

Summary matrix of existing manuals (not all-inclusive)

Existing manuals

Minnesota manuals

Guide to Volunteer Monitoring
Minnesota Lake and Watershed Data Collection Manual
Handbook for Citizen-Assisted Lake Monitoring Program (CAMP)
Minnesota's Citizen Lake Monitoring Program (CLMP) Handbook
Training Program for CLMP+: Expanding Minnesota's CLMP Program
Citizen Stream-Monitoring Program Instructions
Sustainable Lakes Planning Workbook
A Citizen's Guide to Biological Assessment of Wetlands
River Monitors Manual

Federal manuals

National Field Manual for the Collection of Water-Quality Data
Volunteer Lake Monitoring, A Methods Manual
Volunteer Stream Monitoring, A Methods Manual
Volunteer Wetland Monitoring: An Introduction and Resource Guide
Starting Out in Volunteer Water Monitoring
The Volunteer Monitor's Guide to Quality Assurance Project Plans

National non-profit manuals

River Monitoring Study Design Workbook
Testing the Waters: Chemical and Physical Vital Signs of a River
Living Waters: Using Benthic Macroinvertebrates and Habitat to Assess Your River's Health

Other states' manuals

A Citizen's Guide to Understanding and Monitoring Lakes and Streams
Virginia Citizen Monitor's Methods Manual
Texas Watch Monitoring Plan Guide
Volunteer Stream Monitoring Training Manual
Designing Your Monitoring Program: A Technical Handbook for Community-Based Monitoring In Pennsylvania

Minnesota manuals

TITLE	TARGET USERS / GEOGRAPHIC AREA	QA/QC	DATA MANAGEMENT	MEDIA	DATA USES	METHODS	STUDY DESIGN/ PROCESS
<i>Guide to Volunteer Monitoring</i> 2002, by Volunteer Stream Monitoring Partnership (VSMP) http://www.vsmpp.org	Volunteers in the VSMP program / Twin Cities Metro Area	Emphasizes importance of QA/QC and i.d.'s necessity of QA for the intended use and inclusion in VSMP database; includes some QA protocols; mainly refers to other manuals	Discusses how to use data collected for each activity; does not cover data mgmt.; VSMP intends to keep a central database	■ Streams ■ Physical, Chemical, Biological	■ Awareness and education ■ Condition / trend ■ Problem investigation	Describes activities, general methods and data collection Refers to other manuals for details	Discusses importance of determining why, what, where, when, who and how to monitor; suggests contacting a VSMP coordinator or local resource professional for help <u>Discusses proper collec-</u>
<i>Minnesota Lake and Watershed Data Collection Manual</i> 1994, Lakes Task Force (EQB); written by several agencies http://www.shorelandmanagement.org/depth/index.html	State, county, lake associations, consultants (broad audience) / Statewide	Some discussion of lab considerations – detection limits and field techniques	Discusses how to analyze, chart and present data; has various tables to assist reporting	■ Lakes, Stream loading ■ Chemical, Biological	■ Awareness and education ■ Condition / trend ■ Problem investigation ■ Local decision-making	Detailed methods for sampling, analysis and data presentation; integration of lake and watershed data; collecting societal and development data	<u>Gives detailed back-</u>
<i>Handbook for Citizen-Assisted Lake Monitoring Program (CAMP)</i> 2001, Metropolitan Council http://www.metrocouncil.org/environment/RiversLakes/Lakes/campLakes2001.htm	CAMP volunteers / Twin Cities Metro Area	Brief mention of QA/QC, which is handled by the Met Council's analytical lab	Data management is handled by Met Council; data is entered into MPCA Water Quality Database	■ Lakes ■ Physical, Chemical	■ Awareness and education ■ Condition / trend ■ Local decision-making ■ Impaired waters assessment and listing	Provides detailed descriptions of general methods and data collection	ground into how methods were selected, discusses why program was formed

