3,3',4,5',6,6'-Octachloro		
2,2',3,4,4',5,5'-Heptachloro		0.017
2,2',3,3',4,4',5-Heptachloro		
2,2',3,3',4,4',5,6-Octachloro		0.023
2,2',3,3',4,4',5,5',6-Nonachloro		
Decachloro	0.0066	
Total PCBs	**0.0066**	**0.13**
Pesticides	**6/26/92**	**04/09/93**
HCB		
gamma-BHC		
Heptachlor		0.0010
Aldrin		
Heptachlor epoxide		
2,4'-DDE		
cis-Chlordane		
trans-Chlordane		
Dieldrin		
4,4'-DDE		
2,4'-DDD		
4,4'-DDD		
2,4'-DDT		
4,4'-DDT		
Mirex		
Total Pesticides	**0.0**	**0.0010**

Mass Bays Program	1st River Cruise	1st River Cruise	1st River Cruise	1st River Cruise
Merrimack River Data	So. of Buoy 13	Near Buoy 13	Upstream	Upstream
Station Designation	River Station 1	River Station 2	River Station 3A	River Station 3
	Fresh Layer	Salt Layer	Fresh Layer	Fresh Layer
	High Tide	High Tide	Low Tide	Low Tide
Matrix	River Water	River Water	River Water	River Water
Organics Sample ID	ME3HT	ME7HT	ME12LT	ME16LT
Sample Collection Date	04/29/92	04/29/92	04/29/92	04/29/92
PCB/Pesticide Analytical Results	6/25/92	6/25/92	6/26/92	6/26/92
Blank spaces indicate non-detect				
Units	ng/L	ng/L	ng/L	ng/L
PCBs				
2-Chloro				
2,4'-Dichloro				
2,2',5-Trichloro				2.3
2,4,5-Trichloro				
2,2',4,6-Tetrachloro				
2,4,4'-Trichloro				
2,2',5,5'-Tetrachloro				
2,2',4,6,6'-Pentachloro				
2,2',3,5'-Tetrachloro				
2,3',4,4'-Tetrachloro				
2,2',4,5,5'-Pentachloro				
2,2',3,4,5'-Pentachloro				
3,3',4,4'-Tetrachloro				
2,2',4,4',5,6'-Hexachloro				
2,3',4,4',5-Pentachloro				
2,2',3,4',5,6,6'-Heptachloro				
2,2',4,4',5,5'-Hexachloro				
2,3,3',4,4'-Pentachloro				
2,2',3,4,4',5'-Hexachloro				
3,3',4,4',5-Pentachloro				
2,2',3,4',5,5',6-Heptachloro				
2,2',3,3',4,4'-Hexachloro				
2,2',3,3',4,5',6,6'-Octachloro				
2,2',3,4,4',5,5'-Heptachloro				
2,2',3,3',4,4',5-Heptachloro				
2,2',3,3',4,4',5,6-Octachloro				
2,2',3,3',4,4',5,5',6-Nonachloro				
Decachloro	5.7	18	11	4.2
Total PCBs	**5.7**	**18**	**11**	**6.5**
Pesticides	**6/25/92**	**6/25/92**	**6/26/92**	**6/26/92**
HCB				
gamma-BHC				
Heptachlor				
Aldrin				
Heptachlor epoxide				
2,4'-DDE				
cis-Chlordane				
trans-Chlordane				
Dieldrin				
4,4'-DDE				
2,4'-DDD				
4,4'-DDD				
2,4'-DDT				
4,4'-DDT				
Mirex				
Total Pesticides	**0.0**	**0.0**	**0.0**	**0.0**

Mass Bays Program	2nd River Cruise	2nd River Cruise	2nd River Cruise	2nd River Cruise
Merrimack River Data	So. of Buoy 13	Near Buoy 13	Upstream	Upstream
Station Designation	River Station 1	River Station 2	River Station 3A	River Station 3
	Fresh Layer	Salt Layer	Fresh Layer	Fresh Layer
	High Tide	High Tide	Low Tide	Low Tide
Matrix	River Water	River Water	River Water	River Water
Organics Sample ID	M3HT	M4HT	M1LT	M2LT
Sample Collection Date	05/09/92	05/09/92	05/09/92	05/09/92
PCB/Pesticide Analytical Results	**6/25/92**	**6/25/92**	**6/25/92**	**6/25/92**
Blank spaces indicate non-detect				
Units	**ng/L**	**ng/L**	**ng/L**	**ng/L**
PCBs				
2-Chloro				
2,4'-Dichloro				
2,2',5-Trichloro				
2,4,5-Trichloro				
2,2',4,6-Tetrachloro				
2,4,4'-Trichloro		0.49		0.76
2,2',5,5'-Tetrachloro				
2,2',4,6,6'-Pentachloro				
2,2',3,5'-Tetrachloro				
2,3',4,4'-Tetrachloro				
2,2',4,5,5'-Pentachloro				
2,2',3,4,5'-Pentachloro				
3,3',4,4'-Tetrachloro				
2,2',4,4',5,6'-Hexachloro				
2,3',4,4',5-Pentachloro				
2,2',3,4',5,6,6'-Heptachloro				
2,2',4,4',5,5'-Hexachloro				
2,3,3',4,4'-Pentachloro				
2,2',3,4,4',5'-Hexachloro				
3,3',4,4',5-Pentachloro				
2,2',3,4',5,5',6-Heptachloro				
2,2',3,3',4,4'-Hexachloro				
2,2',3,3',4,5',6,6'-Octachloro				
2,2',3,4,4',5,5'-Heptachloro				
2,2',3,3',4,4',5-Heptachloro				
2,2',3,3',4,4',5,6-Octachloro				
2,2',3,3',4,4',5,5',6-Nonachloro				
Decachloro				
Total PCBs	**0.0**	**0.49**	**0.0**	**0.76**
Pesticides	**6/25/92**	**6/25/92**	**6/25/92**	**6/25/92**
HCB	0.31			0.26
gamma-BHC				
Heptachlor				
Aldrin				
Heptachlor epoxide				
2,4'-DDE				
cis-Chlordane				
trans-Chlordane				
Dieldrin				
4,4'-DDE				
2,4'-DDD				
4,4'-DDD				
2,4'-DDT				
4,4'-DDT				
Mirex				
Total Pesticides	**0.31**	**0.0**	**0.0**	**0.26**

Mass Bays Program	3rd River Cruise	3rd River Cruise	3rd River Cruise
Merrimack River Data	So. of Buoy 13	Near Buoy 13	Upstream
Station Designation	River Station 1	River Station 2	River Station 3
	Fresh Layer	**Salt Layer**	**Fresh Layer**
	High Tide	**High Tide**	**Low Tide**
Matrix	**River Water**	**River Water**	**River Water**
Organics Sample ID	**01HT-PAH**	**02HT-PAH**	**03LT-PAH**
Sample Collection Date	**10/10/92**	**10/10/92**	**10/10/92**
PCB/Pesticide Analytical Results	**11/03/92**	**11/03/92**	**11/03/92**
Blank spaces indicate non-detect			
Units	**ng/L**	**ng/L**	**ng/L**
PCBs			
2-Chloro			
2,4'--Dichloro			
2,2',5-Trichloro			1.3
2,4,5-Trichloro			0.50
2,2',4,6-Tetrachloro			
2,4,4'-Trichloro			
2,2',5,5'-Tetrachloro			
2,2',4,6,6'-Pentachloro			
2,2',3,5'-Tetrachloro			0.78
2,3',4,4'-Tetrachloro			
2,2',4,5,5'-Pentachloro			
2,2',3,4,5'-Pentachloro			
3,3',4,4'-Tetrachloro			
2,2',4,4',5,6'-Hexachloro			
2,3',4,4',5-Pentachloro			
2,2',3,4',5,6,6'-Heptachloro			
2,2',4,4',5,5'-Hexachloro			
2,3,3',4,4'-Pentachloro			
2,2',3,4,4',5'-Hexachloro			
3,3',4,4',5-Pentachloro			
2,2',3,4',5,5',6-Heptachloro			
2,2',3,3',4,4'-Hexachloro			
2,2',3,3',4,5',6,6'-Octachloro			
2,2',3,4,4',5,5'-Heptachloro			
2,2',3,3',4,4',5-Heptachloro			
2,2',3,3',4,4',5,6-Octachloro			
2,2',3,3',4,4',5,5',6-Nonachloro			
Decachloro			
Total PCBs	**0.0**	**0.0**	**2.6**
Pesticides	**11/03/92**	**11/03/92**	**11/03/92**
HCB			
gamma-BHC			1.1
Heptachlor			
Aldrin			
Heptachlor epoxide			
2,4'-DDE			
cis-Chlordane			
trans-Chlordane			
Dieldrin			
4,4'-DDE			
2,4'-DDD			
4,4'-DDD			
2,4'-DDT			
4,4'-DDT			
Mirex			
Total Pesticides	**0.0**	**0.0**	**1.1**

Mass Bays Program	4th River Cruise	4th River Cruise	4th River Cruise
Merrimack River Data	So. of Buoy 13	Near Buoy 13	Upstream
Station Designation	River Station 1	River Station 2	River Station 3
	Fresh Layer	Salt Layer	Fresh Layer
	High Tide	High Tide	Low Tide
Matrix	River Water	River Water	River Water
Organics Sample ID	2J-HT-PAH	1J-HT-PAH	3J-LT-PAH
Sample Collection Date	1/8/93	1/8/93	1/8/93
PCB/Pesticide Analytical Results	04/09/93	04/09/93	04/09/93
Blank spaces indicate non-detect.			
Units	ng/L	ng/L	ng/L
PCBs			
2-Chloro			
2,4'--Dichloro		6.90	
2,2',5-Trichloro			
2,4,5-Trichloro			
2,2',4,6-Tetrachloro			
2,4,4'-Trichloro			
2,2',5,5'-Tetrachloro			
2,2',4,6,6'-Pentachloro			
2,2',3,5'-Tetrachloro			
2,3',4,4'-Tetrachloro			
2,2',4,5,5'-Pentachloro			
2,2',3,4,5'-Pentachloro			
3,3',4,4'-Tetrachloro			
2,2',4,4',5,6'-Hexachloro			
2,3',4,4',5-Pentachloro			
2,2',3,4',5,6,6'-Heptachloro			
2,2',4,4',5,5'-Hexachloro			
2,3,3',4,4'-Pentachloro			
2,2',3,4,4',5'-Hexachloro			
3,3',4,4',5-Pentachloro			
2,2',3,4',5,5',6-Heptachloro			
2,2',3,3',4,4'-Hexachloro			
2,2',3,3',4,5',6,6'-Octachloro			
2,2',3,4,4',5,5'-Heptachloro			
2,2',3,3',4,4',5-Heptachloro			
2,2',3,3',4,4',5,6-Octachloro			
2,2',3,3',4,4',5,5',6-Nonachloro			
Decachloro			
Total PCBs	**0.0**	**6.90**	**0.0**
Pesticides	04/09/93	04/09/93	04/09/93
HCB		0.63	
gamma-BHC			
Heptachlor			
Aldrin			
Heptachlor epoxide			
2,4'-DDE			
cis-Chlordane			
trans-Chlordane			
Dieldrin			
4,4'-DDE			
2,4'-DDD			
4,4'-DDD			
2,4'-DDT			
4,4'-DDT			
Mirex			
Total Pesticides	**0.0**	**0.63**	**0.0**

Mass Bays Program	5th River Cruise	5th River Cruise	5th River Cruise	5th River Cruise
Merrimack River Data	So. of Buoy 13	Near Buoy 13	Upstream	Upstream
Station Designation	River Station 1	River Station 2	River Station 3	River Station 3
	Fresh Layer	Salt Layer	Fresh Layer	Fresh Layer
	High Tide	High Tide	Low Tide	Low Tide
Matrix	River Water	River Water	River Water	River Water
Organics Sample ID	SB13-PAH	B13MA-PAH	CA-PAH-1	Duplicate
Sample Collection Date	5/1/93	5/1/93	5/1/93	5/1/93
PCB/Pesticide Analytical Results	05/29/93	05/29/93	05/29/93	Not Analyzed
Blank spaces indicate non-detect.				
Units	ng/L	ng/L	ng/L	
PCBs				
2-Chloro				
2,4'--Dichloro				
2,2',5-Trichloro				
2,4,5-Trichloro				
2,2',4,6-Tetrachloro				
2,4,4'-Trichloro				
2,2',5,5'-Tetrachloro				
2,2',4,6,6'-Pentachloro				
2,2',3,5'-Tetrachloro				
2,3',4,4'-Tetrachloro				
2,2',4,5,5'-Pentachloro				
2,2',3,4,5'-Pentachloro				
3,3',4,4'-Tetrachloro				
2,2',4,4',5,6'-Hexachloro				
2,3',4,4',5-Pentachloro				
2,2',3,4',5,6,6'-Heptachloro				
2,2',4,4',5,5'-Hexachloro				
2,3,3',4,4'-Pentachloro				
2,2',3,4,4',5'-Hexachloro				
3,3',4,4',5-Pentachloro				
2,2',3,4',5,5',6-Heptachloro				
2,2',3,3',4,4'-Hexachloro				
2,2',3,3',4,5',6,6'-Octachloro				
2,2',3,4,4',5,5'-Heptachloro				
2,2',3,3',4,4',5-Heptachloro				
2,2',3,3',4,4',5,6-Octachloro				
2,2',3,3',4,4',5,5',6-Nonachloro				
Decachloro				
Total PCBs	**0.0**	**0.0**	**0.0**	
Pesticides	05/29/93	05/29/93	05/29/93	Not Analyzed
HCB				
gamma-BHC				
Heptachlor				
Aldrin				
Heptachlor epoxide				
2,4'-DDE				
cis-Chlordane				
trans-Chlordane				
Dieldrin				
4,4'-DDE				
2,4'-DDD				
4,4'-DDD				
2,4'-DDT				
4,4'-DDT				
Mirex				
Total Pesticides	0.0	0.0	0.0	

Mass Bays Program	1st River Cruise	1st River Cruise	2nd River Cruise
Merrimack River Data	No. of Buoy 13	So. of Buoy 13	So. of Buoy 13
Station Designation	SED-1	SED-2	SED-3
Matrix	**Sediment**	**Sediment**	**Sediment**
Organics Sample ID	**MESED-1**	**MESED-2**	**M3HT-SED**
Sample Collection Date	**04/29/92**	**04/29/92**	**05/09/92**

TSS Analytical Results

Units

TSS

Oil & Grease Analytical Results

Units

Oil & Grease

TOC Analytical Results

Units

TOC

Mass Bays Program	**1st Bay Cruise**	**1st Bay Cruise**	**1st Bay Cruise**	**1st Bay Cruise**
Merrimack River Data	Massachusetts	Massachusetts	Massachusetts	Massachusetts
Station Designation	Bay Station 2	Bay Station 4	Bay Station 5	Bay Station 6
	100L Seawater	**100L Seawater**	**100L Seawater**	**100L Seawater**
Matrix	**Particulate**	**Particulate**	**Particulate**	**Particulate**
Organics Sample ID	**B02-5-21-92**	**B04-5-21-92**	**B05-5-21-92**	**B06 5-21-92**
Sample Collection Date	**05/21/92**	**05/21/92**	**05/21/92**	**05/21/92**

