

**Report to EPA**

**MARYLAND OPERATOR  
CERTIFICATION REPORT  
FOR CALENDAR YEAR 2012**

**June 2013**



**Department of the Environment  
Water Supply Program**

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## **EXECUTIVE SUMMARY**

The Safe Drinking Water Act Reauthorization of 1996 requires States to develop, implement and enforce operator certification regulations in cooperation with the Drinking Water State Revolving Funds. This annual program report for the Maryland Operator Certification Program is submitted pursuant to federal guidelines published in the February 5, 1999 Federal Register, and in accordance with the guidance provided by the Environmental Protection Agency (EPA) headquarters. Maryland's annual operator certification report provides an update on the implementation of the Operator Certification Program for the period from January 1, 2012 through December 31, 2012.

Maryland regulates 1024 community and nontransient noncommunity water systems. During 2012, a total of 428 of the 475 community water systems were in compliance with the requirement to maintain a certified operator. Of the 549 active nontransient noncommunity water systems, 415 systems employed certified operators. Compliance with the operator certification regulations increased from 59% of water systems in the 2001 baseline to 82% of the water systems in 2012. The rate of compliance for community water systems that serve 3300 or more people is 100%. In addition, the majority of the water systems that serve more than 100 persons are in compliance.

The Maryland Department of the Environment is committed to ensuring that the staff who operate Maryland's water systems are well trained, qualified, and are in compliance with certification requirements. To accomplish this commitment, MDE's efforts are supported by funds provided by EPA through the Operator Expense Reimbursement Grant (ERG), and by State general funds. The ERG training and operator support activities ended December 31, 2012.

# **MARYLAND OPERATOR CERTIFICATION**

## **BACKGROUND**

Under the Safe Drinking Water Act (SDWA) Amendments of 1996, the State primacy agency is required to implement an Operator Certification Program, and to provide annual reports in order to receive the full federal allocation under the Drinking Water State Revolving Fund (DWSRF). The Environmental Protection Agency may withhold 20% of the State's funding if the Operator Certification Program requirements are not met.

Maryland Department of the Environment (MDE) is the designated State primacy agency. The Water Supply Program (WSP) and the Board of Waterworks and Waste Systems Operators (Board) are both part of the Water Management Administration within MDE. The WSP is the program that oversees all aspects of the SDWA requirements. Staff from the WSP are responsible for verifying whether a system is operated by a State-certified operator. This verification is determined as part of the sanitary survey of the public water system.

The Board is responsible for the certification of five categories of water and wastewater facilities. Within the five categories are 24 classes of facilities, each with a unique certificate defined by treatment technologies. In total, the Board administers the program for about 3,600 certificate holders. While the Board oversees the requirements for the certification of operators, the WSP is responsible for the enforcement of the requirements in accordance with the SDWA.

In response to federal guidelines, the Code of Maryland Regulations for the Operator Certification Program was revised in January, 2001. The Environmental Protection Agency (EPA) approved Maryland's Operator Certification Program on July 13, 2001.

The regulations for the Board of Waterworks and Waste Systems Operators were last revised in 2005 to address concerns related to continuing education requirements. In 2012, the Board continued to work with stakeholders to revise the Operator Certification regulations.

Maryland Department of the Environment was awarded the Operator Expense Reimbursement Grant (ERG) in November 2003. This multi-year federal grant was used in two principal areas: to reimburse operators of small water systems for their certification expenses, and to provide Statewide training that will provide operators with the necessary training and education to help them pass the certification exam. This grant ended on December 31, 2012.

## CLASSIFICATION OF WATER SYSTEMS, AND OPERATOR QUALIFICATIONS

Maryland classifies water facilities according to treatment technology. This ensures that operators are technically qualified for the process they are certified to operate.

The operator and superintendent must have certification that matches the water system's classification. Certain classifications of certificates also authorize the holder to operate other classifications of facilities. Table 1 presents the classification of water systems and outlines the typical treatment processes found in each classification.

A temporary operator is defined as an operator who works under the direction of a certified operator or superintendent, and is employed at a water system, but has not met the experience requirements for the classification and/or has not passed an examination for the classification. This type of certificate is only used for operators in training.

