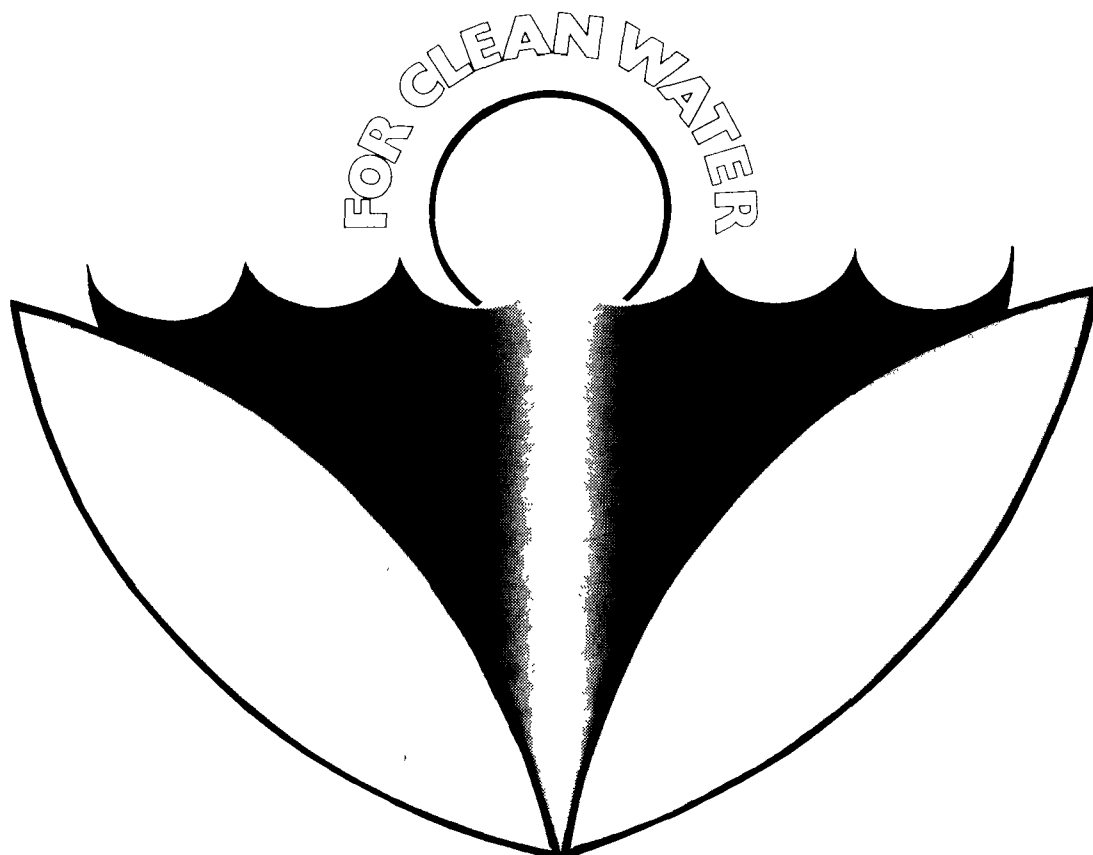




1990 PRELIMINARY DRAFT STRATEGY FOR MUNICIPAL WASTEWATER TREATMENT —PLANNING

000D81100E



PRELIMINARY DRAFT 1990 STRATEGY FOR
MUNICIPAL WASTEWATER TREATMENT

TASK V - PLANNING STRATEGY

OFFICE OF WATER AND WASTE MANAGEMENT
U.S. ENVIRONMENTAL PROTECTION AGENCY

"This paper presents a preliminary draft strategy, proposed by EPA staff, for improving the national municipal wastewater treatment program. EPA is now considering the positions offered here. The document is intended for public review and discussion to assist EPA in developing its final 1990 Strategy."

January 16, 1981

U.S. Environmental Protection Agency
Region V, Library
230 South Dearborn Street
Chicago, Illinois 60604

U.S. Environmental Protection Agency

PREFACE

The proposals presented in the Strategy are the result of both a major effort within the U.S. Environmental Protection Agency and extensive participation on the part of the interested public through meetings and the distribution of relevant issue and background papers prepared by EPA.

The 1990 Strategy was prepared under the guidance of Eckardt C. Beck, Assistant Administrator, Office of Water and Waste Management; James N. Smith, Associate Assistant Administrator, Office of Water and Waste Management; and Henry L. Longest II, Deputy Assistant Administrator, Office of Water Program Operations.

The Chairman of the 1990 Strategy effort within the Agency was Merna Hurd, Associate Assistant Administrator, Office of Water and Waste Management. The Deputy Chairman was Carl Reeverts, Office of Water Program Operations.

The Chairmen of Task V - Planning Strategy were Dave Ziegler, Office of Water Program Operations and Jim Lounsbury, Office of Water Regulations and Standards.

CONTENTS

I.	INTRODUCTION.....	1
	Purpose.....	1
	Background.....	1
	Basic Policy Assumptions.....	2
II.	EXECUTIVE SUMMARY OF PROPOSED STRATEGY.....	3
	Goals and Objectives.....	3
	Strategy Elements.....	3
	Action Plan.....	6
III.	CURRENT PROGRAM DESCRIPTION.....	7
	The Point Source Problem.....	7
	The Nonpoint Source Problem.....	7
	The Intent of the Act.....	10
	Status of EPA's Implementation.....	13
	Issues.....	14
	Basic Program Data.....	14
	Basic Policy Documents.....	14
IV.	MAJOR PROGRAM ISSUES	17
V.	PROPOSED STRATEGY.....	33
	Goals and Objectives.....	33
	Strategy Elements.....	33
VI.	ACTION PLAN.....	47
	APPENDIX.....	55

CHAPTER I

INTRODUCTION

PURPOSE

In carrying out their duties for controlling water pollution, EPA, the States, and other units of government not only build sewage treatment plants, they also perform many other related and equally important tasks, including planning. Planning is a prerequisite for every action to clean up or prevent water pollution.

The purpose of this paper, Task V of the 1990 Construction Grants Strategy, is to define a broad planning and analytical process under the Clean Water Act which will direct the use of pollution control funds for maximum environmental benefit. This process is part of the comprehensive water quality management (WQM) program which includes a wide variety of EPA, State, and local actions.

BACKGROUND

The Background Paper for Task V (draft, October 6, 1980) presents a discussion of the intent of the Act, the status of EPA's implementation of the Act, and key issues which emerge regarding the planning provisions of the Act. The reader should refer to the Background Paper for details.

To summarize, EPA has established an integrated water quality management program, drawing on the provisions of key sections of the Act - 106, 205(g), 208, 303, 314, and others. Two important products of this program are the State problem assessment and the State WQM plan, which consolidate all State, areawide, and local water quality planning into comprehensive Statewide documents.

To identify their problems, States first set water quality standards, which provide benchmarks for gauging water quality problems and evaluating solutions. Then, through the use of monitoring and water quality analysis, the States identify problem receiving waters, pollutants, and sources. The problem assessment process is an iterative process, in which States periodically evaluate water quality standards to make sure they are appropriate for the water body and attainable.

Stemming from the problem assessment, the WQM plan identifies solutions to problems, agencies responsible for those solutions, and necessary financial and institutional arrangements. The planning process varies according to the source and severity of the water quality problem. The overall WQM plan identifies permit conditions for point sources, priorities, and cost-effective treatment options for publicly-owned treatment works, cost-effective nonpoint source controls, tradeoffs between point and nonpoint source control programs, and implementation mechanisms for all sources.

An important contribution of the WQM plan to the construction of sewage treatment works is baseline information for facility planning. The WQM plans include population, waste load, and economic projections for sizing decisions and identify appropriate service areas and management agencies to receive construction grants.

The States are the central managers of the WQM program. To show evidence of good planning and management, they provide EPA with periodic information on their programs and negotiate annual priorities and work programs. Some important outputs of the State management effort are problem assessments, State strategies, and State/EPA Agreements.

BASIC POLICY ASSUMPTIONS

Although this strategy attempts to be objective about options for planning--and its management--under the Clean Water Act, several basic policy assumptions influence the strategy.

First, planning is crucial to the development of efficient solutions to water quality problems. Water quality management plans should stem from problem assessments, should be comprehensive, and should include not only technical solutions to problems, but also fiscal, financial, and institutional solutions.

Second, the States are the key managers and administrators of water quality programs. With guidance and oversight from their EPA Regional Offices, they have latitude to tailor their water quality programs. EPA's role is generally to oversee State action, provide technical and financial assistance, track the expenditure of federal funds, and act as a backstop for States who do not perform adequate planning, management, and enforcement functions.

It is important to note that this paper does not deal in depth with all the aspects of the WQM program. Instead, it focuses on those elements, such as point source planning and water quality standards, which relate directly to construction grants. In its broadest sense, the WQM program encompasses not only point and nonpoint source planning in the States and sub-State agencies, but also the oversight and management of State programs to control, eliminate, and prevent water pollution.

CHAPTER II

EXECUTIVE SUMMARY OF PROPOSED STRATEGY

GOALS AND OBJECTIVES

With respect to construction grants and this 1990 Strategy, the goal of the WQM program is to implement a responsive problem-solving process for municipal sewage treatment which will allow the States to meet the fishable/swimmable goals of the Act, where attainable, by 1990. This problem-solving process will direct available resources to priority projects which have direct, significant impacts on improved water quality.

The following objectives support the goal and represent action areas for EPA and the other participants in the WQM program:

- Emphasize the water quality impacts of construction grants as the basis for priorities; consider nonpoint sources and toxics in setting priorities and awarding grants.
- Modify monitoring programs to identify problems more effectively and to evaluate environmental results.
- Refine water quality standards (WQS), with eventual inclusion of toxics, and incorporate them in State WQM plans; emphasize the attainability of WQS.
- Periodically review program goals; establish within EPA a long-range WQM strategy and improved oversight of State programs.

STRATEGY ELEMENTS

The WQM program has greatly assisted construction grants by establishing WQS and monitoring networks and preparing over 200 initial WQM plans which contain a point source planning framework.

However, the WQM program must improve in several ways to assist the construction grants program. Many of these improvements are already in place in State and EPA Regions. Thus, EPA's intent is to increase the overall national effectiveness of the WQM program to the level of aggressive, well-managed States and Regions.

The Problem-Solving Process

The Act sets up a comprehensive problem-solving process which, when followed, greatly assists EPA and the States in meeting the program goals and objectives stated above. If the construction grants program is to be more responsive to water quality problems, the integrity of the problem-solving process is more important than ever, since it identifies problems and sets water quality priorities.

Problem Identification:

In the area of problem identification, three actions are necessary to assist the construction grants program. EPA and the States must improve their problem assessments to provide the basis for construction grant priorities based on water quality problems. Second, EPA and the States must give more attention to water quality standards attainability and use only attainable standards in planning. Third, the States must improve their monitoring programs to provide crucial data.

Solution Development:

To improve solution development activities related to construction grants, EPA, the States, and local agencies must pay more attention to the potential cost savings associated with point/nonpoint source tradeoffs. States must also become more involved in the fiscal, financial, and institutional aspects of planning for municipal facilities.

EPA is considering redefining secondary treatment to allow some grantees to take advantage of cost savings in design and construction of POTWs. This change would maintain the secondary treatment floor, but reduce the costs of installing the maintaining secondary treatment in certain controlled situations.

EPA will also emphasize the need for States to maintain their WQM plans, which document Statewide solutions to water quality problems and provide for public participation in the planning process. Finally, EPA will provide new guidance on waste load allocations to help States do a better job on these important analyses. In the short run, States should focus waste load allocations on conventional pollutants.

Implementation of Solutions:

The funds which EPA, the States, and others spend on planning and program management should ensure the efficient use of implementation funds. The EPA Regional Offices will make sure implementation efforts are consistent with WQM plans, as the Act requires.

Evaluation:

As it relates to construction grants, evaluation has been weak. Program participants have been frustrated by an inability to demonstrate environmental progress and POTW effectiveness. States should evaluate POTWs on site and, over time, evaluate the aggregate effects of pollution from all the POTWs in the State.

