

US EPA ARCHIVE DOCUMENT

CATALOG DOCUMENTATION
EMAP SURFACE WATERS PROGRAM LEVEL DATABASE
1997-1998 Mid-Atlantic Integrated Assessment Program
Fish Metrics Data

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1. DATA SET IDENTIFICATION

1.1 Title of Catalog Document
EMAP Surface Waters Stream Database
1997-1998 Mid-Atlantic Streams
Stream Fish Metrics Data Summarized by Stream

1.2 Authors of the Catalog Entry
U.S. EPA NHEERL Western Ecology Division
Corvallis, OR

1.3 Catalog Revision Date
October 2002

1.4 Data Set Name
FISHMET

1.5 Task Group
Surface Waters

1.6 Data Set Identification Code
147

1.7 Version
001

1.8 Requested Acknowledgment
These data were produced as part of the U.S. EPA's Environmental Monitoring and Assessment Program (EMAP). If you publish these data or use them for analyses in publication, EPA requires a standard statement for work it has supported:

"Although the data described in this article have been funded wholly or in part by the U.S. Environmental Protection Agency through its EMAP Surface Waters Program, it has not been subjected to Agency review, and therefore does not necessarily reflect the view of the Agency and no official endorsement of the conclusions should be inferred."

2.0 INVESTIGATOR INFORMATION

2.1 Principal Investigator

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2.2 Investigation Participant- Sample Collection

Oregon State University
State of Virginia
State of West Virginia
State of Maryland
U.S. Environmental Protection Agency
Office of Research and Development
Region III

3.0 DATA SET ABSTRACT

3.1 Abstract of the Data Set

The primary function of the stream fish data are to provide a snapshot of the fish assemblage present in the stream at the time of sampling. The fish community represents an integral component of stream biological integrity and represents a snapshot of a publicly visible reflection of stream quality.

3.2 Keywords for the Data Set

Fish assemblage, fish community, fish species identification

4.0 OBJECTIVES AND INTRODUCTION

4.1 Program Objectives

The Environmental Monitoring and Assessment Program (EMAP) was designed to periodically estimate the status and trends of the Nation's ecological resources on a regional basis. EMAP provides a strategy to identify and bound the extent, magnitude and location of environmental degradation and improvement on a regional scale based on a probability-based statistical survey design.

4.2 Data Set Objective

This data set is part of a demonstration project to evaluate approaches to monitoring streams in EMAP. The data set contains the results of multi-habitat sample of the fish assemblage taken during spring low-flow.

4.3 Data Set Background Discussion

The fish community within a stream is an integral component of stream biological integrity and represents a publicly visible reflection of stream quality. This data set contains a list of metrics derived from the species composition within the stream at the time of sampling. The metrics summarize the species relative abundance information by collapsing it into a series of metrics representing trophic guilds, habitat preferences, tolerance capacities and measures of biodiversity.

4.4 Summary of Data Set Parameters

Fish Assemblage metrics include counts of individuals and species collected which can be grouped into several functional classifications, as well as percent of species collected in the same classifications. The classifications include feeding functions such as insectivores and piscivores, species similarities such as minnow species, native/non-native classification, and pollution tolerance or intolerance.

5. DATA ACQUISITION AND PROCESSING METHODS

5.1 Data Acquisition

5.1.1 Sampling Objective

To obtain a sample of the fish assemblage within a stream during a two month sampling window from April through mid-June.

5.1.2 Sample Collection Methods Summary

The assemblage was sampled using single pass with a backpack electrofishing unit distributed in multiple habitats throughout the stream.

5.1.3 Sampling Start Date

May 1997

5.1.4 Sampling End Date

September 1998

5.1.5 Platform

5.1.6 Sampling Gear

Backpack electrofishing unit

5.1.7 Manufacturer of Instruments

5.1.8 Key Variables

5.1.9 Sampling Method Calibration

5.1.10 Sample Collection Quality Control

See Lazorchak, et al. 1998.

5.1.11 Sample Collection Method Reference

Lazorchak, J.M., Klemm, D.J., and Peck D.V. (editors). 1998. Environmental Monitoring and Assessment Program- Surface Waters: Field Operations and Methods for Measuring the Ecological Condition of Wadeable Streams. EPA/620/R-94/004F. U.S. Environmental Protection Agency, Washington, D.C.

