



Guidelines for Preparation of the 1994 State Water Quality Assessments (305(b) Reports)






UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAY 26 1993

OFFICE OF
WATER

MEMORANDUM

SUBJECT: *Guidelines for the Preparation of the 1994 State Water Quality Assessments (305(b) Reports)*

FROM: Robert H. Wayland III, Director 
Office of Wetlands, Oceans & Watersheds

TO: Water Management Division Directors
Regions I-X

Environmental Services Division Directors
Regions I-X

Attached are the *Guidelines for the Preparation of the 1994 State Water Quality Assessments (305(b) Reports)*. These *Guidelines* reflect continuing efforts by the Environmental Protection Agency (EPA) and the States through the 305(b) Consistency Workgroup to refine the water quality assessment and reporting process under Section 305(b) of the Clean Water Act.

The 305(b) Consistency Workgroup consists of representatives from 21 States, 6 Federal Agencies, the 10 Regions and EPA Headquarters. This group met in June and October 1992 and established the following goals for the 1994 305(b) reporting cycle:

- * more detailed guidance for aquatic integrity assessments;
- * improved consistency of reporting information; and
- * improved data quality and utility.

The Workgroup recommended against extensive changes in the *Guidelines* in order to provide a relatively stable set of requirements between 1992 and 1994 cycles, and to serve as a springboard for considering more extensive changes, such as more specific assessment guidance for 1996. Changes for 1994 should have minimal impact on most State 305(b) programs.



These *Guidelines* reflect the recommendations of the Consistency Workgroup, as refined by State comments during the review process. To increase awareness of biological assessment tools, Appendix B: "Making Use Support Determinations" now provides more detailed guidance for aquatic life assessments, including appropriate methods for using biological as well as physical/chemical data. To improve consistency, the *Guidelines* clarify reporting requirements by including tables for many additional types of information to be reported. A later addendum will also provide the computer software for refined Total Waters estimates in a format requested by the States.

Finally, to improve data quality and utility, EPA has revised the Waterbody System (WBS) in response to detailed recommendations from the WBS Advisory Group comprised of both State and Federal WBS users. WBS Version 3.1 incorporates such refinements as a 303(d)/TMDL tracking module, the ability to produce all the 305(b) report tables except groundwater and wetlands, and greater speed of operation.

We are issuing these *Guidelines* eleven months before the State 305(b) reports are due to EPA. By mid-summer of 1993, we will issue the two remaining tools for States to use in producing their reports:

- o the new software for the WBS Version 3.1 (States may request a beta test version now if they desire) and;
- o computer software with updated estimates of total stream and lake acreage estimates for each State, with special categories for border miles.

This additional software will supplement the attached *Guidelines*, but will not delay the development or submittal of the 1994 305(b) reports.

Please ask your Regional 305(b) Coordinators to transmit these *Guidelines* to your States, in order to begin preparation of the 1994 305(b) reports. If you elect to develop supplemental Regional guidance, please be sure to send an informational copy to Barry Burgan, the National 305(b) Coordinator (WH-553). Any questions regarding the above should be directed to Barry at (202) 260-7060.

Attachment

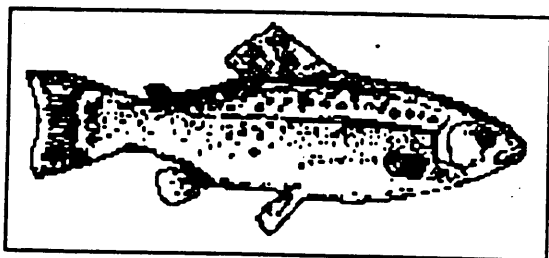
cc: Regional Water Quality Branch Chiefs
Regional Field Branch Chiefs
Regional 305(b) Coordinators
Regional Waterbody System Coordinators
Regional Monitoring Coordinators
305(b) Consistency Workgroup

Guidelines for Preparation of the 1994 State Water Quality Assessments (305(b) Reports)

May 1993

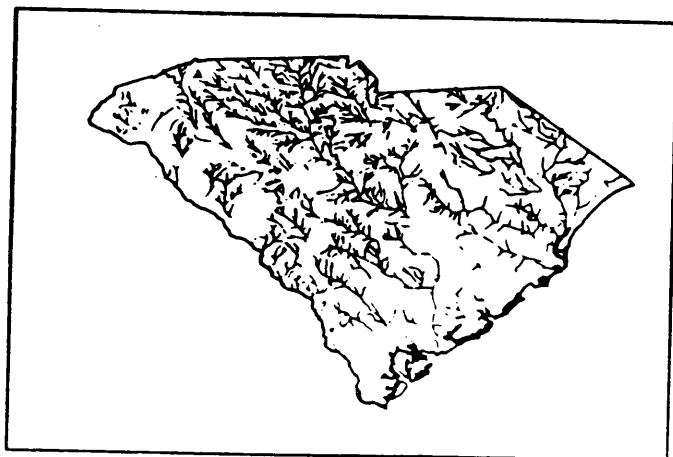
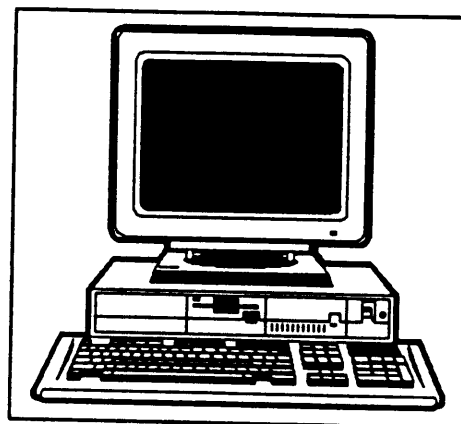
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Cover: A stream with progressive impairment of aquatic life use. Suspended sediment, siltation, toxicants, and nutrients may be the causes or stressors of interest here. Suspended sediment and siltation, for example, can abrade fish gills, suffocate macroinvertebrates, and smother cobbles where fish lay eggs.

EPA's Assessment and Watershed Protection Division will distribute the Waterbody System (WBS) Version 3.1 program in mid-summer to support these *1994 305(b) Guidelines*. This distribution to WBS Coordinators in the States and Territories will include the new software and an updated *WBS User's Guide*. See page 4 of these *Guidelines* for more information about WBS Version 3.1. WBS can now generate all but two tables in these *Guidelines* (wetlands and ground water tables are exceptions).



EPA will also distribute updated estimates of State total waters in mid-summer to support these *Guidelines*. The estimates will include total stream mileage and lake acreage estimates for the State, with special categories for such waters as border rivers and intermittent streams. In response to State requests, EPA will also provide mileages by stream order and total waters estimates for each USGS Cataloging Unit.

TABLE OF CONTENTS

	<u>Page</u>
THE 305(b) PROCESS	1
GOALS FOR THE 1994 CYCLE	3
Expand Use of Biological Integrity Reporting	3
Improve Consistency of Reported Information	3
Improve Data Quality and Utility	4
SUMMARY OF CHANGES IN THE 1994 305(b) GUIDELINES	6
1994 305(b) SUBMISSION REQUIREMENTS AND CONTENTS	8
1994 305(b) CONTENTS — PART I: EXECUTIVE SUMMARY/OVERVIEW ...	11
1994 305(b) CONTENTS — PART II: BACKGROUND	12
Total Waters	13
Maps	14
Summary of Classified Uses	14
1994 305(b) CONTENTS — PART III: SURFACE WATER ASSESSMENT	15
Chapter One: Surface Water Monitoring Program	15
Chapter Two: Assessment Methodology and Summary Data	16
Chapter Three: Rivers and Streams Water Quality Assessment	20
Chapter Four: Lakes Water Quality Assessment	27
Chapter Five: Estuary and Coastal Assessment	35
Chapter Six: Wetlands Assessment	37
Chapter Seven: Public Health/Aquatic Life Concerns	41
1994 305(b) CONTENTS — PART IV: GROUND-WATER ASSESSMENT	47
Overview	47
Ground Water Quality	48
Ground Water Indicators	50
1994 305(b) CONTENTS — PART V: WATER POLLUTION CONTROL PROGRAM	60
Chapter One: Point Source Control Program	60
Chapter Two: Nonpoint Source Control Program	60
Chapter Three: Cost/Benefit Assessment	61
Chapter Four: Special State Concerns and Recommendations	62

TABLE OF CONTENTS

	<u>Page</u>
APPENDIX A PROVISIONS OF THE CLEAN WATER ACT	A-1
APPENDIX B MAKING USE SUPPORT DETERMINATIONS	B-1
APPENDIX C KEY TERMS AND DEFINITIONS	C-1
APPENDIX D DATA SOURCES FOR 305(b) ASSESSMENTS	D-1

LIST OF TABLES

<u>Number</u>		<u>Page</u>
1	Atlas	12
2	State 303(d) List of Waters Needing TMDLs	18
3	Overall Use Support Summary	20
4	Individual Use Support Summary	21
5	Total Sizes of Waters Not Fully Supporting Uses by Various Cause Categories	23
6	Total Sizes of Waters Not Fully Supporting Uses Affected by Various Source Categories	25
7	Trophic Status of Significant Publicly Owned Lakes	29
7a	Example Table for Reporting Trophic Status of Private Lakes	29
8	Lake Rehabilitation Techniques	32
9	List of Clean Lakes Program Projects	33
10	Acid Effects on Lakes	34
11	Sources of High Acidity in Lakes	34
12	Trends in Significant Public Lakes	35
13	Extent of Wetlands, by Type	38
14	Development of State Wetland Water Quality Standards	39
15	Total Size Affected by Toxicants	42
16	Waterbodies Affected by Fish and Shellfish Consumption Restrictions .	44
17	Waterbodies Affected by Fish Kills and Fish Abnormalities	44
18	Waterbodies Affected by Sediment Contamination	44
19	Waterbodies Affected by Shellfish Advisories due to Pathogens	45
20	Waterbodies Affected by Bathing Area Closures	45

LIST OF TABLES (continued)

<u>Number</u>		<u>Page</u>
21	Waterbodies Affected by Surface Drinking Water Restrictions	45
22	Major Sources of Ground Water Contamination	49
23	Ground Water Contaminants	51
24	Number of MCL Exceedances for Ground Water-based or Partial Ground Water-supplied Community PWSs for Selected Contaminants in Four Contaminant Groups	55
25	Number of Ground Water-based or Partial Ground Water-supplied Community PWSs with MCL Exceedances	57
26	Number of Sampling Detections Between 50 and 100 Percent of MCLs for Four Contaminant Groups	59
27	Number of Ground Water-based or Partial Ground Water-supplied Community PWSs that Have Local Wellhead Protection Programs in Place	59

THE 305(b) PROCESS

The Federal Water Pollution Control Act (PL92-500, commonly known as the Clean Water Act), as last reauthorized by the Water Quality Act of 1987 (PL100-4), establishes a process for developing information on the quality of the Nation's water resources and reporting this information to the U.S. Environmental Protection Agency (EPA), the U.S. Congress, and the citizens of this country. The requirements for this process are found in Sections 106(e), 204(a), 303(d), 305(b), and 314(a) of the Clean Water Act (see Appendix A). Each State, Territory, and Interstate Commission must develop a program to monitor the quality of its surface and ground waters and prepare a report every 2 years describing the status of its water quality. The EPA receives these reports and transmits them to Congress along with an analysis of the status of water quality nationwide.

This process, referred to as the 305(b) process, is an essential aspect of the Nation's water pollution control effort. It is the principal means by which the EPA, Congress, and the public evaluate water quality, the progress made in maintaining and restoring water quality, and the extent of remaining problems. Many States rely on the 305(b) process for information needed to conduct program planning and to report to their legislatures on progress and remaining problems in their water pollution control programs. The 305(b) process is an integral part of the State water quality management program requirements set forth in 40 CFR 130.

At the Federal level, the 305(b) process is becoming more important as efforts increase to manage programs more cost effectively. The management objective for the 305(b) process is to provide the information needed to

1. Determine the status of water quality
2. Identify water quality problems
3. Evaluate the causes of poor water quality in assessed waters and the relative contributions of pollution sources
4. Report on the activities under way to assess and restore water quality
5. Determine the effectiveness of control programs

6. Ensure that water pollution control programs are focused on achieving environmental results efficiently
7. Help determine the workload remaining in restoring waters with poor quality and begin to assess the extent of threatened waters
8. Evaluate the effectiveness of interstate compacts in improving water quality
9. Maintain and update statutorily required lists of waters identified under Clean Water Act (CWA) Sections 303(d), 314, and 319.

In addition, 305(b) assessments are important to the implementation of the Coastal Zone Act Reauthorization Amendments of 1990 (CZARA), which require additional management measures for waters identified as threatened or impaired by assessments such as the State 305(b) reports. EPA encourages coastal States to increase emphasis on assessments and reporting for waters within their CZARA Section 6217 coastal areas to support their nonpoint source management programs. See Part V, Chapter 2 of these *Guidelines* for further information about CZARA requirements.

Indian Tribes are exempted from the Section 305(b) reporting requirement (*Federal Register*, Vol. 54, No. 68, April 11, 1989, p. 14357). EPA encourages Indian Tribes to prepare and submit 305(b) reports where sufficient data allow description of tribal waters. Tribes lacking sustained monitoring programs for tribal waters are encouraged to work with appropriate Federal or State agencies to ensure accurate reporting under Section 305(b).

EPA requires Tribes to provide a summary of water quality monitoring data that were collected using EPA funding. A Tribe must perform its monitoring and/or analysis in accordance with EPA quality assurance and quality control (QA/QC) guidelines.

Throughout these *305(b) Guidelines*, the term "State" refers to the States of the United States, U.S. Territories, Interstate Commissions, the District of Columbia, and those Indian Tribes that are treated as States under specific sections of the Clean Water Act.

GOALS FOR THE 1994 CYCLE

In order to coordinate reporting efforts among the States, Territories, Interstate Commissions, and Tribes (where applicable), EPA establishes goals or themes for each 305(b) reporting cycle. The goals for 1994 are to expand use of biological integrity reporting, improve consistency of reported information, and improve data quality and utility.

Expand Use of Biological Integrity Reporting

EPA and the States have long recognized the importance of developing, implementing, and supporting ambient biological assessment programs to report on the biological integrity and aquatic life use attainment of surface waters. EPA strongly recommends this approach, preferably in an integrated assessment involving physical, chemical, and toxicological monitoring. However, biological community/assemblage and habitat data can help to determine attainment of aquatic life uses if physical, chemical, and toxicological data are not available. (Please refer to the discussion in Appendix B on "Making Use Support Decisions Using Biological Data.")

The goal for the 1994 reporting cycle is to increase the States' awareness of and capability in the use of biological assessment tools for assessing use attainment. Increased capability and use at the State level will result in more consistent and accurate reporting of designated use attainment in the *National Water Quality Inventory Report to Congress*.

Improve Consistency of Reported Information

In recent years, workgroups made substantial progress in improving the consistency of water quality reporting. However, further progress is needed to increase the usefulness of water quality measures reported by the States and summarized in the *National Water Quality Inventory Report to Congress*.

EPA convened a 305(b) Consistency Workgroup in 1990, and expanded it in 1992, to address issues of consistency in water quality reporting and to improve accuracy and coverage of State assessments. The 1994 305(b) Consistency Workgroup consists of representatives from 21 States, 6 Federal agencies, the 10 EPA Regions and EPA Headquarters. This standing Workgroup, which will develop future 305(b) guidance, met in June and October 1992 and made the following recommendations to improve 1994 guidance to the States:

GOALS FOR THE 1994 CYCLE

1. Refine the 1992 total waters estimates and distribute them to the States in time for the 1994 cycle. These refinements will include: reporting total stream miles by stream order; refining border waters, coastline, and Great Lakes shoreline estimates; refining total lakes estimates; and providing documentation of Reach File 3/Digital Line Graph (RF3/DLG) total waters estimates to the States.
2. Develop more detailed guidance for aquatic life assessments, including appropriate methods for using biological as well as physical/chemical data.

Guidance developed as a result of these recommendations is incorporated in Part II (Background), Part III (Surface Water Assessment), and Appendix B (Making Use Support Decisions) of these *Guidelines*. In addition to the above changes, these *Guidelines* clarify reporting requirements for the Clean Lakes Program and for public health/aquatic life impacts, among other topics. The Workgroup reviewed all changes, which are summarized in the section titled "Summary of Changes in the 1994 305(b) Guidelines."

The changes should have minimal impact on most State 305(b) programs. The 305(b) Consistency Workgroup recommended against extensive changes to the *Guidelines* in order to provide a relatively stable set of requirements between the 1992 and 1994 cycles, and to serve as a springboard for considering more extensive changes, such as more specific assessment guidance, for 1996.

Improve Data Quality and Utility

Information from the 305(b) process is becoming critically important as water pollution control efforts shift from technology-based to water quality-based approaches. Waterbody-specific information is needed to comply with requirements under Sections 319, 314, and 303(d) of the Clean Water Act and to answer key programmatic questions. To improve data consistency and usefulness, simplify preparation of State reports, and provide a management tool for States, EPA developed a computerized data system, the Waterbody System (WBS), to manage the waterbody-specific portion of the 305(b) information.

In 1992, approximately 40 States either used the WBS or provided WBS-compatible data. The 305(b) Consistency Workgroup referred several technical issues concerning WBS to a new WBS Advisory Group, which first met in September 1992. The Advisory Group, which consists of 20 State and Regional WBS users, made the following recommendations and provided detailed background information for them:

GOALS FOR THE 1994 CYCLE

- Enhance WBS report generation
- Maintain stability in basic database structure
- Focus software enhancements on greater ease of use
- Provide additional hands-on WBS and RF3 training
- Promote the establishment of a full-time position for water quality assessments and WBS use in each State and Region.

EPA is implementing these recommendations for the 1994 cycle. The updated version of WBS, Version 3.1, retains the same core programs and user-friendly concepts (pop-up windows, pick lists) and similar screens as the previous version. EPA will provide WBS Version 3.1 and installation instructions to States by mid-summer to support these *305(b) Guidelines*. EPA contacts for the WBS are the Regional WBS Coordinators and Jack Clifford, National WBS Coordinator, (202) 260-3667.

EPA expects States to fully implement the WBS or a WBS-compatible system for 1994. EPA has provided WBS users with technical assistance since 1987 and will continue to do so in 1993-94.

SUMMARY OF CHANGES IN THE 1994 305(b) GUIDELINES

SUMMARY OF CHANGES IN THE 1994 305(b) GUIDELINES

The following list summarizes changes between the 1992 and 1994 *305(b) Guidelines*. The 1994 *Guidelines* document

- Expands guidance for making aquatic life use support decisions with biological data (Appendix B)
- Asks States to identify waterbodies for which independently applied biological, chemical, or toxicological data suggest different assessment results. WBS contains new codes for this (page 22 and Appendix B)
- Requests that States report total number and acreage of significant publicly owned lakes/reservoirs/ponds in the atlas providing the State overview (Table 1)
- Clarifies reporting guidance for preparing 303(d) lists and provides a table (Table 2)
- Clarifies guidance for primary contact recreation use support determinations based on bacteriological data (Appendix B)
- Revises guidance for reporting ground water indicators. These new indicators provide a snapshot view of the condition of ground water quality over time to enable States to begin to track trends (page 50)
- Asks States to document changes in monitoring and other programs resulting from basinwide planning, watershed-oriented water quality management, and point source/nonpoint source trading (page 15)
- Reflects changes to the WBS (Version 3.1 will be distributed by mid-summer to support these *Guidelines*; page 10).

[Note: By mid-summer, we will send a diskette with refined RF3/DLG estimates of total waters and documentation as an appendix to these *Guidelines*. EPA is working with other Federal agencies and States to continue to refine RF3 estimates (page 13).]

These 1994 *Guidelines* also contain some format changes--none of the following are new reporting requirements. The *Guidelines* document

SUMMARY OF CHANGES IN THE 1994 305(b) GUIDELINES

- Changes the phrase "In-place contamination" to "Contaminated sediments" as a source of impairment (Table 6)
- Provides example tables to facilitate reporting of the information required under the Section 314 Clean Lakes Program (Tables 7 through 12)
- Provides example tables to facilitate reporting information that has been requested previously in narrative format for documenting Public Health/Aquatic Life Impacts. Tables include: fish and shellfish consumption advisories, fish kills and abnormalities, sediment contamination, shellfish advisories, drinking water advisories and closures, and bathing area closures (Tables 16 through 21)
- Moves the chapter on Surface Water Monitoring Programs from Part V to Part I and adds a chapter on Rivers and Streams Water Quality Assessment to Part I.