EPA and the States must begin to evaluate environmental results, that is, water quality results, rather than surrogates. Surrogates have diverted attention from the basic purpose of the Act, cleaner waters.

Institutional Roles

The institutional roles that have developed since 1972 have hindered the WQM program's contribution to construction grants. The main adjustments needed are stronger ties between States and local governments on such issues as fiscal and financial planning; further delegation of responsibility and authority to the States for planning and program management; and more direct contact between States and designated areawide agencies.

Resources

To obtain the maximum payoff from the funds available for the WQM program, EPA, the States, and other participants in the program should direct construction grants and program grants to actions which have direct impacts on water quality, and develop more imaginative funding schemes. EPA will delegate more responsibility to the States to make program administration more efficient, consider changing the definition of secondary treatment, and provide the States with improved information on national goals and objectives.

WQM Program Management

In managing the WQM program, three important changes are needed. First, EPA will place increased emphasis on State 305(b) reports and State strategies, since States will use these management documents to identify problems and action plans for meeting water quality goals. Specifically, State strategies should identify waters which are not fishable/swimmable, but for which those uses are attainable, and describe how States will meet fishable/swimmable standards by 1990. Also, the State strategies should explain how the States will complete the construction grants program under two optional scenarios.

Second, EPA will conduct improved oversight of State programs. Third, EPA will maintain a national WQM strategy to identify goals, objectives, and priorities and give meaning to the oversight function.

ACTION PLAN

The Act, the regulations, and EPA guidance set forth a problem-solving process and management framework which are basically sound. Although this strategy will require some regulatory changes and many administrative changes and actions, EPA will not start a major legislative initiative involving the WQM program at this time. The Proposed Strategy, Chapter V, includes a detailed action plan for regulatory and administrative changes.

CHAPTER III

CURRENT PROGRAM DESCRIPTION

This portion of Task V presents information on the types of problems the WQM program addresses, the programs the Congress established to deal with them, EPA's implementation of the Act, and general program data. A Background Paper preceded the development of Task V and explains in detail the intent of the Act, the status of EPA's implementation of the Act, and the issues which arise in the WQM area. (See draft Background Paper, October 6, 1980.)

THE POINT SOURCE PROBLEM

Point sources of pollution involve direct municipal, industrial and commercial discharges to surface or ground waters through "discrete conveyances," e.g., pipes. They also include industrial or commercial discharges into municipal sewer systems, combined sewer overflows, and small and alternative wastewater systems (SAWs).

The Nation has made great progress since 1972 in controlling point source pollution. EPA and the States have issued over 6500 permits, have initiated a program to control underground injection under the Safe Drinking Water Act, and have completed over 2100 sewage treatment plants.

The results of these actions are apparent in lowered biochemical oxygen demand (BOD) and suspended solids entering surface waters, and to some extent, lowered nutrient levels. An example of the dramatic improvement point source controls can bring about is the improvement in dissolved oxygen and turbidity in Lake Erie.

However, many problems still exist in the point source area. POTWs are experiencing severe operations and maintenance problems, often causing them to be out of compliance with their permits. There is still a large backlog of necessary construction related to treatment plants and combined sewer overflows. Point sources - both municipal and industrial - also contribute to toxics problems and ground water contamination problems in some situations.

Figure III.1 provides data on the extent of point source pollution.

THE NONPOINT SOURCE PROBLEM

Nonpoint sources of water pollution include overland runoff to surface waters, percolation of pollutants through the ground into ground water, and pollution of surface water through runoff into separate storm sewers. EPA's highest priority nonpoint source problems are agricultural runoff, urban runoff, and ground water contamination. Other important problems are mining, silviculture, hydrologic modifications, and construction runoff.

FIGURE III.1 EXTENT OF POINT SOURCE POLLUTION

Percentage of Basins Affected* by Type of Point Source

<u>Region (Number of Basins)</u>	<u>Industrial</u>	<u>Municipal</u>	<u>Combined Sewer Overflows</u>
Northeast (40)	95	95	60
Southeast (47)	74	91	17
Great Lakes (41)	80	95	37
North Central (35)	74	86	6
South Central (30)	70	100	0
Southwest (22)	23	64	0
Northwest (22)	55	73	14
Island (9)	89	100	0
Total (246)	72	89	21

* In whole or in part, beneficial
uses of basins denied

Source: EPA National Water Quality Inventory,
1977 Report to Congress, October 1978

FIGURE III.2 EXTENT OF NONPOINT SOURCE POLLUTION

Region (Number of Basins)	Percentage of Basins Affected* by Type of Pollution Problem from Nonpoint Sources									
	Bacteria	Oxygen Depletion	Nutrients	Suspended Solids	Dissolved Solids	pH	Oil & Grease	Toxics	Pesticide	
Northeast (40)	70	53	63	65	10	18	15	33	18	
Southeast (47)	66	74	57	34	4	9	4	11	23	
Great Lakes (41)	51	54	44	56	27	37	20	34	15	
North Central (35)	69	66	63	80	51	20	0	51	37	
South Central (30)	53	43	63	37	70	23	3	47	40	
Southwest (22)	36	14	45	32	68	14	14	27	0	
Northwest (22)	64	18	55	64	14	9	5	32	0	
Islands (9)	89	44	44	100	0	0	0	22	44	
Total (246)	61	51	56	54	30	18	9	32	22	

* In whole or in part, beneficial
use of basin denied

Source: EPA National Water Quality Inventory,
1977 Report to Congress, October 1978

The Nation has made some progress under the Act in nonpoint source control. Several States have passed sediment control ordinances and nonpoint source control cost-sharing programs. Local governments have enacted zoning ordinances to protect water quality and, for the most part, controlled construction runoff. Together, EPA, the States, areawide agencies, and local governments are building a technical and institutional data base on the control of nonpoint sources. We know that nonpoint sources are a serious problem and that much more information and experience on their control is needed.

Taken together, pollution from nonpoint sources is greater than pollution from point sources. As point sources come under control, the ratio will worsen. Thirty-seven States reported recently that they will be unable to meet the "fishable/swimmable" goals of the Act by 1983 because of nonpoint source problems; for example, toxic metals from urban storm runoff.

BOD loads from urban runoff are estimated as greater than, or equal to, loads from POTWs. Sediment loads from human-induced land-disturbing activity are 360 times greater than loads from point sources, and three times the natural background. BOD pollution from nonpoint sources is five times greater than point sources and the natural background. Total nitrogen pollution is four times greater than point sources and three times the natural background. Coliform bacteria from nonpoint sources would be 50 times higher than from point sources, assuming all point sources employed secondary treatment and disinfection or the equivalent.

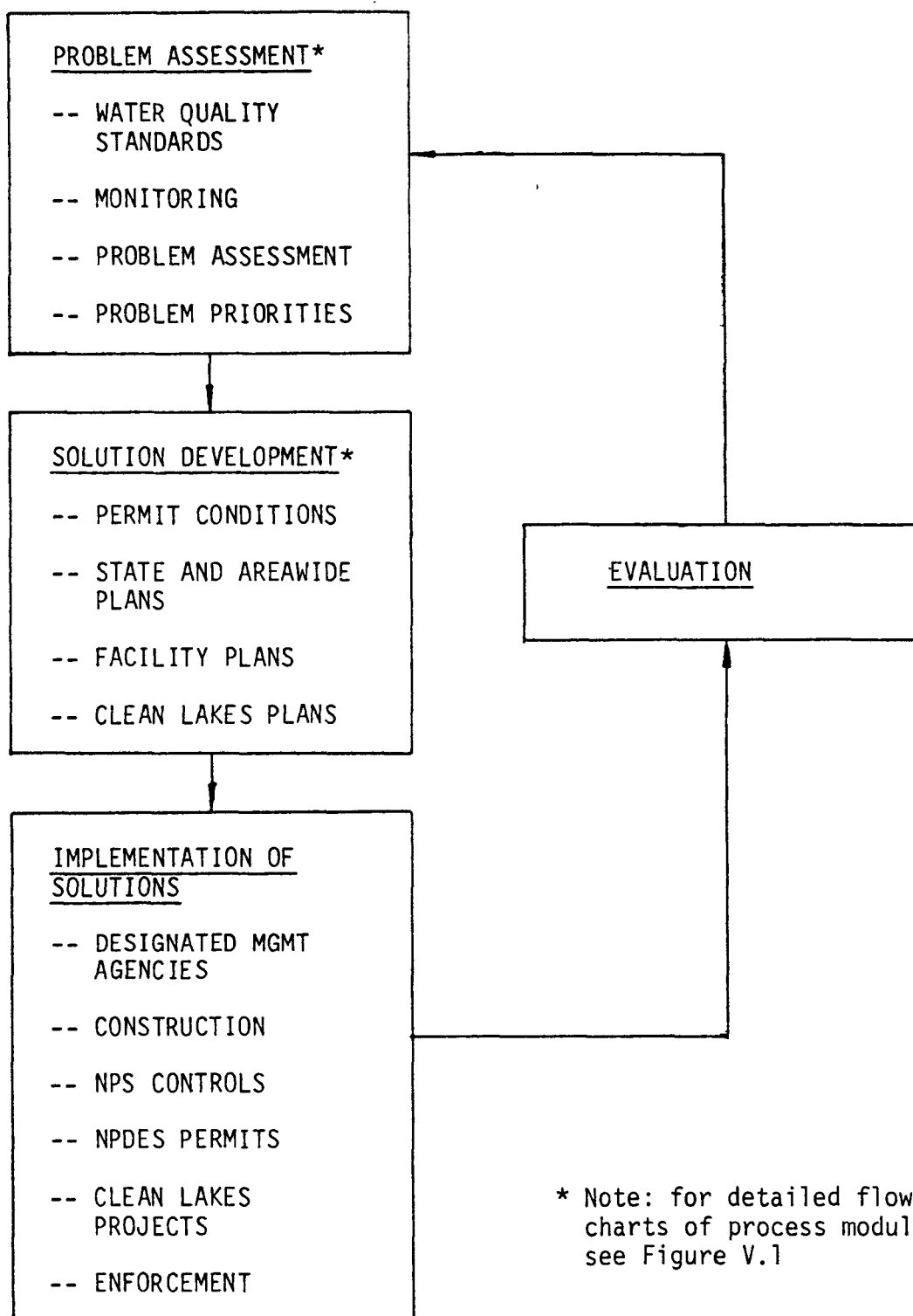
The effects of nonpoint source pollution are widespread. (See Figure III.2.) They have closed beaches, shellfishing areas, and drinking water supplies in coastal areas. Nonpoint sources have created unacceptable levels of toxic chemicals in Great Lakes fish. One of our largest Western cities suffers from bacteria, heavy metals, and nutrients from nonpoint sources in its surface waters which supply both drinking and irrigation water for the area. In the Midwest, nonpoint sources have caused lead and pesticide contamination of major streams. As a Nation, we spend over a half billion dollars a year to remove sediment from harbors, other navigational channels, and reservoirs - much of which could be prevented with nonpoint source controls.

THE INTENT OF THE ACT

The Clean Water Act establishes a process for solving water quality problems. This "problem-solving process" consists of problem definition, development of solutions, implementation of controls, and evaluation. (See Figure III.3.) State WQM plans encompass the problem identification and solution development steps. Specifically, with regard to construction grants, the four steps in the process are as follows:

- Problem definition includes the State process of setting water quality standards, monitoring water quality, identifying situations where desired and attainable uses of the waters are denied by

FIGURE III.3 WQM PROBLEM-SOLVING PROCESS



pollution from municipal facilities, and setting priorities for the development of solutions to POTW problems.

- Solution development takes place through the development of (1) State and areawide WQM plans, which lay out technical, financial, and institutional plans for municipal treatment works, and (2) facility plans, which identify cost-effective treatment processes and lead to plans, specs, and construction. The WQM plans also generally identify permit conditions for municipal treatment works. The Act mandates consistency among these different aspects of solution development.
- Implementation of solutions involves not only the construction of treatment works, but also the designation of management agencies to receive grants, implementation of structural or non-structural nonpoint source controls, and permit issuance and enforcement.
- Evaluation is the last step in the process, providing the feedback necessary to determine whether treatment works, individually and in the aggregate, are meeting their design parameters and the goals of the Act.

