

**Michigan Department of Environmental Quality
Resource Management Division**

CAPACITY DEVELOPMENT REPORT TO THE GOVERNOR 2011

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Executive Summary

The 1996 Amendments to the federal Safe Drinking Water Act (SDWA) added provisions for each state to develop a Capacity Development Program (CDP). The objective of the CDP is to enhance public health protection by helping water systems develop and maintain the capability, or capacity, they need to deliver a safe, reliable, and adequate supply of drinking water to all customers. Capacity has three components:

- Technical – Physical infrastructure and operational ability
- Managerial – Personnel expertise and institutional and administrative capabilities
- Financial – Monetary resources

The purpose of this document is to report to Governor Rick Snyder the effectiveness of Michigan's capacity development strategy as managed by the Michigan Department of Environmental Quality (MDEQ). Each state risks losing 20 percent of the annual Drinking Water Revolving Fund (DWRf) allotment if it does not submit a report to its Governor by September 30 of every third year or does not make the report available to the public under Section 1420(c)(3) of the SDWA.

Many capacity development-related activities have been conducted and incorporated into Michigan's drinking water program since its inception in 1913 and later integrated into the Michigan Safe Drinking Water Act, 1976 PA 399, as amended (Act 399). In addition to establishing health-based standards, Act 399 also includes requirements for water well isolation, system reliability, operator certification, standards of construction, and system planning. As a result, the strategy to help systems maintain technical, managerial, and financial (TMF) capacity is a reflection of our long-standing tradition of technical assistance, with the recent addition of a capacity assessment component.

The strategy is effective. New public water systems are demonstrating adequate capacity before they begin serving water to the public, and existing systems are continuing to enhance and maintain capacity. A strong emphasis on assistance has moved systems toward enhanced capacity.

Systems with adequate TMF capacity are able to maintain high rates of compliance with health-based standards. Additionally, systems use a multibarrier approach to providing safe water to the public, which begins with securing a safe source, such as groundwater from a confined aquifer, and then protecting that source from contamination. The multibarrier approach continues with proper construction of water wells, pumps, treatment plants, and distribution systems. Finally, well-trained, certified operators perform proper oversight (operation and maintenance) and conduct routine monitoring to ensure that these multiple barriers continue to function.

Systems are also taking advantage of programs to enhance their TMF capacity. These programs help systems stay in compliance with existing requirements, prepare systems to comply with upcoming requirements, and help operators and local officials to better manage their systems. These programs include:

- DWRf: The 1996 Amendments to the SDWA provide low-interest loans for repairs or enhancements to help water systems comply with the SDWA. To date, the DWRf has

committed over \$651 million in low-interest loans for 223 projects to construct, upgrade, and replace infrastructure.

- **Relationship with MDEQ Field Staff:** Water system operators maintain a relationship with field staff who are the primary contact with water systems for capacity development. A prime objective of the field staff is to provide excellent customer service, from the construction permit process through regulatory oversight, and continual assessment and assistance for the duration of a system's operation.
- **Source Water Protection:** An increasing number of systems are taking steps to protect their drinking water sources. Federal funding for Wellhead Protection Programs (WHPPs) is available through the DWRP for systems using groundwater. Under the sponsorship of the MDEQ, the Michigan State University (MSU), Department of Civil and Environmental Engineering, recently developed an innovative modeling tool for mapping Michigan's Wellhead Protection Areas (WHPAs). The new tool, which is now called the Michigan Groundwater Management Tool (MGMT), makes systematic and intelligent use of statewide groundwater-related data. The MDEQ uses the MGMT to drastically reduce a community's cost to delineate its WHPA in an effort to provide comprehensive protection of Michigan's groundwater resources. The MDEQ has also added rules to provide grants for communities to protect their surface water intake protection areas; however, this funding is not yet available. Amendments to Michigan's water withdrawal law further assist in the management of water resources in response to increased water use demands, pressure to divert water out of the Great Lakes Basin, and an increase in groundwater conflicts.
- **Operator Certification and Training:** Act 399 requires a certified operator to be available at all community and nontransient noncommunity water systems. These operators must maintain their certification by earning continuing education credits. As a result, new training courses are developed based on operator feedback and field staff input and in response to new regulations, with which water systems must comply.
- Other programs available to systems include financial assessments, technical assistance provider services, security training, and electronic reporting systems.

New regulations will continue to challenge water systems. The United States Environmental Protection Agency (USEPA) promulgated regulations to expand requirements on systems that disinfect. The Stage 2 Disinfection Byproducts Rule builds incrementally on existing rules and requires systems to further evaluate their distribution systems. Systems must identify the locations with high disinfection byproduct concentrations and sample these sites to determine compliance at each location.

The Ground Water Rule was promulgated to reduce the risk of exposure to fecal contamination that may be present in public water systems that use groundwater sources. Groundwater systems with identified risks may be required to perform source water monitoring, implement corrective action, or conduct further compliance monitoring.

The continuing endeavors of water systems to maintain TMF capacity will help them meet the challenges of these new regulations. This report is available on the MDEQ's Web site at <http://www.michigan.gov/deq> and to the public in paper format, on request.

List of Acronyms

ABE	Advisory Board of Examiners
Act 399	Michigan Safe Drinking Water Act, 1976 PA 399, as amended
ACO	Administrative Consent Order
ARI	Adverse Resource Impact
ARRA	American Recovery and Reinvestment Act of 2009
AWM	Abandoned Well Management
AWWA	American Water Works Association
CCR	Consumer Confidence Reports
CDP	Capacity Development Program
CWS	Community Water Systems
DWRF	Drinking Water Revolving Fund
eDWR	Electronic Drinking Water Reporting
ERG	Expense Reimbursement Grant
ERP	Emergency Response Plan
FAP	Financial Action Plan
FY	Fiscal Year
GWIM	Groundwater Inventory and Mapping
LHD	Local Health Departments
MCL	Maximum Contaminant Level
MDEQ	Michigan Department of Environmental Quality
MGMT	Michigan Groundwater Management Tool
MOR	Monthly Operation Reports
MSU	Michigan State University
NCWS	Noncommunity Water Systems
NTNCWS	Nontransient Noncommunity Water Systems
OTCU	Operator Training and Certification Unit
RCAP	Rural Community Assistance Program
RMD	Resource Management Division
RUS	Rural Utilities Service
SDWA	Federal Safe Drinking Water Act
SME	Subject Matter Experts
SWIPP	Surface Water Intake Protection Program
SWPA	Source Water Protection Area
SWPP	Source Water Protection Program
TMF	Technical, Managerial, and Financial
TNCWS	Transient Noncommunity Water System
USDA-RD	United State Department of Agriculture, Rural Development
USEPA	United States Environmental Protection Agency
ug/L	Micrograms per liter
VA	Vulnerability Assessments
WARN	Wastewater Agency Response Network
WHPA	Wellhead Protection Area
WHPP	Wellhead Protection Program

1.0 Introduction

The 1996 Amendments to the federal Safe Drinking Water Act (SDWA) added provisions for each state to develop a Capacity Development Program (CDP). The objective of the CDP is to enhance public health protection by helping water systems to develop and maintain the capacity they need to deliver a safe, reliable, and adequate supply of drinking water to all customers.

