

Watershed Summary Information

Accounting Unit Name: Mass.-Rhode Island Coastal

State(s): MA

Political Boundaries: Essex, Middlesex, Suffolk, Norfolk, Plymouth

Major Waterways: Charles R
Ipswich R
Neponset R
Parker R
Saugus R

Number of Stations in Watershed: Tier1 - 195
Tier2 - 402
Tier3 - 111

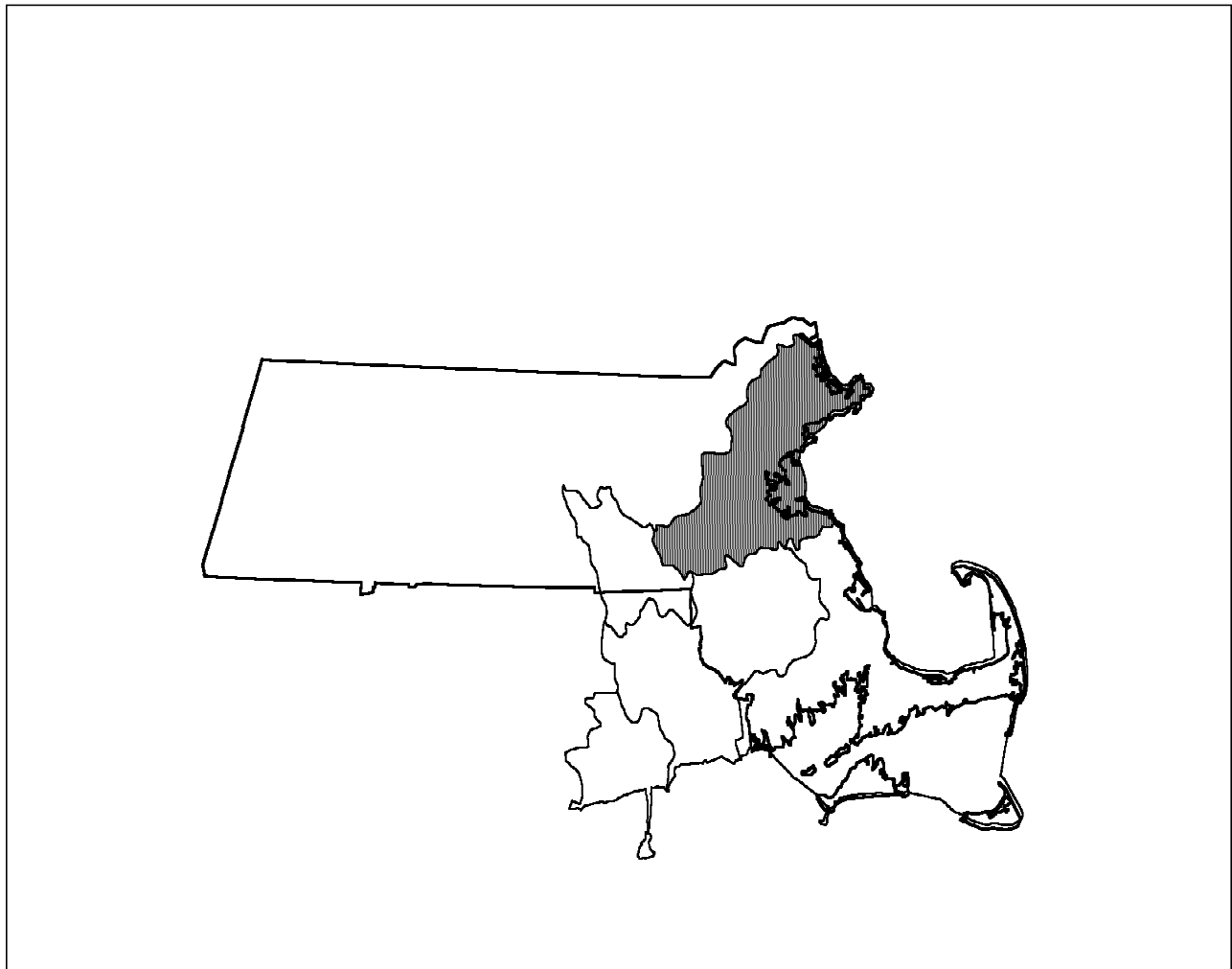


Figure 1. Watershed Location Map

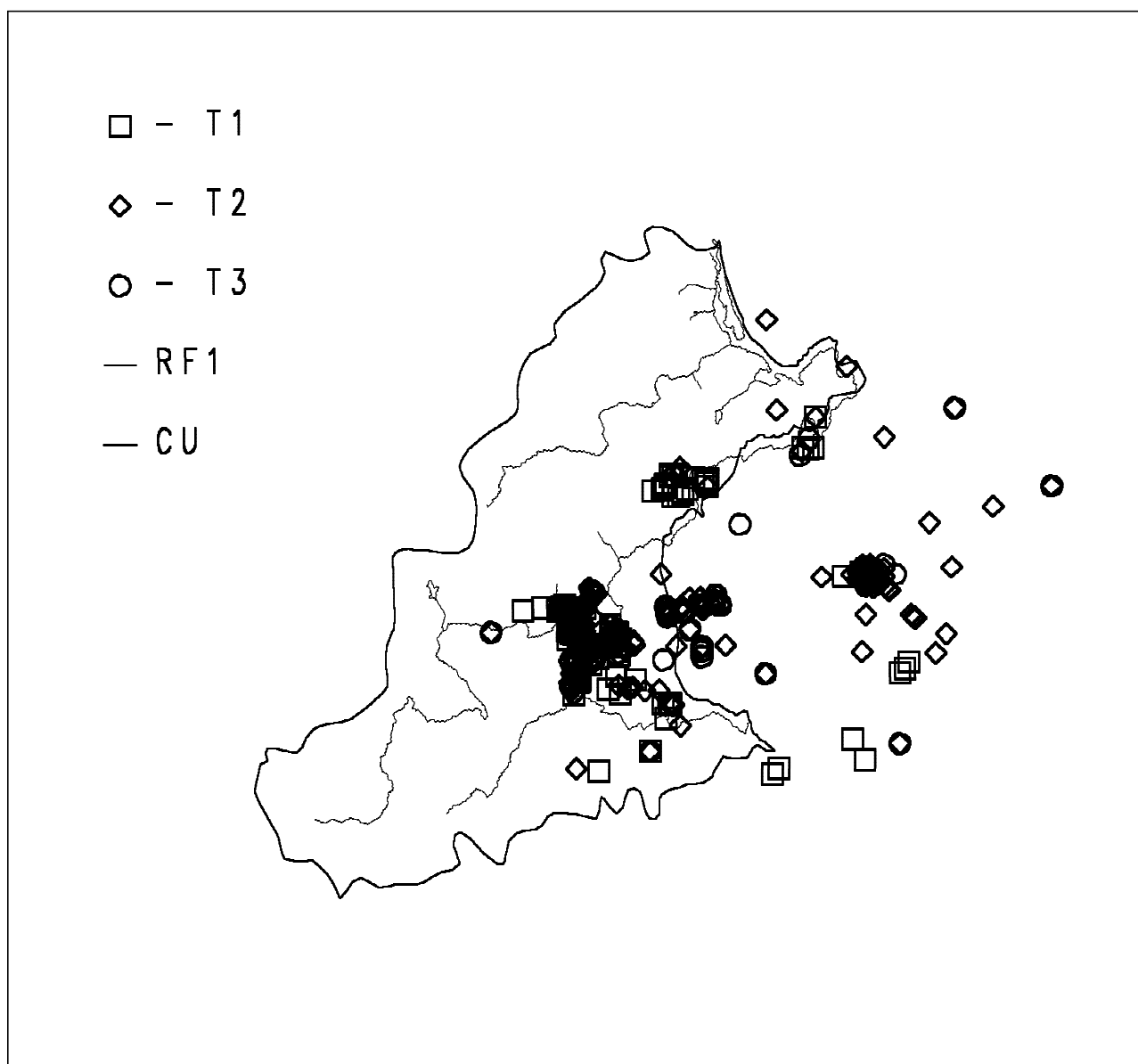


Figure 2. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **COSED** Agency: **NS&T**
 Monitoring Program: **NOAA/National Status and Trends**
 Num. of Stations: 32 Date Range: 1984-90

Source: **MASSBAY** Agency:
 Monitoring Program:
 Num. of Stations: 89 Date Range: 1981-90

Source: **MASSBAY** Agency: **Appx in Battelle, Shea et**
 Monitoring Program: **Battelle, 1984**
 Num. of Stations: 10 Date Range: 1983