One important feature of the 1972 Act (and the 1977 Amendments) was the establishment of base-level technology requirements. The Act requires all municipal dischargers, except certain dischargers to marine waters, to provide a minimum of "Best Practicable Waste Treatment Technology," or secondary treatment. Where necessary to meet attainable water quality standards, the Act requires treatment more stringent than secondary, but secondary treatment is a floor for all POTWs, solving the equity and performance problems apparent in water pollution control programs prior to 1972.

With regard to roles, the Act gave EPA the ultimate responsibility for protecting water quality, but left the States as the primary managers of water quality programs. This was generally in keeping with the State role prior to 1972. EPA's role in implementing the Act is one of management, regulations, and assistance. The States are the key entity, since they administer most clean water programs. The Act established a new role for Regional, or areawide, agencies to perform planning and management from a broad geographical base in complex urban/industrial areas. Local governments also play a critical role under the Act, especially with respect to implementing programs.

The management requirements of the Act are very brief, since it basically leaves the responsibility for clean water on the States. The Act establishes categorical grant programs for State, interstate, areawide, and local agencies to help implement its many provisions and gives the EPA Administrator broad discretion to manage programs and issue regulations and guidance.

STATUS OF EPA'S IMPLEMENTATION

With respect to construction grants, the WQM program has accomplished much, especially in light of the backlog of municipal pollution problems that existed prior to 1972. All States have established water quality standards and monitoring networks, and State and areawide agencies have completed over 200 initial WQM plans. The initial plans include a strong point source planning framework and have resulted in a general understanding of municipal water quality problems.

One 1972 study showed that the cost savings from WQM plans in the municipal treatment area were much larger than the total section 208 appropriations since 1974. Many States, counties, cities, and towns have implemented the municipal recommendations of their WQM plans through the construction of treatment works and the passage of environmental ordinances and financial plans to support them.

However, despite the fact that the WQM program has succeeded in defining the context for construction grants in many EPA Regions and States, implementation of the planning provisions of the Act has also experienced several problems. Perhaps the biggest problem is that - in some States - the WQM plans do not provide adequate data on problems and alternative controls for the States to set water quality-based priorities for POTW construction. Also, problems have arisen in the areas of point source/nonpoint source tradeoffs, the definition of secondary treatment, the use of water quality standards, and other areas. Fortunately, there are realistic solutions to these problems, as the balance of Task V suggests.

Since the Act does not set up a management framework for the WQM program, EPA has done this through its regulations and guidance. The WQM program operates under a five-step management process which includes:

- Continuing State problem assessments
- Annually-updated five-year State strategies
- Annual State/EPA agreements
- Annual detailed work programs
- Program evaluation

Through this management process, the States keep EPA informed on problems, proposed actions, and environmental results of controls. The States also negotiate short and long-term problem-solving priorities with the EPA Regions. As in the problem-solving process, certain problems have occurred within EPA's management of the WQM program, two of the most important being inadequate EPA oversight and vague goals and objectives.

ISSUES

By comparing the intent of the planning provisions of the Act with EPA's implementation, the background paper identified major planning issues which are adversely affecting construction grants. Chapter IV, below, discusses the issues and proposes resolutions for them.

BASIC PROGRAM DATA

Of 225 State and areawide WQM agencies designated by their governors in 1974-76, over 200 of them have State certification and EPA approval of their initial plans. Virtually all of the certifications and approvals have conditions attached, which EPA and the States are now working to satisfy. As mentioned above, the plans are more complete with respect to point source problems than nonpoint source problems. In fact, significant gaps in nonpoint source problem assessment and solution development remain, especially for ground water contamination, urban runoff, and agriculture.

Figure III.4 gives a funding history of categorical grants under the Clean Water Act which support the WQM program. Through section 106 and 208 grants alone, EPA has awarded about \$881 million between 1972 and the present, to State and areawide agencies for planning and management functions. Construction management assistance grants under section 205(g), facility planning grants under section 201, and clean lakes grants under section 314 account for approximately another half billion dollars in funding to the WQM program and the problem-solving process in the same period.

BASIC POLICY DOCUMENTS

See the Appendix for a list of important policy documents which govern the various components of the WQM program. For a more complete list of references, see the Supplemental Guidance for the WQM program, cited in the Appendix.

FIGURE III.4 CWA FUNDING SUMMARY (in millions)

<u>Grant</u>		<u>Authorizations</u>	<u>Appropriations</u>	<u>Obligations</u>
106	FY 72*		15.0	15.0
	73*	60.0	20.0	20.0
	74	75.0	40.0	40.0
	75	75.0	48.5	48.5
	76	0	50.0	50.0
	77	100.0	50.0	50.0
	78	100.0	52.4	52.4
	79	100.0	52.4	52.4
	80	100.0	48.7	48.7
	81	75.0	48.7	
201	FY 73	5,000.0	2,000.0	1,532.0
	74	6,000.0	3,000.0	1,444.4
	75	7,000.0	4,000.0	3,616.2
	76	0	9,000.0	4,813.6
	77	1,480.0	1,480.0	6,663.8
	78	4,500.0	4,500.0	2,300.9
	79	5,000.0	4,200.0	3,871.7
	80	5,000.0	3,400.0	1,765.0
	81	5,000.0	3,304.8	
205(g)	FY 78	92.1	92.1	59.3
	79	85.3	85.3	35.3
	80	70.2	70.2	7.1
	81	66.1	66.1	
208	FY 73	50.0	50.0	0
	74	100.0	100.0	13.6
	75	150.0	150.0	150.0
	76	0	53.0	53.0
	77	150.0	15.0	15.0
	78	150.0	69.0	69.0
	79	150.0	32.0	30.0
	80	150.0	37.5	37.5
	81	100.0	34.0	
314	FY 73	50.0	0	0
	74	100.0	0	0
	75	150.0	4.0	4.0
	76	0	15.0	15.0
	77	50.0	15.0	15.0
	78	60.0	2.3	2.3
	79	60.0	14.6	14.6
	80	60.0	15.0	15.0
	81	30.0	11.0	

* Money appropriated under previous law, FWPCA, not CWA.

CHAPTER IV

MAJOR PROGRAM ISSUES

During the preparation of the Background Paper and through the public participation in the early phases of developing Task V of the 1990 Strategy, EPA and others have identified several major issues affecting the WQM program and its impact on construction grants. (The Current Program Description, above, summarizes the Background Paper.)

The ten issues which follow, involving the problem-solving process, institutional roles, and program resources, constitute the problem statement of Task V. The following pages list the issues, provide brief discussions, and propose resolutions.

Issue No. 1

The construction grants program must have improved water quality data and analysis to set water quality-based priorities.

Discussion

Many States and EPA Regions have strong water quality-oriented programs which use up-to-date problem assessments and WQM plans to drive implementation efforts, such as construction grants. Indeed, the over 200 conditionally certified and approved WQM plans are strongest in the municipal point source area. States such as Texas, Ohio, and Colorado--to mention just a few--have complete point source portions of their WQM plans which identify service areas, population projections, management agencies, and other relevant information.

However, there are States and Regions where the links between problem assessments, plans, and actions are severed, leading to cost-ineffective control programs. EPA's desire, through the 1990 Strategy, is to increase program effectiveness in these States and Regions.

Problem assessments, summarized in State 305(b) reports, are generally weak. Much water quality data, in STORET or included in WQM plans, is occasionally misused, or unused, in subsequent decision-making. Also, some States and Regions don't plan far enough into the future, looking instead only at those immediate problems they can solve in one to two years. Priorities, therefore, are often shortsighted.

Another factor which contributes to difficulty in setting water quality-based priorities is inadequate monitoring. This is discussed in Issue 5.

A troublesome aspect of identifying problems and setting priorities is the problem of prevention. Preventing degradation of existing water quality

can be just as important as improving water quality in three situations: pristine areas, water-short areas, and ground water.

Resolution

To resolve this issue, EPA will stress the use of WQM plans and two management documents - 305(b) reports and State strategies - to tie construction grants priorities to water quality problems.

EPA will work with the States to develop stronger problem assessments, segment by segment. Where applicable, EPA and the States may use environmental indices or similar tools to assist with priority determinations. EPA will provide improved guidance for preparing 305(b) reports and use the reports in decision-making.

EPA will also require strong, comprehensive State strategies, in accordance with the WQM regulations, and prepare improved guidance for the States to follow. The State strategies will provide long-range action plans related to the seriousness of municipal pollution.

Specifically, starting in FY 83, EPA will ask the States to include in their strategies the following information:

- The strategies should identify waters which are not fishable/swimmable (but for which those uses are attainable) and describe how the States will meet the fishable/swimmable goals by 1990. The States should give priority to treatment works needed to achieve fishable/swimmable uses.
- The strategies should explain how the State will complete its construction grants program under the Clean Water Act under two scenarios: (1) unconstrained construction funds, i.e., the "fastest" scenario, and (2) a constant annual level of funding which EPA will specify in guidance.
- The State strategies should, as management tools, explain how other State water quality management resources will contribute to meeting the fishable/swimmable goals. Thus, the strategies should set priorities tied to the problem assessment for water quality standards reviews, monitoring, waste load allocations, nonpoint source planning, evaluation, and other activities.

State WQM plans pick up where problem assessments leave off in the continuous process of identifying problems, setting priorities, developing solutions, and evaluating results. The WQM plans document primarily the solution-development step of the problem-solving process. The EPA Regions and States should use the WQM plans, work to remove conditions on certification or approval, and - as plans change - use the streamlined certification and approval mechanisms in the regulations to keep them up to date.

Where the State and EPA agree that prevention of pollution is important, the State should integrate long-term prevention and correction programs in its strategy.

Issue No. 2

The States must set attainable water quality standards, and use them in planning POTW improvements.

Discussion

The issue revolves about the goal in section 101(a) of the Act, that the Nation achieve fishable/swimmable water quality in all stream segments, "where attainable." As the background paper discussed, the States and EPA seldom considered attainability in setting and approving water quality standards after passage of the 1972 Act. To be attainable, a water quality standard must pass three tests: it must be environmentally, technologically, and economically achievable.

Where WQS are unattainable, they lead to high costs for point and nonpoint source controls, with limited environmental or societal benefit. But most participants in the WQM program do not wish for a widespread downgrading of standards either. At a minimum, standards must protect the existing use of a segment.

Another aspect of this issue is that, under section 510 of the Act, the States may set standards more stringent than what EPA might otherwise approve. The recent lawsuit of the State of Illinois against EPA included this issue, saying that, since the State had set more stringent standards, EPA could not deny the State construction grants for advanced treatment to meet these standards, and should not delay the construction grant process.

The suit was settled out of court. The settlement agreement stipulates that EPA revise its guidance on reviews of advanced treatment projects to minimize unnecessary delays and, at the same time, to respond to the concern for cost-effectiveness in treatment works.

The matter of attainability involves both designated uses and exact criteria to support those uses in WQS. Even when the use of a stream is attainable, the criteria may not be if they don't match the specific situation. Attainability determinations are also affected by seasonal conditions, such as high flow situations, which might violate the criteria but not harm the use.

Resolution

EPA has already acted to resolve this issue by rescinding its policy of "presumptive applicability" of the Red Book criteria. States now have more flexibility in setting criteria to support designated uses.

EPA is also developing guidance for the States to use in attainability determinations. The guidance will describe the environmental, technological, and economic tests for checking a particular use or criteria.

Upon issuance of this guidance, the States should include more attainability determinations in their required cycles of standards reviews and revisions, and fold the results into their WQM plans. The States should set priorities and review the most critical water bodies first, particularly where they have proposed advanced waste treatment or where they need attainability determinations to determine the relative priority of secondary treatment plants. States should give special attention to blanket water quality standards which may not prove attainable on specific segments. Ideally, the best time to analyze attainability is early, before the States need decisions on construction grants or permit conditions.

Where attainability determinations show that uses in existing WQS are unattainable, the States should revise the uses. (At a minimum, however, WQS must maintain the existing uses.) States may lower the criteria within a given use on a segment except in Outstanding National Resource Waters (ONRW).

