Report to EPA

SAFE DRINKING WATER ACT ANNUAL COMPLIANCE REPORT FOR CALENDAR YEAR 2006

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Department of the Environment
Water Supply Program

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EXECUTIVE SUMMARY

The Safe Drinking Water Act reauthorization of 1996 requires states to submit annual reports of their drinking water violations. This report constitutes Maryland's annual compliance report for calendar year 2006. The report contains an overview of the State's public drinking water program, and describes some new initiatives that were undertaken in 2006. This report also provides information on water quality standards, and summarizes public water system violations that occurred during 2006. The report covers the period from January 1 through December 31, 2006.

The Maryland Department of the Environment's (MDE's) goal is to ensure that the water quality and quantity at all public water systems meets the needs of the public and is in compliance with federal and State regulations. This report describes the activities that are undertaken on a routine basis to ensure that public drinking water systems provide safe water to their consumers. Routine activities include regular on-site inspections of water systems to identify any sanitary defects in the systems and a permitting process that helps ensure that systems obtain the best possible source of water. In addition, MDE works with private contractors and local health departments to identify potential sources of contamination in close proximity to ground water and surface water supplies, so that the systems can protect their water sources before contamination occurs.

Public water systems are required to sample for a variety of contaminants on a routine basis, depending on the population served and source type of the water system. When contaminants are found at levels exceeding the federally-established "Maximum Contaminant Level" (MCL), it is considered a violation of federal and State standards. MCL violations are rare in Maryland for most types of chemical contaminants. During 2006, one system exceeded the MCL for a volatile organic contaminant, and seven systems exceeded the MCL for either nitrate or radionuclides. Most total coliform violations occurred in smaller systems where treatment may not be present or properly maintained. In addition, January 23, 2006 was the effective date for the revised arsenic standard of 10 parts per billion which impacted over 20 public water systems.

Violations are also incurred for failure to monitor as required, for failure to use required treatment techniques, or for failure to notify the public under certain circumstances. During 2006, there were 24 monitoring violations for inorganic contaminants, 122 monitoring violations under the Lead and Copper Rule, and 184 monitoring violations under the Total Coliform Rule.

During 2006, MDE accomplished many goals beyond its routine regulatory activities in the areas of water and sewer planning, water resource management, and security. The Advisory Committee on the Management and Protection of the State's Water Resources reviewed available information, research, and applicable regulations, and assessed the adequacy of existing resources to manage and protect the State's ground and surface water resources. The committee's final report found that Maryland's quality of life and continued economic well-being depend on an adequate water supply and is affected by factors such as drought, pollution of water sources, inadequate planning and infrastructure, incomplete information about water sources and population growth.

The Committee continued to deliberate and consider the need for assessing and developing water supply resources. Population and water demand projections indicate that areas of the State will be faced with water supply deficits in coming years. Several study efforts addressing supply issues and associated environmental impacts for large regions of the State have been proposed. The Committee's interim report also recommended several legislative changes needed to better focus the limited staff resources and improve enforcement of water appropriations permit requirements. The committee will continue to evaluate and recommend improvements to regulatory and programmatic structures related to water resource management in the State. The committee is required to submit a final report on July 1, 2008.

Improving water system planning at State and local levels is important for managing and protecting water resources as Maryland's economy and population grow. During the 2006 legislative session, the Maryland General Assembly adopted House Bill 1141, which requires local governments to include a water resources element in their comprehensive plans. Implementation of this legislation will provide a method for local governments to ensure the availability, sustainability and protection of their water resources.

THE DRINKING WATER PROGRAM: AN OVERVIEW

The EPA established the Public Water System Supervision (PWSS) Program under the authority of the 1974 Safe Drinking Water Act (SDWA). Under the SDWA and its 1986 and 1996 Amendments, EPA sets national limits on contaminant levels in drinking water to ensure that the water is safe for human consumption. These limits are known as Maximum Contaminant Levels (MCLs). For some regulations, EPA establishes treatment techniques in lieu of an MCL to control unacceptable levels of contaminants in water. The Agency also regulates how often public water systems (PWSs) monitor their water for contaminants and report the monitoring results to the states or EPA. Generally, the larger the population served by a water system, the more frequent the monitoring and reporting (M/R) requirements. In addition, EPA requires PWSs that serve over 10,000 persons to monitor for unregulated contaminants to provide data for future regulatory development. Finally, EPA requires PWSs to notify the public when they have violated these regulations. Public notification must include a clear and understandable explanation of the nature of the violation, its potential adverse health effects, steps that the PWS is undertaking to correct the violation and the possibility of alternative water supplies during the violation.

The SDWA applies to the 50 states, the District of Columbia, Indian Lands, Puerto Rico, the Virgin Islands, American Samoa, Guam, the Commonwealth of the Northern Mariana Islands, and the Republic of Palau.

The SDWA allows states and territories to seek EPA approval to administer their own PWSS Programs. The authority to run a PWSS Program is called primacy. For a state to receive primacy, EPA must determine that the state meets certain requirements laid out in the SDWA and the regulations, including the adoption of drinking water regulations that are at least as stringent as the Federal regulations and a demonstration that they can enforce the program requirements. All of the states have primacy with the exception of Wyoming. The EPA Regional Offices report the information for Wyoming, as well as the District of Columbia and all Indian Lands but the Navaho Nation. EPA Regional offices also report Federal enforcement actions taken. Maryland received primacy for the PWSS program in 1977.

Each quarter, primacy states submit data to the Safe Drinking Water Information System (SDWIS/FED), an automated database maintained by EPA. The data submitted include, but are not limited to, PWS inventory information, the incidence of Maximum Contaminant Level (MCL), monitoring, and treatment technique violations, and information on enforcement activities related to these violations. Section 1414(c)(3) of the Safe Drinking Water Act requires states to provide EPA with an annual report of violations of the primary drinking water standards. This report provides an overview of violations in each of five categories: MCLs, treatment techniques, variances and exemptions, significant monitoring violations, and significant consumer notification violations.

MARYLAND'S WATER SUPPLY PROGRAM

The Water Supply Program (WSP) is a part of the Water Management Administration within the Maryland Department of the Environment. The mission of the Water Supply Program is to ensure that public drinking water systems provide safe and adequate water to all present and future users in Maryland, and that appropriate usage, planning and conservation policies are implemented for Maryland's water resources. This mission is accomplished through proper planning for water withdrawal, protection of water sources that are used for public water supplies, oversight and enforcement of routine water quality monitoring at public water systems, regular onsite inspections of water systems, and prompt response to water supply emergencies. In addition to ensuring that public drinking water systems meet federal and State requirements under the PWSS program, the WSP also oversees the development of Source Water Assessments for water supplies, and issues water appropriation permits for both public drinking water systems and commercial entities Statewide. Because all of these activities reside together in the WSP, Maryland has the unique opportunity to evaluate and regulate public drinking water systems from a broad perspective that includes an evaluation of the resource for both quantity and quality. The Water Supply Program's activities help to ensure safe drinking water for almost five million Marylanders.

The WSP is responsible for regulating public drinking water systems in Maryland. Public drinking water systems fall into three categories: community, non-transient non-community, and transient non-community. Community water systems (CWS) serve year-round residents, non-transient non-community water systems (NTNCWS) serve regular consumers, such as in a school or daycare setting, and transient non-community water systems (TNCWS) serve different consumers each day, such as in a campground or restaurant. During 2006, the number of public water systems remained consistent compared with previous years. Currently, Maryland has 498 community water systems, 572 non-transient non-community water systems, and 2,537 transient non-community water systems.

MDE directly regulates community water systems (county and municipal systems, small communities and mobile home parks) and non-transient non-community water systems (businesses, schools and day care centers that have their own water supply system). Transient non-community water systems such as gas stations, campgrounds and restaurants are regulated and enforced by the local county environmental health departments through State-County delegation agreements, with the exception of systems in Montgomery, Prince George's and Wicomico Counties, which are directly regulated and enforced by the Water Supply Program. Table 1 presents a summary of Maryland's 2006 statistics on public water systems and the populations served by each type of system.