TSS Analytical Results

Units
TSS

Oil & Grease Analytical Results

Units
Oil & Grease

TOC Analytical Results

Units
TOC

Mass Bays Program	1st Bay Cruise	2nd Bay Cruise
Merrimack River Data	Massachusetts	Massachusetts
Station Designation	Bay Station 8	Bay Station 6
	100L Seawater	300L Seawater
Matrix	Particulate	Particulate
Organics Sample ID	B08-5-21-92	BO-6-10-15-92
Sample Collection Date	05/21/92	10/15/92

TSS Analytical Results

Units
TSS

Oil & Grease Analytical Results

Units
Oil & Grease

TOC Analytical Results

Units
TOC

Mass Bays Program	1st River Cruise	1st River Cruise	1st River Cruise	1st River Cruise
Merrimack River Data	So. of Buoy 13	Near Buoy 13	Upstream	Upstream
Station Designation	River Station 1	River Station 2	River Station 3A	River Station 3
	Fresh Layer	Salt Layer	Fresh Layer	Fresh Layer
	High Tide	High Tide	Low Tide	Low Tide
Matrix	River Water	River Water	River Water	River Water
Organics Sample ID	ME3HT	ME7HT	ME12LT	ME16LT
Sample Collection Date	04/29/92	04/29/92	04/29/92	04/29/92
TSS Analytical Results	5/7/92	5/7/92	5/7/92	5/7/92
Units	mg/l	mg/l	mg/l	mg/l
TSS	4.0	2.5	11	11
Oil & Grease Analytical Results	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Units				
Oil & Grease				
TOC Analytical Results	5/7/92	5/7/92	5/7/92	5/7/92
Units	mg/l	mg/l	mg/l	mg/l
TOC	2.7	<1.0	2.3	2.8

Mass Bays Program	2nd River Cruise	2nd River Cruise	2nd River Cruise	2nd River Cruise
Merrimack River Data	So. of Buoy 13	Near Buoy 13	Upstream	Upstream
Station Designation	River Station 1	River Station 2	River Station 3A	River Station 3
	Fresh Layer	Salt Layer	Fresh Layer	Fresh Layer
	High Tide	High Tide	Low Tide	Low Tide
Matrix	River Water	River Water	River Water	River Water
Organics Sample ID	M3HT	M4HT	M1LT	M2LT
Sample Collection Date	05/09/92	05/09/92	05/09/92	05/09/92
TSS Analytical Results	5/21/92	5/21/92	5/21/92	5/21/92
Units	mg/l	mg/l	mg/l	mg/l
TSS	8	5	15	12
Oil & Grease Analytical Results	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Units				
Oil & Grease				
TOC Analytical Results	5/21/92	5/21/92	5/21/92	5/21/92
Units	mg/l	mg/l	mg/l	mg/l
TOC	2	<1	3	3

Mass Bays Program	3rd River Cruise	3rd River Cruise	3rd River Cruise
Merrimack River Data	So. of Buoy 13	Near Buoy 13	Upstream
Station Designation	River Station 1	River Station 2	River Station 3
	Fresh Layer	**Salt Layer**	**Fresh Layer**
	High Tide	**High Tide**	**Low Tide**
Matrix	**River Water**	**River Water**	**River Water**
Organics Sample ID	**01HT-PAH**	**02HT-PAH**	**03LT-PAH**
Sample Collection Date	**10/10/92**	**10/10/92**	**10/10/92**
TSS Analytical Results	**11/2/92**	**11/2/92**	**11/2/92**
Units	**mg/l**	**mg/l**	**mg/l**
TSS	<5	<5	6
Oil & Grease Analytical Results	**11/2/92**	**11/2/92**	**11/2/92**
Units	**mg/l**	**mg/l**	**mg/l**
Oil & Grease	<2.0	<2.0	<2.0
TOC Analytical Results	**11/2/92**	**11/2/92**	**11/2/92**
Units	**mg/l**	**mg/l**	**mg/l**
TOC	1.7	<1.0	2.8

Mass Bays Program	4th River Cruise	4th River Cruise	4th River Cruise
Merrimack River Data	So. of Buoy 13	Near Buoy 13	Upstream
Station Designation	River Station 1	River Station 2	River Station 3
	Fresh Layer	Salt Layer	Fresh Layer
	High Tide	High Tide	Low Tide
Matrix	River Water	River Water	River Water
Organics Sample ID	2J-HT-PAH	1J-HT-PAH	3J-LT-PAH
Sample Collection Date	1/8/93	1/8/93	1/8/93
TSS Analytical Results	1/19/93	1/19/93	1/19/93
Units	mg/l	mg/l	mg/l
TSS	10	189	8
Oil & Grease Analytical Results	Not Analyzed	Not Analyzed	Not Analyzed
Units			
Oil & Grease			
TOC Analytical Results	1/19/93	1/19/93	1/19/93
Units	mg/l	mg/l	mg/l
TOC	4	2	4

Mass Bays Program	5th River Cruise	5th River Cruise	5th River Cruise	5th River Cruise
Merrimack River Data	So. of Buoy 13	Near Buoy 13	Upstream	Upstream
Station Designation	River Station 1	River Station 2	River Station 3	River Station 3
	Fresh Layer	Salt Layer	Fresh Layer	Fresh Layer
	High Tide	High Tide	Low Tide	Low Tide
Matrix	River Water	River Water	River Water	River Water
Organics Sample ID	SB13-PAH	B13MA-PAH	CA-PAH-1	Duplicate
Sample Collection Date	5/1/93	5/1/93	5/1/93	5/1/93
TSS Analytical Results	5/13/93	5/13/93	5/13/93	5/13/93
Units	mg/l	mg/l	mg/l	mg/l
TSS	<5	<5	6	6
Oil & Grease Analytical Results	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Units				
Oil & Grease				
TOC Analytical Results	5/13/93	5/13/93	5/13/93	5/13/93
Units	mg/l	mg/l	mg/l	mg/l
TOC	5	5	5	5

MERRIMACK RIVER

LABORATORY QA/QC DATA
PAH ANALYTICAL RESULTS

Merrimack River Analytical Data
PAH Results

Lab_Id	Field_Id	Batch	Location	Samp_Type	Matrix	Fate_Code	Samp_Size
MB011	ME3HT	2	Merrimack Fresh Layer High Tide	River Water	WATER	MEAS	4.16
MB012	ME7HT	2	Merrimack Salt Layer High Tide	River Water	WATER	MEAS	4.18
MB013	ME12LT	2	Merrimack Fresh Layer Low Tide	River Water	WATER	MEAS	4.10
MB014	ME16LT	2	Merrimack Salt Layer Low Tide	River Water	WATER	MEAS	4.14
MB015	MESED-1	3	Merrimack North, Sand	Sediment	SED	MEAS	22.85
MB016	MESED-2	3	Merrimack South, Silt/Sand	Sediment	SED	MEAS	19.08
MB017	M3HT-SED	3	Merrimack South, Silt/Sand	Sediment	SED	MEAS	19.55
AI-S-27	NA	3	NA	Process Blank	SED	MEAS	20
AI-S-28	NA	3	NA	Matrix Spike	SED	MEAS	20
AI-S-29	NA	3	NA	Matrix Spike Duplicate	SED	MEAS	20
MB018	B02	4	Massachusetts Bay, Station 2	Seawater Particulates	FILTER	MEAS	100
MB019	B04	4	Massachusetts Bay, Station 4	Seawater Particulates	FILTER	MEAS	100
MB020	B05	4	Massachusetts Bay, Station 5	Seawater Particulates	FILTER	MEAS	100
MB021	B06	4	Massachusetts Bay, Station 6	Seawater Particulates	FILTER	MEAS	100
MB022	B08	4	Massachusetts Bay, Station 8	Seawater Particulates	FILTER	MEAS	100
AI-S-80	NA	4	NA	Process Blank	WATER	MEAS	100
AI-S-81	NA	4	NA	Spiked Blank	WATER	MEAS	100
AI-S-82	NA	4	NA	Spiked Blank Duplicat	WATER	MEAS	100
AI-S-83	NA	4	NA	Equipment Blank	WATER	MEAS	100
MB023	M1LT	5	Merrimack Fresh Water Low Tide	River Water	WATER	MEAS	4.28
MB024	M2LT	5	Merrimack Fresh Water Low Tide	River Water	WATER	MEAS	4.11
MB025	M3HT	5	Merrimack Fresh Layer High Tide	River Water	WATER	MEAS	4.08
MB026	M4HT	5	Merrimack Salt Layer High Tide	River Water	WATER	MEAS	4.16
AI-S-89	NA	5	NA	Process Blank	WATER	MEAS	4.00
AI-S-90	NA	5	NA	Spiked Blank	WATER	MEAS	4.00
AI-S-91	NA	5	NA	Spiked Blank Duplicat	WATER	MEAS	4.00
AL-S-31 PB	NA	8	NA	Process Blank	WATER	MEAS	4.00
AL-S-32 BS	NA	8	NA	Spiked Blank	WATER	MEAS	4.00
MB049	01HTPAH	8	Merrimack Fresh Layer High Tide	River Water	WATER	MEAS	4.06
MB050	02HTPAH	8	Merrimack Salt Layer High Tide	River Water	WATER	MEAS	4.06
MB051	03LTPAH	8	Merrimack Fresh Water Low Tide	River Water	WATER	MEAS	4.12
AL-S-45 PB	NA	9	NA	Process Blank	WATER	MEAS	4.00
AL-S-46 BS	NA	9	NA	Spiked Blank	WATER	MEAS	4.00
MB056	BO-6	9	Massachusetts Bay, Station 6	Seawater Particulates	FILTER	MEAS	300
AM-S-32 PB	NA	11	NA	Process Blank	WATER	MEAS	4.00
AM-S-33 BS	NA	11	NA	Spiked Blank	WATER	MEAS	4.00
MB069	1JHT	11	Merrimack Fresh Layer High Tide	River Water	WATER	MEAS	4.08
MB070	2JHT	11	Merrimack Salt Layer High Tide	River Water	WATER	MEAS	4.06
MB071	3JLT	11	Merrimack Fresh Water Low Tide	River Water	WATER	MEAS	4.02
AM-S-61 PB	NA	12	NA	Process Blank	WATER	MEAS	4.00
AM-S-62 BS	NA	12	NA	Spiked Blank	WATER	MEAS	4.00
MB076	SB13	12	Merrimack Fresh Layer High Tide	River Water	WATER	MEAS	3.83
MB077	CAPAH1	12	Merrimack Fresh Water Low Tide	River Water	WATER	MEAS	4.29
MB078	B13PAH	12	Merrimack Salt Layer High Tide	River Water	WATER	MEAS	4.2

Merrimack River Analytical Data
PAH Results

Lab_Id	Samp_Units	Coll_Date	Anal_Date	Data_Units	C0N	C0NQ	C1N	C1NQ	C2N	C2NQ
MB011	L	04/29/92	07/29/92	ng/L	28.75		17.59			
MB012	L	04/29/92	07/30/92	ng/L	10.65		13.11			
MB013	L	04/29/92	07/30/92	ng/L	58.51		59.12		34.39	
MB014	L	04/29/92	07/29/92	ng/L	40.21		23.06		24.79	
MB015	g	04/29/92	07/26/92	ng/g	5.67		6.91		12.91	
MB016	g	04/29/92	07/26/92	ng/g	13.22		20.23		49.56	
MB017	g	05/09/92	07/26/92	ng/g	16.78		24.9		60.88	
AI-S-27	g	NA	07/26/92	ng/g			4.21			
AI-S-28	g	NA	07/26/92	ng/g	29.26		0.81			
AI-S-29	g	NA	07/26/92	ng/g						
MB018	L	05/21/92	07/27/92	ng/L	0.32		0.31		1.13	
MB019	L	05/21/92	07/27/92	ng/L	0.35		0.3		0.57	
MB020	L	05/21/92	07/27/92	ng/L	0.39		0.28		0.45	
MB021	L	05/21/92	07/29/92	ng/L	0.43		0.24			
MB022	L	05/21/92	07/27/92	ng/L	0.31		0.17		0.45	
AI-S-80	L	NA	07/30/92	ng/L	0.395					
AI-S-81	L	NA	07/30/92	ng/L	9.23		0.196			
AI-S-82	L	NA	07/30/92	ng/L	9.54		0.166			
AI-S-83	L	NA	07/30/92	ng/L	0.237					
MB023	L	05/09/92	07/26/92	ng/L	32.46		15.47		15.46	
MB024	L	05/09/92	07/26/92	ng/L	31.26		15.37			
MB025	L	05/09/92	07/26/92	ng/L	58.05		42.24			
MB026	L	05/09/92	07/26/92	ng/L	9.28		10.6			
AI-S-89	L	NA	07/01/92	ng/L	9.28					
AI-S-90	L	NA	07/01/92	ng/L	256.22		3.04			
AI-S-91	L	NA	07/01/92	ng/L	253.24					
AL-S-31 PB	L	NA	11/11/91	ng/L	7.4	J		ND		ND
AL-S-32 BS	L	NA	11/11/91	ng/L	130			ND		ND
MB049	L	10/10/92	11/11/91	ng/L	7.1	J	9.9	J		ND
MB050	L	10/10/92	11/11/91	ng/L	9.8	J		ND		ND
MB051	L	10/10/92	11/11/91	ng/L	23		32		27	
AL-S-45 PB	L	NA	02/23/91	ng/L	18		6.1	J		ND
AL-S-46 BS	L	NA	02/24/91	%	94			ND		ND
MB056	L	10/15/92	02/24/91	ng/L	0.13	J	0.079	J	0.039	J
AM-S-32 PB	L	NA	05/08/93	ng/L		ND		ND		ND
AM-S-33 BS	L	NA	05/08/93	%	86			NA		NA
MB069	L	01/08/93	05/08/93	ng/L	19		26			ND
MB070	L	01/08/93	05/08/93	ng/L	39			ND		ND
MB071	L	01/08/93	05/08/93	ng/L		ND		ND		ND
AM-S-61 PB	L	NA	05/29/93	ng/L	79			ND		ND
AM-S-62 BS	L	NA	05/29/93	ng/L	105			NA		NA
MB076	L	05/01/93	05/29/93	ng/L	88		9.8	J		ND
MB077	L	05/01/93	05/29/93	ng/L	123		8.9	J	6.5	J
MB078	L	05/01/93	05/29/93	ng/L	71		5.2	J		ND

