Backed Up

Cleaning Up Combined Sewer Systems in the Great Lakes

May 2005

ENVIRONMENTAL INTEGRITY PROJECT

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The Environmental Integrity Project (EIP) analyzed how many of the municipalities with combined sewer systems in six Great Lakes states (Indiana, Illinois, Michigan, Minnesota, Ohio, and Wisconsin, or EPA's Region 5) are in compliance with the Clean Water Act. In general, EIP found that more than half of the municipalities in the Great Lakes states are not yet in full compliance with the Clean Water Act. Evidence suggests that many of the municipalities do not meet minimum standards for preventing combined sewer overflows (CSOs), do not have approved long-term plans required by law for upgrading sewage collection or treatment systems, and do not adequately report the occurrence of CSOs to the public.

Information and data contained in this report were generally derived from federal and state legislative sources; EPA guidance documents, reports and memoranda; EPA's Permit Compliance System database; information provided by the states and EPA in response to open records requests; and personal communications with federal and state regulators. Where discrepancies existed between EPA and state data, EIP used state data.

This report does not address each state's process for integrating long-term control plan development with water quality standard reviews for CSO receiving waters. Although we were not able to obtain sufficient information from EPA or the states to include this information in our report, we encourage readers to press regulators for detailed information about water quality standard reviews and implementation procedures on CSO impacted waters and to actively participate in the process whenever possible.

We wish to thank Nancy Stoner and Laurel O'Sullivan of Natural Resources Defense Council, Mike Shriberg of the Public Interest Research Group and Bethany Renfer of Clean Water Action for their helpful reviews of this report. In addition, EIP wishes to acknowledge the help and cooperation of EPA Region 5 as well as the managers and staff of the state environmental agencies for their courteous assistance.

Finally, we are grateful for the support of the Joyce Foundation, without which this report would not have been possible.

THE ENVIRONMENTAL INTEGRITY PROJECT (EIP) is a non-profit, non-partisan organization dedicated to more effective enforcement of existing federal and state environmental laws and to the prevention of political interference with those laws. EIP's research and reports sheds light on how enforcement and rulemaking affect the public health. EIP also works closely with local communities seeking the enforcement of environmental laws.

COVER PHOTOS

CENTER RIGHT: *Sewage in Basement* (ROSE MACKEY)

Questions and comments can be directed to Michele Merkel at mmerkel@environmentalintegrity.org and Leila Monroe at lmonroe@environmentalintegrity.org

ENVIRONMENTAL INTEGRITY PROJECT
919 Eighteenth Street, NW, Suite 975
Washington, D.C. 20006
Phone (202) 296-8800 ◆ Fax (202) 296-8822

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Executive Summary

Combined sewer systems are designed to carry both stormwater and raw sewage to a wastewater treatment plant through a single collection system. When it rains, combined sewer overflows ("CSOs") dump a mix of pathogens, toxins, and other contaminants directly into lakes and rivers, because the higher flows are more than the wastewater treatment system can handle. Every year, CSOs unload more than 850 billion gallons of raw sewage combined with stormwater into our nation's rivers, lakes, and oceans. Combined sewer overflows are a major threat to water quality in the Great Lakes states—which are home to 43% of the nation's 828 CSO communities—making water unsafe for swimming, boating or fishing during the worst events.

Data from the U.S. Environmental Protection Agency ("EPA") and the six Great Lakes states (Indiana, Illinois, Michigan, Minnesota, Ohio, and Wisconsin, or EPA's Region 5) profiled in this report show that most municipalities in Region 5 are not yet in full compliance with the relatively modest minimum standards designed to reduce CSO events, though these standards have been in place for eight years. In addition, more than half of the municipalities do not have approved long-term control plans that are required by law for upgrading sewer collection or treatment systems to eliminate CSOs. (See Appendix A for detailed information about each CSO permittee in Region 5).

Although permittees must ensure that the public receives adequate notice of CSO occurrences and impacts, only Michigan and Indiana require real-time reporting of overflows to their CSO communities; residents in other states that lack a reliable warning system may be unknowingly exposed to sewage overflows dangerous to human health. Furthermore, studies suggest that underreporting of CSO overflows is a serious problem.

While EPA and states have recently stepped up inspections in Illinois, Indiana, and Ohio, there have been relatively few enforcement actions despite widespread CSO violations. The failure to meet minimum standards for preventing combined sewer overflows should be classified as a serious violation, reported to the public, and followed by an enforcement action if not promptly corrected. EPA should set a firm timetable for eliminating the backlog of long-term control plans that have not been reviewed and approved. Municipalities should provide public notice of combined sewer overflows within 24 hours of an overflow event, including online reporting that indicates the location of such events and the volume of sewage discharged.

Upgrading sewer systems to eliminate CSOs can be financially challenging, especially for municipalities with a large low-income population. Meeting CSO requirements will be even more difficult unless Congress reverses the Bush Administration's proposed cuts to the state revolving fund used to help offset the cost of sewer upgrades. Even if funding is restored, states and municipalities may have to cover approximately 85% of the overall cost of such projects. Environmental organizations and civic groups can help build support for modest increases in sewer rates needed to finance improvements by helping EPA and states educate the public about the benefits of CSO control.

What the Law Requires

The Clean Water Act requires the elimination of most combined sewer overflows through a two step process established in a 1994 policy document, which Congress eventually added to the Clean Water Act. By 1997, communities with permitted CSOs were required to implement nine minimum controls ("NMC") to reduce overflows through better operations and maintenance, while improving monitoring and public notice of CSO discharges. These minimal requirements include eliminating dry weather overflows, reducing the influx of stormwater to combined sewer systems, improving storage capacity, and notifying the public of CSO occurrences and their impacts. The NMC were designed to be relatively cost-effective and, if properly implemented, could eliminate many combined sewer overflows, reduce the need for expensive capital improvement projects, and improve water quality to meet statutory requirements.

Permittees are also required to develop long-term control plans ("LTCP") to further control CSOs, if implementation of the NMC is not sufficient to achieve water quality standards. The LTCP would virtually eliminate the discharge of untreated CSOs by separating collection systems or expanding storage or treatment capacity. While the law requires some permittees to undertake expensive capital improvement projects, it provides permittees with flexibility to consider creative solutions and take financial constraints into account. Long term control plans are supposed to be guided by water quality standards still under development in many states. Once LTCPs are submitted and approved, permittees are generally required to complete work within 20 years.

Findings

Many Permittees Violate Minimum Standards for CSO Controls.

EIP's review of EPA and state data suggests that many permittees have fallen short of complying even with the relatively modest nine minimum controls. All CSO communities in the Great Lakes regions have incorporated the NMC into permits or enforcement orders. However, a review of Region 5 data by EPA's Office of Enforcement and Compliance Assurance suggests that only about 38% of these communities actually comply with these requirements. In some cases the

compliance rates may be even worse. For example, 2001 data compiled by the Ohio River Valley Water Sanitation Commission showed that at least nine out of the ten facilities that discharge to the Ohio River had not fully implemented NMC. This data suggests that far too many municipalities have not taken relatively low-cost actions to reduce overflows by improving operations, which could in turn reduce or eliminate the need for more expensive solutions.

More than Half of the Municipalities do not have Approved Long-Term Control Plans that are Required by Law for Upgrading Sewer Collection or Treatment Systems.

54% of the municipalities still do not have approved long-term control plans. 22% of these municipalities have not even submitted the plans to the states for approval. There are significant differences between the states with regard to LTCP approval. Indiana has approved only 17 of the 107 long term plans required in the state, while Michigan has approved 38 out of 42. Because LTCP are indeed "long-term," and may require up to 20 years to complete, the backlog in development and approval of plans may leave the Great Lakes exposed to raw sewage from CSOs for several decades.

Some municipalities may never opt to fully repair their collection systems if a recently proposed Bush Administration policy is finalized. EPA's proposed "blending" policy authorizes municipalities to routinely dump inadequately treated sewage when it rains, allowing them to avoid compliance with the CSO control law and to ignore the structural and maintenance defects that cause excess wet weather overflows.

The Public is Kept in the Dark.

Although public notice is required by law, some permittees do not adequately notify the public when combined sewer overflows occur, nor do they provide information about the health threats presented by CSOs. Only Michigan and Indiana have real-time reporting of CSO events, provided in a format that is readily accessible by the public. The most widely used method of public notice in other states is to post permanent identification signs at CSO outfalls. Lack of notice about specific CSO occurrences and impacts leaves the public exposed to unnecessary risk; neighborhoods may not be aware that the nearby river or lakefront is overloaded with bacteria and unsafe to enter.

Michigan is the only state that compiles detailed information about overflows in an annual report so that the public can know the extent of the problem in the state. However, no state, including Michigan, was able to provide comprehensive data on the water quality impacts of CSOs on the receiving waters. Without basic knowledge about the cause and effects of CSOs, citizens are effectively denied their right to participate in the long term planning process and may be less willing to accept the cost of eliminating these discharges.

Enforcement of CSO Controls is Overdue.

EPA's 1994 CSO Control Policy made it clear that the failure to meet the nine minimum controls should be considered a serious violation that requires an enforcement response. EPA and Region 5 states completed 66 inspections of CSO systems in 2004, primarily in Illinois, Indiana and Ohio. In the four years prior to 2004, the states reported only 35 inspections across 358 CSO communities. While EPA has brought a number of cases in court, only three states—Michigan, Ohio and Indiana—have initiated any enforcement action against municipalities violating Clean Water Act CSO requirements.

CSO Standards are Flexible, but Funding Capital Projects May be Challenging.

Financing CSO control activities can be challenging—implementing long-term control plans can be costly and sometimes difficult for smaller communities to finance. EPA's Clean Water State

Revolving Fund helps states and municipalities offset the cost of sewer upgrades, including projects to phase out CSOs, but the Bush Administration has proposed cutting the budget for the fund by about 370 million. States and municipalities typically must finance over 85% of wastewater control costs themselves, so even if cuts to the fund are restored, increases in sewer rates may be required in some municipalities to cover the costs of CSO control.

Recommendations

- EPA and States Should Set a Timetable for Enforcement of CSO Minimum Controls.

The nine minimum controls have been required since 1997, are relatively inexpensive, and can reduce the need for more expensive capital projects to eliminate CSOs. These requirements protect human health and water quality by reducing exposure to pathogens and other contaminants. EIP recognizes that federal and state agencies face resource limits, but the CSO Policy was written to account for these challenges. Because state and federal enforcement programs are routinely underfunded, it may not be practical to take immediate action against all violators of CSO requirements. However, EPA and the states should establish a timetable for completing inspections, and for taking enforcement action when necessary.

- States Should Institute a Mandatory Public Notification Program, Providing Real-Time Notice of CSO Spills and Health and Safety Warnings. States Should Also Require Permittees to Characterize the Impacts that CSOs Have on Receiving Waters and Provide this Information to the Public.

To protect public health and welfare, it is critical that the public receive notice of overflows, including online reporting, within 24 hours of CSO events. The public must also be given access to reliable data about the number, frequency and impacts of CSOs in their community, and throughout the state, so that citizens can play an active and informed role in the CSO control planning process. Michigan and Indiana have monitoring, reporting, and mandatory public notification programs, aspects of which should serve as models for other states. However, all states must do a better job of gathering and publicizing information about the impacts of CSOs on water quality. Like Michigan, states should also compile CSO data in an annual report. Such reports publicize the extent of the problem, as well as the actions being taken to control the discharges, and are useful for making informed regulatory decisions.

- EPA Needs to Set Deadlines for Review and Approval of Long Term Control Plans.

Within two years, states should eliminate the large backlog of long-term control plans awaiting approval so that municipalities can start investing in CSO control. While some LTCPs may be delayed because states have still not agreed on the water quality standards that are supposed to guide these plans, states like Michigan have overcome these obstacles and have approved almost all LTCPs. States should incorporate long-term control plans into judicial orders and impose short schedules with enforceable interim and final deadlines necessary to implement the plans. As determined by the EPA, no schedule should exceed 20 years. Permittees should continue to monitor and assess water quality during implementation of the LTCP.

- EPA Should Require All CSO Permittees to be Entered into the Permit Compliance System Database.

EPA should require all CSO permittees that authorize the discharge of raw sewage to be entered into the Permit Compliance System (PCS) database. PCS is a national database that contains federal and state data on Clean Water Act permits. Permittees in PCS that have certain violations are flagged as being in "significant non-compliance" and receive additional scrutiny by EPA and the states. PCS compliance data is also reported publicly in the Agency's "Enforcement Compliance History Online" database (ECHO). CSO communities that do not meet the nine minimum controls or long-term control plan requirements should be added to EPA's list of permittees in significant noncompliance with the Clean Water Act and reported in ECHO.

- States and Citizens Should Oppose EPA's Blending Guidance.

States and citizens should oppose the Bush Administration's proposed guidance that would eliminate current restrictions on discharging inadequately treated sewage into waterways during rain events. The draft guidance would allow sewage operators to divert sewage around certain treatment units, and then combine the largely untreated sewage with fully treated wastewater prior to discharge. EPA refers to this practice as "blending." Blending is illegal under the Clean Water Act when there are feasible engineering alternatives, such as reducing infiltration and inflow, constructing additional capacity, or storing sewage until it can be fully treated. The CSO Control Policy requires the evaluation and use of alternatives to eliminate CSOs as part of a long-term control plan. However, the blending policy creates an incentive for permittees to resort to blending during wet weather, instead of other control alternatives that have greater water quality benefits.

- Environmental Organizations Should Build Public Support for the Financing of CSO Improvement Projects and for Increases in Federal and State Funding.

Congress should reject any proposed cuts to the Clean Water State Revolving Fund (CWSRF) and should increase federal funding instead. For some states, such as Michigan and Illinois, the CWSRF is a primary source of funding for financing CSO controls and other wastewater infrastructure improvements.

Even with federal funding, some CSO projects may not be viable without gradual increases in sewer rates. Environmental groups should help states and municipalities build public support for such increases. History has shown that when the public is informed about the harm caused by CSOs and other wastewater pollutants, they will support reasonable rate increases to finance cleanup. However, government must start spending taxpayer dollars more wisely. There is a growing body of evidence that demonstrates that conventional treatment solutions cost more to develop and maintain in the long run than pollution-prevention approaches. Green infrastructure strategies like grass swales and vegetated roofs, for example, keep stormwater out of the sewage treatment system and save money on below-ground infrastructure costs.

In addition to increased funding for municipalities, state water program officials should identify the necessary resources to fulfill their regulatory obligations and make their resource needs known within the agency and to EPA and state legislatures. States and citizens should encourage state legislators to examine all available funding mechanisms, including setting Clean Water Act permit fees at levels sufficient to recoup the costs of permitting, monitoring and enforcement activities.

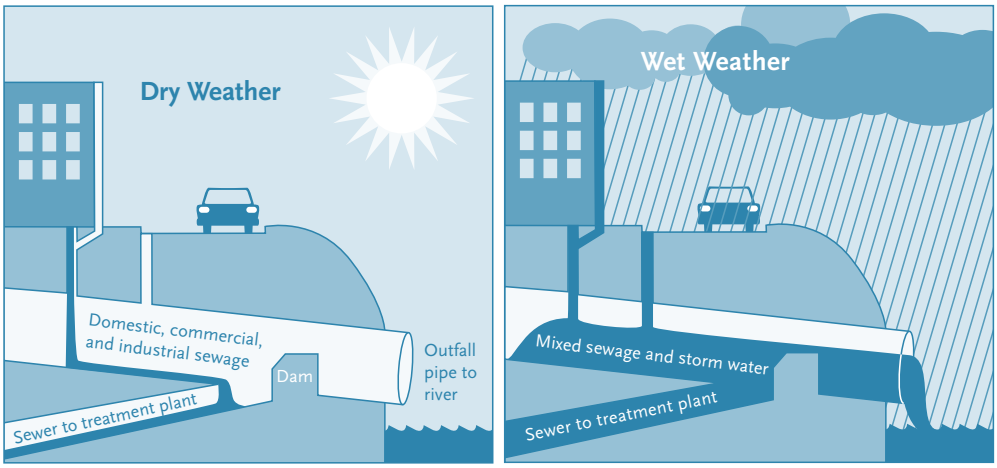
Combined Sewer Overflows in the Great Lakes States

What are Combined Sewer Overflows and Why are they Important?

Combined sewer systems are wastewater collection systems specifically designed to collect and convey domestic and industrial sewage along with storm water through a single pipe system to a wastewater treatment facility.[1] During rainfall or snowmelt events, when the system's capacity is overloaded, these systems are designed to discharge untreated sewage and storm water directly to rivers, streams, lakes, and coastal waters. Discharges that occur in combined sewer systems prior to the treatment facility are called Combined Sewer Overflows (CSOs). Although not designed to do so, combined systems can also back up, discharging raw sewage and storm water into buildings and private residences.[2]

CSOs are remnants of the country's early infrastructure, when municipalities did not design sewer systems to reduce water pollution but rather to move domestic waste away from population centers. In many areas of the United States, this practice of sewage disposal continued well until the 1960s when aesthetic and public health concerns motivated many communities to upgrade their sewer systems.[3] Despite these upgrades, CSOs still serve 46 million Americans in 32 states and the District of Columbia.[4] EPA estimates that about 850 billion gallons of untreated sewage and storm water are released as CSOs each year in the United States.[5]

During dry weather, combined sewer systems are designed to channel sewage to a community's wastewater treatment plant. However, many combined sewer systems have had CSO events during dry weather, indicating poor maintenance

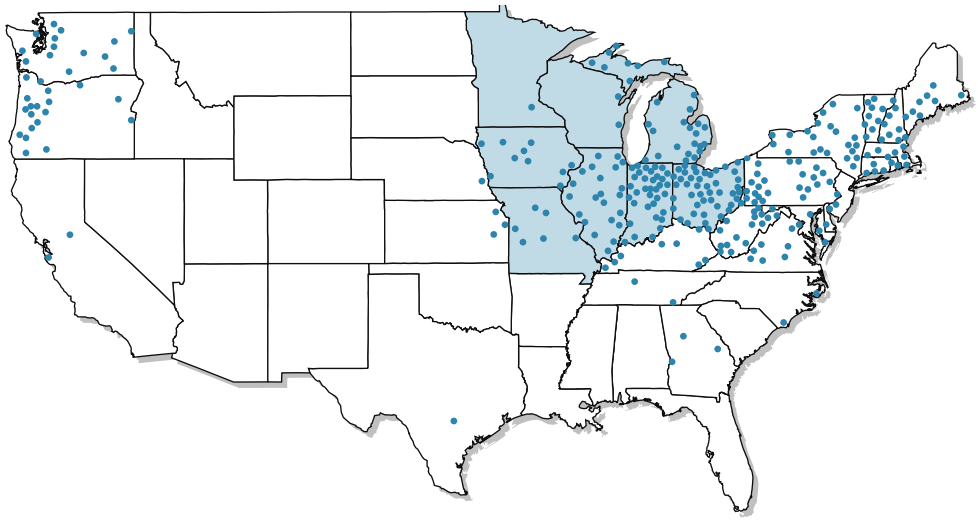


SOURCE: EPA, *2004 Report to Congress*, at 2-2.

or other serious defects in the system. Dry weather discharges are particularly dangerous to communities and the environment, because they are not diluted by storm water. For this reason, dry weather CSO discharges are strictly prohibited by the Clean Water Act.[6]

CSOs are much more likely to be a problem during and after wet weather events, when rainwater or melting snow overloads many combined sewer systems. In such instances, large volumes of untreated domestic sewage and industrial wastewater flow directly into the receiving waters. For example, during two weeks in October 2001, the Detroit Wastewater Treatment Plant spewed approximately 5.2 billion gallons of "diluted raw sewage," "partially treated sewage" and other "unspecified discharge" into the Detroit and Rouge Rivers, both of which empty directly into Lake Huron.[7] This massive discharge was caused by approximately three inches of rain.[8] Similar discharge events occur in CSO communities throughout the United States. CSOs will continue to occur in some wastewater treatment systems because federal law only requires the control and reduction of CSOs, not their total elimination.

MAP: PERMITTED CSO OUTFALLS



SOURCE: EPA, *2004 Report to Congress* at 2-4.

Combined Sewer Overflows in the Great Lakes States

As of July 2004, states had issued permits to more than 700 communities, accounting for a total of 9,319 CSO outfalls.[9] As shown in the map below, the Great Lakes states are home to a large proportion of the nation's combined sewer systems. In Region 5, most of the combined systems are in Illinois, Indiana, Michigan and Ohio, while fewer are located in Minnesota and Wisconsin. These aging systems generally either discharge directly into the Great Lakes themselves or into the region's major rivers.

As demonstrated by the charts below, Great Lakes states account for a large proportion of the nation's CSO communities. There have been 358 CSO permits issued in Region 5, or approximately 43% of the nation's 828 CSO permits.[10] See Appendix A for a full listing of all permits by state. These permits authorize discharges from 3,347 CSO outfalls, or approximately 36%, of the country's 9,319 permitted outfalls.[11]

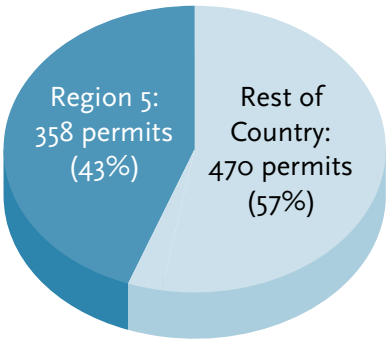
Table 1 shows that there has been a slight decrease in both the number of CSO permits issued, and the number of outfalls since EPA's *2002 CSO Report to Congress.*

The number of CSO permits a state has issued does not necessarily provide an indication of the potential impacts of overflows on state waters. For example, although Wisconsin and Minnesota have only two permittees, Wisconsin has 123 outfalls compared to only 9 in Minnesota.

