





Clean *and* Safe Water

*Ensure drinking water is safe.
Restore and maintain oceans, water-
sheds, and their aquatic ecosystems
to protect human health, support
economic and recreational activities,
and provide healthy habitat for fish,
plants, and wildlife.*



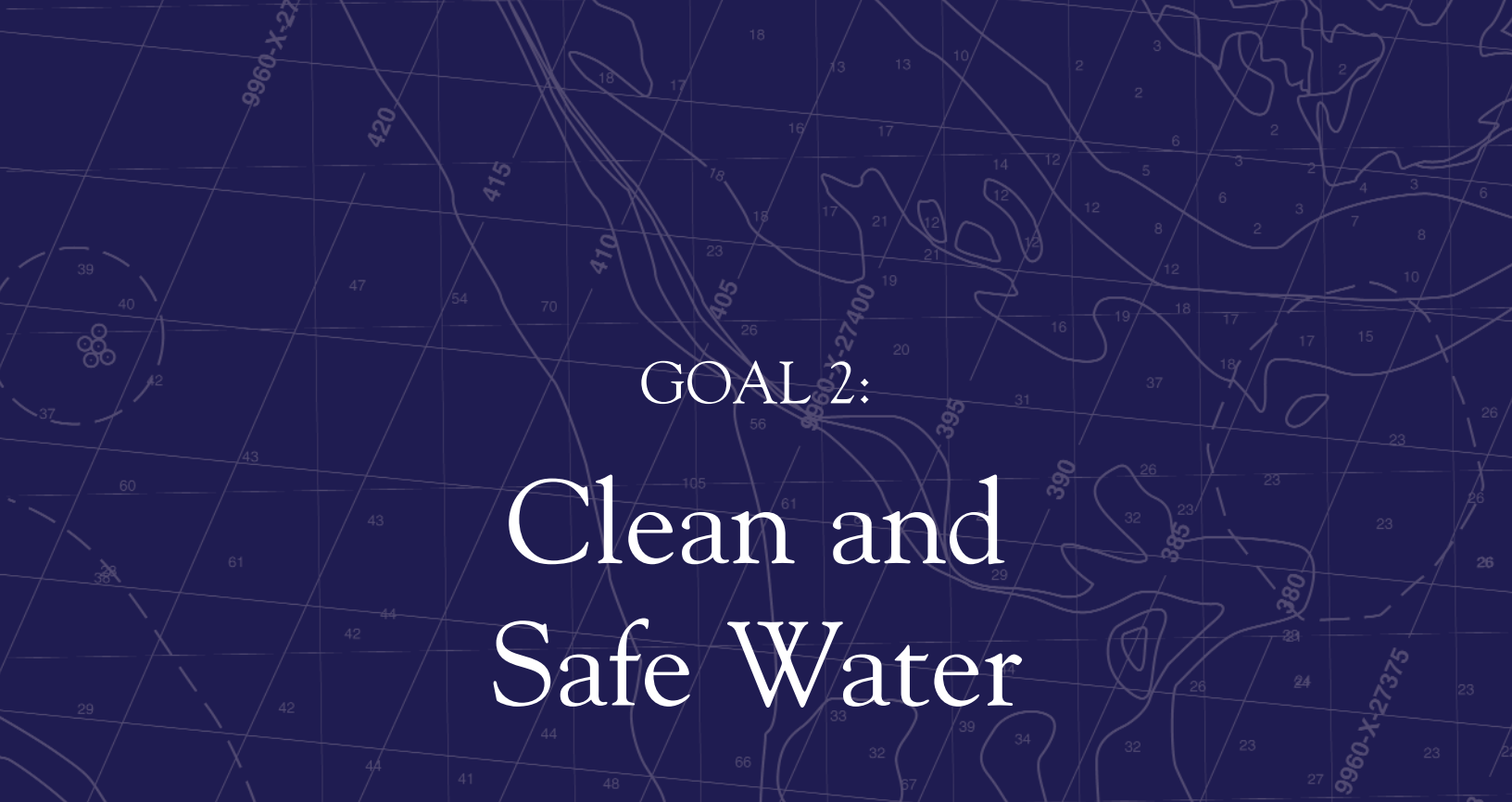


This “Clean and Safe Water” goal defines the improvements that EPA expects to see in the quality of the nation’s drinking water and of surface waters over the next 5 years. These goals include improving compliance with drinking water standards, maintaining safe water quality at public beaches, restoring more than 2,000 polluted waterbodies, and improving the health of coastal waters.

Three key strategies will drive progress toward these clean and safe water goals:

- **Core Programs:** Continue effective implementation of core national water programs, giving priority to improving water quality monitoring and information management, as well as working with state partners to strengthen water quality standards, improve discharge permits, and reduce pollution from diffuse or “nonpoint” sources.
- **Water Infrastructure:** Help sustain and secure the network of pipes and treatment facilities that constitute the nation’s water infrastructure through investments in State Revolving Loan funds, pursuit of innovative financing, local adoption of sustainable management practices, and an increased commitment to water efficiency as well as partnerships and technical assistance to enhance the abilities of utilities to plan for, prevent, detect, and respond to security threats.
- **Watershed Restoration and Protection:** Apply a watershed approach to restoring polluted waters across the country, including developing Total Maximum Daily Loads, implementing clean-up plans on a watershed basis, and promoting innovative, cost-effective practices like water quality trading and watershed permitting to restore and protect water quality.

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GOAL 2: Clean and Safe Water

Since the Clean Water and Safe Drinking Water Acts were enacted over 3 decades ago, government, citizens, and the private sector have worked together to make dramatic progress in improving the quality of surface water and drinking water.

Thirty years ago, many of the nation's drinking water systems provided water to the tap with very limited treatment. Drinking water was too often the cause of illnesses linked to microbiological and other contaminants. Today, drinking water systems monitor the quality of the water they provide and treat water to ensure compliance with standards covering a wide range of contaminants. In addition, efforts to protect waters that are sources of drinking water are helping to keep drinking water safe.

Thirty years ago, about two-thirds of the surface waters assessed by states were not attaining basic water quality goals and were considered polluted.¹ Some of the nation's rivers were open sewers posing health risks, and many water bodies were so polluted that swimming, fishing, and recreation were impossible. Today, the number of polluted waters has been dramatically reduced, and many clean waters are getting even healthier. A massive investment of federal, state, and local funds has resulted in a new generation of sewage treatment. More than 50

industrial sectors now comply with nationally consistent discharge regulations. In addition, sustained efforts to implement best management practices have helped reduce runoff of pollutants from diffuse, or "nonpoint," sources.