The purpose of this document is to report to Governor Rick Snyder the effectiveness of Michigan's capacity development strategy. Each state risks losing 20 percent of the annual Drinking Water Revolving Fund (DWRF) allotment if it does not submit a report to its Governor by September 30 of every third year or does not make the report available to the public under Section 1420(c)(3) of the SDWA.

This report examines the effectiveness of the strategy, progress toward improving capacity, and tools used to help to improve capacity. This report will be available to the public on the Web site of the MDEQ at <http://www.michigan.gov/deq> and at the public's request.

1.1 CDP Overview

Water system capacity is the ability to plan for, achieve, and maintain compliance with drinking water requirements. Capacity has three components:

- Technical – Physical infrastructure and operational ability.
- Managerial – Personnel expertise and institutional and administrative capabilities.
- Financial – Monetary resources.

Michigan's capacity development strategy is to help community water systems (CWS) and noncommunity water systems (NCWS) achieve and maintain technical, managerial, and financial (TMF) capacity by adding a capacity assessment component to the Public Water System Supervision Program. The strategy is an ongoing process to:

- Assess systems' capacity or "capability."
- Prioritize systems most in need of assistance.
- Determine the best means of assistance.
- Provide assistance or refer systems to other capacity assistance or technical assistance providers.
- Measure improvements in TMF capacity during subsequent assessments.

The CDP is implemented by the MDEQ, Resource Management Division (RMD), through amendments to the Michigan Safe Drinking Water Act, 1976 PA 399, as amended (Act 399), by application of capacity development policies and guidance documents and through cooperation and/or partnerships with other agencies.

The CDP focuses on both new systems and existing systems. The new systems program ensures systems have sufficient capacity prior to commencing operation, and the existing systems program works to achieve, maintain, and enhance capacity. These two programs are detailed in two documents and were approved by the USEPA in 2000.

1.1.1 New Systems

New Community Water System Capacity Guideline Document, May 1, 2000. New systems must demonstrate TMF capacity before serving water to the public. The new systems program relies on two control points: construction permits and final inspection. Generally, a construction permit is issued based on the technical capacity of the proposed system. For CWS, the financial and managerial capacity requirements may still be pending while the system is under construction. Approval to commence operation is only granted after a final inspection when the CWS has demonstrated capacity in all three areas.

For nontransient noncommunity water systems (NTNCWS), the RMD has delegated the authority to the local health departments (LHD) to review, approve, and issue construction permits. When these water systems begin the permit application process, the LHD helps them outline their financial and managerial capacity. Prior to receiving approval to commence operation, the NTNCWS must submit a financial plan and a managerial plan that includes an emergency response plan and designation of a certified operator.

1.1.2 Existing Systems

Capacity Development Strategy for Existing Public Water Systems, August 1, 2000. The existing system strategy relies primarily on the capacity assistance component of the drinking water program, which the RMD has traditionally referred to as technical assistance. Through routine system evaluations, also known as sanitary surveys or capacity assessments, RMD staff identify which systems need capacity assistance and prioritizes assistance subject to available resources. The RMD will not request a financial capacity assessment of an existing water system unless violations, deficiencies, or other factors indicate the system lacks technical or managerial capacity. For CWS, capacity assistance is provided through RMD staff or through other technical assistance providers to help communities build TMF capacity. For NCWS, the RMD delegated the authority to the LHD to assess capacity and to provide assistance. If capacity assistance is not accepted or effective, Michigan practices a program of progressive enforcement.

1.2 Involved Parties

The CDP encompasses the efforts of water systems, the MDEQ, technical assistance providers, and other organizations and agencies that affect the capabilities of water systems including:

- MDEQ, RMD District Offices
- LHDs
- MDEQ, RMD, Drinking Water and Environmental Health Section
- Michigan Finance Authority

- Technical Assistance Providers such as:
 - Michigan Section, American Water Works Association
 - Michigan Rural Water Association
 - Rural Community Assistance Program (RCAP)
 - United States Department of Agriculture, Rural Development (USDA-RD), Rural Utilities Service (RUS)
- Contractors
- MDEQ, RMD, Enforcement Section

2.0 Effectiveness of the Capacity Development Strategy

Many capacity development-related activities have been conducted and incorporated into Michigan's drinking water program since its inception in 1913 and later integrated into Act 399. In addition to establishing health-based standards, Act 399 also includes requirements for well isolation, system reliability, operator certification, standards of construction, and system planning. As a result, the strategy to help systems maintain TMF capacity is a reflection of our long-standing tradition of technical assistance, with the recent addition of a capacity assessment component.

The strategy is effective. New public water systems are demonstrating adequate capacity before they begin serving water to the public, and existing systems are continuing to enhance and maintain capacity. A strong emphasis on capacity assistance has moved systems toward enhanced capacity.

2.1 New Systems

New systems must demonstrate TMF capacity before serving water to the public. As a result, they are better able to remain in compliance with health-based standards and monitoring requirements. When violations occur, they are usually minor monitoring violations. Field staff report that new systems that have complied with capacity development requirements are well developed from start-up and perform at a higher level than some older systems. These new systems use modern technology, competent engineering support, and acceptable management. Prior to a formalized CDP, field staff only required adequate technical capacity before a construction permit was issued.

2.1.1 CWS

Proposed CWS are primarily new residential subdivisions. Field staff interacts with developers and their engineering consultant to complete the capacity assessments before approval is granted to serve water to the public. Most developers who phase their projects understand that it is more cost-effective to install a system meeting CWS requirements at the beginning of the project instead of upgrading the water system when they expand. In addition to the traditional technical assessment, these new CWS must complete financial and managerial assessments. The financial capacity assessment requires some thought about future operations and costs. The managerial capacity assessment requires an operations plan, a certified operator, a

sampling site plan, as well as other plans to ensure the system has adequate managerial oversight and organization before commencing operation.