**Table 1. CLASSIFICATION OF WATER TREATMENT SYSTEMS**

<b>Class of Plants</b>	<b>Type of Treatment Systems</b>	<b>Typical Processes Included in the Plant</b>
1	Disinfection	Chlorination
2	Chemical Treatment	Chlorination, pH control and fluoridation
3	Simple Iron Removal	Chlorination, pH control, fluoridation, filtration and iron removal utilizing ion exchange or contact oxidation processes
4	Complete Treatment	Chlorination, pH control, fluoridation, aeration, coagulation, sedimentation, filtration and complex iron removal
5	Site specific	Site specific – any alternative technological plants not covered under the classification system (i.e. reverse osmosis, diatomaceous earth, and arsenic treatment)
D	Distribution	Water distribution
G	No Chemical Treatment	Well, storage tanks, UV disinfection

## MARYLAND COMPLIANCE AND ENFORCEMENT

Water system compliance with the Operator Certification Program is tracked through the Water Supply Program’s Public Drinking Water Information System (PDWIS) that manages all public water system data under the Public Water System Supervision grant. The Water Supply Program coordinates updates to the Public Drinking Water Information System (PDWIS) database from the Board’s administrative database throughout the year. The WSP receives updates from the water systems on operator coverage through a number of sources including sanitary surveys, monthly operating reports, surveys, and electronic communications.

Table 2 provides an overview of the progress made by public water systems in Maryland since 2001 when the federal program was established. The table summarizes the information that is currently available in PDWIS. The number of systems that employ certified operators has increased by 216 since 2001. This represents a significant increase from 59% to 82% of the active community and nontransient non-community water systems. The number of active water systems with certified operators remained consistent with the percentage in 2011.

**Table 2. OPERATOR CERTIFICATION COMPLIANCE OVERVIEW**

Water System Type	Number of Systems		Number of Systems with Operators		Percentage of Systems with Operators	
	2012	Baseline 2001	2012	Baseline 2001	2012	Baseline 2001
<b>Community</b>	475	503	428	402	90%	80%
<b>Nontransient Noncommunity</b>	549	568	415	225	76%	40%
<b>Total</b>	1024	1071	843	627	82%	59%

Figure 1 represents the percentage of systems by water treatment classification that are in compliance with operator certification requirements for 2012. The Class G (untreated) water systems had the largest decline in certified operators.

