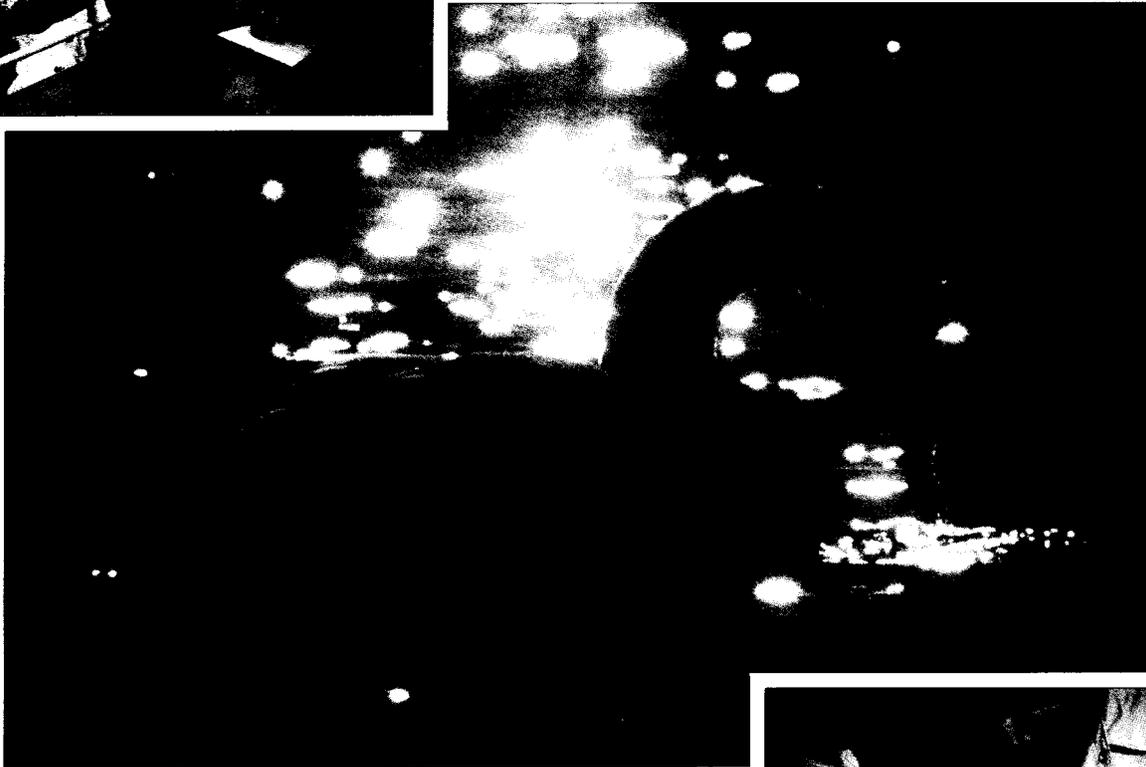




# Wastewater Primer



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**T**he United States Environmental Protection Agency's Office of Wastewater Management (OWM) oversees a range of programs contributing to the well-being of the nation's waters and watersheds. Through its programs and initiatives, OWM promotes compliance with the requirements of the Federal Water Pollution Control Act, commonly referred to as the Clean Water Act,

### **OWM Programs Include:**

- Direction of the National Pollutant Discharge Elimination System (NPDES) Permit Program, including stormwater management, and control of combined sewer and sanitary sewer overflows
- Oversight of the National Pretreatment Program, emphasizing control and prevention of water pollution from industrial facilities
- Enhancement of the Agency's biosolids (sewage sludge) management program that promotes the understanding and compliance with the Federal Part 503 biosolids rule as well as the adoption of additional user and environmentally friendly practices for managing biosolids
- Administration of the Clean Water State Revolving Fund (CWSRF) and the Clean Water Action Section 106 and the Water Quality Cooperative Agreements Section 104(b)(3) grant programs for environmental infrastructure investment
- Completion and closeout of the wastewater Construction Grants program
- Provision of technical advice and training to industries and municipalities in an effort to improve compliance with wastewater regulatory requirements
- Support of the North American Free Trade Agreement (NAFTA) environmental infrastructure program in the U.S.-Mexico border area
- Administration of programs to ensure that animal feeding operation (AFO)

wastes are managed to minimize environmental and public health effects

- Administration of outreach, technical assistance and training programs to help small, rural and underserved communities provide adequate wastewater treatment and disposal services; targeted populations include Alaska Native Villages, Indian tribes, and U.S.-Mexico border - *colonias*
- Management of EPA's National award recognition program for wastewater management excellence in municipalities and wastewater treatment facilities, presented for outstanding and innovative practices in operations and maintenance, beneficial biosolids use, pretreatment management, storm water and combined sewer overflows controls
- Collaboration with other federal agencies (DOI, USDA) and states to address pollution from abandoned mines
- Reporting on the nation's water requirements in the Clean Water Needs Survey



## **The Problem: Water Pollution**

Cleaning and protecting the nation's water is an enormous task. Under the Clean Water Act, the Office of Wastewater Management (OWM) works in partnership with EPA regions, states and tribes to regulate discharges into *surface waters* such as wetlands, lakes, rivers, estuaries, bays, and oceans. Specifically, OWM focuses on control of *wastewater* that is collected in discrete conveyances (also called *point sources*), including pipes, ditches, and sanitary or storm sewers.

Traditionally, the Agency has had separate programs for point sources and *nonpoint sources* (which include agricultural runoff, erosion, and other sources not directly linked to a specific source of pollution). Now, however, as we adopt a more comprehensive strategy, OWM is working with other EPA offices and with our stakeholders to apply a *watershed approach* to water management, promoting integrated solutions to address all sources of pollution to surface water, groundwater, and habitats on a watershed basis.

A watershed may be affected by discharges from municipal and/or industrial facilities, as well as pollutants from other sources that are not as easily identified, and therefore harder to control.

*Municipal wastewater* consists primarily of domestic wastes from households and industrial wastewater from manufacturing and commercial activities. Both types of wastewater are collected in sanitary sewers, and are usually treated at a municipal wastewater treatment plant. After treatment, the wastewater is discharged to its *receiving water* (e. g., a river, an estuary, or an ocean).

