

Watershed Summary Information

Accounting Unit Name:	Lower Delaware
State(s):	NJ PA
Political Boundaries:	Gloucester, Philadelphia, Delaware, Camden, Burlington, Chester, New Castle, Montgomery, Bucks
Major Waterways:	Delaware R Schuylkill R Rancocas Cr Rancocas Cr, S Br Darby Cr
Number of Stations in Watershed:	Tier1 - 18 Tier2 - 29 Tier3 - 10

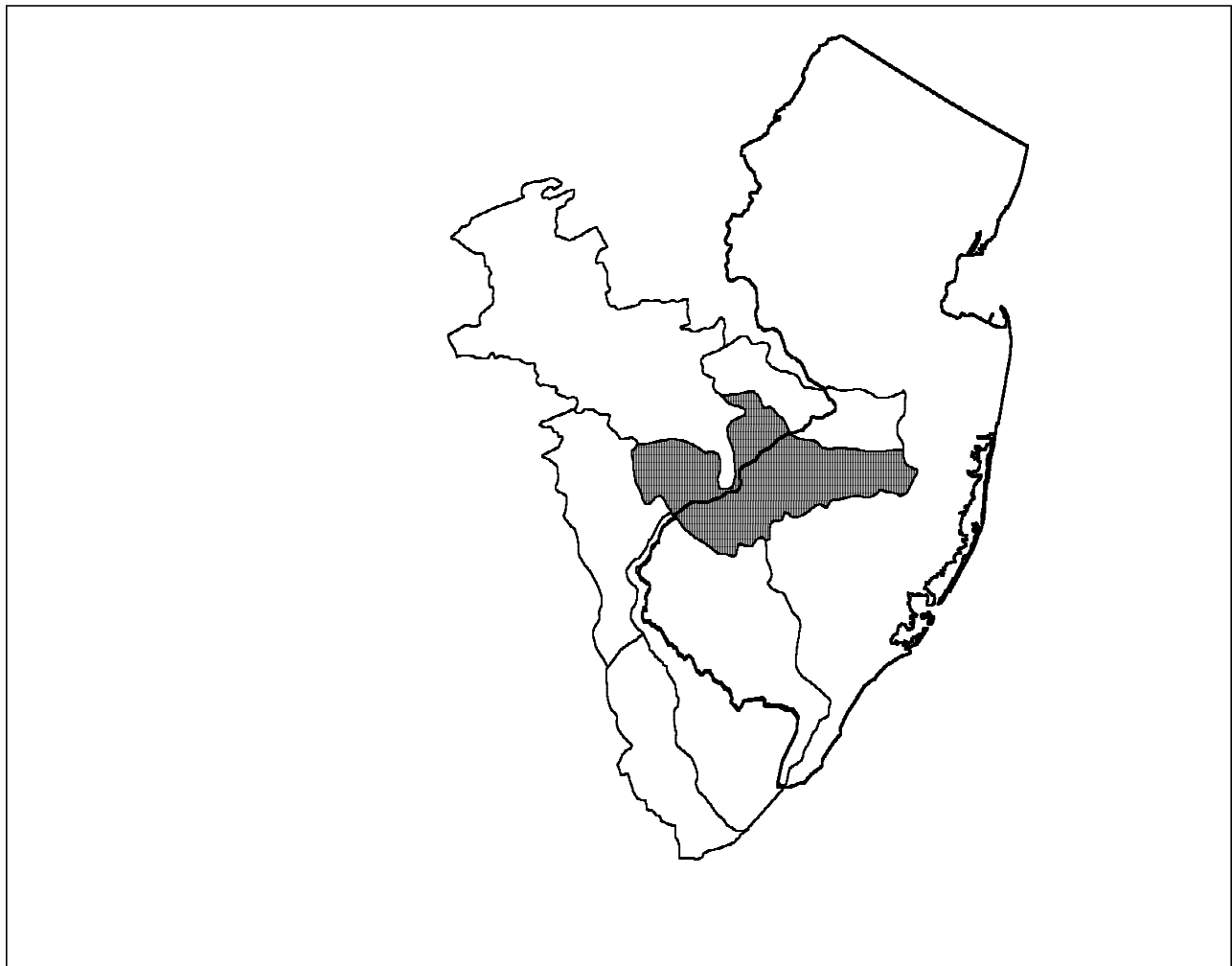


Figure 17. Watershed Location Map

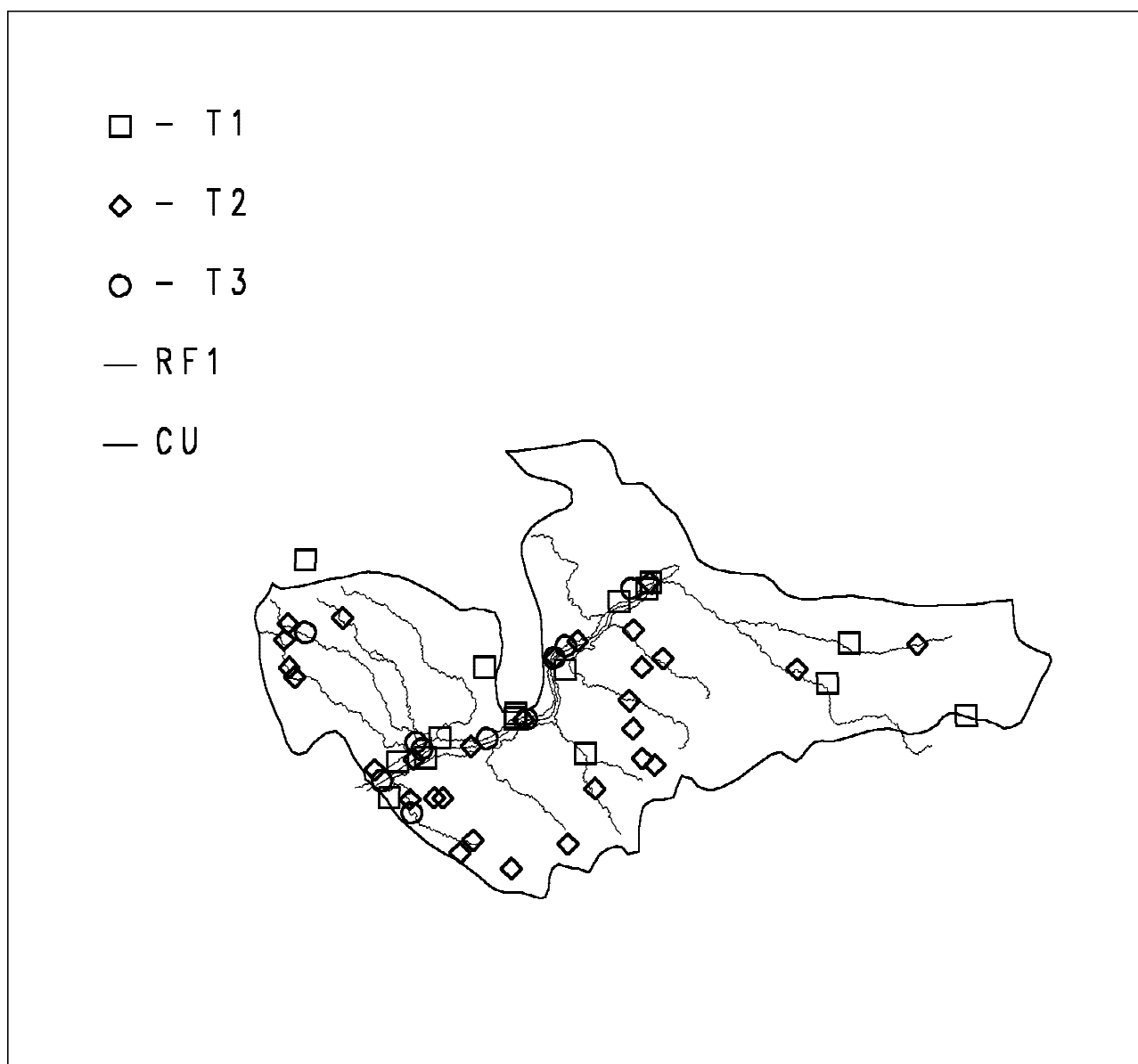


Figure 18. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **EMAP-VA** Agency: **EMAPVA**
 Monitoring Program: **EMAP-VA Province**
 Num. of Stations: 3 Date Range: 1990-91

Source: **STORET** Agency: **11BIOACC**
 Monitoring Program: **USEPA National Bioaccumulation Study**
 Num. of Stations: 4 Date Range: 1986-87