Source: **MASSBAY** Agency: **ACE**
Monitoring Program: **U.S. ARMY COE (1981)**
Num. of Stations: 3 Date Range: 1980

Source: **MASSBAY** Agency: **Battelle**
Monitoring Program: **Battelle, 1987 a and b**
Num. of Stations: 135 Date Range: 1987

Source: **MASSBAY** Agency: **Bay State Environmental C**
Monitoring Program: **ACE_NED permit file 25-86-290**
Num. of Stations: 1 Date Range: 1985

Source: **MASSBAY** Agency: **Boston Edison**
Monitoring Program: **ACE_NED permit file 09-89-530**
Num. of Stations: 11 Date Range: 1980

Source: **MASSBAY** Agency: **COASTAL OIL INC**
Monitoring Program: **ACE_NED permit file 1989-2911**
Num. of Stations: 3 Date Range: 1990

Source: **MASSBAY** Agency: **COE-NED**
Monitoring Program: **ACE_NED permit file Navigatio**
Num. of Stations: 30 Date Range: 1986-90

Source: **MASSBAY** Agency: **CORTEU ASSOCIATES**
Monitoring Program: **ACE_NED permit file 199101096**
Num. of Stations: 2 Date Range: 1991

Source: **MASSBAY** Agency: **DWPC**
Monitoring Program: **MASS. DEQE (1982)**
Num. of Stations: 2 Date Range: 1981

Source: **MASSBAY** Agency: **EPA**
Monitoring Program: **NOLAN, et al. (1981)**
Num. of Stations: 3 Date Range: 1980

Source: **MASSBAY** Agency: **HULL**
Monitoring Program: **ACE_NED permit file 25-81-374**
Num. of Stations: 7 Date Range: 1981

Source: **MASSBAY** Agency: **INDEPENDENT CEM. COR**
Monitoring Program: **ACE_NED permit file 20-87-200**
Num. of Stations: 3 Date Range: 1987

Source: **MASSBAY** Agency: **Long Wharf**
Monitoring Program: **ACE_NED permit file 727-3160**
Num. of Stations: 16 Date Range: 1986

Source: **MASSBAY** Agency: **MA DPW**
Monitoring Program: **ACE_NED permit file MA DPW Be**
Num. of Stations: 11 Date Range: 1988

Source: **MASSBAY** Agency: **MADPW**
Monitoring Program: **ACE_NED permit file 25-86-100**

Num. of Stations: 37 Date Range: 1984

Source: **MASSBAY** Agency: **MASP**

Monitoring Program: **RYAN, et al. (1982)**

Num. of Stations: 14 Date Range: 1981-82

Source: **MASSBAY** Agency: **MBTA**

Monitoring Program: **ACE_NED permit file 83-1064**

Num. of Stations: 6 Date Range: 1989

Source: **MASSBAY** Agency: **MDC**

Monitoring Program: **GCA CORP. (1982)**

Num. of Stations: 14 Date Range: 1982

Source: **MASSBAY** Agency: **MWRA**

Monitoring Program: **ACE_NED permit file 24-87-912**

Num. of Stations: 4 Date Range: 1987

Source: **MASSBAY** Agency: **USACOE-dredge**

Monitoring Program: **MacDonald, 1991**

Num. of Stations: 100 Date Range: 1983-88

Source: **MASSBAY** Agency: **USDT**

Monitoring Program: **JASON M. CORTELL & ASSOC.(198**

Num. of Stations: 31 Date Range: 1982

Source: **MASSBAY** Agency: **USGS**

Monitoring Program: **Bothner A**

Num. of Stations: 29 Date Range: 1987

Source: **ODES** Agency: **BH**

Monitoring Program: **Boston Harbor**

Num. of Stations: 42 Date Range: 1983-88

Source: **ODES** Agency: **MA**

Monitoring Program: **Massachusetts Bay**

Num. of Stations: 66 Date Range: 1982-90

Source: **SEACOE** Agency: **NOAA84**

Monitoring Program: **Benthic Surveillance 1984**

Num. of Stations: 7 Date Range: 1984

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Lead	673	428	.	428	.	401	.	27
Copper	676	422	.	422	.	422	.	.
Mercury	579	362	146	216	146	216	.	.
Chromium	678	358	44	314	44	314	.	.
Nickel	632	315	.	315	.	315	.	.