Issue No. 3

The participants in the WQM program must do a better job of identifying point/nonpoint source tradeoffs that could save construction grant funds. They need better NPS data for this purpose.

Discussion

EPA's recent experience with proposed advanced treatment projects shows that Step 1 grantees often do not consider point/nonpoint source tradeoffs in facility planning, nor do the States consider them in priority list development. Since Federal law does not require or substantially assist the control of nonpoint sources, there is little incentive to control them, even where control would be more cost-effective than advanced waste treatment.

For many proposed treatment works, point/nonpoint source tradeoffs are not an issue, since point source problems usually occur during dry weather and nonpoint source problems during wet weather. However, there are often direct tradeoff possibilities in situations involving eutrophication in the receiving water.

In addition to the direct tradeoffs, there are also indirect point/nonpoint tradeoffs which occur when nonpoint sources would deny or impair the use of a water quality-limited segment regardless of the degree of point source treatment. To attain the use, both advanced municipal treatment and nonpoint source controls would have to be in place.

If the construction grantee fails to take advantage of available tradeoffs between point and nonpoint sources, it will diminish the ultimate cost-effectiveness of the treatment works. However, data on the extent of NPS problems, the effectiveness of NPS controls, and the cause-effect relationships between NPS and water quality is often lacking, making it difficult for Step 1 grantees to assess potential cost savings.

Resolution

To help resolve this issue, EPA will continue to develop a technical base on NPS problems, the effectiveness of point and nonpoint controls, and the linkages between the two types of problems. EPA has recently published draft guidance on conducting tradeoff analyses and will work with the States to provide technical assistance.

States should focus tradeoff analysis on nutrients from proposed POTWs above "still" water bodies such as estuaries, lakes, and reservoirs, where eutrophication may be a problem. They should screen their needs lists and priority lists for proposed projects of this type and require the facility plan or the WQM plan to include a point/nonpoint tradeoff analysis.

In the case of indirect tradeoffs, this is a complex technical issue which EPA is addressing in PRM 79-7, currently under revision in accordance with a court order.

Wherever nonpoint sources cause water quality problems, whether point sources are involved or not, it is generally the State's role to control them. Since there are many situations where nonpoint source control is necessary by itself, States should maintain balanced point and nonpoint programs for the sake of overall cost-effectiveness and clean water.

EPA will continue to manage the agricultural, urban runoff, and ground water prototype projects the States initiated with 208 grants in FY 79-81 to increase our knowledge of nonpoint source problems and controls. A cornerstone of EPA's strategy for solving NPS problems is an emphasis on information transfer. EPA Headquarters and Regions will increase their efforts to transfer successful approaches among similar settings.

Issue No. 4

EPA could bring about significant cost-savings in construction by redefining secondary treatment to include consideration of situational factors.

Discussion

The 1972 Act set forth the principle of base-level treatment technology for all point source dischargers, including POTWs. This policy

was in response to the poor track record of water quality-based requirements prior to 1972, and the equity problems associated with that approach.

The Act requires all POTWs to provide "Best Practicable Waste Treatment Technology" (BPWTT) to meet water quality standards and other environmental objectives such as the protection of ground water. At a minimum, each plan must provide secondary treatment, which EPA defines as an effluent quality of 30 mg/l BOD and suspended solids ("30/30"). The 30/30 requirement generally necessitates the construction of sophisticated activated sludge processes. However, activated sludge plants can be difficult and expensive to operate and maintain, and have been plagued by compliance problems.

Some other types of biological treatment than activated sludge, including its predecessor, the trickling filter, are cheaper and generally more reliable, but cannot usually meet 30/30 all year round. (Trickling filters, for example, work less well in the winter.) In certain situations, however, these other types of biological treatment may be perfectly acceptable and - some feel - should be included in secondary treatment.

EPA cannot return to the total water quality-based system of pre-1972. The water quality-based approach is extremely difficult to implement, is an administrative nightmare, and incurs the equity problems referred to above, for example, when virtually identical communities might have vastly different treatment requirements. However, the definition of secondary treatment could be adjusted to allow a broader range of technology in controlled situations.

The cost savings of redefining secondary treatment this way are not known at this time. However, EPA feels this option could save considerable expense for State and local governments, especially in small communities and rural areas.

Resolution

EPA will soon issue an Advance Notice of Proposed Rulemaking (ANPRM) which will open the issue of the definition of secondary treatment for consideration. The definition could possibly be broadened to take into account local factors such as climate, presence or absence of toxic pollutants, and treatment works performance requirements. EPA would maintain a technology-based requirement of biological treatment, while attempting to trim the costs of "treatment for treatment's sake."

One possible drawback to this option is an equity problem between new projects, which could take advantage of the cost-savings accompanying the new definition, and projects already in the grants pipeline or on the ground.

One possible advantage to a broader definition of secondary treatment, however, is that it could simplify enforcement by increasing POTW reliability, while allowing some flexibility in the 30/30 requirement.

Another option related to the definition of secondary treatment is reconsidering the overall definition of BPWTT. Under the existing definition in EPA guidance, potential construction grantees must consider not only WQS but also ground water and alternative treatment technologies in interpreting BPWTT in their given situation. It might also be possible to use the requirement for BPWTT to establish toxic effluent requirements for POTWs, since we now have better analytical tools and treatability information for assessing and resolving municipal toxic effluent problems.

Issue No. 5

EPA and the States must improve their water quality data through more cost-effective monitoring programs, and refine their water quality analyses to facilitate construction grants.

Discussion

Monitoring is a key input to the problem-solving process, yet it has generally suffered from a lack of planning and has not, as a rule, been cost-effective. State ambient monitoring networks measure long-term trends for entire segments or basins. The networks don't identify specific dischargers in violation; don't assist with decisions on advanced treatment, which require more specific data; don't always detect problems; are expensive to maintain; and usually cover only conventional pollutants.

Also, State monitoring networks rarely include gathering biological data for general assessments of stream quality. Ground water monitoring networks, which are more costly to install and operate than surface networks, are just beginning to be developed.

One of the frustrations of the construction grants program today is its inability to demonstrate the effectiveness of treatment works constructed since 1972. This is primarily because the monitoring networks were not designed up front to provide useful information such as before-and-after water quality.

Quality assurance (QA) is also a problem, compounded by the multiplicity of agencies and purposes involved in monitoring. There is a lack of standardization in monitoring and analytical methods, which is important for toxics, where quality assurance is critical. A lack of QA may render months or years of monitoring useless.

In the area of models, modeling of the behavior of conventional pollutants in aquatic eco-systems for simple flow situations is fairly reliable today. For non-conventional pollutants, especially toxics, and for complex flow regimes (e.g., estuaries) modeling is much less reliable. Since WLAs involve modeling, and since modeling tends to be expensive, there is a need for consistent policy on WLA methods and applications to ensure that funds devoted to this purpose are used equitably and efficiently.

Resolution

One key to resolving this issue is better planning of monitoring activities. EPA will ask the States to include monitoring chapters in their annual State strategies to spell out goals, objectives, priorities, and resources for monitoring - ambient, intensive, and compliance. The States should tailor their monitoring programs segment by segment and target resources at their highest priority needs, as defined in their overall State strategies.

As mentioned in the Background Paper, EPA has already taken some actions to improve the effectiveness of State and EPA monitoring programs. In rethinking the national monitoring network, EPA is pursuing the following objectives: (1) to describe water quality nationally in terms of the goals of the Act, (2) to determine the reasons for problems, and (3) to describe the effectiveness of existing controls and predict the effectiveness of proposed controls.

In FY 81, EPA is working on several prototype stream segments to develop monitoring programs which will describe the integrity of their waters in biological, chemical, and physical terms. EPA will transfer the lessons learned from the prototypes for general implementation in FY 82-83. EPA will also establish several prototypical before-and-after monitoring efforts for new POTWs in the near future.

In the area of quality assurance, EPA has drafted Federal/State QA procedures and targeted implementation for mid-1982. The procedures cover policy, coordination, personnel, facilities, equipment, services, data generation, quality assessment, corrective action, and schedules, and deal primarily with toxic pollutants.

With respect to modeling, EPA has already started to develop a waste load allocation regulation, along with more detailed WLA guidance. In the short term, the States should focus on conventional pollutants when performing waste load allocations for construction grant projects.

The guidance EPA is developing will initially focus on conventional pollutants also, and will include information on the level of sophistication needed to model various parameters and situations, the types of models and other tools needed, necessary data, and the transferability of water quality analysis approaches.

In the long run, EPA will develop WLA procedures for toxic pollutants using either a chemical-by-chemical or general toxicity approach. EPA is conducting pilot studies to assess toxic problems in POTWs, and the results will help formulate the long-term policy. Before this information is available, EPA will not address toxic problems at POTWs unless they are located in toxic hot spots or have known toxic problems.

Other current activities EPA is conducting to assist with development of guidance on toxic WLAs are:

- An assessment of the state-of-the-art of toxic modeling
- An assessment of approaches, such as general toxicity, for setting effluent limits more stringent than base-level technology
- Research on bioassay techniques for analyzing toxicity and making WLA calculations

Issue No. 6

EPA, the States, and construction grantees must give more attention to fiscal, financial, and institutional planning to ensure the long-range viability of their POTWs.

Discussion

The planning process at the State and local levels has suffered from a frequent inability to implement solutions to problems (e.g., construct treatment works) because of a lack of fiscal, financial, and institutional capability at the implementing level. Some examples of problems resulting from inadequate fiscal, financial, and institutional planning are the operations and maintenance record of POTWs, the lack of operational control programs for nonpoint sources, the continuing need for consolidation of municipal service areas, and the high sewer charges which often accompany POTW construction.

EPA has been providing technical assistance through the Financial Management Assistance Project (FMAP). However, in public workshops during the development of this 1990 Strategy, several representatives of local government expressed significant sensitivity to federal involvement in local financial planning.

Resolution

The resolution of this issue requires an increased State role in financial management. EPA will provide technical assistance in this area.

In the course of its regular planning process, each State should plan for the future control of point and nonpoint sources in terms of capital budgeting and tracking the useful lives of existing facilities and their component parts. They should also build capability in State and sub-State agencies through hiring, training, and the use of outside contract assistance and review the capabilities of the designated management agencies to ensure they have appropriate fiscal/financial expertise.

Two examples of funding mechanisms the States can employ to ensure that funds are available for necessary pollution control activities are bond issues and revolving funds. To ease the burden on local governments, States may wish to develop guaranteed loan programs. Thirteen States have already passed cost-sharing legislation for nonpoint source control, but EPA would encourage more States to develop similar incentives.

In the area of EPA assistance, EPA will continue its Financial Management Assistance Project (FMAP) in a coaching mode and apply recently-developed FMAP tools in facility planning and nonpoint source control planning. In conjunction with FMAP, EPA will transfer information on successful fiscal, financial, and institutional approaches among State and sub-State agencies.

Issue No. 7

Over time, the WQM program must consider toxic pollutants in POTW influents and effluents, to increase the effectiveness and efficiency of POTWs.

Discussion

As the nation brings conventional pollutants (e.g., BOD, suspended solids) under control, and as we learn more about the presence of toxic pollutants in the environment, toxics become an emerging problem. Because of the high costs of toxics monitoring and analysis, their persistence in aquatic ecosystems, and questions about pathways, fates, and environmental effects, the WQM program was unable to define or resolve the toxics problem. The initial WQM plans did not generally address toxic pollutants.

The Agency is building toxics capability. It has published ambient water quality criteria for 64 toxics, and will soon issue toxic effluent guidelines under 304(a) and a toxic treatability study for POTWs. Also, the WQM program is gaining information on nonpoint source toxics from carefully-designed prototype projects.

Resolution

Management of toxic pollutants in the future will depend to a great extent on EPA to identify toxic pollutants and controls. EPA must define the state of the art in toxic controls for point and nonpoint sources, and continue to refine the ambient criteria.

Since EPA has published its ambient criteria, the States should begin to incorporate toxics in State standards and monitoring programs. The Administrator may use his authority to require States to consider certain toxic parameters for inclusion in their water quality standards at the national level and State by State.