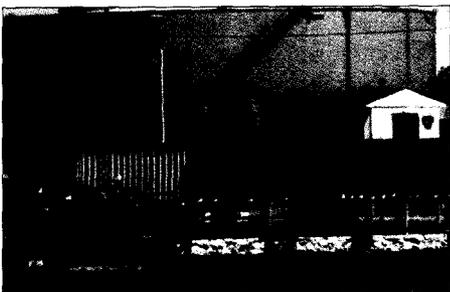
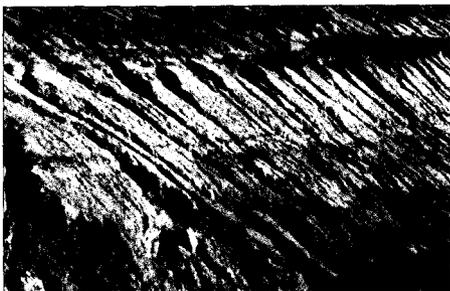
Wastewater entering a treatment plant may contain organic pollutants (including raw sewage), metals, nutrients, sediment, bacteria, and viruses. Toxic substances used in the home - motor oil, paint, household cleaners, and pesticides - or substances released by industries, also make their way into sanitary sewers.

*Industrial processes*, such as steel or chemical manufacturing, produce

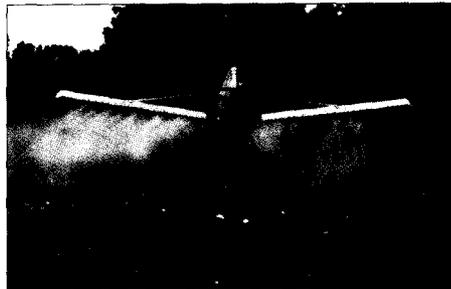
billions of gallons of wastewater daily. Some industrial pollutants are similar to those in municipal sewage, but often are more concentrated. Other industrial pollutants are more exotic and include a variety of heavy metals and synthetic organic compounds. In sufficient dosages, they may present serious hazards to human health and aquatic organisms.

Unlike municipal or industrial sources of pollution, which come from a single discrete facility, other sources are usually more diffuse. For example, rain water or snowmelt washing over farmlands may carry topsoil and fertilizer residues into nearby streams. This type of runoff, called *stormwater*, may carry oil and gasoline, agricultural chemicals, nutrients, heavy metals, and other toxic substances, as well as bacteria, viruses, and oxygen-demanding compounds.

A recent EPA study indicated that roughly one third of identified cases of water quality impairment nationwide are attributable to stormwater, whether from farmland, streets, parking lots, construction sites, or other sources.



*Animal Feeding Operations (AFOS)* are livestock-raising operations, such as hog, cattle and poultry farms, that confine and concentrate animal populations and their waste. Animal waste, if not managed properly, can run off to nearby water bodies and cause serious water pollution and public health risks. There are approximately 450,000 AFO's in the United States.



*Acid Mine Drainage* is one of the most significant environmental impacts resulting from past and current mining activities. It has been cited as a major cause of stream pollution in northern Appalachia (PA, W. VA, VA, MD); over 50 percent of stream miles in PA and WV do not meet water quality standards because of acid mine drainage impacts. In addition, there are an estimated 200,000 abandoned hardrock mines nationwide and somewhere between 2,000 and 10,000 active ones. Some of these mining operations produce waste material and other conditions that result in acid mine drainage as well as discharges of heavy metals which affect aquatic life and drinking water sources. Mine sites may also affect public safety because of mine debris and open entryways, shafts and processing facilities.

*Combined sewer overflows (CSOs)* are mixtures of sewage, industrial wastewater, and storm water discharged prior to reaching a treatment plant. They can cause beach closings, shell fishing bans, and a range of public health problems and can occur in about 1,100 communities that have antiquated water infrastructure.

*Sanitary sewer overflows (SSOs)* are raw sewage overflows from separate sanitary sewer collection systems. Over the years, many sanitary sewer collection systems have deteriorated due to inadequate preventive maintenance and insufficient rehabilitation and replacement. SSOs can discharge to surface waters, flood basements, and overflow from manholes into streets and across private property. Cracked and leaking sanitary sewers can also discharge raw sewage during dry weather periods. Sanitary sewer overflows can result in health risks, property damage, and water quality impacts.

*Sewage sludge*, now generally referred to as biosolids, is the semi-solid residue from wastewater treatment processes. Although biosolids result from the treatment of wastewater, they can be utilized as a valuable resource.

## The Solution: OWM Programs

In 1993, the Government Performance and Results Act (GPRA) was signed into law requiring agencies to establish measurable goals and objectives as part of a strategic planning process. Accordingly, EPA created a strategic plan that sets a number of specific objectives that allow the Agency to meet its overall environmental protection goals.

One of the goals is Clean and Safe Water for all Americans. To help meet this goal, the Agency has committed to achieve a 20 percent reduction by 2005 in pollutant discharges from key point sources and nonpoint sources from 1992 levels. To achieve this objective, OWM is committed by 2005 to reducing annual point source loadings from combined sewer overflows (CSOS), publicly owned treatment works (POTWS), and industrial sources by 30 percent from 1992 levels. Recognizing that the nation's waters are significantly impaired by other sources, such as CAFOS and storm water runoff, we are also working to develop performance measurement approaches for them.

The Office of Wastewater Management (OWM), in cooperation with states, EPA offices, and other stakeholders, manages the following programs to achieve the goals and to continuously improve the quality of the nation's waters.

### ● *Regulatory Programs and Tools*

This section of the *Primer* deals with OWM's regulatory programs, which operate under authority of the Clean Water Act,

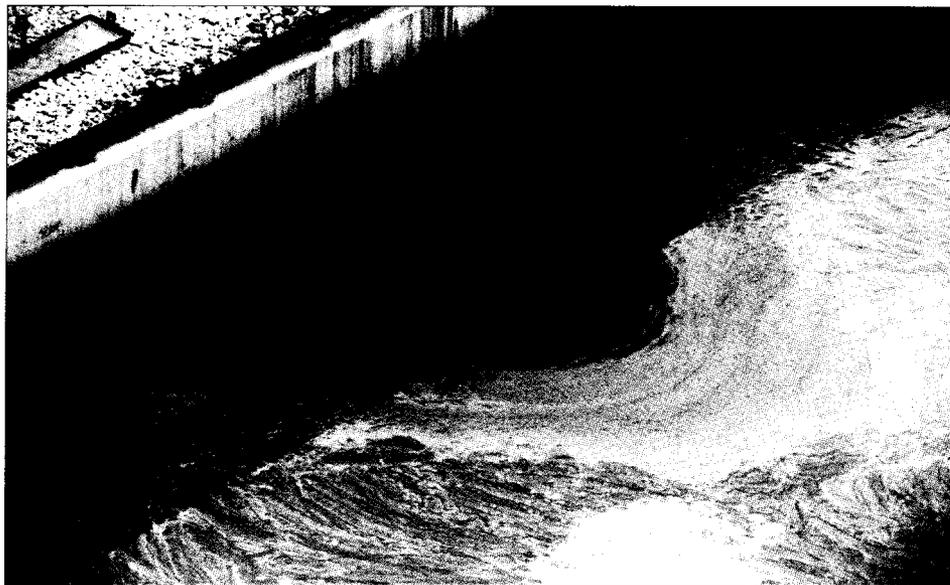
#### *National Pollutant Discharge Elimination System (NPDES) Permit Program*

