



OFFICE OF INSPECTOR GENERAL

*Catalyst for Improving the Environment*

## Evaluation Report

# Sustained Commitment Needed to Further Advance Watershed Approach

Report No. 2005-P-00025

September 21, 2005



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**Abbreviations**

CWSRF	Clean Water State Revolving Fund
EPA	Environmental Protection Agency
HUC	Hydrologic Unit Code
NPDES	National Pollutant Discharge Elimination System
PAM	Program Activity Measure
TMDL	Total Maximum Daily Load

**Cover photo:** A view of the upper watershed of the North Fork Lucie River, Florida  
(from South Florida Water Management District Web site).



# At a Glance

*Catalyst for Improving the Environment*

## Why We Did This Review

We undertook this evaluation to determine how well the U.S. Environmental Protection Agency (EPA) is doing in four critical elements to advance the watershed approach. These four elements are integration, stakeholder participation, strategic planning, and performance measurement.

## Background

A watershed refers to a geographic area in which water drains to a common outlet. A watershed includes not only all water resources, such as lakes and rivers, but also the land that drains into these resources. The watershed approach is a strategy for achieving clean water that relies on decentralized decision making and stakeholder involvement to effectively protect and restore aquatic ecosystems.

For further information, contact our Office of Congressional and Public Liaison at (202) 566-2391.

To view the full report, click on the following link:

[www.epa.gov/oig/reports/2005/20050921-2005-P-00025.pdf](http://www.epa.gov/oig/reports/2005/20050921-2005-P-00025.pdf)

## ***Sustained Commitment Needed to Further Advance Watershed Approach***

### **What We Found**

If EPA is committed to the watershed approach, it needs to make improvements in four key elements:

- Integrating watershed activities into its core water programs.
- Addressing stakeholder concerns to increase their participation.
- Refining and improving key aspects of its strategic planning process.
- Improving the watershed performance measurement system.

EPA adopted the watershed approach to help focus existing, traditional water pollution control programs in a more comprehensive manner and address emerging problems. The premise is that many water quality problems are best solved at the overall watershed level rather than the individual waterbody or discharger level. It is a holistic approach that considers cumulative impacts from a variety of sources, and represents an effort to enhance EPA's ability to improve and protect the Nation's water quality.

Although progress has been made in each of the four critical elements that we reviewed, further improvements are needed for each. EPA has made progress integrating watershed approach principles into some of its core water programs, but needs to address challenges to ensure further success. Stakeholders were enthusiastic about the watershed approach, but identified a number of obstacles when adopting the approach. EPA has made important strides incorporating the watershed approach into its strategic plans, but it must improve some key steps. Although EPA developed a performance measurement system for improving water quality on a watershed basis, EPA did not develop measures to evaluate key programs and activities, and its national outcome measures were not understandable, comparable, and reliable.

### **What We Recommend**

We recommend that EPA address challenges to integrating watershed approach principles into its core programs, as well as obstacles identified by stakeholders concerning the watershed approach. EPA also needs to improve its strategic plans and performance measurement system that address the watershed approach. If EPA is committed to the watershed approach, it will make these needed improvements. EPA provided comments in response to our draft report. The Agency generally agreed with our findings and recommendations.



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

OFFICE OF  
INSPECTOR GENERAL

September 21, 2005

**MEMORANDUM**

**SUBJECT:** Sustained Commitment Needed to Further Advance Watershed Approach  
Report No. 2005-P-00025

**FROM:** Kwai-Cheung Chan /s/  
Assistant Inspector General for Program Evaluation

**TO:** Benjamin Grumbles  
Assistant Administrator  
Office of Water

This is our final report on how well the U.S. Environmental Protection Agency (EPA) is advancing the watershed approach. This report contains findings that describe the issues identified by the EPA Office of Inspector General (OIG) and recommended corrective actions. This report represents the opinion of the OIG, and the findings contained herein do not necessarily represent the final EPA position. Final determinations on matters discussed in this report will be made by EPA managers in accordance with established audit resolution procedures.

The OIG issued a draft report on June 21, 2005, to EPA for review and comment. A response was submitted on July 28, 2005. EPA's response highlighted its efforts to integrate the watershed approach into its core programs and develop partnerships with stakeholders. EPA also responded to our recommendations on improving strategic planning and performance measures. The OIG has incorporated these comments, as well as the technical corrections and supplemental information provided by EPA, into the final report.

**Action Required**

In accordance with EPA Manual 2750, you are required to provide a written response to this report within 90 calendar days of the date of this report. You should include a corrective action plan for agreed upon actions, including milestone dates. We have no objections to the further release of this report to the public. For your convenience, this report will be available at

<http://www.epa.gov/oig>. In addition to providing a written response, please e-mail an electronic version to [mcghee-lenart.renee@epa.gov](mailto:mcghee-lenart.renee@epa.gov).

If you or your staff have any questions regarding this report, please contact me at (202) 566-0827, Dan Engelberg, Director of Program Evaluation – Water Issues, at (202) 566-0830, or Renee McGhee-Lenart, Assignment Manager, at (913) 551-7534.

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# Chapter 1

## Introduction

### Purpose

The U.S. Environmental Protection Agency (EPA) has supported a “Watershed Protection Approach” for well over a decade to help meet the Agency’s Clean Water Act and Safe Drinking Water Act obligations to achieve clean water. The Office of Inspector General (OIG) undertook this evaluation to determine how well EPA is doing in four critical elements to advance the watershed approach. We evaluated those elements using the following questions:

- **Integration:** What progress has EPA made in integrating watershed approach principles into its water programs and activities?
- **Stakeholder Participation:** What advantages/opportunities and challenges exist for EPA to persuade stakeholders to adopt the watershed approach?
- **Strategic Planning:** How well has EPA strategically planned for implementing the watershed approach?
- **Performance Measurement:** How adequately does EPA measure the success of the watershed approach?

### Background

A watershed refers to a geographic area in which water drains to a common outlet. The watershed includes not only the water resources, such as lakes and rivers, but the land surrounding these resources. The watershed approach is a strategy for effectively protecting and restoring aquatic ecosystems and protecting human health that relies on decentralized decision making and significant stakeholder involvement. EPA adopted this approach to help focus existing, traditional water pollution control programs in a more comprehensive manner and address emerging problems such as nonpoint source pollution. An example of the watershed approach is EPA’s National Estuary Program, which provides funding to restore and protect 28 of America’s nationally significant estuaries. An estuary is the region of interaction between rivers and near-shore ocean waters, where fresh and salt water mix. The National Estuary Program is an inclusive, community-based approach on the watershed level.

Historically, EPA has worked to achieve clean and safe waters through implementing the Clean Water Act by employing a variety of regulatory programs and tools. The conventional water programs tend to focus on particular sources, pollutants, industries, or facilities, and have resulted in a fragmented approach to managing water quality. Despite the success of reducing impacts of point source discharges, the nation’s water quality has remained at risk due to the emergence of nonpoint source pollution, which comes from diffuse sources and is generally



carried by rainfall or snowmelt moving over the ground. As a result, EPA adopted the watershed approach to address these challenges.

The watershed approach has as its premise that many water quality problems are best solved at the watershed level rather than the individual waterbody or discharger level. While there is some overlap between the activities of the two approaches, States are still required to fulfill regulatory requirements. For instance, EPA or States must issue National Pollutant Discharge Elimination System permits to point sources dischargers. These permits can be issued to individual facilities or on a watershed basis. Regardless, EPA and States must implement these activities from a fixed pool of resources. EPA must fund its conventional and watershed approaches within its current budget, which may decrease in future years.

Although EPA has supported a “Watershed Protection Approach” since the early 1990s, the approach gained limited acceptance as the means to implement water programs. For example, on December 3, 2003, the then Assistant Administrator for Water noted there were “substantial gaps in actual implementation,” and that “now is the right time to focus and re-invigorate our efforts to more fully institutionalize the approach - both on the ground and as a cornerstone of our core water programs.” The current Assistant Administrator for Water has stated, “...if we are going to leave our water purer than we found it, we must redouble our efforts to implement a watershed management approach in every part of our country.”

EPA elevated the importance of the watershed approach by creating subobjective 2.2.1 in its 2003-2008 Strategic Plan. According to the Strategic Plan, successfully protecting and improving water quality on a watershed basis depends on: implementation of core water programs, including integration on a watershed basis; engaging diverse stakeholders in solving problems; and applying innovative ideas, such as water quality trading, to deliver cost-effective water pollution control. EPA also developed two national outcome measures and an Implementation Plan for Subobjective 2.2.1.

EPA is to assess how well it is improving water quality on a watershed basis through two national outcome measures:

- Number of the Nation’s watersheds where water quality standards are met in at least 80 percent of the assessed waters segments.
- Number of the Nation's watersheds where all assessed water segments maintain their quality and at least 20 percent of assessed water segments show improvements above conditions as of 2002.

EPA also developed an Implementation Plan for Subobjective 2.2.1 to improve water quality on a watershed basis. According to the Implementation Plan, the watershed approach “should be the fulcrum of Federal and State restoration and

protection efforts, and those of our many stakeholders, both private and public. EPA has both a national interest in, and responsibility for, supporting watershed goals and approaches and believes that such an approach is one of the most important environmental guiding principles to maintain and restore the chemical, physical and biological integrity of the Nation’s waters.” The Implementation Plan sets forth the following three-part strategy to improve water quality on a watershed basis:

- Implementing core clean water programs, including on a watershed basis.
- Accelerating watershed protection.
- Applying an adaptive management framework.

To implement core clean water programs to improve water quality on a watershed basis, EPA will:

<b>Figure 1.1: Actions to Implement the Core Clean Water Act Programs</b>	
✓	Strengthen the National Pollutant Discharge Elimination System Permit Program
✓	Develop Total Maximum Daily Loads and Related Plans
✓	Implement Effective Nonpoint Source Practices on a Watershed Basis
✓	Improve Water Quality Monitoring and Assessment
✓	Strengthen the Water Quality Standards Program
✓	Support Sustainable Wastewater Infrastructure through the Clean Water State Revolving Fund

In addition, EPA is integrating watershed principles into these six key program areas. However, EPA recognizes that implementation of water programs on a watershed basis, which is the first part of its three-part national strategy, is not enough to accomplish EPA’s watershed goals.

To accelerate watershed protection, EPA supports local watershed efforts by working in collaboration with multiple partners, including other Federal agencies, States, local governments, and environmental organizations. Local watershed organizations develop watershed plans to help achieve clean and safe water. EPA is developing tools and technical assistance to help these partners. To initiate and strengthen watershed protection efforts for critical watersheds and waterbodies, EPA created the Targeted Watershed Grants program. The program first provided funding in 2003 to a variety of watershed projects designed to encourage community-based approaches to protect and restore waters. Over the past 2 years, EPA awarded 34 grants, totaling over \$28 million.

The final part of EPA’s strategy to accomplish its watershed objectives is to apply an “adaptive management” framework. According to EPA’s Implementation Plan for Subobjective 2.2.1, an adaptive management framework applied to watershed protection involves several key components, including setting challenging but realistic goals, improving assessment and monitoring, and identifying barriers to implementation. The Plan also states that the adaptive management framework will allow EPA to analyze progress and obtain feedback regarding the

effectiveness of different approaches, which can then be used to adjust and realign the goals and specific program management and activities to make progress and achieve clean water goals.

The Government Performance and Results Act does not specifically require that performance measurement be applied to the watershed approach, since it is not identified as a program under the Clean Water Act. Nonetheless, EPA has developed a performance measurement system to assess how well it is improving water quality on a watershed basis and implementing its three-part national strategy.

## **Scope and Methodology**

We conducted our evaluation from October 2003 through February 2005 in accordance with *Government Auditing Standards*, issued by the Comptroller General of the United States. We evaluated the watershed approach by analyzing four critical elements key to the success of this approach: integration of watershed activities into core water programs; partnerships; strategic planning; and development of performance measures and goals.

To evaluate these four critical elements, we evaluated EPA headquarters and regional guidance for the watershed approach and core programs. We also reviewed EPA's Fiscal 2003-2008 Strategic Plan; the Implementation Plan for Subobjective 2.2.1; the National Water Program Guidance for Fiscal 2005; and the 2004 EPA Regional Plans for Regions 1, 4, 7, and 10. We interviewed all four of the primary Office Directors within the Office of Water, as well as managers and program staff in each of the six core programs. We also spoke with EPA regional water program directors and staff from Regions 1, 4, 7, and 10. Additionally, we interviewed representatives of nine large and small watershed organizations, and water staff from six States, to identify advantages and obstacles that EPA needs to address regarding the watershed approach.

Appendix A provides further details on our scope and methodology, including prior coverage of this topic by OIG and others.

## **Results in Brief**

While EPA has made progress in implementing the four key elements that we reviewed regarding the watershed approach, improvements in each of the elements are needed to ensure the success of the approach. EPA has taken steps to integrate the watershed approach into its core water programs, but a number of challenges exist that may prevent further integration. Stakeholders, who are vital to successful implementation of the watershed approach, identified a number of advantages to the watershed approach, as well as obstacles that threaten the implementation of the approach. EPA has made strides in strategic planning for the watershed approach, but phases of the planning process must be improved.

While EPA has developed a performance measurement system, it needs to be improved so that critical performance information is conveyed to EPA on the implementation of the watershed approach.

We recommend that EPA address the challenges that impede integration of the watershed approach into core water programs, as well as the obstacles that prevent stakeholders from adopting and implementing the watershed approach. We also recommend that EPA improve its strategic plans and performance measurement system for implementing the watershed approach. If EPA is committed to advancing the watershed approach, it will need to improve these areas to ensure its success.

In July 2005, EPA provided comments in response to our draft report. EPA's comments to the OIG draft report are in Appendix E. We provide our evaluation of those comments in Appendix F.

## Chapter 2

### Progress Made in Integrating Watershed Principles into Core Programs, but Challenges Remain

EPA has made progress integrating watershed principles into core water programs, but obstacles remain. One of the principal challenges to integrating the nation's various clean water protection programs into a comprehensive watershed-based effort is the fact that most of the programs do not have a watershed origin. They came from individual requirements of the Clean Water Act, with a programmatic focus. Most EPA water protection efforts occur through six "core programs," and EPA has found building watershed principles into these core programs to be a challenge. For example, expanding the geographic focus and increasing stakeholder involvement in regulatory programs may require more time and resources to carry out program requirements. Obtaining the resources needed may be difficult in the current budget environment.