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Minnesota's Citizen Lake Monitoring Program (CLMP) Handbook 2000, MPCA http://www.pca.state.mn.us/water/pubs/clmp-handbook.pdf	CLMP Volunteers / Statewide	Addresses QA/QC issues	MPCA Water Quality Database	■ Lakes ■ Physical	■ Awareness and education ■ Condition / trend ■ Problem investiga- tion ■ Local decision- making ■ Statewide deci- sion-making ■ Impaired waters assessment and listing	Provides standard operating proce- dures for the CLMP; includes SOPs for the pro- gram	NA
Training Program for CLMP+: Expanding Minnesota's CLMP Program 2002, MPCA http://www.pca.state.mn.us/publications/clmp/clmp-training-manual.pdf	Volunteers in the CLMP Program / Statewide	Addresses QA/QC issues	MPCA Water Quality Database	■ Lakes ■ Physical, Chemical	■ Awareness and education ■ Condition / trend ■ Problem investiga- tion ■ Local decision- making ■ Statewide deci- sion-making ■ Impaired waters assessment and listing	Provides standard operating proce- dures for the CLMP Plus; includes SOPs for the spe- cific program	NA
Citizen Stream-Monitoring Program Instructions 2002, MPCA Available from MPCA	Volunteers in CSMP (individuals, school groups, watershed groups like CWP, county networks) / Statewide	Incorporated into pro- gram	Done by MPCA – no information included in docu- ment	■ Perennial streams ■ Physical	■ Awareness and education ■ Condition / trend ■ Problem investiga- tion ■ Local decision- making ■ Statewide deci- sion-making ■ Impaired waters assessment and listing	Provides standard operating proce- dures for the CSMP; includes SOPs for the spe- cific program	Briefly discusses when & where to sample; add'l background and process info. provided in intro. to annual reports

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<i>Sustainable Lakes Planning Workbook</i> 2000, Minnesota Lakes Association http://mnlakes.org/main_dev/workbook.cfm	Lake associations, community planners working with water resource mgmt. agencies / Statewide	Provides program contacts, rather than specific methods QA/QC guidance; Appendix D is a guide for data analysis and assessment and it offers guidance for data management QC	NA	<ul style="list-style-type: none"> ■ Lakes ■ Physical, Chemical, Biological 	<ul style="list-style-type: none"> ■ Awareness and education ■ Condition / trend ■ Local decision-making ■ Impaired waters assessment and listing 	Community organizing, effective use of agency resources, geo-physical landscape measures, in-lake physical-chemical-trophic state measures and data analysis	Provides complete context for long term, multifaceted lake watershed planning; includes uses of water clarity and geo-physical data in this process, as well as MN-specific programs & resources
<i>A Citizen's Guide to Biological Assessment of Wetlands</i> 2002, MPCA Available from MPCA	Citizens interested in biological assessment of wetlands; developed for Wetland Health Evaluation Project-WHEP / MN depressed wetlands	QA/QC issues not specifically addressed; WHEP uses a Twin Cities consulting firm to provide QA/QC	Not addressed in guide; data generated by WHEP is managed by the contract consulting firm	<ul style="list-style-type: none"> ■ Wetlands ■ Biological 	<ul style="list-style-type: none"> ■ Awareness and education ■ Condition / trend ■ Problem investigation ■ Local decision-making 	Provides detailed descriptions of how to collect & analyze a wetland invertebrate sample and how to generate an assessment score	Discusses when and where to sample; addresses the importance of using biological data for wetland assessment; gives brief background into IBIs and biological indicators
<i>River Monitors Manual</i> Mississippi Headwaters Board/Rivers Council of Minnesota, 1997 Available from the Rivers Council of Minnesota 320-259-6800	Citizens interested in understanding and monitoring the health of a river or stream / Minnesota rivers and streams	Explains concepts and methods for various parameters; also references other manuals (mainly River Watch manuals)	Not much on management (some info. on spreadsheets); does cover reporting and interpreting results	<ul style="list-style-type: none"> ■ Streams ■ Physical, Chemical, Biological 	<ul style="list-style-type: none"> ■ Awareness and education ■ Condition / trend ■ Problem investigation ■ Local decision-making ■ Statewide decision-making 	Provides detailed methods for physical, chemical and biological monitoring of rivers; in some cases descriptions reference River Network manuals for specific details	Teaches the basic concepts of river ecology, fundamentals of monitoring river water quality, how to interpret results and take actions to protect your river; helps volunteers choose the level of monitoring that is appropriate for the resources they have available