The Clean Water Act requires that all point source wastewater dischargers obtain and comply with an NPDES permit. NPDES permits regulate the discharges from publicly owned wastewater treatment facilities, other wastewater treatment facilities, industrial facilities, concentrated animal feeding operations, aquaculture, and other "point source" dischargers. The NPDES program also regulates wet weather discharges such as stormwater discharges from industrial activities (e.g. factory stormwater runoff) and municipal stormwater discharges including, urban stormwater runoff, combined sewer overflows, and storm sewer overflows.

NPDES permits are developed to ensure that such discharges to receiving waters are protective of human health and the environment. They establish specific discharge limits, monitoring, and reporting requirements and may also require that dischargers undertake measures to reduce or eliminate pollution to receiving waters. Violations of permit conditions are enforceable under the Clean Water Act. EPA uses a variety of techniques to monitor permittees compliance status, including on-site inspections and review of data submitted by permittees. NPDES permits are issued for a term of five years (or less).

#### *State NPDES Programs*

The Clean Water Act provides that states may be authorized to operate their own NPDES programs provided such programs meet minimum federal requirements. As of February 1998, 42 states and the United States Virgin Islands have authorized NPDES programs. Indian nations can also be authorized to operate an NPDES program. More than 200,000 sources are regulated by NPDES permits nationwide,



## Section 316(b) CWA - Cooling Water Intake Structures

OWM is currently developing regulations under Section 316(b) of the Clean Water Act ("CWA"), 33 U.S.C. Section 1326(b). This section provides that any standard established pursuant to sections 301 or 306 of the Clean Water Act and applicable to a point source shall require that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact. This regulation is unique in that it applies to the *intake* of water and not the discharge. The goal of this regulation is to minimize the impingement (where fish and other aquatic life are trapped in cooling water intake screens) and entrainment (where aquatic organisms, eggs and larvae are sucked into cooling water systems) of fish and other aquatic organisms as they are drawn into an industrial facility's cooling water intake.



## NPDES Watershed Strategy

OWM developed the NPDES Watershed Strategy with input from states and EPA regions. The final strategy reflects a first step towards the Office of Water's goal of fully integrating the NPDES permitting program into the agency's broader watershed protection approach.

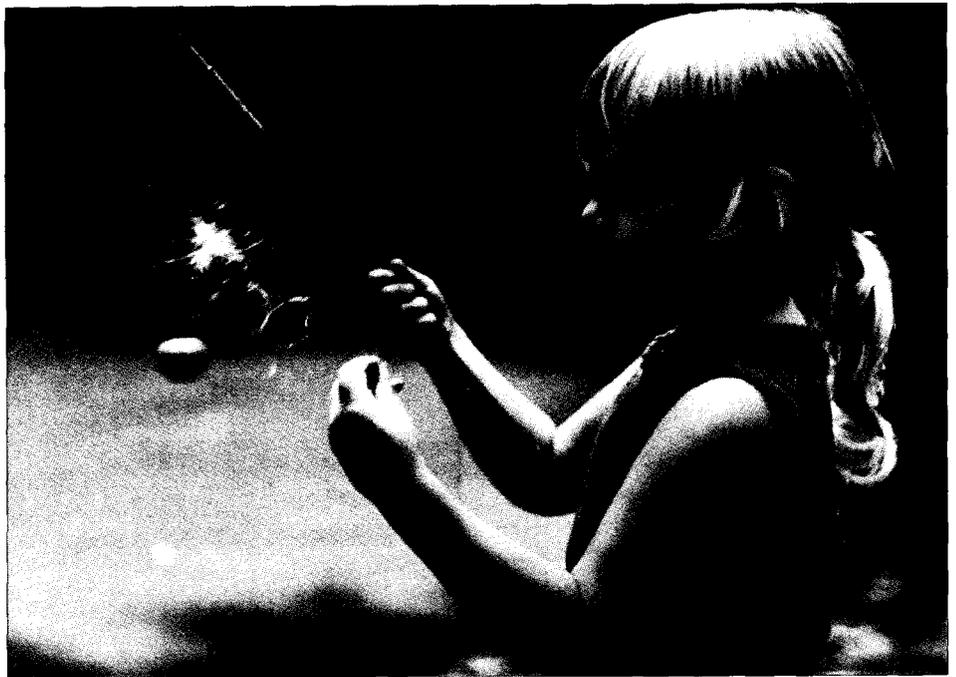
The Watershed Strategy identifies six areas that must be addressed to improve water quality on a watershed basis nationwide.

- Statewide coordination: support the development of state-wide basin management frameworks, and coordinate interstate basin efforts to facilitate implementation of the watershed protection approach.
- NPDES Permits: streamline the process for NPDES permit development, issuance, and review, and develop innovative approaches to permitting on a watershed basis where feasible
- Monitoring and assessment: develop a state-wide monitoring strategy, and

establish point-source ambient monitoring requirements.

- Programmatic measures and environmental indicators: revise existing national accountability measures to facilitate implementation of the watershed protection approach.
- Public participation: utilize existing NPDES public participation process in development of watershed protection plans, and seek broad public participation in identifying local environmental goals.
- Enforcement: include emphasis on facilities that discharge to priority basins.

Implementation of the watershed strategy is now underway, and will include the completion of assessments of each state's watershed protection activities and needs. OWM will coordinate with other EPA Offices and states to ensure that ongoing program activities take watershed planning into consideration.



### *NPDES Watershed Permitting*

A *NPDES Watershed Strategy* has been developed to ensure that the NPDES Program protects watersheds as effectively as possible.

### *NPDES Wet-Weather Strategies*

Chief among the NPDES program's responsibilities is the effective implementation of EPA's *wet-weather strategies*, including stormwater management and the control of combined sewer and sanitary sewer overflows.



