

**BENTHIC COMMUNITY CONDITION AT
AMBIENT TOXICITY PROGRAM SITES
2001**

Prepared for

Maryland Department of Natural Resources
Tidewater Ecosystem Assessments
Annapolis, Maryland

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FOREWORD

This document, *Benthic Community Condition at Ambient Toxicity Program Sites, 2001*, was prepared by Versar, Inc. at the request of Mr. Bruce Michael of the Maryland Department of Natural Resources under Cooperative Agreement CA-02-01/07-4-30722-3734 between Versar, Inc., and the University of Maryland Center for Environmental and Estuarine Studies. The report assesses the status of Chesapeake Bay benthic communities at sites in four Maryland eastern shore tributaries.

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1.0 INTRODUCTION

In September 2001, the Maryland Department of Natural Resources conducted a study to assess water quality, sediment quality, and the quality of biological resources at 20 sites in the tidal Chesapeake Bay. These sites were located in four tributaries of the eastern shore of Maryland: Wye River, Wicomico River, Manokin River, and Big Annemessex River. Water quality, sediment chemistry, sediment toxicity, and benthic invertebrate data were collected at each site. This document presents the results of the benthic portion of the study.

2.0 METHODS

2.1 SAMPLE COLLECTION

Benthic samples for the Ambient Toxicity study were collected at twenty sites on 26 to 28 September 2001. Five sites were sampled in the mesohaline portion of each tributary. Sampling locations are provided in Table 2-1 and Figures 2-1 and 2-2.

Table 2-1. Sampling locations. NAD83 datum.			
Tributary	Station	Latitude	Longitude
Wye River	WY-112	38.8807733	76.1585083
	WY-125	38.8537533	76.1840450
	WY-127	38.8607667	76.1878800
	WY-152	38.9246883	76.1665317
	WY-153	38.9279333	76.1663083
Wicomico River	WI-01	38.2408983	75.8627217
	WI-02	38.2436567	75.8473050
	WI-04	38.2536133	75.8173483
	WI-06	38.2622867	75.7960633
	WI-07	38.2680733	75.7842383
Manokin River	MA-02	38.1358567	75.8025950
	MA-04	38.1362000	75.7828717
	MA-05	38.1466600	75.7913417
	MA-07	38.1571667	75.7753000
	MA-10	38.1646500	75.7468167
Big Annemessex River	BA-02	38.0901217	75.7534067
	BA-05	38.0950833	75.7703350
	BA-07	38.0877717	75.7796567
	BA-09	38.0867800	75.7908683
	BA-10	38.0761617	75.7851300

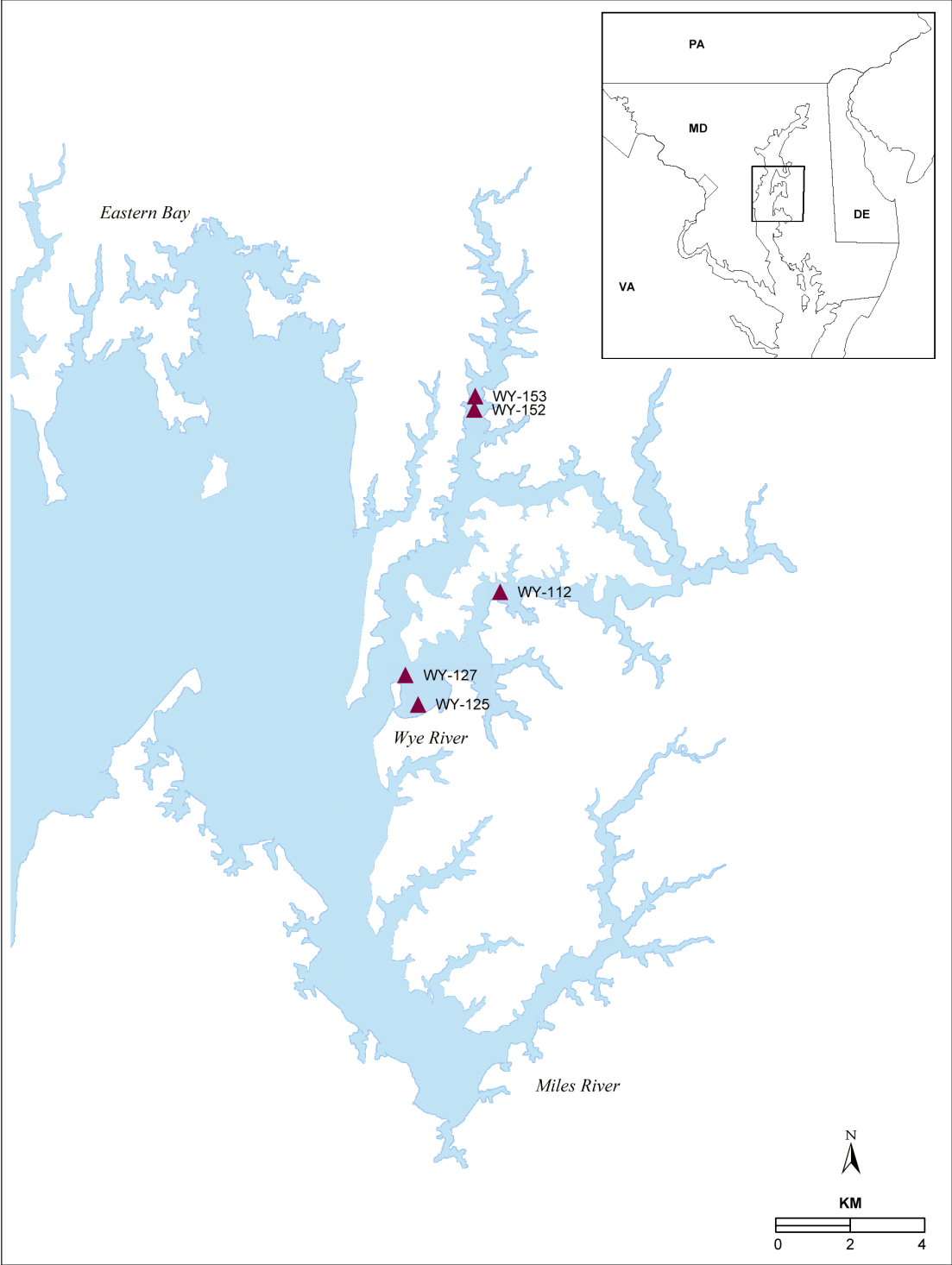


Figure 2-1. 2001 Ambient Toxicity Program sampling locations in the Wye River.