Source: **STORET** Agency: **11FWS**
 Monitoring Program: **US Fish & Wildlife Service Data - USEPA Hq Backdata Study**
 Num. of Stations: 1 Date Range: 1981-86

Source: **STORET** Agency: **1111H100**
Monitoring Program: **USEPA Region 2 Data**
Num. of Stations: 1 Date Range: 1981

Source: **STORET** Agency: **11121XWQ**
Monitoring Program: **USEPA Region 3 Environ Services Div.**
Num. of Stations: 3 Date Range: 1989

Source: **STORET** Agency: **11131DWQ**
Monitoring Program: **USEPA Region 3 Environ Services Div.**
Num. of Stations: 4 Date Range: 1981

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 30 Date Range: 1980-92

Source: **STORET** Agency: **21PA**
Monitoring Program: **Pennsylvania Dept of Environmental Resources Data**
Num. of Stations: 3 Date Range: 1980-88

Source: **STORET** Agency: **31DELRBC**
Monitoring Program: **Delaware River Basin Commission Data**
Num. of Stations: 8 Date Range: 1980-85

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
Polychlorinated biphenyls	46	32	12	20	2	7	10	22
DDT	52	32	5	27	5	20	.	15
Chlordane	45	26	.	26	.	19	.	25
Dieldrin	46	18	.	18	.	9	.	16
Lead	36	18	.	18	.	17	.	1
Cadmium	37	12	.	12	.	11	.	1
Zinc	34	11	.	11	.	11	.	.
Arsenic	33	10	.	10	.	9	.	1
Copper	36	10	.	10	.	9	.	1
Mercury	37	8	1	7	1	6	.	1
Chromium	39	7	1	6	1	6	.	.
Diazinon/Spectracide	14	7	.	7	.	7	.	.
Nickel	25	6	.	6	.	6	.	.
Aldrin	40	5	.	5	.	.	.	5
Dioxins	4	4	4	.	.	.	4	.
Naphthalene	12	3	1	2	1	2	.	.
Benzo(a)pyrene	11	3	.	3	.	2	.	3
Benzo(a)anthracene	11	2	.	2	.	2	.	2
BHC	44	2	.	2	.	2	.	.
Methylnaphthalene, 2-	3	2	.	2	.	2	.	.