1994 305(b) SUBMISSION REQUIREMENTS AND CONTENTS

The Clean Water Act requires that the States transmit their water quality assessments (Section 305(b) reports) biennially to the EPA Administrator. The next reports are due by April 1, 1994. States should provide draft reports to their EPA Regional Offices for review and comment no later than February 1, 1994. EPA requests that the States submit five (5) copies of their final reports to

Barry Burgan
National 305(b) Coordinator
Assessment and Watershed Protection Division (WH-553)
U.S. Environmental Protection Agency
401 M Street, SW
Washington, DC 20460.

The EPA Regional Office may require additional copies.

These *Guidelines* describe the types of water quality information that provide a comprehensive description of statewide water quality (both surface and ground water), and that in turn are compiled on a State, Regional, and/or national basis as appropriate. These *Guidelines* describe the baseline of water quality information required for the Section 305(b) report; however, each State may expand on this baseline where it sees fit or as agreed upon between the State and EPA Region. If a State has no information on a given measure or topic, the report should clearly indicate that this is the case. Appendixes may be used to supplement the report with information considered too detailed for general reading.

Each State's assessment should be based on the most recent water quality data available. However, coverage should not be restricted to only those waters assessed in the 1992-93 reporting period. In order to produce a comprehensive portrayal of the State's water quality, the assessment should include all waters for which the State has currently accurate information. States should collect and evaluate data from all available sources, including State fish and game agencies, health departments, dischargers, and Federal agencies. Assessments should reflect rotating basin surveys and basinwide planning over the last planning cycle, which is typically 5 years for States using that approach.

States should involve designated management agencies for nonpoint source control programs in assessments for their respective source categories and

1994 305(b) SUBMISSION REQUIREMENTS AND CONTENTS

affected waterbodies. The Section 305(b) reports should indicate which agency developed information for the various nonpoint source categories. EPA further encourages States to increase the involvement of Federal agencies in conducting assessments, especially nonpoint source assessments, for waters on Federal lands. In addition, where a Tribal authority has agreed to work with a Federal or State agency to collect and evaluate water quality data, each entity should have an opportunity to review the data. Finally, States involved in interstate compacts should describe any impacts of these agreements on water quality and identify any water quality information from those compacts used in the report.

The Section 305(b) report may be used to satisfy a State's reporting requirements under Section 303(d), promulgated July 24, 1992. If a State wishes to use the Section 305(b) report to transmit Section 303(d) information, the report must be received by EPA on time (by April 1, 1994). Section 303(d) information may be transmitted under separate cover. EPA will compile this information into the national 305(b) Report to Congress. See page 18 for further information on Section 303(d) reporting.

A list of reporting requirements that can be met through the 305(b) report follows. See also Appendix A.

CWA Section	Reporting Requirement Satisfied by Section 305(b) Reports
106	Requires States to report on the quality of navigable waters and, to the extent practicable, ground water, in 305(b) reports as a condition of receiving 106(e) grants for water quality monitoring programs.
303(d)	States must report biennially lists of waterbodies needing total maximum daily loads (TMDLs)--i.e., waters not expected to achieve water quality standards after the implementation of technology-based controls. A State may submit 303(d) lists in its 305(b) report or under separate cover.
305(b)	Biennial reporting on the status of surface and ground water quality Statewide; subject of these <i>Guidelines</i> .
314	State assessment of status and trends of significant publicly owned lakes including extent of point source and nonpoint source impacts due to toxics, conventional pollutants, and acidification; must report through 305(b).
319	One-time assessment of the types and extent of nonpoint source (NPS) pollution Statewide; for those States that have committed to update their 319 assessments (e.g., due to grant conditions), the 305(b) report is a convenient place for such an update.

1994 305(b) SUBMISSION REQUIREMENTS AND CONTENTS

If the 305(b) Report is not used to report information under Sections 303(d) and 319, data should be compatible and in agreement among the separate reports. If inconsistencies occur, States should explain them in a cover letter to EPA Headquarters and the Regional Office.

States can use the WBS to manage the waterbody-specific, quantitative information concerning surface water quality and sources of pollution. For the 1994 305(b) cycle, EPA has modified the WBS to track 303(d)/total maximum daily loads (TMDL) lists as well as 305(b) assessments (see page 22). States should transmit their WBS datasets or other waterbody-specific datasets in electronic form to the National and Regional WBS Coordinators. As in previous reporting cycles, EPA will continue to provide States with technical assistance in implementing the WBS. A *WBS Users Guide* is also available to assist users in the operation of the WBS. In mid-summer, EPA will mail the *WBS Users Guide* to State WBS Coordinators concurrently with the WBS Version 3.1 software. For more information, contact Regional WBS Coordinators or Jack Clifford, National WBS Coordinator, at (202) 260-3667.

To ensure comparability of information developed by many States, consistent measures, terms, and definitions are necessary. Appendix C contains key terms, with a discussion of their definitions and uses.

The text of a Section 305(b) report should include five sections. The contents of each section are described below (see Parts I through V). EPA and the Workgroup have made the following organizational changes since publication of the 1992 *Guidelines*: the chapter on Surface Water Monitoring Programs is now in Part I instead of Part V, and Part I now contains a new chapter, Rivers and Streams Water Quality Assessment. This chapter does not represent a new reporting requirement.

1994 305(b) CONTENTS — PART I: EXECUTIVE SUMMARY/OVERVIEW

- Each State should provide a concise executive summary/overview that is comprehensive and clear enough to stand alone. For both surface and ground water, it should
 - Describe overall State water quality (for surface water, include a summary of the degree of designated use support for the different waterbody types)
 - Describe the causes and sources of water quality impairments
 - Discuss the programs to correct impairments
 - Discuss the general trends in water quality
 - Briefly recap the highlights of each section of the report, particularly the State's monitoring programs, the objectives of the State water quality management program, issues of special concern to the State, and any State initiatives or innovations in monitoring and assessment.

1994 305(b) CONTENTS — PART II: BACKGROUND

To put the report into perspective for the reader, States should provide a brief State overview, as shown in Table 1. States may choose to add categories to the atlas table to reflect special areas of interest (e.g., acres of playas; acres of riparian areas outside of wetlands; miles of streams and acres of lakes on tribal lands).

Table 1. Atlas

Topic	Value
State population	
State surface area	
Total miles of rivers and streams ^a	
- Miles of perennial rivers/streams (subset) ^a	
- Miles of intermittent (nonperennial) streams (subset) ^a	
- Miles of ditches and canals (subset) ^a	
- Border miles of shared rivers/streams (subset) ^a	
Number of lakes/reservoirs/ponds ^a	
Number of significant publicly owned lakes/reservoirs/ponds (subset)	
Acres of lakes/reservoirs/ponds ^a	
Acres of significant publicly owned lakes/reservoirs/ponds (subset)	
Square miles of estuaries/harbors/bays	
Miles of ocean coast ^a	
Miles of Great Lakes shore ^a	
Acres of freshwater wetlands	
Acres of tidal wetlands	

^a Available from EPA RF3/DLG estimates.

NOTE: Impoundments should be classified according to their hydrologic behavior, either as stream channel miles under rivers or as total surface acreage under lakes/reservoirs/ponds, but not under both categories. In general, impoundments should be reported as lakes/reservoirs/ponds unless they are run-of-river impoundments with very short retention times.

Total Waters

The State/EPA 305(b) Consistency Workgroup has agreed that the best estimates of total State waters available on a consistent basis nationwide are obtained using the EPA River Reach File Version 3 (RF3) and the database from which it is derived, the U.S. Geological Survey (USGS) Digital Line Graph (DLG) traces. These computerized databases reflect hydrologic features found on 1:100,000 USGS hydrologic maps.

To support use of the RF3/DLG database, EPA has developed estimates of total waters, by State, as follows: total river miles, with breakdowns for perennial streams, intermittent streams, ditches and canals, and border rivers; total lake acres; number of lakes; total ocean coastal miles; and total Great Lakes shore miles. For the State 305(b) contacts, these estimates will be included on a diskette to be mailed in mid-summer; the diskette will contain an EPA discussion paper explaining their derivation and use.

EPA will be citing the RF3/DLG estimates of total waters (i.e., total river miles, lake acres, ocean coastal miles, and Great Lakes shore miles) in its 1994 305(b) *Report to Congress* and urges States to use them in their State water quality assessments. EPA, in consultation with individual States and USGS, will continue to refine these estimates where appropriate. States using maps and measurement techniques of higher resolution than those on which the RF3/DLG estimates are based may choose to report their own estimates, with appropriate explanation in the text of their reports.

EPA recognizes that variation in cartographic density exists among the maps used to create the DLG, and that the RF3/DLG total water numbers also reflect these variations. Also, RF3 is a new database and users may identify needed corrections. States and other users are urged to participate in updating and correcting RF3 over the next few years. Nonetheless, the use of the RF3/DLG databases represents an important step forward in arriving at an accurate accounting of the Nation's total waters. Prior to the RF3/DLG estimates, some States were using total waters estimates made decades ago with crude maps or measurement techniques. The new estimates have potentially saved these States hundreds of hours of labor in remeasuring their waters. The EPA contact for the total waters estimates is Barry Burgan at (202) 260-7060.

Until improved approaches are available to determine total estuarine and wetlands waters, States should continue to use best available methods and should identify those methods. The National Wetlands Inventory is recommended for State wetland acreage estimates.

Maps

States should include maps and other graphical depictions of background information relevant to water quality assessments. For example, the 305(b) report should include maps of basins or watersheds used in rotating basin surveys or watershed planning, ecoregions, physiogeographic provinces, tribal lands, and other significant characteristics of the State.

Summary of Classified Uses

States should discuss briefly the extent to which they classify (e.g., establish designated uses for) rivers, lakes, and estuarine/coastal waters consistent with the goals of the Clean Water Act. States should also explain what kinds of waters are not classified as to designated use and how they determine which waters should be classified. Last, the 305(b) report should include a brief discussion of changes in water quality classifications that have occurred since the previous report.

1994 305(b) CONTENTS — PART III: SURFACE WATER ASSESSMENT

Chapter One: Surface Water Monitoring Program

To provide a perspective on their activities to evaluate water quality, States should describe their monitoring programs and briefly discuss any changes in program emphasis that are planned or have taken place since the last report. Of particular interest this cycle are any changes resulting from a shift to basinwide planning, watershed planning, or rotating basin surveys.

The description of State monitoring programs should include the basic program components as follows, with references to other documents including approved quality assurance program plans:

- Development and continued planning of monitoring strategies
- Monitoring design (including number of stations, parameters, frequency, and objectives)
 - Fixed-station networks
 - Intensive surveys including rotating basin surveys
 - Targeted areas under watershed programs, other programs, and multiple programs
 - Toxics monitoring programs
 - Biological monitoring programs
 - Fish tissue, sediment, and shellfish monitoring programs
- Development of written protocols (field/lab/assessment)
- Laboratory analytical support
- Quality assurance/quality control (field/lab/data)
- Data storage, management, and sharing
- Assessment activities other than 305(b)

- Reporting other than 305(b) (see Appendix D)
- Training in monitoring and data management
- Volunteer monitoring programs and how volunteer data are used
- The State's use of data from Federal agencies such as EPA, the National Oceanic and Atmospheric Administration (NOAA), USGS, and the U.S. Fish and Wildlife Service.

States should include a map of fixed-station monitoring sites and other key monitoring sites and networks.

Finally, States should discuss any plans to use data generated by EPA's Environmental Monitoring and Assessment Program (EMAP) and should identify any monitoring and/or data management tools needed to improve their ability to assess the quality of their waters, such as new monitoring protocols, data systems, or specific training needs.

Chapter Two: Assessment Methodology and Summary Data

Assessment Methodology

States should provide information on the methods they used to assess data for determining use support status. This documentation should include types of information used, data sources, and identification of organizational units that make use support determinations. The decision process for assigning waterbodies to different use support categories (fully supporting, partially supporting, etc.) should be clearly explained, including the use of monitored vs. evaluative data. EPA encourages the use of flow charts in explaining assessment methodologies. Regional 305(b) Coordinators can provide examples of well-documented methodologies from State 305(b) reports. States not using the WBS should describe the database they use to track and report assessments.

Use support categories and criteria for determining the status of waters are presented in Appendix B. States are asked to use this approach in making use support decisions. EPA no longer recommends alternate approaches such as chemical indices. Because they aggregate and reduce large amounts of data to a single value, chemical indices have generally been found to be more useful in trend analysis and in establishing priority rankings than in making use support decisions.

States should highlight changes in assessment methodology since the last 305(b) assessment. States should also explain any biases incorporated into their assessments (e.g., monitoring concentrated around areas of known

contamination; small percentage of waters assessed; limited monitoring of waterbodies affected by nonpoint sources).

Several States have adopted a rotating basin planning approach in which they assess basins or watersheds at regular intervals (typically 5 years). EPA encourages this approach and requests that States report the status of their efforts and any special considerations in making assessments using rotating basin data. Some States have been criticized unfairly for assessing only a small percentage of their waters in a 2-year 305(b) reporting cycle. A State using the rotating basin approach should report the number of years required to assess all basins (i.e., the entire State) and the percentage of total State waters actually assessed during this cycle. States should also report basinwide plans by name and year completed or expected to be completed.

Water Quality Summary

State submissions should include summary statistics on designated use support and causes and sources of impairment for each type of waterbody (rivers, lakes, estuaries, coastal waters, and Great Lakes). These summary statistics may be reported in a single summary section here or in Chapters 3, 4, and 5, which are each devoted to a particular type of waterbody. (Note: If a State chooses to report summary data in Chapters 3, 4, and 5, Chapter 2 should still be used to report assessment methodology and Section 303(d) waters). For each type of waterbody, four tables are needed:

- Overall use support summary
- Individual use support summary
- Total size of waters not fully supporting uses, by cause categories
- Total sizes of waters not fully supporting uses, by source categories.

Chapter 3 of this document gives formats for these tables. Units of size for these tables are miles for streams, acres for lakes, square miles for estuaries, and linear shore miles for coastal waters and Great Lakes. In addition, States should report on freshwater and tidal wetlands where possible.

Maps (Optional)

Maps displaying designated use support information for rivers, lakes, estuaries, oceans, Great Lakes, and wetlands are very useful in interpreting information geographically. Using the analysis conducted when deriving the summary of designated use support, States should display waterbodies according to one of the three use support categories. Basin-scale maps are most appropriate.

1994 305(b) CONTENTS — PART III: SURFACE WATER ASSESSMENT

Section 303(d) Waters

[NOTE: in the 1992 *Guidelines*, this section appeared in the Public Health/Aquatic Life Concerns chapter.]

States are requested to list their 303(d) waterbodies in a format similar to that in Table 2. To simplify their reporting requirements, States can use WBS to track and report this information. WBS Version 3.1 contains a special 303(d) list module with cause and source codes and other fields appropriate to tracking Total Maximum Daily Loads (TMDLs). EPA's 303(d) program considers WBS to be the primary reporting system for waters needing TMDLs. If a State wishes to transmit 303(d) information via the 305(b) report, however, the submittal must meet the 303(d) requirements and deadlines as described below.

Using the data from Table 2, the WBS, and other sources, States should also provide the following summary information. An asterisk denotes information required by regulation. Other information is requested either in TMDL guidance or in other sections of the 305(b) *Guidelines*:

Table 2. State 303(d) List of Waters Needing TMDLs

WBID	WB Name*	Size of WB Affected	Specific Pollutant or Stressor*	Probable Source(s) of Pollutant	Priority for TMDL (H/M/L/U)*	Targeted for TMDL* (Yes/No)	No. of NPDES Permit Renewals

*Information required by regulation.

WB = Waterbody

H/M/L/U = High/medium/low/unknown or unspecified

Targeted = Waterbody has been identified by State for TMDL development during the April 1994 - April 1996 cycle.

NPDES = National Pollutant Discharge Elimination System.

1994 305(b) CONTENTS — PART III: SURFACE WATER ASSESSMENT

- Methodology used to develop the TMDL list*
- Database used to develop the TMDL list*
- Rationale for any decision not to use existing and readily available data*
- Total number of waterbodies in the State
- Total number of water quality-limited (WQL) waterbodies (total of "partially supporting" and "not supporting" entries in Table 3, Overall Use Support Summary, page 24)
- Total number of WQL waterbodies requiring TMDLs (may be fewer than the number of WQL waterbodies, see Section 303(d) guidance)
- Status of TMDLs targeted during the April 1992 - April 1994 cycle.

Section 303(d) of the Clean Water Act requires States to identify, establish a priority ranking, and develop TMDLs for their waters that do not achieve or are not expected to achieve water quality standards after the implementation of existing required controls. EPA encourages States to include Section 303(d) TMDL waterbody information in the 305(b) report. The use of the WBS and consolidation of reporting requirements under one cover will allow for more consistent reporting of use support determinations, which will improve water quality management decisionmaking. To facilitate reporting Section 303(d) waters, EPA has enhanced the WBS and encourages States to use this option.

By regulation, EPA requires that States submit their information pursuant to Section 303(d) by April 1, 1994. This requirement includes completion of the 303(d) list and public review. The actual list submission can be part of the 305(b) report or a separate document. Amendments to the relevant regulations were promulgated July 24, 1992 (57 *Federal Register* 33040). Detailed technical and program guidance describing State and EPA responsibilities pursuant to Section 303(d) can be found in *Guidance for Water Quality-Based Decisions: The TMDL Process*, EPA 440/4-91-001, published in April 1991 and in the memorandum "Supplemental Guidance on Section 303(d) Implementation" dated August 13, 1992 from Geoffrey H. Grubbs. For more information or to obtain a copy of the guidance, contact the EPA Watershed Management Section at (202) 260-7024.

Chapter Three: Rivers and Streams Water Quality Assessment

[NOTE: New chapter, but no new reporting requirements.]

Designated Use Support

States should report summaries of designated use support in rivers and streams in two tables: one table combining uses into an overall assessment (Table 3) and another listing individual designated uses (Table 4).

To retain summary information on overall use support and the size of waters that are monitored and evaluated, States should report the information in Table 3 for rivers and streams. The WBS can be used to generate Table 3. To do so, WBS users must fill in size fields for the Overall Use Support Category for each waterbody. Users must also complete the Assessment Category field in WBS to distinguish "evaluated" from "monitored" assessments.

Previously established guidelines for multiple use waterbodies apply in the determination of overall use support (see Appendix B).

Table 3. Overall Use Support Summary

Type of Waterbody: Rivers and Streams (reported in miles)^a

Degree of Use Support	Assessment Category		Total Assessed ^a
	Evaluated ^a	Monitored ^a	
Size Fully Supporting			
Size Fully Supporting but Threatened ^b			
Size Partially Supporting			
Size Not Supporting			
TOTAL ASSESSED			

^a Report size in each category (rivers and streams reported in miles).

^b Size threatened is a distinct category of waters and is not a subset of the size fully supporting uses (see Appendix C). It should be added into the totals entered in the bottom line.

Table 4. Individual Use Support Summary

Type of Waterbody: Rivers and Streams (reported in miles)^a

Use	Size Supporting ^a	Size Supporting but Threatened ^{ab}	Size Partially Supporting ^a	Size Not Supporting ^a	Size Not Attainable ^a	Size Unassessed ^a
Fish Consumption						
Shellfishing						
Aquatic Life Support						
Swimming						
Secondary Contact ^c						
Drinking Water Supply						
Agriculture						
State Defined:						
1						
2						
3						
4						
5						
6						

^a Report size in each use support category (rivers and streams reported in miles).

^b Size threatened is a distinct category of waters and is not a subset of the size fully supporting uses. See Appendix C.

^c Includes, for example, wading, boating and other activities involving incidental human body contact with water.