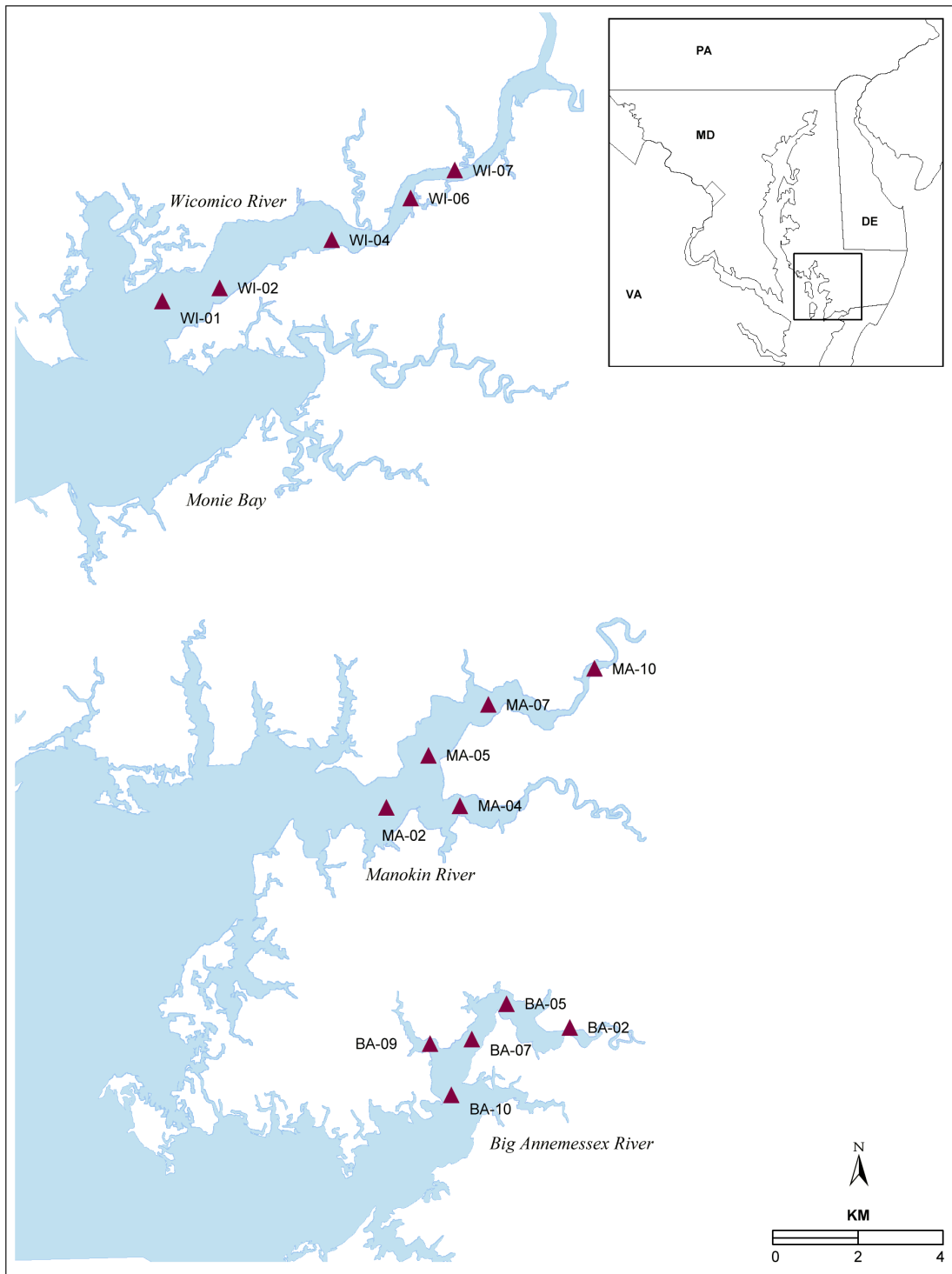


Figure 2-2. 2001 Ambient Toxicity Program sampling locations in the Wicomico, Manokin, and Big Annessex Rivers.

Benthic samples were collected with a Young Grab, which samples an area of 440 cm² to a depth of 10 cm. One benthic grab sample was collected at each site and all samples were sieved through a 0.5-mm screen using an elutriative process. Organisms retained on the screen were transferred to labeled jars and preserved in 10% buffered formalin stained with Rose Bengal (a vital stain used to aid separation of organisms from sediment and detritus). One additional grab sample was collected from each site for percent silt/clay and total organic carbon (TOC) analysis of sediments. Two surficial sediment samples (approximately 120 ml each) from this grab were frozen until processed in the laboratory. Bottom water temperature, conductivity, salinity, dissolved oxygen concentration (DO), and pH were measured at each site with a Hydrolab DataSonde 3 unit.

2.2 LABORATORY PROCESSING

Organisms were sorted from detritus under dissecting microscopes, transferred to 70% ethanol, identified to the lowest practical taxonomic level, and counted. Ash-free dry weight biomass was measured for each species by drying the organisms to a constant weight at 60 °C followed by ashing in a muffle furnace at 500 °C for four hours.

Oligochaetes and chironomid midges were mounted on microscope slides, examined under a compound microscope, and identified to genus and species following procedures based upon currently accepted practices in benthic ecology. The protocol is as follows. If the number of oligochaetes or chironomids in a sample is over 20 individuals, the sample is split and 50% of the specimens are mounted. The remaining portion is saved and used for biomass determinations. The sample is split by evenly spreading the specimens in a gridded tray and selecting half of the total number of grids at random. Total taxonomic counts for each oligochaete or chironomid species are adjusted by the proportion of the total number of specimens mounted in the sample. Total oligochaete or chironomid biomass is estimated by weighing the unmounted specimens and multiplying by 2. Because most species of oligochaetes and chironomids need to be slide-mounted for identification, species-specific biomass cannot be provided except for *Tubificoides* spp. and *Coelotanypus* spp., which do not need slide mounting for identification.

Sand and silt-clay particles were separated by wet-sieving through a 63: stainless steel sieve and weighed using the procedures described by Plumb (1981) and Buchanan (1984). Total organic carbon (TOC) was analyzed on an Exeter Analytical Inc., Model CE-440 Analyzer by the Analytical Services Department of Chesapeake Biological Laboratory. The TOC is determined by performing separate total carbon (TC) and total inorganic carbon analyses (TIC) and subtracting the results. TC is analyzed by high temperature combustion and subsequent measurement of the carbon dioxide produced by thermal conductivity detection. TIC is analyzed by first ashing the sample in a muffle furnace at low temperature to remove the organic carbon, and then applying high temperature combustion to the remaining inorganic carbon in the ash.

2.3 DATA ANALYSIS

Analyses were performed in the context of the Chesapeake Bay Program Benthic Community Restoration Goals, which use the Benthic Index of Biotic Integrity (B-IBI) to measure goal attainment. The Chesapeake Bay B-IBI is described in Weisberg et al (1997) and Alden et al. (2002). A detailed account of the procedures used in the calculation of the B-IBI can be found on the World Wide Web at the following address:

<http://www.baybenthos.versar.com/results/sampback.htm>.

2.3.1 The B-IBI and the Chesapeake Bay Benthic Community Restoration Goals

The B-IBI is a multiple-attribute index developed to identify the degree to which a benthic assemblage meets the Chesapeake Bay Program Benthic Community Restoration Goals. The Restoration Goals are quantitative thresholds based on reference data distributions (Weisberg et al. 1997). The B-IBI provides a means for comparing the relative condition of benthic invertebrate assemblages across different habitats. It also provides a validated mechanism for integrating several benthic community attributes indicative of "health" into a single number that measures overall benthic community condition.

The B-IBI is scaled from 1 to 5. Sites with values of 3.0 or more are considered to meet the Restoration Goals. The index is calculated by scoring each of several attributes as either 5, 3, or 1 depending on whether the value of the attribute approximates, deviates slightly from, or deviates strongly from values at the best reference sites in similar habitats, and then averaging these scores across attributes. The criteria for assigning these scores are numeric and habitat-dependent.

Benthic community condition was classified into four levels based on the B-IBI. Values less than or equal to 2.0 were classified as severely degraded; values from 2.0 to 2.6 were classified as degraded; values between 2.7 and 3.0 were classified as marginal, and values of 3.0 or more were classified as meeting the goals.

3.0 RESULTS

For each of the 2001 Ambient Toxicity Program sites, B-IBI values and the corresponding benthic community condition are presented in Table 3-1 and Figures 3-1 and 3-2. Station-specific water quality measurements and sediment composition are provided in Table 3-2. Details of the water quality measurements, sediment composition, species abundance and biomass, and metric scores are provided in the Appendix.

Table 3-1. B-IBI values and benthic community condition at 2001 Ambient Toxicity Program sites.				
Tributary	Station	B-IBI Value	Benthic Community Condition	Metrics Scoring 1
Wye River	WY-112	4.3	Meets Goal	none
	WY-125	3.7	Meets Goal	none
	WY-127	1.0	Severely Degraded	All metrics
	WY-152	4.0	Meets Goal	none
	WY-153	4.0	Meets Goal	none
Wicomico River	WI-01	2.7	Marginal	Pollution-sensitive sp. biomass
	WI-02	3.4	Meets Goal	Pollution-sensitive sp. biomass
	WI-04	3.0	Meets Goal	Total biomass, pollution-indicative sp. abundance
	WI-06	4.6	Meets Goal	none
	WI-07	2.6	Degraded	Total biomass, pollution-indicative sp. abundance
Manokin River	MA-02	3.3	Meets Goal	Pollution-sensitive sp. biomass
	MA-04	4.0	Meets Goal	none
	MA-05	3.3	Meets Goal	Total abundance
	MA-07	3.0	Meets Goal	Diversity, Carnivore/Omnivore abundance
	MA-10	3.8	Meets Goal	none
Big Annemessex River	BA-02	2.7	Marginal	Diversity, Total abundance, Carnivore/Omnivore abundance
	BA-05	3.7	Meets Goal	Pollution-sensitive sp. biomass
	BA-07	3.0	Meets Goal	Pollution-sensitive sp. biomass
	BA-09	3.7	Meets Goal	none
	BA-10	3.7	Meets Goal	none

For all sites, salinity was in the low (5-12 psu) or high (12-18 psu) mesohaline range (Table 3-2). Bottom water temperature was typical of late summer conditions in shallow water tributaries of the Chesapeake Bay, fluctuating between 20 and 23 /C. Dissolved oxygen concentrations in the water column indicated oxygen saturated or super-saturated conditions. Total organic carbon in sediments ranged from 1.1 % at Station 5 in the Manokin River to 4.7 at Station 2 in the Big Annemessex River, with no indication of organic enrichment being a problem. Except for the Manokin River (Stations 5 and 10), the substrate was muddy (> 40% silt/clay).