One concept which may eventually help control toxic pollutants entering and departing POTWs is Integrated Waste Management (IWM). In integrated

waste management, entire communities would inventory all the wastes produced there, both solid and liquid, and, before disposing of them, attempt to find a use for the wastes. Where no one wants to buy or take a waste product, the community would plan environmentally sound disposal in concert with overall waste disposal plans for the entire area. Thus, IWM would help eliminate toxic pollutants from the waste stream before they reach POTWs by bringing about process changes and integrated waste disposal practices in a given community. EPA will undertake several pilot IWM studies in the near future.

Issue No. 8

EPA, the States, and local agencies must cooperate in developing a long-range strategy for controlling pollution from combined sewer overflows and urban storm runoff.

Discussion

Urban storm runoff and combined sewer overflows are two problems closely aligned with construction grants but accompanied by great uncertainty regarding their severity and control.

In the area of urban runoff, EPA realized after the completion of the initial WQM plans in the late 1970's that it needed much more information on the problem before it could recommend a national control effort. Therefore, EPA initiated the Nationwide Urban Runoff Project (NURP) with 208 grants to States and areawide agencies to answer key questions by 1983.

The NURP will provide answers on the extent of the urban runoff problem, the cause-effect relationships between runoff and water quality, the impacts of urban runoff on aquatic ecosystems, and the effectiveness of alternative control measures.

Combined sewer overflows (CSOs) are a problem of major proportions in the country today. The recently-updated construction grants needs survey will show that reported needs for controlling CSOs have climbed dramatically in recent years. Although many of the same uncertainties that apply to urban runoff also apply to CSOs, they represent a more immediate threat to public health and safety due to the presence of raw sewage in the overflows.

The solution of CSO and urban runoff problems involves the difficult problem of accounting for high-flow (i.e., wet weather) conditions in identifying problems, developing solutions, evaluating results of controls in urban areas, and enforcing regulatory controls. Both CSOs and urban runoff from separated sewers can be covered under the general permit provisions of the NPDES program, which do not dictate effluent standards per se, in favor of mandatory management controls.

Resolution

EPA will work with the States and local agencies to develop a combined sewer overflow and urban storm runoff control strategy by the end of FY 83. This strategy will include a policy on redefining NPDES compliance to take high flows into account.

Between the present and FY 83, EPA will continue the NURP projects initiated in FY 79-81 to build up the data base on urban runoff problems and controls. With respect to combined sewer overflows, States should move to correct the most severe overflows where they have documented public health problems or where CSOs are denying beneficial uses of water bodies.

Issue No. 9

The participants in the WQM program must adjust and agree upon roles, especially regarding planning for construction grants. EPA's role should include less direct involvement but more effective oversight.

Discussion

The WQM program has experienced some conflicts in the past among different levels of government involved in planning solutions to POTW problems. These conflicts sometimes stem from confusion regarding roles. For example, in some persons' opinion, EPA infringed upon the State role by working directly with areawide planning agencies on section 208 grants, rather than using the States as the central managers of planning within their boundaries.

The States are under ever-increasing financial and administrative burdens for water quality management, given the added requirements of the 1977 Amendments and the general economic conditions. In this situation, the State role must be clear, but EPA has failed to give the States strong leadership through a national strategy, for instance, and has not tracked and evaluated State progress toward achieving environmental results, that is, clean water.

The areawide agencies, which received many section 208 grants for point and nonpoint source planning, have depended largely on Federal funding. Often, they lack authority to implement their plans or advocate implementation. Nevertheless, they serve a valuable role by providing a regional perspective on capital investments and institutional arrangements. Local agencies, which must implement many environmental controls, are also under heavy financial and administrative burdens.

Resolution

The proposed strategy, below, discusses preferred institutional roles in detail. In summary, to improve the nature of their contribution to the nation's construction grants program, the participants in the WQM program should take the following actions or make the following adjustments in their roles:

EPA will provide technical assistance, and issue improved guidance on WQS attainability, point/nonpoint source tradeoff analysis effectiveness of nonpoint source controls, monitoring, modeling, waste load allocations, State problem assessments, and State strategies. EPA will also oversee State programs with improved tracking and evaluation and take necessary approval actions on WQS and WQM plans.

In addition, EPA will work with the States and others to develop an urban runoff/CSO strategy and possibly to redefine the definition of secondary treatment. Finally, EPA will help define toxic problems, set the direction for toxic controls and, if necessary, require consideration of certain toxic parameters for inclusion in State WQS.

Regarding the State role, it is most important that they develop water quality-based priorities for construction grants and other activities, with consideration of long-term problems and approaches. To do this, they will have to improve their problem assessments and State strategies, with EPA's assistance.

The States should also develop more cost-effective monitoring programs with EPA's help, keep WQM plans up to date, review WQS for attainability and revise them as necessary, identify potential point/nonpoint tradeoffs and analyze them for cost savings, and undertake more direct involvement in the fiscal and financial aspects of managing POTWs.

Finally, the States should work with EPA on developing an urban runoff/combined sewer overflow strategy, manage the NPS prototypes funded with 208 grants, and, in general, control nonpoint source pollution.

The designated areawide agencies will take a regional look at POTW problems as appropriate, under the direction of the State WQM agencies. Local governments should conduct facility planning in most cases and, as POTW owners and operators, plan and budget for future sewage treatment needs.

Issue No. 10

Since it is unlikely the WQM program will receive increased funding in the future, EPA and the States must adopt a resource plan to ensure the maximum amount of environmental protection for each dollar invested, especially on construction grants.

Discussion

The resource needs of an ideal, or ultimate, WQM program far exceed realistic expectations for resources. State needs for program support are growing, yet State legislatures have cut back State resources and Federal appropriations under Clean Water Act sections 106, 208, 314, and 207 (which is the authorizing section for 205(g) grants) have declined steadily in constant dollars. (See Figure IV.1.) The WQM program has not pulled in significant funding from other Federal agencies or from private sources.

Nevertheless, many of the activities the WQM program encompasses - such as general point source planning, nonpoint source planning, monitoring, modeling, and water quality standards development - are necessary prerequisites to construction grants. A small investment in planning at the front end can have a dramatic payoff during implementation, as shown by the recent study that said WQM planning had saved far more money in construction grants than was spent on the total section 208 appropriation since FY 74.

Resolution

To obtain the maximum environmental payoff under existing resource constraints, the participants in the WQM program should adhere to the following resource principles:

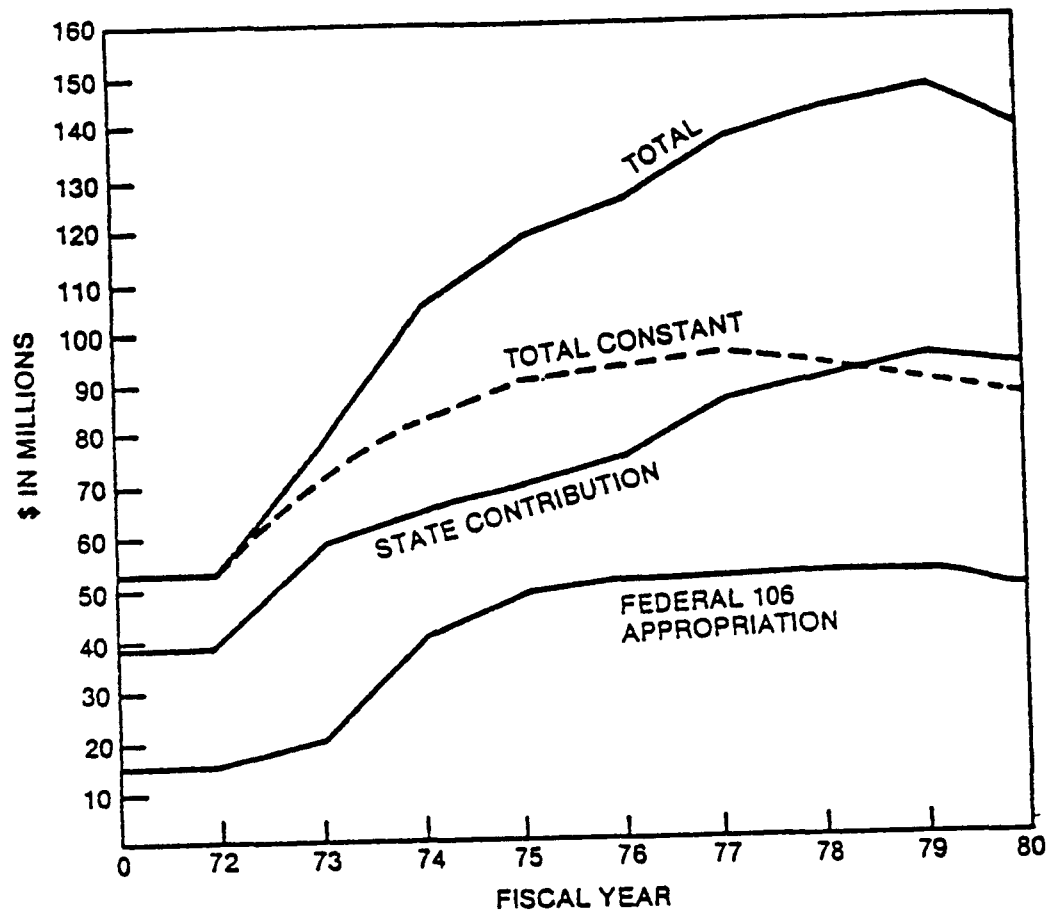
EPA and the States should fund first only those construction grants needs, and other supporting actions, which will have a direct, significant impact on water quality; that is, achieve (or possibly maintain) a desired use of a water body.

EPA will delegate much responsibility and authority to the States, and monitor the results of State programs rather than process details to save funds in the area of program administration. To ensure the effectiveness of the national water quality management program, EPA will issue improved guidance and exercise improved oversight. It is important for all the participants in the WQM program to focus their management attention on environmental results, that is, cleaner waters.

The States should help develop more imaginative funding schemes, such as State bond issues, revolving funds, or guaranteed loans. These mechanisms could include support for planning for other WQM activities, such as monitoring, in addition to capital construction.

EPA will consider revising the definition of secondary treatment (i.e., BPWTT) to save money in facility planning, construction, evaluation, and enforcement in controlled situations.

FIGURE IV.1 HISTORICAL CONTRIBUTIONS TO 106-FUNDED PROGRAMS



Source: Draft WQM Needs Assessment, FY 80-84

CHAPTER V

PROPOSED STRATEGY

GOALS AND OBJECTIVES

With respect to construction grants and this 1990 Strategy, the goal of the WQM program is to implement a responsive problem-solving process for municipal sewage treatment which will allow the States to meet the fishable/swimmable goals of the Act, where attainable, by 1990. This problem-solving process will direct available resources to priority projects which will have direct, significant impacts on improved water quality.

The following objectives support the overall goal and represent action areas for EPA and the other participants in the WQM program:

- Place greater emphasis on the water quality impacts of proposed construction grants as the basis for priorities; consider the contributions of nonpoint sources and toxics in setting priorities and awarding construction grants.
- Modify current monitoring programs to identify and assess problems more effectively and evaluate environmental results.
- Continuously refine water quality standards (WQS), with eventual inclusion of toxic criteria, and incorporate them in State WQM plans to assist decision-making; emphasize the attainability of WQS.
- Periodically review program goals to make sure they are environmentally, financially, and technically desirable and realistic; establish within EPA a long-range WQM strategy and improved oversight of State programs.
- Continue to develop the technical and institutional data base for nonpoint source controls.

STRATEGY ELEMENTS

Since the passage of the 1972 Act, the participants in the WQM program - Federal, State, areawide, and local - have solved many water quality problems, as discussed in the Background Paper. They have controlled, in many situations, not only conventional pollutants from point and nonpoint sources, but also non-conventional pollutants such as toxics.

As mentioned in the current program description, above, the WQM program has greatly assisted construction grants by establishing water quality standards and monitoring networks and preparing over 200 initial WQM plans which contain strong point source planning frameworks and a general understanding of municipal water quality problems.