### *Stormwater Management*

Stormwater discharges from many sources are largely uncontrolled. For this reason, the mandate of the *Stormwater Program* is particularly challenging.

Amendments to the Clean Water Act established a two-phased approach to address stormwater discharges. Phase 1, currently being implemented, requires permits for separate storm water systems serving large and medium-sized communities (those with over 100,000 inhabitants), and for stormwater discharges associated with industrial and construction activity involving at least five acres.

To address the large number of industrial dischargers of stormwater--for populations over 100,000--EPA has developed a strategy with a tiered framework to control administrative burden while emphasizing reduction in risk to human health and ecosystems. Phase 2, now under development, will address remaining stormwater discharges. A proposed regulatory approach would require permits for municipalities in urban areas with populations under 100,000, and smaller construction sites.

### *Combined Sewer Over-ows (CSOS)*

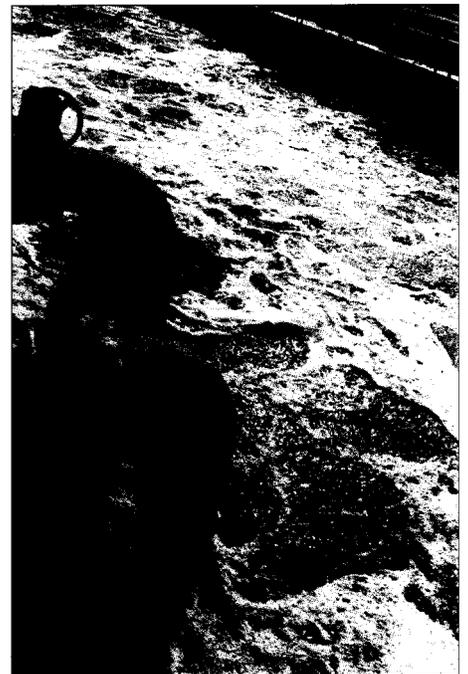
A combined sewer overflow is a discharge from a sewer system that is designed to carry sanitary wastewater and stormwater in the same pipe to a sewage treatment plant. In periods of rainfall or snowmelt, a combined sewer system can discharge excess wastewater directly to rivers, lakes, and estuaries, cause health and environmental hazards because treatment plants can not handle the extra flow.

In April 1994, EPA issued the CSO Control Policy, which calls for communities to control CSOS using a combination of immediate measures, such as public notification and better operation and maintenance, and long-term control activities, such as construction of storage or treatment facilities for wet weather flows. Despite its rigorous approach to controlling

CSOS, the CSO Control Policy provides communities with the flexibility to develop a workable, cost-effective solution to a major environmental problem.

### *Sanitary Sewer Overflows*

EPA is currently evaluating the extent of sanitary sewer overflows across the country. The agency will work with the public and with constituent groups across the country to identify and evaluate issues associated with these overflows to protect human health, property, and water quality.



## ***Animal Feeding Operation (AFOS)***

There are approximately 450,000 AFOS throughout the United States, ranging from small livestock production facilities with few animals to the current trend of large and geographically concentrated facilities generating animal wastes equivalent with a medium-sized city. AFOS, either singularly, or in



combination with other AFOS in a watershed, have been shown to cause significant environmental and public health concerns, including nutrient enrichment of surface waters, contamination of drinking water supplies, fish kills, and odor problems.

Under Section 502 of the Clean Water Act, concentrated animal feeding operations (CAFOs) are point sources and must apply for a National Pollutant Discharge Elimination System (NPDES) permit. Of approximately 6,600 CAFOs, fewer than a quarter have NPDES permits.

During the past few years, significant attention to AFOS has put the issue in the spotlight. The lagoon spills from hog

farms in North Carolina in the summer of 1995 and public concerns about the potential relationship between nutrient enrichment and occurrence of the microorganism, *Pfiesteria*, that attacks fish, is an example of environmental and public health issues.

## ***Mining***

Active and inactive mines throughout the United States present many complex environmental and regulatory issues. Mining is regulated under various federal and state authorities. Federal statutory authority is spread among several agencies; no one agency has overall responsibility.

Regulation of hardrock activities occurs via a complex web of sometimes overlapping jurisdictions, laws and rules covering several environmental media. Recognizing the significance of environmental impacts and the statutory and regulatory complexities of hardrock mining activities, EPA published the Hardrock Mining Framework document in September 1997. Developed by a national workgroup, the Framework is designed to help EPA implement a multi-media, multi-statute approach that focuses on understanding and improving the use of existing EPA authorities and improving EPA's partnership role with other federal agencies and stakeholders.

To focus scarce financial and human resources on priority sites, several federal agencies have developed a joint watershed approach to address abandoned mines on federal lands, which includes a collaborative effort with state and local agencies, tribes, and private parties. This approach consists of four phases and utilizes a flexible schedule and pace for conducting each phase,

- 1 ) identifying and prioritizing watersheds
- 2) characterizing and ranking individual sites
- 3) developing and implementing a cost-effective mitigation plan for priority watersheds
- 4) monitoring for environmental, public health, and safety objectives and effectiveness

## **Coal Mining**

Abandoned coal mines cause many of the greatest impairments to water quality throughout the Appalachian region of the United States. EPA, the Office of Surface Mining (OSM), the Interstate Mining Compact Commission (IMCC) and concerned states have combined their efforts to develop a proposed comprehensive watershed restoration program to help improve water quality in the areas where abandoned mines are located. These efforts are designed to clean up rivers and streams polluted by coal mine drainage, as well as continuing to work with all affected stakeholders.

The program includes, among other things, efforts to provide incentives for re-mining of abandoned sites, use of best management practices (BMPs) to achieve limitations on various chemicals, and an increased focus on a cumulative watershed approach that relies upon total maximum daily loads (TMDLs) to achieve compliance with water quality standards (WQS).

### **Whole Effluent Toxicity (WET)**

*WET is the total toxic effect Of an effluent measured by a biological toxicity test.*

A WET test captures the effect of all toxicants on exposed test organisms without requiring the identification of specific toxicants.

WET replicates to the greatest extent possible the actual environmental exposure of aquatic life to effluent toxicants. WET tests use the same essential procedures as those used to generate water quality criteria.