#### Guiding Principles of the Watershed Approach

EPA's guiding principles<sup>1</sup> for the watershed approach call for a geographic focus and partnerships with those people most affected by watershed management issues. The geographic focus principle encourages activities to be directed within specific geographic areas such as watersheds. Partners, such as States and watershed groups, are to be involved in making key decisions. We evaluated EPA's six core Clean Water Act programs (see Figure 2.1) to determine whether they supported these principles.

**Figure 2.1: Six Core Clean Water Act Programs**

- ✓ National Pollutant Discharge Elimination System
- ✓ Total Maximum Daily Loads
- ✓ Nonpoint Source Pollution Control
- ✓ Water Quality Monitoring
- ✓ Water Quality Standards
- ✓ Clean Water State Revolving Fund

According to EPA's planning documents, these Clean Water Act programs form the foundation for the "watershed framework." This process is briefly described in Appendix B.

<sup>1</sup> The third guiding principle of the watershed approach is *Sound Management Techniques Based On Strong Science and Data*. This principle was not assessed as it is not unique to the watershed approach.

Details on what we found when comparing the conventional and watershed approaches for each of the six programs follow.

## **National Pollutant Discharge Elimination System Program**

EPA has integrated watershed approach principles into the National Pollutant Discharge Elimination System (NPDES) permit program by promoting watershed-based permitting and encouraging States to synchronize issuing NPDES permits by water basins through the “rotating basin approach.” The advantages of watershed permitting are uncertain, however, because this is a new tool, and limited empirical information exists on its benefits and the extent of its use by stakeholders. Regardless of the approach taken for issuing permits, the regulatory requirements of the Clean Water Act must be met.

### *Conventional Approach*

The NPDES program controls water pollution by regulating point sources that discharge pollutants into waters. Point sources are discrete conveyances, such as pipes or man-made ditches. Facilities must obtain NPDES permits if they discharge directly to surface waters, and the permit indicates a specified amount of a pollutant that can be discharged. EPA has authorized 45 States to administer components of their permitting programs with EPA oversight, while EPA administers programs for the remaining five States and the District of Columbia. Typically, permit requirements are arrived at between the States (or EPA) and the affected facility, with limited participation by community groups. The two basic types of NPDES permits are:

- An *individual permit*, specifically tailored for an individual facility or point source.
- A *general permit*, to cover multiple facilities within a specific category. General permits may be written to cover categories of point sources having common elements, such as those in a similar industry, and may only be issued to dischargers within a specific geographical area.

### *Watershed Approach*

EPA has integrated watershed principles into the NPDES program by encouraging watershed-based permitting. This involves developing NPDES permits that coordinate requirements for control of dischargers within the delineated watershed area. EPA’s *Watershed-Based NPDES Permitting Implementation Guidance* – published in December 2003 – emphasizes considering watershed goals and the impact of multiple pollutant sources and stressors, and encouraging increased stakeholder involvement for watershed permits. These efforts expanded the geographic focus of the program to consider the overall conditions of the watershed and other sources affecting water quality. Watershed-based permitting

can combine aspects of the more traditional *individual* and *general* permits described above. Examples include:

- *Watershed-Based Permit for Multiple Permittees* – A single permit is issued to multiple point sources.
- *Watershed General Permit* – This is similar to existing general permits, but the watershed boundary – and not the type of discharge – would be used to determine the sources covered by the permit.
- *Individual Watershed Permits with Coordinated Requirements*

An example of a watershed-based permit is the permit issued to the Neuse River Compliance Association and its co-permittees in North Carolina. Association members include facilities that discharge treated wastewater into the Neuse River basin under existing individual NPDES permits. A single watershed-based permit was issued to Association members governing the total amount of nitrogen discharged into the watershed. The permit established a ceiling of nitrogen to be discharged and allocated this limit among the existing dischargers. The permit allows for trading among Association members to meet the total limit. Pollutants other than nitrogen are controlled under each member's individual permit.

Watershed-based permitting relies significantly on EPA's partners, such as the regulated entities and contributors of nonpoint source pollution. As the basis for making permitting decisions expands from a single point source and water body to a collection of sources in a watershed, the number of parties with an interest expands. Enlisting voluntary involvement by stakeholders – particularly those currently unregulated (such as farmers) – can be a challenge, but is important. Including more stakeholders may require additional time and complexity to the permit development process. As a result, watershed permits may require more resources and thus be more expensive to develop. EPA recognized this in its *Watershed-Based National Pollutant Discharge Elimination System (NPDES) Permitting Implementation Guidance* issued in December 2003. The guidance stated that “engaging a wider variety of stakeholders means that the permitting authority and the permit writer will have to consider a broader range of interests and watershed goals when developing the permit, potentially adding technical complexity and time to the permit development process.” This may be a challenge for States with limited resources. Further details on stakeholder involvement are in Chapter 3.

Ensuring all sources of stressors in a watershed are taken into account can also be challenging. For example, the sources of air deposition that impair watersheds (such as mercury emitted from the smokestacks of coal-fired utilities) may come from other States, and from the air rather than water, and thus can be difficult to control under the Clean Water Act.

The benefits of watershed permitting are uncertain. Since watershed permitting is a new tool, limited empirical information exists on its benefits. In addition, EPA

does not have data on the extent of its use by stakeholders. However, EPA has recently begun to track the number of such permits, and this information is critical for evaluating the effectiveness of watershed-based permitting in achieving clean water goals and improving efforts.

In addition to promoting watershed permitting, EPA has advanced the watershed approach by encouraging stakeholders to synchronize NPDES permit issuance within water basins (a “rotating basin approach”). This approach involves a cycle of management programs (e.g., monitoring, planning, permit issuance) around State river basins over an established time frame (usually 5 years). EPA encouraged such a process for issuing NPDES permits in its 1994 *NPDES Watershed Strategy*. This process may prove difficult because dischargers are often not evenly distributed across States’ water basins, and other Federal initiatives (such as EPA efforts to reduce the NPDES permit backlog) may divert resources from basin permitting cycles according to an EPA report, *A Review of Statewide Watershed Management Approaches*, issued in April 2002.

## **Total Maximum Daily Load Program**

EPA has integrated principles of the watershed approach into the Total Maximum Daily Load (TMDL) program by encouraging States to develop TMDLs on a watershed basis rather than by individual water segments. Stakeholder involvement with TMDLs is critical for both the conventional and watershed approaches, but the broader watershed approach may expand the number of stakeholders. Expanding both the geographic scale and the number of stakeholders may result in additional time and resources required to develop these TMDLs. Regardless of the approach taken for development of TMDLs, the regulatory requirements of the Clean Water Act must be met.

### *Conventional Approach*

A TMDL is a calculation of the maximum amount of a pollutant a waterbody can receive from all sources and still meet water quality standards. The Clean Water Act requires States to identify a list of impaired waters not meeting State water quality standards, set priorities for TMDL development, and develop a TMDL for those pollutants causing the impairment. EPA has approval authority over the lists of impaired waters and corresponding TMDLs, and if EPA disapproves a State submission it must develop the list of impaired waters and corresponding TMDLs itself. TMDLs are geographically based, although the Clean Water Act does not specify the scale at which States should develop TMDLs. In many cases, TMDLs are developed for individual waterbodies rather than entire watersheds. Because EPA is under court orders and consent decrees in some States to develop TMDLs for impaired waterbodies, developing TMDLs for individual waterbodies may be quicker.



## *Watershed Approach*

EPA encourages States to develop TMDLs on a watershed basis because many water pollution concerns are found in the same geographic area and are caused by multiple dischargers, multiple pollutants, or nonpoint sources. Developing more comprehensive TMDLs may take longer due to the complexity of the problems in the watershed and more stakeholders being involved, which may also result in the need for more resources. Similar to NPDES permitting, EPA also encourages a rotating basin approach for TMDL development as watershed strategies suggest that related activities within a basin should be coordinated to achieve greater benefits.

The watershed approach to developing TMDLs relies more heavily on partners and stakeholders than the conventional approach. EPA encourages States to establish local advisory groups to assist State regulators during the TMDL development process. Also, EPA has recently taken steps to further the use of water quality trading in impaired waters for certain pollutants, such as nutrients and sediment. In January 2003, EPA issued a “Final Water Quality Trading Policy,” and in November 2004 published its “Water Quality Trading Assessment Handbook.” The latter discusses how to broaden stakeholder participation by identifying and engaging potential participants.

There are several barriers to developing watershed TMDLs. As is the case for the NPDES permitting program, developing TMDLs for multiple waters and pollutant sources may be more complex than doing so for individual segments and pollutants. This may increase the time needed to complete watershed TMDLs. Increased stakeholder involvement may add to the complexity as well. For these reasons, developing watershed TMDLs may require more resources than conventional TMDLs. Further, some States have found it difficult to complete TMDL development within rotating basin schedules. Some States may find resultant delays of particular concern because they are under court orders and consent decrees to finish TMDLs under specified timeframes.

Jurisdictional issues are another challenge to developing TMDLs on a watershed basis. Many watersheds cross State boundaries, as do the effects of pollution sources. Because pollution control is a State-level activity, downstream States with waters affected by an upstream source in a different State have no way to directly control that pollution source. The issue of air deposition noted previously is an example of this jurisdictional issue. A number of State staff we interviewed identified jurisdictional issues as an important area in which EPA should continue being involved. Chapter 3 contains further details.

## **Nonpoint Source Program**

EPA’s Nonpoint Source program has incorporated watershed principles into the program by encouraging the development of geographically based watershed

plans and involving partners when carrying out programmatic requirements. EPA encourages the development of these plans and is relying on States, working with local watershed groups and other stakeholders, to develop and implement them. Interviews with stakeholders suggest that local watershed groups often lack the technical capacity to develop these plans, which could be an ongoing challenge.

### *Conventional Approach*

Nonpoint source pollution is seen as the largest remaining source of uncontrolled pollution. Rather than coming from a specific source, such as an industrial plant, nonpoint source pollution is generally caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries natural and human-made pollutants, depositing them into surface waters.

The nonpoint source program has historically embraced watershed principles because the 1987 amendments to the Clean Water Act, which created the nonpoint source program, preceded EPA's watershed approach by only a few years. The amendments require that States implement nonpoint source programs on a watershed basis to the maximum extent practicable, and that States involve partners when developing and implementing the programs. In the early phases of the program, some States and EPA regional offices focused their programs on implementation of management practices and demonstration projects of particular technologies in limiting nonpoint source runoff. As a result, EPA has issued numerous publications and reports highlighting specific pollutant reductions or other measurable improvements attributable to the nonpoint source program. Despite these efforts, nonpoint source pollution continues to be a leading cause of water pollution. According to the 1998 Clean Water Act Section 303(d) list, 43 percent of water quality impairments were attributed exclusively to nonpoint source pollution. An additional 47 percent were attributed both to point and nonpoint source pollution.

### *Watershed Approach*

EPA has indicated that developing and implementing watershed plans are important in solving nonpoint source problems. These plans are designed to identify the causes of pollution and suggest controls, known as nonpoint source management measures. Beginning in 1999, EPA and the States sharpened the focus of the nonpoint source program on solving water problems in impaired waters, and in 2002 issued updated guidance to emphasize watershed-based efforts. Moreover, the Office of Water recently established a "program activity measure" to track the number of watershed-based plans supported under State nonpoint source management programs.

EPA has encouraged partnerships through efforts to increase public awareness and understanding of nonpoint source pollution in their watersheds. EPA has conducted focus groups to identify media outreach plans; developed guides on

how to put together watershed outreach campaigns; and assembled radio, television, and newspaper public service announcements. EPA holds conferences on community involvement, and past conferences have included sessions on watershed protection. Nonetheless, maintaining community interest in watershed issues remains a challenge, particularly when there is not a crisis that affects the community directly.

EPA and States often rely on local stakeholders, such as local watershed organizations, to develop comprehensive watershed plans to address nonpoint source impairments. Interviews with stakeholders indicated that watershed organizations often lack the technical capacity to develop these complex plans. To help stakeholders facilitate an effective watershed planning process, EPA established a *Watershed Planning Team*. The team is assisting stakeholders by describing the elements of a comprehensive watershed plan, and developing a Web-based tool to facilitate the development of such plans.

## **Water Quality Monitoring Program**

EPA has introduced watershed principles into the water quality monitoring program primarily by encouraging States to monitor and assess geographic areas, such as watersheds, using a rotating basin approach. EPA has promoted the use of a rotating basin approach for monitoring since it may be more effective than traditional approaches. Although a recent survey by the Association of State and Interstate Water Pollution Control Administrators indicated that some States have adopted a rotating basin approach to monitor State waters, the percentage of assessed waters throughout the nation has remained low.

### *Conventional Approach*

States are responsible for monitoring and reporting to EPA on the condition of their waters. The Clean Water Act does not specify the scale to which States must monitor the quality of their waters. Historically, EPA has relied on submission of Clean Water Act section 305(b) reports to determine that States have monitored water conditions. States have traditionally used a variety of monitoring techniques, such as fixed monitoring networks, probability design, targeted monitoring, and judgmental sampling. However, the percentage of assessed waters in the United States has remained relatively low. For example, from 1992 through 2000, EPA indicated the number of assessed river miles remained about 19 percent. Although EPA does not have all State data for the 2002 reporting cycle, the Agency noted that States assessed a small percentage of their waters for this reporting cycle as well.

To leverage limited resources and in recognition that other stakeholders collect monitoring data, EPA encourages partnerships with other Federal agencies, State monitoring councils, and volunteer organizations that collect data on water quality. For example, EPA is beginning to work more closely with the U.S.

Geological Survey to share monitoring data. Through its work on the National Water Quality Monitoring Council, EPA has worked to form monitoring councils to coordinate monitoring organizations.

### *Watershed Approach*

EPA encourages States to employ a rotating basin approach for monitoring watersheds, since it may result in greater monitoring coverage of State waters than historical practices. In addition, in its 2003 guidance document, *Elements of a State Water Monitoring and Assessment Program*, EPA provided guidance to States to upgrade their monitoring programs and advocated rotating basin approaches. According to EPA's response to our draft report, it is working closely with States to implement this guidance and has indicated that all States and territories are on schedule to have comprehensive State monitoring strategies finalized by September 2005. However, as noted, the percentage of assessed waters in the United States has remained relatively low.

## **Water Quality Standards Program**

The opportunity to incorporate watershed principles (geographic focus and partnerships) is limited in the Water Quality Standards program. For example, because uses vary from place to place, one component of standards – designated uses – may need to vary from site to site. However, EPA has incorporated the *geographic focus* principle of the watershed approach into the Water Quality Standards program for some pollutants.