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Cleaner, safer water has renewed recreational, ecological, and economic interests in communities across the nation. The recreation, tourism, and travel industry is one of the largest employers in the country, and a significant portion of recreational spending comes from swimming, boating, sport fishing, and hunting.² In addition, each year, more than 180 million people visit beaches for recreation.³

The dramatic restoration of some of the nation's most polluted waters has paid large dividends in enhanced recreation, healthier fisheries, and stronger local economies. Many of the nation's best-known water pollution problem areas are showing the results of years of restoration efforts. The Cuyahoga River, once so polluted that it caught fire, is now busy with boats and harbor businesses. Oregon's Willamette River has been restored to provide swimming, fishing, and water sports. In Boston, the Charles River, once badly polluted, increasingly supports boating and related recreation.



Despite numerous improvements in the quality of water, serious water pollution and drinking water problems remain in certain areas. Population growth continues to generate higher levels of water pollution and places greater demand on drinking water systems. Continued progress toward clean waters and safer drinking water will require that the country maintain its commitment to the core programs that have proven so effective in the past and implement partnership approaches to improve water quality and protect human health.

To learn more go to: www.epa.gov/water/.



OBJECTIVE 2.1: PROTECT HUMAN HEALTH

PROTECT HUMAN HEALTH BY REDUCING EXPOSURE TO CONTAMINANTS IN DRINKING WATER (INCLUDING PROTECTING SOURCE WATERS), IN FISH AND SHELLFISH, AND IN RECREATIONAL WATERS.

Sub-objective 2.1.1: Water Safe to Drink.

By 2011, 91 percent of the population served by community water systems will receive drinking water that meets all applicable health-based drinking water standards through approaches including effective treatment and source water protection. (2005 baseline: 89 percent.)

Strategic Targets

- By 2011, 90 percent of community water systems will provide drinking water that meets all applicable health-based drinking water standards through approaches including effective treatment and source water protection. (2005 baseline: 89 percent.)
- By 2011, community water systems will provide drinking water that meets all applicable health-based drinking water standards during 96 percent of person months (i.e., all persons served by community water systems times 12 months). (2005 baseline: 95.2 percent.)
- By 2011, 86 percent of the population in Indian country⁴ served by community water systems will receive drinking water that meets all applicable health-based drinking water standards. (2005 baseline: 86 percent.)
- By 2011, minimize risk to public health through source water protection for 50 percent of community water systems and for the associated 62 percent of the population served by community water systems (i.e., “minimized risk” achieved by substantial implementation, as determined by the state, of actions in a source water protection strategy). (2005 baseline: 20 percent of community water systems; 28 percent of population.)
- By 2015, in coordination with other federal agencies, reduce by 50 percent



the number of homes on tribal lands⁵ lacking access to safe drinking water. (2003 baseline: Indian Health Service data indicate that 12 percent of homes on tribal lands lack access to safe drinking water [i.e., 38,637 homes lack access].)

Sub-objective 2.1.2: Fish and Shellfish Safe to Eat. By 2011, reduce public health risk and allow increased consumption of fish and shellfish, as measured by the following strategic targets:

Strategic Targets

- By 2011, reduce the percentage of women of childbearing age having mercury levels in blood above the level of concern to 4.6 percent. (2002 baseline: 5.7 percent of women of childbearing age have mercury blood levels above levels of concern identified by the National Health and Nutrition Examination Survey [NHANES].)
- By 2011, maintain or improve the percentage of state-monitored shellfish-growing acres impacted by anthropogenic sources that are approved or conditionally approved for use. (2003 baseline: 65 to 85 percent of the 16.3 million acres of state-monitored shellfish-growing acres estimated to be impacted by anthropogenic sources are approved or conditionally approved for use.)

Sub-objective 2.1.3: Water Safe for Swimming. By 2011, improve the quality of recreational waters as measured by the following strategic targets:

Strategic Targets

- By 2011, the number of waterborne disease outbreaks attributable to swimming in or other recreational

contact with coastal and Great Lakes waters will be maintained at 2, measured as a 5-year average. (2005 baseline: An annual average of two recreational contact waterborne disease outbreaks reported per year by the Centers for Disease Control over the years 1998 to 2002, adjusted to remove outbreaks associated with waters other than coastal and Great Lakes waters and other than natural surface waters [i.e., pools and water parks].)



- By 2011, maintain the percentage of days of the beach season that coastal and Great Lakes beaches monitored by state beach safety programs are open and safe for swimming at 96 percent. (2005 baseline: Beaches open 96 percent of the 743,036 days of the beach season [i.e., beach season days are equal to 4,025 beaches multiplied by variable number of days of beach season at each beach].)

MEANS AND STRATEGIES FOR PROTECTING HUMAN HEALTH

WATER SAFE TO DRINK

More than 280 million Americans count on the safety of tap water provided by their local water systems. EPA's strategy for ensuring safe drinking water includes developing and implementing drinking water standards, supporting infrastructure, protecting waters that are a source of drinking water, strengthening the security of water systems, and improving access to safe drinking water on tribal lands.

Drinking Water Standards

The Safe Drinking Water Act (SDWA) directs EPA to establish national standards for contaminants in drinking water provided to consumers by water systems. EPA sets standards based on sound science and rigorous technical and economic analyses. To date, EPA has established standards for 91 contaminants.

Over the next several years, EPA will conduct the second 6-year National Primary Drinking Water Rule Review to help determine whether existing standards need to be

revised. We will also continue to assess the need for new drinking water standards. Guided by recommendations from the National Research Council, the National Drinking Water Advisory Council, and other stakeholders, we will evaluate data on health effects and the risk of exposure to various contaminants; gather information on technologies that prevent, detect, and remove contaminants; and evaluate compliance costs.

Ensuring Compliance

We will work closely with states (49 of which have primary enforcement authority for health-based standards under SDWA), tribes, and owners and operators of municipal water systems to ensure that Americans are served by community water systems providing water that meets health-based standards—including new regulations, such as recent rules for cryptosporidium and disinfection byproducts. To promote compliance with drinking water standards, states carry out a variety of activities, such as conducting onsite sanitary surveys of water systems and working with small systems to improve their capabilities. EPA will work to improve compliance rates by providing guidance, training, and technical assistance; ensuring proper certification of water system operators; promoting consumer awareness of drinking water safety; maintaining the rate of system sanitary surveys and onsite reviews; and taking appropriate action for non-compliance.

Small community water systems are more likely to have difficulty complying with drinking water standards. Many serve low-income populations and are located in rural areas. Water systems such as those serving tribal areas,⁶ Pacific Island Territories, Alaska Native villages, and communities along the U.S.-Mexico border face special challenges in providing safe water. To support small communities, EPA





will provide training and assistance in using cost-effective treatment technologies, properly disposing of waste, and complying with standards for high-priority contaminants, including microbes, disinfectants, disinfection byproducts, and arsenic. We will also work with states to strengthen small systems' technical, management, and financial capabilities.