In the Water Supply Program, emphasis is placed on preventative measures instead of reactive enforcement actions in order to avert serious public health incidents. The vast majority of drinking water violations are corrected immediately, or following the initial notices of violation. Preventive measures include activities such as wellhead protection, surface water protection, monitoring schedules, technical assistance, and sanitary survey inspections. Source water protection programs are used to identify sources of potential contamination, and activities that can prevent future contamination incidents.

Table 1. Drinking Water Statistics	
Population of Maryland (2006)	5,615,727
Individuals served by community water systems	4,873,001
Percent of population served by public water systems	87%
Percent of population served by individual wells	13%
Number of Public Water Systems	3,607
Number of Community Systems	498
Number of Non-transient Non-community Systems	572
Number of Transient Non-community Systems	2,537
Number of Systems using surface water	67
Number of Systems using only ground water	3,540

Program Activities

Routine oversight of public drinking water systems involves a wide range of activities. These activities focus on helping systems to obtain and protect the best available source of water, ensuring that systems comply with State and federal water quality monitoring requirements, and making certain that systems maintain sufficient treatment processes to address any water quality concerns. As EPA develops new regulations and guidelines, or as other drinking water issues arise, the Water Supply Program must respond by developing corresponding programs or adopting regulations. Table 2 presents a summary of the major regulatory activities conducted by the Water Supply Program in 2006.

Table 2. Water Supply Program's Major Activities for the Year 2006	
Sanitary Surveys Conducted of CWS and NTNCWS	738
Sanitary Surveys Conducted of TNC Systems (by local health departments and MDE)	330
Comprehensive Performance Evaluations Conducted	5
Technical Reviews of Water Construction Projects	59
Water Appropriation Permits Issued (New and Renewal)	1043
Individuals Certified to Sample Drinking Water	1028
New Wells Sited	63
Water Quality Reports Reviewed	40,382
Source Water Assessments Mailed to Community Water Systems	100%
County Water and Sewer Plans Reviewed	69

Appropriation Permits Any person who wishes to appropriate water for agricultural (greater than 10,000 gallons per day), municipal, commercial, industrial or other non-domestic uses must obtain a Water Appropriation Permit from the WSP. Issuance of the permit involves evaluating the needs of the user and the potential impact of the withdrawal on neighboring users and the water source, in order to maximize beneficial use of the waters of the State. Permits for large appropriations often involve conducting pump tests to measure the adequacy of an aquifer and safe yield of a well, or reviewing stream flow records to determine the adequacy of a surface water source. In 2007 State legislation passed that provides for additional enforcement authority, and removes the permit requirement for a small water users (less than 5000 gpd).

Arsenic in Ground Water in the Major Aquifers of the Maryland Coastal Plain The study of arsenic in Maryland's Coastal Plain aquifers, which is being conducted in cooperation with the Maryland Geological Survey (MGS), was on hold for 2006. In previous years, samples were collected from major ground water aquifers in the Coastal Plain region in order to identify areas where arsenic levels might exceed the new standard of 10 parts per billion (ppb). Elevated arsenic levels were documented in the Aquia and Piney Point aquifers of Queen Anne's, Talbot, Dorchester, and St. Mary's Counties. Arsenic was detected only sporadically in wells from other aquifers. Additional samples were collected to determine local vertical and lateral variability in arsenic concentrations. Arsenic data from county health departments were acquired to further document geographic distribution. MGS continued work on preparation of the report narrative, maps, and data tables. This project has been delayed due to staff turnover at MGS.

Cadmium in Ground Water In 2003, water samples collected from the Aquia aquifer in the Woodland Beach community in Anne Arundel County, Maryland exceeded the U.S. Environmental Protection Agency's Maximum Contaminant Level of 5 micrograms per liter (µg/L) for cadmium. The Water Supply Program coordinated with the Wastewater Permits Program, the Anne Arundel County Health Department, and the Maryland Geological Survey (MGS) to further investigate the extent of cadmium distribution and hydrogeologic and chemical relations, as well as to develop strategies for addressing health concerns related to the cadmium exceedances. The MGS collected water and soil samples, identified relationships between cadmium and chloride levels and pH, and developed a map showing the depth to the bottom of the weathered zone of the Aquia aquifer. The source of cadmium in ground water could not be determined from the data collected in this study; both natural and human factors may be involved. Preliminary findings indicate that fly ash from Baltimore Gas and Electric may be a potential source of cadmium contamination.

One transient water system and a number of private wells have detected cadmium near or above the drinking water maximum contaminant level of 5 parts per billion cadmium. Because no elevated cadmium samples were found in wells screened below the weathered zone, the MGS map is being used by the Anne Arundel County Health Department to guide depth specifications for new wells.

C***apacity Development*** Regulations were finalized in 1999 that require all new community and non-transient non-community water systems to have sufficient technical, managerial, and financial capacity to provide safe drinking water to their consumers prior to being issued a

construction permit. These capacity development regulations are currently being enforced by the WSP.

The WSP holds meetings with Maryland training providers to coordinate training and ensure that water system training needs are being met. During sanitary surveys, small water systems are provided technical assistance in emergency response and vulnerability assessments.

The WSP has collected capacity development information from all community water systems through a self-assessment survey. A baseline was determined in 2002. This baseline will be used to measure improvements in water system capacity in the future. A second survey will be conducted during 2007 and 2008. The survey has been revised, and is under review by the Capacity Development committee.

On August 18, 2006, EPA determined that MDE met the statutory requirements under the Safe Drinking Water Act for reviewing historical significant noncompliers for the capacity development review.

Capacity Management In Spring 2006, the WSP developed and distributed for comment a guidance document entitled "Water Supply Capacity Management Plans". The final document is expected in 2007. WSP has started to receive capacity management plans from water systems; the plans are reviewed and comments provided to the water systems. Growth in some areas of central and western Maryland has outpaced the water resources in the area. Additional State resources are needed for this task.

Coastal Plain Aquifer Study The 2003 Advisory Committee on the Management and Protection of the State's Water Resources identified the need for a comprehensive assessment of ground water resources in the Maryland Coastal Plain, where population is expected to grow by 37 percent between the years 2000 and 2003. Withdrawals from the confined aquifers of the Coastal Plain in Southern Maryland and the Eastern Shore have caused water levels in some aquifers to decline by tens to hundreds of feet from their original levels, and the rate of decline is expected to increase as the population in these areas grows. A more comprehensive understanding of the confined aquifer systems and how much water is available in these systems is needed in order to make sound management decisions and appropriately evaluate water withdrawal requests.

The U. S. Geological Survey (USGS) and the Maryland Geological Survey (MGS) have begun the first phase of a three-phase assessment of Maryland's Coastal Plain aquifer system. The assessment will document the geologic and hydrologic characteristics of the aquifer system, conduct detailed studies of the regional ground water flow system and water budget, improve documentation of patterns of water quality in the aquifers, enhance ground water level, streamflow, and water quality monitoring networks, and develop tools to facilitate scientifically sound management of the ground water resources in the Maryland Coastal Plain.

Compliance Activities More than 1,000 community and non-transient non-community water systems in Maryland must test for over 90 regulated contaminants on schedules which vary based on source type, historical data, and population. Data is received throughout the year and reviewed for compliance with the regulations. WSP staff received and reviewed more than

40,000 water quality reports in 2006. The WSP issues notices of violations (NOVs) for maximum contaminant level and treatment technique violations as they occur. NOVs for monitoring violations are issued quarterly. The WSP maintains an inventory of more than 3,700 public water systems.

Consumer Confidence Reports The Consumer Confidence Report Rule requires all community systems to report water quality data in an understandable format to their consumers. Maryland received full primacy for this program in September 2001. The reports must be submitted annually to the WSP by July 1 for the previous calendar year, and certification of their delivery to each resident within the system must be submitted to the WSP by October 1 of each year.