### *Conventional Approach*

Water quality standards define the water quality goals for a waterbody. These standards include three components: (1) the designated use or uses; (2) pollutant criteria necessary to protect the uses; and (3) a policy to prevent or limit water quality degradation. These serve as one of the regulatory bases for permitting programs, and provide the basis for the TMDL allocations and nonpoint source controls. States are responsible for adopting and revising water quality standards. EPA approves or disapproves the State standards; if EPA disapproves a standard, it can promulgate a new standard for the State. EPA also develops and revises water quality criteria for certain pollutants, which can be used by States.

### *Watershed Approach*

EPA encourages States to use a watershed as the geographic unit of analysis when adopting criteria for certain parameters, such as nutrients. For example, nutrient levels in the nation's waters vary from one "ecoregion" to another, so it is not appropriate to develop a single national water quality criterion for nutrients. EPA has published nutrient criteria for different ecoregions across the country. It is

EPA's expectation that States tailor such ecoregion criteria to site-specific conditions within a State – such as watersheds.

Water quality standards tend to be waterbody-specific rather than adopted for watersheds. Assigning the same designated uses to an entire watershed would be questionable (for example, only some waters in a watershed would be used as public water supplies). However, some regulatory requirements of the Water Quality Standards program support watershed approach principles. For example, State water quality standards must consider downstream uses. EPA guidance also affords States the opportunity to adopt site-specific criteria for the protection of aquatic life. Site-specific criteria may be appropriate when taking into account the conditions at a site such as a watershed.

EPA's measure of success is dependent upon whether individual waters within watersheds are meeting their applicable water quality standards. EPA also recognizes that to protect water resources, it is critical to address the condition of land areas within watersheds, to help control nonpoint source pollution. Landscape level indicators have been suggested as a way to assess the linkage between pollution sources and aquatic health.

## **Clean Water State Revolving Fund Program**

EPA has incorporated watershed approach principles into the Clean Water State Revolving Fund (CWSRF) program, a funding mechanism available to pay for watershed projects. EPA has encouraged States to consider the goals of watersheds when making funding decisions. However, according to EPA guidance, CWSRF funds have been under-utilized for non-point source watershed projects.

### *Conventional Approach*

The CWSRF is a funding mechanism available to pay for a variety of both point and nonpoint source projects. The 1987 amendments to the Clean Water Act created the CWSRF program, designed to replace the construction grants program. To date, the CWSRF has funded over \$43 billion dollars for eligible projects. EPA makes grants to States for the purpose of establishing a revolving fund that provides loans for the following projects:

- Construction of publicly owned wastewater facilities.
- Implementation of nonpoint source control projects.
- Estuary management projects.

States provide matching funds (a minimum of 20 percent) and then fund low-interest loans to eligible projects within the State. Although EPA provides oversight and technical assistance to States to administer their programs, each State has the authority to fund its own priorities. Most of the CWSRF funding has

been targeted toward wastewater facilities rather than nonpoint source and estuary projects. EPA's 2004 Nonpoint Source Grant Guidelines stated that "...most States have under-utilized this resource (CWSRF) to date... States are encouraged to increase their use of this copious financial resource to help implement their nonpoint source watershed-based plans and other nonpoint source projects...."

### *Watershed Approach*

EPA has incorporated watershed principles into the CWSRF program by providing States with guidance on how to consider the goals of different geographic scales, such as a watershed, when making funding decisions. In 1996, EPA recognized that States were interested in funding other types of projects found within a watershed, such as nonpoint source and estuary projects. As a result, EPA provided guidance to States on how to prioritize projects eligible for CWSRF funding to encourage more flexibility in funding decisions. EPA encourages States to use the CWSRF as a source of funding for nonpoint source projects identified by watershed plans, although EPA admits this source of funding has been under-utilized by States for such projects. As of November 2003, 14 States had not used any of their revolving funds for nonpoint source pollution projects. Given the significance of nonpoint source pollution and the funding available through the CWSRF program, opportunities exist to expand the use of this program to mitigate pollution in watersheds.

## Chapter 3

# Stakeholders Identify Advantages of and Obstacles with Implementing the Watershed Approach

Stakeholders identified a variety of advantages and obstacles that EPA should take into account when trying to persuade other stakeholders to adopt the watershed approach. Although most stakeholders we interviewed see the benefits of the watershed approach, they expressed concerns about how to operationalize the approach. Concerns cited included the need for more public involvement, as well as better coordination and communication. Because stakeholders at the State and local levels contribute most of the labor and thus play a crucial role in achieving improved water quality, EPA should address their concerns.

### Advantages and Opportunities Noted to Watershed Approach

State staff and watershed organization officials we spoke with expressed enthusiasm about the watershed approach. They identified a number of advantages to the approach, as follows.

#### *Watershed Approach Leads to Increased Participation by Stakeholders*

A number of representatives from local watershed organizations, as well as State staff, told us they believe the watershed approach affords local citizens, the regulated community, local governments, and environmental organizations the opportunity to identify priorities and strategies for accomplishing mutual goals. In their view, the watershed approach provides the opportunity for more local involvement because decisions about water quality are made from the 'bottom-up' rather than driven by regulatory agencies. Robust local involvement is critical to the success of the watershed approach.

#### *Watershed Approach Focuses on Environmental Results*

Staff from a number of States interviewed indicated that the watershed approach is more results-oriented than EPA's regulatory programs, and thus provides an opportunity for improved water quality. In their view, the watershed approach is synonymous with a focus on environmental results, and that regulatory programs are too narrow in focus.

#### *Watershed Approach Affords Opportunity to Address Jurisdictional Issues*

Staff from three of the six States we interviewed said the watershed approach enables them to better resolve jurisdictional issues. Since watershed boundaries

cross political lines, such as State and county borders, the watershed approach better enables EPA to become involved in resolving issues that cross jurisdictional boundaries. Staff noted instances of EPA assistance in resolving disputes between political entities, such as municipalities.

### *Watershed Approach Affords Opportunity to Include Additional Programs*

A number of State staff indicated the watershed approach affords EPA the opportunity to incorporate additional pollution control programs in its strategy of achieving clean water. Some interviewees added that they would like to see other programs incorporated into the watershed approach, such as efforts related to ground water, water quantity, and air programs. The watershed approach is designed to be holistic in nature, and therefore focuses on comprehensive solutions to water quality problems. This can be particularly useful when a source of contamination is located outside of a watershed. For example, mercury emitted into the air by coal-fired utilities can result in mercury being deposited in water bodies hundreds of miles away. Mercury deposition in waters is one of the leading causes of fish advisories throughout the country.

## **Stakeholders Identified a Variety of Obstacles**

Stakeholders cited a number of obstacles that EPA must contend with to ensure increased adoption and implementation of different watershed approach mixes. By not addressing these obstacles, the environmental benefits of the watershed approach may not materialize. Details on these obstacles follow.

### *Generating and Maintaining Public Involvement Challenging*

While recognizing that the success and value of the watershed approach depends on enlisting community involvement and support, officials from some watershed organizations noted that one of the biggest challenges facing EPA is encouraging and maintaining public involvement. For example, an official from the River Network, a national environmental organization that supports the watershed movement, stated the public must have a fundamental understanding of what their watershed is and understand how their behaviors impact the watershed. An official from another organization said it is much easier to get people involved and become active in their watershed when there is a perceived problem; it is difficult to mobilize people in the absence of a perceived crisis. A representative from yet another watershed organization said that problems generally motivate people and thus drive involvement.

*“The biggest challenge facing EPA is watershed education for the public... Once the public has a better understanding of these issues, more is possible.”*  
President, River Network

A representative from one watershed organization suggested that EPA work more closely with local organizations in efforts to educate the public. For example, a



representative from the Center for Watershed Protection said that while EPA has some difficulty in conveying certain messages that are controversial, enlisting local organizations to get out controversial messages can be more effective since messages coming from local groups may come across as more credible.

### *Improved Coordination and Communication Needed*

A number of State staff suggested that channels of coordination and communication with EPA need to improve. Water staff from four of the six States we visited were unsure as to what the watershed approach is, what EPA's plan is for implementing it, or what is expected of the States. For example, staff from one State said it is difficult to transition from a program-by-program approach to a "place-based" one, and they were unclear how the existing regulatory programs fit into the watershed approach. Staff from another State said that EPA should better communicate what the watershed approach means to specific stakeholders. These State staff implied that the benefits of the watershed approach have not been demonstrated, and local decision makers need to be educated as to the benefits before the approach can be successful.

Interviewees from States and watershed organizations indicated that EPA must do a better job of sharing information with stakeholders. For example, representatives from three of the four umbrella environmental organizations interviewed (River Network, Southeast Watershed Forum, and Center for Watershed Protection) indicated that EPA could do a better job of disseminating the existence of successful watershed projects and case studies. Stakeholders rely on the successful experiences of others when designing and implementing projects – they do not want to "reinvent the wheel." One representative indicated watershed organizations would implement successful projects more quickly if they thought they would work in their geographical area. EPA has published a number of successful practices in its "Nonpoint Source Success Stories" series. Also, EPA uses a listserver, *Watershed-News*, to inform stakeholders of topics of interest, although EPA estimates only about 2,600 of approximately 6,000 local watershed groups belong to the listserver.

Staff from three of the six States also expressed confusion regarding the scale chosen by EPA to measure results. EPA selected the 8-digit Hydrologic Unit Code (HUC) to measure results, because this represents a natural geographic delineation of hydrologic regions in the United States and the availability of data at this scale. There are 2,262 8-digit HUC watersheds in the United States, with an average of 1,563 square miles and 1,635 miles of rivers and streams in each watershed. However, staff from Colorado, Georgia, and Ohio were unclear why EPA chose the 8-digit code. They were concerned as to the scale at which the code would measure water quality improvements, or how water improvements at smaller scales would be accounted for within the larger scale. Staff added that it is difficult for them to manage water quality on such a large scale because it does

not match up well with the work done at the State level, since States generally implement programs on stream segments or reaches.

### *Watershed Approach Increases State Workload*

A number of State staff we interviewed noted the watershed approach increases their workload. While EPA is encouraging States to adopt watershed approaches, it is still also requiring them to account for programmatic outputs required by the Clean Water Act. For example, staff from one State noted undertaking required programmatic activities, such as NPDES permitting, could detract from other activities directly focused on achieving environmental results – like working with stakeholder groups to implement watershed projects. Staff added that the programmatic work and the watershed approach activities are both full-time jobs, and working on one takes away from the other.

### *Funding Considered Necessary for Additional Workload*

Because of the additional workload previously discussed, staff from four of the six States we interviewed said more funding is needed because the watershed approach requires them to do things beyond what is required by the Clean Water Act. Because these activities take time away from statutory requirements, they believe they should receive additional funding.

Officials from watershed groups emphasized the need for long-term funding commitments. As noted by one watershed organization representative, temporary project funding is the “bane” of watershed organizations because it makes it difficult to plan for fixed expenses, such as salaries and overhead. Recognizing the importance of sustained funding to watershed organizations, Office of Water established a Sustainable Finance Team to build the capacity of watershed organizations to develop and implement finance strategies to obtain and leverage funding. The team is also working with organizations that provide funding to increase their awareness of the economic benefits of watershed management.

### *Watershed Organizations Need Assistance Developing Plans*

Many stakeholders said technical assistance is needed in developing watershed plans (see Chapter 2). Recognizing the importance that the Agency has placed on developing comprehensive watershed plans, the Office of Water has established a Watershed Planning Team to assist stakeholders by describing the elements of a comprehensive watershed plan and developing a Web-based tool to facilitate the development of such plans. Despite EPA’s efforts, stakeholders indicated they need more assistance. In many cases, locally driven,

*“The two key steps needed to solve nonpoint source problems within a watershed context are the development of a watershed-based plan...and the actual implementation of the plan.”*  
EPA Nonpoint Source Guidelines,  
October 23, 2003

citizen-led watershed organizations consisting of volunteers do not have the technical expertise and skills to develop comprehensive watershed plans that met EPA requirements. States and EPA rely on these watershed organizations to develop watershed plans, and therefore the expertise to write such plans is critical. Watershed plans have become more important in the past few years. EPA now requires States to direct a significant portion of the States' nonpoint source funding to watershed plan development.

## Chapter 4

### EPA's Watershed Plan Hampered by Inadequate Preparation

EPA needs to improve key aspects of its strategic planning process for the watershed approach to maximize its benefits. Although the Agency has made considerable progress in strategic planning, improvements are needed in three critical phases:

- Identifying the baseline, or current level of achievement.
- Setting meaningful goals.
- Developing a plan that will move performance from the baseline to goals.

EPA's baseline is undermined by limitations in underlying data and analyses. Also, EPA did not set realistic goals, which may limit its ability to manage water programs and activities. Finally, regional plans are inadequate to implement EPA's national strategies to improve water quality on a watershed basis. Improvements in these key aspects of EPA's strategic planning process are needed to help achieve its watershed goals.

#### Strategic Planning Critical for Allocating Resources

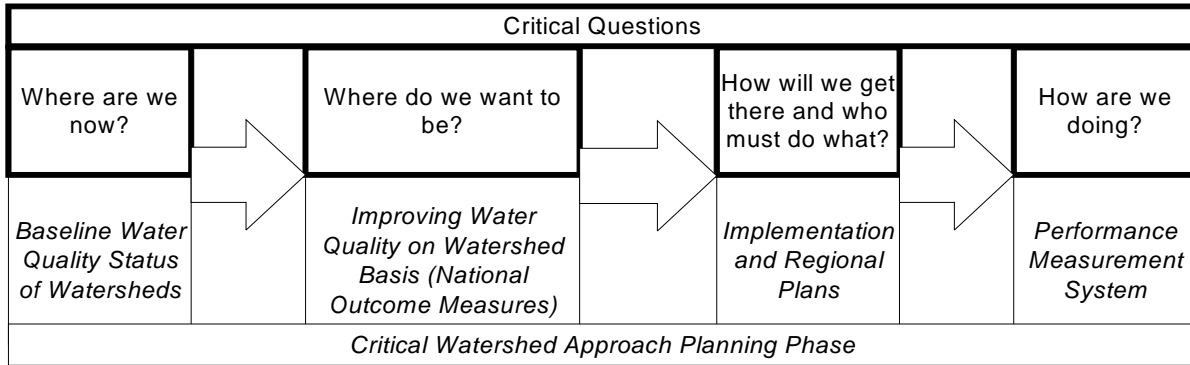
Strategic planning is a required and critical component of organizational success. The Government Performance and Results Act requires executive agencies to develop strategic plans. Moreover, strategic planning is critical because it:

- Provides a roadmap and direction and sets priorities.
- Allocates resources for maximum efficiency and effectiveness.
- Establishes measures of success so that progress can be measured.
- Gains commitment to the plan by involving the organization in its development.
- Coordinates actions of diverse parts of the organization into unified programs.

