Community Environmental Management Systems: A Role for EPA?

A Discussion Paper Prepared by
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Purpose

(1) To assist local governments and communities in navigating and integrating the range of environmental quality, natural resource management, and land use planning requirements for which they are responsible.

(2) To establish incentives for local governments and communities to pursue comprehensive environmental and natural resource management as well as continual improvement.

Proposal

(1) To develop and pilot test in two to three communities a conceptual framework for community-level environmental management, modeled after EMS, that helps communities to integrate the range of EPA regulatory and voluntary programs for which they are responsible. The framework will help communities focus on environmental outcomes, identify environmental priorities, coordinate among related programs, and eliminate redundant planning and monitoring efforts. Cities will be able to adapt the federally focused framework to include state and locality-specific requirements as well as carry out the framework's recommended processes at various levels of investment.

(2) To develop outreach materials and an incentives structure that encourages local governments and communities to implement an EMS and use the framework.

The Problem

Through its regulatory and voluntary programs, EPA requires or encourages states and communities to undertake numerous local environmental management planning activities. EPA also increasingly requires environmental management plans as a funding criterion. Many local government and non-government organizations independently develop plans to accomplish a variety of goals (e.g., resource protection, growth management or to generally meet state or local master planning requirements). These plans, along with the responsibility for implementing them, typically are housed in multiple departments, agencies and offices. These program-specific plans represent redundant work and missed opportunities for collaboration and may be at cross purposes, or suggest conflicting actions. Communities and local governments are well-aware of this problem and repeatedly request EPA's assistance in integrating environmental assessment, planning, and regulatory programs.

A representative sampling of environmental statutes and regulations that apply to local governments revealed 20 EPA regulatory programs that include redundant and/or complementary planning requirements, and nine voluntary or grant programs. (See Appendix C.) These

requirements come from all of EPA's major program offices; however, the Office of Water and the Office of Solid Waste and Emergency Response account for the majority, with 14 of the 20 regulatory programs and six of the nine voluntary programs. EPA is not the only entity that requires environmental management planning; local governments face a myriad of similar planning requirements by other state and Federal agencies. Anecdotal evidence raises two other significant Federal programs that can be drivers of local environmental management: habitat conservation plans called for under the Endangered Species Act and administered either by Interior's US Fish & Wildlife Service or by NOAA's National Marine Fisheries Service;[1] and, flood management plans called for under the National Flood Insurance Act and administered by the Federal Emergency Management Agency.[2]

Among these various planning requirements, ten planning elements commonly recur. (See Box 1.) Not surprisingly, these common elements are found in most standards for Environmental Management Systems.

Box 1

Common Environmental Planning Elements

- establish program goals
- identify and quantify current and potential impacts
- develop a schedule for achieving goals, setting interim milestones
- establish performance measures
- identify available/needed resources
- assign and identify responsible parties
- develop a public participation plan
- develop an evaluation strategy
- develop a strategy for adaptive management and continual improvement
- ensure coordination among those who share similar goals or responsibilities

The Potential of EMS

EMS has been used successfully in private and public sector organizations to improve environmental performance and reduce the costs of environmental management. Facility-based EMS has been endorsed by EPA as a valuable tool in achieving compliance with environmental regulations and minimizing environmental footprints. To further bolster the approach, Performance Track is evolving to create meaningful incentives for facilities to adopt EMS and EPA is supporting the adoption of EMS-like approaches in the agricultural sector to improve environmental and natural resource management.

An EMS is a systematic approach for managing an organization's environmental issues and opportunities. The essential characteristic of an EMS is that its various components interact to provide measurable information enabling continual improvements. The EMS approach is based on the "Plan-Do-Check-Act" model of total quality management. It sets out environmental policies, objectives and targets with pre-determined indicators that provide measurable goals, and a means of determining if the performance level has been reached.

