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# Guidance for State Water Monitoring and Wasteload Allocation Programs



# **Guidance for State Water Monitoring and Wasteload Allocation Programs**

October 1985

Monitoring and Data Support Division  
U.S. Environmental Protection Agency  
Washington, DC 20460

**This guidance for State programs will be reviewed and revised periodically to reflect changes in EPA's Monitoring Strategy, to include new information, or to clarify/update the text. Comments are invited and will be considered in these revisions. Comments or inquiries should be directed to:**

**Monitoring Branch  
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

OFFICE OF  
WATER

To the Reader:

The Guidance for State Water Monitoring and Wasteload Allocation Programs defines the responsibilities of State and Interstate water pollution control agencies, working in a partnership with EPA, for meeting the monitoring and wasteload objectives of the Clean Water Act. It is to be used by the States and EPA Regions in developing annual section 106 and 205(j) work programs that focus water quality monitoring and wasteload allocation programs on areas where water quality decisions need to be made (i.e., priority waterbodies) while continuing to assess water quality conditions and trends throughout the State.

I urge all States to work with the EPA in conducting monitoring and wasteload allocation activities that provide the data and analyses necessary for setting water quality control priorities, developing water quality-based permit limits, measuring compliance with permits, and assessing ambient conditions. Implementing this guidance will provide the data needed to accomplish our water quality program.

Sincerely,

A handwritten signature in black ink, appearing to read "Edwin L. Johnson".

Edwin L. Johnson  
Acting Deputy Assistant Administrator

# FOREWORD

The **Basic Water Monitoring Program** was developed in 1977 to provide a framework for addressing national water monitoring program needs. This earlier guidance stressed intensive surveys to assess water quality problems and called for EPA and the States to operate a national network of fixed monitoring stations, develop and operate a pilot biological monitoring program, and report on water quality in accordance with Section 305(b) of the Clean Water Act.

With the inception of the Agency's new policies on monitoring and water quality-based controls and the development of monitoring strategies for compliance and inland/coastal waters, an expansion of the **Basic Water Monitoring Program** document was necessary. Revisions were also needed to take account of new technical information and guidance. For these reasons, the new **Guidance for State Water Monitoring and Wasteload Allocation Programs** is more oriented towards program management and contains less in the way of detailed technical guidance. References to technical guidance on assessing water quality and developing water quality-based controls are also included.

In general, States and EPA are to work as partners in meeting the monitoring and wasteload allocation requirements of the Clean Water Act. These requirements include:

- Increasing the emphasis on identifying waters needing water quality-based controls and on developing those controls.
- Implementing EPA's policy on developing water quality-based controls for toxics by determining wasteload allocations for toxics using both biomonitoring and pollutant-specific techniques.
- Focusing resources and new techniques on areas where designated uses are not being met while, at the same time, screening water quality in other areas to anticipate problems.
- Focusing on the environmental results gained through pollution abatement actions.
- Acquiring more information on the nature and extent of nonpoint sources of pollution, their impacts on water quality, and the relative success of different approaches to control nonpoint sources.

In addition to these requirements, there are other areas that need emphasis. These include:

- Performing more targeted inspections of discharges to reduce noncompliance and assess the impact of dischargers on receiving waters after controls are in place.
- Increasing the emphasis on pretreatment, compliance, and enforcement programs.
- Increasing the use of effluent data to help target areas for ambient water quality monitoring.
- Improving EPA's data systems (such as STORET and the Permit Compliance System, PCS) to make them more useful for State and EPA analyses.

In operating water quality programs, States are to assess the physical, chemical, and biological integrity of waterways through the use of intensive surveys, fixed stations, and biological monitoring. They are also to ensure that all data collection and analysis activities are performed in a scientifically acceptable manner and that all data collected is used in carrying out needed water quality planning, wasteload allocation, and standards activities. EPA also strongly encourages that water quality assessments be documented by the States in the form of technical reports.

The **Guidance for State Water Monitoring and Wasteload Allocation Programs** is a product of EPA's Office of Water which includes, among others, the Office of Water Regulations and Standards and the Office of Water Enforcement and Permits. Other offices and individuals were also instrumental in preparing this document: the EPA Office of Research and Development; the EPA Office of Policy, Planning, and Evaluation; the EPA Regional Water Division Directors and Environmental Services Division Directors; and the EPA Regional Monitoring Coordinators and Regional Wasteload Allocation Coordinators. During its preparation, this guidance document was discussed with and reflects the comments of the Policy and Technical Subgroups of the Standing Work Group on Monitoring and Wasteload Allocations which include representatives from EPA, the States, and several Interstate Commissions. A final draft was also distributed to all of the States and EPA Regions who submitted many valuable comments that were used in preparing this final guidance.

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# INTRODUCTION

## Purpose

This guidance is to be used by the States and the EPA Regional offices in developing monitoring and wasteload allocation portions of the annual State 106 and 205(j) work programs. This guidance serves to define monitoring and wasteload allocation activities in accordance with EPA regulations and reflects the objectives of EPA's Environmental Monitoring Policy, the Water Quality Monitoring Policy, EPA's Policy for the Development of Water Quality-based Permit Limitations for Toxic Pollutants, the Office of Water's Monitoring Strategy, and the Policy and Program Requirements to Implement the Quality Assurance Program.

As used in this document, the word "State" includes State agencies and Interstate Commissions that receive grants from EPA to help finance water monitoring and wasteload allocation programs.

## Scope

This guidance covers two principal areas. One is an outline of the objectives of the water monitoring program to conduct sound assessments of the quality and condition of the Nation's waters and make the necessary control decisions where they are needed. The second is a description of the process for calculating total maximum daily loads and wasteload allocations for point and nonpoint sources of pollution. As used in this document, the phrase "wasteload allocations for point and nonpoint sources" is equivalent to "wasteload allocations for point sources" and "load allocations for nonpoint sources," as defined in the Water Quality Planning and Management Regulation (40 CFR 130.2). Annual program priorities are not addressed in this document: they are included in the annual Agency Operating Guidance.

## Implementation

EPA will evaluate how well this guidance is being implemented by the States and will continuously work towards improving EPA and State water monitoring and wasteload allocation programs.

The actual effectiveness of State and EPA programs will be judged to a great extent by the degree to which they in fact deliver information that State and EPA administrators need to manage for environmental results. This will include periodic reviews of State and EPA programs by EPA, such as reviews conducted under the Office of Water's portion of the *Agency operating Guidance and the Office of Water's Evaluation Guide*, as well as possible audits of State programs by the Regional offices. In conducting periodic reviews, EPA will be reviewing indicators (including resource and performance estimates outlined in the annual Office of Water portion of the Agency's Strategic Planning and Management System, SPMS) to assess the effectiveness of the State programs. Specific measures in these systems will include information needed by the EPA Regional offices to answer the following types of questions:

- Did the monitoring program provide *adequate support for making important water quality-based regulatory decisions*? For instance, in looking at all the water quality standards revisions, total maximum daily loads (TMDLs)/wasteload allocations (WLAS), water quality-based permit issuances, and nonpoint source control decisions performed by the State, did the State have available the water quality and effluent data and analyses it needed at the time those regulatory decisions were made? For those decisions where the data were not adequate, were the data gaps the result of applying rational priorities to the use of resources?
- Did the State use EPA recommended methodologies for *relating water quality conditions to effluent limitations*? For instance, did the State calculate TMDLs and did they develop a WLA using technically valid methods to arrive at water quality-based controls that meet water quality standards? Did they follow all of the requirements of the regulations, including the antidegradation provisions, in developing TMDLs?
- Did the State allocate resources to operate *acceptable monitoring and wasteload allocation programs*? For instance, did the State devote needed resources for developing water



quality-based controls, assessing water quality conditions and trends, ensuring compliance with NPDES permits, and other activities?

- Did the State use effluent data to help *target ambient water quality monitoring activities*. If so, did they consider areas where both technology and water quality-based controls are in place?
- Did the State conduct chemical and/or biological monitoring to *confirm and/or characterize pollution problems* in all the waters identified as "partially supporting" or "not supporting designated uses"? If such monitoring was not conducted for some of these waters, was the decision not to monitor based on a rational method for setting priorities?
- Did the State develop enough data to evaluate changes or trends in all of the waters identified as "partially supporting" or "not supporting designated uses"? If such monitoring was not conducted for some of these waters, was the decision not to monitor based on a rational method for setting priorities?
- Did the State make progress in *reducing the amount of "unassessed" waters* (number of stream miles, shore miles, acres, etc.) reported in their biennial Section 305(b) reports? If so, did the reduction represent the results of actual monitoring, or use of a technically valid method of projecting water quality (e.g., EPA's bioscreening guidance)?
- Did the State undertake any monitoring and/or screening programs to *identify new or emerging problems* (e.g., previously unknown toxic pollutant contamination)? For instance, did the State conduct monitoring or screening to evaluate "unassessed waters"?

### **Responsibilities of EPA Headquarters, EPA, Regional Offices, and the States**

The EPA Headquarters provides overall policy, guidance, technical assistance, and overview of

program implementation by the Regions and the States for ambient monitoring, water quality analyses, TMDLs, and data reporting. EPA Headquarters also performs national assessments and evaluates the national water quality effects of water programs.

The EPA Regional offices provide overall policy, guidance, and overview of program implementation by the States to ensure that they are operating adequate monitoring programs in accordance with Section 106(e) of the Clean Water Act. The Regional offices review State programs to ensure that adequate State resources from Section 106 and 205(j) grants are directed to priority activities in monitoring, water quality analyses, TMDLs, and data reporting. The Regional offices also provide technical assistance and training for States in water monitoring and wasteload allocation-related activities, ensure that needed water quality-based controls are developed by the States, that data are entered into the national data system, and that appropriate quality assurance procedures are used.

The States have primary responsibility for preparing water quality analyses and TMDLs, States perform monitoring and wasteload allocation activities, prepare assessments and evaluations as required by the Clean Water Act, and ensure that needed environmental data are provided to EPA.

### **Summary**

The Guidance for State Water Monitoring and Wasteload Allocation Programs is summarized in the matrix on the following page. Chapter references are included to expand on the activities presented.

**OVERVIEW OF GUIDANCE FOR STATE MONITORING AND WASTELOAD ALLOCATION PROGRAMS**

Purpose	Activity*	Type of Data Needed	Who Collects	Method	Required Data Reporting	Parameter Coverage	Data Uses								Comments
							National Water Quality Assessment	Statewide Water Quality Assessment, 303(b)	Regional Oversight	Site-Specific Compliance	Program Management, Watershed Assessment	Program Management, Construction Criteria	Check Water Quality Standards		
Conduct Water Quality Assessments (Chapter 4)	Assess conditions and determine trends	Physical/chemical	States	Fixed stations and monitoring surveys include toxics in both fish and sediments	Enter appropriate data into STORET or "hard copies" to EPA Report findings through 305(b) reports	As needed to assess attainment of use	•	•	•		•	•	•	Source of "before" data for program management. Source of data to detect new or emerging problems. Technical report discussing conditions findings trends, etc. strongly encouraged.	
		Biological	States	Biosurveys and bioassays at fixed stations and as a part of intensive surveys. Include species ID and enumeration of fish	Send abstract of findings to EPA, if requested by EPA and report findings through 305(b) reports	Site specific	•	•	•		•	•			
Develop Water Quality-based Controls (Chapter 2)	Identify water quality based controls and set priorities for controls	Physical/chemical	States**	Fixed stations and intensive surveys. Also math modeling	Enter all data into STORET or "hard copies" of data to EPA	As needed	•	•	•	•	•	•	•	Source of "before" data for program management	
		Biological	States**	Biosurveys and bioassays (include species ID and enumeration of fish) / bio math modeling	Enter all data into STORET or "hard copies" of data to EPA	As needed		•	•	•	•	•	•	Source of "before" data for program management	
	Review and revise (or reaffirm) water quality standards	Physical/chemical	States**	Use attainability studies site specific, criteria, etc.	Enter all data into STORET or "hard copies" of data to EPA	As needed							•		
	Develop water quality based controls (TMDL or WAAs)	• Ambient physical/chemical & biological • Effluent • Nonpoint source • Background	States**	Intensive surveys (including biological assessment sampling) and math models	Enter all data into STORET or "hard copies" of data to EPA	As needed		•	•	•	•	•			
	Issue water quality based permits, make construction grant decisions, implement non-point source controls	Not applicable													

\* Technical guidance is available from EPA for each of these activities. For copies, contact the Regional Monitoring, Water Quality Standards, or Wasteload Allocation Coordinators.  
 \*\* Dischargers may also be required to collect data if stringent WAQC program is in effect.

**OVERVIEW OF GUIDANCE FOR STATE MONITORING AND WASTeload ALLOCATION PROGRAMS (con.)**

Purpose	Activity*	Type of Data Needed	Who Collects	Method	Required Data Reporting	Parameter Coverage	Data Uses								Comments
							National Water Quality Assessment	Statewide Water Quality Assessment (SWQA)	Regional Oversight	State-Specific Controls	Program Management, Inspect, Enforcement	Program Monitoring, Construction, SWPPP	Check Water Quality Standards		
Assess compliance with and effectiveness of controls technology & water quality based for point and nonpoint sources  Chapter 26	Monitor municipal and industrial sources & BMP sites for compliance	Effluent from nonpoint source discharge	States  Dischargers (DNR data)	Effluent monitoring as specified in permit	Appropriate data into PCS  PCS inspections	As specified in the permit									
				Necessary if specified in permit	Abstract of findings to EPA	As specified in the permit									
	Document protection of designated use	Ambient physical, chemical, & biological	Dischargers with possible assistance from States	Intensive survey (including biological assessments and effluent sampling) to document results of controls and impact on water quality after controls are in place. If problems are noted, to evaluate controls	Enter data from representative stations into STORET or "hard copies" of data to EPA.  Send abstract of findings to EPA, if requested by EPA	Same as "before" survey								Source of "after" data for program management  Use water quality standards guidance  Follow up monitoring to assess attainment of designated use  Technical report discussing conditions, findings, trends, etc. strongly encouraged	
Fixed stations as needed to document results of controls and impact on water quality				Enter all data into STORET or "hard copies" to EPA	Same as measured at downstream stations for "before" and "after" intensive surveys. Include parameters listed on permits								Use water quality standards guidance  Follow up monitoring to assess attainment of designated use		

\* Technical guidance is available from EPA for each of these activities. For updates, contact the Regional Monitoring, Water Quality Standards, or Wasteload Allocation Coordinators.

**SECTION I**

**WATER QUALITY  
PROGRAM MONITORING**

# CHAPTER 1

## OVERVIEW OF WATER QUALITY PROGRAM MONITORING

Under the Clean Water Act, the States and interstate agencies, in cooperation with EPA, are to perform the water quality monitoring necessary to establish and revise water quality standards, calculate total maximum daily loads, assess compliance with permits, and report on conditions and trends in the ambient waters. Figure 1-1 describes the annual process for evaluating existing data and program needs, establishing priorities, and implementing work activities. This process is described as follows:

### A. Determine Water Quality Needs

Water quality information (including data on point and nonpoint source dischargers) is reviewed by the States to determine the existing and predicted severity of pollution in its waters. This information includes chemical screening data, bioscreening data (including data on numbers and kinds of fish), data collected by dischargers on receiving water quality, fish kill data, information collected from the NPDES Permit and Enforcement programs (e.g., Form 2c and Discharge Monitoring Report data), results of analyses of the dilution available to dischargers, reports from earlier water quality analyses, citizen complaints, results of intensive surveys and fixed station monitoring, data on existing land uses, and any other data on water quality.