A system that simply increases the number of customers without having to alter or construct water system infrastructure is not considered a new system. However, the following existing systems are considered new and subject to capacity development policies:

- Systems that did not meet the definition of a CWS at start-up but are designed to one day meet the definition.
- Systems that are not currently a CWS, but propose to extend the water system to serve additional customers, thereby growing to become a CWS. These systems are usually privately-owned, residential subdivisions that were previously exempt from CWS requirements due to their small size.

Many times, a new developer begins to expand a subdivision or the original developer returns to complete a final phase after many years. These systems pose the greatest challenge because they often expand before fully complying with capacity development requirements and because the control point of a final inspection before commencing operation no longer exists.

2.1.2 NTNCWS

Due to the financial and managerial capacity requirements now placed on new NTNCWS, these systems have a qualified operator and a higher level of awareness of the responsibilities of supplying water to the public. These systems begin operation with an emergency response plan already in place—a valuable tool during emergencies.

2.2 *Existing Systems*

Existing systems are achieving and maintaining TMF capacity as demonstrated by their high rates of compliance, as discussed in section 3.1, and their efforts to manage their systems effectively with qualified and educated staff to meet the needs of their customers. This improved compliance rate is a result of several factors, including:

- Field staff interaction with systems.
- Financial assistance in the form of loans and grants.
- Financial management assistance.
- Source water protection and water system security programs.
- Operator training and certification.
- Compliance and enforcement interaction via letters, phone calls, site visits, and administrative fines.
- Support of data systems for district staff and LHD.
- Support of Web sites for field staff, LHD, and water systems.

- Policy updates, guides, fact sheets, templates, and forms provided to district staff, LHD, and systems.

Many of these factors will be discussed in section 4.

3.0 Progress Toward Improving TMF

Systems with adequate TMF capacity maintain high rates of compliance with health-based standards, monitoring, reporting, and other capacity requirements, which is one measure of success of the CDP. A multibarrier approach to providing safe water is more difficult to measure, but it is an integral part of ensuring water systems have sufficient TMF capacity. Through the construction permit and sanitary survey process, field staff help to ensure systems obtain a safe source and continue to provide safe drinking water.

3.1 Compliance Rates

Comparing compliance data from one year to the next is difficult because of the rapidly increasing number and complexity of rules and requirements each year. With the onslaught of new regulations that have had a disproportionate impact on small systems, the number of systems in compliance may not tell the true story of improved capacity. For example, in January 2006, the maximum contaminant level (MCL) for arsenic was reduced from 50 micrograms per liter (ug/L) to 10 ug/L. Arsenic is a naturally occurring mineral present in groundwater. Michigan has a relatively high number of public water supplies impacted by this revised standard, ranking second among all states. There was a significant decrease in compliance with health-based standards in 2006 as a result of this revised standard. Since 2006, compliance increased annually through 2010. Nearly all of the 108 CWS in noncompliance were under an enforceable administrative consent order (ACO) that incorporated a mutually agreed upon compliance schedule. Many of the 164 NTNCWS that exceeded this revised MCL began serving bottled water to remove the public health threat as they work toward compliance. As of July 2011, 98 of the CWS and 108 of the NTNCWS have returned to compliance by replacing or blending their source, consolidating with an adjacent system that meets the standard, or constructing treatment facilities. The compliance with health-based standards has increased yearly due to many of these systems returning to compliance with the arsenic standard. The few remaining systems are still following a mutually agreed upon compliance schedule and periodically providing public notice to remind customers about the health threat, or have been referred for escalated enforcement.

Small systems make up the majority of systems in Michigan as well as the majority of systems in noncompliance. However, the majority of the population served by CWS is supplied by larger systems that generally comply with requirements. To put compliance data into perspective, it may be useful to compare the percent of population served by CWS that are in compliance with health-based standards and monitoring and reporting requirements.

The following table summarizes compliance in Michigan with health-based drinking water standards and with monitoring and reporting requirements compared to the goals shared with the USEPA:

Compliance with Health-Based Standards	<i>Goal</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>
Percent of people served by CWS meeting new health-based standards ¹	90	97.8	99.2	99.0
Percent of CWS meeting new health-based standards ¹	90	94.8	97.6	98.5
Percent of NTNCWS meeting new health-based standards ¹	90	94.1	94.4	95.3
Percent of Transient NCWS (TNCWS) meeting all health based standards	95	96.6	96.7	96.9
Compliance with Monitoring and Reporting Requirements	<i>Goal</i>			
Percent of people served by CWS without significant violations ²	95	97.2	99.3	99.7
Percent of CWS without significant violations ²	90	93.8	94.8	94.8
Percent of NTNCWS without significant violations for acute health risks ³	90	93.2	94.3	95.5

¹ New health-based standards refer to new regulations since January 2002 and includes the revised arsenic standard. These new regulations generally do not apply to TNCWS.

² Significant monitoring violations are generally defined as any major monitoring violation. A major monitoring violation, with rare exceptions, occurs when no samples were taken or no results were reported.

³ Acute health risks mean those contaminants that have serious adverse effects on human health as a result of short-term exposure.

Compliance with monitoring requirements is considered a measure of success. However, the failure to collect a sample is not necessarily a direct public health threat because Michigan's drinking water program does not automatically assume the absence of a sample creates a public health threat, as discussed in the following section. A missed sample from a properly constructed water system having a satisfactory history of safe samples is a concern, but not a direct threat to public health.

Other new regulatory requirements have been promulgated by the USEPA, and compliance dates are fast approaching. To prepare for the new rules, the RMD has taken advantage of USEPA-sponsored Web cast training sessions. In the last two fiscal years (FY), the RMD has hosted many Web casts at multiple district offices. Some sessions were also attended by water system operators. Most of the topics covered new regulatory requirements while some Web casts focused on managerial and financial capacity issues. Web casts and telecasts are excellent venues to provide quality training at little or no cost to the state or water systems. Operators may use these Web casts to meet certification training and continuing education requirements.