Drought Management Since January 2001, MDE has been evaluating hydrologic conditions using a plan developed by the Statewide Water Conservation Advisory Committee. Conditions are evaluated on a regional basis, and drought status is assessed monthly during normal conditions, and more frequently during times of water shortage. Hydrologic conditions were normal for all regions during 2006.

Emergency Response WSP staff are available to respond to water supply emergencies twenty-four hours a day and may offer technical advice, special sampling, or onsite assistance. Frequently, emergency response involves evaluating the safety of the water supply and determining whether a boil-water advisory is required to protect public health. WSP staff provided assistance to the public in response to 60 complaints in FY2007. In 2006, the WSP assisted local health department in investigation of a Legionella outbreak. The contamination was traced to a recirculating hot water system for a condominium. The facility made plumbing modifications, and installed chlorine dioxide. The water system is currently regulated as a consecutive water system.

Enforcement Strategy The strategy that has been adopted for managing enforcement is progressive enforcement. This technique has been effective in resolving violations, and reserving formal civil and criminal actions for the most serious cases. Mechanisms for obtaining compliance from a water system include:

- Voluntary compliance and correction by the system;
- Telephone calls: an effective method for obtaining complete details about the violation, which enables the State to answer any questions about system responsibilities. Many small water systems (serving less than 100 persons) are managed by volunteers who appreciate the extra assistance;
- Site visits: a system may require hands-on technical assistance by trained staff to address problems not previously encountered;
- Notice of violation: a formal action which contains information on the violation, public notification requirements, and potential enforcement actions;
- Consent agreement: a legal document prepared jointly between the water company and the State, with jointly negotiated deadlines;
- Order: a legal document which orders a water system to complete specific actions before deadlines established by the State;
- Civil and criminal judicial actions taken through the local courts;
- Administrative penalties issued by MDE;

- Financial assistance for a water system which may consist of federal Drinking Water State Revolving Loan Funds, or State Drinking Water Grant Assistance.

When there is a risk to the public's health due to failure of the treatment plant or the loss of water, progressive enforcement is not appropriate. In these types of cases, the State, in cooperation with the local health department, may issue an immediate notice to the system users through the local radio/TV stations, or by door-to-door handouts. Boil-water advisories are managed in this manner. If corrective actions are expected to take days, alternative water sources may be recommended in the notices, or a safe supply of water may be hauled to the water system. MDE works to ensure that all public water is safe for the consumer, and to assist water systems in achieving compliance with the federal and State requirements.

Enterprise Environmental Management System (EEMS) MDE has initiated the development of the Enterprise Environmental Management System, also known as EEMS. This system will become MDE's unified relational database housing the regulated entity, permitting, inspection, and enforcement activity data supporting MDE's programs, and will eventually consolidate MDE's separate permit, compliance, enforcement and other databases that correspond to the Department's various regulatory activities. EEMS is expected to eliminate the inefficiencies of maintaining multiple databases, streamline processes, and improve customer service. A private consultant worked with individual programs during 2006 to determine Departmental priorities for incorporating the various databases into EEMS. TEMPO (Tools for Environmental Management and Protection Organizations) is the primary software system that is being adapted for MDE. New Jersey, Louisiana, Mississippi, New Mexico, Kentucky utilize this software.

Field Operations MDE's Science Services Administration (SSA) conducts sampling operations for public water systems on a year-round basis. The samplers from SSA collect routine compliance samples for inorganic compounds, synthetic organic compounds, volatile organic compounds, and radionuclides according to schedules and priorities established by the WSP. In addition, samplers collect special request samples as needed to follow up on MCL violations, complaints, or other situations that warrant additional sampling.

Laboratory Certification Program In July 2005, the responsibilities for the Laboratory Certification Program and the chief certification officer transferred from the Department of Health and Mental Hygiene to MDE. This action was taken in response to the 2003 on-site evaluation of the Program by EPA that identified an inspection backlog of nine months to a year for various activities. As of June 2006, issuances of certificates were up-to-date and being completed on schedule. As of January 2007, a backlog for on-site inspections remained.

Performance tests (PTs) are reviewed annually during the renewal process. The certification officer is reviewing the PTs. MDE purchased software licenses for maintaining the laboratory certification program. The multi-year license for the IT Toolworks Software will facilitate the PT review and help maintain the overall inventory and data related to certification program. Software installation and initial training was held in August 2007.

In January 2007, MDE's Laboratory Certification Officer left service with the State. Following an on-site inspection by EPA- Region III in May 2007, the laboratory certification program was

placed on temporary restrictions until new staff or contracts are developed for the program. The Department is looking to implement two initiatives that will help with staffing needs and the backlog: an exception request has been approved for a contractual position, and a request for proposal is being developed for a third party assessor to assist with on-site triennial inspections. When the laboratory certification program transferred to MDE, there was an extensive backlog in on-site inspections and certificate renewals.

Operator Certification Legislation for establishing a program to certify operators at water and wastewater facilities in Maryland was first passed in 1957. The most recent revision to the Maryland Annotated Code was in 1999 when the Board and the associated regulations were reestablished until July 1, 2011. The Code of Maryland Regulations for the Operator Certification Program was revised in January 2001, and approved by EPA on July 13, 2001. The regulations require community and non-transient non-community water systems to have State-certified operators. MDE has made no statutory or regulatory changes to the Operator Certification Program since January 2001. In 2005, a new regulation that requires process-related training for certification renewal was passed. The Board reviewed and approved all training for the last three years as process or nonprocess training. The new requirements went into effect in January 2006.

As of June 2006, a total of 497 community water systems were in compliance with the requirement to maintain a certified operator. Of the 573 active nontransient noncommunity water systems, 460 systems employed certified operators. Compliance with the operator certification regulations increased from 59% of water systems in the 2001 baseline to 89% of the water systems in 2006. Of the 641 water systems that serve over 100 persons, 640 water systems employ certified water operators.

MDE received funding from EPA to reimburse operators at small water systems for the expense of training, taking certification examinations and renewing certifications. Certification costs incurred after January 1, 2004 are eligible for reimbursement. The grant request was approved by EPA in November 2003. Reimbursement of expenses related to operator certification started in 2004 and is expected to continue until the grant is expended (2009).

On September 20, 2006, EPA Region III informed MDE that the Operator Certification Program continued to comply with the EPA guidelines.

Regulations In 2005, MDE reviewed a draft agreement from EPA Region III for the enforcement responsibilities under the Unregulated Contaminant Monitoring Rule 2 (UCMR2); the final agreement was signed February 21, 2006. On April 15, 2005, Maryland published the final regulations for the Long Term 1 Enhanced Surface Water Treatment Rule (LT1SWTR). The effective date of the regulations were April 25, 2005. MDE received interim primacy from EPARegion III for the LT1SWTR on February 17, 2006. On August 10, 2006, EPA granted Maryland primacy for the LT1SWTR.

In 2006, EPA finalized three major regulations: Long Term 2 Surface Water Treatment Rule (LT2SWTR), Stage 2 Disinfection Byproduct Rule (Stage 2 DBPR), and the Ground Water Rule.

In 2006, MDE entered into an informal agreement with EPA-Region III for early implementation activities under the LT2SWTR and the Stage 2 DBPR.

Sanitary Survey Inspections A sanitary survey is an onsite inspection of a water system, including the source, treatment, storage, and distribution systems, as well as a review of the operations and maintenance of the system. These inspections are conducted for the purpose of determining the adequacy and reliability of the water system to provide safe drinking water to its customers. The sanitary survey can be used to follow up known or suspected problems or on a routine basis to assess the water system's viability and prevent future problems from occurring. Inspectors may require system upgrades if sanitary deficiencies are identified. The WSP strives to inspect community and non-transient non-community water systems once each year. A total of 738 sanitary surveys were completed for community and non-transient non-community water systems in 2006. Water Supply Program staff and county health departments conducted sanitary survey inspections for 330 transient noncommunity systems during 2006.