The Safe Drinking Water Information System is a database that serves as the primary source of information on compliance with SDWA requirements. To help states and authorized tribes manage their drinking water programs, EPA will continue to improve the database to ensure that it reflects all applicable drinking water regulatory requirements and that data are complete, accurate, timely, and consistent.

Sustainable Infrastructure

Providing drinking water that meets public health standards often requires an investment in constructing or maintaining infrastructure. The Drinking Water State Revolving Fund (DWSRF) provides water systems with low-interest loans to improve infrastructure.

According to EPA's Gap Analysis Report (2002), even with financial assistance from the DWSRF the country faces a multi-billion-dollar gap in capital infrastructure financing over the next 20 years.⁷ Assuming no growth in revenue, the gap is estimated to be approximately \$100 billion between 2000 and 2019. Assuming a real rate of growth of 3 percent per year, this gap shrinks to a point of \$45 billion. EPA will continue its commitment to provide capitalization grants to state DWSRFs until 2018. Low-interest loans from the state DWSRFs support needed infrastructure improvements. EPA will work with states to ensure their SRFs are sustainable and to ensure that, nationally, the DWSRF will provide \$1.2 billion annually in the long term. In addition, EPA will work with states to ensure that DWSRF funds are

IMPROVING TRIBAL DRINKING WATER SYSTEM COMPLIANCE

Often small and rural, tribal water systems face significant challenges in meeting drinking water standards and protecting sources of drinking water. EPA is taking steps to improve tribal water systems by:

- Developing quick-reference guides to help tribes comply with drinking water regulations.
- Promoting watershed protection on tribal lands and implementing source water protection plans.
- Implementing the Public Water System Supervision and Underground Injection Control programs directly on tribal lands.
- Participating in an interagency effort that encourages using available funds to improve tribal access to safe drinking water.

managed effectively, and encourage water system owners and operators to adopt sustainable management systems.

Sources of Drinking Water

Protecting sources of drinking water, such as surface and ground waters, can reduce violations of drinking water standards. We will provide training and technical assistance to states, tribes, and communities taking measures to prevent or reduce contamination of source water, and we will collaborate with stakeholders to protect source water. We are also protecting ground water that is a source of drinking water by working with states, tribes, industry, and other stakeholders to ensure safe underground injection of waste materials. This work includes identifying and evaluating risks from Class V shallow wells and addressing emerging issues, such as carbon sequestration and disposing of drinking water treatment residuals. Finally, we will work with states and tribes to use Clean Water Act authorities to prevent contamination of waters that serve as public water supplies and will encourage other federal programs to focus protection efforts in source water areas.

Water Infrastructure Security

The President has given EPA primary responsibility for coordinating federal, state, and local authorities in the protection of drinking water systems. The Bioterrorism Act of 2002 requires community water systems serving more than 3,300 people to develop vulnerability assessments and to certify emergency response plans. With most of this work now completed, EPA has shifted its focus to reducing risks associated with these vulnerabilities. Our water security program will provide tools and assistance to prevent, detect, respond to, and recover from intentional acts and natural disasters; encourage mutual aid agreements within states and regions; and provide training and exercises to improve water utilities' preparedness.

We are also undertaking two significant initiatives: (1) EPA's Homeland Security Sentinel Initiative (formerly known as Water Sentinel), which will deploy and test a contamination warning system; and (2) the Water Alliance for Threat Reduction, which will provide direct water security training to drinking water utilities serving more than 100,000 people. Collectively, these efforts will represent a robust approach for addressing the threats, vulnerabilities, and consequences facing the water sector.



Tribal Access to Safe Drinking Water

The 2002 World Summit on Sustainable Development in Johannesburg adopted the goal of reducing the number of people lacking access to safe drinking water and basic sanitation by 50 percent by 2015.⁸ In the United States, EPA will focus on providing infrastructure to increase the number of tribal homes with access to safe drinking water and basic sanitation. We will support develop-

ment of drinking water and wastewater facilities in Indian country and Alaska Native villages using set-aside funds from the Drinking Water and Clean Water State Revolving Funds as well as targeted grants.

We will also work with other federal agencies that play key roles in addressing this problem, such as the U.S. Departments of Health and Human Services, Interior, and Agriculture, to coordinate a strategy for improving tribes' access to water and sanitation. (Note that projects to improve infrastructure along the U.S.-Mexico Border and in the Pacific Islands will also increase peoples' access to safe drinking water and basic sanitation. They are described under Goal 4: Healthy Communities and Ecosystems.)

To learn more go to: www.epa.gov/safewater/.



FISH AND SHELLFISH SAFE TO EAT

Some toxic contaminants that enter water bodies can move up the food chain, building up to levels in fish that make them unsafe to eat. The majority of fish consumption advisories issued today, for example, are the result of unhealthy levels of mercury, released into the air from combustion sources, such as coal-fired power plants and incinerators. The mercury is then deposited by rainfall onto land and water, where it is methylated by bacteria and moves up the aquatic food web through fish to people. To make more fish safe to eat, EPA is working to reduce releases of mercury to the air through controls on combustion sources. Federal market-based and other regulatory air programs, for example, will reduce electric-generating unit emissions of mercury. (See Goal 1: Clean Air and Global Climate Change.)

In addition to reducing mercury emissions, EPA is working to improve water and sediment quality. We will continue to implement Clean Water Act programs designed to reduce discharges from stormwater systems, combined sewer overflows, and concentrated animal feeding operations and to reduce runoff from nonpoint sources. We are also working to restore the quality of aquatic sediment in critical water bodies, with special emphasis on the Great Lakes. To reduce the potential for future sediment contamination, EPA is working with its partners to reduce the use of polychlorinated biphenyls (PCBs), a major sediment contaminant, in electrical equipment. (See Goal 4: Healthy Communities and Ecosystems.)

A key element of EPA's strategy for making more fish safe to eat is expanding information about fish safety and making it available to the public. The National Listing of Fish Consumption Advisories website, for example, allows states and tribes to post their advisories and provide information about locations, fish affected, and the number of meals or amount of fish that a person can safely eat. EPA will continue to guide states and tribes in monitoring fish safety and issuing fish consumption advisories.

To learn more go to: www.epa.gov/waterscience/fish/.

Like fish, shellfish can be unsafe for consumption as a result of accumulating disease-causing microorganisms and toxic algae. The U.S. Food and Drug Administration (FDA), Interstate Shellfish Sanitation Commission (ISSC), and coastal states work together to manage the safety of shellfish. States monitor shellfishing waters and can restrict harvesting if shellfish are unsafe. Such restrictions can be the result of poor water quality due to anthropogenic activity, such as discharges from sewage treatment plants. Through its surface water program, EPA is addressing anthropogenic sources that result in such closures. We will continue to work with states, FDA, ISSC, and the National Oceanic and Atmospheric Administration (NOAA) to increase the percentage of shellfishing acres open for harvesting by improving water conditions.