To evaluate the severity of pollution, States need to make evaluations based on the most accurate data available. This includes chemical and biological information and, where quantitative data are lacking, qualitative data such as direct observations or professional judgment. Where States do not have information, routine monitoring activities will provide much of the information needed to fill data gaps. The types of information to be used for making sound evaluations are described below.

#### 1. Chemical Screening Data

Ambient chemical data representing water column, sediment, and tissue samples are

used in the evaluation of water use support. Analyses of these data, collected through fixed station monitoring, intensive surveys, or special studies, should be conducted for those parameters appropriate for the designated use of the water body.

#### 2. Biomonitoring Data

a. **Bioassays.** Biological tests are methods for assessing the toxic effects of discharges on aquatic life and screening for human health hazards. Toxicity tests have been developed which provide rapid and economical results making them adaptable for use in assessing hazards associated with complex effluents. (A discussion of assessing risk to aquatic life and human health is available in EPA's "Technical Support Document for Water Quality-Based Toxics Control", see Reference 1.)

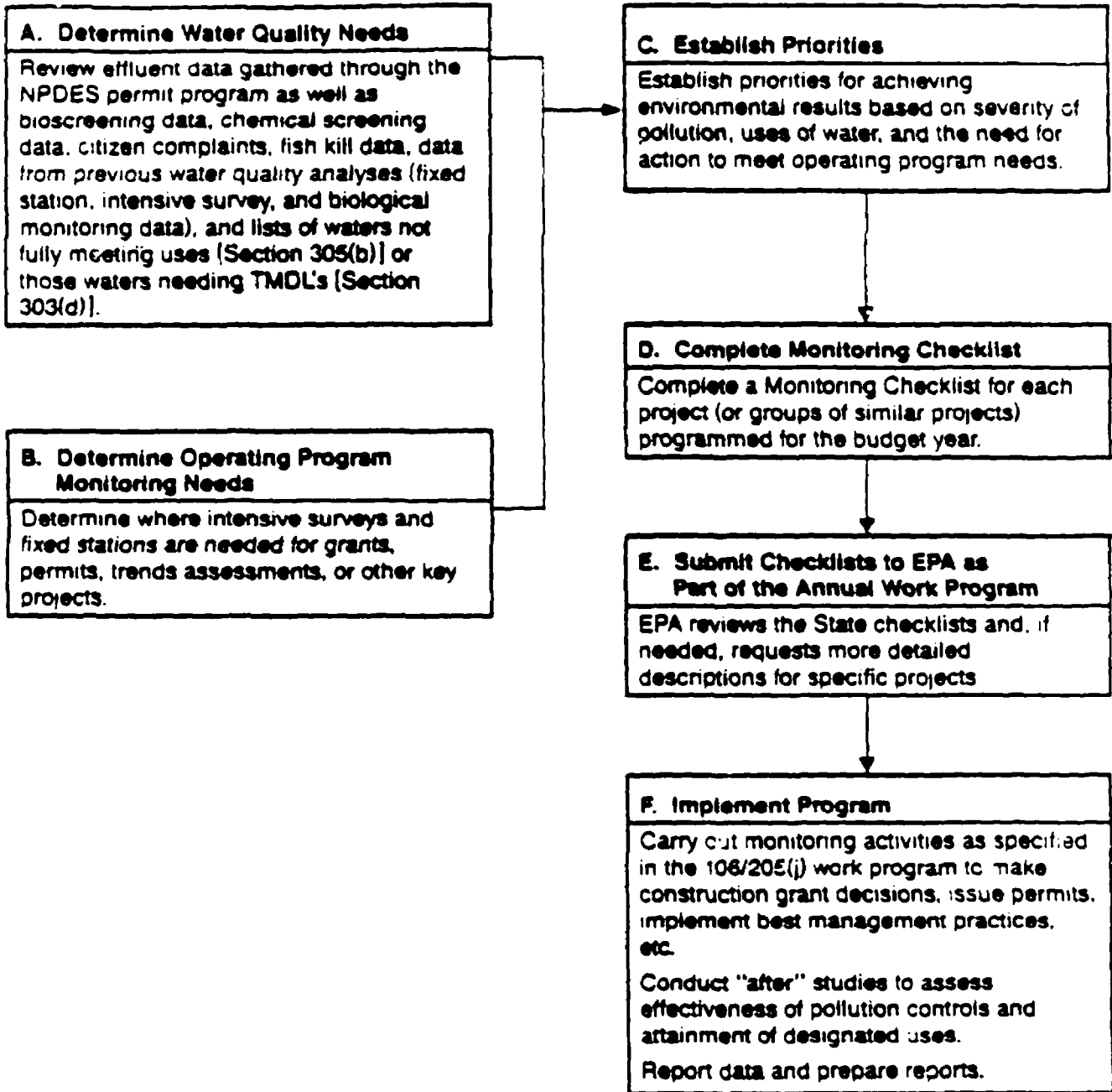
b. **Biosurveys.** Where the designated use of a water body includes the support of aquatic life, the biological information needed to assess whether uses are maintained can be obtained from general surveys of fish, macroinvertebrate and other biological communities, fishery studies, tissue analyses, habitat analyses, creek censuses, capture-recapture/removal sampling, and other quantitative measures. Where resources allow, more in-depth studies on the survival, propagation, production, dispersion, community structure, and species diversity should also be included as a part of the biosurvey. These biosurveys are described in Chapter 4.

#### 3. Professional Judgment/Direct Observation

Whenever possible, quantitative assessments should be made based on biological, physical, and chemical data. However, for some waterbodies States do not have detailed data with which to make these quantitative assessments so that the complete-

Figure 1-1

Annual Process for Establishing Monitoring Priorities and Tracking Implementation



NOTE: EPA and the State continue to discuss the work during the year and at mid-year and end-of-year reviews.

ness of data varies. Given these limitations and until such time as quantitative assessments can be made, it is recommended that the States array all available information and make informed evaluations based on these data. For instance, where a State may not have the biological studies necessary to evaluate support of the aquatic life for a river, it is perfectly reasonable to rely upon a comparison of chemical data and water quality criteria violations tempered where appropriate by professional judgment.

Another example of the use of professional judgment is applying stream survey information from a series of typical streams to other streams (where possible) of similar size and watershed characteristics (vegetative cover, soils, land use patterns, and topography) within the same aquatic ecoregion. Aquatic ecoregion maps for all EPA Regions are available to assist in this (see Reference 2). Professional judgment of the water pollution control staff is valuable for assessing data on stream loadings, dilution ratios, stream models, or other direct and indirect data where chemical and biological information is lacking. A detailed description of the types of professional judgment information that can be used in evaluating designated uses are identified in EPA's Use Attainability Technical Support Documents (see Reference 3).

Other techniques for evaluating the existing or predicted severity of pollution include the review of data on fish kill reports, citizen complaints, and methods tailored by the analyst's judgment to evaluate water use support using available data from intensive surveys, fixed stations, or data from dischargers. The physical condition of water bodies as well as data on adjacent land uses should also be used.

The list of waters not meeting designated uses and the list of waters needing new or revised water quality-based controls also provide useful information for evaluation. States are to prepare a list of water bodies where uses are impaired or threatened and submit this list to the EPA Regional office along with descriptive information as to why the water body does not meet its designated uses. States should update these lists through the

biennial Section 305(b) report. The States should also identify and list waters that still need new or revised total maximum daily loads and wasteload allocations.

EPA headquarters will maintain a composite list of water bodies not meeting designated uses and, over time, a list of the waters needing new or revised total maximum daily loads. These will be maintained as a computer file which will be accessible by the Regions and the States. As new waterbodies are added to these lists, the States are asked to identify each with a River Reach File number (wherever available) to facilitate data handling. The EPA Regional offices are responsible for managing the lists of water bodies prepared by the States.

## **B. Determine Operating Program Monitoring Needs**

State operating program needs are requirements for water monitoring that exist for reasons that may not be based entirely on water quality. They may be based on State initiatives or program priorities such as monitoring for developing wasteload allocations for expiring NPDES permits, obtaining construction grants to fund municipal treatment facilities, or conducting surveys of nonpoint source impacts. In addition, these could be for special lake surveys, trends monitoring, special key projects, or other State program requirements.

To ensure that all State program needs are included in the annual plan for data collection, a list of specific data needs should be requested from all State offices. These other offices may include the State permit office, municipal treatment office, the ambient monitoring office, or other offices that may have needs for water quality information. By integrating needs for water quality early in the planning/budgeting process, maximum utility can be achieved with the available resources.

In preparing a list of waters where water monitoring data are most needed to make water quality-based decisions to prevent or reverse conditions where designated uses are impaired or threatened, States should tabulate these waters as shown on Table 1-1. This table lists waters most needing monitoring as ranked by the State and should be developed as part of the State's unified priority waterbody list.

**Table 1-1  
Monitoring Needs, FY \_\_\_\_\_**

Waters	River Reach No.	Ambient Water Monitoring Needed for Developing Controls			Ambient Water Monitoring Needed for Water Quality Assessments		Compliance with Water Quality-based Conditions
		Water Quality Standards Review	Wasteload Allocation	Nonpoint Source Controls	Conditions and Trends	Post-control Assessment	
Segment "A"		•				•	
Segment "B"				•		•	•
Segment "C"		•	•			•	
Segment "D" etc.					•		•

• = Type of monitoring needed.

### C. Establish Priorities

After competing needs for monitoring have been identified and available ambient and effluent data have been evaluated, the monitoring requirements of each activity and the effect on State resources should be estimated. Where needs exceed available resources, alternatives such as cooperative monitoring projects (see Reference 4) may be considered to consolidate or "piggyback" monitoring activities with other Federal, State, or local agencies. Agreements with dischargers may also be established as a source of data on receiving waters where controls have been implemented.

Based on the severity of pollution, the designated uses of the State's waters, and actions needed to satisfy operating program needs, States should determine where monitoring activities are most needed. In determining these priority activities, States should consider the unified priority waterbody list in accordance with EPA guidance and assess their long-range (generally 3-5 years) objectives to meet the goal of restoring the physical, chemical, and biological integrity of all State waters. They should then make decisions that will help them achieve this goal. Over time, it is expected that State monitoring programs will emphasize monitoring needed for environmental results and deemphasize monitoring for short-term operating program needs.

### D. Complete Monitoring Checklists

After the monitoring priorities have been set by the State, they should be described in their annual work programs. Monitoring Checklists (see Appendix B) should be completed to provide EPA with a minimum of information on monitoring activities planned by the State for the budget year (although the Regional Office may request additional information on a case-by-case basis). One Monitoring Checklist may describe a number of similar activities (e.g., a fixed station network) or it may describe a more complex single activity (e.g., an intensive survey for a complex wasteload allocation study). This checklist is to be developed in conjunction with the EPA Regional office as a part of the monitoring discussion in the State's annual work program. (Other activities may be discussed in the work program, such as infrequent or irregular monitoring for background levels, for which a checklist is not necessary.) This checklist is intended to help the States plan monitoring activities and serve as a means for the Regional offices to track State activities that are funded, at least in part, by EPA grants. Data from the checklists are also needed by EPA Headquarters to assess the national program (e.g., on a national basis, tracking the types of parameters States are monitoring, the amount of data collected, types of surveys conducted, the uses of the data, etc.). This includes



assessing implementation of the **Guidance for State Water Monitoring and Wasteload Allocation Programs** and as a source of information for EPA program reviews under the **Agency Operating Guidance** and the **Office of Water Accountability System**.

Frequently, State priorities or operating program needs necessitate changes in a State's planned monitoring activities. If the changes are significant, a new or updated checklist is sent to the Regional office along with a brief explanation of the changes. If the Regional office agrees that the proposed changes are of a relatively minor nature, submission of revised checklists is not necessary.

It is important that revised checklists for major changes be sent to the EPA Regional office. Checklists for completed surveys are not normally expected since water quality data is to be provided to EPA, and periodic reviews will provide sufficient information on the status of individual activities.

Along with these checklists, States should submit (1) a State map or other suitable scale map showing the location of the waters discussed in the checklist and (2), if available, a copy of the QA/QC project plan for each activity (or reference an existing QA/QC project plan). If the project plan is not available, the State and the Regional office will agree upon a schedule for its submission.

## **E. Submit Checklists to EPA as Part of the Annual Work Program**

In reviewing planned monitoring activities, the EPA Regional offices will consider the technical aspects of each monitoring activity along with overall program activities and priorities contained in the annual State 106 and 205(j) work program. They will also assess how well they reflect national program priorities and national operating guidance. Technical aspects include the balance between ambient fixed stations and intensive surveys, the balance of biological and chemical monitoring, the use of effluent and instream toxicity testing, study design, parametric coverage, sampling frequency, and the feasibility of cooperating with other State agencies, Federal agencies, or individual dischargers for activities that directly or indirectly affect water quality. National program priorities are provided in the EPA's operating guidance and in

national policies (see References 1, 3, 4, and Appendix A).

## **F. Implement Program**

Monitoring Checklists included as part of a State's approved Section 106 and 205(j) work program describe work that is to be carried out by the State, and the appropriate data is to be reported to EPA (see Chapter 6). Followup monitoring (i.e., "after" studies) are also important to assess compliance with controls and the attainment of designated uses. Technical reports documenting "before" conditions, controls implemented, and "after" conditions are strongly encouraged by EPA.

The EPA Regional offices will evaluate the progress made by the States during periodic reviews (such as midyear and end-of-year reviews) of the State monitoring activities. These periodic reviews will evaluate the work that has been completed by the States, the manner in which it has been done, the work that remains to be done, and how well the projects address State and national monitoring priorities.

## **References**

1. Technical Support Document for Water Quality-Based Toxics Control, Office of Water, U.S. Environmental Protection Agency, September, 1985.
2. Aquatic Ecoregion Map of the USEPA Regions I-X, June, 1985. Office of Research and Development, U.S. Environmental Protection Agency, Corvallis, Oregon.
3. Technical Support Manual: Water Body Surveys and Assessments for Conducting Use Attainability Analyses. Office of Water Regulations and Standards, U.S. Environmental Protection Agency, Washington, D.C.:  
Volume I — General, November 1983  
Volume II — Estuarine Systems, November 1983  
Volume III — Lake Systems, November 1984
4. Planning and Managing Cooperative Monitoring Projects, Office of Water, U.S. Environmental Protection Agency, Washington, D.C., (July 1984) EPA 440/4-84-018.

## CHAPTER 2

# MONITORING FOR WATER QUALITY-BASED CONTROLS

The development of controls based on receiving water quality is a very high priority. It involves the collection and analysis of effluent and ambient data to develop water quality-based NPDES permit limits and assess compliance with these permits. It also involves the collection of data necessary for establishing water quality-based targets for nonpoint sources. This type of monitoring thus supports the standards-to-permits process.

### Overview of the Standards-to-Permits Process

The general elements of the standards-to-permits process are shown in Figure 2-1; these elements are also addressed in the Water Quality Planning and Management Regulation (40 CFR Parts 35 and 130, *Federal Register* 50: 1774, dated January 11, 1985). The first element in the process is to identify waters needing water quality-based controls and set control priorities in accordance with Section 303(d) of the Clean Water Act. This section requires States to establish water quality-based control priorities taking into account the uses of the waters and the severity of the pollution. In setting priorities, States may consider the amount of cleanup progress possible with the available resources, and the need to make decisions on expiring permits and on construction grants. In areas where information is not available or is insufficient to assess the magnitude of the pollution problem, additional water quality data should be collected. Consideration should also be given to acquiring data from cooperative monitoring efforts carried out by dischargers, public interest groups, universities, and others (see Reference 1). A more detailed discussion on the identification of waters still needing water quality-based controls is given in Chapter 7.