Lab_Id	C3N	C3NQ	C4N	C4NQ	ACEY	ACEYQ	ACE	ACEQ	BIP	BIPQ
MB011							5.17		10.49	
MB012									2.91	
MB013					8.46				7.4	
MB014					6.96		4.78		3.42	
MB015	13.96		17.49		14.24		3.59		2.72	
MB016	35.59		35.61		47.63		11.05		6.38	
MB017	54.38		33.91		61.11		15.78		5.9	
Al-S-27										
Al-S-28					29.22		32.89			
Al-S-29					34.67		39.5			
MB018	0.23				0.06					
MB019										
MB020									0.07	
MB021									0.1	
MB022									0.07	
Al-S-80										
Al-S-81					8.94		8.67			
Al-S-82					9.41		9.41			
Al-S-83										
MB023					6.9		5.76		2.32	
MB024					5.92		5.92		3.15	
MB025					5.21				3.76	
MB026										
Al-S-89										
Al-S-90					285.37		317.81			
Al-S-91					284.16		332.83			
AL-S-31 PB		ND		ND		ND		ND	5.2	J
AL-S-32 BS		ND		ND	190		190			ND
MB049		ND		ND		ND		ND	2.9	J
MB050		ND		ND		ND		ND		ND
MB051		ND		ND		ND		ND	3.1	J
AL-S-45 PB		ND		ND		ND	3	J	33	
AL-S-46 BS		ND		ND	88		90			ND
MB056		ND		ND		ND		ND	0.021	J
AM-S-32 PB		ND		ND		ND		ND		ND
AM-S-33 BS		NA		NA	66		83			NA
MB069		ND		ND	13			ND		ND
MB070		ND		ND		ND		ND		ND
MB071		ND		ND		ND		ND		ND
AM-S-61 PB		ND		ND		ND		ND	52	
AM-S-62 BS		NA		NA	71		65			NA
MB076		ND		ND	1.9	J	3.6	J	50	
MB077		ND		ND	2.8	J	3.2	J	62	
MB078		ND		ND	0.93	J		ND	40	

Merrimack River Analytical Data
PAH Results

Lab_Id	C0F	C0FQ	C1F	C1FQ	C2F	C2FQ	C3F	C3FQ	C0P	C0PQ
MB011									6.98	
MB012									7.11	
MB013	3.07								14.7	
MB014									12.47	
MB015	6.74		4.02		15.01		19.28		51.46	
MB016	23.59		13.59		42.88		72.93		177.82	
MB017	29.15		17.65		60.16		45.09		226.73	
AI-S-27										
AI-S-28	34.18								37.22	
AI-S-29	147.52								33.73	
MB018									0.24	
MB019									0.07	
MB020										
MB021									0.075	
MB022										
AI-S-80										
AI-S-81	8.96								9.05	
AI-S-82	9.33								9.5	
AI-S-83									0.301	
MB023	4.98								18.43	
MB024	3.43								15.55	
MB025	4.35								9.41	
MB026									2.76	
AI-S-89									1.26	
AI-S-90	288.32								296.18	
AI-S-91	302.17								301.72	
AL-S-31 PB		ND		ND		ND		ND	3.1	J
AL-S-32 BS	210			ND		ND		ND	170	
MB049		ND		ND		ND		ND	3.7	J
MB050		ND		ND		ND		ND		ND
MB051		ND		ND		ND		ND	5.3	J
AL-S-45 PB	2.9	J		ND		ND		ND	1.8	J
AL-S-46 BS	95			ND		ND		ND	82	
MB056		ND		ND		ND		ND	0.049	J
AM-S-32 PB		ND		ND		ND		ND		ND
AM-S-33 BS	75			NA		NA		NA	74	
MB069		ND		ND		ND		ND	26	
MB070		ND		ND		ND		ND	5.5	J
MB071		ND		ND		ND		ND	29	
AM-S-61 PB		ND		ND		ND		ND	50	
AM-S-62 BS	64			NA		NA		NA	91	
MB076	2.8	J		ND		ND		ND	58	
MB077	3.3	J		ND		ND		ND	72	
MB078		ND		ND		ND		ND	49	

Merrimack River Analytical Data
PAH Results

Lab_Id	C0A	C0AQ	C1P/A	C1P/AQ	C2P/A	C2P/AQ	C3P/A	C3P/AQ	C4P/A	C4P/AQ
MB011	3.18									
MB012										
MB013	6.29		15.87							
MB014	5.34		15.51							
MB015	17.34		93.89		98.95		71.91		74.2	
MB016	70.99		252.22		279.5		183.19		230.3	
MB017	79		336.9		381.7		232.83		306.46	
AI-S-27										
AI-S-28	20.8									
AI-S-29	23.65									
MB018	0.2									
MB019										
MB020										
MB021			0.18							
MB022					0.37					
AI-S-80										
AI-S-81	7.41									
AI-S-82	8.31									
AI-S-83										
MB023	6.91		22.09		30.66		19.58		27.18	
MB024	5.99		17.99						21.46	
MB025										
MB026										
AI-S-89										
AI-S-90	155.67									
AI-S-91	179.28									
AL-S-31 PB		ND		ND		ND		ND		ND
AL-S-32 BS	150			ND		ND		ND		ND
MB049		ND		ND		ND		ND		ND
MB050		ND		ND		ND		ND		ND
MB051	1.4	J		ND		ND		ND		ND
AL-S-45 PB		ND		ND		ND		ND		ND
AL-S-46 BS	57			ND		ND		ND		ND
MB056		ND		ND	0.024	J		ND		ND
AM-S-32 PB		ND		ND		ND		ND		ND
AM-S-33 BS	57			NA		NA		NA		NA
MB069		ND		ND		ND		ND		ND
MB070		ND		ND		ND		ND		ND
MB071		ND		ND		ND		ND		ND
AM-S-61 PB		ND	19		42		67		59	
AM-S-62 BS	57			NA		NA		NA		NA
MB076		ND		ND		ND		ND		ND
MB077	2.7	J	10		11		6.5	J		ND
MB078		ND		ND		ND		ND		ND

Lab_Id	C0D	C0DQ	C1D	C1DQ	C2D	C2DQ	C3D	C3DQ	FLANT	FLANTQ
MB011									6 54	
MB012									5 81	
MB013	1 26								20 06	
MB014									17 49	
MB015	3 92		8 08		15 18				112 43	
MB016	12.56		19 16		33 69				378 52	
MB017	17 09		30 18		47.11				463 5	
Al-S-27										
Al-S-28									39 91	
Al-S-29									44 18	
MB018									0 33	
MB019									0 06	
MB020	0 07		0 26						0 07	
MB021									0 048	
MB022									0 05	
Al-S-80										
Al-S-81									10 6	
Al-S-82									11 02	
Al-S-83	0 646									
MB023	1 89								36 96	
MB024	1 69								25.59	
MB025									12 54	
MB026									2 41	
Al-S-89										
Al-S-90	5 63								287 9	
Al-S-91	6								302 96	
AL-S-31 PB		ND		ND		ND		ND		ND
AL-S-32 BS	3	J		ND		ND		ND	220	
MB049		ND		ND		ND		ND	4 5	J
MB050		ND		ND		ND		ND		ND
MB051		ND		ND		ND		ND	7 6	J
AL-S-45 PB		ND		ND		ND		ND	0 57	J
AL-S-46 BS		ND		ND		ND		ND	94	
MB056	0 028	J		ND		ND		ND		ND
AM-S-32 PB		ND		ND		ND		ND		ND
AM-S-33 BS		NA		NA		NA		NA	80	
MB069		ND		ND		ND		ND	44	
MB070		ND		ND		ND		ND	8 8	J
MB071		ND		ND		ND		ND	52	
AM-S-61 PB		ND	11		42		46		11	
AM-S-62 BS		NA		NA		NA		NA	64	
MB076		ND		ND		ND		ND	15	
MB077	3 1	J		ND		ND		ND	28	
MB078		ND		ND		ND		ND	13	

Lab_Id	PYR	PYRQ	C1F/P	C1F/PQ	BAA	BAAQ	C0C	C0CQ	C1C	C1CQ
MB011	6.63						3.24			
MB012	3.89									
MB013	17.01		23.3		6.41		11.11			
MB014	13.99		17.37		6.5		9.07			
MB015	99.59		114.57		52.57		71.35		59.2	
MB016	329.81		335.98		180.9		236.46		166.05	
MB017	404.62		472.55		236.54		288.67		224.33	
Al-S-27										
Al-S-28	36.47				34.81		37.23			
Al-S-29	40.64				40.35		41.74			
MB018	0.23		0.49		0.21		0.19		0.2	
MB019	0.05				0.17		0.05			
MB020	0.05				0.11		0.06			
MB021	0.03				0.07		0.032			
MB022	0.04				0.13		0.03			
Al-S-80										
Al-S-81	10.1				10		10.52			
Al-S-82	10.49				10.6		11.21			
Al-S-83										
MB023	31.75		37.6		16.91		20.25		12.35	
MB024	21.39		24.66		9.04		12.69		8.51	
MB025	9.08				2.67		5.13			
MB026	1.86									
Al-S-89										
Al-S-90	268.23				242.03		248.21			
Al-S-91	275.09				252.53		259.61		0.96	
AL-S-31 PB		ND		ND		ND		ND		ND
AL-S-32 BS	200			ND	220		220			ND
MB049	3.1	J		ND	1.8	J	1.4	J		ND
MB050		ND		ND		ND		ND		ND
MB051	5.7	J		ND	3.4	J	4	J		ND
AL-S-45 PB	0.88	J		ND	1	J	0.59	J		ND
AL-S-46 BS	85			ND	87		97			ND
MB056	0.036	J	0.025	J	0.024	J	0.035	J		ND
AM-S-32 PB		ND		ND		ND		ND		ND
AM-S-33 BS	75			NA	80		83			NA
MB069	30			ND	12		21			ND
MB070	5.2	J		ND		ND		ND		ND
MB071	38			ND		ND		ND	11	
AM-S-61 PB	9.1		18			ND	9.2			ND
AM-S-62 BS	54			NA	73		76			NA
MB076	6.6	J		ND	3.2	J	7.1	J		ND
MB077	17		10		7.1	J	15		5.7	J
MB078	3.7	J		ND	2.3	J	6.2	J		ND

Lab_Id	C2C	C2CQ	C3C	C3CQ	C4C	C4CQ	BBF	BBFQ	BKF	BKFQ
MB011							2.75		1.99	
MB012										
MB013							7.45		6.63	
MB014							6.69		6.6	
MB015	23.31						61.82		60.07	
MB016	79.37		44.97		26.48		198.14		202.24	
MB017	87.61		49.11		21.44		228.14		224.61	
AI-S-27										
AI-S-28							36.41		37.1	
AI-S-29							39.84		38.42	
MB018							0.15		0.14	
MB019							0.05		0.04	
MB020							0.05		0.04	
MB021							0.039		0.028	
MB022							0.03		0.03	
AI-S-80										
AI-S-81							10.08		9.49	
AI-S-82							10.65		10.38	
AI-S-83										
MB023							16.42		16.21	
MB024							10.97		10.2	
MB025							3.68		3.72	
MB026										
AI-S-89										
AI-S-90							237.84		204.15	
AI-S-91							239.57		216.78	
AL-S-31 PB		ND		ND		ND		ND		ND
AL-S-32 BS		ND		ND		ND	190		190	
MB049		ND		ND		ND	1.4	J		ND
MB050		ND		ND		ND		ND		ND
MB051		ND		ND		ND	3.1	J		ND
AL-S-45 PB		ND		ND		ND	0.49	J	0.39	J
AL-S-46 BS		ND		ND		ND	92		97	
MB056		ND		ND		ND	0.03	J	0.013	J
AM-S-32 PB		ND		ND		ND		ND		ND
AM-S-33 BS		NA		NA		NA	87		90	
MB069		ND		ND		ND	23		15	
MB070		ND		ND		ND	5.6	J	3.4	J
MB071	22			ND		ND	38		15	
AM-S-61 PB		ND		ND		ND		ND		ND
AM-S-62 BS		NA		NA		NA	72		74	
MB076		ND		ND		ND	6.1	J	1.6	J
MB077		ND		ND		ND	12		4.7	J
MB078		ND		ND		ND	4.2	J	1.8	J

Lab_Id	BEP	BEPQ	BAP	BAPQ	PER	PERQ	IND	INDQ	DAH	DAHQ
MB011										
MB012										
MB013	6.23		5		1.77		4.38			
MB014	5.49		5.3				4.71			
MB015	46.72		51.01		13.74		43.56		8.35	
MB016	147.75		167.82		46.29				24.3	
MB017	167.57		210.81		55.28		137.02		25.16	
AI-S-27										
AI-S-28			16.94				30.9		31.57	
AI-S-29			24.94				33.84		34.1	
MB018	0.11		0.15				0.13			
MB019							0.04			
MB020							0.05			
MB021										
MB022										
AI-S-80										
AI-S-81			7.62				6.42		5.48	
AI-S-82			8.51				7.36		6.58	
AI-S-83										
MB023	12.88		17.19		4.36		11.8		2.29	
MB024	8.38		9.97		2.8		7.67		2.16	
MB025	3.39		3.42							
MB026										
AI-S-89										
AI-S-90			106.64				167.39		200.18	
AI-S-91			125.86				165.68		203.43	
AL-S-31 PB		ND		ND		ND		ND		ND
AL-S-32 BS		ND	170		2.2	J	110		130	
MB049	0.97	J		ND		ND		ND		ND
MB050		ND		ND		ND		ND		ND
MB051	1.9	J	2.3	J		ND		ND		ND
AL-S-45 PB		ND		ND		ND	0.98	J	0.76	J
AL-S-46 BS		ND	64			ND	84		89	
MB056	0.016	J	0.025	J		ND	0.022	J	0.008	J
AM-S-32 PB		ND		ND		ND		ND		ND
AM-S-33 BS		NA	74			NA	85		92	
MB069	18		12			ND	14			ND
MB070	3.5	J	3.4	J		ND		ND		ND
MB071	19		18			ND	17			ND
AM-S-61 PB		ND		ND		ND		ND		ND
AM-S-62 BS		NA	70			NA	64		65	
MB076	3.1	J	1.6	J	0.49	J	1.5	J		ND
MB077	6.5	J	7.6	J	2.5	J	5.6	J	1.5	J
MB078	2.5	J	2.2	J		ND		ND		ND

Lab_Id	BGP	BGPQ	D8N	D10A	D10P	D12BP
MB011			76	79	80	
MB012			81	81	81	
MB013	4 58		76	78	89	
MB014	4 43		79	73	84	
MB015	41 21		33	68	73	
MB016	115 22		32	52	68	
MB017	120 31		39	64	76	
AI-S-27			NA	12	60	
AI-S-28	30 16		41	60	60	
AI-S-29	34 56			4	54	
MB018	0 13		83	101	98	
MB019			87	104	102	
MB020			80	96	97	
MB021	0 037		97	102	104	
MB022			74	94	95	
AI-S-80			73	68	71	
AI-S-81	7 88		73	69	66	
AI-S-82	8 83		73	68	67	
AI-S-83			54	53	56	
MB023	12 35		73	90	117	
MB024	8 49		77	96	120	
MB025			48	50	58	
MB026			84	92	112	
AI-S-89			79	83	69	
AI-S-90	175 02		89	82	72	
AI-S-91	181 18		87	84	76	
AL-S-31 PB		ND	76	92	108	85
AL-S-32 BS	110		47	72	110	87
MB049		ND	24	79	94	77
MB050		ND	54	80	85	77
MB051	1.7	J	57	91	108	88
AL-S-45 PB	3 3	J	61	65	78	81
AL-S-46 BS	92		54	58	74	53
MB056	0 026	J	75	84	93	115
AM-S-32 PB		ND	85	99	113	132
AM-S-33 BS	82		112	104	114	125
MB069	21		0	59	121	125
MB070	5 9	J	0	6.9	57	118
MB071	23		0	30	105	146
AM-S-61 PB		ND	153	150	155	147
AM-S-62 BS	66		142	141	131	150
MB076	2 3	J	127	130	136	141
MB077	5 4	J	118	130	139	163
MB078	1.7	J	137	136	135	155