WET is used in NPDES permits in two fundamental ways:

- to regulate the toxicity of a discharge
- to generate data on the toxicity of a discharge

NPDES permit limits for WET typically are expressed either as a concentration of effluent in clean water that must not result in an unacceptable WET test endpoint (such as lethality of more than half of the test organisms) or a

number of toxic units (such as 3 TU) which corresponds to an effluent concentration.

WET limits are typically calculated to ensure that state water quality criteria for toxicity (numeric or narrative) are attained and maintained. Alternatively, WET monitoring requirements instead of WET limits are often included in NPDES to generate toxicity data for use in making future decisions about whether WET needs to be controlled at a particular discharge point.

### **Pretreatment**

The National Pretreatment Program is a cooperative effort of federal, state, and local regulatory environmental agencies established to protect water quality. The program is designed to reduce the level of pollutants discharged by industry and other non domestic wastewater sources into municipal sewer systems, and thereby, reduce the amount of pollutants released into the environment through wastewater. The objective of the program is to protect the Publicly Owned Treatment Works (POTW) from pollutants that may interfere with plant operation, prevent untreated pollutants from being introduced into the POTW, and to improve opportunities for the POTW to reuse wastewater and biosolids that are generated.

The General Pretreatment Regulations require POTWS that meet certain requirements to develop local pretreatment programs to control industrial discharges into their municipal sewer systems. These programs must be approved by either EPA or the state acting as the pretreatment Approval Authority. More than 1,500 POTWS have developed Approved Pretreatment Programs.

EPA has also developed national categorical pretreatment standards that apply numeric pollutant limits to industrial users in specific industrial categories. The General Pretreatment Regulations include reporting and other requirements necessary to implement these categorical standards.

## **Biosolids**

OWM's *National Biosolids Program* regulates biosolids (sewage sludge) that are used or disposed of through land application, surface disposal, or incineration. Anyone who works with biosolids is probably regulated under this program. While all compliant practices are permitted by this program, EPA and other federal agencies have continued to promote the beneficial use of the valuable biosolids resource.

EPA's program for biosolids management was mandated by the Clean Water Act. OWM's enhanced biosolids program promotes understanding and compliance with the Federal Part 503 biosolids rule as well as the adoption of additional user and environmentally friendly practices for managing biosolids. Through partnerships with stakeholders OWM is working for the adoption of a biosolids environmental management system that goes beyond compliance with federal and state rules and helps gain public acceptance of biosolids recycling.

OWM and other EPA offices also offer guidance and technical assistance for the beneficial use of biosolids as soil amendments and fertilizer. By helping the public understand the benefits or using biosolids and other similar by-products, EPA enhances pollution prevention by promoting the recycling of biosolids—a beneficial technology for a better environment.

*Biosolids Environmental Management System (BEMS)* is a stakeholder-based program for biosolids management that goes beyond compliance with federal and state rules. BEMS is expected to include a code of good practice, guidance for meeting the code, action plans for entities pledging to meet the code, training programs, and various forms of third-party verification that entities are adhering to their action plans.



### • *Financial Support*

As a leader in wastewater control, OWM is involved in many activities that promote improved wastewater treatment. The Office provides direction and assistance to national, state, and local programs abate and prevent municipal water pollution. Here is an overview.

### *Public-Private Partnerships (P3)*

EPA's *Public-Private Partnerships (P3)* initiative removes barriers to the private ownership of municipal wastewater facilities for those facilities constructed with EPA grant funds. Local officials are in the best position to develop capital financing options that

### **Construction Grants Program**

*During the 1970s and 1980s, the Construction Grants Program was a major source of federal funds, providing more than \$60 billion for the construction of publicly owned and operated wastewater treatment projects. These projects, which constituted a significant contribution to the nation's water infrastructure, included sewage treatment plants, pumping stations, and collection and interceptor sewers; rehabilitation of sewer systems; and the control of combined sewer overflows. EPA's effective management of the construction grants program led to the improvement of water quality in thousands of municipalities nationwide.*

With the 1987 amendments to the Clean Water Act, Congress set 1990 as the last year that funds would be appropriated for the *Construction Grants Program*. By phasing out the construction grants program, EPA shifted the primary method of municipal financial assistance from grants to loans provided by *State Revolving Funds* (see below). Since 1990, Congress has continued to earmark grant funds for special projects, frequently at levels exceeding \$100 million per year. As a result of this earmarking, OWM continues to manage a new-construction grants program.

### **State Revolving Funds**

The Clean Water State Revolving Fund (CWSRF or SRF) program is an innovative method of financing a range of environmental projects. Under the program, EPA provides grants or "seed money" to all 50 states plus Puerto Rico to capitalize state loan funds. The states, in turn, make loans to communities, individuals, and others for high priority water quality activities. As money is paid back into revolving funds, new loans are made to other recipients that need help in maintaining the quality of their water. Currently, the program has over \$26 billion in assets with approximately \$3 billion distributed in new loans annually.

The SRF program is a powerful partnership between EPA and the states. It allows states the flexibility to provide funding for projects that will address their highest-priority water quality needs. Since the program is managed largely by the states, project eligibility varies according to each state's program and priorities. Eligible loan recipients may include communities, individuals, citizens' groups, nonprofits, and others. Loan funds may be used to better the quality of watersheds through a wide range of water-quality related projects; loans may also be used for the protection of groundwater resources.

In addition to managing the CWSRF program, OWM is supporting OGWDW in managing the new Drinking Water SRF program.

### **Types of regulated Pollutants**

*CONVENTIONAL POLLUTANTS* are contained in the sanitary wastes of households, businesses, and industries. These pollutants include human wastes, ground-up food from sink disposals, and laundry and bath waters. Conventional pollutants include:

*PATHOGENS* are organisms which cause disease in humans.

*TOXIC POLLUTANTS* are a group of more than 100 pollutants that have been found to be harmful to animal or plant life by certain pathways of exposure. They are primarily grouped into organics (including pesticides, solvents, polychlorinated biphenyls (PCBS), and dioxins) and metals (including lead, silver, mercury, copper, chromium, zinc, nickel, and cadmium).

*NONCONVENTIONAL POLLUTANTS* are any additional substances that are not conventional or toxic that may require regulation. These include nutrients such as nitrogen and phosphorus.

meet their particular needs. EPA is committed to supporting these communities and allowing them flexibility in financing the wastewater treatment infrastructure needed to achieve the highest possible level of environmental protection.

#### *Section 106 Water Pollution Control Program Grants*

Section 106 of the Clean Water Act authorizes EPA to provide federal assistance to states (including territories, the District of Columbia, and Indian tribes) and interstate agencies to establish and implement water pollution control programs.