While the content and style of strategic plans vary based on industry and type of organization, the planning process is fairly standardized. The process consists of sequential phases that help an organization answer critical questions that, when properly addressed, will result in an adequate strategic plan. Successful strategic planning is accomplished by answering the four critical questions in Figure 4.1. We evaluated EPA's strategic plans, listed below, to determine how well EPA has addressed these questions.

**Figure 4.1**

**Strategic Planning Process**



**Significant Progress Made in Strategic Planning**

EPA made important strides when developing subobjective 2.2.1 in its 2003-2008 Strategic Plan, which focused the goal of improving water quality on a watershed basis as part of the overall Agency strategic planning process. These strategic plans are found in the following documents:

- EPA’s FY2003 – FY2008 *Strategic Plan*
- Implementation Plan for Subobjective 2.2.1
- *National Water Program Guidance for FY2005*
- EPA Regional Plans

Through these documents, the Office of Water presents its vision of using the watershed approach to improve water quality. This vision is to be accomplished through a three-part national strategy and regional plans involving: (1) implementing core water programs, (2) accelerating watershed protection, and (3) applying an adaptive management framework. Progress made toward achieving water quality on a watershed basis is assessed using two national outcome measures:

Table 4.1: National Outcome Measures	
<b>Watershed Restoration Goal</b>	(Baseline: 453 watersheds as of 2002) 500 watersheds by 2005 and 600 by 2008 where 20 percent of water segments in the watershed are assessed and water quality standards are met in at least 80 percent of the assessed water segments.
<b>Watershed Improvement Goal</b>	(Baseline: 0) 200 watersheds by 2008 where all assessed water segments maintain their quality and at least 20 percent of assessed water segments show improvement above conditions as of 2002.

## Limitations in Data and Analysis Undermine Baseline Measure

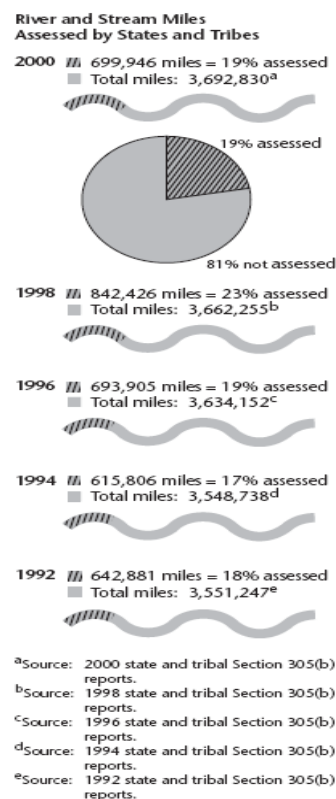
The first critical element of strategic planning is to determine the baseline water quality status of watersheds nationwide. An accurate assessment of the baseline is critical because it provides the foundation upon which EPA will develop its watershed restoration and watershed improvement goals, and determine the strategies, programs, and activities needed to improve water quality on a watershed basis. A flawed baseline indicator could limit EPA's ability to set and achieve useful goals.

### *Data Sources Contribute to Uncertainty of Baseline Estimate*

In developing a baseline for its watershed restoration goal, EPA faced challenges imposed by data sources in attempting to convey the nation's water quality in a single number. The limitations of data sources contribute to the uncertainty of the baseline estimate. We were unable to assess the impact of data limitations on the baseline estimate, but they diminish the reliability that Congress, EPA, and the public can place on EPA's ability to plan and run its clean water programs.

In developing the measure, EPA relied on State assessments of the quality of their waters as contained in the biennial national 305(b) report to Congress on water quality. However, the report has a number of limitations. States assessed only a small portion of their waters as of 2000 (see Figure 4.2). In addition, this national number disguises a wide variability from State to State (States reported different things). Moreover, because States assess their waters in different ways, using a mixture of objective and subjective information, the assessments are not comparable across State borders. Some States also extrapolate from individual monitoring points to a larger coverage, resulting in significant variances. These problems have already been noted in a number of EPA OIG and U.S. Government Accountability Office Reports. In 2001, a Committee of the National Academy of Sciences recommended that EPA develop uniform, consistent approaches to data collection. Over the years, EPA has attempted to increase the uniformity of State 305(b) reports.

**Figure 4.2**



### *Some Uncertainty Also Results from EPA's Analysis*

Although EPA developed a process to estimate the watershed restoration baseline, the process contributes an unknown degree of error in the baseline. These data processing steps, which use 305(b) data, may have introduced errors into the baseline estimate by:

- Excluding certain classes of waters.
- Combining classes of water without adjusting for significance.
- Screening classes of waters differently.
- Employing inconsistent scales to estimate data sufficiency.

EPA's process is detailed in Appendix C.

**Excluding Classes.** When characterizing the quality of complex systems as “the nation’s waters” or “watersheds,” EPA used three waterbody types to classify water resources: rivers, lakes, and estuaries. It did not include other classes of water, such as wetlands and groundwater. Although it may be acceptable to eliminate certain classes of water if they will not materially affect the estimate, ideally, a national assessment should be based on the entire “population” of waters. EPA also based the “rivers” portion of the baseline assessment on “perennial” rivers – that portion of rivers that flow year-round. The Agency excluded “intermittent” and “ephemeral” waters, which can constitute a large share of the total miles of rivers in some parts of the country.

**Combining Classes.** Because watersheds are composed of different types of waters, an overall assessment of quality required EPA to combine distinctly different waterbody types. EPA averages the assessment numbers of each of the three waterbody types (rivers, lakes, and estuaries). Although simple and straightforward, this approach disregards the relative size of the classes; in EPA’s approach, all three classes are treated equally even in watersheds dominated by one of them. Averaging waterbody types without regard for relative size may introduce error into the baseline estimate by inappropriately including or excluding certain watersheds from being counted as part of the baseline.

**Screening Differently.** EPA screened out watersheds based on the amount of available information to prevent watersheds with too little data being labeled as meeting watershed goals. EPA applied a “data sufficiency” requirement that excluded assessments of “rivers” and “small lakes” if the State had assessed less than 20 percent of the river miles or lake acres in that watershed. However, it is important to analyze data uniformly to achieve non-biased results. EPA applied the “data sufficiency” requirement to some but not all classes of waters (such as “estuaries” and “large lakes”). We were unable to establish EPA’s reason for this differential treatment, and did not assess whether it was reasonable. This inconsistent treatment could introduce error into the baseline if the true state of excluded rivers or small lakes differs significantly from included estuaries and large lakes in a watershed.

**Scaling Inconsistently.** EPA determined whether there was sufficient data to derive an estimate by calculating an “assessment ratio” (e.g., the number of miles of rivers assessed divided by the number of miles of rivers in the watershed). For such a calculation to be valid, both of these numbers should be reported at the same scale. However, EPA’s analysis procedures did not ensure that assessment ratios were determined using consistent scales. Because the numerator and denominator of the assessment ratios were sometimes calculated using different geographic scales, EPA’s calculations may be mathematically incorrect. It is possible that some portions of rivers in some watersheds were excluded from the denominator during calculation of the assessment ratio as a result of this inconsistency. We were unable to establish EPA’s rationale for these exclusions.

## Unachievable Goals Hamper EPA's Ability to Guide Activities

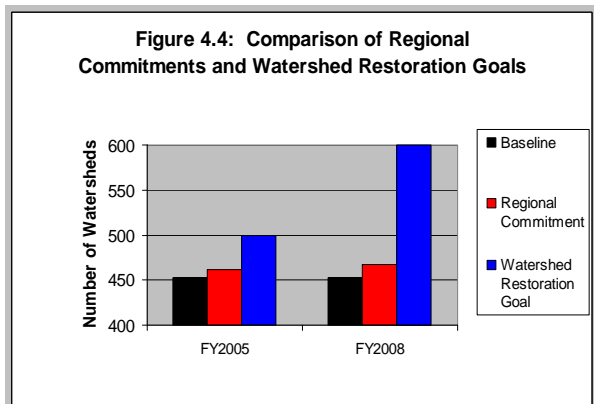
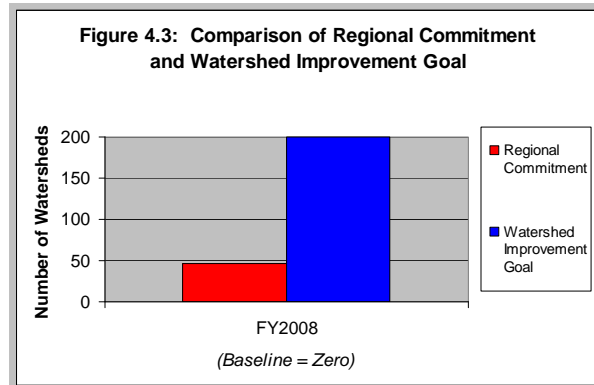
The second critical element of strategic planning is setting challenging yet realistic goals. The goals EPA developed in its initial strategic plan for subobjective 2.2.1 were unachievable because the Office of Water did not effectively communicate that EPA Regions would be responsible for achieving national watershed goals. Also, Regions did not realize they would subsequently be asked to direct their programs and activities to achieve those goals. As a result, there is a significant disconnect between the goals for subobjective 2.2.1 and what the Agency is able to achieve. This disconnect prevents EPA from effectively managing its water programs and activities.

Office of Water based the national watershed goals for 2005 and 2008, in part, on best professional judgment of national water program managers, as well as trend analysis of watershed data previously collected. The goal-setting process was collaborative and also included input from other EPA media offices, EPA Regions, and a State/Tribal Steering Committee including representatives from the Association of State and Interstate Water Pollution Control Administrators. In its strategic plans, the Agency published the following watershed restoration and watershed improvement goals:

<b>Table 4.2: Goals for Number of Watersheds to Be Restored or Improved</b>			
	<b>Baseline (2002)</b>	<b>2005 Goal</b>	<b>2008 Goal</b>
<b>Watershed Restoration Goal</b>	453	500	600
<b>Watershed Improvement Goal</b>	0	-	200



In December 2003, after EPA published its national watershed goals, the Office of Water again consulted with regional offices, this time asking them to estimate their regional commitments for restoring and improving a fixed number of watersheds equivalent to meeting national goals. However, the initial estimated commitments by Regions were collectively unable to meet the goals that were established earlier that year. Those estimates were published in the April 2004 National Water Program Guidance. Office of Water asked EPA Regions to continue consulting with States about regional commitments during the summer of 2004. Despite continued consultation with States, the final regional commitments, made available during October 2004, fell drastically short of national watershed goals (see Figures 4.3 and 4.4). For the watershed restoration goal, EPA was able to commit to a gain of only nine watersheds by 2005 and 15 by 2008, instead of the 47 and 147 watersheds, respectively, it published in the strategic plan. For the watershed improvement goal, EPA was able to commit to only 47 instead of the 200 it published in the strategic plan.



The key reason explaining this disconnect between goals and commitments is that the national watershed goals were established without a common understanding among EPA headquarters and regional offices that each would be responsible for achieving those goals. In particular, the initial request by the Office of Water asked only for “estimates,” instead of “commitments,” which would have indicated to the Regions that they would be responsible for achieving watershed goals. According to an Agency official, because this was the first time EPA set national watershed goals and expressed them as regional commitments, EPA regional personnel involved in the planning process may have felt disconnected from the national goals and believed they were Office of Water goals, not regional goals.

## Regional Plans Inadequate to Implement National Strategies

The third critical element of strategic planning is to develop an implementation plan that allows Office of Water and EPA Regions to move efficiently from the baseline to its strategic goals. However, EPA regional plans are not adequate to implement EPA's national strategy to improve water quality on a watershed basis and achieve watershed restoration and watershed improvement goals. EPA regional plans were recommended by the Office of the Chief Financial Officer to provide "road maps" outlining their contributions toward achievement of the Agency's goals. Further, Office of Water specifically requested each Region to identify how national strategies will be implemented at regional levels.

Our analysis of the regional plans indicates that they are inadequate to support achievement of watershed restoration and watershed improvement goals. We analyzed plans from Regions 1, 4, 7, and 10 to determine whether each plan acknowledged the watershed restoration and watershed improvement goals and each part of EPA's three-part national strategy (see box) was incorporated at the regional level.

### National Strategy to Improve Water Quality on Watershed Basis

- 1) Implement Core Water Programs
- 2) Accelerate Watershed Protection
- 3) Apply Adaptive Management Framework

Of the four regional plans analyzed, only Region 7 acknowledged the national watershed restoration and watershed improvement goals and the regional commitment. Regions 1, 4, and 10 acknowledged the national watershed restoration and watershed improvement goals but not the regional commitments. All four regional plans identified the core water programs that would be implemented to achieve subobjective 2.2.1. However, the regional plans did not emphasize or provide specific strategies, procedures, or policies for implementing core water programs on a watershed basis. The regional plans also lacked specific regional strategies, policies, or activities to support accelerating local watershed protection efforts and implementing an adaptive management approach.

Despite the shortcoming noted, Regions are engaging in watershed planning. Region 1 commented they have been using the watershed approach for so long that some watershed-oriented activities are not fully reflected in the regional plan. Regions 4 and 7 developed water division operational plans to help address the lack of details regarding implementation of the watershed approach in the regional plans. Although these individual efforts are helpful, regional planning efforts remain inadequate to implement EPA's national strategy.