3.2 *Multibarrier Approach*

The multibarrier approach to providing safe drinking water begins with securing a safe source, such as a confined aquifer, and protecting that source from contamination. It continues with proper construction of water wells, pumps, treatment plants, and distribution systems. Proper oversight and monitoring by trained personnel provide confirmation that the multiple barriers are functioning and the integrity of the water system is maintained.

Act 399 provides public health protection through requirements on construction of wells, surface water intakes, treatment facilities, and distribution systems. Construction permits require an engineering review and a sound basis of design that incorporates reliability and redundancy. Some aspects of management and operations are also regulated. A cross connection control program must be developed and implemented in municipal systems to eliminate and prevent potential pathways for contaminants to enter the water system. A system must also conduct a study of water supply requirements and update it every five years. A general plan, or layout and description of the water system and its service area, must be submitted. This plan now requires

systems, which intend to provide fire protection, to include a hydraulic analysis showing pressures under peak demands; an inventory of main size, material, and age; and maps showing existing and future boundaries. Finally, an emergency response plan (ERP) must be developed. These long-standing requirements are key to achieving and maintaining capacity. Compliance with these requirements is part of the continual sanitary survey or evaluation process by field staff.

The RMD is encouraging systems, particularly new systems, to consider both short- and long-term needs and expected growth as they determine their water capacity requirements and develop their general plans and ERPs. This asset management approach is expected to enhance their capacity to manage their assets at the lowest possible cost.

The 1996 amendments to the SDWA required states to assess all source waters used for drinking water. All of Michigan's nearly 18,000 sources were assessed in 2003 to identify areas that supply public drinking water, to evaluate the susceptibility of those water systems to contamination, and to inform the public of the results. After the heavy investment in the assessment process, efforts are being made to move from assessment to protection. Water systems are encouraged to protect their sources through voluntary programs discussed in section 4, Tools Used to Improve TMF.

Finally, oversight of the water system by qualified operators ensures all the elements of the waterworks system are functioning. Each CWS and NTNCWS and certain TNCWS must be under the responsible charge of an operator certified by the MDEQ. Larger systems are also required to designate a certified backup operator. Certification is renewable through training approved by the MDEQ.

4.0 Tools Used to Improve TMF

This section discusses some of the tools used to enhance system TMF capacity, to achieve and maintain compliance with requirements, to prepare for new regulations, and to better manage water systems.

4.1 DWRF

The 1996 Amendments to the SDWA authorized the creation of a revolving fund to provide low-interest loans for repairs or enhancements to help water systems comply with the SDWA. This fund is similar to the State Revolving Fund created to assist water pollution control projects. The capacity development provisions of the SDWA are funded through the DWRF allotment.

Prior to the creation of the DWRF, project financing for CWS was left largely to the local unit of government or to individuals investing in their own systems. The DWRF provides a source of infrastructure financing. Through FY 2010, the DWRF has committed over \$651 million in low-interest loans for 223 infrastructure projects. Of the 223 projects with committed funds, 183 have been completed, and the loan payments are revolving back into the fund. Some systems receive commitments from the DWRF, but may not be ready to proceed with the project until they are able to assure the revenues will be generated to repay the loan. In these cases, the system remains on the priority list for the next year.

The American Recovery and Reinvestment Act of 2009 (ARRA) was signed into law on February 17, 2009. Included in the ARRA was an additional \$2 billion in capitalization for DWRF administered by the states, of which Michigan has received \$67,454,000. These funds provided Michigan with the ability to tender more loans through the DWRF and provided additional subsidy (principal forgiveness for 40 percent of a project's cost).

The following table summarizes the loan commitments for FY 2008 to FY 2010:

DWRF Loan Commitments by FY			
	2008	2009	2010
Number of Projects Committed	21	12	21
Commitments of Funds (\$M)	\$46.26	\$43.27	\$80.03
Number of ARRA Projects	n/a	12	16
Commitments of Funds (\$M)	n/a	\$43.27	\$65.60
Number of Green Qualifying Projects	n/a	4	12

The fourth largest project, since the beginning of the DWRF, was committed in FY 2010 to renovate the city of Benton Harbor water treatment plant to include new clarifiers and a new generator for standby power. Other large commitments in FY 2008 to FY 2010 include a Van Buren Township two million-gallon elevated water tank with a new control system for \$11,075,000 and a new intake and shore water well pumping station for the city of St. Joseph for \$9,955,000.

The ARRA required the states to use at least 20 percent of their ARRA capitalization for “projects to address green infrastructure, water or energy efficiency improvements of other environmentally innovative projects.” To meet this requirement, and to further the MDEQ’s desire to encourage the integration of these practices into water and wastewater infrastructure, qualifying DWRF projects were actively solicited. A number of projects with green reserve qualifying components were funded in 2009 and 2010. The following projects are two examples:

- Lansing Township experienced many water main breaks and had a large percentage of water loss in the distribution system. The water main in these areas was nearly 70 years old and replacement was expected to reduce their water loss by 16 percent. In addition, the township expected to increase energy savings by reducing pumping costs with the new water main infrastructure.
- The city of Greenville installed a photovoltaic roof system to power the well control building and new control system. The new control system allows the community to reduce energy costs by practicing off-peak pumping.

Michigan’s drinking water program relies heavily upon proper water system design and construction to prevent jeopardizing the safety of both the source and finished water. To that end, priority of DWRF projects favors communities that are participating in a Source Water Protection Program (SWPP), which is discussed in section 4.4.

4.2 *Field Staff*

Water system operators develop a relationship with field staff who are the primary contact for capacity development. The CWS are served by RMD staff in one of 8 district offices, and NCWS are served by staff from one of 44 LHDs under contract with the RMD. A primary objective of field staff is to provide excellent customer service from the construction permit process for new infrastructure through the continual assessment and oversight process during operation.

Assistance or consultation during site visits has been the preferred method to maintain system compliance. At times, field staff serve as both capacity assistance providers as well as regulators. When assistance is not accepted or effective, staff initiate enforcement actions.

Capacity of systems is assessed through the sanitary survey process. Field staff detail their findings and recommendations in a letter to the system, which may include a list of items to address and deadlines to meet. Options for capacity assistance may also be offered, such as contacting a technical assistance provider. Sanitary survey letters help systems understand the severity of the deficiencies and importance of acting on the recommendations. For CWS, the sanitary survey includes an overall rating of satisfactory, marginal, or deficient.