These agencies have developed an information system that uses state monitoring data to pinpoint areas where shellfishing has been restricted. This system, now operating in 13 of 22 shellfishing states, enables EPA and states to identify possible sources of pollutants restricting the use of shellfishing waters. EPA will also use this information to help develop watershed plans, implement National Estuary Program plans, issue or reissue permits to point sources, enforce existing permits, and implement controls over polluted runoff.

To learn more go to: www.epa.gov/waterscience/shellfish/.

WATER SAFE FOR SWIMMING

Recreational waters, especially beaches in coastal areas and the Great Lakes, provide outstanding recreational opportunities for many Americans. Swimming in some recreational waters, however, can pose an increased risk of illness as a result of exposure to microbial pathogens. In some cases, these pathogens can be traced to sewage treatment plants, malfunctioning septic systems, and discharges from storm water systems and animal feeding operations. EPA is implementing a three-part strategy to protect public health and the quality of the nation's recreational waters.



First, we will be working with states to ensure that state-adopted criteria for pathogens and bacteria in waters designated for recreational use are current and scientifically sound. (In a related effort, EPA has developed new analytic methods for monitoring pathogen levels at beaches and other recreational waters.) We will continue to work with state, tribal, and local governments to deliver core programs of the Clean Water Act: developing and implementing Total Maximum Daily Loads and implementing the

discharge permit; urban storm water control; and nonpoint pollution control programs. In addition, we will be encouraging state, tribal, and local governments to adopt voluntary guidelines for managing on-site/decentralized sewage treatment systems and using Clean Water Revolving Loan Funds to finance systems where appropriate.

Second, we are implementing controls for combined sewer overflows (CSOs), which occur in about 770 communities around the country. CSOs can affect the quality of recreational waters by releasing untreated wastewater potentially containing high levels of pathogens. EPA, states, and local governments are making steady progress toward reducing overflows under the “CSO Policy.”¹⁰ Most communities with CSOs have now implemented basic control measures, and 48 percent of permittees have adopted schedules for implementing long-term control plans for CSOs. By 2011, permittees will have completed long-term control plans and EPA and states will be monitoring progress toward fully implementing the controls called for in these plans.

To learn more go to: www.epa.gov/npdes/cso.

The third element of our strategy focuses on public beaches along coastal areas and the Great Lakes. Under the Beaches Environmental Assessment and Coastal Health (BEACH) Act, EPA provides grants to state, tribal, and local governments for programs to monitor beach water quality and notify the public when bacterial contamination poses a risk to swimmers. We will continue to expand public access to internet-based beach information on our website. Governments receiving BEACH Act grants will post information on water quality, beach monitoring and advisory programs, and beach closures, which will enable beach-goers to make informed choices.

To learn more go to: www.epa.gov/beaches/.



OBJECTIVE 2.2: PROTECT WATER QUALITY

PROTECT THE QUALITY OF RIVERS, LAKES, AND STREAMS ON A WATERSHED BASIS AND PROTECT COASTAL AND OCEAN WATERS.

Sub-objective 2.2.1: Improve Water Quality on a Watershed Basis. By 2012, use pollution prevention and restoration approaches to protect the quality of rivers, lakes, and streams on a watershed basis.

Strategic Targets

- By 2012, attain water quality standards for all pollutants and impairments in more than 2,250 water bodies identified in 2002 as not attaining standards (cumulative). (2002 baseline: 39,798 water bodies identified by states as not meeting water quality standards. Water bodies where mercury is among multiple pollutants causing impairment may be counted toward this target when all pollutants but mercury attain standards, but must be identified as still needing restoration for mercury [1,703 impaired water bodies are impaired by multiple pollutants including mercury, and 6,501 are impaired by mercury alone].)
- By 2012, remove at least 5,600 of the specific causes of water body impairment identified by states in 2002 (cumulative). (2002 baseline: Estimate of 69,677 specific causes of water body impairment identified by states.)
- By 2012, improve water quality conditions in 250 impaired watersheds nationwide using the watershed approach (cumulative). (2002 baseline: 0 watersheds improved of an estimated 4,800 impaired watersheds of focus having 1 or more water bodies impaired. The watershed



- boundaries for this measure are those established at the “12-digit” scale by the U.S. Geological Survey [USGS]. Watersheds at this scale average 22 square miles in size. “Improved” means that 1 or more of the impairment causes identified in 2002 are removed for at least 40 percent of the impaired water bodies or impaired miles/acres, or there is significant watershed-wide improvement, as demonstrated by valid scientific information, in 1 or more water quality parameters associated with the impairments.)
- Through 2012, the condition of the nation’s wadeable streams does not degrade (i.e., there is no statistically significant increase in the percent of streams rated “poor” and no statistically significant decrease in the streams rated “good”). (2006 baseline: Wadeable Stream Survey identifies 28 percent of streams in good condition; 25 percent in fair condition; 42 percent in poor condition.)



- By 2012, improve water quality in Indian country at not fewer than 50 baseline monitoring stations in tribal waters¹¹ (cumulative) (i.e., show improvement in one or more of seven key parameters: dissolved oxygen, pH, water temperature, total nitrogen, total phosphorus, pathogen indicators, and turbidity). (2006 baseline: 185 monitoring stations on tribal waters located where water quality has been depressed and activities are underway or planned to improve water quality, out of an estimated 1,661 stations operated by tribes.)
- By 2015, in coordination with other federal agencies, reduce by 50 percent the number of homes on tribal lands¹² lacking access to basic sanitation (cumulative). (2003 baseline: Indian Health Service data indicate that 8.4 percent of homes on tribal lands lack access to basic sanitation [i.e., 26,777 homes lacking access out of an estimated 319,070 homes].)

Sub-objective 2.2.2: Improve Coastal and Ocean Water.

By 2011, prevent water pollution and protect coastal and ocean systems to improve national coastal aquatic ecosystem health by at least 0.2 points on the “good/fair/poor” scale of the National Coastal Condition Report. (2004 baseline: National rating of “fair/poor,” or 2.3, where the rating is based on a system ranging from 1.0 to 5.0 in which 1 is poor and 5 is good using the National Coastal Condition Report indicators for water and sediment, coastal habitat, benthic index, and fish contamination.)