The second element in the process is to review and, if necessary, revise the water quality standards for the selected water body. The Water Quality Standards Regulation (40 CFR 131) sets forth

the policies and procedures States are to use in the development, review, revision, and approval of water quality standards. This regulation has been revised and consolidated, with the changes appearing in *Federal Register* 48: 51400 (November 8, 1983). EPA has retained the concept of allowing the State to select specific water bodies for an in-depth review, and, where needed, it would be logical to review standards in the waters identified in the first element of the process.

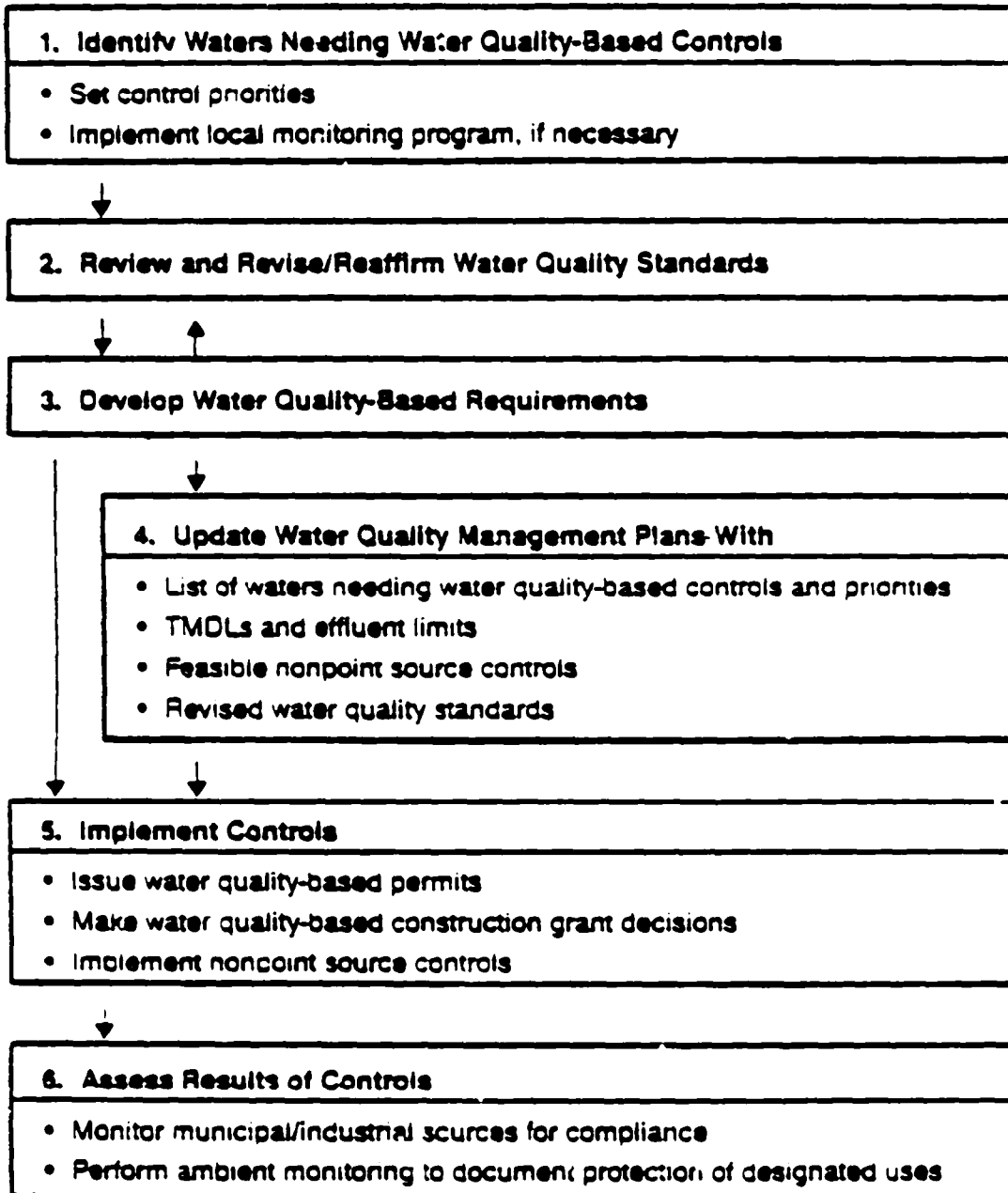
Where existing water quality standards are not adequate, States are to adopt numerical or narrative criteria for the toxic or other pollutants of concern. Where narrative criteria are adopted, the States should indicate as part of its water quality standards submission how it intends to implement these criteria.

EPA recommends adopting two-number acute and chronic criteria (defined in Reference 2) whenever needed. National criteria may be used directly, or may be adopted using site-specific criteria development protocols outlined in the *Water Quality Standards Handbook* (see Reference 3). Although the new water quality standards regulation requires that the State's process for implementing their narrative criterion be described by the State, there is no requirement that this concentration be adopted as a numerical criterion in State water quality standards prior to use in developing water quality-based controls. Additional technical information on use attainability is available from the *Technical Support Manual* series, Volumes I, II, and III (see References 4, 5, 6).

The third element of the process is to use water quality standards as the basis for developing water quality-based effluent limitations, i.e., wasteload allocations. For nontoxic pollutants such as biochemical oxygen demand (which may depress dissolved oxygen levels in the receiving water) and nutrients (which may cause eutrophication), mathematical models may be used to determine the pollution loading consistent with the water quality standards and evaluate point-source/nonpoint-source tradeoffs. In some noncomplex

Figure 2-1

General Elements of the Water Quality-Based Standards-to-Permits Process



situations, simple dilution equations may be adequate for these analyses. Final technical guidance on the use of mathematical models for developing wasteload allocations is available from EPA for a number of pollutants and types of receiving waters (see References 7 through 13).

For toxic pollutants such as heavy metals, water quality analyses can be done using one or both of two techniques: the pollutant-specific approach and the biomonitoring approach. The pollutant-specific approach is best suited for situations with a few well-characterized pollutants or when human health is a concern. The biomonitoring approach should be used when the effluent is complex or when interactions of effluents in the receiving water are of concern. In many cases, both approaches will be needed. As discussed in Section II, EPA prepares technical guidance on the development of toxics controls using the pollutant-specific and the biomonitoring approaches.

At this point, the State Water Quality Management Plans should be updated to include any revisions to the list of waters needing water quality-based controls, any revisions to established State priorities, existing water quality standards, wasteload allocations/total maximum daily loads, and effluent limits.

The next element, which may actually occur before the water quality-based limits are incorporated into water quality management plans, is to incorporate the water quality-based limitations into permits for industrial or municipal facilities or as Best Management Practices (BMPs) for nonpoint source controls. Monitoring may also be required of dischargers (with appropriate quality control by the regulatory authority) if existing information is inadequate to determine whether water quality-based controls are needed. As with permits, construction grant decisions also must be based on the most stringent of technology-based or water quality-based limitations. These decisions are coordinated so that the decision taken on the treatment facility is generally consistent with the limitations in the permit. (The word "generally" is used simply to recognize those instances where facilities that needed to meet permit limits are not eligible for Federal construction grants, such as when advanced treatment facilities are found not to be eligible according to EPA's policy on advanced treatment review [see Reference 14].)

Once water quality-based controls are in place, dischargers are required to provide reports on compliance with NPDES permit limits. They also may be required to assess the impact of their discharge on the receiving water to ensure that the expected water quality is obtained and water quality standards are met (cf. Chapter 3, Monitoring for Compliance and Enforcement). Effluent and ambient data collection requirements may be written into the permits of dischargers (with appropriate quality control by the regulatory authority) for identifying waters needing controls, developing controls, and assessing the effectiveness of these controls to ensure that the designated use is maintained. If a State has not been approved to implement the NPDES program, permitting and compliance reviews of all permittees in that State are the responsibility of the EPA. In a State with approved NPDES authority, EPA retains oversight responsibility for the State compliance program and authority to conduct compliance and enforcement in that State as necessary.

## EPA Responsibilities

EPA Headquarters is responsible for seeing that the mandates regarding TMDLs in the Clean Water Act are carried out, providing oversight of the Regional offices and the States, developing wasteload allocating program policy and guidance, developing computer software for calculating wasteload allocations, developing technical guidance documents, and providing technical training and assistance.

The EPA Regional offices are responsible for assisting Headquarters in developing policy and guidance and distributing this policy and guidance to the States, awarding grants to the States to provide them with resources for developing and implementing wasteload allocations, and providing oversight and technical assistance to the States. In addition, the Regional offices are responsible for reviewing and approving, or disapproving, each State's wasteload allocation process, the wasteload allocation element of the annual 106/205(j) work program; the list of waters where WLAs, LAs, or TMDLs are needed; the priority ranking of these waters; and specific WLAs, LAs, or TMDLs. The EPA Regional offices are also responsible for reporting on State implementation to Headquarters.

## References

1. Planning and Managing Cooperative Monitoring Projects. U.S. EPA, Office of Water, Washington, D.C., (July 1984) EPA 440/4-84-018.
2. Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Life and its Uses. *Federal Register*, Vol. 45, page 79341, November 28, 1980, Appendix B. (This guidance has been revised and published in the *Federal Register*. See 50 FR 30784, July 29, 1985.)
3. Water Quality Standards Handbook, U.S. EPA, Office of Water Regulations and Standards, Washington, D.C., December 1983.
4. Technical Support Manual: Waterbody Surveys and Assessments for Conducting Attainability Analyses. Volume I. U.S. EPA, Office of Water Regulations and Standards, Washington, D.C., November 1983.
5. Technical Support Manual: Waterbody Surveys and Assessments for Conducting Attainability Analyses. Volume II: Estuarine Systems. U.S. EPA, Office of Water Regulations and Standards, Washington, D.C., June 1984.
6. Technical Support Manual: Waterbody Surveys and Assessments for Conducting Attainability Analyses. Volume III: Lakes. U.S. EPA, Office of Water Regulations and Standards, Washington, D.C., November 1984.
7. Technical Guidance Manual for Performing Wasteload Allocations, Book II: Streams and Rivers; Chapter 1, BOD/DO Impacts, (October 3, 1983) EPA-440/4-84-020.
8. Technical Guidance Manual for Performing Wasteload Allocations, Book II: Streams and Rivers; Chapter 2, Nutrient/Eutrophication Impacts, (November 30, 1983) EPA-440/4-84-021.
9. Technical Guidance Manual for Performing Wasteload Allocations, Book II: Streams and Rivers; Chapter 3, Toxic Substances, (June 18, 1984) EPA-440/4-84-022.
10. Technical Guidance Manual for Performing Wasteload Allocations, Book IV: Lakes and Impoundments; Chapter 2, Nutrient/Eutrophication Impacts, (August 29, 1983) EPA-440/4-84-019.
11. Technical Guidance Manual for Performing Wasteload Allocations, Book VII: Permit Averaging Periods, (September 28, 1984) EPA-440/4-84-023.
12. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants, (August 29, 1983) EPA-600/6-82-004 a, b, c.
13. Technical Support Document for Water Quality-based Toxics Control, U.S. EPA, Office of Water, Washington, D.C., September 1985.
14. Policy for Review of Advanced Treatment Projects Notice. *Federal Register*, Vol. 49, page 21462, May 21, 1984.

## CHAPTER 3

# MONITORING FOR COMPLIANCE AND ENFORCEMENT

Section 402 of the Clean Water Act authorizes the creation of the National Pollutant Discharge Elimination System (NPDES) to issue permits for discharges into navigable waters. The NPDES permit is the principal regulatory tool for reducing the quantity of pollutants discharged to the nation's waters and for obtaining data on point-source discharges. Permits issued pursuant to Section 402 of the Act contain specific and legally enforceable effluent limitations and self-monitoring requirements.

As used by EPA, "compliance monitoring" is a generic term which includes all activities taken by Federal or State regulatory agencies to ascertain a permittee's adherence to the conditions of its NPDES permit. Generally, compliance monitoring data collected as part of the NPDES program are used in compliance evaluations and in support of enforcement actions. Data collected in conjunction with compliance monitoring is also an essential element of a complete water monitoring program.

### Program Description

The primary functions of the compliance monitoring program are the determination and verification of compliance with permit conditions including effluent limitations and compliance schedules. Monitoring information can also be required from a discharger utilizing authority provided to EPA under Section 308 of the Clean Water Act. EPA may require dischargers to collect and submit physical, chemical, and biological data on the effluent and, where pertinent, ambient conditions in the waters that receive the effluent. The information derived from these programs plus permit application data is an important part of the information needed to identify and set limits for waters needing water quality-based controls.

Compliance monitoring comprises two elements: *Compliance Review* and *Compliance Inspection*. Guidance for compliance monitoring and enforcement is provided in the Enforcement Management

System Guide (currently being revised). These activities are described below.

### Compliance review

Compliance review is the process of determining the compliance status of the permittee. The review covers all written material relating to the status of a permittee's compliance with an NPDES permit including Discharge Monitoring Reports (DMR), Compliance Schedule Reports (CSR), and Compliance Inspection Reports (CIR). These materials originate from the permittee, regulatory authorities, or third parties including public and private interest groups. Permittee-generated, self-monitoring data reported in the DMRs are the largest source of information used to monitor NPDES compliance.

If a State has not been given authorization to implement the NPDES program, compliance reviews of all permittees in the State are the responsibility of the EPA. In a State that has NPDES authorization, EPA retains oversight responsibility for the State compliance program and may conduct compliance monitoring and enforcement in the State as necessary. EPA uses the computerized Permit Compliance System (PCS), the Quarterly Non-compliance Report (QNCR), State audits, and EPA State Enforcement Agreements to overview NPDES State activities.

The States' biennial Section 305(b) reports (including the lists of waters not meeting uses and waters needing total maximum daily loads) may provide historical data on water problems to help develop inspection plans. These reports and lists should aid EPA and the States in identifying point-source pollution discharges from permittees that prevent attainment of designated use(s) in receiving waters. Citizen complaints also provide useful input to compliance review.

NPDES permits contain specific limits (in concentrations and/or loadings) on the pollutants discharged by a facility. The permit also requires the permittee to conduct self-monitoring of the effluent

and report this information to EPA in a Discharge Monitoring Report (DMR). Monthly reporting is usually required of major sources which are evaluated by EPA within 30 days of receipt. Draft EPA policy requires entry of this data into the Agency's data management system, PCS.

The PCS contains effluent data from the Discharge Monitoring Reports. Parametric data includes conventional pollutants (e.g., BOD, TSS, and nutrients) and toxic pollutants required by the permit. Data is available in PCS for 3 to 5 years on many facilities, with DMR data being entered on major permittees in FY86. All parametric data is entered using STORET parameter codes which will allow easy cross-referencing of PCS data and water quality data. PCS will also contain all the permit pollutant limits.

