

US EPA ARCHIVE DOCUMENT

## CATALOG DOCUMENTATION

National Stream Survey (NSS) Database: Pilot Study - Chemistry  
PILOTDS4 (enhanced Pilot database, includes summer samples)

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#### 1. DATA SET IDENTIFICATION

1.1 Title of Catalog Document  
NSS-I Data Set PILOTS4 1985

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

1.3 Catalog Revision Date  
May 1998

1.4 Data Set Name  
PILOTDS4

1.5 Task Group  
Aquatic Effect Research Program (AERP)- National Surface Water Survey

1.6 Data Set Identification Code  
160

1.7 Version  
001

#### 1.8 Requested Acknowledgment

This research was funded as apart of the National Acid Precipitation Assessment Program (NAPAP) by the U.S. Environmental Protection Agency (EPA). If you publish these data or use them for analyses in publications, 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, it has not been subjected to Agency review, and therefore does not necessarily reflect the views of the Agency and no official endorsement of the conclusions should be inferred."

#### 2. INVESTIGATOR INFORMATION

2.1 Principal Investigator  
Dixon Landers  
U.S. Environmental Protection Agency  
NHEERL Western Ecology Division  
200 S.W. 35th Street  
Corvallis, OR 97333

## 2.2 Investigation Participant - Sample Collection

John Baker, Coordinator

### 3. DATA SET ABSTRACT

#### 3.1 Abstract of the Data Set

The primary function of the stream water chemistry samples characterizes or indexes the chemical and physical properties of a sample reach. The Pilot survey data were collected during field activities during the spring and early summer of 1985. The Pilot survey was conducted to test the logistical and analytical protocols planned for the full-scale NSS-I in the Mid-Atlantic and Southeast. Data from the Pilot Survey were used to evaluate the statistical sampling design, logistics plan, quality assurance plan, data management program, and data analysis plan.

#### 3.2 Keywords for the Data Set

Aluminum, alkalinity, acid neutralizing capacity, calcium, carbonate, color, specific conductance, dissolved inorganic carbon, dissolved organic carbon, bicarbonate, potassium, magnesium, ammonium, sodium, nitrate, total nitrogen, pH, total phosphorus, silica, total suspended solids, turbidity, absorbance, chlorophyll a, water chemistry

### 4. OBJECTIVES AND INTRODUCTION

#### 4.1 Program Objective

The objectives of the pilot survey were (1) to test the ability of NSS-I sampling design to meet Phase I objective, based on analysis of data collected during the pilot survey, (2) to evaluate the Phase I logistics plan (including safety aspects and uncertainties concerning legal and physical site access) and alternative methods of collection, handling, and chemical analysis of samples, and (3) to develop and test a data analysis plan for Phase I, using actual data collected in the pilot survey.

#### 4.2 Data Set Objective

Data set Pilotds4 was used to evaluate the statistical sampling design, logistics plan, quality assurance plan, data management program, and data analysis plan.

#### 4.3 Data Set Background Discussion

#### 4.4 Summary of Data Set Parameters

Water chemistry parameters are reported for one sample taken at the midpoint of the selection stream reach. These include: aluminum, alkalinity, acid neutralizing capacity, calcium, carbonate, color, specific conductance, dissolved inorganic carbon, dissolved organic carbon, bicarbonate, potassium, magnesium, ammonium, sodium, nitrate, total nitrogen, pH, total phosphorus, silica, total suspended solids, and turbidity.

### 5. DATA ACQUISITION AND PROCESSING METHODS

#### 5.1 Data Acquisition

##### 5.1.1 Sampling Objective

Five field sampling visits were made from mid-March to mid-June. During each, a single grab sample of stream water for the purposes of chemical analysis was obtained.

##### 5.1.2 Sample Collection Methods Summary

A 3.8 L sample and four 60-mL syringe samples were collected.

A sample was taken from mid-depth of the stream using a battery driven peristaltic pump and pumped into a 4-liter Cubitanier and four gas-tight 60 ml syringe samples.

