Appendix 1.   Methods—Data Retrieval, Screening, and Modification

Contents

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By R. Edward Hickman

USGS Water-Quality Data Retrieval and Screening

U.S. Geological Survey (USGS) water-quality data were obtained from National Stream Quality Accounting Network (NASQAN) and Hydrologic Benchmark Network (HBN) files, referred to collectively as the National Stream Water-Quality Monitoring Networks (WQN) (Alexander and others, 1997), and from online retrievals from the USGS National Water Information System (NWISWeb). These two datasets were merged.

National Stream Water-Quality Monitoring Networks (WQN) Data

Water-quality data were obtained from CD–ROMs containing data from NASQAN and HBN (Alexander and others, 1997). Data were retrieved from files for nutrients, major ions, and physical properties, and then merged.

National Water Information System (NWISWeb)

Stream water-quality stations were identified and retrieved on a state-by-state basis. A list of all surface-water-quality stations was retrieved for each state. Those stations in the study area (Hydrologic Regions 01 and 02) that had a drainage area of one square mile or more were identified. Water-quality data for these stations were retrieved. Data from all states were merged and duplicates records were removed.

Data Modifications

Recensoring

Water-quality constituents with recent values reported with laboratory-reporting limits (LRLs) were identified from the Laboratory Information Management System (LIMS) of the USGS National Water Quality Laboratory (NWQL). For each constituent, the value of each censored concentration was set to half the original value if the sample was collected after the date the NWQL started using LRLs for at least one method of analysis; these dates were available through LIMS. This procedure follows the recommendation of Helsel (2005).

Censored values of dissolved ammonia (parameter code 00608) prior to October 1, 1997, were reset to 0.02 milligrams per liter (mg/L) (as nitrogen), following NAWQA Program recommendations (D.K. Mueller, U.S. Geological Survey, written commun., 2004).

Water-quality constituent and parameter code	Date when NWQL started reporting values with laboratory-reporting levels
Dissolved ammonia (00608)	10/1/1999
Dissolved nitrite (00613)	10/4/2000
Dissolved organic nitrogen plus ammonia (00623)	10/1/1998
Total organic nitrogen plus ammonia (00625)	10/1/1998
Dissolved nitrite plus nitrate (00631)	10/1/1999
Total phosphorus (00665)	10/1/1998
Dissolved phosphorus (00666)	10/1/1998

Parameter Codes, Calculated Values, and Order of Precedence for Use in Analyses

Total nitrogen was set equal to parameter code 00600 (see next table). If 00600 was unavailable, total nitrogen was calculated by combining parameters: 00625 + nitrite-plus-nitrate, or nitrite-plus-nitrate + 49570 + 00623. In either case, total nitrogen was calculated by summing estimated or uncensored values; if the sum was less than 0.2 mg/L the value was set to <0.2 mg/L.

Ammonia nitrogen was set equal to 00608.

Nitrite-plus-nitrate was set equal to one of the following parameters, if available, listed in order of precedence: 00631, 00630, 00618, or 00620.

Total ammonia-plus-organic nitrogen (total Kjeldahl nitrogen) was set equal to 00625.

Total phosphorus was either set equal to 00665 or calculated from 00666 and 00667 by use of the following method (where "r" is the remark code and "p" is the constituent concentration value for that parameter code):

If r00667 and r00666 are both not equal to "<", then p00665=p00666+p00667

If r00667 equals "<" and r00666 is not equal to "<", then p00665=p00666

If r00667 is not equal to "<" and r00666 equals "<", then p00665=p00667

If r00667 equals "<" and r00666 equals "<", then p00665=p00667

Suspended sediment was set equal to 80154.

Reference

Alexander, R.B., Slack, J.R., Ludtke, A.S., Fitzgerald, K.K., and Schertz, T.L., 1997, Data from selected U.S. Geological Survey National Stream Water-Quality Monitoring Networks (WQN) on CD–ROM: U.S. Geological Survey Fact Sheet FS–013–97, 2 p.

Water-quality constituents and parameter codes	Description of water-quality constituent	Calculated from or set equal to (in order of precedence for use in analyses)
(Remarks and values for the following)		
PHOSPHORUS	Phosphorus, total mg/L	00665, (00667 + 00666)
00665	Phosphorus, total mg/L	
00667	Phosphorus, particulate, mg/L	
00666	Phosphorus, diss, mg/L	
NITROGEN	Total nitrogen, in mg/L as N	00600, (00625 + 00631), (49570 + 00623 + 00631)
00600	Total nitrogen, in mg/L as N	
49570	Particulate-N, mg/L	
TOT.ORG.N	NH3+orgN, wu mg/L as N	00625
00625	NH3+orgN, Total mg/L as N	
00623	NH3+orgN, Diss mg/L as N	
DISS.AMMONIA	Ammonia, Diss mg/L as N	00608
00608	Ammonia, Diss mg/L as N	
NITRATE	Dissolved nitrate plus nitrite, in mg/L as N	00631, 00630, 00618, 00620
00631	Dissolved nitrate plus nitrite, in mg/L as N	
00630	Total nitrate plus nitrite	
00618	Dissolved nitrate	
00620	Total nitrate	
00613	Dissolved nitrite	
00615	Total nitrite	
SUSPSED	Suspended sediment	80154
80154	Suspended sediment	

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