Once a specific facility has been identified as having apparent permit violations, EPA or the approved State proceeds to review the facility's compliance history. A number of data management mechanisms (including the compliance tracking systems) provide the necessary information. These are:

1. Permit Compliance System (PCS), a data management system for storing and retrieving all relevant facts about a facility's permit conditions, its self-monitoring data, the inspections performed, and any enforcement actions taken.
2. The Strategic Planning and Management System (SPMS) and the Office of Water Accountability System, two tracking systems that provide information on permittees with compliance problems and on State and Regional annual work programs.
3. The Quarterly Noncompliance Reports (QNCR), which provide the compliance history of significant violators.

Compliance review focuses on the magnitude, frequency, and duration of violations and any corrective action taken by the permittee. It is used to identify significant permit violations and to provide information for determining appropriate enforcement followup action. Identification of significant violations during compliance review may provide the basis for requesting a survey of the receiving water to evaluate water quality impacts.

#### **Compliance Inspection**

Compliance inspection refers to all field-related

regulatory activities conducted to verify permit compliance status. Such field activities may include evaluation inspections (nonsampling), sampling inspections, other specialized inspections, and remote sensing, depending on the need for compliance information. Compliance inspections are conducted by all States and EPA. Each year EPA provides training for State and EPA compliance. Certain inspections, such as Diagnostic Inspections (DI) and Performance Audit Inspections (PAI), in addition to providing information to support enforcement action, also aid a permittee in evaluating the facility's problems. Compliance Biomonitoring Inspections (CBI) are specifically targeted at facilities whose effluent is suspected or identified as causing toxicity problems that threaten the ecological balance of the receiving waters. Biomonitoring is a toxicity-screening tool that may be used in lieu of more resource-intensive pollutant sampling and analyses.

A Compliance Evaluation Inspection (CEI) provides basic information common to all compliance inspections and is undertaken for one or more of the following purposes:

1. Ensure that permit requirements are being met.
2. Check the completeness and accuracy of permittee's performance and compliance records.
3. Assess the adequacy of the permittee's self monitoring and reporting program.
4. Evaluate the permittee's operation and maintenance activities.
5. Observe the status of construction required by the permit.
6. Address water quality and other specific problems and followup in areas where water quality-based controls were implemented.

For more detailed guidance on procedures for conducting a Compliance Evaluation Inspection, refer to the NPDES Compliance Evaluation and Inspection Manual (see Reference 2) and the NPDES Compliance Inspection Manual (see Reference 9).

A sampling inspection involves effluent sampling or biomonitoring and should satisfy all of the above purposes. It may be appropriate in the case of some facilities to sample or monitor in-plant processes and influent sources to verify permit requirements. (See References 1, 5, and 9 for detailed guidance on conducting sampling inspections.) Procedures are currently being developed

for pretreatment aspects of both sampling and nonsampling inspections.

#### **Followup monitoring**

Once water quality-based controls are in place, followup monitoring is needed to ensure that the NPDES permit limits are met and that the expected water quality is obtained. Dischargers are required to provide reports on compliance with permit limits and also may be required to assess the impact of their discharge on the receiving water. States may require dischargers to monitor as needed to supplement State and Regional regulatory monitoring. Effluent and ambient data collection and reporting requirements (as well as QA/QC requirements) may be written into permits to identify the effectiveness of these controls to ensure that use is maintained or restored (see Reference 10).

#### **Quality Control**

Since the NPDES compliance monitoring system relies heavily on sample analyses performed by the permittees, maintaining high data quality remains top priority. The Discharge Monitoring Report Quality Assurance (DMRQA) program serves as a basis for both data quality evaluation and administrative followup. A Performance Audit Inspection (PAI) of both field and laboratory resources and techniques (see Reference 8) may result due to failure to perform adequately on DMRQA.

#### **Monitoring to Support Enforcement**

Section 309 of the Clean Water Act authorizes the Agency to bring civil or criminal action against facilities who violate their NPDES permit conditions. The EPA Regions and the approved States have specific procedures for reviewing self-monitoring and inspection data and for deciding what type of enforcement action, if any, is warranted. In cases where a facility has received an order

(or the State equivalent) imposing legally binding requirements for returning to and maintaining compliance with permit conditions, EPA or the States conduct periodic inspections to verify that these requirements are being fulfilled.

In cases where the regulatory agency collects samples for evidence in judicial procedures, thoroughly documented chain-of-custody procedures will be used as described in the referenced NPDES Inspection Manuals.

#### **Annual State/EPA Compliance Inspection Plans**

The Agency's annual operating guidance directs that a Compliance Inspection Plan be developed for each State as part of the annual EPA Region/State agreement process. This plan should be incorporated as part of the Section 106 grant documents and included in the State/EPA agreement.

#### **Program Responsibilities**

EPA Headquarters oversees and coordinates regional activities, provides technical assistance to Regional offices upon request, and develops policy, guidance, and regulations.

The EPA Regional offices implement policy guidance, and regulations in nondelegated States; oversee and coordinate activities in delegated States, and provide technical assistance to the States.

States, which are delegated the NPDES program, monitor permittees and implement the NPDES program. In nondelegated States, these responsibilities are assumed by the EPA Regional office, with States providing input on a case-by-case basis.

Permittees conduct self-monitoring and report these data to EPA.



## References

1. Compliance Biomonitoring Inspection Manual (MCD-62, EPA, 1981)
2. Compliance Evaluation Inspection Manual (MCD-75, EPA, 1981)
3. Compliance Evaluation and Troubleshooting at Municipal Wastewater Treatment Facilities (EPA-430/9-78-001)
4. Compliance Flow Measurement Inspection Manual (MCD-77, EPA, 1981)
5. Compliance Sampling Inspection Manual (MCD-51, EPA, 1979)
6. Multi-Media Compliance Audit Inspection Manual (EPA 297/2-83-002)
7. Performance Audit Inspection Manual (EPA-330/1-79-004).
8. NPDES Compliance Inspection Manual (EPA/OWEP-8/84)
9. Technical Support Document for Water Quality-based Toxics Control, U.S. EPA, Office of Water, September 1985.
10. Agency Memorandum from Deputy Administrator to Assistant Administrators, Regional Administrators et al., Implementing the State/Federal Partnership in Enforcement: State/Federal Enforcement "Agreements," June 26, 1984.
11. Agency Memorandum from Assistant Administrator for Water to Regional Administrators, Guidance for Oversight of NPDES Permits, July 6, 1985.

# CHAPTER 4

## WATER QUALITY ASSESSMENTS

The Congress, EPA program managers, and State administrators need to assess the quality of the aquatic environment so that they can make decisions concerning water program priorities and regularly provide reports to the public on the state of the environment, important trends over time, and accomplishments. They also need to evaluate the effectiveness of control measures. National, regional, and State assessments provide this type of critical information; environmental statutes, regulations, and policies provide the mechanisms through which these assessments are conducted.

### Program Description

States are to conduct statewide assessments of water quality conditions and trends that correspond to measures expressed in the Section 305(b) guidance. In conducting these assessments the States should address their waters using the following order of priority:

1. Waters that are not supporting designated uses and are Priority Waters (Priority Waters are those waters for which pollutant abatement and control decisions are most needed to prevent or reverse the impairment of a designated use).
2. Waters that are not supporting designated uses and, while not currently designated as Priority Waters, will likely become Priority Waters in the near future.
3. All other waters that are not supporting designated uses or are threatened and are not included under the above categories.
4. All other waters not included under the above categories.

In conducting these assessments, the State should carry out the following types of activities as part of a balanced monitoring program:

- Monitor the number and kinds and the general health of biological organisms and the presence of toxics in fish, shellfish, and sediments. The purpose of this type of monitor-

ing is to detect toxics in the food chain, evaluate trends, and establish baselines for necessary control actions.

- Monitor chemical and biological parameters for the purpose of determining statewide water quality trends. This is particularly useful for documenting trends in water quality resulting from pollution abatement and control actions. This monitoring includes the tissue analysis described above.
- Monitor chemical and biological parameters using simple monitoring surveys including, where appropriate, bioscreening surveys or periodic sampling at fixed stations for the purpose of evaluating unassessed waters. States are encouraged to conduct short-term toxicity tests and biosurveys in these waters.

Each of these activities is discussed below.

#### 1. Monitoring the Number and Kinds and the General Health of Biological Organisms and the Presence of Toxics in Fish, Shellfish, and Sediments

States should conduct bioassessments including monitoring the number and kinds and general health of biological organisms and the presence of toxics in fish, shellfish, and sediments. In monitoring the number and kinds of biological organisms, the States are encouraged to focus on the fish community where practicable. Otherwise, the States should monitor other available biological communities. While this monitoring should be conducted in waters not supporting designated uses due to toxics, the States may also elect to monitor for toxics in waters meeting designated uses if an emerging toxics problem is suspected or to simply verify the absence of problems. Where this monitoring is conducted to screen for toxics problems, biosurveys are recommended. Where this monitoring is done routinely to assess trends, fixed stations are recommended.

In analyzing tissue, each State should address those problem pollutants that are of special or local concern. In addition, each State is encouraged to analyze tissue for the toxicants listed in Table 4-1, which are known to bioaccumulate in tissue.

**Table 4-1**  
**Trace Organic and Metals Analysis for**  
**Fish/Shellfish Tissue and Sediments**

Parameter	STORET Parameter Code	
Weight, fish/shellfish only, (lb)	00023	
Percent lipid content, fish/shellfish only (%)	39105	
	Tissue (mg/kg, µg/g)	Sediments (µg/kg)
PCBs	(39515)	(39519)
<b>Pesticides</b>		
Chlordane	(34682)	(39351)
cis isomer of chlordane	(39063)	(39064)
trans isomer of chlordane	(39066)	(39067)
cis isomer of nonachlor	(39069)	(39070)
trans isomer of nonachlor	(39072)	(39073)
Dieldrin	(39404)	(39383)
Total DDT	(39378)	(39359)
Endrin—tissue	(34685)	(39393)
Toxaphene—tissue (µg/kg)	(34691)	(39403)
<b>Monocyclic Aromatics</b>		
Pentachlorophenol	(39060)	(39061)
<b>Metals (mg/kg)</b>		
Cadmium	(71940)	(01028)
Lead	(71936)	(01052)
Mercury	(71930)	(71921)

All tissue sampling generally should be carried out in the fall of the year. This is because pesticides are most heavily used during the agricultural growing season and pesticide residues are often more severe at this time. There are also more resident populations of fish in the fall since migrations usually occur in the spring and, since the summer months are the active feeding season for fish, food chain relationships are better defined and peak in the fall.

In conducting tissue analyses, the States must set reasonable objectives. If human health is the prime consideration, the States should analyze fish fillets. If aquatic life impacts or "early warning" screening is the prime consideration, two replicate whole fish composite samples of a representative fish species should be analyzed.\* Each composite sample should include at least five fish, each of approximately the same size. Commercially or recreationally important species should be collected wherever possible, and resident fish are preferred over migratory fish. Because of their great water-filtering capabilities, shellfish are excellent concentrators of con-

taminants. Therefore, wherever possible, representative shellfish samples should be collected and analyzed, especially in estuarine environments.

Where tissue samples reveal elevated levels\*\* of a particular toxicant(s), sediment samples should be collected and analyzed for these toxicants, wherever possible.

## 2. Monitoring of Selected Areas for the Purpose of Determining Statewide Trends

States should continue to monitor waters that collectively will help them evaluate statewide water quality trends. Monitoring conducted in these waterbodies should be designated to show the current condition of the waterbody and whether that condition is improving, staying the same, or getting worse. Priority should be given to waterbodies where control actions have taken place. The States should carefully select areas for the purpose of determining statewide trends. A stable network of reaches selected according to a predetermined statistical design will help ensure the development of informative water quality trends. States are to select parameters that measure water quality in terms of the waterbody's designated use and site-specific conditions. They should also monitor for toxics in tissue at these sites. States must also select a sampling frequency that provides sufficient information for computing reliable trends (see Reference 1 for EPA guidance on computing water quality trends). It is expected that States will continue to maintain a fixed-station network or some other valid approach for computing statewide water quality trends.

## 3. Monitoring of Waters That Have Not Been Previously Assessed

States should continue to broaden the data base for assessing water quality conditions throughout the State. States should collect information for

\* Research is currently underway to determine the appropriateness of analyzing specific organs in comparison with fillet and whole tissue analysis. Technical guidance on this subject should be available in the near future.

\*\* Elevated levels are defined here to be exceedances of State water quality standards, 304(a) criteria and/or FDA action levels, or levels of State concern (when numeric criteria do not exist).

previously unassessed waters using less resource-intensive monitoring surveys or with periodic monitoring at fixed stations. These surveys might include screening biosurveys or simple chemical/physical measurements. Where resources allow, short-term toxicity tests should be employed, especially where toxicity is suspected. Data from these assessments will allow EPA and the States to (1) check for any emerging problems, (2) ensure that existing water quality is maintained, (3) prepare more representative water quality trend assessments, and (4) provide a baseline of water quality against which future water quality conditions can be compared. This latter purpose is most important to ensure successful studies of the water quality effects of future point and nonpoint source dischargers.

Screening biosurveys generally involve brief site visits in which water quality is evaluated using a checklist of simple field indicators such as habitat conditions or the composition of the biological community. EPA is preparing a Bioscreening Handbook which will provide additional guidance on biosurvey screening techniques (see Reference 2). New toxicity tests are also available for sensitive and fairly economical screening of ambient waters and effluents (see Reference 3). At fixed stations, States should collect information that will best measure the degree to which designated uses are being attained.

As a target, the States should assess approximately 20 percent of these unassessed waters per year until all waters that the States believe should be monitored are monitored. This process should be repeated every 6 years and should be synchronized with the 6-year trend-assessment cycle as described in the Section 305(b) guidance document.

## Conduct National Surveys to Supplement State Analyses

The Office of Water will conduct national assessments as needed to meet immediate needs. Assessments ongoing or planned by the Office of Water include: (1) completing the National Dioxin Study, (2) participating in the National Surface Water Survey (on atmospheric deposition), (3) evaluating persistent and bioaccumulative pollutants as a followup to the National Dioxin Study, and (4) evaluating toxicants in sediments. While most of these efforts are being conducted at the Federal level, it is likely that the States will be asked to provide some information. During the design phase of any national assessment, the degree of involvement by the States will be carefully evaluated within the framework of the Section 106 annual work program.

## References

1. Methodologies for Determining Trends in Water Quality Data (see draft as Appendix 3 of Guidance, 1986 State Water Quality Assessments, June 1985).\*
2. Guidance on Biosurvey Techniques (under preparation).\*
3. Technical Support Document for Water Quality based Toxics Control, U.S. EPA, Office of Water, September 1985.

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\*Copies of these documents will be made available by the Monitoring Branch, Monitoring and Data Support Division, Office of Water as they are completed.

# CHAPTER 5

## QUALITY ASSURANCE

Effective quality assurance and quality control (QA/QC) procedures and a clear delineation of QA/QC responsibilities are essential to ensure the utility of environmental monitoring data. These procedures must be applied throughout the measurement and assessment process, including field sample acquisition, sample preservation and control, laboratory analyses, and data assessment. The term "quality control" refers to the routine application of procedures for obtaining prescribed standards of performance in the monitoring and measurement process. The term "quality assurance" includes the quality control functions and involves a totally integrated program for ensuring the reliability of monitoring and measurement data. It involves a system for integrating quality planning, quality control, and quality assessment efforts. The commitment of top-level management to the QA program is of key importance for its success. Management must also be involved in establishing data quality objectives designed to meet the intended use of environmental monitoring data.