5.1.3 Sampling Start Date  
March 1985

5.1.4 Sampling End Date  
June 1985

5.1.5 Platform  
NA

5.1.6 Sampling Gear  
Routine samples were collected from each stream by pumping water through 1/4 inch Tygon tubing held in the center of the stream at mid-depth with a 6-foot sampling boom. Water samples were pumped into a 4-liter polyethylene Cubitainer using portable, battery-driven peristaltic pumps. In addition, four gas-tight 60mL polypropylene syringe samples were collected without exposing the samples to the atmosphere in order to minimize changes in the water sample prior to analysis. These syringes were used for analysis of pH, dissolved inorganic carbon (DIC), and total monomeric and nonexchangeable aluminum performed in the laboratory. (Knapp et al., 1987, Hagley et al., 1988)

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  
Messer, J.J., E.W. Ariss, J.R. Baker, S.K. Drouse, K.N. Eshleman, P.R. Kaufmann, R.A. Linthurst, J.M. Omernik, W.S. Overton, M.J. Sale, R.D. Schonbrod, S.M. Stambaugh, and J.R. Tuschall, Jr. 1986. National Stream Survey Phase I - Pilot Survey. EPA/600/4-86/026. U.S. Environmental Protection Agency, Washington, D.C. 179 pp.

Kaufmann, P.R., A.T. Herlihy, J.W. Elwood, M.E. Mitch, W.S. Overton, M.J. Sale, J.J. Messer, K.A. Cougan, D.V. Peck, K.H. Reckhow, A.J. Kinnery, S.J. Christie, D.D. Brown, C.A. Hagley, and H.I. Jager. Chemical Characteristics of Streams in the Mid-Atlantic and Southeastern United States. Volume I: Population descriptions and Physico-Chemical Relationships. EPA/600/3-88/021a. U.S. Environmental Protection Agency, Washington,

5.1.11 Sample Collection Method Reference  
See Messer et al., 1986.

5.1.12 Sample Collection Method Deviations  
NA

5.2 Data Preparation and Sample Processing

5.2.1 Sample Processing Objective  
See Messer et al., 1986.

5.2.2 Sample Processing Methods Summary  
See Messer et al., 1986.

5.2.3 Sample Processing Method Calibration  
See Messer et al., 1986.

5.2.4 Sample Processing Quality Control  
See Messer et al., 1986.

5.2.5 Sample Processing Method Reference  
See Messer et al., 1986.

## 6. DATA MANIPULATIONS

6.1 Name of New or Modified Values  
None.

6.2 Data Manipulation Description  
See Messer et al., 1986.

## 7. DATA DESCRIPTION

### 7.1 Description of Parameters

#	Parameter SAS Name	Data Type	Len	Format	Parameter Label
57	A1	Num	8	F	DIRECT WATERSHED AREA (SQ MI)
86	A1PRIME	Num	8		UPDATED (1989) A1 (SQ MI)
84	A2	Num	8		WS AREA TO MAPPED UPPER NODE (SQ MI)
85	A3	Num	8		WS AREA TO MAPPED HEADWATER (SQ MI)
67	A4	Num	8		WS AREA BETWEEN U/L SAMPLE SITE (SQ KM)
68	A5	Num	8		WS AREA TO UPPER SAMPLE SITE (SQ KM)
11	ACC011	Num	8		BASE NEUTRALIZING CAPACITY (UEQ/L)
50	ALEX16	Num	8		EXTRACTABLE (MIBK) ALUMINUM (UMOL/L)
12	ALKA11	Num	8		ACID NEUTRALIZING CAPACITY (UEQ/L)
51	ALOR16	Num	8		ORG. MONOMERIC (PCV) ALUMINUM (UMOL/L)
49	ALTL16	Num	8		TOTAL ALUMINUM (UMOL/L)
47	ANDEF	Num	8		ANION DEFICIT, CATSUM-ANSUM (UEQ/L)
43	ANSUM	Num	8		SUM OF ANIONS (UEQ/L)
72	A_WS	Num	8		WS AREA TO MAPPED NODE (SQ KM)
31	CA16	Num	8		CALCIUM (UEQ/L)
44	CATSUM	Num	8		SUM OF CATIONS (UEQ/L)
33	CL16	Num	8		CHLORIDE (UEQ/L)
32	CO316	Num	8		CARBONATE (UEQ/L)
21	COLVAL	Num	8		COLOR VALUE (PCU)
13	COND11	Num	8		CONDUCTANCE -ANALYTICAL LAB- (US/CM)
24	CONIS	Num	8		IN-SITU CONDUCTANCE (US/CM)
82	COUNTY1	Char	25		COUNTY NAME
27	DATSMP	Num	8	DATE	DATE SAMPLED
14	DICE11	Num	8		AIR EQUIL. DIS. INORG. CARBON (MG/L)
15	DICI11	Num	8		INITIAL DIS. INORGANIC CARBON (MG/L)
18	DICVAL	Num	8		DIS. INORG. CARBON -PROCESS.LAB- (MG/L)
7	DOC11	Num	8		DIS. ORGANIC CARBON (MG/L)
28	DO_IS	Num	8		IN-SITU DISSOLVED OXYGEN (MG/L)
29	DRPCDE	Num	8		SITE EXCLUSION CODE (0,1,2,3,4,5,13)
62	ELEV	Num	8		SAMPLE SITE ELEVATION (M)
54	FE16	Num	8		IRON (UMOL/L)
39	FTL16	Num	8		TOTAL FLUORIDE (UEQ/L)
55	GRADE	Num	8		STREAM REACH GRADIENT (%)
41	H16	Num	8		HYDROGEN ION ACTIVITY (UEQ/L)
30	HCO316	Num	8		BICARBONATE (UEQ/L)
36	K16	Num	8		POTASSIUM (UEQ/L)
69	L2	Num	8		LENGTH BETWEEN U/L SAMPLE SITES (KM)
16	LABNAM	Char	30		CHEMICAL ANALYSIS LABORATORY NAME
60	LAT_STD	Num	8		SAMPLE SITE LATITUDE (DECIMAL FORM)
61	LON_STD	Num	8		SAMPLE SITE LONGITUDE (DECIMAL FORM)
77	MAP1	Char	30		1:24,000 SCALE MAP NAME

