CHAPTER 1
INTRODUCTION

1.1 Background

Combined sewer systems (CSSs) are wastewater collection systems designed to carry sanitary sewage (consisting of domestic, commercial, and industrial wastewater) and storm water (surface drainage from rainfall or snowmelt) in a single pipe to a treatment facility. CSSs serve about 43 million people in approximately 1,100 communities nationwide. Most of these communities are located in the Northeast and Great Lakes regions. During dry weather, CSSs convey domestic, commercial, and industrial wastewater. In periods of rainfall or snowmelt, total wastewater flows can exceed the capacity of the CSS and/or treatment facilities. When this occurs, the CSS is designed to overflow directly to surface water bodies, such as lakes, rivers, estuaries, or coastal waters. These overflows—called combined sewer overflows (CSOs)—can be a major source of water pollution in communities served by CSSs.

Because CSOs contain untreated domestic, commercial, and industrial wastes, as well as surface runoff, many different types of contaminants can be present. Contaminants may include pathogens, oxygen-demanding pollutants, suspended solids, nutrients, toxics, and floatable matter. Because of these contaminants and the volume of the flows, CSOs can cause a variety of adverse impacts on the physical characteristics of surface water, impair the viability of aquatic habitats, and pose a potential threat to drinking water supplies. CSOs have been shown to be a major contributor to use impairment and aesthetics degradation of many receiving waters and have contributed to shellfish harvesting restrictions, beach closures, and even occasional fish kills.

1.2 History of the CSO Control Policy

Historically, the control of CSOs has proven to be extremely complex. This complexity stems partly from the difficulty in quantifying CSO impacts on receiving water quality and the site-specific variability in the volume, frequency, and characteristics of CSOs. In addition, the financial considerations for communities with CSOs can be significant. The U.S. Environmental

Protection Agency (EPA) estimates the CSO abatement costs for the 1,100 communities served by CSSs to be approximately $41.2 billion.

To address these challenges, EPA's Office of Water issued a National Combined Sewer Overflow Control Strategy on August 10, 1989 (54 *Federal Register* 37370). This Strategy reaffirmed that CSOs are point source discharges subject to National Pollutant Discharge Elimination System (NPDES) permit requirements and to Clean Water Act (CWA) requirements. The CSO Strategy recommended that all CSOs be identified and categorized according to their status of compliance with these requirements. It also set forth three objectives:

- Ensure that if CSOs occur, they are only as a result of wet weather
- Bring all wet weather CSO discharge points into compliance with the technology-based and water quality-based requirements of the CWA
- Minimize the impacts of CSOs on water quality, aquatic biota, and human health.

In addition, the CSO Strategy charged all States with developing state-wide permitting strategies designed to reduce, eliminate, or control CSOs.

Although the CSO Strategy was successful in focusing increased attention on CSOs, it fell short in resolving many fundamental issues. In mid-1991, EPA initiated a process to accelerate implementation of the Strategy. The process included negotiations with representatives of the regulated community, State regulatory agencies, and environmental groups. These negotiations were conducted through the Office of Water Management Advisory Group. The initiative resulted in the development of a CSO Control Policy, which was published in the *Federal Register* on April 19, 1994 (59 *Federal Register* 18688). The intent of the CSO Control Policy is to:

- Provide guidance to permittees with CSOs, NPDES permitting and enforcement authorities, and State water quality standards (WQS) authorities

- Ensure coordination among the appropriate parties in planning, selecting, designing, and implementing CSO management practices and controls to meet the requirements of the CWA
- Ensure public involvement during the decision-making process.

The CSO Control Policy contains provisions for developing appropriate, site-specific NPDES permit requirements for all CSSs that overflow due to wet weather events. It also announces an enforcement initiative that requires the immediate elimination of overflows that occur during dry weather and ensures that the remaining CWA requirements are complied with as soon as possible.

1.3 Key Elements of the CSO Control Policy

The CSO Control Policy contains four key principles to ensure that CSO controls are cost-effective and meet the requirements of the CWA:

- Provide clear levels of control that would meet appropriate health and environmental objectives
- Provide sufficient flexibility to municipalities, especially those that are financially disadvantaged, to consider the site-specific nature of CSOs and to determine the most cost-effective means of reducing pollutants and meeting CWA objectives and requirements
- Allow a phased approach for implementation of CSO controls considering a community's financial capability
- Review and revise, as appropriate, WQS and their implementation procedures when developing long-term CSO control plans to reflect the site-specific wet weather impacts of CSOs.

In addition, the CSO Control Policy clearly defines expectations for permittees, State WQS authorities, and NPDES permitting and enforcement authorities. These expectations include the following:

- Permittees should immediately implement the nine minimum controls (NMC), which are technology-based actions or measures designed to reduce CSOs and their effects on receiving water quality, as soon as practicable but no later than January 1, 1997.