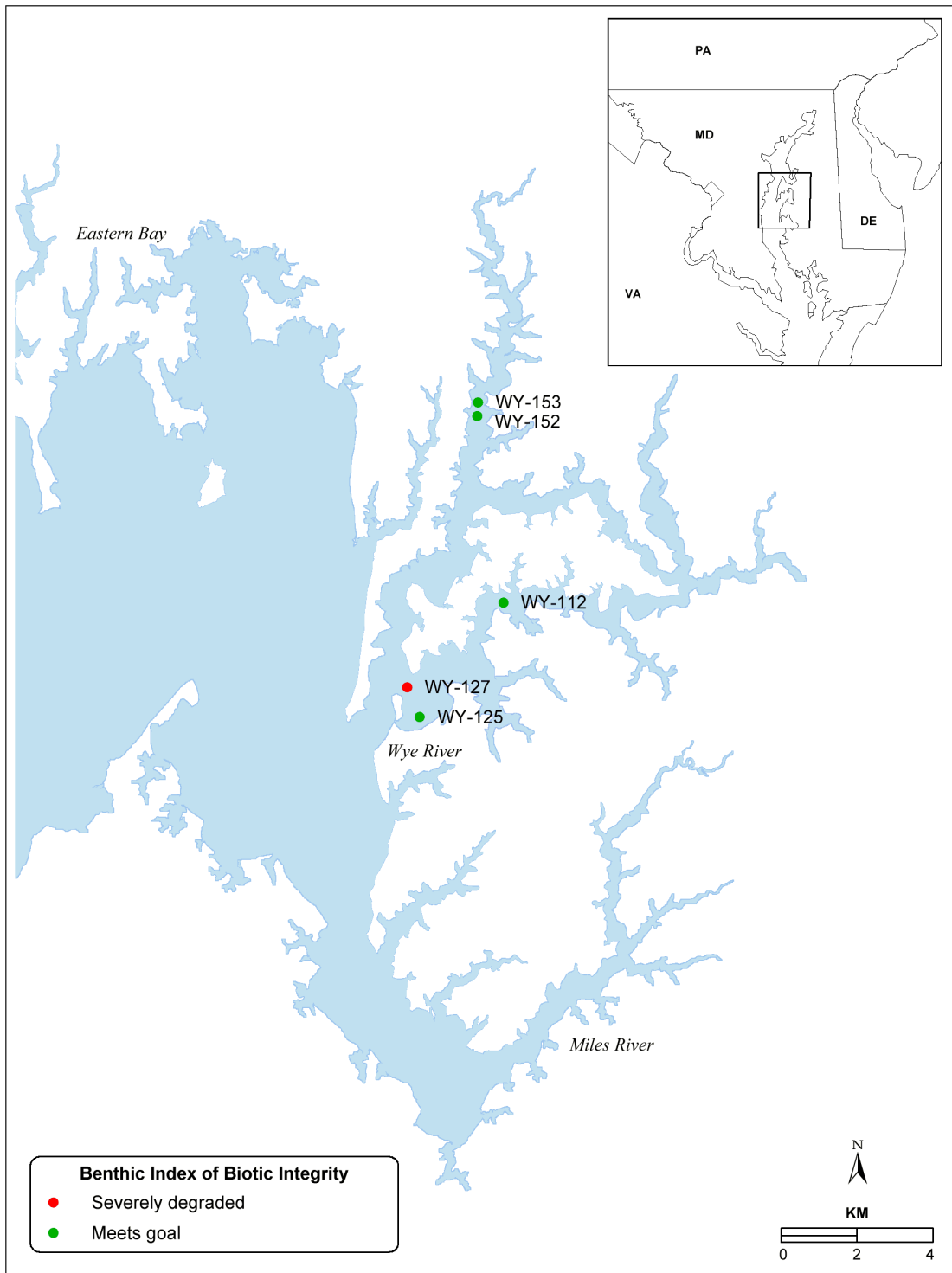


Figure 3-1. Benthic community condition at the 2001 Ambient Toxicity Program sites in the Wye River.

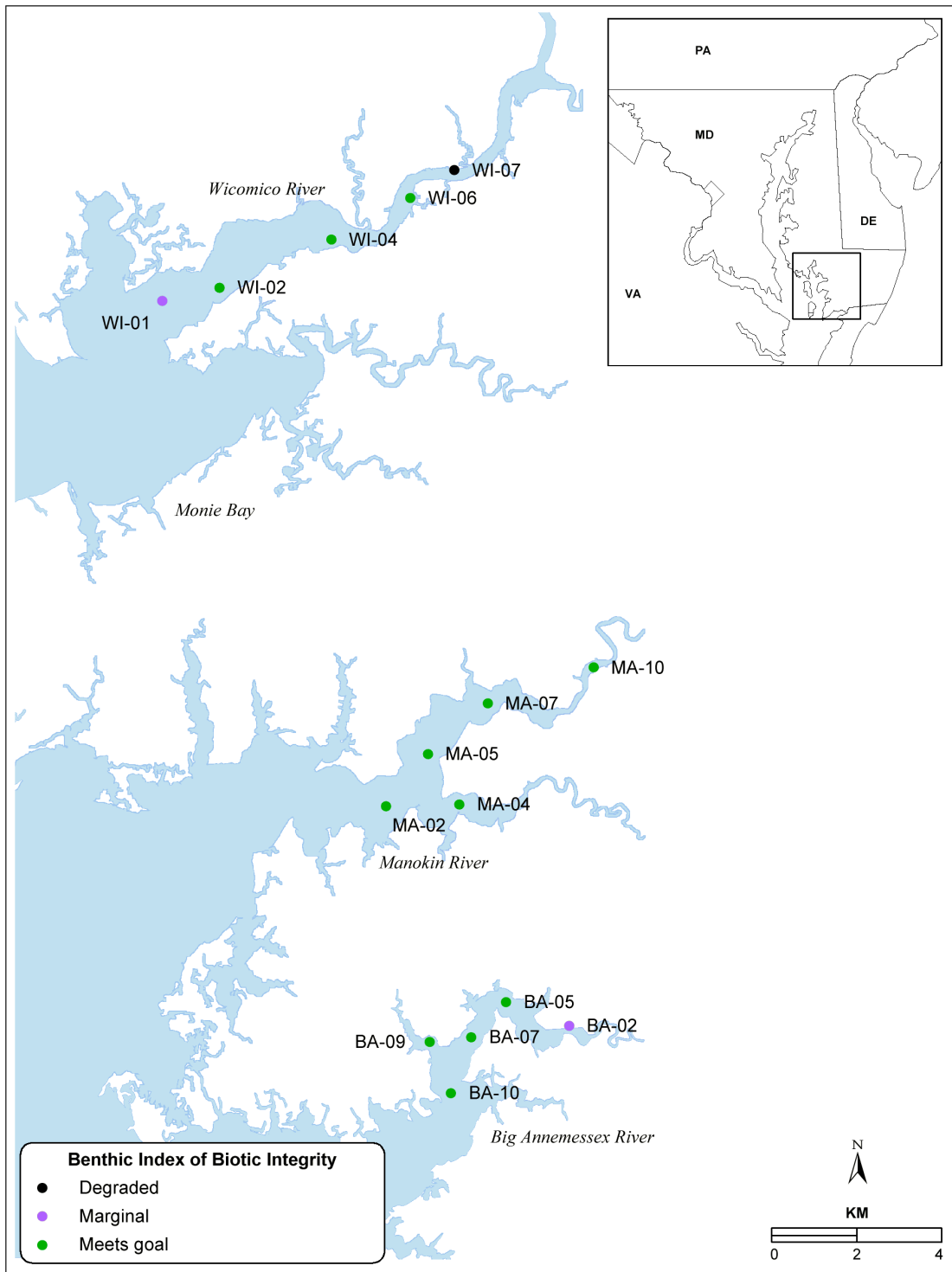


Figure 3-2. Benthic community condition at 2001 Ambient Toxicity Program sites in the Wicomico, Manokin, and Bay Annemessex Rivers.