Despite its successes, however, the WQM program must improve in several ways to be more useful to the construction grants program. This strategy outlines necessary changes. Actually, many parts of this strategy are already in place in States and EPA Regions throughout the country, where they have moved ahead independently in much the same direction this strategy suggests. EPA's intent in Task V is to increase the overall national effectiveness of the WQM program to the level that well-managed, aggressive States and Regions have already achieved.

The following pages present the proposed strategy for Task V in four sections: the problem-solving process, institutional roles, resources, and management.

The Problem-Solving Process

The Act sets up a comprehensive problem-solving process which, when followed, greatly assists EPA and the States in meeting the WQM goals and objectives stated above. (See Figure V.1.) The integrity and usefulness of this process are key to this strategy. If the construction grants program is to become more responsive to water quality problems, the WQM program and the problem-solving process are more important than ever, since they identify problems and set water quality priorities.

EPA and the States will get the most rewards from the problem-solving process if they define precisely what they will accomplish with construction grants and how they will track progress toward that goal. States should determine which of their waters will not support designated or future uses and develop programs to achieve those uses - assuming they are attainable - integrating point and nonpoint source controls.

Problem Identification:

In the first step of the problem-solving process, problem identification, three important actions are necessary to improve the contribution of the WQM program to construction grants. First, EPA and the States must improve their problem assessments to provide the basis for construction grants priorities based on achieving beneficial uses of water bodies. Second, EPA and the States must give more attention to water quality standards attainability and use only attainable water quality standards in formulating plans for POTWs. Third, the States should improve their monitoring programs to provide crucial data for WQS review and priority setting.

Problem assessments, in general, have been weak. This is unfortunate, since they are critical for setting construction and planning priorities. To improve the State problem assessments, EPA will provide new guidance for the semi-annual State 305(b) reports which document the problem assessment process.

TABLE V.1 DETAILED PROBLEM-SOLVING PROCESS
Part 1 -- Problem Assessment Module

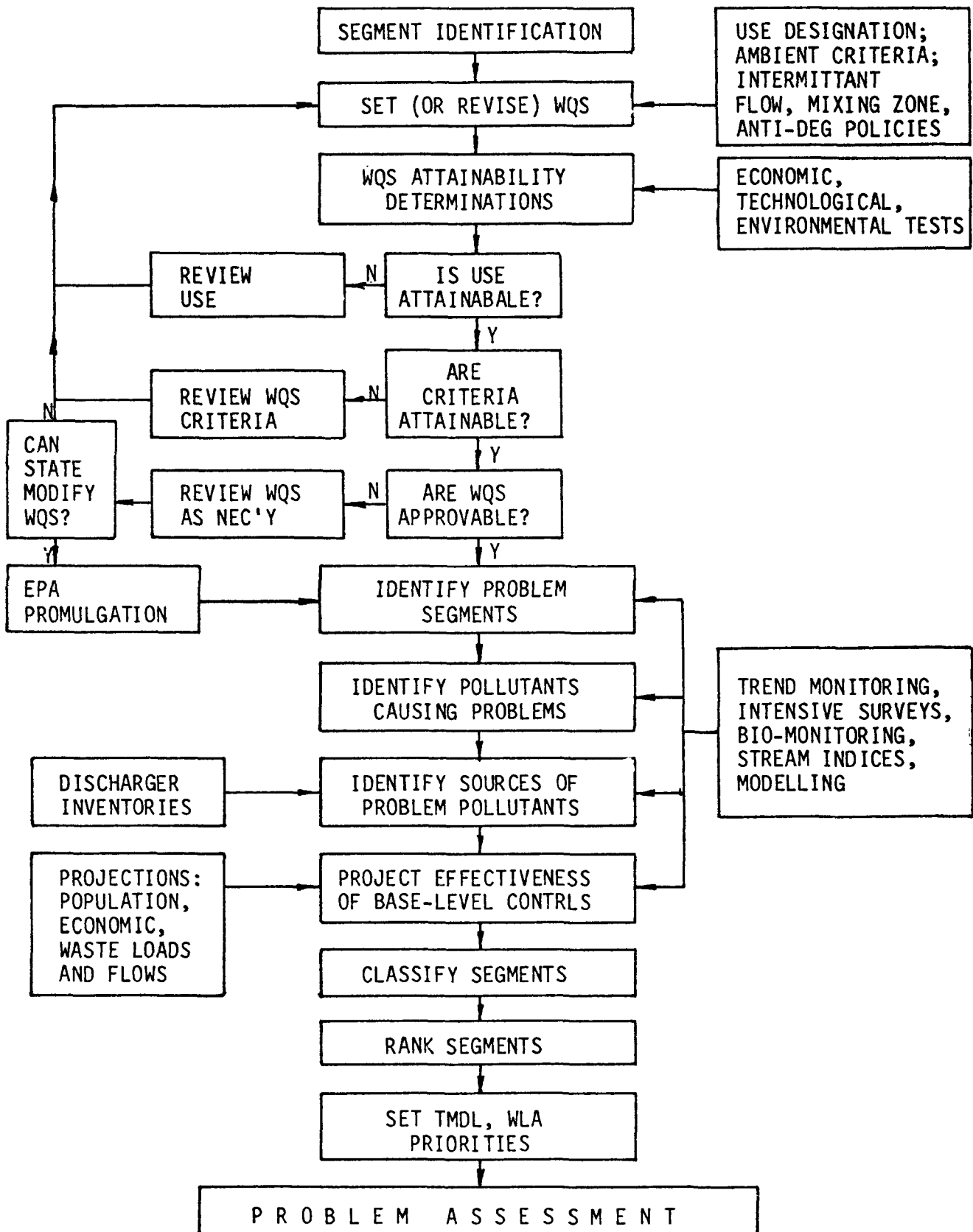


FIGURE V.1 DETAILED PROBLEM-SOLVING PROCESS
Part 2 -- Solution Development Module

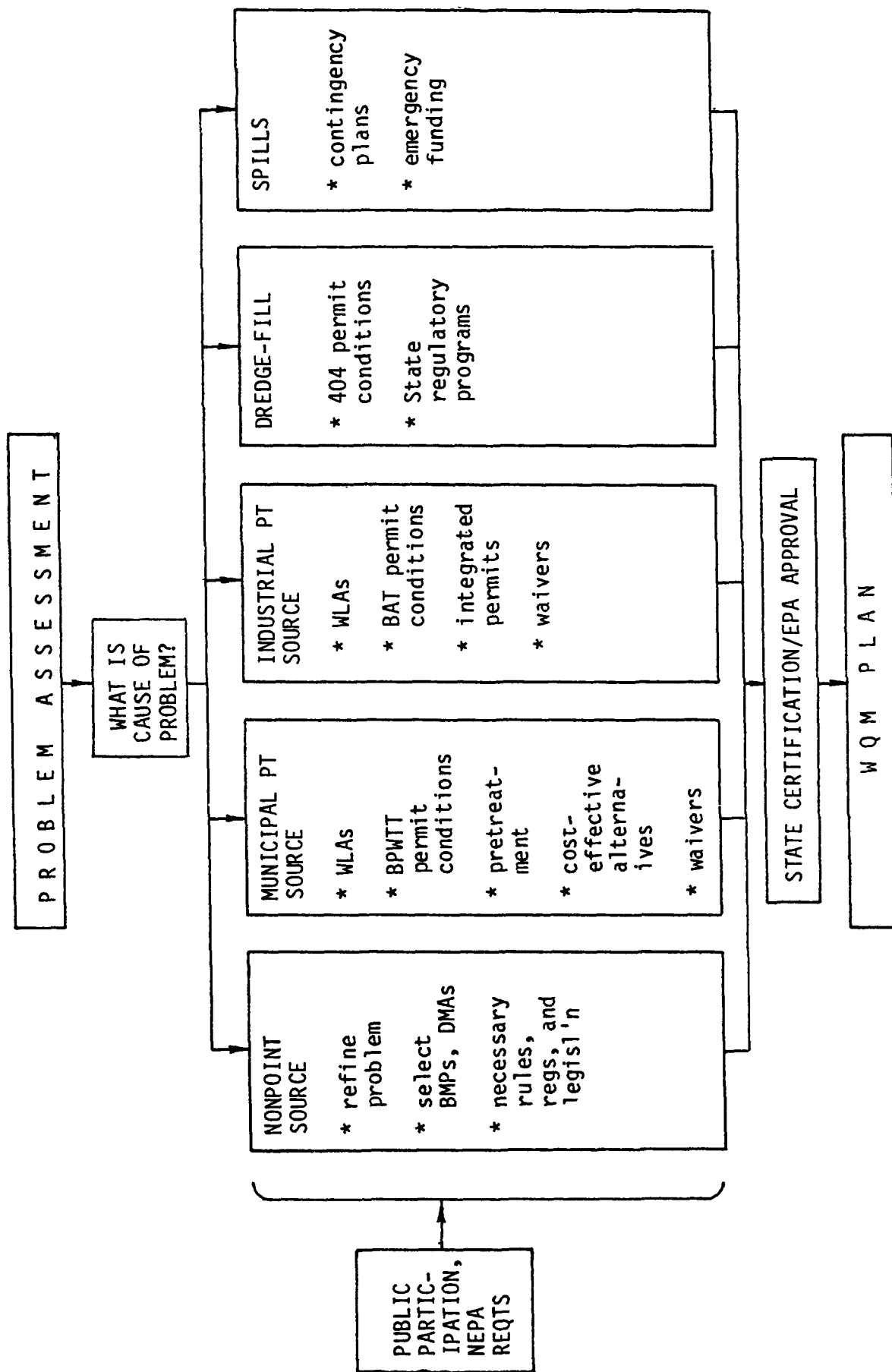
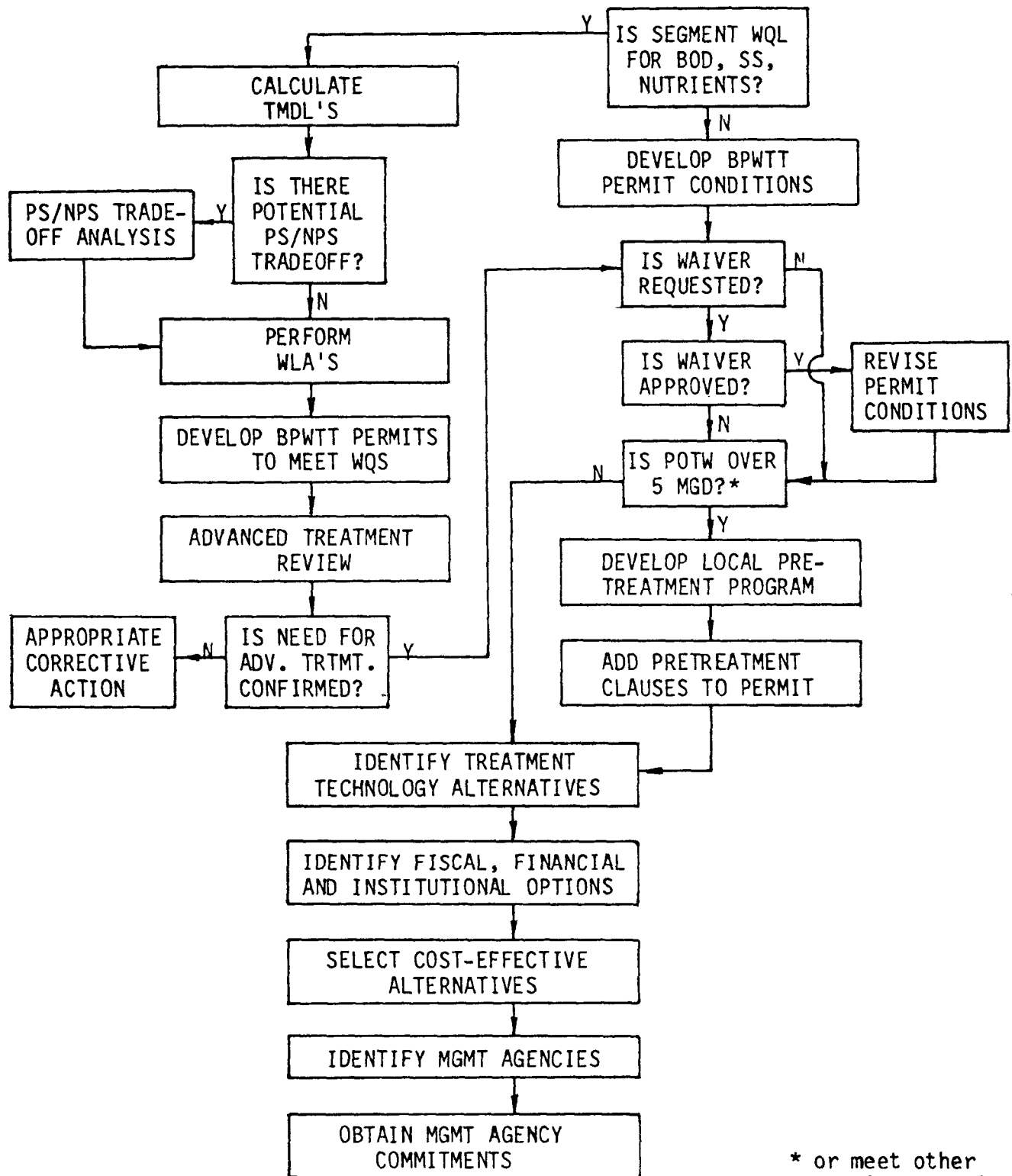


FIGURE V.1 DETAILED PROBLEM-SOLVING PROCESS
 Part 3 -- Solution Development Module, Municipal Pt Source Sub-Module



* or meet other requirements in regulations?