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[1]For example, the Puget Sound Naval Shipyard, which is undertaking an innovative pilot with EPA to use an ecological risk assessment as the foundation for clean up to the Sinclair Inlet, has found the Endangered Species Act to be a significant driver in the county.

[2]Floodplain management often involves local government planning to preserve wetlands and riparian buffers, as well as buyout or acquisition programs that return formerly developed land to natural wetlands or other open space.

While this systematic approach has been adopted primarily by facilities, service organizations and municipalities also have used the framework to improve environmental and resource management. In 1997, EPA's Office of Wastewater Management launched the Local Government Initiative program to train and assist nine local government entities that made commitments to implement EMSs in one or more of their facilities (primarily POTWs). These early participants experienced reduced costs, better understanding of legal requirements, and improved communications between departments. Based on the success of the first project, OW launched and completed a second Local Government Initiative program and has just embarked on a third.

Also due to the success of the Local Government Initiative program, EPA has recently established a national PEER (Public Entity EMS Resource) Center that will provide an on-line source of information for public entities that want to learn more about and hopefully adopt EMSs for their operations. A virtual clearinghouse, it is specifically designed to aid local, county, and state governments that are considering implementing or have implemented an environmental management system (EMS) and want to access the knowledge and field experience of other public entities that have done so. In addition to the national PEER Center, eight Local Resource Centers have been established to provide assistance and information to public entities in various parts of the country.

City-Wide or Community EMS: Who is Doing it and How is it Working

Several cities in the United States and around the world have moved beyond facility EMSs and operate under EMSs with a city-wide fenceline. The following five cities are perhaps the most heavily invested in community EMS work: Scottsdale, Seattle, and Kansas City, Missouri in the United States, as well as Manningham, Australia and Calgary, Canada.[3]

The primary drivers for undertaking a city-wide EMS in Seattle, Kansas City and Calgary ranged from a history of compliance issues to a desire to be world leaders in comprehensive environmental management. Similarly, the goals and targets of their efforts span from increased compliance rates to ISO 14001 certification. These differences demonstrate the wide-ranging value of the city-wide EMS approach. (See Table 1.)

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[3]Based upon analysis of EMS documentation on the world wide web as well as interviews conducted with EMS practitioners in Calgary, Kansas City, and Seattle.

Table 1

	Driver	Goal of EMS	Fenceline
Calgary	regulatory pressure, political/City Council	comprehensive environmental management, ISO certification	city-wide, with 8 of 10 departments ISO 14001 certified, no city-wide EMS manual
Kansas City	prevent future compliance problems	compliance, the compliance plus	in theory city-wide, but only 8 of 10 departments use it
Seattle	consistency in interdepartmental decision making, political/City Council	compliance plus, comprehensive environmental management, ISO certification	in theory city-wide, but only 1 of 5 major departments have EMS in place, others have EMS components

Among these cities, two fundamentally different approaches have emerged for implementing a city-wide EMS – a "trickle down" approach, and a "bubble up" approach. The trickle down approach, used in Seattle and Kansas City, involves developing a set of city-wide goals and a city-wide EMS manual, which then can be adapted to the needs of each city department. In Seattle, the City Council and Mayor's office took the lead on creating the overarching EMS framework, thereby raising the public profile and the political stakes of the city-wide EMS. Conversely, the bubble up approach, used in Calgary and Scottsdale, starts with individual city departments developing an EMS. Once a critical mass of departments have implemented their EMS, the various EMSs can be integrated into a comprehensive, city-wide plan.

Cities choose between a trickle down or bubble up approach based on the existence of prior EMS efforts, resource availability, and cultural issues. Both approaches have exhibited success, but also have drawbacks. With the trickle down approach, some city departments have found it difficult to adapt the city-wide EMSs to their specific operations, and some react negatively to a perceived "top down" management directive. If some departments opt out of the EMS, then some key environmental aspects and impacts may be unaccounted for in the overarching EMS.