Table 3-2. Site-specific water quality measurements near the bottom and sediment composition.								
Station	Sampling Date	Depth (m)	Salinity (psu)	Temperature (°C)	Dissolved Oxygen (mg/l)	pH	Silt/clay (%)	TOC (%)
WY-112	9/26/01	4.5	13.32	23.01	6.91	7.61	59.00	2.44
WY-125	9/26/01	4.9	13.80	21.14	8.21	7.74	64.76	1.47
WY-127	9/26/01	7.6	14.34	22.77	6.91	7.59	63.51	2.25
WY-152	9/26/01	3.1	12.62	23.09	6.34	7.55	84.63	2.58
WY-153	9/26/01	5.3	12.15	22.20	7.14	7.63	83.79	2.69
WI-01	9/26/01	2.6	12.15	22.09	8.92	7.62	85.68	2.71
WI-02	9/26/01	2.6	11.79	22.20	8.99	7.61	65.81	2.46
WI-04	9/26/01	1.5	9.24	22.71	7.38	7.25	47.73	1.70
WI-06	9/26/01	1.5	8.09	23.07	7.18	7.21	44.63	2.36
WI-07	9/26/01	3.0	6.86	22.99	5.99	7.14	76.94	3.43
MA-02	9/27/01	2.1	14.94	21.39	9.87	7.95	67.70	2.17
MA-04	9/27/01	1.2	13.84	21.54	9.70	7.87	65.55	2.57
MA-05	9/27/01	1.2	14.20	21.34	9.29	7.89	30.01	1.08
MA-07	9/28/01	2.1	13.41	20.22	9.35	7.74	72.54	4.45
MA-10	9/28/01	2.0	10.88	20.75	9.07	7.46	30.92	2.74
BA-02	9/27/01	1.2	14.68	19.88	8.82	7.67	76.91	4.71
BA-05	9/27/01	1.2	15.78	20.64	8.58	7.76	79.77	2.89
BA-07	9/27/01	1.8	16.06	20.76	8.73	7.82	67.53	2.88
BA-09	9/27/01	1.2	16.08	20.65	9.13	7.86	50.31	2.06
BA-10	9/27/01	2.4	16.47	20.85	8.97	7.88	63.14	2.89

Sixteen sites met the Benthic Community Restoration Goals for Chesapeake Bay and four sites failed the goals (Table 3-1, Figure 3-1). Of the four sites that failed, two were classified as marginally degraded, one was classified as degraded, and one was classified as severely degraded.

Benthic community condition in the Wye River was best overall, except for Site 127, which was severely degraded (Table 3-1). All benthic community attributes at this site indicated severe impairment. Site 127 had few species and the community was numerically dominated by the opportunist polychaete annelid *Streblospio benedicti* (see Appendix). Some community attributes at sites in the Manokin River were below Chesapeake Bay reference values; however, the B-IBI indicated good benthic community condition at all sites in this tributary. Two sites in the Wicomico River failed the B-IBI, but these sites were only marginally or moderately degraded, within the range of error typically associated with the B-IBI. Likewise, one site failing the B-IBI in the Big Annemessex River was only marginally degraded. This last site (Site BA-02) indicated over-abundance with numerical dominance of the oligochaete annelid *Tubificoides* sp. While excess abundance of *Tubificoides* may be

indicative of organic pollution, this small organism is usually found in high numbers in natural situations near marshes and small creeks.

Overall, and except for Site 127 in the Wye River, benthic community condition in the mesohaline portion of the Maryland eastern shore tributaries here studied was good indicative of good sediment quality. No interpretation is possible with these data as to the causes of severe impairment at Site 127.

4.0 REFERENCES

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APPENDIX

**WATER QUALITY MEASUREMENTS, SEDIMENT COMPOSITION,
SPECIES ABUNDANCES, SPECIES BIOMASS,
B-IBI VALUES, AND METRIC SCORES FOR EACH SITE**

BOTTOM ENVIRONMENT AND BENTHOS, SUMMER 2001
 AMBIENT TOXICITY STATIONS

Watershed: Big Annessex River Station: BA-02 Rep: 01
 Gear: Young Grab Habitat: High Mesohaline Mud Date: 27SEP01
 Sampled Area: 0.044 sq.m Time: 10:06:33

BOTTOM ENVIRONMENT

Depth (m): 1.2 Salinity (ppt): 14.68 Temperature (C): 19.88
 Dissolved Oxygen (mg/l): 8.8 Sediment Silt-Clay (%): 76.91 Total Carbon (%): 4.71

BENTHIC INDEX OF BIOTIC INTEGRITY

B-IBI Score: 2.67		Condition: Marginal		# Attributes Scored: 6	
Value	Score			Value	Score
Shannon-Wiener Index	1.25	1	Pollution Indicative Species Abundance (%)	6.64	
Abundance (#/m2)	5476	1	Pollution Indicative Species Biomass (%)	0.33	5
Biomass (g/m2)	1.05	3	Pollution Sensitive Species Abundance (%)	3.32	
Carnivore-Omnivore Abundance (%)	5.39	1	Pollution Sensitive Species Biomass (%)	63.70	5
Deep Deposit Feeder Abundance (%)	90.46				

BENTHIC ABUNDANCE (per sq. meter)

TAXA	Abundance (#/m2)	Biomass (g/m2)
Amphiporus bioculatus	23	0.00114
Carinoma tremaphoros	91	0.07498
Cyathura polita	114	0.22720
Eteone heteropoda	23	0.00114
Glycinde solitaria	23	0.05680
Heteromastus filiformis	250	0.15222
Macoma mitchelli	114	0.10906
Marenzelleria viridis	45	0.38170
Neanthes succinea	23	0.00114
Oligochaeta		0.00114
Streblospio benedicti	68	0.00227
Tubificidae imm. w/o cap. chaetae	273	
Tubificoides spp.	4430	0.03635

Total w/ Epi.	5476	1.04512
Total w/o Epi.	5476	1.04512
Number of Taxa w/ Epi.	12	
Number of Taxa w/o Epi.	12	

Station: BA-05 Rep: 01
 Watershed: Big Annessex River Habitat: High Mesohaline Mud Date: 27SEP01
 Gear: Young Grab Sampled Area: 0.044 sq.m Time: 10:22:00
 BOTTOM ENVIRONMENT

Depth (m): 1.2 Salinity (ppt): 15.78 Temperature (C): 20.64
 Dissolved Oxygen (mg/l): 8.6 Sediment Silt-Clay (%): 79.77 Total Carbon (%): 2.89

BENTHIC INDEX OF BIOTIC INTEGRITY

B-IBI Score: 3.67		Condition: Meets Goal		# Attributes Scored: 6	
Value	Score	Value	Score	Value	Score
Shannon-Wiener Index	2.73	3	3	Pollution Indicative Species Abundance (%)	3.81
Abundance (#/m2)	2386	5	5	Pollution Indicative Species Biomass (%)	2.60
Biomass (g/m2)	0.83	3	3	Pollution Sensitive Species Abundance (%)	59.05
Carnivore-Omnivore Abundance (%)	32.38	5	5	Pollution Sensitive Species Biomass (%)	8.21
Deep Deposit Feeder Abundance (%)	35.24				

BENTHIC ABUNDANCE (per sq. meter)

TAXA	Abundance (#/m2)	Biomass (g/m2)
Acteocina canaliculata	477	0.02272
Carinoma tremaphoros	45	0.02726
Crangon septemspinosa (Epi)	23	0.06134
Glycinde solitaria	114	0.01590
Haminoea solitaria	23	0.00227
Heteromastus filiformis	23	0.03408
Leucon americanus	409	0.01363
Macoma mitchelli	273	0.50438
Mediomastus ambiseta	818	0.02954
Mulinia lateralis	23	0.02045
Neanthes succinea	45	0.13859
Parahesion luteola	23	0.00227
Podarkeopsis levifuscina	45	0.01818
Streblospio benedicti	68	0.00114
Stylochus ellipticus (Epi)	23	0.00114

Total w/ Epi.	2431	0.89290
Total w/o Epi.	2386	0.83042
Number of Taxa w/ Epi.	15	
Number of Taxa w/o Epi.	13	

BOTTOM ENVIRONMENT AND BENTHOS, SUMMER 2001
 AMBIENT TOXICITY STATIONS

Watershed: Big Annessex River	Station: BA-07	Rep: 01
Gear: Young Grab	Habitat: High Mesohaline Mud	Date: 27SEP01
	Sampled Area: 0.044 sq.m	Time: 10:57:45
BOTTOM ENVIRONMENT		
Depth (m): 1.8	Salinity (ppt): 16.06	Temperature (C): 20.76
Dissolved Oxygen (mg/l): 8.7	Sediment silt-clay (%): 67.53	Total Carbon (%): 2.88
BENTHIC INDEX OF BIOTIC INTEGRITY		
B-IBI Score: 3.00	Condition: Meets Goal	# Attributes Scored: 6
Shannon-Wiener Index	Value	Score
Abundance (#/m2)	2.34	3
Biomass (g/m2)	1500	3
Carnivore-Omnivore Abundance (%)	1.12	Pollution Indicative Species Abundance (%)
Deep Deposit Feeder Abundance (%)	46.97	Pollution Sensitive Species Abundance (%)
	42.42	Pollution Sensitive Species Biomass (%)
		80.30
		4.85
		1
BENTHIC ABUNDANCE (per sq. meter)		
TAXA	Abundance (#/m2)	Biomass (g/m2)
Acteocina canaliculata	545	0.02499
Cyathura polita	23	0.00682
Glycinde solitaria	68	0.00682
Haminoea solitaria	23	0.01363
Heteromastus filiformis	23	0.00227
Leitoscoloplos spp.	45	0.07270
Macoma mitchelli	114	0.17722
Mediomastus ambiseta	568	0.01590
Neanthes succinea	23	0.74522
Paraprionospio pinnata	23	0.05453
Podarkeopsis levifuscina	23	0.00227
Streblospio benedicti	23	0.00227
Total w/ Epi.	1500	1.12464
Total w/o Epi.	1500	1.12464
Number of Taxa w/ Epi.	12	
Number of Taxa w/o Epi.	12	