### Program Description

The EPA QA/QC program requires that all EPA national program offices, EPA Regional offices, and EPA laboratories participate in a centrally planned, directed, and coordinated Agency-wide QA/QC program. This requirement also applies to efforts carried out by the States and interstate agencies that are supported by EPA through grants, contracts, or other formalized agreements. The EPA QA program is based upon EPA order 5360.1, "Policy and Program Requirements to Implement the Quality Assurance Program" (see Reference 1), which describes the policy, objectives, and responsibilities of all EPA Program and Regional offices.

Each office or laboratory that generates data under EPA's QA/QC program must implement, at a minimum, the prescribed procedures to ensure that precision, accuracy, completeness, comparability, and representativeness of data are known

and documented. In addition, EPA's QA/QC procedures apply throughout the study design, sample collection, sample custody, laboratory analysis, data review (including data editing and storage), and data analysis and reporting phases.

### Data Quality Objectives

A full assessment of the data quality needed to meet the intended use should be made prior to specification of QA/QC controls. The determination of data quality is accomplished through the development of data quality objectives. Data quality objectives (DQOs) are qualitative and quantitative statements developed by data users to specify the quality of data needed to support specific decisions or regulatory actions. Establishment of DQOs involves interaction of decisionmakers and the technical staff.

The process for developing DQOs includes a first stage involving input by the decisionmaker regarding the information needed, reasons for the need, how the information will be used, and specification of any time and resource constraints. The next stage in developing DQOs involves clarification of the specific problem. Here, the technical staff and decisionmaker interact to establish a detailed specification of the problem and any constraints imposed on data collection. The third stage involves developing alternative approaches to data collection, selecting the approach to be used, and establishing the final data quality objectives. Once the data collection approach and data quality objectives have been established, a clear understanding of what data quality is to be expected will help ensure that the effort will be successful. Reference 2 describes the process for developing DQOs in more detail.

### Quality Assurance Program Plans and Project Plans

To provide adequate control and guidance, the Agency's QA program relies on the development

and implementation of two QA documents: the QA Program Plan and the QA Project Plan. These plans are required of all recipients of EPA grants and assistance programs. Grant regulations, 40 CFR Part 30, require submission of QA Program Plans to EPA as a prior condition of receiving an EPA grant. QA Project Plans also must be developed according to an acceptable schedule within the QA Program Plan. The QA Program Plan (see Reference 3) describes management policies, organization, objectives, principles, and general procedures that establish how data of known and acceptable quality will be produced.

The QA Project Plan describes and defines specific objectives, network design, procedures, methods, and controls that will be applied to a specific project to ensure the production of data of known and acceptable quality. Two guidance documents are available to assist in preparation of the QA Project Plan: a general guidance document (see Reference 4) and a more detailed guidance document that combines a work plan with the QA Project Plan (see Reference 5). These guidance documents also provide guidance on the use of a short form for limited surveys.

The following information should be included in a QA Project Plan: designated QA officer and project officer; project description (including the objectives, the monitoring network, etc.); a schedule of tasks and products; the project organization and responsibilities; a specification of data quality requirements for the intended use (including precision, accuracy, comparability, completeness, and representativeness); sampling procedures (including preservation, sample custody, instrument and equipment calibration, and maintenance); quality control procedures such as field blanks, lab and reagent blanks, blind field spikes and duplicates, lab spikes and duplicates, standard reference materials, etc.; the procedures for data documentation, data reduction and reporting, data validation, and performance and systems audits; other checks for quality control, handling outliers and corrective actions, and reports documenting results as well as discrepancies with original plans.

Documented QA programs with specific controls described can ensure the integrity and utility of environmental monitoring data. In recognition of the hazards of utilizing data of unknown and suspect quality, a QA Program Plan with well-conceived

DQOs is an essential part of every activity designed to achieve sound environmental results.

## EPA Responsibilities

EPA Headquarters is responsible for providing guidance for developing required Quality Assurance Program Plans and Quality Assurance Project Plans. This includes updates necessitated by new Agency requirements and additional technical guidance for the Regional offices and States to develop sound plans. In addition, Headquarters is responsible for developing Data Quality Objectives for Quality Assurance Plans that will meet the Headquarters data use needs and provide guidance to the Regions on application of the DQO development process.

EPA Regional offices are responsible for developing Quality Assurance Program Plans and Quality Assurance Project Plans for the activities that they conduct. In addition, they are responsible for ensuring that States prepare QA Program Plans and Project Plans in conformance with grant requirements specified in 40 CFR Part 30. The Regions are responsible for developing DQO requirements compatible with Headquarter's requirements and meeting the Regions' specific needs. The Regions are also responsible for assisting the States in developing DQO requirements that meet State needs.

## References

1. EPA Order 5360.1, Policy and Program Requirement to Implement the Quality Assurance Program, April 17, 1984.
2. The Development of Data Quality Objectives, prepared by the EPA Quality Assurance Management Staff and the DQO Workgroup, September 25, 1984.
3. Guidelines and Specifications for Preparing Quality Assurance Program Plans, QAMS-004180, September 1980.
4. Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans, QAMS-005180, December 1980.
5. Guidance for Preparation of Combined Work/Quality Assurance Project Plans for Environmental Monitoring, OWRS QA-1, May 1984.

# CHAPTER 6

## DATA REPORTING

There are two principal vehicles for the States to use in reporting water quality monitoring data to EPA. The first is through the statewide water quality report required by Section 305(b) of the Clean Water Act. The second reporting vehicle is the transmission of monitoring data as technical reports or as data entered into EPA data systems. In accordance with EPA's Water Quality Monitoring Policy for inland and coastal waters (see Appendix A), all water quality data collected by the States for developing water quality-based controls and all appropriate data for water quality assessments and screening are to be reported to EPA by entering these data into STORET or by providing a hardcopy of data in STORET-compatible format. All data should be submitted to EPA by the States within 60 days of the time that the data was reviewed and approved. All technical reports should include cross-references to STORET.

EPA Headquarters and the Regional offices will use these data to track implementation of State programs funded under Section 106 of the Clean Water Act. The EPA Regional offices will review both the quality and the quantity of the data reported by the States.

### Data on Water Quality Assessments

In accordance with EPA's Water Quality Monitoring Policy for inland and coastal waters, States are required to report appropriate water quality data collected in conjunction with water quality assessments to EPA. The States and EPA Regional offices will discuss the State monitoring programs to determine what data is appropriate and the form in which it is to be reported. Assessments data to be reported to EPA include data from the following:

1. **Fixed stations operated for water quality assessments (i.e., water quality conditions and trends only)** — Physical, chemical, and biological data on water column, sediment, and tissue samples.
2. **Intensive surveys conducted for water quality assessments (i.e., water quality conditions and trends only)** — Physical, chemical, and biological data on water column, sediment, and tissue samples at representative stations that accurately represent the conditions during the survey. States are also to prepare brief abstracts of the intensive survey summarizing the results of the survey and submit them to the EPA Regional office as agreed upon by the Regional office and the State. States are strongly encouraged to develop complete technical reports describing the water quality conditions and trends found. Copies of these completed technical reports should be forwarded to the Regional office. Where an "after" study is conducted, a thorough discussion of previous conditions, control actions, present conditions, and the effectiveness of the controls should be included.

### Data on Water Quality-based Controls

In accordance with EPA's Water Quality Monitoring Policy for Inland and Coastal Waters, States are required to report all water quality data collected in conjunction with water quality-based controls to EPA. The States and EPA Regional offices will jointly determine the form in which it is to be submitted. This includes data from all phases of the process, as follows:

1. **Water quality standards reviews** — All physical, chemical, and biological data on water column, sediment, and tissue samples collected in areas to review or revise water quality standards.
2. **TMDLs/WLAs** — All physical, chemical, and biological data on water column, sediment, and tissue samples collected to determine which waterbodies will require TMDLs/wasteload allocations or data collected in conjunction with developing a TMDL or a waste-

load allocation. Where an intensive survey is conducted, data is to be from representative stations that accurately represent the conditions during the survey. States are also strongly encouraged to develop complete technical reports describing the water quality conditions and trends found; the cause(s) of the problem, trends, and needed control activities to ensure thorough analysis of the monitoring data and to assist in convincing dischargers of the need for controls. Copies of these completed technical reports should be forwarded to the EPA Regional office. States should also prepare brief abstracts of the survey after completion and submit them to the EPA Regional office, as agreed upon by the Regional office and the State.

3. **Followup monitoring** — All physical, chemical, and biological data on water column, sediment, and tissue samples collected by dischargers (with appropriate quality control by the delegated authority) or the State in areas where water quality-based controls were implemented to ensure that water quality standards are being maintained. Sampling frequency, parameter coverage, duration, and data entry requirements are to be agreed upon by the EPA Regional office and the State for these areas.

of data in the Section 305(b) reports. They are also requested to participate in the development of the EPA Regional Environmental Management Reports (EMRs). Section 305(b) of the Clean Water Act requires each State to submit a biennial report to the EPA describing the quality of State waters. These reports are to include the following: an analysis of the extent to which State waters provide for the protection and propagation of balanced shellfish, fish, and wildlife populations and recreation in and on the water; an analysis of the extent to which population control actions have achieved this level of water quality; recommendations for needed additional actions; estimates of the environmental impacts, economic and social costs and benefits, and date of achieving this level of water quality; and a description of the nature and extent of nonpoint sources of pollution and recommendations for their control.

In the years in which it is prepared, the biennial water quality assessment (Section 305(b) report) satisfies the requirement for the annual water quality report under Section 205(j). In years when the assessment report is not required, States may satisfy the annual Section 205(j) report requirement by certifying that the most recently submitted Section 305(b) report is current or by supplying an update of the relevant Section(s) of its Section 305(b) report (see the 40 CFR Part 101 regulation).

## Data on Compliance Monitoring

All appropriate data collected in conjunction with compliance reviews is to be stored in the Agency's Permit Compliance System (see Chapter 3).

## Data Reported Through Section 305(b) Reports

States are required to report data and analyses

Specific guidance on the preparation and contents of the Section 305(b) report is provided by EPA. The guidance uses many of the indicators that were developed through the joint EPA/State Evaluation of Progress (STEP) project and shares common indicators with the Administrator's Strategic Planning and Management System (SPMS) and the Agency's Operating Guidance. It is also consistent with EPA requirements for the continuing planning process and the preparation of annual work programs.



## **SECTION II**

# **TOTAL MAXIMUM DAILY LOADS AND WASTELOAD ALLOCATIONS**

# CHAPTER 7

## TOTAL MAXIMUM DAILY LOADS AND WASTELOAD ALLOCATIONS

The Clean Water Act requires the States and EPA to institute water quality-based controls in areas where technology-based controls are not sufficient to meet water quality standards. In so doing, the States are to determine the total maximum daily loads (TMDLs) for a particular waterbody and develop wasteload allocations (WLAS) for point sources and load allocations (LAS) for nonpoint sources. (These terms are defined in the Water Quality Planning and Management Regulation, 40 CFR Section 130.2.)

A recent court decision has brought previously unrecognized duties relative to the development of TMDLs and WLAs to EPA's attention. The United States Court of Appeals for the Seventh Circuit (see Reference 1) stated that:

If a State fails over a long period of time to submit proposed TMDLs, this prolonged failure may amount to the "constructive submission" by that State of no TMDLs. (Scott Decision. p.8)

We think the States' inaction here, in view of the short statutory deadlines may have ripened into a refusal to act. A refusal to act would amount to a determination that no TMDL is necessary and none should be provided. In effect, we may have a "constructive submission" of no TMDLs. As a matter of law, under CWA Section 303(d) (2) . . . a State determination to set no TMDLs must be reviewed by the EPA, and the EPA is then required to approve or disapprove the submission. (Scott Decision, p.10)

In addition, we think that the CWA should be liberally construed to achieve its objectives—in this case, to impose a duty on the SPA to establish TMDLs when the States have defaulted by refusal to act over a long period. (Scott Decision, p.10)

Therefore, if a State defaults, EPA must act to identify the waters needing new or revised TMDLs and establish such TMDLs as necessary to carry out the goals and objectives of the Clean Water Act.

### Process for Identifying Waters and Developing TMDLs

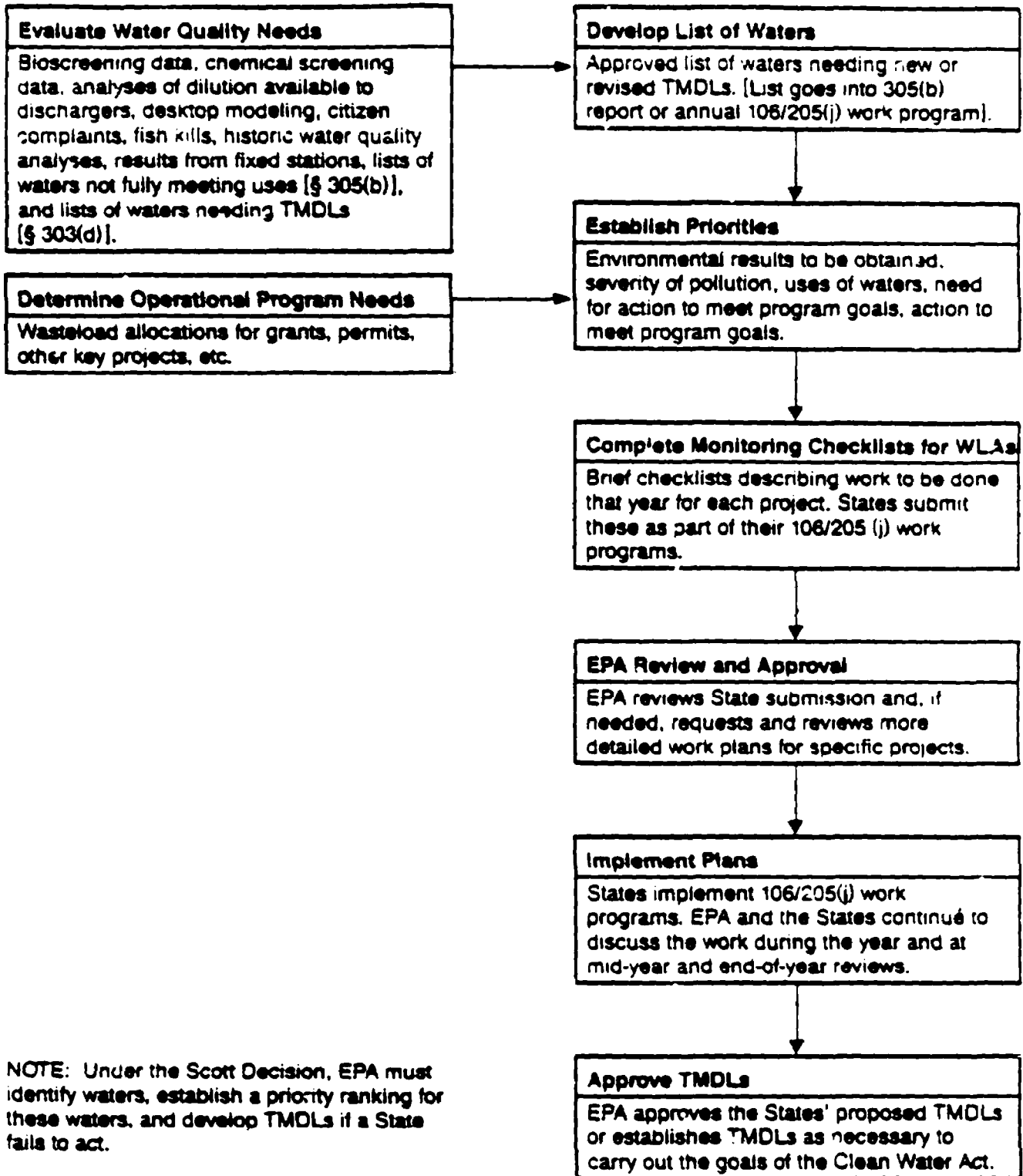
An overview of the process for identifying waters needing new or revised TMDLs, establishing priorities, and developing the needed pollution controls is provided in Figure 7-1. In carrying out this process, States evaluate environmental data and perform analyses to identify waters needing new or revised TMDLs. The States then establish priorities for developing TMDLs as part of the overall State priority waterbody list. Once EPA has approved the list of waters needing new or revised TMDLs and the priority ranking for these waters, States should prepare Monitoring Checklists (see Appendix B) describing the wasteload allocation work to be done during the coming year. The list of waters and their priority ranking are submitted as part of the annual 106/205(j) work program of the biennial Section 305(b) report, and the check lists are submitted as part of the annual Section 106/205(j) work programs. States implement the approved programs and submit the resulting TMDLs to EPA for approval. Once approved, the TMDLs and their component WLAS and LAS are incorporated into the water quality management plans. (Also see the Water Quality Planning and Management Regulation [40 CFR Parts 35 and 130; 50 174 January 11, 1985.]