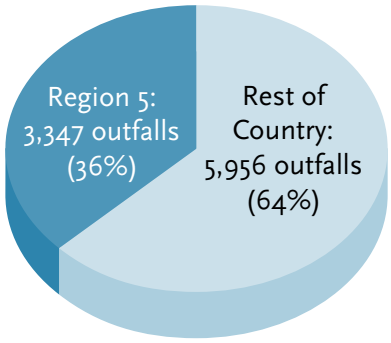
Public Health and Environmental Impacts

CSOs harm aquatic life, our drinking water supply, and recreation.[12] CSOs discharge into the following receiving waters: rivers (43%); streams (38%); oceans, estuaries and bays (5%); lakes and ponds (2%); and other waters (ditches, canals, etc) (12%).[13] The principal pollutants in CSOs are: microbial pathogens, oxygen depleting substances (measured as "biological oxygen demand"), total suspended solids, nutrients, floatables and toxics,

Region 5 CSO Permits



Region 5 Permitted CSO Outfalls



Source, National Data: EPA, *2004 Report to Congress*

Source, Region 5 Data: FOIA Correspondence

TABLE 1: REGION 5 CSO PERMITS AND OUTFALLS BY STATE

State	CSO Permits			Permitted CSO Outfalls		
	2002(1)	2004(2)	Percent Change	2002(1)	2004(2)	Percent Change
Illinois	107	113	+6%	813	749	-8%
Indiana	107	107	0%	898	829	-8%
Michigan	52	46	-12%	297	262	-12%
Minnesota	3	2	-33%	11	9	-18%
Ohio	93	88	-5%	1,421	1,375	-3%
Wisconsin	2	2	0%	123	123	0%
Totals	364	358	-2%	3,563	3,347	-6%

Source (1): EPA 2002 Report to Congress at ES-6, 5-6.
Source (2): FOIA Correspondence—numbers may vary from and are more up to date than those contained in EPA's *2004 Report to Congress.*

such as oil and pesticides that wash from streets into the sewer system during a rain or snowmelt event.[14] Microbial pathogens include hundreds of different types of bacteria, viruses, and parasites. They are easily transported by water and can cause disease in fish and shellfish and illness in humans.[15] Toxics present in CSO discharges include metals (such as cadmium, lead, mercury, silver, and zinc) and synthetic organic chemicals (such as PCBs and pesticides), which pose serious threats to human health.[16]

The pollutant concentrations in CSOs alone may be sufficient to cause a violation of water quality standards, or their impacts may be compounded with other sources of pollution, such as agricultural runoff. The compounding effect of numerous sources of pollution makes it difficult to assign specific cause-and-effect relationships between CSO events and observed water quality impacts and impairments.[17] In addition, widespread disparities in water quality reporting and monitoring by states makes it difficult to fully assess the magnitude of CSO impacts. Inconsistencies and incomplete information presented in Table 2 result from state practices that include (1) citing significant percentages of pollutants from unknown sources in water quality reports; (2) not attributing impairment to a specific source or using inconsistent source listings, e.g., CSOs are only tracked as a specific pollutant in some states; and (3) compounding the impacts of CSOs by including them in a broader category like "urban wet weather."[18]

Yet, even with widespread inconsistency and acknowledged data gaps in state water quality assessments, some CSO impacts are fairly well documented. For example, information developed from the Great Lakes Water Quality Agreement between the United States and Canada links CSOs to many "Areas of Concern." Indiana's Area of Concern, the Grand Calumet River, receives the discharge from 15 CSOs outfalls, which release untreated municipal waste, carrying both conventional and toxic pollutants.[26] Annually, these outfalls discharge an estimated 11 billion gallons of raw wastewater into the Grand Calumet River and Indiana Harbor. Approximately 57% of the annual CSO volume is discharged within 8 miles of Lake Michigan, resulting in nearshore fecal coliform contamination.

TABLE 2: WATER QUALITY IMPAIRMENTS ATTRIBUTED TO CSOS 2000-2004

	Impairment in Inland Lakes		Impairment in Streams		Impairment in Lake Michigan-Basin Waters	
	2002	2004	2002	2004	2002	2004
Illinois[19]	250 acres	250 acres	368 miles	331 miles	10.0 miles	9.7 miles
Indiana[20]	ND	30 acres[21]	174 miles	286 miles	ND	ND
Michigan[22]	930 acres (1997–2003)		321 miles (1997–2003)		ND	ND
Minnesota[23]	ND	ND	ND	ND	ND	ND
Ohio[24]	Major threat 193 miles; Moderate threat 1717 miles; Minor threat 1458 miles (1988-2000, 305(b) report cycle).		Major threat 191.68 miles; Moderate threat 57.72 miles (1988-2000, 305(b) report cycle).		ND	ND
Wisconsin[25]	2,965 acres	ND	ND	ND	ND	ND

ND = No data in 305(b) Report
Source: See endnotes for citations to individual states' 305(b) Reports

Controlling Pollution from CSOs

The Clean Water Act was passed by Congress in 1972 to restore and maintain the chemical, physical, and biological integrity of the nation's waters.[27] All point sources, including CSOs, may only discharge pollutants into the nation's waters pursuant to a valid NPDES permit.[28] However, not until 1989 did EPA turn its attention to alleviating the problem of CSOs.[29] As part of a national strategy targeting CSOs, EPA required states to develop permitting strategies by January 1, 1990.[30] By April 1992, 30 states, including all of the Great Lakes states, had submitted their strategies to EPA.

In 1994, EPA announced a new national CSO Control Policy, which was developed with input from stakeholders, including municipalities, states and environmental groups.[31] The Policy required permittees to characterize their sewer systems and implement best management practices called "nine minimum controls" (NMC) by January 1, 1997.[32] These controls are designed to reduce combined sewer overflows and the threats that they pose to water quality and public health through:

- Proper operation and regular maintenance programs for the sewer system and the CSOs;
- Maximum use of the collection system for storage;
- Review and modification of pretreatment requirements to assure CSO impacts are minimized;
- Maximization of flow to the POTW for treatment;
- Prohibition of CSOs during dry weather;
- Control of solid and floatable materials;
- Pollution prevention;
- Public notification to ensure that the public receives adequate notification of CSO occurrences and impacts; and,
- Monitoring to effectively characterize CSO impacts and the efficacy of CSO controls.

In addition to the NMC, CSO communities were expected to implement additional controls, if necessary to meet water quality standards, through the subsequent development of a site-specific long-term control plan (LTCP).[33] The development of a community's LTCP is flexible, depending on a facility's characteristics and the community's needs, including

the ability to pay for improvements. The CSO Control Policy requires that the development of the LTCP be coordinated with the "review and appropriate revision of [water quality standards] and implementation procedures on CSO-impacted receiving waters."[34] This review should include a use attainability analysis, which is a "structured scientific assessment of the factors affecting the use, including the physical, chemical, biological, and economic factors," to determine whether currently enforceable water quality standards can be reached or whether justification for reclassification exists.[35]

Communities are choosing to meet LTCP requirements in several different ways. One approach is to separate the sanitary and stormwater systems so that sanitary sewage is carried to the treatment plant while stormwater is directed to a nearby waterbody via a separate storm sewer system. Some states required sewers to be separated prior to the CSO Control Policy. For example, Minnesota considers sewer separation as the LTCP for all of its permittees, because sewer separation has been required in permits since the 1970s. Through 10-year separation programs, the cities of South St. Paul and Red Wing have successfully eliminated all CSO discharges. The combined systems in metropolitan Minneapolis and St. Paul are almost completely separated, and only 9 outfalls remain in the state.

A second approach that municipalities are using to control CSOs is to construct retention basins or storage tunnels to contain the extra flow during wet weather. For example, the Metropolitan Water Reclamation District of Chicago's ongoing Tunnel and Reservoir Plan (TARP) Project was implemented to address the CSO problem by providing holding capacity for 18 billion gallons of combined sewage in its tunnels and reservoirs until it can to be pumped to the water reclamation plant for full treatment. Although TARP is scheduled for completion in 2015, significant benefits have already been realized. Between 1985 and 2001, more than 578 billion gallons of CSOs were captured and conveyed to the water reclamation plants for full treatment. Furthermore, the waterways have seen an increase in both the fish population and number of species present, basement and street flooding have been reduced, and there are fewer floodwater discharges to Lake Michigan.[36] Similarly, the City of Milwaukee stores excess wastewater until it can be treated in a "Deep Tunnel System." [37] Although there continue to be overflows of significant volumes, the annual average number of overflows in Milwaukee has been reduced from 50 to 2.4 since the tunnel has been operational.[38]

Finally, some municipalities are using innovative solutions to control or eliminate CSOs. The small town of Akron, IN developed an inexpensive and effective solution to the problem of a CSO polluting nearby Town Lake. The town installed Continuous Deflective Separation units to remove the floatables and larger suspended solids from the CSO, then used some low ground the city already owned to create a wetlands area to address the biological treatment of the CSO. The entire project cost just $700,000. Separating the sanitary and storm sewers in the town would have cost an estimated $4 million, while enlarging the treatment plant would have cost $1.1 million.[39] As in Akron, green infrastructure solutions are working in a number of other communities across the nation. (See Green Infrastructure text box).

EPA's CSO Control Policy became law with the passage of the Wet Weather Water Quality Act of 2000,[40] which specified that each permit, order or decree covering CSO discharges must conform to the 1994 Policy.[41]

Are CSO Communities Doing What the Law Requires?

Many Municipalities Have Not Implemented Cost-Effective Minimum Controls.

The NMC are measures that can reduce CSOs and their effects on receiving water quality without requiring significant engineering studies, construction activity or financial investment.[42] Permittees were required to implement the relatively modest NMC and to document compliance by no later than January 1, 1997.[43] EIP's review of EPA and state data suggests that many municipalities have fallen short of complying with this deadline. As shown in Table 3, all of the CSO communities in the Great Lakes Region have requirements to implement the NMCs. However, a review by EPA's Office of Enforcement and Compliance Assurance suggests that only about 38% of these communities actually comply with these requirements.[44] Thus, far too many municipalities have not taken the relatively low-cost actions to reduce overflows by improving operation and maintenance.

More than Half of the Municipalities do not have Approved Long-Term Control Plans that are Required by Law for Upgrading Sewer Collection or Treatment Systems.

In addition to the NMC, combined sewer system operators are required to implement additional controls if necessary to meet water quality standards through the subsequent development of a site-specific long-term control plan.[45] The law does not set an enforceable deadline for LTCP development, but permittees are generally expected to develop a LTCP within 2 years of being required to do so in a permit or an order.[46] Furthermore, implementation schedules for CSO controls should not extend past 20 years and should be significantly shorter for municipalities that are not likely to incur substantial financial impacts.[47]

Despite these goals, 54% of the municipalities still do not have approved long-term control plans. 22% of these municipalities have not even submitted their plans to the states for approval. There are significant differences between the states, with regard to LTCP. For example, Indiana has approved only 17 of the 107

TABLE 3: REGION 5 COMPLIANCE DATA

	Illinois		Indiana		Michigan		Minnesota		Ohio		Wisconsin		Totals:
Permits	113		107		46		2		88		2		358
Outfalls	749		829		262		9		1,375		123		3,347
	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	
NMC Required	113	0	107	0	46	0	2	0	88	0	2	0	358
LTCP Required	96	17	107	0	42	4	2	0	86	2	2	0	335
LTCP Submitted	73	40	98	9	42	4	2	0	43	45	2	0	260
LTCP Approved	68	45	17	90	38	8	2	0	26	62	2	0	153

SOURCE: FOIA Correspondence. See state sections for further information.

Green Infrastructure Can Help To Reduce CSOs

While hard infrastructure projects are an important component of addressing our wastewater needs, low impact development (LID) methods should be used to reduce stormwater runoff at its source to minimize flows into sewers and treatment plants. LID methods are often cheaper, more effective, and provide a broader array of environmental benefits.[1] In a combined sewer system, LID can reduce both the number and volume of sewer overflows.[2] LID strategies include disconnecting roofs and paved areas from traditional drainage infrastructure and conveying runoff instead to bioretention areas, swales, and vegetated open spaces. LID also seeks to prevent the generation of runoff by reducing the impervious footprint of a site, thereby reducing the amount of water that needs to be treated.[3]

LID is economical and costs less than conventional stormwater management systems, in part, because of fewer pipe and below-ground infrastructure requirements.[3] While states are allowed to fund non-point source projects under the Clean Water State Revolving Fund (CWSRF), many of them continue to fund traditional, centralized wastewater treatment approaches even when a non-point or non-structural solution would be less expensive, more effective, and provide non-water quality benefits.[1] Ohio is an exception and provides incentives to public wastewater utilities that also undertake stream protection and restoration projects.[1] Minnesota has no explicit incentives, but has spent about 2% of CWSRF funds for decentralized wastewater systems.[1] Michigan's recent bond referendum funds a special program under the CWSRF which is supposed to use at least 2% of its funds for nonpoint projects "if needed."[1] Illinois, Indiana and Wisconsin do not provide incentives for green infrastructure projects through their loan programs.[1] However, last summer the Mayor of South Bend, Indiana offered a free Downspout Disconnect Program for residents who lived in homes with downspouts that went directly into the ground and connected to the sewer system.[4] At about the same time, the Mayor of Chicago presented a resolution stating that municipalities around the Great Lakes have been working to develop green infrastructure alternatives and urging Congress to provide federal funding to help municipalities develop alternative stormwater management techniques to help reduce pressure on combined sewer systems.[5]

Green infrastructure is already working in a number of communities across the nation, saving money and enhancing environmental quality. For example, Portland, Oregon's Museum of Science and Industry used green infrastructure stormwater management techniques in its 20-acre site, including grass swales and "mini-wetlands," that store and filter nearly 70% of the runoff from a six-acre parking lot. These techniques have been documented to remove 50% of sediment and other contaminants that would otherwise have poured into the city's stormwater system, and have saved the museum $78,000 in hard infrastructure costs (e.g., manholes, pipes, trenching, catch basins).[6]

Green infrastructure approaches result in cleaner bodies of water, a greener environment, and better quality of life. States should require all CSO control projects to include nonstructural and decentralized best management practices, or have municipalities demonstrate why these approaches are not feasible to incorporate into conventional project designs.[1]

[1] *Follow the Money: An Action Agenda for Making Smarter Clean Water State Revolving Fund Investments in the Great Lakes* Region, American Rivers (2004).

[2] *Low Impact Development (LID): A Literature Review,* EPA-841-B-00-005 (Oct. 2000).

[3] *Stormwater Strategies: Community Responses to Runoff Pollution,* Natural Resources Defense Council (May 1999).

[4] *South Bend Offers Free Downspout Disconnect Program,* Press Release from Mayor Stephen J. Luecke (May 24, 2004).

[5] *Combined Sewer Overflows,* Resolution #3 presented by Mayor Richard M. Daley (July 16, 2004).

[6] *A Cost Comparison of Conventional and Water-Quality-Based Stormwater Designs,* Portland Department of Environmental Services (1996).

long term plans required in the state, while Michigan has approved 38 out of 42. Developing and approving LTCP as quickly as possible is important, because some of the compliance schedules in the approved LTCP are extremely long, so relief for local communities will not come quickly. For example, some of Michigan's approved LTCP have compliance schedules extending out to 2020.[48] Some LTCP schedules even exceed a 20 year implementation schedule. Just last month, the Northeast Ohio Regional Sewer District adopted a 30 year schedule to design and construct its CSO Control Program, although this schedule has not been approved by either Ohio EPA or U.S. EPA.[49]

Some municipalities may never opt to fully repair their collection systems if a recently proposed Bush Administration policy is finalized. EPA's "blending" policy authorizes permittees to routinely dump inadequately treated sewage when it rains, allowing them to continue to ignore the structural and maintenance defects that cause excess wet weather flows. See "EPA Proposal to Allow Sewage Dumping" below.

Data on Overflows in Some States is Limited, and Public Notification Procedures are Often Inadequate. Consequently, the Public is Kept in the Dark About the Location, Amount and Quality of Sewage Entering State Waters. Without this Basic Knowledge, Citizens are Effectively Denied their Right to Participate in the Long-Term Planning Process.

In order to implement NMC and LTCP, permittees are required to ensure that the public receives adequate notification of CSO occurrences and impacts. Adequate notification will "inform the public of the location of CSO outfalls, the actual occurrences of CSOs, the possible health and environmental effects of CSOs, and the recreational or commercial activities (e.g., swimming and shellfish harvesting) curtailed as a result of CSOs."[50] Furthermore, public participation and agency interaction is an important part of the system characterization phase of LTCP development.[51] Despite these requirements, some states do not provide adequate notification to the public when sewer overflows occur. Michigan is the only state that compiles detailed information about overflows in an annual report

EPA Proposal to Allow Sewage Dumping

EPA has proposed a new policy that would allow permittees to routinely dump sewage during rain events. EPA calls this proposal its "blending" policy because it would allow sewer operators to mix largely untreated sewage with treated sewage before discharging into waterways. Blending is illegal under the Clean Water Act when there are feasible alternatives, such as reducing infiltration and inflow, constructing additional capacity, or storing sewage until it can be fully treated. This policy would put more pathogens, including viruses, bacteria and parasites, as well as toxic chemicals, hormones and other pollutants into our waterways. The policy would also act as a disincentive for municipalities to repair leaky sewer systems, because it would allow dilution to substitute for effective treatment when it is raining. Because EPA's sewage dumping policy would increase sewage pollution and threaten public health, it has provoked broad and bi-partisan opposition from business interests, public health officials, state environmental officials, shell fishermen and tens of thousands of citizens.

Sources: Clean Water Network Letter to Administrator Leavitt, *Adverse Public Health and Environmental Effects of EPA's Sewage Treatment Proposal* (Feb. 9, 2004); Natural Resources Defense Council Flyer, *Co-Sponsor the Save Our Waters From Sewage Act (H.R. 1126), Say No to Sewage Dumping: Stop EPA from Finalizing its Proposed Sewage Dumping Policy* (2005).

so that the public can know the extent of the problem in the state. No state was able to provide comprehensive data on the water quality impacts of CSOs on the receiving waters. Without basic knowledge about the cause and effects of CSOs, citizens are effectively denied their right to participate in the long term planning process and may be less willing to accept the cost of eliminating these discharges.

Only Michigan and Indiana Require Real-Time Reporting of Overflows.

Only Michigan and Indiana effectively comply with the public notification requirement of the NMC by imposing "real-time" notification and reporting requirements on every municipality that has a sewage overflow. Immediately, but not more than 24 hours after an overflow begins in Michigan, the person responsible for the sewer system must notify the Michigan Department of Environmental Quality, the local health departments, and a daily newspaper of general circulation in the county or counties that contain waters that may be affected by the discharge.[52] The Department of Environmental Quality also must post notification of an overflow on its website "promptly." At the conclusion of the discharge, the municipality must provide the following information to the state in writing: the volume and quality of the discharge, the waters and/or land receiving the discharge, the reason for the discharge, the start and end times of the discharge, and verification of the municipality's compliance status with the requirements of its NPDES permit and other applicable laws.[53] Michigan law also requires permittees to test the affected waters each time a discharge occurs in order to assess the risk to the public created by the CSO, although this requirement may be waived by the affected local county health department if it determines that such testing is not needed.[54] Indiana has also implemented an effective public notice and reporting program, although it does not require notification of overflows to be posted on the internet.

In contrast to Michigan and Indiana, some states have very limited requirements for reporting overflows. Although Ohio has 1,375 outfalls, there is no statutory requirement that permittees notify either the public or the state when CSO events occur. Rather, public notification is only generally required by permits as part of the NMC. The most widely used method by permittees is the posting of permanent signs at CSO outfalls, which is not sufficient to inform the public of actual occurrences of CSOs or the possible health and environmental effects of the overflows. Frustrated citizens groups in Ohio are advocating the creation of a sewage right to know law modeled after Michigan's law.[55]

TABLE 4: REPORTING REQUIREMENTS FOR CSO EVENTS

	Mandatory Reporting of CSO Events?	Report to State Authority?	Report to Public?	Real time reporting?
Illinois	Yes. 35 Ill.Admin. Code 305.102	Periodic Reports to Illinois Environmental Protection Agency. Information regarding Combined Sewer Overflows as required by agency.	Permittees are required to develop a public notification program, and hold a meeting on the program (and on pollution prevention and operational and maintenance activities) every permit cycle. Permittees are required to consider internet CSO notification as well as mass media notification	Online reporting for Chicago, maintained by Metropolitan Water Reclamation District of Greater Chicago; http://www.mwrd.org/mo/csoapp/default.htm This cite provides information for 43 CSO permittees in the metro and suburban Chicago area.
Indiana	Yes. Title 327 IN Admin.Code 5-2.1-1 to -7	Yes. The permittee shall document its public notification efforts on its monthly CSO discharge monitoring report, and make those reports available to Department of Environmental Management.	Yes. Permittees must notify affected public, persons requesting notification, local health departments and drinking water suppliers within 10 miles of outfall, when a CSO discharge is occurring or imminent. The Department of Environmental Management also maintains a "CSO Tracking" page on their website, http://www.in.gov/idem/water/npdes/permits/wetwthr/cso/ (last updated 11/23/04), although it does not include information about overflows.	Yes. Notification provided, in a manner that is reasonable and effective (or a manner agreeable to the recipient and the CSO community) when a CSO discharge is occurring or is imminent. Posting of prominent signs warning of CSOs also required.
Michigan	Yes. Public Act 451, Section 3112a. (1994).	Yes. Person responsible for sewer system must report at start and end of discharge on the volume, quality, duration, reason, and location of the CSO. Reporting must be made to the Department of Environmental Quality, local health departments, and a daily newspaper within 24 hours after discharge begins.	Yes. Upon being notified of a CSO event, the Department of Environmental Quality shall promptly post the notification on its website. In addition, person responsible for sewer system must report at start and end of discharge on the volume, quality, duration, reason, and location of the CSO. Reporting must be made to the Department of Environmental Quality, local health departments, and a daily newspaper within 24 hours after discharge begins.	Yes. Person responsible for sewer system must report an event immediately but not more than 24 hours after discharge begins and the Department of Environmental Quality shall promptly post it on its website.
Minnesota	Permit by Permit.	All permittees must submit an annual report to the MN Pollution Control Agency; monthly precipitation and overflow data required for some outfalls.	All permittees required to post identification signs on all authorized outfalls.	No.
Ohio	Not required by statute or regulation, but addressed permit by permit.	Permittees submit basic overflow data either monthly or in annual reports, as specified in NPDES permit. CSO data is not routinely compiled.	Public notification is required by permits as part of the NMC. The most widely used method is the posting of permanent signs at CSO outfalls.	The Metropolitan Sewer District of Greater Cincinnati has a program to notify Hamilton County residents when existing or predicted weather conditions are likely to cause CSOs. The CSO advisories are issued by email and recorded on a CSO telephone information line; http://www.msdgc.org/consent_decree/public_notification/
Wisconsin	Permit by Permit.	Yes.	Milwaukee Metro Sewage District Permit requires public notification of time and location of CSO discharges, including nature and duration of potentially harmful conditions.	The Milwaukee Metro Sewage District has a Storm Update, updated every 5 minutes, with data on number of overflows, and the volume of water currently being stored or treated (as well as capacity) in the Deep Tunnel, Jones Island plant and South Shore plant; http://www.mmsd.com/news/stormupdate.cfm

Michigan is the Only State that Compiles Overflow Data on Frequency and Volume in an Annual Report.