EMSs developed using the bubble up approach, on the other hand, run the risk of never being more than the sum of their parts. There may be only limited interdepartmental communication and planning. However, even the sum of the parts may result in environmental improvements and better management. For example, Calgary, perhaps the closest to having all city departments ISO 14001 certified, has no city-wide EMS manual. Investments have been directed primarily at departmental efforts, with great results. Calgary is aware, however, that an overarching city-wide policy would better link planning activities to the EMS and would help ensure that departments are not conducting repetitious planning and monitoring requirement activities. The primary advantage of this approach is that it can be implemented incrementally, one department at a time, which may be more feasible to many local governments just getting started with EMS.

The cities also vary in their adherence to strict EMS standards, and whether or not they are seeking or hope to seek ISO certification. Calgary and Manningham, in particular, have set ISO certification as their goal. Significantly, Scottsdale has been approved as the only city-wide member of EPA's National Environmental Performance Track, which requires members have implemented a high quality EMS that meets standards similar to ISO 14001. Seattle also is seeking Performance Track membership.

Most agree that the ISO, or similar, standards are a useful tool; however, cities that may not be able to achieve certification can use the EMS framework to improve management and achieve greater environmental results. ISO 14001 may be the preferred level of operation, but also may be an unrealistic goal for many cities across the nation.

Regardless of the approach and standards used, all of these cities are seeing benefits from their EMS efforts. Although evaluations are mostly incomplete due to the short implementation time, these cities have experienced greater compliance rates, improved interdepartmental communication, increased land preservation/restoration, and reduced waste. Almost every city also has experienced difficulty in the implementation stage. While goals are being met in one area, more often than not the city is failing to meet another specified target.

Despite this range of experiences, the cities all recommend that other municipalities follow in their footsteps. Most noted that the EMS is an efficient way to bundle legal requirements so that city departments know where to get information on their own requirements as well as those of other departments. The researched cities all suggest a city-wide fenceline for greater results. (See Box 2.)

Based upon this initial research, it appears that a City-wide or Community EMS is a logical and effective expansion of the EMS framework that has the potential to help local governments, at a minimum, streamline environmental management activities by connecting the dots among related programs and requirements, and ultimately, can help communities minimize their overall environmental footprint. EMS applied at this scale provides a systematic approach to develop policies, practices and procedures that are able to respond to the social, economic, and environmental challenges ahead.

Box 2

Advice from the Field: Pointers for Embarking on a City-wide EMS

- Establish program goals.
- The bigger the fenceline the better. All city departments should be involved.
- Tie EMS into ongoing environmental planning activities.
- Individual department EMSs are the foundation, and city-wide EMS doesn't necessarily need to be more than the sum of its parts.
- Use a bottom up approach, involving all employees and all departments.
- Create an oversight committee comprised of all stakeholders.
- Identify cultural and financial issues that may pose challenges to implementing an EMS.
- Begin assessment phase by looking at compliance with regulatory requirements, then move to include other impacts, including indirect and beneficial impacts.
- Mechanism for continual improvement should start with interdepartmental reporting and end with third party auditing.

Table 2

	General feelings about EMS program and its future.	Would you recommend other communities adopt this approach?	What role, if any, should EPA play?
Calgary	Overall favorable. Involves learning curve. ISO 14001 is a tool, not the answer.	Yes. Use ISO 14001 but have to integrate.	Could help communication and information sharing among local governments. Help spread best practices. Provide financial assistance.
Kansas City	Overall favorable. Built good interdepartmental relationships. Monumental task.	Yes. Can be a useful tool for every municipality.	Conduct outreach. Produce guidance. Provide technical and financial assistance. Create incentives through SEPs. Include in regulatory programs.
Seattle	Overall favorable. Making solid progress. The larger the fenceline the better.	Yes. Recommends ISO 14001 standard and a wide fenceline.	Enable city to link to local EMSs through financial help. Pay for consultants to develop EMS framework and training for employees.

A Role for EPA?