### Identification of Waters Needing New or Revised TMDLs

In accordance with the Clean Water AU. States and to identify and prepare a list of the waters within their boundaries for which existing pollution control requirements are not or will not be stringent enough to meet the applicable water quality standards over the next 5 years. These are the water quality limited segments that need new or revised TMDLs. This list is one component of the State priority waterbody list. Existing pollution control requirements that States should consider in

Figure 7-1

The Process for Identifying Waters Needing TMDLs, Establishing Priorities, and Developing Needed Pollution Controls



NOTE: Under the Scott Decision, EPA must identify waters, establish a priority ranking for these waters, and develop TMDLs if a State fails to act.

identifying these waters include:

- **Technology-based effluent limitations required by:**
  - Sections 301(b), 306, 307, or other sections of the CWA
  - State or local authority preserved by Section 510 of the CWA (or)
  - Federal law, regulation, treaty, permit, lease, or other authority
- **Water quality-based effluent limitations required by:**
  - Section 301(b) (1) (C) of the CWA and incorporated into an approved NPDES permit
  - State or local authority preserved by Section 510 of the CWA (or)
  - Federal law, regulation, treaty, permit, lease, or other authority
- **Other pollution control requirements (e.g., Best Management Practices) required by either Federal, State, or local authority.**

Guidance on using simple screening methods for identifying waters needing new or revised TMDLs is provided in Reference 2. The use of biological tests for screening for aquatic life impacts and health hazards is provided in Reference 3. In addition, guidance is available on identifying waters presently not meeting designated uses (see Chapters 2 and 4).

The process for identifying waters needing new or revised TMDLs is shown in Figure 7-2. A brief discussion of this process follows.

Section 303(d) of the Clean Water Act requires each State to identify those waters within its boundaries for which new or revised TMDLs are needed to implement water quality standards. Further, it requires each State to establish a priority ranking for these waters. The list of waters needing new or revised TMDLs should include all segments where TMDLs are needed to support permits or construction grants during the coming year. This list should be incorporated into the States' priority waterbody list to assure that programmatic interrelationships are recognized and that proper sequencing of activities occurs.

Many of these waters do not fully support designated uses; others may fall into the "threatened" category. States may choose to submit this information to EPA along with the Section 106/205(j) work program, or they may elect to report this

information in the Section 305(b) report.

Factors that States should carefully consider in setting priorities include:

- **The severity of the pollution and the uses of the waters**
- **National policies and priorities in documents such as the *Policy for the Development of Water Quality-Based Permit Limitations for Toxic Pollutants*, *Policy for the Review of Advanced Treatment (AT) Projects*, and the EPA's annual Operating Guidance**
- **Court orders and decisions**
- **Short-term water program needs: e.g., wasteload allocations needed for permits that are coming up for revisions or for construction grant applications. EPA is developing additional guidance or criteria for approval of State identifications of waters needing new or revised TMDLs and their priority rankings.**

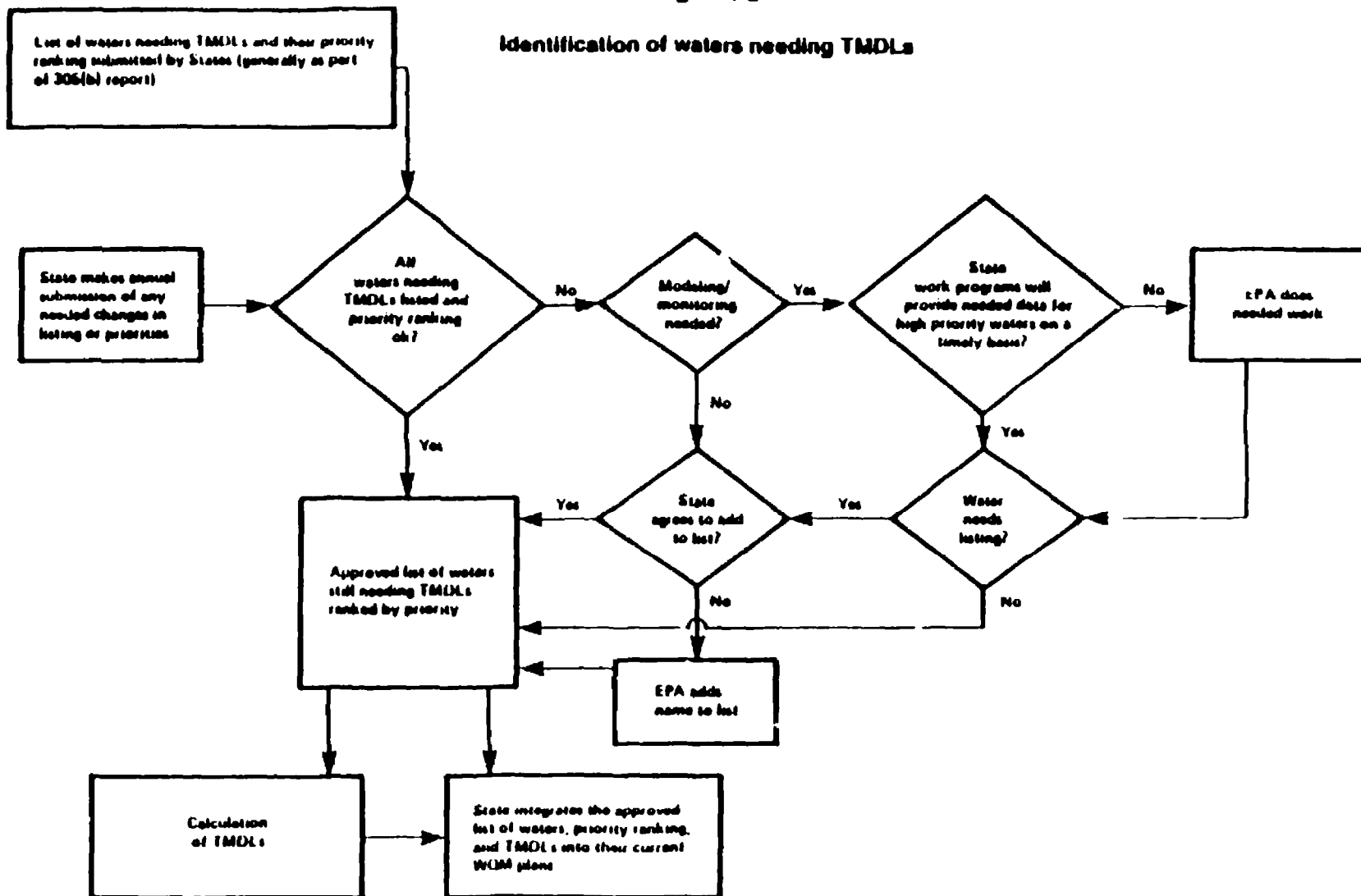
EPA Regional offices will review the State lists and determine whether they have listed all of the waters needing TMDLs and whether the State priorities are acceptable. The Regional offices should work with the States on needed changes to the list of waters identified or their priority ranking, including waters that now support the designated use but may soon need TMDLs to prevent future water quality problems. As resources allow, EPA Headquarters will work with the Regional offices and the States to improve the initial State lists to ensure that all significant toxics problems are included and to account for new information on effluent concentrations associated with best available technology (BAT), new water quality criteria, etc.

In cases where additional monitoring or modeling is needed to determine if a TMDL is needed, the Regional office and the State should negotiate a schedule for doing this monitoring and modeling as part of the State's Section 106 or 205(j) work program. If the work program does not provide for doing this work on the high-priority waters in a timely manner, then the Regional office will perform this work consistent with the availability of resources.

If EPA determines that a particular water should be listed, but the State does not agree to list it in a timely manner, then EPA must add this water to the list. Once the list identifying waters needing TMDLs and their priority ranking is approved, the State shall incorporate the list into the current water quality management (WQM) plans.

Figure 7-2

Identification of waters needing TMDLs



## Developing TMDLs

Each year the Regional office and the States should reach agreement on work plans for developing TMDLs as part of their annual Section 106 and 205(j) grant negotiations. To accomplish this, each State should prepare a WLA element in its annual work program that is submitted to EPA for approval. These submissions should include a Monitoring Checklist (see Appendix B) for each WLA project (or group of similar and straightforward WLA projects) that the State plans to focus on in the next fiscal year.

One way that States could show their priority ranking is given in Table 7-1. For example, if a particular State plans to develop TMDLs for five segments during the coming fiscal year, and if there are an additional five segments for which the State feels it should develop TMDLs as soon as resources become available, their priority lists could be configured as shown in the table. States may assign the same priority ranking to groups of waters, provided that these groups do not include too

many segments. Such groups may be particularly appropriate for segments in which no TMDL development is planned for the next fiscal year, because a less detailed priority ranking is needed for lower priority WLA projects. States may find it helpful to include additional information in this table, such as: segment descriptors (e.g., State ID numbers, River Reach File numbers or USGS hydrological codes if River Reach numbers are not available), segment length, parameters causing the water quality problems, uses supported or impaired, or special segment designations (e.g., priority waters or national resource waters).

An overview of the process for calculating TMDLs is provided in Figure 7-3.

If a State is planning to develop relatively simple and routine WLAs for a number of segments during the coming year, it may submit one Monitoring Checklist for these WLA projects rather than a separate checklist for each individual project. However, in any segment where developing wastewater allocations is more complex or is critical to the

Table 7-1  
Waters Needing TMDLs and Their Priority Ranking<sup>1</sup>

TMDL Priority	Segment Description (name, number, etc.)	TMDLs Needed to			
		Control Priority WQ Problems	Issue Permits	Issue Con. Grants	Support Other Actions
1	Set A*				
2	Segment A	•	•		
3	Segment B	•	•		
4	Segment C		•		
5	Segment D				•
5	Segment E	•	•	•	
6	Set B**				
6	Segment F	•	•	•	
6	Segment G	•			
7	Segment H				•
7	Segment I	•	•		
7	Segment J	•	•		
8	Set C***				

\*Set A includes the waters for which the State plans to develop TMDLs during the coming year.

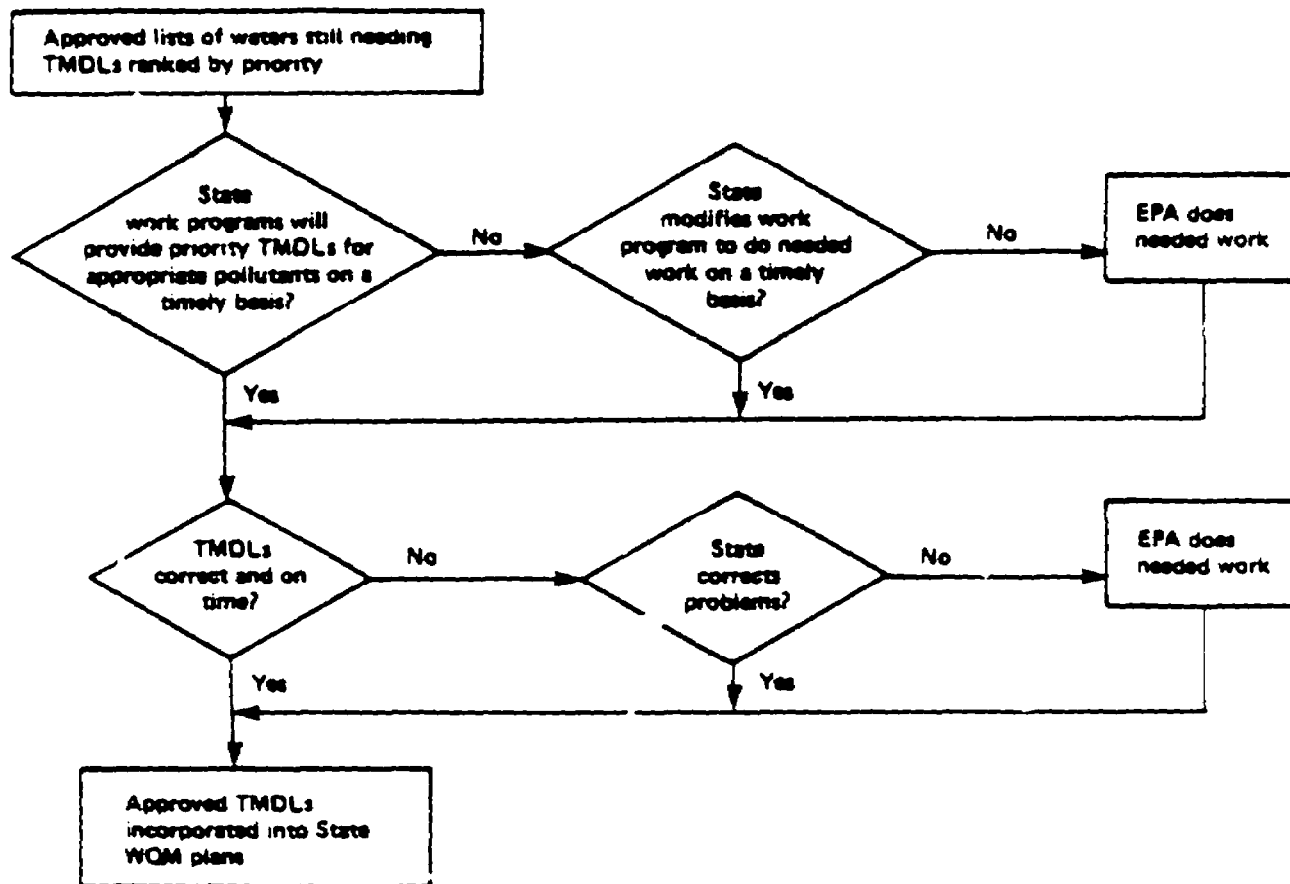
\*\*Set B includes the waters for which TMDLs should be developed as soon as resources become available.

\*\*\*Set C includes the waters (not listed individually) for which relatively low priority TMDLs are needed or for which it has not yet been determined whether TMDLs are needed.

<sup>1</sup>This is a supplemental list to the State's unified priority waterbody list.