In addition to real-time reporting, Michigan is the only state that collects CSO overflow data on frequency and volume and compiles the information in an annual report.[56] Michigan's annual report on CSOs lists all of the reported overflows for each permittee as well as reported volumes for each overflow event. Michigan also provides data on NMC and LTCP compliance. Michigan's CSO report is useful for making regulatory decisions and publicizes the extent of the problem as well as the actions being taken to control the discharges.

States are not Compiling and Reporting Data on CSO Impacts to Receiving Waters.

In addition to monitoring the frequency and volumes of overflows, permittees are supposed to characterize and report on the ***impacts*** of CSOs on receiving water. No state was able to provide data regarding the impacts of CSOs beyond the limited information in their biennial water quality reports to Congress (see section on Public Health and Environmental Impacts). Some states told us that the data existed in LTCP that were being developed or in various reports but that the information was not standardized or able to be provided readily. Other states told us that it was too premature to provide such data, because the CSO Control Policy only requires a post-construction monitoring program after implementation of the LTCP to verify compliance with the water quality standards. A closer read of the law however, reveals that water quality monitoring is required at all stages of implementing the CSO Control Policy. For example, one of the NMC is to effectively characterize CSO impacts so that the permittee can document the degree to which the NMC achieve compliance with water quality standards. Without such analysis, it is impossible for permittees to know if they need to develop a LTCP. Furthermore, water quality monitoring is one of the required minimum elements of a LTCP. It is critical that permittees conduct water quality monitoring during the development and implementation of the LTCP to ensure that CSO control efforts are effective and improve water quality. Additionally, this data is necessary to evaluate whether the projects are wise investments of taxpayer dollars. Finally, if CSO systems do not regularly monitor water quality, they may expose the public to unnecessary risk.

Overflow Data Reported to the Public May not be Accurate.

Even when overflow events are reported by municipalities or by states, the data may not be accurate. There have been a number of studies which indicate that underreporting of CSO events is a serious problem. For example, a 2003 report by Milwaukee-based Triad Engineering, Inc. documented that the Milwaukee Metropolitan Sewerage District was underreporting overflow volumes by an average of 72%.[57] In 2001, Clean Water Action in Michigan also found that nearly 29 billion gallons of overflows that were reported to the health departments did not appear on MDEQ's website.[58] The discrepancies in the Michigan data hopefully have been remedied by the modifications to the overflow reporting laws discussed above.

Are CSO Laws Being Enforced?

The CSO Control Policy, which has the effect of law, makes clear that enforcement is critical to achieving its goals. It requires EPA or states to take enforcement actions for overflows that occur during dry weather and establishes strategies for enforcing the nine minimum controls and long-term control plan requirements.[59] According

to EPA guidance documents, states were required to inspect all CSO permittees by 2001, and take enforcement actions against municipalities that were not yet in compliance with CSO requirements.[60] Where municipalities are not meeting the basic nine minimum controls, there is a presumption that EPA and states will take violators to court to seek compliance. The data suggests that these goals are being largely ignored. Few CSO permittees have been inspected, and there are very few court actions against violators who have failed to meet the CSO Control Policy requirements. While EPA and some states have taken more modest administrative actions, these are few and far between. Rather, most actions have been informal in nature and impose no penalties or consequences for noncompliance.

It is unclear why states have been so reluctant to enforce the Clean Water Act for violations of the CSO Control Policy, particularly when it has been nearly ten years since municipalities have been required to implement the nine minimum controls. While it may be politically difficult for states to take enforcement actions against permittees that are strapped for funds and face other urgent priorities, the Policy provides sufficient flexibility to municipalities that are financially disadvantaged to consider the site-specific nature of the CSOs and the most cost-effective means of reducing pollutants. Furthermore, EPA and the states evaluate a permittee's current financial condition before determining the penalty for Clean Water Act violations and exercise enforcement discretion for municipalities that are progressing expeditiously toward appropriate CSO controls. The CSO Policy also recognizes that financial capability is a factor when developing compliance schedules.

EPA and the States Rarely Inspect CSO Systems.

In 2000, EPA Headquarters directed Region 5 and the states to inspect all of the CSO communities by fiscal year 2001. As shown in Table 5, Illinois was the only state that conducted CSO inspections by 2001, although it inspected only 4 of its 113 permittees, or 3.5% of the total. By 2004, there was a notable increase in the number of CSO inspections in Illinois, Indiana, and Ohio; however, Minnesota still had not inspected a single CSO system. Although Michigan performs CSO inspections, often during an inspection of a wastewater treatment plant, they were unable to provide EIP with data, because they do not separately track them.

TABLE 5: NUMBER OF CSO INSPECTIONS BETWEEN YEARS 2000-2004*

State	2000	2001	2002	2003	2004
Illinois	3	1	12	9	26
Indiana	0	0	6	0	25
Michigan	N/A	N/A	N/A	N/A	N/A
Minnesota	0	0	0	0	0
Ohio	0	0	3	1	14
Wisconsin	0	0	0	0	1
TOTALS	3	1	21	10	66

Source: FOIA Correspondence

* Some of these inspections were conducted by EPA or jointly with the state.

States should use inspections to ensure that municipalities are implementing the CSO Control Policy. Although the CSO Policy requires municipalities to submit documentation verifying implementation of the NMC, the Clean Water Act also requires states to have inspection procedures, *independent of information supplied by regulated persons,* to verify compliance or noncompliance with applicable program requirements.[61] States should not rely on municipalities' self-certification of compliance. In fact, when states have conducted inspections, they have identified compliance problems. Ohio provides a case in point. Ohio recently began, and plans to continue, conducting inspections specifically focused on NMC implementation. Ten of its inspection reports are currently available. A review of these reports revealed that only two of the permittees were fully implementing the NMC.[62] In addition, 2001 data compiled by the Ohio River Valley Water Sanitation Commission showed that at least nine out of the ten facilities that discharge to the Ohio River had not fully implemented NMC.[63]

EPA and the states should set a timetable for completing inspections of all CSO communities. At a minimum, the Clean Water Act requires states or EPA to have the ability to inspect all major facilities (municipal discharges designed for flows of greater than one million gallons per day) annually.[64] In addition to verifying permittee compliance, inspections will help the states to compile permit and enforcement information and to improve the quality of their data.

EPA and the States are Failing to Take Court Actions Against Permittees that are Not Complying with the CSO Control Policy Requirements.

Formal enforcement data in Table 6 reveals that Region 5 and the states are not adequately enforcing the CSO requirements of the Clean Water Act. The CSO Control Policy requires certain formal enforcement responses to ensure compliance. EPA guidance defines a formal enforcement response as one that requires actions to achieve compliance, specifies a timetable, contains consequences for noncompliance that are independently enforceable without having to prove the original violation, and subjects the person to adverse legal consequences for noncompliance.[65] These actions include administrative orders that require corrective actions or penalties and judicial actions that usually resolve more serious violations and are filed in a court.

TABLE 6: REGION 5 SUMMARY OF CSO ENFORCEMENT ACTIONS BETWEEN YEARS 1997–2004

State	Informal Action	Notice of Violation	Federal Judicial Action	Federal Administrative Order	State Judicial Action	State Administrative Order	State Administrative Penalty Order
Illinois	36	47	3	2	0	N/A	N/A
Indiana	0	13	4	2	0	10	7
Michigan	3	6	0	0	1	0	3
Minnesota*	0	0	0	0	0	0	0
Ohio	N/A	N/A	5	1	8	1	3
Wisconsin	0	0	0	0	0	0	0
TOTALS:	39	66	12	5	9	11	13

SOURCE: FOIA Correspondence and State Information (see state sections for further information)
* According to Minnesota, there has been no need for enforcement because the permittees have implemented the NMC and are implementing the LTCP.

According to the CSO Control Policy, states should initiate a judicial action against CSO permittees that failed to document implementation with the nine minimum controls by January 1, 1997.[66] In Region 5, there are still approximately 136 permittees who have not implemented the nine minimum controls, yet the Region and states have only taken 21 judicial actions since 1997. Furthermore, it is not clear from the enforcement information provided whether all of the judicial actions resolved violations for the failure to implement the NMC, so the number of relevant enforcement actions may be much lower.

The CSO Control Policy also states that a judicial order is generally the appropriate mechanism for incorporating the long term control plan and imposing a schedule with appropriate milestone dates necessary to implement the plan.[67] Administrative orders, however, may be appropriate for permittees whose long-term control plans will take less than five years to complete, and for smaller facilities that have met the January 1, 1997 deadline.[68] Region 5 states have approved 153 long-term control plans; however, only 50 judicial and administrative actions have been initiated since 1997.

Some states that do not have a large number of formal enforcement actions, such as Illinois, rely on informal enforcement responses. Informal actions do not include penalties or impose consequences for noncompliance. Informal compliance tools, such as notice of noncompliance letters, may make sense in some instances (e.g., for first time, minor violations). However, these tools become meaningless when they are not backed up by stronger actions, such as those that require enforceable deadlines and monetary penalties. In addition, when informal warnings are not tracked and reported (e.g., Ohio), the state and the public have no way of measuring the success of the program, and repeat violators may go unnoticed. Finally, EPA's CSO Compliance and Enforcement Strategy suggests that informal enforcement mechanisms may never be appropriate to ensure compliance with the CSO Policy.[69]

Is Funding a Barrier to CSO Control Activities?

Although Financial Limitations are Accounted for in the CSO Control Law, Funding is a Significant Challenge in Permittees' Efforts to Fully Comply with the Law.

Recognizing that financial considerations are a major factor in implementation of CSO controls, the law gives permittees the opportunity to substantially decrease the burden of expensive capital improvements in their long term control plans by first implementing the low cost nine minimum controls. The NMC can reduce CSOs and their harmful effects without requiring significant engineering studies, construction activity, or financial investment. Furthermore, a permittee may take financial capability into consideration in LTCP development, review of water quality standards, and negotiation of enforceable schedules. However, "each permittee is ultimately responsible for aggressively pursuing financial arrangements for the implementation of its long-term control plan."[70]

Despite accommodation in the CSO law, many communities struggle with financing CSO control activities. As of January 1, 2000, the national needs for wastewater control and watershed cleanup were $181.2 billion.[71] Combined Sewer Overflow Correction needs accounted for $50.6 billion, or 27.9% of the total.[72] In 2000, Region 5 CSO needs surpassed $21.3 billion—state needs in the Region vary, corresponding to the scope of the problem in each state (see Table 7: Region 5 CSO Correction Needs).

TABLE 7: REGION 5 CSO CORRECTION NEEDS, 1996-2000

	Number of Facilities with CSO Needs in 1996	Number of Facilities with CSO Needs in 2000	1996 CSO Needs ($ Millions)	2000 CSO Needs ($ Millions)
Illinois	104	105	10,415	9,450
Indiana	119	107	4,953	5,468
Michigan	48	21	4,133	2,437
Minnesota	1	1	29	6
Ohio	110	109	4,660	3,623
Wisconsin	3	3	59	342
Totals	385	346	24,249	21,326

Source: *Clean Watersheds Needs Survey 2000,*[73] projections are for a multi-year period, see endnotes.

Although CSO mitigation needs slightly decreased in Region 5 between 1996 and 2000, the *2002 AMSA Financial Survey* noted that among the wastewater management agencies responding to the survey, CSO mitigation needs overall increased 6% from 1999 to 2002—a significantly larger increase than experienced by other categories of wastewater capital needs.[74] The survey also found that 23.8% of CSO mitigation needs for 2002 to 2006 are unfunded.[75]

Significant funding gaps exist in CSO communities throughout Region 5. For example, a report released by the Maumee River Basin Partnership for Local Governments estimates that local communities along the river basin, which includes parts of Indiana, Michigan, and Ohio, will need to spend a combined total of $881 million over the next 15 years on CSO related programs.[76] This amount represents 86% of the total estimated cost of over $1 billion for the Maumee communities to comply with NPDES programs.[77] In Michigan alone, it is estimated that $1.7–$3.4 billion will be needed for CSO communities over the next 12 years.[78]

The problem of funding CSO controls is exacerbated by the difficulty of keeping up with all wastewater control needs. Wastewater infrastructure around the nation is in bad shape and is rapidly getting worse—in March, 2005, the American Society of Civil Engineers downgraded U.S. wastewater infrastructure from Grade D to D-.[79] Studies by EPA, the Congressional Budget Office, the Government Accountability Office, and the Water Infrastructure Network estimate a water infrastructure funding gap of $300–600 billion over the next 20 years.[80]

States and Municipalities have Traditionally Financed the Majority of CSO Costs Themselves. Self-Financing is Likely to Remain the Most Significant Source of Funding for CSO Control.

EPA has provided guidance to permittees on the various funding sources for CSO control activities.[81] In the 2004 Report to Congress, EPA cited the 2002 AMSA Financial Survey, which concluded that self financing is the most common option used for capital investments and operation and maintenance activities for wastewater treatment systems, including CSO control. The various revenue sources for wastewater control include: fees (user charges, property taxes, hookup fees, development charges, assessments, permit fees, and special levies) which account for 66%; other local income sources (reserves or fund transfers, interest payments, sales, and other mechanisms) 16%; bonds 13%; Clean Water State Revolving Fund

(CWSRF) loans 4%; and Federal and state grants 1%.[82] However, for capital improvement projects alone (many of which are CSO controls), CWSRF represents 13.5% of funding, local funds 77.5%, federal grants 0.9%, and "other sources" 7.6%.[83]

This data demonstrates that municipalities have traditionally supplied the majority of CSO control funding themselves. Federal funding has historically only covered a fraction of CSO costs, and the current Administration has repeatedly proposed cuts to the CWSRF. Therefore, permittees must prepare to make more effective use of self financing mechanisms, especially rate increases and connection fees. The 2002 AMSA Financial Survey indicates that rates and fees are not keeping up with costs, and there is room for increases without placing too much burden on the public. "Adjusting for inflation, average residential sewer rates have actually decreased by 0.3% from 1999 to 2002. For industrial customers, inflation-adjusted rates for volume (in dollars per 1,000 gallons) and BOD have increased by 1% and 4%, respectively, since 1999, while inflation-adjusted rates for suspended solids have decreased by 2% from 1999 to 2002."[84]

When the public is informed about the harm caused by CSOs and other wastewater pollutants, there is generally strong support for raising sewer rates and fees to address the problem. The City of Toledo, Ohio, provides an example of public willingness to pay for clean water. In July 2004, voters in Toledo overwhelmingly approved an ordinance that requires a 15-year series of improvements to upgrade the City's combined sewer system at an expected cost of more than $400 million. Funding for the program will come from an incremental increase of sanitary sewer rates over the next fifteen years, including a 9.75% increase in rates in each of the next four years.[85]

Conversely, when public expectations are raised too high, there may be frustration and anger with system inadequacies and the resulting increases in wastewater costs. Milwaukee's experience provides a good case in point. After massive overflows that occurred in May, 2004, the public was furious that the expensive Deep Tunnel system had not prevented these events. In an editorial, state Senator Alberta Darling declared, "No one can dispute the fact that the district, its signature deep tunnel and it labyrinth of combined sewers have not done what the citizen taxpayers were told they would do: eliminate overflows and the dumping of sewage."[86] An audit commissioned by the Mayor after the May events notes that "[t]he deep tunnel falls short of public expectations for a very expensive project. It does, however, appear to be performing close to the technical objectives established during the design."[87] In response to the overflows, both Senator Darling and the director of the Milwaukee Metropolitan Sewerage District emphasized that public education and outreach are essential to address gaps in public understanding and gain support to continue with the development and financing of effective control measures.[88]

To increase public support for financing control measures, government must start spending taxpayer dollars more wisely. There is a growing body of evidence that demonstrates that conventional treatment solutions cost more to develop and maintain in the long run than pollution-prevention approaches. Municipalities should incorporate green infrastructure approaches into their CSO control strategies, like grass swales and vegetated roofs, for example, to keep stormwater out of the sewage treatment system and to save money on below-ground infrastructure costs. (See text box on Green Infrastructure).

Although it Comprises Only a Small Percentage of Total Funding, the CWSRF is Important for CSO Control. Costs will continue to Increase and Infrastructure Improvements will be Delayed if Congress does not Restore Federal Funding.

The Clean Water State Revolving Fund (CWSRF) is the federal government's major funding mechanism for financing capital improvements in wastewater infrastructure, including CSO control.[89] CWSRF monies are loaned to communities for clean water infrastructure and loan repayments are recycled back into the program to fund additional projects. Compared to the total amount necessary to control CSOs, the CWSRF only meets of a fraction of the funding needs. Nevertheless, for some states, such as Michigan and Illinois, the CWSRF is an important source of financing for capital improvements.

States may leverage the loans received through the CWSRF by issuing bonds or utilizing other financing mechanisms.[90] Every federal dollar spent in the CWSRF Program has resulted in $0.73 in additional clean water expenditures from state contributions and fund earnings.[91] Each year when the Bush administration has attempted to curtail the CWSRF, Congress has restored the funding cuts because the program has been successful and is critical for financing CSO controls and other wastewater infrastructure activities.[92]

Besides providing financing for capital projects, the CWSRF has additional benefits, which make it particularly important to the successful control of CSOs. For example, small and/or economically disadvantaged communities often rely disproportionately on CWSRF to finance their CSO control activities.[93] In addition, the CWSRF provides one of the only consistent sources of data on the monies spent on CSO control activities, as well as anticipated financial needs.[94]

The federal government's contribution to CSO control costs is already insufficient (compare Table 7: "Region 5 CSO Correction Needs" and Table 8: "Percent of Total CWSRF Used for CSOs"), therefore the Bush administration should be increasing federal funding rather than targeting the CWSRF for budget cuts. The $370 million proposed cut to the CWSRF is the largest decrease, by far, among the government's infrastructure financing programs.[95]

A broad coalition of interested parties, including states, the wastewater industry, and environmental groups, oppose cuts to the CWSRF. According to one calculation, a $500 million cut in federal capitalization translates, with leveraging, into a

TABLE 8: PERCENT OF TOTAL CWSRF USED FOR CSOS JULY 1, 1987 THROUGH JUNE 30, 2003

	Total Assistance[96] (millions of dollars)	Combined Sewer Overflow Correction[97] (millions of dollars)	Percent of CWSRF Used for CSOs
REGION 5	9,072.5	1,760.1	19.4
Illinois	1,486.8	561.8	37.8
Indiana	1,085.8	119.4	11.0
Michigan	1,867.7	967.5	51.8
Minnesota	1,271.8	4.0	.3
Ohio	2,305.1	99.3	4.3
Wisconsin	1,055.4	8.2	.8

Source: EPA Summary Reports, CWSRF

TABLE 9: CLEAN WATER STATE REVOLVING FUND (millions of dollars)

	President's Budget	Enacted
FY 2006	$730.0	NA
FY 2005	$850.0	$1,100.0
FY 2004	$840.0	$1,342.0
FY 2003	$1,212.0	$1,341.0
FY 2002	$850.0	$1,350.0
FY 2001	$800.0	$1,347.0
FY 2000	$800.0	$1,345.4
FY 1999	$1,075.0	$1,350.0
FY 1998	$1,075.0	$1,350.0

Source: Summaries of the EPA's Budget[98]

$1.1 billion cut at the state level.[99] With the proposed budget cuts, nearly 2,000 water quality projects nationwide would not be completed.[100] The Association of Metropolitan Sewerage Agencies has called for increased federal funding for needed infrastructure projects.[101] Creative funding solutions have been proposed, such as a 5 cent per bottle fee on beverages or the creation of a wastewater infrastructure trust fund.[102]

According to a February 2004 national survey conducted by the Association of Metropolitan Sewerage Agencies, the American public agrees that the nation's water quality future should be a vital national priority. Regardless of political views, Americans widely support water infrastructure funding.[103] Citizens' groups should continue to actively show support for increasing the outright federal funding of CSO control activities.

Increased Funding for States May Be Needed for CSO Regulation

While the CSO Control Policy was written to account for the limited resources of CSO communities, nowhere does the policy contain provisions to account for the limited resources of the states. In Illinois, for example, the shortage of resources is probably the largest single factor affecting the timely implementation of the federal CSO Control Policy of 1994.

Prior to the CSO Control Policy, Illinois had sufficient resources to regulate CSOs. Illinois was able to evaluate each CSO discharger in the state during the 1980s. Each CSO community was required to invest in infrastructure projects to either comply with state CSO standards, or to provide a demonstration of "minimal CSO impacts" to the Illinois Pollution Control Board. Three staff personnel worked full time on CSOs for almost four years. In addition, every field office in the state and project managers that administered grant programs were heavily involved in these CSO activities. These activities consumed an estimated 40 FTEs (full-time equivalents) over roughly the first four years of the program and several FTEs per year for the next few years.

Implementing the federal policy easily consumes far more resources than the state CSO control efforts of the past. Other competing programs have reduced the number of FTEs available at the state level to implement the federal CSO control policy. Today, Illinois EPA simply lacks the resources necessary to expeditiously implement the federal CSO Control Policy. In fact, only one person is currently responsible for reviewing NMCs and LTCPs as well as operation and maintenance plans. Additional funding is desperately needed if these NPDES activities are to be fully implemented in a timely fashion.