BOTTOM ENVIRONMENT AND BENTHOS, SUMMER 2001
 AMBIENT TOXICITY STATIONS

Watershed: Big Annessex River	Station: BA-09	Rep: 01
Gear: Young Grab	Habitat: High Mesohaline Mud	Date: 26SEP01
	Sampled Area: 0.044 sq.m	Time: 9:09:15
BOTTOM ENVIRONMENT		
Depth (m): 1.2	Salinity (ppt): 16.08	Temperature (C): 20.65
Dissolved Oxygen (mg/l): 9.1	Sediment silt-clay (%): 50.31	Total Carbon (%): 2.06
BENTHIC INDEX OF BIOTIC INTEGRITY		
B-IBI Score: 3.67	Condition: Meets Goal	# Attributes Scored: 6
Shannon-Wiener Index	Value	Score
Abundance (#/m2)	1113	3
Biomass (g/m2)	0.90	3
Carnivore-Omnivore Abundance (%)	42.86	5
Deep Deposit Feeder Abundance (%)	48.98	5
		Pollution Indicative Species Abundance (%)
		Pollution Sensitive Species Abundance (%)
		Pollution Sensitive Species Biomass (%)
		Value
		Score
		0.00
		0.00
		65.31
		50.32
		3
BENTHIC ABUNDANCE (per sq. meter)		
TAXA	Abundance (#/m2)	Biomass (g/m2)
Acteocina canaliculata	91	0.00454
Carinoma tremaphoros	68	0.04544
Cyathura polita	68	0.09770
Glycinde solitaria	45	0.01818
Heteromastus filiformis	45	0.10906
Leucon americanus	23	0.00114
Macoma mitchelli	45	0.08406
Marenzelleria viridis	23	0.32035
Mediomastus ambiseta	500	0.01136
Neanthes succinea	45	0.18176
Parahesion luteola	114	0.01363
Podarkeopsis levifuscina	45	0.01136
Total w/ Epi.	1113	0.89858
Total w/o Epi.	1113	0.89858
Number of Taxa w/ Epi.	12	
Number of Taxa w/o Epi.	12	

BOTTOM ENVIRONMENT AND BENTHOS, SUMMER 2001
AMBIENT TOXICITY STATIONS

Watershed: Big Annessex River	Station: BA-10	Rep: 01
Gear: Young Grab	Habitat: High Mesohaline Mud	Date: 27SEP01
	Sampled Area: 0.044 sq.m	Time: 12:01:16
BOTTOM ENVIRONMENT		
Depth (m): 2.4	Salinity (ppt): 16.47	Temperature (C): 20.85
Dissolved Oxygen (mg/l): 9.0	Sediment silt-clay (%): 63.14	Total Carbon (%): 2.89
BENTHIC INDEX OF BIOTIC INTEGRITY		
B-IBI Score: 3.67	Condition: Meets Goal	# Attributes Scored: 6
Shannon-Wiener Index	Value	Score
Abundance (#/m2)	2.71	3
Biomass (g/m2)	2227	5
Carnivore-Omnivore Abundance (%)	0.59	3
Deep Deposit Feeder Abundance (%)	57.14	5
	19.39	
		Pollution Indicative Species Abundance (%)
		5.10
		Pollution Sensitive Species Abundance (%)
		67.35
		Pollution Sensitive Species Biomass (%)
		45.86
		3
BENTHIC ABUNDANCE (per sq. meter)		
TAXA	Abundance (#/m2)	Biomass (g/m2)
Acteocina canaliculata	1022	0.05680
Ampelisca abdita	23	0.00227
Amphiporus bioculatus	91	0.00114
Clymenella torquata	23	0.20221
Egotea triloba (Epi)	23	0.00114
Glycinde solitaria	45	0.00114
Leucon americanus	136	0.00114
Listriella clymenellae	23	0.00114
Macoma mitchelli	159	0.01818
Mediomastus ambiseta	386	0.00909
Neanthes succinea	91	0.02954
Paraprionospio pinnata	23	0.02726
Pectinaria gouldii	23	0.00454
Podarkeopsis levifuscina	23	0.00114
Saccoglossus kowalevskii	68	0.23174
Streblospio benedicti	91	0.00227
Total w/ Epi.	2249	0.59072
Total w/o Epi.	2227	0.58958
Number of Taxa w/ Epi.	16	
Number of Taxa w/o Epi.	15	

BOTTOM ENVIRONMENT AND BENTHOS, SUMMER 2001
 AMBIENT TOXICITY STATIONS

Station: MA-02		Rep: 01	
Watershed: Manokin River		Date: 27SEP01	
Gear: Young Grab		Time: 15:36:58	
Habitat: High Mesohaline Mud			
Sampled Area: 0.044 sq.m			
BOTTOM ENVIRONMENT			
Depth (m): 2.1	Salinity (ppt): 14.94	Temperature (C): 21.39	
Dissolved Oxygen (mg/l): 9.9	Sediment silt-clay (%): 67.70	Total Carbon (%): 2.19	
BENTHIC INDEX OF BIOTIC INTEGRITY			
B-IBI Score: 3.33	Condition: Meets Goal	# Attributes Scored: 6	
Shannon-Wiener Index	Value	Score	
Abundance (#/m2)	3.29	5	
Biomass (g/m2)	1386	3	Pollution Indicative Species Abundance (%) 6.56
Carnivore-Omnivore Abundance (%)	1.02	3	Pollution Indicative Species Biomass (%) 19.42
Deep Deposit Feeder Abundance (%)	52.46	5	Pollution Sensitive Species Abundance (%) 44.26
	29.51		Pollution Sensitive Species Biomass (%) 17.75
BENTHIC ABUNDANCE (per sq. meter)			
TAXA	Abundance (#/m2)	Biomass (g/m2)	
Acteocina canaliculata	409	0.02272	
Cyathura polita	23	0.13178	
Glycinde solitaria	68	0.02499	
Heteromastus filiformis	159	0.04317	
Leitoscoloplos spp.	45	0.13859	
Leucon americanus	23	0.00114	
Macoma mitchelli	182	0.11133	
Mediomastus ambiseta	114	0.00114	
Mulinia lateralis	45	0.19766	
Neanthes succinea	91	0.00114	
Oligochaeta		0.34080	
Parahesion luteola	45	0.00114	
Podarkeopsis levifuscina	91	0.00114	
Tubificidae imm. w/o cap. chaetae	45	0.00114	
Tubificoides spp.	45	0.00114	
Total w/ Epi.	1386	1.01786	
Total w/o Epi.	1386	1.01786	
Number of Taxa w/ Epi.	14		
Number of Taxa w/o Epi.	14		

BOTTOM ENVIRONMENT AND BENTHOS, SUMMER 2001
AMBIENT TOXICITY STATIONS

Watershed: Manokin River	Station: MA-04	Rep: 01
Gear: Young Grab	Habitat: High Mesohaline Mud	Date: 27SEP01
	Sampled Area: 0.044 sq.m	Time: 15:03:17
BOTTOM ENVIRONMENT		
Depth (m): 1.2	Salinity (ppt): 13.84	Temperature (C): 21.54
Dissolved Oxygen (mg/l): 9.7	Sediment silt-clay (%): 65.55	Total Carbon (%): 2.58
BENTHIC INDEX OF BIOTIC INTEGRITY		
B-IBI Score: 4.00	Condition: Meets Goal	# Attributes Scored: 6
Shannon-Wiener Index	Value	Score
Abundance (#/m2)	3.27	5
Biomass (g/m2)	1431	3
Carnivore-Omnivore Abundance (%)	0.71	3
Deep Deposit Feeder Abundance (%)	33.33	5
	42.86	
		Value
		9.52
		3.22
		47.62
		51.53
		3
BENTHIC ABUNDANCE (per sq. meter)		
TAXA	Abundance (#/m2)	Biomass (g/m2)
Acteocina canaliculata	182	0.02499
Cyathura polita	91	0.28854
Glycinde solitaria	204	0.02954
Heteromastus filiformis	91	0.04771
Leitoscoloplos spp.	23	0.19766
Leucon americanus	159	0.02045
Macoma mitchelli	136	0.03862
Mediomastus ambiseta	204	0.02045
Oligochaeta		0.00114
Streblospio benedicti	45	0.02272
Tubificidae imm. w/o cap. chaetae	91	
Tubificoides spp.	204	0.01363
Total w/ Epi.	1431	0.70546
Total w/o Epi.	1431	0.70546
Number of Taxa w/ Epi.	11	
Number of Taxa w/o Epi.	11	