7.1 Description of Parameters, continued

#	Parameter SAS Name	Data Type	Len	Format	Parameter Label
78	MAP2	Char	30		1:24,000 SCALE MAP NAME
79	MAP3	Char	30		1:24,000 SCALE MAP NAME
80	MAP4	Char	30		1:24,000 SCALE MAP NAME
81	MAP5	Char	30		1:24,000 SCALE MAP NAME
34	MG16	Num	8		MAGNESIUM (UEQ/L)
53	MN16	Num	8		MANGANESE (UMOL/L)
37	NA16	Num	8		SODIUM (UEQ/L)
40	NH416	Num	8		AMMONIUM (UEQ/L)
35	NO316	Num	8		NITRATE (UEQ/L)
74	NODE	Char	9		REACH SAMPLE POSITION (U=UPPER, L=LOWER)
3	NOTSAM	Char	30		REASON NOT SAMPLED
42	OH16	Num	8		HYDROXIDE (UEQ/L)
46	ORGION	Num	8		CALCULATED ORGANIC ANIONS (UEQ/L)
10	PHAC11	Num	8		INITIAL PH, ACIDITY TITRATION
9	PHAL11	Num	8		INITIAL PH, ALKALINITY TITRATION
8	PHEQ11	Num	8		AIR EQUILIBRATED LAB PH
19	PHSTVL	Num	8		CLOSED SYSTEM PH -PROCESS. LAB-
23	PH_CLO	Num	8		FIELD PH, CLOSED CONTAINER -PILOT ONLY
73	PH_R	Num	8		FIELD PH, OPEN SYSTEM
48	PTL16	Num	8		TOTAL PHOSPHOROUS (UMOL/L)
83	QUAD	Char	30		1:250,000 SCALE MAP NAME
56	RCH_HW	Num	8		SHREVE ORDER -1:250,000 SCALE MAP
6	RCH_ID	Char	8		REACH IDENTIFICATION CODE
58	RCH_LN	Num	8		LENGTH OF MAPPED BLUE LINE REACH (KM)
1	SAMCOD	Char	3		SAMPLE TYPE (D, DA, E, EDA, ER, NS, SY, R)
22	SAMRN	Num	8		SAMPLE VISIT NUMBER (0, 1, 2, 3, 4)
66	SHRE75	Num	8		SHREVE ORDER -1:24,000 SCALE MAP
52	SI0216	Num	8		DISSOLVED SILICA (UMOL/L)
4	SIT_CLS	Char	6		SITE CHARACTERISTIC CODE
38	S0416	Num	8		SULFATE (UEQ/L)
45	SOBC	Num	8		SUM OF BASE CATIONS (UEQ/L)
59	STATE1	Char	2		STATE (TWO CHARACTER CODE)
5	STATE2	Char	2		STATE (TWO CHARACTER CODE)
65	STRA75	Num	8		STRAHLER ORDER -1:24,000 SCALE MAP
71	STRATUM	Num	8		STRATUM (1=REG., 2=LOW ANC, 3=SMALL A1)
64	STRMDP	Num	8		STREAM DEPTH (M)
2	STRMNAM	Char	30		STREAM NAME
63	STRMWD	Num	8		STREAM WIDTH (M)
17	STRM_ID	Char	9		STREAM/SITE IDENTIFICATION CODE
70	SUB_ID	Char	3		SUBREGION IDENTIFICATION CODE
26	TIMSMP	Num	8	TIME	TIME SAMPLED (HH:MM)
25	TMPSTR	Num	8		STREAM TEMPERATURE (DEG C)
20	TURVAL	Num	8		TURBIDITY (NTU)
76	W	Num	8		REACH WEIGHTING FACTOR
75	WC	Num	8		STAGE II CONDITIONAL WEIGHT