Appendix A:
All CSO Permittees in Region 5*

NPDES	Facility Name	Number of Outfalls	NMC Required?	LTCP Required?	LTCP Submitted?	LTCP Approved?	LTCP Implemented?
ILLINOIS							
IL0027367	Addison	1	YES	YES	YES	NO	
IL0048518	Aurora CSOs	16	YES	NO			
IL0025135	Beardstown S.D.	1	YES	YES	YES	NO	
IL0072001	Bloomington CSOs	6	YES	YES	YES	YES	
IL0027731	Bloomington/Normal WRD/ STP	9	YES	YES	YES	YES	
ILM580032	Brookfield CSOs	6	YES	YES	YES	YES	
IL0023825	Cairo STP	3	YES	NO			
IL0027839	Canton-West STP	2	YES	YES	YES	NO	
IL0022675	Carlinville STP	1	YES	YES	NO		
IL0045012	Chicago CSOs	231	YES	YES	YES	YES	
IL0027464	City of Alton STP	6	YES	NO			
IL0021873	City of Belleville STP #1	15	YES	YES	YES		
ILM580031	City of Blue Island CSOs	5	YES	YES	YES	YES	
ILM580025	City of Calumet City CSOs	7	YES	YES	YES	YES	
IL0035084	City of Casey STP	1	YES	YES	YES	NO	
IL0070505	City of Elgin CSOs	12	YES	NO			
ILM580002	City of Evanston CSOs	15	YES	YES	YES	YES	
ILM580020	City of Harvey CSOs	7	YES	YES	YES	YES	
IL0022519	City of Joliet-Eastside STP	9	YES	YES	YES	NO	
ILM580028	City of Markham CSO	1	YES	YES	YES	YES	
IL0029815	City of Mason City	1	YES	NO			
IL0029874	City of Metropolis STP	1	YES	NO			
IL0021113	City of Morris STP	5	YES	NO			
IL0024996	City of Oglesby STP	7	YES	NO			
IL0037800	City of Peoria CSOs	16	YES	NO			
IL0030660	City of Peru STP	22	YES	YES			
IL0022004	City of Streator STP	17	YES	YES	YES	NO	
IL0028231	Cowden STP	1	YES	NO			
ILM580026	Des Plaines CSO	2	YES	YES	YES	YES	
ILM580011	Dixmoor CSO	1	YES	YES	YES	YES	
IL0026450	Dixon STP	4	YES	NO			
IL0033472	East St. Louis CSOs	2	YES	NO			
IL0028622	Effingham STP	3	YES	YES	YES	NO	
IL0021601	Fairbury STP	11	YES	YES			
IL0022462	Farmer City STP	2	YES	YES	YES	NO	
IL0020818	Fox Metro Water Reclamation District	1	YES	NO			

* The information in this spreadsheet may differ slightly from the summary information in Table 3, because the states recently provided EIP with updated summary information but did not update the spreadsheet.

NPDES	Facility Name	Number of Outfalls	NMC Required?	LTCP Required?	LTCP Submitted?	LTCP Approved?	LTCP Implemented?
IL0028657	Fox River WRD-South STP	1	YES	NO			
ILM580029	Franklin Park CSOs	4	YES	YES	YES	YES	
IL0023141	Galesburg Sanitary District	40	YES	NO			
IL0023281	Gibson City STP	1	YES	YES	NO		
IL0022471	Glenbard WW Authority-Lombard	2	YES	YES	YES	NO	
IL0072389	Golf CSOs	1	YES	YES	YES	YES	
IL0022331	Granville STP	4	YES	YES	YES	NO	
IL0023388	Havana STP	2	YES	NO			
IL0066818	Hinsdale CSOs	4	YES	YES	YES	YES	
IL0021661	Jacksonville STP	2	YES	YES	YES	NO	
ILM580008	LaGrange Park CSOs	3	YES	YES	YES	YES	
IL0029424	LaSalle WWTP	3	YES	NO			
IL0029467	Lawrenceville STP	4	YES	YES	YES	NO	
IL0029564	Lincoln STP	2	YES	YES	YES	NO	
ILM580034	Lincolnwood CSOs	2	YES	YES	YES	YES	
IL0020621	Litchfield STP	1	YES	YES	YES	NO	
IL0021059	Marseilles STP	1	YES	NO			
IL0068365	Marshall STP	2	YES	YES	YES	NO	
IL0029831	Mattoon WWTP	4	YES	NO			
IL0028592	Metro East S.D. CSOs	4	YES	YES	YES	NO	
IL0023272	Milford STP	4	YES	YES	YES	NO	
IL0021253	Monmouth Main WWTP	6	YES	NO			
IL0030015	Morton STP 2	2	YES	YES			
IL0028061	MWRDGC Calumet Water Reclamation Plant	13	YES	YES	YES	YES	
IL0047741	MWRDGC James C. Kire WRP	1	NO	YES	YES	YES	
IL0028053	"MWRDGC Stickney, West-Southwest STP"	15	YES	YES	YES	YES	
IL0028070	MWRDGC-Lemont WRP	1	YES	YES	YES	YES	
IL0028088	MWRDGC-Northside Water Reclamation Plant	9	YES	YES	YES	YES	
IL0030384	Ottawa STP	14	YES	NO			
ILM580014	Park Ridge CSOs	4	YES	YES	YES	YES	
IL0034495	Pekin STP 1	4	YES	YES			
IL0072834	Phoenix CSOs	1	YES	YES	YES	YES	
IL0030457	Pontiac STP	5	YES	NO			
ILM580037	Posen CSO	1	YES	YES	YES	YES	
IL0043061	Prophetstown STP	2	YES	NO			
IL0030503	Quincy STP	6	YES	YES			
ILM580015	Riverside CSOs	5	YES	YES	YES	YES	
IL0030783	Rock Island	6	YES	YES			
IL0028321	S.D. of Decatur Main STP	4	YES	YES	YES	NO	

NPDES	Facility Name	Number of Outfalls	NMC Required?	LTCP Required?	LTCP Submitted?	LTCP Approved?	LTCP Implemented?
ILM580036	Skokie CSOs	3	YES	YES	YES	YES	
IL0021989	Spring Creek STP	6	YES	YES	YES	NO	
IL0031216	Spring Valley WWTP	9	YES	NO			
IL0021971	Sugar Creek STP	2	YES	YES	YES	NO	
ILM580033	Summit CSOs	4	YES	YES	YES	YES	
IL0031356	Taylorville S.D. STP	2	YES	NO			
IL0072508	Town of Normal CSOs	0	YES	N/A			
ILM580006	Village of Arlington Heights CSO	1	YES	YES	YES	YES	
ILM580018	Village of Burnham CSOs	3	YES	YES	YES	YES	
ILM580016	Village of Calumet Park CSO	1	YES	YES	YES	YES	
ILM580017	Village of Dolton CSOs	3	YES	YES	YES	YES	
ILM580019	Village of Forest Park CSOs	2	YES	YES	YES	YES	
IL0021423	Village of Hartford CSO	1	YES	YES	YES	NO	
ILM580009	Village of LaGrange CSOs	3	YES	YES	YES	YES	
IL0039551	Village of Lemont CSOs	2	YES	YES	YES	YES	
ILM580004	Village of Lyons CSOs	3	YES	YES	YES	YES	
ILM580022	Village of Maywood CSOs	8	YES	YES	YES	YES	
ILM580003	Village of Melrose Park CSO	1	YES	YES	YES	YES	
ILM580005	Village of Morton Grove CSOs	2	YES	YES	YES	YES	
ILM580035	Village of Niles CSOs	8	YES	YES	YES	YES	
ILM580030	Village of North Riverside CSOs	2	YES	YES	YES	YES	
ILM580024	Village of River Forest CSOs	2	YES	YES	YES	YES	
ILM580021	Village of River Grove CSO	6	YES	YES	YES	YES	
ILM580007	Village of Riverdale CSOs	4	YES	YES	YES	YES	
ILM580013	Village of Schiller Park CSO	1	YES	YES	YES	YES	
ILM580010	Village of South Holland CSOs	5	YES	YES	YES	YES	
ILM580023	Village of Stickney CSOs	1	YES	YES	YES	YES	
IL0033618	Village of Villa Park CSOs	4	YES	YES	YES	NO	
IL0045039	Village of Western Springs CSOs	4	YES	YES	YES	YES	
IL0022161	Watseka STP	6	YES	NO			
IL0021792	Wenona WWTP	1	YES	YES	YES	NO	
ILM580012	Wilmette CSO	1	YES	YES	YES	YES	
IL0031852	Wood River STP	1	YES	NO			
	INDIANA						
IN0022144	Albion	1	YES	YES	NO		
IN0032476	Anderson WWTP	19	NO	YES	NO		
IN0020222	Attica	2	YES	YES	YES		
IN0020672	Auburn WWTP	4	YES	YES	NO		

NPDES	Facility Name	Number of Outfalls	NMC Required?	LTCP Required?	LTCP Submitted?	LTCP Approved?	LTCP Implemented?
IN0020664	Avilla WWTP	1	YES	NO	NO		
IN0021369	Berne	3	YES	YES	YES		
IN0022420	Boonville	2	YES	YES	YES		
IN0021211	Brazil Municipal STP	1	YES	YES	NO		
IN0020427	Bremen WWTP	2	YES	NO	NO		
IN0022462	Butler	1	YES	YES	YES		
IN0022535	Centerville Municipal STP	1	YES	YES	NO		
IN0022560	Chesterfield WWTP	2	YES	YES	YES		
IN0022578	Chesterton Municipal STP	1	YES	YES	NO		
IN0020044	City of Alexandria WPCP	2	YES	YES	YES		
IN0021296	City of Angola WWTP	2	YES	YES	NO		
IN0050903	City of Aurora WW Collection System	5	YES	YES	YES		
IN0022411	City of Bluffton WWTP	1	YES	YES	YES		
IN0022608	City of Clinton POTW	6	YES	YES	YES		
IN0032573	City of Columbus POTW	3	YES	YES	YES		
IN0032964	City of Crawfordsville WWTP	2	YES	YES	YES		
IN0025763	City of Crownpoint WWTP	5	YES	YES	YES		
IN0039314	City of Decatur WWTP	4	YES	YES	YES		
IN0025674	City of Elkhart WWTP	39	YES	YES	YES		
IN0032191	City of Fort Wayne WWTP	42	YES	NO	NO		
IN0025755	City of Goshen WWTP	6	YES	YES	YES		
IN0023132	City of Huntington WWTP	15	YES	YES	YES		
IN0020656	City of Kendallville WWTP	1	YES	YES	YES		
IN0021385	City of Knox WWTP	n/a	YES	YES	YES		
IN0032875	City of Kokomo Municipal Sanitation Utility	26	YES	YES	YES		
IN0023604	City of Logansport WWTP	16	YES	YES	YES		
IN0025666	City of Madison WWTP	7	YES	YES	YES		
IN0025585	City of Marion WWTP	9	YES	YES	YES		
IN0025640	City of Mishawaka WWTP	18	YES	YES	YES		
IN0023914	City of New Castle WWTP	8	YES	YES	NO		
IN0020168	City of Noblesville WWTP	7	YES	YES	YES		
IN0032328	City of Peru WWTP	16	YES	YES	YES		
IN0024473	City of Seymour WWTP	1	YES	YES	YES		
IN0024520	City of South Bend WWTP	35	YES	YES	NO		
IN0024554	City of Sullivan WWTP	5	YES	YES	YES		
IN0025607	City of Terre Haute POTW	10	YES	YES	YES		
IN0024741	City of Wabash WWTP	8	YES	YES	YES		
IN0032972	Civil Town of Speedway WWTP	1	YES	YES	NO		
IN0022624	Columbia City WWTP	12	YES	YES	YES		

NPDES	Facility Name	Number of Outfalls	NMC Required?	LTCP Required?	LTCP Submitted?	LTCP Approved?	LTCP Implemented?
IN0032336	Connersville	5	YES	YES	YES		
IN0022829	East Chicago S.D.	3	YES	YES	NO		
IN0021652	Eaton	2	YES	YES	YES		
IN0024660	Elden Kuehl Pollution Control Facility	n/a	NO	YES	NO		
IN0032719	Elwood	14	YES	YES	NO		
IN0033073	Evansville East WWTP	15	YES	YES	YES		
IN0032956	Evansville Westside WWTP	8	YES	YES	YES		
IN0021105	Fairmount	16	YES	YES	YES		
IN0020958	Fortville WWTP	7	YES	YES	NO		
IN0022934	Frankfort	1	YES	YES	YES		
IN0022977	Gary WWTP	12	YES	YES	NO		
IN0020109	Greenfield	0	YES	NO	NO		
IN0020133	Greensburg WWTP	1	YES	YES	NO		
IN0023060	Hammond WWTP	20	YES	YES	YES	NO	
IN0021628	Hartford City	17	YES	YES	YES		
IN0023183	Indianapolis-Belmont	134	NO	NO	YES		
IN0031950	Indianapolis-South Port		NO	NO	NO		
IN0023302	Jeffersonville	16	YES	YES	NO		
IN0032468	Lafayette	13	YES	YES	NO		
IN0025577	LaPorte Municipal STP	1	YES	YES	YES		
IN0023582	Ligonier WWTP	5	YES	YES	YES		
IN0023621	Lowell Municipal STP	1	YES	YES	YES		
IN0023736	Markle WWTP	2	YES	YES	YES		
IN0023752	Michigan City	2	YES	YES	YES	YES	
IN0020770	Middletown	3	YES	YES	YES		
IN0038318	Milford	1	YES	YES	NO		
IN0020176	Monticello Municipal STP	6	YES	YES	YES		
IN0020117	Montpelier WWTP	4	YES	YES	YES		
IN0035696	Mt. Vernon WWTP	3	YES	YES	YES		
IN0025631	Muncie Sanitary District	20	YES	YES	YES		
IN0021466	Nappanee	11	YES	YES	YES		
IN0020346	New Haven STP	4	YES	YES	YES		
IN0020877	North Judson Municipal STP	2	YES	YES	YES		
IN0020362	North Manchester STP	7	YES	YES	YES		
IN0020451	North Vernon WWTP	2	YES	NO	NO	NO	
IN0020745	Ossian WWTP	6	YES	YES	NO		
IN0021342	Oxford WWTP	3	YES	YES	NO		
IN0024023	Paoli Municipal STP	8	YES	YES	YES		
IN0021202	Plainfield Municipal STP	5	YES	YES	YES		
IN0020991	Plymouth Municipal STP	10	YES	YES	YES		
IN0020095	Portland Municipal STP	16	YES	YES	YES		

NPDES	Facility Name	Number of Outfalls	NMC Required?	LTCP Required?	LTCP Submitted?	LTCP Approved?	LTCP Implemented?
IN0024414	Rensselaer	18	YES	YES	YES		
IN0025615	Richmond-Major	4	YES	YES	YES		
IN0020001	Ridgeville WWTP	3	YES	YES	YES		
IN0021067	Rockport WWTP	1	YES	YES	YES		
IN0020907	Rossville	5	YES	YES	YES		
IN0020125	Royal Center WWTP	1	YES	YES	YES		
IN0021270	Rushville	2	YES	YES	NO		
IN0020567	South Whitley Municipal STP	2	YES	YES	YES		
IN0024562	Summitville	2	YES	YES	YES		
IN0021016	Tell City WWTP	5	YES	YES	YES		
IN0021474	Tipton Municipal STP	7	YES	YES	YES		
IN0025232	Town of Akron WWTP	3	YES	YES	NO		
IN0021245	Town of Brownsburg WWTP	2	YES	YES	YES	NO	
IN0022683	Town of Crothersville WWTP	2	YES	YES	YES		
IN0024406	Town of Redkey POTW	6	YES	YES	YES		
IN0024460	Valparaiso-Major	1	YES	YES	YES		
IN0024716	Veedersburg WWTP	1	YES	YES	YES		
IN0024775	Wakarusa WWTP	7	YES	YES	NO		
IN0024791	Warren	3	YES	YES	NO		
IN0024805	Warsaw WWTP	1	YES	YES	YES	NO	
IN0025658	Washington Municipal STP	5	YES	YES	YES		
IN0020711	Waterloo Municipal STP	2	YES	YES	NO		
IN0024821	West Lafayette WWTP	4	YES	YES	YES		
IN0025615	William Edwin Ross WWTP	n/a	YES	YES	YES		
IN0020516	Winamac Municipal STP	5	YES	YES	YES		
	MICHIGAN						
MI0022152	Adrian WWTP	2	YES	YES	YES	YES	
MI0022225	Armada WWTP		YES				
MI0022284	Bay City WWTP	5	YES	YES	YES	YES	YES
MI0025534	Birmingham CSO	1	YES	YES	YES	YES	YES
MI0021695	Blissfield WWTP	2	YES	YES	YES	YES	
MI0025461	Bloomfield Hills CSO		YES				
MI0048046	Bloomfield Village CSO	1	YES	YES	YES	YES	
MI0025585	Chapaton RTB	1	YES	YES	YES	YES	
MI0021083	Croswell WWTP	1	YES	YES	YES	YES	
MI0048879	Crystal Falls CSO	2	YES	YES	YES	YES	
MI0025542	Dearborn CSO	19	YES	YES	YES	YES	
MI0051811	Dearborn Heights CSO	1	YES	YES	YES		
MI0022802	Detroit WWTP	86	YES	YES	YES	YES	
MI0020401	Dundee WWTP		YES				
MI0022853	East Lansing WWTP	2	YES	YES	YES	YES	
MI0022918	Essexville WWTP	1	YES	YES	YES	YES	YES

NPDES	Facility Name	Number of Outfalls	NMC Required?	LTCP Required?	LTCP Submitted?	LTCP Approved?	LTCP Implemented?
MI0023001	Gladwin WWTP	1	YES	YES	YES	YES	
MI0020800	Grand Ledge WWTP		YES				
MI0026069	Grand Rapids WWTP	10	YES	YES	YES	YES	
MI0026085	Groose Pointe Shores CSO	0	YES				
MI0026077	Grosse Pointe Farms CSO	7	YES				
MI0037273	Grosse Pointe Park CSO		YES				
MI0051837	Inkster/Dearborn Heights CSO	1	YES	YES	YES		
MI0023205	Iron Mountain-Kingsford WWTP	1	YES	YES	YES	YES	YES
MI0023400	Lansing WWTP	30	YES	YES	YES	YES	
MI0051802	Livonia CSO		YES				
MI0020362	Manistee WWTP	4	YES	YES	YES	YES	
MI0023515	Manistique WWTP	1	YES	YES	YES	YES	
MI0025453	Martin RTB	2	YES	YES	YES	YES	
MI0020656	Marysville WWTP	1	YES				
MI0025631	Menominee WWTP	1	YES				
MI0025500	Milk River CSO	1	YES	YES	YES	YES	
MI0023647	Mt. Clemens WWTP	1	YES	YES	YES	YES	
MI0023701	Niles WWTP	8	YES	YES	YES	YES	
MI0043982	North Houghton County W&SA CSO	2	YES	YES	YES	YES	
MI0020214	Norway WWTP	1	YES	YES	YES	YES	
MI0026115	Oakland County SOCSDS 12 Towns RTF	1	YES	YES	YES	YES	
MI0037427	Oakland County-Acacia Park CSO	1	YES	YES	YES	YES	
MI0023833	Port Huron WWTP	14	YES	YES	YES	YES	
MI0051829	Redford Township CSO	1	YES	YES	YES		
MI0028819	River Rouge CSO	1	YES	YES	YES	YES	
MI0023973	Saginaw Township WWTP	0	YES	YES	YES	YES	YES
MI0025577	Saginaw WWTP	7	YES	YES	YES	YES	
MI0024058	Sault Ste Marie WWTP	6	YES	YES	YES	YES	
MI0036072	Southgate/Wyandotte CSO RTF	2	YES	YES	YES	YES	YES
MI0020591	St. Clair WWTP	0	YES	YES	YES	YES	
MI0026735	St. Joseph CSO	5	YES	YES	YES	YES	
MI0021440	Wakefield WWSL	1	YES	YES	YES	YES	
MI0051543	Wayne Co/Dearborn Heights CSO		YES				
MI0051551	Wayne Co/Livonia CSO		YES				
MI0051560	Wayne Co/Livonia/Westland CSO		YES				
MI0051519	Wayne Co/Wayne CSO		YES				

NPDES	Facility Name	Number of Outfalls	NMC Required?	LTCP Required?	LTCP Submitted?	LTCP Approved?	LTCP Implemented?
MI0051497	Wayne Co/Westland CSO		YES				
MI0051501	Wayne Co/Westland/Wayne CSO		YES				
MI0051462	Wayne County/Inkster/ Dearborn Heights CSO	2	YES	YES	YES		
MI0051489	Wayne County/Dearborn Heights CSO	7	YES	YES	YES	YES	
MI0051471	Wayne County/Inkster CSO	10	YES	YES	YES	YES	YES
MI0051535	Wayne County/Redford/ Livonia CSO	8	YES	YES	YES	YES	
MI0021270	Yale WWSL		YES				
MN0046744	MCWS-Minneapolis	8	YES	YES	YES	YES	YES
MN0025470	MCWS-St. Paul	2	YES	YES	YES	YES	YES
MN0024571	Red Wing	1	YES	YES	YES	YES	YES
	OHIO						
OH0020940	Arcanum WWTP	14	YES	YES	YES	YES	
OH0020851	Bluffton WWTP	20	NO	YES	YES	YES	
OH0021491	Bremen	1	YES	YES	NO		
OH0023833	City of Akron	38	YES	YES	YES	NO	
OH0023981	City of Avon Lake	14	YES	YES	YES	NO	
OH0024139	City of Bowling Green	1	YES	YES	NO	YES	
OH0052922	City of Bucyrus	22	YES	YES	YES		
OH0024686	City of Clyde WWTP	3	YES	YES	NO		
OH0025003	City of Elyria WWTP	27	YES	YES	YES	NO	
OH0052744	City of Fostoria	5	YES	YES	YES	YES	
OH0025364	City of Girard WWTP	4	YES	YES	YES	NO	
OH0026069	City of Lima WWTP	19	YES	YES	YES	YES	
OH0026263	City of McComb WWTP	2	YES	YES	NO		
OH0020451	City of Milford WWTP	2	YES	NO	YES	NO	
OH0052604	City of Norwalk	3	YES	YES	YES	NO	
OH0027332	City of Sandusky	15	YES	YES	YES	YES	
OH0023400	City of Wauseon	4	YES	NO	YES	YES	
OH0028118	City of Willard	3	YES	NO		YES	
OH0028223	City of Youngstown WTP	101	YES	YES	NO		
OH0024759	Columbus Grove	4	YES	YES	NO		
OH0024732	Columbus-Jackson Pike	31	YES	YES	YES	NO	
OH0024741	Columbus-Southerly	1	YES	YES	YES	NO	
OH0020664	Crestline WWTP	1	YES	YES			
OH0024899	Defiance	44	YES	YES	YES	NO	
OH0024929	Delphos WWTP	6	YES	YES	YES	NO	
OH0020974	Delta WWTP	9	YES	YES	NO		
OH0022471	Deshler WWTP	7	YES	YES	YES	YES	