BOTTOM ENVIRONMENT AND BENTHOS, SUMMER 2001
 AMBIENT TOXICITY STATIONS

Station: MA-05		Rep: 01	
Watershed: Manokin River		Date: 27SEP01	
Gear: Young Grab		Time: 14:13:03	
Habitat: High Mesohaline Sand			
Sampled Area: 0.044 sq.m			
BOTTOM ENVIRONMENT			
Depth (m): 1.2	Salinity (ppt): 14.20	Temperature (C): 21.34	
Dissolved Oxygen (mg/l): 9.3	Sediment silt-clay (%): 30.01	Total Carbon (%): 1.08	
BENTHIC INDEX OF BIOTIC INTEGRITY			
B-IBI Score: 3.33	Condition: Meets Goal	# Attributes Scored: 6	
Shannon-Wiener Index	Value	Score	
Abundance (#/m2)	2.72	3	
Biomass (g/m2)	6566	1	Pollution Indicative Species Abundance (%) 4.50
Carnivore-Omnivore Abundance (%)	1.35	3	Pollution Sensitive Species Abundance (%) 3.71
Deep Deposit Feeder Abundance (%)	32.18	3	Pollution Sensitive Species Biomass (%) 56.40
	58.82		Pollution Sensitive Species Biomass (%) 8.09
BENTHIC ABUNDANCE (per sq. meter)			
TAXA	Abundance (#/m2)	Biomass (g/m2)	
Acteocina canaliculata	1590	0.04998	
Amphiporus bioculatus	23	0.00114	
Carinoma tremaphoros	23	0.02045	
Glycinde solitaria	204	0.01818	
Heteromastus filiformis	295	0.07270	
Leucon americanus	159	0.00227	
Macoma mitchelli	250	0.07043	
Mediomastus ambiseta	1908	0.04090	
Micrura leidyi	23	0.37034	
Mulinia lateralis	68	0.04544	
Neanthes succinea	204	0.61798	
Oligochaeta		0.00114	
Podarkeopsis levifuscina	45	0.01363	
Streblospio benedicti	114	0.00454	
Stylochus ellipticus (Epi)	23	0.00227	
Tubificidae imm. w/o cap. chaetae	114		
Tubificoides spp.	1545	0.01818	
Total w/ Epi.	6589	1.34957	
Total w/o Epi.	6566	1.34730	
Number of Taxa w/ Epi.	16		
Number of Taxa w/o Epi.	15		

BOTTOM ENVIRONMENT AND BENTHOS, SUMMER 2001
 AMBIENT TOXICITY STATIONS

Watershed: Manokin River	Station: MA-07	Rep: 01
Gear: Young Grab	Habitat: High Mesohaline Mud	Date: 28SEP01
	Sampled Area: 0.044 sq.m	Time: 10:52:14
BOTTOM ENVIRONMENT		
Depth (m): 2.1	Salinity (ppt): 13.41	Temperature (C): 20.22
Dissolved Oxygen (mg/l): 9.4	Sediment silt-clay (%): 72.54	Total Carbon (%): 4.45
BENTHIC INDEX OF BIOTIC INTEGRITY		
B-IBI Score: 3.00	Condition: Meets Goal	# Attributes Scored: 6
Shannon-Wiener Index	Value	Score
Abundance (#/m2)	1.73	1
Biomass (g/m2)	3794	3
Carnivore-Omnivore Abundance (%)	1.05	3
Deep Deposit Feeder Abundance (%)	8.98	1
	85.03	
		Value
		17.96
		0.11
		7.19
		87.17
		5
BENTHIC ABUNDANCE (per sq. meter)		
TAXA	Abundance (#/m2)	Biomass (g/m2)
Carinoma tremaphoros	91	0.02272
Cyathura polita	159	0.39306
Glycinde solitaria	45	0.08406
Heteromastus filiformis	68	0.03862
Leucon americanus	45	0.00114
Macoma balthica	68	0.43395
Macoma mitchelli	23	0.02726
Neanthes succinea	45	0.00682
Oligochaeta		0.01818
Streblospio benedicti	91	0.00114
Tubificidae imm. w/o cap. chaetae	591	
Tubificoides spp.	2567	0.01818
Total w/ Epi.	3794	1.04512
Total w/o Epi.	3794	1.04512
Number of Taxa w/ Epi.	11	
Number of Taxa w/o Epi.	11	

BOTTOM ENVIRONMENT AND BENTHOS, SUMMER 2001
 AMBIENT TOXICITY STATIONS

Station: MA-10		Rep: 01	
Watershed: Manokin River		Date: 28SEP01	
Gear: Young Grab		Time: 12:03:17	
Habitat: Low Mesohaline			
Sampled Area: 0.044 sq.m			
BOTTOM ENVIRONMENT			
Depth (m): 2.0	Salinity (ppt): 10.88	Temperature (C): 20.75	
Dissolved Oxygen (mg/l): 9.1	Sediment silt-clay (%): 30.92	Total Carbon (%): 2.74	
BENTHIC INDEX OF BIOTIC INTEGRITY			
B-IBI Score: 3.80	Condition: Meets Goal	# Attributes Scored: 5	
Shannon-Wiener Index	Value	Score	Score
Abundance (#/m2)	2.33	3	5
Biomass (g/m2)	2363	5	1.77
Carnivore-Omnivore Abundance (%)	1.15	3	15.38
Deep Deposit Feeder Abundance (%)	14.42		63.45
	62.50		
BENTHIC ABUNDANCE (per sq. meter)			
TAXA	Abundance (#/m2)	Biomass (g/m2)	
Carinoma tremaphoros	45	0.08861	
Cyathura polita	295	0.56800	
Edotea triloba (Epi)	45	0.00682	
Gammarus spp. (Epi)	23	0.00909	
Heteromastus filiformis	68	0.11360	
Leptocheirus plumulosus	91	0.01818	
Leucon americanus	136	0.01136	
Macoma mitchelli	204	0.13178	
Marenzelleria viridis	68	0.16358	
Oligochaeta		0.00114	
Streblospio benedicti	45	0.02045	
Tubificidae imm. w/o cap. chaetae	136		
Tubificoides spp.	1272	0.03635	
Total w/ Epi.	2431	1.16894	
Total w/o Epi.	2363	1.15304	
Number of Taxa w/ Epi.	12		
Number of Taxa w/o Epi.	10		

BOTTOM ENVIRONMENT AND BENTHOS, SUMMER 2001
 AMBIENT TOXICITY STATIONS

Watershed: Wicomico River	Station: WI-01	Rep: 01
Gear: Young Grab	Habitat: High Mesohaline Mud	Date: 26SEP01
	Sampled Area: 0.044 sq.m	Time: 13:58:55
BOTTOM ENVIRONMENT		
Depth (m): 2.6	Salinity (ppt): 12.15	Temperature (C): 22.09
Dissolved Oxygen (mg/l): 8.9	Sediment silt-clay (%): 85.68	Total Carbon (%): 2.71
BENTHIC INDEX OF BIOTIC INTEGRITY		
B-IBI Score: 2.67	Condition: Marginal	# Attributes Scored: 6
Shannon-Wiener Index	Value	Score
Abundance (#/m2)	2.44	3
Biomass (g/m2)	1091	3
Carnivore-Omnivore Abundance (%)	0.52	Pollution Indicative Species Abundance (%)
Deep Deposit Feeder Abundance (%)	16.67	Pollution Sensitive Species Abundance (%)
	58.33	Pollution Sensitive Species Biomass (%)
		12.64
		1
BENTHIC ABUNDANCE (per sq. meter)		
TAXA	Abundance (#/m2)	Biomass (g/m2)
Carinoma tremaphoros	23	0.01818
Glycinde solitaria	136	0.01818
Macoma balthica	23	0.04771
Macoma mitchelli	91	0.06362
Mulinia lateralis	23	0.04771
Neanthes succinea	23	0.31126
Oligochaeta		0.00114
Streblospio benedicti	136	0.00454
Tubificidae imm. w/o cap. chaetae	159	
Tubificoides spp.	477	0.00909
Total w/ Epi.	1091	0.52142
Total w/o Epi.	1091	0.52142
Number of Taxa w/ Epi.	9	
Number of Taxa w/o Epi.	9	