Prevention and control measures supported by State Water Quality Management programs include permitting; pollution control activities; surveillance, monitoring, and enforcement; advice and assistance to local agencies; and the provision of training and public information.

Increasingly, EPA and states are working together to develop *basin-wide approaches* to water quality management. The Section 106 program is helping to foster a watershed protection approach at the state level by looking at states water quality problems holistically, and targeting the use of limited finances available for effective program management. In the near term, the program is seeking ways to streamline the grants process to ease the administrative burden on states.

Federal assistance is available to qualified Indian tribes under section 106 for developing and establishing Water Quality programs on reservation lands. Activities supported by tribal water quality programs include developing water quality standards, water quality monitoring and problem assessment, and initiating actions to establish permitting and enforcement programs.

#### *Water Quality Cooperative Agreements*

Through this program and under authority of Section 104(b)(3) of the Clean Water Act, EPA makes grants to state water pollution control agencies, interstate agencies, municipalities and other nonprofit institutions, organizations, and individuals to promote the coordination of environmentally beneficial activities. These activities include municipal compliance with the Clean Water Act, stormwater control, sludge management, and pretreatment.

Among the efforts eligible for funding under this program are research, investigations, experiments, training, environmental technology demonstrations, surveys, and studies related to the causes, effects, extent, and prevention of pollution.

EPA's regional offices select grant proposals that are most likely to advance the states' and EPA's ability to deal with water pollution. Headquarters also manages grants that address concerns of a national scope. Unlike the Section 106 program, these grants may not be used to fund ongoing program activities or construction except to a limited extent as part of demonstrations.

#### *Indian Grants Management*

Tribal communities and Native Alaskan Villages face significant human health and environmental problems due to the lack of adequate wastewater treatment systems. The office of Wastewater Management is committed to working with tribes and other federal agencies to assure that funding will be available to help Native Americans and Alaskan Villagers preserve their environmental and public health,

#### *Clean Water Act Indian Set-Aside Grant Program*

In 1987, the Indian Set-Aside Grant (ISA) Program was created under section 518(c) of the Clean Water Act (CWA) Amendments to increase Indian tribes' ability to plan design, construct, operate, and maintain wastewater treatment systems. The program is administered in cooperation with the Indian Health Service. This partnership maximizes the technical resources available through both agencies to address tribal sanitation needs. Millions of dollars in grant funds have been made available for wastewater projects on Indian lands and in Alaska Native Villages. To date, CWA ISA Program has disbursed more than \$78 million in funding.

#### *Alaska Native Village Sanitation Program*

There are 268 communities in Alaska, of which 70 percent are considered Alaskan Native Villages (ANVs). Many of these villages lack basic drinking water and sewage disposal systems to service their residents. In 1995, EPA created a grant program for ANVS and rural Alaska communities to assist them with funding to construct water and wastewater sanitation facilities. Other sources of funds are also provided for training and technical assistance activities. To date, \$47 million has been made available to improve sanitation in Alaska rural communities and Native Villages.

## **Wastewater Assistance to U.S. Colonias on the Mexico Border**

*Colonias* are impoverished communities along the U.S.-Mexico border which lack basic services such as roads, safe drinking water or wastewater treatment. Over 1,200 (total population

of over 300,000) have been identified in Texas and New Mexico. EPA grants, matched by state resources, provide for construction of wastewater facilities in these communities. \$320 million has been appropriated by Congress for this program.



### **EPA Activities on the U.S. - Mexico Border**

The United States and Mexico 2000+ miles of common border. More than nine million people live along it, mostly in fifteen "sister city" pairs. The rapid increase in population and industrialization in the border cities has overwhelmed existing wastewater treatment, drinking water supply, and solid waste disposal facilities. Untreated and industrial sewage often flows north into the United States from Tijuana, Mexicali, and Nogales, and into the Rio Grande.

Some 300,000 people on the United States side of the border also lack safe drinking water, wastewater collection and treatment systems, and adequate solid waste disposal facilities. They live in unincorporated areas called *colonias*.

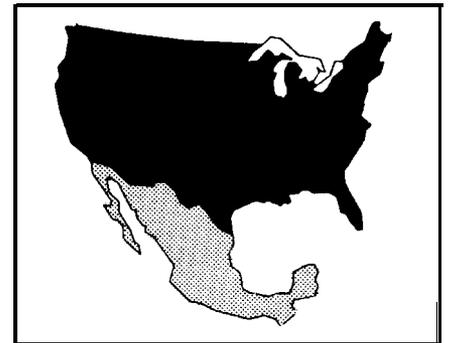
As part of the Administration's efforts to implement the North

American Free Trade Agreement (NAFTA), EPA is working with other federal, state, and local agencies to help find and fix environmental problems on the border. Some \$8 billion in a mix from federal, state, local, and private-sector funding will be required to adequately protect public health and the border ecosystem.

OWM's and Regional partners, border development activities include:

- Identification of border community needs, and help in meeting them
- Grants for funding of wastewater treatment construction in the *colonias* and elsewhere on the border
- Helping improve environmental information collection on the border
- Providing technical assistance and training to officials and border residents

EPA will continue working to



improve environmental conditions along the border. Border offices have been opened in San Diego and El Paso to serve as community outreach centers for people on both sides of the border. EPA will also continue to support the work of the Border Environment Cooperation Commission, the North American Development Bank, the U.S.-Mexico Foundation for Science, as well as other initiatives to improve the border environment and the health of its residents.

### *Small Community Initiatives*

Living without basic indoor plumbing or adequate wastewater disposal systems is a common lifestyle in many small rural communities, including Alaska Native Villages, Indian tribes and economically disadvantaged communities along the United States - Mexico border (*colonias*). OWM's Small, Underserved Communities Team directs several programs to provide financial and technical assistance, information and outreach to help these communities address health and environmental problems and meet Clean Water Act requirements. The team focuses on communities with fewer than 10,000 people.



### *Small Community Outreach and Education (SCORE) Program*

*SCORE* is a national information and outreach network that aims to help small communities with fewer than 10,000 people provide self-sufficient wastewater facilities. *SCORE*'s message is that the keys to self-sufficient facilities are appropriate technology, sound financial management and operations, pollution prevention, and public education. *SCORE* works through states, federal agencies, public interest and advocacy groups, and educational institutions to deliver its messages. The headquarters *SCORE* coordinator conducts periodic teleconferences with EPA regional office *SCORE* coordinators to keep abreast of issues that affect their small community audiences.