NPDES	Facility Name	Number of Outfalls	NMC Required?	LTCP Required?	LTCP Submitted?	LTCP Approved?	LTCP Implemented?
OH0048321	Dunkirk	6	YES	YES	NO		
OH0049999	Eastern Ohio Regional Wastewater Authority	47	YES	YES	NO		
OH0031062	Euclid	18	YES	YES	NO		
OH0025127	Fayette WWTP	15	NO	YES	NO		
OH0025135	Findlay Water Pollution Control Center	18	YES	YES	YES	YES	
OH0025151	Forest WWTP	3	NO	YES	YES	YES	
OH0025160	Fort Recovery WWTP	4	NO	YES	NO		
OH0025291	Fremont WWTP	13	YES	YES	NO		
OH0022578	Green Springs WWTP	1	YES	YES	NO		
OH0105457	Hamilton County Commissioners	215	YES	YES	YES		
OH0021105	Hamler WWTP	6	NO	YES	YES	YES	
OH0025771	Hicksville	5	YES	YES	NO		
OH0025852	Ironton WWTP	9	YES	YES	NO		
OH0026018	Lakewood WWTP	9	YES	YES	NO		
OH0026026	Lancaster WWTP	31	YES	YES	YES	NO	
OH0126268	Lisbon WWTP	9	YES	YES	NO		
OH0058971	Luckey STP	4	YES	NO	YES	YES	
OH0026352	Marion Water Pollution Control	3	YES	YES	YES	NO	
OH0021466	McConnelsville	11	YES	YES	NO		
OH0058408	Metamora	4	YES	YES	YES	YES	
OH0026514	Middleport WWTP	13	YES	YES	NO		
OH0026522	Middletown WWTP	8	YES	YES	YES	NO	
OH0021831	Montpelier WWTP	3	YES	YES	NO		
OH0020893	Napoleon WWTP	3	YES	YES	YES		
OH0026671	Newark WWTP	25	YES	YES	YES	NO	
OH0022110	Newton Falls WWTP	28	YES	YES	YES	YES	
OH0020117	North Baltimore	2	YES	YES	YES	YES	
OH0043991	Northeast Ohio Regional Sewer District	126	YES	YES	YES	NO	
OH0026841	Oak Harbor	9	YES	YES	YES	YES	
OH0023396	Ohio City	2	YES	YES		YES	
OH0021008	Perrysburg Water Pollution Control	4	YES	YES	YES	YES	
OH0021725	Pomeroy	13	YES	YES	NO		
OH0052876	Port Clinton	2	YES	YES	YES	YES	
OH0027197	Portsmouth	10	YES	YES	NO		
OH0022322	Put-In-Bay WWTP	3	YES	YES	NO		
OH0027481	Springfield STP	58	YES	YES	YES	NO	
OH0027511	Steubenville	16	YES	YES	NO		

NPDES	Facility Name	Number of Outfalls	NMC Required?	LTCP Required?	LTCP Submitted?	LTCP Approved?	LTCP Implemented?
OH0052949	Tiffin	30	YES	YES	NO		
OH0027740	Toledo	37	YES	YES	NO		
OH0020214	Toronto WWTP	7	YES	YES	NO		
OH0020001	Upper Sandusky	1	YES	YES	NO	YES	
OH0027910	Van Wert	6	YES	YES	YES	YES	
OH0023884	Village of Ansonia WWTP	2	YES	YES	YES	YES	
OH0020192	Village of Bradford	9	YES	YES	YES	YES	
OH0020559	Village of Caldwell WWTP	22	YES	YES	NO		
OH0029122	Village of Gibsonburg	3	YES	YES	YES	NO	
OH0020486	Village of Greenwich WWTP	10	YES	YES	NO		
OH0020826	Village of Leipsic	1		YES	NO		
OH0094528	Village of Malta	9	YES	YES	NO		
OH0026565	Village of Mingo Junction	6	YES	YES	NO		
OH0020613	Village of New Boston	2	YES	YES			
OH0021148	Village of Pandora WWTP	7	NO	YES	YES	YES	
OH0020338	Village of Paulding	2	YES	YES	YES	YES	
OH0021326	Village of Payne WWTP	2	NO	YES	NO		
OH0020524	Village of Swanton	9	YES	YES	NO		
OH0027952	Wapakoneta WWTP	3	YES	YES	NO		
OH0027987	Warren	4	YES	YES	YES	NO	
OH0028177	Woodsfield WWTP	5	YES	YES	NO		
OH0020591	Woodville	17	YES	YES	NO		
OH0028185	Wooster	3	YES	YES	NO		
OH0028240	Zanesville WWTP	21	YES	YES	NO		
	WISCONSIN						
WI0024767	Milwaukee MSD-Jones Island	120	YES	YES			
WI0025593	Superior Sewage Disposal System	3	NO	YES			

Illinois

Impacts

In 2004, Illinois reported that combined sewer overflows are the potential source of impairment in 331 miles of streams, 250 acres of inland lakes, and 9.7 miles of beaches in the Lake Michigan basin.[104] CSOs rank eighth as a potential source of impairment of Illinois waters. The top three sources include agriculture (3,400 miles), hydromodification (2,299 miles), and municipal point sources (1,416 miles).[105]

Control Strategy

Illinois has had CSO control requirements in regulations since the 1960s.[106] In the early 1980s, to "stretch" grant dollars the state began a program where a CSO community could demonstrate compliance with water quality standards without having to meet all of the treatment requirements.[107] The Illinois Environmental Protection Agency (IEPA) now has treatment standards in place for CSOs under 35 Illinois Administrative Code Section 306.305.[108] The treatment standards presume that CSO communities are achieving water quality standards as long as they are meeting three conditions.[109] First, all dry weather flows and the first flush from storm flows, as determined by IEPA, shall meet applicable effluent standards. Second, additional flows, up to ten times the average dry weather flow for the design year, shall be given a minimum of one hour retention for primary treatment and 15 minutes retention for secondary disinfection. Third, flows in excess of ten times dry weather flows shall be treated, in whole or part, to prevent nuisance conditions, such as the accumulation of sludge deposits, floating debris and solids, and to prevent depression of oxygen levels.[110]

The Illinois Administrative Code allows communities to opt-out of the above requirements, if an exception is granted by the Illinois Pollution Control Board, "based upon water quality effects, actual and potential stream uses, and economic considerations including those of the discharger and those affected by the discharge."[111] Twenty-one municipalities have been granted exceptions including Peoria, Elgin, Aurora, Cairo, and Alton—generally, they have reduced CSO requirements written into their Board orders.[112] Illinois asserts its CSO program is similar in structure to the federal CSO Control Policy because the treatment standard contained in Section 306.305 of the Administrative Code is similar to the presumption approach in the federal policy, while the exception procedure is similar to the demonstration approach.[113] The State claims that most communities are meeting the requirements of Section 306.305, and therefore they are presumed to meet water quality standards as well.[114]

IEPA began putting the requirements for compliance with the NMC in NPDES permits prior to the adoption of the federal CSO Control Policy of 1994.[115] After the policy was adopted, Illinois gave credit for past CSO control efforts, but incorporated requirements for sensitive areas, monitoring and water quality evaluations into NPDES permits so that the efficacy of these controls could be evaluated. Since the incorporation of the federal CSO Control Policy of 1994 into the Clean Water Act, IEPA has been evaluating the past CSO control efforts for each CSO community in the state to

ILLINOIS CSO CONTROL IMPLEMENTATION OVERVIEW

Permits[117]	113	
Outfalls	749	
	YES	NO
NMC Required	113	0
LTCP Required	96	17
LTCP Submitted	73	40
LTCP Approved	68	45

determine if CSO discharges comply with federal CSO control requirements. Thus far, 96 of the 113 CSO communities have been evaluated, 43 are associated with Chicago's on-going Tunnel and Reservoir Plan, 30 are required to develop and implement additional CSO controls through LTCPs, and 23 appear to meet the federal requirements and are being required to implement post-construction monitoring programs. The Agency is reviewing the remaining 17 communities and is in discussion with EPA Region 5 on these.[116]

Implementation and Enforcement of Regulatory Framework

Compliance with the NMC is typically documented in Operation and Maintenance Plans or Municipal Compliance Plans produced by the communities.[118] All CSO communities have permit requirements for the six minimum measures identified in the EPA's 1989 National CSO Strategy; notices were issued in 1994 stating that the additional three measures would be required. Permits issued since 1994 include requirements for all of the NMC.[119]

Public Involvement

IEPA requires each CSO permittee to review and hold a public meeting on their CSO Operational and Maintenance Plan, pollution prevention activities, public notification plan, and, following construction of the LTCP, on the post-construction program. Additional public meetings are held on LTCPs where the state is involved in financing any portion of the LTCP.

The Metropolitan Water Reclamation District of Chicago has developed a public notification program for combined sewer overflows into the Chicago area waterways, in accordance with Special Condition 10.12 of the recently reissued NPDES Permits for the North Side, Stickney, and Calumet Water Reclamation Plants.[120] The District solicited comments and feedback from the affected public in the development of the CSO Public Notification Plan.[121] Consistent with the Plan, a Use Attainability Analysis is currently underway for the Chicago Area Waterway System.

Chicago's Major Infrastructure Program

The Metropolitan Water Reclamation District of Chicago's ongoing Tunnel and Reservoir Plan (TARP) Project was implemented to address the CSO problem by providing holding capacity for 18 billion gallons of combined sewage in its tunnels and reservoirs until it can to be pumped to the water reclamation plant for full treatment. TARP is the LTCP for 43 CSO

permittees or about 38% of Illinois CSO permittees and involves 399 currently-permitted CSO outfalls out of the 749 in the state. Although TARP is scheduled for completion in 2015, significant benefits have already been realized. It is estimated that between 1985 and 2001, more than 578 billion gallons of CSOs have been captured and conveyed to the water reclamation plants for full treatment. Furthermore, the waterways have seen an increase in both the fish population and number of species present; basement and street flooding have been reduced; and there are fewer floodwater discharges to Lake Michigan. To date, more than $2 billion has been spent on the project.[122]

Enforcement Data

The enforcement situation in Illinois is different from other Region 5 states in that IEPA has no authority under existing state statutes to issue administrative orders or to collect administrative penalties.[124] IEPA has tried to have the laws changed to provide administrative order authority to the Agency, but so far these efforts have not been supported or enacted by the General Assembly.

ILLINOIS, NUMBER OF INSPECTIONS (by year)[123]

2000	2001	2002	2003	2004
3	1	12	9	26

ILLINOIS

Federal CSO Judicial Actions

Community	Effective Date
Rock Island WWTP	8/21/2003
Metropolis	n/a
Paris	n/a

Federal CSO Administrative Orders

Community	Effective Date
City of Rock Island	2/13/1998
City of Lawrenceville	9/30/2002

Federal CSO Administrative Penalty Orders (none)

State CSO Judicial Actions (none)

State CSO Administrative Orders (N/A)

State CSO Administrative Penalty Orders (N/A)

Indiana

Impacts

CSOs account for the impairment of 286 miles of streams[125] and 30 acres of lakes in Indiana.[126] Many of the sources impairing Indiana's lakes and reservoirs are unknown, therefore, CSOs may have greater impacts than reported. Indiana has not been able to identify the source of impairment for 2,190 miles of its streams and 64,196 acres of its lakes and reservoirs.

Areas of Concern

Indiana has one Area of Concern (AOC), the Grand Calumet River, which flows into Lake Michigan after passing through the heavily industrialized cities of Gary, East Chicago and Hammond.[127] The AOC begins 15 miles south of downtown Chicago and includes the east branch of the river, a small segment of the west branch and the Indiana Harbor and Ship Canal. 90% of the Grand Calumet's one billion gallons of daily flow originates as municipal and industrial effluent, cooling and process water, and storm water overflows. Fifteen CSOs contribute untreated municipal waste, including conventional and toxic pollutants, to the AOC. Annually, CSO outfalls discharge an estimated eleven billion gallons of raw wastewater into the harbor and river. Approximately 57% of the annual CSO volume is discharged within eight miles of Lake Michigan, resulting in nearshore fecal coliform contamination.

Control Strategy

In May 1996, the Indiana Department of Environmental Management (IDEM) finalized its strategy for bringing CSOs into compliance by 2005.[128] The main purpose of the Final CSO Control Strategy was to modify Indiana's Combined Sewer Overflow Strategy, issued in 1991, to reflect changes made in EPA's National CSO Control Strategy.[129] The goals of the Final CSO Strategy are to be achieved through the implementation of phased controls found in the *Long-term Control Plan and Use Attainability Analysis Guidance, (revised)*.[130] IDEM made its strategy consistent with CSO control law by adding three additional minimum control requirements and by adding a requirement to develop a LTCP.[131] Implementation of Indiana's CSO strategy is proceeding in two phases.[132] Phase 1 focuses on implementation of the NMC in order to maximize the CSO control capability of a facility's existing infrastructure. Phase 2 generally requires capital expenditures to meet water quality standards if Phase 1 proves to be inadequate.

In Phase 1, CSO permittees are required to demonstrate implementation of the NMC. Phase 1 also requires CSO permittees to review and revise their sewer use ordinances to prevent additional CSOs, and to promote future designs to help minimize the impact of wet weather events. Finally, CSO permittees are required to establish a protocol for assessing CSO discharges and reporting on the impact of both CSOs and the efficacy of CSO controls on receiving streams.[133]

Phase 2 requires CSO permittees to establish a LTCP that incorporates water quality based effluent limits. The LTCP is required to have affordable and enforceable water quality based goals, including control technique alternatives developed with public participation. Phase 2 plans could require implementation schedules of ten to fifteen years. Phase 2's overall goal is to either reduce outfalls to a maximum of four per year or capture 85% of all outfalls by volume.[134]

Implementation and Enforcement of Regulatory Framework

Indiana communities report compliance with the first eight NMC through submission and approval of Operation and Maintenance Plans. The ninth NMC, the requirement to monitor and characterize impacts, is satisfied through Stream Reach Characterization and Evaluation Reports.[136]

Public Involvement

On May 9, 2003, the new Indiana Combined Sewer Overflow Public Notification Rules took effect.[137] The stated purpose of these rules is to educate the public on the impact of contact with CSOs, alert the public that is affected by CSOs, enable the public to protect themselves from CSO exposure, and to complement a community's CSO program with current NPDES requirements. The CSO Public Notification Rule requires:

- A CSO notification procedure to be submitted to IDEM by November 9, 2003;
- The initiation of notification procedures starting November 9, 2003;
- Implementation of the full notification program by February 9, 2004;
- Public notice to be submitted to local newspapers in March 2004, and every March thereafter, to provide media sources, affected public and interested persons opportunities to receive CSO notifications;
- Notice to be provided when a CSO is discharging or flow is imminent based on predicted or actual precipitation events;
- Revision of Combined Sewer Overflow Operational Plans to include CSO Notification Procedures;
- Provision of proper signage at CSO locations including contact information and, if available, a web site address; and
- Evaluation of access points (public and private) to affected waters to determine if signage or other notification practices are necessary.[138]

IDEM provides some information on their website on compliance with public notification requirements, as well as reporting deadlines and enforcement of the NMC and LTCP.[139]

INDIANA CSO CONTROL IMPLEMENTATION OVERVIEW

Permits[135]	107	
Outfalls	829	
	YES	NO
NMC Required	107	0
LTCP Required	107	0
LTCP Submitted	98	9
LTCP Approved	17	90

Note: Of the 107 permittees required to implement NMC, 102 of those have approved NMC operational plans and the remaining 5 permittees are working with IDEM to ensure that their plans are adequate. Of the LTCP approved, 13 are certain and 4 are at the end of the approval process, awaiting final sign-off. EIP conversation with IDEM representative, April 27, 2005.

LTCP

On February 10, 2005, the Indiana Senate introduced Bill No. 620, and the Governor signed the bill into law on April 21, 2005. This law amends the terms of certain variances from water quality standards and of variance renewals. It establishes a CSO wet weather use designation for waters affected by receiving combined sewer overflows. It also requires the department of environmental management, upon request of an NPDES permittee, to establish a schedule of compliance to meet water quality based requirements during development, approval, and implementation of a long term control plan. Although it appears to weaken CSO requirements, some citizen's groups are supportive of the law because they believe it will incentivize IDEM to approve the backlog of 90 LTCP it has received but not yet approved.[140]

Creative Local Actions

The small town of Akron, IN developed an innovative, inexpensive, and effective solution to the problem of a CSO polluting nearby Town Lake. The town installed a Continuous Deflective Separation unit to remove the floatables and larger suspended solids from the CSO, then used some low ground the city already owned to create a wetlands area to address the biological treatment of the CSO. The entire project cost just $700,000. Separating the sanitary and storm sewers in the town would have cost an estimated $4 million, while enlarging the treatment plant would have cost $1.1 million.[141]

Enforcement Data

INDIANA, NUMBER OF INSPECTIONS (by year)[142]

2000	2001	2002	2003	2004
0	0	6	0	25

INDIANA

Federal CSO Judicial Actions

Community	Effective Date
City of Boonville	4/16/1997; amended 8/13/2001
Hammond	4/23/1999
Anderson	7/18/2002
Madison	n/a

Federal CSO Administrative Orders

Community	Effective Date
Fort Wayne	1995, 1996
Bluffton Utilities	3/19/1998
Bluffton POTW	6/6/2000

Federal CSO Administrative Penalty Orders (none)

State CSO Judicial Actions (none)

State CSO Administrative Orders

Community	Effective Date
Town of Ridgeville	9/11/2002 (amended)
City of Boonville	11/25/2002
Town of Centerville	11/25/2002
City of New Castle	1/27/2003
Town of Summitville	1/30/2003
Redkey	5/14/2003
City of Bluffton	6/26/2003
Akron	10/22/2003
City of Ligonier	11/04/2004
Mt. Vernon	11/10/2004
City of Elwood	2/08/2005

State CSO Administrative Penalty Orders

Community	Effective Date	Penalty Amount
Town of Ridgeville	10/15/2001	$750
City of Sullivan	1/22/2003	$2,625
City of New Castle	1/29/2003	$5,025
Town of Summittville	1/29/2003	$575
City of Bluffton	6/24/2003	$3,370
Town of Remington	6/6/2003	$825
City of Ligonier	11/04/2004	$6,450

Source: FOIA Correspondence and IDEM CSO tracking[143]

Michigan

Impacts

In Michigan's most recent water quality report, which includes assessments from 1997 to 2003, CSOs ranked seventh as a contributing source to the impairment of the state's rivers, impairing 321 miles.[144] Hydromodification impaired 3,094 river miles, inconclusive sources (including atmospheric sources) impaired 2,136 miles, and agriculture impaired 1,655 miles.[145] CSOs also impaired 930 acres of lakes. These numbers seem surprisingly low given the volume of sewage that has been released by CSOs in Michigan. According to the Michigan Department of Environment Quality's 2002-2003 Annual Report on CSOs, there were 384 CSO events reported for a total volume of 23,802.15 million gallons (i.e., approximately 23 billion, 802 million gallons) from January 1, 2002 through December 31, 2002. "For the calendar year 2003, there were 397 reported events for a total CSO volume of 19,354.03 million gallons (19 billion, 354 million gallons)."[146] Some of these overflows may have been partially treated.[147]

Areas of Concern

Michigan has fourteen AOCs, including five in the Upper Peninsula (Deer and Torch Lakes and the Manistique, Menominee and St. Mary's Rivers) and nine in southern Michigan (Muskegon and White Lakes and the Clinton, Detroit, Kalamazoo, Raisin, Rouge, Saginaw, which includes the bay, and St. Clair Rivers).[148] CSOs discharge into all of these waterbodies.

Control Strategy

Michigan initiated a CSO control program in 1988 and in 1994 incorporated the requirements of the federal CSO Control Policy into that state program. All municipalities with CSOs have completed the necessary interim control measures and have developed LTCP. "In Michigan, these LTCP are contained in various legal documents including state issued NPDES permits, Administrative Consent Orders, Abatement Orders, and other types of court orders."[149] Michigan requires that communities either eliminate CSOs (via sewer separation) or provide "adequate treatment." Adequate treatment is defined as retention and full treatment of the one-year, one-hour design storm; primary treatment (i.e. 30 minute detention time) of the ten-year, one-hour design storm; or limited treatment of flows above the ten-year/one-hour storm flows.[150] Consistent with Michigan's approach to CSO control, an allowable alternate method for establishing that adequate treatment is provided for CSO discharges is the direct evaluation of "in-stream" water quality impacts based upon a determination of compliance with the Michigan Water Quality Standards.