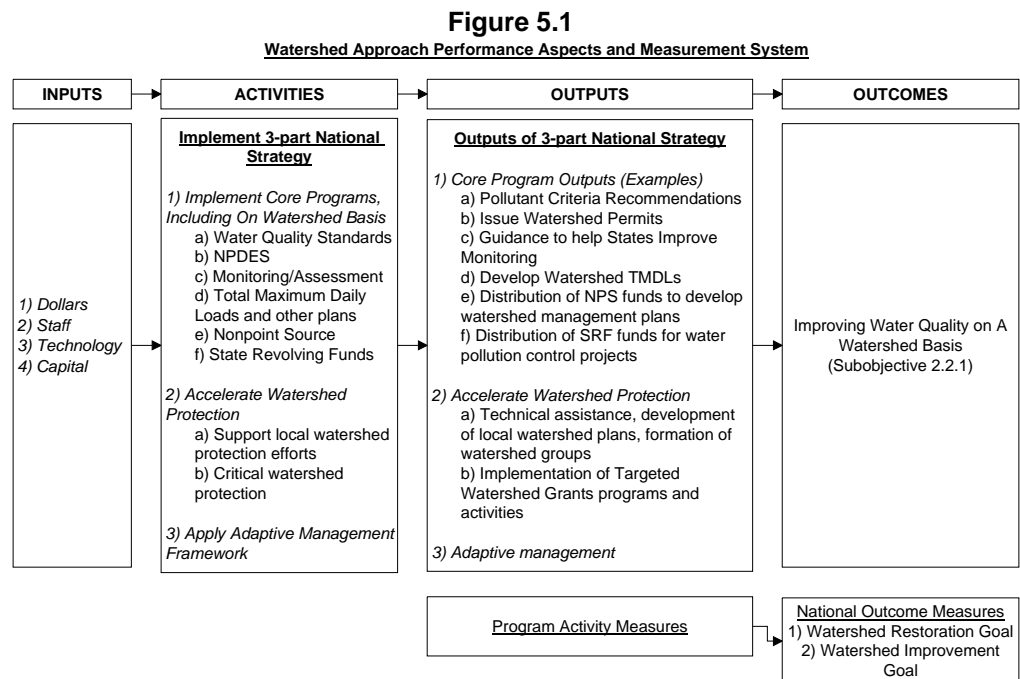
# Chapter 5

## Progress Made Developing Performance Measurement System, but Improvements Needed

EPA took important steps to advance the watershed approach by developing a performance measurement system for subobjective 2.2.1. However, issues still need to be addressed. EPA did not develop measures to evaluate key programs and activities, including implementation of some core water programs on a watershed basis. Further, while EPA's national outcome measures were relevant, they were not understandable, comparable, and reliable. Without these improvements, the ability of EPA's performance measurement system to convey useful information on EPA's strategy to improve water quality on a watershed basis will be hampered.

### Aspects of Watershed Approach Performance and Measurement

EPA plans to improve water quality on a watershed basis by implementing its three-part national strategy involving voluntary and regulatory programs. The logic model in Figure 5.1 details the relationship between critical aspects of performance, both in general terms and using the watershed approach, and the system of measures to assess each critical aspect of performance.



It is important for the Agency to measure critical aspects of performance (outputs and outcomes) so that it can determine what the program is accomplishing and whether the intended results are being achieved. Output performance measures, which EPA refers to as program activity measures (PAMs) for subobjective 2.2.1, are most beneficial when they fulfill a set of minimum characteristics and measure goods and services produced by a program or organization. Complete PAMs are able to indicate what each critical strategy and program is accomplishing through an indicator, numeric target, and timeframes. Outcome performance measures help the Agency demonstrate what it is achieving as a result of its programs and activities.

## **Performance Measurement System Incomplete**

Office of Water made significant progress developing a performance measurement system with both output and outcome performance measures. However, EPA currently lacks measures to provide performance information for all critical strategies and programs, including implementation of some core water programs on a watershed basis.

To evaluate the outputs from its national strategies, programs, and activities, Office of Water developed 35 PAMs, which are listed in Appendix D. The PAMs are the basis for monitoring progress in implementing programs to accomplish improved water quality on a watershed basis. Complete PAMs provide useful performance information about all critical strategies, programs, and activities, and provide an indicator of what is being accomplished, a numeric target, and a timeframe. However, EPA's PAMs were incomplete because they could not provide tracking or performance information for all critical national strategies. Moreover, while EPA could track programmatic information for the water quality standards, NPDES, and State Revolving Fund programs, it could not provide performance information about how these programs were being implemented on a watershed basis.

Of the 35 PAMs, 10 provide information on directing core programs on a watershed basis, and only 6 of those 10 are "performance measures" in the sense that they include a specific target and timeframe. The remaining 25 measures provide information about the core programs but not in terms of watershed aspects. Fifteen of those 25 are true performance measures that include a target and timeframe. The results of this analysis are shown in the following table for two of the three critical national strategic objectives (there were no PAMs for the third objective on applying adaptive management).

**Table 5.1: Watershed-Based Performance and Tracking Measures by National Strategy and Key Program/Activity for Subobjective 2.2.1**

Critical National Strategic Objectives	Key Program/Activity	Watershed-Based Measures		Non-Watershed (Core Program)-Based Measures	
		Performance Measures	Tracking Measures	Performance Measures	Tracking Measures
1. Implement Core Water Programs; including innovations that apply to programs on watershed basis	Water Quality Standards	0	0	5	1
	Monitoring/Assessment	2	0	2	0
	Watershed Planning, TMDL, Nonpoint Source	3	2	1	4
	NPDES Program and National Regulations	0	2	5	4
	State Revolving Fund	0	0	2	1
2. Accelerate Watershed Protection	Support local watershed protection efforts	0	0	0	0
	Initiate or strengthen watershed protection for critical watersheds/waterbodies	1	0	0	0
<b>Total</b>		6	4	15	10

EPA developed a mixture of performance measures for its core programs. Some do not have a watershed basis, while others are helpful in advancing that approach. An example of a measure for a core program implemented on a watershed basis is PAM 68: “Number of watersheds in which a watershed permit(s) has been issued and the number of States issuing NPDES permits using a rotating basin process.” EPA is currently only tracking this measure. If it were to develop a meaningful target and timeframe, this measure could provide more helpful performance information to program managers.

EPA does not have performance measures for some key programs and activities. For instance, the NPDES program has tracking measures but no performance measures on a watershed basis; the water quality standards and State Revolving Fund programs have neither on a watershed basis. Also, EPA does not have performance and tracking measures to evaluate its support for local watershed protection efforts.

## National Outcome Measures Need Improved Design

EPA developed two national outcome measures to assess the environmental impact of the watershed approach as implemented through EPA’s national strategy: the watershed restoration and watershed improvement goals (see Figure 5.2). EPA uses these outcome measures to reflect its progress toward improving water quality on a watershed basis and determine the environmental impact of the watershed approach as implemented through its three-part national strategy.

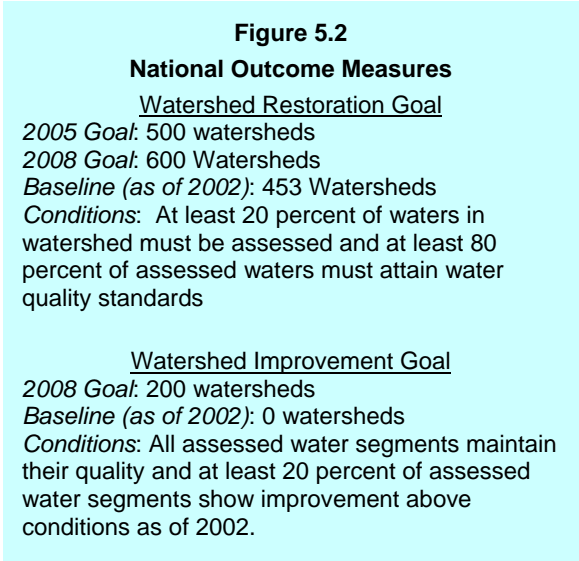
Outcome measures are critical to demonstrating what an organization is accomplishing, whether results are being achieved, and providing a structured approach for focusing an organization’s strategic plans. These measures need to be:

- relevant – relates to Agency objectives, attributable to programs and activities, and useful to the Agency;
- comparable – allows comparison over time to indicate future performance;
- understandable – clearly and consistently defined and measurable; and
- reliable – represents what it claims to indicate; extent to which data and analysis are free from error; and verifiable.

The national outcome measures are “relevant” because they relate directly to EPA’s objective of improving water quality on a watershed basis and are attributable to the Agency’s national strategies, programs, and activities. Further, these measures are useful for the Agency to demonstrate improvements to water quality on a watershed basis.

The watershed restoration and watershed improvement goals do not completely fulfill the “understandability” criterion, because they leave key terms undefined. Incomplete or ambiguous definitions of key terms may prevent the performance measure from yielding valuable information to EPA. EPA identified the key terms “watershed” and “water quality standards.” However, it did not identify such key terms as “assessed water segment,” “maintain their quality,” and “show improvement.” While States may provide some of these definitions, it is important for these terms to be defined on a national basis. Leaving key definitions undefined may limit the usefulness of the outcome measure.

The watershed restoration and watershed improvement goals also appear to fulfill the “comparability” condition because they are based on a simple calculation of the increase or decrease in the number of watersheds that meet certain conditions, which can be compared with a baseline to assess progress. However, the comparability of the measure is undermined for two reasons. First, EPA does not clarify exactly how it will compare watershed data across time periods or how variations in monitoring coverage affect the comparability of the measures. For instance, increases above the baseline for the watershed restoration goal could simply represent increases in the coverage of monitoring as opposed to actual improvements in water quality. Watersheds where greater than 80 percent of assessed water segments already meet water quality standards could be counted as meeting goals by simply increasing the percent of assessed waters above the data



sufficiency condition of 20 percent through monitoring. While technically meeting the watershed restoration goal, actual water quality improvements have not occurred. Second, there are shortcomings regarding baselines, such as limitations in data and analysis, as discussed in Chapter 4.

The “reliability” of the watershed restoration and watershed improvement goals needs to be enhanced to ensure the usefulness of the goals as national outcome measures. A reliable outcome measure represents what it claims to indicate and is based on data and analysis that are verifiable. As noted in Chapter 4, there are limitations in the data used by EPA to establish its baseline for meeting conditions. Further, EPA data analysis procedures introduce errors that impact the reliability of the measures. The reliability of both the watershed restoration and watershed improvement goals is significantly diminished due to the extent of errors associated with the data and analysis.

## **Chapter 6**

### **EPA's Commitment Must Be Sustained by Addressing Critical Issues**

EPA has taken various actions to advance the watershed approach but, based on continuing and anticipated challenges, needs to do more. While addressing the four elements that were the focus of our report may not guarantee success, ignoring them will hinder the ability of EPA to achieve clean and healthy water. If EPA is committed to further advancing the watershed approach, it needs to continue to integrate watershed principles into core water programs, address obstacles facing stakeholders, and improve key planning steps and performance measures. Due to the overlapping nature of the issues discussed in Chapters 2 through 5, we are providing overall conclusions as well as recommendations in this chapter.

EPA needs to make additional progress integrating the watershed approach into some of its core programs to assist EPA and its partners in achieving the nation's clean water goals. For example, increasing geographic focus and stakeholder involvement may increase the complexity, resources, and time required to implement programs. This, in turn, may result in the need for additional resources. Obtaining such resources in the current budget environment may be difficult.

EPA needs to make additional progress in partnering with stakeholders. Stakeholders, such as States and watershed groups, play a critical role as partners with EPA in furthering clean water goals through the watershed approach. EPA recognizes the importance of these groups and has taken several steps to involve them, but faces an immense task in coordinating with so many stakeholders. EPA needs to coordinate and communicate with these vital stakeholders to advance the watershed approach.

EPA needs to make further progress in planning to implement the watershed approach and measuring its effectiveness. Planning and measurement are critical to ensuring that the Agency provides direction, sets priorities, allocates resources efficiently and effectively, and determines whether results are being achieved. To continue advancing the watershed approach, EPA needs a sustained commitment to make improvements to critical areas of the strategic plan and measurement system. Without these improvements, EPA's progress will continue to be limited.



## Recommendations

If EPA is committed to the watershed approach, we recommend that the Assistant Administrator for Water:

- 6-1 Continue to integrate watershed activities into its core water programs. Specifically, EPA could:
  - Commit the necessary resources to support, where appropriate, the development of watershed permits, watershed TMDLs, and watershed plans;
  - Evaluate the benefits and costs of watershed permitting and watershed TMDLs; and
  - Work closely with States to ensure that the CWSRF is used as an additional source of funding for nonpoint source and other watershed-related projects.
  
- 6-2 Work in partnership with stakeholders to ensure obstacles with implementing the watershed approach are addressed. Specifically, EPA could:
  - Work closely with watershed advocacy groups to educate the public about the value of water resources and how public participation is critical to safeguard these resources;
  - Improve coordination and communication with States and watershed organizations to help ensure the success of the watershed approach in achieving clean and safe water; and
  - Provide technical assistance to stakeholders, particularly in developing watershed plans.
  
- 6-3 Continue to refine and improve key aspects of its strategic planning process. Specifically, EPA could:
  - Improve the accuracy and reduce the uncertainty of the baseline;
  - Ensure that Office of Water and EPA Regions clearly understand their roles in setting and achieving national watershed goals; and
  - Improve Regional plans to help achieve watershed goals.
  
- 6-4 Continue to improve key aspects of its performance measurement system. Specifically, EPA could:
  - Ensure that the performance of all critical national strategies and implementation of core water programs on a watershed basis can be assessed since EPA does not have performance measures for some key programs and activities; and
  - Improve the design of the watershed restoration and watershed improvement goals to be more understandable, comparable, and reliable.

## **Agency Comment and OIG Evaluation**

EPA generally concurred with our recommendations and in some cases has taken actions to address them. EPA's response to our draft report recommendations is in Appendix E, and our OIG evaluation of the response is in Appendix F. The OIG has incorporated technical corrections and clarifications provided by EPA into the final report as appropriate.

## ***Details on Scope and Methodology***

We conducted our evaluation from October 2003 through February 2005 in accordance with *Government Auditing Standards*, issued by the Comptroller General of the United States. This evaluation focused only on EPA's efforts regarding the watershed approach and not those of other Federal agencies, States, or watershed groups. We nonetheless interviewed State and watershed groups to evaluate EPA's role in watershed efforts.

We evaluated the watershed approach by analyzing four key elements that help ensure its success:

- Integration of watershed activities into core water programs;
- Partnerships;
- The process of strategic planning for the watershed approach; and
- The development of performance measures.

These four elements came from the synthesis of numerous EPA documents reviewed by the team. Details on how we performed our evaluation for each element follow.

### **Integration**

We evaluated EPA's efforts to integrate the two of three guiding principles (*Partnerships, Geographic Focus, and Sound Management Techniques*) of the watershed approach into EPA's programs. We did not evaluate Sound Management Techniques because (1) sound management techniques are not unique to the watershed approach; and (2) EPA is employing a new management technique for the watershed approach, adaptive management. Since 2005 is the first year that the adaptive management process will be applied to the watershed approach, we did not evaluate the process.