- Permittees should give priority to environmentally sensitive areas.

- Permittees should develop long-term control plans (LTCPs) for controlling CSOs. A permittee may use one of two approaches: 1) demonstrate that its plan is adequate to meet the water quality-based requirements of the CWA ("demonstration approach"), or 2) implement a minimum level of treatment (e.g., primary clarification of at least 85 percent of the collected combined sewage flows) that is presumed to meet the water quality-based requirements of the CWA, unless data indicate otherwise ("presumption approach").

- WQS authorities should review and revise, as appropriate, State WQS during the CSO long-term planning process.

- NPDES permitting authorities should consider the financial capability of permittees when reviewing CSO control plans.

Exhibit 1-1 illustrates the roles and responsibilities of permittees, NPDES permitting and enforcement authorities, and State WQS authorities.

In addition to these key elements and expectations, the CSO Control Policy also addresses important issues such as ongoing or completed CSO control projects, public participation, small communities, and watershed planning.

1.4 Guidance to Support Implementation of the CSO Control Policy

To help permittees and NPDES permitting and WQS authorities implement the provisions of the CSO Control Policy, EPA is developing the following guidance documents:

- *Combined Sewer Overflows—Guidance for Long-Term Control Plan* (Publication number 832-B-95-002)
- *Combined Sewer Overflows—Guidance for Nine Minimum Control Measures* (Publication number 832-B-95-003)
- *Combined Sewer Overflows—Guidance for Screening and Ranking* (Publication number 832-B-95-004)

Exhibit 1-1. Roles and Responsibilities

Permittee	NPDES Permitting Authority	NPDES Enforcement Authority	State WQS Authorities
• Evaluate and implement NMC • Submit documentation of NMC implementation by January 1, 1997 • Develop LTCP and submit for review to NPDES permitting authority • Support the review of WQS in CSO-impacted receiving water bodies • Comply with permit conditions based on narrative WQS • Implement selected CSO controls from LTCP • Perform post-construction compliance monitoring • Reassess overflows to sensitive areas • Coordinate all activities with NPDES permitting authority, State WQS authority, and State watershed personnel	• Reassess/revise CSO permitting strategy • Incorporate into Phase I permits CSO-related conditions (e.g., NMC implementation and documentation and LTCP development) • Review documentation of NMC implementation • Coordinate review of LTCP components throughout the LTCP development process and accept/approve permittee's LTCP • Coordinate the review and revision of WQS as appropriate • Incorporate into Phase II permits CSO-related conditions (e.g., continued NMC implementation and LTCP implementation) • Incorporate implementation schedule into an appropriate enforceable mechanism • Review implementation activity reports (e.g., compliance schedule progress reports)	• Ensure that CSO requirements and schedules for compliance are incorporated into appropriate enforceable mechanisms • Monitor adherence to January 1, 1997, deadline for NMC implementation and documentation • Take appropriate enforcement action against dry weather overflows • Monitor compliance with Phase I, Phase II, and post-Phase II permits and take enforcement action as appropriate	• Review WQS in CSO-impacted receiving water bodies • Coordinate review with LTCP development • Revise WQS as appropriate: Development of site-specific criteria Modification of designated use to -- Create partial use reflecting specific situations -- Define use more explicitly Temporary variance from WQS

- *Combined Sewer Overflows—Guidance for Monitoring and Modeling* (Publication number 832-B-95-005)
- *Combined Sewer Overflows—Guidance for Financial Capability Assessment* (Publication number 832-B-95-006)
- *Combined Sewer Overflows—Guidance for Funding Options* (Publication number 832-B-95-007)
- *Combined Sewer Overflows—Guidance for Permit Writers* (Publication number 832-B-95-008)
- *Combined Sewer Overflows—Questions and Answers on Water Quality Standards and the CSO Program* (Publication number 832-B-95-009)

1.5 Purpose of Manual and Target Audience

This guidance presents a process for screening and ranking CSSs with CSOs that have adverse impacts on water quality, aquatic life, or human health. Its primary purpose is to give NPDES permitting authorities (i.e., EPA Regions and States with approved NPDES programs) a method of prioritizing the issuance of NPDES permits to communities with CSSs. A secondary purpose is to give communities with multiple CSOs to multiple receiving water bodies a tool for ranking CSOs. Ranking CSOs will give the communities a basis for allocating resources to eliminate or control, in accordance with the CSO Control Policy, CSOs with the most significant impacts and to maximize the environmental benefits achieved for the resources expended. It can also help target monitoring needs. The screening and ranking process relies primarily on information readily available for most CSSs, such as a general knowledge of known or expected impacts from CSOs, estimates of CSO flows and their characteristics, and receiving water characteristics.