BOTTOM ENVIRONMENT AND BENTHOS, SUMMER 2001
 AMBIENT TOXICITY STATIONS

Watershed: Wicomico River	Station: WI-02	Rep: 01
Gear: Young Grab	Habitat: Low Mesohaline	Date: 26SEP01
	Sampled Area: 0.044 sq.m	Time: 14:26:00
BOTTOM ENVIRONMENT		
Depth (m): 2.6	Salinity (ppt): 11.79	Temperature (C): 22.20
Dissolved Oxygen (mg/l): 9.0	Sediment silt-clay (%): 65.81	Total Carbon (%): 2.46
BENTHIC INDEX OF BIOTIC INTEGRITY		
B-IBI Score: 3.40	Condition: Meets Goal	# Attributes Scored: 5
Shannon-Wiener Index	Value	Score
Abundance (#/m2)	3.17	5
Biomass (g/m2)	1227	3
Carnivore-Omnivore Abundance (%)	1.16	3
Deep Deposit Feeder Abundance (%)	40.74	
	24.07	
BENTHIC ABUNDANCE (per sq. meter)		
TAXA	Abundance (#/m2)	Biomass (g/m2)
Carinoma tremaphoros	45	0.01818
Cyathura polita	23	0.00682
Diadumene leucolena (Epi)	68	0.00454
Glycinde solitaria	182	0.02045
Heteromastus filiformis	114	0.03408
Leucon americanus	45	0.00114
Macoma balthica	68	0.21584
Macoma mitchelli	159	0.04771
Marenzelleria viridis	45	0.15222
Neanthes succinea	250	0.66342
Rhithropanopeus harrisi (Epi)	23	0.00909
Streblospio benedicti	114	0.00114
Tubificoides spp.	182	0.00114
Total w/ Epi.	1318	1.17576
Total w/o Epi.	1227	1.16213
Number of Taxa w/ Epi.	13	
Number of Taxa w/o Epi.	11	

BOTTOM ENVIRONMENT AND BENTHOS, SUMMER 2001
 AMBIENT TOXICITY STATIONS

Watershed: Wicomico River	Station: WI-04	Rep: 01
Gear: Young Grab	Habitat: Low Mesohaline	Date: 26SEP01
	Sampled Area: 0.044 sq.m	Time: 14:46:11
BOTTOM ENVIRONMENT		
Depth (m): 1.5	Salinity (ppt): 9.24	Temperature (C): 22.71
Dissolved Oxygen (mg/l): 7.4	Sediment silt-clay (%): 47.73	Total Carbon (%): 1.7
BENTHIC INDEX OF BIOTIC INTEGRITY		
B-IBI Score: 3.00	Condition: Meets Goal	# Attributes Scored: 5
Shannon-Wiener Index	Value	Score
Abundance (#/m2)	3.10	5
Biomass (g/m2)	954	3
Carnivore-Omnivore Abundance (%)	0.81	1
Deep Deposit Feeder Abundance (%)	38.10	
		Pollution Indicative Species Abundance (%)
		Pollution Sensitive Species Abundance (%)
		Pollution Sensitive Species Biomass (%)
		Value
		21.43
		0.85
		26.19
		85.19
		5
BENTHIC ABUNDANCE (per sq. meter)		
TAXA	Abundance (#/m2)	Biomass (g/m2)
Balanus improvisus (Epi)	23	0.00114
Carinoma tremaphoros	136	0.02954
Cyathura polita	182	0.34080
Heteromastus filiformis	68	0.01136
Macoma balthica	23	0.06134
Macoma mitchelli	91	0.02726
Marenzelleria viridis	45	0.28400
Neanthes succinea	45	0.03181
Oligochaeta		0.00114
Streblospio benedicti	68	0.00682
Tubificidae imm. w/o cap. chaetae	136	
Tubificoides spp.	159	0.01136
Total w/ Epi.	977	0.80656
Total w/o Epi.	954	0.80542
Number of Taxa w/ Epi.	11	
Number of Taxa w/o Epi.	10	

BOTTOM ENVIRONMENT AND BENTHOS, SUMMER 2001
AMBIENT TOXICITY STATIONS

Watershed: Wicomico River	Station: WI-06	Rep: 01
Gear: Young Grab	Habitat: Low Mesohaline	Date: 26SEP01
	Sampled Area: 0.044 sq.m	Time: 15:04:27
BOTTOM ENVIRONMENT		
Depth (m): 1.5	Salinity (ppt): 8.09	Temperature (C): 23.07
Dissolved Oxygen (mg/l): 7.2	Sediment silt-clay (%): 44.63	Total Carbon (%): 2.38
BENTHIC INDEX OF BIOTIC INTEGRITY		
B-IBI Score: 4.60	Condition: Meets Goal	# Attributes Scored: 5
Shannon-Wiener Index	Value	Score
Abundance (#/m2)	3.17	5
Biomass (g/m2)	2386	5
Carnivore-Omnivore Abundance (%)	1.60	3
Deep Deposit Feeder Abundance (%)	28.57	5
	3.81	
BENTHIC ABUNDANCE (per sq. meter)		
TAXA	Abundance (#/m2)	Biomass (g/m2)
Amphiporus bioculatus	23	0.00114
Apocorophium lacustre (Epi)	23	0.00114
Carinoma tremaphoros	182	0.02954
Cyathura polita	409	0.77021
Edotea triloba (Epi)	23	0.00114
Heteromastus filiformis	45	0.02726
Laeonereis culveri	23	0.02045
Leptocheirus plumulosus	523	0.07725
Leucon americanus	204	0.00114
Macoma mitchelli	318	0.11814
Marenzelleria viridis	182	0.47485
Neanthes succinea	45	0.02954
Rangia cuneata	182	0.04771
Rhithropanopeus harrisi (Epi)	23	0.05453
Streblospio benedicti	204	0.00114
Tubificoides spp.	45	0.00114
Total w/ Epi.	2454	1.65629
Total w/o Epi.	2386	1.59949
Number of Taxa w/ Epi.	16	
Number of Taxa w/o Epi.	13	

BOTTOM ENVIRONMENT AND BENTHOS, SUMMER 2001
 AMBIENT TOXICITY STATIONS

Watershed: Wicomico River	Station: WI-07	Rep: 01
Gear: Young Grab	Habitat: Low Mesohaline	Date: 26SEP01
	Sampled Area: 0.044 sq.m	Time: 15:25:32
BOTTOM ENVIRONMENT		
Depth (m): 3.0	Salinity (ppt): 6.86	Temperature (C): 22.99
Dissolved Oxygen (mg/l): 6.0	Sediment silt-clay (%): 76.94	Total Carbon (%): 3.43
BENTHIC INDEX OF BIOTIC INTEGRITY		
B-IBI Score: 2.60	Condition: Degraded	# Attributes Scored: 5
Shannon-Wiener Index	Value	Score
Abundance (#/m2)	3.02	5
Biomass (g/m2)	1340	3
Carnivore-Omnivore Abundance (%)	0.70	1
Deep Deposit Feeder Abundance (%)	38.98	
	35.59	
		23.73
		0.16
		33.90
		72.82
		3
BENTHIC ABUNDANCE (per sq. meter)		
TAXA	Abundance (#/m2)	Biomass (g/m2)
Apocorophium lacustre (Epi)	23	0.00227
Carinoma tremaphoros	159	0.07043
Chiridotea almyra	23	0.00227
Cyathura polita	273	0.23402
Gammarus daiberi (Epi)	295	
Gammarus spp. (Epi)		0.11587
Heteromastus filiformis	182	0.03408
Leptocheirus plumulosus	91	0.02272
Macoma balthica	23	0.02499
Macoma mitchelli	45	0.00682
Marenzelleria viridis	159	0.25219
Melita nitida (Epi)	91	0.01363
Neanthes succinea	68	0.05226
Oligochaeta		0.00114
Rhithropanopeus harrisi (Epi)	114	
Streblospio benedicti	23	0.21584
Tubificidae imm. w/o cap. chaetae	295	0.00114
Total w/ Epi.	1863	1.04966
Total w/o Epi.	1340	0.70205
Number of Taxa w/ Epi.	15	
Number of Taxa w/o Epi.	11	

BOTTOM ENVIRONMENT AND BENTHOS, SUMMER 2001
 AMBIENT TOXICITY STATIONS

Watershed: Wye River	Station: WY-112	Rep: 01
Gear: Young Grab	Habitat: High Mesohaline Mud	Date: 26SEP01
	Sampled Area: 0.044 sq.m	Time: 9:22:53
BOTTOM ENVIRONMENT		
Depth (m): 4.5	Salinity (ppt): 13.32	Temperature (C): 23.01
Dissolved Oxygen (mg/l): 6.9	Sediment silt-clay (%): 59.00	Total Carbon (%): 2.45
BENTHIC INDEX OF BIOTIC INTEGRITY		
B-IBI Score: 4.33	Condition: Meets Goal	# Attributes Scored: 6
Shannon-Wiener Index	Value	Score
Abundance (#/m2)	3.20	5
Biomass (g/m2)	1409	3
Carnivore-Omnivore Abundance (%)	2.51	5
Deep Deposit Feeder Abundance (%)	29.03	5
	16.13	
BENTHIC ABUNDANCE (per sq. meter)		
TAXA	Abundance (#/m2)	Biomass (g/m2)
Carinoma tremaphoros	91	0.03862
Glycinde solitaria	45	0.00227
Heteromastus filiformis	114	0.02954
Macoma balthica	364	1.59267
Macoma mitchelli	114	0.03181
Mulinia lateralis	114	0.29763
Neanthes succinea	136	0.47939
Oligochaeta		0.00114
Parahesion luteola	136	0.02045
Streblospio benedicti	182	0.01590
Tubificidae imm. w/o cap. chaetae	45	
Tubificoides spp.	68	0.00454
Total w/ Epi.	1409	2.51397
Total w/o Epi.	1409	2.51397
Number of Taxa w/ Epi.	11	
Number of Taxa w/o Epi.	11	