NOTE: State-defined codes should be established by the State for any important uses that are not included above. Examples of such uses could include Outstanding Resource Waters, Aesthetics, and Industry. To the extent possible, States should attempt to group waters into the seven general categories of use. Where waterbodies have multiple uses, the appropriate waterbody length/area should be entered in each applicable category.

Table 4 lists specific designated uses and combines Clean Water Act goal reporting and designated use reporting into one table. The fishable goal of the Clean Water Act is reported under the Fish Consumption, Shellfishing, and Aquatic Life Support Uses, and the swimmable goal is reported under the Swimming and Secondary Contact Uses. The WBS can be used to generate this table. To do so, WBS users must fill in size fields for the individual use support categories for each waterbody.

EPA and the 305(b) Consistency Workgroup are interested in cases where independently applied biological/habitat, chemical, or toxicological monitoring data suggest different assessment results. The WBS contains new codes in the Assessment Type field for these cases. These are the "9000" codes in Appendix Table C-1. EPA will use WBS to tabulate and study those waterbodies with discrepancies among biological/habitat, chemical, or toxicological assessments; States are asked to enter this field in their WBS datasets. States not using WBS should provide a separate list of such waterbodies and the bases for the final assessment decisions in these cases. This information will help EPA and the States in their efforts to set and/or refine biological criteria and integrate biological assessment methods into management decisionmaking.

Causes and Sources of Nonsupport of Designated Uses

For those waters assessed that are not fully supporting their designated uses (i.e., partially and not supporting uses), States should provide the following information to illustrate the causes and sources of use impairment statewide. *States may also wish to prepare similar tabular information for waters that fully support uses but are threatened.*

Relative Assessment of Causes —

Causes are those pollutants or other stressors that contribute to the actual or threatened impairment of designated uses in a waterbody. Stressors are factors or conditions (other than specific pollutants) that cause impairment (e.g., flow and other habitat alterations, presence of exotic species). In Table 5, States should provide the total size (in miles) of rivers and streams affected by each cause category. *A waterbody may be affected by several different causes and its size should be counted in each relevant cause category.* If the relative contribution of the cause is listed in the waterbody-specific information as High, include the size of the waterbody with less than full support under "major contribution" in Table 5; if listed as Moderate or Slight, include the size under moderate/minor contribution. (WBS uses the terms High, Moderate, and Slight rather than Major, Moderate, and Minor). See Appendix C for a discussion of the terms Major/Moderate/Minor and a list of cause codes for the WBS.

Table 5. Total Sizes of Waters Not Fully Supporting Uses by Various Cause Categories

Type of Waterbody: Rivers and Streams (Reported in Miles)^a

Cause Category	Size of Waters by Contribution to Impairment	
	Major ^a	Moderate/Minor ^a
Cause unknown		
Unknown toxicity		
Pesticides		
Priority organics		
Nonpriority organics		
Metals		
Ammonia		
Chlorine		
Other inorganics		
Nutrients		
pH		
Siltation		
Organic enrichment/low DO		
Salinity/TDS/chlorides		
Thermal modifications		
Flow alterations		
Other habitat alterations		
Pathogen indicators		
Radiation		
Oil and grease		
Taste and odor		
Suspended solids		
Noxious aquatic plants		
Filling and draining		
Total toxics		
Turbidity		
Filling and draining		
Exotic species		
Other (specify)		

^a Reported in total size (rivers and stream reported in miles). When preparing this table for other waterbody types, use the following units: lakes, acres; estuaries, square miles; coastal waters and Great Lakes, shore miles; wetlands, acres.

The relative magnitude of causes does not necessarily correspond to degree of use support. For example, a waterbody can have 3 causes labeled as moderate, but have sufficient impairment from these multiple causes to be assessed as not supporting.

Most of the causes in Table 5 are self-explanatory but some warrant clarification. Siltation refers to the deposition of sediment on the bottom of a waterbody causing such impacts as smothering of benthic habitat in streams or filling in of lakes. Thermal modification generally involves the heating of receiving waters by point sources (e.g., plant cooling water) or nonpoint sources (e.g., runoff from pavement or elimination of bank shading). Flow alteration refers to frequent changes in flow or chronic reductions in flow that impact aquatic life (e.g., as flow-regulated rivers or a stream with extensive irrigation withdrawals). Other habitat alterations may include removal of woody debris or cobbles from a stream. Exotic species are introduced plants and animals (e.g., Eurasian millfoil, zebra mussels, grass carp) that can interfere with natural fisheries, endangered species, or other components of the ecosystem.

States can use WBS to generate Table 5 from waterbody-specific information. To do so, WBS users must complete Cause Size and Cause Magnitude fields for each waterbody. See Appendix C for more information about using WBS to generate this table.

Relative Assessment of Sources —

Sources are the facilities or activities that contribute pollutants or stressors, resulting in impairment of designated uses in a waterbody. Provide the total size (in miles) of rivers and streams affected by each category of source, including the size with overall point and nonpoint source impacts (Table 6). *A waterbody may be affected by several sources of pollution and the appropriate size should be counted in each relevant source category.* If the relative contribution of the source is listed in the waterbody-specific information as High, the size with less than full support should be included as a major contribution; if it is listed as Moderate or Slight, the size should be included as a moderate/minor contribution. See Appendix C for a discussion of the terms major/moderate/minor.

Table 6 shows the minimum level of detail regarding source categories. WBS stores and reports on a more detailed list of source subcategories under some of the general categories such as Agriculture. The full list of source categories is given in Appendix C. States are asked to include the more detailed list of subcategories, since this will increase the overall usefulness of the report and of the State's WBS database.

Table 6. Total Sizes of Waters Not Fully Supporting Uses Affected by Various Source Categories

Type of Waterbody: Rivers and Streams (reported in miles)^a

Source Category	Contribution to Impairment	
	Major ^a	Moderate/Minor ^a
Industrial Point Sources		
Municipal Point Sources		
Combined Sewer Overflows		
Agriculture		
Silviculture		
Construction		
Urban Runoff/Storm Sewers		
Resource Extraction		
Land Disposal		
Hydromodification/Habitat Modification		
Marinas		
Atmospheric Deposition		
Contaminated Sediments ^b		
Unknown Source		
Other (specify) ^c		

^a Reported in total size (rivers and streams reported in miles).

^b Bottom sediments contaminated with toxic or nontoxic pollutants; includes historical contamination from sources that are no longer actively discharging. Examples of contaminants are PCBs, metals, nutrients (common in lakes with phosphorus recycling problems), and sludge deposits. Please indicate the screening levels or criteria used (e.g., EPA sediment quality criteria; NOAA effects range-medium [ER-M] values).

^c List additional sources known to affect waters of the State.

To use the WBS to generate Table 6 from waterbody-specific information, users must complete Source Size and Source Magnitude fields for each waterbody. *It is also important to enter in WBS the size of waters impacted by the general source categories listed in Table 6 (such as Agriculture--nonpoint).* For example, WBS cannot calculate the size of waters affected by **Agriculture** from the agriculture subcategories in Appendix C because the sizes of waters affected by each subcategory may overlap and are not additive. For example, in a 15-mile waterbody with 10 miles affected by feedlots and 5 miles affected by pastureland, the total size affected by the **Agriculture** general category could be as little as 10 miles or as large as 15 miles, depending on how these subcategories of sources overlap. Table 6 must show the total size of waters affected by each general source category to avoid this type of subcategory overlap. *To accomplish this using the WBS, total mileage must be entered for the general source categories affecting a waterbody (i.e., for the categories in Table 6 and the bold categories in Appendix Table C-3) whether or not subcategories are also entered. See Appendix C for further information on this topic.*

States that use the WBS are requested to link causes with sources for a waterbody whenever possible. A special cause/source link field is provided in WBS for this purpose. Linked cause/source data are very important for producing the standard 305(b) report tables and for answering State resource management questions. For example, the question "Which waterbodies are not fully supporting uses due to nutrients from agricultural runoff?" may not be answerable if the cause/source link field is not used.

The following chart illustrates what happens when causes and sources are not linked in WBS. Although valuable information is stored, one cannot tell which sources are associated with which pollutants or stressors:

Waterbody	Causes (pollutants/stressors)	Sources (not linked with causes)
WBID = XX-012 Mill Creek above Brook Branch	nutrients, siltation, thermal modification	urban runoff, removal of riparian vegetation, municipal point sources

The following chart shows how the same causes and sources can be associated with each other using the WBS link variable:

Waterbody	Causes (pollutants/stressors)	Sources (linked with causes)
WBID = XX-012 Mill Creek above Brook Branch	nutrients	urban runoff
	nutrients	municipal point sources
	siltation	removal of riparian vegetation
	thermal modification	urban runoff
	thermal modification	removal of riparian vegetation

Chapter Four: Lakes Water Quality Assessment

Summary Statistics

If not already presented in Chapter Two: Methodology and Summary Data, States should report summary statistics for use support and for causes and sources of impairment in lakes. The format should be similar to that used for rivers and streams. That is, Tables 3 through 6 should be developed for all lakes in the State, including significant publicly owned lakes under Section 314 as well as any other lakes assessed by the State. The reporting unit for lakes in these tables is acres.

Because of national interest in the relative contribution of point sources versus nonpoint sources, each State is also asked to report

- Statewide total acres of lakes not fully supporting uses, with major contributions from point sources
- Statewide total acres of lakes not fully supporting uses, with major contributions from nonpoint sources.

See "Relative Assessment of Sources" in Chapter 3 for further discussion. EPA will assist WBS users in generating these numbers.

The remainder of this chapter deals with reporting requirements under Section 314. The focus is on significant publicly owned lakes, although States may choose to report on private lakes as well.

Clean Lakes Program

Section 314(a)(2) of the CWA, as amended by the Water Quality Act of 1987, requires the States to submit a biennial assessment of their lake water quality as part of their 305(b) report. The specific elements of the

1994 305(b) CONTENTS — PART III: SURFACE WATER ASSESSMENT

assessment, as outlined in Section 314(a)(1)(A-F), constitute the minimal requirements for approval and for subsequent grant assistance as required by Section 314(a)(4). The discussion below is a clarification and tabulation of the information requested in previous Guidelines.

For purposes of Clean Lakes Program reporting, this section of the Lake Water Quality Assessment chapter should focus on publicly owned public access lakes that the State considers significant (as defined by the State). Only significant publicly owned lakes are eligible for funding under Section 314 of the CWA. Therefore, for the purposes of this section, the term "lake" will refer to "significant publicly owned lakes/reservoirs/ponds." Although all lakes should be included in the summary tables described in the Summary Statistics section above, the reporting requirements described below are specific to the Clean Lakes Program. If States wish to report such information for private lakes, they may do so using similar tables. However, totals for Section 314 significant publicly owned lakes must always be distinguished from private lakes. For example, see Tables 7 and 7a. WBS can be used to generate these tables if significant publicly owned lakes are coded as such in WBS Screen 1.

In order to remain eligible to receive Clean Lakes funding, all States must meet the reporting requirements of Section 314 (a)(1)(A-F). This information, required biennially, must be submitted as part of a State's 305(b) report. The Regional Clean Lakes Coordinators will review these reports for approval/disapproval, determine the State's eligibility for Clean Lakes funding, and notify the EPA Headquarters Clean Lakes Program of the State's eligibility status. Since 1989, Clean Lakes Program Congressional appropriations have provided funding to over 45 States and Tribes for cooperative agreements entitled "lake water quality assessments." Although these awards are generally intended to build and strengthen State/Tribal lake programs, a specific objective of these agreements is to assist the States and Tribes in meeting the reporting requirements of Section 314. As with any cooperative agreement or grant, there is an associated "approval" process standard to the administration of these awards (done by the Regional grants administration staff). *This approval is separate from the above-mentioned approval/disapproval (by the Regional Clean Lakes Coordinator) of the lake water quality information submitted in the State's 305(b) report.*

(NOTE: If a State chooses to submit a "lake water quality" report in addition to a 305(b) report, the State should ensure that the information required specifically by Section 314(a) is included in the biennial 305(b) report.)

The Clean Lakes section of the report should reflect the status of lake water quality in the State, restoration/protection efforts, and trends in lake water quality. The text of this chapter should include narrative discussions and summary information, which should be supported by specific information on

Table 7. Trophic Status of Significant Publicly Owned Lakes

	Number of Lakes	Acreage of Lakes
Total		
Assessed		
Oligotrophic		
Mesotrophic		
Eutrophic		
Hypereutrophic		
Dystrophic		
Unknown		

Table 7a. Example Table for Reporting Trophic Status of Private Lakes

	Number of Lakes	Acreage of Lakes
Total		
Assessed		
Oligotrophic		
Mesotrophic		
Eutrophic		
Hypereutrophic		
Dystrophic		
Unknown		

NOTE: These tables merely clarify reporting requirements contained in earlier versions of this guidance. They are not new reporting requirements.

each lake. If summary lake information is presented elsewhere in the State report, page and table citations should be given in this chapter. Lake-specific information may be submitted by computer disk or as a hard-copy appendix to the State report.

Each State should report the following information:

Background --

The State's definition of "significant" as it relates to the purposes of this assessment. The definition must consider public interest and use.

- Total number of significant publicly owned lakes and number of acres of significant publicly owned lakes in the State.
- Any other background information the State considers relevant to this discussion.

Trophic Status [314(a)(1)(A)] --

- The total number of lakes and lake acres in each trophic class (dystrophic, oligotrophic, mesotrophic, eutrophic, hypertrophic). Table 7 shows one way to present the information.
- A discussion of the approach used to determine trophic status and why it was selected.

Control Methods [314(a)(1)(B)] --

- A description of procedures, processes, and methods to control sources of pollution to lakes including
 - point and nonpoint source controls
 - land use ordinances and regulations designed to protect lake water quality.
- A general description of the State pollution control programs as they relate to the protection of lake water quality. In particular, discuss the State lake management program, including related activities under the nonpoint source, point source, wetlands, and emissions control programs, and any other relevant program activities. Also, describe the State's water quality standards that are applicable to lakes.

1994 305(b) CONTENTS — PART III: SURFACE WATER ASSESSMENT

Restoration/Rehabilitation/Efforts [314(a)(1)(C)] --

- A general description of the State's plans to restore and/or protect the quality of its lakes. This is the State's management plan for its lakes program and should focus on the cooperative working relationships among Federal, State, Tribal, and local agencies concerned with lake protection, restoration, and management.
- A description and tabulation of techniques to restore lake water quality. Table 8 provides a list of lake rehabilitation techniques as well as a format for reporting the number of lakes and the acreage of lakes where each technique has been applied. The WBS can be used to generate Table 8 if users enter data in the following WBS data fields for each individual lake waterbody: the Control Measure field, the Restoration Measure field, and the Significant Publicly Owned Lake field. Note that the WBS allows users to create additional control and restoration codes as needed.
- A description and tabulation of Lake Water Quality Assessment grants and Phase I, Phase II, and Phase III Clean Lakes Program projects that have been undertaken and/or completed. Table 9 shows one way to present this information. State Clean Lakes records or EPA's Clean Lakes tracking system, CLPMS, can provide the information needed for Table 9. For more information or to obtain a copy of CLPMS, contact the EPA Headquarters Clean Lakes Program staff at (202) 260-5404.

Impaired and Threatened Lakes [314(a)(1)(E)] -

- If not provided previously in the water quality summary chapter or at the beginning of this lakes chapter, provide summary tables on designated use support and causes and sources of nonsupport in lakes similar to Tables 3 through 6. Include information on threatened lakes, if available.
- A discussion of State water quality standards as they apply to lakes. If water quality standards have not been established for lakes, the measure used to determine impairment or threatened status should be identified.

Acid Effects on Lakes [314(a)(1)(D); 314(a)(1)(E)] -

- The number of lakes and lake acres that have been assessed for high acidity. If information is available, discuss the nature and extent of toxic substances mobilization (release from sediment to water) as a result of high acidity. Table 10 shows one way to present this information.
- The number of lakes and lake acres affected by high acidity. Indicate the measure (pH, acid-neutralizing capacity) used to determine acidic condition and the level at which the State defines "affected."

Table 8. Lake Rehabilitation Techniques

Rehabilitation Technique	Number of Lakes Where Technique Has Been Used	Acres of Lakes Where Technique Has Been Used
<i>In-lake Treatments</i>		
Phosphorus Precipitation/Inactivation		
Sediment Removal/Dredging		
Artificial Circulation to Increase Oxygen		
Aquatic Macrophyte Harvesting		
Application of Aquatic Plant Herbicides		
Drawdown to Desiccate and/or Remove Macrophytes		
Hypolimnetic Aeration		
Sediment Oxidation		
Hypolimnetic Withdrawal of Low DO Water		
Dilution/Flushing		
Shading/Sediment Covers or Barriers		
Destratification		
Sand or Other Filters Used to Clarify Water		
Food Chain Manipulation		
Biological Controls		
Other In-lake Treatment (Specify)		
<i>Watershed Treatments</i>		
Sediment Traps/Detention Basins		
Shoreline Erosion Controls/Bank Stabilization		
Diversion of Nutrient Rich In-flow		
Conservation Tillage Used		
Integrated Pest Management Practices Applied		
Animal Waste Management Practices Installed		
Porous Pavement Used		
Redesign of Streets/Parking Lots to Reduce Runoff		
Road or Skid Trail Management		

1994 305(b) CONTENTS – PART III: SURFACE WATER ASSESSMENT

Table 8. Lake Rehabilitation Techniques (continued)

Rehabilitation Technique	Number of Lakes Where Technique Has Been Used	Acres of Lakes Where Technique Has Been Used
Land Surface Roughening for Erosion Control		
Riprapping Installed		
Unspecified Type of Best Management Practice Installed		
Other Watershed Controls (Specify)		
<i>Other Lake Protection/Restoration Controls</i>		
Local Lake Management Program In-place		
Public Information/Education Program/Activities		
Local Ordinances/Zoning/Regulations to Protect Lake		
Point Source Controls		
Other (Specify)		

NOTE: This table merely clarifies reporting requirements contained in earlier versions of these Guidelines. This table does not represent a new reporting requirement.

Table 9. List of Clean Lakes Program Projects

Name of Project	Type of Project^a	Federal Funding (\$)	Problems Addressed	Management Measures Proposed or Undertaken^b

^a Lake Water Quality Assessment (LWQA), Phase I, Phase II, or Phase III.

^b Refer to Table 13 for a partial list of management/rehabilitation measures.

NOTE: This table merely clarifies reporting requirements contained in earlier versions of these Guidelines. This table is not a new reporting requirement.

Table 10. Acid Effects on Lakes

	Number of Lakes	Acreage of Lakes
Assessed for Acidity		
Impacted by High Acidity		
Vulnerable to Acidity		

Table 11. Sources of High Acidity in Lakes

Source	Number of Lakes Impacted	Acreage of Lakes Impacted
Acid Deposition		
Acid Mine Drainage		
Natural Sources		
Other (list)		

NOTE: These tables merely clarify reporting requirements contained in earlier versions of this guidance. They are not new reporting requirements.

- A discussion of the specific sources of acidity, with estimates of the number of affected lake acres attributed to each source of acidity. Table 11 shows one way to present this information. WBS will generate Tables 10 and 11 if the required data are entered (see *WBS User's Guide*).
- A description of the methods and procedures used to mitigate the harmful effects of high acidity, including innovative methods of neutralizing and restoring the buffering capacity of lakes and methods of removing from lakes toxic metals and other toxic substances mobilized by high acidity.

Toxic Effects on Lakes [314(a)(1)(E); 314(a)(1)(F)] --

- If not provided in Public Health/Aquatic Life Concerns chapter (Chapter 7), the number of lakes and number of lake acres monitored for toxicants and those with elevated levels of toxic pollutants.

1994 305(b) CONTENTS – PART III: SURFACE WATER ASSESSMENT

- A discussion of the sources of toxic pollutants in lakes, with estimates of the number of affected lake acres attributed to each source of toxic pollutants.

Trends in Lake Water Quality [314(a)(1)(F)] --

- A general discussion of apparent lake water quality trends. Include the total number of lakes and lake acres in each trend category (improved, degraded, stable or unknown). Table 12 shows one way to present this information. WBS can be used to generate Table 12.
- A discussion of how apparent trends were determined (e.g., changes in use support status, statistical trend analysis of water quality parameters). Indicate the time frame of analysis. If sufficient data are available, States should report on trends in trophic status, trends in toxic pollutants or their effects, and trends in acidity or its effects. For a lake, the trend in trophic status may be more important than the trophic status itself.