Figure 7-3

Calculation of TMDLs



approval of a large construction grant\* or major permit, the Regional office may, at its option, require the State to submit additional information describing the proposed wasteload allocation project. In either event, the Regional office and the State should reach an agreement on the level of detail that is appropriate for each checklist.

EPA Regional offices review the annual State 106/205(j) work programs. If EPA disapproves a State's list of waters needing new or revised TMDLs, then the Region (working closely with the State) identifies those waters within the State where new or revised TMDLs are necessary to implement the applicable water quality standards. If

\*Procedures should also comply with the requirements of the Agency's Policy for the Review of Advanced Treatment Projects Notice, if applicable, published in the Federal Register on May 21, 1984 (49 FR 21462).

EPA disapproves a State's priority ranking of these waters or the checklist, then the Region and State are to negotiate acceptable revisions to the priority ranking and the checklists.

In accordance with the approved priority ranking for those waters and the annual work program, each State develops its proposed TMDLs for those pollutants that are expected to cause water quality standards violations (including generic toxicity) and for the approved list of waters identified as needing new or revised TMDLs. States are expected to follow EPA's guidance if they wish to receive funding for advanced treatment (AT) projects. States are encouraged to use EPA's guidance when developing TMDLs, copies of which may be obtained from the Wasteload Allocation Coordinator in each Regional office.

If the State chooses not to develop the needed

TMDLs for appropriate pollutants on a timely basis, EPA will establish the TMDLs. This will be done by focusing available EPA resources on the most critical water quality problems.

Section 303(d) (2) of the CWA requires EPA to approve or disapprove all of the States' proposed TMDLs. EPA may not delegate this responsibility. The most efficient way to meet this requirement is to tailor EPA's level of review to what is reasonable and appropriate (see Reference 1). Thus, where a State has clearly described its TMDL/WLA process in its continuing planning process (as required under 40 CFR Part 130.7 [a]) and EPA has approved this process, the Regional office may satisfy the Act's requirement for review of all TMDLs by:

- Conducting an in-depth review of a sample of the State's TMDLs to determine how well the State is implementing its approved TMDL/WLA process.
- Conducting a less detailed review of each of the State's other TMDLs.

In either case, EPA must, at a minimum, determine whether the State's proposed TMDLs are "established at a level necessary to implement the applicable water quality standards with seasonal variations and a margin of safety that takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality" (CWA Section 303 [d][1]). For those States that do not have an approved WLA process, Regions are expected to conduct in-depth reviews of all of the proposed TMDLs. When Regions review the State TMDLs, they should also consider how well the States are following the EPA technical guidance for conducting wasteload allocations.

For those WLA projects that EPA reviews in detail, States should prepare a report describing each project and submit it to the Regional office for approval. This submission should contain: (1) the proposed TMDLs, WLAs, LAs, and (2) supporting information that the Region will need to evaluate the State's water quality analysis and determine whether to approve or disapprove the proposed TMDLs, WLAs, and LAs. During their grant negotiations, Regions and States should reach an agreement on the specific information that these wasteload allocation reports should contain and determine the individual WLA projects for which such reports are necessary.

If EPA disapproves a State's TMDL and the State does not agree to correct the problems, then EPA shall, within 30 days of the disapproval date, establish such TMDLs as necessary to implement the water quality standards. However, the Region should inform the State that EPA would prefer to have the State develop the TMDLs, since the short time available for EPA's establishment of the TMDLs would likely necessitate using simplistic and overly conservative techniques in developing the TMDLs and also because negative publicity might arise should EPA be forced to step in.

## Quality Assurance for Wasteload Allocations

Quality assurance requirements must be met to obtain grants under which wasteload allocations are performed. In addition, specific technical QA/QC controls are necessary in the use of environmental data and models. Considerations also apply, however, when utilizing models, such as wasteload allocation models which involve "real" environmental data as well as parametric and mathematical relationships. In such cases, model sensitivity studies can help establish the levels of QA/QC required for specific data. For example, the allowable range of uncertainty in the data can be established through model sensitivity studies. This allowable range of uncertainty may indicate, for example, the need for tight limits on precision for a particular pollutant parameter. The general requirements for quality assurance are discussed in Chapter 5.

## EPA Responsibilities

EPA Headquarters is responsible for seeing that the mandates regarding TMDLs in the Clean Water Act are carried out, providing oversight of the Regional offices and the State, developing wasteload allocation program policy and guidance, developing computer software for calculating wasteload allocations, developing technical guidance documents, and providing technical training and assistance.

The EPA Regional offices are responsible for assisting Headquarters in developing policy and guidance and distributing this policy and guidance to the States, awarding grants to the States to



provide them with resources for developing and implementing wasteload allocations, and providing technical assistance to the States. In addition, the Regional offices are responsible for reviewing and approving, or disapproving, each State's wasteload allocation process; the wasteload allocation element of the annual 106/205(j) work program; the list of waters where WLAs, LAs, or TMDLs are needed; the priority ranking of these waters; and specific WLAs, LAs, or TMDLs. The EPA Regional offices are also responsible for reporting on State implementation to Headquarters.

## References

1. Scott Decision (Scott v. EPA, Nos. 81-2884 and 81-2885, decided on August 16, 1984).
2. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants (August 29, 1983) EPA-600/6-82-004 a, b, c.
3. Technical Support Document for Water Quality-based Toxics Control, U.S. EPA, Office of Water, September 1985.
4. Draft Guidance on the Development and Use of Priority Waterbody Lists, U.S. EPA, Office of Water, Washington, D.C. (July 1985)

## **Appendix A**

# **MONITORING POLICY INLAND AND COASTAL WATERS**

# Monitoring Strategy, U.S. EPA, Office of Water

## June 1984

### Purpose of This Policy

The purpose of this policy is to establish overall goals and objectives for those key elements of the water quality monitoring program that are most needed to achieve the "fishable/swimmable" goal of the Clean Water Act (CWA), to implement applicable EPA regulations, and to implement the EPA Environmental Monitoring Policy. Water quality monitoring is required by the Clean Water Act and provides the data needed to regulate sources of water pollution, assess the quality of the Nation's waters and evaluate the environmental effectiveness of national water quality programs.

### Scope of This Policy

"Water quality monitoring" is defined as the set of activities that provide chemical, physical, geological, biological, and other environmental data required by environmental managers. For the purpose of this policy, water quality monitoring is limited to those activities involved in the EPA and State implementation of the Clean Water Act in inland/coastal waters. "Regulatory monitoring" is the collection and analysis of effluent and ambient data needed for establishing water quality-based permit requirements and for assessing and enforcing compliance with permits. Regulatory monitoring also provides data necessary for establishing water quality-based controls for nonpoint sources. Regulatory monitoring for assessing and enforcing compliance with permits is not addressed in this policy.

### Statement of Policy

**Major Objectives:** This policy establishes three major objectives for the Nation's water monitoring program:

#### I. Advance the Regulatory Monitoring Program

Regulatory monitoring for establishing and enforcing water quality-based permit requirements and determining needed nonpoint source abatement actions is the highest priority of this policy. The goal is to strengthen the process for identifying waters not fully meeting designated uses and provide comprehensive, reliable data to EPA Regions and States for water quality management, construction grant and permit decisions. Attention should be given to identifying new problems as well as controlling known problems.

In view of the need for regulatory monitoring data on sources of pollution and impacted waters, EPA may require dischargers to collect chemical, physical, and biological data on their effluents and ambient conditions in their receiving waters as a National Pollutant Discharge Elimination System (NPDES) permit requirement. Ambient data requirements in NPDES permits will be established, in consultation with the State and the dischargers, when the potential exists for non-attainment of water quality standards. EPA will also support State requirements for data collection by dischargers.

#### II. Conduct Sound Assessments

Water quality assessments are defined as the analysis of environmental data to determine the quality of the ambient environment. Assessments are usually done for fairly large geographical areas, such as States, and may use a number of different kinds of data, e.g., concentrations of pollutants in receiving waters, number of reported fish kills, and the amount of impact detected in natural biological communities. Projections of future

conditions may also be done using detected ambient trends and data on expected pollution loads.

National, regional and State assessments of water quality are to be done at least every 2 years using, at a minimum, information collected to meet the requirements of Sections 305(b) and 205(j) of the CWA. On a 6-year cycle, beginning in 1968, the States will submit long-term trend information as part of their Section 305(b) reports. To support these and other assessments, each State will develop site-specific monitoring plans for waters not meeting designated uses. These plans are to be developed following EPA guidance and are to be negotiated between the Regions and the States. The Office of Water will supplement the Section 305(b) information to the extent necessary to derive sound national estimates and to answer questions of immediate interest to program managers. Regional assessments shall be performed as needed for Environmental Management Reports. Additional assessments of specific water quality problems will be performed on an as-needed basis. To the extent feasible, data will be extracted from ongoing regional and State regulatory monitoring.

### III. Evaluate Control Programs

EPA will utilize its formal program management and reporting systems for guiding EPA and State water quality monitoring activities and for evaluating EPA and State performance.

Program evaluation studies use water quality assessments to evaluate the effects of pollution control programs on environmental conditions. Program evaluation studies will be performed as needed to evaluate the environmental results of major national programs. To the extent feasible, data will be extracted from ongoing regional and State regulatory monitoring studies.

## Program Support Functions

The following program support functions must be accomplished if the major objectives are to be met:

**Improving EPA Oversight of the States:** EPA is

required to provide oversight of the States' implementation of the Clean Water Act. In order to provide adequate oversight, the EPA must have adequate information on both water quality conditions and pollution control activities in each State. Therefore, all appropriate State water quality data necessary to ensure implementation of the Clean Water Act must be reported to EPA via entry into STORET or in STORET-compatible format. This includes appropriate assessment data; appropriate screening data; and all regulatory monitoring data, including data needed for approvals of water quality standards, and wasteload allocations/total maximum daily loads.

In addition, Regions must ensure that they have adequate information on the water quality monitoring program in each State. If a State's proposed work program for a Section 106 grant fails to address a national priority monitoring activity that the Regional Administrator considers essential, the Regional Administrator may award an amount less than the allotment derived under the national allocation formula until the State's work program shows that the national priority activity is adequately addressed.

The individual State allotments derived from the national allocation formula represent funding targets and are not individual State entitlements. The funding targets are used to guide the development of State work programs and serve as a basis of discussion between the Regional Administrator and the State during negotiations over the final work program. The actual grant award is based on these negotiations between the State and Regional Administrator and is determined by annual State program activities. The State and Regional Administrator agree upon the State's annual activities and a funding level commensurate with those activities. The Regional Administrator may determine that a State's proposed activities do not represent a balanced water quality management approach consistent with national priorities contained in national and regional guidance. If a State work program does not adequately address a priority activity contained in national and regional guidance, the Regional Administrator may award less than the State's initial funding allotment in accordance with 40 CFR 35.143(b).

ERA Regions will work closely with the States through the Section 106 program planning process to ensure that the combined efforts of the

**Regions and States** reflect national monitoring priorities and support EPA regulations and policies. **Improving Data Quality:** Quality assurance/quality control will continue to be a high priority. The goal is that all data used by EPA or States for decisionmaking will be of known and sufficient quality for the intended uses. Also, for monitoring used for national and regional assessments, where feasible, the data should be of comparable quality to allow for effective use of regional and national data bases.

**Data Management:** The goal is that data systems will be made more useful so that EPA and State managers will be able to use ambient data and assessments to determine the environmental impacts of decisions. This will be accomplished by cross-linking existing data systems and developing interactive data retrieval and analysis mechanisms usable by line managers.

## **Roles of the EPA and the States in Implementing this Policy**

**EPA Headquarters:** Provide overall policy, guidance, technical assistance, and overview of program implementation by the Regions and States. Specific responsibilities follow:

- Prepare guidance and ensure that technical training and technical assistance is available for monitoring, water quality analysis, and data reporting.
- Perform national assessments and evaluate the national water quality effects of CWA programs.
- Make national data systems more useful for national, regional, and State managers by upgrading and cross-linking the existing systems and developing interactive data retrieval and analysis mechanisms for line managers. Continue support of the River Reach and Industrial Facility Discharge files.
- Ensure that appropriate quality assurance/quality control procedures are used in all national data collection efforts and provide needed laboratory capability for national studies of pollutants requiring special analyses, e.g., dioxin.
- Prepare Headquarters budget requests, and in consultation with the Regions, prepare requests for regional and State water quality

monitoring and analysis programs.

- Peer review major agency program activities involving water monitoring and consult with other program offices on water monitoring activities.

**Regional offices:** Provide overall policy, guidance, and overview of program implementation by States. Provide oversight of the States to ensure that adequate State resources from Sections 106/205(j) grants are directed to priority activities in monitoring, water quality analysis, and data reporting. Provide technical assistance and training for States. Ensure that needed water quality-based controls are developed, and provide needed water quality-based controls if the State fails to act in a timely manner. Implement Section 106(e) requirement for adequate State monitoring programs. Ensure that data are entered into national data systems. Specific responsibilities follow:

- Ensure that the appropriate regulatory monitoring is performed by States, the Region, or dischargers needed for developing and implementing water quality-based controls and identifying needed nonpoint source controls. This includes data required to identify waters needing water quality-based controls, data needed to develop controls, and data needed to assess the effectiveness of controls. Ensure that the developed controls are implemented, and provide controls if the State fails to act in a timely manner.
- Provide technical assistance and training to the States. Ensure that each Regional office has the capability to conduct water quality monitoring and analyses. For work involving toxics, where feasible, the Region is expected to have a capability in both the pollutant-specific and the biomonitoring approaches.
- Ensure that appropriate quality assurance/quality control procedures are used for all regional and State water quality data and for all data used in regional decisionmaking, including data reported by permittees.
- Perform regional water quality assessments, primarily based on State data, as needed to prepare Environmental Management Reports.
- Ensure that regional data systems are compatible with and do not unnecessarily duplicate national data systems. Ensure that data collected by the States and the Regions are

entered into the national system, including data needed to update the Industrial Facilities Discharge File.

**States:** Perform regulatory monitoring, assessments and program evaluations as needed to meet the requirements of the Clean Water Act. States have the primary responsibility for monitoring and water quality analysis. In carrying out this responsibility, States are expected to implement a balanced monitoring program. Specific responsibilities follow:

- As the first priority, States should collect and analyze data as needed to make water quality management decisions:
  - Identify: (a) waters not fully supporting designated uses and (b) priority waterbodies, i.e., those waters most needing water quality-based and nonpoint source controls or other actions to prevent or reverse an impairment of the designated use. Determine the reason(s) for nonsupport and the actions needed to prevent or reverse the impairment of the use. Include this information in the biennial Section 305(b) report to Congress. Focus on toxics as well as conventional pollutants. Simple screening techniques may be appropriate for many situations.
  - Develop needed water quality-based con-

trols for both conventional and toxic pollutants. For toxics, use both the pollutant-specific and the biomonitoring techniques, as appropriate.

- As needed to supplement State and regional regulatory monitoring, write effluent and ambient data collection requirements into permits for identifying waters needing controls, developing controls, and assessing the effectiveness of these controls to ensure that use is maintained or restored.
- Perform any additional monitoring needed for the Section 305(b) report to Congress, including monitoring needed to determine the status of waters not meeting designated uses and the reason(s) for nonattainment.
- Ensure that needed environmental data are provided to EPA, including appropriate assessment data; appropriate screening data; and all regulatory data including data needed for approvals of water quality standards and wasteload allocations/total maximum daily loads.
- Ensure that appropriate quality assurance/quality control procedures are used for all data used in State decisionmaking and for all data reported to EPA, including data reported by dischargers.