Chaloud, D.J. and D.V. Peck. 1994. Environmental Monitoring and Assessment Program: Integrated Quality Assurance Project Plan for the Surface Waters Resource Group, 1994 Activities. EPA 600/X-91/080, Rev. 2.00. U.S. Environmental Protection Agency, Las Vegas, Nevada.

5.1.12 Sample Collection Method Deviations

5.2 DATA PREPARATION AND SAMPLE PROCESSING

5.2.1 Sample Processing Objective

See Lazorchak, et al. (1998) and Chaloud and Peck (1994).

5.2.2 Sample Processing Methods Summary

See Lazorchak, et al. (1998) and Chaloud and Peck (1994).

5.2.3 Sample Processing Method Calibration

See Lazorchak, et al. (1998) and Chaloud and Peck (1994).

5.2.4 Sample Processing Quality Control

See Lazorchak, et al. (1998) and Chaloud and Peck (1994).

5.2.5 Sample Processing Method Reference

See Lazorchak, et al. (1998) and Chaloud and Peck (1994).

6. DATA MANIPULATIONS

6.1 Name of New or Modified Values

None.

6.2 Data Manipulation Description

See Chaloud and Peck (1994).

7. DATA DESCRIPTION

7.1 Description of Parameters

| # | Parameter SAS Name | Data Type | Len | Format | Parameter Label |
|----|-----------------------|--------------|-----|--------|--|
| 81 | ALIEN | Num | 8 | | Nonindigenous individuals Metric(0-10) |
| 17 | ALIEN9 | Num | 8 | | Final IBI Alien Metric Score |
| 71 | BENTHIC | Num | 8 | | Benthic species IBI Metric Score |
| 14 | BENTHIC9 | Num | 8 | | Final IBI NSBENT24 Metric Score |
| 12 | CARN9 | Num | 8 | | Final IBI PPRISCIN2 Metric Score |
| 70 | COLUMN | Num | 8 | | Water column species IBI Metric Score |
| 11 | COTTID9 | Num | 8 | | Final IBI PCOTTID Metric Score |