Michigan Public Act 451 imposes mandatory notification and reporting requirements on both the person responsible for the discharging sewer system and the state department of environmental quality.[151] Not more than 24 hours after an overflow begins, the person responsible for the sewer system must notify the Michigan Department of

Environmental Quality, the local health departments, and a daily newspaper of general circulation in the county or counties that contain waters that may be affected by the discharge. The Department of Environmental Quality also must post notification of an overflow on its website "promptly."[152] At the conclusion of the discharge, the municipality must provide the following information to the state in writing: the volume and quality of the discharge, the waters and/or land receiving the discharge, the reason for the discharge, the start and end times of the discharge, and verification of the municipality's compliance status with the requirements of its NPDES permit and other applicable laws.[153] Michigan law also requires permittees to test the affected waters each time a discharge occurs, in order to assess the risk to the public created by the CSO.

While Michigan's reporting requirements are the most comprehensive of the Region 5 states, the state legislature has proposed amendments to Public Act 451 to further enhance the quality of wet weather reporting. Repeatedly over the past three years the amending legislation has died in committee, but in January, 2005, the latest version, Senate Bill No. 30 was introduced. The proposed legislation requires that each person responsible for a sewer system provide an annual report of all the discharges reported throughout the year to each municipality affected by the discharge.[154]

Implementation and Enforcement of Regulatory Framework

Rouge River Watershed

The Rouge River National Wet Weather Demonstration Project is a good example of successful CSO control, achieved through a well funded effort, and coordinated between local, state and national entities. The Rouge River Watershed comprises 467 square miles, including parts of three counties, forty-eight municipalities and 1.5 million people.[156] Located in southeastern Michigan, the watershed contains the most densely populated and urbanized land area in the state, including major portions of Detroit.[157] The river empties into the Detroit River, which connects Lakes St. Clair and Erie.

To clean up the Rouge River, a Remedial Action Plan was developed by the Michigan Department of Environmental Quality (MDEQ), in partnership with communities, citizens, businesses, industries and local governments. Wayne County is spearheading the plan's implementation via the Rouge River National Wet Weather Demonstration Project (Rouge Project) with funding from EPA and local communities.[158] A primary component of the Rouge Project is the control of the 168 CSOs located within a tributary service area of approximately 59,300 acres.[159] The primary objective of the Rouge Project was to separate and treat one-third of the watershed's CSOs by 1997, with signed permits in place to

MICHIGAN CSO CONTROL IMPLEMENTATION OVERVIEW

Permits[155]	46	
Outfalls	262	
	YES	NO
NMC Required?	46	0
LTCP Required?	42	4
LTCP Submitted?	42	4
LTCP Approved?	38	8

control the remaining CSOs by 2005.[160] According to the Rouge Project website:

> The Rouge River Wet Weather Demonstration Program has been successful in identifying efficient and cost effective CSO basins for control of combined sewer overflows. The wisdom of controlling CSOs at remote locations versus trying to convey all of the combined sewage at one time to the central treatment plant was confirmed. Combined sewer overflow pollutant loads to the river have been cut by 90 to 100 percent during most wet weather events. Demonstration basins, built to a smaller size than what would have been required by presumptive criteria, have reduced release of pollution to the river with excellent environmental protection results. Protection of human health, elimination of the discharge of raw sewage, and meeting water quality standards have been achieved, with the exception of TRC, which is still being investigated. Phased implementation has allowed lessons learned to be used in subsequent phases, affording greater efficiencies in developing and implementing controls for the remaining CSOs with a very large savings in capital expenditures. The completed basins are controlling overflows at a rate of approximately 4 billion gallons per year with outstanding water quality and aesthetic improvements and increased recreational usage in the Rouge River.[161]

Saginaw River and Bay

Prior to implementing CSO controls, Saginaw's 36 CSO outfalls discharged nearly 3 billion gallons of combined sewage each year into the Saginaw River.[162] As of 2001, Saginaw had spent nearly $100 million on capital improvements in the combined sewer system. These expenditures have resulted in the elimination of 20 of the 36 CSOs and a 75% reduction in the amount of combined sewage discharged from the combined sewer system each year. The Saginaw River is now characterized as one of the top walleye fisheries in the country.

St. Joseph River

During 2002, St. Joseph had eleven CSO discharges, which dumped seven million gallons of raw and partially-treated sewage into the river.[163] Niles had three outfalls in 2002, which discharged eight million gallons of waste into the St. Joseph River.[164] To combat the river's increased burden of ***E. coli,*** Michigan and Indiana have begun a joint study of the impacts of CSO outfalls on the St. Joseph River.[165] Both states plan to follow implementation strategies to keep bacterial pollution out of the lower St. Joseph River.

St. Clair River

Water quality regulators in Michigan are working with their Canadian counterparts to finance a $210 million combined sewer separation initiative in Port Huron and upgrade the Sarnia Sewage Treatment Plant in Ontario.[166] In the mid-1980s, the St. Clair River experienced over 100 CSO discharges annually. In recent years, the occurrence of CSO outfalls has dropped to ten or fewer per year. By the end of 2001, five CSOs had been eliminated, reducing CSO discharge by 162 million gallons per year. The municipalities in the watershed on the Michigan side of the river are all under corrective action orders through the NPDES permit program to eliminate all CSOs and SSOs. Marysville, St. Clair and Marine City have separated their sanitary and storm sewer systems, or are in the process of implementing CSO control plans. Port Huron is about 70% complete with their sewer separation project ahead of schedule. Sarnia has drafted a plan for installing secondary sewage treatment and eliminating CSOs.[167]

Enforcement Data

MICHIGAN, NUMBER OF INSPECTIONS (BY YEAR)[168]

2000	2001	2002	2003	2004
0	0	0	0	0

MICHIGAN

Federal CSO Judicial Actions

Community	Effective Date
Menominee	4/21/1988
Wayne County	1994

Federal CSO Administrative Orders (none)

Federal CSO Administrative Penalty Orders (none)

State CSO Judicial Actions

Community	Effective Date
City of Marlette, 88-61963-CE	6/15/2001

State CSO Administrative Orders (none)

State CSO Administrative Penalty Orders

Community	Effective Date
City of Gladwin, ACO-SW02-026	8/6/2002
City of East Lansing, AFO-SW99-002	6/29/1999
City of Jackson, AFO-SW99-002b	9/30/1999

Source: FOIA Correspondence

Minnesota

Impacts

Like Ohio, the Minnesota Pollution Control Agency identifies whether or not there is an impairment of a water body, but does not indicate a specific source of the impairment. The CSO outfalls remaining in Minnesota discharge to the Mississippi River, not to any of the Great Lakes. According to MPCA, "it would be hard to attribute any impairment in the Metro stretch of the Mississippi River to CSOs" because there have been only a few overflows in the last few years.[169]

Control Strategy

Minnesota has required sewer separation in permits since the 1970s. Permit conditions are considered to meet the requirements of the NMC, and separation is the LTCP.[170] In 1993, the City of Red Wing began a program to separate all remaining combined sewers within 10 years.[171] Red Wing completed sewer separation in late 2004 and no longer has CSO outfalls.[172] Minnesota only has 2 CSO permits and nine permitted outfalls remaining, so the state develops controls on a site-specific basis for the 2 permittees, Metropolitan Council/Minneapolis and Metropolitan Council/St. Paul.[173]

In 1933 a joint sanitary district for the cities of Minneapolis and St. Paul was created.[174] The cities began separating their sewers in the late-1950s as part of ongoing capital improvement programs. The programs included funding to construct separate storm drains as city streets were paved.[175] These projects did not progress quickly enough, however, and in 1984, St. Paul engineers estimated that an annual average of 4.6 billion gallons of untreated sewage and stormwater from the metro area overflowed into the 26 miles of the Mississippi River running between the Twin Cities. Discharges were occurring, on average, once every three days.[176]

St. Paul developed a Comprehensive Sewer Plan for stormwater management in 1984.[177] In 1986 Minneapolis began an accelerated sewer separation program, now referred to as Phase 1 of the Minneapolis Combined Sewer Overflow Program.[178] In 1986, the municipal governments of Minneapolis and St. Paul began developing a comprehensive CSO control program. The Metropolitan Council Environmental Services (MCES), the municipal sanitary sewer district serving the metro area, and the Metropolitan Council, the regional planning authority, prepared a draft plan for mitigating the impacts of CSOs in Minneapolis, South St. Paul and St. Paul. Final recommendations from the study included construction of new regional sanitary interceptors to ensure capacity and acceleration of sewer separation projects underway in the cities.[179]

MINNESOTA CSO CONTROL IMPLEMENTATION OVERVIEW

Permits[180]	2	
Outfalls	9	
	YES	NO
NMC Required?	2	0
LTCP Required?	2	0
LTCP Submitted?	2	0
LTCP Approved?	2	0

Implementation and Enforcement of Regulatory Framework

In early 1996, the Twin Cities had substantially completed their ten-year CSO elimination plan.[181] In Minneapolis, more than 95% of the city's combined sewers were separated, enabling the elimination of all except eight of the original thirty-four overflow regulators.[182] The remaining separation areas are being addressed as part of a five-year plan of accelerated scheduling of street improvements and flood mitigation projects, focused on eliminating CSOs.[183] As part of its sewer separation program, St. Paul installed 189 miles of storm sewers and 11.9 miles of sanitary sewers, paved 168 miles of oiled streets, and disconnected rainleaders at 21,900 residential properties.[184] The two CSOs in St. Paul have not overflowed in the past five years.[185]

To complete CSO abatement, Minneapolis began implementation of Phase 2 of the Combined Sewer Overflow Program in 2003. The five year program strives to eliminate the remaining CSOs, although the City notes that "[t]he elimination of overflow structures may not be feasible in every case without causing a public health or safety hazard."[186] Key components of the plan include:[187]

- Passage of the "Rainleader Ordinance" to identify and complete disconnection citywide of all private sources of clear water inflow to the sanitary sewer system;[188]
- Commitment to significant investment in capital improvements and maintenance repairs, including sewer separation and sanitary main restoration projects; and,
- Initiation of a public education campaign to educate Minneapolis residents and business owners about the CSO problem, solutions, the city's response and how they can help.

Minnesota has spent nearly $110 million in state grants, $31 million in federal grants, and more than $160 million in city funding on sewer separation projects.[189] As a result, the state has had notable success in eliminating CSO discharges. According to a representative from the state, in 1986 there were 90 outfall locations in 4 cities. Today 81 outfalls have been eliminated and 9 remain. In 2003, only 2 of those outfalls actually had an overflow, and in 2004 only 5 of them had overflows.[190]

Enforcement Data

According to a representative of the Minnesota Department of Natural Resources, no CSO enforcement actions were taken or needed in Minnesota because the permittees have implemented the nine minimum controls and a long term control plan of sewer separation.[192]

MINNESOTA, NUMBER OF INSPECTIONS (by year)[191]

2000	2001	2002	2003	2004
0	0	0	0	0

MINNESOTA

Federal CSO Judicial Actions (none)

Federal CSO Administrative Orders (none)

Federal CSO Administrative Penalty Orders (none)

State CSO Judicial Actions (none)

State CSO Administrative Orders (none)

State CSO Administrative Penalty Orders (none)

Ohio

Impacts

In Ohio's *2004 Integrated Water Quality Monitoring and Assessment Report,* CSOs are listed as "High Magnitude Sources" of impairment in 32 of the state's 331 Watershed Assessment Units. [193] Information on the specific causes and sources of impairment of individual waterbodies or watersheds is available in Ohio EPA's *Biological and Water Quality Reports.*[194] These reports detail the results of interdisciplinary biological and water quality surveys, and the impacts of CSOs are considered as part of this monitoring and evaluation process.

Areas of Concern

In Ohio, the Ashtabula, Black, Cuyahoga and Maumee Rivers are listed as AOCs.[195] CSOs discharge into each of these waterbodies. The affected rivers and watersheds suffer from a number of impairments including restrictions on fish and wildlife consumption; degradation of fish and wildlife populations; fish tumors or other deformities; bird or animal deformities as well as reproduction problems; eutrophication or undesirable algae; restrictions on drinking water consumption; drinking water taste and odor problems; and beach closings.[196]

Control Strategy

Ohio updated its CSO strategy in 1995. Like Indiana, Ohio's previous state strategy only required six minimum control measures.[197] The goals of Ohio's revised CSO strategy were to control outfalls so that they would not significantly cause or contribute to violations of water quality standards, to minimize the total loading of pollutants discharged during wet weather, and to eliminate CSOs when cost effective.[198] Major provisions of Ohio's 1995 CSO Strategy required communities to (1) develop and implement a Combined Sewer System Operational Plan that included documentation on implementation of the NMC, (2) maximize the treatment of wet weather flows at wastewater plants by conducting wet weather stress testing, and (3) address sanitary sewer extensions that occur up pipe of CSOs.[199] Since the state implemented its strategy in March 1995, at least 13 communities have eliminated their outfalls.[200]

Ohio EPA implements CSO controls through provisions in NPDES permits and uses orders and consent agreements when appropriate. Ohio's focus has been on ensuring that all of the CSO permits require implementation of the NMC and

that all communities are required to develop a long-term control plan.[201]

The Ohio River Valley Water Sanitation Commission (ORSANCO) has adopted its own CSO strategy for facilities affecting the Ohio River.[202] The primary objectives of the strategy are to identify monitoring and assessment techniques to detect the impacts of wet weather discharges on the river, to determine CSO impacts on Ohio River water quality, to determine if the nine minimum control are adequate to meet water quality standards on the river and its tributaries, and to document water quality improvements resulting from CSO controls. Ohio EPA consults with ORSANCO and Ohio River CSO communities to address issues relating to monitoring and assessing CSO impacts on the Ohio River in a manner consistent with the ORSANCO strategy. Ultimately, however, Ohio EPA uses its CSO strategy and the NPDES permit program to require monitoring and to implement CSO controls.

Implementation and Enforcement of Regulatory Framework

OHIO CSO CONTROL IMPLEMENTATION OVERVIEW

Permits[203]	88	
Outfalls	1,375	
	YES	NO
NMC Required	88	0
LTCP Required	86	2
LTCP Submitted	43	45
LTCP Approved	26	62

Note: LTCP are required in permits or enforcement mechanisms for 86 permittees. The 2 permittees not required to submit LTCP have done so anyway.

Enforcement Data

OHIO, NUMBER OF INSPECTIONS (by year)[204]

2000	2001	2002	2003	2004
0	0	3	1	14

OHIO

Federal CSO Judicial Actions

Community	Effective Date
Bedford	9/30/1985
Wellston	10/13/1987
City of North Olmsted	7/31/1991
Portsmouth	1992
Port Clinton	9/8/1999
Youngstown	3/5/2002
Toledo	12/19/2002
Cincinnati Metropolitan Sewer District	n/a
City of Akron	n/a

Federal CSO Administrative Orders

Community	Effective Date
Port Clinton	1995
Columbus WWTP	7/17/1998

Federal CSO Administrative Penalty Orders (none)

State CSO Judicial Actions

Community	Effective Date
Eastern Ohio Regional Wastewater Authority	1/23/1997
Village of New Waterford	3/1/1997
City of Sandusky	12/22/1997
City of Steubenville	5/27/1998
City of Girard	10/13/1999
City of Bucyrus	4/3/2002
City of Ashtabula	6/26/2003
City of Columbus	9/17/2004

State CSO Administrative Orders

Community	Effective Date
Village of Pandora	7/25/2003

State CSO Administrative Penalty Orders

Community	Effective Date	Penalty Amount
Village of Forest	8/15/2001	$5,000
Village of Ansonia	9/6/2002	$10,000
City of Delphos	10/30/2003	$11,189

Wisconsin

Impacts

The Wisconsin Department of Natural Resources' 2002 Water Quality Assessment Report only includes CSOs as a source of impairment of inland lakes. CSOs ranked 16th among the sources of impairment, impairing 2,965 acres of lakes. The top three sources were agriculture (50,705 acres), crop-related sources (48,089 acres), and hydromodification (39,884 acres).[205] While it appears from this limited data that CSOs make a relatively minor contribution to the impairment of Wisconsin's waters, historically there have been large volumes of overflows from the Milwaukee Metropolitan Sewerage District (MMSD). MMSD maintains an in-line storage system, also known as the "Deep Tunnel," which is supposed to have reduced the release of more than 37 million gallons of untreated CSOs and SSOs from entering waterways between 1994 and 2002.[206] The Mayor of Milwaukee commissioned an independent audit of the MMSD, released October 1, 2004, to explore the causes of the large volume of sewer overflows in May 2004, as well as other periods of wet weather.[207] Since the Deep Tunnel became operational in 1994, MMSD has reported 24 tunnel-related CSO events, (see table below).[208]

Areas of Concern

Wisconsin's AOCs include the Milwaukee estuary, Lower Green Bay and Fox Rivers, Menominee River and Sheboygan River.[210] The Milwaukee estuary is particularly hard-hit by lands that drain directly to the AOC via storm sewers and combined sewer systems. This relatively small drainage area contributes disproportionately large amounts of pollutants associated with urban runoff. The AOC acts as both a source of pollution to Lake Michigan and as a sink for pollutants generated throughout the watershed.

Summary of Deep Tunnel-Related Overflows Recorded by MMSD[209]

YEAR	Number of Reported CSOs	Volume (MG)
1994	1	171
1995	1	773
1996	1	675
1997	2	1,983
1998	2	629
1999	6	4,106
2000	5	3,490
2001	3	464
2002	2	440
2003	0	0
2004	1	4,141
TOTAL	24	16,872

Control Strategy

Wisconsin has 2 CSO permittees, Superior and Milwaukee, and 123 permitted CSO outfalls.[211] Through the joint efforts of Wisconsin communities, the Department of Natural Resources, and predecessor agencies, there are only three combined sewer systems remaining in Wisconsin serving portions of the City of Superior, the City of Milwaukee, and the Village of Shorewood.[212] The Superior CSOs discharge to Lake Superior, while the Milwaukee, CSOs discharge to Lake Michigan at points north of Chicago.[213]

The City of Superior operates a satellite treatment facility for combined wastewater. The limits in the permit are reflective of secondary treatment requirements. The City recently received a special appropriation to evaluate its sewer system, including its combined portions, which is currently underway.[214]

MMSD has jurisdiction over the Milwaukee-area CSO outfalls. Milwaukee claims it has a state of the art system, with very low levels of SSOs and CSOs, compared to other metropolitan areas in the U.S. with more than one million people.[215] MMSD is a state-chartered, government agency providing wastewater services for 28 municipalities in a 420 square-mile area. The service area includes all cities and villages in Milwaukee County (except the City of South Milwaukee), and all or part of 10 municipalities in the surrounding counties of Waukesha, Ozaukee, Racine and Washington.[216] In 1998, MMSD signed the largest private wastewater service agreement in the U.S., contracting with United Water for the operation of, among other things, the District's two wastewater treatment plants, regional sewage collection pipes, and the Deep Tunnel.[217]

After passage of the 1972 amendments to the Clean Water Act, the Wisconsin Department of Natural Resources ordered MMSD to reduce the amount of sewage discharged into Milwaukee-area waterways. In 1977, MMSD created its Water Pollution Abatement Program, "a comprehensive, multi-year sewer improvement program that was designed to virtually eliminate sanitary sewer overflows and to greatly reduce combined sewers overflows."[218] The program would eventually cost $2.3 billion and provided for upgrading the District's sewage treatment plants, improving and replacing the existing sewage conveyance system, and selecting an alternative to discharging sewage overflows into area waterways.[219]

To accomplish the last provision, "the Deep Tunnel System emerged as the best solution to overflow problems because it fulfilled two functions simultaneously: storing excess wastewater until it could be treated, and then conveying the wastewater to the treatment plant."[220] The Deep Tunnel is officially known as the Inline Storage System, because it accepts the excess sewage and stormwater along a line of overflow points.[221] The $716 million Deep Tunnel became operational in 1994, having taken two years to plan and nine years to build.[222] The Deep Tunnel System is 19.4 miles long and can hold up to 405 million gallons of wastewater.[223] The tunnels range in diameter from 17 to 32 feet, and are 275 to 325 feet underground.[224]

Before 1994, MMSD had reported an average of fifty overflows annually. At the time of construction, the Deep Tunnel was expected to significantly reduce combined sewer overflows by allowing an average of only 1.4 CSOs per year, while eliminating sanitary sewer overflows. [225] In early 2004, MMSD received considerable media attention when 4.6 billion gallons of overflows were released, mostly from CSOs, over a two week period.[226] The Mayor of Milwaukee commissioned the independent audit of MMSD after the events. The report concluded that the Deep Tunnel falls short of public expectations for a very expensive project, however, it does appear to be performing close to the technical objectives established

during the design of the project.[227] "MMSD records indicate that the annual average for the 10 year operational history of the tunnel (1994 through 2003) is approximately 2.4 CSOs per year…This includes a yearly high of 6 and a low of zero."[228]

Implementation and Enforcement of Regulatory Framework

Wisconsin's permittees claim to have satisfied the NMC.[230] According to a representative from Superior's Department of Public Works, Wastewater Treatment Division, Superior has actually exceeded the requirements of the NMC and LTCP through their program of CSO control. The city has no untreated CSOs; most are captured and receive at least some level of treatment so that they meet the numerical limitations required by their NPDES permit.

Another tool used by Wisconsin to address wastewater overflows is the Compliance Maintenance Annual Report (CMAR). "The CMAR is a self-evaluation tool that promotes the owner's awareness and responsibility for wastewater collection and treatment needs, measures the performance of a wastewater treatment works during a calendar year, and assesses its level of compliance with permit requirements."[231] While it would seem to be an excellent mechanism for ensuring compliance with the monitoring and assessment requirements of the NMC and LTCP, CMAR only requires reporting of SSOs, not CSOs.

WISCONSIN CSO CONTROL IMPLEMENTATION OVERVIEW

Permits[229]	2	
Outfalls	123	
	YES	NO
NMC Required	2	0
LTCP Required	2	0
LTCP Submitted	2	0
LTCP Approved	2	0

Enforcement Data

WISCONSIN, NUMBER OF INSPECTIONS (by year)[232]

2000	2001	2002	2003	2004
0	0	0	0	1

WISCONSIN

Federal CSO Judicial Actions (none)

Federal CSO Administrative Orders (none)

Federal CSO Administrative Penalty Orders (none)

State CSO Judicial Actions (none)

State CSO Administrative Orders (none)

State CSO Administrative Penalty Orders (none)

NOTES

[1] *Report to Congress: Impacts and Control of CSOs and SSOs, April 26, 2004,* EPA 833-R-04-001, at 1-2, *available at* http://cfpub.epa.gov/npdes/cso/cpolicy_report2004.cfm (last updated Aug. 25, 2004), [hereinafter 2004 *Report to Congress*].