MERRIMACK RIVER

LABORATORY QA/QC DATA
PCB/PESTICIDE ANALYTICAL RESULTS

Merrimack River Analytical Data
PCB/Pesticide Results

Lab_Id	Field_Id	Location/Sample Type	Matrix	Samp_Size	Samp_Units	Units_Qual	Anal_Date	Data_Units
MB011	ME3HT	Merrimack Fresh Layer High Tide	WATER	4.16	L		25-Jun-92	ng/L
MB012	ME7HT	Merrimack Salt Layer High Tide	WATER	4.18	L		25-Jun-92	ng/L
MB013	ME12LT	Merrimack Fresh Layer Low Tide	WATER	4.10	L		26-Jun-92	ng/L
MB014	ME16LT	Merrimack Salt Layer Low Tide	WATER	4.14	L		26-Jun-92	ng/L
AI-S-24	NA	PROC. BLANK	WATER	4.00	L		25-Jun-92	ng/L
AI-S-25	NA	SPIKED BLANK	WATER	4.00	L		26-Jun-92	ng/L
AI-S-26	NA	SPIKED BLANK DUP.	WATER	4.00	L		26-Jun-92	ng/L
MB015	MESED-1	Merrimack North, Sand	SED	22.85	g	Dry	04-Jun-92	ng/g
MB016	MESED-2	Merrimack South, Silt/Sand	SED	19.08	g	Dry	04-Jun-92	ng/g
MB017	M3HT-SED	Merrimack South, Silt/Sand	SED	19.55	g	Dry	04-Jun-92	ng/g
AI-S-27	NA	PROC. BLANK	SED	22.85	g		04-Jun-92	ng/g
AI-S-28	NA	MATRIX SPIKE	SED	30.03	g		04-Jun-92	ng/g
AI-S-29	NA	MATRIX SPIKE DUP.	SED	31.03	g		04-Jun-92	ng/g
MB018	B02	Massachusetts Bay, Station 2	FILTER	1 - 100 L	FILTER		26-Jun-92	ng/filter
MB019	B04	Massachusetts Bay, Station 4	FILTER	1 - 100 L	FILTER		26-Jun-92	ng/filter
MB020	B05	Massachusetts Bay, Station 5	FILTER	1 - 100 L	FILTER		26-Jun-92	ng/filter
MB021	B06	Massachusetts Bay, Station 6	FILTER	1 - 100 L	FILTER		26-Jun-92	ng/filter
MB022	B08	Massachusetts Bay, Station 8	FILTER	1 - 100 L	FILTER		26-Jun-92	ng/filter
AI-S-80	NA	PROC. BLANK	FILTER	1	FILTER		26-Jun-92	ng/filter
AI-S-81	NA	SPIKE BLANK	FILTER	1	FILTER		27-Jun-92	ng/filter
AI-S-82	NA	SPIKE BLANK DUP	FILTER	1	FILTER		27-Jun-92	ng/filter
AI-S-83	NA	FIELD BLANK	FILTER	1	FILTER		26-Jun-92	ng/filter
MB023	M1LT	Merrimack Fresh Water Low Tide	WATER	4.28	L		25-Jun-92	ng/L
MB024	M2LT	Merrimack Fresh Water Low Tide	WATER	4.11	L		25-Jun-92	ng/L
MB025	M3HT	Merrimack Fresh Layer High Tide	WATER	4.08	L		25-Jun-92	ng/L
MB026	M4HT	Merrimack Salt Layer High Tide	WATER	4.16	L		25-Jun-92	ng/L
AI-S-89	NA	PROC. BLANK	WATER	4.00	L		25-Jun-92	ng/L
AI-S-90	NA	SPIKE BLANK	WATER	4.00	L		25-Jun-92	ng/L
AI-S-91	NA	SPIKE BLANK DUP.	WATER	4.00	L		25-Jun-92	ng/L
MB049	01-HT	Merrimack Fresh Layer High Tide	WATER	4.06	L		11/03/92	ng/L
MB050	02-HT	Merrimack Salt Layer High Tide	WATER	4.06	L		11/03/92	ng/L
MB051	03-LT	Merrimack Fresh Water Low Tide	WATER	4.12	L		11/03/92	ng/L
AL-S-45	NA	NA	PROC BL	4.00	L		04/08/93	ng/L
AL-S-46	NA	NA	MTXSPK	4.00	L		04/09/93	ng/L
MB056	BO-6	Massachusetts Bay, Station 6	FILTER	1 - 300 L	FILTER		04/09/93	ng/filter
AM-S-32	NA	NA	PROC BL	4.00	L		04/08/93	ng/L
AM-S-33	NA	NA	MTXSPK	4.00	L		04/09/93	%
MB069	1JHT	Merrimack Fresh Layer High Tide	WATER	4.08	L		04/09/93	ng/L
MB070	2HTJ	Merrimack Salt Layer High Tide	WATER	4.06	L		04/09/93	ng/L
MB071	JLT	Merrimack Fresh Water Low Tide	WATER	4.02	L		04/09/93	ng/L
MB076	SB13	Merrimack Fresh Layer High Tide	WATER	3.83	L		05/29/93	ng/L
MB077	CAPAH1	Merrimack Fresh Water Low Tide	WATER	4.29	L		05/29/93	ng/L
MB078	B13PAH	Merrimack Salt Layer High Tide	WATER	4.20	L		05/29/93	ng/L
AM-S-61 PB	NA	NA	WATER	4.00	L		05/29/93	ng/L
AM-S-62 BS	NA	NA	WATER	4.00	L		05/29/93	%

Merrimack River Analytical Data
PCB/Pesticide Results

Lab_Id	PCB1	PCB1Q	PCB8	PCB8Q	HCB	HCBQ	GBHC	GBHCQ	PCB18	PCB18Q
MB011		ND		ND		ND		ND		ND
MB012		ND		ND		ND		ND		ND
MB013		ND		ND		ND		ND		ND
MB014		ND		ND		ND		ND	2.3	
AI-S-24		ND		ND		ND		ND		ND
AI-S-25		ND		ND	12		17			ND
AI-S-26		ND		ND	10		19			ND
MB015		ND		ND	1.2			ND		ND
MB016		ND		ND	3.6		4.1			ND
MB017		ND	1.5		12			ND		ND
AI-S-27		ND		ND	0.036	J		ND		ND
AI-S-28		ND	0.15		1.3		0.97			ND
AI-S-29	0.59		0.12		1.1		1.3			ND
MB018		ND	12			ND		ND		ND
MB019		ND		ND		ND		ND		ND
MB020		ND		ND		ND		ND		ND
MB021		ND		ND		ND		ND		ND
MB022		ND		ND		ND		ND		ND
AI-S-80		ND		ND		ND		ND		ND
AI-S-81	130			ND	42		52			ND
AI-S-82		ND		ND	42		52			ND
AI-S-83		ND		ND		ND		ND		ND
MB023		ND		ND		ND		ND		ND
MB024		ND		ND	0.26			ND		ND
MB025		ND		ND	0.31			ND		ND
MB026		ND		ND		ND		ND		ND
AI-S-89		ND		ND		ND		ND		ND
AI-S-90		ND		ND	11		15			ND
AI-S-91		ND		ND	11		13		0.47	
MB049			15.0	NC		ND	0.54	NC		ND
MB050			4.3	NC		ND		ND		ND
MB051			19.6	NC		ND	1.1		1.3	
AL-S-45			31.93		0.064	NC		ND	38.09	
AL-S-46				ND	81		81			ND
MB056			23.31		0.96	NC		ND		ND
AM-S-32				ND		ND		ND		ND
AM-S-33				ND	103		137			ND
MB069			6.90		0.63		6.15	NC		ND
MB070				ND	0.10	NC	1.47	NC		ND
MB071				ND	0.50	NC	1.57	NC	0.22	NC
MB076				NC		NC	0.00			ND
MB077				ND		NC	0.00			ND
MB078				ND		NC	0.00			ND
AM-S-61 P				ND		NC		NC		ND
AM-S-62 B				ND	97		89			

Merrimack River Analytical Data
PCB/Pesticide Results

Lab_Id	PCB29	PCB29Q	PCB50	PCB50Q	PCB28	PCB28Q	HEPT	HEPTQ	PCB52	PCB52Q
MB011		ND		ND		ND		ND		ND
MB012		ND		ND		ND		ND		ND
MB013		ND		ND		ND		ND		ND
MB014		ND		ND		ND		ND		ND
AI-S-24		ND		ND		ND		ND		ND
AI-S-25		ND		ND		ND	14			ND
AI-S-26		ND		ND		ND	16			ND
MB015		ND		ND	0 66			ND	1 1	
MB016	0 068	J		ND	2 2			ND	1 6	
MB017		ND		ND	2 8			ND		ND
AI-S-27		ND		ND		ND		ND		ND
AI-S-28		ND		ND		ND	0 69			ND
AI-S-29		ND		ND		ND	0 96			ND
MB018		ND		ND		ND		ND		ND
MB019		ND		ND		ND		ND		ND
MB020		ND		ND		ND		ND		ND
MB021		ND		ND		ND		ND		ND
MB022		ND		ND		ND		ND		ND
AI-S-80		ND		ND		ND		ND		ND
AI-S-81		ND		ND		ND	51			ND
AI-S-82		ND		ND		ND	52			ND
AI-S-83		ND		ND		ND		ND		ND
MB023		ND		ND		ND		ND		ND
MB024		ND		ND	0 76			ND		ND
MB025		ND		ND		ND		ND		ND
MB026		ND		ND	0.49			ND		ND
AI-S-89		ND		ND		ND		ND		ND
AI-S-90		ND		ND		ND	13			ND
AI-S-91		ND		ND		ND	13			ND
MB049	0 58	NC		ND		ND		ND		ND
MB050	0.38	NC	0 27	NC		ND		ND	0.11	NC
MB051	0 50			ND		ND		ND		ND
AL-S-45	0 5597	NC	27		33			ND	17	
AL-S-46		ND		ND		ND	82			ND
MB056		ND		ND	4 60	NC	0 29			ND
AM-S-32		ND		ND		ND		ND		ND
AM-S-33		ND		ND		ND	112			ND
MB069		ND		ND		ND	0.79	NC	0 58	NC
MB070		ND		ND	0.23	NC	0 04	NC		ND
MB071		ND		ND		ND	0.47	NC		ND
MB076		ND		ND		ND		NC		ND
MB077		ND	0 00		0 00			NC	0 00	NC
MB078		ND		ND		NC		ND		ND
AM-S-61 P		ND		ND		NC		ND		ND
AM-S-62 B							102			

Lab_Id	ALD	ALDQ	PCB104	PCB104Q	PCB44	PCB44Q	HE	HEQ	PCB66	PCB66Q
MB011		ND		ND		ND		ND		ND
MB012		ND		ND		ND		ND		ND
MB013		ND		ND		ND		ND		ND
MB014		ND		ND		ND		ND		ND
AI-S-24		ND		ND		ND		ND		ND
AI-S-25	13			ND		ND	17			ND
AI-S-26	14			ND		ND	18			ND
MB015		ND		ND	3.1			ND	0.63	
MB016		ND		ND	2.6			ND	3	
MB017		ND		ND	1.2			ND	3	
AI-S-27		ND		ND		ND		ND		ND
AI-S-28	1.4			ND		ND	0.94			ND
AI-S-29	2.3			ND	0.048	J	1.6			ND
MB018		ND		ND		ND		ND		ND
MB019		ND		ND		ND		ND		ND
MB020		ND		ND		ND		ND		ND
MB021		ND		ND		ND		ND		ND
MB022		ND		ND		ND		ND		ND
AI-S-80		ND		ND		ND		ND		ND
AI-S-81	51			ND		ND	53			ND
AI-S-82	49			ND		ND	54			ND
AI-S-83		ND		ND		ND		ND		ND
MB023		ND		ND		ND		ND		ND
MB024		ND		ND		ND		ND		ND
MB025		ND		ND		ND		ND		ND
MB026		ND		ND		ND		ND		ND
AI-S-89		ND		ND	0.59			ND		ND
AI-S-90	13			ND	0.46		14			ND
AI-S-91	13			ND	0.46		13			ND
MB049		ND		ND		ND		ND		ND
MB050	0.04	NC		ND		ND		ND		ND
MB051		ND	3.9	NC	0.78			ND	0.22	NC
AL-S-45		ND	0.28	NC	17			ND	20	
AL-S-46	120			ND		ND	83			ND
MB056		ND	1.76	NC	30.65	NC		ND	16.06	NC
AM-S-32		ND		ND		ND		ND		ND
AM-S-33	105			ND		ND	113			ND
MB069		ND	0.25	NC	1.40	NC	0.24	NC		ND
MB070		ND		ND		ND		ND		ND
MB071		ND		ND	1.96	NC		ND	1.55	NC
MB076		ND		ND		ND		ND		ND
MB077		ND		ND		ND		ND		ND
MB078		ND		ND		ND		ND		ND
AM-S-61 P		ND		ND		ND		ND		ND
AM-S-62 B	100			ND		ND	86			ND

Merrimack River Analytical Data
PCB/Pesticide Results

Lab_Id	2,4'-DDE	2,4'-DDEQ	PCB101	PCB101Q	CIS	CISQ	TRANS	TRANSQ	PCB87	PCB87Q
MB011		ND		ND		ND		ND		ND
MB012		ND		ND		ND		ND		ND
MB013		ND		ND		ND		ND		ND
MB014		ND		ND		ND		ND		ND
AI-S-24		ND		ND		ND		ND		ND
AI-S-25		ND		ND	13		15			ND
AI-S-26		ND		ND	15		18			ND
MB015		ND	0.72		0.38		0.37		0.37	
MB016		ND	1.6		0.87		1.2		0.59	
MB017		ND	1.9		1		1.5		0.76	
AI-S-27		ND		ND		ND		ND		ND
AI-S-28		ND		ND	0.89		0.94			ND
AI-S-29		ND		ND	1.5		1.7			ND
MB018		ND		ND		ND		ND		ND
MB019		ND		ND		ND		ND		ND
MB020		ND		ND		ND		ND		ND
MB021		ND		ND		ND		ND		ND
MB022		ND		ND		ND		ND		ND
AI-S-80		ND		ND		ND		ND		ND
AI-S-81		ND		ND	41		52			ND
AI-S-82		ND		ND	42		52			ND
AI-S-83		ND		ND		ND		ND		ND
MB023		ND		ND		ND		ND		ND
MB024		ND		ND		ND		ND		ND
MB025		ND		ND		ND		ND		ND
MB026		ND		ND		ND		ND		ND
AI-S-89		ND		ND		ND		ND		ND
AI-S-90		ND		ND	12		14			ND
AI-S-91		ND		ND	12		14			ND
MB049	0.42	NC		ND		ND	0.78	NC		ND
MB050		ND		ND		ND		ND		ND
MB051	0.85	NC		ND		ND	0.87	NC	0.01	NC
AL-S-45		ND	8.1			ND		ND	3.13	
AL-S-46	92			ND	79		84			ND
MB056		ND		ND		ND		ND	1.10	
AM-S-32		ND		ND		ND		ND		ND
AM-S-33	118			ND	114		118			ND
MB069		ND		ND	0.35	NC		ND	0.09	NC
MB070		ND		ND		ND		ND		ND
MB071		ND		ND	0.60	NC		ND		ND
MB076		ND		ND		ND		ND		ND
MB077		ND	0.00	NC	0.00	NC		ND		ND
MB078		ND		ND		ND		ND		ND
AM-S-61 P		ND		ND		ND		ND		ND
AM-S-62 B	90			ND	86		93			ND