| | | | | |
|-----|----------|-----|---|---|
| 13 | CYPR9 | Num | 8 | Final IBI NSCYPR4 Metric Score |
| 75 | GRAVEL | Num | 8 | Simple lithophil IBI Metric Score |
| 15 | GRAVEL9 | Num | 8 | pgravel IBI Metric Score |
| 85 | HERBIV | Num | 8 | Herbivore IBI Metric Score |
| 86 | IBI | Num | 8 | Draft Index of Biotic Integrity |
| 102 | IBI_NEW | Num | 8 | Final IBI Score (McCormick et al) |
| 69 | INTOL | Num | 8 | Intolerant IBI Metric Score |
| 10 | INTOL9 | Num | 8 | Final IBInsintol4 IBI Metric Score |
| 76 | INVERT | Num | 8 | Invertivore IBI Metric Score |
| 103 | LAT_DD | Num | 8 | X-Site Latitude (decimal degrees) |
| 104 | LON_DD | Num | 8 | X-Site Longitude (decimal degrees) |
| 7 | LWSKM2 | Num | 8 | Log10 watershed area (km2) |
| 80 | NALIEN | Num | 8 | Calc. adjusted proportion of aliens |
| 68 | NATFAM | Num | 8 | Native family IBI Metric Score |
| 59 | NATIVFAM | Num | 8 | Number of families represented |
| 67 | NATSP | Num | 8 | Native species IBI Metric Score |
| 77 | NINDIV | Num | 8 | Abundance IBI Metric Score |
| 82 | NOMNI_H | Num | 8 | Adjusted proportion omnivore-herbivores |
| 78 | NPTOLE | Num | 8 | Adjusted proportion of tolerants |
| 66 | NREPROS | Num | 8 | Number of reproductive guilds |
| 46 | NSANGU | Num | 8 | Number of anguilla species |
| 54 | NSATHER | Num | 8 | Number of atherin species |
| 90 | NSBENT2 | Num | 8 | Number of native bent_inv minus 3 taxa |
| 100 | NSBENT23 | Num | 8 | Watershed Area Corrected NSBENT2 |
| 101 | NSBENT24 | Num | 8 | Offset & Watershed Corrected NSBENT2 |
| 57 | NSBHAB | Num | 8 | Number of benthic habitat species |
| 37 | NSCATO | Num | 8 | Number of sucker species |
| 91 | NSCATO2 | Num | 8 | Number of native intolerant Catostomids |
| 38 | NSCENT | Num | 8 | Number of sunfish species |
| 56 | NSCOLU | Num | 8 | Number of water column species |
| 39 | NSCOTT | Num | 8 | Number of sculpin species |
| 40 | NSCYPR | Num | 8 | Number of minnow species |
| 87 | NSCYPR2 | Num | 8 | Number of native intolerant cyprinids |
| 98 | NSCYPR3 | Num | 8 | Watershed Area Corrected NSCYPR |
| 99 | NSCYPR4 | Num | 8 | Offset & Watershed Corrected NSCYPR |
| 41 | NSDART | Num | 8 | Number of darter species |
| 47 | NSDRUMX | Num | 8 | Number of drum species |
| 53 | NSESOXX | Num | 8 | Number of esox species |
| 49 | NSFUND | Num | 8 | Number of fundelis species |
| 52 | NSGAMB | Num | 8 | Number of gambusia species |
| 42 | NSICTA | Num | 8 | Number of ictalurid species |
| 43 | NSINTOL | Num | 8 | Number of intolerant species |
| 96 | NSINTOL3 | Num | 8 | Watershed Area Corrected NSINTOL |
| 97 | NSINTOL4 | Num | 8 | Offset & Watershed Corrected NSINTOL |
| 45 | NSLAMP | Num | 8 | Number of lamprey species |
| 58 | NSLUNK | Num | 8 | Number of charismatic megafauna |
| 48 | NSPERCO | Num | 8 | Number of percopsis species |
| 50 | NSPPER | Num | 8 | Number of perch species |
| 55 | NSSALM | Num | 8 | Number of salmon species |
| 51 | NSUMBR | Num | 8 | Number of umbridae species |
| 65 | NTROPH | Num | 8 | Number of trophic guilds |
| 9 | NUMFISH | Num | 8 | Number of individuals in sample |
| 44 | NUMNATSP | Num | 8 | Number of native species |
| 8 | NUMSPEC | Num | 8 | Total number of fish species |