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Pyrene	12	2	.	2	.	2	.	.
Bis(2-ethylhexyl)phthalate	6	1	1	.	1	.	.	1
Di-n-butyl phthalate	7	1	1	.	1	.	.	.
Dichlorobenzene, 1,4-	9	1	1	.	1	.	.	.
Acenaphthylene	6	1	.	1	.	1	.	.
Anthracene	11	1	.	1	.	1	.	.
Chrysene	10	1	.	1	.	1	.	.
Dibenzo(a,h)anthracene	10	1	.	1	.	1	.	1
Dichlorobenzene, 1,2-	9	1	.	1	.	1	.	.
Ethylbenzene	5	1	.	1	.	1	.	.
Fluoranthene	12	1	.	1	.	1	.	.
Fluorene	11	1	.	1	.	1	.	.
Heptachlor epoxide	44	1	.	1	.	.	.	1
Indeno(1,2,3-cd)pyrene	11	1	.	1	.	.	.	1
Nitrosodiphenylamine, N-	9	1	.	1	.	1	.	.
Phenanthrene	9	1	.	1	.	1	.	.
Toxaphene	35	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	7	1.81	0.00	1	12.70	12.70
Acenaphthylene	6	4.30	0.00	1	25.80	25.80
Acrylonitrile	4	0.00	0.00	0	.	.
Aldrin	64	0.82	0.00	9	32.00	0.10
Anthracene	9	30.48	0.00	4	150.00	19.80
Antimony	10	1639.00	0.00	4	9300.00	285.00
Arsenic	56	7305.00	4000.00	47	44000.00	1000.00
Benzene	8	1.14	0.60	4	3.90	1.20
Benzo(a)anthracene	8	41.88	0.00	2	205.00	130.00
Benzo(a)pyrene	9	217.11	0.00	4	1270.00	47.00
Benzo(b)fluoranthene	4	0.00	0.00	0	.	.
Benzo(ghi)perylene	8	20.03	0.00	2	132.00	28.20
Benzo(k)fluoranthene	4	0.00	0.00	0	.	.
Biphenyl	1	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	10	6030.00	625.00	5	48700.00	1250.00
Bromophenyl phenyl ether, 4-	5	0.00	0.00	0	.	.
Butyl benzyl phthalate	5	0.00	0.00	0	.	.
BHC	77	0.03	0.00	5	1.00	0.10
Cadmium	66	810.52	0.00	17	12000.00	145.00
Chlordane	62	14.72	4.50	39	130.00	1.00
Chlorobenzene	6	6.33	0.00	2	37.00	1.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Chromium	74	66543.24	7000.00	59	3051000	2000.00
Chrysene	7	45.16	0.00	2	252.00	64.10
Copper	66	16723.79	6500.00	58	110000.0	1000.00
Di-n-butyl phthalate	9	2893.33	0.00	4	14700.00	890.00
Di-n-octyl phthalate	5	0.00	0.00	0	.	.
Diazinon/Spectracide	36	0.18	0.00	13	1.40	0.10
Dibenzo(a,h)anthracene	7	5.16	0.00	1	36.10	36.10
Dibromochloromethane	4	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	6	21.67	0.00	1	130.00	130.00
Dichlorobenzene, 1,3-	5	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	6	83.33	0.00	1	500.00	500.00
Dichloroethane 1,1-	4	0.00	0.00	0	.	.
Dichloroethane 1,2-	4	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	4	0.00	0.00	0	.	.
Dichloromethane	7	17.54	11.00	5	48.00	6.80
Dichloropropane, 1,2-	4	0.00	0.00	0	.	.
Dieldrin	69	1.80	0.30	44	64.00	0.10
Diethyl phthalate	9	51.89	0.00	4	170.00	67.00
Dimethyl phthalate	5	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	5	0.00	0.00	0	.	.
DDT	221	5.98	1.40	158	210.00	0.04
Endosulfan mixed isomers	60	0.03	0.00	7	0.60	0.10
Endosulfan, alpha-	4	0.00	0.00	0	.	.
Endosulfan, beta-	4	0.00	0.00	0	.	.
Endrin	62	0.01	0.00	1	0.60	0.60
Ethion/Bladen	37	0.00	0.00	0	.	.