The following table summarizes evaluations, visits, and timeliness of construction permits issued for CWS:

CWS Evaluations, Visits, and Construction Permits			
	FY 2008	FY 2009	FY 2010
Number of Sanitary Surveys Conducted	507	449	425
Percent Rated Satisfactory	85	85	82
Percent Rated Marginal	11	10	11
Percent Rated Deficient	4	5	6
Percent Not Rated	0	0	2
Number of Visits	1,639	1,699	1,614
Number of Construction Permits Issued	1,199	887	759
Percent Issued Within 10 Business Days of Receipt	80	76	76

The data reflect the following:

- The number of construction permit applications received has declined significantly over the three fiscal years, likely due to a downturn in the state's economy.
- The percent of CWS rated satisfactory has slightly increased from an average of 79 percent in 2005-2007 to 84 percent in the 2008-2010 time period.
- Significantly less time reviewing construction permit applications has afforded field staff more time to visit water systems from 2008-2010, as compared to 2005-2007, which may have resulted in more compliance assistance and satisfactory sanitary survey ratings.

Deficient systems receive priority for assistance. Ratings are based on compliance with health-based standards, monitoring requirements, qualified operator requirements, and requirements in Act 399 for TMF sufficiency, such as well construction, general and emergency response plans, and financial requirements for privately-owned systems.

Two MDEQ policies were developed in 2010 to help field staff effectively use sanitary surveys and address water system deficiencies. The sanitary survey policy confirms the requirements for surveys to be conducted every three years; however, a reduced survey frequency may apply if certain criteria are met. In addition, surveys may be performed more frequently if significant deficiencies exist or corrective action is necessary. The significant deficiency policy was developed to help staff identify a significant deficiency and set forth steps to resolve the deficiencies. These policies help staff provide greater oversight and attention to those deficiencies that also helped CWS return to compliance or obtain a satisfactory rating in the next survey.

Often staff have found that a one-time capacity assistance meeting is sufficient to keep systems in compliance. In other situations, the district engineer spends more time with the system operators to help solve more complicated concerns or refers the system to other capacity assistance providers. At times, water system operators want to comply, but lack the financial resources or support from community leaders to make necessary changes. When capacity assistance is met with resistance, enforcement notices are used to outline the consequences of failing to correct deficiencies. These letters may offer one more opportunity to meet with staff to arrive at a mutually agreed upon compliance schedule.

In some cases, field staff may meet with community leaders or attend municipal meetings to discuss the benefits of agreeing to a course of action with a compliance schedule that allows them time to address their problems without further enforcement or penalties.

System operators and managers have many other opportunities to interact with field staff outside the capacity assessment arena. Field staff attend, participate, and present at periodic regional operator meetings to discuss upcoming regulations and regional issues and to network with operators and managers. Field staff also serve as instructors at operator training workshops, serve as subject matter experts (SME) for operator certification examinations, and present training at professional meetings. When a system begins to develop a project plan to apply for a DWRF loan, field staff consult with the system and work with its consulting engineer to ensure the project plan addresses system priorities.

Two guidance documents have been updated. *Standard Practices for Waterworks Design, Construction, and Operation for Type I Public Water Supplies* guides water systems and their consulting engineers as they design improvements and prepare applications for construction permits. The *Cross Connection Rules Manual* is a guide for CWS to prevent backflow from contaminating their water systems.

As previously mentioned, oversight of NCWS is provided by 44 LHDs under contract with the RMD. The NCWS staff maintains communication with each of the 44 LHDs during the year. This communication occurs during the formal quarterly reviews and annual evaluations of each of the 44 LHD's work in achieving and maintaining water system compliance. Training of LHD staff is conducted extensively during these visits to inform, explain, and discuss new and updated program issues and procedures. The NCWS staff periodically updates a handbook for LHDs and distributes it to LHD staff. This handbook includes policies, procedures, guidance, templates, and forms to implement the drinking water program. The NCWS staff also presents topics at groundwater and other environmental health conferences.

4.3 *Financial Assessments*

Both new and existing systems have opportunities to achieve and maintain financial capacity. Financial capacity assessments are not required of existing systems unless serious deficiencies

in technical or managerial capacity exist. However, voluntary participation in financial assessments have been increasing.

4.3.1 New Systems

New systems must demonstrate financial capacity before serving water to the public. In the NCWS Program, the system may receive help from the LHD during the permit application process to develop a financial plan. They must submit a financial plan, including a budget, to the LHD in order to receive approval to commence operation. In the CWS Program, systems submit their financial plan and supporting documents to the MDEQ for review and approval during the construction permit stage. Systems may complete their financial plan during the construction phase of the water system but must receive approval prior to the final inspection to commence operation of the water system.

4.3.2 Existing Systems

To help existing CWS improve financial capacity, the RMD conducted financial assessments of systems that serve a population of less than 10,000 that could benefit from an assessment. An analyst in the RMD administration assesses the selected communities' existing financial health and develops Financial Action Plans (FAP). The assessment is a review of financial documents and an on-site meeting with system representatives. An FAP is a tailor-made comprehensive plan to strengthen the system's financial situation based on the assessment. Short- and long-range goals are identified in the FAP followed by a step-by-step process to reach the goals. Useful tools to help complete the steps are included with the FAP, such as a sample water use and rate ordinance and a service agreement checklist. The assessment is not designed to provide funding; however, financing options are discussed at the on-site meeting. Further information on obtaining funding is provided with the FAP, such as forms to help apply to the DWRP. The system is expected to carry out the FAP, and the RMD is available to assist when requested. The FAP is intended to also be a guide for field staff. An outline of a typical assessment report is included in the Appendix. From FY 2008 to FY 2010, 12 CWS underwent financial assessments. An example of a financial assessment success is mentioned below:

- Kinross Township in Chippewa County separated water and wastewater funds, implemented new water rates, and developed a capital improvement plan as suggested in the FAP. The township has acquired a substantial amount of cash and cash equivalents with no major capital improvements needed in the immediate future.

Applying for a DWRP loan can be a daunting task for small cities and villages. Field staff report some of their communities that underwent a financial assessment became motivated to apply for a loan through the DWRP or the RUS of the USDA-RD. The financial assessment helped the following communities put into perspective the need to move forward and gather the information needed to apply for a loan:

- The village of Breckenridge in Gratiot County underwent a financial assessment in 2009 that led to a project plan in 2011. The project called for replacement of a 4-inch water main with a larger 8-inch main, looping in several areas of the distribution system, and the construction of a 300,000 gallon storage tank.
- Often, consolidation and regionalization issues are being addressed in these financial assessments. The city of St. Louis underwent a financial assessment in 2008 and is anticipating applying for future USDA-RD funding. The project is expected to include new wells to augment the capacity of the city of Alma water treatment plant and

two interconnections from the city of Alma to the city of St. Louis. Currently, the two communities are working to form a regional water authority.