Strategic Targets

- By 2011, at least maintain aquatic ecosystem health on the “good/fair/poor” scale of the National Coastal Condition Report in the Northeast Region. (2004 baseline: Northeast rating of 1.8.)
- By 2011, at least maintain aquatic ecosystem health on the “good/fair/poor” scale of the National Coastal Condition Report in the Southeast Region. (2004 baseline: Southeast rating of 3.8.)
- By 2011, at least maintain aquatic ecosystem health on the “good/fair/poor” scale of the National Coastal Condition Report in the West Coast Region. (2004 baseline: West Coast rating of 2.0.)
- By 2011, at least maintain aquatic ecosystem health on the “good/fair/poor” scale of the National Coastal Condition Report in the Puerto Rico Region. (2004 baseline: Puerto Rico rating of 1.7.)
- By 2011, 95 percent of active dredged material ocean dumping sites will have achieved environmentally acceptable conditions (as reflected in each site’s management plan and measured through onsite monitoring programs). (2005 baseline: 94 percent.)





MEANS AND STRATEGIES FOR PROTECTING WATER QUALITY

IMPROVE WATER QUALITY ON A WATERSHED BASIS

To improve water quality, EPA will work with states, interstate agencies, tribes, local governments, and others in three key areas: maintaining strong core programs that emphasize watershed protection; identifying and restoring impaired waters on a watershed basis; and investing in water infrastructure and strengthening management practices to improve the sustainability of water systems.

Strong Core Programs

Building on the progress toward clean water achieved over the past 30 years, EPA is working with states and tribes to implement four critical components of the Clean Water Act: scientifically sound water quality standards; effective water monitoring; strong programs for controlling nonpoint sources of pollution; and strong discharge permit programs.

Scientifically sound water quality standards are vital to protecting water for swimming, public uses, and fish and wildlife, and they provide the environmental baselines for water quality programs. EPA supports state and tribal programs by providing scientific water quality criteria information. For example, we are developing or improving criteria for nutrients and pathogens in ambient water and determining how to address emerging contaminants, such as pharmaceuticals and personal care products found in the aquatic environment. We will continue to work with states and tribes to improve water quality standards and to assist them in adopting appropriate designated uses and criteria. We will also work with states and tribes to operate and administer the standards program effectively. Every

3 years states and authorized tribes are expected to review their standards and revise them if necessary; EPA is committed to review and approve or disapprove changes to standards promptly.

To learn more go to: www.epa.gov/waterscience/standards/.

To improve water quality, we need complete, reliable data on the condition of the nation's rivers, lakes, streams, and wetlands. Among our top priorities for the next 5 years are continuing long-term cooperative EPA-state surveys of water conditions similar to the recently completed survey of wadeable streams and focusing next on lakes and rivers; implementing state and tribal water-monitoring strategies on established schedules; and improving water quality data bases. This monitoring work will help inform assessments of fish tissue contamination and of the conditions of coastal waters, ground water, and beaches.

To learn more go to: www.epa.gov/owow/monitoring/.

IMPLEMENTING CORE PROGRAMS ON A WATERSHED BASIS

EPA and states are delivering core Clean Water Act programs on a watershed basis. For example, we are:

- Issuing watershed discharge permits.
- Implementing water quality trading at the watershed level.
- Assessing infrastructure needs by watershed.
- Demonstrating watershed scale program integration through targeted watershed assistance grants.

A key component of the Clean Water Act is controlling nonpoint sources of pollution. EPA will continue working with states



to reduce nonpoint pollution by implementing best management practices and providing education and technical assistance. We will help states develop plans for watersheds with impaired water quality caused by nonpoint sources and use those plans to coordinate monitoring, implementation, and efficient use of federal and other funding. A critical step in this effort is forging strategic partnerships with a broad range of agricultural interests, and we will work with federal partners to ensure that federal resources are managed in a coordinated manner.

To learn more go to: www.epa.gov/owow/nps/.

IMPROVING WATER QUALITY ON TRIBAL LANDS

To improve and protect water quality on tribal lands, EPA is working with tribes to:

- Develop water quality standards and monitoring strategies.
- Develop nonpoint pollution programs under Section 319 grants.
- Develop water permit programs.
- Develop tribal wetlands programs.
- Develop watershed protection plans.
- Involve tribes in developing Total Maximum Daily Loads.
- Provide Clean Water Indian Set-Aside and Alaska Native Villages Sanitation Grants to address wastewater infrastructure issues.
- Increase access to basic sanitation and safe drinking water.

The National Pollutant Discharge Elimination System (NPDES) requires point sources discharging to the nation's waters to have permits for those discharges and industrial facilities that discharge to sewer systems to have pretreatment programs to reduce their impact on sewage treatment plants.

Over the next 5 years, EPA will continue to strengthen management of the permit program. We will:

- Monitor implementation of the follow-up actions that resulted from the Permitting for Environmental Results Strategy we recently completed to address concerns about the backlog in issuing permits and the health of state NPDES programs.
- Continue to support states in using innovative permit tools. Momentum is building for watershed-based permitting and pollutant trading, and over the next 5 years EPA expects to begin to see the results of early efforts in this area.
- Work to ensure that permits issued by state and local governments to control storm water from industrial sites, construction sites, and municipal storm sewers are promptly reissued when they expire.
- Ensure that industrial discharges to publicly-owned sewage treatment works are pretreated effectively. We will provide tools for states and localities to work with industrial dischargers and will monitor the percentage of significant industrial facilities meeting pretreatment requirements.
- Revise rules for discharges from Concentrated Animal Feeding Operations (CAFOs) to reflect court findings. We expect that after the revised rules take effect in 2007, permits will be issued promptly, and CAFOs will begin implementing nutrient management plans.
- Develop or revise national regulations addressing key industrial sources of pollution. EPA will consider promulgating new wastewater regulations for airport deicing and drinking water



treatment residuals and revising regulations for some chemical manufacturers.

- Continue working with states to address and resolve significant non-compliance with discharge permits in a timely manner, emphasizing instances of significant noncompliance in which excessive effluents contribute to impaired waters.
- Continue working with states and sewage treatment plants to improve compliance with permit conditions.

To learn more go to: www.cfpub.epa.gov/npdes/.

Restore Impaired Waters on a Watershed Basis

In reports to EPA, states identify waters as “impaired” when one or more of the uses designated in water quality standards is not being attained. EPA, states, interstate agencies, and tribes are expanding and strengthening efforts to meet our 2012 goal of restoring more than 2,250 of the 39,798 waters that states identified as impaired in 2002. In a related effort, we are also working to restore and protect large-scale ecosystems around the country. (See Goal 4: Healthy Communities and Ecosystems.)

Over the next several years, we will continue to work with states to coordinate identification of impaired waters and improve data on location and causes of impairment. Better data will enable EPA and states to identify watersheds where impaired waters are clustered and determine likely causes and remedies. Improved data will also help states refine schedules for developing TMDLs so that TMDLs needed to restore a group of impaired waters can be coordinated. Developing TMDLs on a watershed basis will be cost effective and create opportunities for coordinating response programs and innovations such as watershed-based permitting and water quality trading. Water quality trading is a valuable tool that

promotes shared responsibility for controlling discharges within a watershed and reduces pollutants at lowest cost.