The assessments should identify and rank water quality problems segment by segment and identify treatment works necessary to attain fishable/swimmable conditions. Although the existing data base in STORET, State WQM plans, and problem assessments is imperfect, it contains a vast store of information. There is great potential for making better use of this information.

Over time, the problem assessments should shift to include toxic pollutants, once EPA has identified pollutants of interest in different States and feasible controls. (EPA published ambient criteria for toxics in November, 1980.)

Water quality standards, which represent State water quality benchmarks, have not always proved attainable. Once the States set them and EPA approves them, they tend to become fixed, arbitrary reference points, rather than integral parts of the WQM plans and the planning process.

In their periodic reviews of water quality standards, which the Act requires every three years, the States should verify WQS attainability based on environmental, technological, and economic tests. Where WQS are not attainable, States should modify them and incorporate the modifications in their WQM plans.

EPA's goals in the area of water quality standards are to implement the highest attainable standards, establish sound scientific and technical bases for standards, and coordinate technology-based and water quality-based requirements.

Rather than review WQS on every segment arbitrarily, the States should set priorities for these reviews - as they do for other activities - to respond to known water quality problems or situations where major capital investments are proposed to achieve WQS. To give the States more flexibility in setting WQS, EPA has rescinded its policy on presumptive applicability of the Red Book criteria. EPA is also revising its WQS regulations and developing guidance on how to make attainability determinations.

States may lower the criteria in a stream within a given use except in Outstanding National Resource Waters (ONRW). Downward adjustments in uses and criteria may be approved due to natural background, irretrievable human-induced conditions, or substantial social and economic impacts.

Over time, as our knowledge and expertise grow, States should expand their WQS to include toxic criteria. The Administrator may use his authority to require States to consider certain toxic parameters for inclusion in their WQS, nationally or State by State.

Monitoring is a key input to the construction grants program for problem identification, solution development, and evaluation. However, it has suffered from a lack of planning and has not, as a rule, been cost-effective. EPA Regions will work with the States to include monitoring plans in their annual State strategies and focus monitoring of POTW performance where it will do the most good.

During FY 81, EPA is performing several prototype monitoring programs which will describe the chemical, physical, and biological integrity of selected stream segments. EPA will transfer the lessons learned from these prototypes to the States for implementation in FY 82-83. EPA has also initiated several prototype before-and-after monitoring studies related to POTW construction to determine the effectiveness of new POTWs.

Quality assurance is another key need in the monitoring area. EPA has published draft QA procedures which it will finalize soon and implement nationwide by mid-1982.

Solution Development:

Solution development is the second step in the problem-solving process. To improve solution development activities related to construction grants, the participants in the WQM program must take certain actions and make several changes.

First, EPA, the States, and local agencies must pay more attention to the potential cost savings associated with point/nonpoint source tradeoffs, as discussed above in Issues. State planning agencies should consider the possibility of tradeoffs for every proposed treatment works that would discharge above a lake, reservoir, or estuary likely to suffer eutrophication problems. EPA will continue to assess, through prototype projects and research, whether other direct tradeoffs are important. PRM 79-7, under revision at this time, will set forth policy on handling indirect point/nonpoint tradeoffs in construction grants.

To facilitate evaluation of possible cost savings from tradeoffs and assist in meeting the fishable/swimmable goals, EPA will build up its nonpoint source data base on problems, solutions, and cause-effect relationships, especially for agriculture, urban runoff, and ground water problems, and issue guidance on evaluating tradeoffs.

In addition to considering tradeoffs, the States must also become more involved in the fiscal, financial, and institutional aspects of construction grants. Each State should plan to control pollution into the future through such tools as capital budgeting, manpower planning, and tracking of the useful lives of facilities. To ensure appropriate fiscal/financial expertise, they should build State and sub-State capability through hiring, training, and outside assistance. They should also review the financial and institutional capabilities of their designated management agencies which receive construction grants.

Next, so that grantees can take advantage of some cost savings in design and construction of POTWs in the future, EPA is considering redefining base-level secondary treatment. The new definition would allow, in controlled circumstances, biological treatment other than activated sludge based on performance, climatic, and reliability considerations. By doing this, EPA would maintain the treatment floor the Act calls for but reduce the costs of installing and maintaining secondary treatment in some instances.

In the area of planning to control pollution from urban runoff and combined sewer overflows, EPA will not recommend a national strategy until it gathers and analyzes more data on the scope of these problems, their impacts on water quality, and the costs and effectiveness of various controls. Working with the States and others, EPA will develop a comprehensive urban runoff/combined sewer strategy which will take into account, among other factors, high seasonal flows and how to account for them in NPDES permits and questions of WQS attainability.

So that solutions don't become fragmented, EPA will emphasize the need for the States to maintain their WQM plans, which document selected solutions for all types of water quality problems and which explain how they relate to each other and the State's problem assessment. The WQM regulations provide streamlined certification and approval procedures for routine plan updates which should make it easy for States to keep their plans current and workable.

Waste load allocations (WLAs) and water quality analysis in general are crucial inputs to the development of solutions to municipal point source problems. EPA is developing a new regulation and several pieces of guidance to help States do a better job on waste load allocations. The guidance will discuss general requirements, procedures for simple systems, procedures for complex systems and large dischargers, and instructions for evaluating nonpoint source impacts and controls.

In the short term, until EPA has advanced the state of the art in planning for toxic pollution control, the States should focus their WLAs on conventional pollutants. Each WLA should contain documentation of models, constants, and assumptions; stringent enough effluent limits, taking into account seasonal variations and a margin of safety; gross allotments for nonpoint sources; and a description of the mixing zone policy employed.

Implementation of Solutions:

Implementation follows the problem definition and solution development steps described above. For construction grants, implementation involves Step 2 and 3 grants, NPDES permits for POTWs, and enforcement against dischargers who are in violation of their permits. The funds which EPA, the States, and others spend on planning should ensure the efficient use of implementation funds. The EPA Regional Offices will make sure implementation efforts, specifically construction grants and permits, are consistent with WQM plans, as the Act requires.

EPA will work with the States, local governments, USDA, and the State and local conservation agencies to direct available nonpoint source control funds to situations where they will have the most benefit, either on their own or as part of a coordinated control effort involving a POTW. EPA may also develop, over the long run, a legislative initiative under the Clean Water Act to support implementation of nonpoint source controls

in some way. EPA encourages the States to develop cost-sharing programs, as 13 have already done.

Evaluation:

In the problem-solving process, evaluation follows the implementation of solutions. As it relates to construction grants, the evaluation step has been weak. Program participants have been frustrated by an inability to demonstrate environmental progress and POTW effectiveness. To improve their evaluations, the States should evaluate POTWs on site, and also evaluate the aggregate effects of pollution for all the POTWs in the State. They should identify new POTWs they wish to evaluate in advance, so that they can conduct before-and-after studies. EPA is aware that studies of POTW effectiveness for single plants of an entire State may not be possible in one or two years, but may require much longer times.

As mentioned above, EPA Headquarters is developing information on before-and-after monitoring through the use of prototype efforts for eventual transfer to State agencies.

With respect to evaluation, EPA and the States must begin to evaluate environmental results, that is, water quality results, rather than surrogates such as the number of treatment plants completed or the number of pounds of BOD removed at a particular plant. The program's dependence on surrogates has diverted attention from the basic purpose of the Act, cleaner waters.

Institutional Roles

As previous portions of this strategy have discussed, the development of institutional roles has hindered the WQM program's contribution to construction grants. The main adjustments in roles needed to improve the program are stronger ties between State and local governments on such issues as fiscal and financial planning, further delegation of responsibility and authority to the States for planning and program management, and more direct links between States and designated areawide agencies under section 208. (For additional discussion, see also Issue 9, above.)

EPA Role:

EPA's role is primarily to oversee and direct the national program; delegate authority; build State capability; provide assistance; issue regulations and guidance; review and approve various State outputs; identify toxic pollutants, criteria, and feasible controls; and evaluate the effectiveness of the national program. To help with oversight and direction of the program, EPA will develop with the States and others an annual national strategy to define WQM goals, objectives, related actions, and priorities.

To put resources closer to problems and avoid duplication of effort, EPA will delegate functions to the States. EPA Regions will review State planning processes and existing delegation agreements to determine what activities the States are performing now, and encourage the States to manage the WQM program and plan solutions to problems with the assistance of involved sub-State entities.

One of EPA's main functions is to provide technical assistance and guidance on a variety of topics. (See the Action Plan, below, for details on upcoming guidance documents.) Two of the most important areas which require improved guidance and assistance are controls on toxic pollutants and nonpoint sources as they affect both ground and surface waters. In the toxics area, EPA recently published toxic water quality criteria and will soon conclude a toxics treatability study for POTWs.

State Role:

Over the life of the WQM program, the trend has been toward a stronger State role in both planning and program management. This strategy reinforces that trend and also encourages stronger ties between the States and units of local government to solve some of the problems affecting construction grants.

States should carry out general management functions, implement the planning process, maintain workable WQM plans, and review and revise water quality standards. They should also focus on the problems and capabilities of local units of government involved in POTW construction or operation, especially for capital budgeting and long-term financing, to ensure the long-term operation and maintenance of on-lot disposal systems, POTWs, sewers, and nonpoint source controls.

Regarding the involvement of sub-State planning agencies, specifically, the designated areawide planning agencies under section 208, the States should manage their involvement and make sure they receive funds to perform the tasks for which they have expertise. At the same time, the States must make sure that the Statewide use of funds is non-duplicative, focused on priority problems, and making use of transferable information from neighboring Regions or States.

In general, it is the States' role to control nonpoint sources, since the Congress has reserved this responsibility for the States. The States can employ regulatory programs, such as general NPDES permits for storm sewers, or employ incentive programs such as cost-sharing under USDA or the State.

Areawide and Local Agencies:

The designated areawide agencies provide important planning inputs to the WQM program on such items as definition of municipal service areas,

identification of management agencies, development of fiscal/financial plans, consideration of integrated waste management, identification of operations and maintenance programs, and identification of cost-effective controls for certain nonpoint sources, particularly urban runoff and construction runoff. The areawide agencies also serve an advocate function for implementation of certified and approved WQM plans.

Since areawide agencies tend to be weaker in terms of authority and capability than the States, the States should oversee and coordinate their efforts. The State agencies may contract with the areawide agencies to perform vital planning or implementation functions if they do not receive grants directly. Also, the areawide agencies should develop self-sustaining funding sources, if possible, with State and EPA assistance.