Table 12. Trends in Significant Public Lakes

	Number of Lakes	Acreage of Lakes
Assessed for Trends		
Improving		
Stable		
Degrading		
Trend Unknown		

NOTE: This table merely clarifies reporting requirements contained in earlier versions of this guidance. This table is not a new reporting requirement.

Chapter Five: Estuary and Coastal Assessment

Summary Statistics (including Great Lakes shoreline)

If not already presented in Chapter Two: Methodology and Summary Data, States should report summary statistics for use support and causes and sources of impairment in estuaries, coastal waters, and the Great Lakes. The format should be similar to that used for rivers and streams. That is, the State should develop Tables 3 through 6 for all estuaries in the State. The reporting unit for estuaries in these tables is square miles. Similarly, separate tables should be prepared for coastal waters and the Great Lakes

using shoreline miles as the size unit. WBS includes a Great Lakes waterbody category with size units of (shoreline) miles. For Great Lakes embayments, States may use the "estuary" waterbody category if they wish to report impacts in areal units (square miles).

Special Topics

As part of the national initiative to increase understanding of estuarine and near coastal waters and the Great Lakes and to better direct pollution control efforts in these waters, EPA asks the States to provide information on five overall topics: eutrophication, habitat modification, changes in living resources, toxic contamination, and pathogen contamination.

All States are asked to collect and provide coastal, estuary, and Great Lakes information as appropriate. Although EPA understands that these data may not be readily available in every coastal State, efforts to produce this information will result in a broader understanding of our coastal and estuarine resources. Those areas for which no data are currently available should be clearly identified by the States. Also, States are encouraged to discuss their methods for collecting the information and how these methods may limit use of the data.

In Chapter Seven: Public Health/Aquatic Life Concerns, the State should provide information on toxic contamination in estuaries, coastal waters, and the Great Lakes (incidents of toxicants above Food and Drug Administration/National Academy of Science [FDA/NAS] levels of concern in fish and shellfish tissue; sediment contamination; fishing advisories and bans) and information on pathogen contamination (bathing area closures and shellfish advisories). Chapter Seven should also include fish kills that have occurred in estuarine, coastal waters, or Great Lakes.

In this chapter (Chapter 5), States should report further information on estuaries, coastal waters, and Great Lakes including

- A case study from at least one estuary/coastal/Great Lakes area. States are encouraged to describe problems and challenges, not just "success stories"
- Information on eutrophication including
 - occurrence, extent, and severity of hypoxia and anoxia (low or complete absence of dissolved oxygen);
 - occurrence, extent, and severity of algal blooms possibly related to pollution; and

1994 305(b) CONTENTS — PART III: SURFACE WATER ASSESSMENT

- estimated nutrient loadings broken out by point sources, combined sewer overflows, and nonpoint sources
- Information on habitat modification including the status and trends in acreage of submerged aquatic vegetation; acreage of tidal wetlands; miles of diked, bulkheaded, or stabilized shoreline; and dredging operations
- Information on changes in living resources including discussion of any increases or decreases in the abundance or distribution of species dependent on estuarine, near coastal, or Great Lakes waters; changes in species diversity over time; and changes in the amount of catch. Wherever possible, these changes should be discussed in terms of their causes (water quality versus changes in fishing regulations, overuse of resources, etc.).

EPA and NOAA are paying special attention to coastal issues. Any data acquired through these agencies' coastal initiatives should be included in the assessment. Data of particular interest include data collected under the National Coastal Monitoring Act of 1992, which establishes the basis for a comprehensive national monitoring program for coastal ecosystems.

In addition, the State should discuss its activities, if any, under EPA's Great Lakes Program, the National Estuary Program, the Near Coastal Water Pilot Projects, the Chesapeake Bay Program, the Gulf of Mexico Program, and Mid-Atlantic Bight and New York Bight programs. Any additional State programs, research activities, or new initiatives in estuarine or coastal waters or the Great Lakes should be discussed in this chapter. Information on coastal (tidal, estuarine) or Great Lakes wetlands should be reported in Chapter 6: Wetlands Assessment.

Chapter Six: Wetlands Assessment

Protecting the Nation's wetland resources (including riparian areas) is a high priority at EPA, other Federal agencies, and most States. Wetlands are considered waters of the United States and of the States. In an effort to gain more comprehensive information on State efforts to protect wetlands, EPA requests information on State wetland resources and protection activities in the State 305(b) reports. This information is vital to efforts to integrate wetlands protection into traditional base water programs.

Although EPA recognizes that information on wetland quality and extent may not be generally available, the Agency encourages States to report existing information for their wetlands. Previously reported information should be updated where applicable. States should report on coastal (i.e., tidal, estuarine or Great Lakes) wetlands in this section of their report, rather than in Chapter 5: Estuary and Coastal Assessment.

1994 305(b) CONTENTS — PART III: SURFACE WATER ASSESSMENT

States that wish to do so may report separately on nonwetlands riparian areas. Riparian areas are essential components of riverine ecosystems, especially in the western United States.

Extent of Wetland Resources

States should provide information on their wetland types and their historical, most recent, and second most recent acreages (specify when available). Table 13 is provided as a guide for formatting information. Define wetland types using the Cowardin classification system currently used by the U.S. Fish and Wildlife Service (Cowardin et al., 1979; FWS/OBS-79/31). If another classification system is used, please identify the system. Also, list sources of information and discuss reasons for acreage change, where known. EPA encourages States to include maps of significant wetlands if this information is available and to describe current or planned inventory programs for their wetland resources.

Table 13. Extent of Wetlands, by Type

Wetland Type^a	Historical Extent (acres)¹	1992 Reported Acreage² (second most recent acreage)	Most Recent Acreage³ (if any recorded)	% Change from 1992 to Most Recent

Sources of Information

- 1
- 2
- 3

^a Use Cowardin et al. (1979)--Classification of Wetlands and Deepwater Habitats of the United States, Fish and Wildlife Report FWS/OBS-79/31--or report classification system used.

NOTE: This table merely clarifies reporting requirements contained in earlier versions of this guidance. This table is not a new reporting requirement.

1994 305(b) CONTENTS — PART III: SURFACE WATER ASSESSMENT

Potential sources of information include the U.S. Fish and Wildlife Service National Wetlands Inventory, the State fish and game department, and the State parks and recreation agency (wetlands are to be included in State Outdoor Recreation Plans).

Integrity of Wetland Resources

EPA encourages States to report on the attainment of designated uses in their wetland areas. To the extent possible, complete Tables 3, 4, 5, and 6 (designated use support, causes and sources of impairment) for wetlands and present them in this chapter.

States should discuss their wetland monitoring program in a brief narrative. Include information on the scope and comprehensiveness of the program (e.g., parametric and geographic coverage), types of monitoring, and how use support decisions are made.

Development of Wetland Water Quality Standards

In July 1990, EPA published guidance on the level of achievement expected of States by the end of FY 1993 in the development of wetland water quality standards. Water quality standards for wetlands are necessary to ensure that, under the provisions of the Clean Water Act, wetlands are afforded the same level of protection as other waters. Development of wetlands water quality standards provides a regulatory basis for a variety of water quality management activities including, but not limited to, monitoring and assessment under Section 305(b), permitting under Sections 402 and 404, water quality certification under Section 401, and control of nonpoint source pollution under Section 319.

Table 14 is a guide for presenting tabular information on development of State wetlands water quality standards.

Table 14. Development of State Wetland Water Quality Standards

	In Place	Under Development	Proposed
Use Classification			
Narrative Biocriteria			
Numeric Biocriteria			
Antidegradation			
Implementation Method			

NOTE: This table merely clarifies reporting requirements contained in earlier versions of this guidance. This table is not a new reporting requirement.

1994 305(b) CONTENTS — PART III: SURFACE WATER ASSESSMENT

To supplement the information in Table 14, States should list designated uses for wetlands. In addition States should

- Identify any modifications to existing human health and aquatic life criteria for wetlands.
- Briefly describe State efforts to develop narrative and numeric biological criteria. Provide examples where appropriate.
- Briefly describe classification of wetlands in State antidegradation policy. Provide an example of how State antidegradation policies are used to protect critical wetlands.
- Indicate whether the State specifically identifies wetlands as "waters of the State."
- Wetland activities typically cut across various agencies' responsibilities. Briefly describe any mechanism to coordinate wetland issues among relevant State organizations.

Additional Wetland Protection Activities

This section is designed to update EPA on State wetland protection activities and provide States with an opportunity to exchange information on achievements and obstacles in protecting their wetland resources. Discussions need not be extensive or detailed but should

- List the Federal permits or licenses to which the State applies Section 401 certification authority, discuss 401 certification of Section 404 nationwide permits, and specify whether the State uses guidelines or regulations to implement Section 401.
- If possible, summarize in tabular format 401 certification activity over the past 2 years: type of federal permit/license; number of acres of wetlands affected; decision (waive, deny, establish conditions); and party responsible for monitoring of conditions.
- Provide an example of how the State integrates wetlands protection activities with programs dealing with stormwater runoff (nonpoint source control and Section 402 stormwater management).
- Briefly describe any State activities, past and present, funded through the 104(b)(3) wetland grant program.
- Briefly describe the most effective mechanism or innovative approach used in protecting wetlands (such as Outstanding Resource Waters, State Wetland Conservation Plan, watershed or local planning, State Program

General Permits under Section 404, Section 401 certification and wetland water quality standards). Note if these are being partially supported by the 104(b)(3) State Wetland Grant Program.

Chapter Seven: Public Health/Aquatic Life Concerns

Size of Waters Affected by Toxicants

Using the format in Table 15, States should report on the extent of toxicant-caused problems in each waterbody type. WBS can generate the totals needed for this table from waterbody-specific information. Each State defines "elevated levels of toxicants", which can include exceedances of numeric State water quality standards, 304(a) criteria, and/or Food and Drug Administration (FDA) action levels or levels of concern (where numeric criteria do not exist). Elevated levels of toxicants may occur in the water column, in fish tissue, or in sediments. As a means of providing perspective, States should discuss which toxic pollutants have been monitored for and include a list of those toxic pollutants for which the State has adopted numeric criteria.

Public Health/Aquatic Life Impacts

To the extent possible, States should provide information on the following public health and aquatic life impacts of toxic and nontoxic contamination:

- Fishing or shellfishing advisories currently in effect
- Pollution-caused fish kills/abnormalities; States may choose to distinguish recurring fish kills from other pollution-caused fish kills occurring during the reporting period (clearly identify approach used).
- Sites of known sediment contamination
- Shellfish restrictions/closures currently in effect
- Restrictions on surface drinking water supplies during this reporting cycle
- Restrictions on bathing areas during this reporting cycle
- Incidents of waterborne disease during this reporting cycle
- Other aquatic life impacts of pollutants and stressors (e.g., reproductive interference, threatened or endangered species impacts).

States should use tables to summarize key statistics regarding toxic and nontoxic impacts, but should supplement the tables with narrative as appropriate. For example, EPA encourages States to discuss the

Table 15. Total Size Affected by Toxicants

Waterbody	Size Monitored for Toxicants ^a	Size with Elevated Levels of Toxicants ^b
Rivers (miles)		
Lakes (acres)		
Estuaries (miles ²)		
Coastal waters (miles)		
Great Lakes (miles)		
Freshwater wetlands (acres)		
Tidal wetlands (acres)		

^a To generate the totals needed for this table from the WBS, the Monitored for Toxics field in WBS must be entered as "yes" for each appropriate waterbody.

^b Totals for this column can be generated from waterbody-specific information in the WBS if total size affected by toxicants is stored for each waterbody using Cause Code 2400 ("Total Toxicants"). For example, assume a waterbody is 10 miles in size, with 4 miles impacted by metals and 3 miles impacted by pesticides. However, the total portion of the waterbody that is impacted by toxicants is only 5 miles (because some miles have both metals and pesticides). In WBS, 5 miles must be entered under Code 2400: Total Toxicants for WBS to accurately calculate Statewide Summaries for Table 15. If code 2400 is left blank, the WBS will provide an approximation using information entered under special toxics codes (e.g., metals, pesticides). Refer to the *WBS Users Guide* for more information.

nature/limits of the monitoring effort from which these data are derived and to place these impacts in perspective as compared to other water quality problems in the State. States are reminded to consider estuaries and wetlands in the waters listed below, as appropriate. Separate tables are recommended for each type of impact (e.g., fishing/shellfishing advisories, fish kills); Tables 16 through 21 provide examples. These tables may require information from outside the State water quality agency. For example, Table 16 requires up-to-date information on consumption restrictions that is typically available from the State health agency or EPA's National Fish Consumption Advisory Database. *Note that these tables do not represent new reporting requirements, but clarify the types of information required in the 1992 Guidelines.*

WBS Version 3.1 offers two options for preparing Tables 16 through 21. First, WBS now contains a stand-alone module that exists mainly to prepare these particular tables.

Second, WBS also contains Aquatic Contamination Codes in the main WBS assessment screens that users may assign to a waterbody. By entering in these codes, WBS users can perform a wide variety of queries and generate lists of waterbodies that can be used to prepare Tables 16-21. The WBS Aquatic Contamination Codes are:

- 1 = Fish/shellfish tissue contamination above FDA/NAS levels of concern
- 2 = Fish/shellfish advisory in effect (see Appendix C, Item 2)
 - 2a = Restricted consumption advisory for subpopulation
 - 2b = Restricted consumption advisory, general population
 - 2c = "No consumption" advisory for a subpopulation
 - 2d = "No consumption" advisory or ban, general population
 - 2e = Commercial fishing ban
- 3 = Bathing area closure, occurred during reporting period
- 4 = Pollution-related fish abnormality observed during reporting period
- 5 = Shellfish advisory due to pathogens, currently in effect
- 6 = Pollution-caused fish kill, occurred during reporting period
- 7 = Sediment contamination
- 8 = Surface drinking water supply closure, occurred during reporting period
- 9 = Surface drinking water supply advisory, occurred during reporting period
- 10 = Waterborne disease incident, occurred during reporting period.

See the *WBS User's Guide* for more information.

1994 305(b) CONTENTS – PART III: SURFACE WATER ASSESSMENT

Table 16. Waterbodies Affected by Fish and Shellfish^a Consumption Restrictions

Name of Waterbody and Identification No. or Reach No.	Waterbody Type	Size Affected	Type of Fishing Restriction				Cause(s) (Pollutant(s)) of Concern
			No Consumption		Limited Consumption		
			General Population	Sub-population	General Population	Sub-Population	

^a Does not include shellfish harvesting restrictions due to pathogens. See Table 19.

NOTE: Much of this information is available in EPA's fish consumption advisory database, which is accessible through the NPS electronic bulletin board. EPA expects to complete an updated version in the Fall of 1993 and provide it to State 305(b) Coordinators. Coordinators may verify the printout with their colleagues in State health departments and include the corrected printout by reference in the 305(b) report in lieu of Table 16 or transfer information to Table 16. EPA will also provide instructions to access the database on the NPS electronic bulletin board.

Table 17. Waterbodies Affected by Fish Kills and Fish Abnormalities

Name of Waterbody and Identification No. or Reach No.	Waterbody Type	Size Affected	Cause(s) (Pollutant(s)) of Concern	Source(s) of Pollutant(s)	Number of Fish Killed	Number of Fish with Abnormalities

Table 18. Waterbodies Affected by Sediment Contamination

Name of Waterbody and Identification No. or Reach No.	Waterbody Type	Size Affected	Causes(s) (Pollutant(s)) of Concern	Source(s) of Pollutant(s)

NOTE: These tables merely clarify reporting requirements contained in earlier versions of this guidance. These tables are not new reporting requirements.

1994 305(b) CONTENTS — PART III: SURFACE WATER ASSESSMENT

Table 19. Waterbodies Affected by Shellfish Advisories due to Pathogens

Name of Waterbody and Identification No. or Reach No.	Waterbody Type	Size Affected	Sources of Pathogens and/or Indicators ^a

^a Indicators include, but are not limited to fecal coliforms and *E. coli*.

Table 20. Waterbodies Affected by Bathing Area Closures

Name of Waterbody and Identification No. or Reach No.	Waterbody Type	Size Affected	Cause(s) (Pollutant(s)) of Concern ^a	Source(s) of Pollutant(s)	Comments (Chronic or One-time Event)

^a Pollutants include, but are not limited to medical waste, fecal coliforms, *E. coli*, enterococci, and other indicators of pathogenic contamination.

Table 21. Waterbodies Affected by Surface Drinking Water Restrictions

Name of Waterbody and Identification No. or Reach No.	Waterbody Type	Type of Restriction			Cause(s) (Pollutant(s)) of Concern	Source(s) of Pollutant(s)
		Closure ^a (Y/N)	Advisory ^b (Y/N)	Other (explain)		

^a Closures restrict all consumption from a drinking water supply.

^b Advisories require that consumers disinfect water (through boiling or chemical treatment) before ingestion.

NOTE: These tables merely clarify reporting requirements contained in earlier versions of this guidance. These tables are not new reporting requirements.

1994 305(b) CONTENTS — PART III: SURFACE WATER ASSESSMENT

EPA has developed a National Fish Consumption Advisory Database to encourage information exchange among (and within) States. States reviewed and corrected a draft of the database in 1992. EPA will provide hard copy of the corrected database to State 305(b) Coordinators for use in the 1994 reporting cycle. The database will also be accessible through EPA's Nonpoint Source Bulletin Board System. The EPA contact for the database is Jeff Bigler at (202) 260-1305.

PART IV: GROUND-WATER ASSESSMENT

Section 106(e)(1) of the Clean Water Act states that ground water quality information should be reported by the States in their Section 305(b) reports. The State agency responsible for the development or implementation of the State's ground water protection strategy should prepare the ground water part of the Section 305(b) report.

EPA has worked with the States to develop a comprehensive approach to protecting the Nation's ground water resources. The overall goal of this policy is to prevent adverse effects on human health and the environment and to protect the environmental integrity of the Nation's ground water resources. As part of this approach, States are developing Comprehensive State Ground Water Protection Programs (CSGWPPs) consisting of a series of strategic activities, including monitoring and documenting progress, that will enable the States and EPA to reach this goal. Guidance on the comprehensive approach encourages States to collect and report ground water data to help provide a national picture of ground water protection progress and needs (EPA Office of The Administrator, *Final Comprehensive State Ground Water Protection Program Guidance*, EPA 100-R-93-001, December 1992). This reporting will be linked in some measure to future 305(b) reports.

The first two sections of these guidelines, Overview and Ground Water Quality, describe the reporting elements included in the Section 305(b) report in prior years and should be regarded as the baseline of ground water reporting to be provided. The last section, Ground Water Indicators, describes a set of indicators that can be used to track progress and trends in ground water protection efforts and should be reported when data are readily available.

Overview

The States should provide a brief summary overview, in narrative form, that describes the general quality of the State's ground water, including findings of major studies, issues of concern now and for the future, and progress in developing ground water protection programs. This summary overview will serve as an introduction to the State's ground water conditions and special issues.

If States have more detailed information than requested in these guidelines for some or all ground water quality indicators, EPA encourages the States to use the most detailed information they have readily available. In the

future, EPA plans to request additional information from States on their ambient ground water monitoring programs and the designated uses of their ground water resources (e.g., drinking, agricultural, industrial, etc.).

EPA will continue to work with the States as part of the CSGWPP process as well as with others in the ground water protection community to develop additional indicators for the 1996 *Guidelines* that address more directly the States' concerns about representing the quality of all of their ground water resources.

Ground Water Quality

Many States have engaged in studies to identify the specific contaminants that are degrading the quality of their ground water resources and to distinguish the sources of those contaminants. In reporting to Congress for 1994, EPA will characterize the trends identified by the States both for the major sources of ground water quality degradation and for major contaminants. Therefore, EPA requests that the States continue to qualitatively address these two areas of ground water quality. EPA is asking each State to complete Tables 22 and 23 of these guidelines and provide supporting text to describe any additional or special factors that they would like to highlight.