Ethylbenzene	7	3.27	0.00	3	12.00	4.40
Fluoranthene	10	112.21	0.00	4	630.00	90.10
Fluorene	8	5.15	0.00	2	30.50	10.70
Heptachlor	65	0.01	0.00	6	0.20	0.10
Heptachlor epoxide	66	0.09	0.00	15	1.20	0.10
Hexachlorobenzene	8	0.00	0.00	0	.	.
Hexachlorobutadiene	5	0.00	0.00	0	.	.
Hexachloroethane	5	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	8	22.94	0.00	2	147.00	36.50
Isophorone	6	36.67	0.00	1	220.00	220.00
Lead	66	53865.15	30000.00	52	300000.0	10000.00
Malathion	37	0.00	0.00	0	.	.
Mercury	62	63.36	10.00	32	980.00	10.00
Methoxychlor	57	0.23	0.00	1	13.00	13.00
Methylnaphthalene, 2-	3	18.13	23.30	2	31.10	23.30
Mirex/Dechlorane	61	0.01	0.00	2	0.70	0.10
Naphthalene	10	119.47	0.00	4	670.00	62.00
Nickel	58	6220.69	0.00	17	60000.00	5000.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Nitrosodiphenylamine, N-	6	8.83	0.00	1	53.00	53.00
Pentachlorophenol	5	0.00	0.00	0	.	.
Phenanthrene	12	120.91	23.50	6	570.00	47.00
Phenol	5	0.00	0.00	0	.	.
Polychlorinated biphenyls	87	15.55	0.00	38	600.00	0.15
Pyrene	13	211.80	27.00	7	1300.00	27.00
Silver	11	10.82	0.00	1	119.00	119.00
Tetrachloroethane, 1,1,2,2-	4	0.00	0.00	0	.	.
Tetrachloroethene	4	0.00	0.00	0	.	.
Tetrachloromethane	4	0.00	0.00	0	.	.
Toluene	8	9.98	6.75	6	25.00	5.30
Toxaphene	62	0.00	0.00	0	.	.
Tribromomethane/Bromoform	4	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	5	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	5	1.36	0.00	1	6.80	6.80
Trichloroethane, 1,1,2-	4	0.00	0.00	0	.	.
Trichloroethene	4	0.00	0.00	0	.	.
Trichlorofluoromethane	4	0.00	0.00	0	.	.
Trichloromethane/Chloroform	4	0.00	0.00	0	.	.
Zinc	66	95978.79	42500.00	64	530000.0	7000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	3	0.00	0.00	0	.	.
Aldrin	7	2.86	0.00	2	10.00	10.00
Aniline	3	0.00	0.00	0	.	.
Anthracene	3	0.00	0.00	0	.	.
Antimony	3	0.00	0.00	0	.	.
Arsenic	11	83.56	70.00	6	344.30	70.00
Benzidine	3	0.00	0.00	0	.	.
Benzo(a)anthracene	3	0.00	0.00	0	.	.
Benzo(a)pyrene	3	0.00	0.00	0	.	.
Benzo(b)fluoranthene	3	0.00	0.00	0	.	.
Benzo(k)fluoranthene	3	0.00	0.00	0	.	.
Benzoic acid	3	0.00	0.00	0	.	.
Benzyl alcohol	3	0.00	0.00	0	.	.
Beryllium	3	0.00	0.00	0	.	.
Biphenyl	7	3.90	0.00	3	18.30	4.29
Bis(2-chloroethyl)ether	3	0.00	0.00	0	.	.
Bromophenyl phenyl ether, 4-	3	0.00	0.00	0	.	.
Butyl benzyl phthalate	3	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
BHC	39	3.78	0.00	16	15.30	2.78
Cadmium	11	4156.15	30.00	8	45000.00	9.00
Chlordane	47	2123.62	30.00	44	74880.00	5.80
Chloronaphthalene, 2-	3	0.00	0.00	0	.	.
Chlorophenol, 2-	3	0.00	0.00	0	.	.
Chlorpyrifos/Dursban	7	13.09	13.60	7	23.00	2.50
Chromium	5	19.60	0.00	1	98.00	98.00
Chrysene	3	0.00	0.00	0	.	.
Copper	11	49236.98	830.00	8	536000.0	482.00