This guidance is not designed or intended to be used as a tool to prioritize Federal enforcement actions. Decisions to initiate an enforcement action are generally based on site-specific data and information and in accordance with the NPDES permitting authority's enforcement management system.

In this recommended screening and ranking process, the NPDES permitting authority uses the available information to assess an individual CSS. The screening process involves two

criteria. If the NPDES permitting authority determines through the screening process that the CSS has a high likelihood of causing significant adverse impacts, the CSS may be assessed (i.e., scored) using the ranking process, which has seven criteria. Chapters 2 and 3 of this guidance discuss the screening and ranking processes, respectively. They present each criterion, the associated scoring, and the rationale for its use in the screening or ranking process. The scores for all ranking criteria may be totaled to determine priorities.

NPDES permitting authorities should develop and issue NPDES permits for those communities with the highest point totals and proceed, in order, to the communities with the lowest point totals.

This guidance can also be used to rank individual CSO outfalls within a CSS, to identify CSOs requiring prompt attention, to better allocate limited resources, and to prioritize any necessary modifications under individual CSO permits. Ranking individual CSO outfalls is particularly useful whenever resources or other constraints limit an NPDES permitting authority's or a community's ability to address all of its CSS and CSO problems simultaneously.

In applying this recommended screening and ranking process, it is important to recognize that, as stated in the CSO Control Policy,

> *EPA expects a permittee's long-term CSO control plan to give the highest priority to controlling overflows to sensitive areas. Sensitive areas, as determined by the NPDES authority in coordination with State and Federal agencies, as appropriate, include designated Outstanding National Resource Waters, National Marine Sanctuaries, waters with threatened and endangered species and their habitat, waters with primary contact recreation, public drinking water intakes or their designated protection areas, and shellfish beds.*

EPA also recognizes, however, that technical and financial constraints may limit a permittee's ability to implement controls for all CSOs to sensitive areas at the same time. This document can help establish priorities to phase in permitting efforts across multiple CSSs and CSOs to many sensitive areas, as well as CSOs to less sensitive areas.

1.6 Watershed Approach to Permitting

In response to the 1989 EPA National Combined Sewer Overflow Control Strategy, 30 States have received approval or conditional approval for CSO permitting strategies. EPA expects States to evaluate the need to revise their CSO strategies for consistency with the 1994 CSO Control Policy. This represents an opportunity for NPDES permitting authorities to reconsider their CSO permitting priorities in light of current or suspected environmental impacts, watershed permitting initiatives, and other factors. States and EPA Regions should review these strategies and establish appropriate permitting priorities for implementation of the CSO Control Policy. In establishing CSO permitting priorities, the NPDES permitting authority should consider factors such as the environmental impacts of CSOs (e.g., beach closings, human health hazards, and potential risk to endangered species). The NPDES permitting authority should also consider requiring immediate action for CSOs to areas that meet the CSO Control Policy's definition of "sensitive areas." This document provides guidance on establishing permitting priorities for CSSs and provides permittees with a tool for prioritizing individual CSOs within their CSSs to allow for effective allocation of resources.

EPA encourages States to use a watershed approach to set permitting priorities. Under a watershed approach, all surface water, ground water, and habitat stressors within a geographically defined area are understood and addressed in a coordinated fashion, as an alternative to addressing individual pollutant sources in isolation. To support States that want to implement a comprehensive statewide watershed approach, the Office of Water has developed guidance and training designed to assist communities and natural resource agencies that are pursuing a watershed approach. One part of the effort is the release of the NPDES Watershed Strategy. This Strategy encourages NPDES permitting authorities to evaluate water pollution control needs on a watershed basis. The CSO Control Policy supports the goals of the NPDES Watershed Strategy and urges communities to work with NPDES permitting authorities to coordinate CSO control program efforts with other point and nonpoint source activities within the watershed.

Applying a watershed approach to the CSO control program is particularly timely and appropriate since the ultimate goal of the CSO Control Policy is development of long-term CSO controls that will provide for the attainment of WQS. Since pollution sources other than CSOs are likely to be contributing to the receiving water and affecting whether WQS are achieved, the NPDES permitting authority needs to consider and understand these other sources.

NPDES permitting authorities can use this document to prioritize other wet weather sources, as well as CSOs. Assessing wet weather sources on a watershed basis will allow the NPDES permitting authority to effectively allocate resources for the greatest improvement in the quality of the receiving water bodies within the watersheds under its jurisdiction. For watersheds with interstate consideration, the respective NPDES permitting authorities should establish an ongoing dialogue to address mutual concerns for improving the watersheds' quality.

The CSO Control Policy promotes ongoing interaction between the NPDES permitting authority and the permittees during CSO control program planning and implementation. Such interaction is critical to the success of a CSO program and is important in the screening and ranking process. As the NPDES permitting authority compiles available information for the screening and ranking process, the permittee can also contribute valuable information.