Small System Technical Assistance MDE continued funding for the eighth year of a circuit rider for the Maryland Rural Water Association (MRWA) to train operators of small water systems. MDE refers systems in need of assistance to the MRWA, and the MRWA's circuit rider provides hands-on training to system operators for chemical feed systems, leak detection, corrosion control, and consumer confidence reporting.

Source Water Assessments The Safe Drinking Water Act reauthorization of 1996 requires each state to develop and submit to EPA a plan for conducting source water assessments for all public water supplies. Maryland's Source Water Assessment Plan was approved by EPA in November 1999. Maryland is conducting studies to define areas of contribution for each public water supply, identify potential sources of contamination within those areas, and assess the vulnerability of the supply to those sources of contamination.

In 2006, source water assessments were completed for 64 community water systems and 1168 noncommunity water systems. By March 2006, source water assessment reports had been completed for all community water systems and non-community water systems.

Surface Water Filtration Plant Optimization Program MDE has a long history of working to improve the technical, managerial and financial capacity of Maryland's surface water filtration plants, which serve the vast majority of Maryland's population. This has primarily been accomplished by the WSP through the use of Comprehensive Performance Evaluations (CPE). CPEs are used to evaluate the performance of a surface water treatment plant to determine if the plant is optimized for removal of particles and parasitic organisms such as *Giardia* and *Cryptosporidium.* The CPE assists in identifying areas of potential improvement in the operation, maintenance, design, and administration of the plant in order to achieve optimized plant performance. Since 1990, when the WSP adopted optimization goals and began conducting CPEs, the process has helped improve surface water systems' technical, managerial, and financial capacity and has strengthened drinking water treatment understanding among operators and local government officials across the State. Because of these benefits, the WSP plans to continue to perform CPE's, with periodic re-evaluations, at Maryland's surface water plants. Five CPEs were conducted in calendar year 2006.

In addition to plant optimization activities through the CPE process, the WSP continued its participation in EPA's Area Wide Optimization Program (AWOP). These additional optimization efforts include tracking of turbidity data in the form of graphs and prioritizing filtration plants that can benefit from technical assistance. By FFY 2006, most surface water systems were reporting turbidity and other data electronically, which allows the WSP to more easily analyze water plant performance. As an extension of optimization activities through AWOP, the WSP has joined with other states in Region III to extend Performance Based Training (PBT) to operators of several water plants in several Region III states for the purpose of working through a structured program that will assist with achieving plant optimization. After the PBT sessions for the initial plants, the WSP intends to present this training for other plants within Maryland.

Transient Non-community Water System Oversight Transient water systems, such as churches, campgrounds, rest stops and restaurants, account for about 72% of Maryland's public water systems. In 2006, twenty of Maryland's twenty-three counties had delegated authority for oversight of transient non-community systems in their jurisdictions, and received funding from MDE through the State Revolving Loan Fund set-asides. Transient systems in the delegated counties accounted for almost 96% of the total number of transient systems in 2006. One hundred eighteen systems are directly managed by the Water Supply Program in the remaining three counties.

Counties with delegated authority have overseen this program since 1998. The Water Supply Program has provided delegated counties with written and verbal guidance, and has offered several training opportunities to educate the county programs about the federal and State requirements for these systems. Beginning in 2001, the Water Supply Program initiated routine program evaluations of the delegated counties in order to provide additional direction. The program evaluations involve visiting each county for a file review, interviewing county staff regarding program operations, and preparing a written evaluation of each program. All twenty delegated county programs have undergone an initial program review, and a second round of evaluations is in progress. Guidance and technical assistance are provided to the counties as needed.

Water and Sewer Plan Evaluations In 1997, the Maryland Legislature enacted Smart Growth legislation limiting most State infrastructure funding to areas that local governments designate for growth (Priority Funding Areas). Through the Smart Growth planning process, funding programs such as the DWSRF give preference to infrastructure improvement projects that are in the Priority Funding Areas. All new water systems must be incorporated in the County Water and Sewerage Plans before a MDE Construction Permit is issued. These planning processes help prevent unnecessary new systems and generally encourage consolidation of small systems to improve system reliability and economy. In addition, the County Water and Sewerage Plans assist in the long-term planning of water resources and treatment plants, thereby reducing the potential for undersized water treatment plants and water outages.

Since January 2005, the Water Supply Program reviews all County Water and Sewerage Plans in order to address source water protection issues and to ensure compliance with capacity development and other

SDWA requirements. For calendar year 2006, the Water Supply Program reviewed 69 County Water and Sewerage Plans.

Water Conservation Act As water appropriation permits for large water systems are renewed or expanded, they are being modified to require these utilities to conduct annual audits of their water use. During 2006, one permit was modified to include this special provision. The Maryland Water Conservation Act, passed during the 2002 legislative session, required MDE to produce guidelines on water conservation best management practices for water utilities. This document was published in October 2003 and is available on MDE's website at www.mde.state.md.us.

Water Resources Management Advisory Committee Based on recommendations of the 2003 Advisory Committee on the Management and Protection of the State's Water Resource, and the 2005 Maryland General Assembly a second Committee was formed in 2005 to complete and supplement the work of the 2003 Committee. The 2005 Committee is charged with reviewing the latest information on the State's water resources, assessing the adequacy of existing laws and regulations, and recommending comprehensive strategies for the development, management and protection of the State's water resources. The Committee produced an interim report in June 2006. A final report is due by July 1, 2008.

The Committee's Interim Report focused on the need for better water resources planning in Maryland and the relationship between land use planning and water resources management. During the 2006 legislative session, the Maryland General Assembly passed HB 1141, which was signed into law on May 2, 2006 and codified as Chapter 381. This law added new requirements for local governments to more thoroughly examine the effects of proposed land use on streams and wetlands, forest and agricultural conservation lands, water supplies and water quality to avoid negative impacts to the State's natural resources. In particular, the law requires local governments to include a Water Resources Element in their Comprehensive Plans, and requires MDE to provide data and technical assistance to local governments, and to review the Water Resources Element. Maryland's county and municipal governments have long had the primary responsibility for land use planning under existing State law. These provisions will enhance local planning efforts by requiring them to ensure that water resources will be adequate for both water supply and as suitable receiving waters for waste disposal. MDE and the Department of Planning (MDP) will be assisting local governments in implementing the new requirements. Requiring land use plans to consider these critical needs as early in the process as possible will ensure that plans are realistic and environmentally sustainable.

The Committee continues to meet regularly, and will consider a number of additional topics before producing a final report in 2008. Topics for consideration include water quality issues related to water supply, the role of water conservation and water reuse in managing Maryland's water supplies, Maryland's water allocation policies, and the need to identify new or alternative water resources. In addition, the Committee will seek to identify appropriate funding mechanisms to undertake recommended activities.

Water System Security Planning WSP staff provide on-going technical assistance to water systems on vulnerability assessments, emergency response plans, sampling protocols and resources. In 2004, public water systems serving populations greater than 3,300 people were required under the Bioterrorism Act of 2002 to complete vulnerability assessments (VAs).

Systems also had to certify that they have prepared emergency response plans (ERPs). In addition, WSP passes along security related updates and federal security alerts to water systems. WSP also monitors the daily infrastructure reports produced by the Department of Homeland Security to remain cognizant of any relevant drinking water security information**.**

As an outgrowth of the work done in 2004 by the Water Security and Sewerage Systems Advisory Council, MDE partnered with state and federal agencies to form a Joint Maryland Committee on Water Security. In April 2006, the Committee successfully proposed and obtained an Urban Area Security Initiative (UASI) grant in the amount of $1.55 million from the Senior Policy Group for the National Capital Region (NCR SPGs). These funds originate from the Department of Homeland Security and are subawarded by the Washington D.C. government. The funds are intended to initiate an early warning system (EWS) for monitoring water quality in raw source waters at five (5) sites in the Potomac and Patuxent Rivers. The EWS is anticipated to achieve three main water security goals:

1. The EWS will protect public health by providing remote, automated surveillance and monitoring of public drinking water quality. At present, there is *no system in place* to continuously monitor raw water quality for sudden changes that could indicate natural or terrorist induced contamination.
2. The project follows a risk-based counter-terrorism strategy. 100% protection of all water infrastructures is impossible, but this project focuses attention properly on drinking water system intakes that are at greatest risk on the Potomac.
3. This project is directly responsive to HSPD-9, which calls for the development of: "… robust, comprehensive, and fully coordinated surveillance and monitoring systems, including …public health and water quality that provides early detection and awareness of disease, pest, or poisonous agents." HSPD-9, § (8)(a). Providing early warning of intentional or accidental chemical or biological contamination is a must.