EPA will work with states to develop coordinated watershed restoration plans focused on small, “12-digit” watersheds as defined by the U.S. Geological Survey. These plans will demonstrate how to coordinate planning and implementation of pollution control actions to improve water quality.

We will also continue working with states to develop TMDLs consistent with state TMDL development schedules and court-ordered deadlines. Since 2000, states and EPA have made significant progress in developing and approving TMDLs, and we have completed more than 20,000 TMDLs across the country. We expect to maintain the current pace of approximately 3,500 TMDLs completed and approved per year.

To learn more go to: www.epa.gov/owow/tmdl/.



As additional TMDLs are developed to support those already in place, the number of impaired water bodies and watersheds ready for implementing pollution controls will increase. EPA and states must carefully define and schedule restoration actions resulting

from TMDLs. In some cases, a single permit revision or enforcement action may bring about restoration. In other cases, water body or watershed-scale restoration plans linking point source controls, nonpoint source management practices, and financing support will be needed.

To support this effort, EPA will refine the selection and issuance of “high-priority” permits—those expired permits that states determine have a significant environmental impact. A permit might be accorded high priority, for example, if the permitted facility were contributing to impaired waters or if the permit incorporated new TMDLs and water quality standards or had the potential to contribute to watershed restoration. EPA will ensure that these critical permits are issued promptly.

Support Sustainable Wastewater Infrastructure

Sustaining water and wastewater infrastructure is a critical challenge. Existing systems are aging—some have components more than 100 years old—and growing, shifting populations require investment in new systems. EPA’s Gap Analysis Report (2002) estimated that if capital spending for wastewater infrastructure remained at current levels, the potential gap in funding between 2000 and 2019 would be about \$120 billion. Assuming a real annual rate of growth in revenues of 3 percent, the gap shrinks to \$21 billion. Furthermore, many utilities have not focused attention on managing for long-term sustainability.

To address this challenge, the nation must fundamentally change the way it views, values, invests in, and manages water infrastructure. All parties will need to collaborate to find effective, efficient, and fair solutions; EPA is one partner in a larger, cooperative effort to address this nationwide infrastructure problem. To help facilitate solutions, we have developed a Sustainable Infrastructure Strategy, organized around four main themes or “pillars:”



- **Sustainable Management Practices:** We will work with utilities and associations to promote sustainable management practices and finalize a national strategy in early 2007.
- **Water Efficiency:** We will develop “WaterSense,” a voluntary partnership program modeled after EPA’s Energy Star program, to create a consumer market for water-efficient products.
- **Full Cost Pricing:** We will identify the range of approaches used to set rate structures based on full cost pricing, and we will develop options we can share with communities.
- **A Watershed Approach:** We will work with utilities, watershed organizations, and others to provide tools and information that will promote a watershed approach to infrastructure decisions.

EPA is developing an Internet-based Clean Watersheds Needs Survey (CWNS) data system that will allow communities and states to enter and update information on their pollution prevention and treatment project needs. CWNS data will be easily accessible for setting project priorities, Internet mapping analyses, and other purposes that support infrastructure management. We are also undertaking a major research and development initiative to identify water infrastructure needs that can be addressed through innovation.



Clean Water State Revolving Funds (CWSRFs), another tool supporting sustainable infrastructure management, provide low-interest loans to help finance wastewater treatment facilities and other clean water projects. A portion of CWSRF funding is set aside each year for water infrastructure improvements on tribal lands, including expanding access to basic sanitation. EPA provides grants to capitalize state CWSRFs which may be used to fund projects that support an integrated watershed approach, including repairing and upgrading onsite treatment systems. As of early 2006, the federal government had invested more than \$23 billion in capitalizing state CWSRFs.¹³ The revolving nature of the funds and substantial additions from states have increased that investment, cumulatively over the years making \$55 billion available for loans.¹⁴ We will continue our commitment to provide annual capitalization grants to CWSRFs until 2011. Additionally, we will work with state CWSRF programs to maintain their excellent fiduciary condition.

To learn more go to: www.epa.gov/owm/cwfinanceomdex/htm.

IMPROVE COASTAL AND OCEAN WATERS

EPA tracks progress in improving coastal and ocean waters through the National Coastal Condition Report, a cooperative

EPA, NOAA, U.S. Department of Agriculture (USDA), and Department of the Interior (DOI) project established in 2002. In describing the ecological and environmental condition of U.S. coastal waters, the report indicates that, overall, coastal waters are improving. To maintain this progress, we will focus on:

- **Assessing coastal conditions.** The National Coastal Condition Report uses five indicators to determine the condition of coastal waters. EPA and other federal agencies will review changing conditions and periodically issue updated assessments. To support this work, we are developing indices for measuring the health of coral reefs and monitoring compliance with environmental requirements at ocean dumping sites.
- **Reducing vessel discharges.** Discharges from vessels threaten U.S. waters and ecosystems. Ships discharge pollutants, and discharges of ballast water can spread invasive species, such as zebra mussels. We will assess the need for discharge standards for cruise ships operating in Alaskan waters; cooperate with the U.S. Department of Defense on establishing discharge standards for armed forces vessels; and assess our programs to reduce sewage discharges. To address the problem of





invasive species, we will assist the U.S. Coast Guard in developing ballast water discharge standards and continue to pursue this issue at the international level.

- **Implementing coastal nonpoint source pollution programs.** Rapid growth in coastal areas can result in increased pollution from nonpoint sources. We will continue to work with NOAA, coastal states, and Great Lakes states to reduce nonpoint source pollution in the “coastal zone.”
- **Managing dredged material.** Several hundred million cubic yards of sediment are dredged from waterways, ports, and harbors every year. EPA and the U.S. Army Corps of Engineers (the Corps) share responsibility for regulating the disposal of this sediment. To ensure that sediment is disposed of safely and properly, we will work with the Corps to evaluate disposal sites, designate and monitor sites, and review disposal permits. We will also work with states and other federal agencies to ensure

that major ports and harbors have plans for managing dredged material, which include provisions for beneficial reuse of the material.

- **Supporting international marine pollution control.** With the U.S. Coast Guard, NOAA, and the U.S. Department of State, EPA is negotiating international standards at the International Maritime Organization. We will use these standards as a mechanism to address invasive aquatic species, harmful antifoulants, bilge water, and marine debris.

We will coordinate these efforts with those of other federal agencies, states, tribes, and public and private parties. To improve coastal waters, we must successfully implement pollution controls in inland watersheds (see Sub-objective 2.2.1). Our progress will also be tied to geographically focused projects, such as the National Estuary Program, as well as ecosystem protection programs. (See Goal 4: Healthy Communities and Ecosystems.)

To learn more go to: www.epa.gov/owow/oceans/ncct/.