**Appendix B**

**MONITORING CHECKLISTS**

**Form A:**  
**For Intensive Surveys/Wasteload**  
**Allocations/Special Studies**

**Form B:**  
**For Fixed-Station Networks**

## Preparation and Submission of Monitoring Checklists

Monitoring checklists should be prepared by each State to describe their planned monitoring and wasteload allocation activities in the upcoming (budget) year. One Form A checklist describing planned intensive surveys, wasteload allocations, or special studies should be prepared for each survey/study or group of activities requiring similar monitoring (such as groups of intensive surveys that are conducted for the same purpose but on different waterways). One Form B checklist describing fixed-station networks should also be prepared for each network of stations. When reporting on groups of intensive surveys, wasteload allocations, special studies, or when reporting on fixed-station networks, the States should attach a list of the locations (i.e., sites for the surveys/studies and stations for networks) with key location information (see instructions for completing the forms). Other information may also accompany these forms, such as maps, outlines of proposed studies, or other information to help explain or clarify the submission.

States are to work with the EPA Regional office in developing their annual 106/205(j) work programs and they should submit completed checklists to the Regional offices as part of the work programs. These checklists are intended as planning documents and are not intended to replace detailed study plans or project plans. The States and the Regional office should work together during their preparation and implementation, and the Regional office should use these checklists to track planned State activities that are funded, at least in part, by EPA grants.

Modifications to checklists that have been submitted to EPA may be necessary as State program needs change or new information becomes available. When changes or revisions are necessary, the States should contact the Regional office to discuss these changes. If the Region agrees that the proposed changes are of a relatively minor nature, submission of revised checklists is not necessary. It is important that revised checklists be sent to the EPA Regional office for major changes. Checklists for completed surveys are not normally expected since water quality data is to be provided to EPA and periodic reviews will provide sufficient status.

States are strongly encouraged to prepare written reports adequately describing the study, dates, purposes, findings, etc., and provide copies of them to EPA (see Chapter 6). Written reports should also include references to data in the STORET data system.

## Instructions for Completing Monitoring Checklist

### Form A—Intensive Surveys Wasteload Allocations/Special Studies

**Primary water**—Name of the waterbody on which the survey/study will be conducted. If more than one, write as primary/secondary.

**Nearest town**—If feasible, the name of the nearest city or town of sufficient size to locate the area on a map.

**State**—The State in which the survey will be conducted. If interstate, write as primary/secondary.

**Planned start date**—The estimated date that fieldwork for the survey will begin.

**Planned end date**—The estimated date that the fieldwork will be completed.

**EPA River Reach number**—The River Reach File number(s) for the affected reach(s). If the Reach Number is not known (and cannot be provided by EPA), the USGS Hydrologic Unit Code may be used. This code consists of four separate 2-digit codes that identify the USGS Region, Subregion, Accounting unit, and Cataloging unit. River miles of upstream and downstream limits or other descriptors may be added to the Comments section to help locate the site.

**Designated/actual use**—Designated use or uses of the waterbody(s).

**Waterbody type, principal objective/purpose, significant land use**—Check, as appropriate. More than one for each may be checked.

**Number of samples by media**—Give estimated numbers of samples for each media, as appropriate.

**Sources of problems**—Give the estimated number of facilities (or discharge points, if nonpoint sources) to characterize the causes of pollution in the study areas that are being assessed in the survey.



**Parametric coverage: physical, biological, chemical measurements**—Check which media will be assessed in the survey, as appropriate.

**Sample frequency**—Check anticipated frequency of sampling. Additional comments or explanation may be written in the Comments section on pg. 2.

**Data to be entered into STORET?**—Check whether all, some, or none of the data (by media) will be entered by the State into STORET. Also, add the anticipated date when all data (by media) will be entered. If data will not be entered into STORET by the State, give the date that "hardcopy" of the data will be sent to EPA.

**Intensive survey for modeling/model description**—If the intensive survey(s) is done to calibrate a model, check the appropriate item describing special considerations for the planned survey.

**Quality assurance**—Self explanatory.

**Comments**—Can be used to provide clear/concise explanations of other sections of the checklist. If more space is needed, the reverse of the form may be used.

**State contact**—Self explanatory.

**Estimated resources**—Provide estimates of work-years and any contractor costs anticipated for operating the survey, wasteload allocation, or special study. These should include all costs for planning, field work, lab work, quality assurance/quality control, etc. Also include an estimate of the percent of the total cost that is funded by grants under Section 106 and 205(j) of the Clean Water Act. If other EPA grant funds are used, specify source(s) of funds.

### **Form B—Fixed-Station Networks**

**Name of network**—Self explanatory.

**Network purpose(s)**—Check why the network is operated. More than one may be checked, as appropriate.

**Waterbody type**—Check the types of waterbodies on which the monitoring stations are located.

**Parametric coverage: physical, biological, and chemical measurements**—Check which media are assessed.

**Sample frequency**—Check planned frequency for collecting and analyzing samples at each station.

Also, indicate in the Comments section if modifications are necessary (for example, if sampling is curtailed during the winter months).

**Data to be entered in STORET?**—Check whether all, some, or none of the data (by media) will be entered into STORET. Also, add the anticipated date when all data will be entered. If the data will not be entered into STORET, indicate the date that "hardcopy" of the appropriate data (as agreed upon by the Regional office) will be sent to EPA.

**Quality assurance**—Self explanatory.

**Comments**—Self explanatory. Can be used to provide clear/concise explanations of other sections of the checklist (such as sampling frequencies or parameter coverage where there may be significant variations between stations). If more space is necessary, the reverse of the form may be used.

**State contact**—Self explanatory.

**Estimated resources**—Provide estimates of work-years and any contractor costs anticipated for operating the network. These should include all costs for planning, field work, lab work, quality assurance/quality control, etc. Also, include an estimate of the percent of the total cost that is funded by grants under Section 106 or 205 of the Clean Water Act. If other EPA funds are used, specify source(s) of funds.

**Attached list of monitoring stations.** For stations that are in STORET, the following information (at a minimum) should be provided for each station:

1. STORET Agency code
2. STORET Station number
3. EPA River Reach number (or USGS Hydrologic Unit if the Reach number is unknown). River mile may also be added to help locate each site.

For stations that are not in STORET, the following information (at a minimum) should be provided for each station:

1. Name of waterbody
2. EPA River Reach number (or USGS Hydrologic Unit if the Reach number is unknown). River mile may also be added to help locate each site.
3. Latitude-longitude coordinates
4. Nearest town
5. State

State of \_\_\_\_\_ FY \_\_\_\_\_

Primary Water \_\_\_\_\_ Nearest Town \_\_\_\_\_ State \_\_\_\_\_ Planned Start Date: \_\_\_\_\_

EPA River Reach Number (or USGS Hydrologic Number if unknown) \_\_\_\_\_ Planned End Date: \_\_\_\_\_

Designated Use \_\_\_\_\_ Actual Use \_\_\_\_\_

<b>Waterbody Type:</b> <input type="checkbox"/> Stream <input type="checkbox"/> Lake <input type="checkbox"/> Impoundment <input type="checkbox"/> Estuary/Bay <input type="checkbox"/> Wetland <input type="checkbox"/> Ocean <input type="checkbox"/> Groundwater	<b>Survey Purpose(s):</b> <input type="checkbox"/> Conditions & trends <input type="checkbox"/> Basin status <input type="checkbox"/> Wasteload allocation—conventional <input type="checkbox"/> Wasteload allocation—toxics <input type="checkbox"/> Model calibration/verification <input type="checkbox"/> Municipal permits/compliance <input type="checkbox"/> Industrial permits/compliance <input type="checkbox"/> Water quality standards attainment <input type="checkbox"/> Post-controls assessment <input type="checkbox"/> Nonpoint source assessment <input type="checkbox"/> Other: _____ _____ _____ _____	<b>Number of Samples by Media:</b> _____ Surface water _____ Ground water _____ Sediment _____ Fish/shellfish _____ Effluent _____ Biological _____ Other: _____ _____ _____
<b>Significant Land Use:</b> <input type="checkbox"/> Residential <input type="checkbox"/> Industrial <input type="checkbox"/> Agricultural <input type="checkbox"/> Silvicultural <input type="checkbox"/> Mining <input type="checkbox"/> Urban <input type="checkbox"/> Office/Shopping <input type="checkbox"/> Other: _____		

**Sources of Problems (show number):**

<input type="checkbox"/> Municipal, primary	<input type="checkbox"/> Nonpoint source, agriculture	<input type="checkbox"/> Hazardous Waste Disposal
<input type="checkbox"/> Municipal, secondary	<input type="checkbox"/> Nonpoint source, silviculture	<input type="checkbox"/> Hazardous waste storage
<input type="checkbox"/> Municipal, advanced	<input type="checkbox"/> Nonpoint source, urban	<input type="checkbox"/> Power/Energy
<input type="checkbox"/> Industrial permittee, major	<input type="checkbox"/> Eutrophication	<input type="checkbox"/> Other (list): _____
<input type="checkbox"/> Industrial permittee, minor	<input type="checkbox"/> Mine drainage	_____
<input type="checkbox"/> Storm or combined sewer	<input type="checkbox"/> Land disposal	_____
<input type="checkbox"/> Oil/Gas well	<input type="checkbox"/> Irrigation	_____

**PARAMETRIC COVERAGE**

<b>Physical Measurements</b> <input type="checkbox"/> Hydrological <input type="checkbox"/> Habitat <input type="checkbox"/> Climatological <input type="checkbox"/> Meteorological _____ _____ _____	<b>Biological Measurements</b> <input type="checkbox"/> Plankton <input type="checkbox"/> Periphyton <input type="checkbox"/> Fish/Shellfish tissue <input type="checkbox"/> Bacteriological <input type="checkbox"/> Macroinvertebrates <input type="checkbox"/> Effluent bioassay <input type="checkbox"/> Stream bioassay <input type="checkbox"/> Species & diversity _____ _____ _____	<b>Chemical Measurements</b> Water Column Sediment Dissolved oxygen Oxygen demanding Nutrients Solids Oil and grease Organics Metals Pesticides Cyanides and phenols Reaction rates Radionuclides _____
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<b>Sample Frequency:</b> <input type="checkbox"/> Daily <input type="checkbox"/> Multiple per day <input type="checkbox"/> _____ <input type="checkbox"/> _____	<b>Sample Frequency:</b> <input type="checkbox"/> Daily <input type="checkbox"/> Multiple per day <input type="checkbox"/> _____ <input type="checkbox"/> _____	<b>Sample Frequency:</b> <input type="checkbox"/> Daily <input type="checkbox"/> Multiple per day <input type="checkbox"/> _____ <input type="checkbox"/> _____
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<b>Data to be entered into STORET?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Partial Est. Date: _____	<b>Data to be entered into STORET?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Partial Est. Date: _____	<b>Data to be entered into STORET?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Partial Est. Date: _____
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MODELING				
INTENSIVE SURVEY FOR MODELING	<b>Sample Type:</b> <input type="checkbox"/> Plug flow <input type="checkbox"/> Multi-day synoptic (no. days: _____) <input type="checkbox"/> Other _____	<b>Time of Travel Studies?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No	<b>Cross Section Profiles?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No	<b>Season/Flow Conditions</b>
			<b>Flow Records Available/Used?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No	
MODEL DESCRIPTION	<b>Model Name:</b> _____		<b>Other Design Conditions:</b>  _____  _____  _____	
	<b>Model Type:</b> <input type="checkbox"/> Steady State <input type="checkbox"/> Dynamic <input type="checkbox"/> 1-Dimensional <input type="checkbox"/> 2-Dimensional <input type="checkbox"/> 3-Dimensional <input type="checkbox"/> Other	<b>Design Temperature</b> _____ °C		
	<b>Design Streamflow</b>  <b>Ratio of Receiving Water Design Flow to Effluent Flow</b> _____ : _____			
<b>Parameters Modeled:</b> _____				

### QUALITY ASSURANCE

- Have Data Quality Objectives been established?     Yes     No    Est. Date: \_\_\_\_\_
- Has a Work Plan/QA Project Plan been prepared?     Yes     No    Plan No. \_\_\_\_\_
- Will EPA approved or acceptable field and laboratory methods be used?     Yes     No     Unknown
- Will QA audits be performed?     Yes     No     Unknown
- Will precision and accuracy estimates for the data be determined?     Yes     No     Unknown

### COMMENTS

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STATE CONTACT	ESTIMATED RESOURCES	
Name: _____  Address: _____  Phone: _____	<b>Total Work Years</b> _____	% (of total) funded by §106 grants: _____
	<b>Total Funds (State + EPA)</b> _____	% (of total) funded by §206(l) grants: _____
		% (of total) funded by other: _____ EPA funds: _____

State of \_\_\_\_\_ FY \_\_\_\_\_

Name of Network \_\_\_\_\_

Network Purpose(s):

- Condition and trends assessment
- Water quality standards attainment/maintenance
- Basin status
- Post-controls assessment
- Nonpoint source assessment
- \_\_\_\_\_
- \_\_\_\_\_

Waterbody Types:

- Streams
- Lakes
- Impoundments
- Estuaries/Bays
- Wetlands
- Ocean
- \_\_\_\_\_

**PARAMETRIC COVERAGE**

**Physical Measurements**

- Hydrological
- Habitat
- Climatological
- Meteorological
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

**Biological Measurements**

- Plankton
- Periphyton
- Fish/shellfish tissue
- Bacteriological
- Macroinvertebrates
- Effluent bioassay
- Stream bioassay
- Species & diversity
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

**Chemical Measurements**

- | Water                    | Column                   | Sediment                 |                      |
|--------------------------|--------------------------|--------------------------|----------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Dissolved oxygen     |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Oxygen demanding     |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Nutrients            |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Solids               |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Oil and grease       |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Organics             |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Metals               |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Pesticides           |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Cyanides and phenols |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Reaction rates       |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Radionuclides        |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____                |

Sample Frequency:

- Daily
- Weekly
- Monthly
- Quarterly
- Other: \_\_\_\_\_

Sample Frequency:

- Daily
- Weekly
- Monthly
- Quarterly
- Other: \_\_\_\_\_

Sample Frequency:

- Daily
- Weekly
- Monthly
- Quarterly

Data to be entered into STORET?

- Yes  No

Est. Date: \_\_\_\_\_

Data to be entered into STORET?

- Yes  No

Est. Date: \_\_\_\_\_

Data to be entered into STORET?

- W/C:  Yes  No Est. Date: \_\_\_\_\_

Sed.:  Yes  No Est. Date: \_\_\_\_\_

**QUALITY ASSURANCE**

- Have Data Quality Objectives been established?  Yes  No Est. Date: \_\_\_\_\_
- Has a Work/QA Project Plan been prepared?  Yes  No Plan No. \_\_\_\_\_
- Will EPA approved or acceptable field and laboratory methods be used?  Yes  No  Unknown
- Will QA audits be performed?  Yes  No  Unknown
- Will precision and accuracy estimates for the data be determined?  Yes  No  Unknown

**COMMENTS**

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**STATE CONTACT**

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Phone: \_\_\_\_\_

**ESTIMATED RESOURCES**

Total Work Years	% (of total) funded by \$106 grants:
	% (of total) funded by \$205(j) grants:
Total Funds (State + EPA)	% (of total) funded by other:
	EPA funds:

**ATTACH LIST OF ALL STATIONS IN THIS NETWORK (See Instructions)**