The core objectives of the EWS are to provide rapid analytical results in order to determine response needs. The EWS will screen a number of basic parameters with sufficient sensitivity and permit automated, remote monitoring. The primary approach will be 1) to analyze water quality, in locations where baseline conditions are established, and to detect significant departures or "state changes" from the benchmarks that may indicate a contamination event, and 2) employ bio-monitors to detect potentially toxic conditions in water.

Water System Security Preparedness WSP staff provide on-going technical assistance to water systems on vulnerability assessments, emergency response plans, sampling protocols and security resources. In addition, WSP passes along security related updates and federal security alerts to water systems. WSP gathers information from the Water Information Sharing and Analysis Center (WISAC), which distributes information on threats to water and wastewater facilities. WSP also monitors the daily infrastructure reports produced by the Department of Homeland Security to remain cognizant of any relevant drinking water security information.

WSP staff have been active in coordinating a Joint Water Security Committee to implement the 2004 Water Security and Sewerage Systems Advisory Council report's recommendations to enhance security. Participating agencies on the new security committee include staff from the

federal Department of Homeland Security, Maryland State Police, Maryland Emergency Management Agency, US Geological Survey, and the Metropolitan Washington Council of Governments. MDE was awarded funding for an early warning system to monitor raw water near select drinking water intakes for the presence of potentially toxic contaminants in the Potomac and Patuxent rivers. The system was tested in 2007 and is expected to be operational in 2008. The system uses sophisticated chemical and biological monitoring devices and is the first of its kind in the Mid-Atlantic Region.

In cooperation with EPA Region III, and State laboratories, WSP staff have been active in developing the pandemic response process for coordination of potential impacts of a pandemic influenza on the water industry and state programs.

Watershed Management Several of the largest water systems in Maryland, including the City of Baltimore, City of Cumberland, and the Washington Suburban Sanitary Commission, rely on surface water sources. All of these systems currently have formalized watershed management programs in place. The purpose of watershed management programs is to ensure the high quality of water in streams and reservoirs used for drinking water. This is accomplished in a variety of ways, including the formation of watershed technical groups, the promotion of agricultural and urban best management practices (BMPs), the purchase of conservation easements and buffers along waterways, implementation of low-development zoning, and public education. The Water Supply Program has completed all source water assessments; these assessments include recommendations for the establishment of new watershed management plans for Maryland communities that rely on surface water sources. In 2006, efforts to initiate a protection program are ongoing for the City of Frederick, Linganore Creek water supply source, and Frederick County; this program was adopted in 2007.

Well Siting One important step in protecting a ground water supply is to identify the best possible location for the well. WSP staff conduct joint site inspections with local Health Department personnel to assist systems in locating new wells at community and non-transient non-community water systems. In 2006, approximately 63 well sites were approved by the WSP.

Wellhead Protection Maryland's Wellhead Protection (WHP) Program was approved by EPA in 1991. Delineations of areas of contribution have been completed for more than 400 ground water systems. To date, 40 systems are implementing protection measures for their ground water supplies. These systems serve approximately 192,500 residents in Maryland (see Table 3).

Table 3. Source Water Protection in Maryland For the Year 2006

System Type	No. of Systems	Population Benefited
Systems with Active WHP Programs	40	192,500
Systems with Active Watershed Management Programs	19	2,650,000

ANNUAL COMPLIANCE INFORMATION

This report includes violation data for calendar year 2006. MCL violations are reported for all types of public water systems. Monitoring violations are reported for all systems that are directly overseen by MDE, including all community water systems, all non-transient non-community water systems, and transient non-community water systems in Montgomery, Prince George's and Wicomico Counties.

Figure 1 presents the various types of violations incurred by community water systems in 2006 based on the population size. If a water system has multiple violations in the same category for 2006, it is counted once.

Summaries of the various violations for all public water systems in 2006 are presented in Tables 4 through 10.

As indicated by Figure 1, both MCL and monitoring violations occur more frequently in smaller systems, which have fewer resources and less technical expertise for operating the systems. MDE inspectors regularly visit systems where water quality problems occur to advise and assist system owners to meet their regulatory and water quality requirements.

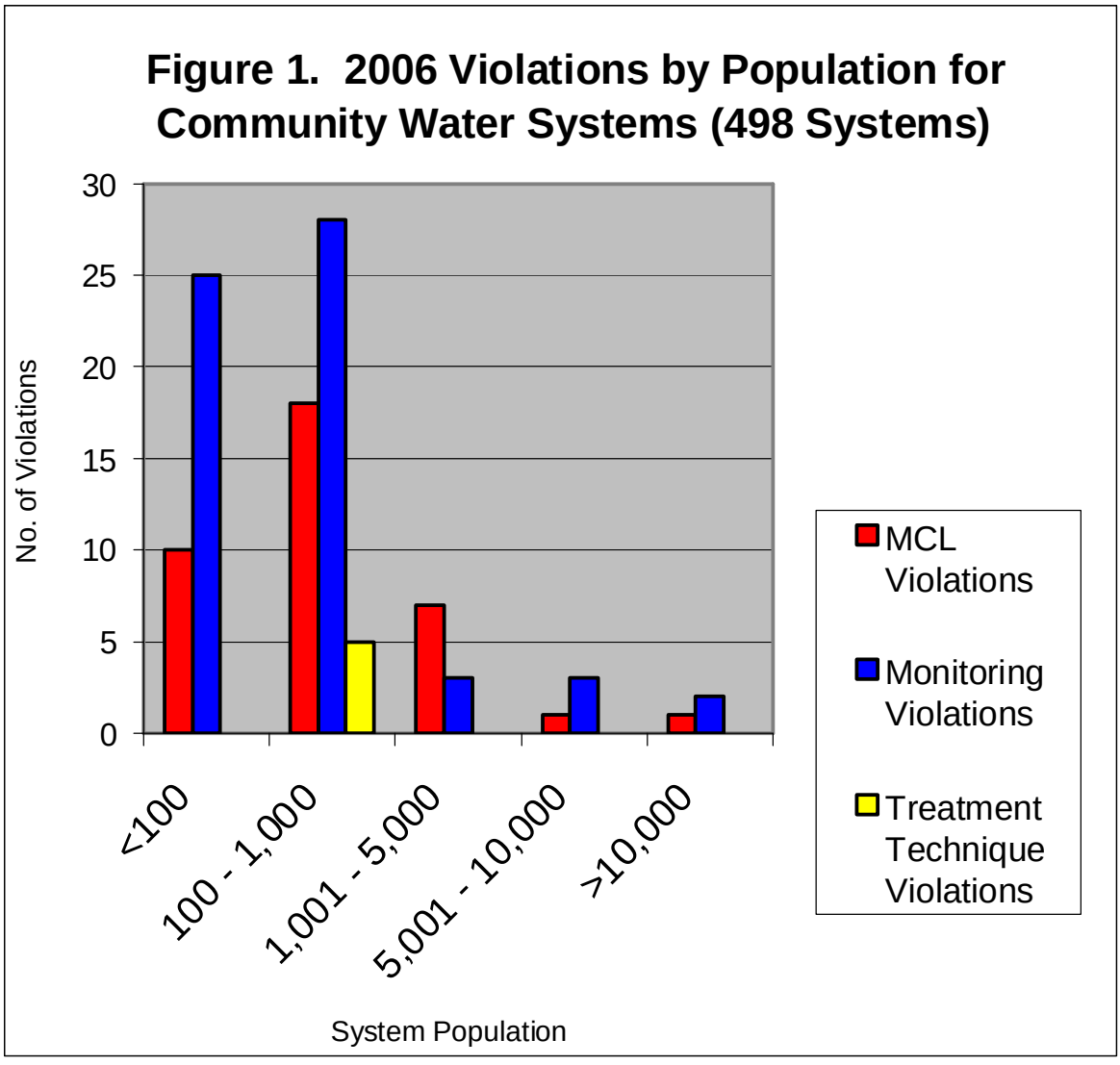
Maximum Contaminant Level Compliance

Under the Safe Drinking Water Act (SDWA), the EPA sets national limits on contaminant levels in drinking water to ensure that the water is safe for human consumption. These limits are known as Maximum Contaminant Levels (MCLs). Contaminants are categorized into several categories: Inorganic Contaminants, Organic Contaminants, Lead & Copper, and Bacteria.