| | | | | |
|----|----------|------|-------|---|
| 83 | OMNI | Num | 8 | Omnivore IBI Metric Score |
| 16 | OMNI9 | Num | 8 | Final IBI Pmacro Metric Score |
| 31 | PATNG | Num | 8 | Proportion of ind. as attacher non-guarder |
| 29 | PBCLN | Num | 8 | Proportion of ind. - bc spwn clear substr. |
| 28 | PBCST | Num | 8 | Proportion of ind. as broadcast spawners |
| 25 | PBENT | Num | 8 | Proportion of fish as benthic insectivores |
| 20 | PBENTSP | Num | 8 | Proportion of benthic hab. sp. in native sp. |
| 61 | PCARN | Num | 8 | Proportion piscivore-invert. (piscinv + pisciv) |
| 30 | PCGBU | Num | 8 | Proportion of ind. as clear gravel buriers |
| 92 | PCOLD1 | Num | 8 | Proportion of cold water ind. |
| 93 | PCOLD2 | Num | 8 | Proportion of cold & cool water ind. |
| 19 | PCOLSP | Num | 8 | Proportion of column sp. in native sp. |
| 88 | PCOTTID | Num | 8 | Proportion of ind. as cottids |
| 89 | PCYPTL | Num | 8 | Proportion of ind. as tolerant cyprinids |
| 22 | PEXOT | Num | 8 | Proportion of ind. as introduced |
| 63 | PGRAVEL | Num | 8 | Proportion of simple lithophils |
| 33 | PHERB | Num | 8 | Proportion of ind. as herbivores |
| 24 | PINSE | Num | 8 | Proportion of ind. as native insectivores |
| 62 | PINVERT | Num | 8 | Proportion of invertivores |
| 74 | PISCINV | Num | 8 | Piscivore-invertivore IBI Metric Score |
| 21 | PLUNKSP | Num | 8 | Proportion of luncker sp. to native sp. |
| 35 | PMACRO | Num | 8 | Proportion of macro-omnivores |
| 34 | PMICRO | Num | 8 | Proportion of micro-omnivores |
| 95 | PMICRO2 | Num | 8 | Proportion of micro-omnivores - RHINATRO |
| 27 | PNEST | Num | 8 | Proportion of ind. as nest associates |
| 32 | PNTGU | Num | 8 | Proportion of ind. as nester guarder |
| 60 | POMNI_H | Num | 8 | Proportion omni-herbiv.(pmicro + pmacro + herbiv) |
| 26 | PPISC | Num | 8 | Proportion of ind. as carnivores |
| 94 | PPISCIN2 | Num | 8 | Proportion of piscivore-insectiv.-SEMOATRO |
| 36 | PPISCINV | Num | 8 | Proportion of piscivore-insectivores |
| 23 | PTOLE | Num | 8 | Proportion of ind. as tolerant |
| 64 | PTREPRO | Num | 8 | Proportion tolerant reproductive guild indiv |
| 72 | REPRO | Num | 8 | Reproductive guild IBI Metric Score |
| 4 | SAMPLED | Char | 30 | Site Sampled Code |
| 1 | SITE_ID | Char | 15 \$ | Stream ID |
| 6 | SQRTAREA | Num | 8 | Square root of watershed area (km2) |
| 18 | TOLERNT9 | Num | 8 | Final IBI PTOLE Metric Score |
| 84 | TOLREPR | Num | 8 | Tolerant reproductive IBI Metric Score (not in IBI) |
| 79 | TOLRNT | Num | 8 | Tolerant individual IBI Metric Score |
| 73 | TROPH | Num | 8 | Trophic guild IBI Metric Score |
| 3 | VISIT_NO | Num | 8 | Visit Number |
| 5 | WS_AREA | Num | 8 | Watershed area (km2) |
| 2 | YEAR | Num | 8 | Sample Year |

7.1.6 Precision to which values are reported

7.1.7 Minimum Value in Data Set

| Name | Min |
|----------|--------------|
| ALIEN | 0 |
| ALIEN9 | 0 |
| BENTHIC | 0 |
| BENTHIC9 | 0 |
| CARN9 | 0 |
| COLUMN | 0 |
| COTTID9 | 0 |
| CYPR9 | 0 |
| GRAVEL | 0 |
| GRAVEL9 | 0 |
| HERBIV | . |
| IBI | 0 |
| IBI_NEW | 0 |
| INTOL | 0 |
| INTOL9 | 0 |
| INVERT | 0 |
| LAT_DD | 35.182938 |
| LON_DD | -83.555659 |
| LWSKM2 | -1.176056517 |
| NALIEN | 0.0555555556 |
| NATFAM | 0 |
| NATIVFAM | 0 |
| NATSP | 0 |
| NINDIV | 0 |
| NOMNI_H | 0 |
| NPTOLE | 0 |
| NREPROS | 0 |
| NSANGU | 0 |
| NSATHER | 0 |
| NSBENT2 | 0 |
| NSBENT23 | -11.81958974 |
| NSBENT24 | -6.540589744 |
| NSBHAB | 0 |
| NSCATO | 0 |
| NSCATO2 | 0 |
| NSCENT | 0 |
| NSCOLU | 0 |
| NSCOTT | 0 |
| NSCYPR | 0 |
| NSCYPR2 | 0 |
| NSCYPR3 | -14.29234721 |
| NSCYPR4 | -8.005347209 |
| NSDART | 0 |
| NSDRUMX | 0 |
| NSESOXX | 0 |
| NSFUND | 0 |
| NSGAMB | 0 |
| NSICTA | 0 |
| NSINTOL | 0 |
| NSINTOL3 | -2.689881586 |