### *Rural Community Assistance (RCAP) Program*

*RCAP* is a national network of nonprofit organizations which provide onsite technical assistance through a cooperative agreement to help small rural communities develop and maintain adequate water and wastewater disposal systems. *RCAP* coordinates work with state and local officials to provide technical assistance, including facilities development, management and finance, operations and maintenance (O&M), program planning and supplemental funding needs in small rural communities. The program's focus is on unsewered communities under administrative orders, small systems with O&M problems, communities with permitting violations and other management, financing, and construction needs.

### *National Small Flows Clearinghouse (NSFC)*

Funded by EPA, the *NSFC* serves as the national collection and distribution center for information on small community wastewater systems and

innovative/alternative technology. The Clearinghouse provides a variety of services, including a toll-free technical assistance hotline, a free computer bulletin board system, Internet home page, computer databases, 2 newsletters, a journal and technical publications and videos. The Clearinghouse also manages the National Onsite Demonstration Program. This four-phased program funded by EPA seeks to demonstrate the successful implementation of alternative onsite wastewater technologies in small communities nationwide. The program funds the design, installation and monitoring of wastewater systems in selected communities. objectives include the development of model programs for managing and maintaining onsite systems and for training local officials, installers and engineers.

### *National Environmental Training Center for Small Communities (NETCSC)*

The Municipal Assistance Branch manages a cooperative agreement with the *NETCSC* at West Virginia University in Morgantown, WVA. *NETCSC* serves as a national environmental training center that supports environmental trainers nationwide to improve the quality of wastewater, drinking water, and solid waste services in communities with fewer than 10,000 people. *NETCSC* develops new training curricula, redesigns existing ones, and presents training courses around the country to help small communities meet federal and state environmental compliance requirements. Services also include a toll-free technical assistance center, quarterly newsletter, resource catalog, web site, and electronic databases.

### *Waste water Operator Onsite Technical Assistance*

Using funding under Section 104(g) of the CWA, this program operates through a network of operator training personnel in states to provide over-the-shoulder operator training and technical assistance to small wastewater treatment plants (under 5 MGD) with compliance problems. Approximately 800 facilities receive this assistance annually from state water pollution control agencies or state training centers.

### **Technical Assistance Program**

EPA provides technical assistance to other EPA offices and regions, state agencies, other federal agencies, municipalities, and a range of other constituents.

### *Municipal Technologies*

The Agency provides both direct and indirect assistance in municipal wastewater treatment technologies. Direct assistance includes one-on-one discussions about design, operation, and maintenance of systems, and the identification and solution of problems. Indirect assistance includes support for the development of regulations; technical information; guidance, assessments, evaluation, and cost estimates for the design, construction, and operation and maintenance of municipal wastewater treatment facilities. Areas of expertise include:

- conventional collection/pumping systems
- combined sewer and sanitary sewer overflow treatment and control
- stormwater treatment and management
- fixed film and suspended growth biological processes
- physical/chemical treatment processes
- advanced treatment processes
- conventional sludge treatment and disposal procedures
- biosolids technologies
- disinfection and odor control

- operation and maintenance
- safety
- plant startup and post-disaster assistance

### *Innovative and Alternative Technologies*

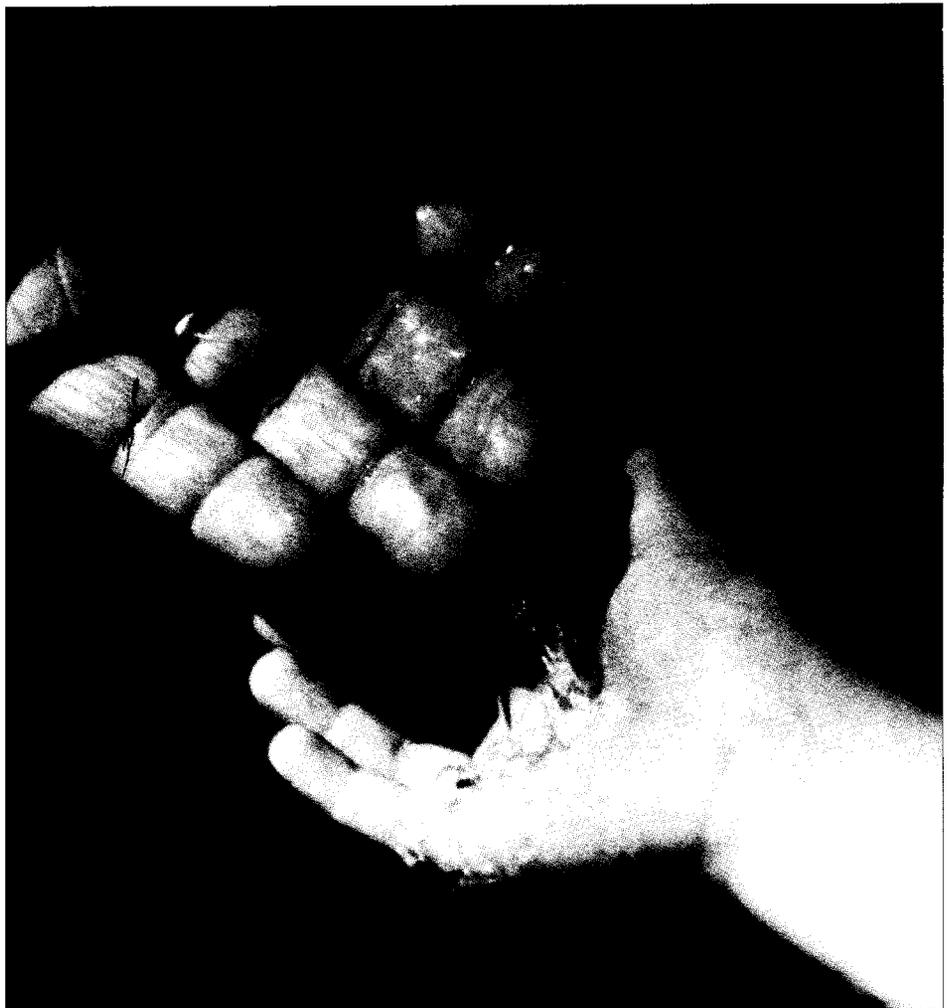
EPA also provides technical assistance for the development of innovative and alternative treatment technologies. Areas of expertise include:

- alternative collection systems
- on-site treatment systems
- land application of effluent
- innovative and alternative treatment technologies
- biosolids technologies
- land application of biosolids
- constructed wetlands
- composting technologies

- alternative disinfection technologies
- odor control
- operation and maintenance

### *Clean Water Needs Survey (CWNS)*

The Clean Water Needs Survey (CWNS) is a biennial cooperative effort between EPA and the states. In 1996, the overall needs for water quality projects and other activities were \$139.5 billion. The heart of the CWNS is the database with technical and cost information on 16,000 publicly owned wastewater treatment facilities. The database also contains cost and technical information for other programs and projects that target documented water quality or public health problems. The CWNS does not address private wastewater treatment facilities -- these are, of course, integral parts of the nation's water quality infrastructure.