Merrimack River Analytical Data
PCB/Pesticide Results

Lab_Id	DIEL	DIELQ	4,4'-DDE	4,4'-DDEQ	PCB77	PCB77Q	2,4'-DDD	2,4'-DDDQ	PCB154	PCB154Q
MB011		ND		ND		ND		ND		ND
MB012		ND		ND		ND		ND		ND
MB013		ND		ND		ND		ND		ND
MB014		ND		ND		ND		ND		ND
AI-S-24		ND		ND		ND		ND		ND
AI-S-25	17		16			ND		ND	5.2	
AI-S-26	18		19			ND		ND	5.9	
MB015		ND		ND	1		0.095	J		ND
MB016		ND	1.5			ND	0.41			ND
MB017		ND	1.7		3.5		0.78			ND
AI-S-27		ND		ND		ND		ND		ND
AI-S-28	0.92		1.3			ND		ND	0.32	
AI-S-29	1.7		2.2			ND		ND	0.6	
MB018		ND		ND		ND		ND		ND
MB019		ND		ND		ND		ND		ND
MB020		ND		ND		ND		ND		ND
MB021		ND		ND		ND		ND		ND
MB022		ND		ND		ND		ND		ND
AI-S-80		ND		ND		ND		ND		ND
AI-S-81	54		57			ND		ND	17	
AI-S-82	54		55			ND		ND	18	
AI-S-83		ND		ND		ND		ND		ND
MB023		ND		ND		ND		ND		ND
MB024		ND		ND		ND		ND		ND
MB025		ND		ND		ND		ND		ND
MB026		ND		ND		ND		ND		ND
AI-S-89		ND		ND		ND		ND		ND
AI-S-90	15		16			ND		ND	4.4	
AI-S-91	14		16			ND		ND	4.4	
MB049		ND		ND		ND		ND		ND
MB050		ND		ND		ND		ND		ND
MB051		ND		ND		ND		ND		ND
AL-S-45		ND		ND		ND		ND		ND
AL-S-46	81		90			ND	44			ND
MB056		ND		ND		ND		ND		ND
AM-S-32		ND		ND		ND		ND		ND
AM-S-33	119		110			ND	64			ND
MB069	1.88	NC		ND		ND		ND		ND
MB070	0.45	NC		ND		ND		ND		ND
MB071	2.20	NC		ND		ND		ND		ND
MB076	0.00	NC		ND		ND		ND		ND
MB077	0.00	NC		ND		ND		ND		ND
MB078	0.00	NC	0.00	NC		ND		ND		ND
AM-S-61 P		ND		ND		ND		ND		ND
AM-S-62 B	92		84			ND	50			ND

Merrimack River Analytical Data
PCB/Pesticide Results

Lab_Id	PCB118	PCB118Q	4,4'-DDD	4,4'-DDDQ	2,4'-DDT	2,4'-DDTQ	PCB188	PCB188Q	PCB153	PCB153Q
MB011		ND		ND		ND		ND		ND
MB012		ND		ND		ND		ND		ND
MB013		ND		ND		ND		ND		ND
MB014		ND		ND		ND		ND		ND
AI-S-24		ND		ND		ND		ND		ND
AI-S-25		ND	19		13			ND		ND
AI-S-26		ND	24		22			ND		ND
MB015		ND	1 1			ND		ND	1 5	
MB016	1 7		2 1			ND		ND	2.8	
MB017	2		2 9			ND		ND	3 2	
AI-S-27		ND		ND		ND		ND		ND
AI-S-28		ND	1 8		0.93			ND		ND
AI-S-29		ND	3 4		1 7			ND		ND
MB018		ND		ND		ND		ND		ND
MB019		ND		ND		ND		ND		ND
MB020		ND		ND		ND		ND		ND
MB021		ND		ND		ND		ND		ND
MB022		ND		ND		ND		ND		ND
AI-S-80		ND		ND		ND		ND		ND
AI-S-81		ND	66		48			ND		ND
AI-S-82		ND	68		50			ND		ND
AI-S-83		ND		ND		ND		ND		ND
MB023		ND		ND		ND		ND		ND
MB024		ND		ND		ND		ND		ND
MB025		ND		ND		ND		ND		ND
MB026		ND		ND		ND		ND		ND
AI-S-89		ND		ND		ND		ND		ND
AI-S-90		ND	18		14			ND		ND
AI-S-91		ND	17		13			ND		ND
MB049		ND		ND		ND		ND		ND
MB050		ND		ND		ND		ND		ND
MB051		ND		ND		ND		ND		ND
AL-S-45		ND		ND		ND		ND	17	
AL-S-46		ND	91		101			ND		ND
MB056		ND		ND		ND		ND		ND
AM-S-32		ND		ND		ND		ND		ND
AM-S-33		ND	136		136			ND		ND
MB069		ND		ND		ND		ND	0.40	NC
MB070		ND		ND		ND	0.53	NC		ND
MB071		ND		ND		ND		ND		ND
MB076		ND		ND		ND		ND		ND
MB077		ND		ND		ND		ND		ND
MB078		ND		ND		ND		ND		ND
AM-S-61 P		ND		ND		ND		ND		ND
AM-S-62 B		ND	112		114			ND		ND

Lab_Id	PCB105	PCB105Q	4,4'-DDT	4,4'-DDTQ	PCB138	PCB138Q	PCB126	PCB126Q	PCB187	PCB187Q
MB011		ND		ND		ND		ND		ND
MB012		ND		ND		ND		ND		ND
MB013		ND		ND		ND		ND		ND
MB014		ND		ND		ND		ND		ND
AI-S-24		ND		ND		ND		ND		ND
AI-S-25		ND	16			ND		ND		ND
AI-S-26		ND	19			ND		ND		ND
MB015		ND		ND	1 4			ND		ND
MB016		ND		ND	3 2			ND	1.1	
MB017	0 99			ND	2 9			ND	1.1	
AI-S-27		ND		ND		ND		ND		ND
AI-S-28		ND	0 69			ND		ND		ND
AI-S-29		ND	1 4			ND		ND		ND
MB018		ND		ND		ND		ND		ND
MB019		ND		ND		ND		ND		ND
MB020		ND		ND		ND		ND		ND
MB021		ND		ND		ND		ND		ND
MB022		ND		ND		ND		ND		ND
AI-S-80		ND		ND		ND		ND		ND
AI-S-81		ND	38			ND		ND		ND
AI-S-82		ND	51			ND		ND		ND
AI-S-83		ND		ND		ND		ND		ND
MB023		ND		ND		ND		ND		ND
MB024		ND		ND		ND		ND		ND
MB025		ND		ND		ND		ND		ND
MB026		ND		ND		ND		ND		ND
AI-S-89		ND		ND		ND		ND		ND
AI-S-90		ND	14			ND		ND		ND
AI-S-91		ND	14			ND		ND		ND
MB049		ND	1 5	NC		ND		ND		ND
MB050		ND		ND		ND		ND		ND
MB051		ND		ND		ND		ND		ND
AL-S-45		ND		ND	10			ND	6 5	
AL-S-46		ND	92			ND		ND		ND
MB056		ND		ND	3 94			ND		ND
AM-S-32		ND		ND	4 65			ND		ND
AM-S-33		ND	130			ND		ND		ND
MB069		ND		ND	15 60	NC		ND		ND
MB070		ND		ND	19 67	NC		ND		ND
MB071		ND	0 67	NC	11 40	NC	0 50	NC	0 55	NC
MB076		ND		ND	11	NC		ND		ND
MB077		ND		ND	18	NC		ND		ND
MB078		ND		ND	9 9	NC		ND		ND
AM-S-61 P		ND		ND	7 0	NC		ND		ND
AM-S-62 B		ND	109		12	NC		ND		ND

Merrimack River Analytical Data
PCB/Pesticide Results

Lab_Id	PCB128	PCB128Q	PCB200	PCB200Q	PCB180	PCB180Q	MIREX	MIREXQ	PCB170	PCB170Q
MB011		ND		ND		ND		ND		ND
MB012		ND		ND		ND		ND		ND
MB013		ND		ND		ND		ND		ND
MB014		ND		ND		ND		ND		ND
AI-S-24		ND		ND		ND		ND		ND
AI-S-25		ND		ND		ND	16			ND
AI-S-26		ND		ND		ND	20			ND
MB015	0.16			ND	0.53			ND	0.96	
MB016	0.4			ND	1.4			ND	2.4	
MB017	0.47			ND	1.4			ND	2.5	
AI-S-27		ND		ND		ND		ND		ND
AI-S-28		ND		ND		ND	1			ND
AI-S-29		ND		ND		ND	2.1			ND
MB018		ND		ND		ND		ND		ND
MB019		ND		ND		ND		ND		ND
MB020		ND		ND		ND		ND		ND
MB021		ND		ND		ND		ND		ND
MB022		ND		ND		ND		ND		ND
AI-S-80		ND		ND		ND		ND		ND
AI-S-81		ND		ND		ND	54			ND
AI-S-82		ND		ND		ND	54			ND
AI-S-83		ND		ND		ND		ND		ND
MB023		ND		ND		ND		ND		ND
MB024		ND		ND		ND		ND		ND
MB025		ND		ND		ND		ND		ND
MB026		ND		ND		ND		ND		ND
AI-S-89		ND		ND		ND		ND		ND
AI-S-90		ND		ND		ND	17			ND
AI-S-91		ND		ND		ND	15			ND
MB049		ND		ND		ND		ND	3.5	NC
MB050		ND		ND		ND		ND	10	NC
MB051	0.55	NC		ND	0.52	NC		ND	9.1	NC
AL-S-45	0.68		0.42		9.01			ND	3.4	
AL-S-46		ND		ND		ND	96			ND
MB056		ND		ND	5.04			ND		ND
AM-S-32		ND		ND		ND		ND		ND
AM-S-33		ND		ND		ND	119		0.14	
MB069		ND		ND	0.63	NC		ND		ND
MB070		ND		ND		ND	0.08	NC		ND
MB071		ND		ND	0.89	NC		ND		ND
MB076		ND		ND	0.00	NC		ND		ND
MB077		ND		ND	0.00	NC		ND		ND
MB078	0.00	NC		ND	0.00	NC		ND		ND
AM-S-61 P	0.00	NC		ND	0.00	NC		ND		ND
AM-S-62 B		ND		ND	0.00	NC	98			ND

Lab_Id	PCB195	PCB195Q	PCB206	PCB206Q	PCB209	PCB209Q	TCMX-5	TCMX-5Q	%DBOFB	%DBOFB
MB011		ND		ND	5 7		36		98	
MB012		ND		ND	18		35		100	
MB013		ND		ND	11		38		92	
MB014		ND		ND	4 2		33		105	
AI-S-24		ND		ND	33		44		82	
AI-S-25		ND		ND	9 5		56		64	
AI-S-26		ND		ND	2 6		66		54	
MB015	0 97		0 33		1 8		5 8		74	
MB016	0 42		0 39		1 7		6 3		82	
MB017	2		0 35		1 3		5 2		113	
AI-S-27		ND		ND	0 37		6 1		83	
AI-S-28		ND		ND	0 34		4 2		78	
AI-S-29		ND		ND	0 3		6 9		54	
MB018		ND		ND		ND	180		79	
MB019		ND		ND	56		190		74	
MB020		ND		ND	3 9		170		83	
MB021		ND		ND	33		160		93	
MB022		ND		ND	0 66		170		87	
AI-S-80		ND		ND		ND	190		77	
AI-S-81		ND		ND		ND	170		83	
AI-S-82		ND		ND		ND	170		84	
AI-S-83		ND		ND	210		190		74	
MB023		ND		ND		ND	15		111	
MB024		ND		ND		ND	14		126	
MB025		ND		ND		ND	30		59	
MB026		ND		ND		ND	16		112	
AI-S-89		ND		ND		ND	18		98	
AI-S-90		ND		ND		ND	19		96	
AI-S-91		ND		ND		ND	20		90	
MB049		ND		ND		ND			95	
MB050		ND		ND		ND			86	
MB051		ND		ND		ND			110	
AL-S-45	1 03		0 62		0 11				156	
AL-S-46		ND		ND		ND			111	
MB056	6 90			ND		ND			155	
AM-S-32		ND		ND	0 03				164	
AM-S-33		ND		ND		ND			167	
MB069		ND		ND		ND			176	
MB070		ND		ND		ND			93	
MB071		ND		ND		ND			168	
MB076		ND	0 00	NC	0 00	NC			96	
MB077		ND	0 00	NC	0 00	NC			100	
MB078		ND	0 00	NC		ND			103	
AM-S-61 P		ND		ND		ND			102	
AM-S-62 B		ND		ND		ND			93	

APPENDIX B

MERRIMACK RIVER CRUISE LOGS AND HYDROGRAPHIC DATA

MASS BAY - MERRIMACK RIVER SAMPLING
DAILY LOG FOR: 4/29/92

7:00 AM Left Winchester Bay in Tow

9:00 AM Launched Boat; Headed out to Merrimack River Mouth

9:15 AM Buoy 13 Transect, Station 2
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	11.0	3
3	13.0	19
6	14.0	24
9	14.0	24
12	14.0	24
15	14.0	24
18	14.0	24
21	14.0	24
Near Bottom	14.0	24

9:30 AM Buoy 13 Transect: North Shore
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	11.0	2
3	13.5	22
Bottom, 6	13.5	23

9:40 AM Buoy 13 Transect: South shore (approximately 1/2 mile south of Buoy 13)
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	11.5	0.5
3	12.0	3
6	13.5	23
Bottom, 9	14.0	22.5

Coordinates:
42 48 6
70 50 16
13830
25959

MASS BAY - MERRIMACK RIVER SAMPLING
DAILY LOG FOR: 4/29/92

9:50 AM Buoy 13 Transect, Station 1: South Shore (approximately 1/4 mile south of Buoy 13)
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	11.0	0.5
3	11.5	4.5
4	12.5	14
6	13.5	23
Bottom, 9	14.0	23

Coordinates:
42 48 96
70 50 11
13827.6
25955.86

10:05 AM Collected 4 samples near the surface (less than 1 foot deep):