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Arsenic	417	281	14	267	14	240	.	27
Zinc	678	278	.	278	.	278	.	.
Cadmium	633	236	.	236	.	236	.	.
Polychlorinated biphenyls	94	89	35	54	17	39	18	71
Benzo(a)pyrene	91	54	1	53	1	45	.	54
Dibenzo(a,h)anthracene	90	49	5	44	5	44	.	46
Benzo(a)anthracene	83	46	3	43	3	33	.	31
Pyrene	91	46	3	43	3	43	.	.
Chrysene	89	46	.	46	.	46	.	.
Silver	131	45	20	25	20	25	.	.
Fluorene	89	41	1	40	1	40	.	.
DDT	78	38	7	31	7	31	.	1
Anthracene	84	38	2	36	2	36	.	.
Naphthalene	65	28	2	26	2	26	.	.
Dieldrin	51	28	.	28	.	2	.	28
Chlordane	73	24	.	24	.	24	.	2
BHC	48	16	1	15	1	15	.	.
Fluoranthene	91	16	.	16	.	16	.	.
Acenaphthylene	26	15	.	15	.	15	.	.
Phenanthrene	62	15	.	15	.	15	.	.
Indeno(1,2,3-cd)pyrene	49	13	.	13	.	.	.	13
Benzo(a)anthracene/Chrysene	14	12	.	12	.	12	.	9
Aldrin	44	11	.	11	.	.	.	11
HMW_PAHs	7	5	.	5	.	5	.	.
Heptachlor epoxide	47	4	.	4	.	.	.	4
Acenaphthene	46	3	.	3	.	3	.	.
Benzo(b)fluoranthene	35	3	.	3	.	.	.	3
Methylnaphthalene, 2-	15	2	1	1	1	1	.	.
Heptachlor	42	2	.	2	.	.	.	2
LMW_PAHs	7	2	.	2	.	2	.	.
Bis(2-ethylhexyl)phthalate	9	1	1	.	1	.	.	1

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	76	28.71	15.15	54	392.90	1.30
Acenaphthylene	43	20.70	8.62	24	95.86	5.39
Aldrin	21	1.56	0.40	15	10.00	0.02
Anthracene	91	174.16	92.00	72	3777.70	6.10
Antimony	83	10533.81	2700.00	65	120000.0	150.00
Arsenic	455	15209.37	11000.00	448	175699.9	5.00
Benzo(a)anthracene	77	427.32	410.00	68	2691.10	8.10