Given the potential for this approach to help local governments navigate EPA's regulatory programs, and achieve more efficient, effective environmental management, EPA should encourage local governments to adopt city-wide and community EMSs, and provide guidance and technical assistance to help local governments implement their EMSs. (See Table 2.)

Possible Roles for EPA:

- Watch for further developments in this area. Evaluate and document successes and failures.
- Develop and distribute outreach materials about the experiences of local governments who have tried it. Help create networks of practitioners.
- Create guidance documents to help communities implement EMS (e.g., how to use Community EMSs to integrate EPA programs, lessons learned documents, etc.).
- Provide technical and financial assistance to help support the implementation of Community EMSs.
- Create incentives within EPA's programs for the implementation of Community EMSs. For example, encourage broader city and county participation in Performance Track and develop associated incentives for membership.

APPENDIX A

Community EMS for Program Neutral Planning: Joint OW-NCEI Work Plan

Objective: To develop and pilot test a conceptual framework, modeled after EMS, that helps communities to integrate their various environmental management requirements and voluntary programs, focusing initially on those required by EPA, but also by other Federal agencies. The Framework should enable communities to focus on achieving environmental outcomes, rather than meeting the multitude of process-related requirements in EPA's various regulations and voluntary programs. The framework should help communities to eliminate redundant planning and monitoring programs, to improve coordination among related programs to achieve greater environmental improvements, and to more effectively identify environmental priorities.

Work Plan:

- Inventory and analyze local environmental planning requirements (completed early August)

- Inventory and analyze local environmental monitoring and data management requirements (completed early August)

- Tetra Tech (OWM) will develop draft comprehensive planning process and monitoring program, and draft conceptual Framework to form foundation of Community EMS. (September)

- Convene cross-Agency workgroup to: (October)

    - Develop comprehensive planning process that could serve in lieu of EPA planning requirements, and meet broader goal of integrated ecosystem management

    - Develop comprehensive monitoring program/process that could serve in lieu of EPA monitoring requirements, and meet broader goal of integrated ecosystem management

    - Using the EMS model, develop a draft conceptual Framework.

- Finalize conceptual Framework document (October-November)

- Select two to three pilot communities.

- Work with pilot communities to adapt draft Framework to meet their needs.

- Apply the Framework in the pilot communities, with the end product being a "Community EMS".

- Evaluate the effectiveness of the tool.

APPENDIX B

COMMUNITY ENVIRONMENTAL MANAGEMENT SYSTEM (EMS) FRAMEWORK FOR PROGRAM NEUTRAL PLANNING

DRAFT OUTLINE

September 15, 2003

I. Introduction

A. What is the purpose, scope, and target audience of this document? (from Amanda/Adam's initial paper)

B. What is a Community Environmental Management System(EMS)?

C. Why is EPA supporting the development of a Community EMS now?

D. What the rest of this document contains (description of each chapter).

II. Overview of Environmental Management Systems (EMS)

A. Background on EMS concept

1. Overview of ISO 14000
2. EPA EMS Policy
3. EPA EMS Position Statement

B. Overview of the EMS Process (pull information from PEER's EMS Troubleshooter's Guide; provide just a synopsis of the process here – save detail for Chapter III and beyond)

1. Getting Ready
2. Plan
3. Do
4. Check
5. Act

C. Benefits of using an EMS (cite actual benefits from both industry and communities)

D. Current applications of EMSs (include both industry and communities)

III. Overview of the Community Environmental Management System Framework: Water Focus (Phase I)

A. Overview of the Community Environmental Management System concept

B. Relationship Between EMSs and EPA's Community Environmental Management System Framework

1. Scope just focuses on water-related requirements
2. (Need to think of other comparisons/contrasts)

C. Overview of Regulations Integrated Under the Community EMS

1. Explanation of why this version of the Community EMS Framework only addresses water regulations and EPA's plans to expand the Framework over time
2. Overview of federal regulations that impact communities
3. Overview of federal regulations that focus on water (probably just a table or a figure)
4. Discuss of customizing the framework to include state and local requirements (this discussion will be particularly important where the state administers many of the federal programs addressed in earlier sections)