OBJECTIVE 2.3: ENHANCE SCIENCE AND RESEARCH

BY 2011, CONDUCT LEADING-EDGE, SOUND SCIENTIFIC RESEARCH TO SUPPORT THE PROTECTION OF HUMAN HEALTH THROUGH THE REDUCTION OF HUMAN EXPOSURE TO CONTAMINANTS IN DRINKING WATER, FISH AND SHELLFISH, AND RECREATIONAL WATERS AND TO SUPPORT THE PROTECTION OF AQUATIC ECOSYSTEMS—SPECIFICALLY, THE QUALITY OF RIVERS, LAKES, AND STREAMS, AND COASTAL AND OCEAN WATERS.

MEANS AND STRATEGIES FOR ENHANCING SCIENCE AND RESEARCH

EPA conducts research dedicated to the drinking water and water quality programs, and brings to bear additional research on human health and ecological issues conducted in support of other programs. (See Goal 4: Healthy Communities and Ecosystems.)

DRINKING WATER RESEARCH PROGRAM

The SDWA Amendments of 1996 direct EPA to conduct research to strengthen the scientific foundation for standards that limit public exposure to drinking water contaminants. The program’s primary goals focus on developing research products that the Agency will use to make regulatory decisions on candidate drinking water contaminants and review



existing regulations. In addition, EPA regional offices, states, tribes, municipalities, and utilities often need technical advice to put new and revised drinking water regulations into action. Our Drinking Water Research Program (DWRP) develops drinking water treatment strategies, compliance monitoring methods, and tools for source water protection to support EPA and its partners in implementing SDWA. We will advance methods for assessing exposure and monitoring contaminants; study contaminant mode-of-action and dose-response; determine treatment, performance, and cost parameters; and study the effects of distribution systems on water quality. By providing the science and engineering information that we and our partners need, our research contributes measurable results that advance our efforts to ensure safe drinking water.

WATER QUALITY RESEARCH PROGRAM

EPA's Water Quality Research Program (WQRP) priorities reflect the research needs of our national water program, regions, states,

and tribes. We are targeting our research efforts to achieve measurable results: protective criteria for designated uses of aquatic systems; diagnostic and forecasting techniques related to designated uses of aquatic systems; and sustainable watershed technologies. For example, WQRP research will help the Agency promulgate protective standards; identify contaminants and how they contribute to impaired waters; and use tools for restoring and protecting the nation's waters that consider point and nonpoint sources of contamination and the treatment and beneficial use of biosolids. WQRP activity directly supports the Agency's goals for improving water quality and will contribute to the environmental outcomes we are working to achieve.



HUMAN CAPITAL

Over the past 20 years, EPA has delegated significant authority for protecting surface water and drinking water to state governments. As a result, our role increasingly is one of providing our partners and stakeholders with guidance, assistance, and financial and information resources. We will continue



to be responsible for coordinating national water policy and evaluating water programs, as well as for directly implementing certain programs for some states and tribes.

Our evolving role in protecting water quality means that our workforce must be competent in communication, policy development, and managing contracts and assistance agreements, as well as in engineering and life science disciplines. EPA's water program is establishing a Workforce Council to review workforce initiatives and advise senior managers on priorities for improving quality of work life.

The water program is also assessing the optimal skill mix needed to fulfill mission-critical assignments, the distribution of tasks among those positions, and expected trends in staff retirement. It has formed a



Recruitment Council of staff and managers to plan and coordinate participation in job fairs, train employees on the recruitment process, and improve recruitment information sharing. In addition, water program offices have established or are working to establish ties to historically black colleges, as well as to other colleges and universities, to ensure a diverse workforce into the future.

Recognizing that today’s staffers are tomorrow’s leaders, our water program has initiated several long-term efforts to provide employees

with training and career guidance. The Water Careers Program provides a variety of opportunities related to individual development plans, mentoring and coaching, and leadership. About 100 water program staff members have participated in this leadership development program, instituted in 2002. The water program also provides key training programs to EPA and state employees including the Drinking Water Academy, the Water Quality Standards Academy, the Watershed Academy, and the NPDES Permit Writer’s Course.

PERFORMANCE MEASUREMENT

Most of the strategic targets we have established to achieve our goal of clean and safe water are measurable and reportable on an annual basis. Using a “bottom up” approach, our national water program works closely with our regional offices and states to develop annual national targets, which are captured in annual national water program guidance. To track annual progress toward our research

objective, we use a number of objective measures of customer satisfaction, product impact and quality, and efficiency.

Using such sources as program evaluations and environmental indicators, we have developed two new strategic targets and related measures that will also be included in the Agency’s forthcoming *Report on the Environment (ROE)*.¹⁵ One measure addresses the chemical, biological and physical condition of wadeable streams; the second expresses the mercury blood-levels of women of child-bearing age, a reflection of the health risk from consuming contaminated fish.

ENVIRONMENTAL JUSTICE MEASURES

Our water program is participating in an Agency-wide effort to develop and strengthen measures to ensure that the environmental and public health benefits of programs are equitably shared. Under our goal for clean and safe water, we will measure tribal water systems’ compliance with drinking water standards, the condition of tribal waters, and tribal access to safe drinking water and basic sanitation.

In the future, our national water program expects to be able to use established, Agency-wide criteria that identify “environmental justice” areas for which we will develop measures of progress in improving drinking water safety and restoring impaired waters. EPA will strive to deliver program resources so that progress toward clean and safe water in these areas is equal to or better than progress reported nationwide.

IMPROVING PERFORMANCE MEASUREMENT

As we incorporated improved measures in this *Strategic Plan*, we also made a preliminary assessment of longer-term opportunities for improving performance measurement. Based on this assessment, we will work to expand and sustain a scientifically—sound, statistically-valid monitoring regimen to characterize the condition of the nation’s waters, to advance measurement of water quality conditions on tribal lands, and to improve measures related to environmental justice.



USING FEEDBACK FROM PERFORMANCE ASSESSMENTS AND PROGRAM EVALUATIONS

EPA's water program assesses program and regional performance on a continuing basis and prepares mid- and end-of-year performance reports using the environmental and program measures established in its annual national water program guidance to describe program progress. These reports include recommendations to improve specific instances of poor performance, disseminate "best practices," and inform the development of future annual guidance and strategic plans. Through this process, we have identified the need for performance improvements such as integrating clean water and drinking water programs, reducing data reporting lags in the drinking water program, and expediting reviews of tribal applications to administer EPA regulatory programs.

In addition, water program managers visit three to four EPA regional offices and great water body offices each year to discuss program management and performance. Topics include assessing regional performance against measures in the *Strategic Plan*, regional water issues identified in regional plans, and the program commitments that states and tribes make annually in their grant work plans. These assessments help identify innovations or "best practices" developed by regions, states, tribes, watershed organizations, and others, which can be described in water program performance reports and shared across the country.