| | |
|----------|--------------|
| NSINTOL4 | -1.219881586 |
| NSLAMP | 0 |
| NSLUNK | 0 |
| NSPERCO | 0 |
| NSPPER | 0 |
| NSSALM | 0 |
| NSUMBR | 0 |
| NTROPH | 0 |
| NUMFISH | 0 |
| NUMNATSP | 0 |
| NUMSPEC | 0 |
| OMNI | 0 |
| OMNI9 | 0 |
| PATNG | 0 |
| PBCLN | 0 |
| PBCST | 0 |
| PBENT | 0 |
| PBENTSP | 0 |
| PCARN | 0 |
| PCGBU | 0 |
| PCOLD1 | 0 |
| PCOLD2 | 0 |
| PCOLSP | 0 |
| PCOTTID | 0 |
| PCYPTL | 0 |
| PEXOT | 0 |
| PGRAVEL | 0 |
| PHERB | 0 |
| PINSE | 0 |
| PINVERT | 0 |
| PISCINV | 0 |
| PLUNKSP | 0 |
| PMACRO | 0 |
| PMICRO | 0 |
| PMICRO2 | 0 |
| PNEST | 0 |
| PNTGU | 0 |
| POMNI_H | 0 |
| PPISC | 0 |
| PPISCIN2 | 0 |
| PPISCINV | 0 |
| PTOLE | 0 |
| PTREPRO | 0 |
| REPRO | 0 |
| SQRTAREA | 0.2582092175 |
| TOLERNT9 | 0 |
| TOLREPR | . |
| TOLRNT | 0 |
| TROPH | 0 |
| VISIT_NO | 0 |
| WS_AREA | 0.066672 |
| YEAR | 1997 |

7.1.7 Maximum Value in Data Set

| Name | Max |
|----------|--------------|
| ALIEN | 10 |
| ALIEN9 | 10 |
| BENTHIC | 10 |
| BENTHIC9 | 10 |
| CARN9 | 10 |
| COLUMN | 10 |
| COTTID9 | 10 |
| CYPR9 | 10 |
| GRAVEL | 10 |
| GRAVEL9 | 10 |
| HERBIV | . |
| IBI | 92.962806424 |
| IBI_NEW | 98.909281533 |
| INTOL | 10 |
| INTOL9 | 10 |
| INVERT | 10 |
| LAT_DD | 42.567163 |
| LON_DD | -74.688136 |
| LWSKM2 | 5.0118742737 |
| NALIEN | 1 |
| NATFAM | 10 |
| NATIVFAM | 11 |
| NATSP | 10 |
| NINDIV | 10 |
| NOMNI_H | 1 |
| NPTOLE | 1 |
| NREPROS | 4 |
| NSANGU | 1 |
| NSATHER | 1 |
| NSBENT2 | 16 |
| NSBENT23 | 9.0621523708 |
| NSBENT24 | 14.341152371 |
| NSBHAB | 19 |
| NSCATO | 7 |
| NSCATO2 | 6 |
| NSCENT | 9 |
| NSCOLU | 17 |
| NSCOTT | 3 |
| NSCYPR | 14 |
| NSCYPR2 | 8 |
| NSCYPR3 | 6.9263340661 |
| NSCYPR4 | 13.213334066 |
| NSDART | 11 |
| NSDRUMX | 1 |
| NSESXX | 2 |
| NSFUND | 1 |
| NSGAMB | 2 |
| NSICTA | 3 |
| NSINTOL | 8 |
| NSINTOL3 | 6.3417729978 |