Another tool to help systems with financial and managerial capacity through asset management is the *Check Up Program for Small Systems*. This no-cost software program released by the USEPA can help small systems to develop an asset management plan. An RMD staff member received USEPA trainer certification and is available to help small water systems learn the program and begin managing their assets at the lowest possible cost.

4.4 Source Protection

Systems are continuing to take steps to protect their drinking water sources. The SDWA established and funded source water assessment activities, including Wellhead Protection Programs (WHPP) and Surface Water Intake Protection Programs (SWIPP) through the DWRP. The SDWA did not provide funding specifically for implementation of SWIPPs for surface water sources. Authority has been obtained to provide grants for communities to protect their surface water intake areas through the DWRP capacity development set aside funds.

Amendments to water withdrawal legislation were enacted to further help manage the water resources of the state. Michigan completed a matching grant program to protect aquifers from contamination by locating and properly plugging abandoned water wells that are located in a community's source water protection area (SWPA). These efforts are discussed below.

4.4.1 Source Water Assessments to Protection

The SDWA required that all of Michigan's 18,000 CWS and NCWS drinking water sources be assessed in 2003. Potential sources of contamination were inventoried, and susceptibility to contamination was determined by the combined efforts of the RMD and local, state, and national agencies. A procedure is being drafted for staff to update the 2003 assessments during periodic sanitary surveys.

The Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, was amended recently in response to increased water use demands, pressure to divert water outside the Great Lakes Basin, and an increase in groundwater use conflicts. The legislative amendments are intended to help manage water resources and ensure withdrawals do not cause an adverse resource impact (ARI) to the waters of the state. In preparation to comply with provisions that require a permit for water withdrawals above a minimum threshold, the RMD established baseline capacities for each CWS. Earlier mandates of the legislation were fulfilled by the RMD partnering with the United States Geological Survey and MSU on the Groundwater Inventory and Mapping (GWIM) project to compile a groundwater inventory and make it available to the public. The GWIM data is available on the Internet and can be used in a myriad of ways. For example, CWS can target protection efforts by simultaneously viewing their WHPPA and sites of environmental contamination in the GWIM databases. Improved capabilities have included integration of the GWIM databases with the MGMT software, which will allow users to scientifically map the recharge area of a water well instead of relying upon an arbitrary circle. This benefits small systems by providing delineations at virtually no cost for the WHPP. An assessment tool was developed to help water systems locate potential water well sites in areas that are not likely to cause an ARI to the waters of the state.

Since 2007, several pilot programs using MGMT software were completed to target source protection in small CWS and NCWS. In four pilot program workshops, RMD and LHD staff provided well delineations generated from MGMT to about 188 select water systems located in

Eaton, Livingston, Kent, and Jackson Counties. Participants used the MGMT output and their source water assessment data to complete a self-assessment of their source protection practices. The self-assessment tool is intended to help the operators identify activities that may increase the risk of a contamination incident and identify actions to reduce the risk. The statewide rollout to provide this information began in the MDEQ's Kalamazoo District in August 2011 and will be completed by the end of FY 2012.

4.4.2 SWPP

A WHPP is a SWPP for water systems that rely upon water wells and it assists communities in protecting their groundwater sources. A WHPP minimizes the potential for contamination by identifying and protecting the area that contributes to water supply wells and avoids costly groundwater cleanups. Of the 435 municipal systems in Michigan using groundwater as their water supply, 285 are involved in some aspect of wellhead protection, such as performing a delineation, inventorying the potential sources of contamination, and planning for emergencies. Of those 285 systems, 225 have completed all the steps and have an approved WHPP or have met the substantial implementation standard. As a result, 85 percent of the population that obtains drinking water from groundwater is in communities taking action to protect their sources. Municipalities are encouraged to apply for a WHPP grant using a 50 percent local and 50 percent state match to fund activities involved in protecting their wellheads.

The SWIPP is the surface water counterpart to the WHPP. Under this program, communities develop partnerships with surrounding communities to identify and take action to protect the area around the intake. To date, six communities have completed a SWIPP. A matching grant program, equivalent to that used in the WHPP, is being considered when funds become available, which may stimulate activities in a SWIPP by larger municipalities.

To further protect surface water intakes, the RMD worked with federal and local governmental agencies to install a continuous, real-time water quality monitoring network in the St. Clair River, Lake St. Clair, and Detroit River. Thirteen drinking water treatment facilities will be equipped with a range of analytical devices. The monitoring system includes data transmission, data visualization, automated notification/alarm service, data archiving, and a publicly accessible Web site for data retrieval. In addition, rapid toxicity test equipment is being used to monitor water distribution systems in Southeast Michigan served by some of these surface water intakes. Nearly instantaneous communication is key to protecting surface water intakes because of the rapid rate of flow and corresponding changes in water quality compared to groundwater rates. Funding for this monitoring network is nearly exhausted, and MDEQ staff is working with communities to determine future funding options.

Abandoned well management (AWM) is addressed in many of the MDEQ drinking water programs. No one knows exactly how many unplugged and improperly abandoned wells exist in Michigan, though it is estimated at over a million, quite likely more than in any other state. The AWM includes the following efforts:

- The basic environmental health services contract with LHDs includes an AWM component. The LHDs often include, as a condition of a new water well construction permit, a requirement to plug existing, abandoned water wells. Since its inception in 2000, over 70,000 abandoned water wells have been plugged.
- The WHPP provides public education and training opportunities for CWS, water well drilling contractors, other state agencies, and the public. The goal is to raise public awareness of the health and environmental hazards posed by unplugged abandoned

water wells. The wellhead protection grant program also approves expenditures, towards well abandonment in a wellhead protection area (WHPA), to be used as the local match towards the grant.

4.5 *Operator Training and Certification*

Due to amendments to Act 399, a properly certified operator must be available at all CWS, all NTNCWS, and certain TNCWS. These operators maintain their certification by meeting continuing education requirements through training offered in a variety of venues.