Table 4 presents a summary of inorganic contaminant (IOC) violations. Eight systems exceeded the MCL of 10 mg/L for nitrate. The MCL for gross alpha radioactivity was exceeded by six water systems. Chapel Point Woods (June 2006) in Charles County constructed a reverse osmosis treatment system for the removal of Polonium, a gross alpha emitter that is a decay element of Radium 226. Mount Carmel Woods in Charles County took one of their two wells out of service due to elevated levels of Polonum, and drilled a new well in 2006 to replace the lost quantity of water. Golden Kay Apartments in Cecil County installed ion exchange treatment for removal of Radiums. Harbor View (July 2006) in Cecil County took one of their wells out of service. Ongoing violations of the MCL for combined Radium-226 and Radium-228 at the Graymount Apartments in Cecil County, and Concord Estates in Frederick County have not yet been resolved.

Table 5 presents a summary of volatile organic contaminant (VOC) violations. One system exceeded the MCL for any organic contaminant in 2005. The MCL for benzene, a VOC, was exceeded at Barr Freightliner, located in Wicomico County. A new well was drilled in 2006 to replace the contaminated well.

Violation summaries for all public water systems under the Total Coliform Rule are presented in Table 7. In addition, the data indicates that the 29 MCL violations for twenty-eight community and nontransient noncommunity water systems were lower than previous years (compared to 52 reported in 2005, 40 reported in 2004). The majority of the MCL violations are related to transient noncommunity water systems which typically have little or no treatment.



Monitoring Compliance

A PWS is required to monitor and verify that the levels of contaminants present in the water do not exceed the MCL. If a PWS fails to have its water tested as required or fails to report test results correctly to the primacy state, a monitoring violation occurs.

Water systems are notified annually by MDE of their monitoring requirements. In addition, a reminder notice is sent to the systems about one month before the end of the year if reports are not received. If a system fails to report or complete the required testing, a violation letter is sent to the water system. If there is no response after about one month, a second notice of violation letter is sent by certified mail to the water system; this letter will typically contain a requirement for public notification, and potential fines. Phone calls and visits by the technical staff are also used to provide assistance to water systems.

Significant Monitoring Violations For this report, significant monitoring violations are generally defined as any major monitoring violation that occurred during the calendar year of the report. A major monitoring violation, with rare exceptions, occurs when no samples were taken or no results were reported during a compliance period. The tables in this report include monitoring violations for community water systems, non-transient non-community water systems, and the transient non-community water systems in Montgomery, Prince George's and Wicomico Counties, which were overseen directly by MDE. During 2006, there were 24 monitoring violations for IOCs, no monitoring violations for VOCs, no monitoring violations for SOCs, and 184 monitoring violations for total coliform (see Tables 4, 5, 6 and 7). Thirty-one systems failed to collect their initial tap sample for lead and copper, and eighty-nine systems failed to collect follow-up sampling for lead and copper (see Table 9).

Table 4. Inorganic Contaminant Violations								
Contaminant			MCL Violations			Monitoring Violations		
Code	Name	MCL (mg/L)	# of Vios	# Vios RTC	# of Systems with Vios	# of Vios	# Vios RTC	# of Systems with Vios
1074	Antimony*	0.006	0	0	0	0	0	0
1005	Arsenic	0.010	49	5	27	3	3	3
1094	Asbestos	7 mil. fibers/L	0	0	0	0	0	0
1010	Barium*	2	0	0	0	1	0	1
1075	Beryllium*	0.004	0	0	0	0	0	0
1015	Cadmium*	0.005	0	0	0	2	0	2
1020	Chromium*	0.1	0	0	0	1	0	1
1024	Cyanide	0.2	0	0	0	0	0	0
1025	Fluoride	4	0	0	0	0	0	0
1035	Mercury*	0.002	0	0	0	1	0	1
1040	Nitrate-N	10	5	5	4	14	0	14
1041	Nitrite-N	1	0	0	0	0	0	0
1045	Selenium*	0.05	0	0	0	1	0	1
1085	Thallium*	0.002	0	0	0	1	0	1
4000	Gross Alpha Radioactivity	15 pCi/L	2	0	2	0	0	0
4100	Gross Beta Radioactivity	4 mrem	0	0	0	0	0	0
4010	Combined Radium 226 +228	5 pCi/L	1	0	1	0	0	0
	Totals		57	10	34	24	3	24

MCL = maximum contaminant level
RTC = returned to compliance

Table 5. Violations for Volatile Organic Contaminants								
Contaminant			MCL Violations			Monitoring Violations		
Code	Name	MCL (mg/L)	# of Vios	# Vios RTC	# of Systems with Vios	# of Vios	# Vios RTC	# of Systems with Vios
2977	1,1-Dichloroethylene	0.007	0	0	0	0	0	0
2981	1,1,1-Trichloroethane	0.2	0	0	0	0	0	0
2985	1,1,2-Trichloroethane	0.005	0	0	0	0	0	0
2980	1,2-Dichloroethane	0.005	0	0	0	0	0	0
2983	1,2-Dichloropropane	0.005	0	0	0	0	0	0
2378	1,2,4-Trichlorobenzene	0.07	0	0	0	0	0	0
2990	Benzene	0.005	0	0	0	0	0	0
2982	Carbon Tetrachloride	0.005	1	1	1	0	0	0
2380	cis-1,2-Dichloroethylene	0.07	0	0	0	0	0	0
2964	Dichloromethane (methylene chloride)	0.005	0	0	0	0	0	0
2992	Ethylbenzene	0.7	0	0	0	0	0	0
2989	Monochlorobenzene	0.1	0	0	0	0	0	0
2968	o-Dichlorobenzene	0.6	0	0	0	0	0	0
2969	p-Dichlorobenzene	0.075	0	0	0	0	0	0
2996	Styrene	0.1	0	0	0	0	0	0
2987	Tetrachloroethylene	0.005	0	0	0	0	0	0
2991	Toluene	1	0	0	0	0	0	0
2979	trans-1,2-Dichloroethylene	0.1	0	0	0	0	0	0
2984	Trichloroethylene	0.005	0	0	0	0	0	0
2976	Vinyl Chloride	0.002	0	0	0	0	0	0
2955	Xylenes (Total)	10	0	0	0	0	0	0
	Totals		1	1	1	0	0	0