**FIGURE 1. OPERATOR CERTIFICATION COMPLIANCE BY CLASSIFICATION**

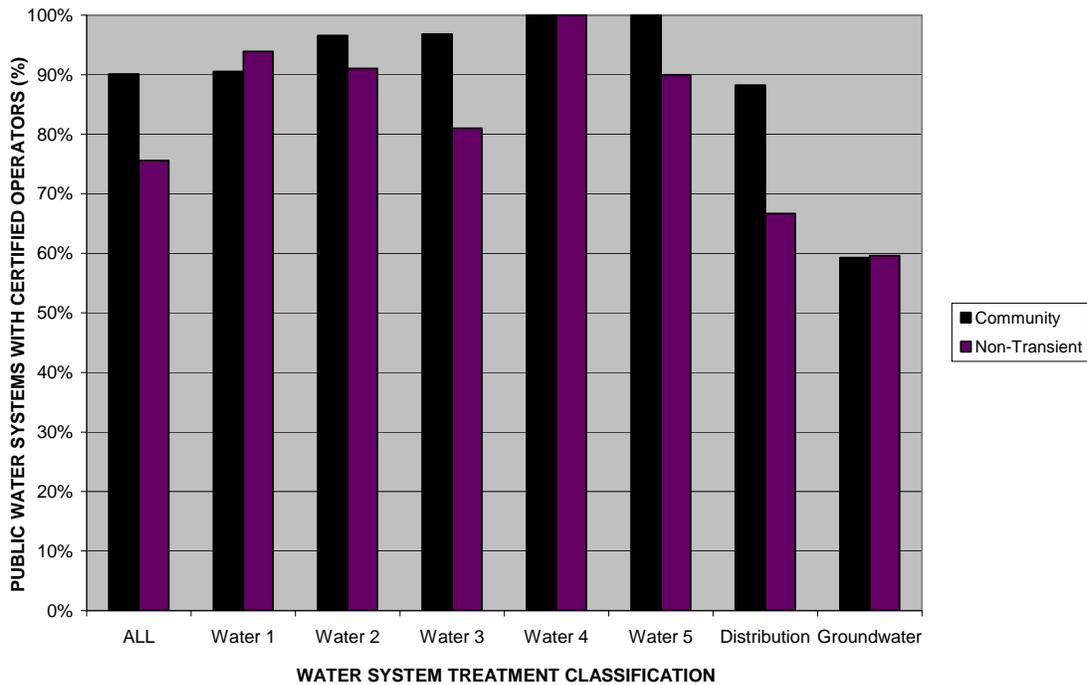
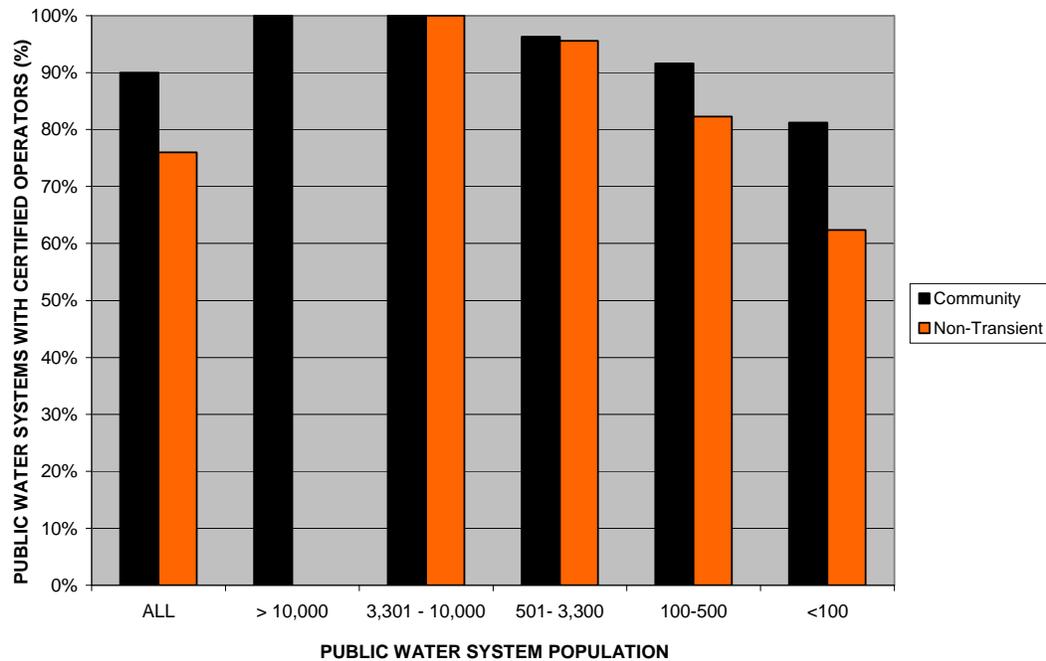


Figure 2 represents the percentage of systems by public water system type that are in compliance for 2012 based on the population that the water system serves. The overall rate of compliance among systems serving 100 or more persons is greater than 95%.

**FIGURE 2. OPERAOR CERTIFICATION COMPLIANCE BY POPULATION**



## TEMPORARY, CERTIFIED, & GRANDPARENTED OPERATORS

Individual operator certification status is tracked through the Board of Waterworks and Waste Systems Operators database. MDE staff maintains the administrative records for all classifications of operators in Maryland: water, wastewater, and industrial. The Board also maintains records of operators with temporary certification who are in training for operator certification. Grandparented certificates were granted to persons who acted as operators for water treatment facilities that were not required to employ operators prior to February 2001. The grandparented certificates are site-specific, and were issued to qualified recipients through February 5, 2003.

Table 3 summarizes the number of water operator certificates that are currently in effect in Maryland (Source: Board of Waterworks and Waste Systems Operators database, May 2013).