Sample	Analysis
ME1-HT	TOC
ME2-HT	TSS
ME3-HT	PAH
ME4-HT	Phytoplankton

High Tide, Fresh Water Layer

10:20 AM Buoy 13 Transect, Station 2
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	11.0	1.5
3	11.0	3
4	12.0	7
6	13.0	25
9	14.0	25
12	14.0	25
15	14.0	25

Coordinates:
42 49 12
70 50 23
13827.63
25957.54

Collected 4 samples at a depth of 12 feet:

Sample	Analysis
ME5-HT	TOC
ME6-HT	TSS
ME7-HT	PAH
ME8-HT	Phytoplankton

High Tide, Salt Water Layer

11:05 AM SED-1: North Side
Collected sediment sample
ME-SED1 at a depth of 7 feet
Sample: fine sand and silt, dark grey

Coordinates:
42 48 84
70 50 30
13826.1
25959.02

MASS BAY - MERRIMACK RIVER SAMPLING
DAILY LOG FOR: 4/29/92

11:35 AM SED-2: South Shore
Collected sediment sample
ME-SED2 at a depth of 7 feet
Sample: silt, some fine sand, brown and grey, mussels/crab

Coordinates:
42 48 63
70 50 30
13830.73
25955.20

Observed sand at depth of 8 feet
Did not sample

Coordinates:
42 48 8
70 50 34

2:00 PM Power Cables Transect, toward South Bank
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	10.0	1.5
1.5		
3	11.0	1.5
6	11.0	1.5
9	11.0	3
12	11.0	5
20	13.0	16.5

Power Cables Transect, toward North Bank
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	11.0	1.5
3	11.0	1.5
6	11.0	1.5
9	11.0	1.5
Bottom, 12	11.0	1.5

MASS BAY - MERRIMACK RIVER SAMPLING
DAILY LOG FOR: 4/29/92

2:15 PM At Buoy 13, Station 2
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	11.0	5.5
3	11.0	5
6	11.0	6
9	11.5	8
12	12.0	11.5
15	13.0	18
18	13.0	21.5
Near Bottom,19	13.5	22
Bottom	13.5	23

2:20 PM Collected sample at Buoy 13
ME-9 Phytoplankton

2:30 PM Buoy 13 Transect, South of Buoy 13
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	11.0	4
6	11.0	4

Buoy 13 Transect, North of Buoy 13
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	10.0	6
3	10.0	8

Upstream, above bridge, around cable area on chart, up by public ramp
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	11.0	0
9	11.0	0
Bottom, 14	11.0	0

MASS BAY - MERRIMACK RIVER SAMPLING
DAILY LOG FOR: 4/29/92

3:07 PM Station 3A, Just downstream of sewer outfall
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	11.0	0
6	10.5	0
9	11.0	0

Coordinates:
42 48 87
70 57 24
13835.61
25962.48

Collected 4 samples:

Sample	Analysis
ME-10-LT	TOC
ME-11-LT	TSS
ME-12-LT	Organics

Upstream, Fresh Water Layer

3:30 PM Station 3, Upstream of sewer outfall at overhead cables.

Coordinates:
42 48 80
70 51 88
13840.24
25966.21

Collected 3 samples:

Sample	Analysis
ME-14-LT	TOC
ME-15_LT	TSS
ME-16-LT	Organics

Upstream, Fresh Water Layer

MASS BAY - MERRIMACK RIVER SAMPLING
DAILY LOG FOR: 5/9/92

9:30 AM Launched Boat

9:45 AM Station 3A: Downstream of Cables and Sewer Plant
Overcast, foggy; slight "sewer" odor
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	11.5	0.4
3	11.5	0.4
6	11.5	0.4
9	11.5	0.4
12	11.5	0.4
18	11.5	0.4

Collected 4 samples:

Sample	Analysis
M1LT	TOC
M1LT	TSS
M1LT	PAH
PHYTO-1	Phytoplankton

Upstream, Fresh Water Layer

10:00 AM Route 1 Bridge
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	12.0	4

10:20 AM Buoy 13, Station 2
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	11.5	2.7
3	11.5	2.8
6	11.5	2.8
9	11.5	2.8
12	11.5	2.9
18	11.5	3.2

MASS BAY - MERRIMACK RIVER SAMPLING
DAILY LOG FOR: 5/9/92

10:35 AM Buoy 11
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	11.0	6
3	11.0	7.5
6	11.1	8.5
9	11.0	8.5

10:45 AM Buoy 7 at mouth of river
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	11.0	8.0
3	11.0	9.5
6	11.0	10.0
9	11.0	10.0
12	11.0	12.0
20	11.0	14.0

11:00 AM Station 3: Upstream of Sewer Plant (200 meters)
Low Tide (outgoing)
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	11.5	3.5
3	11.5	3.5
6	11.5	3.6
9	11.5	3.6
12	11.5	3.6

Collected 4 samples:

Sample	Analysis
M2LT	TOC
M2LT	TSS
M2LT	PAH
PHYTO-2	Phytoplankton

Upstream. Fresh Water Layer

Earlier high salinities due to sewage outflow
Call Newburyport and check time of discharge

MASS BAY - MERRIMACK RIVER SAMPLING
DAILY LOG FOR: 5/9/92

4:20 PM Near Buoy 13, Station 2
Water clear
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	10.0	20
3	9.0	26
6	9.0	26
9	8.5	26
12	8.5	26
18	8.5	26
21	8.5	26

4:30 PM South of Buoy 13, SED-3
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	13.5	6
3	9.5	24
6	9.0	25

Collected Sediment sample ME-HT-SED

North of Buoy 13
Clear water, bottom visible
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	8.5	25.5
3	8.5	25.5
6	8.5	25.5

4:52 PM Buoy 15 Transect: at Buoy 15, South Bank
Water visibility poor (3 feet); water dark color
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	12.5	0.2
3	12.5	3.0
6	9.0	24.0

MASS BAY - MERRIMACK RIVER SAMPLING
DAILY LOG FOR: 5/9/92

4:59 PM Buoy 15 Transect: at Buoy 15
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	13.0	3.0
3	11.0	19.5
6	9.0	25.5
9	9.0	25.5
12	8.5	25.5
15	8.5	25.5

5:05 PM Buoy 15 Transect: North of Buoy 15
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	12.5	2.5
3	11.5	20
6	9.5	23

5:15 PM Station 1, South of Buoy 13
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	13.0	3.5
1.5	10.0	21
3	9.0	26
6	9.0	26
9	8.5	26

5:20 PM Collected 3 samples at depth of 0.5 feet

High Tide, Fresh Water Layer

Sample	Analysis
M3-HT	TOC
M3-HT	TSS
M3-HT	PAH

MASS BAY - MERRIMACK RIVER SAMPLING
DAILY LOG FOR: 5/9/92

5:30 PM Station 2, Buoy 13
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	11.0	10.5
3	9.0	25.5
6	8.5	26
9	8.5	26
12	8.5	26
15	8.5	26
18	8.5	26
21	8.5	26

Collected 3 samples at depth of 12 feet

High Tide, Salt Water Layer

Sample	Analysis
M4-HT	TOC
M4-HT	TSS
M4-HT	PAH

MASS BAY - MERRIMACK RIVER SAMPLING
DAILY LOG FOR: 10/10/92

10:45 AM Left dock, headed out to Buoy 13
Vessel - Sea Quest - High Tide
Partly Cloudy, 17 deg C
Overcast, no rain - It had rained heavily during the night

11:03 AM Station 2, Buoy 13
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	13.0	20.0
3	11.5	25.0
6	11.5	25.5
9	11.5	25.5
12	11.5	25.5
15	11.0	25.5
18	11.0	25.5

Collected 4 samples at a depth of 10 feet:

Sample	Analysis
02HT	PAH
02HT	TSS
02HT	TOC
02HT	O&G

High Tide, Salt Water Layer

11:58 AM Buoy 13 Transect, South of Buoy 13
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	15.5	13.5
3	11.5	25.5
6	11.5	25.5
9	11.5	25.5

12:10 PM Buoy 13 Transect, North of Buoy 13
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	13.5	18.0
3	12.0	24.5
6	11.5	25.5
9	11.0	25.5

MASS BAY - MERRIMACK RIVER SAMPLING
DAILY LOG FOR: 10/10/92

12:19 PM Buoy 13 Transect, Half-way between North of Buoy 13 and Buoy 13
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	13.5	17.5
3	11.5	25.0
6	11.5	25.5
9	11.5	25.5
12	11.0	25.5
15	11.0	25.5
18	11.0	25.5

12:22 PM Buoy 13 Transect, at Buoy 13
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	13.5	18.0
3	11.5	25.0
6	11.5	25.5
9	11.5	25.5
12	11.5	25.5
15	11.5	25.5
18	11.5	25.5

12:45 PM Station 1, Buoy 13 Transect, South of Buoy 13
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	14.5	14.5
1.5	13.5	20.0
3	11.5	25.5
6	11.5	25.5
9	11.5	25.5

Collected 4 samples near the surface.

Sample	Analysis
01HT	PAH
01HT	TSS
01HT	TOC
01HT	O&G

High Tide, Fresh Water Layer

MASS BAY - MERRIMACK RIVER SAMPLING
DAILY LOG FOR: 10/10/92

Buoy 7, Mouth of River
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	13.5	18.0
3	12.0	23.5
6	11.5	25.5
9	11.5	25.5
18	11.5	25.5

1:15 PM Downstream of Cables and Sewer Plant, Buoy 15
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)	
0	13.0	23.5	Double-Checked
3	12.0	25.0	
6	11.5	25.5	
9	11.5	25.5	
12	11.5	25.5	

1:25 PM Station 3, Under Cables
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	13.0	21.0
3	12.5	23.5
6	12.0	25.0
9	12.0	25.0
12	11.5	25.0
15	11.5	25.0

1:41 PM Buoy 13 Transect, South of Buoy 13
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	13.0	23.5
3	12.0	25.0
6	11.5	25.5
9	11.5	25.5

MASS BAY - MERRIMACK RIVER SAMPLING
DAILY LOG FOR: 10/10/92

Buoy 13 Transect, North of Buoy 13
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	13.0	23.0
3	12.0	25.0
6	12.0	25.0
9	11.5	25.5
12	11.5	25.5

1:53 PM Half-way between Buoy 13 and Buoy 15
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	12.5	23.5
0	11.5	25.0
6	11.5	25.5
9	11.5	25.5
12	11.5	25.5
15	11.5	25.5
18	11.5	25.5

Buoy 13 Transect, Buoy 13
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	12.0	14.5
3	12.0	25.0
6	11.5	25.5
9	11.5	25.5
12	11.5	25.5
15	11.5	25.5
18	11.5	25.5
21	11.5	25.5

Note: earlier low salinities possibly due to last night's rain

MASS BAY - MERRIMACK RIVER SAMPLING
DAILY LOG FOR: 10/10/92

4:00 PM Buoy 13 Transect, at Buoy 13 - Outgoing Low Tide
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	13.0	20.0
3	13.0	20.0
6	13.0	20.0
9	13.0	20.0
12	13.0	20.0

4:07 PM Buoy 13 Transect, South of Buoy 13
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	13.0	20.0
3	13.0	20.5
6	13.0	20.5

4:19 PM Buoy 13 Transect, North Side of Buoy 13
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	13.0	20.0
3	13.0	20.5
6	13.0	21.0

4:36 PM Buoy 15 Transect, at Buoy 15
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	14.0	12.0
3	14.0	12.5
6	14.0	12.5
9	14.0	12.5

MASS BAY - MERRIMACK RIVER SAMPLING
DAILY LOG FOR: 10/10/92

4:40 PM Buoy 15 Transect, North of Buoy 15
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	14.0	12.0
3	14.0	12.0
6	14.0	12.0

4:52 PM Buoy 15 Transect, South of Buoy 15
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	14.0	10.0
3	14.0	10.0
5	14.0	10.0

4:53 PM Buoy 15 Transect, at Buoy 15
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	14.0	10.0
3	14.0	10.0
6	14.0	10.5
9	14.0	10.5

5:00 PM Station 3, Under Cables
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	14.0	7.0
3	14.0	7.0
6	14.0	7.0
9	14.0	7.0

Collected 4 samples from mid-depth.

Sample	Analysis
03LT	PAH
03LT	TSS
03LT	TOC
03LT	O&G

Upstream, Fresh Water Layer

MASS BAY - MERRIMACK RIVER SAMPLING
DAILY LOG FOR: 1/8/93

10:15 AM Overcast - High Tide

Station 2, Buoy 13
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	2.5	6.0
1.5	3.0	17.0
3	3.5	19.0
6	3.5	20.0
9	3.5	20.0
12	3.5	20.0
21	3.5	20.0

10:30 AM Collected 3 samples at approx. 10 feet:

Sample	Analysis
1J-HT	PAH
1J-HT	TSS
1J-HT	TOC

High Tide, Salt Water Layer

Station 1, South of Buoy 13
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	3.0	<1
0.5	2.0	1.0
1.5	4.0	14.0
3	5.5	19.5
6	5.5	19.5

10:45 AM Collected 3 samples at surface:

Sample	Analysis
2J-HT	PAH
2J-HT	TSS
2J-HT	TOC

High Tide, Fresh Water Layer

MASS BAY - MERRIMACK RIVER SAMPLING
DAILY LOG FOR: 1/8/93

Buoy 13 Transect, Between Buoy 13 and South of Buoy 13
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	2.0	<0.5
0.5	3.5	8.0
3	5.0	19.0
6	5.0	19.0
9	5.0	19.0

Buoy 13 Transect, North of Buoy 13
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	2.5	2.0
0.5	4.0	10.0
1.5	5.0	16.0
3	5.0	19.0
6	5.5	19.5
Bottom, 9	5.5	20.5

11:30 AM Buoy 15
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	2.5	1.5
0.5	3.0	10.0
1.5	4.0	12.0
3	5.0	18.0
6	5.5	19.5
9	5.5	19.5
15	5.5	20.0

MASS BAY - MERRIMACK RIVER SAMPLING
DAILY LOG FOR: 1/8/93

Buoy 13 Transect, South of Buoy 13
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	2.5	1.5
1	5.5	3.0
1.5	5.0	17.0
3	5.0	19.0
6	5.5	19.5
Bottom,9	5.5	19.5

Buoy 15 Transect, North of Buoy 15
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	2.5	2.0
0.5	3.5	8.5
1.5	4.0	12.0
3	5.0	19.0
6	5.5	19.5
9	5.5	19.5

Cable Transect, at Power Cables, South Side - 25' of water
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	3.0	7.0
0.5	3.5	8.5
1.5	4.0	15.5
3	5.0	17.5
6	5.5	19.0
9	5.5	19.0
12	5.5	19.5

MASS BAY - MERRIMACK RIVER SAMPLING
DAILY LOG FOR: 1/8/93

Cable Transect, at Power Cables. North Side (19' of water)
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	3.0	6.0
1.5	5.0	7.0
3	5.0	10.5
9	5.5	19.0
12	5.5	19.5

2:30 PM Buoy 13 Transect, at Buoy 13 - Strong Ebb Current
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	3.5	8.0
1.5	3.5	8.5
3	3.5	8.5
6	3.5	8.5
9	5.0	15.0
12	5.0	18.5
Bottom, 18	5.0	17.5