Major Sources of Contamination - Table 22

States should note that this table is modified slightly from previous *Guidelines* and the sources are organized alphabetically. It is not necessary to quantitatively prioritize the sources of contamination; simply group the major sources into the three qualitative categories described below.

Using Table 22, States should

- First, check those sources of ground water contamination that are considered *major* sources of contamination in your State. Because definitions of these terms vary from State to State based on the specific categories of data that the States maintain, States should clarify terms as necessary. This would include a State's definition of any source categories that may be unique to the State or distinct from EPA's conventional use of terminology. Simply indicate "NA" for any source that is "not applicable" in your State.
- Second, indicate the relative priority of each source (H = high, M = medium, and L = low).
- Third, identify the basis used for establishing the priority ranking using the list of factors provided at the end of Table 22. Describe any additional or special factors that you would like to highlight.

Table 22. Major Sources of Ground Water Contamination

Source	Check	Relative Priority	Factors^b
Animal Feedlots			
Containers			
Deep Injection Wells			
De-icing Salt Storage Piles			
Fertilizer Applications			
Irrigation practices (return flow)			
Land Application			
Landfills (permitted)			
Landfills (unpermitted)			
Material Transfer Operations			
Material Stockpiles			
Mining and Mine Drainage			
Pesticide Applications			
Pipelines and Sewer Lines			
Radioactive Disposal Sites			
Salt-water Intrusion			
Septic Tanks			
Shallow Injection Wells			
Storage Tanks (above ground)			
Storage Tanks (below ground)			
Storm Water Drainage Wells			
Surface Impoundments			
Transportation of Materials			
Urban Runoff			
Waste Tailings			
Waste Piles			
Other (specify) ^a			

^a Include other sources of concern in your State.

^b **Factors for Establishing Relative Priority**

- | | |
|--|--|
| (1) number of sources | (5) high to very high priority in localized areas of State, but not over majority of State |
| (2) location of sources relative to ground water used as drinking water | (6) hydrogeologic sensitivity |
| (3) size of the population at risk from contaminated drinking water | (7) findings of the State's ground water protection strategy or other reports |
| (4) risk posed to human health and/or the environment from released substances | (8) other criteria (please specify) |

Ground Water Contaminants - Table 23

As with the previous table, States should note that this table also is modified slightly from previous Section 305(b) *Guidelines* and the contaminants are reorganized. The format of the table is now very similar to Table 22 except that it focuses on contaminants instead of sources. At a minimum, for 1994 States should report the qualitative information in the table as shown. For the future, States should also start thinking about quantitatively identifying contaminant occurrence based on data collected by Statewide ground water monitoring programs. This may include reporting the actual number of documented occurrences of contaminants, the number of sites with ongoing investigations or cleanup activities that have documented specific contaminants, the number of public water supply wells or systems with each type of contaminant, and the total number of sites assessed or wells monitored.

EPA recognizes that not all States test for all contaminants. It is possible that some States may not report a specific contaminant from their list simply because its presence is not monitored. In actuality, it could be that no data exist to either support or refute the contaminant's presence. Therefore, for 1994, in addition to identifying contaminants currently affecting ground water supplies, EPA is asking each State to provide a list of those contaminants for which it tests ground water as well as the detection level for each contaminant. This will help avoid reporting misleading information.

In Table 23, States should

- Check which of the contaminants listed are found in the State's ground water as a result of the sources listed in Table 22.
- Provide the relative priority of each contaminant (H = high, M = medium, and L = low).
- Identify the basis used for establishing the priority ranking using the list of factors provided at the end of Table 23. Describe any additional or special factors that you would like to highlight, including whether or not your State monitors for it.

Table 23. Ground Water Contaminants

Contaminant Category	Check	Relative Priority	Factors ^b
Organic Contaminants			
Pesticides			
Other agricultural chemicals ^a			
Petroleum compounds			
Other Organic Chemicals:			
Volatile			
Semi-volatile			
Miscellaneous ^a			
Microbial Contaminants			
Bacteria			
Protozoa			
Viruses			
Inorganic Contaminants			
Pesticides			
Other agricultural chemicals ^a			
Nitrate			
Fluorides			
Brine/Salinity			
Metals			
Arsenic			
Other metals ^a			
Radionuclides			
Other ^a			

^a Specify any other contaminants of concern in your State. If necessary, add an additional sheet.

^b **Factors for Establishing Relative Priority**

- | | |
|---|---|
| (1) areal extent of contamination | (5) high priority in localized areas of State, but not over majority of State |
| (2) location of contamination relative to ground water used as drinking water | (6) hydrogeologic sensitivity to this contaminant |
| (3) size of the population at risk from drinking water threatened by this contaminant | (7) findings of the State's ground water protection strategy or other reports |
| (4) risk posed to human health and/or the environment from this contaminant | (8) other criteria (please specify) |

Ground Water Indicators

The ground water indicators described below are a limited set of selected data that, when taken together, give a relative indication of the condition of the ground water resource. As these indicators are collected over time, the data will be used to help determine trends in the progress that States and the Nation are making in improving and protecting this resource.

As part of the State's 305(b) report for 1994, the State should report data for the following four indicators, where data are available:

- (1) Number of maximum contaminant level (MCL) exceedances for ground water-based or partial ground water-supplied community public water systems (PWSs). (Note: Partial ground water-supplied PWSs are those that rely on sources of ground water to supply part of their water supply. They do not necessarily rely solely on ground water as a source of water).
- (2) Number of ground water-based or partial ground water-supplied community PWSs with reported MCL exceedances;
- (3) Number of ground water-based or partial ground water-supplied community PWSs with detections between 50 and 100 percent of MCLs; and
- (4) Number of ground water-based or partial ground water-supplied community PWSs that have local Wellhead Protection Programs in place.

EPA recognizes that these ground water indicators may not present a complete picture of the condition of the Nation's ground water resources. Good examples of this are the two indicators that are based on MCLs. States routinely monitor for MCL violations in *treated* not *raw* water. Therefore, MCL data alone do not perfectly represent the true quality of the ground water. If there are MCL exceedances, however, the number of violations does provide a good indication of the general quality of the State's ground water. Given these limitations, EPA would like to emphasize the following: *States should use the best data that they have available for each indicator. If States have access to "better" information than these Guidelines specifically request, EPA urges these States to use the more detailed data in addition to the data that EPA has requested. EPA asks the States to identify that they are departing from the Guidelines and to clearly describe the data they are providing.*

The following provides some examples of "better" data States may choose to use to supplement what EPA has requested in these guidelines:

1994 305(b) CONTENTS — PART IV: GROUND-WATER ASSESSMENT

- MCL exceedances in raw water rather than treated water. Unless otherwise stated, EPA will assume that the data represent treated water
- MCL exceedances by a specific wellhead or wellfield rather than by PWS. Unless otherwise stated, EPA will assume that the data are presented by PWS
- Data on PWSs relying solely, rather than partially, on ground water
- Other types of PWSs (e.g., noncommunity water systems, nontransient noncommunity water systems) in addition to community PWSs.

These examples are just some of many possible enhancements that EPA encourages States to make to their reporting of ground water quality indicators if States have access to more detailed data. At a minimum, EPA is requesting MCL-related indicator data for ground water-based or partial ground water-supplied community PWSs because these are the most readily available data. If States do not have data for one or more indicators at the level of detail that EPA is requesting in these *Guidelines*, however, EPA urges those States to plan now to begin collecting the requested data for future reporting.

Reporting these minimum ground water indicators once every two years will provide Congress with a snapshot view of the condition of the Nation's ground water resources. It will also enable EPA and the States to track trends in ground water quality over time and will help support better decision making and priority setting for State ground water protection efforts. EPA is strongly promoting wider use of indicator data across all Federal as well as State environmental programs to report on the quality of environmental resources and progress in protection programs.

The importance of being able to measure trends in ground water was one of the key recommendations of EPA's Ground Water Monitoring Strategy. Furthermore, one of the criteria for determining the adequacy of States' comprehensive ground water protection programs is the extent of ground water monitoring, data collection and analysis activities conducted to determine the extent of ground water contamination. This criterion suggests that States will have a monitoring and data management program that would result in a ground water indicator collection and reporting process. EPA's Ground Water Protection Strategy for the 1990s also identifies the use of a percent of MCLs as an indicator, which, if reached, suggests that additional management action is needed to protect the resource and avoid the failure of reaching an MCL.

EPA initiated development of these ground water indicators by sponsoring a two-day workshop in 1986 that was attended by representatives of various EPA offices, other Federal agencies, State agencies, public interest groups, and technical organizations. Workshop participants developed a number of principles that they felt EPA should consider when choosing ground water indicators. Following the workshop, EPA developed a preliminary list of indicators and conducted interviews with State, Regional and Federal officials to refine this list. Finally, EPA used the results of three State pilot studies and continued assistance from States and EPA program offices to develop the indicators presented in these guidelines.

Several States have expressed interest in using indicators as part of Section 305(b) reporting in place of, or in addition to, the previous ground water guidelines. However, EPA recognizes that each State has different ground water data management needs and programs. EPA also recognizes that further work is needed to identify additional indicators that more effectively measure the condition of the total ground water resource. EPA will continue to work with the States as part of the CSGWPP process, as well as with others in the ground water protection community, to develop additional indicators for the 1996 *Guidelines* that address more directly the States' concerns about representing the quality of all of their ground water resources.

Some States are already collecting and maintaining the indicator data described here as well as additional monitoring data, while others are not. For those that are, these *Guidelines* provide instruction on reporting the data for their 1994 305(b) reports. For those States that are not collecting all of these data, these *Guidelines* provide a baseline for data to gather as they develop ground water quality monitoring and data collection systems. For more assistance on ground water data needed to characterize a State's ground water resources, States may wish to consult EPA's *Ground Water Resource Assessment Technical Assistance Document*, due to be released in late 1993 or early 1994. As further indicator guidelines are developed, they will help set the stage for those States that are moving toward developing comprehensive ground water monitoring and information systems, particularly in relationship to ground water indicator reporting, and will assist those States that are already in the process. The guidelines and tables for each of these indicators are provided below.

Ground Water Indicator 1: MCL Exceedances

For Table 24, States should

- For three contaminant groups--metals, VOCs, and pesticides--identify the five contaminants for which MCLs are most often exceeded.

1994 305(b) CONTENTS — PART IV: GROUND-WATER ASSESSMENT

- For nitrates and each of the contaminants listed in the other three groups:
 - report the number of samples that exceeded MCLs during the latest 12-month period for which data are available. Report such violations only for ground water-based or partial ground water-supplied community PWSs.
 - report the number of samples monitored for MCLs during the 12-month reporting period.

Table 24. Number of MCL Exceedances for Ground Water-based or Partial Ground Water-supplied Community PWSs for Selected Contaminants in Four Contaminant Groups

Contaminant Group	Contaminant	No. of MCL Exceedances	No. of Samples
Metals			
VOCs			
Pesticides			
Nitrate			

EPA is requesting States to provide this information because

- Using MCL exceedances as an indicator is consistent with the CSGWPP approach, which recognizes the use of MCLs as a principal means of establishing a reference point for ground water protection activities where ground water is a current or reasonably expected source of drinking water.
- From a public health standpoint, this indicator will provide ground water quality information on a very important use of ground water (i.e., drinking water).
- By reporting the number of samples monitored for MCLs, States will be placing their number of MCL exceedances in perspective.
- EPA will aggregate the data provided by States to obtain a national percentage of MCL exceedances for the State-listed contaminants. In order for EPA to derive this national figure for all ground water-based or partial ground water-supplied community PWSs, States must report their data numerically.
- Reporting the number of MCL exceedances for selected contaminants for the most recent 12-month period every other year provides a "snapshot" of the most important ground water contaminants while limiting the States' reporting burden.
- Although MCL data are available to EPA via the Federal Reporting Data System (FRDS) data base, having States supply these data gives them the opportunity to review the data for suitability for 305(b) reporting.

Ground Water Indicator 2: Number of PWSs with MCL Exceedances

For Table 25, States should

- Report the total number of ground water-based or partial ground water-supplied community PWSs in the State.
- List the population served by the total number of ground water-based or partial ground water-supplied community PWSs in the State.
- Report the *number of PWSs* (i.e., ground water-based or partial ground water-supplied community PWSs) that had MCL exceedances during the 12-month reporting period for the contaminants listed in Table 24. Do not report the number of MCL exceedances in Table 25.

1994 305(b) CONTENTS — PART IV: GROUND-WATER ASSESSMENT

- Estimate the population served by the number of ground water-based or partial ground water-supplied community PWSs that had MCL exceedances.

Table 25. Number of Ground Water-based or Partial Ground Water-supplied Community PWSs with MCL Exceedances

	Ground Water-based or Partial Ground Water-supplied Community PWSs	Ground Water-based or Partial Ground Water-supplied Community PWSs with MCL Exceedances
Total No.		
Population Served		

EPA is requesting that States provide this information because

- Reporting the population served for all ground water-based or partial ground water-supplied community PWSs in the State and for those ground water-based or partial ground water-supplied community PWSs with MCL exceedances directly links this indicator to human health
- By reporting the total number of ground water-based or partial ground water-supplied community PWSs and the number of PWSs with MCL exceedances, States will place their number of systems with exceedances in perspective
- EPA will aggregate the data provided by States to obtain a national percentage of all ground water-based or partial ground water-supplied community PWSs with MCL exceedances for the contaminants each State listed. In order for EPA to derive this national figure, States must report their data numerically.

Ground Water Indicator 3: Detections of 50 to 100 Percent of MCLs

Using Table 26, States should

- For the same priority constituents identified in Table 24, report the number of sample detections between 50 and 100 percent of the established MCL that occurred during the 12-month reporting period. Report such violations only for ground water-based or partial ground water-supplied community PWSs.

1994 305(b) CONTENTS — PART IV: GROUND-WATER ASSESSMENT

EPA is requesting States to provide this information in an effort to provide an early warning of potentially more serious incidents of ground water contamination. Changes over time in the number of detections in this range of 50 to 100 percent of MCLs may suggest that future MCL exceedances will occur. Such changes also suggest changes in quality that are likely affecting the wider ground water resource. Knowledge of such changes over time could help wellhead managers identify potential problem areas to investigate and possibly implement additional protection measures or remediate sources of contamination before violations occur.

Table 26. Number of Sampling Detections Between 50 and 100 Percent of MCLs for Four Contaminant Groups

Contaminant Group	Contaminant	No. of MCL Samples Between 50 and 100% of the MCL
Metals		
VOCs		
Pesticides		
Nitrate		

1994 305(b) CONTENTS — PART IV: GROUND-WATER ASSESSMENT

EPA understands that some States may not have data available to fully characterize this indicator. States are encouraged to use related data that they may have available and, if necessary, to report such related data in another format if they cannot complete this table as it is presented in these *Guidelines*. EPA also realizes that lead contamination may be a result of lead in the water distribution system rather than contamination associated with the ground water resource. Regardless of this likelihood, States should still report data on lead contamination.

Ground Water Indicator 4: Local Wellhead Protection Programs in Place

For Table 27, States should report

- The number of ground water-based or partial ground water-supplied community PWSs and the number of people served by those systems. This information is available from Table 25.
- The number of ground water-based or partial ground water-supplied community PWSs that have local wellhead protection programs (WHPPs) in place and the number of people these PWSs serve.

This information will be used to track progress and assess the effectiveness of WHPPs in those States with EPA-approved programs. States can use their latest WHPP Biennial Reports as a source for the quantitative data required by this indicator. States that have WHPPs but do not have an EPA-approved program can use other sources of information.

Table 27. Number of Ground Water-based or Partial Ground Water-supplied Community PWSs that Have Local Wellhead Protection Programs In Place

Number of Ground Water-based or Partial Ground Water-supplied Community PWSs	Population Served	Number of Ground Water-based or Partial Ground Water-supplied Community PWSs with Local WHPP in Place	Population Served

PART V: WATER POLLUTION CONTROL PROGRAM

Chapter One: Point Source Control Program

Within the context of both technology-based and water-quality-based controls, States should provide a general overview of the point source control program. Focus on program actions, their relationship to water quality, and their effectiveness in improving water quality. Discuss, in particular, State programs to assess and control the discharge of toxic pollutants.

EPA will use information available through the Permit Compliance System (PCS) to summarize national progress. EPA encourages the States to provide additional quantitative information if they desire.

Chapter Two: Nonpoint Source Control Program

Section 319 of the Clean Water Act, as amended by the Water Quality Act of 1987, required States to conduct an assessment of their nonpoint source (NPS) pollution problems and submit that assessment to EPA. In this chapter, the State is asked to update its Section 319(a) assessment report and discuss highlights of its nonpoint source management programs, including NPS priority watersheds. Updated waterbody-specific information on Section 319 waters should be included in the WBS. In addition, if a State provides a hard-copy list of its Section 319 waters, it should do so here or in a clearly identified Appendix.

Program highlights to be reported in this chapter should include both activities funded under Section 319 and nonpoint source activities funded from other Federal, State, or local sources. Highlights may include, but are not limited to, results of special nonpoint source projects, new State legislation for nonpoint source control, Section 319 ground-water activities, an analysis of the change in water quality due to implementation of NPS controls, and innovative activities begun/completed since the last 305(b) reporting cycle (e.g., intergovernmental initiatives, watershed targeting, point source/nonpoint source trading).

In addition, States may refer to several other sources that will help them in reporting on nonpoint sources. The *Nonpoint Source Guidance* (December 1987) describes annual reporting for the Section 319 Management Program, which is not included in the 305(b) reporting process.

Section 6217 of the Coastal Zone Reauthorization Amendments of 1990 requires each State with a federally approved coastal zone management program to develop a coastal nonpoint program to restore and protect coastal waters. States must implement management measures in conformity with guidance issued by EPA and NOAA to protect coastal waters. This guidance, *Technical Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters*, describes management measures that States are to achieve or implement throughout their coastal zone.

Section 6217 also requires that States develop additional management measures to address more localized problems resulting from particular land uses or to manage critical coastal areas adjacent to impaired or threatened waters. These additional management measures are to be implemented in combination with the basic management measures specified in the technical guidance. In order to meet these requirements, States should begin to focus water quality assessments and reporting under Section 305(b) on coastal waters and begin to identify threatened and impaired waterbodies for which additional management measures will be applied. EPA and NOAA have prepared a separate guidance document, *Coastal Nonpoint Pollution Control Program Development and Approval Guidance* (NOAA and EPA, 1993), which describes how and when States are to develop programs to implement these management measures. Contact the Nonpoint Source Branch, EPA Assessment and Watershed Protection Division, (202) 260-7085, for a copy.

Chapter Three: Cost/Benefit Assessment

Section 305 requires the States to report on the economic and social costs and benefits of actions necessary to achieve the objective of the Clean Water Act. It is recognized that this information may not be readily available due to the complexities of the economic analysis involved. However, until such time that procedures for evaluating costs and benefits are in wider use and have become available, States should provide as much of the following information as possible.

As a measure of the costs of pollution control activities, States should discuss capital investments in municipal and industrial facilities as well as nonpoint source management measures and the costs of operating these facilities/measures. In addition, include the costs of administering water pollution control activities through State and local government offices.

States should also provide, if possible, information on the beneficial outcomes resulting from actions taken to maintain or improve water quality conditions in the State. Some examples might include increasing use of water-based recreational activities, improvements in commercial fisheries,

recovery of damaged aquatic environments, and reduced costs of water treatment undertaken at municipal and industrial facilities.

States should discuss the costs and benefits of water quality achievements for programs or specific sites documented elsewhere in the report. Examples of such projects include Clean Lakes restorations and nonpoint source control projects.

Chapter Four: Special State Concerns and Recommendations

This chapter should consist of two parts. First, States should discuss special concerns that are significant issues within the State and that affect its water quality program. List and discuss any special concerns that are not specifically addressed elsewhere in this guidance, or, if they are addressed, are not identified as special State concerns. This section is a key part of the assessment, describing the forces driving specific State programs and illustrating the complex and varying nature of water quality problems throughout the country. Include, if possible, the strategies that are being planned or implemented to alleviate these problems, and give site-specific examples.