| | |
|----------|--------------|
| NSINTOL4 | 7.8117729978 |
| NSLAMP | 1 |
| NSLUNK | 13 |
| NSPERCO | 1 |
| NSPPER | 1 |
| NSSALM | 1 |
| NSUMBR | 1 |
| NTROPH | 5 |
| NUMFISH | 3869 |
| NUMNATSP | 32 |
| NUMSPEC | 33 |
| OMNI | 10 |
| OMNI9 | 10 |
| PATNG | 0.6585365854 |
| PBCLN | 0.8645833333 |
| PBCST | 0.6893854749 |
| PBENT | 1 |
| PBENTSP | 1 |
| PCARN | 1 |
| PCGBU | 1 |
| PCOLD1 | 1 |
| PCOLD2 | 1 |
| PCOLSP | 1 |
| PCOTTID | 0.8977272727 |
| PCYPTL | 1 |
| PEXOT | 0.9444444444 |
| PGRAVEL | 1 |
| PHERB | 0.5185810811 |
| PINSE | 1 |
| PINVERT | 1 |
| PISCINV | 10 |
| PLUNKSP | 1 |
| PMACRO | 0.8854166667 |
| PMICRO | 1 |
| PMICRO2 | 1 |
| PNEST | 0.7816091954 |
| PNTGU | 1 |
| POMNI_H | 1 |
| PPISC | 0 |
| PPISCIN2 | 1 |
| PPISCINV | 1 |
| PTOLE | 1 |
| PTREPRO | 1 |
| REPRO | 10 |
| SQRTAREA | 320.58052577 |
| TOLERNT9 | 10 |
| TOLREPR | . |
| TOLRNT | 10 |
| TROPH | 10 |
| VISIT_NO | 3 |
| WS_AREA | 102771.8735 |
| YEAR | 1998 |

7.2 Data Record Example

7.2.1 Column Names for Example Records

"ALIEN", "ALIEN9", "BENTHIC", "BENTHIC9", "CARN9", "COLUMN", "COTTID9", "CYPR9",
"GRAVEL", "GRAVEL9", "HERBIV", "IBI", "IBI_NEW", "INTOL", "INTOL9", "INVERT",
"LAT_DD", "LON_DD", "LWSKM2", "NALIEN", "NATFAM", "NATIVFAM", "NATSP", "NINDIV",
"NOMNI_H", "NPTOLE", "NREPROS", "NSANGU", "NSATHER", "NSBENT2", "NSBENT23",
"NSBENT24", "NSBHAB", "NSCATO", "NSCATO2", "NSCENT", "NSCOLU", "NSCOTT", "NSCYPR",
"NSCYPR2", "NSCYPR3", "NSCYPR4", "NSDART", "NSDRUMX", "NSESXX", "NSFUND", "NSGAMB",
"NSICTA", "NSINTOL", "NSINTOL3", "NSINTOL4", "NSLAMP", "NSLUNK", "NSPERCO",
"NSPPER", "NSSALM", "NSUMBR", "NTROPH", "NUMFISH", "NUMNATSP", "NUMSPEC", "OMNI",
"OMNI9", "PATNG", "PBCLN", "PBCST", "PBENT", "PBENTSP", "PCARN", "PCGBU", "PCOLD1",
"PCOLD2", "PCOLSP", "PCOTTID", "PCYPTL", "PEXOT", "PGRAVEL", "PHERB", "PINSE",
"PINVERT", "PISCINV", "PLUNKSP", "PMACRO", "PMICRO", "PMICRO2", "PNEST", "PNTGU",
"POMNI_H", "PPISC", "PPISCIN2", "PPISCINV", "PTOLE", "PTREPRO", "REPRO",
"SAMPLED", "SITE_ID", "SQRTAREA", "TOLERNT9", "TOLREPR", "TOLRNT", "TROPH",
"VISIT_NO", "WS_AREA", "YEAR"

7.2.2 Example Data Records

10,10,7.2736214704,10,0,4.891021517,0,10,0.25,0,,.51.484390079,54.331689591,0,
8.8985206317,0,38.247943,-81.886602,-0.661344334,1,5.7838153636,1,6.87674532,
0.8,0.975,0,1,0,0,0,1.6958565863,6.9748565863,1,0,0,0,1,0,2,0,3.6706388347,
9.9576388347,0,0,0,0,0,0,0,-0.09933714,1.3706628599,0,1,0,0,0,0,2,40,2,2,10,
10,0,0,0,0,0.5,0.975,0.025,0,0,0.5,0,1,0,0.025,0,0,0,10,0.5,0,0.025,0.025,0,
0.975,0.025,0,0,0.975,1,0.975,6.2029424391,"Yes","MAIA97-001",0.4670117772,
0,,0,10,1,0.2181,1997