Federal manuals

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<i>National Field Manual for the Collection of Water-Quality Data</i> 1998, USGS http://water.usgs.gov/ owq/pubs.html	USGS Field Personnel / United States	Provides USGS organi- zational structure sup- porting QA aspects for USGS water programs and constitutes SOPs for USGS	NA	<ul style="list-style-type: none"> ■ Surface and ground waters ■ Physical, Chemical, Biological 	<ul style="list-style-type: none"> ■ Awareness and education ■ Condition / trend ■ Problem investiga- tion ■ Local decision- making ■ Statewide deci- sion-making ■ Impaired waters assessment and listing ■ Regulatory action 	Provides USGS SOPs for water & sediment sampling, selected field phys- ical-chemical meas., and bacteria counts; other books address other SOPs such as lab methods	Provides individual SOPs for elements of a study; does not address overall study design
<i>Volunteer Lake Monitoring, A Methods Manual</i> 1991, US EPA http://www.epa.gov/ owow/monitoring/ lakevm.html	Volunteers and organizers of vol- unteer monitors / United States	QA concepts and ele- ments are described	NA	<ul style="list-style-type: none"> ■ Lakes ■ Physical, Chemical, Biological 	<ul style="list-style-type: none"> ■ Condition / trend ■ Local decision- making 	Sampling algae, aquatic plants, sed- iment and bacteria and meas. DO	Conventional description of planning process based on QA principles; detailed, but general guidance for program development
<i>Volunteer Stream Monitoring, A Methods Manual</i> 1997, US EPA http://www.epa.gov/ owow/monitoring/ volunteer/stream/	Volunteer monitor- ing program mgrs / United States	QA concepts and ele- ments are described; additional details for physical-chemical meas.	Provides technical advice for good organization and QA	<ul style="list-style-type: none"> ■ Streams and water- shed ■ Physical, Chemical, Biological 	<ul style="list-style-type: none"> ■ Awareness and education ■ Condition / trend ■ Problem investiga- tion ■ Local decision- making ■ Statewide deci- sion-making ■ Impaired waters assessment and listing ■ Regulatory action 	Watershed survey, macroinvert. & habitat assess- ment, in-stream water physical- chemical meas.; data mgmt. & analysis	Conventional description of planning process based on QA principles; detailed, but general guidance for program development

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<i>Volunteer Wetland Monitoring: An Introduction and Resource Guide</i> 2000, US EPA http://www.epa.gov/owow/wetlands/monitor/volmonitor.html	Citizens and organizations interested in wetland monitoring / U.S.	The importance of having a quality QAPP is heavily emphasized; QA/QC procedures are not specifically addressed	Discusses the importance of good data management	<ul style="list-style-type: none"> ■ Wetlands ■ Physical, Chemical, Biological 	■ NA	References methods manuals; does not give detailed methods; more of a process document; does a very good job of outlining why/how to effectively implement wetland volunteer monitoring	Discusses the process for designing a wetland study; addresses key issues such as target audience, data quality, and data objectives
<i>Starting Out in Volunteer Water Monitoring</i> 1998, US EPA http://www.epa.gov/owow/monitoring/volunteer/startmon.html	Volunteers and organizers of volunteer monitors / U.S.	NA	NA	<ul style="list-style-type: none"> ■ Surface waters ■ NA 	■ NA	4-page factsheet offering first-step guidance for individuals interested in beginning a monitoring effort	Guide to planning a volunteer monitoring effort, with references to helpful EPA guidance
<i>The Volunteer Monitor's Guide to Quality Assurance Project Plans</i> 1996, US EPA http://www.epa.gov/owow/monitoring/volunteer/qappcovr.htm	Volunteer monitoring program planners / U.S.	Complete and technical guidance for quality assurance design	Addresses QA considerations for data management	<ul style="list-style-type: none"> ■ Surface and ground waters ■ NA 	Useful to all: <ul style="list-style-type: none"> ■ Awareness and education ■ Condition / trend ■ Problem investigation ■ Local decision-making ■ Statewide decision-making ■ Impaired waters assessment and listing ■ Regulatory action 	NA	Detailed guidance for QA in program development; the QA concept encompasses all aspects, including successful design and reporting

National non-profit manuals

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<i>River Monitoring Study Design Workbook</i> River Network Available from River Network at http://www.rivernetwork.org/marketplace/category.cfm?Category=25	Volunteer monitoring program planners / U.S.	Covers how to set up a quality assurance program	Not included	■ Streams ■ Physical, Chemical, Biological	■ NA	Does not include specific monitoring methods; focus is on how to design a monitoring effort	Discusses the process for designing a stream monitoring effort, including determining the purposes of the monitoring program; selecting appropriate water quality indicators, methods and sites; deciding who to involve and setting a schedule
<i>Testing the Waters: Chemical and Physical Vital Signs of a River</i> River Network Available from River Network at http://www.rivernetwork.org/marketplace/category.cfm?Category=25	High school teachers and community groups interested in volunteer monitoring of stream water chemistry and physical characteristics / U.S.	NA	Some discussion of how to manage data that is generated	■ Streams ■ Physical, Chemical	■ NA	Each indicator chapter (physical survey, temperature, turbidity, dissolved oxygen, pH, alkalinity, phosphate, nitrate and conductivity) has background information and measurement procedures	Covers nine water quality indicators, information needed to design a study and deal with the data once it's carried out, and how to use the information to take action
<i>Living Waters: Using Benthic Macroinvertebrates and Habitat to Assess Your River's Health</i> River Network Available from River Network at http://www.rivernetwork.org/marketplace/category.cfm?Category=25	Citizens interested in volunteer monitoring of stream water biology and habitat / U.S.	NA	NA	■ Streams ■ Biological		Describes four options for monitoring benthic macroinvertebrates, the detailed procedures for each option and how to interpret and present results	Describes how to design and carry out a river study using benthic macroinvertebrates; includes background information about macroinvertebrates and the role they play in the river ecosystem