D. Overview of the Community EMS Framework (convey through a simple graphic that sets up the subsequent chapters)

1. Getting Ready
   a. Identify appropriate EMS team
   b. Establish goals
   c. Determine which requirements apply to the municipality and should be addressed through the EMS
   d. Select "fenceline" of the EMS based on regulations to be addressed
2. Plan
   a. Conduct inventory of existing plans developed to satisfy federal regulations
   b. Review integrated plan checklists and worksheets to identify data gaps
   c. Collect and compile additional data to fill data gaps (e.g., for new or changed program requirements)
   d. Develop integrated plan using checklists and worksheets that identify common planning requirements across programs **(to be developed)**
3. Do
   a. Develop implementation schedule
   b. Assign roles and responsibilities for plan implementation
   c. Determine required resources
   d. Develop training materials
4. Check
   a. Identify monitoring requirements based on programs/regulations incorporated into the Community EMS
   b. Develop performance indicators (may go beyond just regulatory goals to incorporate other goals and objectives)
   c. Customize monitoring program
   d. Develop EMS Auditing procedures
5. Act

a. Establish schedule for reviewing and revising integrated plan

IV. Putting the Community EMS Framework in Motion

(This section will contain the very detailed narrative to walk communities through the process depicted in the graphic outlined above; B - D are contingent upon the findings of our efforts to comprehensively cross-walk the requirements of the various water programs contained in the associated file, Program Matrix 9-9; this section will contain checklists and worksheets where necessary to assist users)

A. Getting Ready

B. Plan

C. Do

D. Check

E. Act

V. Resources

A. Detailed information on federal regulations

B. Funding sources

C. Technical guidance references

D. Technical assistance resources

APPENDIX C

Community EMS Framework Development
Description of Federal Programs with Municipal Impacts
September 15, 2003 Draft

This documents contains key elements of federal regulatory programs that will comprise Phase I of the Community Environmental Management System (EMS) Framework, most of which focus on water-related regulations and programs. The table presented below corresponds to the draft outline for the Community EMS Framework for Program Neutral Planning (September 15, 2003 draft). It contains two categories of federal regulatory programs: 1) those that require communities to conduct planning and implementation activities at the local level and 2) those that do not require communities to do anything, but impact decision-making at the local level. Federal regulatory programs in the first category include:

- NPDES Storm Water (industrial, construction, and municipal)
- NPDES CSO Policy
- NPDES Pretreatment Program
- Section 319 Non-Point Source Control Program
- Underground Injection Control
- Watershed Initiative
- Source Water Assessment Program
- Water Conservation Planning
- National Flood Insurance Program
- Habitat Conservation Plans

Federal regulatory programs in the second category include:

- Anti-Degradation Policy (Water Quality Standards)
- Section 303(d) Total Maximum Daily Loads
- Section 305(b)/State Monitoring Programs

The list of federal regulatory programs addressed in the Phase I Community EMS Framework may change as the framework evolves. As a next step, EPA is developing comprehensive matrices that provides detail on specific key elements (e.g., planning, monitoring, reporting, etc.) for each program listed. These detailed matrices will facilitate identification of overlapping programmatic requirements for communities that the Community EMS Framework will attempt to integrate.