We selected the six core water programs (NPDES, TMDL, Nonpoint Source, Water Quality Monitoring, Water Quality Standards, and CWSRF) highlighted in subobjective 2.2.1 of EPA's *Strategic Plan*. We determined the extent to which watershed approach principles have been integrated into the programs. To do so, we interviewed all four of the primary Office of Water office directors, as well as the managers and program staff in each the six core programs, and spoke with EPA regional water program directors and staff from Regions 1, 4, 7, and 10. We obtained and analyzed program guidance, regulatory and statutory requirements, and guidelines for each program. We also analyzed the recommendations of EPA's Program Integration Team and other Office of Water efforts to identify any other EPA actions involving integration of the watershed approach into programmatic activities.

### **Partnerships**

Using a structured interview instrument, we interviewed representatives of umbrella environmental and watershed organizations. Using a different structured interview instrument,

we interviewed water staff from six States, to identify both advantages/opportunities and challenges that EPA needed to address regarding the watershed approach. The table notes the States and watershed organizations interviewed:

States	Umbrella Environmental Organizations	Watershed Organizations
Massachusetts	Southeast Watershed Forum	Charles River Watershed Association
Georgia	River Network	Cherry Creek Stewardship Partners
Oregon	Center for Watershed Protection	Rathburn Land and Water Alliance
Colorado	Georgia River Network	West Creek Preservation Committee/ White Oak Creek Watershed Partners
Ohio		
Iowa		

### Strategic Planning

We researched academic and professional textbooks, the Government Performance and Results Act, and information from the National Partnership for Reinventing Government to identify the critical process elements that must be addressed to ensure successful strategic planning. We evaluated EPA’s Fiscal 2003-2008 Strategic Plan; Implementation Plan for subobjective 2.2.1; the National Water Program Guidance for Fiscal 2005; and 2004 EPA Regional Plans for Regions 1, 4, 7, and 10 against these criteria. We also reviewed EPA Regional Plans and guidance from the Office of the Chief Financial Officer. Further, we interviewed Office of Water program directors for the Office of Wetlands, Oceans, and Watersheds; Office of Science and Technology; Office of Wastewater Management; and the Office of Ground Water and Drinking Water; as well as four regional water directors and other senior policy advisors, to understand the strategic planning process and determine how well strategic planning for the watershed approach occurred. We reviewed EPA’s Data Processing Techniques to confirm how EPA calculated the baseline number of watersheds meeting assessment and attainment conditions for subobjective 2.2.1. Our analysis also compared the watershed restoration and watershed improvement goals for subobjective 2.2.1 for Fiscal 2005 and Fiscal 2008 against EPA regional commitments.

In developing a baseline for its watershed restoration goal, EPA had data limitations. These limitations contributed to the uncertainty of the baseline estimate. These limitations have been noted in previous Government Accountability Office and OIG reports. We were unable to assess the impact of data limitations on the baseline estimate. The data limitations did not impact OIG findings and conclusions. More details on watershed data quality can be found in Chapter 4.

### Performance Measurement

We researched reports from similar auditing organizations in Federal and foreign governments to identify criteria relating to performance measurement by which to assess EPA’s Management Matrix System. We identified three distinct sets of criteria useful for assessing critical aspects of EPA’s system. First, we reviewed EPA’s overall system to ensure that it is capable of

communicating vital performance information about critical national strategies and programs designed to improve water quality on a watershed basis. Second, we reviewed EPA's national outcome measures, the watershed restoration and watershed improvement goals, to ensure the measures are properly designed to convey performance information about the cumulative impact of EPA's efforts to improve water quality on a watershed basis. Finally, we evaluated EPA's PAMs to ensure that each measure contained an indicator, target, and timeframe to determine if it could convey performance information about that program.

EPA's overall system of performance measures was evaluated to ensure that it is complete by measuring those key factors, strategies, or activities that allow the Agency to improve water quality on a watershed basis. The criteria for completeness can be found in a December 1997 report by the Office of the Auditor General of Canada regarding how Canadian federal organizations can make performance measurement work.

We reviewed EPA's national outcome measures – the watershed restoration and watershed improvement goals – to ensure the measures are properly designed to convey performance information about the cumulative impact of EPA's efforts to improve water quality on a watershed basis. Properly designed outcome performance measures, such as EPA watershed restoration and improvement goals, should fulfill a set of criteria in order to be useful. We used criteria developed by the Office of the Auditor General of Canada that require outcome performance measures to be: (1) Understandable, (2) Relevant, (3) Comparable, (4) Reliable, and (5) Practical. We chose to exclude the element of practicality; we were not able to determine what each aspect of practicality meant in terms of EPA's national outcome measures.

We evaluated the individual PAMs to ensure that each measure contained an indicator, target, and timeframe to determine whether it could convey performance information about that program. We evaluated EPA's PAMs using criteria set forth by the Office of Management and Budget in its 2003 Supporting Documentation to the Instructions for Completing the Program Assessment Rating Tool (PART).

## **Management Controls**

We identified the following management controls as applicable to our objectives: effectiveness of program operations and validity and reliability of data. Review of compliance with applicable laws and regulations was not applicable to this evaluation since the watershed approach is voluntary and no laws and regulations apply to the actual approach.

### *Effectiveness of Program Operations*

Although the watershed approach is not a program, we evaluated the effectiveness of the watershed approach by evaluating the Office of Water's strategic planning process for the watershed approach and evaluating watershed performance measures. Details on what we found are in Chapters 4 and 5 of the report.

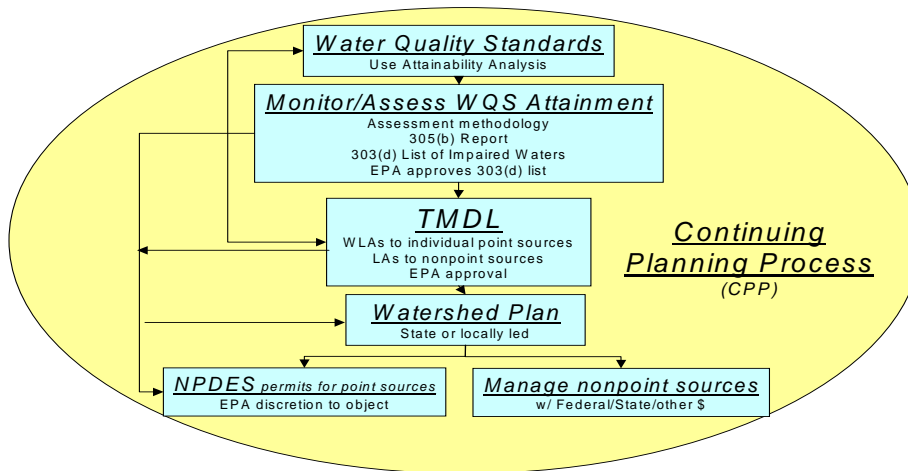
## Validity and Reliability of Data

Individual data measurements in databases were not directly analyzed or used to support findings and conclusions. Our evaluation of the national outcome measure, which uses data from the National Assessment Database in terms of establishing a baseline status of watersheds nationwide, focused on data processing techniques and not the actual raw data. Furthermore, the quality and reliability of data in the National Assessment Database were previously examined in other EPA OIG and Government Accountability Office reports, some of which are discussed in Chapter 4 and listed in this appendix under Prior Coverage.

### Prior Coverage

Agency	Report
EPA OIG	"Stronger Leadership Needed to Develop Environmental Measures for Clean Water State Revolving Fund," 2004-P-00022, June 2004
EPA Office of Water	"A Review of Statewide Watershed Management Approaches," April 2002
U.S. Government Accountability Office	<p>"Watershed Management: Better Coordination of Data Collection Efforts Needed to Support Key Decisions," GAO-04-382, June 2004</p> <p>"Performance Budgeting: Observations on the Use of OMB's Program Assessment Rating Tool for the Fiscal Year 2004 Budget," GAO-04-174, January 2004</p> <p>"Program Evaluation: Strategies for Assessing Information Dissemination Contributes to Agency Goals," GAO-02-923, September 2002</p> <p>"Water Quality: Key EPA and State Decisions Limited by Inconsistent and Incomplete Data," GAO/RCED-00-54, March 2000</p> <p>"Grant Programs: Design Features Shape Flexibility, Accountability, and Performance Information," GAO/GGD-98-137, June 1998</p> <p>"Evaluating a Performance Measurement System - A Guide for the Congress and Federal Agencies," FGMSD-80-57, May 12, 1980</p>
Office of Management and Budget	"Performance Measurement Challenges and Strategies," June 18, 2003
Association of State and Interstate Water Pollution Control Administrators, Water Quality Monitoring Programs	"Status and Future of State Ambient Water Quality Monitoring Programs," 2002
Committee to Assess the Scientific Basis of the Total Maximum Daily Load Approach to Water Pollution Reduction, Water Science and Technology Board, National Research Council	"Assessing the TMDL Approach to Water Quality Management," ISBN: 0-309-07579-3, 2001

## Clean Water Act Watershed Framework



EPA's support for watershed approaches centers on the goals of the Clean Water Act. The framework for watershed protection and restoration in the Clean Water Act is focused on the attainment of water quality standards as set by the States and approved by EPA. Water quality standards define the water quality goals for waterbodies, such as rivers and lakes. These waterbodies are then periodically assessed against those standards and reported in Clean Water Act section 305(b) reports submitted by the States. Waters not meeting water quality standards are then placed on a list required by Clean Water Act section 303(d). For that list of waters, TMDLs are developed that set load reduction targets for individual point sources and categories of nonpoint sources. More and more watershed plans are being developed that take those load reduction targets and expand them into a more detailed step-by-step approach that typically includes broad stakeholder involvement. These TMDLs and watershed plans include the eventual wasteload reductions required of individual NPDES permittees and nonpoint source management practices used to obtain load reductions in a given watershed. Periodically, the waters are assessed to determine the success of the remedial actions designed to reduce point and nonpoint source loadings. Although not depicted, the CWSRF is a source of funding for several types of projects found within watersheds. This cyclical return to the top of the Clean Water Act Watershed Framework flowchart is the Continuous Planning Process.<sup>2</sup>

<sup>2</sup> Office of Water Document Provided to OIG: The Watershed Approaches at EPA

## ***EPA's Data Processing Techniques for Developing Watershed Restoration Baseline***

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### **Step by Step Data Processing Techniques for Developing a Watershed Indicator of Water Quality Standards Attainment and the Assumptions made as part of that process**

RTI International – February 10, 2005



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#### **1. Developing Watershed Indicators from the National Assessment Database**

The current Office of Water outcome measure indicator of watershed water quality standard attainment is presented in terms of scores for USGS subbasin (HUC8) watersheds. These watershed scores are derived from underlying designated use assessment information organized around reporting segments representing reaches along streams, lakes, and estuaries. This segment-level information comes from databases States develop as part of the Clean Water Act Section 305(b) process. EPA assembles available State assessment database into a National Assessment Database (the NAD).

A number of data processing operations are performed on the primary NAD segment-level information. Only certain waterbody types are used in the watershed indicator. These include rivers, small (freshwater) lakes, large lakes, and estuaries. For freshwater lakes, a size threshold of 2,000 surface acres is used to divide smaller lakes from large lakes. Through the 2000 305(b) reporting cycle, the PC-based data systems EPA encouraged States to use included fields to record the size of an assessment segment (for instance, 500 acres on an arm of a larger reservoir) as well as a waterbody size (e.g., 10,000 acres for an entire large reservoir which could include segment components on its arms and the main storage pool near the hydrostructure). This waterbody size was the basis for assigned a lake segment as representing either a small lake or a large lake.

The appropriate waterbody type use attainment data records for a given NAD baseline must have georeferencing information adequate to assign the segments to USGS subbasins (HUC8s). These HUC8 assignments can be derived from GIS coverages or from the contents of special basin location fields in the State databases. Segments that appear in the NAD database but that cannot be reasonably assigned to HUC8 units are not processed for the development of the



watershed use attainment indicator. For the selected use attainment database records in the NAD, there will usually be an assessment for a given segment involving multiple designated uses. For the watershed indicator, derived overall water quality standards attainment status information is developed for each segment. This involves generating a data record that records a “worst case” condition looking at the assessment provided for all reported uses. For instance, if an aquatic life use shows impairment, then the overall status for the segment would be rated as impaired even if other uses, for instance, a primary contact recreation use, were deemed to be attaining these other uses.

The overall water quality attainment status information is then grouped by waterbody strata (rivers, small lakes, large lakes, and estuaries) and also grouped (or “sub-totaled”) according to HUCs or portions of complete HUCs contained within a State. These HUC-within-state polygons are called STHUC units. The summary information for these STHUC units is the basis for a series of data adequacy tests. For large lakes and for estuaries, these waterbody types are considered “unique” – and the STHUC results for these waterbody type strata are always maintained. For the rivers and for the small lakes, certain minimum levels of assessment effort are required. Where information is available in the EPA (RF3-based) Total Waters Database, the miles of stream assessed in a STHUC unit are compared with a value that is 20% of the estimated miles of perennial streams in the STHUC polygon. For small lakes, the acres of small lakes assessed in a STHUC unit are compared with a value that is 20% of the estimated acres of lakes with surface acreage less than 2,000 acres in the STHUC polygon. Where these tests cannot be performed (e.g., RF3 was never fully implemented for States in EPA Region 10), then it is assumed that the data adequacy test is met. Where the river or small lake values show levels of assessment effort below these thresholds, then the STHUC information is not used.

## **2. Step-by-Step development of the Watershed Indicator**

For this step-by-step discussion, it is already assumed that the NAD data have been compiled, and that the STHUC subtotals have been calculated.

### **Step 1. Capture prior HUC scores from previous cycles**

Take the previous HUC scores developed from the previous GPRA reporting cycle (the 2000 baseline scores) – and hold this until the final step. These scores will be used to fill in the gaps where no information is available for a given HUC for 2002.

### **Step 2. Compile STHUC summaries for the major water types and perform data adequacy test**

Take STHUC summaries for 2002 reporting for use attainment information for the 4 major waterbody types of: rivers, small lakes, large lakes, estuaries. Apply data adequacy test (see **Assumptions: Data Adequacy Test**) (where the TOTAL WATERS information is available) for the STHUC results for rivers and small lakes.

For rivers, the test is relative to TOTAL WATERS (see **Assumptions: Total Waters**) estimates of perennial stream/river miles. Keep all results for large lakes and estuaries.

Keep river and small lakes results where TOTAL WATERS information is not available for rivers or small lakes.

NOTE: For 9 Small Lake STHUCs and for 22 River STHUCs -- it was discovered that a check that should have been ">19.999" was apparently implemented in the original production work as ">19" -- a keypunch error that resulted in a decision to "keep" the information.