7.1.6 Precision to which values are reported

7.1.7 Minimum Value in Data Set

Name	Min
A1	0.4
A1PRIME	1
A2	0
A3	0
A4	0
A5	0
ACC011	0

## 7.1.7 Minimum Value in Data Set, continued

Name	Min
ALEX16	0
ALKA11	12
ALOR16	0
ALTL16	0.1853087243
ANDEF	-469.5152675
ANSUM	48.772732281
A_WS	0
CA16	16.2674
CATSUM	68.889257389
CL16	10.12739
C0316	0.000683231
COLVAL	0
COND11	7.58
CONIS	1
DATSMP	9207
DICE11	0.231
DIC111	0.215
DICVAL	0.267
DOC11	0.141
DO_IS	6.7
DRPCDE	0
ELEV	231.6367
FE16	0
FTL16	0.10528
GRADE	0.3412503413
H16	0.0036307805
HC0316	6.3297221326
K16	6.36693
L2	0.8851
LAT_STD	34.485277778
LON_STD	-82.050555556
MG16	15.38262
MN16	0
NA16	26.0565
NH416	0
N0316	0
OH16	0.0050118723
ORGION	1.3738970823
PHAC11	5.7
PHAL11	5.75
PHEQ11	6.29
PHSTVL	6.06
PH_CLO	6.14
PH_R	5.89
PTL16	0.0613417705
RCH_HW	1
RCH_LN	1.0138
SAMRN	0
SHRE75	1
SI0216	64.576259903
S0416	6.22518
SOBC	68.16854
STRA75	1
STRATUM	1
STRMDP	0.0076
STRMWD	0.3048
TIMSMP	30600
TMPSTR	3.9

7.1.7 Minimum Value in Data Set, continued

Name	Min
TURVAL	0.08
W	3.5506241331
WC	2

7.1.8 Maximum Value in Data Set

Name	Max
A1	36.05
A1PRIME	36
A2	55.16
A3	2.0098069498
A4	71.5029
A5	142.9541
ACC011	393
ALEX16	1.4083463049
ALKA11	3019
ALOR16	2.6313838856
ALTL16	2742.5691202
ANDEF	541.79366938
ANSUM	2682.6897312
A_WS	148.7437
CA16	2455.08
CATSUM	2979.6932072
CL16	840.658
C0316	28.708624886
COLVAL	750
COND11	283.6
CONIS	211
DATSMP	9328
DICE11	33.8
DIC111	30.8
DICVAL	33.08
DOC11	7.72
DO_IS	12.4
DRPCDE	5
ELEV	1307.5282
FE16	10.637535817
FTL16	8.00128
GRADE	17.648071625
H16	1.995262315
HC0316	2484.881665
K16	94.609
L2	24.2678
LAT_STD	35.964444444
LON_STD	-84.736944444
MG16	367.7022
MN16	2.2024827988
NA16	965.7
NH416	19.9584
N0316	57.7454
OH16	2.7542287033
ORGION	72.00399575
PHAC11	8.44
PHAL11	8.43
PHEQ11	8.65
PHSTVL	8.81
PH_CLO	8.83
PH_R	8.82
PTL16	47.459159295



7.1.8 Maximum Value in Data Set, continued

Name	Max
RCH_HW	13
RCH_LN	32.1532
SAMRN	4
SHRE75	243
SI0216	367.81838759
S0416	273.783
SOBC	2979.22234
STRA75	6
STRATUM	1
STRMDP	0.8534
STRMWD	39.9878
TIMSMP	71400
TMPSTR	27.5
TURVAL	1800
W	320
WC	2

7.2 Data Record Example

7.2.1 Column Names for Example Records

A1 A1PRIME A2 A3 A4 A5 ACC011 ALEX16 ALKA11 ALOR16 ALTL16 ANDEF ANSUM A\_WS CA16  
 CATSUM CL16 C0316 COLVAL COND11 CONIS COUNTY1 DATSMP DICE11 DIC111 DICVAL DOC11  
 DO\_IS DRPCDE ELEV FE16 FTL16 GRADE H16 HC0316 K16 L2 LABNAM LAT\_STD LON\_STD  
 MAP1 MAP2 MAP3 MAP4 MAP5 MG16 MN16 NA16 NH416 NO316 NODE NOTSAM\_OH16 ORGION  
 PHAC11 PHAL11 PHEQ11 PHSTVL PH\_CLO PH\_R PTL16 QUAD RCH\_HW RCH\_ID RCH\_LN SAMCOD  
 SAMRN SHRE75 SI0216 SIT\_CLS S0416 SOBC STATE1 STATE2 STRA75 STRATUM STRMDP  
 STRMNAM STRMWD STRM\_ID SUB\_ID TIMSMP TMPSTR TURVAL W WC