[2] *Id.*

[3] *See, e.g.,* the history of the development of the water pollution control plant of Defiance, Ohio for an interesting overview of the city's transition from the use of open canals in the eighteenth century to its current combined sewer system. *Available at* http://www.cityofdefiance.com/WPC/index.htm (last visited Apr. 7, 2005).

[4] 2004 Report to Congress at 4-13.

[5] *Id.* at 4-18.

[6] *See* CWA § 402(q)(1), 33 U.S.C. § 1342(q)(1) (2003) (stating CSO discharge permits must conform to EPA Combined Sewer Overflow Control Policy, which prohibits dry weather discharges).

[7] *See Combined Sewer Overflow (CSO) & Sanitary Sewer Overflow (SSO) Annual Report* (July 2000—December 2001) at CSO-23-CSO-24, MDEQ (2001), *available at* http://www.deq.state.mi.us/documents/deq-swq-csossoreport01.pdf (last visited Apr. 7, 2005).

[8] *See* Annual Climatological Summary for Detroit-2001, National Weather Service Detroit/Pontiac, (January 23, 2002), *available at* http://www.crh.noaa.gov/dtx/dtw_final_2001.htm (last visited Apr. 7, 2005).

[9] *2004 Report to Congress* at 4-13.

[10] National Data: *2004 Report to Congress.* Region 5 Data: FOIA Correspondence.

[11] *Id.*

[12] *2004 Report to Congress* at 5-2.

[13] *Wastewater Management: Controlling and Abating Combined Sewer Overflows,* Office of Inspector General, Report No. 2002-P-00012 (August 26, 2002), at 2, *available at* http://www.rougeriver.com/OIG.pdf (last visited Apr. 7, 2005).

[14] *2004 Report to Congress* at 5-2.

[15] *Id.* at 6-2.

[16] *Id.* at 6-5.

[17] *Id.*

[18] *Id.* at 5-6.

[19] 2002 data, *Illinois Water Quality Report,* 2002 IEPA/BOW/02-006 (July, 2002), *available at* www.epa.state.il.us/water/water-quality/index.html (last visited April 7, 2005). 2004 data, *Illinois Water Quality Report 2004*, IEPA/BOW/04-006, 49, 62, 71 (May, 2004), *available at* www.epa.state.il.us/water/water-quality/index.html, (last visited April 7, 2005).

[20] *2002 Integrated Water Quality Monitoring and Assessment Report,* and *2004 Integrated Water Quality Monitoring and Assessment Report,* IDEM, Office of Water Quality, *available at* http://www.in.gov/idem/owm/planbr/wqs/quality.html (last updated July 12, 2004).

[21] Includes reservoirs.

[22] *Water Quality and Pollution Control in Michigan (2004 Sections 303(d) and 305(b) Integrated Report,* MI/DEQ/WD-04/029, Report at 26, 34, (Revised, May 2004) *available at* http://www.michigan.gov/deq/0,1607,7-135-3308_7255-12711--,00.html (last visited Apr. 7, 2005).

[23] "Basins/Watersheds," Minnesota Pollution Control Agency, *at* http://www.pca.state.mn.us/water/basins/index.html (last visited Apr. 7, 2005).

[24] *Year 2000 Ohio Water Resource Inventory,* Ohio EPA, Sept. 11, 2000, at 4-19, 4-22, *available at* http://www.epa.state.oh.us/dsw/bioassess/ohstrat.html (last visited Apr. 28, 2005). Beginning with the 2002 305(b) report, Ohio stopped compiling and listing CSO and other source impairment data, focusing instead on Watershed Assessment Unit level information, which supports other water programs. EIP Correspondence with Ohio EPA representative April 27, 2005.

[25] *Wisconsin Water Quality Assessment Report to Congress, 2002,* Wisconsin Department of Natural Resources, Water Division, PUB-WT-254, 2003, at 122, *available at* http://www.dnr.state.wi.us/org/water/wm/watersummary/final305b_2002.html (last visited Apr. 7, 2005).

[26] "Grand Calumet Area of Concern," U.S. EPA *at* http://www.epa.gov/glnpo/aoc/grandcal.html (last updated Apr. 9, 2003).

[27] CWA § 101(a), 33 U.S.C. § 1251(a) (2005).

[28] CWA § 402, 33 U.S.C. § 1342 (2005). *See also,* "National Pollution Discharge Elimination System" (NPDES), at http://cfpub.epa.gov/npdes/ (last updated Dec. 8, 2003).

[29] *National Combined Sewer Overflow Control Strategy,* Environmental Protection Agency (August 10, 1989), *available at* http://www.epa.gov/npdes/pubs/owm0356.pdf (last viewed Apr. 7, 2005).

[30] *Id.*

[31] *Combined Sewer Overflow (CSO) Control Policy,* 59 Fed. Reg. 18,688, 18,691 (April 19, 1994) *available at* http://www.epa.gov/npdes/pubs/owm0111.pdf (last visited Apr. 8, 2005). The purpose of the Policy is to coordinate the planning, selection, design and implementation of CSO management practices and controls to meet the requirements of the CWA and to involve the public fully during the decision making process. *Id.* at 18,689, [hereinafter *1994 CSO Control Policy*].

[32] *Id.*

[33] *Id.* at 18,691, 18,693.

[34] *Id.* at 18,694.

[35] *Id.* at 18695.

[36] "Combined Sewer Overflow Public Notification Plan, Revised April 2004," Metropolitan Water Reclamation District of Chicago, *at* http://www.mwrdgc.dst.il.us/mo/csoapp/CSO/cso.htm (last updated May 19, 2004).

[37] "Projects & Programs: Collection System: Deep Tunnel System," Milwaukee Metropolitan Sewerage District, *at* http://www.mmsd.com/projects/collection8.cfm (last updated July 16, 2004).

[38] *An Evaluation: Milwaukee Metropolitan Sewerage District, 2001–2002* Wisconsin Joint Legislative Audit Committee, 02-12 (July 2002), at 3, *available at* http://www.legis.state.wi.us/lab/reports/02-12full.pdf (last visited Jan. 27, 2005); *Mayor's Independent MMSD Audit Committee: Final Report,* presented to Mayor Tom Barrett, (October 1, 2004) at 13, *available at* http://www.milwaukee.gov/display/router.asp?docid=4665 (last visited Nov. 9, 2004) [hereinafter *Mayor's Audit*].

> The ability to meet CSO control objectives is largely determined by the weather, and more specifically how many large storm events occur during a given year... It is important to note that the tunnel was not sized to contain total CSO volumes during heavy rains. In fact, during the original planning (WPAP), engineers estimated that there would be events of significant CSO volume (greater than 1 billion gallons). *Id.* at 13-14;

See also, Sewer Overflows in Wisconsin-A Report to the Natural Resources Board, Wisconsin DNR, (Mar. 15, 2001) at 25, *available at* http://dnr.wi.gov/org/water/wm/WW/so/seweroverflows.pdf (last visited Apr. 14, 2005).

[39] "Small town finds cost-effective CSO solution," Water World No. 7, Vol. 19; pg. 22; ISSN: 1083-0723, July 1, 2003.

[40] Wet Weather Water Quality Act of 2000 (P.L. 106-554); CWA § 402(q), 33 U.S.C. § 1342(q) (2005); *available at* http://www.ncsl.org/statefed/stormwaterpollution1204.htm (last visited Apr. 14, 2004)

[41] CWA § 402(q)(1), 33 U.S.C. § 1342(q)(1) (2005).

[42] Memorandum from Robert Perciasepe and Steven Herman to Water Management Division Directors, Region 1–10, Regional Counsels, Regions 1–10 and State Directors, "Implementation of the CSO Control Policy" (May 19, 1998), *available at* http://cfpub.epa.gov/npdes/cso/memoranda.cfm (last updated, Jul. 10, 2003).

[43] *1994 CSO Control Policy,* 59 Fed. Reg. at 18,691. "Documentation of the nine minimum controls may include operation and maintenance plans, revised sewer use ordinances for industrial users, sewer system inspection reports, infiltration/inflow studies, pollution prevention programs, public notification plans, and facility plans for maximizing the capacities of the existing collection, storage and treatment systems, as well as contracts and schedules for minor construction programs for improving the existing system's operation. The permittee should also submit any information or data on the degree to which the nine minimum controls achieve compliance with water quality standards." *Id.*

[44] EIP email correspondence with representative from the United States Environmental Protection Agency, Office of Enforcement and Compliance Assurance, July 17, 2003. EPA has 2004 compliance rates but has not yet produced this information for EIP.

[45] *1994 CSO Control Policy* at 18,691, 18,693.

[46] *1994 CSO Control Policy* at 18,691.

[47] *Combined Sewer Overflows: Guidance for Financial Capability Assessment and Schedule Development,* Office of Water, U.S. EPA, EPA 832-B-97-004 at 46 (Feb. 1997), *available at* http://cfpub.epa.gov/npdes/cso/guidedocs.cfm (last updated Sept. 12, 2002).

[48] Combined Sewer Overflow (CSO) & Sanitary Sewer Overflow (SSO) *2002 &2003 Annual Report (January 2002 & 2003)*, Michigan DEQ, at CSO-34, CSO-36, *available at* http://www.deq.state.mi.us/documents/deq-wd-csossoreport03.pdf (last visited Apr. 14, 2005).

[49] "Northeast Ohio Regional Sewer District Takes Stand," PR Newswire US, March 3, 2005, *available at* http://www.neorsd.org/internet/do/viewlibrary.do?libraryId=1292 (last visited Apr. 14, 2005).

[50] *Combined Sewer Overflows: Guidance for Nine Minimum Controls,* Office of Water, U.S. EPA, EPA 832-B-95-003 at 60 (May 1995), *available at* http://cfpub.epa.gov/npdes/cso/guidedocs.cfm (last updated Sept. 12, 2002).

[51] *Id.* at 30.

[52] Public Act 451, Section 324.3112a. (1994), "Natural Resources and Environmental Protection Act," as amended by 2000 PA 286, *available at* http://www.legislature.mi.gov/mileg.asp?page=Home (last visited Apr. 14, 2005).

[53] *Id.* at 324.3112a (1) (b).

[54] *Id.* at 324.3112a (3).

[55] EIP telephone conversation with Ohio PIRG representative, March 17, 2005.

[56] *See, Combined Sewer Overflow (CSO) & Sanitary Sewer Overflow (SSO) 2002 &2003 Annual Report (January 2002–December 2003)*, Michigan DEQ, at CSO-34, CSO-36, *available at* http://www.deq.state.mi.us/documents/deq-wd-csossoreport03.pdf (last visited Apr. 14, 2005).

[57] "Sewage Dumping in Milwaukee May be Worse Than Reported, Study Says," The Milwaukee Journal Sentinel, Wednesday July 2, 2003, *available at* http://www.greatlakes-directory.org/wi/070203__great__lakes.htm (last visited on Apr. 4, 2005) ; *see also, Mayor's Audit*.

[58] "Wasting Our Water Wonderland," Clean Water Action and Clean Water Fund (Oct. 9, 2001), *available at* http://www.cleanwateraction.org/pdf/cso_mi.pdf (last visited Apr. 14, 2005).

[59] *1994 CSO Control Policy*, at 18,697.

[60] Memorandum from Steven Herman to Water Management Division Directors, Regions I–X, Enforcement Division Directors, Regions I, II, VI and VIII, and Regional Counsels, Regions I–X, "Compliance and Enforcement Strategy Addressing Combined Sewer Overflows and Sanitary Sewer Overflows" (April 27, 2000).

[61] "Requirements for compliance evaluation programs," 40 C.F.R. 123.26 (b).

[62] EIP reviewed inspection reports from the Defiance Waste Water Treatment Plant (WWTP), Forest WWTP, City of Toronto, City of Zanesville WWTP, N.E. Ohio Regional Sewer District, Village of Bluffton, City of Newark, City of Columbus, City of Steubenville WWTP and City of Lancaster. According to the inspection reports, City of Zanesville WWTP and City of Newark were the only two cities that were fully implementing their NMC.

[63] "Implementation of the Nine Minimum Controls Along the Ohio River," Ohio River Valley Water Sanitation Commission (2001). ORANSCO compiled NMC implementation information for Toronto, Steubenville, Ming Junction, Easter Ohio RWA, Pomeroy, Middleport, Ironton, New Boston and Portsmouth. Toronto and Steubenville were subsequently inspected by the state on June 10, 2004 and April 20, 2004 respectively and still were not in full compliance with the NMC.

[64] "Requirements for compliance evaluation programs," 40 C.F.R. 123.26 (e) (5).

[65] "Guidance for Oversight of NPDES Programs", Environmental Protection Agency (May 1987).

[66] *1994 CSO Control Policy,* at 18,691.

[67] *1994 CSO Control Policy,* at 18,697.

[68] *Id.*

[69] Memorandum from Steven Herman to Water Management Division Directors, Regions I–X, Enforcement Division Directors, Regions I, II, VI and VIII, and Regional Counsels, Regions I–X, "Compliance and Enforcement Strategy Addressing Combined Sewer Overflows and Sanitary Sewer Overflows" (April 27, 2000), at 6 ("For permit violations, Regional plans should call for, at a minimum Administrative Penalty Orders. If a permittee is in violation of an Administrative Order, a judicial action should be considered. However, issuance of an AO is not required prior to initiating an enforcement action").

[70] *1994 CSO Control Policy,* at 18,690.

[71] *Clean Watershed Needs Survey 2000, Report to Congress,* 3-1, U.S. EPA, *available at* http://www.epa.gov/owm/mtb/cwns/2000rtc/toc.htm (last updated Sept. 9, 2003). The survey only counted needs which would be eligible for funding under the Clean Water State Revolving Fund. Needs not eligible for Federal assistance under Title VI of the CWA, such as operation and maintenance costs, house connections to sewers, and costs to acquire land that were not used as part of the treatment process, were not reported in the Survey.

[72] *Clean Watershed Needs Survey 2000,* at 3-1. The CWNS took a snapshot in time, compiling short-term and long-term needs that could be documented in accordance with nationally uniform standards. All needs reported in the CWNS 2000 existed as of January 1, 2000, and were eligible for CWSRF assistance under the CWA. Unlike wastewater infrastructure planning during the 1970s and 1980s, which used a 20-year planning horizon (as a result of the Title II Construction Grants Program), current wastewater infrastructure planning horizons vary considerably across the United States. After the CWSRF program was established, communities began to plan and estimate their wastewater infrastructure projects over a shorter period of time. Now this planning horizon is often only 5 or 10 years. A few States, however, project their needs for up to a 20-year period. As a result, the CWNS 2000 cannot provide a comprehensive estimate of national or State wastewater needs in a uniform planning horizon. *Id.* at 2-2.

[73] *Id.* at *Appendix C*.

[74] *2002 AMSA Financial Survey: a National Survey of Municipal Wastewater Management Financing and Trends,* Association of Metropolitan Sewerage Agencies at 72, *available at* http://www.amsa-cleanwater.org/pubs/index.cfm#whatsnew (last visited Mar. 29, 2005), [hereinafter *2002 AMSA Financial Survey*].

[75] *Id.* at 73.

[76] *Financial Burdens incurred by Local Governments of the Maumee River Basin in order to achieve water quality directives,* prepared by the Maumee River Basin Partnership of Local Governments, at 3 (May 2004), available on request from the Partnership, www.mrbplg.org (last visited Apr. 13, 2005).

[77] *Id.*

[78] *2004 Report to Congress* at 9-9.

[79] "Wastewater," *Report Card for America's Infrastructure,* American Society of Civil Engineers, *available at* http://www.asce.org/reportcard/2005/page.cfm?id=35 (last visited Apr. 14, 2005); *see also* James Laughlin, "Associations Look to Future of Industry," WaterWorld, No.12, Vol.20; Pg.1; ISSN: 1083-0723 (Dec. 1, 2004).

[80] Patrick Crow "AMSA Asks Congress to Establish Water Trust Fund," WaterWorld (Jan. 13, 2005), *available at* Water Infrastructure Network News, http://www.win-water.org/win_news/011305article.html (last visited Apr. 14, 2005).

[81] EPA's guidance document acknowledges that finding the lowest cost funding for CSO control activities will be challenging for many permittees. The document provides descriptions and examples of the various types of funding which may be used to implement the CSO Control Policy:

- Bonds (revenue bonds, general obligation bonds, and other bonds);
- Loans (CWSRF loans, state loan programs, Rural Utilities Service Loan Programs; CoBank Loan Programs; commercial loans);
- Grants (federal grants, state grant programs);
- Privatization;
- Other options (special reserves, use of special assessments, and "pay-as-you-go")

Combined Sewer Overflows-Guidance for Funding Options, (EPA-832-B-95-007), U.S. EPA Office of Wastewater Management, Municipal Support Division, (April, 1995), *available at* http://www.epa.gov/npdes/pubs/owm0249.pdf (last visited Apr. 14, 2005).

[82] *2004 Report to Congress* at 9-11 (citing *2003 AMSA Financial Survey,* [sic], the AMSA survey is dated 2002; numbers cited by EPA are rounded from AMSA numbers).

[83] *2002 AMSA Financial Survey* at 75.

[84] *2004 Report to Congress* at 9-11, quoting 2002 *AMSA Financial Survey.*

[85] "Toledo Waterways Initiative: Overview," The Official Site of the City of Toledo, Ohio, *available at* http://www.ci.toledo.oh.us/index.cfm?Dept=Dept13Nav&Page=Page3521 (last visited Mar. 31, 2005).

[86] *Mayor's Audit at* 13.

[87] *Id.*

[88] Alberta Darling, "Puzzling out answers for cleaner water: Time to fix broken system" and Kevin L. Shafer, "Puzzling out answers for cleaner water: Steps being taken to improve sewerage system," Milwaukee Journal Sentinal, Pg. 01J, June 20, 2004.

[89] *2004 Report to Congress* at 9-12.

[90] *2004 Report to Congress* at 9-13. For a breakdown by year and state of the CWSRF, including federal grant amounts, and state contributions, see, "Clean Water SRF Program Information [for each state]," *Individual State Reports,* National Information Management System Reports, *available at* http://www.epa.gov/r5water/cwsrf/ (last updated March 11, 2004).

[91] *Financing America's Clean Water Since 1987: A Report of Progress and Innovation,* U.S. EPA, Office of Water, EPA-832-R-00-011 at 3 (May 2001), *available at* http://www.epa.gov/owm/cwfinance/cwsrf/basics.htm (last revised Feb. 25, 2004).

[92] "AMSA Asks Congress to Establish Water Trust Fund," *supra* note 80; *See also*, Greg Gordon and Tom Meersman, "Officials decry Bush water-treatment budget," Star Tribune (Feb. 20, 2005),.

[93] *2004 Report to Congress* at 9-13 to 9-14.

[94] Most municipalities are not required to explicitly report on the costs to implement CSO controls or their anticipated future needs. Therefore financial information on resources spent to address CSOs must be drawn from alternative sources including: LTCP and other facility planning documents; municipal interviews conducted; information on state and local expenditures on wastewater infrastructure from the U.S. Census Bureau; specific reporting categories associated with the Clean Watershed Needs Survey and the CWSRF; other loan and grant programs; and federal, state, and industry reports, such as the AMSA's triennial financial survey. *2004 Report to Congress* at 9-1.

[95] "Summary of EPA's Budget" FY 2006, Appendix B: Infrastructure Finance *available at* www.epa.gov/budget (last updated Feb. 8, 2005).

[96] "Clean Water SRF Assistance for Wastewater Treatment, Nonpoint Source, and Estuary Projects, by State and Region," *Summary Reports—Project Assistance,* National Information Management System Reports, *available at* http://www.epa.gov/r5water/cwsrf/ (last updated Mar. 11, 2004).

[97] *Id.*

[98] "Summary of EPA's Budget" U.S. EPA (2000-2006), (generally contained in Appendix B: Infrastructure Finance), *available at* www.epa.gov/budget (last updated Feb. 8, 2005). Enacted amounts for FYs 03-05 are not contained in summary documents, but EIP obtained these numbers from a representative with EPA Office of Budget, April 29, 2005. FY 03 and 04 represent the final enacted amount after revision was removed.

[99] *All Dried Up: How Clean Water is Threatened by Budget Cuts,* Water Infrastructure Network Report at 65 (Sept. 22, 2004) *available at* http://www.win-water.org/win_reports/reports.html (last visited Apr. 14, 2005).

[100] *Id.*

[101] "Associations Look to Future of Industry," *supra* note 79; *see also,* "AMSA Asks Congress to Establish Water Trust Fund," supra note 80.

[102] "AMSA Asks Congress to Establish Water Trust Fund," *supra* note 80.

[103] Survey prepared by the Luntz Research Companies, February, 2004, *available at* http://www.amsa-cleanwater.org/advocacy/releases/2004-02-09survey.pdf (last visited Apr. 14, 2005); also *available at* "As election approaches, American public shows overwhelming support for clean water funding," WaterWorld, (Feb. 26, 2004).

[104] *Illinois Water Quality Report 2004,* IEPA/BOW/04-006, 49, 62, 71 (May, 2004), *available at* www.epa.state.il.us/water/water-quality/index.html, (last visited Apr. 14, 2005). "Illinois EPA defines potential sources as known or suspected activities, facilities, or conditions that may be contributing to impairment of a designated use." *Id.* at 35. The Metropolitan Water Reclamation District of Greater Chicago, has developed a public notification program for CSOs into Chicago area waterways in accordance with the condition of its NPDES permits. The date and volume of CSO events, organized by pump station location is organized and updated fairly frequently in the "Summary of Activity at Major Pump States," MWRDGC, *available at* http://www.mwrdgc.dst.il.us/mo/csoapp/default.htm (last visited Apr. 14, 2005). Other useful information is available at the same website, including a list of reversals to Lake Michigan from 1985 through the present, and CSO notification services.