MCL = maximum contaminant level
RTC = returned to compliance

Table 6. Violations for Synthetic Organic Contaminants								
Contaminant			MCL Violations			Monitoring Violations		
Code	Name	MCL (mg/L)	# Vios	# Vios RTC	# of Systems with Vios	# Vios	# Vios RTC	# of Systems with Vios
2063	2,3,7,8-TCDD(dioxin)	3x10-8	0	0	0	0	0	0
2105	2,4-D (Formula 40, Weedar 64)	0.07	0	0	0	0	0	0
2110	2,4,5-TP (Silvex)	0.05	0	0	0	0	0	0
2051	Alachlor (Lasso)	0.002	0	0	0	0	0	0
2050	Atrazine (Atranax, Crisazina)	0.003	0	0	0	0	0	0
2306	Benzo(a)pyrene	0.0002	0	0	0	0	0	0
2046	Carbofuran (Furdan, 4F)	0.04	0	0	0	0	0	0
2959	Chlordane	0.002	0	0	0	0	0	0
2031	Dalapon	0.2	0	0	0	0	0	0
2035	Di(2-ethylhexyl)adiphate	0.4	0	0	0	0	0	0
2039	Di(2-ethylhexyl)phthalate	0.006	0	0	0	0	0	0
2931	Dibromochloropropane (DBCP, Nemafume)	0.0002	0	0	0	0	0	0
2041	Dinoseb	0.007	0	0	0	0	0	0
2032	Diquat	0.02	0	0	0	0	0	0
2033	Endothall	0.1	0	0	0	0	0	0
2005	Endrin	0.002	0	0	0	0	0	0
2946	Ethylene Dibromide (EDB, Bromofume)	0.00005	0	0	0	0	0	0
2034	Glyphosate	0.7	0	0	0	0	0	0
2065	Heptachlor (H-34, Heptox)	0.0004	0	0	0	0	0	0
2067	Heptachlor Epoxide	0.0002	0	0	0	0	0	0
2274	Hexachlorobenzene	0.001	0	0	0	0	0	0
2042	Hexachlorocyclopentadiene	0.05	0	0	0	0	0	0
2010	Lindane	0.0002	0	0	0	0	0	0
2015	Methoxychlor (DMDT, Marlate)	0.04	0	0	0	0	0	0
2036	Oxamyl (Vydate)	0.2	0	0	0	0	0	0
2326	Pentachlorophenol	0.001	0	0	0	0	0	0
2040	Picloram	0.5	0	0	0	0	0	0
2384	Polychlorinated biphenyls (PCB, Aroclor)	0.0005	0	0	0	0	0	0
2037	Simazine	0.004	0	0	0	0	0	0
2020	Toxaphene	0.003	0	0	0	0	0	0
	Totals		0	0	0	0	0	0

MCL = maximum contaminant level
RTC = returned to compliance

Table 7. Total Coliform Rule Violations				
Violation Name	**MCL**	**# of Vios**	**# Vios RTC**	**# of Systems with Vios****
MCL, Acute (Fecal Coliform)	Absence	13	8	13
MCL, Monthly (Total Coliform)	Absence	168	119	159
Monitoring, Routine and Repeat Major *	N/A	184	76	70
Totals		365	203	242

MCL = maximum contaminant level
RTC = returned to compliance

* Monitoring violations in this report include all CWS, all NTNC, and TNC systems in Montgomery, Prince George's and Wicomico Counties.

** For a system that serves fewer than 33,000 people and collects less than 40 samples per month, two positive samples in one compliance period is a violation. For a system that serves more than 33,000 people, greater than 5% of the samples testing positive in one compliance period is a violation.

Disinfection Byproduct Rule Compliance

Surface water systems that serve 10,000 or more persons are required to sample for haloacetic acids (HAA5) and total trihalomethane (TTHM). Beginning in 2004, all water systems that disinfect the drinking water with chlorine, chlorine dioxide, or ozone are required to monitor for disinfection byproducts. In 2006, six systems had violations for Disinfection Byproduct (DBP) Rule requirements.

Table 8. Disinfection Byproduct Rule Violations								
Contaminant			**MCL Violations**			**Monitoring Violations**		
Code	**Name**	**MCL (mg/L)**	**# of Vios**	**# Vios RTC**	**# of Systems with Vios**	**# of Vios**	**# Vios RTC**	**# of Systems with Vios**
TTHM	Total Trihalomethanes	0.08	10	2	4	0	0	0
HAA5	Haloacetic Acids (5)	0.06	4	1	2	0	0	0
Totals			14	3	6	0	0	0

After the two years of initial monitoring for the DBP Rule was completed, 540 of the groundwater systems that serve fewer than 10,000 persons were reduced to triennial monitoring frequency due to the low concentration of DBPs. Beginning in 2006, consecutive water systems were sampled quarterly for DBPs in order to determine how the Stage 2 DBP Rule may impact these water systems.

Treatment Technique Compliance

For some regulations, the EPA establishes treatment techniques (TTs) in lieu of an MCL to control unacceptable levels of certain contaminants. In 2006, there were thirteen Surface Water Treatment Rule (SWTR) treatment technique violations and no Lead & Copper treatment technique violations, as outlined in Tables 9 & 10.

Lead and Copper Rule Community and non-transient non-community water systems are required to treat their water if it is found to be corrosive. Based on a system's population, five to one hundred samples are collected at homes or sample locations with the highest probability of elevated lead concentrations. This is determined based on a survey of when homes were constructed and/or when plumbing is installed and/or if the service line leading to the home contains lead. Lead solder was prohibited from use in water systems beginning in the mid-1980s. A water system's results for the compliance period cannot exceed the action level in more than 10% of the samples. Although exceeding the action level is not a violation, follow-up actions are required. In 2006, 22 systems failed to conduct required public education activities (see Table 9).

Table 9. Lead and Copper Violations

Violation Name	# of Vios	# Vios RTC	# of Systems with Vios
Initial Tap Sampling for Lead and Copper (51)	31	11	31
Follow-up or Routine Tap Sampling (52)	91	38	89
Public Education (65)	23	6	22
Totals	145	55	142

RTC = returned to compliance
# of vios = Number of violations that occurred in 2006 plus number of ongoing, unresolved violations

Surface Water Treatment Rule Water systems that use surface water as their drinking water source are required to provide filtration and disinfection. The treatment process is monitored throughout each day, and reported monthly to the State. Table 10 outlines the Surface Water Treatment Rule violations for 2006. Four systems exceeded the turbidity MCLs indicating that their treatment

systems may not be functioning properly, and five systems failed to install required filtration systems to meet federal and State regulations. Five of these systems have achieved compliance. Seven ground water systems under the direct influence of surface water have not yet installed treatment. As of June 2005, Maryland's last unfiltered surface water source was taken out of service; the water system connected to a regional water system.

Table 10. Surface Water Treatment Rule Violations

Type of System	Violation Type	# of Vios	# Vios RTC	# of Systems with Vios
Filtered Water System	Treatment Technique (41)	2	2	2
Filtered Water Systems	Treatment Technique Exceeds 1 NTU (43)	1	1	1
Filtered Water Systems	Treatment Technique Exceeds 0.3 NTU (44)	1	1	1
Filtered Water Systems	Monitoring, Filtered (38)	1	1	1
Unfiltered Water Systems	Failure to Filter (42)	7	0	7
Totals		12	5	12

RTC = returned to compliance

Variances and Exemptions

A primacy state can grant a PWS a variance from a primary drinking water regulation if the characteristics of the raw water sources reasonably available to the PWS do not allow the system to meet the MCL. To obtain a variance, the system must agree to install the best available technology, treatment techniques, or other means of limiting drinking water contamination that the Administrator finds are available (taking costs into account), and the state must find that the variance will not result in an unreasonable risk to public health. At the time the variance is granted, the State must prescribe a schedule the PWS will follow to come into eventual compliance with the MCL. Small systems may also be granted variances if they cannot afford (as determined by application of the Administrator's affordability criteria) to comply with certain MCLs (non-microbial, promulgated after January 1, 1986) by means of treatment, alternative source of water, restructuring or consolidation. Small systems will be allowed three years to install and operate EPA approved small system variance technology. The variance shall be reviewed not less than every five years to determine if the system remains eligible for the variance.