7.2.2 Example Data Records

8.290000,8,0,0.11,0.39,8.29,19,0,90,0,0.9524868431,47.092937649,111.66619517,  
 21.4711,81.337,158.75913282,15.45908,0.067507561,15,16,3,12,"MONROE",20MAR85,  
 0.9,0.81,1.254,0.67,10.4,0,609.5703,0.0895415473,1.0528,6.5469509914,  
 0.0794328235,57.191785072,12.12018,6.5175,"LIAC-NYSDOH",35.32222222,  
 84.100277778,"BIG JUNCTION (TN-NC)"," "," "," "," ",26.89902,0.0273035058,  
 38.3235,0,11.95233,"L"," ",0.1258925412,6.5735810948,7.1,7.05,7.34,7.03,6.83,  
 6.89,0.2937947956,"CHATTANOOGA, TN-NC",1,"2A07701",7.4026,"R",1,12,97.363690833,  
 " ",25.8168,158.6797,"TN"," ",3,1,0.4237,"SUGAR COVE BRANCH OF N. RIVER",10.576,  
 "2A07701L","2AS",11:15,7.6,0.24,15.440289505,2

8.290000,8,0,0.11,20.459,1.01,25.1,0.129716107,84.55,0.1111852346,1.6492476466,  
 15.315078417,137.98301012,21.469,71.357,153.29808854,16.53106,0.0579763115,15,  
 17,10,"MONROE",03APR85,1.115,1.2,1.2585,0.97,11,0,609.5703,0.0035816619,1.0528,  
 6.5469509914,0.1258925412,77.845195989,12.81057,6.5175,"LIAC-NYSDOH",35.32222222,  
 84.100277778,"BIG JUNCTION (TN-NC)"," "," "," "," ",30.55959,0,38.0625,0.382536,  
 14.621845,"L"," ",0.0794328235,9.455161917,6.9,6.86,7.12,7.08,6.99,6.88,  
 0.1452831407,"CHATTANOOGA, TN-NC",1,"2A07701",7.4026,"DA",2,12,110.6783836,  
 " ",27.7947,152.78966,"TN"," ",3,1,0.4237,"SUGAR COVE BRANCH OF N. RIVER",  
 10.576,"2A07701L","2AS",10:45,8,0.8,15.440289505,2

8.290000,8,0,0.11,20.459,1.01,26.6,0.0741234897,93.3,0.0370617449,2.7055073753,  
 42.670699829,131.82741646,21.469,91.317,174.49811629,15.2334,0.0519355938,5,  
 17.9,15,"MONROE",17APR85,1.04,1.17,1.261,0.5,9.4,0,609.5703,0.0895415473,1.316,  
 6.5469509914,0.1348962883,74.721629841,13.75666,6.5175,"LIAC-NYSDOH",  
 35.32222222,84.100277778,"BIG JUNCTION (TN-NC)"," "," "," "," ",30.10716,0,  
 38.628,0.5544,12.32332,"L"," ",0.0741310241,4.8682667913,6.87,6.85,7.41,7.12,  
 7.06,7.06,0.4519919933,"CHATTANOOGA, TN-NC",1,"2A07701",7.4026,"R",3,12,  
 86.878370282," ",28.107,173.80882,"TN"," ",3,1,0.4237,"SUGAR COVE BRANCH OF  
 N. RIVER",10.576,"2A07701L","2AS",11:20,13.8,1.3,15.440289505,2

## 8. GEOGRAPHIC AND SPATIAL INFORMATION

8.1 Minimum Longitude  
-84.73694 Decimal Degrees

8.2 Maximum Longitude  
-82.050556 Degrees

8.3 Minimum Latitude  
34.4852 Decimal Degrees

8.4 Maximum Latitude  
35.9644444 Decimal Degrees

8.5 Name of Area or Region  
Southern Blue Ridge Province Subregion 2As (Tennessee, Kentucky, Virginia, Georgia)

## 9. QUALITY CONTROL / QUALITY ASSURANCE

9.1 Data Quality Objectives  
See Messer et al., 1986.

9.2 Quality Assurance Procedures  
See Messer et al., 1986.

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

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## 12. TABLE OF ACRONYMS

## 13. PERSONNEL INFORMATION

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