These cases are flagged in the river and small lakes STHUC files with a "Y" in a field called USED19 (see **Appendix A: Field Descriptions**).

**Step 3. Refine the STHUC Dataset to only those STHUCs that passed the Data Adequacy Test**

For the water types of lakes and estuaries, it is assumed that they pass the data adequacy test. Rivers and small lakes are treated independently of one another in regards to the data adequacy test. For example, if <20% of a STHUC's perennial rivers were assessed, but >20% of the STHUC's small lakes were assessed, then the result would be to discard the river information for that STHUC while at the same time keeping the small lake information.

**Step 4. Create an Average Ratio for All Lakes**

To create a score for each HUC, the first step is to average the ratios from the differing water types. The first step in this is to average the two lake water types (small and large) together.

**Step 5. Create an Average Ratio across all water types and develop HUC scores**

Use available STHUC use attaining ratios for rivers, Lakes (small/large combined), and estuaries and average the ratios over HUC watersheds to develop new 2002 HUC ratios and GPRA scores.

**Step 6. Create an Average Ratio across all water types and develop HUC scores**

Take the new 2002 HUC scores and carry over HUC scores from the previous GRPA HUC scores (see step 1) where new 2002 HUC scores are not available to create the complete 2002 HUC-level set of scores.

**Definition of number scores assigned to watersheds**

WATERSHED PERCENT RANGE	SCORE	LABEL
80% to100%	0	80 - 100% meeting all uses
>=50% to <80%	1	50 - 79% meeting all uses
>=20% to <50%	2	20 - 49% meeting all uses
<20%	3	<20% meeting all uses
---	-1	Data Not Available to Develop Score

### 3. Assumptions

**Data Adequacy Test:** Only rivers and small lakes are subjected to the Data Adequacy Test. To determine whether or not to include values for rivers or small lakes for a given STHUC, the State must have assessed at least 20% of that water type (see **Assumptions: Determining Percent Assessed**). Rivers and small lakes are treated independently, meaning that one can be kept while the other is left out. If a STHUC passes the Data Adequacy Test because there was no Total Waters data available (see **Assumptions: Total Waters Not Available**), it is NOT assumed that the State has assessed 100% of the water, but rather that the State has assessed at least 20% of the water. Estuaries and Large Lakes are not subject to the Data Adequacy Test, and are therefore always included.

**Total Waters:** Total waters numbers were derived from EPA's RF3-based Total Waters Database. Reach File 3 (RF3) is a stream coverage at a scale of 1-100,000. Since the development of RF3, the USGS has developed a new stream coverage called the National Hydrography Dataset (NHD) which exists at three possible different scales: 1-100,000, 1-24,000, and local scales (meaning scales that are specific to an individual State). Because of these differing stream coverages and scales, what the State considers their total waters may differ from what exists in the RF3-based Total Waters Database.

**Determining Percent Assessed:** To determine the percent assessed for Rivers and Small Lakes in a given STHUC, a ratio is developed by taking the total size reported by the State in that STHUC divided by the total size (see **Assumptions: Perennial Rivers**) in the STHUC provided from the Total Water Database. Because the source for the numerator is different from the source for the denominator, there may be cases where the total assessed size is greater than the total size for that STHUC. This could result from a number of possibilities, including differing scales of the source data for the two numbers (see **Assumptions: Total Waters**), to differing ways in which the sizes were determined. If the ratio of assessed waters to total waters is greater than 100%, then it is assumed that the STHUC passes the Data Adequacy Test (see **Assumptions: Data Adequacy Test**).

**Perennial Rivers:** The total waters value for the purpose of the Data Adequacy Test for rivers is based solely on Perennial Rivers.

**Total Waters Not Available:** If a total waters value was not available for a given STHUC, it was assumed that the rivers and small lakes passed the Data Adequacy Test.

## Subobjective 2.2.1 Program Activity Measures

PAM No.	Program Activity Measure Description	2005 Target	2008 Target	Type
<b>Water Quality Standards</b>				
38	Number of States & authorized Tribes that have completed a review of water quality standards within three years of the previous triennial review under Section 303(c) of the Clean Water Act. (56 State/Territories, & 22 authorized Tribes)	N/A	N/A	Core Program/ Tracking
39	Number of new or revised criteria documents for water pollutants published providing the scientific information necessary for State adoption or revision of a water quality standard protocols and methods for the pollutant, including needed implementation protocols and methods.	5	15	Core Program/ Performance
40	Number of States that have adopted into their water quality standards, and EPA has approved, nutrient criteria for fresh water (rivers/streams, lakes, and reservoirs).	5	25	Core Program/ Performance
41	Number of States that have adopted into their water quality programs for streams and small rivers, biological criteria designed to support determination of attainment of water quality standard use designations standards. [Note: biological criteria may include quantitative endpoints or narrative criteria with quantitative implementation procedures or translators]	17	45	Core Program/ Performance
42	Number of Tribes that have water quality standards approved by EPA.	33	33	Core Program/ Performance
43	Each year, percentage of State/Tribal water quality standards submissions that are approved/disapproved by EPA within 90 days.	73%	75%	Core Program/ Performance
<b>Monitoring</b>				
44	Each year, the number of States & Territories that have adopted and begun implementing a comprehensive monitoring strategy [including a State approach to putting data into the Storage and Retrieval Data System (STORET) consistent with national guidance. (i.e., March 2003 guidance describing 10 key monitoring elements).	56	56	Watershed/ Performance
45	Number of States, Interstate Agencies, and Territories that provide comprehensive integrated assessments of the condition of their waters consistent with sections 305(b) and 303(d) of the Clean Water Act and EPA's integrated assessment guidance. (56 State/Territories)	41	56	Watershed/ Performance
46	Number of Tribes that currently receive EPA funding that have developed comprehensive monitoring strategies that serve all water quality management needs, and address all tribal waters, including all water body types and that provide their water quality data in a system accessible for storage in EPA's STORET.	Under develop- ment	90 45	Core Program/ Performance
47	EPA reports results of a statistical survey of the condition of the Nation's water, conducted in cooperation with the States.	N/A	56	Core Program/ Performance
<b>Watershed Planning, TMDLs, and Nonpoint Source</b>				
48	The number of watershed based plans (and water miles/acres covered), supported under State Nonpoint Source Program grants (section 319) since the beginning of FY 2002 that are under development and the number of watershed based plans, (and water miles/acres covered), where watershed based plans are being implemented.	N/A	N/A	Watershed/ Tracking
49	Number of watershed based plans (and miles covered), supported under State Nonpoint Source Programs (section 319) since the beginning of FY 2002 that have been substantially implemented.	44 TBD	50 5,000	Watershed/ Performance
50 **	Number of national significant watersheds where a watershed approach to protecting and restoring water quality is being fostered using Watershed Initiative grant assistance (cumulative).	60	100	Watershed/ Performance
51	Percentage of TMDLs approved since the beginning of 2004 that were developed as part of a larger, watershed planning process that addressed restoration and protection of all waters within a watershed.	N/A	N/A	Watershed/ Tracking
52	Percentage of the TMDLs required for waters currently on the 303(d) list that are established or approved by EPA within 13 years of listing consistent with national policy. Annual targets will be based on State schedules or straight-line rates that ensure that the national policy is met.	76%	100%	Core Program/ Performance
53	Number of Tribes that currently receive EPA funding in 2004 that have participated with States &/or EPA in development of measures (e.g., TMDLs or watershed-based plans) to restore and protect watersheds with impaired waters.	24	20	Watershed/ Performance

54	Percentage of TMDL approvals occurring since the beginning of FY 04 for which EPA took approval action within 30 days of submission.	N/A	N/A	Core Program/ Tracking
55	Percentage of TMDLs approved by EPA, or watershed plans developed for restoration of waters on a State impaired waters list that address nutrient impairments that specifically identify a "trading margin."	25	200	Watershed/ Performance
56	Number of waterbodies identified by States in 2000 as being impaired by nonpoint sources or by both point & nonpoint sources that are fully restored (cumulative). [Estimated 6,264 waterbodies impaired solely or partially by nonpoint source]	N/A	N/A	Core Program/ Tracking
57	Annual reduction in lbs/tons of nitrogen, phosphorus, and sediment from nonpoint sources to waterbodies	N/A	N/A	Core Program/ Tracking
58	Number and dollar value of projects financed with Clean Water SRF loans to prevent polluted runoff (cumulative).	N/A	N/A	Core Program/ Tracking
<b>Permitting and National Regulations</b>				
59	Percentage of all NPDES permits that are considered current and, beginning in 2005, the percentage of high priority permits are also current; permits for facilities in Indian Country and to meet the same standard/schedule. [Targets to be reevaluated once universe of priority permits is defined in cooperation with States/Tribes]	87% 95% 88% 95%	90% 95% 90% 95%	Core Program/ Performance
60	Number of States that have updated regulations and/or statutes where necessary to reflect new Concentrated Animal Feeding Operations (CAFO) requirements; number of States that have issued Statewide general permits, or otherwise substantially implemented the permit program, consistent with these new requirements.	35 37	44 49	Core Program/ Performance
61	Percentage of States/Regions that have issued NPDES general permits requiring storm water management programs for Phase II municipalities (MS4S) (estimated annual load reduction of 4.1 billion pounds of pollutants). (Note: assumes continued availability of general permits)	93%	100%	Core Program/ Performance
62	Percentage of States/Regions that have issued NPDES general permits requiring storm water pollution prevention plans for Phase II construction (estimated annual load reduction of 17 billion pounds of pollutants). (Note: assumes continued availability of general permits)	98%	100%	Core Program/ Performance
63	Percentage of Significant Industrial Users (SIUs) in Publicly Owned Treatment Works (POTWs) with Pretreatment Programs and percentage of known Categorical Industrial Users (CIUs) in non-pretreatment POTWs that have control mechanisms in place that implement applicable pretreatment requirements.	N/A	N/A	Core Program/ Tracking
64	Number of pounds of pollution loadings to waterbodies from industrial dischargers reduced (2004-2008) as a result of national industrial water pollution control regulations.	1.0	2.4	Core Program/ Performance
65	Estimated annual reduction in pounds of pollutants discharged to waters as a result of NPDES permits for storm water, POTWs, CAFOs, Combined Sewer Overflows (CSOs), and industrial discharges. (annual reduction in 2003)	N/A	N/A	Core Program/ Tracking
66	Using the planning process called for in section 304(m) of the Clean Water Act, identify any industrial categories where discharges to waterbodies or releases to POTWs pose a significant risk to water quality and determine whether to develop new national pollution control regulations, revise existing regulations, or develop other control tools.	N/A	By 2006	Core Program/ Tracking
67	Number of dischargers with permits providing for trading between the discharger and other water pollution sources and the number of dischargers that carried out trades.	N/A	N/A	Watershed/ Tracking
68	Number of watersheds in which a watershed permit(s) has been issued and the number of States issuing NPDES permits using a rotating basin process.	N/A	N/A	Watershed/ Tracking
69	Percentage of NPDES program authorities where a comprehensive assessment of NPDES program integrity has been conducted (beginning in FY 04) and the percentage of assessed programs that are complying with implementation schedules for all those follow-up actions for which a schedule has been established.	N/A	N/A	Core Program/ Tracking
<b>State Revolving Fund</b>				
70	Fund utilization rate [cumulative loan agreement dollars to the cumulative funds available for projects] for the CWSRF.	90%	94%	Core Program/ Performance
71	Return on Federal investment [cumulative dollar amount of assistance disbursements to projects divided by cumulative Federal outlays for projects] for the CWSRF.	N/A	N/A	Core Program/ Tracking
72	Number of States using integrated planning and priority systems to make CWSRF funding decisions.	29	28	Core Program/ Performance

**Type Codes:**

Watershed/Performance - indicates a PAM designed to assess implementation of core water programs on a watershed basis, which is also a “true” performance measure that includes the indicator, target, and timeframe.

Watershed/Tracking - indicates a PAM designed to assess implementation of core water programs on a watershed basis, which lacks either a target or timeframe and is classified as a tracking measure.

Core Program/Performance - indicates a PAM designed to assess implementation of core water programs, which is also a “true” performance measure that includes the indicator, target, and timeframe.

Core Program/Tracking - indicates a PAM designed to assess implementation of core water programs, which lacks either a target or timeframe and is classified as a tracking measure.

\*\* In Table 5.1 of the report, we classified this measure as addressing the critical national strategic objective of accelerating watershed protection (specifically initiating or strengthening watershed protection for critical watershed/waterbodies). The measure was not classified in the “Watershed Planning, TMDL, Nonpoint Source” category in Table 5.1.

## ***Agency Comments on Draft Report***

### **MEMORANDUM**

**SUBJECT:** Draft Evaluation Report: "Sustained Commitment Needed to Further Advance Watershed Approach"

**FROM:** Benjamin H. Grumbles  
Assistant Administrator

**TO:** Dan Engelberg  
Director, Water Issues  
Office of Program Evaluation  
Office of Inspector General

Thank you for your memorandum dated July 19, 2004, transmitting the draft report on the subject evaluation, No. 2003-001564. We appreciate your interest in the watershed approach which continues to be one of the Administrator's highest priorities for the water program as evidenced in the 500-day plan goal of Restoring Watersheds and Coastal Waters and the Principles of "a better way" (<http://www.epa.gov/adminweb/administrator/500dayplan.htm>). Overall, the report has done a good job of capturing the essence of the issues and the recommendations are relatively general. Although, it recognizes the benefits of the watershed approach it also correctly points out the challenges of achieving full success as a result of our limited ability to provide individual support to all local watershed organizations due to the resource challenges as pointed out in various parts of the report. The Office of Water's continuing commitment to the watershed approach has spanned more than ten years and recently been broadened with the inclusion of a watershed sub-objective in the Agency's Strategic Plan which has focused even more energy and enthusiasm into improving our support in watershed protection.

I am pleased to respond to the draft report's specific recommendations in attachment 1 of this memorandum. In addition, attachment 2 to this memorandum provides some additional clarifications based on our review of the main body of your report.

Attachments

cc: Nikki Tinsley

## **ATTACHMENT 1**

### **Memorandum from Benjamin H. Grumbles to Dan Engelberg**

Subject: "Draft Evaluation Report: "Sustained Commitment Needed to Further Advance Watershed Approach."