4.5.1 Operator Training and Certification Unit (OTCU)

The RMD, OTCU, provides over 30 training courses each year and administers the Expense Reimbursement Grant (ERG) Program to cover training expenses of operators employed by small systems. The OTCU certifies over 200 organizations and training providers that offer other opportunities for continuing education, including online courses. Operators certified in distribution systems must provide oversight at over 1,400 CWS and approximately 1,500 NTNCWS. Operators certified in treatment systems must provide oversight at CWS and NCWS that employ treatment.

The occasional CWS without a certified operator is usually due to unanticipated operator turnover, retirements, and the like. Field staff work with each of these water systems to pursue an interim certified operator while also pursuing a permanent replacement. There is continual turnover of certified operators in NCWS, and the effort to retain certified operators at these small systems is an ongoing process.

Major program activities during FY 2008 to FY 2010 include:

- Continuation of the ERG Program approved training with free registration to certified small system operators with training activity offered by LHD and MDEQ staff.
- Training opportunities available for small community and nontransient, noncommunity operators to meet renewal requirements for their certifications.
- Streamlined the operator certification renewal process.
- Utilized SME to validate new questions for licensing examinations. The SME include water system operators holding licenses of the highest level in their category.
- Full implementation and promotion of a Web-based application allowing certified operators to view pertinent information regarding their certifications such as certificate renewal status, the list of courses completed, and other information.
- Provide a Web-based listing of all Advisory Board of Examiners (ABE) approved courses to assist drinking water personnel in maintaining certification.
- Maintaining an Intranet Web-based program allowing RMD technical staff access to readily confirm a certified operator's status.
- Web-based search capabilities to manage and track certification and continuing education status of all staff associated with a specific water system.

- Stakeholder workgroups SMEs met several times to validate exam questions.
- Development of all exams using Scantron scored questions, validated by SMEs.
- Promotion of the Level 5 Guide Book geared towards operators of NTNCWS.
- Implementation of rule changes to include technical and managerial training categories for continuing education requirements upon renewal.

4.5.2 Small System Training

For the past several years, RMD staff has conducted training specifically for small CWS and awarded continuing education credits to operators who participated. Many attendees are operators employed by more than one system or may also work at NTNCWS, so this targeted training is improving the operation and maintenance of many more systems than the number of operators attending. General topics covered new regulatory requirements, monitoring and reporting, communicating with the public, construction permit preparation, and operational issues. Special topics change each year and have included cross connections, wellhead abandonment, and source water protection. In 2008 and 2009, 51 and 146 individuals, respectively, attended at 1 of 5 sites. In 2010, 170 individuals attended 5 sites, and the ERG covered registration for 104 participants.

Also in 2008, the RMD's Cadillac District Office partnered with the communities of Mackinaw City, Gaylord, and Cadillac in the northern Lower Peninsula to host training sessions. A county director of public works and RMD field staff served as instructors. Training focused on routine monitoring and reporting requirements and communicating with the public. Total attendance for this 2008 event was 141 attendees. In 2009, in addition to the Cadillac District Office, RMD technical staff from other district offices provided training for over 169 attendees. In 2010, there were 68 attendees at 3 locations that covered the Upper Peninsula, northern lower Michigan, and Lansing.

Other small system training starts with "train-the-trainer" sessions conducted by the NCWS staff for LHD staff who then train NCWS operators. Topics range from current requirements and practices to discussions of new requirements and regulations.

Surveillance visits and sanitary surveys are additional opportunities for the LHD staff to provide training for NCWS operators.

The NCWS staff has published a comprehensive study guide for individuals pursuing certification to operate an NCWS. It may also be useful for operators of other small CWS. Topics range from regulatory authority through source protection and system construction to monitoring and operation oversight. The guide is available on the Internet.

4.6 Security

The USEPA water security grants funded the following multiyear contracts to improve water system security and emergency response:

- Under the Bioterrorism Act of 2002, water systems serving populations greater than 3,300 developed ERPs. The first contract provided training for water systems to develop and implement successful ERP incorporating malevolent acts of terrorism into local

responsiveness planning and training. Under the Bioterrorism Act, departments of public works are considered part of a community's first responder network. The contract consisted of two elements to train network participants:

- Conduct tabletop exercises. All 30 exercises have been held of the 30 scheduled by December 31, 2008. Participants believe these exercises are useful and should be conducted more frequently.
- Conduct train-the-trainer conferences to prepare municipalities to conduct their own tabletop exercises. To date, 10 conferences have been held with a total of 125 participants.

Some RMD field staff and LHD personnel have participated in both tabletop exercises and train-the-trainer conferences to fulfill their role as primary contact for water systems during an emergency.

- The second contract involved on-site reviews of Vulnerability Assessments (VA) at systems serving populations greater than 3,300. This work included a review of capital improvements projects, Reliability Studies, Master Plans, and the like to determine if the security needs identified in the VA are being implemented or incorporated into future plans. The contract was completed on December 31, 2008.
- Gas Chlorine Reduction Initiative: The intent of the final contract, completed on March 31, 2008, was to encourage CWS and NCWS to switch from gas chlorine to a safer alternative disinfectant by providing information, cost-benefit analyses, contacts, support, and documentation. While gas chlorine currently meets the disinfection needs of water systems, it is dangerous. The majority of the participating utilities now understand the need for changing from gas chlorine to a safer alternative inasmuch as the paradigm has changed from a cost-benefit analysis to a risk-benefit analysis. RMD field staff are also working with water systems to change to a safer alternative. Eleven water systems have converted from chlorine gas to other disinfectants since 2008. In addition, six systems that still use gas chlorine have enhanced safety protocols to minimize potential problems. Below are some results of this initiative:
 - The city of Wyoming, in Kent County, completed a water treatment plant expansion that included replacement of all their old chemical feed equipment. The new chemical feed includes a sodium hypochlorite system, and the gas system has been decommissioned.
 - Lake Charter Township, in Berrien County, converted to liquid from gas in conjunction with their new microfiltration plant expansion.
 - The city of Charlevoix's Water Treatment Plant, in Charlevoix County, switched from gas chlorination to a solid calcium hypochlorite pellet system.

The MDEQ, Water Security and Emergency Management Program, is responsive to the various federal programs and the needs of the public water systems. Planning, training, and coordinating are all a part of the effort to emphasize emergency management for all hazards; terrorism and malevolent acts as well as weather-related incidents and accidents.