2:40 PM Buoy 13 Transect, North of Buoy 13
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	3.5	10.0
1.5	3.5	10.0
3	3.5	10.5
Bottom, 5	3.5	10.5

2:45 PM Buoy 13 Transect, South of Buoy 13
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	3.5	8.5
1.5	3.5	8.5
3	3.5	9
Bottom, 6	3.5	9

MASS BAY - MERRIMACK RIVER SAMPLING
DAILY LOG FOR: 1/8/93

2:50 PM Station 3, at Power Cables - 14' of Water
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	3.5	2.0
3	2.0	2.0
6	2.0	2.0
9	2.0	2.0
12	2.0	2.0

3:00 PM Collected 3 samples from mid-depth:

Sample	Analysis
3J-LT	PAH
3J-LT	TSS
3J-LT	TOC

Low Tide, Fresh Water Layer

MASS BAY - MERRIMACK RIVER SAMPLING
DAILY LOG FOR: 5/1/93

8:46 AM Left Ramp at Newburyport

9:14 AM Buoy 13 Transect, at Buoy 13
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	11	4
0.5	10	7
1.5	9.5	16.5
3	9	17
4.5	9	17.5
6	7	26
9	6.5	27
12	6.5	27.5
15	6.5	27.5
18	6.5	27.5

Buoy 13 Transect, South of Buoy 13
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	11	5
0.5	11	6
1	11	9.5
1.5	10	12.5
3	27	14
4.5	9.5	15
6	9	19

Buoy 13 Transect, Half Way Between Buoy 13 and South of Buoy 13
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	11.5	4
0.5	11.5	4.5
1	9.5	15
1.5	9.5	16
3	9	17
4.5	9	17
6	8.5	19.5
9	7	26
12	6.5	27.5

MASS BAY - MERRIMACK RIVER SAMPLING
DAILY LOG FOR: 5/1/93

9:35 AM Buoy 13 Transect, North of Buoy 13
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	11	9
0.5	11	9
1	10.5	10
1.5	9.5	17
3	8	24
4.5	7.5	25
6	7	26
8	7	26

9:40 AM Buoy 13 Transect, Between Buoy 13 and North of Buoy 13
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	11.5	5
0.5	11	5
1	11	7
1.5	9.5	14
3	8.5	18
4.5	8	23
6	8	24
9	7.5	25.5
12	7	27
15	6.5	27.5
18	6.5	27.5
21	6.5	27.5

9:50 AM Buoy 13
Collected samples (Bottom Salinity = 27.5)

Sample	Analysis		High Tide, Salt Water Layer
B13	PAH		
B13MATSS	TSS	15 feet	
B13MATOC	TOC		

10:24 AM South of Buoy 13
Collected samples

Sample	Analysis	High Tide, Fresh Water Layer
SB13	PAH	
SB13TOC	TSS	

MASS BAY - MERRIMACK RIVER SAMPLING
DAILY LOG FOR: 5/1/93

SB13TOC TOC

10:28 AM Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	11.5	6
0.5	11	7.5
1.5	11	9
3	11	9
4.5	10.5	10
6	10.5	10

10:31 AM Buoy 13 Transect, Half Way Between Buoy 13 and South of Buoy 13
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	12	2.5
0.5	12	5.0
1.5	11.5	6.5
3	11	8.5
4.5	10.5	9.5
6	10.5	10.5
9	8	18
12	7	26.5
15	7	27
18	7	27

10:39 AM Buoy 13 Transect, Buoy 13
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	11	6
0.5	11	7.5
1	11	8
1.5	10.5	8.5
3	11	9.5
4.5	10.5	11
6	10	12
9	9	20
12	7.5	24
15	7	26
17	7	26

MASS BAY · MERRIMACK RIVER SAMPLING
DAILY LOG FOR: 5/1/93

Buoy 13 Transect, Half Way Between Buoy 13 and North of Buoy 13
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	11.5	4.5
0.5	11.5	6
1	11	9
3	10	12
6	10	12
9	9	18
12	9	18
15	9	18
18	9	18

10:50 AM Buoy 13 Transect, North of Buoy 13
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	12	5.5
0.5	11	10
1	11	10
1.5	10.5	11
3	10	12
6	10	15

11:10 AM Buoy 15 Transect, Buoy 15
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	11.5	3.5
0.5	12	3.5
1.5	12	3
3	12	3.5
6	11	6
9	11	8.5
12	11	8

MASS BAY - MERRIMACK RIVER SAMPLING
DAILY LOG FOR: 5/1/93

11:17 AM At Power Cables
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	12	1
1	12	1
3	12	1
6	12	1
9	12	1
12	12	1
15	12	1

11:20 AM Buoy 15 Transect, South of Buoy 15
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	12	3
1.5	12	3
3	12	3.5
6	11	7
8	11	7

Buoy 15 Transect, North of Buoy 15
Collected depth, temperature and salinity data

Depth (feet)	Temp. (deg. C)	Salinity (ppt)
0	12	1
1.5	12	1
3	12	1
6	12	2

At Power Cables
Collected six samples

Sample	Analysis
CAPAH 1	PAH
CAPAH2	PAH
CATSS1	TSS
CATSS2	TSS
CATOC1	TOC
CATOC2	TOC

Low Tide, Fresh Water Layer

APPENDIX C

SAMPLING INFORMATION SUMMARIES

Surface Water and Sediment Sampling Station Data

Station #	Latitude	Longitude	Method of Location	Description	Sediment/Bottom type
Merrimack River Stations					
1	42 48 96	70 50 11	Converted from Loran coordinates	South Shore (approx. 1/4 mile south of Buoy 13)	—
2	42 49 12	70 50 23	Converted from Loran coordinates	Buoy 13 Transect	—
3	42 48 80	70 51 88	Converted from Loran coordinates	Upstream of sewer outfall, at overhead cables	—
3A	42 48 87	70 57 24	Converted from Loran coordinates	Just downstream of sewer outfall	—
SED-1	42 48 84	70 50 30	Converted from Loran coordinates	North side - Buoy 13 transect	fine sand and silt, dark grey
SED-2	42 48 63	70 50 30	Converted from Loran coordinates	South Shore - Buoy 13 transect	silt, some fine sand, brown and grey, mussels/crab
SED-3	42 48 45	70 50 30	Estimated from NOAA Chart	South of Buoy 13	—
Massachusetts Bay Stations					
2	42 22 26	70 50 33	Loran	Mass Bays Transect-5/21/92	—
4	42 23 14	70 42 42	Loran	Mass Bays Transect - 5/21/92	—
5	42 23 35	70 38 36	Loran	Mass Bays Transect - 5/21/92	—
6	42 23 55	70 34 40	Loran	Mass Bays Transect 5/21/92	—
6	42 23 55	70 34 35	Loran	Mass Bays Transect - 10/15/92	—
8	42 24 34	70 26 29	Loran	Mass Bays Transect - 5/21/92	—

Sample Data for PAH Samples

Sample ID	Cruise Type	Station ID	Date	Time	Depth (m)
ME3-HT	Merrimack River	1	4/29/92	10:05	surface
ME7-HT	Merrimack River	2	4/29/92	10:20	3.6
ME-12-LT	Merrimack River	3A	4/29/92	15:07	surface
ME-16-LT	Merrimack River	3	4/29/92	15:30	surface
M1LT	Merrimack River	3A	5/9/92	9:45	surface
M2LT	Merrimack River	3	5/9/92	11:00	surface
M3-HT	Merrimack River	1	5/9/92	17:20	0.15
M4-HT	Merrimack River	2	5/9/92	17:30	3.6
02HT	Merrimack River	2	10/10/92	11:03	3
01HT	Merrimack River	1	10/10/92	12:45	surface
03LT	Merrimack River	3	10/10/92	17:00	approx. 1.5
1J-HT	Merrimack River	2	1/8/93	10:30	3
2J-HT	Merrimack River	1	1/8/93	10:45	surface
3J-LT	Merrimack River	3	1/8/93	15:00	approx. 1.8
B13	Merrimack River	2	5/1/93	9:50	4.6
SB13	Merrimack River	1	5/1/93	10:24	surface
CAPAH1	Merrimack River	3	5/1/93	11:20	surface
CAPAH2	Merrimack River	3	5/1/93	11:20	surface
BO2-5-21-92	Mass Bay	2	5/21/92	not available	5
BO4-5-21-92	Mass Bay	4	5/21/92	not available	14
BO5-5-21-92	Mass Bay	5	5/21/92	not available	15
BO6-5-21-92	Mass Bay	6	5/21/92	not available	18
BO8-5-21-92	Mass Bay	8	5/21/92	not available	16
BO6-10-15-92	Mass Bay	6	10/15/92	not available	20

Merrimack River
Sampling Station Hydrographic Data

Station #	Date	Time	Depth below water surface (ft)	Temp (degrees C)	Salinity (PSU)
1	4/29/92	9:50	0	11.0	0.5
1	4/29/92	9:50	3	11.5	4.5
1	4/29/92	9:50	4	12.5	14
1	4/29/92	9:50	6	13.5	23
1	4/29/92	9:50	bottom, 9	14.0	23
2	4/29/92	10:20	0	11.0	1.5
2	4/29/92	10:20	3	11.0	3
2	4/29/92	10:20	4	12.0	7
2	4/29/92	10:20	6	13.0	25
2	4/29/92	10:20	9	14.0	25
2	4/29/92	10:20	12	14.0	25
2	4/29/92	10:20	15	14.0	25
2	4/29/92	14:15	0	11.0	5.5
2	4/29/92	14:15	3	11.0	5
2	4/29/92	14:15	6	11.0	6
2	4/29/92	14:15	9	11.5	8
2	4/29/92	14:15	12	12.0	11.5
2	4/29/92	14:15	15	13	18
2	4/29/92	14:15	18	13	21.5
2	4/29/92	14:15	near bottom, 19	13.5	22
2	4/29/92	14:15	bottom	13.5	23
3A	4/29/92	15:07	0	11.0	0
3A	4/29/92	15:07	6	10.5	0
3A	4/29/92	15:07	9	11.0	0
3	4/29/92	15:30	sample but no data		

Merrimack River
Sampling Station Hydrographic Data

Station #	Date	Time	Depth below water surface (ft)	Temp (degrees C)	Salinity (PSU)
3A	5/9/92	9:45	0	11.5	0.4
3A	5/9/92	9:45	3	11.5	0.4
3A	5/9/92	9:45	6	11.5	0.4
3A	5/9/92	9:45	9	11.5	0.4
3A	5/9/92	9:45	12	11.5	0.4
3A	5/9/92	9:45	18	11.5	0.4
3	5/9/92	11:00	0	11.5	3.5
3	5/9/92	11:00	3	11.5	3.5
3	5/9/92	11:00	6	11.5	3.6
3	5/9/92	11:00	9	11.5	3.6
3	5/9/92	11:00	12	11.5	3.6
SED-3	5/9/92	16:30	0	13.5	6
SED-3	5/9/92	16:30	3	9.5	24
SED-3	5/9/92	16:30	9	9.0	25
1	5/9/92	17:15	0	13.0	3.5
1	5/9/92	17:15	1.5	10.0	21
1	5/9/92	17:15	3	9.0	26
1	5/9/92	17:15	6	9.0	26
1	5/9/92	17:15	9	8.5	26
2	5/9/92	17:30	0	11.0	10.5
2	5/9/92	17:30	3	9.0	25.5
2	5/9/92	17:30	6	8.5	26
2	5/9/92	17:30	9	8.5	26
2	5/9/92	17:30	12	8.5	26
2	5/9/92	17:30	15	8.5	26
2	5/9/92	17:30	18	8.5	26
2	5/9/92	17:30	21	8.5	26

Merrimack River
Sampling Station Hydrographic Data

Station #	Date	Time	Depth below water surface (ft)	Temp (degrees C)	Salinity (PSU)
2	10/10/92	11:03	0	13	20.0
2	10/10/92	11:03	3	11.5	25.0
2	10/10/92	11:03	6	11.5	25.5
2	10/10/92	11:03	9	11.5	25.5
2	10/10/92	11:03	12	11.5	25.5
2	10/10/92	11:03	15	11.0	25.5
2	10/10/92	11:03	18	11.0	25.5
1	10/10/92	12:45	0	14.5	14.5
1	10/10/92	12:45	1.5	13.5	20.0
1	10/10/92	12:45	3	11.5	25.5
1	10/10/92	12:45	6	11.5	25.5
1	10/10/92	12:45	9	11.5	25.5
3	10/10/92	17:00	0	14.0	7.0
3	10/10/92	17:00	3	14.0	7.0
3	10/10/92	17:00	6	14.0	7.0
3	10/10/92	17:00	9	14.0	7.0
2	1/8/93	10:15	0	2.5	6.0
2	1/8/93	10:15	1.5	3.0	17.0
2	1/8/93	10:15	3	3.5	19.0
2	1/8/93	10:15	6	3.5	20.0
2	1/8/93	10:15	9	3.5	20.0
2	1/8/93	10:15	12	3.5	20.0
2	1/8/93	10:15	21	3.5	20.0
1	1/8/93	10:30	0	3	<1
1	1/8/93	10:30	0.5	2	1.0
1	1/8/93	10:30	1.5	4	14.0
1	1/8/93	10:30	3	5.5	19.5
1	1/8/93	10:30	6	5.5	19.5

Merrimack River
Sampling Station Hydrographic Data

Station #	Date	Time	Depth below water surface (ft)	Temp (degrees C)	Salinity (PSU)
3	1/8/93	17:50	0	3.5	2.0
3	1/8/93	17:50	3	2.0	2.0
3	1/8/93	17:50	6	2.0	2.0
3	1/8/93	17:50	9	2.0	2.0
3	1/8/93	17:50	12	2.0	2.0
1	5/1/93	10.28	0	11.5	6
1	5/1/93	10.28	0.5	11	7.5
1	5/1/93	10.28	1.5	11	9
1	5/1/93	10.28	3	11	9
1	5/1/93	10.28	4.5	10.5	10
1	5/1/93	10.28	6	10.5	10
2	5/1/93	10:39	0	11	6
2	5/1/93	10:39	0.5	11	7.5
2	5/1/93	10:39	1	11	8
2	5/1/93	10:39	1.5	10.5	8.5
2	5/1/93	10:39	3	11	9.5
2	5/1/93	10:39	4.5	10.5	11
2	5/1/93	10:39	6	10	12
2	5/1/93	10:39	9	9	20
2	5/1/93	10:39	12	7.5	24
2	5/1/93	10:39	15	7	26
2	5/1/93	10:39	17	7	26
3	5/1/93	11:17	0	12	1
3	5/1/93	11:17	1	12	1
3	5/1/93	11:17	3	12	1
3	5/1/93	11:17	6	12	1
3	5/1/93	11:17	9	12	1
3	5/1/93	11:17	12	12	1
3	5/1/93	11:17	15	12	1