A primacy state can grant an exemption temporarily relieving a PWS of its obligation to comply with an MCL, treatment technique, or both if the system's noncompliance results from compelling factors (which may include economic factors) and the system was in operation on the effective date of the MCL or treatment technique requirement. A new PWS that was not in operation on the effective date of the MCL or treatment technique requirement by that date may be granted an exemption only if no reasonable alternative source of drinking water is available to the new system. Neither an old or a new PWS is eligible for an exemption if management or restructuring changes can reasonably be made that will result in compliance with the SDWA or improvement of water quality, or if the exemption will result in an unreasonable risk to public health. The State will require the PWS to comply with the MCL or treatment technique as expeditiously as practicable, but not later than three years after the otherwise applicable compliance date.

In September 2004, MDE distributed information to the water systems that were impacted by the new Arsenic Rule standard of 0.010 milligrams per liter in the drinking water. The guidance document provided information to water systems on obtaining an exemption as allowed in the regulations. Maryland received 20 exemption requests for the Arsenic Rule deadline of January 23, 2006. After reviewing the documents and plans for achieving compliance, seventeen exemptions were tentatively approved pending on the development of a final schedule. Memorandums of Understanding and schedules have been signed for all seventeen water systems. Nine systems are drilling new wells to a deeper aquifer, and eight systems are installing arsenic removal treatment. All seventeen water systems are expected to have completed their upgrades by 2008.

Consumer Confidence Report Compliance

Every community water system is required to deliver to its customers a brief annual water quality report. This report is required to include some educational material, and provides information on the source water, the levels of any detected contaminants, and compliance with drinking water regulations. For 2006, notices of violation were issued to systems that failed to submit their CCRs by the July 1 compliance deadline. Table 11 presents a summary of the Consumer Confidence Report Reporting Violations.

Table 11. Consumer Confidence Reporting Violations

Violation Name	# of Vios	# Vios RTC	# of Systems with Vios
Consumer Notification	2	2	2

Conclusion

Maryland public water systems maintain a high level of compliance with all Safe Drinking Water Act requirements. In general, compliance is more difficult for smaller systems, which struggle both financially and technically to meet a continually increasing number of complex regulations. MDE's technical assistance approach is aimed at helping all public drinking water systems to achieve the highest possible level of public health protection.

DEFINITIONS

Filtered Systems Water systems that have installed filtration treatment [40 CFR 141, Subpart H].

Inorganic Contaminants Non-carbon-based compounds such as metals, nitrates, and asbestos. These contaminants are naturally occurring in some water, but can get into water through farming, chemical manufacturing, and other human activities. EPA has established MCLs for 15 inorganic contaminants [40 CFR 141.62].

Lead and Copper Rule This rule established national limits on lead and copper in drinking water [40 CFR 141.80-91]. Lead and copper corrosion pose various health risks when ingested at any level, and can enter drinking water from household pipes and plumbing fixtures. States report violations of the Lead and Copper Rule in the following four categories:

> *Initial lead and copper tap monitoring and reporting:* SDWIS Violation Code 51 indicates that a system did not meet initial lead and copper testing requirements, or failed to report the results of those tests to the State.
>
> *Follow-up or routine lead and copper tap monitoring and reporting:* SDWIS Violation Code 52 indicates that a system did not meet follow-up or routine lead and copper tap testing requirements, or failed to report the results.
>
> *Public education:* SDWIS Violation Code 65 shows that a system did not provide required public education about reducing or avoiding lead intake from water.

Maximum Contaminant Level (MCL) The highest amount of a contaminant that EPA allows in drinking water. MCLs ensure that drinking water does not pose either a short-term or long-term health risk. MCLs are defined in milligrams per liter (parts per million) unless otherwise specified.

Monitoring EPA specifies which water testing methods the water systems must use, and sets schedules for the frequency of testing. A water system that does not follow EPA's schedule or methodology is in violation [40 CFR 141].

States must report monitoring violations that are significant as determined by the EPA Administrator and in consultation with the states. For purposes of this report, significant monitoring violations are major violations and they occur when no samples are taken or no results are reported during a compliance period. A major monitoring violation for the surface water treatment rule occurs when at least 90% of the required samples are not taken or results are not reported during the compliance period.

Organic Contaminants Carbon-based compounds, such as industrial solvents and pesticides. These contaminants generally get into water through farm cropland or discharge from factories. EPA has set legal limits on 54 organic contaminants that are to be reported [40 CFR 141.61].

Public Water System A Public Water System (PWS) is defined as a system that provides water via piping or other constructed conveyances for human consumption to at least 15 service connections or serves an average of at least 25 people for at least 60 days each year. There are three types of PWSs.

PWSs can be community (such as towns), non-transient non-community (such as schools or factories), or transient non-community systems (such as rest stops or parks). For this report when the acronym "PWS" is used, it means systems of all types unless specified in greater detail.

Radionuclides Radioactive particles that can occur naturally in water or result from human activity. EPA has set legal limits on four types of radionuclides: radium-226, radium-228, gross alpha, and beta particle/photon radioactivity [40 CFR 141]. Violations for these contaminants are to be reported using the following three categories:

Gross alpha: SDWIS Contaminant Code 4000 for alpha radiation above MCL of 15 picoCuries/liter (pCi/L). Gross alpha includes radium-226 but excludes radon and uranium.

Combined radium-226 and radium-228: SDWIS Contaminant Code 4010 for combined radiation from these two isotopes above MCL of 5 pCi/L.

Gross beta: SDWIS Contaminant Code 4100 for beta particle and photon radioactivity from man-made radionuclides above 4 millirem/year.

Uranium: SDWIS Contaminant Code 4006 for total Uranium above MCL of 30 µg/L.

Reporting Interval The WSP Annual Compliance Report is submitted to EPA by July 1 of each year, and reports violations for the previous calendar year.

SDWIS Code Specific numeric codes from the Safe Drinking Water Information System (SDWIS) have been assigned to each violation type included in this report. The violations to be reported include exceeding contaminant MCLs, failure to comply with treatment requirements, and failure to meet monitoring and reporting requirements. Four-digit SDWIS Contaminant Codes have also been included in the chart for specific MCL contaminants.

Surface Water Treatment Rule The Surface Water Treatment Rule establishes criteria under which water systems supplied by surface water sources, or ground water sources under the direct influence of surface water, must filter and disinfect their water [40 CFR 141, Subpart H]. Violations of the Surface Water Treatment Rule are to be reported for the following four categories:

Monitoring, routine/repeat (for filtered systems): SDWIS Violation Code 38 indicates a system's failure to carry out required tests, or to report the results of those tests.

Treatment techniques: SDWIS Violation Code 41 shows a system's failure to properly treat its water. States report Code 41 for filtered and unfiltered systems to EPA.

Failure to filter (for unfiltered systems): SDWIS Violation Code 42 shows a system's failure to properly treat its water.

Total Coliform Rule (TCR) The Total Coliform Rule establishes regulations for microbiological contaminants in drinking water. These contaminants can cause short-term health problems. If no

samples are collected during the one month compliance period, a significant monitoring violation occurs. States are to report four categories of violations:

Acute MCL violation: SDWIS Violation Code 21 indicates that the system found fecal coliform or E. coli, potentially harmful bacteria, in its water, thereby violating the rule.

Non-acute MCL violation: SDWIS Violation Code 22 indicates that the system found total coliform in samples of its water at a frequency or at a level that violates the rule. For systems collecting fewer than 40 samples per month, more than one positive sample for total coliform is a violation. For systems collecting 40 or more samples per month, more than 5% of the samples positive for total coliform is a violation.

Major routine and follow-up monitoring: SDWIS Violation Codes 23 and 25 show that a system did not perform any monitoring.

Sanitary Survey: SDWIS Violation Code 28 indicates a sanitary survey was not performed.

Treatment Technique A water treatment process that EPA requires instead of an MCL for contaminants that laboratories cannot adequately measure. Failure to meet other operational and system requirements under the Surface Water Treatment and the Lead and Copper Rules have also been included in this category of violation for purposes of this report.

Unfiltered Systems Water systems that do not need to filter their water before disinfecting it because the source is very clean [40 CFR, Subpart H].

Violation A failure to meet any State or federal drinking water regulation.