

US EPA ARCHIVE DOCUMENT

CATALOG DOCUMENTATION  
EMAP SURFACE WATERS PROGRAM LEVEL DATABASE  
1993-1996 MID-ATLANTIC STREAMS DATA  
Periphyton Chlorophyll Data

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DATA SET IDENTIFICATION

1.1 Title of Catalog Document  
EMAP Surface Waters Stream Database  
1993-1996 Mid-Atlantic Streams  
Periphyton Chlorophyll Data

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

1.3 Catalog Revision Date  
July 2002

Data Set Name  
PERIPHYT

1.5 Task Group  
Surface Waters

1.6 Data Set Identification Code  
118

1.7 Version  
002

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

Dr. John Stoddard  
U.S. Environmental Protection Agency  
NHEERL Western Ecology Division  
200 S.W. 35th Street  
Corvallis, OR 97333

### 2.2 Investigation Participant- Sample Collection

Oregon State University  
State of Virginia  
State of West Virginia  
State of Maryland  
State of Pennsylvania  
University of Maine  
U.S. Fish and Wildlife Service  
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 data set contains the results of chlorophyll analysis, periphyton ash free dry mass, acid and alkaline phosphatase activity.

### 3.2 Keywords for the Data Set

acid phosphatase, alkaline phosphatase, ash free dry mass , chlorophyll a, enzyme activity, periphyton, pheophytin

## 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 periphyton taken during spring low-flow.

### 4.3 Data Set Background Discussion

The primary function of the periphyt data set is to provide an assessment of the amount of chlorophyll present in the stream at the time of sampling. Periphyton represents an integral component of stream biological integrity. Periphyton is algae, fungi, bacteria, protozoa, and associated organic matter

associated with channel substrates. Periphyton are useful indicators of environmental condition because they respond rapidly and are sensitive to a number of anthropogenic disturbances, including habitat destruction, contamination by nutrients, metals, herbicides, hydrocarbons, and acidification.

#### 4.4 Summary of Data Set Parameters

Amount of chlorophyll a in mg, periphyton ash free biomass (total, and per square meter), and alkaline/acid phosphatase activity. Flow type at sample point is also indicated.

### 5. DATA ACQUISITION AND PROCESSING METHODS

#### 5.1 Data Acquisition

##### 5.1.1 Sampling Objective

To obtain counts of periphyton species at the sample site during a two month sampling window from April through mid-June.

##### 5.1.2 Sample Collection Methods Summary

Periphyton samples were collected from erosional and depositional habitats located at each of nine interior cross-section transects (transects "B" through "J") established within the sampling reach, according to the protocols outlined in Lazorchak et. al (1998).

##### 5.1.3 Sampling Start Date

April 1993

##### 5.1.4 Sampling End Date

July 1996

##### 5.1.5 Platform

NA

##### 5.1.6 Sampling Gear

Plastic funnel, 500ml plastic bottles, stiff-bristled toothbrush, 60-ml syringe, and a wash bottle.

##### 5.1.7 Manufacturer of Instruments

NA

##### 5.1.8 Key Variables

NA

##### 5.1.9 Sampling Method Calibration

NA

##### 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

NA

### 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
10	AFDM	Num	8		Periphyton Ash Free Dry Mass (g)
11	AFDM_M2	Num	8		Periphyton Ash Free Dry Mass (g/m <sup>2</sup> )
9	AREA_CM2	Num	8		Area of Periphyton Sampled
12	CHL	Num	8		Amount of Chlorophyll a (mg)
13	CHL_M2	Num	8		Chlorophyll a (mg)/m <sup>2</sup> of Stream Bed
14	CHL_MASS	Num	8		Ratio of Choro-a(mg):Periphyton AFDM(g)
17	COMMENT	Char	200		Periphyton Comments
3	DATE_COL	Num	8	MMDDYY	Date of Site Visit
18	LAT_DD	Num	8		X-Site Latitude (decimal degrees)
19	LON_DD	Num	8		X-Site Longitude (decimal degrees)
8	N_TRANS	Num	8		Number of Transects Sampled
15	PHA	Num	8		Amount of Pheophytin (mg)
16	PHA_M2	Num	8		Pheophytin (mg)/m <sup>2</sup> of Stream Bed
5	SAMPLED	Char	30		Site Sampled Code
7	SAMPTYPE	Char	20		Sample Method
6	SAMP_ID	Num	8		Sample Tracking Number (Barcode)
1	SITE_ID	Char	15		Site Identification Code
2	VISIT_NO	Num	8		Within Year Site Visit Number
4	YEAR	Num	8		Year of Site Visit