APPENDIX D

CALCULATIONS OF PAH LOADINGS TO MASSACHUSETTS BAY

CALCULATION OF LOADINGS

TOTAL PAH

DRAINAGE BASINS AND SOURCES	Watershed Category	Total PAH Avg. Conc. (ng/l)	Annual Flow Rate (m^3/s)	Conversion Factor 0.031536	Estimated Loading (kg/yr)	Subtotals and Totals
RIVERS						
Merrimack **	Non-Urban	308	121.9	0.031536	1184	
Subtotal						1184
North Shore						
Ipswich River	Non-Urban	308	6.4	0.031536	62.2	
Essex River	Non-Urban	308	0.45	0.031536	4.37	
Rowley River	Non-Urban	308	0.48	0.031536	4.66	
Parker River	Non-Urban	308	2.86	0.031536	27.8	
Annisquam River	Non-Urban	308	0.11	0.031536	1.07	
Danvers River	Urban	596	0.59	0.031536	11.1	
Crane River	Non-Urban	308	0.28	0.031536	2.72	
Pines River	Urban	1578	0.48	0.031536	23.9	
Saugus River	Urban	1578	2.32	0.031536	115	
Subtotal						253
Boston Harbor						
Mystic River	Urban	916	3.18	0.031536	91.9	
Charles River	Urban	3223	15.35	0.031536	1560	
Neponset River	Urban	1578	5.58	0.031536	278	
Weymouth Fore River	Urban	1578	6.28	0.031536	312.52	
Weymouth Back River	Urban	1578	4.38	0.031536	218.0	
Weir River	Urban	1578	1.25	0.031536	62.20	
Subtotal						2522
South Shore						
South River	Non-Urban	308	1.15	0.031536	11.2	
North River	Non-Urban	308	3.9	0.031536	37.9	
Green Harbor River	Non-Urban	308	0.35	0.031536	3.40	
Jones River	Non-Urban	308	1.71	0.031536	16.6	
Town Brook	Non-Urban	308	0.31	0.031536	3.01	
Eel River	Non-Urban	308	0.51	0.031536	4.95	
Herring River	Non-Urban	308	0.37	0.031536	3.59	
Beaver Dam Brook	Non-Urban	308	0.18	0.031536	1.75	
Subtotal						82.4
Total River Loading						**4042**

****Annual Flow from the Merrimack River into Massachusetts Bay was estimated as one-half of the total flow from the river, based on potential favorable conditions of flow to the Bay of half of one year.**

CALCULATION OF LOADINGS

TOTAL PAH

DRAINAGE BASINS AND SOURCES	Watershed Category	Total PAH Avg. Conc. (ng/l)	Annual Flow Rate (m^3/s)	Conversion Factor 0.031536	Estimated Loading (kg/yr)	Subtotals and Totals
COASTAL NPDES						
Merrimack		6865	2.59	0.031536	561	
Subtotal						561
North Shore						
S. Essex		4717	1.19	0.031536	177	
Lynn		505	3.7	0.031536	58.9	
Remaining		6865	0.51	0.031536	110	
Subtotal						346
Boston Harbor						
Deer Island		17533	11.6	0.031536	6414	
Nut Island		4705	5.7	0.031536	846	
Remaining		6865	4	0.031536	866	
Subtotal						8126
South Shore		6865	0.44	0.031536	95.3	
Subtotal						95.3
Total NPDES Loading						**9128**
COASTAL CSO						
Boston Harbor		4780	0.203	0.031536	30.6	
South Shore						
Total CSO Loading						**30.6**
COASTAL RUNOFF						
Merrimack	Non-Urban	1315	0.13	0.031536	5.39	
North Shore	Urban	12194	0.8	0.031536	308	
Boston Harbor	Urban	12194	0.734	0.031536	282	
South Shore	Non-Urban	1315	0.51	0.031536	21.1	
Cape Cod	Non-Urban	1315	0.57	0.031536	23.6	
Total Coastal Runnoff Loading						**640**
TOTAL LOADING						**13841**

CALCULATION OF LOADINGS

CARCINOGENIC PAH

DRAINAGE BASINS AND SOURCES	Watershed Category	Total PAH Avg. Conc. (ng/l)	Annual Flow Rate (m^3/s)	Conversion Factor 0.031536	Estimated Loading (kg/yr)	Subtotals and Totals
RIVERS						
Merrimack **	Non-Urban	86	121.9	0.031536	330.604502	
Subtotal						331
North Shore						
Ipswich River	Non-Urban	86	6.4	0.031536	17.3574144	
Essex River	Non-Urban	86	0.45	0.031536	1.2204432	
Rowley River	Non-Urban	86	0.48	0.031536	1.30180608	
Parker River	Non-Urban	86	2.86	0.031536	7.75659456	
Annisquam River	Non-Urban	86	0.11	0.031536	0.29833056	
Danvers River	Urban	80	0.59	0.031536	1.4884992	
Crane River	Non-Urban	86	0.28	0.031536	0.75938688	
Pines River	Urban	245	0.48	0.031536	3.7086336	
Saugus River	Urban	245	2.32	0.031536	17.9250624	
Subtotal						51.8
Boston Harbor						
Mystic River	Urban	162	3.18	0.031536	16.2460858	
Charles River	Urban	494	15.35	0.031536	239.134334	
Neponset River	Urban	245	5.58	0.031536	43.1128656	
Weymouth Fore River	Urban	245	6.28	0.031536	48.5212896	
Weymouth Back River	Urban	245	4.38	0.031536	33.8412816	
Weir River	Urban	245	1.25	0.031536	9.6579	
Subtotal						391
South Shore						
South River	Non-Urban	86	1.15	0.031536	3.12	
North River	Non-Urban	86	3.9	0.031536	10.6	
Green Harbor River	Non-Urban	86	0.35	0.031536	0.95	
Jones River	Non-Urban	86	1.71	0.031536	4.64	
Town Brook	Non-Urban	86	0.31	0.031536	0.84	
Eel River	Non-Urban	86	0.51	0.031536	1.38	
Herring River	Non-Urban	86	0.37	0.031536	1.00	
Beaver Dam Brook	Non-Urban	86	0.18	0.031536	0.49	
Subtotal						23.0
Total River Loading						**796**

****Annual Flow from the Merrimack River into Massachusetts Bay was estimated to be one-half of the total flow from the river, based on potentially favorable conditions of flow to the Bay for one half year.**

CALCULATION OF LOADINGS

LMW PAH

DRAINAGE BASINS AND SOURCES	Watershed Category	Total PAH Avg. Conc. (ng/l)	Annual Flow Rate (m^3/s)	Conversion Factor 0.031536	Estimated Loading (kg/yr)	Subtotals and Totals
COASTAL NPDES						
Merrimack		6572	2.59	0.031536	537	
Subtotal						537
North Shore						
S. Essex		4553	1.19	0.031536	171	
Lynn		427	3.7	0.031536	49.8	
Remaining		6572	0.51	0.031536	106	
Subtotal						326
Boston Harbor						
Deer Island		16766	11.6	0.031536	6133	
Nut Island		4543	5.7	0.031536	817	
Remaining		6572	4	0.031536	829	
Subtotal						7779
South Shore		6572	0.44	0.031536	91.2	
Subtotal						91.2
Total NPDES Loading						**8733**
COASTAL CSO						
Boston Harbor		2624	0.203	0.031536	16.8	
South Shore						
Total CSO Loading						**16.8**
COASTAL RUNOFF						
Merrimack	Non-Urban	661	0.13	0.031536	2.71	
North Shore	Urban	7080	0.8	0.031536	179	
Boston Harbor	Urban	7080	0.734	0.031536	164	
South Shore	Non-Urban	661	0.51	0.031536	10.6	
Cape Cod	Non-Urban	661	0.57	0.031536	11.9	
Total Coastal Runnoff Loading						**368**
TOTAL LOADING						**11599**

CALCULATION OF LOADINGS

HMW PAH

DRAINAGE BASINS AND SOURCES	Watershed Category	Total PAH Avg. Conc. (ng/l)	Annual Flow Rate (m^3/s)	Conversion Factor 0.031536	Estimated Loading (kg/yr)	Subtotals and Totals
RIVERS						
Merrimack **	Non-Urban	148	121.9	0.031536	569	
Subtotal						569
North Shore						
Ipswich River	Non-Urban	148	6.4	0.031536	29.9	
Essex River	Non-Urban	148	0.45	0.031536	2.10	
Rowley River	Non-Urban	148	0.48	0.031536	2.24	
Parker River	Non-Urban	148	2.86	0.031536	13.3	
Annisquam River	Non-Urban	148	0.11	0.031536	0.513	
Danvers River	Urban	163	0.59	0.031536	3.03	
Crane River	Non-Urban	148	0.28	0.031536	1.31	
Pines River	Urban	529	0.48	0.031536	8.01	
Saugus River	Urban	529	2.32	0.031536	38.7	
Subtotal						99.1
Boston Harbor						
Mystic River	Urban	331	3.18	0.031536	33.2	
Charles River	Urban	1093	15.35	0.031536	529	
Neponset River	Urban	529	5.58	0.031536	93.1	
Weymouth Fore River	Urban	529	6.28	0.031536	104.77	
Weymouth Back River	Urban	529	4.38	0.031536	73.1	
Weir River	Urban	529	1.25	0.031536	20.85	
Subtotal						854
South Shore						
South River	Non-Urban	148	1.15	0.031536	5.37	
North River	Non-Urban	148	3.9	0.031536	18.2	
Green Harbor River	Non-Urban	148	0.35	0.031536	1.63	
Jones River	Non-Urban	148	1.71	0.031536	7.98	
Town Brook	Non-Urban	148	0.31	0.031536	1.45	
Eel River	Non-Urban	148	0.51	0.031536	2.38	
Herring River	Non-Urban	148	0.37	0.031536	1.73	
Beaver Dam Brook	Non-Urban	148	0.18	0.031536	0.840	
Subtotal						39.6
Total River Loading						**1562**

****Annual Flow from the Merrimack River into Massachusetts Bay was estimated to be one-half of the total flow from the river, based on potentially favorable conditions for flow to the Bay of one half year.**

CALCULATION OF LOADINGS

HMW PAH

DRAINAGE BASINS AND SOURCES	Watershed Category	Total PAH Avg. Conc. (ng/l)	Annual Flow Rate (m^3/s)	Conversion Factor 0.031536	Estimated Loading (kg/yr)	Subtotals and Totals
COASTAL NPDES						
Merrimack		293	2.59	0.031536	23.9	
Subtotal						23.9
North Shore						
S. Essex		164	1.19	0.031536	6.15	
Lynn		78	3.7	0.031536	9.10	
Remaining		293	0.51	0.031536	4.71	
Subtotal						20.0
Boston Harbor						
Deer Island		767	11.6	0.031536	281	
Nut Island		162	5.7	0.031536	29.1	
Remaining		293	4	0.031536	37.0	
Subtotal						347
South Shore		293	0.44	0.031536	4.07	
Subtotal						4.07
Total NPDES Loading						**395**
COASTAL CSO						
Boston Harbor		2157	0.203	0.031536	13.8	
South Shore						
Total CSO Loading						**13.8**
COASTAL RUNOFF						
Merrimack	Non-Urban	653	0.13	0.031536	2.68	
North Shore	Urban	5109	0.8	0.031536	129	
Boston Harbor	Urban	5109	0.734	0.031536	118	
South Shore	Non-Urban	653	0.51	0.031536	10.5	
Cape Cod	Non-Urban	653	0.57	0.031536	11.7	
Total Coastal Runnoff Loading						**272**
TOTAL LOADING						**2242**

CALCULATION OF LOADINGS

NAPHTHALENES

DRAINAGE BASINS AND SOURCES	Watershed Category	Total PAH Avg. Conc. (ng/l)	Annual Flow Rate (m^3/s)	Conversion Factor 0.031536	Estimated Loading (kg/yr)	Subtotals and Totals
RIVERS						
Merrimack **	Non-Urban	82	121.9	0.031536	315	
Subtotal						315
North Shore						
Ipswich River	Non-Urban	82	6.4	0.031536	16.6	
Essex River	Non-Urban	82	0.45	0.031536	1.16	
Rowley River	Non-Urban	82	0.48	0.031536	1.24	
Parker River	Non-Urban	82	2.86	0.031536	7.40	
Annisquam River	Non-Urban	82	0.11	0.031536	0.284	
Danvers River	Urban	92	0.59	0.031536	1.71	
Crane River	Non-Urban	82	0.28	0.031536	0.724	
Pines River	Urban	312	0.48	0.031536	4.72	
Saugus River	Urban	312	2.32	0.031536	22.8	
Subtotal						56.6
Boston Harbor						
Mystic River	Urban	194	3.18	0.031536	19.5	
Charles River	Urban	649	15.35	0.031536	314	
Neponset River	Urban	312	5.58	0.031536	54.9	
Weymouth Fore River	Urban	312	6.28	0.031536	61.790	
Weymouth Back River	Urban	312	4.38	0.031536	43.10	
Weir River	Urban	312	1.25	0.031536	12.299	
Subtotal						506
South Shore						
South River	Non-Urban	82	1.15	0.031536	2.97	
North River	Non-Urban	82	3.9	0.031536	10.1	
Green Harbor River	Non-Urban	82	0.35	0.031536	0.905	
Jones River	Non-Urban	82	1.71	0.031536	4.42	
Town Brook	Non-Urban	82	0.31	0.031536	0.802	
Eel River	Non-Urban	82	0.51	0.031536	1.32	
Herring River	Non-Urban	82	0.37	0.031536	0.957	
Beaver Dam Brook	Non-Urban	82	0.18	0.031536	0.465	
Subtotal						21.9
Total River Loading						**899**

****Annual Flow from the Merrimack River into Massachusetts Bay was estimated to be one-half of the total flow from the river, based on potentially favorable conditions of flow to the Bay for one half year.**

CALCULATION OF LOADINGS

NAPHTHALENES

DRAINAGE BASINS AND SOURCES	Watershed Category	Total PAH Avg. Conc. (ng/l)	Annual Flow Rate (m^3/s)	Conversion Factor 0.031536	Estimated Loading (kg/yr)	Subtotals and Totals
COASTAL NPDES						
Merrimack		4289	2.59	0.031536	350	
Subtotal						350
North Shore						
S. Essex		2858	1.19	0.031536	107	
Lynn		222	3.7	0.031536	25.9	
Remaining		4289	0.51	0.031536	69.0	
Subtotal						202
Boston Harbor						
Deer Island		11458	11.6	0.031536	4192	
Nut Island		2616	5.7	0.031536	470	
Remaining		4289	4	0.031536	541	
Subtotal						5203
South Shore		4289	0.44	0.031536	59.5	
Subtotal						59.5
Total NPDES Loading						**5815**
COASTAL CSO						
Boston Harbor		925	0.203	0.031536	5.92	
South Shore						
Total CSO Loading						**5.92**
COASTAL RUNOFF						
Merrimack	Non-Urban	159	0.13	0.031536	0.652	
North Shore	Urban	950	0.8	0.031536	24.0	
Boston Harbor	Urban	950	0.734	0.031536	22.0	
South Shore	Non-Urban	159	0.51	0.031536	2.56	
Cape Cod	Non-Urban	159	0.57	0.031536	2.86	
Total Coastal Runnoff Loading						**52.0**
TOTAL LOADING						**6772**