Water programs are also evaluated periodically by EPA and organizations such as EPA's Office of Inspector General (OIG), the Government Accountability Office, the Office of Management and Budget (OMB), and the National Academy of Sciences. We have used the results of such evaluations to formulate some of the water program goals and strategies presented in this *Strategic Plan*.

For example, after evaluating the Agency's work with states and tribes to implement clean water programs on a watershed basis, OIG recommended that we redesign our watershed measure and revise supporting program activity measures. EPA responded by developing a new measure addressing improvement in water quality in "12 digit" watersheds and expanding and revising watershed-related program activity measures in its annual national water program guidance. The new watershed measure addresses smaller geographic areas than did our previous measure and is more flexible in that it recognizes improvement in water quality as well as full restoration of impaired waters.



In another study which influenced this *Strategic Plan*, OIG evaluated the implementation of programs to protect sources of drinking water. Based on OIG's assessment, our national program and regional managers worked with states and tribes to revise and simplify measures related to source water protection. This effort has helped us better define an ambitious and realistic target for implementing source water protection programs by 2011.



A number of water programs were reviewed using OMB’s Program Assessment Rating Tool (PART). These include Public Water Supply Supervision, rated Adequate; Underground Injection Control, rated Adequate; Surface Water Protection, rated Moderately Effective; and Oceans and Coastal Protection, rated Adequate.

The EPA Board of Scientific Counselors (BOSC) and OMB evaluated the Drinking Water Research Program in 2005. BOSC found the research to be of high quality and

national importance and the program relevant and critical to EPA’s mission. OMB found that the program has developed annual and long-term measures of performance, coordinates its work with other agencies, employs good oversight of competitively awarded grants, and requires grantees to work toward program goals. Input from these evaluations was instrumental in revising our long-term drinking water research plans.

To learn more go to: www.epa.gov/water/waterplan.

EMERGING ISSUES AND EXTERNAL FACTORS

Over the past several years, EPA has assessed emerging issues that can affect our goals for clean and safe water. Among the issues identified were:

- **Decaying Water Infrastructure and Population Growth:** Municipal wastewater infrastructure constructed in the 1970s and 1980s, and an increasing percentage of drinking water infrastructure, is nearing the end of its useful life. Responding to

this challenge is complicated by the demands of a steadily growing population for drinking water supplies, wastewater treatment, and storm water management. EPA is in the first stages of an innovative, broad-based collaboration with states and municipalities to implement new strategies to strengthen water infrastructure management, including new initiatives related to water efficiency, sustainable management practices, and innovative financing of infrastructure.

- **Water Scarcity:** Demand for water for municipal and other uses is growing steadily. Meeting this demand while protecting ecological values of aquatic resources will be a significant challenge.
- **Nanotechnology:** The predicted explosion in the use of nanotechnology offers potential for both innovative water treatment methods and harm to aquatic systems from the release of nanoscale devices and products.





- **Remote Sensing Technology:** Dramatic progress in miniaturizing sensors and gathering environmental data from remote locations will open new avenues for monitoring the condition of waters.
- **Climate Change:** Understanding of the effects of climate change on the health and productivity of coastal waters and habitats, fisheries, and wetlands is necessary to inform sound environmental management and protection of these resources.
- **Pharmaceuticals in Wastewater:** More pharmaceutical products of more varied types are reaching aquatic systems through wastewater systems, with the potential for unanticipated impacts on ecological systems and human health.
- **Renewable Energy:** As energy needs increase and costs from conventional sources climb, demand for alternatives, including renewable energy, will grow. Recent studies have demonstrated the potential for sewage treatment plants and animal feeding operations to generate significant amounts of renewable energy from treatment process by-products.

To learn more go to: www.epa.gov/ocfo/futures/perspectives.htm.

As we address these emerging water issues and continue to strengthen and improve current programs, a number of external factors can affect our success. For example, much of our progress in achieving our goals will depend on maintaining strong partnerships. States, our primary partners in implementing clean water and safe drinking water programs, are facing budget problems and perhaps deficits. EPA recognizes that state budget shortfalls are an external factor that may limit progress toward clean and safe water goals.



Local governments also play a critical role in implementing clean and safe water programs. Municipalities and other local entities have partnered with states and the federal government to finance wastewater treatment and drinking water systems, and their continued contribution is essential to meeting water goals. Municipalities are also taking on additional responsibilities for addressing storm water and CSOs. In the case of the drinking water program, effective local management of drinking water systems, including protection of source waters, is essential to maintaining high rates of compliance with drinking water standards. More than 90 percent of the nation's 52,000 community water systems are smaller systems (serving 10,000 or fewer people) that often struggle to provide safe drinking water.¹⁶ Continued consultation with local governments is critical to achieving clean and safe water.

EPA implements programs in Indian country, helps build tribes' capacity to administer clean and safe water programs, and works as co-regulators with authorized tribes. Tribal resource needs are great, however, and unlike states, many tribes are still developing programs to administer clean and safe water programs. Inadequate progress in developing these programs is another factor that could limit progress toward our clean water goals.



Key elements of the national water program, including nonpoint source control, source water protection, and watershed management, require broad partnerships among many federal, state, and local agencies and the private sector. Over the next several years, building partnerships with the agricultural community (such as USDA, state agricultural agencies, and local conservation districts) is a top priority for meeting clean water goals. We will continue to provide water quality data and technical assistance that can help USDA target its runoff control programs.

Similarly, we rely on many agencies for monitoring data to measure progress toward

our clean and safe water goals. States lead the effort in water quality monitoring. Other agencies also provide critical information; for example, USGS maintains water-monitoring stations throughout the nation, and NOAA provides information on coastal waters.

Other federal partnerships are critical to achieving our water program goals. EPA relies on the Corps to co-administer the Section 404 program of the Clean Water Act. In fact, the Corps acts as the lead federal agency for permitting the discharge of dredged or fill material and, as part of its civil works projects, addressing dredged material management issues in U.S. waters. We will continue to work with the U.S. Agency for International Development, Department of State, and other interested stakeholders to improve access to safe drinking water and sanitation worldwide in support of the United Nations Millennium Goals. To this end, we will promote the international use of Water Safety Plans as a health-based risk assessment tool for improving water systems.

Finally, all of our coastal and oceans activities are carried out in partnership with other federal agencies and, in some cases, with international, state, local, and private entities as well. We rely on the efforts of the U.S. Department of Defense, the U.S. Coast Guard, Alaska and other states, and a number of cruise ship and environmental and nongovernmental organizations to manage wastewater discharges from vessels.



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4. Use of the terms “Indian country,” “Indian lands,” “tribal land,” “tribal waters,” and “tribal areas” within this *Strategic Plan* is not intended to provide any legal guidance on the scope of any program being described, nor is their use intended to expand or restrict the scope of any such programs.
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