Program	Objective	Scope/ Scale	Stakeholder Involvement	Planning Elements	Monitoring	Reporting	Schedule
NPDES Storm Water	To reduce pollutant loadings to receiving waters carried by storm water runoff transported through storm sewer systems from municipal, industrial, and construction activities.	Phase I MS4s (over 50,000) Phase II MS4s (in Urbanized areas and not regulated under Phase I) Industrial activities (based on SIC code, includes POTWs) Construction activities (greater than 1 acre)	Public involvement required under Phase II MS4 Program. Limited public involvement for industrial and construction activities – storm water pollution prevention plans must be publicly accessible. All NPDES permits have public notice requirements.	**MS4:** Both Phase I and Phase II MS4s required to develop and implement storm water management programs. Phase II MS4 programs must include six minimum control measures 1) Public education 2) Public participation 3) Illicit discharge detection and elimination 4) Construction runoff controls 5) Post-construction controls 6) Good housekeeping/pollution prevention **Industrial:** Storm water pollution prevention plan **Construction:** Storm water pollution prevention plan	Phase I MS4s have monitoring requirements; Phase II MS4s have none; Monitoring for industrial activities varies depending on SIC code, but typically includes visual monitoring at a minimum; Construction activities do not have monitoring requirements, but must conduct inspections.	Annual reports required for Phase I and II MS4s	All NPDES permit have a maximum 5 year permit term. All Phase I MS4s should have permit coverage. Phase II MS4s required to have permit coverage as of March 10, 2003. Industrial and construction activities must have coverage 2 days prior to operation.

Program	Objective	Scope/ Scale	Stakeholder Involvement	Planning Elements	Monitoring	Reporting	Schedule
NPDES CSO Policy	To reduce pollutant loadings to receiving waters discharged from combined sewer systems carrying both storm water and sanitary wastewater.	Approximately 772 cities with combined sewer systems	Required element under long-term control plan	**Nine minimum control measures:** 1. Operation and maintenance 2. Maximum use of system 3. Review of pretreatment requirements 4. Maximization of flow to the POTW 5. Prohibition of CSOs during dry weather 6. Control of solids and floatables 7. Pollution prevention 8. Public notification 9. Monitoring of impacts and control efficacy **Long-term control planning:** 1. Characterization, monitoring, and modeling 2. Public participation 3. Consideration of sensitive areas 4. Evaluation of alternatives 5. Cost/performance considerations 6. Operational plan 7. Maximizing treatment	**Nine minimum control measures:** Monitoring of impacts and control efficacy **Long-term control planning:** Post-construction compliance monitoring	(Requires further research)	(Requires further research)

Program	Objective	Scope/ Scale	Stakeholder Involvement	Planning Elements	Monitoring	Reporting	Schedule
NPDES Pretreatment	To control pollutants from industrial users that may pass through or interfere with wastewater treatment processes or contaminate sewer sludge.	Approximately 1,500 communities required to develop and implement pretreatment programs.	Public notice requirements for program approvals, modifications, local limits development, industrial user significant non-compliance	Identify and locate all industrial users subject to the pretreatment program Track existing industrial user information and/or classification changes and new user information	Annual monitoring of significant industrial users; must determine appropriate monitoring locations for industrial users; required to review local limits every 5 years	Annual reporting documenting program status and activities	(Requires further research)

Program	Objective	Scope/ Scale	Stakeholder Involvement	Planning Elements	Monitoring	Reporting	Schedule
Section 319 Grants (watershed planning)	To assist states in implementing nonpoint source management programs	Project-specific; typically 8 digit watersheds or smaller	Required throughout project	Basic work plan requirements Supplemental guidance on nine key elements: 1) Identify causes and sources 2) Develop loading reduction estimate for management measures 3) Description of management measures 4) Estimate of amounts of financial and technical assistance 5) Public information/education 6) Schedule 7) Implementation milestones 8) Criteria for determining if loading reductions are being achieved 9) Monitoring plan to evaluate implementation effectiveness	Projects may have monitoring; Work plans must contain a performance evaluation process; Nine key elements requires a monitoring plan	Performance reports (semi-annual) Financial status reports (semi-annual) Progress reports (annual)	Project-specific