### *Water Alliances for Voluntary Efficiency (WAVE) Program*

In 1992, EPA established the *Water Alliances for Voluntary Efficiency (WAVE) Program* to help businesses reduce water use. WAVE is a voluntary efficiency program whose goal is to prevent pollution by conserving water and reducing associated energy use.

At present, WAVE is focused on improving water efficiency in the lodging industry. Hotel/Motel Partners commit to surveying their facilities for opportunities to upgrade water-using devices and improving operating practices. The WAVE program will be expanded to office buildings and educational institutions in 1998.

To assist Partners, EPA established a WAVE Supporter program with equipment manufacturers and distributors, water management companies, utilities, state and local governments, and others. Supporters promote the benefits of water efficiency and provide information to WAVE partners and water conservation professionals.

EPA assists Partners and Supporters by publicly recognizing the environmental efforts of participants, and by providing materials they can use to educate their customers and employees about water efficiency.

### *Youth and the Environment Program*

Introduced in 1990, the *Youth and the Environment Program* gives economically disadvantaged urban and rural youth the chance to explore career opportunities in the environmental field.

By combining summer employment with academic training and hands-on experience, this program exposes students to many environmental career options. Students have worked in water supply management, wastewater treatment, recycling, energy, marine environments, hazardous waste, and natural resources protection.

Besides providing valuable work experience for disadvantaged teenagers, Youth and the Environment fosters a sense of stewardship among the participants,

### *National Wastewater Management Excellence Awards Program*

OWM manages a national awards recognition program that publicizes water quality achievements made in wastewater treatment facilities and programs. Award winners demonstrate exceptional technical expertise and a dedicated commitment to clean water. Traditionally, the Assistant Administrator for Water presents an engraved plaque to honor municipalities, individuals and programs for outstanding, innovative practices in the areas of operations and maintenance, beneficial biosolids use, pretreatment management, stormwater and combined sewer overflow controls.

### *Voluntary Environmental Management Systems*

The use of voluntary environmental management systems (EMS) by organizations is rapidly increasing around the world. These systems provide a framework for organizations and communities to more effectively manage their environmental obligations, including those required to comply with applicable statutes and regulations. In addition, these systems can be useful for moving beyond compliance, improving overall environmental performance, and making greater use of pollution prevention approaches. From a business standpoint, EMSs can help organizations meet their environmental obligations more efficiently, thus maintaining their competitive position in the global marketplace.

The most prominent environmental management systems standard now in place is the ISO 14001 International Standard, which was completed in September, 1996. Organizations around the world are now beginning to put in place EMSs based on ISO 14001. Many are also considering becoming certified to the standard by third-party auditors.

Government agencies, especially at the federal and state level, are now beginning to look closely at the possibility of integrating environmental management systems into their regulatory programs, including the ISO 14001 standard. EPA and several states are pursuing pilot projects with various organizations, to test these EMSs to determine if they really can help improve environmental performance. Another important project EPA is undertaking focuses exclusively on counties and municipalities. Specifically, EPA is providing focused training and other forms of assistance to a select group of these communities who are interested in establishing an environmental management system based on the ISO 14001 standard. Information on these projects is available on the OWM Home Page at <http://WWW.EPA.GOV/OWM/wm046200.htm>.



## Reinvention Efforts

The Permits Division in OWM is engaged in many reinvention activities that simplify the process by which permit and permit program decisions are made. Some of these result in regulatory changes, but others do not. Here is a short summary of these activities.

Revising **permit applications** to obtain necessary information more efficiently through electronic submission, eliminating unnecessary data requests, and giving waivers from reporting information already available through other sources.

Revising the **pretreatment program** to give POTWs greater flexibility to streamline their programs and to reduce the burden to both the cities and industrial users.

Revising **state program requirements for biosolids** to enable states with well run biosolids programs to more quickly become authorized without making unnecessary administrative changes in their programs.

Making several improvements to **NPDES permit regulations** to eliminate unnecessary regulations, reduce the administration of the NPDES program, and expand the use of general permits. This is a continuing project, and further changes might likely be made.

Following **electronic submission of NPDES reporting** to make reporting faster and less expensive.

Reducing **reporting and monitoring burdens based on levels of compliance** to allow for an overall 27% reduction in reporting without sacrificing any assurance of environmental protection.

## Information Resources

The Office of Wastewater Management provides public access to information about its programs. Please contact the following for additional information about wastewater and other EPA issues.

### FOR DOCUMENTS :

Water Resource Center  
U.S. EPA  
Mail Code RC-4100  
401 M Street, S.W.  
Washington, D.C. 20460  
Telephone: (202) 260-7786  
Fax: (202) 260-0386  
Internet: [waterpubs@epamail.epa.gov](mailto:waterpubs@epamail.epa.gov)

National Small Flows Clearinghouse  
West Virginia University  
Post Office Box 6064  
Morgantown, WV 26506  
Telephone: (800) 624-8301  
Fax: (304) 293-3161  
Internet: <http://www.nsfv.wvu.edu>

National Center for Environmental  
Publications and Information (NCEPI)  
11029 Kenwood Road  
Building #5  
Cincinnati, OH 45242  
Telephone: (513) 489-8190 or (800)  
490-9198

### FOR MORE SPECIFIC INFORMATION ABOUT WASTEWATER PROGRAMS:

*Office of Wastewater Management  
(OWM)  
U.S. EPA  
Mail Code 4201  
401 M Street, S. W.  
Washington, D.C. 20460  
Internet: <http://www.epa.gov/owm/>*

### FOR GENERAL INFORMATION ABOUT THE U.S. EPA:

*EPA Information Resources Center  
U.S. EPA  
Mail Code 3404  
401 M Street, S. W.  
Washington, D. C. 20460  
Telephone: (202) 260-5922  
Fax: (202) 260-6257*