**Table 3. CERTIFIED AND GRANDPARENTED OPERATORS**

CLASS OF WATER SYSTEMS	CERTIFICATE TYPE		
	Temporary	Operator	Grandparented
<b>G</b>	71	39	Not available
<b>1</b>	146	229	Not available
<b>2</b>	135	246	Not available
<b>3</b>	121	145	Not available
<b>4</b>	225	498	Not applicable
<b>5</b>	49	51	Not applicable
<b>D</b>	243	386	Not applicable
<b>Total</b>	<b>990</b>	<b>1594</b>	<b>84</b>

**Enforcement** – The Department’s Attorney General’s Office provides legal counsel to the Board. Counsel attends Board meetings and offers interpretations on the Board’s statutes and regulations as needed. When an operator’s certificate is under review by the Board on a matter involving an operator’s certificate, an attorney from the Department’s Attorney General’s Office serves as the prosecutor and assists in preparation of the hearing documents.

The Water Supply Program – Engineering and Technical Assistance Division provides investigative support for determining whether enforcement action is needed with regard to operator certification for public water systems.

The Board received a referral in 2011 regarding an operator who was found guilty of falsification of records in court. The Board and the operator agreed to a one-year suspension of the operator’s certification.

## **CERTIFICATION RENEWAL**

All certificates issued by the Board are renewed on a triennial basis. Each operator must obtain a minimum number of continuing education units as a condition of renewal. Most operators must obtain 16 units every three years, while some operators at facilities with higher classification levels must obtain 30 hours. Temporary and grandparented certificate holders must obtain either 24 or 45 units, depending on the classification of the facility in which they work. All superintendent certificates (except Industrial Wastewater Treatment Classes 1 and 2) require seven units of “superintendent-approved” training review. Temporary certificate holders must take an examination during each three-year period until they pass the examination for their classification.

Code of Maryland Regulations (COMAR) 26.06.01.13 requires that the Board approve training that operators may take to be eligible for certification renewal. The Training Review and Evaluation (TRE) Committee was created by the Board to receive, review, and evaluate each application for training approval. The Committee’s comments and recommendations are considered by the Board when determining if training will be approved.

**Training Approval Process** - The approval process begins when a description of the training is submitted to the Board on an “Application for Training Program Approval” that is available from the Board. This can occur before or after the training has taken place. When the Board receives the application, the training is assigned a course code, by which the course is thereafter identified. The TRE Committee evaluates the training’s content and the instructor’s credentials to determine the value and appropriateness for the continuing education of an operator. The certificate classifications for which the training is valid are also specified. Following the TRE Committee’s recommendation and the Board’s decision, the applicant will receive a letter detailing the final outcome of the approval request.

## OPERATIONAL STRUCTURE

The Board of Waterworks and Waste Systems Operators is a part of the Maryland Department of Environment – Environmental Boards, established by the Maryland General Assembly. The Board was created to certify individuals as superintendents and operators of water and wastewater systems. The Board establishes the training and experience requirements for applicants who want to enter the profession. Competency is evaluated using examinations that are based on Board-approved Need-to-Know documents. Continuing education is a prerequisite for license renewal. The Board collects fees for operator certification, and fees for testing from certificate holders. In addition, the Board has authority to take disciplinary action against a licensee who has been determined to be professionally incompetent, falsified records, failed to submit self-monitoring reports, or been negligent in operation and maintenance of the works.

**Funding** -The administrative staff are funded under a combination of federal funds (Drinking Water State Revolving Fund set-asides), and State general funds. In addition, Maryland has utilized the Operator Reimbursement Grant to assist small water systems with expenses related to certification and training. The grant ended on December 31, 2012.

**Data Management** – In 2012, MDE-Water Supply Program began to upgrade and consolidate certain databases as part of a conversion to the State Drinking Water Information System for States (SDWIS-State) through a third party contract. The Board’s database which is currently in D-Base will be included in this project. The project is scheduled for completion in Spring 2014.

**Examinations** – Testing for operator certification is offered monthly at various locations across the State. The certification program administers the exams which consist of multiple choice exams for the designated classification. The exams are forwarded to ABC for scoring and preparation of an individualized report for the certificate holder. Each examinee receives a report that identifies their performance for each topic, and their overall score. Scores of 70 or above are passing. ABC has a contract with the State that must be renewed annually through State procurement as an outside provider.