Program	Objective	Scope/ Scale	Stakeholder Involvement	Planning Elements	Monitoring	Reporting	Schedule
Underground Injection Control	To provide safeguards for injection wells to prevent endangerment of current and future underground sources of drinking water.	Program addresses five classes of injection wells. Communities most likely to be impacted by Class I (treated municipal effluent) and Class V (non-hazardous fluids through on-site disposal systems) requirements. Permits may address a specific well, or an area.	Required for Class V injection wells.	Class I: Plugging and abandonment plan Class V: Submit inventory information	Class I: Mechanical integrity tests, yearly monitoring of injection operation, monitoring wells to supplement ambient monitoring are authorized Class V: can be required by state/EPA; requirements may vary	Planned changes, anticipated noncompliance, transfers, monitoring reports, compliance schedules, 24 hour reporting	(Requires further research)

Program	Objective	Scope/ Scale	Stakeholder Involvement	Planning Elements	Monitoring	Reporting	Schedule
Watershed Initiative	Grant program to encourage successful community-based approaches and techniques to protect water resources throughout the country.	Intra- or inter-state watersheds	Grant nominees must include a description of the information and outreach component that will encourage public participation, as well as a listing of watershed stakeholders.	**Characterization of the Watershed and Watershed Planning Effort.** An assessment of the natural resource and environmental conditions, and an identification of problem sources and areas for treatment are required. These include: • A description of the watershed's biological, physical, and, if relevant social and/or cultural characteristics. • An identification of problems or threats facing the watershed. • A comprehensive description of the watershed plan. This should include: ✓ Short- and long-term watershed goals, ✓ Identification and prioritization of the projects necessary to address the problems or threats facing the watershed; ✓ Delineation of which projects that are part of the plan but are not eligible for funding; and ✓ Person, or entity, who will be responsible for implementing the watershed plan.	Grant nominees must submit a detailed plan for monitoring and evaluation	(Details on reporting requirements not available from info on EPA's web site.)	One-time grant awards; EPA intends to make this an annual program if funding is available.

Program	Objective	Scope/ Scale	Stakeholder Involvement	Planning Elements	Monitoring	Reporting	Schedule
Source Water Assessment Program	To analyze existing and potential threats to public water supplies to encourage the development and implementation of effective source water protection programs.	States must develop source water assessment and protection programs, and then conduct assessments of all public water systems	Required, but requirements vary from state to state	Delineate source water protection zone (ground and/or surface) Inventory potential sources of contamination and associated hazards Determine susceptibility Develop and implement land management strategies (requirements for this vary from state to state)	None associated with the assessment; monitoring may be a part of land management strategy implementation	Programs required EPA approval; completed assessments submitted to EPA for review and approval	Assessments required to be completed by May 2003; no federal schedule for developing protection plans using assessment results
Water Conservation Plans	To help bring conservation into the mainstream of water utility capital facility planning	Basic guidelines: fewer than 10,000 Intermediate guidelines: between 10,000 and 100,000 Advanced guidelines: more than 100,000	Should involve community members in process from goal development through implementation	**Basic:** Conservation planning goals Water system profile Demand forecast Water conservation measures Implementation and evaluation strategy **Intermediate/Advanced:** Planned facilities Benefits and costs Select measures Integrate resources and modify forecasts	(Requires further research)	(Requires further research)	States may require a PWS to submit a WCP consistent with guidelines as a condition of receiving a state loan or grant

Program	Objective	Scope/ Scale	Stakeholder Involvement	Planning Elements	Monitoring	Reporting	Schedule
National Flood Insurance Program	To enable property owners in participating communities to purchase insurance as a protection against flood losses in exchange for State and community floodplain management regulations that reduce future flood damages.	Approximately 20,000 communities participate (as of 8/02); communities choose to participate; must adopt and enforce floodplain management requirements	None apparent in program publications and regulations	**NFIP Minimum Requirements:** 1) identifying and mapping flood-prone areas, including Special Flood Hazard Areas found in the 100-year floodplain; 2) floodplain management, consisting of reviewing proposed development to ensure it complies with the community's floodplain management ordinance, selecting a regulatory floodway, and adopting and enforcing a flooplain ordinance; 3) floodplain insurance. **Community Rating System (discounts flood insurance premiums for communities that go beyond NFIP minimum requirements):** Consists of 18 creditable activities in the categories of public information, mapping and regulations, flood damage reduction and flood preparedness.	Under this program, monitoring may equate to ensuring property owner compliance with the floodplain management ordinance	No apparent formal reporting requirements at the federal level; however FEMA or States conduct program assessments (frequency unclear)	