#### **Recommendation 1** (Report Recommendation 6.1):

*Continue to integrate watershed activities into its core water programs. Specifically EPA could:*

- *Commit the necessary resources to support, where appropriate, the development of watershed permits, watershed TMDLs and watershed plans;*
- *Evaluate the benefits and costs of watershed permitting and watershed TMDLs; and,*
- *Work closely with state to ensure that the CWSRF is used as an additional source of funding for nonpoint source and other watershed related projects.*

We are and will continue to integrate our core programs into our watershed approach. This December we plan to publish a draft technical guidance on watershed based permitting to further assist states and local stakeholders. EPA is encouraging a watershed approach to TMDLs by developing guidance for States on effective ways to pursue TMDL development in a watershed context. We are working with interested Regions and select States to generate a draft of this guidance this fiscal year, with particular attention to existing examples, successful models, and lessons learned. The guidance will integrate approaches of the permits and non-point source programs to facilitate successful implementation at the watershed level. In addition, the Regions are evaluating opportunities to financially and technically support watershed approaches to TMDL development in specific cases including the costs and benefits of watershed TMDLs.

Beginning in 2002, the NPS Program and Grants Guidelines have required that States dedicate \$100 million of the 319 funds to remediating 303(d) - listed waters through the development and implementation of watershed-based plans. The plans must be consistent with any TMDLs that have been developed and serve as a mechanism to coordinate monitoring and planning on a watershed basis, and provide the foundation for effective implementation using federal and other funding sources. To implement watershed projects, States first must develop watershed-based plans that identify pollutants and the significant sources of those pollutants and determine the most appropriate mechanisms to address those sources. In most cases, the planning and implementation is led by local communities with State assistance.

As noted in the report, EPA has provided states with guidance and flexibility to utilize the CWSRF for state watershed priorities. EPA has consistently emphasized priority setting systems based on water quality information and watershed needs. Since, the watershed approach includes both point and nonpoint sources of pollution, the two sources need to be considered together. Twenty-seven states have voluntarily adopted "Integrated Priority Setting Systems" that enhance their ability to target funds to watershed priorities. While EPA does not have a strategic planning target for CWSRF nonpoint source funding, the EPA strategic plan does have a CWSRF Performance Activity Measure for Integrated Planning and Priority Systems.



**Recommendation 2** (Report Recommendation 6.2):

*Work in partnership with stakeholders to ensure obstacles with implementing the watershed approach are addressed. Specifically, EPA could:*

- *Work closely with watershed advocacy groups to educate the public about the value of water resources and how public participation is critical to safeguard these resources;*
- *Improve coordination and communication with states and watershed organizations to help insure the success of the watershed approach in achieving clean and safe water; and*
- *Provide technical assistance to stakeholders, particularly in developing watershed plans.*

We agree and have initiated a number of new activities designed to assist stakeholders in implementing the watershed approach in addition to continuing to refine existing and develop new watershed support tools already in the pipeline. Already this calendar year we have held two “dialogues” with groups of national, regional and local organizations to discuss their both their support needs and better understand the obstacles to their success. We have also begun hosting a series of monthly Webcast Learning Seminars intended to deliver watershed training to a broader national audience. The first Webcast held in June 2005 on the Eight Tools for Watershed Protection in Developing Areas attracted more than 600 participants from 40 states, the Virgin Islands, and Puerto Rico. Just this week, OWOW will launch a new web-based Watershed Discussion Board. This tool will offer watershed practitioners a platform to exchange ideas and hopefully stimulate innovative solutions that can be easily shared. Our goal is to engage watershed leaders from around the country in these interactive, on-line discussions and encourage the sharing of expertise and experience. We are also planning to build on the national success through our partnership with the Weather Channel on the “After the Storm” video that highlighted the importance of water resources to the general public. In addition, through the Environmental Financing Network, a nationwide group of educational centers located at major universities around the country, EPA has funded the development and distribution of a suite of tools on how to obtain funding and resources for completing watershed work.

By the end of the calendar year we expect to release drafts of two major tools that will support the development of watershed plans. One is guidance developed by our nonpoint source program, a Watershed Planning Handbook that can be used as a technical resource by stakeholders to improve the technical basis of watershed plans. The second is a web-based watershed planning tool that complements the guidance by helping watershed planners follow a stepwise, user-defined process to integrate the programmatic aspects of the Clean Water Act into their watershed plans. EPA has requested input from EPA Regions, States, watershed organizations, and other stakeholders in developing these draft tools. EPA is planning to provide training for the use of these tools in the coming fiscal year.

The Watershed Managers Forum, the group of OW and regional managers most closely aligned with the day to day operations of the watershed sub-objective, is developing a revised national strategy to increase the capacity of local watershed groups. By focusing national support to watershed organizations on some key support activities, we hope to ease the resource pressure that the regions are feeling to work one on one with more and more local watershed groups.

One major omission from your recommendations on partnerships is the importance of other government agencies and programs to ultimate success at the watershed level. For example, integration of the conservation programs contained in the Farm Bill in agriculture dominated watersheds and those contained in the Highway Bill for urban and suburban areas dealing with stormwater runoff programs can be critical to local watershed planning and implementation. Since a large percentage of funding for addressing nonpoint source problems, most of the technical assistance resources, and much of the authority and responsibility appropriated by Congress come primarily through the Farm and Highway Bill programs, these programs need to be recognized as a significant part of the watershed solution.

The report also fails to make the connection between our partnerships with local watershed NGOs and our need to both measure and demonstrate success. This approach is especially important in light of the resource constraints on EPA and the States that the report does emphasize in various places. Finally, both tribes and local planning agencies can play critical roles in watershed approaches and are not mentioned in the report.

**Recommendation 3** (Report Recommendation 6.3):

*Continue to refine and improve keys aspects of its strategic planning process. Specifically, EPA could:*

- *Improve the accuracy and reduce the uncertainty of the baseline;*
- *Ensure the Office of Water and EPA Regions clearly understand their roles in setting and achieving national watershed goals; and,*
- *Improve Regional plans to help achieve watershed goals.*

Thank you for acknowledging in the body of the report that we have made important strides in developing our watershed sub-objective. We agree that the accuracy is critical to targeting and measuring our success. The importance of data quality was emphasized at our first ever EPA Watershed Managers Forum meeting in December when the Watershed Managers Forum agreed that improving our Assessment Database (ADB) was a critical first step in sub-objective success. Further, the report documents the challenges in setting performance measures based on watershed improvements and contains some reasonable recommendations to work incrementally to improve these measures. We have already begun this process. An ad-hoc national Measures/Data Workgroup is now examining a range of issues related to data needs, data quality and measures of success and expected to make recommendations for improvements in time for the next strategic planning cycle.

The Watershed Managers Forum which was officially Chartered on Earth Day 2005, has been a key focal point for improving the two-way, regional/headquarters communication on the watershed sub-objective. Working with this group, we have supplemented the broad regional plans that are part of our strategic planning process. Each region has developed a much more specific watershed sub-objective "game plan". Just this week, we have sent the regions a general critique of their initial game plans with recommendations for improvements. We believe these actions along with the broad participation of the regions in our various workgroups working on the measurement and local watershed capacity building activities are key actions to help achieve overall watershed success.

**Recommendation 4** (Report Recommendation 6.4):

*Continue to improve key aspects of its performance measurement system. Specifically, EPA could:*

- *Ensure that the performance of all critical national strategies and implementation of core water programs on a watershed basis can be assessed; and*
- *Improve the design of the watershed restoration and watershed improvement goals.*

We agree that improvements are needed in our ability to measure success and as mentioned above we are working jointly with our regions to identify possible improvements in both measures and the data needed to support them. Our strategic planning program activity measures underwent a critical analysis with much regional input that led to changes in 2006. We expect these activities along with the current PART reviews by OMB will have a significant impact on our next strategic plan.

A major focus of Office of Water is to strengthen data management systems to track water quality status and trends and measure progress in the nation's watersheds. We are linking our IT efforts and the statistically-based monitoring efforts to the Strategic Plan. These efforts include redesigning STORET into a new system, tentatively called Water Quality Exchange (WQX). WQX will contain the data from probability surveys that characterize condition of nation's water resources. WQX also will contain data that supports measures of incremental progress towards restoration or protection of waterbody segments or watersheds. In addition, WQX will provide data that is used to make state assessment decisions, which are reported in the National Assessment Database (<http://www.epa.gov/waters/305b/index.html>). The assessment decisions are linked to the National TMDL Tracking System (<http://www.epa.gov/waters/tmdl/index.html>), which contains information on TMDLs underway and those completed.

Statistically-based monitoring provides a benchmark for large classes of waters of the U.S., allowing us to track changes across the whole resource and determine what proportion of the waters are moving up or down the scale in certain categories like e.g., good, fair and poor. The site specific data on waterbody segments allow us to track the improvements associated with specific actions in individual watersheds by measuring changes in chemical, physical and fish tissue data. The state monitoring strategies now being developed address both the types of monitoring designs needed to generate the data needed to track changes at these different scales and the data systems needed to store and manage the data.

## ***OIG Evaluation of Agency Comments***

EPA generally concurred with our recommendations and in some cases has taken actions to address them. EPA's response to our draft recommendations is in Appendix E. Following is our evaluation of the EPA's specific comments on our recommendations.

### **Recommendation 6-1**

According to EPA's response to the OIG draft report, EPA plans to issue draft technical guidance by the end of the fiscal year on watershed permitting to further assist States and stakeholders. In addition, the response stated that Regions are evaluating opportunities to financially and technically support watershed approaches to TMDL development in specific cases, including the costs and benefits of watershed TMDLs. The response also noted EPA's support for watershed plans through the use of 319 funds and for watershed priorities through CWSRF funds. EPA mentioned that 27 States have voluntarily adopted "Integrated Priority Setting Systems" that enhance their ability to target funds to watershed priorities.

EPA's listed activities to integrate watershed activities into its core water programs generally satisfy the recommendations set forth in the draft report. However, EPA should also study the benefits and cost of watershed permitting and watershed TMDLs. The Agency has recognized in previous guidance that watershed permitting may require more time to develop permits. For example, in its *Watershed-Based National Pollutant Discharge Elimination System (NPDES) Permitting Implementation Guidance*, issued in 2003, EPA states the following:

*... An expansion in stakeholders presents a challenge to and a new role for the permitting authority (coordinator). Engaging a wider variety of stakeholders means that the permitting authority and the permit writer will have to consider a broader range of interests and watershed goals when developing the permit, potentially adding technical complexity and time to the permit development process. An expansion in stakeholder involvement will also challenge the other stakeholders as they take the time to understand one another's goals for and concerns about the watershed, and determine how to best structure the watershed-based permitting process to meet these goals.*

Similar issues exist in developing watershed TMDLs. Evaluating the benefits and costs of watershed permitting and watershed TMDLs may provide critical information for stakeholders as they seek to identify innovative solutions to reduce loadings into their watersheds. EPA is in a unique position to provide such information to those permitting authorities.

### **Recommendation 6-2**

According to EPA's response, EPA is planning to work with the Weather Channel to further highlight the importance of water resources to the general public. To improve coordination and communications with States and watershed groups, EPA (1) has held two "dialogues" with groups of national, regional, and local organizations to discuss both their support needs and

better understand the obstacles to their success; (2) began hosting a series of monthly Webcast Learning Seminars intended to deliver watershed training to a broader national audience; and (3) will launch a new Web-based Watershed Discussion Board. EPA's response also stated that the Agency is working with the Environmental Financing Network to fund the development and distribution of a suite of tools on how to obtain funding and resources for completing watershed work. Additionally, EPA is developing a Watershed Planning Handbook that can be used as a technical resource by stakeholders and a Web-based watershed planning tool.

EPA was concerned that we omitted the importance of other government agencies and programs in the success of the watershed approach. We understand that other Federal, State, and local agencies also play a fundamental role in the success of the watershed approach. In this report, we evaluated only EPA's efforts.

EPA's listed activities to work in partnership with stakeholders satisfy the recommendations in the draft report. Continuing to support these types of activities will be crucial for the success of the watershed approach.

### **Recommendation 6-3**

In response to the first part of our recommendation, the Agency acknowledges the importance of accuracy in terms of targeting and measuring success and states that an ad-hoc national workgroup is examining a wide range of issues related to data quality and strategic planning. The response states that improving the Assessment Database is a critical first step in the success of the watershed subobjective. However, the Agency does not offer specific actions that it will take to improve the accuracy of the baseline. For instance, it does not offer any actions it could take to change how the baseline is calculated or how to compensate for errors in the Assessment Database. The Agency does state that an ad-hoc national Measures/Data Workgroup is now examining a range of issues related to data needs, data quality, and measures of success. However, the recommendations for improvements will not be ready until the next strategic planning cycle.

The Agency states that the Watershed Managers Forum will help communication between the Regions and headquarters and that each Region is now developing regional "game plans" for the watershed subobjective that will help address improvement to the regional plans. While a workgroup may help communication, the Agency does not offer specific actions that should be taken to help improve communication during the planning process. EPA's response did not address how the Agency would ensure that the Office of Water and EPA Regions clearly understand their roles in setting and achieving national watershed goals. Moreover, without knowing the specific content of the "game plans," we are unable to determine whether they will be beneficial in improving regional plans.

### **Recommendation 6-4**

The Agency agreed that improvements are needed to measure success and stated that they are working jointly with Regions to identify possible improvements in both the measures and the

data needed to support them. The Agency expects that the current Program Assessment Rating Tool reviews by the Office of Management and Budget will have a significant impact on the next strategic plan. The response states that the Agency's major focus of the Office of Water is to strengthen data management systems to track water quality status and to measure trends in the progress in the nation's watersheds by redesigning the Storage and Retrieval Data System (STORET) into a new system tentatively called Water Quality Exchange.

The Agency does not offer specific actions that it will take to address this recommendation. The Agency does not address whether the mix of performance measures will be revised to better determine the success of key initiatives or strategies. For example, in our draft report, we stated that the NPDES program has tracking measures but no performance measures on a watershed basis; the water quality standards and State Revolving Fund programs have neither on a watershed basis. Additionally, EPA does not address how it plans on improving the design of the watershed restoration and watershed improvement goals to be more understandable, comparable, and reliable. EPA's 90-day response should address actions the Agency plans on taking to address this recommendation.

## ***Distribution***

Office of the Administrator  
Assistant Administrator, Office of Water  
Director, Office of Wetlands, Oceans, and Watersheds  
Director, Office of Wastewater Management  
Director, Office of Science and Technology  
Director, Office of Ground Water and Drinking Water  
Agency Followup Official (the CFO)  
Agency Followup Coordinator  
Associate Administrator for Congressional and Intergovernmental Relations  
Associate Administrator for Public Affairs  
General Counsel  
Inspector General