In 2012, 264 water examinations were taken by certificate holders, which by comparison was a 20% decline in examinations taken during 2011. The passing rate for the examinations was 36% (96 operators passed examinations). This passing rate was higher than the overall passing rate for 2011 (30%). Table 4 summarizes the examination data based on the certification classification.

**Table 4. 2012 EXAMINATION PERFORMANCE**

CLASS OF WATER SYSTEMS	WATER EXAMINATIONS		
	Exams Taken	Exams Passed	Percentage Passed
<b>G</b>	NA	NA	NA
<b>1</b>	52	14	27%
<b>2</b>	46	17	37%
<b>3</b>	14	4	29%
<b>4</b>	82	29	35%
<b>5</b>	6	3	50%
<b>D</b>	64	29	45%
<b>Total</b>	<b>264</b>	<b>96</b>	<b>36%</b>

**Computer-Based Examinations** – Computer-based examinations are available for all categories at select locations in the area. This project is coordinated through the Association of Boards of Certification (ABC). The Board completed work with ABC and a third-party contractor to provide examinations for operators at approved third-party sites. ABC allows approved third-party contractors to administer the examinations. This type of testing arrangement is used routinely in other industries such as real estate, tax preparation, and education. Some applicants prefer this arrangement because they can take the exam in a location near them at their convenience, and they would have the results prior to leaving the testing facility.

Paper examinations will continue to be offered to those applicants who are more comfortable with this format; computer-based exams are gradually being accepted by the new generation operators. There are additional fees associated with the computer-based testing. The computer-based testing facility charges between \$42 and \$59 for an electronic exam, depending on the amount of time allotted for the examination. The testing site fee is the responsibility of the applicant, and it is not covered by MDE. Currently, there is one location in Anne Arundel County (Glen Burnie) and one in the District of Columbia that are available for electronic testing. The Board has been working with stakeholders to promote the use of the electronic testing. In the second year of this program, fewer than 20 exams were taken at the computer-based facilities. However, the passing rate for the computer-based examinees is around fifty percent which is an increase from the passing rate for those who take the paper examination.

**Examination Development** - As a fully accredited testing client, Maryland is allowed to make use of the Need-To-Know (NTK) criteria developed by ABC. The Board reviewed all categories of NTK documents for water treatment, and determined that this document was acceptable for Maryland examinations. Following a review of two Association of Boards of Certification (ABC) examinations, the Board determined that the ABC exams were acceptable alternative examinations. The Board approved the use of ABC examinations for all principle Water classifications (1, 2, 3, and 4). As of 2012, the ABC exams were being used for Maryland Water 2 and Water 3 classifications only.

## **STAKEHOLDER INVOLVEMENT**

### **Board of Waterworks and Waste Systems Operators**

The Board of Waterworks and Waste Systems Operators was created by the Maryland General Assembly in 1967, and consists of eleven voting members who are appointed by the Governor and the Secretary of the Department for four-year terms. Terms may be renewed. The Board members represent various interest groups including municipal government, county government, sanitary commissions, water and wastewater operators, academia, agriculture, and the public. The Board meets once per month, at various sites around the State. The meetings are open to the public. The Board encourages interested operators to attend these meetings to observe the Board's activities.

### **Board Meetings**

Monthly Board meetings are attended by representatives of the various water and wastewater organizations including: American Water Works Association (AWWA)– Chesapeake Section, Maryland Water and Wastewater Operators Association (WWOA), Maryland Rural Water Association, and Maryland Environmental Service. These stakeholders are not voting members of the Board, but they are recognized liaisons who participate in the meetings. The liaisons report on Board activities to their organizations, and update the Board on operator concerns.

### **Board Committees**

The Training Review Evaluation Committee involves Board members and representatives from the MDE-Water Supply Program, Maryland Center for Environmental Training, Maryland Rural Water Association, AWWA, private industrial wastewater system, and Chesapeake Water Environment Association (CWEA), and WWOA. The TRE committee reviews all requests for training approval, established minimum standards for approval of operator training, and makes recommendations to the Board. This committee meets quarterly.

## **PROGRAM REVIEW**

### **Internal Reviews**

The Board completed a programmatic review, and provided a report to the Legislature in 2011. Additional internal assessments of the Board continued in 2012 as part of the regulation review process.