Second, provide recommendations as to additional general actions that are necessary to achieve the objective of the Clean Water Act: providing for the protection and propagation of shellfish, fish, and wildlife and allowing recreation in and on the water. Examples of recommendations include developing more FDA action levels, improving training of municipal treatment facility operators, correcting combined sewer overflows, placing more emphasis on the identification and control of nonpoint sources, point source/nonpoint source trading, basinwide planning, and watershed-based water quality management.

This chapter should also discuss any programmatic changes occurring or anticipated due to a shift to basinwide planning or watershed-oriented water quality management.

APPENDIX A

PROVISIONS OF THE CLEAN WATER ACT

Section 305. Water Quality Inventory

(b)(1) Each State shall prepare and submit to the Administrator by April 1, 1975, and shall bring up to date by April 1, 1976, and biennially thereafter, a report which shall include--

(A) a description of the water quality of all navigable waters in such State during the preceding year, with appropriate supplemental descriptions as shall be required to take into account seasonal, tidal, and other variations, correlated with the quality of water required by the objective of this Act (as identified by the Administrator pursuant to criteria published under section 304(a) of this Act) and the water quality described in subparagraph (B) of this paragraph;

(B) an analysis of the extent to which all navigable waters of such State provide for the protection and propagation of a balanced population of shellfish, fish, and wildlife, and allow recreational activities in and on the water;

(C) an analysis of the extent to which the elimination of the discharge of pollutants and a level of water quality which provides for the protection and propagation of a balanced population of shellfish, fish, and wildlife and allows recreational activities in and on the water, have been or will be achieved by the requirements of this Act, together with recommendations as to additional action necessary to achieve such objectives and for what waters such additional action is necessary;

(D) an estimate of (i) the environmental impact, (ii) the economic and social costs necessary to achieve the objective of this Act in such State, (iii) the economic and social benefits of such achievement, and (iv) an estimate of the date of such achievement; and

(E) a description of the nature and extent of nonpoint sources of pollutants, and recommendations as to the programs which must

APPENDIX A: PROVISIONS OF THE CLEAN WATER ACT

be undertaken to control each category of such sources, including an estimate of the costs of implementing such programs.

(2) The Administrator shall transmit such State reports, together with an analysis thereof, to Congress on or before October 1, 1975, and October 1, 1976, and biennially thereafter.

Section 106. Grants For Pollution Control Programs

(e) Beginning in fiscal year 1974 the Administrator shall not make any grant under this section to any State which has not provided or is not carrying out as a part of its program--

(1) the establishment and operation of appropriate devices, methods, systems, and procedures necessary to monitor, and to compile and analyze data on (including classification according to eutrophic condition), the quality of navigable waters and, to the extent practicable, ground waters including biological monitoring; and provision for annually updating such data and including it in the report required under section 305 of this Act;

Section 204. Limitations and Conditions

(a) Before approving grants for any project for any treatment works under section 201(g)(1), the Administrator shall determine--

(2) that (A) the State in which the project is to be located (i) is implementing any required plan under section 303(e) of this Act and the proposed treatment works are in conformity with such plan, or (ii) is developing such a plan and the proposed treatment works will be in conformity with such plan, and (B) such State is in compliance with section 305(b) of this Act.

Section 303. Water Quality Standards and Implementation Plans

(d)(1) (A) Each State shall identify those waters within its boundaries for which the effluent limitations required by Section 301(b)(1)(A) and Section 301(b)(1)(B) are not stringent enough to implement any water quality standard applicable to such waters. The State shall establish a priority ranking for such waters, taking into account the severity of the pollution and the uses to be made of such waters.

(B) Each State shall identify those waters or parts thereof within its boundaries for which controls on thermal discharges under Section 301 are not stringent enough to assure protection and

APPENDIX A: PROVISIONS OF THE CLEAN WATER ACT

propagation of a balanced indigenous population of shellfish, fish, and wildlife.

(C) Each State shall establish for the waters identified in Paragraph (1)(A) of this subsection, and in accordance with the priority ranking, the total maximum daily load, for those pollutants which the Administrator identified under Section 304(a)(2) as suitable for calculation. Such load shall be established at a level necessary to implement the applicable water quality standards with seasonal variations and a margin of safety which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality.

(D) Each State shall estimate for the waters identified in Paragraph (1)(B) of this subsection the total maximum daily thermal load required to assure protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife . . ."

(d)(2) Each State shall submit to the Administrator, from time to time, with the first submission not later than one hundred and eighty days after the date of publication of the first identification of pollutants under Section 304(a)(2)(D), for his approval the waters identified and the loads established under Paragraphs (1)(A), (1)(B), (1)(C), and (1)(D) of this subsection . . ."

NOTE: EPA published final revisions to 40 CFR 130.7 (the regulations implementing Section 303(d)) in the Federal Register on July 24, 1992. The revisions define "from time to time" as a biennial reporting requirement for submitting prioritized lists of water quality-limited waters. (Note that the regulatory revisions pertain exclusively to 303(d) lists of waters requiring TMDLs and do not require biennial submittals of TMDLs). The regulations also specify that the State submittals under Section 303(d) coincide with State Submittals under Section 305(b) and may be submitted as part of the 305(b) report. From the 303(d) regulations:

"(d) Submission and EPA approval.

- (1) Each State shall submit biennially to the Regional Administrator, beginning in 1992, the list of waters, pollutants causing impairment, and the priority ranking including waters targeted for TMDL development within the next two years as required under Paragraph (b) of this section. For the 1992 biennial submissions, these lists are due no later than October 22, 1992. Thereafter, each State shall submit to EPA lists required under Paragraph (b) of this section on April 1 of every even-numbered year. The list of waters may be submitted as part of the State's biennial water quality report required by Section 130.8 of this part and Section 305(b) of the CWA or submitted under separate cover."

APPENDIX A: PROVISIONS OF THE CLEAN WATER ACT

Section 314. Clean Lakes

(a) Each State shall prepare or establish, and submit to the Administrator for his approval--

(A) an identification and classification according to trophic condition of all publicly owned lakes in such State;

(B) a description of procedures, processes, and methods (including land use requirements), to control sources of pollution of such lakes;

(C) a description of methods and procedures, in conjunction with appropriate Federal agencies, to restore the quality of such lakes;

(D) methods and procedures to mitigate the harmful effects of high acidity, including innovative methods of neutralizing and restoring buffering capacity of lakes and methods of removing from lakes toxic metals and other toxic substances mobilized by high acidity;

(E) a list and description of those publicly owned lakes in such State for which uses are known to be impaired, including those lakes which are known not to meet applicable water quality standards or which require implementation of control programs to maintain compliance with applicable standards and those lakes in which water quality has deteriorated as a result of high acidity that may reasonably be due to acid deposition; and

(F) an assessment of the status and trends of water quality in lakes in such State, including but not limited to, the nature and extent of pollution loading from point and nonpoint sources and the extent to which the use of lakes is impaired as a result of such pollution, particularly with respect to toxic pollution.

(2) Submission as part of 305(b)(1) Report.--The information required under paragraph (1) shall be included in the report required under section 305(b)(1) of this Act, beginning with the report required under such section by April 1, 1988.

APPENDIX B

MAKING USE SUPPORT DETERMINATIONS

1. INTRODUCTION

This appendix on making use support determinations includes recommendations by the State/EPA 305(b) Consistency Workgroup, which met in June and October 1992 to discuss the 1994 *Guidelines*.

Appendix B covers the following topics:

- Making Use Support Decisions Using Biological Data
- Making Use Support Decisions Using Chemical Data and Other Indicators
- Making Use Support Decisions Using Evaluative Data
- Additional Considerations for Lakes
- Guidelines for Assessing Overall Use Support.

The appendix incorporates recent developments in water quality standards (specifically, the duration and frequency components of criteria for toxic chemicals) as described in the *Technical Support Document for Water Quality-Based Toxics Control* (EPA, 1991). Also, the appendix: recommends separate approaches for individual designated use categories based on whether toxicants or conventionals are being analyzed; includes specifics for determining acceptable duration and frequency exceedances for toxicants; recommends EPA values for *E. coli*, enterococci, and fecal coliform bacteria; and makes limited recommendations for designated use support assessments in lakes. This guidance also augments previous 305(b) guidance on the use of biological data.

In July 1991, EPA transmitted final national policy on the integration of biological, chemical, and toxicological data in water quality assessments. According to this policy, referred to as Independent Application, if any one of the three types of monitoring data (biological, chemical, or toxicological) indicates impairment of water quality standards, this should be taken as evidence of impairment regardless of the findings of the other types of data. (For more information, see EPA's *Policy on the Use of Biological Assessments and Criteria in the Water Quality Program*, May 1991). States should follow this policy of Independent Application when making use support decisions.

APPENDIX B: MAKING USE SUPPORT DETERMINATIONS

In its 1994 305(b) report, each State should clearly explain its assessment methods (see Part III Chapter 2 of these Guidelines). This explanation should include details of how the State makes use support determinations (full support, partial support, nonsupport) when independently applied biological, chemical, or toxicological data suggest different assessment results. New Assessment Type Codes have been added to the WBS to track waterbodies in this situation. States and EPA will use this information to better understand and quantify problems caused by discrepancies in aquatic life use determinations.

2. MAKING USE SUPPORT DECISIONS USING BIOLOGICAL DATA

The following guidance on the use of biological data in making use support decisions is greatly enhanced from previous reporting cycles. EPA encourages States to follow the approaches described here (and in the reference documents cited below) to the extent possible. However, EPA realizes that there are different tiers of bioassessment and that many States are not in a position to fully implement these programs quickly. The goal for a minimally acceptable bioassessment is one comparable to Level II of EPA's Rapid Bioassessment Protocols for Use in Streams and Rivers (USEPA, 1989). States should take the approaches described below and in the references as goals for State monitoring and assessment programs. Guidance for lakes and estuaries is under development.

2.1 Aquatic Life Use

2.1.1 Biological Assessment

- A. Fully Supporting: Reliable data indicate that the biological community (e.g., fish, macroinvertebrates, or algae) has not been modified beyond the natural range of the reference condition.
- B. Partially Supporting: At least one assemblage (e.g., fish, macroinvertebrates, or algae) indicates less than full support with slight to moderate modification of the biological community noted. Other assemblages indicate full support.
- C. Not Supporting: At least one assemblage indicates non-support. Data clearly indicate severe modification of the biological community.

2.2 Additional Information on Biological Assessment of Aquatic Life Use Support

Biological assessments are evaluations of the biological condition of waterbodies using biological surveys and other direct measurements of resident biota in surface waters. They are done by qualified professional

APPENDIX B: MAKING USE SUPPORT DETERMINATIONS

staff trained in biological methods and data interpretation. The utility of biological measures has been demonstrated in assessing impairment of receiving waterbodies, particularly that caused by nonpoint sources and nontraditional water quality problems such as habitat degradation.

Bioassessment is used to measure the attainment of biological integrity, which is the ideal condition of a community within a specified habitat and region. The attainment of biological integrity is the underpinning of the biocriteria process and an integral component of overall ecological integrity. Guidance for development of biocriteria-based programs is provided in the *Biological Criteria: National Program Guidance for Surface Waters* (USEPA, 1990) and *Biological Criteria: Technical Guidance for Streams and Small Rivers* (USEPA, in review). The techniques for biosurveys are still evolving, but there have been significant improvements in the last decade.

Appropriate methods have been established by EPA (e.g., USEPA, 1989), State agencies (e.g., Ohio EPA 1987), and other investigators assessing biological integrity (e.g., Karr et al. 1986; see references at the end of this Appendix). As biosurvey techniques continue to improve, several technical considerations apply:

- *A MULTIMETRIC APPROACH TO BIOASSESSMENT is recommended to strengthen data interpretation and reduce error in judgment based on isolated indices and measures.*

The accurate assessment of biological integrity requires a method that integrates biotic responses through an examination of patterns and processes from individual to ecosystem levels (Karr et al., 1986). The preferred approach is to define an array of metrics that individually provide information on each biological parameter and, when integrated, function as an overall indicator of biological condition. The conventional approach is to select some biological parameter that refers to a narrow range of changes or conditions and evaluate that parameter. Many ecological studies focus on a limited number of parameters that might include one or more of the following: species distributions, abundance trends, standing crop, or production estimates. Parameters are interpreted separately with a summary statement about the overall health. This conventional approach is limited in that the key parameters emphasized may not be reflective of overall ecological health. The strength of a multimetric approach is its ability to integrate information from individual, population, community, zoogeographic, and ecosystem levels into a single, ecologically based index of water resource quality (Karr et al., 1986).

- *Assessment of HABITAT-STRUCTURE as an element of the biosurvey is critical to assessment of biological response.*

Interpretation of biological data in the context of habitat quality provides a mechanism for discerning the effects of physical habitat structure on biota from those of chemical toxicants. If habitat is of poor or somewhat

APPENDIX B: MAKING USE SUPPORT DETERMINATIONS

degraded condition, expected biological values are lowered; conversely, if habitat is in good condition (relative to regional expectations), high biological condition values are expected. If lowered biological values are indicated simultaneously with good habitat assessment rating scores, toxic or conventional contaminants in the system may have caused a suppression of community development. Additional chemical data may be needed to further define the probable causes (stressors). On the other hand, high biological metric scores in poor habitat could indicate a temporary response to organic enrichment, natural variation in colonization/mortality, change in predation pressures, change in food source/abundance, siltation, or other factors.

- *The identification of the REFERENCE CONDITION is basic to any assessment of impairment or attainment of aquatic life use and to the establishment of biological criteria.*

Reference conditions are described from an aggregate of data acquired from multiple sites with similar physical dimensions, represent minimally impaired conditions, and provide an estimate of natural variability in biological condition and habitat quality.

Reference conditions must be stratified in order to account for much of the natural physical and climatic variability that affects the geographic distribution of biological communities. The Ecoregion Concept (Omernik, 1987) recognizes geographic patterns of similarity among ecosystems, grouped on the basis of environmental variables such as climate, soil type, physiography, and vegetation. Procedures have begun in several ecoregions around the United States to identify reference conditions within those particular ecoregions. In essence, these studies are developing reference databases in order to define biological potential and physical habitat expectations within ecoregions. The concept of reference conditions for bioassessment and biocriteria is discussed further below.

In developing community bioassessment protocols, reference conditions against which to compare test sites and to judge impairment are needed. Ideally, reference conditions represent the highest biological conditions found in habitats unimpacted by human pollution and disturbance. That is, the ecoregion/regionalized reference site concept is meant to accommodate natural variations in biological communities due to bedrock, soils, and other natural physicochemical differences. Recognizing that pristine habitats are rare (even remote lakes and streams are subject to atmospheric deposition), resource managers must decide on an acceptable level of disturbance to ~~represent an achievable or existing~~ reference condition. Acceptable reference conditions will differ among geographic regions and States and will depend on the aquatic life use designations incorporated into State water quality standards.

APPENDIX B: MAKING USE SUPPORT DETERMINATIONS

The best approach to classifying and characterizing regional reference conditions is determined by the estimated quality of potential reference sites that are available in the region. If a sufficient number of relatively undisturbed waterbodies exist (e.g., primarily forested watersheds), then it is possible to define watershed conditions acceptable for reference sites. If no undisturbed waterbodies exist, then reference conditions can be characterized based on the best available for the region. Characterization of reference conditions depends heavily on classification of natural resources. Waterbodies vary widely in size and ecological characteristics, and a single reference condition that applies to all systems would be misleading. A classification system that organizes waterbodies into groups with similar ecological characteristics is required to develop meaningful reference conditions. The purpose of a classification is to explain the natural biological condition of a natural resource from the physical characteristics: for example, a deep, cold lake in the northern forested region of the Upper Midwest will often support a fish community characterized by trout or walleye as top predators (Heiskary et al., 1987).

EPA sees the use of reference sites as an important component and goal of State biological programs, but realizes that many States are not in a position to implement such programs quickly. The Agency also recognizes other approaches such as upstream/downstream sampling (USEPA, 1990).

The Ohio Environmental Protection Agency has been very active in the development of biocriteria based on reference conditions. Ohio's experiences and methods may be useful to other States in developing their biological monitoring and biocriteria programs (see, for example, Ohio EPA, 1987, 1990). For further information on the development and implementation of biological criteria and assessments, States should consult *Biological Criteria: National Program Guidance for Surface Waters* (USEPA, 1990) and *Rapid Bioassessment Protocols for Use in Streams and Rivers: Benthic Macroinvertebrates and Fish* (Plafkin et al., 1989).

- *A standardized INDEX PERIOD is important for consistent and effective monitoring.*

The intent of a State-wide bioassessment program is to evaluate overall biological conditions. The capacity of the aquatic community to reflect integrated environmental effects over time can be used as a foundation for developing bioassessment strategies (USEPA, 1989). An index period is a time frame for sampling biological communities to evaluate attainment of aquatic life uses. Ideally, the optimal index period will correspond to recruitment cycles of the organisms (based on reproduction, emergence, and migration patterns). In some instances, an index period would be oriented to maximize impact of a particular pollutant source (e.g., high-temperature/low-flow period for point sources). Sampling during an index period can (1) minimize between-year variability due to natural events,

APPENDIX B: MAKING USE SUPPORT DETERMINATIONS

(2) optimize accessibility of the target assemblages, and (3) maximize efficiency of sampling gear.

- *STANDARD OPERATING PROCEDURES (SOPs) and an effective QUALITY ASSURANCE (QA) PROGRAM are established to support the integrity of the data.*

The validity of the ecological study and resultant conclusions are dependent upon an effective QA Plan. An effective QA Plan at the onset of a study provides guidance to staff in several areas: objectives and milestones for achieving objectives throughout the study; lines of responsibility; accountability of staff for data quality objectives; and accountability for ensuring precision, accuracy, completeness of data collection activities, and documentation of sample custody procedures.

Documented SOPs for developing study plans, maintenance and application of field sampling gear, performance of laboratory activities, and data analyses are integral quality control components of QA that can provide significant control of potential error sources.

- *AN IDENTIFICATION OF THE APPROPRIATE NUMBER OF SAMPLING SITES that are representative of a waterbody is an important consideration in evaluating biological condition.*

The spatial array of sampling sites in any given watershed and the extrapolation of biological condition and water quality to areas beyond the exact sampling point must be established in any type of assessment. Two primary guidelines can be identified for extrapolating biological assessment data to whole watersheds. First, the structure of aquatic communities in lotic (flowing water) systems changes naturally with increase in size of stream. Thresholds in this continuum of change can be established through an analysis of regional databases. The biological condition at any particular site can only be used to represent upstream and downstream areas of the same physical dimensions and flow characteristics. Likewise, lake size will influence the number of sites needed to adequately characterize a lake or area of a lake. In small lakes, one site will generally be sufficient. In large lakes with multiple basins or in reservoirs with various zones (inflow, mid-section, outflow), a site representative of each basin or zone may be needed.

A second consideration for site identification is the change in land use patterns along a stream gradient or lake shoreline. Changes from agricultural ~~land-use to urban centers, forested parkland, etc.,~~ would warrant different representative sampling sites. A waterbody with multiple dischargers may also require numerous sampling sites to characterize the biological condition of the waterbody.

3. MAKING USE SUPPORT DECISIONS USING CHEMICAL DATA AND OTHER INDICATORS

This guidance is provided to encourage the best and most nationally consistent use of chemical data. EPA recognizes that many States may not always collect a broad spectrum of chemical data (and data on additional indicators such as fishing restrictions) for every waterbody. Therefore, States are expected to apply the following guidance to whatever data are available and to use a "worst case" approach where multiple types of data are available. (If, for example, pathogen conditions indicate impairment of recreational use but no bathing area closures are in effect, the waterbody is still considered impaired).

EPA and the 305(b) Consistency Workgroup are interested in cases where there is a discrepancy among independently applied assessment results based on biological/habitat, chemical, or toxicological monitoring data. The WBS contains new Assessment Type Codes for these cases (see Appendix Table C-1). EPA will use WBS to study those waterbodies with discrepancies among biological/habitat, chemical, or toxicological assessments; States are strongly encouraged to enter these codes in their WBS datasets. States not using WBS should provide a separate list of such waterbodies and the bases for the final assessment decisions in these cases. The information will help EPA and the States in their efforts to set and/or refine biological criteria and integrate biological assessment methods into management decisionmaking.