#### 7.1.6 Precision to which values are reported

#### 7.1.7 Minimum Value in Data Set

Name	Min
AFDM	0
AFDM_M2	0
AREA_CM2	0
CHL	0
CHL_M2	0
CHL_MASS	0
DATE_COL	04/26/1993
LAT_DD	36.5535
LON_DD	-83.24443889
N_TRANS	0
PHA	0
PHA_M2	0
SAMP_ID	200501
VISIT_NO	0
YEAR	1993

7.1.7 Maximum Value in Data Set

Name	Max
AFDM	7.23424
AFDM_M2	669.83703704
AREA_CM2	108
CHL	5.3999414548
CHL_M2	499.99457914
CHL_MASS	174.31285714
DATE_COL	09/15/1996
LAT_DD	42.327388889
LON_DD	-74.35110833
N_TRANS	9
PHA	9.0566400124
PHA_M2	838.57777892
SAMP_ID	230627
VISIT_NO	2
YEAR	1996

7.2 Data Record Example

7.2.1 Column Names for Example Records

"AFDM", "AFDM\_M2", "AREA\_CM2", "CHL", "CHL\_M2", "CHL\_MASS", "COMMENT", "DATE\_COL", "LAT\_DD", "LON\_DD", "N\_TRANS", "PHA", "PHA\_M2", "SAMPLED", "SAMPTYPE", "SAMP\_ID", "SITE\_ID", "VISIT\_NO", "YEAR"

7.2.2 Example Data Records

0.2608,24.148148148,108,0.6091872,56.406222222,2.3358404908," ",05/17/1994,38.525300,-75.631100,9,0.1129944,10.462444444,"Yes","POOL",210751,"DE750S",1,1994  
 0.21233,19.660185185,108,0.1334466,12.356166667,0.6284867894," ",05/15/1995,39.261506,-79.410106,9,0.07371336,6.8253111111,"Yes","RIFFLE",222228,"MD003S",1,1995  
 .....," ",.....,"Sampling failed (inaccessible)"," ",..,"MD004S",.,1995  
 ..,108,0.3554304,32.910222222,..,"Sample partially missing",05/15/1995,39.454089,-79.406339,9,0.09284925,8.5971527778,"Yes","RIFFLE",222231,"MD005S",1,1995  
 0.4795,199.79166667,24,0.2538102,105.75425,0.5293226277," ",05/22/1995,39.635933,-77.493186,2,0.21770112,90.7088,"Yes","POOL",222246,"MD006S",1,1995

8. GEOGRAPHIC AND SPATIAL INFORMATION

8.1 Minimum Longitude

-83 Degrees 14 Minutes 39 Seconds West (-83.244439 Decimal Degrees)

8.2 Maximum Longitude

-74 Degrees 21 Minutes 3 Seconds West (-74.351108 Decimal Degrees)

8.3 Minimum Latitude

36 Degrees 33 Minutes 12 Seconds North (36.553500 Decimal Degrees)

8.4 Maximum Latitude  
42 Degrees 19 Minutes 38 Seconds North (42.327389 Decimal Degrees)

## 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



13. PERSONNEL INFORMATION

Project Manager

Dr. John Stoddard

U.S. Environmental Protection Agency

NHEERL Western Ecology Division

200 S.W. 35th Street

Corvallis, OR 97333

541-754-4441

541-754-4716(FAX)

stoddard@mail.cor.epa.gov

Quality Assurance Officer

Dave Peck

U.S. Environmental Protection Agency

NHEERL Western Ecology Division

200 S.W. 35th Street

Corvallis, OR 97333

541-754-4426

541-754-4716(FAX)

davep@mail.cor.epa.gov

Information Management, EMAP-Surface Waters

Marlys Cappaert

CSC c/o U.S. Environmental Protection Agency

NHEERL Western Ecology Division

200 S.W. 35th Street

Corvallis, OR 97333

541-754-4467

541-754-4338(FAX)

cappaert@mail.cor.epa.gov