All day training was held for the members of the Michigan Section, American Water Works Association (AWWA), at the *Annual Water Security Summit: Water Security and Emergency*

Management. Topics included United States Army portable water treatment units, tabletop exercises, the Michigan Water and Wastewater Agency Response Network (WARN), Risk Management Plans, Disaster Recovery and Emergency Water, and Business Continuity Plans.

Topics presented at the Michigan Section, AWWA Regional Training included: all hazards security and emergency management, VA, ERP, Incident Command System, National Incident Management System, WARN, and distribution system vulnerability.

The USEPA has eliminated the Water Sector Security funding as of FY 2010. As a result, further contracting is curtailed. To help offset that loss of funds, grant applications were submitted to the Michigan State Police, Emergency Management and Homeland Security Division, for the FY 2010 United States Department of Homeland Security to continue the efforts of recent years to conduct tabletop exercises and to train small water systems in emergency response planning. These proposals did not receive funding; however, we have recently received a multimedia State and Tribal Assistance Grant to continue water system security training.

Field staff will continue to be involved in safety and security enhancements through the construction permit process and the operation of new systems.

4.7 Enforcement

Evaluations and compliance information becomes the basis for enforcement. When systems fail to return to compliance, escalated enforcement, including ACOs and MDEQ orders, can be initiated.

Before escalated enforcement is used, many systems are encouraged to return to compliance before they are assessed fines for violations. Michigan's administrative fines policy for monitoring and reporting violations was updated in 2001 to add timely submittals of monthly operation reports (MOR) for systems that employ treatment and timely submittals of the Consumer Confidence Report (CCR). Water systems are reporting MORs and CCRs on time, with few exceptions, since fines were initiated. No fines have been sought in recent years due to disinvestment in this enforcement action due to resource limitations.

When a fine is not applicable or does not prevent further violations, the RMD moves to a Notice of Violation and ACO. Field staff prefers technical assistance over enforcement to return systems to compliance or to prepare them to meet upcoming requirements, especially when options are particularly expensive or when acceptable alternatives are not readily available. As a result, only 14 drinking water cases needed further enforcement action from FY 2008 through FY 2010.

A majority of these cases were referred for escalation based on system inadequacies such as lack of sufficient capacity, water treatment plant deficiencies, or violations of active consent orders. Meeting the revised arsenic standard continues to be particularly difficult for a few small water systems that do not treat their water and have raised insufficient funds to install treatment to remove arsenic. A few of these cases have been referred to enforcement for failure to meet the deadlines and terms of the ACO. Many of the NTNCWS, that have not implemented a permanent solution, continue serving bottled water to remove the public health threat under an agreement with the RMD.

Privately-owned new CWS are subject to additional requirements to ensure they are able to provide an adequate supply of drinking water. Proposed systems must stipulate to certain

conditions such as: obtain a local government's refusal to accept ownership of the system; establish an escrow account available to the RMD for immediate repair or maintenance of the system; provide contact information of operation personnel; and agree to seek MDEQ approval before transferring ownership. The stipulation ensures private owners understand their responsibilities prior to establishing the water system. The RMD has increased the minimum required escrow amount to \$10,000.00, which had been unchanged since 1979, while also eliminating the requirement for new water system owners to enter into an ACO with the MDEQ.

4.8 Electronic Reporting

The RMD is working to develop electronic reporting systems to provide more convenience to water systems and more accurate and complete assessment of capacity. The successful implementation of the Internet-based reporting system for discharge monitoring reports prompted Michigan to expand the project to include electronic Drinking Water Reporting (eDWR.) The eDWR System will provide for online submittal of drinking water laboratory results and treatment plant operational data. The collection of data will allow the RMD to query certain parameters to assess capacity on a systemwide and statewide basis.

4.9 Summary

Every three years the RMD must report to the Governor on the effectiveness of the CDP. This program is effective as evidenced by the high rates of compliance with drinking water standards and with monitoring and reporting requirements. An even more critical measure of the effectiveness of Michigan's CDP is the absence of any major waterborne disease outbreaks like those that have occurred in neighboring states and provinces.

Public water systems use a multibarrier approach to provide safe water. This approach begins with securing a safe source and continues with constructing quality infrastructure using a sound basis of design. This multibarrier approach is maintained by qualified personnel properly operating the system and routinely monitoring to confirm that the multibarriers are indeed functioning and the integrity of the water system is maintained on a continuous basis.

Field staff periodically assesses the capacity of water systems through sanitary surveys and serves as a primary resource as systems address capacity issues. Programs available to systems include the DWRF, SWPP, operator training, financial assessments, and technical assistance provider services.

New regulations will continue to challenge water systems. Continuing endeavors to maintain TMF capacity will help to meet the challenges of these new regulations.

This report is available to the public, on request, or on the MDEQ Web site at <http://www.michigan.gov/deq/water>. Click on Drinking Water, Community Water Supply, and then Capacity Development Reports.

Appendix: Outline of a Typical Financial Assessment and Financial Action Plan (FAP)

Financial Assessment

Introduction: Population, location, transportation routes, and community characteristics; description of the water system and major projects or concerns such as expansion, securing loans, and meeting new drinking water standards; and major financial shortfall such as the need for a rate methodology.

Requested Information: Budget, last two years of audited records, water use and water rate ordinances, latest rate ordinance or resolution, recent rate or feasibility study, and contract or service agreements with outside customers.

Submitted Information: Supply usually does not provide all the information requested.

Analysis: Summary or highlights of each of the documents provided by the supply.

On-site Meeting: Date and attendees; and list of items discussed, such as the financial concerns, the billing method, and major recent projects.

FAP

Goal One: Develop the financial capability to fund present and future needs.

Task 1: Develop a capital improvement projects plan.

Step 1: List anticipated water projects.

Step 2: Estimate the cost of each project to be funded.

Step 3: Project the anticipated date the project is to begin.

Step 4: Calculate the dollar amount necessary to be set aside annually.

Step 5: Establish a line item in the budget for capital improvement expenditures.

Task 2: Develop and implement a rate setting methodology.

Step 1: Identify water system expenses.

Step 2: Identify replacement expenses and fund the replacement account.

Goal Two: Establish the legal and managerial capability to protect the water system.

Task 1: Develop a penalties section in the water ordinance.

Task 2: Adopt the amendment to the ordinance.

Tools Included With FAP

Sample resolution, sample water use and rate ordinance, service agreement checklist, DWRF informational brochure, DWRF project plan preparation guide, securing a DWRF loan fact sheet, and a fixed variable allocation spreadsheet to prepare the budget and determine water rates.