BOTTOM ENVIRONMENT AND BENTHOS, SUMMER 2001
 AMBIENT TOXICITY STATIONS

Watershed: Wye River	Station: WY-125	Rep: 01
Gear: Young Grab	Habitat: High Mesohaline Mud	Date: 26SEP01
	Sampled Area: 0.044 sq.m	Time: 9:53:58
BOTTOM ENVIRONMENT		
Depth (m): 4.9	Salinity (ppt): 13.80	Temperature (C): 21.14
Dissolved Oxygen (mg/l): 8.2	Sediment silt-clay (%): 64.76	Total Carbon (%): 1.47
BENTHIC INDEX OF BIOTIC INTEGRITY		
B-IBI Score: 3.67	Condition: Meets Goal	# Attributes Scored: 6
Shannon-Wiener Index	Value	Score
Abundance (#/m2)	3.29	5
Biomass (g/m2)	1068	3
Carnivore-Omnivore Abundance (%)	0.90	3
Deep Deposit Feeder Abundance (%)	38.30	5
	31.91	
		Value
		Score
		Abundance
		Biomass
		Abundance (%)
		Species Abundance (%)
		Species Biomass (%)
		Species Biomass (%)
		Abundance (#/m2)
		Biomass (g/m2)
BENTHIC ABUNDANCE (per sq. meter)		
TAXA	Abundance (#/m2)	Biomass (g/m2)
Acteocina canaliculata	23	0.00114
Amphiporus bioculatus	45	0.03862
Cyathura polita	45	0.01818
Glycinde solitaria	136	0.02726
Heteromastus filiformis	204	0.15222
Macoma balthica	114	0.30672
Macoma mitchelli	23	0.01363
Mulinia lateralis	45	0.08406
Neanthes succinea	45	0.24992
Parahesione luteola	114	0.00454
Streblospio benedicti	136	0.00114
Tubificoides spp.	136	0.00114
Total w/ Epi.	1068	0.89858
Total w/o Epi.	1068	0.89858
Number of Taxa w/ Epi.	12	
Number of Taxa w/o Epi.	12	

BOTTOM ENVIRONMENT AND BENTHOS, SUMMER 2001
 AMBIENT TOXICITY STATIONS

Station: WY-127		Rep: 01	
Watershed: Wye River		Date: 26SEP01	
Gear: Young Grab		Time: 10:09:48	
Habitat: High Mesohaline Mud			
Sampled Area: 0.044 sq.m			
BOTTOM ENVIRONMENT			
Depth (m):	7.6	Salinity (ppt):	14.34
Dissolved Oxygen (mg/l):	6.9	Sediment silt-clay (%):	63.51
		Temperature (C):	22.77
		Total Carbon (%):	2.25
BENTHIC INDEX OF BIOTIC INTEGRITY			
B-IBI Score:	1.00	Condition:	Severely Degraded
		# Attributes Scored:	6
Shannon-Wiener Index	1.41	Value	Score
Abundance (#/m2)	750	1	1
Biomass (g/m2)	0.31	1	1
Carnivore-Omnivore Abundance (%)	9.09	1	1
Deep Deposit Feeder Abundance (%)	0.00	1	1
		Pollution Indicative Species Abundance (%)	75.76
		Pollution Sensitive Species Abundance (%)	42.96
		Pollution Sensitive Species Biomass (%)	3.03
		Pollution Sensitive Species Biomass (%)	9.63
BENTHIC ABUNDANCE (per sq. meter)			
TAXA	Abundance (#/m2)	Biomass (g/m2)	
Carinoma tremaphoros	23	0.00682	
Macoma balthica	23	0.02954	
Macoma mitchelli	91	0.12496	
Mulinia lateralis	23	0.09542	
Parahesionia luteola	45	0.01363	
Streblospio benedicti	545	0.03635	
Total w/ Epi.	750	0.30672	
Total w/o Epi.	750	0.30672	
Number of Taxa w/ Epi.	6		
Number of Taxa w/o Epi.	6		

BOTTOM ENVIRONMENT AND BENTHOS, SUMMER 2001
 AMBIENT TOXICITY STATIONS

Watershed: Wye River	Station: WY-152	Rep: 01
Gear: Young Grab	Habitat: High Mesohaline Mud	Date: 26SEP01
	Sampled Area: 0.044 sq.m	Time: 10:35:13
BOTTOM ENVIRONMENT		
Depth (m): 3.1	Salinity (ppt): 12.62	Temperature (C): 23.09
Dissolved Oxygen (mg/l): 6.3	Sediment silt-clay (%): 84.63	Total Carbon (%): 2.6
BENTHIC INDEX OF BIOTIC INTEGRITY		
B-IBI Score: 4.00	Condition: Meets Goal	# Attributes Scored: 6
Shannon-Wiener Index	Value	Score
Abundance (#/m2)	1886	3
Biomass (g/m2)	1.43	5
Carnivore-Omnivore Abundance (%)	42.17	5
Deep Deposit Feeder Abundance (%)	9.64	5
		Pollution Indicative Species Abundance (%)
		Pollution Sensitive Species Abundance (%)
		Pollution Sensitive Species Biomass (%)
		Value
		Score
		7.23
		1.59
		19.28
		55.19
		3
BENTHIC ABUNDANCE (per sq. meter)		
TAXA	Abundance (#/m2)	Biomass (g/m2)
Carinoma tremaphoros	227	0.10451
Coelotanypus spp.	68	0.01818
Cyathura polita	318	0.55437
Heteromastus filiformis	45	0.01590
Leptocheirus plumulosus	750	0.23856
Macoma balthica	45	0.23629
Macoma mitchelli	45	0.12723
Neanthes succinea	23	0.11133
Parahesion luteola	159	0.02045
Streblospio benedicti	68	0.00454
Tubificoides spp.	136	0.00114
Total w/ Epi.	1886	1.43250
Total w/o Epi.	1886	1.43250
Number of Taxa w/ Epi.	11	
Number of Taxa w/o Epi.	11	

BOTTOM ENVIRONMENT AND BENTHOS, SUMMER 2001
 AMBIENT TOXICITY STATIONS

Watershed: Wye River	Station: WY-153	Rep: 01
Gear: Young Grab	Habitat: High Mesohaline Mud	Date: 26SEP01
	Sampled Area: 0.044 sq.m	Time: 10:48:37
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BOTTOM ENVIRONMENT		
=====		
Depth (m): 5.3	Salinity (ppt): 12.15	Temperature (C): 22.20
Dissolved Oxygen (mg/l): 7.1	Sediment silt-clay (%): 83.79	Total Carbon (%): 2.7
=====		
BENTHIC INDEX OF BIOTIC INTEGRITY		
=====		
B-IBI Score: 4.00	Condition: Meets Goal	# Attributes Scored: 6
	Value	Score
Shannon-Wiener Index	2.30	3
Abundance (#/m2)	3363	3
Biomass (g/m2)	2.77	5
Carnivore-Omnivore Abundance (%)	22.97	3
Deep Deposit Feeder Abundance (%)	15.54	5
=====		
BENTHIC ABUNDANCE (per sq. meter)		
=====		
TAXA	Abundance (#/m2)	Biomass (g/m2)
Carinoma tremaphoros	91	0.06589
Chironomidae		0.00114
Chironomus spp.	23	
Cyathura polita	91	0.47258
Leptocheirus plumulosus	1659	0.38397
Macoma balthica	204	1.56314
Macoma mitchelli	23	0.10224
Mulinia lateralis	23	0.11814
Oligochaeta		0.00114
Parahesion luteola	568	0.04998
Streblospio benedicti	159	0.00909
Tubificidae imm. w/o cap. chaetae	45	
Tubificoides spp.	477	0.00682
=====		
Total w/ Epi.	3363	2.77411
Total w/o Epi.	3363	2.77411
Number of Taxa w/ Epi.	11	
Number of Taxa w/o Epi.	11	