Other states' manuals

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<i>A Citizen's Guide to Understanding and Monitoring Lakes and Streams</i> 1991, Washington Department of Ecology	Citizens / Puget Sound area (could be applied broadly)	Discusses the importance of QA/QC; describes what good QA/QC is, defines common QA/QC terms, and describes how to implement a QA/QC plan	Does not directly address data management	<ul style="list-style-type: none"> ■ Lakes, streams ■ Physical, Chemical 	<ul style="list-style-type: none"> ■ Awareness and education ■ Condition / trend ■ Problem investigation ■ Local decision-making ■ Statewide decision-making ■ Impaired waters assessment and listing 	Gives detailed methods for collecting a variety of water quality sample parameters	Addresses many aspects of study design and process; details who, why, what, when, where, how; very good background into why various WQ parameters are used, natural variation, & expected pollution impacts
<i>Virginia Citizen Monitor's Methods Manual</i> 1999, Virginia DEQ http://www.deq.state.va.us/cmonitor/manual.html	Citizen volunteers / Virginia (could be applied broadly)	Provides a boilerplate QA/QC plan; discusses different levels of QC for different objectives; defines QA/QC terms	Discusses the need for good data management; details not provided	<ul style="list-style-type: none"> ■ Streams ■ Physical, Chemical, Biological 	<ul style="list-style-type: none"> ■ Awareness and education ■ Condition / trend ■ Problem investigation ■ Local decision-making ■ Statewide decision-making ■ Impaired waters assessment and listing 	Provides detailed methods for all sampling methods recommended	Good intro. section on developing a monitoring plan; primarily a methods manual rather than a process manual
<i>Texas Watch Monitoring Plan Guide</i> Texas Watch, San Marcos, TX 78666 http://www.texaswatch.geo.swt.edu/formsx.htm	Volunteers in the Texas Watch program / Texas	Indicates that QA/QC is important, but provides no detailed protocol; discusses the need for a QA officer and defines officer duties	Discusses the need for a data coordinator	<ul style="list-style-type: none"> ■ Surface waters ■ Physical, Chemical 	<ul style="list-style-type: none"> ■ Awareness and education ■ Condition / trend ■ Problem investigation ■ Local decision-making 	Methods not detailed; manual is intended to be used with add.'l Texas Watch material & is just a brief intro. to its program	Discusses process for setting up a monitoring program using its resources

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<i>Volunteer Stream Monitoring Training Manual</i> 2000, Indiana DNR RiverWatch http://www.in.gov/dnr/soilcons/riverwatch/vsm/manual.html	RiverWatch volunteers / Indiana (could be applied broadly)	Emphasizes the need for good QA/QC; gives a decent outline of steps to be followed for different levels of QA/QC based on monitoring objectives	Indiana DNR Riverwatch program provides data mgmt. tool (an online, data entry program).	<ul style="list-style-type: none"> ■ Streams ■ Physical, Chemical, Biological 	<ul style="list-style-type: none"> ■ Awareness and education ■ Condition / trend ■ Problem investigation ■ Local decision-making 	Provides detailed methods for all recommended sampling methods	Includes a chapter devoted to study design
<i>Designing Your Monitoring Program: A Technical Handbook for Community-Based Monitoring In Pennsylvania</i> Pennsylvania Citizens' Volunteer Monitoring Program, Pennsylvania DEP, 2001. http://www.dep.state.pa.us/dep/deputate/watermgmt/wc/subjects/CVMP/cvmp_HdBook.htm	Volunteer monitors / Pennsylvania	Discusses need for good QA/QC; includes table that defines QC measures and recommends QC measures for various monitoring uses	Includes discussion of data mgmt; need to plan for this up-front as part of study design	<ul style="list-style-type: none"> ■ Lakes, streams, ground water, watershed ■ Physical, Chemical, Biological 	<ul style="list-style-type: none"> ■ Awareness and education ■ Condition / trend ■ Problem investigation ■ Local decision-making ■ Statewide decision-making ■ Impaired waters assessment and listing 	Breaks uses down, then includes list of what, why, when, where, how often (etc.); monitoring options (including examples of methods), and sources of further information by use	Key/ integral part of the manual

*The MPCA is working towards the use of CLMP monitoring in 305(b) assessments and 303(d) listing.