Cresol, o	3	0.00	0.00	0	.	.
Cresol, p-	3	0.00	0.00	0	.	.
Di-n-butyl phthalate	1	0.00	0.00	0	.	.
Di-n-octyl phthalate	3	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	3	0.00	0.00	0	.	.
Dibenzofuran	3	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	3	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	3	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	3	0.00	0.00	0	.	.
Dichlorobenzidine, 3,3'-	3	0.00	0.00	0	.	.
Dichlorophenol, 2,4-	3	0.00	0.00	0	.	.
Dicofol/Kelthane	7	3.18	0.00	3	10.40	3.69
Dieldrin	18	46.32	20.00	13	450.00	6.89
Diethyl phthalate	3	0.00	0.00	0	.	.
Dimethyl phthalate	3	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	3	0.00	0.00	0	.	.
Dinitrophenol, 2,4-	3	0.00	0.00	0	.	.
Dinitrotoluene, 2,4-	3	0.00	0.00	0	.	.
Dinitrotoluene, 2,6-	3	0.00	0.00	0	.	.
Dioxins	18	0.00	0.00	16	0.01	0.00
DCPA/Dacthal	6	10.00	10.00	6	10.00	10.00
DDT	42	19426.35	100.00	28	516400.0	10.00
Endosulfan, alpha-	3	0.00	0.00	0	.	.
Endosulfan, beta-	3	0.00	0.00	0	.	.
Endrin	18	3.33	0.00	6	10.00	10.00
Fluoranthene	3	0.00	0.00	0	.	.
Fluorene	3	0.00	0.00	0	.	.
Heptachlor	17	4.12	0.00	6	20.00	10.00
Heptachlor epoxide	13	5.03	0.00	4	36.80	8.60
Hexachlorobenzene	16	4.09	0.00	7	10.00	5.38
Hexachlorobutadiene	10	0.00	0.00	0	.	.
Hexachloroethane	3	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	3	0.00	0.00	0	.	.
Isophorone	3	0.00	0.00	0	.	.
Isopropalin	7	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Lead	11	8513.35	156.00	9	92000.00	90.00
Mercury	17	1481.07	70.00	17	24000.00	30.00
Methoxychlor	12	0.22	0.00	1	2.66	2.66
Mirex/Dechlorane	13	4.85	3.01	7	10.00	3.01
Naphthalene	3	0.00	0.00	0	.	.
Nickel	3	0.00	0.00	0	.	.
Nitrobenzene	3	0.00	0.00	0	.	.
Nitrophenol, 4	3	0.00	0.00	0	.	.
Nitrosodi-n-propylamine, N-	3	0.00	0.00	0	.	.
Nitrosodiphenylamine, N-	3	0.00	0.00	0	.	.
Pentachlorobenzene	7	3.23	0.00	3	9.47	5.41
Pentachloronitrobenzene/Quin	7	0.00	0.00	0	.	.
Pentachlorophenol	3	0.00	0.00	0	.	.
Polychlorinated biphenyls	52	578.17	200.00	36	4413.00	0.90
Pyrene	3	0.00	0.00	0	.	.
Selenium	9	4203.19	438.20	9	35000.00	160.00
Silver	3	0.00	0.00	0	.	.
Tetrachlorobenzene, 1,2,4,5-	7	1.49	0.00	2	6.18	4.25
Toxaphene	9	88.89	100.00	6	200.00	100.00
Trichlorobenzene, 1,2,4-	10	0.33	0.00	1	3.30	3.30
Trichlorophenol, 2,4,5-	3	0.00	0.00	0	.	.
Trichlorophenol, 2,4,6-	3	0.00	0.00	0	.	.
Trifluralin/Treflan	7	0.00	0.00	0	.	.
Zinc	9	28497.78	17790.00	9	90140.00	5600.00

Biotoxicity Data

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
Monitoring Program: EMAP-VA Province							
39.8348	75.3508	91-08-10	Ampelisca Abdita	S	21.00	11.00	no
39.8813	75.1833	90-08-08	Ampelisca Abdita	S	7.00	6.00	no
39.9722	75.1002	91-08-10	Ampelisca Abdita	S	34.00	11.00	Yes