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Benzo(a)anthracene/Chrysene	22	115.45	145.00	12	290.00	130.00
Benzo(a)pyrene	99	309.39	263.33	80	1700.00	3.05
Benzo(b)fluoranthene	34	114.94	0.00	15	667.11	15.47
Benzo(ghi)perylene	55	161.53	150.00	36	450.00	22.78
Benzo(k)fluoranthene	31	92.87	0.00	12	721.43	32.66
Benzoic acid	9	0.00	0.00	0	.	.
Benzyl alcohol	9	0.00	0.00	0	.	.
Biphenyl	47	83.91	21.00	47	1323.80	0.83
Bis(2-ethylhexyl)phthalate	9	800.00	0.00	1	7200.00	7200.00
Bromophenyl phenyl ether, 4-	9	0.00	0.00	0	.	.
Butyl benzyl phthalate	9	0.00	0.00	0	.	.
BHC	28	2.16	0.95	24	15.00	0.20
Cadmium	661	1508.52	222.00	517	35060.00	10.00
Chlordane	64	2.97	2.25	62	12.10	0.10
Chromium	717	131665.6	58579.99	683	2950000	30.00
Chrysene	98	384.43	265.00	78	2200.00	11.00
Copper	715	73556.94	31000.00	709	3400000	200.00
Cresol, o	9	0.00	0.00	0	.	.
Cresol, p-	9	0.00	0.00	0	.	.
Di-n-butyl phthalate	9	48.89	0.00	1	440.00	440.00
Di-n-octyl phthalate	9	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	102	86.40	44.00	81	910.00	1.80
Dibenzofuran	9	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	9	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	9	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	9	0.00	0.00	0	.	.
Dieldrin	35	3.87	1.70	30	16.00	0.17
Diethyl phthalate	9	0.00	0.00	0	.	.
Dimethyl phthalate	9	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	9	0.00	0.00	0	.	.
DDT	261	8.27	3.15	243	357.72	0.16
Fluoranthene	99	619.72	470.00	81	5001.20	6.40
Fluorene	95	56.41	34.00	76	1017.30	1.20
Heptachlor	16	0.73	0.50	11	3.00	0.39
Heptachlor epoxide	29	1.18	0.80	22	3.40	0.24
Hexachlorobenzene	66	1.21	0.83	55	6.10	0.10
Hexachlorobutadiene	9	0.00	0.00	0	.	.
Hexachloroethane	9	0.00	0.00	0	.	.
HMW_PAHs	7	3171.43	4100.00	5	6800.00	2500.00
Indeno(1,2,3-cd)pyrene	55	159.95	150.00	36	540.00	19.00
Isophorone	9	0.00	0.00	0	.	.
Lead	731	111698.2	50000.00	707	1880000	130.00
LMW_PAHs	7	356.71	37.00	4	1500.00	37.00
Mercury	626	590.48	200.00	537	14000.00	3.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Methylnaphthalene, 2-	15	1294.67	0.00	2	19000.00	420.00
Mirex/Dechlorane	31	1.67	1.58	31	4.43	0.29
Naphthalene	73	318.63	100.00	64	6723.30	0.72
Nickel	664	23673.69	17730.50	632	673600.0	40.00
Nitrosodiphenylamine, N-	9	0.00	0.00	0	.	.
Pentachlorophenol	9	0.00	0.00	0	.	.
Phenanthrene	99	355.86	250.00	80	2851.20	3.70
Phenol	9	0.00	0.00	0	.	.
Polychlorinated biphenyls	163	129.29	19.00	115	9881.00	2.28
Pyrene	99	658.35	460.00	80	4631.60	9.80
Silver	133	1909.81	975.00	87	12000.00	16.00
Trichlorobenzene, 1,2,4-	9	0.00	0.00	0	.	.
Zinc	740	158237.1	98000.00	740	2156000	30.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	27	3.14	0.00	12	11.00	3.00
Anthracene	27	61.04	0.00	6	1300.00	18.00
Antimony	18	58.89	0.00	2	830.00	230.00
Arsenic	27	8885.19	8700.00	27	10000.00	7800.00
Benzo(a)anthracene	27	216.52	95.00	19	1800.00	18.00
Benzo(a)pyrene	27	28.59	0.00	4	390.00	11.00
Benzo(b)fluoranthene	9	17.67	0.00	4	46.00	25.00
Benzo(k)fluoranthene	9	17.67	0.00	4	59.00	26.00
Biphenyl	27	42.59	0.00	12	310.00	17.00
BHC	27	2.17	1.80	20	7.60	1.30
Cadmium	27	1362.96	1300.00	27	1900.00	760.00
Chlordane	27	28.31	29.00	27	65.00	6.90
Chromium	27	1967.41	1900.00	27	5600.00	620.00
Chrysene	27	207.79	260.00	23	480.00	5.40
Copper	27	12618.52	12000.00	27	18000.00	9600.00
Dibenzo(a,h)anthracene	27	0.00	0.00	0	.	.
Dieldrin	27	21.30	21.00	26	57.00	2.40
DDT	162	18.94	6.45	100	120.00	1.90
Fluoranthene	27	684.07	690.00	26	2000.00	130.00
Fluorene	27	63.48	0.00	12	590.00	27.00
Heptachlor	27	1.91	1.60	14	11.00	1.60
Heptachlor epoxide	27	3.23	0.00	12	14.00	1.70
Hexachlorobenzene	6	4.65	1.60	6	12.00	0.38
Indeno(1,2,3-cd)pyrene	9	0.00	0.00	0	.	.
Lead	27	10625.93	10000.00	27	19000.00	3900.00

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Manganese	18	11077.78	9150.00	18	38000.00	4600.00
Mercury	27	251.85	220.00	27	450.00	140.00
Mirex/Dechlorane	27	1.64	0.00	8	25.00	0.31
Naphthalene	27	72.70	78.00	15	210.00	47.00
Nickel	27	1153.70	940.00	27	6700.00	570.00
Polychlorinated biphenyls	18	380.63	304.80	18	906.00	106.33
Pyrene	27	425.93	390.00	22	3200.00	43.00
Selenium	27	1981.48	2000.00	27	2900.00	1200.00
Silver	27	1010.74	1100.00	27	1900.00	340.00
Tin	27	294.07	280.00	26	480.00	110.00
Zinc	27	122185.2	120000.0	27	160000.0	85000.00