[105] *Illinois Water Quality Report 2004* at 49.

[106] "Retrofitting a State CSO Control Program to the Federal CSO Control Policy: the Illinois Approach to Implementing the Federal CSO Control Program," CSO Partnership, April 2004 Chicago Workshop Presentations, *available at* http://www.csop./April2004ChicagoWorkshopPresentations/02StuderRetrofittingaStateCSOControlProgrampresentation.ppt (last visited, Apr. 7, 2005).

[107] *Id.*

[108] *Report to Congress: Implementation and Enforcement of the Combined Sewer Overflow Control Policy,* EPA 833-R-01-003 (Dec. 2001, delivered to Congress Jan. 29, 2002), "State Profile, Illinois-Region 5," IL-1, *available at* http://cfpub.epa.gov/npdes/cso/cpolicy_report.cfm (last updated Sept. 12, 2002) [hereinafter *2002 Report to Congress*].

[109] "Treatment of Overflows and Bypasses," 35 Ill. Admin. Code 306.305 (2005).

[110] *Id.*

[111] "Exception Procedure," 35 Ill. Admin. Code 306.350, et seq. (2005).

[112] *2002 Report to Congress* at IL-1.

[113] *Id.*

[114] *Id.*

[115] EIP correspondence with IEPA representative, April 27, 2005.

[116] *Id.*

[117] Numbers were collected from responses to Freedom of Information Act (FOIA) requests submitted by EIP to the state environmental agencies. They may vary from and are more up to date than figures contained in the 2002 Report to Congress.

[118] *2002 Report to Congress,* "State Profile, Illinois-Region 5," IL-2.

[119] *Id.*

[120] "CSO Main Page," Metropolitan Water Reclamation District of Chicago, *at* http://www.mwrdgc.dst.il.us/mo/csoapp/default.htm (last updated May 19, 2004).

[121] "Combined Sewer Overflow Public Notification Plan, Revised April 2004," Metropolitan Water Reclamation District of Chicago *at* http://www.mwrdgc.dst.il.us/mo/csoapp/CSO/cso.htm (last updated May 19, 2004). The District considers the affected public to include governmental organizations, civic groups, recreational groups or any public citizen with an interest in or responsibility for the condition of the Chicago Area Waterway System (CAWS). Currently, the District identified the following organizations to be among the affected public: the USEPA; the IEPA; the City of Chicago; all municipalities located adjacent to the CAWS; the Friends of the Chicago River; NeighborSpace; the Openlands Project; the Sierra Club; the Civic Federation; the Prairie Rivers Network; the Lake Michigan Federation; and other environmentally based organizations. Other groups which are to be specifically identified include the recreational and commercial users of the CAWS such as canoe or kayak clubs, high school or collegiate rowing teams and owners of marinas. *Id.*

[122] *Id.*

[123] Numbers were collected from responses to Freedom of Information Act (FOIA) requests submitted by EIP to the state environmental agencies. They may vary from and are more up to date than figures contained in the EPA reports to Congress.

[124] EIP correspondence with IEPA representative, April 27, 2005.

[125] "Table 9: Summary of National and State Sources Impairing Waters-Streams," *Indiana Integrated Water Quality Monitoring and Assessment Report, 2004,* Indiana Department of Environmental Management, Office of Water Quality at 37, *available at* http://www.in.gov/idem/owm/planbr/wqs/quality.html (last updated July 12, 2004).

[126] Id. at 44. The IDEM provides a database of "CSO Tracking," as well as other useful information on CSO control activities, *at* http://www.in.gov/idem/water/npdes/permits/wetwthr/cso/index.html (last updated November 23, 2004).

[127] "Grand Calumet Area of Concern," U.S. EPA, *at* http://www.epa.gov/glnpo/aoc/grandcal.html (last updated Apr. 9, 2003).

[128] "Wastewater Permit Guide," *available at* http://www.in.gov/idem/water/npdes/guide/section2.html (last visited Apr. 7, 2005).

[129] *Final Combined Sewer Overflow Strategy,* Indiana Department of Environmental Management, Office of Water Quality, Pretreatment & Urban Wet Weather Section, CSO Group, May 1996, *available at* http://www.in.gov/idem/water/npdes/permits/wetwthr/cso/index.html (last updated Nov. 24, 2004).

[130] *Combined Sewer Overflow Long Term Control Plan and Use Attainability Analysis Guidance (revised),* Indiana Department of Environmental Management, Combined Sewer Overflow Group, (*Revised* Final Draft 9/17/01), *available at* http://www.in.gov/idem/water/npdes/permits/wetwthr/cso/guidance/tablecont.html (last updated Nov. 24, 2004).

[131] *2002 Report to Congress,* "State Profile, Indiana-Region 5," IN-1.

[132] "Wastewater Permit Guide," *available at* http://www.in.gov/idem/water/npdes/guide/section2.html (last visited Apr. 14, 2005).

[133] *Id.*

[134] *Id. See also,* Burns Ind. Code Ann. § 13-11-2-120.5 (2004), "Definition of Long Term Control Plan".

[135] Numbers were collected from responses to Freedom of Information Act (FOIA) requests submitted by EIP to the state environmental agencies. They may vary from and are more up to date than figures contained in the 2002 Report to Congress; *see also,* "CSO Tracking," IDEM, Office of Water Quality, *at* http://www.in.gov/idem/water/npdes/permits/wetwthr/cso/csotrack.xls (last updated Nov. 23, 2004).

[136] *2002 Report to Congress* at IN-2.

[137] Indiana Combined Sewer Overflow Public Notification Rules, 327 IAC 5-2.1 (May 9, 2003). Synopsis *available at* www.iwpca.org/pdfs/TheNewCSOPublicRule.pdf (last visited Apr. 7, 2005).

[138] *Id.*

[139] *Id.*

[140] "Senate Bill 0620. 2005 Regular Session," Access Indiana, Bill Info:Ligislative Services Ageny, *at* http://www.in.gov/apps/lsa/sessions/billwatch/billinfo?year=2005&session=1&request=getBill&docno=620 (last updated Apr. 6, 2005); "SB-620 to Unlock CSO Logjam," *Children's Environmental Health Issues in Indiana, March 2005 Edition,* Improving Kids' Environment, (IKE Coalition), *available at* http://www.ikecoalition.org/IKE_Newsletter/IKE_03-05_Newsletter.htm#CSO_620 (last visited Apr. 7, 2005).

[141] "Small town finds cost-effective CSO solution," Water World No. 7, Vol. 19; pg. 22; ISSN:1083-0723, July 1, 2003.

[142] Numbers were collected from responses to Freedom of Information Act (FOIA) requests submitted by EIP to the state environmental agencies. They may vary from and are more up to date than figures contained in the 2002 Report to Congress.

[143] "CSO Tracking," IDEM, Office of Water Quality, *at* http://www.in.gov/idem/water/npdes/permits/wetwthr/cso/csotrack.xls (last updated Nov. 23, 2004).

[144] *Water Quality and Pollution Control in Michigan (2004 Sections 303(d) and 305(b) Integrated Report,* MI/DEQ/WD-04/029, Report at 25, 34, (Revised, May 2004), *available at* http://www.michigan.gov/deq/0,1607,7-135-3308_7255-12711--,00.html (last visited April 7, 2005).

[145] *Id.*

[146] *Combined Sewer Overflow (CSO) & Sanitary Sewer Overflow (SSO) 2002 & 2003 Annual Report,* Michigan Department of Environmental Quality, in cooperation with the Environmental Science and Services Division, at 9, *available at* http://www.deq.state.mi.us/documents/deq-wd-csossoreport03.pdf (last visited Apr. 14, 2005).

[147] *Id.* Sewage that is "partially treated" has received some combination of screening, settling, skimming and/or disinfection. Partially treated sewage does not meet the national secondary treatment standards for wastewater or is treated to a level less than that required by a National Pollutant Discharge Elimination System.

[148] "Areas of Concern (AoCs) On-line," U.S. EPA *at* http://www.epa.gov/glnpo/aoc/ (last updated Feb. 14, 2005).

[149] *Combined Sewer Overflow (CSO) & Sanitary Sewer Overflow (SSO) 2002 & 2003 Annual Report,* Michigan Department of Environmental Quality at 8, *available at* http://www.michigan.gov/deq/0,1607,7-135-3313_3682_3715---,00.html (last visited Apr. 14 2005).

[150] *2002 Report to Congress,* "State Profile, Michigan-Region 5," MI-1.

[151] Public Act 451, Section 324.3112a. (1994), "Natural Resources and Environmental Protection Act," as amended by 2000 PA 286, *available at* http://www.legislature.mi.gov/mileg.asp?page=Home (last visited Apr. 14, 2005).

[152] *Id.*

[153] *Id.*

[154] Senate Bill No. 30, January 25, 2005 Introduced by Senator Switalski: a bill to amend 1994 PA 451, *available at* http://www.legislature.mi.gov/mileg.asp?page=Bills (last visited Apr. 5, 2005).

[155] Numbers were collected from responses to Freedom of Information Act (FOIA) requests submitted by EIP to the state environmental agencies. They may vary from and are more up to date than figures contained in the 2002 Report to Congress.

[156] "Watershed Progress: Rouge River Watershed, Michigan," U.S. EPA, *available at* http://www.epa.gov/owow/watershed/rouge_mi.html (last updated Apr. 1, 2005).

[157] *2002 Report to Congress,* "Community Case Study: Rouge River Watershed, MI," ROU-1.

[158] EPA awarded $288 million to Wayne County for the Rouge River National Wet Weather Demonstration Project. "Watershed Progress: Rouge River Watershed, Michigan," U.S. EPA, *available at* http://www.epa.gov/owow/watershed/rouge_mi.html (last updated Apr. 1, 2005). The total cost of the project is expected to be between $1–3 billion. *2002 Report to Congress,* "Community Case Study: Rouge River Watershed, MI," ROU-1.

[159] "Combined Sewer Overflow Control Program," Rouge River National Wet Weather Demonstration Project, *at* http://www.rougeriver.com/cso/ (last updated Apr. 16, 2005).

[160] "Watershed Progress: Rouge River Watershed, Michigan."

[161] "Combined Sewer Overflow Control Program," Rouge River National Wet Weather Demonstration Project, *at* http://www.rougeriver.com/cso/ (last updated Apr. 16, 2005).

[162] *See* Combined Sewer Overflow (CSO) & Sanitary Sewer Overflow (SSO) Annual Report (July 2000—December 2001) at 8, Michigan Department of Environmental Quality (2001), *available at* http://www.deq.state.mi.us/documents/deq-swq-csossoreport01.pdf (last visited Apr. 27, 2005).

[163] *See* Scott Aiken, "States Study Ways to Lower Bacteria Counts in St. Joseph River", The Herald-Palladium (October 2, 2003), *available at* http://www.heraldpalladium.com/articles/2003/10/02/news/news4.txt (last visited April 7, 2005). Website Now Requires Password for access.

[164] *Id.*

[165] *Id.*

[166] "St. Clair River Area of Concern," U.S. EPA, *at* http://www.epa.gov/grtlakes/aoc/st-clair.html (last updated Apr. 9, 2003).

[167] *Id.*

[168] Numbers were collected from responses to Freedom of Information Act (FOIA) requests submitted by EIP to the state environmental agencies. They may vary from and are more up to date than figures contained in the 2002 Report to Congress.

[169] EIP electronic correspondence with Minnesota Pollution Control Agency representative, Nov. 23, 2004.

[170] *2002 Report to Congress,* "State Profile, Minnesota-Region 5," MN-1.

[171] *Id.*

[172] EIP email correspondence with representative from the Minnesota Department of Natural Resources, Division of Water Quality, April 18, 2005.

[173] *Id.*

[174] "Combined Sewer Separation in Minneapolis: A history of separating sewage from stormwater," City of Minneapolis, *available at* http://www.ci.minneapolis.mn.us/cso (last visited April 7, 2005).

[175] *See* "CSO Control Revitalizes Stretch of the Mississippi," American Public Works Association"(December 1, 1996), *available at* http://apwa.americancityandcounty.com/ar/government_cso_control_revitalizes/index.htm (last visited Apr. 26, 2005).

[176] *Id.*

[177] *Id.*

[178] *Minneapolis Combined Sewer Overflow Program, 2003 Annual Report,* Minneapolis Public Works Department, Engineering Services Division, (April 29, 2004), *available at* http://www.ci.minneapolis.mn.us/cso/ (last visited Apr. 27, 2005).

[179] "CSO Control Revitalizes Stretch of the Mississippi." *supra* note 177.

[180] Numbers were collected from responses to Freedom of Information Act (FOIA) requests submitted by EIP to the state environmental agencies. They may vary from and are more up to date than figures contained in the 2002 Report to Congress.

[181] "CSO Control Revitalizes Stretch of the Mississippi." *supra* note 177.

[182] "Combined Sewer Separation in Minneapolis: A history of separating sewage from stormwater," City of Minneapolis, *available at* http://www.ci.minneapolis.mn.us/cso/ (last visited Apr. 27, 2005).

[183] *Id.*

[184] "CSO Control Revitalizes Stretch of the Mississippi." *supra* note 177. St. Paul estimated that as much as 20% of its CSO discharge was caused by private drains and rainleaders connected to the sanitary sewer system. As a result, it undertook a public education and rebate program to encourage property owners to voluntarily disconnect their drains from the public system. *Id.*

[185] *2002 Report to Congress,* "State Profile, Minnesota Region 5," MN-1.

[186] *Minneapolis Combined Sewer Overflow Program, 2003 Annual Report,* at 3, Minneapolis Public Works Department, Engineering Services Division, (April 29, 2004), *available at* www.ci.minneapolis.mn.us/cso (last visited Jan. 21, 2005).

[187] "Combined Sewer Overflow—A Minneapolis Solution," City of Minneapolis, *available at* http://www.ci.minneapolis.mn.us/cso/ (last visited Apr. 27, 2005).

[188] Minneapolis Ordinance Title 3., *Chapter 56. Prohibited Discharges to Sanitary Sewer System,* (2003). "The Rainleader Disconnection Program's (RDP) objective is to identify and complete disconnection citywide of all private sources of clear water inflow to the sanitary sewer system...Previous City ordinance and State Plumbing codes only affected new construction, but not existing connections. Prohibited connections under the new ordinance include both new and preexisting roof drains, area drains, or other clear water connections." *Minneapolis Combined Sewer Overflow Program, 2003 Annual Report* at 4.

[189] EIP email correspondence with representative from the Minnesota Department of Natural Resources, Division of Water Quality, April 18, 2005.

[190] *Id.*

[191] Numbers were collected from responses to Freedom of Information Act (FOIA) requests submitted by EIP to the state environmental agencies. They may vary from and are more up to date than figures contained in the 2002 Report to Congress.

[192] EIP email correspondence with representative from the Minnesota Department of Natural Resources, Division of Water Quality, April 18, 2005.

[193] "Appendix D.2. Watershed Assessment Unit Results," *Final 2004 Integrated Water Quality Monitoring and Assessment Report,* Ohio EPA, *available at* http://www.epa.state.oh.us/dsw/tmdl/2004IntReport/2004OhioIntegratedReport.html#download (last updated Apr. 14, 2005); EIP correspondence with Ohio EPA representative, April 27, 2005.

[194] "Statewide Biological and Water Quality Monitoring & Assessment," Ohio EPA, *at* http://www.epa.state.oh.us/dsw/bioassess/ohstrat.html (last visited Apr. 28, 2005).

[195] "Areas of Concern (AoCs) On-line," U.S. EPA *at* http://www.epa.gov/glnpo/aoc/ (last updated Feb. 14, 2005).

[196] *Id.*

[197] *State of Ohio Combined Sewer Overflow Strategy,* Ohio Environmental Protection Agency (March 1995), *available at* http://www.epa.state.oh.us/dsw/cso/csostrem.pdf (last visited Jan. 13, 2005).

[198] *Id.*

[199] EIP correspondence with Ohio EPA representative, April 27, 2008.

[200] "Ohio CSO Inventory (October, 2004)," *at* http://www.epa.state.oh.us/dsw/cso/ohiocsoinventory%2010%2004.pdf (last visited Apr. 27, 2005).These communities include Ashtabula, Attica, Bloomville, Continental, Elmore, Genoa, Marshalville, Maumee, Monroeville, Niles, Pemberville, Rockford and Wellston. However, the number of CSO-free communities did not increase between 2003–2004.

[201] EIP correspondence with Ohio EPA representative, April 27, 2008.

[202] "A Strategy for Monitoring the Impacts of Combined Sewer Overflows on the Ohio River", Ohio River Valley Water Sanitation Commission (September 1993), described in *State of Ohio Combined Sewer Overflow Strategy* at 13.

[203] Numbers were collected from responses to Freedom of Information Act (FOIA) requests submitted by EIP to the state environmental agencies. They may vary from and are more up to date than figures contained in the 2002 Report to Congress.

[204] *Id.* Ohio started tracking NMC inspections in September, 2004.

[205] *Wisconsin Water Quality Assessment Report to Congress, 2002,* Wisconsin Department of Natural Resources, Water Division, PUB-WT-254, 2003, at 122, *available at* http://www.dnr.state.wi.us/org/water/wm/watersummary/final305b_2002.html (last visited Apr. 27, 2005). However, it should be noted that no data was provided in the tables of sources impairing the Great Lakes Waters. *Id.* at 129.

[206] *2002 Report to Congress,* "State Profile, Wisconsin—Region 5," WI-1.

[207] *Mayor's Independent MMSD Audit Committee: Final Report,* presented to Mayor Tom Barrett, (October 1, 2004), *available at* http://www.milwaukee.gov/display/router.asp?docid=4665 (last visited Apr. 27, 2005) [hereinafter Mayor's Audit].

[208] *Mayor's Audit,* at B-4.

[209] *Mayor's Audit,* at B-5; Source is from MMSD Contract Compliance Office records.

[210] *See* "Areas of Concern (AoCs) On-line," U.S. EPA *at* http://www.epa.gov/glnpo/aoc/ (last updated Feb. 14, 2005).

[211] *2002 Report to Congress,* "State Profile, Wisconsin—Region 5," WI-1.

[212] *Sewer Overflows in Wisconsin—A Report to the Natural Resources Board,* at 9, Wisconsin Department of Natural Resources (WDNR), (2001), *available at* http://dnr.wi.gov/org/water/wm/WW/so/ (last visited Apr. 27, 2005). This report focuses on SSO and Bypass occurrences.

[213] *2002 Report to Congress,* "State Profile, Wisconsin-Region 5," WI-1.

[214] *Id.*

[215] *Sewer Overflows in Wisconsin—A Report to the Natural Resources Board,* at 22.

[216] "About Us," Milwaukee Metropolitan Sewerage District, *at* http://www.mmsd.com/about/about1.cfm (last updated Mar. 25, 2004). More specifically, MMSD is as a special-purpose municipal corporation, defined in § 200.23, Wis. Stats. Since 1982, it has been governed by the Milwaukee Metropolitan Sewerage Commission. An Evaluation: Milwaukee Metropolitan Sewerage District, 2001-2002 Wisconsin Joint Legislative Audit Committee, 02-12 (July 2002) at 3, *available at* http://www.legis.state.wi.us/lab/reports/02-12full.pdf (last visited Apr.13, 2005).

[217] "United Water Services Contract," Milwaukee Metropolitan Sewerage District, *at* http://www.mmsd.com/united/ (last updated Mar. 23, 2004).

[218] *An Evaluation: Milwaukee Metropolitan Sewerage District, 2001–2002* at 11.

[219] *An Evaluation: Milwaukee Metropolitan Sewerage District, 2001–2002* at 11-12. Local, state, and federal funds financed the Water Pollution Abatement Program. *See, Id.* at 12 for breakdown of funding sources and expenditures.

[220] "Projects & Programs: Collection System: Deep Tunnel System," Milwaukee Metropolitan Sewerage District, *at* http://www.mmsd.com/projects/collection8.cfm (last updated July 16, 2004).

[221] *Id.*

[222] *An Evaluation: Milwaukee Metropolitan Sewerage District, 2001–2002* at 3; "Projects & Programs: Collection System: Deep Tunnel System".

[223] "Projects & Programs: Collection System: Deep Tunnel System".

[224] *Id.*

[225] *An Evaluation: Milwaukee Metropolitan Sewerage District, 2001–2002* at 3.

[226] Carrie Antlfinger, "Milwaukee's sewage problems highlight national issue," Associated Press, *available at* http://www.duluthsuperior.com/mld/duluthsuperior/9185491.htm (posted Jul. 18, 2004).

[227] *Mayor's Audit* at 13.

[228] *Mayor's Audit at 13.* "The ability to meet CSO control objectives is largely determined by the weather, and more specifically how many large storm events occur during a given year... It is important to note that the tunnel was not sized to contain total CSO volumes during heavy rains. In fact, during the original planning (WPAP), engineers estimated that there would be events of significant CSO volume (greater than 1 billion gallons)." *Id.* at 13-14.

[229] Numbers were collected from responses to Freedom of Information Act (FOIA) requests submitted by EIP to the state environmental agencies. They may vary from and are more up to date than figures contained in the 2002 Report to Congress.

[230] Personal communication with state personnel on October, 2004.

[231] "Wastewater Treatment Works Compliance Maintenance Program: Redevelopment of Wisconsin Administrative Code NR 208 and the Compliance Maintenance Annual Report (CMAR)", Wisconsin Department of Natural Resources, *at* http://dnr.wi.gov/org/water/wm/ww/cmar.html (last updated Dec. 28, 2004).

[232] Numbers were collected from responses to Freedom of Information Act (FOIA) requests submitted by EIP to the state environmental agencies. They may vary from and are more up to date than figures contained in the 2002 Report to Congress.

ENVIRONMENTAL INTEGRITY PROJECT

919 Eighteenth Street, NW, Suite 975
Washington, D.C. 20006
Phone (202) 296-8800
Fax (202) 296-8822
www.environmentalintegrity.org