3.1 Aquatic Life Use

3.1.1 Toxicants (including chlorine and ammonia)

- A. Fully Supporting: For any one pollutant, no violations of acute criteria (EPA's criteria maximum concentration or applicable State criteria) within a 3-year period, based on grab or 1-day composite samples. If 4-day composite data are available, no violations of chronic criteria within a 3-year period. Exception to this rule is possible if the State has collected an abundant data set (i.e., sampling monthly or more frequently over a 3-year period). In that case, one violation of acute or chronic criteria is allowable as a once-in-three-years occurrence.
- B. Partially Supporting: Not applicable. Violations of acute or chronic criteria at greater-than-allowable frequency are assumed to cause severe impacts to sensitive species.
- C. Not Supporting: For any one pollutant, one or more violations of acute or chronic criteria within a 3-year period (based on sampling type mentioned above). Exception to this rule is

APPENDIX B: MAKING USE SUPPORT DETERMINATIONS

possible if the State has collected an abundant data set; in that case, two or more violations of acute or chronic criteria are needed to show nonsupport, as a once-in-3-years violation is allowable.

The following considerations apply to this approach:

- States should document their sampling frequency. Waters should have at least quarterly data to be considered monitored; monthly or more frequent data are considered abundant. More than 3 years of data may be used, although the once-in-3-years consideration still applies (i.e., two violations are allowed in 6 years of abundant data).
- The once-in-3-years goal is not intended to include spurious violations resulting from lack of precision in analytical tests. Therefore, using documented quality assurance/quality control (QA/QC) assessments, States may consider the effect of laboratory imprecision on the observed frequency of violations.
- If the duration and frequency specifications of EPA criteria change in the future, these recommendations should be changed accordingly.
- Samples should be taken outside of designated mixing zones or zones of initial dilution.

3.1.2 Conventionals (DO, pH, temperature)

- A. Fully Supporting: For any one pollutant or stressor, criteria exceeded in ≤ 10 percent of measurements. In the case of dissolved oxygen, national ambient water quality criteria specify the recommended acceptable daily average and 7-day average minimums and the acceptable 7-day and 30-day averages. States should document the DO criteria being used for the assessment and should discuss any biases which may be introduced by the sampling program (e.g., grab sampling in waterbodies with considerable diurnal variation).
- B. Partially Supporting: For any one pollutant, criteria exceeded in 11 to 25 percent of measurements. For dissolved oxygen, the above considerations apply.
- C. Not Supporting: For any one pollutant, criteria exceeded in > 25 percent of measurements. For dissolved oxygen, the above considerations apply.

3.2 Drinking Water Use

3.2.1 Toxicants (applies to ambient drinking water criteria established in State standards)

- A. Fully Supporting: For any one pollutant, mean or median $<$ criterion (use mean for data of normal distribution, median for non-normal distribution).
- B. Partially Supporting: Not applicable. Drinking water use is assumed either to be supported or not supported based on whether or not mean or median criterion is met.
- C. Not Supporting: For any one pollutant, mean or median \geq criterion (use mean for data of normal distribution, median for non-normal distribution).

Note that for many toxicants, concentrations are below detection limits and are not included in ambient monitoring programs. Pathogens are also not generally monitored in ambient water to determine drinking water suitability because of the effectiveness of water treatment. Where ambient water must be of potable quality, States should use guidelines for pathogens described in Section 5.1.

3.2.2 Drinking Water Supply Data

- A. Fully Supporting: No drinking water supply closures or advisories in effect during reporting period; no treatment necessary beyond "reasonable levels."
- B. Partially Supporting: One drinking water supply advisory lasting 30 days or less per year; or problems not requiring closures or advisories but adversely affecting treatment costs and the quality of polished water, such as taste and odor problems, color, excessive turbidity, high dissolved solids, pollutants requiring activated charcoal filters, etc.
- C. Not Supporting: One or more drinking water supply advisories lasting more than 30 days per year, or one or more drinking water supply closures per year.

3.3 Primary Contact Recreation Use

3.3.1 Bacteria

States should base use support determinations on their own State criteria for bacteriological indicators.

EPA encourages States to adopt bacteriological indicator criteria for the protection of primary contact recreation uses consistent with those recommended in *Ambient Water Quality Criteria for Bacteria — 1986* (EPA 440/5-84-002). This document recommends criteria for enterococci and *E. coli* bacteria (for both fresh and marine waters) consisting of:

- Criterion 1 - a geometric mean of a statistically sufficient number of samples should not be exceeded, and
- Criterion 2 - no sample should exceed a one sided confidence limit of the data calculated using the frequency of use of the waterbody.

Many State criteria for the protection of the primary contact recreation use are based on fecal coliform bacteria as previously recommended by EPA (*Quality Criteria for Water — 1976*), consisting of:

- Criterion 1 - based on a minimum of five samples taken over a 30 day period, the fecal coliform bacteria level should not exceed a log mean of 200 per 100 ml, and
- Criterion 2 - not more than 10% of the total samples taken during any 30 day period exceed 400 per 100 ml.

If State criteria are based on either of EPA's criteria recommendations outlined above, States should use the following approach in determining primary contact recreational use support.

- A. Fully Supporting: Criteria exceeded in ≤ 10 percent of measurements.
- B. Partially Supporting: Criteria exceeded in 11 to 25 percent of measurements.
- C. Not Supporting: Criteria exceeded in > 25 percent of measurements.

- - - This guidance establishes a minimum baseline approach; should States have more restrictive criteria, these may be used in place of EPA's criteria. Please indicate when this is the case.

APPENDIX B: MAKING USE SUPPORT DETERMINATIONS

3.3.2 Bathing Area Closure Data

- A. Fully Supporting: No bathing area closures or restrictions in effect during reporting period.
- B. Partially Supporting: On average, one bathing area closure per year of less than 1 week's duration.
- C. Not Supporting: On average, one bathing area closure per year of greater than 1 week's duration, or more than one bathing area closure per year.

3.4 Fish Consumption Use

3.4.1 Fish/Shellfish Consumption Advisory Data

- A. Fully Supporting: No fish/shellfish advisories or bans are in effect.
- B. Partially Supporting: "Restricted consumption" fish advisory or ban in effect for general population or a subpopulation that could be at potentially greater risk (e.g., pregnant women, children). Restricted consumption is defined as limits on the number of meals or size of meals consumed per unit time for one or more fish/shellfish species.
- C. Not Supporting: "No consumption" fish/shellfish advisory or ban in effect for general population, or a subpopulation that could be at potentially greater risk, for one or more fish species; commercial fishing/shellfishing ban in effect.

4. MAKING USE SUPPORT DECISIONS USING EVALUATIVE DATA

Evaluative assessments occur where there are no site-specific ambient data. Such assessments are based on, for example, land use, location of sources, substantiated citizen complaints, volunteer-collected data, noncalibrated/verified predictive models using estimated inputs, etc. See Appendix C for a list of types of evaluative assessments from the Waterbody System. Appendix C also lists data types that may or may not be considered evaluative data by a State (quality-assured chemical, biological, and bacteriological data collected by volunteers; discharger self-monitoring data).

4.1 All Uses--Evaluative Assessment

- A. Fully Supporting: No point or nonpoint sources are present that could interfere with the use, or sources are present but information indicates that uses are fully attained. Criteria attainment predicted.
- B. Partially Supporting: Sources are present and information indicates uses are partially supported or there is uncertainty about use support. Substantiated complaints on record.
- C. Not Supporting: Sources are present and information clearly indicates use not supported. Criteria exceedances predicted.

5. ADDITIONAL CONSIDERATIONS FOR LAKES

Guidance is needed to distinguish between use support assessments in lakes and in rivers, since certain types of commonly collected chemical data may be of little value in making use support determinations in lakes and since States tend not to conduct extensive chemical monitoring in lakes.

State lake managers should address a broad array of parameters in making lake use support decisions. Many of these parameters may not have specific criteria (e.g., algal blooms, growth of nuisance weeds) but have important effects on lake uses. Many are also indicators of the level of lake eutrophication.

Lake resources vary regionally, even within States, due to variations in geology, vegetation, hydrology, and land use. Therefore, regional patterns of lake water quality, morphometry (physical characteristics such as size, shape, and depth), and watershed characteristics should ideally be defined based on comparison to natural conditions using an ecoregion approach. The State can then set reasonable goals and criteria for a variety of parameters (see references for further information). These regional patterns apply to natural lakes only.

5.1. Recreation Use - Lakes

5.1.1 Trophic Status

Trophic status is traditionally measured using data on total phosphorus, chlorophyll *a*, and secchi transparency. As mentioned above, comparison of trophic conditions to natural, ecoregion-specific standards allows the best use of this measure.

In this context, user perception surveys can be a useful adjunct to trophic status measures in defining recreational use support. Heiskary and Walker (1988) and Smeltzer and Heiskary (1990) offer a basis for linking trophic

APPENDIX B: MAKING USE SUPPORT DETERMINATIONS

status measures with user perception information. This can provide a basis for categorizing use support based on trophic status data. If user perception data are not collected in the State, extrapolations using data from another State, i.e., best professional judgment, might provide the opportunity to characterize recreational use support in a similar fashion.

5.1.2 Pathogens

States should consider pathogen data in determining support of recreational uses. Guidelines in Section 3.3 also apply to lakes.

5.1.3 Additional Parameters

In addition to trophic status and pathogens, States should consider the following parameters in determining support of recreational uses:

- Frequency/extent of algal blooms, surface scums and mats, or periphyton growth
- Turbidity (reduction of water clarity due to suspended solids)
- Lake bottom siltation (reduction of water depth)
- Extent of nuisance macrophyte growth (noxious aquatic plants)
- Aesthetics.

5.2 Aquatic Life Use - Lakes

5.2.1 Toxicants and Conventional

If available, States should consider data on toxicants and conventionals in making aquatic life use support determinations. Guidelines in Section 2.1 and 3.1 also apply to lakes.

States should discuss their interpretation of dissolved oxygen, pH, and temperature standards for both epilimnetic and hypolimnetic waters.

5.2.2 Additional Parameters

In addition, States should consider the following parameters in determining support of aquatic life uses:

- Turbidity
- Lake bottom siltation
- Exotic species.

APPENDIX B: MAKING USE SUPPORT DETERMINATIONS

For **Drinking Water** and **Fish Consumption** uses, States should follow the guidelines in Sections 3.2 and 3.4, respectively.

6. GUIDELINES FOR ASSESSING OVERALL USE SUPPORT

In assessing waterbodies with multiple uses, States should follow previously established EPA guidelines. Specifically:

- Fully Supporting Overall Use = All uses are fully supported.
- Partially Supporting Overall Use = One or more uses are partially supported and remaining uses are fully supported.
- Not Supporting Overall Use = One or more uses are not supported.

7. REFERENCES

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APPENDIX B: MAKING USE SUPPORT DETERMINATIONS

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APPENDIX C

KEY TERMS AND DEFINITIONS

1. Assessed Waters

"Assessed waters" are those waterbodies for which the State is able to make use support decisions based on actual information. Such waters are not limited to waters that have been directly monitored -- it is appropriate in many cases to make judgments based on other information. "Assessed waters" should also include waters assessed prior to the current reporting period if the State believes that the assessment conclusions are still valid.

EPA encourages States to report on all waters for which a reasonable judgment can be made. In most States there are waters for which ambient monitoring is done infrequently or not at all. In the past, many States have not reported on those waters. A State should include such waters in the 305(b) process if the State has a reasonable basis for evaluation. To encourage reporting on more waters, and to distinguish between assessment bases, the term "total assessed waters" is subdivided into two categories.

- "Evaluated waters" are those waterbodies for which the use support decision is based on information other than current site-specific ambient data, such as data on land use, location of sources, predictive modeling using estimated input variables, and surveys of fish and game biologists. *As a general guide*, if an assessment is based on older ambient data (e.g., older than 5 years), the State should also consider it "evaluated."
- "Monitored waters" are those waterbodies for which the use support decision is principally based on current site-specific ambient data believed to accurately portray water quality conditions. Waters with data from integrated intensive surveys and biological monitoring and biosurveys should be included in this category, along with waters monitored by fixed station chemical/physical monitoring. Waters with fixed station chemical/physical monitoring should be monitored on a quarterly or more frequent basis to be considered "monitored."

In addition, as general guidance, EPA recommends that data from a single monitoring station not be used to generate a monitored assessment of an entire watershed. Rather, a monitoring station can be considered representative of a waterbody for that distance upstream and/or

APPENDIX C: KEY TERMS AND DEFINITIONS

downstream in which there are no significant influences to the waterbody that might tend to change water quality within the zone represented by the monitoring station. A significant influence can be a point or nonpoint source of pollution or a major change in watershed drainage characteristics such as land use, tributary influences, or significant hydrological modifications (such as channelization).

Table C-1 provides specific assessment type categories for use by States that serve to better define evaluated versus monitored assessments.

States may use some flexibility in applying these guidelines. For example:

- For the 800 series of codes, if rigorous quality assurance/quality control procedures have been applied to State-managed or State-approved volunteer monitoring programs, waters sampled under these programs could be considered monitored. As a general rule, quality-assured programs are those that have approved Quality Assurance Program Plans, conduct intensive volunteer training, and use EPA-approved methods of sampling and analysis. Data from quality-assured citizen monitoring programs and self-monitoring programs are generally considered as monitored data. However, a State may use its discretion in making an Assessment Category determination of evaluated versus monitored.
- If older ambient data exist for high-quality waters located in remote areas with no known sources, and if those data are believed to accurately portray water quality conditions, those waters could be considered monitored.

If both monitoring and evaluative data are used in making a use support decision, the State may cite whichever assessment category it feels is most defensible. In its methodology section, the State should discuss its use of these assessment categories.

2. Definitions for Fish Advisories and Bans

- a. Restricted consumption fish advisory or ban for a subpopulation:

Advises restricted consumption (e.g., limited number of meals or size of meals per unit time) of fish or shellfish species by a *subpopulation* that could be at potentially greater risk (e.g., pregnant women, nursing mothers, or children).

- b. Restricted consumption fish advisory or ban, general population:

Advises restricted consumption (e.g., a limited number of meals or size of meals per unit time) of fish or shellfish species by the *general population*.

Table C-1. Assessment Type Codes from the Waterbody System

Evaluated Assessments

- 100 Qualitative (evaluated) assessment--unspecified**
- 110 Information from local residents
- 120 Surveys of fish and game biologists/other professionals
- 130 Land use information and location of sources
- 140 Incidence of spills and /or fish kills
- 150 Monitoring data that are more than 5 years old
(See 800 category)
- 170 Best professional judgment
- 180 Screening models (desktop models; models are not calibrated or verified)

Monitored Assessments

- 200 Chemical/physical monitoring**
 - 210 Fixed station chemical/physical monitoring, conventional pollutants only
 - 220 Non-fixed station chemical/physical monitoring, conventional pollutants only
 - 230 Fixed station chemical/physical monitoring, conventional plus toxic pollutants
 - 240 Non-fixed station chemical physical monitoring, conventional plus toxic pollutants
 - 250 Chemical monitoring of sediments
 - 260 Fish tissue analysis

 - 300 Biological monitoring**
 - 310 Ecological/habitat surveys
 - 320 Benthic macroinvertebrate surveys
 - 330 Fish surveys
 - 340 Primary producer surveys (phytoplankton, periphyton, and/or macrophyton)
 - 350 Fixed station biological monitoring

 - 400 Bacteriological monitoring**
 - 410 Shellfish surveys
 - 420 Water column surveys (e.g., fecal coliform)
 - 430 Sediment analysis

 - 500 Toxicity testing**
 - 510 Effluent toxicity testing, acute
 - 520 Effluent toxicity testing, chronic
 - 530 Ambient toxicity testing, acute
 - 540 Ambient toxicity testing, chronic
 - 550 Toxicity testing of sediments
-

Table C-1. (continued)

600	Modeling
610	Calibrated models (calibration data are less than 5 years old)
700	Integrated intensive survey (field work exceeds one 24-hour period and multiple media are sampled)
710	Combined sampling of water column, sediment, and biota for chemical analysis
720	Biosurveys of multiple taxonomic groups (e.g., fish, invertebrates, algae)
Assessments Based on Data from Other Sources	
800	Assessments based on data from other sources
810	Chemical/physical monitoring data by quality-assured volunteer program
820	Benthic macroinvertebrate surveys by quality-assured volunteer program
830	Bacteriological water column sampling by quality-assured volunteer program
840	Discharger self-monitoring data (effluent)
850	Discharger self-monitoring data (ambient)
860	Monitoring data collected by other agencies or organizations (use the assessment comment field to list other agencies)
Discrepancy in Aquatic Life Assessment Results	
900	Discrepancy in Aquatic Life Assessment Results
910	Discrepancy among different data types; aquatic life assessment is based on physical/chemical data
920	Discrepancy among different data types; aquatic life assessment is based on biological/habitat data
930	Discrepancy among different data types; aquatic life assessment is based on toxicity testing data
940	Discrepancy among different data types; aquatic life assessment is based on qualitative (evaluated) assessment data

- c. No consumption fish advisory or ban for a subpopulation:

Advises against consumption of fish or shellfish species by a *subpopulation* that could be at potentially greater risk (e.g., pregnant women, nursing mothers or children).

- d. "No consumption" fish advisory or ban, general population:

Advises against consumption of fish or shellfish species by the *general population*.

- e. Commercial fishing ban:

Prohibits commercial fishing, commercial harvesting, and/or the sale of fish and shellfish.

3. Monitored for Toxicants

Significant public concern centers on contamination of water resources by toxic constituents. Although contamination may not be likely for many waters, it is important to report on the extent that potential contamination is being examined.

Waters are "monitored for toxicants" if ambient monitoring information is collected that is capable of indicating the presence of toxic substances. This measure includes waters so monitored but for which no toxicants were found. The actual data required will vary according to potential exposure routes. For example, where a water is not used as a drinking water but is fished, a bioassessment or ambient toxicity with tissue residue analysis is considered sufficient to detect contamination by toxicants. For reporting, waters monitored for toxicants is a subset of waters monitored (i.e., those waters are counted in both categories).

4. Threatened Waters

"Threatened waters" refers to those waters that *fully support their designated uses* but that may not fully support uses in the future (unless pollution control action is taken) because of anticipated sources or adverse pollution trends. These waters should be a separate category from waters fully supporting uses. States should use this category to describe waters for which actual monitoring or evaluative data indicate an apparent declining ~~water quality trend (i.e., water quality conditions have deteriorated,~~ compared to earlier assessments, but the waters still support uses). States may also choose to include waters for which monitoring or evaluative data indicate potential water quality problems requiring additional data or verification.

5. Major/Moderate/Minor Contribution to Impairment

Part III of these Guidelines (Tables 5 and 6) requests determination of the relative contribution to impairment of causes and sources of pollution. As guidelines in determining relative contribution, States may consider the following:

- **Major contribution:** A cause/source makes a major contribution to impairment if it is the only one responsible for less than full support or if it predominates over others.
- **Moderate contribution:** A cause/source makes a moderate contribution to impairment if it is one of multiple causes/sources responsible for less than full support and none predominate.
- **Minor contribution:** A cause/source has minor contribution to impairment if it is one of multiple causes/sources responsible for less than full support and others predominate.

6. Causes and Sources

Causes are those pollutants or other stressors that contribute to the actual or threatened impairment of designated uses in a waterbody. Table C-2 is a list of causes from the EPA Waterbody System (WBS). States can also add their own codes to WBS to track additional causes. For example, some States have added codes under Code 500--Metals, to track specific metals such as mercury and copper. If a State chooses to add cause codes to WBS, the data system can still be used to generate 305(b) Report Table 5, "Total Sizes of Waters Not Fully Supporting Uses Affected by Various Cause Categories." *To use the WBS to generate this table, enter a total size for each major category of causes (e.g., 0500--Metals or 0200--Pesticides).* This is necessary because there may be overlap among the subcategories of causes. For example, 5 miles of a waterbody may be impacted by copper and 7 miles by zinc, but the total size impacted by "metals" may be 10 miles due to partial overlap of the specific causes. Simple addition of the sizes impacted by the specific causes (i.e., 12 miles) would not be accurate in this case.