Local governments are deeply involved in both planning and management activities related to POTWs. Through their areawide or regional agencies they participate in facility-related aspects of areawide planning. Where WQM plans designate them the management agencies for this purpose, they receive construction grants for POTWs and operate and maintain existing POTWs in their jurisdictions.

Units of local government also generally conduct Step 1 facility planning which includes identification of service areas, fiscal/financial aspects, operations and maintenance, and point/nonpoint source tradeoffs (unless a certified and approved WQM plan already includes this information). Local governments should give full consideration to no-action or non-structural alternatives and innovative/alternative technology when conducting facility planning to ensure the ultimate cost-effectiveness of the systems they select.

Resources

All available evidence indicates that the ideal or ultimate needs of the WQM program far exceed anticipated Federal, State, and local budgets. Therefore, the participants in the program must set priorities and work to develop or redirect additional funding sources.

To obtain the maximum payoff from the funds available, EPA, the States, and the other participants in the WQM program should observe the resource principles discussed above in Issue 10. Briefly, the States should direct construction grants and program grants to actions with direct impacts on water quality, and develop more imaginative funding schemes. EPA will delegate more responsibility to the States to make program administration more efficient, consider changing the definition of secondary treatment, and provide the States with improved information on national goals and objectives.

Since there is no broad implementation authority or program for non-point source controls under EPA's mandate, EPA will attempt to achieve necessary nonpoint source controls through State and Federal cost-sharing

efforts, USDA conservation programs, and the use of private funding sources such as land developers. After further study, EPA may recommend a Federal nonpoint source implementation program to augment State programs.

EPA will use its national WQM strategy to set priorities for the use of WQM funds nationally, such as grants to States under sections 106, 205(g), 208, and 314. (For more information on the strategy, see Management, immediately below.)

WQM Program Management

In managing the WQM program, three important changes are needed. First, EPA will put increased emphasis on State 305(b) reports and State strategies, since States will identify in these management documents their problems and action plans for meeting water quality goals. Second, EPA will conduct improved oversight of State programs. Third, EPA will maintain a national WQM strategy which will clearly identify goals, objectives, and priorities, and, therefore, give meaning to the oversight function.

The States must conduct, under the Act and EPA regulations, continuous problem assessment processes and submit 305(b) reports summarizing their assessments every other year. To stress the importance of the problem assessment process in setting construction grant priorities, EPA will issue improved guidance on 305(b) reports which will ask the States to identify, segment by segment, streams which aren't meeting their designated uses and whether municipal sewage treatment problems are involved.

EPA will also ask the States to develop strong, comprehensive State strategies to provide the long-range action plans for solving municipal point source problems and keeping intact the designated uses of all water bodies in the State. Specifically the strategies should identify:

- waters which are not fishable/swimmable, but for which those uses are attainable, and how the State will meet the fishable/swimmable goal by 1990
- plans for completing construction grants programs under the Clean Water Act, under two scenarios: (1) fastest possible completion assuming unconstrained resources, and (2) constant annual federal funding at a level EPA will specify in its State strategy guidance
- priorities and action plans for all components of the State WQM program--water quality standards reviews, monitoring, waste load allocations, nonpoint source and ground water management programs, and other activities--to ensure cohesive, coordinated State programs

After considering several options for the timing of this proposed requirement, EPA recommends that States should begin to provide this information by FY 83, since that is the earliest feasible time.

By stressing improved oversight of State programs, EPA does not wish to imply more detailed or burdensome reporting of State activities. As discussed above under the problem-solving process, EPA will stress environmental results (cleaner water) in preference to surrogate measures of State performance.

Since some tracking of State management functions is necessary, however, to analyze where Federal and State funds are going and whether they are being used effectively, EPA will conduct limited tracking of State program activities. This will involve two types of information: data on proposed expenditures of funds on priority outputs and data on accomplishment of those outputs.

To provide the context for improved oversight, EPA will use its national WQM strategy. Working with the States and others involved in the WQM program, EPA will develop priorities through a rational process of defining goals, identifying long- and short-range objectives, identifying associated activities and outputs, then deciding on national priorities which the EPA Regions will stress in their annual negotiations with the States.

Priority activities are generally those which are either mandatory under authorizing legislation, or those which are necessary before other important parts of the program can operate. Some of EPA's short-range priorities which relate to construction grants are water quality standards attainability determinations, waste load allocations for situations involving proposed AST/AWT plants, State and local pretreatment programs, construction grants management delegation, POTW operator training, and 305(b) reports and State strategies.

CHAPTER VI

ACTION PLAN

In general, Task V of the 1990 Strategy assumes that the Act, the regulations, and EPA guidance set forth a problem-solving process and management framework which are basically sound. Although this strategy will necessitate some regulatory changes and many administrative changes, EPA will not start a major legislative initiative involving the WQM program at this time.

Legislative Changes

Although EPA anticipates no major changes in the law in the short run as a result of Task V, there may be a need for legislative changes in the nonpoint source area within five years, after more information on the effectiveness of present control programs becomes available. EPA may suggest some type of Federal regulatory authority to ensure NPS control or may pursue expanded Federal cost-sharing programs.

Regulatory Changes

One of the assumptions of this strategy is that EPA will propose, before the end of FY 81, new regulations for water quality standards and waste load allocations. Beyond these two areas, EPA is assessing the construction grants regulations and the WQM regulations to determine what adjustments are needed to implement Task V.

Preliminary findings on necessary regulatory changes are as follows:

- EPA may revise the definition of BPWTT/secondary treatment in the construction grants regulations and will issue an Advanced Notice of Proposed Rulemaking in FY 81.
- EPA should review the goal statement of the WQM program and revise it to reflect the goals stated herein (see 40 CFR 35.1505).
- EPA may wish to expand its description of what States are required to include in their Continuing Planning Process descriptions, especially with respect to setting water quality-based priorities (see 40 CFR 35.1509)
- EPA should change the statement in 35.1511 that problem assessment activities should be funded only with section 106 funds.
- As with the Continuing Planning Process, EPA should expand its requirements for State strategy preparation to set the basis for water quality-based priorities (see 35.1511-2).

- EPA should say in the WQM regulations that designated management agencies in certified and approved WQM plans may receive construction grants to perform eligible construction-related tasks (See 35.1513-6.)
- The discussion of roles in 35.1521-2 should be updated to include a stronger State role in planning and program management
- Appendix A - Water Quality and Pollutant Source Monitoring - of the WQM regulations should be updated to reflect this strategy and other recent developments.

Other Actions

The Action Plan, shown on the following pages, presents a calendar of action items this strategy identifies. The items are identified by the part of the problem-solving process they are associated with, or as part of needed improvements in program management.

ACTION PLAN FOR IMPLEMENTATION OF THE 1990 STRATEGY -- PLANNING

Strategy Area	Milestones/Outputs			
	FY 81	FY 82	FY 83	FY 84 & Later
PROBLEM IDENTIFICATION				
1. WQS regulations (EPA-HQ) --proposed --final				
2. WQS attainability guidance (EPA-HQ) --general --economic --environmental				
3. toxic ambient water quality criteria for 65 toxic pollutants (EPA-HQ)				
4. protocol for modifying toxic WQ criteria; list of pollutants to be considered for inclusion in WQS (EPA-HQ)				
5. priorities for toxic WQS revisions (EPA-HQ)				
6. incorporation of toxics in State WQS (States)				
7. prototype studies on monitoring to describe WQ (EPA-HQ)				

ACTION PLAN FOR IMPLEMENTATION OF THE 1990 STRATEGY -- PLANNING

Strategy Area	Milestones/Outputs			
	FY 81	FY 82	FY 83	FY 84 & Later
8. full scale programs to describe WQ (EPA-HQ)				
9. ground water monitoring strategy (EPA-HQ)				
10. guidance for improving State 305(b) reports (EPA-HQ)				
11. implementation of Fed/ State quality assurance requirements (EPA-HQ, RO's; States)				
12. WQS reviews containing attainability tests (States)				
13. 305(b) reports including identification of all waters not fishable/ swimmable and necessary treatment works compared to works already in place (States)				
SOLUTION DEVELOPMENT				
1. NURP report to Congress on urban storm runoff (EPA-HQ)				

ACTION PLAN FOR IMPLEMENTATION OF 1990 STRATEGY -- PLANNING

Strategy Area	Milestones/Outputs			
	FY 81	FY 82	FY 83	FY 84 & Later
2. waste load allocation regulations (EPA-HQ) --proposed --final	<div></div>			
3. completion of POTW toxic treatability study (EPA-HQ)				
4. point/nonpoint source tradeoff guidance (EPA-HQ) --draft --final	<div></div> <div></div>			
5. removal of conditions on WQM plan certification/approval (EPA-RO's, States)				
6. pilot integrated waste management studies (EPA-HQ, RO's, States)				
7. construction grants projects screened for possible PS/NPS tradeoffs, especially regarding eutrophication (States)				
8. ANPRM on revised definition of secondary treatment (EPA-HQ)	<div></div>			

ACTION PLAN FOR IMPLEMENTATION OF THE 1990 STRATEGY -- PLANNING

Strategy Area	Milestones/Outputs			
	FY 81	FY 82	FY 83	FY 84 & Later
9. study of high-flow/low DO situations regarding PS/NPS tradeoffs (EPA-HQ)				
10. tentative legislative initiative for NPS control (EPA-HQ)				
11. EPA/State strategy for USR/CSO controls; high flow considerations (EPA-HQ)				
IMPLEMENTATION (See other 1990 Strategy Tasks)				
EVALUATION				
1. evaluation of effects of pollution control at specific sites (States)				
2. development of evaluation strategies (States)				

ACTION PLAN FOR IMPLEMENTATION OF THE 1990 STRATEGY -- PLANNING

Strategy Area	Milestones/Outputs			
	FY 81	FY 82	FY 83	FY 84 & Later
PROGRAM MANAGEMENT				
1. State strategy guidance, including requirements for States to show how they will meet fishable/swimmable uses by 1990; priorities for segments, nonpoint source controls, waste load allocations, water quality standards reviews, planning, monitoring, evaluation, public participation (EPA-HQ, RO's)				
2. national WQM strategy, annually updated (EPA-HQ)				
3. tracking of State progress--environmental and programmatic (EPA-HQ,RO)				
4 mechanism for State input to WQM Strategy and overall policy (EPA-HQ)				
5. technical assistance (EPA-HQ, ROs)				
--monitoring				
--water quality analysis				
--fiscal/financial/institutional planning				
--NPS controls				

ACTION PLAN FOR IMPLEMENTATION OF THE 1990 STRATEGY -- PLANNING

Strategy Area	Milestones/Objectives			
	FY 81	FY 82	FY 83	FY 84 & Later
6. WQM Needs Assessment updates (EPA-HQ)			X	
7. national summary of 305(b) reports and State strategies (EPA-HQ)			X	
8. review program goals (EPA-HQ, RO's, States)				X
9. incorporate water quality needs into Construction Grants Needs Survey (EPA-HQ)				

1990 STRATEGY TASK V -- PLANNING

APPENDIX

Major WQM Policy Documents

1. 40 CFR Part 35, Subpart G, "Grants for Water Quality Planning, Management, and Implementation." Final Regulations. May 23, 1979.
2. US-EPA, Water Planning Division, "Water Quality Management Five-Year Strategy, FY 81 Baseline." January 1980.
3. US-EPA, Water Planning Division, "Supplemental Water Quality Management Program Guidance for FY 81." June 1980.
4. US-EPA, Office of Planning and Management, "Agency Operating Year Guidance for FY 81." February 1980.
5. US-EPA, 440/9-76-025, "Basic Water Monitoring Program." Revised 1978.
6. 40 CFR Part 35, Subpart E, Appendix A, "Cost-Effectiveness Analysis Guidelines." September 27, 1978.
7. US-EPA, Criteria and Standards Division, "Clean Lakes Program Strategy." August 1980.
8. US-EPA, Water Planning Division, "Draft WQM Needs Assessment for FY 80-84." September 1980.
9. US-EPA, Office of the Administrator, "Handbook for FY 81 State/EPA Agreements." March 1980.