10,10,10,10,3.1028678256,9.5872619625,0,10,5.8762886598,6.6044321779,,
83.002629956,70.626067805,6.997547567,10,10,38.550017,-82.144807,1.633596705,
1,6.7265165472,5,10,5.82,0.7663230241,0.295532646,4,0,0,8,3.6812842899,
8.9602842899,10,2,1,5,9,0,6,2,0.8087398825,7.0957398825,5,1,0,0,0,0,2,
0.7182771072,2.1882771072,0,9,0,0,0,0,5,291,19,19,9.5790378007,10,
0.1271477663,0.0309278351,0.0034364261,0.2749140893,0.5263157895,
0.2164948454,0.206185567,0,0,0.4736842105,0,0.560137457,0,0.587628866,
0.0859106529,0.264604811,0.5395189003,10,0.4736842105,0,0.147766323,
0.147766323,0.2233676976,0.4089347079,0.2336769759,0,0.0274914089,
0.2164948454,0.704467354,0.412371134,10,"Yes","MAIA97-002",6.5584068187,
3.8561610211,,.3.2836960672,8.3333333333,1,43.0127,1997

9.0909090909,6.2405986038,9.2307692308,8.0492534201,5.1303098707,9,0,0,
3.1363636364,0,,.76.031357531,,.7.5,10,9.5454545455,39.067885,-81.388766,
3.5996374953,0.9090909091,8.8888888889,8,8,4.4,0.5636363636,0.6954545455,4,
0,0,9,-0.471307549,4.8076924508,12,6,5,3,9,0,3,3,-8.069743707,-1.782743707,
2,1,0,0,0,2,3,0.7053453675,2.1753453675,1,9,0,0,0,0,5,220,20,22,7.0454545455,
0,0.0181818182,0.1954545455,0.1772727273,0.3909090909,0.5454545455,
0.0454545455,0.0954545455,0,0.0136363636,0.4545454545,0,0.0909090909,
0.0909090909,0.3136363636,0.1590909091,0.0863636364,0.4772727273,4.5454545455,
0.4545454545,0.2590909091,0.0181818182,0.0181818182,0.0045454545,0.2227272727,
0.4363636364,0,0.0454545455,0.0454545455,0.3045454545,0.4,10,"Yes",
"MAIA97-003",63.069407005,9.6859263186,,.7.7272727273,8.3333333333,1,
3977.7501,1997

8. GEOGRAPHIC AND SPATIAL INFORMATION

8.1 Minimum Longitude

-83 Degrees 33 Minutes 20 Seconds West (-83.555659 Decimal Degrees)

8.2 Maximum Longitude

-74 Degrees 41 Minutes 17 Seconds West (-74.688136 Decimal Degrees)

8.3 Minimum Latitude

35 Degrees 10 Minutes 58 Seconds North (35.182938 Decimal Degrees)

8.4 Maximum Latitude

42 Degrees 34 Minutes 1 Seconds North (42.567163 Decimal Degrees)

8.5 Name of Area or Region

Mid Atlantic: EPA Region III which includes Delaware, Maryland, New York, Virginia, and West Virginia

9. QUALITY CONTROL / QUALITY ASSURANCE

9.1 Data Quality Objectives

See Chaloud and Peck (1994)

9.2 Quality Assurance Procedures

See Chaloud and Peck (1994)

9.3 Unassessed Errors

NA

10. DATA ACCESS

10.1 Data Access Procedures

10.2 Data Access Restrictions

10.3 Data Access Contact Persons

10.4 Data Set Format

10.5 Information Concerning Anonymous FTP

10.6 Information Concerning WWW

10.7 EMAP CD-ROM Containing the Data

11. REFERENCES

Lazorchak, J.M., Klemm, D.J., and Peck D.V. (editors). 1998. Environmental Monitoring and Assessment Program- Surface Waters: Field Operations and Methods for Measuring the Ecological Condition of Wadeable Streams. EPA/620/R-94/004F. U.S. Environmental Protection Agency, Washington, D.C.

Chaloud, D.J. and D.V. Peck. 1994. Environmental Monitoring and Assessment Program: Integrated Quality Assurance Project Plan for the Surface Waters Resource Group, 1994 Activities. EPA 600/X-91/080, Rev. 2.00. U.S. Environmental Protection Agency, Las Vegas, Nevada.

12. TABLE OF ACRONYMS

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