Sources are the activities or facilities that contribute pollutants or stressors resulting in impairment of designated uses in a waterbody. Table C-3 lists source codes from the WBS. States can also add their own source codes to WBS. WBS can be used to generate 305(b) Report Table 6, "Total Sizes of Waters Not Fully Supporting Uses Affected by Various Source Categories." *However, to use the WBS to generate this table, enter a total size for each major category of sources (i.e., the bold categories in Table C-3 such as 1000--Agriculture and 2000--Silviculture).* This is necessary because there may be overlap among the subcategories of sources. For example, 5 miles

APPENDIX C: KEY TERMS AND DEFINITIONS

of a stream may be impaired by nonirrigated crop production and 2 miles by pastureland, but the total size impacted by "Agriculture" may range from 5 to 7 miles depending on the amount of overlap of impacted areas. Simple addition of the sizes impacted by more detailed sources may not be accurate in such cases.

WBS users should link causes with sources for a waterbody whenever possible. WBS contains a special cause/source link field for this purpose. Linked cause/source data are very important for producing the standard 305(b) report tables and for answering management questions from State WBS users. For example, the question "Which waterbodies are not supporting uses due to nutrients from agricultural runoff?" cannot be answered if the cause/source link field is not used. See also the end of Part III Chapter 3 of these Guidelines.

APPENDIX C: KEY TERMS AND DEFINITIONS

Table C-2. Cause Codes from the Waterbody System

0000	Cause Unknown	1300	Salinity/Total Dissolved
0100	Unknown Toxicity		Solids/Chlorides
0200	Pesticides	1400	Thermal Modifications
0300	Priority Organics	1400	Flow Alterations
0400	Nonpriority Organics	1600	Other Habitat Alterations
0500	Metals	1700	Pathogens
0600	Ammonia (unionized)	1800	Radiation
0700	Chlorine	1900	Oil and Grease
0800	Other Inorganics	2000	Taste and Odor
0900	Nutrients	2100	Suspended Solids
1000	pH	2200	Noxious Aquatic Plants
1100	Siltation	2300	Filling and Draining
1200	Organic	2400	Total Toxics
	Enrichment\Low	2500	Turbidity
	Dissolved Oxygen	2600	Exotic Species

NOTE: In addition to the above, WBS users can enter their own customized cause codes.

Table C-3. Source Codes from the Waterbody System

0100	Industrial Point Sources
0110	Major Industrial Point Sources
0120	Minor Industrial Point Sources
0200	Municipal Point Sources
0210	Major Municipal Point Sources
0220	Minor Municipal Point Sources
0230	Package Plants (Small Flows)
0400	Combined Sewer Overflow
0900	Domestic Wastewater Lagoon
1000	Agriculture
1100	Nonirrigated Crop Production
1200	Irrigated Crop Production
1300	Specialty Crop Production
1400	Pastureland
1500	Rangeland
1600	Feedlots (Confined Animal Feeding Operations)
1700	Aquaculture
1800	Animal Holding/Management Area
1900	Manure Lagoons
2000	Silviculture
2100	Harvesting, Restoration, Residue Management
2200	Forest Management
2300	Logging Road Construction/Maintenance
3000	Construction
3100	Highway/Road/Bridge Construction
3200	Land Development
4000	Urban Runoff/Storm Sewers
4100	Nonindustrial Permitted
4200	Industrial Permitted
4300	Other Urban Runoff

Table C-3. Source Codes from the Waterbody System (continued)

5000	Resource Extraction
5100	Surface Mining
5200	Subsurface Mining
5300	Placer Mining
5400	Dredge Mining
5500	Petroleum Activities
5600	Mill tailings
5700	Mine Tailings
5800	Acid Mine Drainage
6000	Land Disposal
6100	Sludge
6200	Wastewater
6300	Landfills
6400	Industrial Land Treatment
6500	Onsite Wastewater Systems (Septic Tanks)
6600	Hazardous Waste
6700	Septage Disposal
7000	Hydromodification/Habitat Modification
7100	Channelization
7200	Dredging
7300	Dam Construction
7400	Flow Regulations/Modification
7500	Bridge Construction
7600	Removal of Riparian Vegetation
7700	Streambank Modification/Destabilization
7800	Drainage/Filling of Wetlands
7900	Marinas
8000	Other
8100	Atmospheric Deposition
8200	Waste Storage/Storage Tank Leaks
8300	Highway Maintenance and Runoff
8400	Spills
8600	Contaminated Sediments
8600	Natural Sources
8700	Recreational Activities
8800	Upstream Impoundment

Table C-3. Source Codes from the Waterbody System (continued)

8900	Salt Storage Sites
8910	Groundwater Loadings
8920	Groundwater Withdrawal

9000	Unknown Source
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Note: In addition to the above, WBS users can enter their own customized source codes.

APPENDIX D

DATA SOURCES FOR 305(b) ASSESSMENTS

The main purpose of this appendix is to identify Federal data sources that may be useful for assessing use support in State waterbodies, including sources that may not be commonly used by State water quality agencies.

The sources discussed below are Federal and nongovernmental data sources; States will find additional data available from such State agencies as fish and wildlife agencies, State planning offices, departments of health, etc.

D.1 EPA Databases

Table D-1 lists EPA databases that may prove useful for assessing use support in State waterbodies. States can access each of these systems through EPA's National Computer Center mainframe computer. The national data systems in Table D-1 vary in data completeness and data quality; a State should evaluate such characteristics for their data before a system is used for assessing use support. The most complete and reliable national data systems tend to be those in which the State regularly updates information (e.g., STORET, the WBS, and the Permit Compliance System (PCS) in many States), and for which rigorous quality assurance features have been incorporated (e.g., ODES). Most of the information in Table D-1 is taken from the *Office of Water Environmental and Program Information Compendium* FY92, EPA 800-B92-001.

EPA's Assessment and Watershed Protection Division will distribute Version 3.1 of the WBS shortly after issuing these *Guidelines*. EPA specifically designed the WBS to store use support assessments for individual waterbodies and generate summary information requested in this guidance. The WBS differs from other databases in that the WBS does not contain raw data. Instead, the WBS contains use support assessment information resulting from analysis of the raw monitoring data from the States.

D.2 Other Data Sources

Table D-2 lists sources of information available from Federal agencies and other organizations outside EPA. Many of these sources are readily available but may not be used by State water quality programs. Many State water

APPENDIX D: DATA SOURCES FOR 305(b) ASSESSMENTS

quality agencies rely on a combination of EPA data systems and their own systems for acquiring water quality data. Reliable data on rural sources are especially difficult to obtain in many States. The best information often comes from State departments of agriculture, which compile county statistics annually and make them available relatively quickly (e.g., data on crop and livestock production). Data on crop cover, agricultural BMPs, and animal units are typically available only as county summaries, although hard copy files and maps showing exact locations may be available at the Soil and Water Conservation District level.

Data collected and analyzed by agencies of the U.S. Department of the Interior (DOI) may be of special interest to State water quality agencies. Several DOI programs as listed in Table D-2. The Water Resources Division of the U.S. Geological Survey (USGS) coordinates USGS databases through its National Water Data Exchange (NAWDEX) Program Office. For more information, contact the local NAWDEX Assistance Center in the appropriate USGS Water Resources District Office, or call Dr. James S. Burton, Chief of the national NAWDEX Program Office, at (703) 648-5684.

The DOI's Fish and Wildlife Service has many relevant monitoring and assessment programs including the National Wetlands Inventory, the National Contaminant Biomonitoring Program, the Biomonitoring of Environmental Status and Trends (BEST) Program, and the National Irrigation Water Quality Program. Table D-2 gives brief descriptions and contacts.

The National Oceanic and Atmospheric Administration, through its National Status and Trends Program, assesses the levels of 70 organic chemicals and trace elements in bottom-dwelling fish, sediments and mollusks at more than 300 sites throughout the United States. Table D-2 presents some major components of the Program and contacts.

APPENDIX D: DATA SOURCES FOR 305(b) ASSESSMENTS

Table D-1. EPA Data Systems Containing Water Information

Data System	Description	Primary Function	Contact
Waterbody System (WBS) EPA, Office of Wetlands, Oceans, and Watersheds (OWOW)	Database of assessment information drawn from CWA 305(b) activities	Provides waterbody-specific information on pollution causes and sources, use impairments, and status of TMDL development	John Clifford, OWOW (202) 260-3667
Reach File EPA, OWOW	Hydrologic georeferencing and routing system based on USGS digital line graph traces	Can integrate many databases having locational information on water quality conditions or pollutant causes	John Clifford, OWOW (202) 260-3667
STORET Water Quality System EPA, OWOW	Data analysis tool for chemical monitoring data from surface and groundwater sites. Also capabilities to store sediment and fish tissue data	Major source of raw ambient data for water quality assessments	Robert King, OWOW (202) 260-7028
STORET Biological System (BIOS) EPA, OWOW	A special component of STORET for storing information on biological assessments	Simplifies storage and analysis of biological data or metrics, with links to other EPA data files	Robert King, OWOW (202) 260-7028
Ocean Data Evaluation System (ODES) EPA, OWOW	Database and analysis system for marine and near coastal monitoring information	Permit tracking system for NPDES discharges to oceans and estuaries and for ocean dumping programs	Robert King, OWOW (202) 260-7028
Current Fish Consumption Advisories and Bans EPA, Office of Science and Technology (OST)	National database of fish/shellfish consumption advisories and bans from State 305(b) reports and other sources	Identifies waterbodies, species affected by advisories and bans and the problem pollutants	Jeff Bigler, OST (202) 260-1305
Clean Lakes System EPA, OWOW	Data analysis system for significant publicly owned lakes under CWA Section 314 program	Provides data integration using number of EPA data files with mapping capabilities using the Reach File	Susan Ratcliffe, OWOW (202) 260-5404

APPENDIX D: DATA SOURCES FOR 305(b) ASSESSMENTS

Table D-1. EPA Data Systems Containing Water Information

Data System	Description	Primary Function	Contact
Permit Compliance System (PCS) EPA, Office of Wastewater Enforcement and Compliance (OWEC)	Locations and discharge characteristics for about 7,100 major and 56,300 minor NPDES facilities	Compliance status tracking system for major dischargers	Dela Ng, OWEC (202) 260-8313
Industrial Facilities Discharge File (IFD) EPA, Office of Water	Information for about 120,000 NPDES dischargers; also Superfund sites	Locations, flows and receiving waterbodies, for industrial discharges and POTWs	Robert King, OWOW (202) 260-7028
Facility Index Systems (FINDS) EPA, Office of Information Resources Management	Basic information on over 300,000 facilities regulated by EPA	Starting point for finding regulated facilities in a given area where more detailed information available through other data systems like PCS, TRIS, AIRS, or RCRA	Joe Anderson, OIRM (703) 557-3091
Toxic Chemical Release Inventory System (TRIS) EPA, Office of Pesticides and Toxic Substances	Database of estimated and measured releases by industries of about 300 toxic chemicals to all environmental media	Inventory of toxic chemical releases with references to receiving waters and methods of waste treatment	Ruby Boyd, OPTS (202) 260-8387
Drinking Water Supply File (DWS) EPA, OWOW	Information on 7,650 public and community surface water supplies	Data on waterbody, flow, and locations of mainly surface water intakes	Robert King, OWOW (202) 260-7028
Federal Reporting Data System (FRDS) EPA, Office of Ground Water and Drinking Water (OGWDW)	Information about public supplies	Detailed data on compliance with Safe Drinking Water Act requirements including monitoring	Larry Weiner, OGWDW (202) 260-2799
Gage File EPA, OWOW	Information on some 36,000 stream gage locations	Summaries of mean annual and critical low flows and other data collected. Sites indexed to Reach File	Robert King, OWOW (202) 260-7028

APPENDIX D: DATA SOURCES FOR 305(b) ASSESSMENTS

Table D-1. EPA Data Systems Containing Water Information

Data System	Description	Primary Function	Contact
City and County Files EPA, OWOW	Location information and census data for 53,000 municipalities and all counties	Background data with lists of streams for each city, census population, county land/water area (coastal counties)	Robert King, OWOW (202) 260-7028
Dam File EPA, OWOW	Information on locations of 68,000 damsites and associated reservoirs	Information on ownership, uses of reservoir, size, and stream reach	Robert King, OWOW (202) 260-7028
USGS Land Use and Data Analysis (LUDA) Database EPA, Office of Information Resources Management (OIRM)	USGS database of land use from the 1970s; available through GRIDS on NCC	Contains locations of approximately 40 land use types for entire United States	Robert Pease, OIRM (703) 557-3018
Geographic Resources Information and Data System (GRIDS) EPA, OIRM	A repository for major GIS data layers along with a selection of GIS applications on the EPA NCC mainframe	Provides access to major GIS products from the USGS, Census Bureau and EPA	Robert Pease, OIRM (703) 551-3018

APPENDIX D: DATA SOURCES FOR 305(b) ASSESSMENTS

Table D-2. Other Useful Data Sources

Data System	Description	Primary Functions	Contacts
Water Data Storage and Retrieval System (WATSTORE) DOI, USGS, Water Resources Division	Database of water quality data collected at 5,000 stations and peak flow and daily flow data collected at 8,000 stations.	Store data collected by USGS, as well as cooperating agencies in DOI and the Corps of Engineers; good source of ground-water data.	Dr. James S. Burton, Chief USGS Water Resources Division, NAWDEX Program Office (703) 648-5684
National Rivers Inventory, DOI, National Park Service	List of over 1,500 river segments (approximately 63,000 miles).	Identifies waters with potential for National Wild and Scenic Rivers status.	Bern Collins (202) 343-3765 OR Tracy Miller National Park Service (202) 343-3663
National Wetlands Inventory, DOI, Fish and Wildlife Service	Computerized mapping scheme for entire United States.	Shows locations of vegetative community types using a FWS classification scheme.	David Dall DOI, Fish and Wildlife Service (202) 358-2201
Emergency Wetlands Resources Act Regional Concept Plans, DOI, Fish and Wildlife Service	Descriptions of priority wetland sites according to value and function prepared by each of the 7 FWS regional offices. Based mainly on State SCORP reports.	To prioritize Federal and State efforts related to the Emergency Wetlands Resources Act of 1986 to promote acquisition or other protection measures for major wetland tracts.	David Dall DOI, Fish and Wildlife Service (202) 358-2201
National Contaminant Biomonitoring Program, DOI, Fish and Wildlife Service	Fish and bird tissue samples collected between 1965 and 1988 for chlorinated pesticides, PCBs, and metals	Fish monitoring done to evaluate the effects of toxicants at 110 freshwater sites in specific watersheds and the Great Lakes.	Branch Chief, Field Research, National Fisheries Research Center (314) 875-5399

APPENDIX D: DATA SOURCES FOR 305(b) ASSESSMENTS

Table D-2. Other Useful Data Sources

Data System	Description	Primary Functions	Contacts
National Irrigation Water Quality Program, DOI, Fish and Wildlife Service	Physical, chemical and biological data collected at about 200 areas consisting of about 600 projects.	To identify and address irrigation-induced contamination on DOI irrigation and drainage facilities, National Wildlife Refuges, and other wildlife management areas .	Chief, Division of Environmental Contaminants (703) 358-2148
Biomonitoring of Environmental Status and Trends (BEST) Program, DOI, Fish and Wildlife Service	Data collection to address effects on migratory birds, endangered species, anadromous fish, certain marine mammals, and habitats. Pilot projects through 1995; full implementation in 1996.	Monitor and assess environmental contamination effects to fish and wildlife and their habitats, on and off National Wildlife Refuges.	Chief, Division of Environmental Contaminants (703) 358-2148
Multi-State Fish and Wildlife Information Systems Project, DOI, Fish and Wildlife Service	Database of life history, habitat needs, and environmental tolerances for inland and marine fish and wildlife.	Central database to facilitate review of permits, regulatory requirements, and ecological preservation or restoration programs.	Rick Bennett (703) 358-1718 DOI, Fish and Wildlife Service OR Andy Loftus (202) 898-0770 Sport Fishing Institute
National Gap Analysis Project, DOI, Fish and Wildlife Service	Application of GIS technology to prioritize habitat protection needs for specific fish or wildlife species and for overall species protection.	Provides way to identify habitat protection needs based on identification of "gaps" when comparing existing protected areas with regional habitat distributions.	Dr. Ted LaRoe (703) 358-2171 DOI, Fish and Wildlife Service

APPENDIX D: DATA SOURCES FOR 305(b) ASSESSMENTS

Table D-2. Other Useful Data Sources

Data System	Description	Primary Functions	Contacts
Rivers and Trails Conservation Assistance Program, DOI, National Park Service	Program supports development and updates to Statewide river inventories or evaluation of particular river corridors or greenways.	Supports Federal and State scenic river programs and a variety of greenway and open space protection initiatives.	Samuel Stokes (202) 343-3779 DOI, National Park Service
American Rivers Outstanding Rivers List	Database on 15,000 river segments possessing outstanding scenic, recreational and ecological attributes.	Assembles information from National Park Service river surveys, Northwest Power Planning Council's Protected Areas Program, Nature Conservancy Priority Aquatic Sites and other major sources.	Susie Wilkins (202) 547-6900 Outstanding Rivers List
Recreation Information Management System, USDA, Forest Service	Database of recreational facilities and areas in National Forest System.	Contains data on types of recreation, visitor days, and participation by activity.	USDA, Forest Service (202) 205-1706
Biological and Conservation Data System, The Nature Conservancy	Listing by States of rare species and key habitat areas.	For identifying waters important for rare plant and animal species protection.	The Nature Conservancy (703) 841-8781
National Water Quality Technology Development Staff, USDA, Soil Conservation Service	Four regional centers provide database, modeling, and GIS technology assistance to promote former President Bush's Water Quality Initiative, the Farm Bill, and other programs.	Will provide convenient access to soil survey data and a variety of models (e.g., AGNPS) for use with GIS systems to support USDA HUA projects and similar initiatives.	Jackie Diggs USDA, Soil Conservation Service (202) 720-0136

APPENDIX D: DATA SOURCES FOR 305(b) ASSESSMENTS

Table D-2. Other Useful Data Sources

Data System	Description	Primary Functions	Contacts
Benthic Surveillance Project, National Status and Trends Program, Department of Commerce, NOAA	Sampling at 79 estuarine sites for PCBs, PAHs, chlorinated pesticides, butyltins, sewage tracers, and trace elements.	Determine concentrations of toxic chemicals in sediments and bottom-dwelling fish.	NS&T Program National Ocean Service, NOAA (301) 713-3028
Mussell Watch Project, National Status and Trends Program, NOAA	Mussels and oysters collected annually at about 240 sites and analyzed for same parameters as the Benthic Surveillance Project.	To determine concentrations of toxic chemicals in mussels and similar bivalve mollusks as "sentinel organisms" in environmental monitoring.	NS&T Program National Ocean Service, NOAA (301) 713-3028
Coastal Contamination Assessments, National Status and Trends Program, NOAA	Quick-reference reports for Long Island Sound, Gulf of Maine, Hudson-Raritan area, Narragansett Bay, and Buzzards Bay reports done or underway.	To identify potential toxicant problems and compare local levels of contamination with national-scale results.	NS&T Program National Ocean Service, NOAA (301) 713-3028
National Estuarine Inventory and Strategic Assessment Program, NOAA	Source of demographic, economic, and natural resource information for 102 Estuarine Drainage Areas.	Provide data to support NOAA initiatives related to the Sea Grant and Coastal Zone Management Programs.	John P. Tolson National Ocean Service, NOAA (301) 713-3000
National Shellfish Register, NOAA	Tracks status of shellfish harvesting areas by State at 5-year intervals (most recent data is from 1990).	Detect trends in shellfish growing waters and the abundance of shellfish resources.	Maureen Warren National Ocean Service, NOAA (301) 713-3000

APPENDIX D: DATA SOURCES FOR 305(b) ASSESSMENTS

Table D-2. Other Useful Data Sources

Data System	Description	Primary Functions	Contacts
Decennial Census Department of Commerce, Bureau of the Census	Major source of information with county-level resolution dealing with population, agriculture, mining, etc.	Available in digitized form and, in conjunction with USGS, in a variety of new map forms. Census of agriculture often provides best available data on crop, livestock, and land use patterns.	Charles D. Jones (301) 763-5180