Program	Objective	Scope/ Scale	Stakeholder Involvement	Planning Elements	Monitoring	Reporting	Schedule
Habitat Conservation Plans Under the Endangered Species Act	To relieve restrictions on private landowners that want to develop land inhabited by endangered species. To offset any harmful effects that a proposed activity might have on the species.	Any landowners (private landowners, corporations, state or local governments, or other non-Federal landowners) that desire to conduct activities on their land that might incidentally harm (or "take") a species listed as endangered or threatened.	Public comment period (30-90 day minimum); informational meetings; steering committees; and public education.	Plans should include: 1) An assessment of impacts that are likely to result from the proposed taking; 2) Measures to monitor, minimize, and mitigate impacts; 3) An analysis of alternative actions; and 4) Additional measures deemed necessary or appropriate.	Monitoring plans should establish target milestones or reporting requirements throughout the life of the HCP, and should address actions to be taken in the case of unforeseen or extraordinary circumstances. directly related to the significance of the biological impacts. Monitoring may include compliance and biological conditions.	periodic reporting from responsible entities to maintain oversight of the implementati on of the HCP's terms and conditions.	Plan must be submitted - prior to the taking action - as part of the incidental take permit application.

Program	Objective	Scope/ Scale	Stakeholder Involvement	Planning Elements	Monitoring	Reporting	Schedule
Anti-Degradation Policy	Component of state water quality standards intended to provide three levels of water quality protection.	Protection of existing uses, protection of high quality waters, and protection for outstanding national resource waters. Has potential impacts on NPDES permittees.	Policies and implementation methods go out for public review and comment.	Varies from state to state.	(Requires further research)	(Requires further research)	(Requires further research)
303(d) Total Maximum Daily Loads	Allocate pollution "budget" to sources discharging to impaired water bodies to attain water quality standards. Specific to pollutant(s) causing impairment.	Segments and/or watersheds listed on the state 303(d) list	Regulatory requirements at certain phases in the process; some states may require more depending on state-specific TMDL development protocols.	Watershed characterization Pollutant sources and loadings report Predictive analysis of pollutants in the waterbed Determine allowable load Allocate pollutant loadings with margin of safety Develop implementation plan (not required)	Monitoring plans required for state to determine attainment of water quality standards; evaluation required for implementation of TMDL	May vary from state to state	Based on 303(d) list and state's TMDL schedule

Program	Objective	Scope/ Scale	Stakeholder Involvement	Planning Elements	Monitoring	Reporting	Schedule
State Monitoring Programs	To determine if state waters are in attainment of water quality standards and to facilitate decision-making related to programs under the Clean Water Act	Extent of monitoring network varies from state to state; as of 2000 305(b) report, 19% of nation's total river and stream miles, 43% of lake, pond, and reservoir acres, 36% of estuarine square miles and 92% of Great Lakes shoreline miles	Encouragement of volunteer monitoring programs	Establish appropriate monitoring methods & procedures (including biological monitoring) to compile & analyze data on WQ of the US & to the practicable extent, ground-waters. Collection & analysis of physical, chemical & biological data and quality assurance & control programs to assure scientific validity (to determine abatement & control priorities; develop & review WQS, TMDLs, WAs & LAs; assess compliance w/NPDES permits by dischargers	Collection & analysis of physical, chemical & biological data; quality assurance & control programs to assure scientifically valid data.	States required to prepare a biennial report under CWA Section 305(b) that describes the extent to which state waters meet their designated uses	Schedule varies; many states are on a 5-year rotating basin cycle for monitoring state waters