#### **Examination Update**

The Board continues to work on the development of a new water examination for Class G. Site-specific examinations are available for Arsenic Removal, Reverse Osmosis, and Diatomaceous Earth filtration.

#### **Examination Performance**

The Board continues to monitor the overall passing rate for examinees. The overall passing rate has not varied greatly over the last decade. The Board's staff surveyed examinees, and found that some operators take the examination without completing any training. Other operators indicated that they did not study for the examination, but they took the exam because it was mandatory. These may be contributing factors to the low passing rate.

The Board and an adhoc committee reviewed the Need-to-Know (NTK) criteria established by ABC for water. The Water NTK criteria were determined to be consistent with the Examination prescription used by the Board for the development of water examinations, and was adopted as Maryland's NTK where appropriate.

#### **Training**

The Operator Expense Reimbursement Grant (ERG) provided resources that helped MDE to develop a core curriculum for small water system operators (serving fewer than 3300) that is offered across the State. The goal of the training is to provide operators with a wide range of training that will prepare them for the examination, and for their career as an operator. It has been observed that the passing rate increases for persons who attend the Annual Short Course each year. The Short Course is a week-long training session that is sponsored by the Water and Wastewater Operators Association each June. The Board will continue to work with MDE and water organizations on possible training opportunities for operators.

MDE negotiated multiple contracts with the Maryland Center for Environmental Training, DelTech, and Maryland Rural Water Association to provide a wide range of training classes for eligible operators free of charge. MDE's contract with each of the three organizations targeted a different training need based in regional location. Collectively, the three training partners cover a comprehensive curriculum of all of the training needs.

- Maryland Center for Environmental Training – a core curriculum was approved for operators at various community colleges located in western Maryland, central Maryland, southern Maryland, and northeastern Maryland.
- DelTech – a core curriculum was approved for operators on the eastern shore of Maryland.
- Maryland Rural Water Association – A one-day course for Small Ground Water System Operations was developed, and will be offered at various locations throughout the State. The class was designed for Class G operators, but it is open to all entry levels Water operators.

## **Fees**

The 2009 Legislative Audit suggested that the Board's fees were not sufficient to support all of the current Board expenses. In 2012, the Department evaluated the Board's expenses and determined that additional resources were needed to support the operator certification program. The Board is reviewing a fee increase of \$25 per certificate. These changes will be incorporated into the regulation revisions that are planned for 2013.

## **External Reviews**

In 2009, legislative auditors completed a full programmatic review of the Board's functions. There were no external reviews in 2012.

## **Regulations**

In consultation with various water and wastewater organizations, regulations were drafted to address the following items:

1. Technical corrections to COMAR 26.06.01 Table 8 for continuing education credit (50% Rule); Water G, 1, and 2 are exempt.
2. Provide a reference for Technical Review and Evaluation (TRE) Committee in the State regulations.
3. Technical correction for the physical location of the Board.
4. Review fees for certification and examination for operators.
5. Establish definition for "Pending Employment"; this limitation typically impacts new operators, or operators from out-of-state that are seeking reciprocity.

The regulation revision is expected to be finalized in 2013.

## **ADDITIONAL ACTIVITIES**

The following summarizes the activities that were initiated by the Water Supply Program to educate and target public water system operators:

1. Direct contact with small water systems by Water Supply Program staff and Maryland Rural Water Association (MRWA) circuit riders was made throughout 2012. This activity is coordinated by the Water Supply Program under a contract with MRWA.
2. The Water Supply Program and Board staff provide training for operators at various annual conferences such as American Waterworks Association (AWWA), Water and Wastewater Operators Association (WWOA), and MRWA.
3. The WSP participates in EPA's Area Wide Optimization Program (AWOP). AWOP was developed to increase awareness of the need for continuous optimization of surface water plants so that the risk of waterborne disease outbreaks will be reduced. AWOP has developed tools and methods to promote plant optimization. The WSP participates in on-site, multi-state activities to assess and ensure optimized plant performance.
4. Email communications updating public drinking water regulations and guidance; providing guidance during emergency events.
5. Public water system operators are invited to participate in security training, and emergency exercises.
6. The Water Supply Program continued the annual notification of the monitoring schedules, water quality data, and general updates to all community and nontransient noncommunity water systems in 2013.